

# **Trinity River Channel Rehabilitation Site Bucktail (River Mile 105.45-107.0)**

---

**Environmental Assessment/Initial Study  
DOI-BLM-CA-N060-2015-0057-EA and TR-EA0215  
State Clearinghouse #2015112039**



**California Lead Agency for CEQA**  
North Coast Regional Water Quality Control Board



**Project Proponent and Federal Lead Agency for NEPA**

Trinity River Restoration Program  
U. S. Department of the Interior, Bureau of Reclamation



**Federal Co-lead Agency for NEPA**  
U. S. Department of Interior, Bureau of Land Management

**May 2016**



# CONTENTS

---

|                                                                                                                     |            |
|---------------------------------------------------------------------------------------------------------------------|------------|
| <b>ACRONYMS AND ABBREVIATIONS .....</b>                                                                             | <b>v</b>   |
| <b>CHAPTER 1. INTRODUCTION AND BACKGROUND.....</b>                                                                  | <b>1-1</b> |
| 1.1 Overview .....                                                                                                  | 1-1        |
| 1.2 Regional Setting .....                                                                                          | 1-5        |
| 1.3 Project Location .....                                                                                          | 1-5        |
| 1.4 Project Chronology and Background .....                                                                         | 1-6        |
| 1.4.1 Analysis Since the 2009 Master EIR – EA/EIR .....                                                             | 1-11       |
| 1.5 Purpose and Need .....                                                                                          | 1-14       |
| 1.6 Purpose of This Document .....                                                                                  | 1-15       |
| 1.7 Federal and California Lead Agencies .....                                                                      | 1-17       |
| 1.8 Regulatory Framework .....                                                                                      | 1-18       |
| 1.9 Scoping and Public Involvement .....                                                                            | 1-18       |
| <b>CHAPTER 2. PROJECT DESCRIPTION AND ALTERNATIVE DEVELOPMENT .....</b>                                             | <b>2-1</b> |
| 2.1 Background .....                                                                                                | 2-1        |
| 2.2 Goals and Objectives .....                                                                                      | 2-1        |
| 2.3 Alternative Development .....                                                                                   | 2-2        |
| 2.4 Description of Alternatives .....                                                                               | 2-4        |
| 2.4.1 No Project Alternative .....                                                                                  | 2-4        |
| 2.4.2 Proposed Project .....                                                                                        | 2-4        |
| 2.4.3 Detailed Master EIR Activities Described to Provide Additional<br>Clarity for the Reader beyond Table 1 ..... | 2-10       |
| 2.4.4 Activity Areas .....                                                                                          | 2-11       |
| 2.5 Alternatives Considered but Eliminated from Further Evaluation .....                                            | 2-38       |
| 2.5.1 2013 Design Alternative .....                                                                                 | 2-38       |
| <b>CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL<br/>CONSEQUENCES.....</b>                                      | <b>3-1</b> |
| 3.1 Introduction to the Analysis .....                                                                              | 3-1        |
| 3.1.1 Affected Environment/Environmental Setting .....                                                              | 3-1        |
| 3.1.2 Environmental Consequences/Impacts and Mitigation Measures .....                                              | 3-1        |
| 3.1.3 Mitigation and Monitoring Program .....                                                                       | 3-2        |
| 3.2 Land Use .....                                                                                                  | 3-3        |
| 3.2.1 Affected Environment/Environmental Setting .....                                                              | 3-3        |
| 3.2.2 Environmental Consequences/Impacts and Mitigation Measures .....                                              | 3-5        |
| 3.3 Geology, Fluvial Geomorphology, Minerals, and Soils .....                                                       | 3-8        |
| 3.3.1 Affected Environment/Environmental Setting .....                                                              | 3-8        |
| 3.3.2 Environmental Consequences/Impacts and Mitigation Measures .....                                              | 3-15       |
| 3.4 Water Resources .....                                                                                           | 3-18       |
| 3.4.1 Affected Environment/Environmental Setting .....                                                              | 3-19       |
| 3.4.2 Environmental Consequences/Impacts and Mitigation Measures .....                                              | 3-20       |
| 3.5 Water Quality .....                                                                                             | 3-23       |
| 3.5.1 Affected Environment/Environmental Setting .....                                                              | 3-24       |
| 3.5.2 Environmental Consequences/Impacts and Mitigation Measures .....                                              | 3-27       |

