

State Water Resources Control Board

Division of Water Rights

STAFF REPORT

RUSSIAN RIVER WATERSHED

Proposed Actions to be taken by
the Division of Water Rights
on Pending Water Right Applications
within the Russian River Watershed

August 15, 1997



STATE OF CALIFORNIA

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STAFF REPORT

PENDING WATER RIGHT APPLICATIONS WITHIN THE RUSSIAN RIVER WATERSHED

1.0 INTRODUCTION

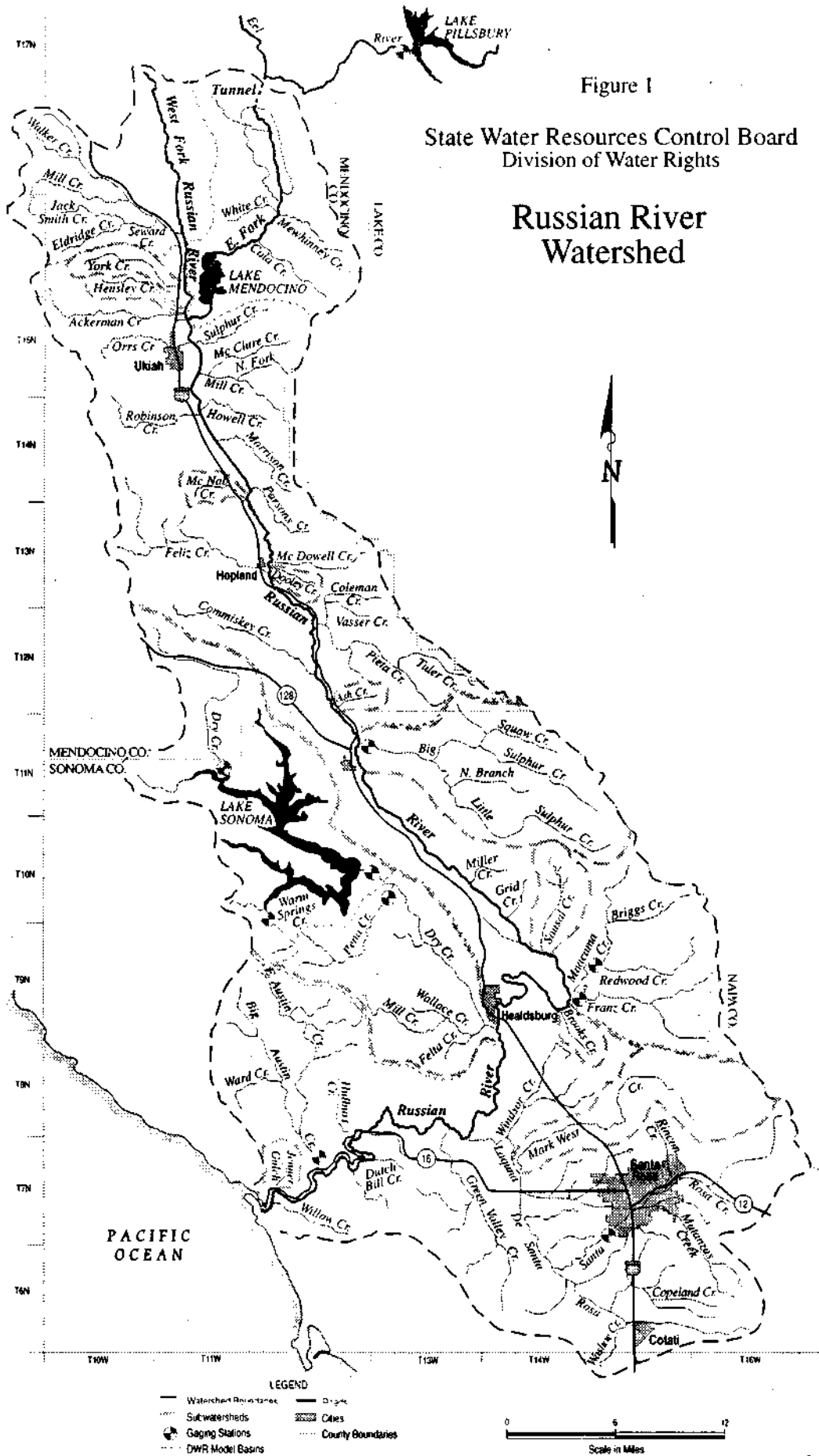
1.1 General The purpose of this report is to describe actions recommended by staff of the Division of Water Rights (Division) of the State Water Resources Control Board (SWRCB) on 81 pending water right applications and 12 incomplete/unaccepted applications within the Russian River watershed. This report describes these pending applications, discusses the methodology used to develop terms to protect fishery resources, evaluates water availability, and outlines the proposed process for acting on these applications.

The pending water right applications request diversion of a total of approximately 29,000 acre-feet of water per year (afa), primarily for irrigation, frost protection, industrial, municipal or domestic use. The 12 incomplete/unaccepted applications request a total of approximately 20,000 afa, primarily for frost protection, irrigation and domestic use. Of the 81 pending applications, 29 applications have been filed in Mendocino County requesting a total of 1,947 afa by direct diversion and 1,600 afa by storage; and 52 applications have been filed in Sonoma County requesting a total of 11,282 afa by direct diversion and 14,459 afa by storage. Of the 12 incomplete applications, 11 applications have been filed in Mendocino County requesting a total of 16,509 afa by direct diversion; and one application has been filed in Sonoma County requesting a total of 4,033 afa by direct diversion.

1.2 Description of the Watershed Figure 1 shows the Russian River watershed, major reservoirs, locations of watersheds with pending water right applications and other significant features within the watershed. The Russian River, which provides the water supply for approximately 500,000 people in Mendocino, Sonoma, and Marin Counties, encompasses an area of approximately 1,485 square miles within Mendocino and Sonoma Counties, including 23 major tributaries.

The Russian River is fed by the East and West Forks, approximately two miles north of the City of Ukiah, and by numerous tributaries. Streamflow in the river is measured at five locations -- Capella, Hopland, Cloverdale, Healdsburg, and Guerneville. Based on measured flows near Guerneville, the Russian River has an average annual runoff of approximately 1.6 million afa; however, flow has varied from a low of 64,000 afa during the 1976-1977 water year to a high of 4.3 million afa during the 1982-1983 water year.

The Russian River meanders in a southerly direction for a distance of 110 miles, through the Ukiah Valley, Hopland Valley, Alexander Valley, Fitch Mountains, Healdsburg Valley, and through the gorge of the Coastal Range Mountains to the Pacific Ocean at Jenner. Approximately 15 percent of the Russian River watershed is made up of level areas, most notably the Santa Rosa Plains, Alexander Valley, Hopland Valley, Ukiah Valley, Redwood Valley, and Potter Valley. The valleys are connected by mountainous gorge stretches along the



river's course. The remaining 85 percent of the river's watershed is comprised of hilly and mountainous terrain.¹

The Russian River valley areas have mostly been converted to agriculture (predominately vineyard) and grazing rangeland. Riparian habitat along the river, which has decreased by 34 percent along the river's middle reach during the period 1942 to 1990, exists in thin, discontinuous strips.² Within the river's upland areas, semi-natural-vegetation consisting of conifer and hardwood forests, chaparral, and grasslands occur, with some conversion of oak woodlands to vineyard in hillside areas.³

Urban development within the Russian River watershed is concentrated around the communities of Potter Valley, Ukiah, Hopland, Cloverdale, Healdsburg, Windsor, Forestville, Sebastopol, Santa Rosa, Rohnert Park, Cotati, and resort communities including Rio Nido, Monte Rio, Guerneville, Duncan Mills and Jenner. The largest concentration of people occurs in the Santa Rosa Plains, which includes six incorporated communities with over 200,000 residents. Industrial development within the watershed includes electronic manufacturing and other high-technology industries, petroleum distribution plants, light manufacturing, and other construction-related industries.⁴

The Division has records of 1,406 existing water diversions within the Russian River watershed in Mendocino and Sonoma Counties. These water development projects affect the flow in the main stem of the Russian River and the tributaries. Flow in the main stem of the Russian River is controlled, to a large degree, by the Sonoma County Water Agency's coordinated operation of Lake Mendocino and Lake Sonoma and by PG&E's operation of Potter Valley hydroelectric power project, which imports approximately 159,000 afa from the Eel River into the Russian River watershed.

1.3 Fishery Resources The Russian River watershed provides valuable habitat for coho salmon and steelhead trout. Coho and steelhead have been listed as a threatened species by the National Marine Fisheries Service (NMFS) under the Federal Endangered Species Act. In 1996, American Rivers, a national conservation organization, included the Russian River on their list of the twenty most threatened rivers in North America.

¹ U.S. Corp of Engineers, 1982, "Russian River Basin Study, Northern California Stream Investigation, Final Report.

² Sonoma County Water Agency, 1996, "Water Supply and Transmission System Project; Draft Environmental Impact Report", Vol. 1, Santa Rosa, California, vii and 511 pp.

³ Circuit Rider Productions, Inc., 1994, "Riparian habitat Status Report", Winston, California, pp 22.

⁴ Regional Water Quality Control Board, September 25, 1996, draft report relating to water quality problems, pp 2.1-3.

The condition of coho and steelhead depends on the proper combination of flow, temperature, water quality, substrate, cover and riparian habitat. The most important habitat for fish is provided by the tributaries, rather than the main stem of the river. Numerous factors have adversely affected the fishery resources including construction of water development projects, barriers to migration, gravel mining operations, timber management practices, adjacent land use, introduction of non-native fish, hatchery operations, and commercial ocean fishing. The SWRCB has authority to control factors related to water development projects, however, the SWRCB has limited authority to control many of the other factors affecting the fishery resources. Studies to address many of these issues are currently being conducted by several federal, state and local governmental agencies, and by local resources conservation districts.

1.4 Board Workshops On January 4, 1995, the SWRCB held a workshop to receive comments and recommendations regarding possible courses of action that should be taken to address water right issues on the Russian River. Based on comments presented at that workshop, staff recommended a multi-phased strategy to address water right issues:

Phase 1 Conduct an environmental assessment of the potential cumulative effects on river flows of the pending water right applications and develop permit terms that would avoid cumulative impacts.

Phase 2 Process pending applications and petitions that do not have significant impacts, or that include specific permit terms that would mitigate for local and cumulative impacts.

Phase 3 Act on Sonoma County Water Agency's petitions to change existing water right permits on the main stem of the river, following completion of appropriate environmental documentation.

Phase 4 Hold a hearing to determine which streams in the watershed are fully appropriated and the season that is fully appropriated.

Phase 5 Assist in the development of a basin-wide management plan for the Russian River watershed.

This staff report is a continuation of the multi-phased strategy and describes specific activities relating to phases 1 and 2. Following completion of the activities outlined in this report, the SWRCB can hold a hearing to determine whether streams are fully appropriated, i.e., phase 4 of the proposed strategy. SCWA is presently completing an EIR relating to proposed changes in their water right permits and intends to submit an application and petitions. Division staff will act on SCWA's application and petitions (i.e., Phase 3) following receipt of the application and petitions and the accompanying EIR. Division staff will continue to participate in on-going efforts that are designed to develop basin-wide management plans, i.e., phase 5 of the multi-phased strategy.

On November 7, 1996, the SWRCB held a second workshop to bring together various agencies and groups to promote coordinated actions to protect the anadromous fish in the Russian River. That workshop was held, in large measure, as the result of requests by the Friends of the Russian River and the National Heritage Institute. There was

general consensus that a comprehensive watershed management plan is needed to provide long-term improvement to the fishery resources.

1.5 Coordination with other Agencies Several agencies are currently conducting studies, developing management plans, or implementing measures to improve conditions affecting the fishery resources within the Russian River watershed. Division staff will continue to participate in studies leading to development of watershed plans. The measures proposed in this staff report will complement watershed management planning efforts being conducted by other agencies.

1.6 Other Studies The following provides a brief description of some of the other on-going studies of the Russian River watershed that are being conducted by other agencies. In most cases, these are cooperative efforts involving federal, state and local agencies, environmental organizations, representatives from industries in the area, and volunteer and/or community groups. In many cases, agencies other than the SWRCB have primary authority to control specific factors that affect fishery resources.

Corps The U.S. Army Corps of Engineers (Corps) is conducting the Russian River Ecosystem Restoration Reconnaissance Study. The purpose of the study is to determine whether operation of Coyote and Warm Springs dams should be modified in the interest of environmental protection and restoration, erosion control and streambank protection, groundwater supplies and other purposes.

SCWA Sonoma County Water Agency (SCWA) initiated an effort to secure federal and state funding for projects that would restore and enhance fishery resources within the watershed. SCWA recently released a report entitled *Russian River Action Plan, A Regional Assessment of Resource Needs and Restoration Opportunities*. That report provides additional information relating to on-going studies within the watershed. SCWA also distributes the *Russian River Bulletin*. That newsletter is circulated to governmental agencies to facilitate coordination, communication and cooperation among agencies with on-going activities in the watershed.

