SECTION 2.2

KLAMATH WATERSHED MANAGEMENT AREA

The following discussion draws upon knowledge obtained through public input, agency contacts, and the personal experience of Regional Water Board staff. This document presents a summary of knowledge regarding water quality issues and the existing and planned actions at this time.

MANAGEMENT AREA DESCRIPTION

The Klamath WMA includes several hydrologic units within 105.00: 105.10 (Lower Klamath), 105.20 (Salmon River), 105.30 (Middle Klamath), 105.40 (Scott River), 105.50 (Shasta River), 105.60 (Upper Klamath)), 105.80 (Butte Valley), and 105.90 (Lost River).

The Klamath River Watershed Management Area (most of that portion of the overall Klamath River Basin which is within the State of California) has been divided into three sub-basins: Lower Klamath, Middle Klamath and Upper Klamath (Figure 2.2-1). This division facilitates budgeting and it also helps recognize that the size of the overall basin, and its diversity in climatic and geologic facets and land uses affect water quality in different ways in different sub-areas of the basin. In addition to this segmentation of the watershed area within California, roughly half of the watershed is north (and mostly upstream) of the California-Oregon state border. The segment of the basin in Oregon has profound effects on the quality and quantity of the Klamath River in California. The Trinity River watershed, though within the overall Klamath basin, is not included in the Klamath River Watershed Management Area. Each sub-basin is described below.

The **Lower Klamath** subwatershed encompasses that portion of the Klamath River and its tributary watershed downstream from the Scott River to the Pacific Ocean (excluding the Trinity River), and is 2,564 square miles in area. Included in the watershed are the Salmon River, Blue Creek, numerous smaller perennial streams, and the Klamath River delta/estuary. The area is largely rugged, steep forestland with highly erodable soils. The population of the area is small and scattered. Water quality issues have arisen as a result of unauthorized discharges or inadequately treated residential sewage.

Water quality issues in the sub-basin are related to the salmonid-habitat qualities of the mainstem river and the effects to the tributaries of silvicultural activities on both federal and private lands. These issues include high summertime water temperatures, sedimentation, erosion, mass wasting and stream modifications that affect salmonid habitats, and forestland herbicide applications that threaten domestic water supplies.

Major land uses in the watershed include timber harvesting, grazing, dairies, and agriculture; gravel mining occurs in the river just outside the coastal zone. Pollutants contributed by agricultural land uses include nutrient loads (primarily from grazing, dairies, and irrigated agriculture in the upper watershed), bacteria, and sediment. In the middle to lower watershed, historic and current timber harvesting is a source of increased sedimentation. Active and inactive mines may also contribute metals.

The Klamath River and its delta and estuary are designated as a Critical Coastal Area. See Appendix C for more information on the Klamath River CCA and CCAs in general.

The **Middle Klamath** subwatershed is 2,850 square miles in area and encompasses that portion of the Klamath River and tributaries between the confluence of the Klamath and Scott Rivers and Iron Gate Dam. Included in the watershed are the mainstem Klamath River, the Shasta River and Scott River watersheds and lesser tributaries. The two major tributaries, the Shasta and Scott Rivers, receive localized precipitation as well as snow and glacial melt from nearby mountain ranges. The quality of water from Iron Gate reservoir, agriculture in the Shasta and Scott Valleys and silvicultural activities in the remainder of the drainage are the major issues. Other water quality issues are related to surface water and groundwater contamination from toxic chemical discharges in the Weed and the Yreka areas.

The **Upper Klamath** subwatershed includes watershed areas in California that are upstream of Iron Gate Dam. Many natural and human-altered watershed elements above Iron Gate and across the California-Oregon border affect the quality and quantity of water which exits Iron Gate Dam, supplies the mainstem flow and affects (both supports and jeopardizes) the beneficial uses of the river within California. The complexity of this sub-basin is magnified by jurisdictional issues associated with water-delivery/utilization infrastructures (including the Federal Klamath Project) irrigation, hydropower, endangered species, tribal rights, lake-level-management demands for Upper Klamath Lake, the waters criss-crossing the California-Oregon border, and minimum flow requirements in the Klamath below Iron Gate Dam. The Irongate fish hatchery has a NPDES permit. Considerable energy is being expended in State/Federal cooperative efforts to assist in resolving trans-border issues. While it is recognize that water quality assessment, planning, and management should be conducted with regard to the issues, the realities of the California-Oregon border and other jurisdictions color the perspective and intensify the issues.

Most of the Upper Klamath watershed area is in Oregon. The primary subwatershed in California is the Lost River watershed, which is 1,689 square miles in area. That subwatershed, which is about half in California and half in Oregon, encompasses Clear Lake Reservoir and most of its tributaries in California, the agricultural and contributing areas in Oregon, and, in California, the agricultural and wildlife-refuge areas which were once the bottom of Tule Lake and the Lower Klamath Lake. Ground water is now part of the surface water system, since numerous high production wells were brought online in