|                   |                                                                       |            |
|-------------------|-----------------------------------------------------------------------|------------|
| 3.6               | Fishery Resources .....                                               | 3-32       |
| 3.6.1             | Affected Environment/Environmental Setting .....                      | 3-33       |
| 3.6.2             | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-41       |
| 3.7               | Vegetation, Wildlife, and Wetlands.....                               | 3-56       |
| 3.7.1             | Affected Environment/Environmental Setting .....                      | 3-56       |
| 3.7.2             | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-75       |
| 3.8               | Recreation and Wild and Scenic Rivers.....                            | 3-87       |
| 3.8.1             | Affected Environment/Environmental Setting .....                      | 3-87       |
| 3.8.2             | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-88       |
| 3.9               | Socioeconomics .....                                                  | 3-92       |
| 3.9.1             | Affected Environment/Environmental Setting .....                      | 3-93       |
| 3.9.2             | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-94       |
| 3.10              | Cultural Resources.....                                               | 3-97       |
| 3.10.1            | Affected Environment/Environmental Setting .....                      | 3-98       |
| 3.10.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-99       |
| 3.11              | Air Quality.....                                                      | 3-102      |
| 3.11.1            | Affected Environment/Environmental Setting .....                      | 3-103      |
| 3.11.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-104      |
| 3.12              | Visual Resources.....                                                 | 3-109      |
| 3.12.1            | Affected Environment/Environmental Setting .....                      | 3-109      |
| 3.12.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-115      |
| 3.13              | Hazards and Hazardous Materials .....                                 | 3-119      |
| 3.13.1            | Affected Environment/Environmental Setting .....                      | 3-119      |
| 3.13.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-121      |
| 3.14              | Noise.....                                                            | 3-124      |
| 3.14.1            | Affected Environment/Environmental Setting .....                      | 3-124      |
| 3.14.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-126      |
| 3.15              | Public Services and Utilities/Energy .....                            | 3-127      |
| 3.15.1            | Affected Environment/Environmental Setting .....                      | 3-127      |
| 3.15.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-129      |
| 3.16              | Transportation/Traffic Circulation.....                               | 3-133      |
| 3.16.1            | Affected Environment/Environmental Setting .....                      | 3-133      |
| 3.16.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-134      |
| 3.17              | Tribal Trust .....                                                    | 3-139      |
| 3.17.1            | Affected Environment/Environmental Setting .....                      | 3-139      |
| 3.17.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-142      |
| 3.18              | Environmental Justice.....                                            | 3-143      |
| 3.18.1            | Affected Environment/Environmental Setting .....                      | 3-144      |
| 3.18.2            | Environmental Consequences/Impacts and Mitigation Measures .....      | 3-145      |
| <b>CHAPTER 4.</b> | <b>CUMULATIVE EFFECTS AND OTHER CEQA AND NEPA</b>                     |            |
|                   | <b>CONSIDERATIONS.....</b>                                            | <b>4-1</b> |
| 4.1               | Cumulative Impacts .....                                              | 4-1        |
| 4.1.1             | Methodology and Analysis .....                                        | 4-1        |
| 4.2               | Irreversible and Irretrievable Commitments of Resources .....         | 4-5        |
| 4.3               | Relationship between Local Short-Term Uses of the Environment and the |            |

|                   |                                                                 |            |
|-------------------|-----------------------------------------------------------------|------------|
|                   | Maintenance and Enhancement of Long-Term Productivity .....     | 4-6        |
| 4.4               | Growth-Inducing Impacts.....                                    | 4-7        |
| 4.5               | Environmental Commitments and Mitigation Measures.....          | 4-7        |
| 4.6               | Significant Effects under CEQA .....                            | 4-7        |
| 4.7               | Connected Actions .....                                         | 4-8        |
| <b>CHAPTER 5.</b> | <b>LIST OF PREPARERS .....</b>                                  | <b>5-1</b> |
| 5.1               | Bureau of Reclamation.....                                      | 5-1        |
| 5.1.1             | Trinity River Restoration Program Office.....                   | 5-1        |
| 5.1.2             | Mid-Pacific Region Office .....                                 | 5-1        |
| 5.2               | Bureau of Land Management .....                                 | 5-1        |
| 5.3               | Trinity County Resource Conservation District.....              | 5-1        |
| 5.4               | Regional Water Quality Control Board – North Coast Region ..... | 5-1        |
| 5.5               | North Wind Services, LLC.....                                   | 5-1        |
| 5.6               | North State Resources, Inc. ....                                | 5-2        |
| <b>CHAPTER 6.</b> | <b>REFERENCES.....</b>                                          | <b>6-1</b> |