RWQCB The North Coast Regional Water Quality Control Board (RWQCB) has developed a five-year Watershed Management Program for the Russian River watershed, which includes:

- Problem identification and assessment (FY 95-96),
- Assessment and implementation actions (FY 96-98),
- Implementation of actions (FY 98-99), and
- Evaluation of the implementation and feedback (FY 99-2000).

The RWQCB's goals and actions for improving water quality within the Russian River watershed include:

- Protecting surface water and groundwater,
- Protecting cold and warm water fisheries,
- Protecting aquatic life and public health in Bodega Harbor, and other activities.

California Coastal Conservancy The California Coastal Conservancy is coordinating activities leading to the development of a Russian River Resource Enhancement Plan for Mendocino and Sonoma Counties. Two specific studies have been completed. The

Russian River Estuary Study describes measures relating to the overall management of the estuary. A second report describes geomorphical conditions of the river.

DFG The goal of the California Department of Fish and Game (DFG) in the Russian River watershed is to preserve the biodiversity of the Russian River salmon and steelhead. DFG has developed a Russian River Basin Planning Project with the objective of developing a Fishery Action Plan for the Russian River. The focus of the project has been to conduct continuing surveys of selected streams, based on each stream's value for salmon or steelhead habitat and existing community interest in preservation or restoration. DFG is currently preparing an EIR relating to the removal of barriers to fish passage at the Healdsburg dam.

NMFS The National Marine Fishery Service (NMFS) has oversight responsibilities for activities within the Russian River basin, including:

- PG&E Potter Valley Hydroelectric Project. NMFS provided engineering support and advice for fish screen installation.
- Gravel extraction. NMFS developed recommendations for fishery protection measures.
- Corp of Engineer permit applications. NMFS reviews all proposals.
- Healdsburg Dam Fish Ladder. NMFS provides engineering support and advice.

SRCD The goal of the Sotoyome Resource Conservation District (SRCD) is to promote watershed stewardship, education and technology transfer through grant projects as well as through other activities in which other agencies are involved. SRCD is working with the Goldridge and Mendocino Resource Conservation Districts and other agencies to coordinate watershed planning efforts. Among several other watershed planning and restoration activities, SRCD has been coordinating watershed restoration efforts with the staff from 11 other governmental agencies. In addition, SRCD using grant award funds has implemented projects to develop a broad coalition of agencies, landowners, students, and community groups to improve water quality in the Sonoma County section of the Russian River.

Sonoma County The Sonoma County Board of Supervisors has directed that a supplemental EIR on the County's Aggregate Resources Management Plan be prepared for the instream gravel mining in the Russian River.

Mendocino County The Mendocino County Board of Supervisors is scheduled to review the Upper Russian River Aggregate Resources Management Plan.

2.0 WATER RIGHT PROCESS

2.1 Authority of the SWRCB The authority of the SWRCB on water right issues is defined primarily by the Water Code and the California Code of Regulations (Regulations). The Water Code and Regulations specify procedures that the SWRCB must follow when acting on applications for water right permits. In addition, the SWRCB must comply with the provisions of the California Environmental Quality Act (CEQA) and the California Endangered Species Act (CESA). All permits that are issued by the SWRCB must also comply with the "reasonableness" criteria, as defined in Article X, section 2 of the California Constitution, and must also take into consideration the public trust doctrine, as articulated by the California Supreme Court in the Audubon Decision. The following provides a brief discussion of these requirements as they relate to SWRCB review of pending water right applications within the Russian River watershed.

2.1.1 Water Code Water Code section 100 states that the SWRCB shall maximize the beneficial uses of the water resources of the state. Beneficial uses of water include offstream consumptive uses to include municipal, domestic, and irrigation use, as requested in the pending applications. Water Code section 1243 states that the use of water for recreation and the preservation and enhancement of fish and wildlife resources is a beneficial use of water. Section 1243.5 states that, "In determining the amount of water available for appropriation, the [SWRCB] shall take into account, whenever it is in the public interest, the amounts of water needed to remain in the source for protection of beneficial uses...".

2.1.2 Reasonableness Water Code section 275 proscribes the unreasonable use, unreasonable method of use, or unreasonable method of diversion of water. A memo⁵ prepared by the SWRCB Chief Counsel describes an approach for determining reasonableness. An evaluation of reasonableness requires a case-by-case evaluation of the specific facts relating to a proposed use of water. The memo provides a list of over 20 court cases and/or SWRCB decisions that determined whether a particular use of water was reasonable.

2.1.3 Public Trust Doctrine In the Audubon decision, the California Supreme Court states that "The state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible." The decision states that "...the function of the Water Board has steadily evolved from the narrow role of deciding priorities between competing appropriators to the charge of comprehensive planning and allocation of waters. This change necessarily affects the board's responsibility with respect to the public trust." The decision states that the SWRCB "...in undertaking planning and allocation of water resources, is required by statute to take [public trust] interests into account". The decision states that recent legislation "...made clear [the SWRCB's] authority to weigh and protect public trust values." Similar to provisions in the Water Code, the Audubon decision indicates that the SWRCB must maximize beneficial uses of

⁵ Memo by William R. Attwater, Chief Counsel dated December 20, 1982. Subject: Analysis of the law of waste and unreasonable use of water.

water. Finally, the decision affirms that the SWRCB "... has the power and duty to protect such [public trust] uses by withholding water from appropriation."

2.1.4 CEQA CEQA imposes responsibilities on the SWRCB in addition to those imposed by the Water Code and the public trust doctrine. When the SWRCB is the "lead" agency, the SWRCB must conduct an environmental review and prepare an environmental document that describes the potential environmental impacts that could result from the proposed project. Whenever feasible, the SWRCB must adopt conditions that would avoid or mitigate adverse environmental effects, that are within the SWRCB's jurisdiction.

2.1.5 Fish and Game Code Section 5937 Section 5937 of the Fish and Game Code provides, in pertinent part:

"The Owner of a dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam."

The State Water Board has the authority, when it issues a water right permit, to apply Section 5937 of the Fish and Game Code.⁶ Since 1975, the State Water Board has required that permits throughout the state include a term implementing Section 5937 of the Fish and Game Code.⁷

2.1.6 Endangered Species Act Coho and steelhead have been listed as threatened species by the National Marine Fisheries Service (NMFS) under the Federal Endangered Species Act. The practical result of the federal listings is that the SWRCB must place emphasis on the instream flow and other measures needed to protect these fishery resources. Failure to provide measures to protect fishery resources could subject future permittees to sanctions under provisions of section 9 of the Federal Endangered Species Act.

The issuance of a water right permit by the SWRCB does not authorize any activity that would result in a "take" of any species protected by the Federal Endangered Species Act, nor does the possession of a water right permit issued by the SWRCB authorize diversion in a manner that would result in a "take" of any endangered species.

Coho and steelhead are also being considered for listing under the California Endangered Species Act (CESA). The SWRCB must comply with the consultation requirements of CESA, if these fish are designated as threatened or endangered species.

2.2 Water Right Process A water right permit authorizes a person to divert a specific quantity of water from a stream during a particular season for specific purposes of use and

⁶ (See 57 Ops.Cal.Atty.Gen 577 (1974).)

⁷ (23 Cal. Code Reqs. sec. 782)

place of use. An appropriative water right permit is based on the concept of "first in time, first in right", i.e., permittees with later application numbers cannot divert water until permittees with earlier application numbers have satisfied their water rights. The following provides a brief description of the major steps in the process to obtain a water right permit from the SWRCB. It should be noted that, in most cases, the person requesting a water right permit must also obtain permits and/or approvals from other governmental agencies.

2.2.1 Protests The Division distributes a notice of each water right application to interested parties. Any party can submit a protest against the application based on a claim of injury to existing water rights, injury to the environment, or a claim that approval of the application is not in the public interest. All protests must provide facts to support the allegations, in accordance with section 745(c) of the Regulations. All protests must be resolved before a water right permit can be issued. There are several procedures for resolving protests:

Negotiation The applicant and protestant can negotiate terms that are acceptable to both parties to resolve issues raised in the protests.

Field Investigations On minor projects (i.e., direct diversion of 3 cfs or less or storage of 200 afa or less) with unresolved protests, Division staff must conduct a field investigation and prepare a staff analysis, in accordance with Water Code section 1345 et seq. Staff issues a permit in accordance with the recommendations contained in the staff analysis, unless a party submits objections and requests a hearing.

Hearing On major projects, a water right hearing must be held to resolve the issues raised by the protests that are not resolved by negotiation.

2.2.2 CEQA Approval of an application is a discretionary action and, as such, requires that the Division comply with the provisions of CEQA, in accordance with Public Resources Code section 21000 et seq. When approving an application to appropriate water, the SWRCB is either a "lead" agency or a "responsible" agency, as defined by CEQA. Some applications have been submitted by public agencies. On those applications, the public agency will be the lead agency and the SWRCB will be the responsible agency. On most pending applications within the Russian River, the SWRCB will be the lead agency and will conduct an evaluation of the potential environmental impacts, determine mitigation measures, and prepare the appropriate environmental document.

2.2.3 Water Availability The Division must determine that water is available for appropriation in accordance with Water Code section 1375. The primary focus of this staff analysis is to determine whether water is available for appropriation within the Russian River watershed. A determination of water availability must consider the flow in the stream for different seasons and types of water years (i.e., wet, normal and dry), the amount of water needed to satisfy existing water rights, and the instream flow needed to protect fishery resources. A water availability determination must also consider limitations imposed by previous SWRCB decisions, including the conditions imposed by

Decision 1030 and Decision 1610. Determining the availability of water within the Russian River watershed is a difficult task, for several reasons:

Hydrology On most tributaries, there are no gages and limited data available to define the streamflow, particularly during low flow conditions. The Division developed a hydrology model to estimate the unimpaired (or natural) flow in the tributaries.

Fishery needs No comprehensive study has been conducted to define the flow regime needed to protect the fishery resources within the main stem of the Russian River or most tributaries. Division staff have developed recommended fish bypass flows based on consultation with DFG and other fishery agencies, a review of the literature, and a review of fishery studies conducted on two streams within the Russian River watershed and two streams in the vicinity of the Russian River.

Existing diversions The Division does not have complete records of existing diversions within the watershed, for several reasons. The Division does not have a complete record of all riparian and pre-1914 water rights and does not have accurate information relating to quantities of water diverted under those rights. Diverters have flexibility in the operation of their facilities. For example, storage in reservoirs can depend on flood control criteria or power release requirements; diversions for irrigation can depend on the crop and season; diversions for frost protection can depend on weather conditions.

Effects of SWRCB Decisions and Orders Determination of water availability is further complicated by conditions contained in SWRCB Decisions 1030 and 1610. Those decisions limit the allowable season of diversion, establish instream flow requirements and reserve quantities of water for appropriation within Sonoma and Mendocino counties.

2.3 Pending Applications Tables 1 and 2 provide a summary of the 81 pending water right applications within the Russian River watershed. Of the 81 pending applications, 29 applications have been filed in Mendocino County requesting a total of 1,947 afa by direct diversion and 1,600 afa by storage. A total of 52 applications have been filed in Sonoma County requesting a total of 11,282 afa by direct diversion and 14,459 afa by storage. Of the 29 applications filed in Mendocino County, 12 applications request water rights on the main stem of Russian River (i.e., 1,460 afa by direct diversion and 243 afa by storage) and 17 applications are located within various tributary watersheds (i.e., 487 afa by direct diversion and 1,357 afa by storage). Of the 52 applications filed in Sonoma County, 7 applications request water rights on the main stem of Russian River (i.e., 5,269 afa by direct diversion and 28 afa by storage) and 45 applications are located within various tributary watersheds (i.e., 6,013 afa by direct diversion and 14,431 afa by storage). As indicated on Tables 1 and 2, the applications are for several purposes of use including irrigation, frost protection, municipal, domestic, power generation, and recreation.

Table 3 provides a summary of the 12 incomplete water right applications that have been submitted, but not accepted by the Division. All 12 incomplete/unaccepted applications request diversion from the main stem of the Russian River. Of the 12 applications, 11 are

located in Mendocino County and request a total of 16,509 afa by direct diversion for irrigation and frost protection purposes. The one application located in Sonoma County requests a total of 4,033 afa for municipal purposes.