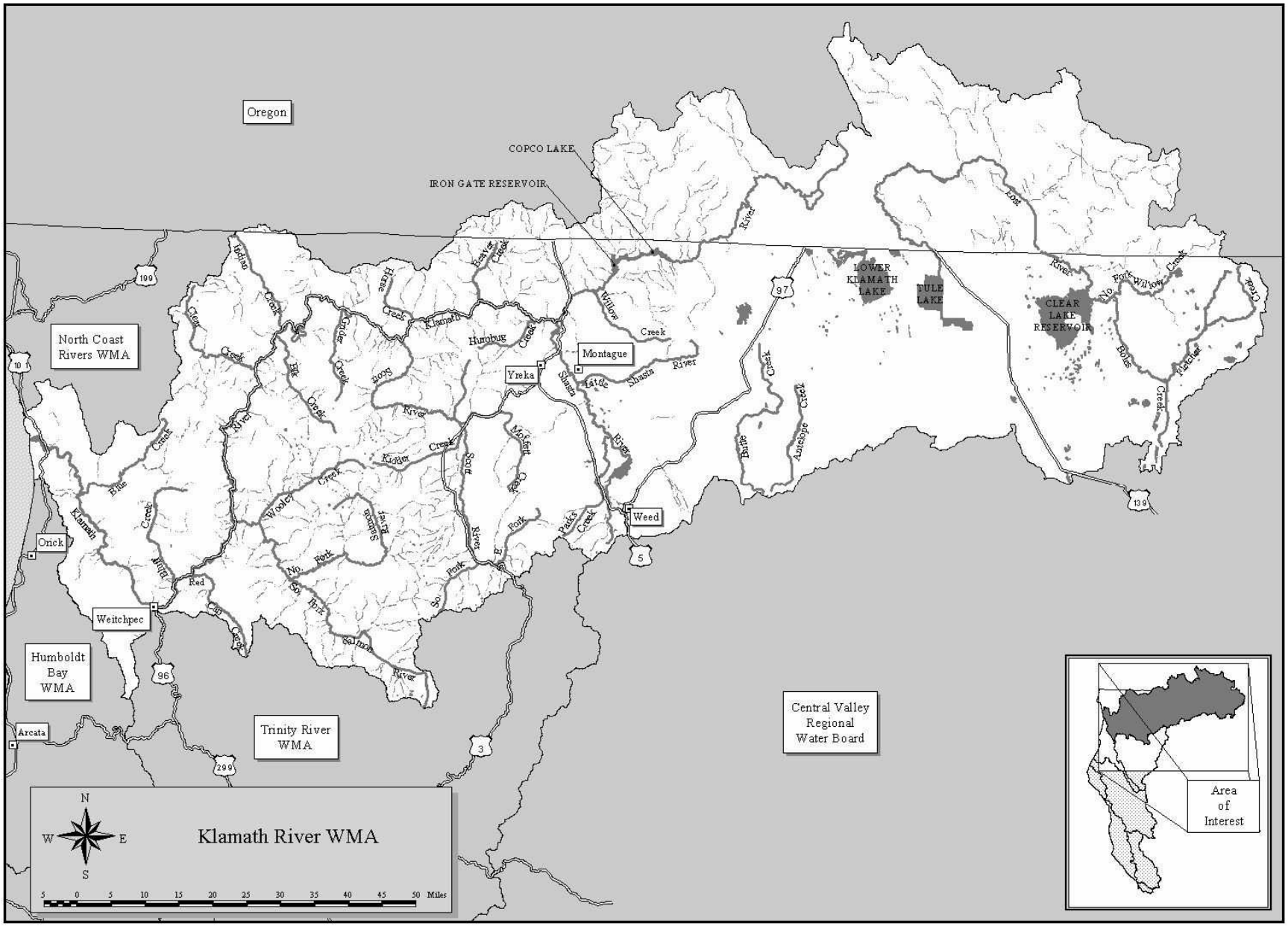

Figure 2.2.1. Klamath River WMA

2001 to augment surface flows. Additional wells were developed in 2001 and add to the surface water flow regime. The Regional Water Board expects to regulate these ground water discharges to surface water under the NPDES program.

Primary beneficial uses in the basin are domestic, agricultural and industrial water supply, cold and warm water fisheries, and recreation. The shortnosed sucker (*Chamistes brevirostris*) and Lost River sucker (*Deltistes luxatus*), native to the watershed, are listed as endangered under the federal Endangered Species Act.

Both Oregon and California have CWA section 303(d) issues of water quality impairment in the Lost and Klamath Rivers. A joint effort to reconcile the inconsistencies between the Oregon and California standards and addressing the nonattainments is under way. A primary element of that effort is to first define the roles of the various states' agencies in these interstate waterbodies.

ASSESSMENT AND PROBLEM IDENTIFICATION

Primary water quality issues in the Klamath WMA

- Salmonid habitat destruction
- High water temperatures
- Sedimentation of streams
- Soil erosion
- Mass wasting
- Hydromodiification
- Forest herbicide applications
- Low flows
- High nutrient levels
- Low dissolved oxygen

Upper Klamath subwatershed

Land uses and associated hydrologic and water quality factors in the Klamath basin change dramatically moving downstream through the watershed areas. The uppermost Lost River basin around Clear Lake, characterized by high desert stream systems, continues to be dominated by cattle grazing on both US Forest Service and private lands. The area is sparsely settled, with Clear Lake being part of the Klamath Basin National Wildlife Refuges. Land uses on the California side in the lower Lost River basin are primarily 1) crop agriculture such as grains, potatoes, and onions, 2) grazing, and 3) lands administered for the National Wildlife Refuge.