## FIGURES

|           |                                                                                                                                                         |       |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Figure 1. | Proposed Project Location and Relationship to Other TRRP Sites.....                                                                                     | 1-3   |
| Figure 2. | Land Management and Boundaries of the Bucktail Rehabilitation Site. ....                                                                                | 1-7   |
| Figure 3. | Bucktail Rehabilitation Site – Proposed Project. ....                                                                                                   | 2-15  |
| Figure 4. | Geomorphic Features at the Bucktail Rehabilitation Site. ....                                                                                           | 3-11  |
| Figure 5. | Aquatic Habitat and Potential Project Impacts at the Bucktail Rehabilitation Site.....                                                                  | 3-37  |
| Figure 6. | Impacts of the Proposed Project on Riparian Area Habitat at the Bucktail Rehabilitation Site.....                                                       | 3-53  |
| Figure 7. | Plant Community Habitats in the Bucktail Rehabilitation Site. (Habitat classification follows the California Wildlife Habitat Relationships model)..... | 3-57  |
| Figure 8. | Boundaries of Waters of the United States, Including Wetlands, and Potential Project Impacts in the Bucktail Rehabilitation Site.....                   | 3-73  |
| Figure 9. | Key Observation Points for the Bucktail Rehabilitation Site.....                                                                                        | 3-111 |

## TABLES

|           |                                                                                                                                  |      |
|-----------|----------------------------------------------------------------------------------------------------------------------------------|------|
| Table 1.  | Rehabilitation Activities from Master EIR .....                                                                                  | 2-5  |
| Table 2.  | Activity Areas at the Proposed Bucktail Rehabilitation Project Site. ....                                                        | 2-12 |
| Table 3.  | Revegetation Types and Species Proposed for the Bucktail Site.....                                                               | 2-23 |
| Table 4.  | Estimated Quantities of Off-Site Materials Needed for Civil Design Features. ....                                                | 2-25 |
| Table 5.  | Summary of Potential Land Use Impacts for the No Project and Proposed Project Alternatives.....                                  | 3-6  |
| Table 6.  | Geomorphic Features within the Project Area Boundaries.....                                                                      | 3-9  |
| Table 7.  | Summary of Geology, Fluvial Geomorphology, Soils, and Minerals Impacts for the No Project and Proposed Project Alternatives..... | 3-16 |
| Table 8.  | Summary of Potential Water Resource Impacts for the No Project and Proposed Project Alternatives.....                            | 3-22 |
| Table 9.  | Summary of Potential Water Quality Impacts for the No Project and Proposed Project Alternatives.....                             | 3-28 |
| Table 10. | Special-Status Fish Species Considered for Analysis.....                                                                         | 3-34 |

|           |                                                                                                                            |       |
|-----------|----------------------------------------------------------------------------------------------------------------------------|-------|
| Table 11. | Summary of Potential Fishery Resource Impacts for the No Project and Proposed Project Alternatives.....                    | 3-42  |
| Table 12. | Plant Community Types Within the Project Area Boundaries.....                                                              | 3-56  |
| Table 13. | Special Status Wildlife Species Considered for Analysis.....                                                               | 3-66  |
| Table 14. | Summary Acreages of USACE Jurisdictional Waters and Wetlands within the Project Area.....                                  | 3-71  |
| Table 15. | Summary of Potential Vegetation, Wildlife, and Wetland Impacts for the No Project and Proposed Project Alternatives.....   | 3-77  |
| Table 16. | Summary of Potential Recreation Impacts for the No Project and Proposed Project Alternatives.....                          | 3-88  |
| Table 17. | Summary of Potential Impacts on Socioeconomics for the No Project and Proposed Project Alternatives.....                   | 3-95  |
| Table 18. | Summary of Potential Cultural Resources Impacts for the No Project and Proposed Project Alternatives.....                  | 3-100 |
| Table 19. | Summary of Potential Air Quality Impacts for the No Project and Proposed Project Alternatives.....                         | 3-105 |
| Table 20. | Key Observation Points for the Proposed Project.....                                                                       | 3-113 |
| Table 21. | Photographs of Views from Various Key Observation Points for the Bucktail Rehabilitation Site.....                         | 3-114 |
| Table 22. | Summary of Potential Visual Resource Impacts for the No Project and Proposed Project Alternatives.....                     | 3-116 |
| Table 23. | Summary of Hazards and Hazardous Materials Impacts for the No Project and Proposed Project Alternatives.....               | 3-122 |
| Table 24. | Typical Construction Noise Levels.....                                                                                     | 3-125 |
| Table 25. | Construction Equipment Noise.....                                                                                          | 3-125 |
| Table 26. | Summary of Potential Noise Impacts for the No Project and Proposed Project Alternatives.....                               | 3-126 |
| Table 27. | Summary of Public Services and Utilities Impacts for the No Project and Proposed Project Alternatives.....                 | 3-130 |
| Table 28. | Roadway Characteristics for Potential Access Roads Serving the Proposed Project Sites.....                                 | 3-133 |
| Table 29. | Summary of Potential Transportation Impacts for the No Project and Proposed Project Alternatives.....                      | 3-135 |
| Table 30. | Summary of Potential Tribal Trust Impacts for the No Project and Proposed Project Alternatives.....                        | 3-143 |
| Table 31. | Summary of Potential Environmental Justice Impacts for the No Project and Proposed Project Alternatives.....               | 3-145 |
| Table 32. | Summary of Cumulative Impacts Considering Past, Present and Reasonable Foreseeable Actions in the Trinity River Basin..... | 4-3   |