TABLE 1
SUMMARY OF UNPERMITTED APPLICATIONS - MENDOCINO COUNTY

STREAM SOURCE WATERSHED	APP NUMBER	APPLICANT	DIRECT DIVERSION (CFS)	STORAGE DEMAND (AF)	USE	SEASON
MAIN STEM RUSSIAN RIVER	29525	NELSON	1.94	0	I,N,L	6/1-9/15
	29526	NELSON	3.0	0	I,N,L	3/1-5/15
	29591	JOHNSON ORCHARDS	2.22	0	N	2/15-5/15
	29592	JOHNSON ORCHARDS	1.18	0	I,D	4/15-10/15, 1/1-12/30
	29760	BRUTOCAO VINEYARDS	2.95	158	I,N,L,E	4/15-6/30 (DD) 11/1-6/30 (STO)
	30036	JOHNSON ORCHARDS	8.54	0	N	2/15-5/15
	30161	MORENO AND COMPANY	8.5	0	N	3/1-4/30
	30162	THOMAS, ET AL	30.0	0	N	3/1-4/30
	30163	THOMAS, ET AL	30.0	0	N	3/1-4/30
	30170	THOMAS, ET AL	13.0	0	N	3/1-4/30
	30553	MILOVINA BROTHERS	0	40	I,N,R,E	11/1-5/15
	30554	MILOVINA BROTHERS	0	45	I,N,R,E	11/1-5/15
	FORSYTHE CREEK	30363	TODD	0	10	I,N
MCNAB CREEK	29763	NELSON & SONS, ASSOCIATES	0	69.5	I,N,L,S	11/1-4/30
	29764	NELSON & SONS, ASSOCIATES	6.7	0	N	3/15-6/1
	29765	NELSON & SONS, ASSOCIATES	6.7	0	N	3/15-6/1
	30290	WHITE	0	17	I,N,L,D,S	11/1-4/30
DOOLEY CREEK	30015	FITZGERALD	2.99	123	I,S	4/1-6/30 (DD) 12/1-4/30 (STO)
HOWELL CREEK	29479	RUCKER	0	5	I,N,R,S	11/1-4/30
ROBINSON CREEK	29511	HILBRETH FARMS, INC.	3.0	0	N	4/15-5/30
	29512	HILBRETH FARMS, INC.	0.41	45	I,N	5/1-6/30 (DD) 11/1-6/30 (STO)
COLEMAN CREEK	29783	FITZGERALD	0	70	I,N,L	11/1-6/15
MILL CREEK	30615	BARTOLOMEI	0	45	I,N,L,R,E	10/1-5/31
HENSLEY CREEK	29908	EVANS	0	600	D	11/1-4/30
UNNAMED STREAMS TRIB. TO WEST FORK RUSSIAN RIVER	29202	M.H., C.L., & V.S. TRIONE, TRUSTEES	2.0	130	I,L,N	5/1-5/31 (DD) 11/1-5/31 (STO)
	29203	M.H., C.L., & V.S. TRIONE, TRUSTEES	21.0	0	N	3/10-5/31
	30349	LIGHT	0	8.3	I,R,F,W	11/1-4/30
UNNAMED STREAMS TRIB. TO EAST FORK RUSSIAN RIVER	30560	MOERMAN	1.04	165	I,L,N,R,F	5/1-6/1 (DD) 11/1-6/1 (STO)
	30564	MOERMAN	7.0	0	N	3/15-5/15

NOTE: I=IRRIGATION, N=FROST PROTECTION, L=HEAT CONTROL, J=INDUSTRIAL, M=MUNICIPAL, D=DOMESTIC, R=RECREATIONAL, W=WILDLIFE, E=FIRE PROTECTION

TABLE 2

Summary of Unpermitted Applications - Sonoma County

STREAM SOURCE WATERSHED	APP. NUMBER	APPLICANT	DIRECT DIVERSION (CFS)	STORAGE DEMAND (AF)	USE	SEASON
MAINSTEM RUSSIAN RIVER	29462	RUSSEL	0.65	28	I,N,R,D,E	3/15-4/30 (DD) 11/1-4/30 (STO)
	29737	WINDSOR WATER DISTRICT	11.14	0	M	1/1-12/31
	29901	RUSSIAN RIVER COUNTY WATER DISTRICT	0.66	0	M	1/1-12/31
	30199	RIVERVIEW II HOMEOWNERS ASSOCIATION	0.04	0	I	4/1-10/31
	30391	SWEETWATER SPRINGS MUTUAL WATER CO.	0.7	0	D,N,I,S	10/15-4/15
	30397	HELMOLZ	6,000 GPD	0	I	3/15-11/15
AUSTIN CREEK	30412	FIELD STONE WINERY	0.5	0	I,D,J	1/1-12/31
	30077	CAZADERO WATER COMPANY	0.13	0	M	1/1-12/31
JENNER GULCH	30186	AUSTIN ACRES MUTUAL WATER COMPANY	9850 GPD	0	D	1/1-12/31
	30179	SONOMA COAST ASSOCIATES	0	244	I	10/15-4/15
GIRD CREEK	30259	GALEF	0	42	I,N,S,R	11/1-4/30
SAUSAL CREEK	29704	KENDALL-JACKSON WINERY	0	49	I,N,L	10/1-3/31
	29705	KENDALL-JACKSON WINERY	0	2,235 *	I,N,L	10/1-5/31
	29706	KENDALL-JACKSON WINERY	0	2,235 *	I,N,L	10/1-5/1
	29707	KENDALL-JACKSON WINERY	1.8	750	I,N,L	4/1-9/30 (DD) 10/1-5/31 (STO)
	29708	KENDALL-JACKSON WINERY	0	49	I,N,L	10/1-5/1
	29811	KENDALL-JACKSON WINERY	0	1,080	I,N,LL	10/1-3/31
MILLER CREEK	30126	MARCHESCHI	0	11	I,N,R,D	10/1-3/31
	29703	KENDALL-JACKSON WINERY	0	700	I,N,L	10/1-3/31
DRY CREEK	29663	PRUETT	0	20	S,R,F,W	10/31-4/30
	30182	E & J GALLO WINERY	0	250	I,N,F	10/15-5/15
MARK WEST CREEK	29754	FOOTHILLS PROPERTY OWNERS ASSOCIATION	0	25	R, F	11/15-4/15
	29802	SPLAN	0	40	I,R,F,N,W	10/1-6/30
	29858	GRIGG	0	35	I,R,F	10/15-4/30
	30181	RITCHIE	2.9	51	I,R,F,N,W	5/15-9/30 (DD) 10/15-5/15 (STO)
SANTA ROSA CREEK	30051	DEGRANGE	0	28	I,S,R,D,W	10/1-5/31
	30336	ARMSTRONG	0	10	I,R	11/1-4/30
	30429	E.R. STERN, TRUST	0	27	I,N	11/1-5/31
WINDSOR CREEK	29772	S A S S	0	40	I,D	10/1-5/31
	29848	FURTH	0	65	I	10/1-5/31
	29849	FURTH	0	100	I,L,N	11/1-5/31
	29850	FURTH	0	25	I,L,N	10/1-5/31
	29962	SCHRAM	0	14	R	10/15-5/15
	30223	SONOMA CUTTER VINEYARD	0	120	I,N,L	11/1-3/31
GREEN VALLEY CREEK	29333	KEEPER	0	20	I,N	12/1-5/15
	30583	KENDALL-JACKSON WINERY	0	60	I,N	11/1-4/30

TABLE 2 (cont.)

Summary of Unpermitted Applications - Sonoma County

STREAM SOURCE WATERSHED	APP. NUMBER	APPLICANT	DIRECT DIVERSION (CFS)	STORAGE DEMAND (AF)	USE	SEASON
MAACAMA CREEK	29381	BERINGER WINE ESTATES	0	30	I,N	11/1-5/15
	29715	FERRARA-CARANO VINEYARDS	0	400	I,N,L,R	10/1-3/31
	29784	BURTON	0.03	20	I,N,L,R,F	3/1-6/1 (DD) 11/1-5/31 (STO)
	29983	OGG	0	26	I,N,L,J	10/1-4/30
	29998	CARR	0	30	I,N,R,F	10/1-5/15
DUTCH BILL CREEK	29444	CAMP MEEKER RECREATION/PARK DISTRICT	0	5.7	D	11/1-6/1
	30044	CAMP MEEKER RECREATION/PARK DISTRICT	7,200 GPD	1.0	M	1/1-12/31 (DD) 8/1-12/31 (STO)
BIG SULPHUR CREEK	27177	UNION OIL COMPANY OF CALIFORNIA	22	0	J	10/1-5/1
	29201	NORTHERN CALIFORNIA POWER AGENCY	33.4	7,000	J	10/1-6/30 (DD) 10/1-6/30 (STO)
	30518	CALPINE GEYSERS COMPANY	0.4	0	J	11/1-4/30
	30540	COOK	2.3	0	I,N,L	3/15-4/30
	30541	COOK	0	400	I,N,L	11/1-5/1
CROCKER CREEK	30540	COOK	2.3	0	I,N,L	3/15-4/30
	30541	COOK	0	400	I,N,L	11/1-5/1
UNNAMED STREAMS TRIBUTARY TO RUSSIAN RIVER	30282	FERRARI-CARANO VINEYARDS	0	98	I,N	11/1-4/30
	30364	RICKARDS	0	23	I,N	11/1-4/30
	30365	RICKARDS	3	0	I,N	3/15-4/30
	30534	MINIAR	0	79	I,N,L	11/1-4/30

NOTE: I=IRRIGATION, N=FROST PROTECTION, L=HEAT CONTROL, J=INDUSTRIAL, M=MUNICIPAL, D=DOMESTIC, R=RECREATIONAL, W=WILDLIFE, E=FIRE PROTECTION

TABLE 3

Summary of Unaccepted Applications - Mendocino and Sonoma County

STREAM SOURCE WATERSHED	APP. NUMBER	APPLICANT	DIRECT DIVERSION (CFS)	STORAGE DEMAND (AF)	USE	SEASON
MAIN STEM RUSSIAN RIVER	00114	BRUTOCAO VINEYARDS	2.95	0	N	3/1-5/15
	00127	JOHNSON & DEMARCHI	6.11	0	N	3/1-6/1
	00128	KOHN PROPERTIES	2.57	0	N	3/1-6/1
	00129	KOHN PROPERTIES	8.68	0	N	3/1-6/1
	00130	KOHN PROPERTIES	40.75	0	N	3/1-6/1
	00131	KOHN PROPERTIES	29.58	0	N	3/1-6/1
	00132	KOHN PROPERTIES	8.68	0	I	6/1-10/1
	00133	KOHN PROPERTIES	2.57	0	I	6/1-10/1
	00134	KOHN PROPERTIES	5.68	98.18	I,N	6/1-10/1 (DD) 3/1-6/1 (STO)
	00135	JOHNSON & DEMARCHE	32.71	0	N	3/1-6/1
	00313	MENDOCINO COUNTY R. R. FLOOD CONTROL AND WATER CONSERVATION IMPROV. DIST.	75	15,000	I,D	1/1-12/31
	00448	CITY OF CLOVERDALE	5.57	0	M	1/1-12/31

NOTE: I=IRRIGATION, N=FROST PROTECTION, L=HEAT CONTROL, J=INDUSTRIAL, M=MUNICIPAL, D=DOMESTIC, R=RECREATIONAL, W=WILDLIFE, E=FIRE PROTECTION

3.0 HYDROLOGY

3.1 General The hydrology of the Russian River is typical of most northern California coastal streams. The river is characterized by high flows in the winter and low flows during the summer, with substantial variation in annual runoff.

Streamflow has been measured by the U. S. Geological Survey (USGS) at five locations on the main stem of the river and at several locations on major tributaries, for various periods of time. Figure 1 shows the locations of these gages. The period of record for these gages are shown in Table 4 below:

TABLE 4

USGS GAGING STATIONS WITHIN THE RUSSIAN RIVER WATERSHED

STATION	LOCATION	PERIOD OF RECORD
CAPELLA (# 11461500)	MAIN STEM RUSSIAN RIVER	1941-1996
CLOVERDALE (# 1146300)	MAIN STEM RUSSIAN RIVER	1951-1996
GUERNEVILLE (# 1146700)	MAIN STEM RUSSIAN RIVER	1939-1996
HEALDSBURG (# 1146400)	MAIN STEM RUSSIAN RIVER	1939-1996
HOPLAND (# 11462500)	MAIN STEM RUSSIAN RIVER	1939-1996
CAZADERO (# 11467200)	AUSTIN CREEK	1960-1966
KELLOG (# 11463900)	MAACAMA CREEK	1961-1981
UKIAH (# 11461000)	WEST FORK RUSSIAN RIVER	1953-1993

Figure 2 shows the average monthly flow in the Russian River, as measured at the five USGS gage locations. Figure 3 shows the annual flow in the river as measured at the Guerneville gage from 1940 to 1983. The Russian River has an average annual runoff of 1,610,000 afa, however, runoff has varied from a low of 64,000 af in 1977 to a high of 4,300,000 af in 1983. There is very little snow in the watershed; consequently, virtually all runoff is a direct result of rainfall. Approximately 95 percent of rainfall occurs from October to May.