The Klamath River begins at the point where the outflow from Upper Klamath Lake is released through the modified natural channel known as Link River and also via hydropower systems, and then enters Lake Ewana. Keno Dam controls this lake. Below Keno the river flows through rugged canyon areas into California. It passes through the John Boyle hydropower structures along its way. Upon entering California, the Klamath River flows into Copco Reservoir, through its hydropower system and then into Iron Gate Reservoir. Dams created these reservoirs for power generation and to regulate flow regimes down stream. Permanent residences and cabins dot the shoreline of Copco Lake. Both cold and warm-water fishing are popular in the nutrient-rich waters.

Iron Gate Dam blocks upstream salmon migration at this point in the Klamath River. Iron Gate Hatchery is located just downstream of the dam.

Livestock which graze on public and privately owned lands adjacent to streams which flow to Clear Lake have free access to the streams, thus causing trampled banks (sediment discharge) and loss of riparian vegetation, nutrient release, increased water temperature and widely ranging temperature extremes. Unshaded, sediment laden eutrophic streams are poor-to-unsuitable habitat for RARE species; the severity of degradation to Clear Lake tributary streams varies by location, but Boles, Willow and Mowitz Creeks have been assessed and are receiving remedial efforts. Lost River below Clear Lake Dam in California is substantially impaired.

Drainage from agricultural lands and wetlands conveys nutrient rich, suspended particulate materials and dissolved materials into waterbodies that are long standing nutrient traps. Evaporation, transpiration, insolation and planktonic growth processes cause these waters to have very high nutrient levels, support very high plankton (algae) populations, and have widely swinging diel dissolved oxygen, pH and ammonia levels. The Tule Lake sump system is highly eutrophic with consequent low dissolved oxygen levels, high pH levels, high un-ionized ammonia levels, and high water temperatures. This water quality is perceived as impaired and may become or remain toxic to and uninhabitable by native fish species, including the ESA listed shortnose sucker and Lost River sucker. The question remains open whether irrigated agriculture and lake wetland modifications have affected this eutrophic condition to a measurable degree such that water quality beneficial uses are impaired.

For the Upper Klamath above Iron Gate Dam the Straits Drain contributes un-ionized ammonia and nutrient-rich suspended particulate materials which, in summer heat, contribute to the robust algae growth potential (eutrophication) of river flows which have been released from Upper Klamath Lake. The Drain discharge contributes to the nonattainment of desired water quality conditions in the river and is an issue to be addressed by Oregon in a TMDL process pursuant to Clean Water Act section 303(d). Possible remediation of the non-attainment should consider turnover time of water in the refuges, the timing and quantity of discharges to and from Klamath Straits Drain, and the quality of discharges to and from the Drain that can be accomplished within the primary wildlife protection mandates of the refuge.

Hydromodifications (dams, levees, irrigation diversion, and drain-water removal works) that have been constructed since 1860 in the basin upstream of Iron Gate Dam have resulted in:

- diminished dry season river flow rates,
- increased summer/fall water temperatures and impairments to WARM and RARE beneficial uses,
- arrested migration of anadromous fish,
- endangerment of fish species native only to this basin,
- development of an extensive agricultural community in Oregon and California, including the development of extensive private property on once underwater lake/marshes and once inhospitable canyon lands,
- development of extensive hydropower resources,
- preservation of managed migratory waterfowl refuges, and
- ground water augmentation of surface flows.

Middle Klamath subwatershed
The Middle Klamath Basin begins at Iron Gate Dam. The Shasta River confluence is downstream. The Shasta River Valley has a substantial cattle grazing industry on private lands irrigated extensively by streams in the watershed. Dwinnel Dam on the upper Shasta River controls stream flows for downstream irrigation, and the movement and distribution of water is complex. The City of Weed, which is supported by the forest products and tourist industries, is situated upstream of the reservoir. The Shasta River historically was the top salmon producing tributary in the Klamath River system. The small cities of Yreka and Weed are the primary centers of population.

The Scott River is the other major tributary in the Middle Klamath basin. It also has a substantial cattle grazing industry irrigated extensively from streams in the watershed. Silvicultural activities on both USFS and private lands dominate the steep, highly erodable watersheds flowing into the valley floor. The Scott River alluvial gravels were mined extensively in the 1800's. That activity and more-recent channeling for flood control altered its morphological characteristics dramatically. The Scott River also supports substantial salmon runs. Small towns in the valley such as Etna, Fort Jones and Callahan support the timber and grazing dominated economies. There has been concern expressed that too much water is being used by agriculture at the expense of maintaining instream flows to the extent necessary to maintain a viable salmonid fishery. Another concern is recreational instream suction dredging for gold at the confluence of the Klamath River and possibly in other locations.

Treatment plants in the watershed at Yreka, Weed, Montague, Shastina and Granada use a combination of oxidation and perk ponds. Due to a Cease and Desist Order, the treatment system in Yreka disposes of secondary treated water to subsurface leach fields that drain to Yreka Creek. Groundwater is being monitored. An unlined landfill near Yreka has been approved for 30 years, and poses no threat to the Shasta River. In Weed, the Roseburg Forest Products and the J.H. Baxter Paper Company are Superfund sites where treated groundwater is used to water log deck and adjacent fields. Monitoring occurs on Beaughton and Boles Creeks, and toxic substance monitoring (TSM) has occurred in the past.