## APPENDICES

---

|            |                                                                         |
|------------|-------------------------------------------------------------------------|
| Appendix A | Comments and Responses to Comments on the Draft EA/IS                   |
| Appendix B | Mitigation Monitoring and Reporting Program and Project Design Features |
| Appendix C | Aquatic Conservation Strategy-Consistency Evaluation                    |
| Appendix D | Compliance with Standards and Guidelines for Survey and Manage Species  |
| Appendix E | Wild and Scenic River, Section 7 Analysis and Determination             |

## Acronyms and Abbreviations

---

|                 |                                                       |
|-----------------|-------------------------------------------------------|
| AEAM            | Adaptive Environmental Assessment and Management      |
| afa             | acre feet annually                                    |
| APE             | Area of Potential Effect                              |
| ARPA            | Archaeological Resources Protection Act               |
| BA              | Biological Assessment                                 |
| Basin Plan      | Water Quality Control Plan for the North Coast Region |
| BDA             | Beaver Dam Analog                                     |
| BFE             | base flood elevation                                  |
| BLM             | U.S. Bureau of Land Management                        |
| BMI             | Benthic Macroinvertebrate                             |
| BMP             | best management practice                              |
| BO              | Biological Opinion                                    |
| CAA             | Clean Air Act                                         |
| CAAQS           | California Ambient Air Quality Standards              |
| Caltrans        | California Department of Transportation               |
| CARB            | California Air Resources Board                        |
| CCAA            | California Clean Air Act                              |
| CCR             | California Code of Regulations                        |
| CDFW            | California Department of Fish and Wildlife            |
| CEQ             | Council on Environmental Quality                      |
| CEQA            | California Environmental Quality Act                  |
| CESA            | California Endangered Species Act                     |
| CFR             | Code of Federal Regulations                           |
| cfs             | cubic feet per second                                 |
| CH <sub>4</sub> | methane                                               |
| CHP             | California Highway Patrol                             |
| CLJ             | Constructed Log Jam                                   |
| CNDDB           | California Natural Diversity Database                 |
| CNPS            | California Native Plant Society                       |
| CO              | carbon monoxide                                       |
| CO <sub>2</sub> | carbon dioxide                                        |
| CRHR            | California Register of Historic Resources             |
| CVP             | Central Valley Project                                |
| CVPIA           | Central Valley Project Improvement Act                |
| CWA             | Clean Water Act                                       |
| CY              | cubic yard                                            |
| dB              | logarithmic decibel                                   |
| dBA             | “A-weighted” decibel scale                            |
| dbh             | diameter at breast height                             |
| DPS             | Distinct Population Segment                           |
| DSS             | Decision Support System                               |
| DWR             | Department of Water Resources                         |