FIGURE 2: RUSSIAN RIVER AVERAGE MONTHLY FLOW COMPARISON

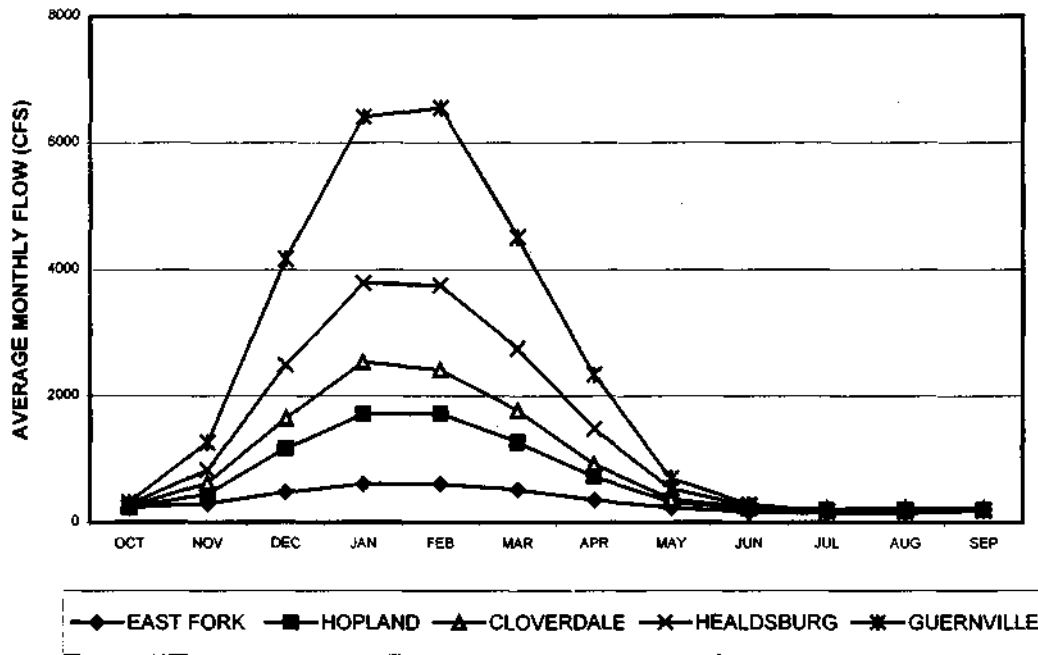
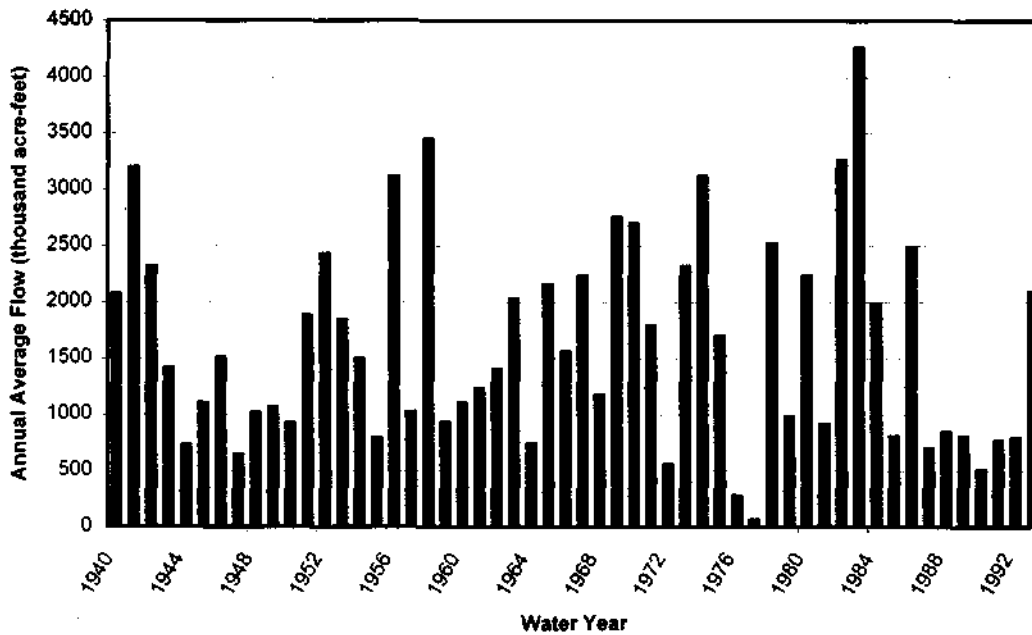


FIGURE 3: ANNUAL RUSSIAN RIVER FLOW AT GUERNEVILLE (WATER YEAR 1940 TO 1993)



3.2 Water Development Projects There is extensive development within the watershed that substantially affects the flow in the Russian River and tributaries.

3.2.1 Recorded Diversions In addition to the 81 pending applications, there are a total of 1,326 recorded water rights within the Russian River watershed in Mendocino and Sonoma Counties on file with the Division, including: 1,047 permitted/licensed applications, 11 Stockpond Certificates, 21 Small Domestic Use registrations, and 247 Statements of Water Diversion and Use⁸. Table 5 provides a summary of the recorded water rights. Many of these permits are for direct diversion for agricultural irrigation and frost protection; consequently, there is substantial water demand during the spring and summer season, when instream flow is critically important for coho and steelhead.

Of the 1,047 permitted/licensed applications, a total of 512 are storage projects, of which 488 are classified as minor storage project (i.e., less than 200 acre-feet capacity) and 24 are classified as major storage projects (i.e., greater than 200 acre-feet capacity). Of the 24 major storage projects, 17 fall in the range of 200 to 500 acre-feet capacity, 3 fall in the range of 500 to 1,000 acre-feet capacity, and 2 fall in the range of 1,000 to 3,000 acre-feet capacity. The remaining two major storage projects are for Lake Mendocino, with a capacity of 122,500 af, and Lake Sonoma, with a capacity of 381,000 af.

TABLE 5

Recorded Water Rights within the Russian River Watershed

CATEGORY	TOTAL NUMBER	DIRECT DIVERSION (CFS)	STORAGE (AF)
PERMITTED/LICENSED	1047	3,254	486,648
STOCKPONDS	11	0	28
SMALL DOMESTIC USE REGISTRATIONS	21	0.03	76
STATEMENTS OF WATER DIVERSION AND USE	247	1,842	3,269
CERTIFICATE OF POWER RIGHTS	4	-	-
TOTAL	1,326	5,096	529,020

⁸ Riparian and pre-1914 water users are required by statute to file a Statement of Water Diversion and Use (Statement), however, not all water users file Statements.

3.2.2 Potter Valley Project Pacific Gas and Electric Company (PG&E) operation of the Potter Valley hydro electric project results in the importation of approximately 159,000 afa into the Russian River watershed. This project was initiated in the early 1900's, when Snow Mountain Water and Power Company began diverting water from the Eel River at the Van Arsdale diversion dam, through a transmountain tunnel to the Potter Valley Powerhouse. After the water was used to generate power, the water imported from the Eel River was discharged into the East Fork Russian River. In 1922, PG&E acquired the system and subsequently constructed Scott Dam on the Eel River, creating Lake Pillsbury. In 1950, PG&E increased the capacity of the transmountain tunnel for the Eel River diversion to about 350 cfs, and entered into contractual arrangements with Potter Valley Irrigation District, whereby PG&E agreed to supply 50 cfs to the District. Any imported Eel River water in excess of contractual commitments with the District was considered as abandoned water. Consequently, this abandoned Eel River water has become the major supply of water in the Russian River during the late summer and fall.

PG&E has three water right Licenses 1424, 1199, and 5545 (Applications 1719, 5661, 6594), which authorize the diversion and rediversion of Eel River water at Scotts Dam (Lake Pillsbury) and Van Arsdale Dam into the East Fork Russian River. Table 6 summarizes PG&E's water rights.

TABLE 6

Summary of PG&E's Water Rights

WATER RIGHT	POINT OF DIVERSION	SEASON OF DIVERSION	ANNUAL AMOUNT	PLACE OF USE	AUTHORIZED USES
A-1719 L-1424	SCOTT DAM VAN ARSDALE DAM	11/1-6/1	102,366 AFA	EEL RIVER, POTTER VALLEY POWERHOUSE	POWER, FISH AND WILDLIFE
A-5661 L-1199	SCOTT DAM VAN ARSDALE DAM	11/1-4/30	4,500 AFA	POTTER VALLEY IRRIGATION DISTRICT	IRRIGATION
A-6594 L-5545	SCOTT DAM VAN ARSDALE DAM	5/1-10/15 11/1-6/1	40 CFS 4,908 (4098 AFA)	POTTER VALLEY IRRIGATION DISTRICT	IRRIGATION

The Federal Energy Regulatory Commission (FERC) has directed PG&E to evaluate modification of the Potter Valley Project to improve the condition of the fishery resources. Cal Trout has recommended that PG&E reduce the amount of water diverted from the Eel River in order to improve the conditions for fishery resources in the Eel River. There are on-going discussions involving several agencies including PG&E, FERC, DFG, Cal Trout and the Eel-Russian River Commission. Obviously, any reduction in the amount of water diverted from the Eel River would reduce the supply of water available within the Russian River watershed, particularly in the main stem.

The United States Supreme Court has determined that FERC has exclusive jurisdiction to establish fish bypass requirements on federally licensed hydro electric projects, such as

PG&E's Potter Valley Project; consequently, the SWRCB has no water right permit review authority in this matter, except as it may relate to the protection of downstream water rights. Any future modification of the Potter Valley project may require a FERC license amendment which, in turn, may require issuance of a Water Quality certificate by the SWRCB, in accordance with section 401 of the Clean Water Act. A 401 certificate may require specific terms to protect beneficial uses of water.

3.2.3 Sonoma County Water Agency The Sonoma County Water Agency (SCWA) is the largest water diverter within the watershed and has four water right permits issued by the SWRCB for operation of the Russian River Project. These permits authorize the storage of 122,500 afa in Lake Mendocino on the East Fork of the Russian River and storage of 245,000 afa in Lake Sonoma on Dry Creek. These permits also allow for the diversion and re-diversion of up to 180 cfs or 75,000 afa at Wohler-Mirabel pumping plant on the Russian River. The authorized purposes of use include municipal, domestic, irrigation, industrial and recreation. These permits authorize use of water in the SCWA service area as well as other areas outside of the Russian River watershed including the Marin Municipal Water District and the North Marin Water District.

As indicated in section 3.2.2 above, a substantial portion of the flow into the Russian River is water that is imported from the Eel River by PG&E via the Potter Valley power project.

The U.S. Corps of Engineers (Corps) also operates the Russian River Project for flood control. The Corps has flood control operating rule curves that provide minimum pools in both reservoirs. The SWRCB does not have jurisdiction to regulate the Corp's operation of the Russian River Project for flood control purposes.

In 1986 the SWRCB adopted Decision 1610 that established conditions relating to SCWA's water right permits for the operation of the Russian River Project. The decision established instream flows to be maintained by SCWA in the Russian River and Dry Creek through the coordinated operation of Lake Mendocino and Lake Sonoma. In that decision, the SWRCB also evaluated water availability and stated:

"Because of the projected shortage, we have in effect allocated the remaining available water under Permits 12947A, 12949, and 12950 first to instream environmental uses including the fishery, and then to SCWA at its diversion facilities, to the extent that downstream minimum flow requirements are met. Substantially higher minimum flows likely would cause the system to go dry in less than normal years, to the detriment of all beneficial uses dependent on it, and would in other years lower Lake Mendocino enough to impair its recreational and environmental uses and reduce its reliability as a water supply."

SCWA is currently evaluating alternatives to increase it's water supply to meet future needs in its service area. The proposed project includes increased diversions from the Russian River, a conjunctive use project, and water conservation. SCWA circulated a

draft EIR⁹ for this project in September 1996. The draft EIR states that SCWA proposes to increase diversions from the Russian River by 26,000 afa, thereby increasing the total diversions from 75,000 afa to 101,000 afa. SCWA must submit an application and petitions to the SWRCB requesting approval for these changes in their water rights¹⁰.

Recently, the Division received approximately 560 letters from residents in the Russian River watershed who object to any increase in SCWA's diversion from the Russian River. The letters are virtually identical and state that the parties object to any increase in water allocation to SCWA unless a major water conservation program is implemented. The letters also request that SCWA and other major municipal users within the watershed be required to implement a plan to maximize agricultural reuse of treated Wastewater.

The Marin Municipal Water District is also evaluating the possibility of increasing the amount of water that could be obtained from the Russian River under contract with SCWA. In 1995, the SWRCB adopted Order WR 95-17 that established instream flow requirements and limited the amount of water available from Lagunitas Creek in Marin County, the District's primary source of supply.

3.3 Reservation On August 17, 1961, the SWRCB, pursuant to Decision D-1030, ordered the conditional approval of water right Applications 12919A and 12920A for storage in Lake Mendocino. In D-1030, the SWRCB found that: (1) it was in the public interest to protect all water uses supplied from the Russian River main stem which existed at the time Applications 12919 and 12920 were filed in 1949, and (2) that a reservation should be made for a sufficient quantity of water to meet future requirements in Mendocino County and uses along the Russian River in Sonoma County. Accordingly, D-1030 reserved 8,000 afa for beneficial use in the service area of Mendocino County Russian River Flood Control and Water Conservation Improvement District, and 10,000 afa for beneficial use within the Russian River Valley in Sonoma County.

Attachment C provides a description of staff's evaluation of the amount of water that is available under this reservation. As described in Attachment C, staff have determined that approximately 5,000 af of Mendocino County's 8,000 af reservation is still available for appropriation and approximately 2,500 af of Sonoma County's 10,000 reservation is still available for appropriation. Staff recommends that the pending applications on the main stem of the Russian River be approved, in each county, in order of priority date of the application. These applications are for a total pending demand of 1,703 afa in Mendocino County and a pending chargeable demand of 1,713 afa in Sonoma County.