Lower Klamath subwatershed
The Lower Klamath Basin below Scott River is characterized by mountainous terrain used extensively for silvicultural purposes on both USFS and private lands. Timber sales occur in the Klamath National Forest. Logging is particularly heavy on private corporate lands in the redwood region of the lower basin. The small communities along the Klamath are almost all timber-based. The Karuk and Yurok Tribes make their ancestral communities along the lower Klamath River, with fishing being an important part of their cultures. The Lower Klamath River recreational salmon fishery is popular. There has been both historic and recent mining activity on some of the tributaries such as Indian Creek. Abandoned mines are a concern in the Salmon River watershed that is a major tributary to the lower Klamath River. There is concern about recreational instream suction dredging for gold in the Salmon River. Timber related herbicide use on tribal lands and adjacent to tribal lands by private timber companies is a concern for the local tribes in the area. The Klamath River and its delta and estuary are designated as a Critical Coastal Area. The identified problems are sedimentation/threat of sedimentation, threat of fish population decline and impacts to fish. The pollutants are nutrients,

temperature, and sediment. The sources are industrial/municipal point sources, irrigated agriculture, surface mining, silviculture, and other nonpoint sources.

WATER QUALITY GOALS AND ACTIONS

The following goals and supporting actions reflect a synthesis of the problems and issues in the WMA and are the focus for water quality control activities.

- **Protect and enhance the salmonid fishery (mainstem and tributaries below Iron Gate)**
- **Protect and enhance warm water and endangered aquatic species**
- **Maintain the viability of agriculture and timber uses**
- **Maintain recreational opportunities**
- **Protect groundwater uses**
- **Protect Critical Coastal Areas**

Actions to support achieving those goals are arranged by individual sub-basins and/or watersheds due to the size of the WMA and the diversity of issues and jurisdictions. Accordingly, there is overlap in the actions among some geographic areas. The summary listing of actions is in priority order for all actions, with some distinctions based on geographic area, but largely incorporating geographic concerns in the prioritization.

Upper Klamath River Basin - Lost River Watershed

The current effort towards resolution of nutrient loading, high water temperatures and eutrophic streams is to continue to support USFS and Lava Beds RCD efforts to protect the streams by methods such as alternative watering sources and prescriptive and management measures such as stream sensitive grazing allotments, riparian plantings, and livestock exclusion (seasonal or year-to-year rotations). This support is currently accomplished through various grant programs.

The effort towards resolution is through monitoring and assessment of specific field drainages by the Tulelake Irrigation District (TID). This also can be supported through California's participation with the TMDL Committee established by the Oregon Department of Environmental Quality (ODEQ) for Klamath River and Lost River non-attainment issues. Remedial and restoration measures may include revised impoundment management (refresh stagnant lakes/sumps), enhance marsh/wetland functions to convert water borne nutrients and particulates into plants and soil, revised land/crop management to keep nutrients and particulates on cropland and in marketable biomass, and support for fish screening the canal and drain systems at strategic points to keep the fish in the streams and Tule Lake.

The following specific actions are aimed at addressing the issues and problems described above for the Lost River watershed, and are responsive to the broader goals to: 1) protect and enhance warm water and endangered aquatic species, and 2) to maintain the viability of agriculture:

- continue existing level of point source compliance and complaint inspections, including NPDES, underground tank, toxic site remediations, etc.,
- continue existing level of baseline water quality monitoring and investigation of pesticide and toxics issues,
- increase staff interactions with Bureau of Reclamation (BOR) and National Wildlife Refuges to document and understand influences of Klamath Straits Drain discharges

on downstream Klamath water quality and to address the issues of water quantity, conveyance, and timing in a manner that better protects water quality,
- increase staff interaction with ODEQ and TID on review of existing water quality objectives through the TMDL process and funding support for assessment of agricultural practices affecting water quality in Lost River and Tule Lake, and
- continue existing level of grant programs for stream restoration.

Upper Klamath River Basin - mainstem Klamath River above Iron Gate Dam, including reservoirs

The Lost River watershed contributes to a problem downstream in the mainstem Klamath River from the commingled drainage from agricultural lands and a wildlife refuge that is pumped from the area known as Klamath Straits and discharges into the Lake Ewana reach of Klamath River in Oregon. Water in Straights Drain has been used and retained in the Lower Klamath Wildlife Refuge in diked-off cells to benefit resident and migratory waterfowl. Cells are shallow areas of water that may sit for long periods of time. Because of the differences in timing of waters routed through the Klamath River/Lake Ewana system versus the Straits system and the concentrating processes that occur before water is pumped from the Straits, this drainage discharge is usually of much lower quality than the river.

Water in Copco and Iron Gate reservoirs becomes thick with algae in the summer months, leading to complaints about aesthetic conditions from the public. As part of the Federal Energy Regulatory Commission (FERC) process the effort towards resolution would be to encourage and support PacifiCorp and BOR efforts to determine if revised reservoir water management through the system would help alleviate the problem.

The following specific actions are aimed at addressing the issues and problems described above for the mainstem Klamath River in the Upper Klamath Basin, and are responsive to the broader goals to: 1) protect and enhance the salmonid fishery, 2) protect and enhance warm water and endangered aquatic species, 3) maintain the viability of agriculture, and 4) maintain recreational opportunities:
- significantly increase staff interaction with PacifiCorp, BOR, Klamath Compact Commission, USFWS, and CDFG working towards understanding water conveyance and flow scheduling as relates to water quality factors in the FERC and SWRCB water rights licensing processes,
- continue existing level of baseline monitoring, including multi-agency coordination of hydrolab stations in Oregon at JC Boyle and Keno Dams with emphasis on documenting water quality as it flows from above Klamath Straits Drain into Copco reservoir,
- begin SWAMP sampling of permanent station at Klamathon below Iron Gate Dam,
- increase staff interactions with ODEQ on review of common bi-state water quality objectives through the TMDL program, including California concerns regarding Klamath water quality meeting recreation standards,
- increase staff time spent interacting with USFWS for KRIS maintenance and use,
- increase staff interaction with residents of Copco Reservoir regarding summertime nuisance conditions, and
- continue existing level of grant program for stream restoration work.