|                  |                                                      |
|------------------|------------------------------------------------------|
| EA               | Environmental Assessment                             |
| EFH              | Essential Fish Habitat                               |
| EIR              | Environmental Impact Report                          |
| EIS              | Environmental Impact Statement                       |
| ELJ              | Engineered Log Jam                                   |
| EPA              | Environmental Protection Agency                      |
| ESA              | Endangered Species Act                               |
| ESL              | Environmental Study Limit                            |
| ESU              | Evolutionarily Significant Unit                      |
| °F               | degrees Fahrenheit                                   |
| FAC              | Facultative Plants                                   |
| FACU             | Facultative Upland Plants                            |
| FACW             | Facultative Wetland Plants                           |
| FEIS             | Final Environmental Impact Statement                 |
| FEMA             | Federal Emergency Management Agency                  |
| FIRM             | Flood Insurance Rate Map                             |
| fps              | feet per second                                      |
| GHG              | greenhouse gas                                       |
| GIS              | geographic information system                        |
| HAP              | Hazardous Air Pollutant                              |
| HEC-RAS          | Hydraulic Engineering Center River Analysis System   |
| HVT              | Hoopa Valley Tribe                                   |
| IAP              | Integrated Assessment Plan                           |
| IS               | Initial Study                                        |
| KMP              | Klamath Mountains Province                           |
| KOP              | key observation point                                |
| LCSD             | Lewiston Community Services District                 |
| L <sub>dn</sub>  | day-night average sound level                        |
| LRMP             | Land and Resource Management Plan                    |
| LWD              | large woody debris                                   |
| MBTA             | Migratory Bird Treaty Act                            |
| MDB&M            | Mount Diablo Base and Meridian                       |
| MFF              | maximum fishery flow                                 |
| mg/L             | milligrams per liter                                 |
| mm               | millimeter                                           |
| MMRP             | Mitigation Monitoring and Reporting Program          |
| MoA              | Memorandum of Agreement                              |
| msl              | mean sea level                                       |
| N <sub>2</sub> O | nitrous oxide                                        |
| NAAQS            | National Ambient Air Quality Standards               |
| NAGPRA           | Native American Graves Protection & Repatriation Act |
| NAHC             | Native American Heritage Commission                  |
| NCAB             | North Coast Air Basin                                |

|                      |                                                                  |
|----------------------|------------------------------------------------------------------|
| NCUAQMD              | North Coast Unified Air Quality Management District              |
| NEPA                 | National Environmental Policy Act                                |
| NHPA                 | National Historic Preservation Act                               |
| NI                   | No Indicator                                                     |
| NMFS                 | National Marine Fisheries Service                                |
| NO <sub>x</sub>      | nitrogen oxide                                                   |
| NRHP                 | National Register of Historic Places                             |
| NTU                  | nephelometric turbidity unit                                     |
| OBL                  | Obligate Wetland Plants                                          |
| OHWM                 | ordinary high water mark                                         |
| PA                   | Programmatic Agreement                                           |
| PJD                  | preliminary jurisdiction determination                           |
| PM <sub>10</sub>     | particulate matter less than 10 microns in aerodynamic diameter  |
| PM <sub>2.5</sub>    | particulate matter less than 2.5 microns in aerodynamic diameter |
| PRC                  | Public Resources Code                                            |
| Proposed Project     | Bucktail Rehabilitation Site                                     |
| Q                    | flow rate (typically expressed in cfs)                           |
| Q <sub>1.5</sub>     | 1.5-year return interval design flow                             |
| Q <sub>100</sub>     | 100-year flood flow                                              |
| Q <sub>s</sub>       | summer base flow                                                 |
| Reclamation          | U.S. Bureau of Reclamation                                       |
| Regional Water Board | North Coast Regional Water Quality Control Board                 |
| RM                   | River Mile                                                       |
| RMP                  | Resource Management Plan                                         |
| ROD                  | Record of Decision                                               |
| SAB                  | Scientific Advisory Board                                        |
| SHPO                 | State Historic Preservation Office                               |
| SMARA                | Surface Mining and Reclamation Act                               |
| SO <sub>2</sub>      | sulfur dioxide                                                   |
| SONCC                | Southern Oregon/Northern California Coast                        |
| SR                   | State Route                                                      |
| SRA                  | shaded riverine aquatic                                          |
| STNF                 | Shasta-Trinity National Forest                                   |
| SWPPP                | Storm Water Pollutant Prevention Plan                            |
| TAC                  | Toxic Air Contaminant                                            |
| TCRCD                | Trinity County Resource Conservation District                    |
| TMC                  | Trinity Management Council                                       |
| TRD                  | Trinity River Division                                           |
| TRFEFR               | Trinity River Flow Evaluation Final Report                       |
| TRGA                 | Trinity River Guides Association                                 |
| TRRP                 | Trinity River Restoration Program                                |
| UPL                  | Obligate Upland Plants                                           |
| USACE                | U.S. Army Corps of Engineers                                     |
| USC                  | United States Code                                               |

|       |                                |
|-------|--------------------------------|
| USDA  | U.S. Department of Agriculture |
| USDI  | U.S. Department of Interior    |
| USFS  | U.S. Forest Service            |
| USFWS | U.S. Fish and Wildlife Service |
| USGS  | U.S. Geological Survey         |
| VFD   | volunteer fire department      |
| VRM   | Visual Resource Management     |
| WSE   | water surface elevation        |
| WSRA  | Wild and Scenic Rivers Act     |
| YT    | Yurok Tribe                    |