⁹ SCWA. *Draft Environmental Impact Report: Water Supply and Transmission System Project*. September 1996.

¹⁰ Ibid. Vol. IV, Appendix G.

3.4 FAS Determination Section 1205 et seq. of the Water Code provides that the SWRCB can declare a stream system to be fully appropriated. A declaration can relate to a specific stream reach and/or season. For example, the SWRCB can declare a stream to be fully appropriated during the summer. A declaration that a stream system is fully appropriated means that all available supplies of water are being used and that no water is available for appropriation within that stream reach during the specified season. In most cases, water right permits cannot be issued on a fully appropriated stream. Tables 7 and 8 below provide a summary of streams and related decisions in which the SWRCB has declared certain seasons of the year to be fully appropriated within the Russian River watershed in Mendocino and Sonoma Counties.¹¹

3.5 Hydrologic Model The Division has developed a hydrologic model to estimate the average monthly unimpaired runoff for each tributary. The model provided estimated flow values that were used to determine water availability and to determine the instream flow requirements needed to protect fishery resources.

The model was developed by California State University, Sacramento under contract with SWRCB. The model is based on the HEC-1 model and also incorporates parameters that define the physical characteristics of the watershed. Basically, the model is a rainfall-runoff model, i.e. the model can be used to estimate the runoff that would occur for different rainfall amounts. Attachment A provides a description of the model.

As described in Attachment A, a copy of the model can be obtained from the Division for a cost of \$25.

3.6 Analysis of Measured Flow Data Division staff evaluated the average monthly measured (or impaired) flow for each tributary. Division staff also calculated the exceedence curves to determine the percentage of time that different flows would occur within the stream.

(For illustration, the 10 percent exceedence curve represents a 1 in 10 year frequency; i.e., in 90 percent the years, flows would be greater than that amount.) Figure 4 is a representative exceedence curve of the average annual unimpaired flow for Maacama Creek. Figure 5 is a representative curve showing the average monthly impaired and unimpaired flow in Maacama Creek. The two hydrographs are similar; however, the impaired flow is less than the unimpaired flow.

Division staff also evaluated the average daily flow in each tributary with USGS gage data. Figure 6 is a representative example showing the flow in the West Fork of the Russian River Creek for a dry water year (1954). The rainfall is also shown on Figure 6. As indicated on this figure, the streamflow increases immediately after a rainstorm. This rainfall-runoff pattern results in "spikes" or "pulses" in streamflow. As indicated on these figures, early rains are absorbed into the soil and do not result in a significant amount of runoff.

¹¹ Water Right Order 89-25, Exhibit A.

TABLE 7

Fully Appropriated Streams - Mendocino County

MENDOCINO COUNTY STREAM SYSTEM	RELATED DECISION or ORDER	FULLY APPROPRIATED SEASON	CRITICAL REACH
RUSSIAN RIVER (TRIBUTARY TO PACIFIC OCEAN)	D-1110 D-1610 WR 74-30	07/01 - 10/31	At the point where the boundary of the service area of the Mendocino County Russian River Flood Control and Hater Conservation District crosses the Russian River, which is located a short distance north of the Mendocino/Sonoma County line upstream; excluding all tributaries with the exception of (1) the West Fork Russian River and (2) the Easy Fork Russian River excluding Potter Valley (refer to Order WR 74-30). This restriction on the main stem Russian River does not apply to uses commenced prior to January 28, 1949.
ROBINSON CREEK (TRIBUTARY TO RUSSIAN RIVER)	D-1516	07/01 - 10/31	FROM CONFLUENCE WITH RUSSIAN RIVER UPSTREAM
FELIZ CREEK (TRIBUTARY TO RUSSIAN RIVER)	D-154S	08/01 - 10/31	FROM CONFLUENCE WITH RUSSIAN RIVER UPSTREAM

TABLE 8

Fully Appropriated Streams - Sonoma County

SONOMA COUNTY STREAM SYSTEM	RELATED DECISION or ORDER	FULLY APPROPRIATED SEASON	CRITICAL REACH
MARK WEST CREEK (TRIBUTARY TO RUSSIAN RIVER)	D-0302	05/01 - 10/31	MARK WEST CREEK WHERE IT CROSSES HIGHWAY 101 LOCATED IN SECTION 29, T8N, R8W, MDB&M UPSTREAM
GREEN VALLEY CREEK (TRIBUTARY TO RUSSIAN RIVER)	D-0663	06/15 - 10/31	FROM POINT OF DIVERSION DOWNSTREAM APPROXIMATELY 6 MILES
ATASCADERO CREEK (TRIBUTARY TO GREEN VALLEY CREEK)	D-0709	06/15 - 10/31	FROM THE CONFLUENCE OF GREEN VALLEY CREEK UPSTREAM
LAGUNA DE SANTA ROSA CREEK (TRIBUTARY TO MARK WEST CREEK)	D-0852 D-0691	06/01 - 10/31	FROM LAGUNA DE SANTA ROSA AND NORTH OF MOLINO ROAD LOCATED WITHIN SECTION 26, T7N, R9W, UPSTREAM
SANTA ROSA CREEK (TRIBUTARY TO LAGUNA DE SANTA ROSA)	D-1038	06/01 - 10/31	FROM SANTA ROSA CREEK LOCATED AT THE POINT WITHIN SECTION 18, T7N, R8W, UPSTREAM
UNNAMED STREAM SW1/4, SW1/4 SEC 5, T9N, R8W (TRIBUTARY TO RUSSIAN RIVER)	D-1537	06/01 - 10/31	FROM THE POINT OF DIVERSION IMMEDIATELY DOWNSTREAM AND UPSTREAM
UNNAMED STREAM SE1/4, SE1/4, SEC 36, T11N, R10W (TRIBUTARY TO GILL CREEK)	D-1608	06/01 - 09/30	FROM THE CONFLUENCE OF GILL CREEK AND THE UNNAMED STREAM LOCATED WITHIN PROJECTED SECTION 1, T10N, R10W, UPSTREAM

FIGURE 4: MONTHLY EXCEEDANCE CURVES BASED ON USGS OBSERVED DATA COLLECTED FROM MAACAMA CREEK ABOVE KELLOGG DURING 1961 TO 1981 (ANNUAL DAILY AVERAGE = 80.94 CFS)

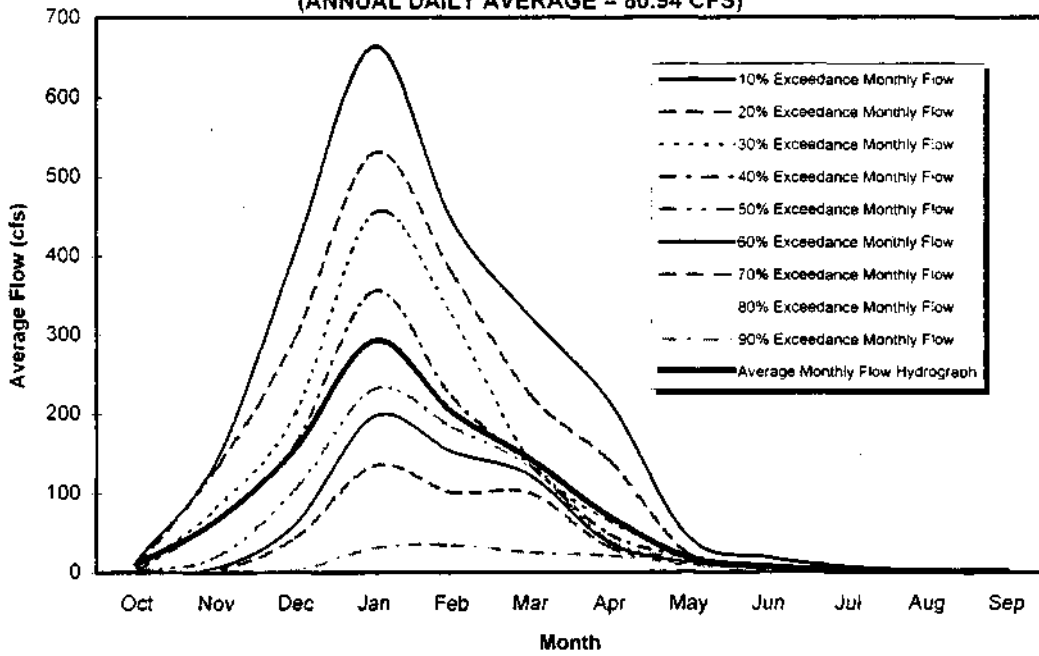


FIGURE 5: FLOW COMPARISON IN MAACAMA CREEK WATERSHED (AVERAGE CONDITION)

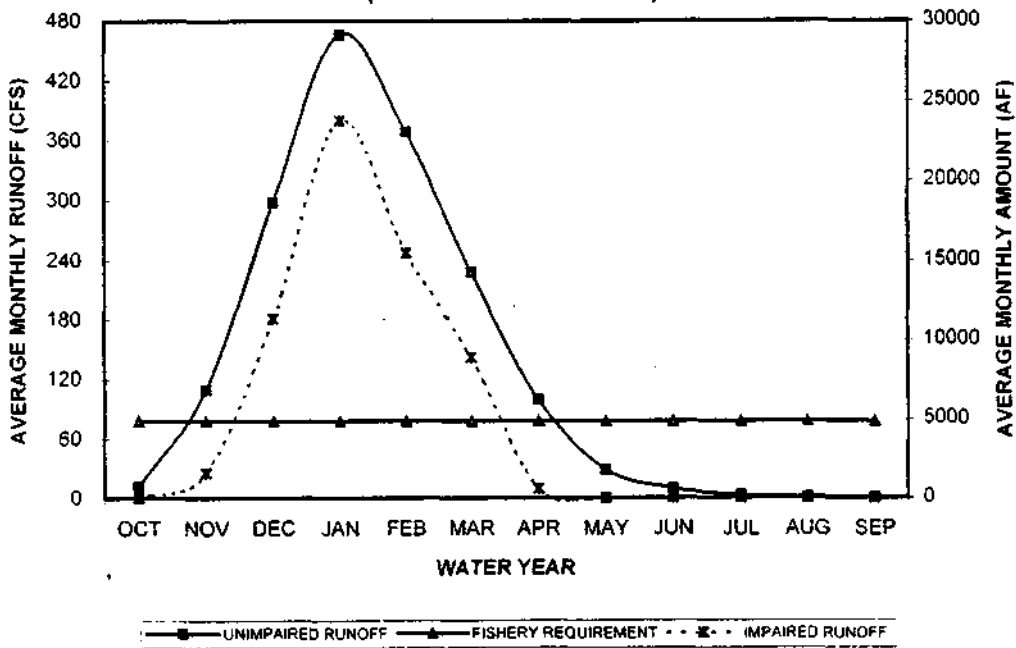
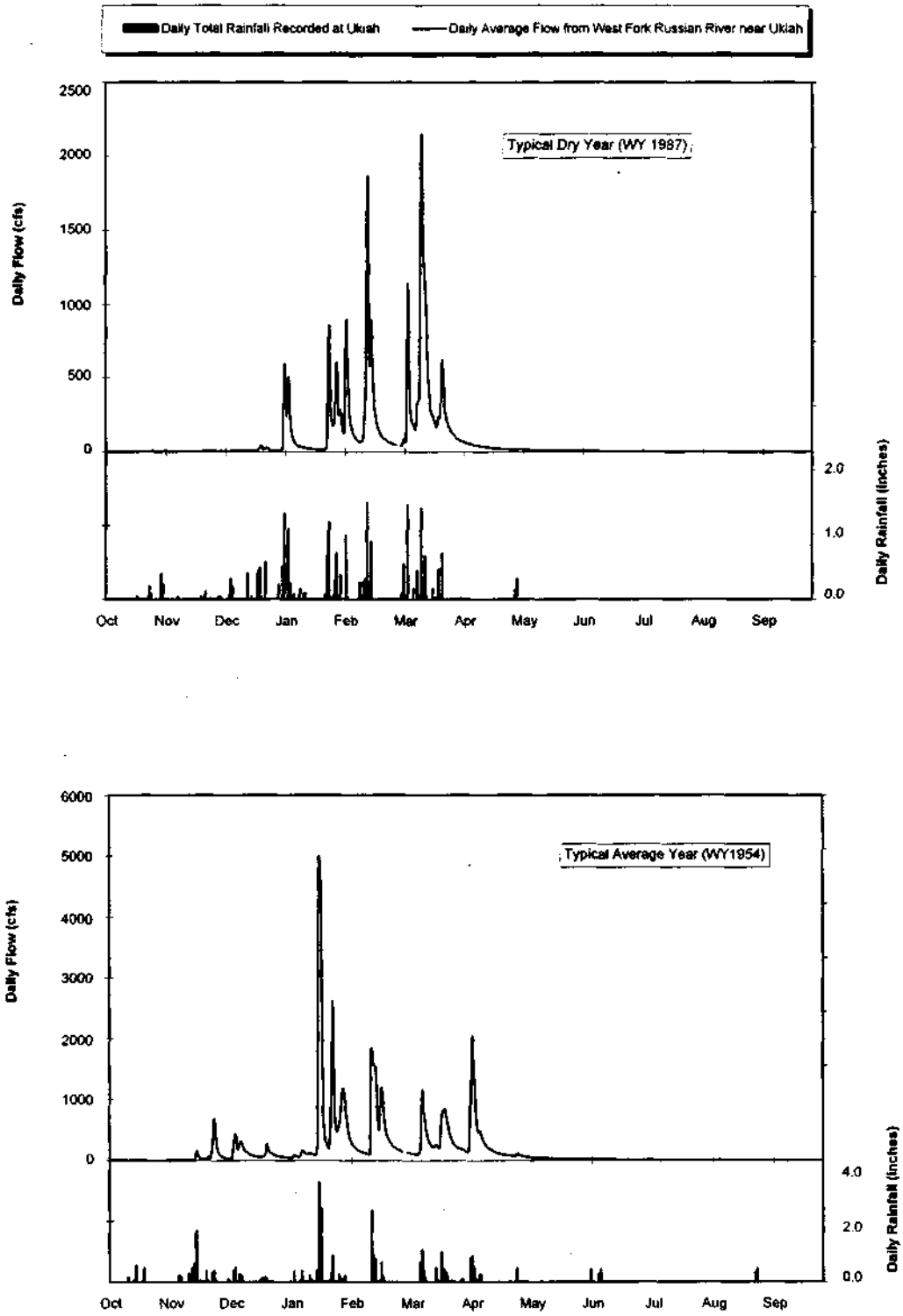


FIGURE 6: OBSERVED FLOW AND RAINFALL NEAR UKIAH



4.0 FISHERY RESOURCES

4.1 General Division staff have conducted an analysis of the measures needed to protect fishery resources within the Russian River watershed. The principal focus of this analysis is to define the flow regime needed in the tributaries to protect coho and steelhead. Attachment B provides a detailed discussion of the fishery resources, the factors affecting fishery resources, and the methodology used by Division staff to develop the proposed measures to protect coho and steelhead.