Middle Klamath River Basin - mainstem Klamath River and Shasta and Scott River watersheds

The discharge from Iron Gate Dam can be at water temperatures considered detrimental to salmonids. The degree that reservoir management is a factor must be determined during the upcoming FERC re-licensing process. The effort at resolution of this issue may be through Regional Water Board input on water quality factors to the State Water Resources Control Board at it reviews and considers CWA section 401 certification of the FERC re-licensing process.

Silvicultural activities have historically had a significant and adverse impact on water quality beneficial uses of the Middle Klamath Basin. The effect has been impaired stream habitat from erosion and mass wasting, and consequent declining fisheries. New laws, regulations, and state and federal regulatory activities during the past 20 years have moderated these impacts during current logging and associated activities. The current resolution is continued Regional Water Board participation in the CDF Review Team process, review of sensitive federal timber sales, and monitoring overview of forest herbicide applications.

The Shasta River has high water temperatures and low dissolved oxygen at times during the summer. The Regional Water Board is developing TMDLs for dissolved oxygen and temperature that are due in 2004. There is a Technical Advisory Committee (TAC) consisting of state and federal agencies, local watershed groups, and interested parties that will help with a TMDL monitoring plan and land access. Cattle grazing affecting riparian habitat and bank stability, along with warm, flood irrigation return flow are the primary causes. The current effort towards resolution to this issue is to support local landowner efforts to restore riparian habitat and reuse irrigation return flow. The Yreka sewage treatment plant discharges to percolation ponds in the Yreka Creek flood plain. Evidence of leakage of those ponds directly into Yreka Creek has prompted staff to work with the City of Yreka on alternatives to percolation pond disposal of effluent. Contamination from sites in Weed and Yreka may contribute dioxins, metals, and MTBE to tributary streams. Additional assessment and monitoring may be required to assess the degree of impact and further cleanup and remediation efforts.

SWAMP has established four monitoring stations in the Shasta River watershed at Yreka Creek, Highway 263, Montague, and Edgewood. All four sites are being sampled for organics, inorganics, nutrients, low level metals and low level mercury, along with standard water quality parameters.

The Scott River has no flow in locations at times, and areas of high streambed sedimentation. Irrigation canals diverting large amounts of water and cattle grazing affect these issues. Upslope logging and road building on sensitive and highly erosive soils affect the latter. Current resolution includes supporting local landowner efforts towards alternatives to diverting large amounts of stream flow during the fall months, restoring riparian corridors to improve water quality, and reducing erosion sources to control stream sedimentation. Current field support comes through grant program activities. The Regional Water Board is developing a TMDL for sediment and for temperature for the Scott River watershed that is due in 2005.

The following specific actions are aimed at addressing the issues and problems described above for the mainstem Klamath River and its tributaries in the Middle Klamath Basin, and are responsive to the broader goals to: 1) protect and enhance the salmonid fishery, 2) maintain the viability of agriculture and timber uses, and 3) maintain recreational opportunities:

- continue existing level of point source compliance and complaint inspections on commercial timberland areas (federal and private),
- continue existing level of CDF Review Team meetings and inspections,
- issue waste discharge requirements (WDRs) or waiver of WDR for THPs
- continue existing level of review of USFS timber sales as well as other USFS projects,
- continue existing level of work with local community on sediment control in the upper Scott River watershed,
- continue existing level of forest herbicide application monitoring,
- continue existing grant program for stream restoration and nonpoint source control of agricultural, construction, and timberland in the Shasta, Scott, and Salmon Rivers, concentrating on those issues which affect water temperature and habitat, such as riparian corridors, irrigation water discharges,
- increase staff interaction with USFWS and CDFG towards determining specific temperature needs for fish in the mainstem below Iron Gate dam and in the Shasta and Scott Rivers using the FERC process to ensure adequate flows for fish migration and temperature maintenance,
- review grazing permits and practices for water quality compliance,
- increase baseline water quality monitoring, using SWAMP permanent stations at Klamath River at Klamathon, Klamath River near Empire Creek, Shasta River at the mouth, and Klamath River near Horse Creek,
- continue existing level of staff interaction with local watershed groups towards developing TMDLs in designated subwatersheds, and
- increase cooperation with the Division of Water Rights to evaluate water diversions and impacts to salmonids.

Lower Klamath River Basin

Silvicultural activities have historically had a significant and adverse impact on water quality beneficial uses of the Lower Klamath Basin. The effect has been impaired stream habitat from erosion and mass wasting, and consequent declining fisheries. New laws, regulations, and state and federal regulatory activities during the past 20 years have moderated these impacts during current logging and associated activities.