The overall condition of fishery resources depends on the proper combination of several factors, including flow, temperature, dissolved oxygen, water quality, substrate conditions, availability of cover and riparian habitat. No comprehensive study has been conducted to define the flow regime needed to protect coho and steelhead within the main stem of the Russian River, or most tributaries. Limited data are available to evaluate the relationship between streamflow and the condition of the fishery resources during different life stages. Division staff have developed a recommended minimum flow regime based on consultation with DFG and other fishery agencies, a review of the literature, and a review of fishery studies conducted on two streams within the Russian River watershed and two other streams in the vicinity of the Russian River.

4.2 Population Trends The populations of coho and steelhead in the Russian River have declined dramatically. At the turn of the century, the Russian River supported a commercial salmon fishery. In the 1940's the estimated statewide population of coho ranged from 200,000 to 1,000,000. By the 1980's the estimated statewide population had declined to 33,500. The estimated coho population in the Russian River has declined from 7,000 in 1975 to less than 1,000 in the 1990's. The historic steelhead population was estimated at over 400,000 fish. Currently, the estimated statewide steelhead population is 39,000. Within the Russian River watershed, the estimated steelhead population in the 1880's ranged from 20,000 to 60,000. Currently, the estimated population ranges from 10,000 to 20,000 including hatchery fish.

As described in Attachment B, numerous factors have contributed to the decline of the fish populations including water development projects, gravel mining operations, land use practices, timber management practices, barriers to fish passage, and degradation of water quality. Control of many of these activities is outside of the jurisdiction of the SWRCB. As described in Section 1.5 above, however, several agencies and environmental organizations are conducting studies and/or completing activities that are designed to restore the anadromous fishery resources within the watershed.

4.3 Life Stages Coho and steelhead are anadromous fish. Both species are born and live in fresh water, migrate to the ocean, and then return to their stream of birth to spawn and repeat the life cycle. Although the species are similar, the life stages for the two species occur during different time periods. Figure 7 below shows the time periods for the different life stages.

COHO SALMON	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
UPSTREAM MIGRATION		█	█	█								
SPAWNING			█	█	█							
INCUBATION			█	█	█	█						
EMIGRATION/REARING					█	█	█	█	█	█		
REARING	█	█	█	█	█	█	█	█	█	█	█	█
STEELHEAD	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
UPSTREAM MIGRATION		█	█	█	█	█	█					
SPAWNING				█	█	█	█					
INCUBATION				█	█	█	█	█	█			
EMIGRATION/REARING				█	█	█	█	█	█	█		
REARING	█	█	█	█	█	█	█	█	█	█	█	█

Figure 7: Life Stages for Coho and Steelhead

4.4 Proposed Flow Regime The following provides a discussion of the proposed flow regime required in the tributaries for during different seasons and different life stages of coho and steelhead.

4.4.1 Fall Coho and steelhead arrive at the mouth of the Russian River in the late summer and fall and then migrate upstream when storms increase the flow in the river. Storms in the fall provide "pulse" flows that serve as an "environmental cue" that causes the fish to migrate upstream. These pulse flows also increase the flow in the tributaries which allows for the physical passage of fish and provides adequate areas for spawning. Consequently, the pulse flows are particularly important to the upstream migration and spawning of coho. As described in Attachment B, staff reviewed precipitation data and flow data for the main stem and tributaries. In many years, there is relatively little precipitation and few pulse flows before mid-December; however, in 90 percent of all years of record, substantial precipitation and pulse flows occur by mid-December. Accordingly, staff recommend that no new diversion be allowed before December 15 in order to avoid reduction in the pulse flows in the tributaries and the main stem of the Russian River.

4.4.2 Winter Coho migrate upstream from October through January and spawn from November through the end of January, with incubation of embryos extending through March. Steelhead begin upstream migration in November, with spawning occurring from January through April, and incubation extending through May.

Adequate flow is required for successful spawning. In addition, it is important that adequate flow be maintained throughout the incubation period to prevent dewatering of redds and to prevent an increase in temperature and a reduction in dissolved oxygen levels. Usually steelhead require higher flows than coho in order to achieve optimum spawning conditions. Consequently, the instream flow required for steelhead spawning is the limiting factor during this time period.

Staff recommend that a minimum winter spawning flow be established that is equivalent to 60 percent of the average annual unimpaired flow. As described in Attachment B, this value is based on comparison of the average annual flow and results of the IFIM studies (i.e. Instream Flow Incremental Methodology) conducted on two streams within the Russian River watershed and two other streams in the immediate vicinity. In addition, the proposed spawning flows are based on a review of other SWRCB decisions that relied on the results of IFIM studies to establish flows to keep fish in "good" condition.

High pulse flows are also important for gravel recruitment, i.e., moving gravel downstream and removing silt from gravel in order to provide suitable habitat for spawning. In order to preserve these pulse flows, staff recommend that all new permits include a term that would limit the allowable rate of diversion. The maximum allowable rate of diversion could be limited (for example, a maximum of 2 cfs) or could be set as a percentage of the flow in the stream, i.e. a higher rate of diversion would be allowed on larger streams with higher flows. Staff recommend that specific permit terms be developed on a case-by-case basis in conjunction with the review of each application.

4.4.3 Spring During the spring (March through April) coho incubation and out-migration are occurring. Steelhead spawning, incubation and out-migration are also occurring during this time period.

Although streamflow diminishes naturally during the spring, it is important that adequate flow be maintained, particularly for incubation and out-migration. A reduction in flow could dewater redds, could cause a harmful increase in temperature and dissolved oxygen levels, and could diminish flows necessary for the physical passage of out-migrating fish. Consequently, staff recommend that the spawning bypass flow extend through April. However, water is not available on a reliable basis in April to provide these flows. In most years, such flows are available only to the end of March. Therefore, to prevent any further reduction in spring flows, staff recommend that no new diversions be allowed after March 31.

4.4.4 Summer Adequate flow in the tributaries for rearing of coho and steelhead is the limiting factor during the summer months. Review of hydrologic data indicates that most tributaries have relatively low flow, particularly in the late summer. Low flows can result

in elevated temperatures and reduced dissolved oxygen levels which can be lethal to coho and steelhead.

As described in Attachment B, staff compared the average annual flow to the results of IFIM studies, as well as other SWRCB decisions and determined that a minimum flow equal to 30 percent of the average annual flow is required during the summer to keep rearing habitat in good condition. Review of hydrologic data indicates that this minimum flow is rarely achieved. Accordingly, staff recommend that no new diversions be allowed from the tributaries during the summer.

4.4.5 Summary Figure 8 shows the recommended minimum flow regime and allowable season of diversion, in relation to the daily unimpaired flow. As indicated, diversion would only be allowed from December 15 to March 31, provided that a bypass flow equal to 60 percent of the average annual unimpaired flow is maintained in the stream during that period. It should be emphasized that these proposed measures are general recommendations that would apply primarily to relatively small projects located on tributary streams. Additional terms may need to be developed on a case-by-case basis for larger projects.

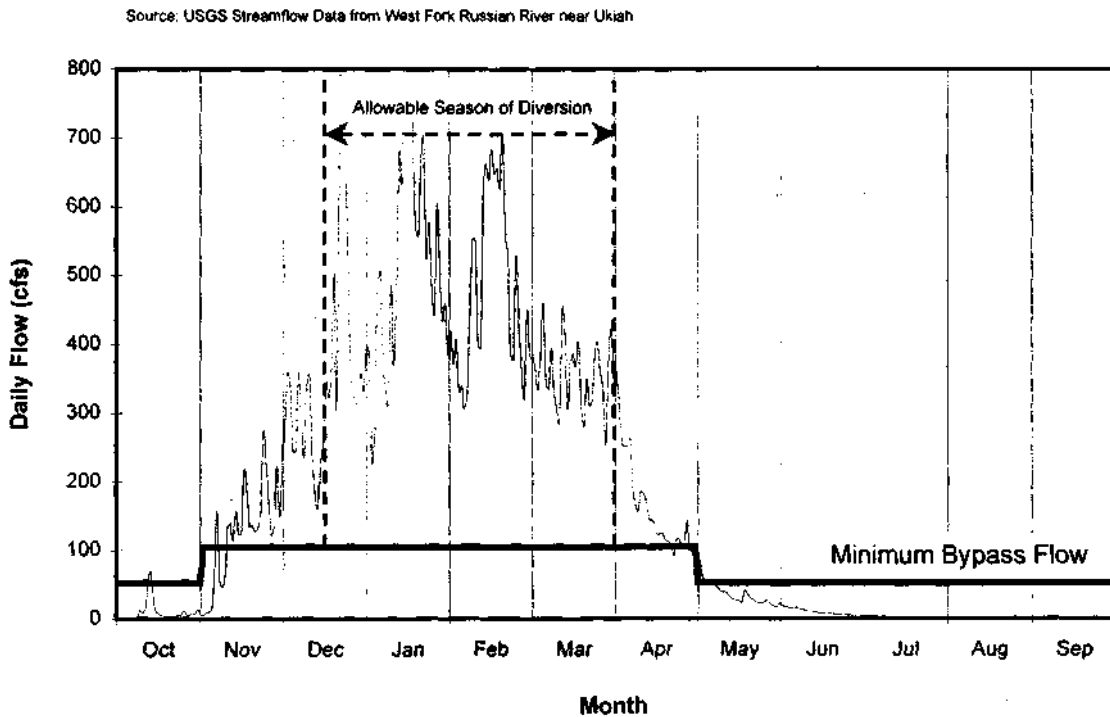


FIGURE 8

Recommended Minimum Flow Regime and Allowable Diversion Season

4.5 Fishery Resources in the Main Stem In general, the main stem of the river does not provide good habitat for spawning and rearing of coho and steelhead. In particular, conditions in the lower portion of the river have been adversely affected due to a combination high water temperatures, gravel mining operations, "downcutting" of the stream channel, loss of riparian habitat and degradation of water quality. These conditions have resulted in a proliferation of warm water fish that are predators of coho and steelhead.

SCWA is required to maintain instream flow requirements in the main stem of the Russian River as required by D-1610. That decision established instream flows for different seasons and different water year types (normal, dry, critically dry), based on the total inflow to Lake Pillsbury, on specified dates. The existing instream flow requirements do not provide the optimum habitat for anadromous fishery resources. Rather, D-1610 states that the flow standards are based on balancing of beneficial uses of water and environmental risks. In that balancing, the SWRCB considered SCWA's need for water, instream flows needed for fishery resources, recreation, aesthetics, riparian vegetation, dilution of Wastewater discharges, recreational benefits at the lakes and economics. Despite significant adverse environment impacts, the SWRCB approved the project after making a finding of overriding considerations under CEQA.

The main stem of the Russian River provides for the upstream and downstream migration of coho and steelhead. The pulse flows in the fall are particularly important for upstream migration. As described in Attachment B, however staff have concluded that approval of all pending applications would have no measurable effect on the pulse flows in the main stem.

Since the SCWA is required to maintain instream flows in the main stem of the Russian River, approval of all pending applications would have no measurable affect on the summer flow in the main stem. However, approval of applications on the main stem could result in increased diversions from Lake Mendocino and/or Lake Sonoma which, in turn, could deplete the amount of cold water stored in the lakes. This could result in an increase in water temperature, both in the lakes and downstream, which could have an adverse impact to fishery resources¹².

4.6 Barriers to Fish Migration There are numerous barriers to the migration of anadromous fishery located throughout the watershed. For example, Lake Sonoma blocks passage to about 130 square miles of area above the dam, or 11% of the total watershed; Lake Mendocino blocks passage to about 105 square miles of area above the dam, or 7% of the total watershed¹³. Several agencies are currently evaluating methods to remove barriers to fish migration. For example, DFG is currently circulating an EIR relating to the construction of a

¹² SCWA EIR, Vol. I, pg. 6.4-3

¹³ SCWA. The Russian River: An Assessment of its Condition and Governmental Oversight. August 1996. (Pages 1-VI-2 and 3)

fish ladder on the Healdsburg dam; studies are in progress relating to providing fish passage facilities in the Matanzas Creek culvert in the City of Santa Rosa.

In general, staff recommend that no application be approved that would create a new barrier to fish migration. Staff recommend that all new reservoirs either be constructed off-stream or, if constructed on-stream, provide a fish ladder that conforms to criteria acceptable to DFG and NMFS. Staff recommend approval of applications for on-stream reservoirs that are constructed above permanent barriers to fish migration, for example, applications located in the Dry Creek watershed upstream of Lake Sonoma. On-stream reservoirs may be approved on a case-by-case basis if the reservoir is located on a stream that does not provide habitat suitable for coho or steelhead.

4.7 Fish Screens Improperly screened diversion facilities can adversely affect coho and steelhead. Young fish can be drawn into the diversion facilities or can be impinged on the screens. Staff recommend that new permits include terms that would require construction of fish screens that conform to criteria developed by DFG and NMFS.

5.0 EVALUATION OF WATER AVAILABILITY

5.1 General The SWRCB is required to act on the pending water right applications. When acting on these applications, the SWRCB must comply with numerous provisions of the law. The SWRCB is required to maximize the beneficial uses of water resources of the state, to protect public trust resources, to ensure that diversion and use of water is reasonable and in the public interest, and to develop terms to mitigate adverse environmental impacts whenever feasible.

In order to maximize the beneficial uses of water, the SWRCB must balance competing uses of water. In this particular case, the SWRCB must balance the benefits of off-stream consumptive uses of water and the need for instream flow to protect anadromous fish and other public trust resources. On the one hand, the pending applications would authorize the diversion and use of water for municipal, domestic and agricultural uses, which are important to the public interest and the economy of Mendocino and Sonoma counties. On the other hand, providing adequate instream flow is important for the protection and enhancement of coho and steelhead, particularly during low-flow conditions in the tributaries. The practical effect of the Endangered Species Act is that the SWRCB must place emphasis on those measures needed to protect coho and steelhead.

The SWRCB must also determine that water is available for appropriation in accordance with section 1375 of the Water Code, taking into account existing diversions, prior SWRCB decisions and flows needed for the protection of fishery resources. The following provides an evaluation of water availability and the measures needed to protect fishery resources for several categories of projects.

5.2 Wintertime Storage Projects Staff have evaluated water availability within the tributaries based on a review of actual flow data and theoretical flow data developed by the hydrologic model and the proposed minimum fish bypass requirements described in Section 4.4 above. Figures 9, 10, and 11 are representative examples of water availability for average and dry water year conditions for three tributaries; Austin Creek, Maacama Creek, and West Fork Russian River. These tributaries are located near the mouth of the Russian River, near the middle of the watershed, and at the headwaters; consequently, these tributaries should provide a good cross-section of water availability conditions throughout the entire watershed. These figures show the actual flow that occurred in an average water year and a dry water year, with 1 in 10 year frequency. It is important to note that the actual flow data take into account existing diversions of water. The amount of water available for appropriation in average and dry years in these three watersheds is summarized in Table 9 below.

FIGURE 9: WATER AVAILABILITY AND FISH FLOW REQUIREMENTS IN AUSTIN CREEK NEAR CAZADERO FOR AVERAGE AND DRY YEAR CONDITIONS

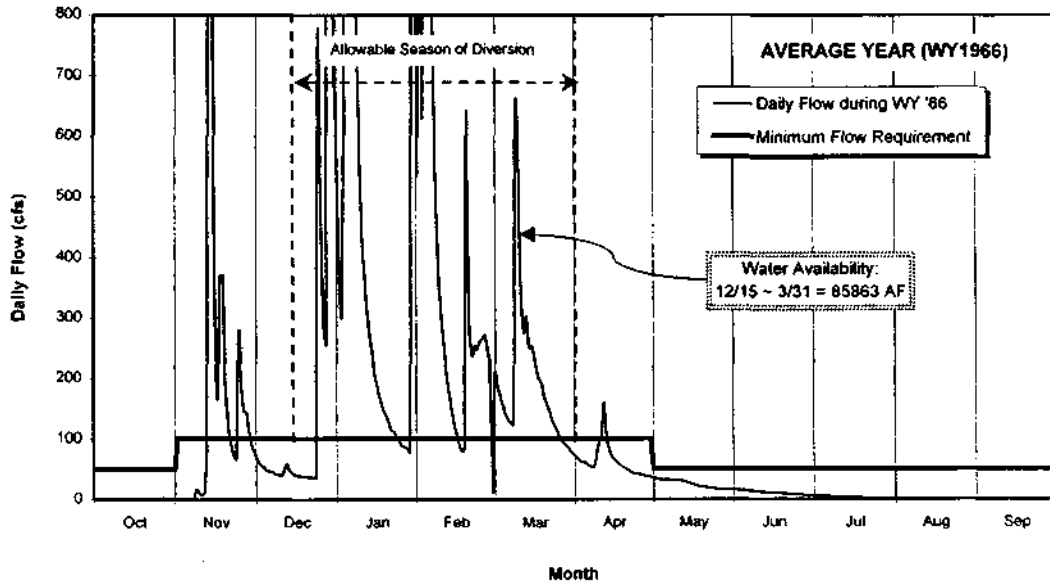
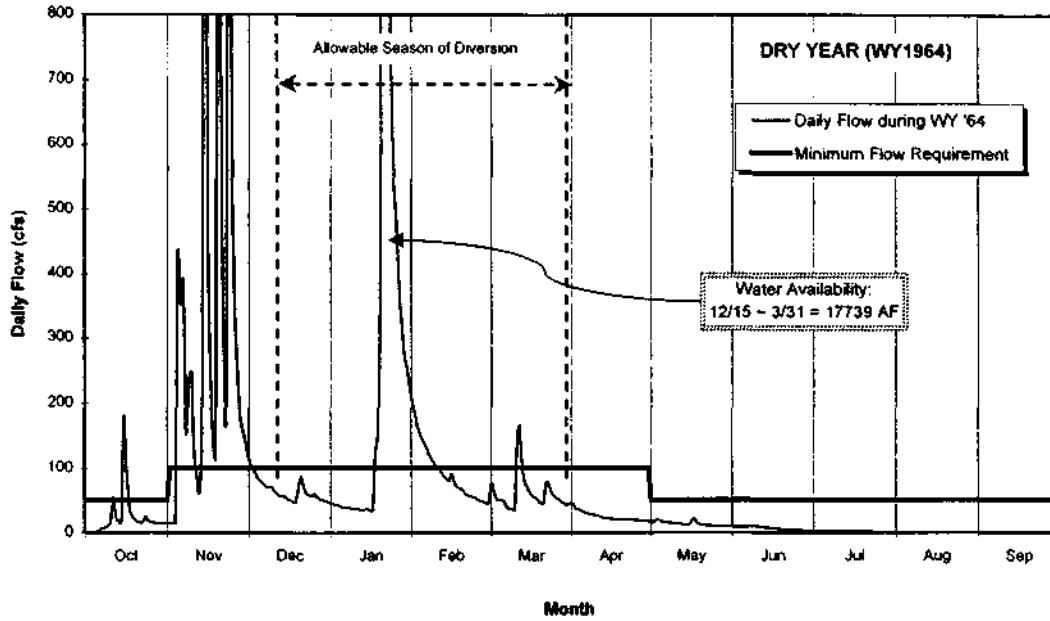


FIGURE 10: WATER AVAILABILITY AND FISH FLOW REQUIREMENTS IN MAACAMA CREEK ABOVE KELLOGG FOR AVERAGE AND DRY YEAR CONDITIONS

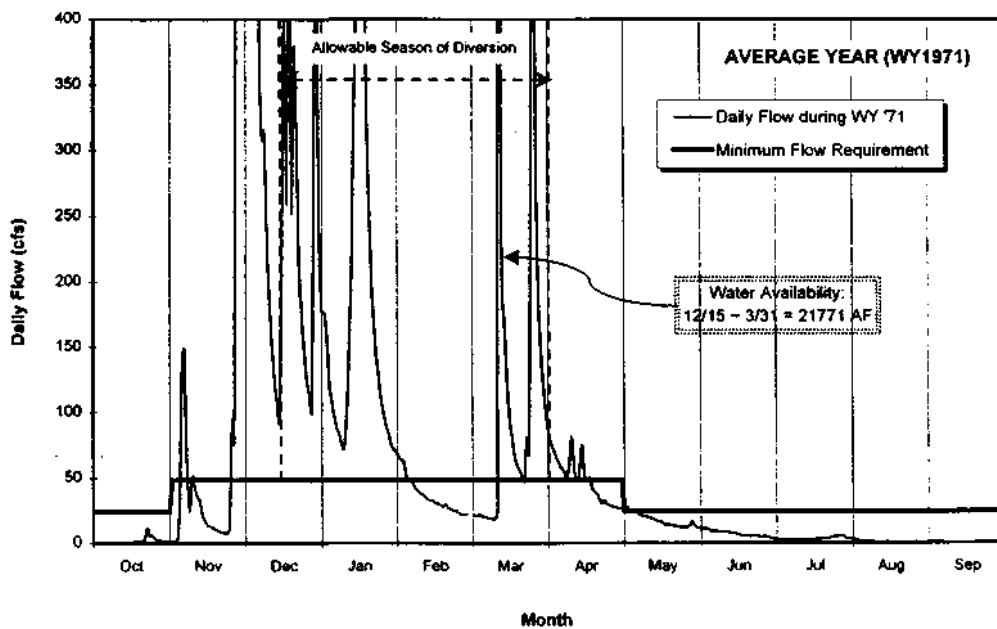
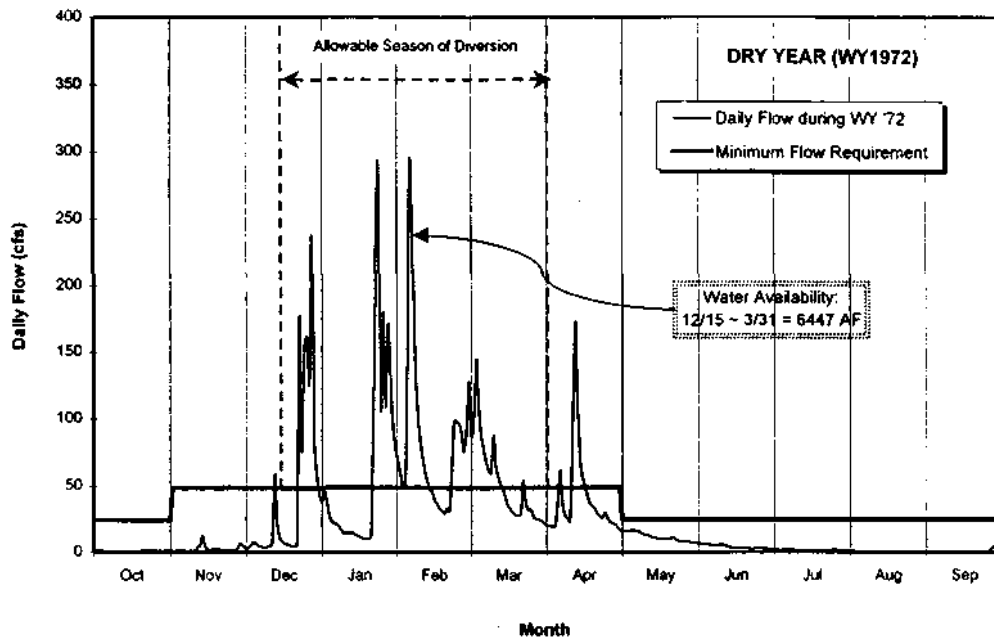


FIGURE 11: WATER AVAILABILITY AND FISH FLOW REQUIREMENTS IN WEST FORK RUSSIAN RIVER NEAR UKIAH FOR AVERAGE AND DRY YEAR CONDITIONS