The following specific actions are aimed at addressing the issues and problems described above for the Lower Klamath Basin, and are responsive to the broader goals to: 1) protect and enhance the salmonid fishery, 2) maintain the viability of timber uses, and 3) maintain recreational opportunities:

- continue existing level of CDF Review Team meetings and inspections,
- continue existing level of review of USFS timber sales as well as other USFS projects,
- issue waste discharge requirements (WDRs) or waivers of WDRs for THPs
- increase staff interaction with private timber companies to develop long-term water quality monitoring programs,
- foster adaptive management based on water quality findings,
- begin monitoring of SWAMP stations at the Scott River at the mouth, Klamath River at Seiad Valley, and Klamath River at Weitchpec,
- increase level of forest herbicide application monitoring, and
- participate on the Regional Committee for Critical Coastal Areas to develop a Critical Coastal Area Action Plan and promote projects in the Klamath Critical Coastal Area.

IMPLEMENTATION STRATEGY

Significant strategy development and implementation for water quality protection and improvement are occurring in the management area through action by many agencies, tribes, and individuals. The actions are prioritized in recognition of shifting resources. As such, the implementation of actions to address issues and achieve water quality goals are flexible.

Clean Water Act section 319(h) grants supported the development of a Klamath River Information System (KRIS), a computerized database and data analysis tool. The KRIS system provides access to and analysis capabilities for a large body of water resource and land use information, valuable in making the multitude of management decisions necessary in this large and complex watershed.

The Water Quality Control Plan for the North Coast Region (Basin Plan) and this chapter recognize that the Klamath watersheds are culturally, climatically and geologically diverse. The watershed provides some of the highest quality water resources of the Region, yet it simultaneously produces some of the most challenging water resource conflicts. The Basin Plan contains specific water quality objectives for many index points within the Basin and it provides implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provision of the Basin Plan is its discharge prohibitions section, which prohibits direct waste discharge to all freshwater surface waters in this management area. The one exception to this prohibition results from the situation of City of Tulelake at a place that was once submerged by the waters of Tule Lake. This City is permitted to discharge its treated municipal wastes into the irrigation-drain system which eventually is pumped from the low point of the valley into the higher-elevation waters of the Klamath River in Oregon.

The Klamath River Basin Fisheries Task Force (KRBFTF) was authorized by Congress in 1986 and is overseeing a 20-year effort to restore salmonid fishery values to the Klamath watershed. It is headed by a multiple representative task force that makes funding, management, and scheduling decisions regarding fishery restoration efforts in the watershed. The Regional Water Board coordinates activities closely with the KRBFTF. Staff intends to continue coordinating with the listed agencies and groups enhancing our relationships where definite water quality benefits can be realized.

The general emphasis in the watershed is to continue interagency coordination, assess existing conditions and uses, focus reduction efforts for sediment, nutrient and oxygen-demanding loadings to selected subwatersheds, assess conditions and operations to determine where water temperature and nutrient improvements are feasible, and support efforts to improve riparian areas. The plan is to increase efforts in assessment, evaluate objectives attainment, and maintain the nonpoint source grant program.

Assessment

The assessment efforts will focus on identified concerns regarding objectives attainment and integration with Oregon's standards (e.g., dissolved oxygen, temperature, sediment, unionized ammonia) and evaluation of the need to develop an action plan for the management area to be included in the Basin Plan. Interagency coordination is a large part of the effort, since many agencies, tribes, and groups are collecting information and have jurisdiction. See http://www.krisweb.com/ for information and data on the Klamath WMA.

A Clean Water Act section 104(b) grant is being used to support an assessment effort in the Upper and Middle Klamath watersheds. It involves considerable interagency coordination and data sharing with the Bureau of Reclamation, National Biological Service, PacifiCorp, University of California at Davis, California Department of Fish and Game, Oregon Department of Environmental Quality and others. The assessment is aimed at describing the water quality relationships in the Klamath River downstream to Ike's Falls. Assessment activities are occurring in the major tributary streams, notably the Lost, Shasta, and Scott Rivers. Additional investigations into pesticides in the Tulelake area may be warranted in the future.

The Klamath River is on the CWA section 303(d) impaired water body list for dissolved oxygen, temperature and nutrients. The Regional Water Board is currently developing TMDLs for the mainstem Klamath River, and the Lost, Salmon, Scott and Shasta Rivers. In addition to data collection by the TMDL staff, USGS is working under contract for the Regional Water Board on TMDL data collection in the Lost, Klamath and Shasta Rivers watersheds. The USEPA and Regional Water Board staffs are coordinating with the Hoopa, Karuk and Yurok Tribes in the development of tribal water quality plans. The Hoopa plan has been approved and plans for the Yurok and Karuk Tribes are underway.

In the Scott River watershed, sedimentation and temperature studies need enhancement, especially regarding sediment inputs from the east side of the watershed. A Clean Water Act section 205(j) planning grant assessed the sediment sources in Moffet Creek. The local community is involved in a CRMP-type process that will need assistance in implementing the TMDL waste reduction strategy for sediment and in developing a strategy for a temperature TMDL.

The Shasta River watershed faces needs regarding local community assistance in developing a TMDL waste reduction strategy for temperature and dissolved oxygen. Further investigation of toxics issues in the upper watershed near Weed should be sought to determine the extent to which dioxins, metals, and MTBE contamination of local sites is impacting the beneficial uses of the Shasta River.

Monitoring

Long-term monitoring is a goal for the entire WMA. The Surface Water Ambient Monitoring Program (SWAMP) will rotate intensive surveys into the WMA in the future. The intensive survey will focus on overall assessment of water quality in the WMA, and address assessment of known problem areas. SWAMP monitoring was conducted in the Scott River and Shasta River watersheds and at some mainstem Klamath River stations in the FY 02-03 and FY 03-04.