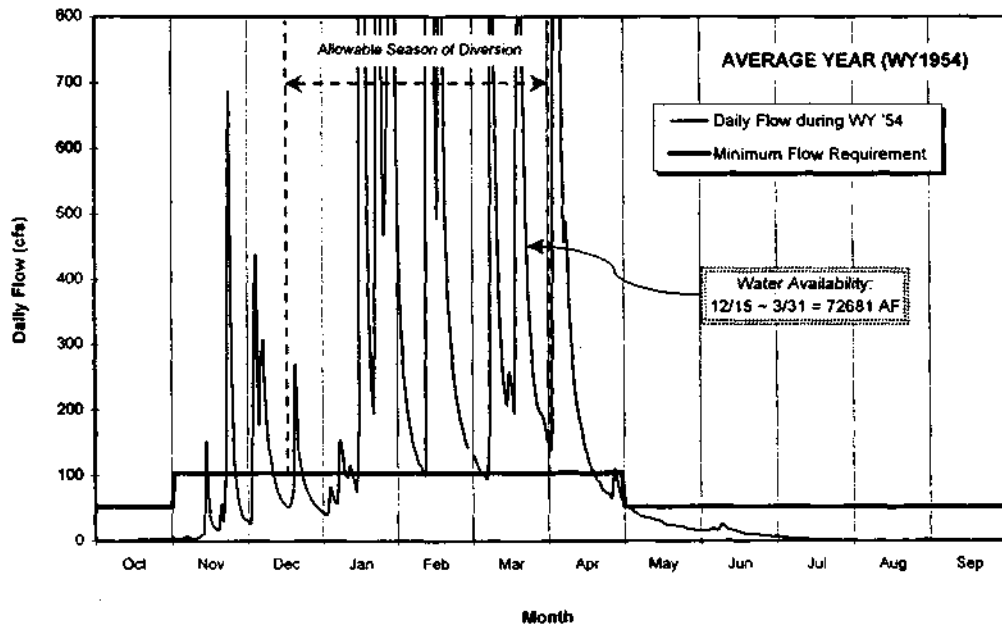
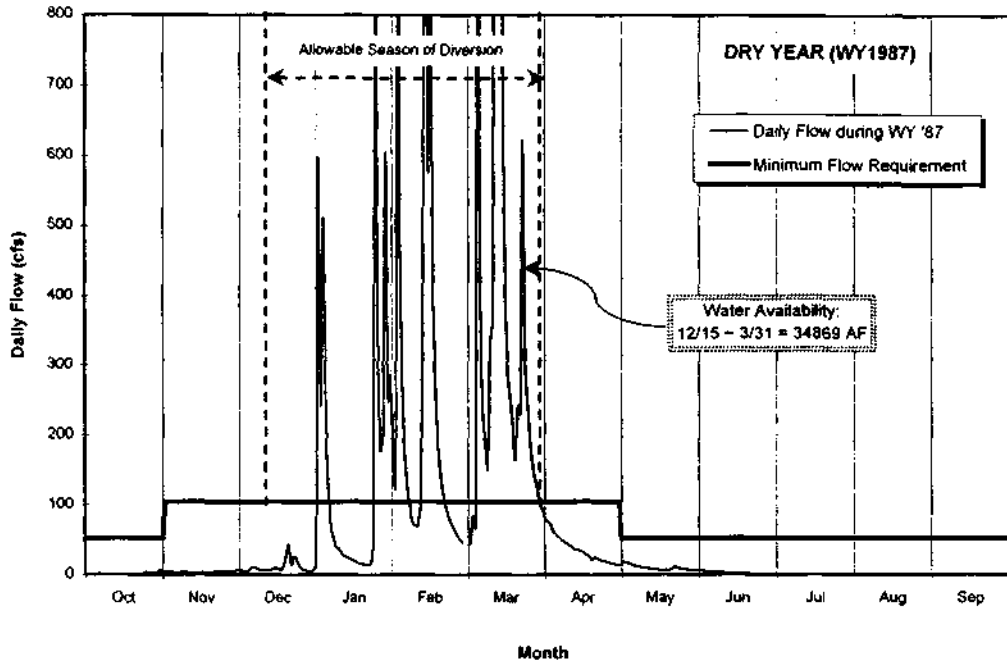


TABLE 9

Water Available for Appropriation in Average and Dry Year Conditions in Austin Creek, Maacama Creek and the West Fork of the Russian River

WATERSHED	WATER AVAILABLE (AFA) AVERAGE CONDITION	WATER AVAILABLE (AFA) DRY CONDITION
AUSTIN CREEK	85,863	17,739
MAACAMA CREEK	21,771	6,447
WEST FORK RUSSIAN RIVER	72,681	34,869

As indicated in Table 8, water is available for appropriation during peak winter runoff periods in both average and dry year conditions. Accordingly, Division staff recommend approval of pending applications seeking water right permits for wintertime storage and diversion of water, with the inclusion of the following conditions that are designed to protect the fishery resources within the Russian River watershed.

Allowable Season of Diversion The diversion season would be limited to December 15 to March 31. This would prevent diversions during the fall to avoid impacts to upstream migration and spawning, and during the spring to avoid impacts to spawning, incubation and outmigration.

Minimum Bypass Flow New permits would require a minimum bypass flow of 60 percent of average annual flow in order to provide adequate flow for upstream migration, spawning, incubation and out-migration.

Barriers to Fish Passage Staff recommend that applications for storage projects be approved only when the reservoir would not create a barrier to migration of anadromous fish. Staff recommend approval of applications only if the reservoir is constructed off-stream, or provides a fish ladder, or is constructed upstream of an existing permanent barrier to fish passage, or is located on a stream that does not provide habitat suitable for coho or steelhead.

Maximum Rate of Diversion New permits would include terms that would limit the maximum allowable rate of diversion. Limiting the rate of diversion would preserve "pulse" flows which are important for attraction and upstream migration of fish and for gravel recruitment, which is important to providing suitable spawning habitat. The allowable rate of diversion would be determined on a case-by-case basis, depending on the flow in the stream.

Fish Screens New permits would include terms that would require the installation of fish screens that conform to criteria developed by DFG and NMFS.

Bypass Facilities New permits would require that all on-stream reservoirs include bypass facilities that would allow bypass of flows, consistent with the terms described above.

Compliance New permits would contain specific measures to demonstrate compliance with the terms described above. Those measures would be developed on a case-by-case basis.

5.3 Spring Frost Protection There are 11 applications within tributary watersheds requesting water rights for direct diversion for frost protection from March through May. Diversions of water for frost protection present a difficult problem. The period from March through May is a critical season for frost protection; however, maintaining adequate flow in the stream is also important for several critical life-stages of coho and steelhead. If all diverters simultaneously divert water for frost protection, flows could be lowered dramatically and impact fish. In order to evaluate the reasonableness of direct diversion for frost protection, Division staff have evaluated alternative methods that could be used to provide frost protection.

The SWRCB was faced with a similar situation on the Napa River. In that particular case, the SWRCB determined in 1972 that direct diversion for frost protection, when the river contained insufficient flow to supply all needs, represented an unreasonable method of diversion and use of water. The SWRCB restricted diversions from the Napa River for frost protection purposes, and required diverters to participate in a trial distribution program controlled by a watermaster. Sections 659 and 660 were added to the Regulations to define SWRCB policy for diversion of water from the Napa River for frost protection. In March 1974, legal action was brought in the Superior Court of Napa County by the SWRCB against diverters who were in violation of SWRCB policy. The lawsuit was ultimately settled by a stipulated judgement which required the diverters to participate in the trial distribution program.

A publication prepared by the Cooperative Extension at the University of California at Davis (Leaflet #2743) discusses frost protection measures for vineyards in Napa, Sonoma and Mendocino counties. The report presents comparative cost data for the two principal methods used for frost protection -- wind machines and sprinklers. The report states that the total annual costs of the two methods are:

	<u>Cost per acre</u>
• Wind machines and heaters	\$220 to 230
• Sprinklers	\$190 to 200

These data indicate that using wind machines, rather than directly diverting water from streams, is more expensive but is a reasonable, cost-effective, alternative method for providing frost protection. As described in the SWRCB memo on reasonableness "The overriding public interest may require an individual to incur reasonable additional expense in order to maximize beneficial uses of water."

The Cooperative Extension report also discusses the requirements for construction of small reservoirs to provide for winter time storage of water that could then be used to supply water for frost protection in the spring. The report states that a reservoir with a capacity of 22 af would provide sufficient capacity to provide frost protection for a 40 acre vineyard for a total of 60 hours of frost conditions. The total area required for the reservoir would depend on the

topography of the site and the depth of the reservoir. The report indicates that a 22 af reservoir would require about three acres of land.

The report also discusses the cost and practicality of using wells to provide water for frost protection.

As indicated above, there are reasonable, cost-effective alternative methods of providing frost protection, other than further direct diversions from the streams. As discussed in Attachment B, there are limited data available to define the flow regime in the spring to protect the fishery resources, however, providing adequate flow during this period is important for several life-stage of coho and steelhead. Consequently, staff concludes that new diversions for frost protection represent an unreasonable method of diversion and use of water. Accordingly, staff recommend that new diversions not be allowed after March 31, unless the applicant submits specific studies which demonstrate that further diversions in the spring will have no significant effect on coho and steelhead.

If applicants wish to construct off-stream storage reservoirs for storage of water for frost protection, rather than requesting a water right for direct diversion of water, it may be necessary for parties to submit a new application. Those new applications would have lower priorities than the pending applications. Where allowed, the Division will modify the applications for direct diversion and issue permits for off-stream storage reservoirs.

5.4 Projects on Main Stem Water is available for appropriation under D-1030 reservations for Mendocino and Sonoma Counties. Staff recommends the conditional approval of these pending applications, provided that existing protests can be resolved. Approval of the pending applications will have immeasurable impact on the flow in the main stem of the Russian River.

5.5 Municipal There is one pending application that requests a water right for existing diversion from the underflow of Austin Creek to supply 53.59 afa of water for municipal purposes in the town of Cazadero, which has about 280 permanent residents and 350 vacation residents. There is one other pending application that requests a water right for existing diversion from the underflow of Austin Creek to supply 10 afa for domestic purposes at 25 homes. There may be overriding public interest considerations that would preclude the SWRCB from canceling these applications. In both cases, the SWRCB is the "lead" agency and must prepare an environmental document. Staff will conduct an evaluation to determine whether there are feasible alternatives to the existing diversions and/or whether measures can be developed that would mitigate the potential impacts to fishery resources resulting from these diversions.

5.6 Domestic Several applications request the right to store 10 af or less of water for domestic purposes. Section 1228 et seq. of the Water Code provides for the issuance of Small Domestic Registration certificate for domestic use not exceeding direct diversion of 4,500 gpd or diversion by storage of 10 afa. For pending applications that meet these criteria, staff proposes to issue Small Domestic Registration certificates.

6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Proposed Actions on Pending Applications The SWRCB is required to act on pending applications and to balance competing beneficial uses of water. To accomplish those objectives, Division staff developed a hydrologic model, developed terms to protect coho and steelhead, reviewed existing SWRCB decisions and evaluated water availability. Based on a review of that information, staff recommend that the pending applications be processed in accordance with the general guidelines described in this staff report.

Staff will contact protestants to determine whether the measures described in this staff report will satisfy concerns raised in the protests and whether the protestants are willing to withdraw their protests. If the protests are resolved and/or withdrawn, staff would process the permits. If protests are not withdrawn, staff would conduct a field investigation and prepare a staff analysis and/or would hold a hearing in accordance with section 1345 et seq. of the Water Code.

In conjunction with that review process, Division staff will conduct a site-specific environmental assessment of each project and prepare the appropriate environmental document, when the Division is the lead agency. Staff may propose additional measures to mitigate potential impacts to public trust resources other than coho and steelhead.

On those pending projects with no unresolved protests, staff will prepare the appropriate environmental document and issue the permits, in accordance with the conditions described above.

Staff will continue processing the 12 incomplete/unaccepted applications. Following receipt of necessary information, staff will distribute a notice to interested parties and will process those applications as described above.

6.2 Fully Appropriated Stream This report provides an analysis of water availability, as required by section 1375 of the Water Code and provides sufficient basis for the SWRCB to declare the entire watershed to be a fully appropriated stream. Accordingly, staff recommend that all tributaries within the entire Russian River watershed be added to the list of Fully Appropriated Streams (FAS) from April 1 through December 14.

Section 1205 (c) of the Water Code allows modification of the FAS designation, upon petition of any party and the conduct of a hearing by the SWRCB. To request a future change in the FAS designation, parties would be required to submit detailed hydrologic data to show that water is available for appropriation, including the results of specific studies relating to the instream flow needed to protect coho and steelhead.

It should also be noted that any new permit would include standard water right permit 12. This term provides for the reserved jurisdiction of the SWRCB to modify terms relating to the public trust resources. The SWRCB could modify the terms proposed in this staff report, following submittal of specific information and a water right hearing.

6.3 SCWA Applications/Petitions SCWA has indicated that it will submit an application and petitions requesting modification of its water right permits. The application and petitions would relate to SCWA's operation of Lake Sonoma and instream flow in Dry Creek and the lower portion of the Russian River. SCWA is currently completing an EIR relating to those changes. Staff recommend that, in conjunction with review of SCWA's application and petitions, the SWRCB review the instream flow requirements for the entire main stem of the Russian River. In conjunction with the review of SCWA's water rights, the SWRCB could review the results of other on-going studies that are currently being conducted by other agencies.

6.4 Coordination Staff will continue to coordinate with other agencies that are conducting studies leading to the development of comprehensive plans for the Russian River watershed.