Core Regulatory

The core regulatory program will continue to be supported at its current level with regard to compliance inspections, waste discharge orders and enforcement, groundwater and toxic site mitigation/remediation activities, and coordination with the public and other agencies in pollution prevention and data gathering. Ground water-to-surface water discharges to augment surface flows will be regulated to ensure that constituents and thermal discharges comply with the Basin Plan. The main issues in the Klamath basin involves underground storage tank investigations and clean-ups related to California Department of Transportation and CDF.

Ground water
The underground storage tank program and remedial work on existing localized ground water contamination will continue. Continued outreach regarding hazardous waste handling and potential ground water contamination is a priority in preventing future problems. The extent to which ground water contamination influences surface waters may be an issue in the Weed and Yreka areas, requiring additional investigation in the future.

Water Quality Certification
Clean Water Act section 401 water quality certifications will be processed as they are requested, however, there is a need to scrutinize them more closely with respect to the Endangered Species Act listing of coho salmon.

Nonpoint Source Program
Work will continue with local agencies and groups regarding land use effects on water quality, following the State Nonpoint Source Pollution Control Program and the Policy for the Implementation and Enforcement of the NPS Pollution Control Program to reduce nonpoint source pollution. (See Appendix B for more information on NPS control.) This involves issuing Waste Discharge Requirements (WDRs), waivers of WDRs, or relying on Basin Plan prohibitions. Our active outreach program will continue as well as the CWA section 319(h) grant program and Water Bond grant programs.

Response to the section 303(d) requirements for waste load reductions will necessarily include assessment of the feasibility of water quality objectives attainment on the Lost, Klamath, Shasta, and Scott Rivers. The data will support assessing the relationships of land and water use to objectives attainment, nonpoint source control alternatives, and development of potential management changes to achieve water quality objectives. Additional information concerning TMDLs is at http://www.waterboards.ca.gov/northcoast/programs/tmdl/Status.html.

In addition, Regional Water Board staff is proposing a new Total Maximum Daily Load (TMDL) Implementation Policy for Sediment Impaired Receiving Waters in the North Coast Region, which is applicable to all sediment impaired watersheds in the Region. Also under development is a Regional Sediment Amendment to the Basin Plan with prohibitions and an Action Plan, which will provide more enforcement tools to the TMDL Implementation Policy for controlling sediment. See Section 3, Regional Activities for more information on these efforts.

Timber Harvest
The Regional Water Board has an extensive timber harvest program where staff review and inspect timber harvest plans on private lands for implementation of the Forest Practice Rules and compliance with recently adopted General Waste Discharge Requirements (WDRs) or a Categorical Waiver. Additionally, staff reviews U.S. Forest Service timber sales for implementation of best management practices and compliance with a recently adopted Categorical Waiver to ensure protection of water quality and beneficial uses.

Regional Water Board staff continues to work in concert with the California Department of Forestry and Fire Protection during the review and approval of proposed timber harvesting activities on private lands. The SWRCB and CDF/BOF entered into a Management Agency Agreement, which delegates some water quality protection

responsibilities to the CDF/BOF associated with timber harvest regulation. The Regional Water Board has not given up any authority to regulate timber if violations of the Basin Plan occur or threaten to occur. More recently however, the Regional Water Board adopted General WDRs and a Categorical Waiver of WDRs for discharges related to timber harvesting on private timberlands. Regional Water Board staff continues to review timber harvest plans (THPs) and non-industrial timber management plans (NTMPs) and provide recommendations to CDF during the Review Team process. In addition, Regional Water Board staff must review THPs and NTMPs for compliance with the recently adopted General WDRs or waivers of WDRs.

The Regional Water Board currently has resources to oversee timber sale activities associated with USFS lands pursuant to the USFS MAA. Regional Water Board staff continues to review USFS timber harvesting activities for compliance with the recently adopted Categorical Waiver of WDRs and implementation of best management practices. Review of non-timber nonpoint source activities on USFS land is not well funded. Regional Water Board staff is unable to implement this portion of the USFS MAA except for responding to complaint issues on a case-by-case basis. This is a significant issue for future oversight by the Regional Water Board for these activities.

The program is also involved in the USFS co-op roads (cooperative maintenance agreement between the USFS and a timber company), fire salvage timber sales, and rehabilitation in the basin. Staff has met with the USFS and assisted with the formulation of language on co-op roads to get private users to agree to wet weather rules and maintenance.

Aerial and ground application of herbicides is an issue with the Native Americans of this area. Reports of forest herbicide applications are required in the WDRs and the waivers of WDRs. The USFS is the single largest landowner and is protecting water quality through the implementation of Management Agency Agreement with the State Water Resources Control Board. The primary water quality issues are recovery of threatened and endangered species of coho salmon and steelhead trout and protection of domestic water supplies in small rural communities.

Water Quality Planning
The Basin Plan review process necessarily feeds into the activities in this WMA to the extent issues are identified that affect the Klamath River WMA:

- review of water quality problems in the Lost, Klamath, Scott, and Shasta Rivers
- evaluation of dissolved oxygen and temperature objectives,
- consideration of a nutrient objective,
- review of Nonpoint Source Control Measures.

Local Contracts/Agreements
The Regional Water Board will continue active involvement in the Clean Water Act sections 319(h) grant program and the Water Bond grant programs, as well as promoting other programs like the California Department of Fish and Game programs.

Evaluation and Feedback
The progress of implementation will be reviewed on a yearly basis, and adjustments made to the future year's work based on that review. Additionally, an evaluation of the

process will occur at the end of the cycle that will determine the changes to be made in the program overall.

During the Klamath WMA assessment effort, Regional Water Board staff conducted and participated in several multi-agency, water quality assessment projects. These included the 1995 Lost River Water Quality Characteristics project (CWA section 319(h) grant), the TMDL data gathering project (USEPA mini-grant), and the first year of a two-year water quality monitoring project covering areas from Tulelake in the Upper Klamath downstream to Ike's Falls in the Lower Klamath (CWA section 104(b) grant).

BUDGET

The Regional Water Board will attempt to fund the highest priority actions as identified in each WMA to the extent funding constraints allow, and will pursue additional funding for those actions not currently addressed.

Appendix 2.2-A
Stakeholders

Partial list of agencies and groups with jurisdiction and/or interest in water quality in the Klamath WMA:

United States
Klamath River Basin Fisheries Task Force
Bureau of Reclamation
Forest Service
Bureau of Land Management
Klamath Basin Ecosystem Restoration Office
Environmental Protection Agency, Regions IX & X
Army Corps of Engineers
Geological Survey
National Biological Service
Fish and Wildlife Service
National Marine Fisheries Service (NOAA Fisheries)
Natural Resources Conservation Service

Native American
Klamath Tribe
Hoopa Tribe
Yurok Tribe
Karuk Tribe

Oregon State
Oregon Department of Environmental Quality

California State
Department of Fish and Game
Department of Health Services
Department of Pesticide Regulation
Office of Environmental Health and Hazard Assessment
Department of Toxic Substance Control
Department of Water Resources

Department of Parks and Recreation
California Coastal Conservancy
UC Agricultural Extension

County and Local Agencies
Resource Conservation Districts
- Lava Beds RCD
- Siskiyou RCD
- Shasta RCD

Irrigation districts
- Tulelake Irrigation District
- Klamath Irrigation District
- Butte Valley Irrigation District
- Montague Irrigation District
- others in Shasta and Scott watershed

County Agricultural Commissioners
city planning departments
city public works departments

Companies, Organizations, and Public Interest Groups
PacifiCorp
Klamath Water Users Association
American Fisheries Society, Humboldt Chapter
Timberland owners
Farm Bureaus
Scott River Watershed Council
Shasta CRMP
Klamath Forest Alliance
French Creek WAG
Siskiyou Bioregional Group
Lower Klamath Restoration Partnership
North California Indian Development Council
Salmon River Restoration Council

APPENDIX 2.2-B

Monitoring priorities and needs for the Klamath WMA

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis.

1. Nutrient and Eutrophication Studies - $170,000 (1.0 PY + $60,000)
An intensive nutrient, temperature and dissolved oxygen monitoring and assessment program was funded for two years on the upper and middle Klamath River. The effort continues by other agencies and entities in the upper and middle Klamath River without significant involvement by Regional Water Board staff. Staff should be collecting data specific to the needs for TMDL development and implementation of nonpoint source controls. The SWAMP established five permanent stations in the upper and middle

Klamath in FY 2000-01. The intensive survey in FY 2002-03 focused more intensively on problem areas.

2. Sedimentation - $70,000 (0.3 PY=$40,000)
The Scott River watershed is 303(d) listed for sediment impacts. Assessment of sediment sources and impacts is needed to assist in developing a TMDL sedimentation reduction strategy for the watershed. A CWA section 205(j) project with the Siskiyou RCD evaluated sediment sources in Moffett Creek. Additional assessment is needed in the lower Klamath River tributaries (Terwer, Blue, High Prairie, Hunter Creeks)

3. Lake Shastina Toxics - $42,000 (0.2 PY + $20,000)
While cleanup activities continue on Beaughton and Boles Creeks to eliminate metals, dioxins, and MTBE contamination, new sources have been identified. Additional assessment is needed to determine the extent of the problem in the tributaries and Lake Shastina.

4. Yreka Creek Petroleum - $42,000 (0.2 PY + $20,000)
While groundwater contamination from solvents and other petroleum products are documented and being addressed to varying degrees, contamination of Yreka Creek from contiguous groundwater is a concern. To date no significant problems have been identified, however it remains a concern.

Surface Water Monitoring Program

The Surface Water Monitoring Program (SWAMP) rotated intensive surveys into the Klamath WMA in FY 02-03 and FY 03-04. The intensive survey focuses on overall assessment of water quality in the WMA, and addressed assessment of known problem areas. Parameters are general water chemistry, nutrients, metals and organic chemicals. In FY 01-02 three monitoring stations were established in the Scott River watershed: Fort Jones, near Etna Creek, and at the town of Callahan. Parameters tested are water chemistry, nutrients, metals and organic compounds. In addition, multiparameter dataloggers will be deployed at scheduled intervals for continuous measurement of pH, dissolved oxygen (DO), specific conductance (SC) and temperature at each of the stations.

Seven long-term stations will be maintained in the WMA as initiated in FY 2000-01: Klamath River at Klamathon, near Empire Creek, near Horse Creek, at Seiad Valley, at Weitchpec; Shasta River at the mouth; Scott River at the mouth. Additional monitoring sites were established in the Shasta River system as well in FY 01-02. In addition to the permanent station at the Highway 263 Bridge, monitoring in Yreka Creek at Anderson Grade Road and the Highway 3 bridge has been added.

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation.