
Interim Draft Report

Rocky Creek Regional Water Supply Project

Preliminary Water Management Plan

Prepared for
The Central Coast Water Council

December 3, 2001

Prepared by
CH2MHILL
Fuller & Morris
David Evans and Associates



**Printed on
Recycled and
Recyclable
Paper**

Contents

Section	Page
Executive Summary	ES-1
Background.....	ES-1
Scope of Study.....	ES-1
Facility Descriptions and Conservation Programs	ES-1
Existing Water Rights and Demands.....	ES-2
Current and Future Water Needs.....	ES-2
Preliminary Biological Resource Assessment Results.....	ES-3
Operational Plan	ES-3
1 Background.....	1-1
Project Driver.....	1-1
Council Membership.....	1-1
Project Goals	1-2
2 Scope of Study.....	2-1
Purpose of this Draft Water Management Plan	2-1
Location of Project Area.....	2-1
3 Facility Descriptions and Conservation Programs.....	3-1
Member Facilities.....	3-1
City of Lincoln City.....	3-1
City of Newport.....	3-1
City of Toledo	3-1
City of Waldport.....	3-2
City of Yachats.....	3-2
Kernville-Gleneden Beach-Lincoln Beach Water District.....	3-2
Southwest Lincoln County Water District.....	3-2
City of Siletz.....	3-5
Facility Interties.....	3-5
Conservation Programs	3-5
Results and Conclusions.....	3-9
4 Existing Water Rights.....	4-1
Existing Water Rights Held by Members.....	4-1
Historical Streamflow and Instream Water Rights.....	4-1
Water Availability Analysis	4-1
5 Current and Future Water Needs.....	5-1
Current and Projected Water Demands	5-1
Approach	5-1
Assumptions.....	5-1
Population Projections	5-2

Section	Page
Water Demands.....	5-5
Supply Deficit Analysis	5-9
Comparison of Existing Water Rights to Projected Demands	5-10
Deficit Water by Members with Conservation Programs	5-11
6 Biological Resources and Environmental Permitting Analysis	6-1
Purpose and Summary	6-1
Methods.....	6-2
Review of Existing Literature.....	6-2
Discussion of Meetings with Agencies, Council and Environmental Stakeholders	6-2
Regulatory Issues for Water Supply Development and Use	6-3
State Water Law	6-3
Intersection of State and Federal Law.....	6-4
Biological Conditions and Water Rights Development.....	6-8
Fish Utilization	6-8
Core Areas	6-10
Water Quality Limited Streams	6-10
Water Right Development: Comparison of Senior Water Rights to Drought Flows	6-21
Description of the Rocky Creek Watershed.....	6-22
Existing Conditions	6-22
Potential for Restoration	6-24
Recommendations Regarding Future Water Development.....	6-27
Regulatory Processes for Water Rights Development.....	6-27
Minimum Stream Flows	6-28
Future of ESA Listings	6-28
Regionalizing the Central Coast Water Supply and Development	6-28
Studies Anticipated for Rocky Creek.....	6-28
7 Operational Plan.....	7-1
8 References.....	8-1
Appendixes	
A Instream Water Rights	

Section **Page**

Tables

ES-1 Current and Projected Average Day and Peak Day Demands for Central Coast Water Council Members.....ES-2

3-1 Summary of Conservation Programs by Entity 3-6

4-1 Rocky Creek Regional Water Supply Project- Existing Water Rights and Permits..... 4-3

4-2 Rocky Creek Regional Water Supply Project Instream Rights..... 4-5

4-3 Gaged Locations within the Middle Coast Basin with 95% Exceedance Flows Calculated by OWRD 4-7

4-4 Rocky Creek Regional Water Supply Project Estimated 95 Percent Exceedance Flows..... 4-8

5-1 Existing and Projected Equivalent Population for Project Members and Others..... 5-3

5-2 Population Growth Factors Used in Developing Population Projections 5-4

5-3 Water Use Rates and Peak Day Peaking Factors Used in Projecting Future Water Demands..... 5-5

5-4 Current and Projected Total Annual Demands for Each Member 5-8

5-5 Current and Projected Average Day Demand Projections for Members in Million Gallons per Day..... 5-8

5-6 Current and Projected Peak Day Demands for Project Members in Million Gallons per Day..... 5-9

5-7 Proposed Scenarios for Evaluating Potential Effects from Mitigation Requirements and Source Sharing Opportunities..... 5-10

5-8 Proposed Classifications and Rankings to Be Used in Developing Scenarios for Evaluating the Regional Plan and Opportunities for Source Sharing and Resource Enhancement 5-11

5-9 Scenario Summary Table – Scenario 1 5-13

6-1 Distribution of Coastal Cutthroat Trout within Central Coast Study Area 6-9

6-2 Salmon Core Areas of the Central Coast Water Plan Study Area 6-19

6-3 Water Quality Limited Streams in Study Area..... 6-20

6-4 Apparent Deficits During Drought Years with All Senior Rights Developed..... 6-25

Figures

2-1 Rocky Creek Regional Water Supply Project..... 2-3

3-1 Project Service Area Boundaries and Water Transmission Facilities 3-3

5-1 Scenario 1 Regional Supply and Demand with Source Sharing 5-12

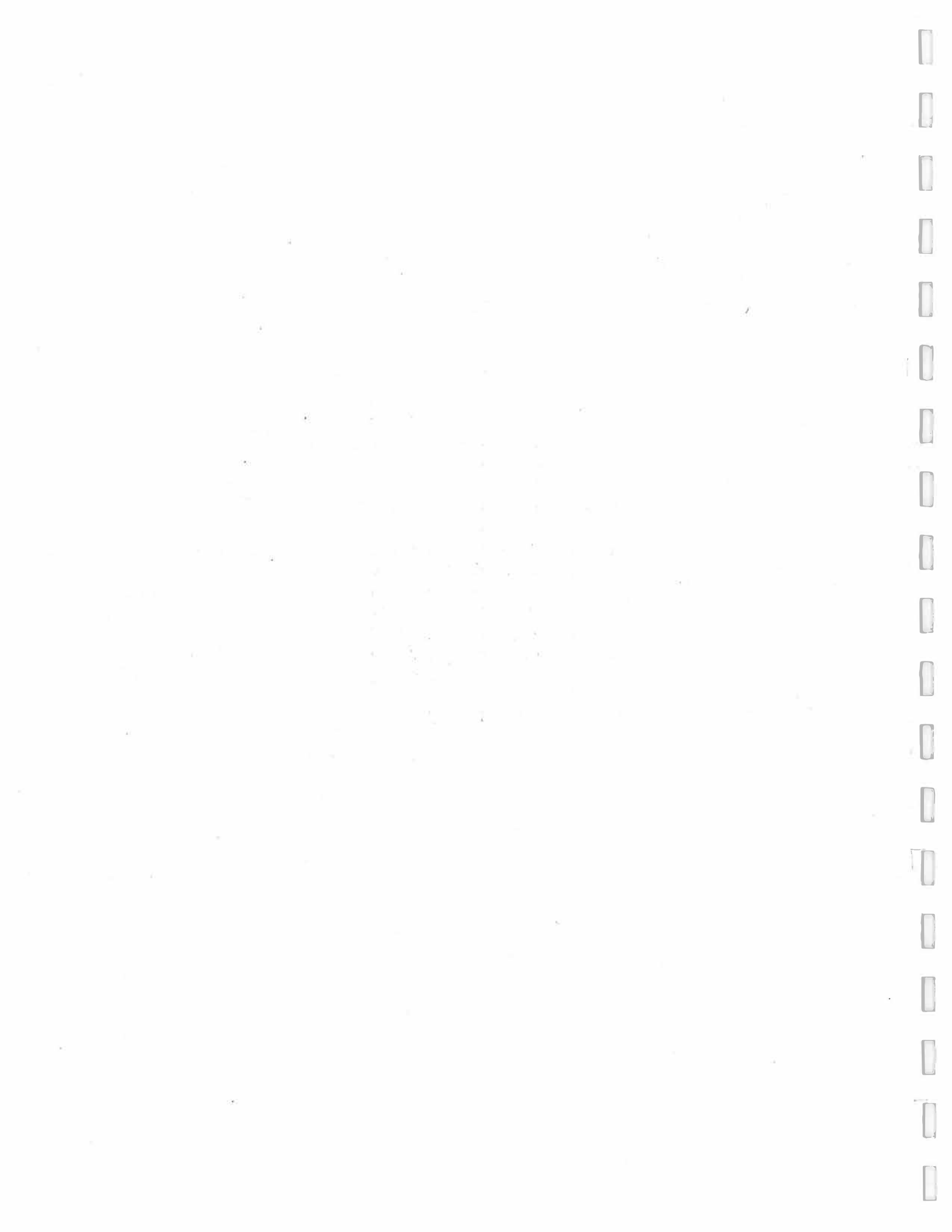
6-1 Coho Distribution within Project Area 6-11

6-2 Chum Distribution within Project Area 6-13

6-3 Steelhead Distribution within Project Area 6-15

6-4 Chinook Distribution within Project Area 6-17

6-5 Rocky Creek Basin 6-23



Executive Summary

Background

The Central Coast Water Council is managing and directing development of the Rocky Creek Regional Water Supply Project, which will supply summer peaking water supply for several communities in Lincoln County. As requested by the Oregon Water Resources Department, the Council has undertaken this preliminary water management planning to analyze the area's water needs in support its associated water rights applications.

Scope of Study

The purpose of this water management plan is to provide a framework for implementation of the proposed Regional Water Supply Project, produce a water needs analysis for the project area, and develop a schedule to construct facilities as they are needed to augment peak season water supplies for the participating communities. The study area includes the Lincoln City service area in the north through the Yachats service area in the south plus the Cities of Siletz and Toledo.

Facility Descriptions and Conservation Programs

The existing water pumping, treatment, transmission, and storage facilities of the central coast are summarized in Table ES-1. All of the water supply agencies in the area have water conservation programs. Currently, 5 to 25 percent of water supplies is unaccounted. The industry standard is 10 to 15 percent. The following general methods are recommended for improving water conservation:

1. Conduct leakage tests, make repairs as needed, evaluate water line materials for potential problems, and update the Capital Improvement Plan to incorporate water conservation measures.
2. Ensure that meters are calibrated or replaced as needed, because often unaccounted water is a product of faulty meters, or error in reading the meters.
3. Ensure that all known uses of water are metered, and conservation measures are implemented as much as possible.
4. Demand side conservation measures include providing public education on water conservation, developing ordinances to ensure conservation, provide water saving devices and implement programs ensuring their use, develop a program for funding replacement of meters and faulty lines.
5. Develop a rate structure that provides incentives for water conservation.
6. Develop a reasonable goal for unaccounted water losses, at the most 10 to 15 percent.

Existing Water Rights and Demands

The existing water rights on record at the OWRD for members of the Central Coast Water Council were reviewed. Similarly, historical stream flows and instream water rights were reviewed as they pertain to the study area. Using stream flow data for the area, the availability of water was evaluated.

Current and Future Water Needs

In developing preliminary data about current and future water needs, the following factors were considered:

- Population growth
- Service area growth
- Water use patterns and rates
- Potential for water dependant industry and commercial development
- Public use
- Potential for conservation

The total current and projected average day and peak day demands of the Central Coast Water Council Members are shown in Table ES-1.

TABLE ES-1

Total Current and Projected Average Day and Peak Day Demands the Central Coast Water Council Members
(million gallons per day)

Year	2000	2010	2020	2025	2030	2040	2050
Average Day	6.8	8.8	11.1	12.4	13.8	17.2	21.4
Peak Day	13.1	17.0	21.4	23.9	26.7	33.2	41.4

The actual supply deficit that members may be facing cannot be fully determined without a full biological resource assessment. In the coming year, many more meetings with the Technical Advisory Committee (TAC), the Council, and the permitting agencies will be necessary to arrive at a better understanding of the true supply deficit facing the members, without the Rocky Creek Regional Water Supply Project.

In order to begin the discussions, proposed scenarios are described below. Scenario 1, which assumes full use of the members' water rights that are senior to instream water rights as available under drought conditions with no additional mitigation streamflows, is included in this interim draft report. Scenario 1 will yield the most reliance on existing water rights and the streams from which they are used, and the least reliance on a new regional water supply project.

In discussions with the TAC in the upcoming year, other scenarios will be discussed and evaluated, in particular with respect to regional source sharing and opportunities for biological resource enhancement.

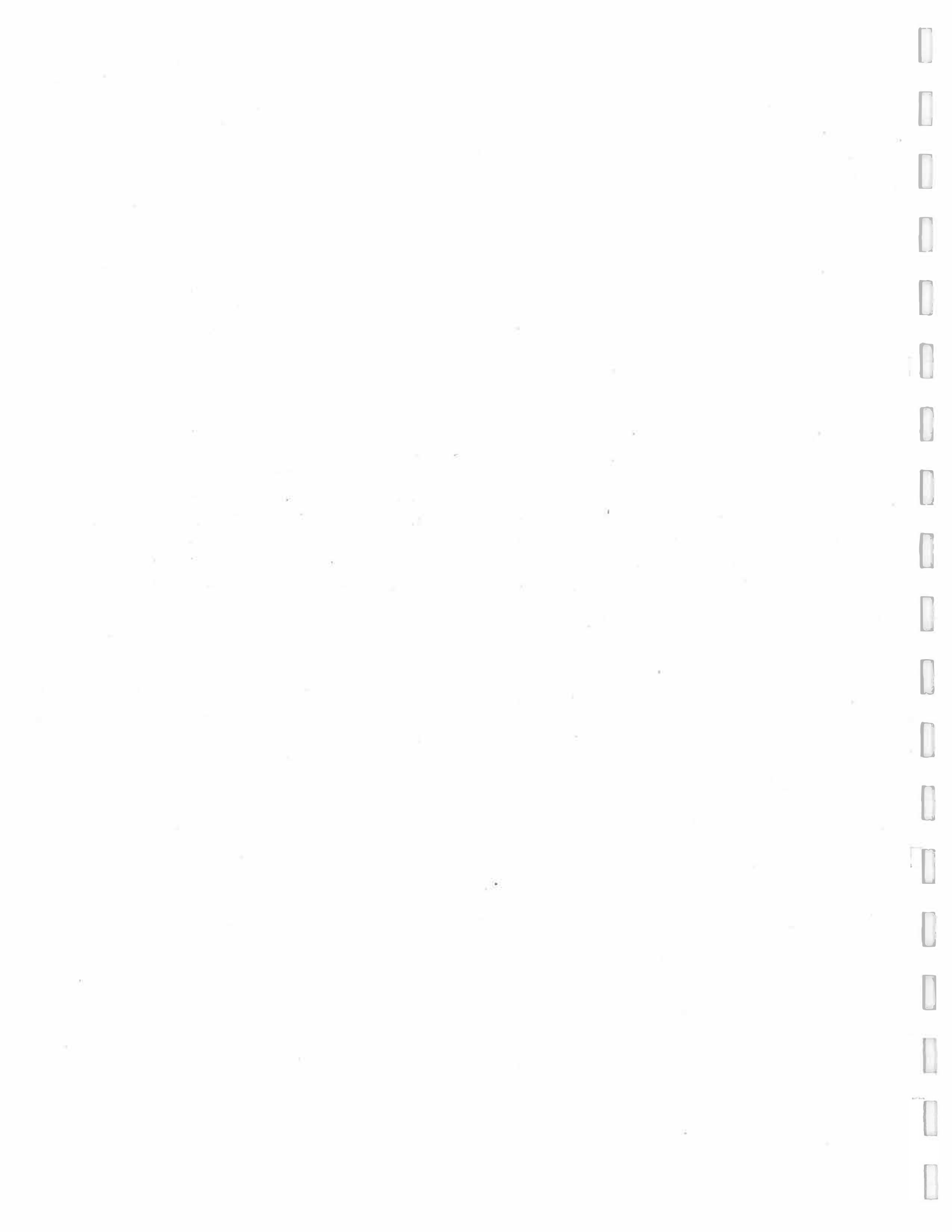
Preliminary Biological Resource Assessment Results

Based on the analysis of study area streams and the respective existing fish and water quality conditions, it appears that many of the undeveloped water rights currently held by the CCWC members may be difficult to fully develop. Even though members may hold water right permits, the actual ability to develop those rights is not certain. Virtually all of the surface water bodies for which there are outstanding (undeveloped) water right permits have substantive constraints because of federal Endangered Species Act listings. Several streams have been designated as Core Areas in the Oregon Coastal Salmon Restoration Initiative. Additionally, several streams have been listed as water quality limited by the State of Oregon. Given today's regulatory climate, successful development of water rights in these streams may be difficult and, if approved, may require costly and potentially extensive mitigation measures.

The use of Rocky Creek Reservoir as a long-term regional water supply appears to be feasible, at this phase in the evaluation process. The potential environmental impacts of a reservoir in the Rocky Creek drainage seem permissible and can be mitigated. Though there will be impacts to wetlands, stream habitats, and riparian resources, the impacts will not eliminate resources unique within the central coast ecoregion. Mitigation opportunities to compensate for the impacts appear to be available. There will be no impact to anadromous fish species. Rocky Creek has been considered for anadromous fish restoration by Oregon Department of Transportation and a citizens group, though existing fish barriers and ongoing watershed logging practices may present substantive limitations to successful restoration.

Operational Plan

It will be necessary for the Council members to determine how to satisfy their system demands until the Rocky Creek project is online. This will involve sharing of water supplies among the members as they are available. South County water providers are currently evaluating how the City of Toledo supply can fulfill that role for them. The City of Lincoln City and Kernville-Glendon Beach-Lincoln Beach Water District are currently working on an arrangement to share the Drift Creek water rights. These activities and others that may be initiated in the future will allow the time required for development of Rocky Creek supply when all the participants are in common need for additional water to satisfy their increasing demands. Once the Rocky Creek project is developed, it can be used for augmenting the existing supplies during the summer and early fall when stream flows are typically at their lowest.



Background

Project Driver

An administrative hold for the Rocky Creek Project water rights applications R-83810 and S-83809 has been granted by the Oregon Water Resources Department (OWRD), and is extended to December 27, 2002. OWRD will not begin processing of the Proposed Final Order for these applications until December 27, 2002 (Letter from OWRD to Richard M. Glick, June 5, 2001). In order to help ensure the applications are ready to be processed at the end of the hold period, OWRD has requested several items to be submitted according to the schedule presented in the June 5, 2001, letter. In particular, OWRD requests that a report indicating substantial completion be submitted February 1, 2002, and a final report submitted December 27, 2002. This report should include the following analysis:

- The need for water that includes present and future populations to be served for each entity involved in the project, based on available data
- The basis for those population projections
- Present and future uses to be served and the assumptions that were used in the projections
- An analysis of all the water rights held by the entities involved in the regional water supply and of all existing rights that apply to the proposed service area

In addition, a progress report is due on or just before February 1, 2002, and a final plan framework is due December 27, 2002, on water conservation planning. This water conservation plan framework for the entities and the area to be served should include efficiency standards for the service area. This framework will not be to the level of detail required for water conservation and management plans under OWRD's Division 86 rules.

If OWRD has not received the information described above with a due date of February 1, 2002, it will consider moving forward at that time with a basin plan amendment to address municipal use on Rocky Creek.

The goal for this interim draft report is to present draft information intended to meet the requirements of the Progress Report items described above.

Council Membership

The Central Coast Water Council has been formed to manage and direct the Rocky Creek Project. Council Members include the following entities:

- City of Lincoln City
- City of Newport

- City of Siletz
- City of Toledo
- City of Waldport
- City of Yachats
- Kernville-Glenden Beach-Lincoln Beach Water District
- Seal Rock Water District
- Southwest Lincoln County Water District

Project Goals

Goals for a successful project include obtaining agreement between members on the need for the project, developing a collaborative regional approach, including appropriate permitting agencies and others in discussions about the project, facilitating public understanding of the project, and ensuring the timely submittal of deliverables to OWRD.

SECTION 2

Scope of Study

Purpose of this Draft Water Management Plan

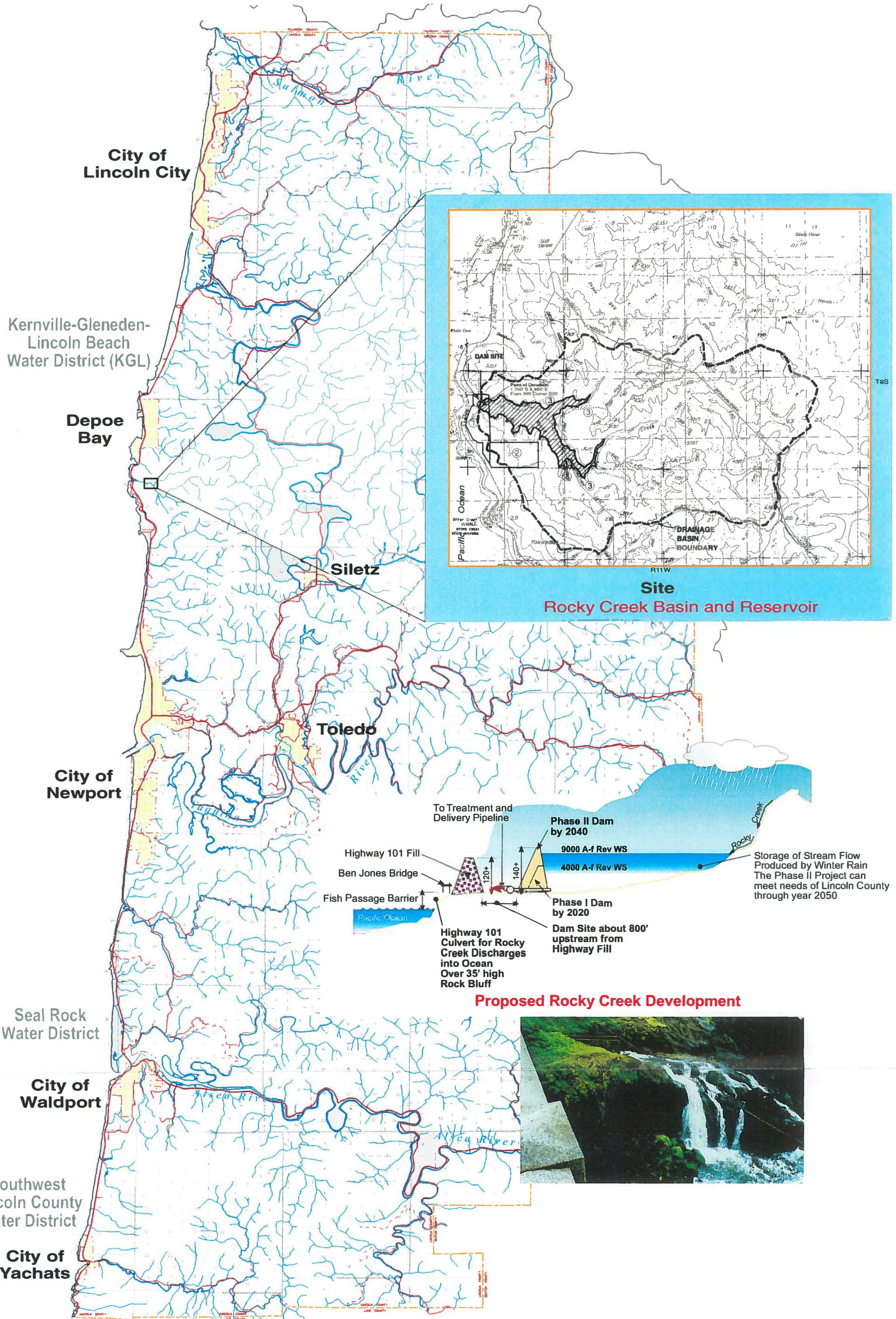
The purpose of this draft Water Management Plan is to show significant progress in meeting the requirements set forth by OWRD in their letter dated June 5, 2001. As such, this draft Plan will provide a framework for support of the Rocky Creek project, develop the needs analysis in support of that project, and illustrate the construction time frame required in order for the project to augment water supplies to Council Members as their current supplies are fully used, especially during the peak season.

Location of Project Area

The project area includes all of coastal Lincoln County, the Lincoln City service area in the north through the Yachats service area in the south plus the Cities of Siletz and Toledo. Only Depoe Bay has not elected to join the Council.

Figure 2-1 Project Study Area and Rocky Creek Project Location depicts the entire project service area and the specific location of the Rocky Creek basin located immediately south of the City of Depoe Bay.

Proposed Water Supplies



Proposed Rocky Creek Development



Not to Scale.
 Excerpted from: Long-Range Water Supply, A Study of Newport's Water Supply and the Potential for Future Regionalization of Water Supplies, City of Newport, Oregon, June 1997. Fuller & Morris.

Figure 2-1
 Rocky Creek Regional Water Supply Project

Figure Reference: Previous Regional Plan.

Facility Descriptions and Conservation Programs

Member Facilities

The project service area boundary and water transmission facilities are shown in Figure 3-1.

City of Lincoln City

The City of Lincoln City has a raw water intake on Schooner Creek. The intake is stainless steel slotted screen with 0.0689-inch (1.75 mm) openings. There are four pumps at the intake with two each having a capacity of 930 gallons per minute (gpm) and the other two each with an 1,860 gpm capacity. The City currently does not have raw water storage. The main transmission pipeline begins at 24 inches and decreases in a northerly direction. The City has no intertie with other entities. Water is treated using conventional multi-media with pre-grit and pre-clarification. Treated water is stored in three tanks, with a total capacity of 5 million gallons (MG). The city recently replaced all the residential service meters.

City of Newport

The City of Newport has an unscreened intake on Big Creek. Raw water is stored in two reservoirs, of 349 MG (Big Creek Reservoir #2) and of 60 MG (Big Creek Reservoir #1). Pumping occurs year-round, daily for 24 hours, typically. Pump firm capacity is 4,200 gpm, and nominal is 4,000 gpm, with three pumps. The main transmission pipeline is 16 inches in diameter for 1,000 feet. The intertie with Seal Rock Water District is 12 inches in diameter. Water is treated using a full treatment system of coagulation, flocculation, sedimentation and filtration. Treated water is stored in a system of storage tanks with a full capacity of 6.1 MG.

City of Toledo

The City of Toledo serves water to the area within the City Urban Growth Boundary and supplies excess water, under contract, to the Seal Rock Water District. The City primarily obtains water from Mill Creek in the fall, winter, and spring, and the Siletz River in the summer. The Siletz River pump station has three pumps at an unscreened intake. Total capacity at this pump station is 1,250 gpm. An 850-gpm capacity pump station is located on Mill Creek. Raw water is treated at a 3.2 mgd chemical flocculation, rapid sand treatment facility. Treated water is transmitted to the distribution system via two 18-inch diameter transmission lines. Much of Seal Rock's water supply comes from the Ammon Road 1.0 MG reservoir.

City of Waldport

The City of Waldport has one pump at the intake, which is used July through October, depending on the weather. For the remainder of the year, impoundments are used to supply water [verify?]. Pump has a capacity of 300 gpm. Plans for 2002 call for two new pumps of 500 gpm each to be installed. Raw water is stored in a 0.15-MG storage tank, typically from November through July. Water is treated with rapid sand filtration process, which has a treatment capacity of 520 gpm. An 8-inch intertie connects the City's system to SWLCWD and the City of Yachats. Treated water is transmitted via a 12-inch diameter line for 2,000 feet and also a 10-inch diameter line for 8,000 feet [*are these the same line or separate directions?*]. Treated water storage capacity is 3 MG.

City of Yachats

The City of Yachats is a retirement and bedroom community where the weekend and holiday population regularly increases sharply (sometimes doubling) due to the influx of tourists to the city's six major motels, several smaller motels, bed and breakfast facilities, and other hospitality services. The City currently operates a 1.0-million-gallon-per-day (mgd) maximum capacity multi-media filtration water treatment plant. Two intake facilities are used, one on Reedy Creek, and one on Salmon Creek. The Reedy Creek intake is perforated 8-inch galvanized pipe enclosed in geotextile gravel pack filter. Salmon Creek intake is a 6-inch Johnson Type Filter. The intakes are gravity feed. Raw water is stored in a 0.5-MG storage tank during off-hours to maintain a consistent rate to the treatment plant. The City has plans to build additional raw water storage capacity of up to 3 MG to store Reedy Creek raw water. A 12-inch diameter transmission line of 4,700 feet is used to transmit treated water. The City just recently completed replacement of all domestic water meters.

Kernville-Gleneden Beach-Lincoln Beach Water District

Kernville-Gleneden Beach-Lincoln Beach Water District (KGL) serves an area approximately _____ square miles. Both an infiltration gallery and a direct surface intake are used to withdraw water from Drift Creek, the District's only water supply. The infiltration gallery is operated year-round, and the river intake is used during low flow periods. Both the infiltration gallery and the direct intake gravity feed a concrete pump well, from which water is pumped to the slow sand filters. The main transmission pipeline has a diameter of 12 inches for 9,150 feet, and 8 inches for another 2,550 feet. Total system storage capacity is 2.45 MG.

Southwest Lincoln County Water District

Southwest Lincoln County Water District (SWLCWD), a municipal water district, is located within a 0.5 mile to 1 mile wide, 8-mile long strip of land between the City of Waldport on the north and the City of Yachats on the south along Highway 101. The SWLCWD currently takes water from three supply sources on Dicks Fork, Big Creek, and Starr Creek. Vingie Creek is currently under development.

SWLCWD owns and operates two water treatment plants, Blodgett and Dicks Fork. Both treatment plants use a conventional package filtration system, and will have a combined actual treatment capacity of 450 gpm when Vingie Creek water comes on-line.

Primary Water Supply Sources By Entity

Note: Underdeveloped Supply in ()

City of Lincoln City

- Schooner Creek
- (Rock Creek)
- (Gordey Creek)

**Kernville -
Gleneden Beach -
Lincoln Beach
Water District (KGL)**

- Drift Creek

City of Depoe Bay

- N & S Depoe Bay Creek
- Rocky Creek

City of Siletz

- Tangerman Creek
- Siletz River

City of Newport

- Big Creek
- Siletz River

City of Toledo

- Mill Creek
- Siletz River

**Seal Rock
Water District (SRWD)**

- Toledo - Siletz River
- (Drift Creek)

City of Waldport

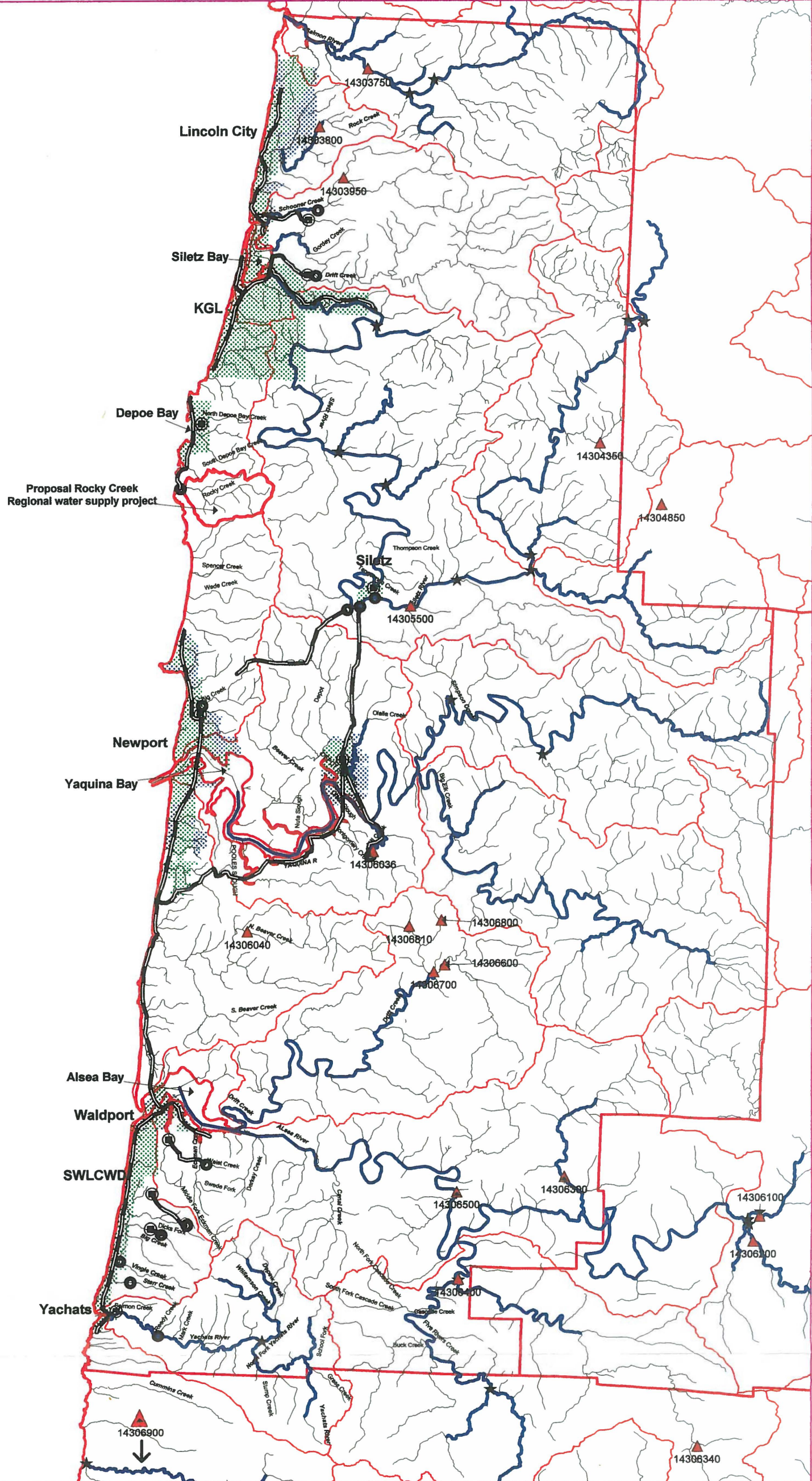
- N & S Forks Weist Creek
- Swede & Middle Fork of Eckman Creek
- (Darkey Creek)

**Southwest
Lincoln County
Water District (SWLCWD)**

- Dick's Fork Creek
- Big Creek
- Vingie Creek
- Starr Creek

City of Yachats

- Salmon Creek
- Reedy Creek
- (Yachats River)



**Interim Draft Report
Rocky Creek
Regional Water Supply Project
Preliminary Water Management Plan
December 05, 2001**



- Legend**
- Member Point of Diversion
 - ⊙ Water Treatment Plant
 - ★ Point of Instream rights
 - Creek
 - Instream Water Right
 - ▭ Watershed
 - ▨ Urban Growth Boundary
 - ▭ Lincoln County Boundary
 - Transmission Pipe
 - ▲ Stream Gage Location
 - ▨ Service Area or City Boundary (* not complete for all entities)

**Figure 3-1
Project Service Area
Boundaries and Water
Transmission Facilities**



Scale: 1" = 22000'

The treatment plants are currently operated when treated water reservoirs are half empty. During periods of high turbidity, SWLCWD operates on treated water storage, if necessary. The Blodgett plant is operated typically Monday through Friday, 24 hours per day. Dicks Fork is run infrequently, about 2 or 3 days per week. Water rights on Big Creek, Starr Creek, and Vingie Creek are treated at Blodgett WTP year-round. Water rights on Dick's Fork have been treated at Dick's Fork WTP year-round.

City of Siletz

The City of Siletz has a newly installed (in year 2000) package plant, and three new storage tanks of 1 MG capacity. The main transmission line for the city is 8 inches in diameter, and approximately 1.5 miles long. The City's diversion works are fairly new as well, with two 30-horse-power pumps with a nominal capacity of 350 gpm. The intake is screened.

Facility Interties

The following interties exist amongst the Council Members:

- Toledo is intertied with Seal Rock Water District via an 8-inch pipeline.
- City of Toledo has an 8-inch intertie with the City of Newport via Seal Rock Water District. Use of this intertie is highly variable, and primarily for emergency needs.
- SWLCWD has a 4 inch diameter intertie with the City of Yachats. This connection provides for future cooperative use of water.
- SWLCWD has an 8 inch diameter intertie with a 2 inch meter bypass with the City of Waldport.

Conservation Programs

Individual master plans, conservation plans, and other information provided by Council representatives were reviewed in order to summarize the conservation programs and plans currently in place in the region. Pertinent information for each entity is summarized in Table 3-1.

Conservation planning hinges on the key measurement of unaccounted water. Unaccounted water is the difference in the quantity of raw water diverted from streams, impoundments, and wells, and the quantity of water metered at customer connections. This unaccounted water could be due to system leaks, unmetered use at a water treatment plant (backwash water, wash down, etc.), inaccuracies in meter readings, failing and obsolete meters, and other unmetered uses such as fire flows and system flushing.

TABLE 3-1
 Summary of Conservation Programs by Entity

Entity	Current Unaccounted Water Level/ Recent High	Conservation Planning Efforts	Documented Impacts	Target Unaccounted Water Level	Reference
City of Newport	6.99%	Provide free water saver kits and information in brochures and newspapers.	None documented	Status quo	The Bridge, City of Newport, Vol. 4, 3., July 2001.
Lincoln City	Current average unaccounted for water is at 20 to 21%, down significantly from historical. When taking into account estimated use for line flushing, fire hydrant flows, and unmetered developer use, the unaccounted water is at 12 to 16%.	Water Conservation and Curtailment Plan. Existing conservation programs include: Water conservation kits, plumbing code adoption, public education, public facility fixtures, service meter installation and replacement, meter testing and maintenance, leak detection and repair, water conservation rate structure, city vehicle wash water conservation, and water reuse.	The percent of unaccounted for water has been decreasing steadily over the years, due to supply-side management and conservation activities, along with demand-side conservation. Routine fire flow and other unmetered uses may account for 5 to 8% of the total losses.	10%	Water Conservation and Curtailment Plan, August 2001. CH2M HILL.
City of Siletz	5%	A City ordinance of mandatory water conservation procedures. The ordinance provides for the establishment of rules and regulations prohibiting or limiting nonessential uses of water, as well as penalties for violations and declaring an emergency.	None documented	Status quo	The City of Siletz, An Ordinance of the city of Siletz, Ordinance No. 144, July 13, 1992. Additional data provided by the City of Siletz.

TABLE 3-1
Summary of Conservation Programs by Entity

Entity	Current Unaccounted Water Level/ Recent High	Conservation Planning Efforts	Documented Impacts	Target Unaccounted Water Level	Reference
Southwest Lincoln County Water District	5%	Water System Development and Conservation Plan. Conservation measures have taken the form of incentive programs, metering of homes in 1994, conducting system-wide leak repair or line replacement, encouraging water reuse, and implementing a rate structure that provides incentives to conserve. The District is fully metered with new meters.	Water use from 1993 to 1996 was reduced by 20%, even though the customer base has increased by 10%.	To improve and/or maintain the current level of conservation and continue to educate the public.	Southwest Lincoln County Water District, Water System Development and Conservation Plan, pp.18-19, July 31, 2001.
Yachats	22%. The year 2001 unaccounted for water was roughly 30% by the month of July.	Conservation Plan. The Plan describes incentive programs, and rate structures. In addition, the City replaced approximately 680 meters (all their domestic meters) in September of 2001.	None documented	15%	Dyer Partnership Engineers & Planners, Inc, City of Yachats, Lincoln County Oregon, Master Plan, pp.5-11, June 2001.
Waldport	18%	None	None documented	No targets provided by the City.	Provided by City of Waldport
Seal Rock Water District	21.7%	Rate structure that provides incentives to conserve water.	None documented	5 to 10%	Provided by Tom Donaty, Seal Rock Water District.

TABLE 3-1
 Summary of Conservation Programs by Entity

Entity	Current Unaccounted Water Level/ Recent High	Conservation Planning Efforts	Documented Impacts	Target Unaccounted Water Level	Reference
Kernville-Gleneden Beach-Lincoln Beach Water District	23%	Conservation recommendations were provided in the Master Plan of August 2000. The District implements conservation measures as specific needs occur. Water conservation kits are available and have been distributed.	None documented	No targets provided in the Master Plan.	CH2M Hill, Kernville-Gleneden Beach Lincoln Beach Water District Master Plan, pp.2-1,4-8, Aug 2000
Toledo	21.5% (Combined with Seal Rock Water District)	A Conservation Plan was recommended and outlined in the Toledo Master Plan of February 1998.	None documented		City of Toledo, Oregon Master Plan, pp.58, Feb 1998. KPFF Consulting Engineers,

Results and Conclusions

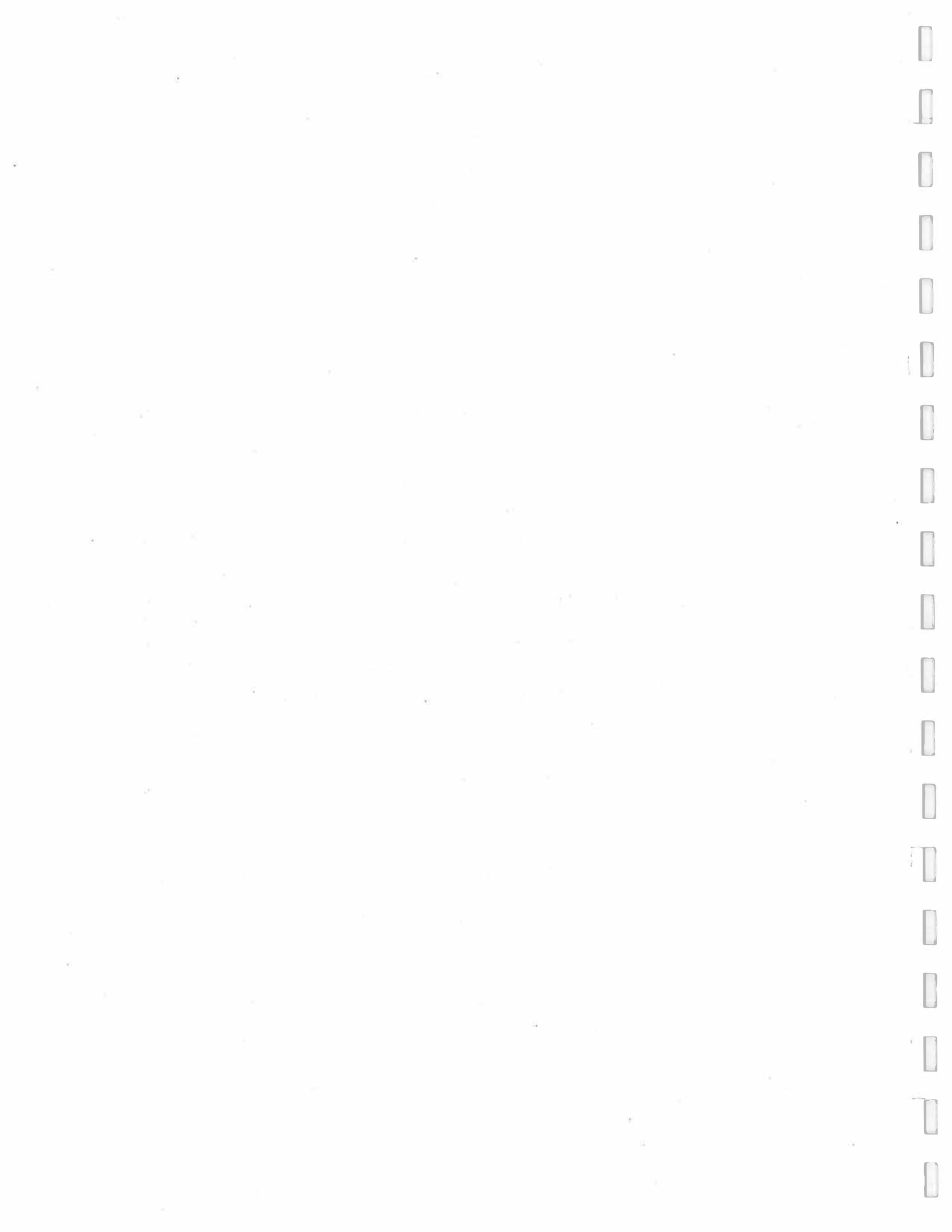
As summarized in Table 3-1, all the entities have some form of conservation program in place. To date, numerical success in reducing the amount of unaccounted water is not readily available. However, given the details of the various programs, and the entities' commitments to conserving water, positive results should be apparent in the future.

Current industry standards and goals for non-revenue water in the region is from 10 percent to 15 percent. As shown in Table 3-1, the current unaccounted water level ranges from 5 percent to 25 percent.

Some general methods for further reducing the unaccounted water levels for these systems could include the following:

1. Conduct leakage tests, make repairs as needed, evaluate water line materials for potential problems, and update the capital improvement plan to incorporate water conservation measures.
2. Ensure that meters are calibrated or replaced as needed, because often unaccounted water is the result of faulty meters, or errors in reading the meters.
3. Ensure that all known uses of water are metered, and conservation measures are implemented as much as possible.
4. Demand side conservation measures include providing public education on water conservation, developing ordinances to ensure conservation, provide water saving devices and implement programs ensuring their use, develop a program for funding replacement of meters and faulty lines.
5. Develop a rate structure that provides incentives for water conservation.
6. Develop a reasonable goal for unaccounted water losses, at the most 10 to 15 percent.

It is imperative that the entities strive to maintain an efficient system. Reducing losses should result in improved water system performance and reduced water use.



Existing Water Rights

Existing Water Rights Held by Members

CH2M HILL reviewed the Oregon Water Resources Department (OWRD) on-line Water Rights Information System (WRIS - <http://www.wrd.state.or.us/index.shtml>) database records for all of the Permit Numbers supplied for each of the members. CH2M HILL also retrieved and copied all of the available and pertinent (including most transfers and special orders) OWRD Water Rights file information from OWRD for the Permit Numbers. The data are summarized in Table 4-1. A preliminary review of the hard copy file information did not indicate any inconsistencies with the on-line information.

Historical Streamflow and Instream Water Rights

In-stream rights for the Mid-Coast region of Oregon were downloaded from OWRD and reviewed for pertinent streams. A summary of the pertinent instream rights for the project area is included in Table 4-2. Note that although additional instream rights may be found upstream of the member intakes, those instream rights were not included if it was determined that they would not impact this study. Additional detail for each of these rights is provided in Appendix A.

Water Availability Analysis

The water availability analysis hinges on understanding the drought streamflow conditions in the project area. For purposes of this study, the drought streamflow condition was selected to be the 95 percent exceedance flows, which means the streamflows are higher than these drought flows at least 95 percent of the time. The procedure used to estimate these streamflows is described below.

The OWRD Water Availability Report System (WARS) was queried to obtain all available monthly 95 percent exceedance flows and other watershed information for streams in the middle coast basin. Table 4-3 lists the gaged locations found to have 95 percent exceedance flows calculated by OWRD.

The gage locations were mapped using latitude and longitude coordinates obtained from OWRD. The gage locations were plotted on Figure 3-1 of the middle coast basin showing the streams of interest for this particular study.

Because most of the streams in this study area are not gaged, or do not have a long enough period of record to calculate the 95 percent exceedance flow, the monthly 95 percent exceedance flows for the streams of interest were estimated using the data from gaged streams with similar hydrologic characteristics, and for which the 95 percent exceedance

flows had already been calculated by OWRD. Characteristics such as location, basin area, rainfall, elevation, and slope were used to evaluate the similarity of stream basins.

To estimate the 95 percent exceedance flow for an ungaged stream (or one where data were insufficient to complete the required statistical analysis), a gage transfer was performed using a nearby hydrologically similar gaged stream. The monthly 95 percent exceedance flows for the ungaged stream were then adjusted based on area and precipitation to obtain the estimated 95 percent exceedance flow for that stream. Rainfall and basin area information were based on estimates provided by others as used in a previous study entitled *Long-Range Water Supply- A Study of Newport's Water Supply and the Potential for Future Regionalization of Water Supplies* (Fuller & Morris, June 1997). An example of the gage transfer calculation is as follows:

$$\begin{array}{rclcl} \text{Ungaged 95\%} & & \text{Gaged 95\%} & & \text{Ungaged} & & \text{Ungaged Basin} \\ \text{Exceedance Flow} & = & \text{Exceedance Flow} & * & \frac{\text{Basin Area}}{\text{Gaged}} & * & \frac{\text{Rainfall}}{\text{Basin Rainfall}} \end{array}$$

This calculation was repeated for each month to obtain the monthly 95 percent exceedance flow for the streams of interest where data were insufficient to do the required statistical analysis. The calculations can be found in Table 4-4.

Table 4-1 Rocky Creek Regional Water Supply Project Existing Water Rights and Permits												
Held By	Name in OWRD Records	Application No.	Permit No.	Certificate No.	Status	Stream > Trib To per OWRD Records	Priority Date	Quantity	Remarks	In-Stream Rights per OWRD Records	Status/ Comments	
Newport	City of Newport	S 72	S 20	1012	Non-Cancelled	Blattner CR > Big CR	05/10/1909	0.5400CFS		NO		
	City of Newport	S 11156	S 7722	9127	Non-Cancelled	Big CR/Tribs > Pacific Ocean	10/27/1926	10.0000CFS	Rate: 1/80	YES		
	Agate Beach Water District	S 16844	S 12609	28003	Non-Cancelled	Little CR > Pacific Ocean	04/17/1937	0.2500CFS		NO		
	City of Newport	S 8970	S 5882	8603	Non-Cancelled	Nye CR > Pacific Ocean	05/14/1923	1.5000CFS		NO		
	City of Newport	S 9224	S 6197	9113	Non-Cancelled	Nye CR > Pacific Ocean	10/15/1923	0.7000CFS		NO		
	City of Newport	S 9221	S 6194	9112	Non-Cancelled	Section Line CR > Yaquina Bay	10/15/1923	0.1000CFS		NO		
	South Beach Water District	S 28792	S 23106	27683	Non-Cancelled	Unn STR > Yaquina Bay	09/18/1953	0.4000CFS				
	City of Newport	S 44381	S 33151	57650	Non-Cancelled	Jeffries CR > Big CR	01/09/1968	0.4000CFS		NO		
	City of Newport	R 26260	R 1236	21358	Non-Cancelled	Big CR > Pacific Ocean	08/01/1951		200.0000AFT	Related Documents: P-20703	YES	
	City of Newport	S 26388	S 20703	21357	Non-Cancelled	A Reservoir > Big CR	08/31/1951		200.0000AFT	Related Documents: P-R1236	YES	
	City of Newport	R 43412	R 5134	48627	Non-Cancelled	Big CR > Pacific Ocean	See Remarks		345 AFT	Related Documents: P-33127; Priority Dates 310 AFT 3/24/1967 & 35 AFT 6/5/1968	YES	
	City of Newport	S 43413	S 33127	48628	Non-Cancelled	Big CR Res 2 > Big CR	See Remarks		345 AFT	Related Documents: P-R5134; Priority Dates Priority Dates 310 AFT 3/24/1967 & 35 AFT 6/5/1968	YES	
	City of Newport	R 52124	R 6171		Non-Cancelled	Big CR enlargement Res 2 > Pac Ocn.	06/27/1974		625.0000AFT	Related Documents: P-R5134, P-38220	YES	
	City of Newport	S 52204	S 38220		Non-Cancelled	Big CR Res 2 > Big CR	07/19/1974		625.0000AFT	Related Documents: P-R6171	YES	
	City of Newport	S 39121	S 29213		Non-Cancelled	Siletz R > Pac Ocn	09/24/1963	6.0000CFS		Siletz bay > Pac Ocn NO		
Lincoln City	Oceanlake Water District	S 14891	S 11506	14366	Cancelled	Rock CR > Devils L	03/28/1933	0.2000CFS		SP ORD V49 P196	YES	
	City of Oceanlake	S 22462	S 20179	21779	Non-Cancelled	Rock CR > Devils L	See Remarks	1.5000CFS		Priority Date & POD: 0.75 CFS 4/22/1947 & 0.75 CFS 7/18/1949 @ 7S 10W 7NESE; 0.75 CFS 4/22/1947 & 0.75 CFS 7/18/1947 @ 7S 11W 12SWNE	YES	
	Taft Nelscott Delake Water District	S 15555	S 11661	12120	Non-Cancelled	Erickson CR > Schooner CR	09/28/1934	0.8900CFS		Other Limits: Towns of Taft, Nelscott, Delake, Roosevelt	NO	
	Cutler City Water District	S 19083	S 14677	22259	Non-Cancelled	Gordey CR > Drift CR	11/15/1940	0.5000CFS			NO	
	Cutler City Water District	S 20903	S 16370	22260	Non-Cancelled	Gordey CR > Drift CR	06/11/1945	0.5000CFS			NO	
	City of Lincoln City	S 22866	S 18293		Non-Cancelled	N. & S. Fork Schooner CR > Siletz Bay	10/14/1947	7.0000CFS		SP OR V52 P63 Related Document: Permit-37605; T-7841, T-7842	NO	
	City of Lincoln City	S 50011	S 37605		Non-Cancelled	N. & S. Fork Schooner CR > Siletz Bay	01/29/1973	3.5000CFS		SP OR V52 P63 Related Document: Permit-18293; T-7841, T-7842	NO	
	City of Lincoln City	S 63608	S 46867		Non-Cancelled	Schooner CR > Siletz Bay	06/08/1982	6.0000CFS		Related Documents: P-G9827	YES	
KGL	Kernville Gleneden Beach Lincoln Beach Water Dist.	S 39298	S 29267		Non-Cancelled	Drift Creek > Siletz Bay	12/10/1963	3.0000CFS		YES	A claim of beneficial use for 1.60 csf was submitted to WRD in February 2000. A permit extension for the remaining 1.4 csf was submitted in February 2000.	
	Kernville Gleneden Beach Lincoln Beach Water Dist.	S 46929	S 35106		Non-Cancelled	Drift Creek > Siletz Bay	04/30/1970	4.0000CFS		YES	A permit extension for 4.0 csf was filed in February 2000.	
						Unn STR > Drift Creek					A permit application for this source was filed in March 2000 for 2.0 cfs. Its purpose is to substitute for other rights during high turbidities in the winter. It will not increase the Districts total quantity of rights.	
Depot Bay	Depoe Bay Water District	S 41246	S 30618	41346	Non-Cancelled	see comments	08/19/1965	0.5600CFS		Source & Quantity: 0.56 CFS from N Depoe Bay CR > Depoe Bay & 0.56 CFS from A Reservoir > N. Depoe Bay CR		
	Depoe Bay Water District	R 41245	R 4605	41345	Non-Cancelled	Unn STR > N Depoe Bay CR	08/19/1965		8.6600AFT	Related Documents: P-30618		
	Depoe Bay Water District	S 52553	S 42830	64894	Non-Cancelled	S Depoe Bay CR > Depoe Bay CR	10/31/1974	0.5000CFS		Note: Certificate Date 1/1/1801	NO	
	City of Depoe Bay	S 69800	S 50604		Non-Cancelled	S Depoe Bay CR > Depoe Bay CR	01/05/1989	2.0000CFS			NO	
Seal Rock	Seal Rock Water District	S 26489	S 26489	32199	Non-Cancelled	Hill CR > Pacific Ocean	10/01/1959	0.4000CFS			NO	
	Seal Rock Water District	S 50094	S 40277		Non-Cancelled	Siletz R > Pac Ocn	02/28/1973	2.6000CFS			Siletz bay > Pac Ocn NO	
	Seal Rock Water District	S 50269	S 43196		Cancelled	Drift Creek > Alsea R	05/04/1978	10.0000CFS		SP ORD V49 P411	YES	
Siletz	City of Siletz	S 20172	S 15718M	22447	Non-Cancelled	Unn Stream > Siletz R	03/23/1944	0.5000CFS				
	U.S Public Housing	S 21217	S 16630	15803 S	Non-Cancelled	Unn Stream > Siletz R	10/11/1945	3.0000CFS				
	City of Siletz	S 28688	S 22589	27681	Non-Cancelled	Siletz R > Siletz Bay	08/06/1953	0.2500CFS			YES	
	City of Siletz	S 40425 -	S 30209	41548	Non-Cancelled	Tangerman CR > Siletz R	11/12/1964	0.4400CFS		Related Documents: P-R4538; Alternate Source: Reservoir > Tangerman CR	NO	
	City of Siletz	R 40545-	R 4538	41547	Non-Cancelled	Tangerman CR > Siletz R	01/27/1965		2.0000AFT	Related Documents: P-30209	NO	
	City of Siletz	S 68639	S 49649		Non-Cancelled	Siletz R > Pac Ocn	12/20/1985	1.0000CFS			Siletz bay > Pac Ocn NO	
	Tribes							0.26 CFS		Per Jim Fuller		

Held By	Name in OWRD Records	Application No.	Permit No.	Certificate No.	Status	Stream > Trib To per OWRD Records	Priority Date	Quantity	Remarks	In-Stream Rights per OWRD Records	Status/ Comments
Toledo	City of Toledo	S 1197	S 709	905 s	Non-Cancelled	Mill CR > Yaquina R	01/14/1911	5.0000CFS		YES	No Diversion
	City of Toledo	S 6531	S 4085	9040	Non-Cancelled	Mill CR > Yaquina R	05/15/1919	10.0000CFS		YES	No Diversion
	City of Toledo	S 9958	S 7191	9047	Non-Cancelled	Unn Str > Mill CR	12/22/1924	0.7500CFS			
	City of Toledo	S 9959	S 7192	9048	Non-Cancelled	Mill CR > Yaquina R	12/22/1924	0.7500CFS		YES	
	City of Toledo	R 33458	R 5132	42193	Non-Cancelled	Mill CR > Yaquina R	11/09/1959	250.0000AFT		YES	
	City of Toledo	S 33459	S 33124	42194	Non-Cancelled	Mill CR > Yaquina R	11/09/1959	250.0000AFT		YES	
	City of Toledo	S 16771	S 12553	14396	Non-Cancelled	Siletz R > Siletz Bay	02/12/1937	1.7500CFS		YES	
	City of Toledo	T 7480	S 9370		Non-Cancelled	Siletz R > Siletz Bay	10/24/1929	4.0000CFS	Primary IM; Alternate MU	YES	Status Unknown
	City of Toledo	S 58445	S 44083		Non-Cancelled	Siletz R > Pac Ocn	03/23/1979	4.0000CFS		Siletz bay > Pac Ocn NO	Status Unknown
Waldport	City of Waldport	S 12728	S 9114	11357	Non-Cancelled	Weist Cr > Eckman SL	05/16/1929	0.5000.CFS		NO	
	City of Waldport	S 14279	S 10315	11150	Non-Cancelled	Weist Cr > Eckman SL	08/31/1931	0.2300CFS		NO	
	City of Waldport	S 23660	S 18654		Non-Cancelled	Eckman CR > Alsea Bay	03/18/1949	2.0000CFS		NO	
	City of Waldport	S 29939	S 23587		Non-Cancelled	Eckman CR > Alsea Bay	04/25/1955	2.0000CFS		NO	
	City of Waldport	S 39480	S 30624		Non-Cancelled	Darkey Cr > Alsea R	02/04/1964	1.5000CFS		NO	
SWLCWD	Southwest Lincoln County Water District	S 20898	S 16464	29023	Cancelled	Star Cr > Pac Ocn	06/08/1945	0.3000CFS		NO	
	Southwest Lincoln County Water District	S 20897	S 19165	29022	Cancelled	Big CR > Pacific Ocean	06/08/1945	0.3000CFS		YES	
	Southwest Lincoln County Water District	S 42767	S 31979		Non-Cancelled	Vingie Cr > Pac Ocean	09/06/1966	0.3000CFS		NO	SP OR V52 P564
	Southwest Lincoln County Water District	S69804	S52498		Non-Cancelled	Vingie Cr > Pac Ocean	01/13/1989	1.000CFS*	0.6 CFS 7/1 through 7/31. T-7862; SP OR V52 P564	NO	
	Southwest Lincoln County Water District	S 48301	S 36270		Non-Cancelled	Dicks Fork Big CR > Big CR	06/07/1971	0.4000CFS		NOT FOUND	
Yachats	Yachats Water District	S 15440	S 11586	14104	Non-Cancelled	Cape CR > Pac Ocean	07/21/1934	0.4900CFS		YES	
	Yachats Water District	S 20951	S 17333	22933	Non-Cancelled	Reedy CR > Yachts R	07/09/1945	2.0000CFS		NO	
	City of Yachats	S 38383	S 29018		Non-Cancelled	Salmon CR > Yachts R	See Remarks	2.0000CFS	Related Documents: 11966; Priority: 1.0 CFS 8/22/1963 & 1.0 CFS 6/26/1963	NO	
	Yachats Water District	S 47457	S 35219		Cancelled	Marks Cr > Yachats R	Cancelled	3.0000CFS	Cancelled SP OR V52 P939		
	City of Yachats	S 69856	S 51190		Cancelled	Yachats R > Pacific Ocean		2.0000CFS	2.0 CFS of which 1.0 CFS is not subject to instream water right certificate 59608 or min. stream flows with a date of priority of March 26, 1974. InStream Cert 59608; T-7589, T-7967; Supercedes P-51124; SP OR V50 P578, V52 P767, V53 P265	YES	
	City of Yachats	S69856	S53471		Non-Cancelled	Yachats R > Pacific Ocean	03/20/1998 & See Remarks	2.0 CFS	1.0 CFS Not Subject to CERT 59608 (an instream right) or Priority 3/26/1974. Related Documents: Instream Certs 59739, 59608, 69608, 73161; T7967, T7589. Supercedes P-51190; SP OR V52 P767, V53, P265	YES	

Table 4-2 Rocky Creek Regional Water Supply Project Instream Rights									
Stream Name	Stream Code	Certification Number	Priority Date	Upstream Mile	Downstream Mile	Condition Code	Purpose	To be maintained ¹	Comment
CAPE CR > PACIFIC OCEAN	181170	59551	03/26/1974	0	0	1	For supporting aquatic life and recreation	In Cape Creek at or near its mouth (SW1/4, S34, T16S, R12W)	
CAPE CR > PACIFIC OCEAN	181170	72898	03/25/1991	0	0	0	For anadromous and resident fish rearing	Cape Creek from an unnamed tributary (SWNE, S32, T16S, R11W) to the mouth at river mile 0.0 (S34, T16S, R12W)	
DRIFT CR > SILETZ BAY	1806100020	59580	03/26/1974	3	0	41	For supporting aquatic life and recreation	In Drift Creek from its confluence with Gordey Creek (NE1/4, S1, T8S, R11W) to the mouth of Drift Creek	4 cfs is reserved for municipal purposes. EPD
DRIFT CR > SILETZ BAY	1806100020	59728	07/12/1966	2.5	0	3	For supporting aquatic life and recreation	In Drift Creek from its confluence with Gordey Creek (NE1/4, S1, T8S, R11W) to the mouth of Drift Creek	4 cfs is reserved for municipal purposes.
DRIFT CR > ALSEA R	18094000400090	59579	03/26/1974	4.9	0	38	For supporting aquatic life and recreation	In Drift Creek from its confluence with Wheelock Creek (NW1/4, S24, T13S, R11W) to its confluence with the Alsea River (NE1/4, S27, T13S, R11W)	
DRIFT CR > ALSEA R	18094000400090	59727	07/12/1966	4.9	0	3	For supporting aquatic life and recreation	In Drift Creek from its confluence with Wheelock Creek (NW1/4, S24, T13S, R11W) to its confluence with the Alsea River (NE1/4, S27, T13S, R11W)	
DRIFT CR > ALSEA R	18094000400090	59742	07/12/1966	22	0	3	For supporting aquatic life and recreation	In Drift Creek and its tributaries above USGS Gage Number 14-3067, (NW1/4, S24, T12S, R10W), measured at the gage and maintained to the mouth.	
MILL CR > YAQUINA R	18081000500200	73142	03/25/1991	0	0	0	For anadromous and resident fish rearing	Mill Creek from an unnamed tributary (SENE, S33, T11S, R10W) to the mouth at river mile 0.0 (NENW, S28, T11S, R10W)	
ROCK CR > DEVILS L	18060000100040	73162	11/19/1991	0	0	0	For anadromous and resident fish rearing	Rock Creek from the falls (NENE, S12, T7S, R11W) to the mouth at River Mile 0.0 (S14, T7S, R11W).	
Schooner	1806100010	59601	11/03/1983			1	For supporting aquatic life and minimizing pollution	Have priority over the right to use water for human consumption, livestock consumption, or the use of waters legally released from storage.	
SILETZ R > SILETZ BAY	1806100030	67712	07/12/1966	42.6	0	40	For supporting aquatic life and recreation	In the Siletz River from the USGS Gage 14-3005 at stream mile 42.6 (SW1/4, S11, T10S, R10W) to the mouth of the Siletz River.	EPD
SILETZ R > SILETZ BAY	1806100030	67713	03/26/1974	42.6	0	38	For supporting aquatic life and recreation	In the Siletz River from the USGS Gage No. 14-3055 at Stream Mile 42.6 (SW 1/4, S11, T10S, R10W) to the mouth of the Siletz River.	EPD
YACHATS R > PACIFIC OCEAN	181000	59608	03/26/1974	5	0	43	For supporting aquatic life and recreation	In the Yachats River from its confluence with Beamer Creek, (SW 1/4, S32, T14S, R11W) to the mouth of the Yachats River.	EPD- Mun. Res 1 cfs below river mile 5
YACHATS R > PACIFIC OCEAN	181000	59609	03/26/1974	8.8	0	38	For supporting aquatic life and recreation	In the Yachats River from its confluence with the North Fork of the Yachats River (SW 1/4, S35, T14S, R11W) to its confluence with Beamer Creek (SE 1/4, S32, T14S, R11W)	EPD
YACHATS R > PACIFIC OCEAN	181000	59739	07/12/1966	5	0	3	For supporting aquatic life and recreation	In the Yachats River from State Engineer temporary gage at river mile 5 (SW1/4, S32, T14S, R11W) to the mouth.	1 cfs reserved for muni purposes below rm 5
YACHATS R > PACIFIC OCEAN	181000	59740	07/12/1966	8.8	0	3	For supporting aquatic life and recreation	In the Yachats River from its confluence with the North Fork of the Yachats River (SW 1/4, S35, T14S, R11W) to its confluence with Beamer Creek (SE 1/4, S32, T14S, R11W)	1 cfs reserved for muni purposes below rm 5
YACHATS R > PACIFIC OCEAN	181000	73160	03/25/1991	15.2	8.8	0	For anadromous and resident fish rearing	Yachats River from an unnamed tributary at river mile 15.2 (NESE, S12, T15S, R11W) to North Fork at River Mile 8.8 (S12, T15S, R11W)	
YACHATS R > PACIFIC OCEAN	181000	73161	03/25/1991	8.8	0	0	For anadromous and resident fish rearing	Yachats River from North Fork at River Mile 8.8 (S12, T15S, R11W) to the mouth at River mile 0.0 (S27, T14S, R12W)	
				1 All locations within the WM (Willamette Meridian)					

TABLE 4-3
 Gaged Locations within the Middle Coast Basin with 95% Exceedance Flows
 Calculated by OWRD
HUC stands for Hydrologic Unit Code

Location with 95% Exceedance Flows	HUC
Schooner Cr Nr Lincoln City, OR	14303950
Big Cr Nr Roosevelt Beach, OR	14306900
Rock Cr Nr Lincoln City, OR	14303800
Siletz R At Siletz, OR	14305500
Mill Cr Nr Toledo, OR	14306036
Sunshine Cr Nr Valsetz, OR	14304350
Salmon R Nr Otis, OR	14303750
S Fk Alsea R Nr Alsea, OR	14306200
N Fk Alsea R At Alsea, OR	14306100
N Fk Beaver Cr Nr Seal Rock, OR	14306040
Needle Br Nr Salado, OR	14306700
Flynn Cr Nr Salado, OR	14306800
Five Rivers Nr Fisher, OR	14306400
Fall Cr Nr Alsea, OR	14306300
E Fk Lobster Cr Nr Alsea, OR	14306340
Drift Cr Nr Salado, OR	14306600
Deer Cr Nr Salado, OR	14306810
Big Rock Cr Nr Valsetz, OR	14304850
Alsea R Nr Tidewater, OR	14306500

Table 4-4

Rocky Creek Regional Water Supply Project Estimated 95% Exceedance Flows.

Stream	Drainage Area (Square Miles) ¹	Average Precipitation (Inches) ¹	Gage Used for 95% Exceedance Estimates ²	Estimated 95% Exceedance Flow (cfs)											
				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Rock Creek	3.7	85	14303800	5.9	9.9	8.7	8.7	7.0	5.2	4.2	3.0	1.2	2.3	3.8	10.1
Erickson Creek	2		14303800	3.2	5.3	4.7	4.7	3.8	2.8	2.3	1.6	0.6	1.3	2.1	5.5
Gordey Creek	1.1	85	14303800	1.8	2.9	2.6	2.6	2.1	1.6	1.2	0.9	0.3	0.7	1.1	3.0
South Fork Schooner	3.1	105	14303950	8.7	10.6	11.0	10.5	7.6	4.0	3.1	2.6	2.0	2.3	5.9	11.9
Schooner Creek	15.5	95	14303950	39.4	47.8	49.5	47.4	34.5	18.3	14.2	11.6	9.2	10.3	26.5	54.0
Drift Creek	38	100	14303950	101.7	123.4	127.8	122.3	88.9	47.2	36.7	30.0	23.6	26.7	68.4	139.2
North Depoe Bay Creek	0.83	65	14303800	1.0	1.7	1.5	1.5	1.2	0.9	0.7	0.5	0.2	0.4	0.7	1.7
South Depoe Bay Creek	3.97	65	14303800	4.9	8.1	7.1	7.1	5.7	4.3	3.4	2.5	1.0	1.9	3.1	8.3
Rocky Creek	5.35	65	14303800	6.5	10.9	9.6	9.6	7.7	5.8	4.6	3.3	1.3	2.6	4.2	11.2
Big Creek	3.3	65	14306040	6.8	10.0	7.6	4.6	3.2	1.8	1.3	0.9	0.8	1.1	1.9	6.7
Siletz River	200	124	14305500	609.0	651.1	693.2	557.2	331.5	184.6	111.2	73.2	64.7	80.2	333.7	644.6
Weist Creek	0.58	85	14306036	1.1	1.1	1.3	1.1	0.7	0.4	0.2	0.3	0.1	0.1	0.3	0.8
Eckman(Middle Fork)	1.53	85	14306036	2.9	2.9	3.4	3.0	1.8	1.0	0.5	0.9	0.2	0.3	0.7	2.2
Darkey Creek	2.74	90	14306036	5.5	5.5	6.4	5.6	3.4	1.8	1.0	1.7	0.4	0.6	1.3	4.2
Big Cr (North of Yachats)	1.65	90	14306036	3.3	3.3	3.9	3.4	2.0	1.1	0.6	1.0	0.2	0.3	0.8	2.6
Vingle Creek	2.81	90	14306036	5.6	5.7	6.6	5.7	3.5	1.9	1.0	1.7	0.4	0.6	1.4	4.4
Dicks Fork	0.97	90	14306036	1.9	2.0	2.3	2.0	1.2	0.7	0.4	0.6	0.1	0.2	0.5	1.5
Salmon Creek	1.17	93	14306036	2.4	2.4	2.8	2.5	1.5	0.8	0.4	0.8	0.2	0.3	0.6	1.9
Marks Creek	0.54	95	14306036	1.1	1.1	1.3	1.2	0.7	0.4	0.2	0.4	0.1	0.1	0.3	0.9
Yachats River	45	100	14306200	65.2	102.9	116.9	80.9	50.9	26.9	14.2	3.0	7.5	9.6	16.8	35.5
Mill Creek	4.2	85	14306036	7.9	8.0	9.3	8.1	4.9	2.7	1.4	2.5	0.5	0.8	1.9	6.2

¹ Drainage area and precipitation provided by others, and used as basis of results in 'Long-Range Water Supply, A Study of Newport's Water Supply and the Potential for Future Regionalization of Water Supplies. June 1997. Fuller & Morris.

² Hydrologic Unit Codes

Current and Future Water Needs

Current and Projected Water Demands

A safe and reliable water supply is a fundamental part of modern society and an essential element of public health and stable communities. Assuring adequate supplies for the future requires careful consideration of many factors, including:

- Population growth
- Service area growth
- Water use patterns and rates
- Potential for water dependant industry and commercial development
- Public use
- Potential for conservation

Future needs are determined by projecting historical trends, especially population and water use characteristics. However, historical trends are almost never uniform and the planning for water must assume growth on the high side of historical norms to be assured of adequate water supplies.

The goal of this section is to provide population projections and water demands; then compare those demands to water rights and available streamflow supplies to estimate current and future deficits for each member. This section includes an analysis based on one possible scenario for the region based on assumptions of water rights usage and source sharing. Additional discussions with members is required, and more collaboration with permitting agencies on water rights usage and mitigation flows is needed before a final regional supply plan can be developed.

Approach

Existing documents were used in developing the population and water demands of each entity. These sources included Water Master Plans, water billing records, water treatment plant operations records, and conservation plans and ordinances. These preliminary data have been presented to Council Technical Advisory Committee members for review and validation. At this time, these data should be considered draft and under review by the members.

Assumptions

Information used in developing population and demand data for each member are as listed:

- The most up to date planning documents (Water Master Plans) if available contain the most accurate data for developing population projections and water demands, as modified by recent conversations with each member
- Land use planning or county comprehensive plans were not evaluated in developing the population projections, except as they might have been used in developing the original data provided by each member
- Data for Depoe Bay and the miscellaneous categories were not reviewed or updated, since they are currently not members of the Council.

Population Projections

Table 5-1 summarizes the projected equivalent population of the project members as well as Depoe Bay and smaller communities not yet participating in the project. These nonproject members are included in the analysis because a regional system stands to potentially benefit the entire region, not just those who are included in the Central Coast Water Council at this time.

Current and projected equivalent populations were obtained either from interviews with members themselves, from members' up-to-date water master plans, or estimated based on information provided by the members. With the exception of the City of Newport, all members have relatively current water master plans.

Developing representative population estimates for the mid-coast region of the state is challenging, given the variations throughout the year primarily caused by tourism. Equivalent populations are presented in Table 5-1, since in some cases the populations were derived from the equivalent dwelling units, a common practice in that area. Where provided, the peak, as well as off-peak populations, are given in Table 5-1. For most of the members, the peak season is the summertime, when tourism is at its highest. As shown on the table, an equivalent population of 136,000 is anticipated in year 2050 for the members. Refer to the table for specific information for each member.

Table 5-2 summarizes the population growth factors, which were either provided in the master plan documents or were calculated from population projection estimates provided by the members. Current growth rates range from 3.3 percent to 1.7 percent for the members [*note: Siletz rate appears high- needs verification with Siletz*]. The average weighted growth rate for the members ranges from 2.6 percent currently to 2.3 percent in year 2050. The growth rate for the City of Waldport is based on a medium growth rate anticipated in the Water Source Siting Study (Dyer, 1999).

TABLE 5-1

Existing and Projected Equivalent Population for Project Members and Others

Note that although Depoe Bay and the Miscellaneous (Otter Rock, etc) are not members of the CCWC, they are included here for preliminary discussions.

Year	2000	2010	2020	2025	2030	2040	2050	Comments
Lincoln City	7,028	8,567	10,443	11,212	12,036	13,873	15,989	Provided by Lincoln City.
KGL	4,490	5,473	6,672	7,366	8,133	9,914	12,085	Provided by CH2M HILL for KGL.
Depoe Bay (w/ Miroco)	2,700	3,196	3,783	4,115	4,477	5,196	6,030	Not updated at this time.
Newport	9,532	12,131	15,437	17,415	19,646	25,002	31,817	Developed based on Year 2000 census, and 2.44% AAGR, per Mike Schoberg/Newberg.
Seal Rock	5,543	7,669	10,611	12,481	14,681	20,312	28,104	City of Toledo, Oregon, Water Master Plan, February 1998. KPFF Consulting Engineers. Based on 1998 population.
Waldport	1,986	2,669	3,587	4,158	4,821	6,478	8,706	Population provided by Waldport for Year 2000. Water Source Siting Study, May 1999. Dyer Partnership. Section 4, Table 4.2.1, medium growth rate of 3% used for future growth projections.
SWLCWD	1,984	2,457	3,058	3,279	3,517	4,044	4,651	Population based on off-peak estimates, developed by CH2M HILL from information provided in the Water System Development and Conservation Plan (SWLCWD, Revised July 2001), p 4, comparing the year 2001 number of metered services to population.
Yachats - off peak	1,293	1,655	2,119	2,397	2,716	3,487	4,477	Population based on off-peak estimates, provided in the City of Yachats Water Master Plan, June 2001. Dyer Partnership.[Equivalent Population]
Yachats - peak	1,870	2,394	3,064	3,467	3,928	5,043	6,475	Population based on peak estimates, provided in the City of Yachats Water Master Plan, June 2001. Dyer Partnership.[Equivalent Population]
Toledo	3,781	4,845	6,208	7,027	7,954	10,192	13,059	City of Toledo, Oregon, Water Master Plan, February 1998. KPFF Consulting Engineers. Based on 1998 population.
Siletz	1,000	1,961	2,475	2,667	2,873	3,335	3,870	Population projections provided by the City of Siletz.
Misc (Otter R,Siletz & Alsea Rivers, etc)	1,700	2,285	3,070	3,559	4,126	4,789	5,558	Not updated at this time.
TOTAL	41,614	53,645	68,408	76,747	86,193	108,178	136,344	This total includes the old Depoe and Misc. populations.

TABLE 5-2

Population Growth Factors Used in Developing Population Projections

Except as noted, in most cases these growth factors were generated from the equivalent population projections used in Table 5-1.

Years of Growth	2000 to 2010	2010 to 2020	2020 to 2025	2025 to 2030	2030 to 2040	2040 to 2050	Comment
Lincoln City	2.00	2.00	1.43	1.43	1.43	1.43	City of Lincoln City, Water Master Plan Update. August 2001. CH2M HILL.
KGL	2.00	2.00	2.00	2.00	2.00	2.00	Kernville-Gleneden Beach- Lincoln Beach Water District Master Plan. August 2000. CH2M HILL.
Depoe Bay (w/ Miroco)	1.70	1.70	1.70	1.70	1.50	1.50	Not updated.
Newport	2.44	2.44	2.44	2.44	2.44	2.44	Year 2000 based on 2000 census results. Population growth rate is from the Wastewater Facilities Plan- 1995 Update, Mary 1996. Fuller & Morris Engineering/CH2M HILL. Approved by Mike Shoberg/Newport, as high, but good estimate for peak demands.
Seal Rock	3.30	3.30	3.30	3.30	3.30	3.30	Assuming the 1998 population for SRWD is 5648 per the Toledo Master Plan [unclear if 1998 or 1995- we assumed 1998]
Waldport	3.00	3.00	3.00	3.00	3.00	3.00	Medium Growth Rate, from Water Source Siting Study (Dyer, 1999).
SWLCWD	2.16	2.21	1.41	1.41	1.41	1.41	Based on off-peak population.
Yachats	2.50	2.50	2.50	2.53	2.53	2.53	Based on off-peak population.
Toledo	2.51	2.51	2.51	2.51	2.51	2.51	Based on population data provided by the City of Toledo.
Siletz	6.97	2.36	1.51	1.50	1.50	1.50	Based on data provided by the City, however the first 10 years growth rate appears to be high compared with other members.
Misc (OtterR, Siletz & Alsea Rivers, etc)	3.00	3.00	3.00	3.00	1.50	1.50	Not updated.
Resulting Weighted Average		2.57	2.46	2.33	2.35	2.30	2.34 This weighted average includes the old Depoe and Misc. that have not been updated.

Water Demands

Water demands are projected using water use rates and peak day peaking factors shown in Table 5-3, in conjunction with the projected populations provided in Table 5-1. In most cases, the members also provided projected water demands, which were checked to verify these estimates.

The water use rates average 138 gallons per capita per day (gpcd) for the members overall. The rates range from a high of 284 gpcd for the City of Lincoln City and a low of 86 gpcd for Seal Rock Water District and the City of Siletz. Additional details for each member's estimate are provided under "Comments" in Table 5-3. It should be noted that the 284 gpcd used for the City of Lincoln City was provided in the Water Master Plan Update (CH2M HILL, 2000), and is high because it is based on in-city population and entire service area (City plus outside users) demands.

TABLE 5-3
Water Use Rates and Peak Day Peaking Factors Used in Projecting Future Water Demands

	Annual Average Water Use Rates (gpcd)	Peak Day Peaking Factor (peak day/average day)	Comments
Lincoln City	284	1.89	City of Lincoln City Water Master Plan Update, August 2001. CH2M HILL. The Master Plan used the highest per capita usage from 1995 to 1999, which occurred in 1997. The MDD/ADD peaking factor of 1.89 occurred in 1998.
KGL (w/ Siletz WD)	110	1.70	[Ongoing review]
Depoe Bay (w/ Miroco)	110	2.00	Not updated.
Newport	241	1.93	Year 1996 operations records were used to determine the gpcd; year 2000 operations records were used to determine the peaking factor.
Seal Rock	86	2.00	Per Herbert Jennings (City of Toledo) via phone as calculated from sales records.
Waldport	144	1.89	Assume historical peaking factor from 1998 is appropriate to use (Dyer, 1999). Water usage rate is based on year 2000 operations records, at the raw water meter (104.1 MG/population of 1986).
SWLCWD	88	1.40	Calculated from year 2000 data provided by SWLCWD, with the estimated population of 1984 as described above. Peaking Factor is estimated using the PDD provided by SWLCWD for year 2010, and our estimated population for year 2010.
Yachats	154	1.74	City of Yachats Water Master Plan (Dyer, 2001)
Toledo	110	2.00	Per City of Toledo via phone after data sheets were submitted, as calculated from sales records.

TABLE 5-3
 Water Use Rates and Peak Day Peaking Factors Used in Projecting Future Water Demands

	Annual Average Water Use Rates (gpcd)	Peak Day Peaking Factor (peak day/average day)	Comments
Siletz	86	2.20	Year 2000 demands with year 2001 population (provided by the City) were used to estimate per capita demand and peak day factor.
Misc. (Otter R., Siletz & Alsea Rivers, etc)	110	2.00	Not updated.
Overall Project Average	138		

The total annual demand projected for each member is summarized in Table 5-4. These demands are based on the projected populations provided in Table 5-1 and the water use rates from Table 5-3. Current annual water use is approximately 2,500 million gallons (MG) and future at year 2050 is projected to be about 7,800 MG.

Table 5-5 includes projections for the average day demands at 21.4 million gallons per day (mgd) in Year 2050. As shown in Table 5-6, the projected peak day demand is 41.4 mgd, which results in a regional peaking factor (peak day demand divided by average day demand) of about 1.93.

The following notes are from individual discussions with the different entities, and data that they provided.

City of Lincoln City

The largest user for the City of Lincoln City is Shilo Inn, at 2 percent of the annual total water demand. The City has no wholesale customers. They do serve areas outside the City limits on a retail basis. Between 1998 and 2000, the City diverted up to 4.32 cubic feet per second (cfs) from Schooner Creek, and 1.87 cfs from the infiltration gallery at the treatment site.

City of Newport

The City of Newport has a large tourist industry that fluctuates seasonally. In addition, industrial demand can vary significantly from one year to the next, depending on the shrimping and other fisheries activities. The City has several water rights that are unavailable for their use at this time.

City of Toledo

The City of Toledo serves two wholesale customers, Seal Rock Water District and Wright Circle, year-round. The current annual water demand for these customers is about 150.6 MG. This discrepancy is due in part because the data in Table 5-4 are based on population and per capita use rates from the Master Plan and from discussions with the City of Toledo (*Note that we are still working with the City and Seal Rock on refining these demands*).

Georgia Pacific (GP) currently uses the City's water supply for some minor uses such as fire protection, restrooms, etc. Historically GP used up to 2 mgd of the City's supply for industrial demand.

City of Waldport

Historical population for the City of Waldport has stayed around 2,000 residents. The year 2000 census identified 2,050 residents. Average annual day demands have decreased from 0.35 mgd in 1997 to 0.285 mgd in year 2000. The City has no outside service or wholesale customers.

City of Yachats

The City of Yachats has a residential population of around 600 to 700 people. For purposes of determining the peak water demands, the peak equivalent population was used in this study. The City has five current water rights, on Reedy Creek, Cape Creek, Salmon Creek, and Yachats River. Two water rights have been used in the last 3 years year-round (Reedy Creek and Salmon Creek).

City of Siletz

- Historical population was not provided.
- Total annual water demand ranged from 40 to 47.7 MG between 1996 and 2000.
- Maximum historical peak day demand between 1996 and 2000 was reported at 0.23 mgd in 1999.
- The City has two outside service and wholesale customers (1) Confederated Tribes of Siletz, and (2) Camp 12, both of which are served year-round.
- Largest user is Confederated Tribes of Siletz, at 1 percent of annual total water demand.

Kernville-Gleneden Beach-Lincoln Beach Water District

On average, the District produced about 480,000 gpd in 1999. The total production was 175 MG during the year. On a peak day, the District produced over 800,000 gpd. In recent years, the District has experienced water demand growing at about 2 percent annually. KGL's largest historical user of water has been Salishan Lodge, at 3 percent of annual total water demand. Worldmark Condominiums is projected to use 3.25 percent in year 2000, with future use uncertain. KGL provides service to Lower Siletz Water District, which is projected to have a total annual demand of 3.4 MG in 2001, delivery year-round.

Southwest Lincoln County Water District

Southwest Lincoln County Water District has a highly-variable equivalent water service population. At any time, up to 50 percent of the homes in the District could be empty. The District's largest water user is Angel Job Corps, with about 7.9 percent of total annual water demand currently, and projected to be 5.2 percent in 2050. All water uses in the District are metered.

The District has a 4 inch intertie with the City of Yachats, which is operational now (*verify with SWLCWD*). The District and City of Yachats have a "Water Emergency Mutual Aid

Agreement," for the purposes of water emergencies. The District has also provided water to the City of Waldport twice in the last 8 years. However, the District could not easily receive water in return because of system pressure constraints.

TABLE 5-4
 Current and Projected Total Annual Demands Projected for Each Member (Millions Gallons- MG)
 Note that these demands are based on the projected populations in conjunction with water use rates.

Year	2000	2010	2020	2025	2030	2040	2050
Lincoln City	680	888	1,083	1,162	1,248	1,438	1,657
KGL	180	220	268	296	327	398	485
Depoe Bay (w/ Miroco)	108	128	152	165	180	209	242
Newport	838	1,067	1,358	1,532	1,728	2,199	2,799
Seal Rock	174	241	333	392	461	638	882
Waldport	104	140	189	219	253	341	458
SWLCWD	64	79	98	105	113	130	149
Yachats	73	93	119	135	153	196	252
Toledo	152	195	249	282	319	409	524
Siletz	41	71	88	94	101	116	134
Misc. (Otter R., Siletz & Alsea Rivers, etc.)	68	92	123	143	166	192	223
TOTAL	2,482	3,213	4,060	4,525	5,048	6,266	7,805

TABLE 5-5
 Current and Projected Average Day Demand projections for the members in millions gallons per day (mgd)

Year	2000	2010	2020	2025	2030	2040	2050
Lincoln City	1.9	2.4	3.0	3.2	3.4	3.9	4.5
KGL (w/ Siletz WD)	0.5	0.6	0.7	0.8	0.9	1.1	1.3
Depoe Bay (w/ Miroco)	0.3	0.4	0.4	0.5	0.5	0.6	0.7
Newport	2.3	2.9	3.7	4.2	4.7	6.0	7.7
Seal Rock	0.5	0.7	0.9	1.1	1.3	1.7	2.4
Waldport	0.3	0.4	0.5	0.6	0.7	0.9	1.3
SWLCWD	0.2	0.2	0.3	0.3	0.3	0.4	0.4
Yachats	0.2	0.3	0.3	0.4	0.4	0.5	0.7

TABLE 5-5
Current and Projected Average Day Demand projections for the members in millions gallons per day (mgd)

Year	2000	2010	2020	2025	2030	2040	2050
Toledo	0.4	0.5	0.7	0.8	0.9	1.1	1.4
Siletz	0.1	0.2	0.2	0.3	0.3	0.3	0.4
Misc (OtterR,Siletz & Alsea Rivers, etc.)	0.2	0.3	0.3	0.4	0.5	0.5	0.6
TOTAL	6.8	8.8	11.1	12.4	13.8	17.2	21.4

TABLE 5-6
Current and Projected Peak Day Demands for project members in millions gallons per day (mgd)

Year	2000	2010	2020	2025	2030	2040	2050
Lincoln City	3.5	4.6	5.6	6.0	6.5	7.4	8.6
KGL (w/ Siletz WD)	0.8	1.0	1.2	1.4	1.5	1.9	2.3
Depoe Bay (w/ Miroco)	0.6	0.7	0.8	0.9	1.0	1.1	1.3
Newport	4.4	5.6	7.2	8.1	9.1	11.6	14.8
Seal Rock	1.0	1.3	1.8	2.1	2.5	3.5	4.8
Waldport	0.5	0.7	1.0	1.1	1.3	1.8	2.4
SWLCWD	0.2	0.3	0.4	0.4	0.4	0.5	0.6
Yachats	0.5	0.6	0.8	0.9	1.1	1.4	1.7
Toledo	0.8	1.1	1.4	1.5	1.7	2.2	2.9
Siletz	0.2	0.4	0.5	0.6	0.6	0.7	0.8
Misc. (Otter R.,Siletz & Alsea Rivers, etc.)	0.4	0.5	0.7	0.8	0.9	1.1	1.2
TOTAL	13.1	17.0	21.4	23.9	26.7	33.2	41.4

Supply Deficit Analysis

The actual supply deficit that the members may be facing cannot be fully determined without a full biological resource assessment. In the coming year, many more meetings with the TAC, the Council, and the permitting agencies will be necessary to arrive at a better understanding of the true supply deficit facing the members, without the Rocky Creek Regional Water Supply Project.

In order to begin the discussions, proposed scenarios are described below. Scenario 1, which assumes full use of the senior water rights as available under drought conditions with no additional mitigation streamflows, is included in this interim draft report. Scenario 1 will yield the most reliance on existing water rights and the streams from which they are used, and the least reliance on a new regional water supply project.

In discussions with the TAC in the upcoming year, the proposed scenarios that will be discussed and evaluated, in particular with respect to regional source sharing and opportunities for biological resource enhancement, include those shown in Table 5-7.

TABLE 5-7
 Proposed Scenarios for Evaluating Potential Effects from Mitigation Requirements and Source Sharing Opportunities
Note that these scenarios have not been approved by the members; thus are considered draft information.

Scenario	Description of Scenario	
Scenario 1	Use all Senior Rights (Classification A) to their fullest capability. This will show the latest time for constructing Rocky Creek assuming South County interconnections allow necessary transfers to meet member demands in the interim.	
Other scenarios	To be developed with the members of the CCWC.	
Under all scenarios, the full amount of available storage is assumed to be somewhat less than the stored water right, due to assumed siltation rates, and anticipating that Big Cr Res 1 comes offline.		
Available Storage:	330 MG	1013 AF
Actual Stored Rights:	463 MG	1422 AF

The classifications and rankings shown in Table 5-8 will be used in the discussions to evaluate the potential for biological resource enhancement options, and urgency of the regional system. Additional discussions with the TAC and the Council will likely result in modifications to these classifications and rankings.

Comparison of Existing Water Rights to Projected Demands

The results of the analysis based on Scenario 1 are summarized in Table 5-9 and charted graphically in Figure 5-1. The annual deficits anticipated by each member are tabulated, as are the peak day demands not met by the supply available to each member. Based on the assumptions of Scenario 1, under conditions of maximum senior right usage, the potential storage required from Rocky Creek Regional Water Supply Project would be 2,500 acre-feet (815 million gallons). Under other scenarios to be developed in the immediate future, the storage requirements will be greater.

TABLE 5-8

Proposed Classifications and Rankings to Be Used in Developing Scenarios for Evaluating the Regional Plan and Opportunities for Source Sharing and Resource Enhancement

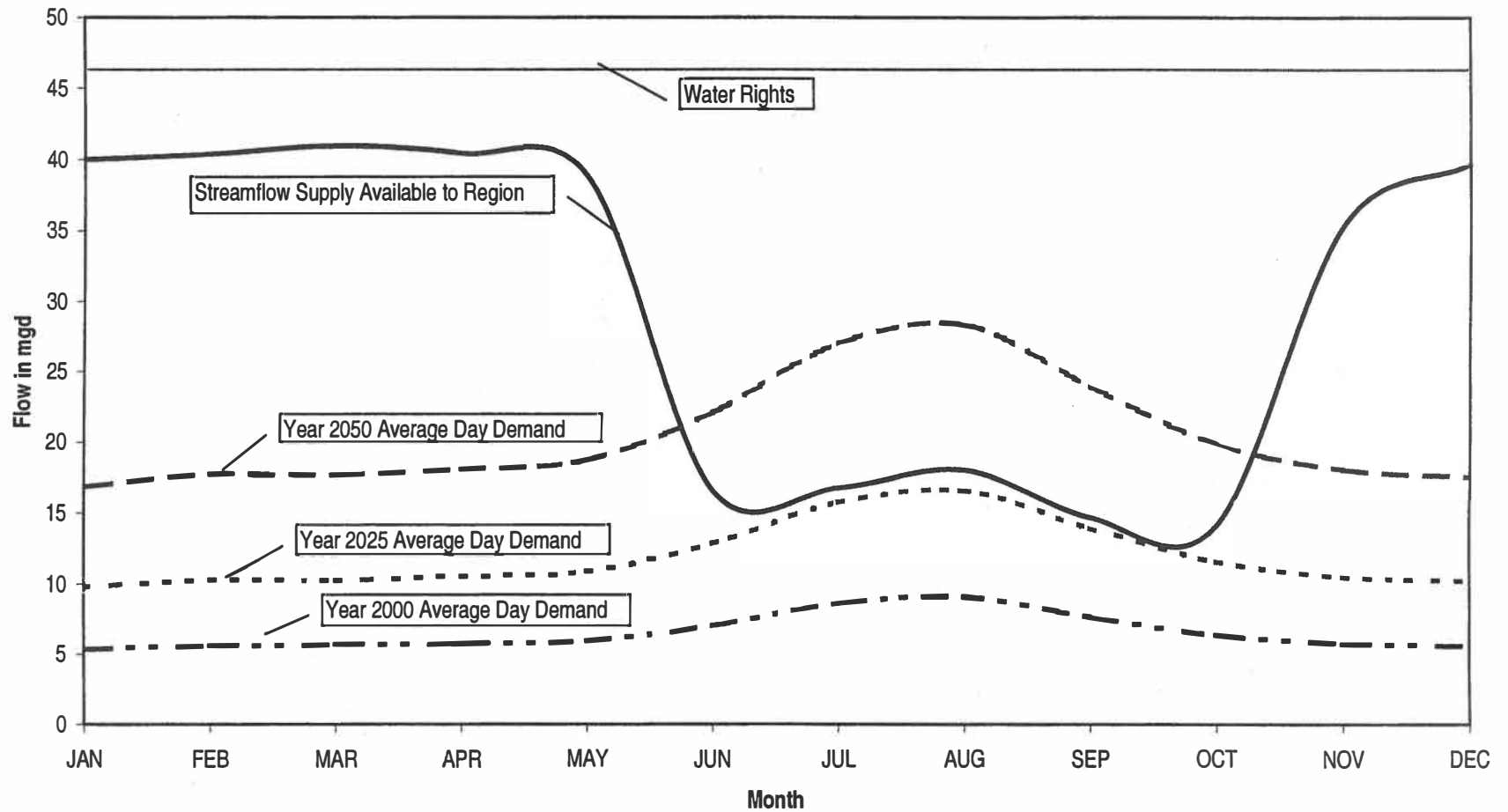
Note that these classifications and rankings are proposed, yet to be reviewed by the TAC or Council.

Classifications Based on Reliability	
A	SR Rights - Maximum use results in least reliance on Rocky Creek
B	SR Rights that are always available (rights less than drought stream flow)
C	SR Rights that are approximately = to lowest stream flows
D	SR Rights that are greater than lowest stream flows and therefore not fully available in summer/drought
E	Rights available from reservoir at whatever rate is necessary to meet demands
E1	Rights that allow use of water entering reservoir, but are not available in drought conditions due to reservoir evaporation.
Proposed Rankings	
I	Absolutely must retain
II	Important but may have to consider leaving some flow in stream
III	Can consider giving them up
IV	No foreseeable use

Deficit Water by Members with Conservation Programs

Future analyses will include an option to evaluate the impact of anticipated conservation programs on the demands of each member. As described in Section 3, an industry target would be from 10 to 15 percent. If every member of the Council could meet that target, substantial water savings could be realized.

Figure 5-1
Scenario 1: Regional Supply and Demand with Source Sharing
Selected Senior Water Rights and Municipal Preferences with No Mitigation



Note: Seasonal Supply is Based on 95% Exceedance Flows.

TABLE 5-9

Scenario Summary Table - Scenario 1

Entity	Stream	Senior Water Rights and Municipal Preferences	Assumptions Used in This Scenario			Available Streamflow Supply Under Drought Conditions in Summer (95% Exceedance Flows), with Minimum Flows - (cfs)												Imported Water To Meet Needs					
			Rights (cfs)	Mitigation Preference Streamflow (cfs)	0.00	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Dry Season Volume - MG			Additional Peak Day Demand Not Met with Existing Individual Streamflow Supplies - mgd		
																		2010	2025	2050	2010	2025	2050
Lincoln City	Schooner Cr	17.39	17.39	0.00	17.4	17.4	17.4	17.4	17.4	17.4	14.2	11.6	9.2	10.3	17.4	17.4	0	0	0.0	0.00	0.00	1.70	
	Rock Cr	1.7	1.70	0.00	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.2	1.7	1.7	1.7							
	Gordey Cr	1	1	0.00	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.3	0.7	1.0	1.0							
	Streamflow Supply Total				20.1	20.1	20.1	20.1	20.1	20.1	16.9	14.2	10.7	12.7	20.1	20.1							
	Streamflow Supply Available to Region				20.1	20.1	20.1	20.1	20.1	4.7	6.0	6.3	4.9	4.5	20.1	20.1							
KGL	Drift Cr	7	7	0.00	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0	0	0	0.00	0.00	0.00	
	Streamflow Supply Available to Region				7.0	7.0	7.0	7.0	7.0	1.3	1.6	1.7	1.6	1.4	7.0	7.0							
Depoe Bay	Rocky Cr	4	7.1	0	6.5	7.1	7.1	7.1	7.1	5.8	4.6	3.3	1.3	2.6	4.2	7.1	0	0	0	0.00	0.08	0.50	
	Streamflow Supply Available to Region				6.5	7.1	7.1	7.1	7.1	0.8	0.7	0.8	0.7	0.6	4.2	7.1							
Newport	Big Cr	10.54	0	0.50	0.0	9.5	7.1	4.1	2.7	1.3	0.8	0.4	0.3	0.3	0.7	3.1	-265	-214	342	-5.46	-3.00	-3.89	
	Siletz R	6	7.19	0.00	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2							
	Streamflow Supply Total				7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2							
	Streamflow Supply Available to Region				7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	6.5	7.2	7.2							
Seal Rock	Siletz		0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	240	391	879	1.32	2.15	4.83	
Waldport	Weist Cr	0.73	0.73	0.00	0.7	0.7	0.7	0.7	0.7	0.4	0.2	0.3	0.1	0.1	0.3	0.7	0.1	6.8	60.9	0.33	0.74	1.97	
	Eckman Cr	4	4	0.00	2.9	2.9	3.4	3.0	1.8	1.0	0.5	0.9	0.2	0.3	0.7	2.2							
	Darkey Cr	1.5	1.5	0.00	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	0.4	0.6	1.3	1.5							
	Streamflow Supply Total				5.1	5.1	5.6	5.2	4.0	2.8	1.7	2.7	0.6	1.0	2.3	4.5							
	Streamflow Supply Available to Region				5.1	5.1	5.6	5.2	4.0	2.8	1.7	2.7	0.6	1.0	2.3	4.5							
SWLCWD	Big Cr	0.3	0.3	0.00	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0	0	0	0.00	0.00	0.12	
	Starr, Vinge	1.2	1.2	0.00	1.2	1.2	1.2	1.2	1.2	1.2	1.0	1.2	0.4	0.6	1.2	1.2							
	Dicks Fk	0.4	0.4	0.00	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.1	0.2	0.4	0.4							
	Streamflow Supply Total				1.9	1.9	1.9	1.9	1.9	1.9	1.7	1.9	0.7	1.1	1.9	1.9							
	Streamflow Supply Available to Region				1.9	1.9	1.9	1.9	1.9	1.9	1.7	1.9	0.7	1.1	1.9	1.9							
Yachats	Reedy Salmon	4	4	0.00	2.4	2.4	2.8	2.5	1.5	0.8	0.4	0.8	0.2	0.3	0.6	1.9	0	0	0.0	0.00	0.00	0.67	
	Yachats		1.49	0.00	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5							
	Streamflow Supply Total				3.9	3.9	4.3	4.0	3.0	2.3	1.9	2.2	1.6	1.7	2.1	3.4							
	Streamflow Supply Available to Region				3.9	3.9	4.3	4.0	3.0	0.8	0.9	1.0	0.8	0.7	2.1	3.4							
Toledo	Mill Cr	16.5	6.5	0.20	10.1	7.8	9.1	7.9	4.7	2.5	1.2	2.3	0.3	0.6	1.7	6.0	-65	-65	-65	0.00	0.00	0.00	
	Siletz	5.75	5.75	0.00	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8							
	Siletz		0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0							
	Streamflow Supply Total				5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8							
	Streamflow Supply Available to Region				5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8							
Siletz	Tangerman	0.44	0.44	0	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0	0.0	0.0	0.00	0.00	0.00	
	Siletz	0.50	4.01	0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0							
	Streamflow Supply Total				4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5							
	Streamflow Supply Available to Region				4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5							
TOTALS (CFS)			82.95	71.66	0.7																		
TOTALS (MGD)			53.6	46.3	0.5																		
Mitigation flow without evap (CFS)					0.0																		
Streamflow Supply Totals (cfs)					62	63	63	63	60	57	51	48	39	43	55	61							
Streamflow Supply Totals (mgd)					40	40	41	40	39	37	33	31	25	28	35	40							
Totals Supply Available to Region (cfs)					62	63	63	63	60	26	26	28	23	22	55	61							
Total Supply Available to Region (mgd)					40	40	41	40	39	17	17	18	15	14	35	40							
Total Storage Needed (MG) without accounting for sharing of streamflow supply or Big Creek Storage excess.																	-89.9	118.4	1217.8	-3.81	-0.04	13.49	

Actual additional storage required assuming some streamflow supply can be shared is:

Notes:

Storage Need: 814.7 MG
2500 Ac.ft.

Biological Resources and Environmental Permitting Analysis

Purpose and Summary

The purpose of this section is to describe the environmental considerations that will face water development for the Central Coast Water Council (CCWC) members, both individually and collectively. The major environmental issues include water rights development processing, state and federal permitting required for water development activities, and federal Endangered Species Act (ESA) compliance.

In summary, it was found that CCWC members may have difficulty certificating their undeveloped water rights. Although CCWC members may hold water right permits for undeveloped sources, the actual development of those rights may be difficult to achieve. Virtually all of the surface water bodies for which there are outstanding (undeveloped) water right permits could have substantive constraints because of ESA listings. In addition, several streams have been designated as Core Areas in the Oregon Coastal Salmon Restoration Initiative (State of Oregon 1997) and, separately, Oregon Department of Fish and Wildlife (ODFW) has identified several streams as priorities for protection or restoration because of their potential significance to salmon recovery efforts. Many streams within the Central Coast Water Council study area (study area) have been listed as water quality limited by the State of Oregon (Department of Environmental Quality [DEQ] website 2001). Given today's regulatory climate, successful development of water rights may be difficult and, if approved, may require costly and potentially extensive mitigation measures.

The use of the proposed Rocky Creek Reservoir as a long-term regional water supply appears to be feasible at this phase in the evaluation process. Preliminary investigations indicate the potential environmental impacts of a reservoir in the Rocky Creek drainage can be mitigated. Though there will be impacts to wetlands, stream habitats, and riparian resources, the impacts will not eliminate resources unique within the central coast ecoregion. There will be no impact to anadromous fish species, and mitigation opportunities to compensate for the potential fish and wildlife impacts appear to be available. Rocky Creek has been considered for anadromous fish restoration by the Oregon Department of Transportation and a citizens group, though existing fish barriers and ongoing watershed logging practices may present substantive limitations to successful restoration. Additional technical and biological work will be required to fully assess the impact levels to different resources of a reservoir project, or the feasibility of an anadromous fishery restoration action.

Methods

Review of Existing Literature

All of the coastal streams that have existing CCWC members' water rights were mapped on GIS overlays to the U.S. Geological Survey quadrangle maps. The National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS) and the ODFW web pages were used to identify species current and potential use, the status of fish species by stream and reach, and other information as was available. The Oregon Coastal Salmon Restoration Initiative (State of Oregon 1997) was used to identify streams that have been designated as Core Areas or as Recovery Areas. The DEQ web page was reviewed for water quality limited designations (Section 303 lists). Non-compliance conditions for water quality standards were identified according to stream and reach.

Earlier work prepared by the consulting firm Fuller & Morris Engineering, Inc. for the City of Newport concerning alternative water supply locations, regional considerations, and Rocky Creek resources (Fuller and Morris 1997) was utilized. This work assessed a number of siting and feasibility issues during the inventory and evaluation of numerous potential water supply options for the Central Coast, including fish and wildlife resource issues. The Technical Memorandum *The Potential for Anadromous Fish Protection in the Rocky Creek Drainage Upstream of a Migration Barrier Beneath Highway 101*, prepared by Charles Huntington for David Evans and Associates (DEA), was reviewed in detail as part of the evaluation of the Rocky Creek natural resources and potential impacts of a reservoir placement (Huntington 1998). The Rocky Creek Report, prepared by the Stewards of Rocky Creek (1999), that evaluated the anadromous fish restoration potential for the creek, was also used.

CH2M HILL inventoried the water rights for all CCWC members (Section 4). The rights were identified according to those that have been certified and those that are permitted but not yet certified. A more detailed discussion of water rights is included below under Regulatory Issues for Water Supply Development and Use. The locations for all permitted points of diversion were mapped on GIS maps.

Discussion of Meetings with Agencies, Council and Environmental Stakeholders

Fish biologists at the ODFW offices in Newport were consulted regarding the overall priority streams and fish issues for the study area. Maps were reviewed regarding fish presence, life stage uses, and known or suspected limiting factors for species of concern. Water availability during critical flow periods was specifically discussed for the streams in the study area. From these discussions a subjective "overlay" of streams of particular interest or priority to ODFW for protection or restoration purposes were identified.

Habitat survey information that ODFW developed for Rocky Creek in 1994 was obtained from ODFW. This information and the Huntington report were used during site reconnaissance activities by DEA biologists in the fall of 2001.

The CCWC was briefed on the environmental issues in November and again in December of 2001. The regulatory process and current issues of critical concern were reviewed. The

anticipated future regarding additional water withdrawals was also discussed with the CCWC.

The Technical Advisory Committee (TAC) for the CCWC was convened twice during the environmental review process. The first meeting included an overall review of the critical issues facing coastal water development, and a review of the existing water rights of CCWC members that have not been developed or perfected. The environmental issues within the Rocky Creek basin were reviewed as well. Alternatives to Rocky Creek were reviewed and TAC members made recommendations for additional technical considerations. The TAC will meet again in December 2001 to review the findings of the technical work of the team. Revisions will be made to some of the technical work based on these comments.

A meeting was held with WaterWatch and Oregon Trout to discuss potential streamflow and fishery issues. The representatives of these organizations expressed particular concern about the following:

- An alternatives analysis to review other potential locations for a long term water supply reservoir.
- Water conservation as the primary source of additional water to meet growing demand.
- The participating agencies need to develop good water management plans with aggressive conservation programs.
- Future water development in many coastal streams is not guaranteed, even with water right permits, given the fish and water quality problems.

Discussions with a representative of the Stewards of Rocky Creek occurred to solicit input and review information contained in the Stewards' *Rocky Creek Report* (1999).

Regulatory Issues for Water Supply Development and Use

State Water Law

The water appropriation process in Oregon includes two phases: the water right permit and the water right certificate. The permit phase represents initial approval of the water right and authorizes the holder to begin the process of developing the water right and putting the water to beneficial use. Most permits provide an initial period of up to five years for that development to occur. Municipal permits allow for incremental development of water rights, through permit extensions, in recognition of population growth. Once the water has been fully developed, the permit holder may obtain a certificate – or the final water right. If water is not fully developed during the initial permit phase, the water right holder may apply for an “extension” of the permit, upon a showing of good cause (Pagel 2000).

Oregon water law, based on the prior appropriation doctrine, has included some limitations on the right to use water: the right must be exercised regularly to remain valid and becomes subject to forfeiture after five or more years of non-use; the right is limited to the amount which can be put to beneficial use without waste; and the right remains appurtenant to the land on which the beneficial use occurs.

The holder of a water right may voluntarily initiate a change (or “transfer”) in the type of use, place of use, or point of diversion (for surface water) or point of appropriation (for ground water). Under Oregon law, the transfer application must be approved unless the Water Resources Department determines the change will result in injury to other water right holders.

The state water code was revised in 1955 in recognition of the need to identify and protect minimum perennial stream flows for public purposes. However, the new law did not alter the pre-existing system of priority dates. Minimum stream flow rules applied only prospectively, affecting the state’s ability to issue new water rights on a given waterway but not limiting water use under pre-existing senior rights. The water rights analysis in this study recognizes the prior appropriation premise concerning instream rights.

The 1955 law also established a ‘public interest’ test in connection with water right issuance. The state was directed to determine that the proposed new use would not “impair or be detrimental to the public interest.” In 1987, the law was again amended to expressly include instream flow as a “beneficial use” of water, paving the way for issuance of instream water rights. Three state agencies – the Departments of Fish and Wildlife, Environmental Quality, and Parks and Recreation – were authorized to apply for instream water rights in amounts needed to address public interests in fish and wildlife protection, water quality, and recreation. Once issued, the instream rights are held by the Water Resources Department “in trust” for the public. The priority date for an instream water right, like out-of-stream rights, is the date the application is filed with the Water Resources Department. However, the 1987 law also allowed minimum stream flows established pursuant to the 1955 law to be converted to instream water rights with a priority date of the time of adoption of the minimum stream flow rule (Pagel 2000).

Appendix A lists the instream water fights for streams that have CCWC member diversions.

Intersection of State and Federal Law

The Endangered Species Act of 1973, as amended (16 U.S. 1531, *et seq.*), requires protection of those species listed as “threatened,” or “endangered,” and includes strict enforcement provisions. As almost every perennial stream in the Central Coast study area has been mapped as habitat for one or more listed species, the ESA will play a significant role in any future water development activities.

Key provisions of the federal law include:

- A process for listing species as “endangered” if the species is determined to be in danger of extinction, or for listing as “threatened” if it is “likely to become endangered” in the foreseeable future.
- A duty for all federal agencies to ensure their actions will not jeopardize a protected species, including a process to consult with the listing agency (either NMFS or USFWS, depending on the species) to determine whether proposed actions are likely to result in such jeopardy.

- A strict prohibition against the “taking” of a species listed as endangered, and a process for establishing similar protection of “threatened” species by administrative regulations. (“Taking” includes adverse impacts to habitats of listed species.)
- A process to allow for the “incidental take” of a listed species under certain limited circumstances, and pursuant to an approved “habitat conservation plan” designed to minimize the potential for adverse impact on a listed species.
- Strict penalties for violation of the law, including civil penalties of up to \$25,000 and \$50,000 for criminal violations.
- A process allowing citizen suits to compel enforcement of the ESA.

Given recent agency and court actions, it is clear that water right holders no longer enjoy the level of certainty and reliability previously associated with senior water rights, and applicants for new water rights face high hurdles in demonstrating the proposed use of water to meet federal requirements.

The issue arises in two contexts: (1) in state decision-making on requests for new water uses or for changes in existing ones, and (2) in federal enforcement actions.

State Decision-Making

Historically, applications for new water rights were evaluated against the standard of whether the proposed use would “impair or be detrimental to the public interest.” In recent years, the public interest evaluation has evolved to include a systematic analysis of potential impacts on fish and wildlife. With the advent of salmon listings under the ESA, state rules have been further amended to require specific ESA findings on all new water right applications (Pagel 2000).

The coordination between state and federal requirements appears to be supported by law. In a recent case in Massachusetts, the federal court held a state agency may be held liable for “take” under the ESA for authorizing private actions, through state-issued permits, that could result in harm to a listed species (Strahan v. Cox, 127 F3rd 155 [1st Cir. 1997] in Pagel 2000).

Permit holders requesting extension of existing permits may face uncertainty with respect to ESA impacts. In contrast to the transfer process, which is statutorily limited to consideration of only injury to other water rights, the extension decision must be based on the department’s more subjective determination of “good cause” (ORS 537.230, 537.630). According to the state’s Attorney General, this statutory allows the department to consider factors such as ESA listings or other public interests in the use of water. Permit extensions may be conditioned or denied, if necessary, to protect listed species (Pagel 2000).

ESA Enforcement and Existing Water Rights

ESA enforcement actions may also be brought against existing water right holders, as the listing agencies are now turning their attention toward the consequences of water withdrawals. The recent experience of several irrigation districts in the Walla Walla River Basin is demonstrative. The USFWS gave notice of potential ESA violations as a result of the districts’ long-standing exercise of valid state water rights. The districts’ historic

practices – authorized under their water rights – had the effect of dewatering the river during critical periods for the bull trout, a listed species. The districts were warned of the potential for enforcement action unless they made substantial changes in their water management practices. The irrigation districts were able to reach a negotiated agreement with the USFWS and other interested parties to avoid immediate enforcement action by initiating short-term stream flow restoration efforts and agreeing to develop a long-term plan.

The intersection of state water law and the ESA raises numerous questions for water users, the general public, and public officials. It is currently unclear whether and to what extent the federal listing agencies will be able to compel changes in state-authorized water use and distribution through ESA enforcement actions.

In the meantime, affected parties may be able to reduce exposure to ESA liability, and thereby increase certainty in water deliveries, by employing a variety of strategies for reaching negotiated agreements with the listing agencies. For CCWC members, it could mean developing a comprehensive water withdrawal and management plan that addresses fish flows and water withdrawals across the study area.

Jurisdictional Waters and State and Federal Permitting

For the development of a water right a structure of some kind is generally required in the body of water from which the water will be drawn. Structures may include pipes, weirs, small dams, embankments, infiltration galleries, pumps, or other physical features required to direct or draw the water out of the stream or pond into a pipe. Structures or any fill material placed below high water requires a Joint Removal-Fill Permit from the Oregon Division of State Lands (DSL) (ORS 196.800-990) and the U.S. Army Corps of Engineers (USACE) (Section 404, Clean Water Act). The activity is exempt under State regulation if the fill is less than 50 cubic yards; however, the activity may fall under federal jurisdiction regardless of the amount of fill. If the project is located along a navigable waterway it may also require a USACE Section 10 permit under the federal Rivers and Harbors Act; however, the Joint-Removal Fill Permit process is designed to include Section 10 Permits as well. The project or structure may qualify for a Section 404 Nationwide Permit, which cover a variety of minor activities including small fills or a Section 404 Individual Permit for activities that do not meet the threshold requirements of a Nationwide Permit.

To obtain a Removal-Fill Permit, the applicant is required to submit a Joint Application that includes a wetlands and waterways delineation, project description and drawings, an alternatives analysis, and a wetlands mitigation plan. In addition to a complete application, the following is required to obtain a Removal-Fill Permit:

- Section 401 Clean Water Act – Water Quality Certification for the project
- Project must be the least environmentally damaging practicable alternative
- Adverse impacts must be mitigated
- A plan to monitor and report on wetland mitigation conditions
- Compliance with the National Environmental Policy Act (NEPA)

- Compliance with the federal ESA (see following section)

Upon receipt of a complete application for an Individual Permit, the USACE will prepare a 30-day public notice to receive comment. A Public Notice is not required for a Nationwide Permit. Once the Applicant addresses the public comments, a Permit is issued. Nationwide Permits generally require approximately 30-45 days, whereas an Individual Permit requires 90 days or more to process. The Removal-Fill Permit process may require additional time should ESA compliance be required. For large or controversial projects, such as dams or significant diversions, the process can take 12-36 months.

ESA Consultations and Compliance

Compliance with federal ESA is required for all projects that may affect a species that is proposed or listed as threatened or endangered under the ESA. Since most waterways along the Central Coast provide habitat for at least one listed anadromous fish species, it is anticipated that any water right development will require ESA compliance. The USFWS is responsible for consultations regarding plants, animals, non-anadromous fish and the sea-run cutthroat trout, while NMFS is responsible for consultations regarding marine mammals and anadromous fish. If there is a federal nexus, the applicant will work in coordination with the federal agency through which it is acquiring the funding or permit (lead federal agency) and will use their ESA compliance guidelines (ESA Section 7). If there is no federal nexus, a Section 10 permit may be required for the proposed action.

ESA Section 7 Compliance. Informal consultation with the federal agencies should be initiated in the planning stages of a project to make a preliminary determination of the species that may be impacted by the project and to minimize the potential impacts. If the informal consultation results in a determination of "No Effect" (no in-water work and no alteration to riparian or other components of critical habitat and no impact on water quality or quantity) or "May Affect, Not Likely to Adversely Affect" (effects are expected to be discountable, insignificant, or completely beneficial) on the listed species or its habitat, the federal agency will prepare a letter of concurrence to complete the informal consultation process.

Formal consultation is required if the determination of effect for the project is "May Affect, Likely to Adversely Affect" (effects are not discountable, insignificant, or completely beneficial) or "Jeopardy" (project puts the continued existence of the species at risk). To initiate formal consultation, the applicant is required to prepare a Biological Assessment (BA). The BA must include a description of the project, the potential impacts of the project, and a description of the cumulative effects from other, non-federal actions that could impact the species. Once completed, the BA is submitted to the lead federal agency for their review. Once the lead federal agency has concurred with the findings in the BA, the applicant and the lead agency will submit the BA to the USFWS and/or NMFS, initiating formal consultation. Should the determination of effect be a "May Affect..." USFWS and/or NMFS will prepare a Biological Opinion with reasonable and prudent alternatives and will issue an Incidental Take Statement to the applicant. Should the determination of effect be "Jeopardy" the project will not be authorized until the project has been modified to ensure the project will not put the continued existence of the subject species at risk. Modification or destruction of designated critical habitat that does not reach this threshold is not prohibited by Section 7 of the federal ESA (USFWS and NMFS 1998).

ESA Section 10 Compliance. If there is no federal nexus for the proposed project but there are anticipated impacts to federally listed species, the project applicant may be required to comply with Section 10 of the ESA. Section 10 requires an applicant to submit a Habitat Conservation Plan (HCP) that specifies, among other things, the impacts that are likely to result from a “take” and the measures the applicant will undertake to minimize and mitigate such impacts. The process for preparing an HCP and securing the resulting Section 10 permit has been lengthy and costly in most cases to date.

Biological Conditions and Water Rights Development

Fish Utilization

A landscape-level environmental review was undertaken for the Central Coast Ecoregion,¹ which includes the entire study area from Lincoln City to Yachats. The primary resources reviewed for this landscape-level evaluation were the federally listed threatened and endangered fish species (NMFS and USFWS websites 2001) and the DEQ water quality Section 303(d) lists (DEQ website 2001). The federally listed anadromous fish species provide a clear indication of streams and rivers that are of particular concern of the state and federal resource agencies and permitting agencies. The current guiding policy at the state and federal levels is the protection, to the maximum extent possible, of all habitats that are utilized by these species. Because of the hydrological conditions of the west slope coastal ecoregion, surface water flows are naturally limited by season and thus particularly sensitive to water withdrawals. The hydrological limitations are caused by the lack of snow pack, steep slopes and shallow soils with limited groundwater retention capability, and extensive land management activities that continue to remove the moisture retention capacity of the watersheds.

The identification of water bodies with potential environmental fatal flaws concerning water source development focused on the federally listed anadromous fish species of the Oregon coast. These species are:

- Coho salmon (*Oncorhynchus kisutch*)
- Chum salmon (*Oncorhynchus keta*)
- Winter and summer steelhead trout (*Oncorhynchus mykiss*)
- Spring and fall chinook salmon (*Oncorhynchus tshawytscha*)

Searun cutthroat trout (*Oncorhynchus clarki clarki*) is considered a candidate for listing under the federal ESA (Federal Register, March 23, 1998). The Evolutionary Significant Unit (ESU) for the cutthroat trout includes the entire study area. Table 6-1 lists the several streams in the Central Coast study area that include resident and anadromous cutthroat trout. The decision to list this species is under consideration by USFWS at this time (fws.gov/species 2001).

¹ For the purposes of this discussion the Coast Range Ecoregion, as defined in the Oregon Biodiversity Project report “Oregon’s Living Landscape: Strategies and Opportunities to Conserve Biodiversity” 1998, has been segmented to focus on

Table 6-1. Distribution of Coastal Cutthroat Trout within Central Coast Study Area

Waterbody	Life History
Siletz River below Siletz Falls	Anadromous
Siletz River above Siletz Falls	Resident
Euchre Creek	Resident
Dewey Creek	Resident
Rock Creek	Resident
Big Rock Creek	Resident
Little Rock Creek	Resident
South Fork Siletz River	Resident
Drift Creek	Anadromous
Sampson Creek	Resident
Schooner Creek	Anadromous
Fogarty Creek	Anadromous
Depoe Creek	Anadromous
Spencer Creek	Anadromous
Big Creek	Anadromous
Yaquina River	Anadromous and Resident
Bear Creek	Resident
Little Yaquina River	Resident
Buttermilk Lake	Resident
Thiel Creek	Anadromous and Resident
Beaver Creek	Anadromous
Alsea River	Anadromous
Five Rivers	Fluvial
Fall Creek	Fluvial
Parker Creek	Resident
Racks Creek	Resident
Klickitat Creek	Resident
South Fork Alsea River	Resident
Peak Creek	Resident
Drift Creek	Anadromous
Gopher Creek	Resident
Slide Lake	Adfluvial
Big Creek	Resident
Yachats River	Anadromous

Source: [Http://www.dfw.state.or.us/ODFWhtml/Research&Report/WildFish/CHAPTER4.html](http://www.dfw.state.or.us/ODFWhtml/Research&Report/WildFish/CHAPTER4.html)

Note: Some waterbodies may be outside of Central Coast study area

Maps were generated for the entire Central Coast study area of listed fish species use by stream. These maps (see Figures 6-1 through 6-4) illustrate the extent to which listed

the Oregon Central Coast within the study area (from the Schooner Creek watershed on the north at Lincoln City to the Yachats River watershed on the south end of the study area).

salmonids utilize the Central Coast drainages. Generally speaking, the only streams without anadromous fish presence (current or potential) are those with permanent blockage or those intermittent streams with flows too limited to support a fishery.

Core Areas

Core Areas for salmon recovery have been identified in the Oregon Coastal Salmon Restoration Initiative. Salmon Core Areas are defined as reaches or watersheds within individual coastal basins that are judged to be of critical importance to the persistence of salmon populations that inhabit those basins. Previous efforts to identify key habitats for salmonids (American Fisheries Society Aquatic Diversity Areas, DSL Essential Salmonid Habitats, and ODFW Source Watersheds) were utilized and improved upon to produce a consistent and well-documented methodology for Core Area mapping.

Under pristine conditions, salmon (including coho, chum, and chinook salmon; steelhead; and cutthroat trout) are not evenly distributed throughout river basins. Instead, they tend to concentrate in local reaches of river basins to spawn and rear. These concentrations reflect the combination of local differences in the character of the stream environment and preferences of each species for certain habitat features. Stream features where these habitats occur are called Core Areas.

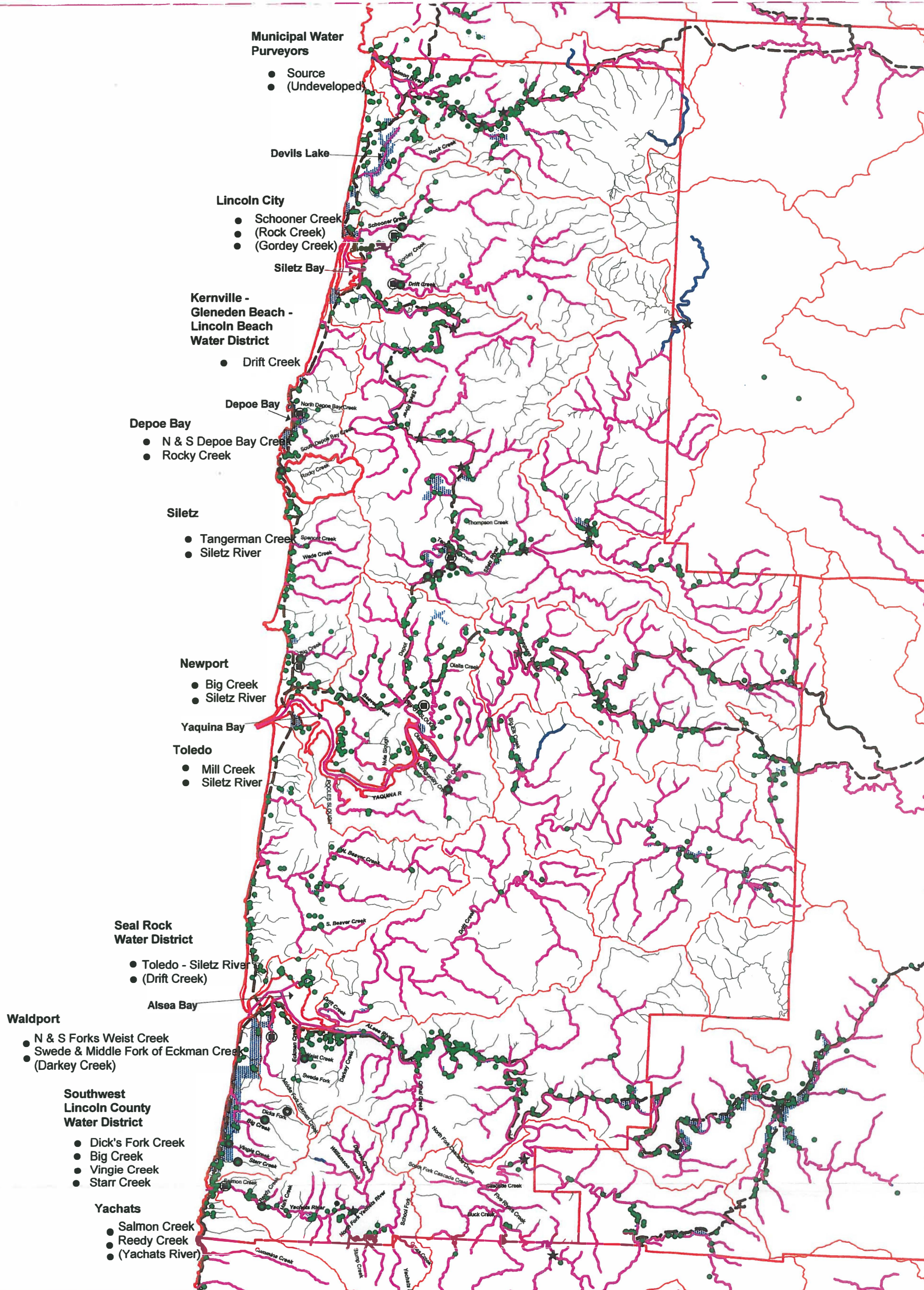
Core Areas have been identified by Hydrologic Units, defined by U.S. Geological Survey (USGS). The following Table 6-2 lists the Core Areas that fall within the Study Area. (Core Areas for cutthroat trout have not been identified as detailed inventory data for this species is not yet available).

Recovery Areas have not yet been identified for the Central Coast study area. As that information becomes available it will be included in the overall CCWC study effort.

Water Quality Limited Streams

The federal Clean Water Act requires all states to identify the surface water bodies of the state that are in noncompliance with federal water quality standards. The State of Oregon has developed the list of streams that are in noncompliance on the coast (the Section 303(d) list). Table 6-3 is the list of the streams and rivers within the study area that have been identified as "water quality limited" (in noncompliance with water quality standards).

Additional or future water withdrawals from water quality limited streams will be closely evaluated for their potential adverse affect on water quality conditions.



Municipal Water Purveyors

- Source
- (Undeveloped)

Devils Lake

Lincoln City

- Schooner Creek
- (Rock Creek)
- (Gordey Creek)

Siletz Bay

Kernville - Gleneden Beach - Lincoln Beach Water District

- Drift Creek

Depoe Bay

- Depoe Bay**
- N & S Depoe Bay Creek
 - Rocky Creek

Siletz

- Tangerman Creek
- Siletz River

Newport

- Big Creek
- Siletz River

Yaquina Bay

- Toledo**
- Mill Creek
 - Siletz River

Seal Rock Water District

- Toledo - Siletz River
- (Drift Creek)

Alesea Bay

Waldport

- N & S Forks Weist Creek
- Swede & Middle Fork of Eckman Creek (Darkey Creek)

Southwest Lincoln County Water District

- Dick's Fork Creek
- Big Creek
- Vingie Creek
- Starr Creek

Yachats

- Salmon Creek
- Reedy Creek
- (Yachats River)

**Interim Draft Report
Rocky Creek
Regional Water Supply Project
Preliminary Water Management Plan
December 05, 2001**

Legend

- Member Point of Diversion
- ⊙ Water Treatment Plant
- Other Point of Diversion
- ★ Point of Instream rights
- Creek
- Instream Water Right
- ▭ Watershed
- ▨ Place of Use
- ▭ Lincoln County Boundary
- Highway
- Coho Distribution

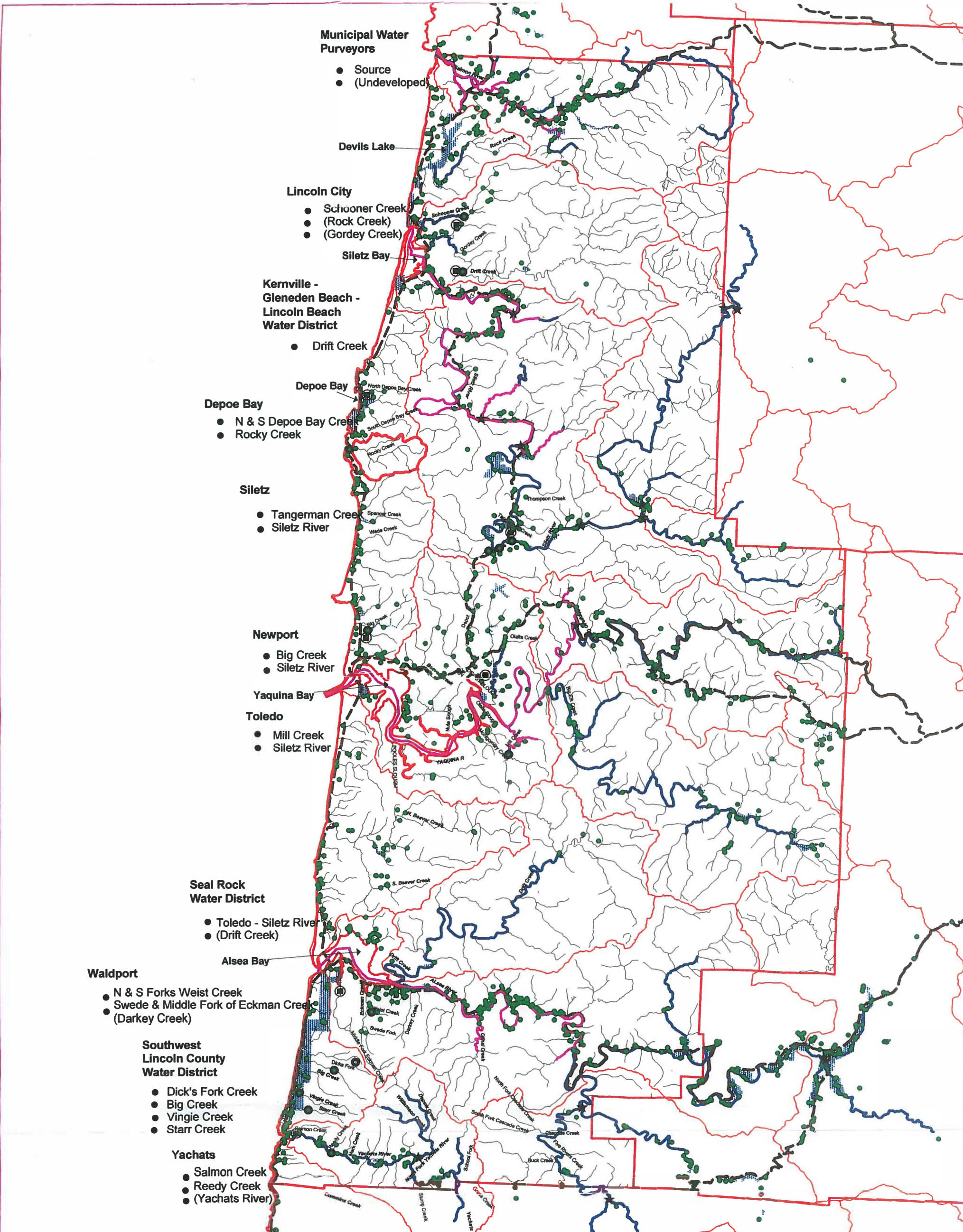
Figure 6-1

Coho Distribution within Project Area



Scale: 1" = 22000'





Municipal Water Purveyors

- Source
- (Undeveloped)

Devils Lake

Lincoln City

- Schooner Creek
- (Rock Creek)
- (Gordey Creek)

Siletz Bay

**Kernville -
Gleneden Beach -
Lincoln Beach
Water District**

- Drift Creek

Depoe Bay

- Depoe Bay**
- N & S Depoe Bay Creek
 - Rocky Creek

Siletz

- Tangerman Creek
- Siletz River

Newport

- Big Creek
- Siletz River

Yaquina Bay

- Toledo**
- Mill Creek
 - Siletz River

**Seal Rock
Water District**

- Toledo - Siletz River
- (Drift Creek)

Alesea Bay

Waldport

- N & S Forks Weist Creek
- Swede & Middle Fork of Eckman Creek
(Darkey Creek)

**Southwest
Lincoln County
Water District**

- Dick's Fork Creek
- Big Creek
- Vingie Creek
- Starr Creek

Yachats

- Salmon Creek
- Reedy Creek
- (Yachats River)

**Interim Draft Report
Rocky Creek
Regional Water Supply Project
Preliminary Water Management Plan
December 05, 2001**



Legend

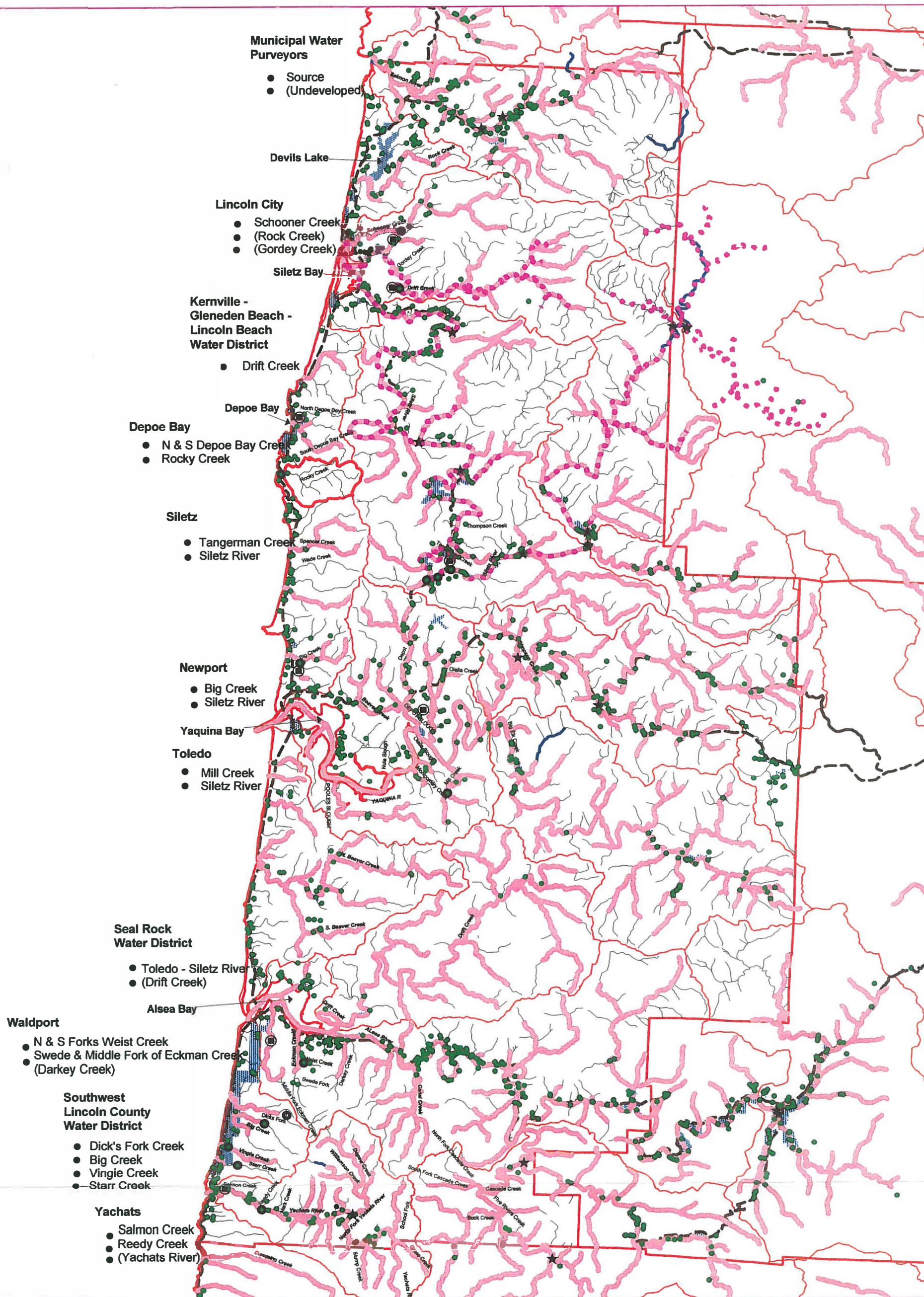
- Member Point of Diversion
- ⊙ Water Treatment Plant
- Other Point of Diversion
- ★ Point of Instream rights
- Creek
- Instream Water Right
- ▭ Watershed
- ▨ Place of Use
- ▭ Lincoln County Boundary
- Highway
- Chum Distribution

Figure 6-2

**Chum Distribution
within Project Area**



Scale: 1" = 22000'



**Interim Draft Report
Rocky Creek
Regional Water Supply Project
Preliminary Water Management Plan
December 05, 2001**

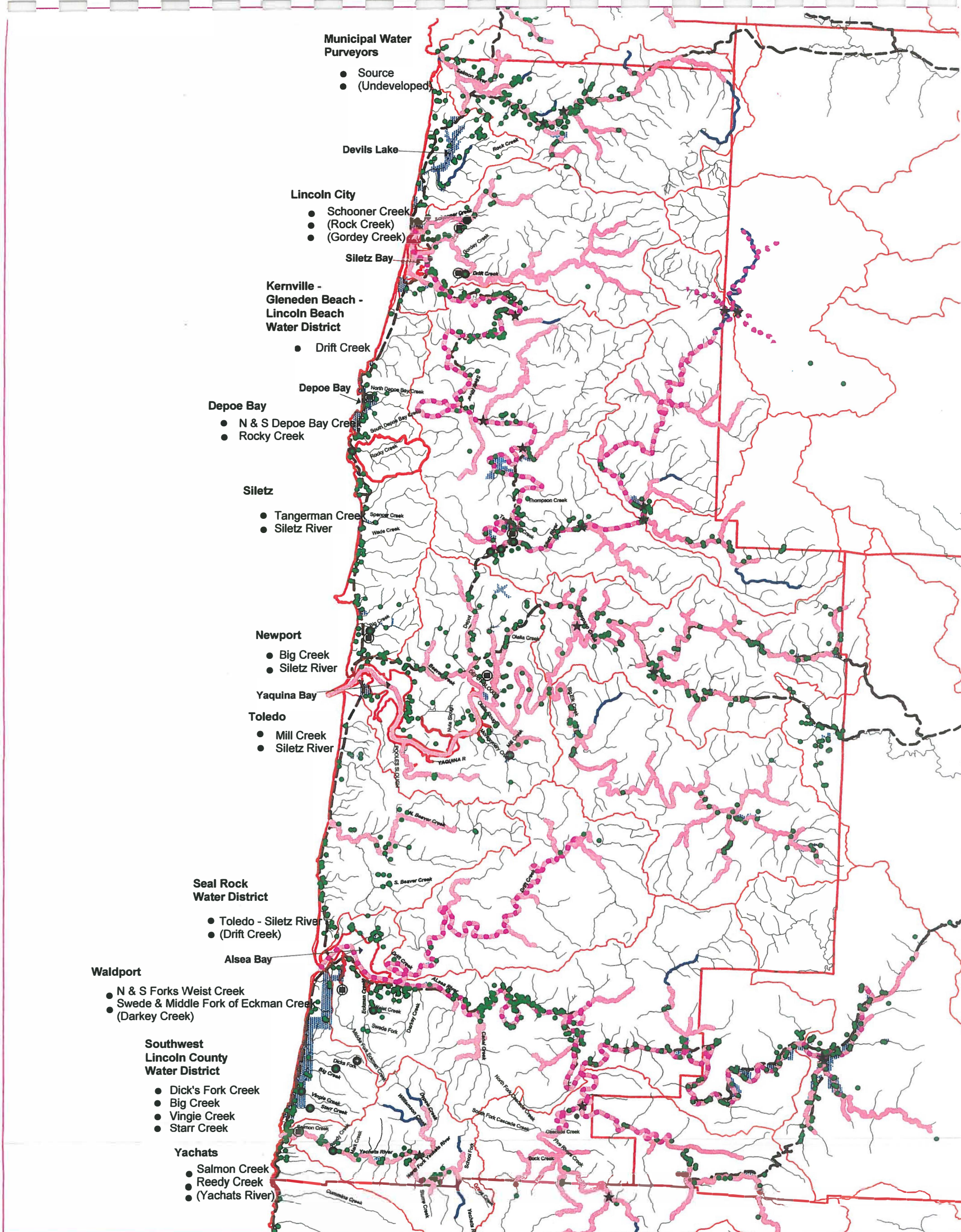


- Legend**
- Member Point of Diversion
 - ⊙ Water Treatment Plant
 - Other Point of Diversion
 - ★ Point of Instream rights
 - Creek
 - Instream Water Right
 - ▭ Watershed
 - ▨ Place of Use
 - ▭ Lincoln County Boundary
 - Highway
 - Summer Steelhead Distribution
 - Winter Steelhead Distribution

**Figure 6-3
Steelhead Distribution
within Project Area**



Scale: 1" = 22000'



Interim Draft Report
Rocky Creek
Regional Water Supply Project
Preliminary Water Management Plan
December 05, 2001



- Legend**
- Member Point of Diversion
 - ⊙ Water Treatment Plant
 - Other Point of Diversion
 - ★ Point of Instream rights
 - Creek
 - Instream Water Right
 - ▭ Watershed
 - ▨ Place of Use
 - ▭ Lincoln County Boundary
 - Highway
 - Spring Chinook Distribution
 - Fall Chinook Distribution

Figure 6-4
Chinook Distribution
within Project Area



Scale: 1" = 22000'

Table 6-2. Salmon Core Areas of the Central Coast Water Plan Study Area

BASIN	SUBBASIN	ID CODE	SPECIES	STREAM REACH
Siletz River	Main Stem	SCU1	Chum	Bear Creek
Siletz River	Main Stem	SCHF1	Fall Chinook	Cedar Creek
Siletz River	Main Stem	SCU2	Chum	Cedar Creek
Siletz River	Main Stem	SSTW1	Winter Steelhead	Euchre Creek
Siletz River	Main Stem	SCHF2	Fall Chinook	Euchre Creek
Siletz River	Main Stem	SCHF3	Fall Chinook	Siletz River
Siletz River	Main Stem	S1	Coho	Dewey Creek
Siletz River	Main Stem	S2	Coho	Bentilla Creek
Siletz River	Main Stem	S3	Coho	Sam Creek
Siletz River	Main Stem	S4	Coho	Mill Creek
Siletz River	Main Stem	S6	Coho	Palmer Creek
Siletz River	Main Stem	SCHF4	Fall Chinook	Siletz River
Siletz River	Main Stem	SCHS1	Spring Chinook	Siletz River
Siletz River	Main Stem	SSTW2	Winter Steelhead	Siletz River
Siletz River	Main Stem	SCHF7	Fall Chinook	Sunshine Creek
Siletz River	Main Stem	SSTW4	Winter Steelhead	Sunshine Creek
Siletz River	Main Stem	S5	Coho	Sunshine Creek
Siletz River	Rock Creek	SCHF6	Fall Chinook	Big Rock Creek
Siletz River	North Fork	SSTS1	Summer Steelhead	Siletz River, N. Fork
Siletz River	Drift Creek	SCHF8	Fall Chinook	Drift Creek
Siletz River	Drift Creek	SSTW3	Winter Steelhead	Drift Creek
Siletz River	Drift Creek	SCHF5	Fall Chinook	Drift Creek
Yaquina River	Main Stem and Bay	YCO1	Coho	Mill Creek
Yaquina River	Main Stem and Bay	YCU1	Chum	Mill Creek
Yaquina River	Main Stem and Bay	YSTW1	Winter Steelhead	Mill Creek
Yaquina River	Main Stem and Bay	YCHF1	Fall Chinook	Simpson Creek
Yaquina River	Main Stem and Bay	YCU2	Chum	Simpson Creek
Yaquina River	Main Stem and Bay	YCO2	Coho	Thornton Creek
Yaquina River	Main Stem and Bay	YCO8	Coho	Bales Creek
Yaquina River	Main Stem and Bay	YCHF6	Fall Chinook	Bales Creek
Yaquina River	Main Stem and Bay	YCO3	Coho	Buttermilk Creek
Yaquina River	Main Stem and Bay	YCHF2	Fall Chinook	Yaquina River
Yaquina River	Main Stem and Bay	YSTW2	Winter Steelhead	Yaquina River
Yaquina River	Main Stem and Bay	YCO4	Coho	Yaquina River
Yaquina River	Elk Creek	YCO7	Coho	Deer Creek
Yaquina River	Elk Creek	YCHF5	Fall Chinook	Deer Creek
Yaquina River	Elk Creek	YSTW3	Winter Steelhead	Wolf Creek
Yaquina River	Elk Creek	YCO5	Coho	Wolf Creek
Yaquina River	Elk Creek	YCHF3	Fall Chinook	Elk Creek
Yaquina River	Little Elk Creek	YCHF4	Fall Chinook	Salmon Creek
Yaquina River	Little Elk Creek	YCO6	Coho	Salmon Creek
Alsea River	Main Stem and Bay	ALCU1	Chum	Canal Creek
Alsea River	Main Stem and Bay	ALCHS1	Spring Chinook	Alsea River
Alsea River	Main Stem and Bay	ALCHF3	Fall Chinook	Alsea River
Alsea River	Drift Creek	ALCHF1	Fall Chinook	Drift Creek
Alsea River	Drift Creek	ALCO1	Coho	Drift Creek
Alsea River	Five Rivers	ALCHF2	Fall Chinook	Lobster Creek
Alsea River	Five Rivers	ALCO3	Coho	Lobster Creek
Alsea River	Five Rivers	ALCO2	Coho	Five Rivers

Alsea River	Five Rivers	ALCHF4	Fall Chinook	Five Rivers
Alsea River	South Fork	ALCO4	Coho	Tobe Creek
Beaver Creek	North Fork	BCCO1	Coho	Beaver Creek, N Fork
Yachats River	Main Stem	YACO2	Coho	Yachats River, School Fork
Yachats River	North Fork	YACO1	Coho	Yachats River, N Fork

Table 6-3. Water Quality Limited Streams in Study Area

Basin	Waterbody Name	Boundaries	Parameter(s)
Siletz/Yaquina	Big Elk Creek	Mouth to Headwaters	Sedimentation, Habitat Modification, Temperature
	Depot Slough	Tidal portions of the Slough	Bacteria
	Drift Creek (Siletz)	Mouth to Headwaters	Temperature
	Mill Creek	Mouth to Headwaters	Temperature
	Nutes Slough	Tidal portions of the Slough	Bacteria
	Pooles Slough	Tidal portions of the Slough	Bacteria
	Yaquina River	Mill Creek to Simpson Creek	Temperature
	Yaquina River (Upper Tidal Portion)	River Mile 5 to Mill Creek (RM 12)	Bacteria
	Depot Slough	Tidal portions of the Slough	Bacteria
	Devils Lake	Lake	Chlorophyll a, pH
	Mill Creek	Mouth to Headwaters	Temperature
	Nutes Slough	Tidal portions of the Slough	Bacteria
	Ollala Slough	Tidal portions of the Slough	Bacteria
	Siletz River	Mouth to Rock Creek	Temperature
	Thompson Creek	Mouth to Headwaters	Bacteria
	Salmon River	Mouth to Headwaters	Temperature
Alsea	Buck Creek	Mouth to Headwaters	Temperature
	Cascade Creek (Main, N. & S. Forks)	Mouth to Headwaters	Temperature
	Depew Creek	Mouth to Headwaters	Temperature
	Five Rivers Creek	Mouth to Headwaters	Temperature
	School Fork Creek	Mouth to Headwaters	Temperature
	Stump Creek	Mouth to Headwaters	Temperature
	Williamson Creek	Mouth to Headwaters	Temperature
Yachats River (Main and N. Fork)	Mouth to Below Grass Creek	Temperature	

Source: DEQ 303D List, DEQ website 2001

Water Right Development: Comparison of Senior Water Rights to Drought Flows

There are some systems within the study area which appear to be over-appropriated during drought conditions and development of even senior rights on these systems may prove problematic. In order to determine potential biological impacts to waterways within the study area from withdrawals associated with the Council members water rights, the utilization of all senior rights were compared to the 95 percent exceedance flows (drought conditions) for each waterway (Table 6-4). These flow values were calculated using existing gage data or were estimated using gage data from streams with similar hydrologic characteristics (see discussion in Section 4). This analysis assumes development of all senior rights (if a municipal right is junior to an instream right it was not used) and that all withdrawals are consumptive. This analysis does not take into consideration minimum biological instream flow requirements as they have not been determined for the waterways within the study area. For some larger waterways, such as the Siletz River or Drift Creek flowing into Siletz Bay, the minimum flow requirements will be much greater than for the smaller streams with much lower average flows. As such, only those waterways whose total withdrawals exceed the 95 percent exceedance flows are highlighted. Fish habitats in some waterways can be significantly impacted at flow levels much greater than the apparent deficits noted, therefore, potential flow reductions from all withdrawals are shown. In some cases, municipalities have storage rights in addition to their "run-of-river" rights and these are noted in Table 6-4 when applicable. Under these circumstances, seasonal deficits to stream flows can be balanced by utilizing the system's storage capabilities for flow augmentation. Several municipal systems also have the ability to shift their withdrawals to different sources from season to season to avoid excessive stream flow depletions or for water quality purposes. In addition, streams with reservoirs will have less flow than indicated by the 95% exceedance flow because some of the flow goes to filling the reservoir and reservoir evaporation losses are higher than stream evaporation losses.

The results of this preliminary potential deficit analysis are illustrated in Table 6-4. There are several drainages that appear to be over-appropriated during a portion of or throughout the year during drought conditions. For example, if Lincoln City were to develop all of the applicable rights on the Schooner Creek system (17.4 cfs), their rights would exceed flows in the North and South Forks of Schooner Creek nine months out of the year during drought conditions. Some of Lincoln City's rights on the Schooner Creek system have been proof surveyed for certification, but OWRD has not acted on them yet. As another example, should the City of Waldport attempt to develop their senior water rights on the Eckman Creek system (4.0 cfs), their rights would exceed flows throughout the entire year during drought conditions. None of the City of Waldport's rights on the Eckman Creek system have been certificated. Due to the apparent deficits in these systems, it is believed that the full development of even senior rights will be problematic.

Description of the Rocky Creek Watershed

Existing Conditions

Rocky Creek is a perennial stream on the west side of the Oregon Coast range that flows directly into the Pacific Ocean under Highway 101. The Rocky Creek basin is illustrated in Figure 6-5. It is located approximately mid-way between Lincoln City and Newport. Rocky Creek drains a watershed of approximately 5.3 sq. miles, characterized by typical west-slope coastal forest. The basin's primary landowner is Boise Cascade who manages their property for timber harvesting. Elevations range from approximately 180 to 800 feet. Rocky Creek is typical of rivers and streams on the Coast Range with a deeply incised streambed and steep gradient (Stewards of Rocky Creek 1999). For much of its length, Rocky Creek is constrained within moderate V-shaped slopes and alternating terraces and slopes.

Vegetation in the basin is dominated by Sitka spruce (*Picea sitchensis*) in the lower elevations and western hemlock (*Tsuga heterophylla*) and Douglas fir (*Pseudotsuga heterophylla*) in the higher elevations. Disturbed and slide areas are generally characterized by red alder (*Alnus rubra*) and big-leaf maple (*Acer macrophyllum*). Wetland areas are limited as the creek is generally constrained within the steep slopes of the basin. The Rocky Creek Basin is typical of Oregon Coast habitats and provides habitat to many terrestrial and aquatic species. Wildlife within the Coast Range is dominated by such mammals as the black-tail deer (*Odocoileus hemionus*), Roosevelt elk (*Cervus elaphus*), black bear (*Ursus americanus*), cougar (*Felis concolor*) and coyote (*Canis latrans*). Common bird species include the dark-eyed junco (*Junco hyemalis*), American robin (*Turdus migratorius*), several species of woodpecker, accipiters and hawks. There are several at-risk species of wildlife that occur within the Coast Range ecoregion; however, surveys for these species have not yet been conducted within the Rocky Creek Basin. These species include the tailed frog (*Ascaphus truei*), the marbled murrelet (*Brachyramphus marmoratus*), the northwest pond turtle (*Clemmys marmorata marmorata*), the Del Norte salamander (*Plethodon elongatus*), the northern red-legged frog (*Rana aurora*) and the northern spotted owl (*Strix occidentalis caurina*) (Defenders of Wildlife 1998). No unique or rare habitats have been identified in the Rocky Creek basin.

There is currently large-scale clear-cutting occurring within the watershed. Road densities are moderately high. There is evidence to suggest that the creek and its watershed were subjected to severe disturbance during one or more earlier cycles of timber harvest. Levels of fine sediment in the streambed are high and raw banks are abundant within the Rocky Creek watershed (Huntington 1998).

In 1994 ODFW conducted a stream survey within the Rocky Creek basin from the high tide mark for a distance of approximately five miles (ODFW 1994). The following description for the basin conditions is relevant for the survey period (1994) but conditions have not been dramatically altered (though subsequent logging activities could change the habitat conditions). At the base of the Reach 1 is a dammed pool caused by the backing up of water behind the Highway 101 culvert. This is the only dammed pool within the basin. Both Reaches 1 and 2 are dominated by scour pools (56% and 48%, respectively) with some riffle habitats (19% and 15%, respectively). The riparian vegetation in Reach 1 is dominated by small deciduous trees (6-12 in) and shrubs. In Reach 2 the riparian vegetation is dominated



Source: ODFW Stream Report for Rocky Creek, 1994; and, USGS Depoe Bay, OR 7.5" Quad, 1984.

Figure 6-5

Rocky Creek Basin



DAVID EVANS
AND ASSOCIATES INC

by large deciduous trees (12-19 in). The stream habitat in Tributary 1 is predominately beaver pools (56%), with some scour pools (22%), riffles (6%) and rapids (13%). In Tributary 2 the stream habitat is also dominated by beaver pools (57%), with some scour pools (16%), glides (6%), riffles (12%) and rapids (9%). In general, the stream habitat in the Rocky Creek basin is predominately scour pools (39 percent) and beaver pools (40 percent). Substrates are dominated by fine sediments, with lesser amounts of gravel and cobble (ODFW 1994).

In his report on the potential for anadromous fish production in the rocky creek drainage, Huntington summarizes the aquatic habitats in Rocky Creek by stating the following:

“Overall, streams in the Rocky Creek watershed appear to me to be in fair to poor condition, and better suited to coho production than to use by winter steelhead. Within portions of the watershed below the natural migration barrier, anadromous fish habitat is characterized by good shading, infrequent to highly frequent beaver dams, abundant pools, very extensive deposits of fine sediment, spawning gravels that range in quality from low-fair to terrible, frequent raw streambanks, and moderate to low volumes of instream woody debris. The primary differences between habitat below and above the natural barrier are greater abundances of beaver dams, woody debris, and fine streambed sediment in the upstream areas. Potential spawning habitat above the natural barrier seems to be of lower quality, although there are a few areas where spawning gravel in these upper areas is in fair condition.”

Currently, Rocky Creek supports resident cutthroat trout and sculpin (ODFW 1994). In 1952 anadromous fish passage into Rocky Creek was permanently blocked by the placement of a long and unbaffled box culvert beneath Highway 101, discharging over a 30-40 ft. basalt bluff to the ocean. Prior to this blockage, the watershed once supported runs of coho salmon, winter steelhead, and sea-run cutthroat trout (Huntington 1998). There has been speculation that Rocky Creek may have supported chum salmon, but it is unknown whether this species would ever have thrived in a small, direct ocean tributary without an estuary (Huntington 1998). Restoration of anadromous passage to Rocky Creek and the Rocky Creek culvert was considered a priority within a salmon barrier inventory conducted by the Oregon Department of Transportation and Oregon Department of Fish and Wildlife (State of Oregon 1997). The Stewards of Rocky Creek, a private citizens group, has been a strong proponent for salmon restoration of Rocky Creek (Stewards of Rocky Creek 1999).

Potential for Restoration

In 1988 Charles Huntington prepared a report discussing the potential for anadromous fish production in the Rocky Creek basin (Huntington 1988). In his aquatic inventory, Huntington found that the Rocky Creek watershed provides habitat suitable for use by coho salmon, winter steelhead and sea-run cutthroat; however, there is a natural migration barrier, a moderately steep, natural bedrock slide or chute, located 1.9 miles (mi) upstream from Highway 101. This bedrock slide is approximately 100 feet long and 30 feet wide, spanning the width of the creek. As flow approaches the slide, it fans across the bedrock and forms a thin sheet of water, creating a substantial obstacle for migration under most flow conditions. Huntington concluded that this formation could completely block anadromous fish from over half of the suitable habitat that would otherwise be available within the watershed and

Table 6-4. Apparent Deficits During Drought Years with all Senior Rights Developed (Using 95% Exceedance Flows)

Municipality	Water Body	Tributary to	Permit No. (* Certified)	Priority Date	Q - cfs (* = Storage)	Sum of Q's cfs	January		February		March		April		May		June		July		August		September		October		November		December			
							Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit	Flow	Deficit
Lincoln City	Rock Creek	Devils Lake	S 11506	03/27/1929	0.20	0.20	NA																									
	Rock Creek	Devils Lake	S 20179*	04/11/1943	0.75																											
	Rock Creek	Devils Lake	S 20179*	07/17/1945	0.75	1.50	5.91	4.41	9.85	8.35	8.69	7.19	8.69	7.19	6.95	5.45	5.22	3.72	4.17	2.67	3.01	1.51			2.32	0.82	3.83	2.33	10.08	8.58		
	Erickson Cr	Schooner Cr	S 11661*	09/27/1930	0.89	0.89	3.20	2.31	5.33	4.44	4.70	3.81	4.70	3.81	3.76	2.87	2.82	1.93	2.26	1.37	1.63	0.74			1.25	0.36	2.07	1.18	5.45	4.56		
	Gordey Cr	Drift Cr	S 14677*	11/14/1936	0.50																											
	Gordey Cr	Drift Cr	S 16370*	06/10/1941	0.50	1.00	1.76	0.76	2.93	1.93	2.58	1.58	2.58	1.58	2.07	1.07	1.55	0.55	1.24	0.24					1.14	0.14	3.00	2.00				
	N Fk Schooner	Schooner Cr	S 18293	10/13/1943	3.50																											
	N Fk Schooner	Schooner Cr	S 37605	01/28/1969	3.50																											
S Fk Schooner	Schooner Cr	S 37605	01/28/1969	3.50	10.50			10.57	0.07	10.95	0.45			10.47	-0.03	7.62	-2.88	4.05	-6.45	3.14	-7.96	2.57	-7.96	2.02	-8.48	2.29	-8.21	5.86	-4.64	11.93	1.43	
Schooner Cr	Siletz Bay	S 46867	06/07/1978	6.00	6.00	39.42	33.42	47.82	41.82	49.54	43.54	47.39	41.39	34.46	28.46	18.31	12.31	14.22	8.22	11.63	5.63	9.15	3.15	10.34	4.34	26.49	20.49	53.96	47.96			
KGL	Drift Creek	Siletz Bay	S 29267	12/09/1959	3.00																											
	Drift Creek	Siletz Bay	S 35106	04/29/1966	4.00	7.00	101.72	94.72	123.40	116.40	127.85	120.85	122.29	115.29	88.94	81.94	47.25	40.25	36.69	29.69	30.02	23.02	23.62	16.62	26.68	19.68	68.37	61.37	139.24	132.24		
Depoe Bay	N Depoe Bay Cr	Depoe Bay	S 30618*	08/18/1961	0.56*	0.56	1.01	0.45	1.69	1.13	1.49	0.93	1.49	0.93	1.19	0.63	0.89	0.33	0.72	0.16					0.66	0.10	1.73	1.17				
	S Depoe Bay Cr	Depoe Bay	S42830*	10/30/1970	0.50																											
	S Depoe Bay Cr	Depoe Bay	S 50604	01/04/1985	2.00	2.50	4.85	2.35	8.08	5.58	7.13	4.63	7.13	4.63	5.71	3.21	4.28	1.78	3.42	0.92					3.14	0.64	8.27	5.77				
	Rocky Cr	Pacific		06/26/1969	4.00	4.00	6.54	2.54	10.89	6.89	9.61	5.61	9.61	5.61	7.69	3.69	5.77	1.77	4.61	0.61					4.23	0.23	11.15	7.15				
Newport	Jeffries Cr	Big Cr	S 33151*	01/08/1964	0.40	0.40	NA																									
	Blatner Cr	Big Cr	S 20*	05/09/1905	0.54																											
	Big Cr/Tribs	Big Cr	S 7722*	10/26/1922	10.00																											
	Big Cr	Pacific	R 1236*	07/31/1947	200*																											
	Big Cr	Pacific	S 20703*	08/30/1947	200 AF*																											
	Big Cr	Pacific	R 5134*	03/23/1963	310*																											
	Big Cr	Pacific	S 33127*	03/23/1963	310 AF*																											
	Big Cr	Pacific	R 5134*	06/04/1964	35*																											
	Big Cr	Pacific	S 33127*	06/04/1964	35 AF*																											
	Big Cr	Pacific	R 6171	06/26/1970	625*																											
	Big Cr	Pacific	S 38220	07/18/1970	625 AF*	10.54	6.85	3.69	10.00	-0.54	7.58	-2.96	4.64	-5.90	3.15	-7.39	1.83	-8.71	1.27	-9.27	0.89	0.65	0.84	-9.70	1.05	-9.40	1.88	-8.68	6.71	3.83		
	Little Cr	Pacific	S 12609*	04/16/1933	0.25	0.25	NA																									
	Siletz R	Pacific	S29213	09/23/1959	6.00	6.00	609.02	603.02	651.13	645.13	693.24	687.24	557.18	551.18	331.50	325.50	184.65	178.65	111.22	105.22	73.21	67.21	64.68	58.68	80.23	74.23	333.66	327.66	644.65	638.65		
Seal Rock	Hill Cr	Pacific	S 26489*	09/30/1955	0.40	0.40	NA																									
Waldport	Weist Cr	Eckman Sl	S 9114*	05/15/1925	0.50																											
	Weist Cr	Eckman Sl	S 10315*	08/30/1927	0.23	0.73	1.09	0.36	1.10	0.37	1.29	0.56	1.12	0.39																		
	Eckman (SW Fk)	Alsea Bay	S 18654	03/17/1945	2.00																											
	Eckman (Mid Fk)	Alsea Bay	S 23587	04/24/1951	2.00	4.00	2.88	1.12	2.91	1.09	3.40	0.60	2.95	1.05	1.79	2.21	0.97	3.03	0.52	3.48	0.90	3.10	0.19	3.81	0.30	3.70	0.71	3.29	2.22	1.76		
	Darkey Cr	Alsea R	S 30624	02/03/1960	1.50	1.50	5.45	3.95	5.52	4.02	6.45	4.95	5.60	4.10	3.40	1.90	1.84	0.34														
SWLCWD	Starr Cr	Pacific	S 16464*	06/07/1941	0.30	0.30	NA																									
	Big Cr	Pacific	S 19165*	06/07/1941	0.30	0.30	3.28	2.98	3.33	3.03	3.88	3.58	3.37	3.07	2.05	1.75	1.11	0.81	0.60	0.30	1.02	0.72			0.21	0.09	0.34	0.04	0.81	0.51	2.56	2.26
	Vingie Cr	Pacific	S31979	09/05/1962	0.90	0.90	5.59	4.69	5.67	4.77	6.61	5.71	5.74	4.84	3.49	2.59	1.89	0.99	1.02	0.12	1.74	0.84	0.96	0.54	0.58	0.32	1.38	0.48	4.36	3.46		
	Dicks Fk	Big Cr	S 36270 *	06/06/1967	0.40	0.40	1.93	1.53	1.96	1.56	2.28	1.88	1.98	1.58	1.20	0.80	0.65	0.25														
Yachats	Cape Cr	Pacific	S 11586*	07/20/1930	0.49	0.49	NA																									
	Reedy Cr	Yachats R	S 17333*	07/08/1941	2.00																											
	Salmon Cr	Yachats R	S 29018	06/25/1959	1.00																											
	Salmon Cr	Yachats R	S 29018	08/21/1959	1.00	4.00	2.41	1.59	2.44	1.58	2.84	1.16	2.47	1.53	1.50	-2.50	0.81	-8.19	0.44	-3.56	0.75	-3.25	0.18	-3.84	0.25	-3.75	0.59	-3.41	1.88	-2.12		
	Yachats R	Pacific	S 53471	03/19/1985	2.00	2.00	65.16	63.16	102.90	100.90	116.90	114.90	80.91	78.91	50.93	48.93	26.85	24.85	14.24	12.24	3.01	1.01	7.52	5.52	9.61	7.61	16.78	14.78	35.53	33.53		
Toledo	Unn Str	Mill Cr	S 7191*	12/21/1920	0.75																											
	Mill Cr	Yaquina R	S 709*	01/03/1907	5.00																											
	Mill Cr	Yaquina R	S 4085*	05/14/1915	10.00																											
	Mill Cr	Yaquina R	S 7192*	12/21/1920	0.75																											
	Mill Cr	Yaquina R	R 5132*	11/08/1955	250*																											
	Mill Cr	Yaquina R	S 33124*	11/08/1955	250 AF*	16.50																										
	Siletz R	Pacific	S 12553*	02/11/1933	1.75																											
	Siletz R	Pacific	S 9370	10/23/1925	4.00	5.75	609.02	603.27	651.13	645.38	693.24	687.49	557.18	551.43	331.50	325.75	184.65	178.90	111.22	105.47	73.21	67.46	64.68	58.93	80.23	74.48	333.66	327.91	644.65	638.90		
Siletz	Unn Str	Siletz R	S 15718*	03/22/1940	0.50																											
	Unn Str	Siletz R	S 16630*	10/10/1941	3.00	3.50	NA																									
	Tangerman Cr	Siletz R	S 30209*	11/1																												

may have long served as an isolating mechanism for sub-populations of fish within the watershed (Huntington 1988). In his aquatic inventory, Huntington indicates there are approximately 3.2 miles of coho habitat and 3.9 miles of steelhead habitat below the natural barrier and about 4.3 miles of coho habitat and 4.8 miles of steelhead habitat upstream. Huntington believes that the reaches and tributaries above the natural barrier would only be accessible to coho and steelhead if the slide were modified to allow for passage. ODFW indicated that steelhead may have been able to get above the natural barrier; however, only optimal flow conditions would have allowed coho to pass (Goodson, ODFW pers comm). Others have asserted that both steelhead and anadromous cutthroat could have migrated past the natural barrier (Stewards of Rocky Creek 1999).

Recommendations Regarding Future Water Development

Regulatory Processes for Water Rights Development

Permitting for additional water development in the Central Coast study area may be difficult on many of the streams and may not be possible on some streams. Streams where low flow conditions occur, where over-appropriation of water is likely, where listed fish species occur, or where water quality limitations will be exasperated by additional withdrawals are all subject to critical review by the state and agencies that review water right permit processes. Any new or expanded withdrawals that are not yet certified will be subject to a potential denial or an approval with mitigation and/or conditions (instream flow replacement for proposed withdrawals, limits on withdrawal periods, etc.).

Intake structures that require instream structures or fill will require state and federal permitting. At both levels of the permit review process the fish impacts issue will be fully evaluated. Any potential adverse impacts to the habitats of a listed species could result in a permit denial. Dams or other structures necessary for storage will be especially scrutinized, with a large reservoir project such as Rocky Creek requiring several years of permitting and public reviews (see below for more details on Rocky Creek).

The potential permits required for new or expanded water withdrawals (recognizing that project designs can vary substantially, thus determining what is required for a specific project action) may include:

- County/City building permits
- Joint Removal-Fill Permit
- State lands lease (for tidal and other lands owned by the State of Oregon)
- 401 Certification (from DEQ if a fill requires a Corps Section 404 permit)
- Section 10 (Corps) Permit for structures in a navigable waterway
- Federal ESA compliance requiring a Biological Opinion and Incidental Take Statement (ESA Section 7) or a Habitat Conservation Plan and Incidental Take Permit (ESA Section 10)

Minimum Stream Flows

Future water withdrawal proposals will be expected to address the minimum stream flow requirements of the subject stream. Flow reductions can adversely impact habitats, fish migration, water quality, and other aspects of the aquatic environment. To determine the minimum stream flow required for a sustainable biota is difficult and costly. Even with extensive studies the issue may not be resolved to any parties' satisfaction.

Future of ESA Listings

The federal court in Eugene ruled that the NMFS incorrectly listed the coho as a threatened species (*Alesea Valley Alliance v. Evans*, 99-6265-HO, D. OR). The decision has been appealed to the 9th Circuit Court of Appeals. The decision to de-list the species may be upheld and additional species presently listed will also be challenged in court as plaintiffs hope to remove these species from ESA protection. NMFS is now to review 22 other ESA listings that include hatchery stocks, though the science community generally believes the listings won't significantly change. Regardless, for long-term water supply planning it is recommended that the CCWC proceed as if the species will remain listed, because the scientific and social concerns for salmon protection will likely remain.

Regionalizing the Central Coast Water Supply and Development

The future for water development in most streams within the Central Coast study area will either be very difficult or will be substantively limited because of environmental and regulatory constraints. To develop a regional water supply system provides some important opportunities for CCWC members to address these water development limitations:

- A regional supply plan can limit, and potentially minimize, the overall impacts of growth on coastal aquatic resources.
- The impacts of one long-term water supply (versus several) can, in the case of the proposed Rocky Creek Reservoir, avoid impacts to anadromous fish and water quality limited streams.
- CCWC members can contribute to fish and water quality restoration efforts on several streams if the future supply is focused (such as at Rocky Creek) and existing water rights on other streams can be reduced or retired without harm to the public.

Studies Anticipated for Rocky Creek

In order to construct the proposed Rocky Creek Reservoir, local, state and federal permits will be required, including those listed above, as well as a water right permit from the Water Resources Department. A number of scientific evaluations will be required to obtain the necessary permitting. These include, but are not limited to, the following:

- Technical evaluation of barrier restoration
- Threatened and Endangered plant and wildlife surveys
- Wetlands and jurisdictional waterways delineation
- Alternatives analysis for NEPA Compliance (Environmental Impact Statement)

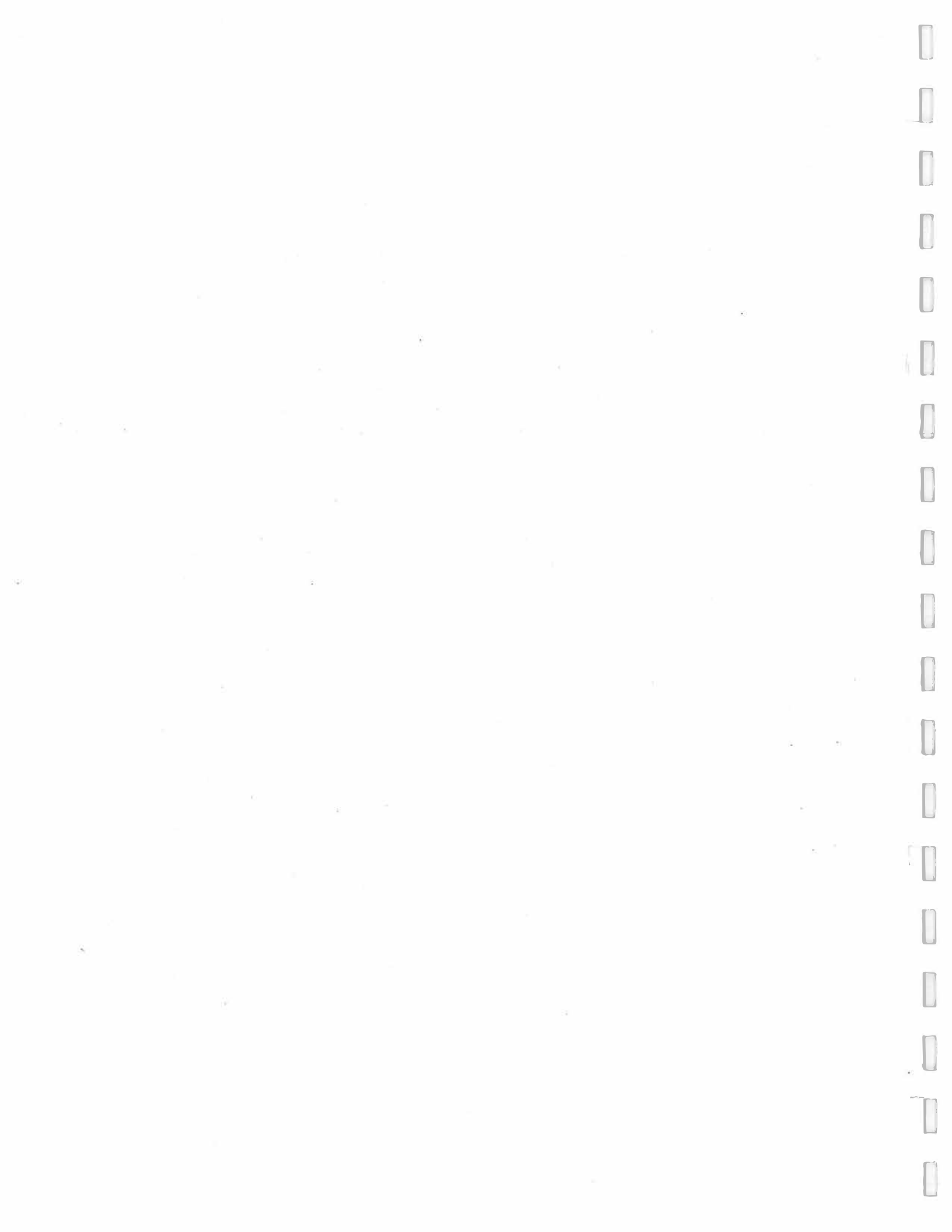
- Wildlife habitat impacts assessment and mitigation plan per ODFW (OAR 635-415-0025)
- A Biological Assessment will be required to comply with federal ESA if federally listed species are located within the reservoir impact area.

These studies and analyses will be conducted during a subsequent phase of the Central Coast Water planning process.



Operational Plan

It will be necessary for the Council members to determine how to satisfy their system demands until the Rocky Creek project is online. This will involve sharing of water supplies among the members as they are available. South County water providers are currently evaluating how the City of Toledo supply can fulfill that role for them. The City of Lincoln City and Kernville-Gleneden Beach-Lincoln Beach Water District are currently working on an arrangement to share the Drift Creek water rights. These activities and others that may be initiated in the future will allow the time required for development of Rocky Creek supply when all the participants are in common need for additional water to satisfy their increasing demands. Once the Rocky Creek project is developed, it can be used for augmenting the existing supplies during the summer and early fall when stream flows are typically at their lowest.



SECTION 8

References

- CH2M HILL. August 2000. Kernville-Gleneden Beach- Lincoln Beach Water District Master Plan.
- CH2M HILL. August 2001. City of Lincoln City, Water Master Plan Update.
- Defenders of Wildlife. 1998. *Oregon living landscape: Strategies and opportunities to conserve biodiversity*. Oregon Biodiversity Project.
- Dyer Partnership. ____ 1996. City of Siletz, Master Water System Plan.
- Dyer Partnership. May 1999. City of Waldport, Water Source Siting Study.
- Dyer Partnership. June 2001. City of Yachats Water Master Plan.
- Federal Register. Vol. 63 No. 55/ Monday, March 23, 1998. Listing Endangered and Threatened Species and Designating Critical habitat: Petition to List Sea-Run Cutthroat Trout and Designate Critical Habitat Throughout Its Range in California, Oregon and Washington.
- Fuller and Morris Engineering, Inc. 1997. Long-Range water Supply: A Study of Newport's Water Supply and the Potential for Future Regionalization of Water Supplies. June 1997. City of Newport, Oregon.
- Fuller & Morris Engineering/CH2M HILL. May 1996. Wastewater Facilities Plan- 1995 Update.
- Goodson, Kevin. Oregon Department of Fish and Wildlife. Assistant District Fish Biologist. Personal Communication. September 25, 2001.
- Huntington, Charles. 1988. *The potential for anadromous fish production in the Rocky Creek drainage upstream of a migration barrier beneath Highway 101*. Prepared for David Evans and Associates and Fuller and Morris Engineering.
- Kirkpatrick, Glenn. Stewards of Rocky Creek. Personal Communication. November 28, 2001.
- KPFF Consulting Engineers. February 1998. City of Toledo, Oregon, Water Master Plan.
- Oregon Department of Fish and Wildlife (ODFW). 1994. *Stream report for Rocky Creek*. ODFW Aquatic Inventory Project.
- Oregon State Water Resources Board. 1965. Mid-Coast Basin Plan.
- Pagel, M.O. 2000. The Intersection of Federal ESA Regulations and State Water Law. *Proceedings of the Oregon Water law Conference, The Seminar Group, October 2000*.
- Russell, Aubrey. Oregon Trout. Personal Communication. November 27, 2001.

- Russell, Karen. WaterWatch of Oregon. Personal Communication. November 27, 2001.
- State of Oregon. 1997. Oregon's Coastal Salmon Restoration Initiative (The Oregon Plan). Multi-volume Summary of actions and programs planned to restore salmon in coastal Oregon. Office of the Governor, Salem, Oregon.
http://www.oregon-plan.org/archives/ocsra_mar1997.FCH15.html
- Stewards of Rocky Creek. 1999. Restoration Documentation for the Rocky Creek Project.
- SWLCWD. Revised July 2001. Water System Development and Conservation Plan.
- U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Final ESA Section 7 Consultation Handbook.

APPENDIX A

Instream Water Rights



Instream Water Rights

Stream Code: 181170 Cert#: 59551 Application:MF 438

Stream Name: CAPE CR > PACIFIC OCEAN

Priority: 3/26/1974 Upstream Mile: 0.0 Downstream Mile: 0.0

Condition Code: 01

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN CAPE CREEK AT OR NEAR ITS MOUTH (SW1/4, SEC. 34, T 16S, R 12W, WM).

Oct	Nov	Dec	Jan
10.0/20.0	35.0/35.0	55.0/55.0	55.0/55.0
Feb	Mar	Apr	May
55.0/55.0	55.0/55.0	50.0/50.0	30.0/30.0
Jun	Jul	Aug	Sep
10.0/10.0	10.0/10.0	5.0/5.0	5.0/5.0

Stream Code: 181170 Cert#: 72898 Application:IS 71401

Stream Name: CAPE CR > PACIFIC OCEAN

Priority: 3/25/1991 Upstream Mile: 0.0 Downstream Mile: 0.0

Condition Code: 0

Purpose: For ANADROMOUS AND RESIDENT FISH REARING

To be maintained

CAPE CREEK FROM AN UNNAMED TRIBUTARY (SWNE, SECTION 32, TOWNSHIP 16S, RANGE 11W WM); TO THE MOUTH AT RIVER MILE 0.0 (SECTION 34, TOWNSHIP 16S, RANGE 12W WM)

Oct	Nov	Dec	Jan
16.9/16.9	88.9/88.9	97.0/97.0	97.0/97.0
Feb	Mar	Apr	May
97.0/97.0	97.0/97.0	67.2/67.2	36.6/36.6
Jun	Jul	Aug	Sep
22.4/22.4	13.2/13.2	8.8/8.8	8.9/8.9

Stream Code: 1806100020 Cert#: 59580 Application:MF 446

Stream Name: DRIFT CR > SILETZ BAY

Priority: 3/26/1974 Upstream Mile: 3.0 Downstream Mile: 0.0

Condition Code: 41

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN DRIFT CREEK FROM ITS CONFLUENCE WITH GORDEY CREEK (NE1/4, SEC. 1, T 8S, R 11W, WM), TO THE MOUTH OF DRIFT CREEK.

Oct	Nov	Dec	Jan
30.0/80.0	100.0/100.0	100.0/100.0	100.0/100.0
Feb	Mar	Apr	May
100.0/100.0	100.0/100.0	100.0/100.0	100.0/100.0
Jun	Jul	Aug	Sep
40.0/40.0	25.0/25.0	22.0/22.0	22.0/22.0

Comments: 4 CFS IS RESERVED FOR MUNICIPAL PURPOSES. EPD

Stream Code: 1806100020 Cert#: 59728 Application:MF 445

Stream Name: DRIFT CR > SILETZ BAY

Priority: 7/12/1966 Upstream Mile: 2.5 Downstream Mile: 0.0

Condition Code: 03

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN DRIFT CREEK FROM ITS CONFLUENCE WITH GORDEY CREEK (NE1/4, SEC. 1, T 8S, R 11W, WM), TO THE MOUTH OF DRIFT CREEK.

Oct	Nov	Dec	Jan
22.0/80.0	100.0/100.0	100.0/100.0	100.0/100.0
Feb	Mar	Apr	May
100.0/100.0	100.0/100.0	100.0/100.0	100.0/100.0
Jun	Jul	Aug	Sep
40.0/40.0	25.0/22.0	22.0/22.0	22.0/22.0

Comments: 4 CFS RESERVED FOR MUNICIPAL PURPOSES.

Stream Code: 18094000400090 Cert#: 59579 Application:MF 43

Stream Name: DRIFT CR > ALSEA R

Priority: 3/26/1974 Upstream Mile: 4.9 Downstream Mile: 0.0

Condition Code: 38

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN DRIFT CREEK FROM ITS CONFLUENCE WITH WHEELOCK CREEK (NW1/4, SEC. 24, T 13S, R 11W, WM), TO ITS CONFLUENCE WITH THE ALSEA RIVER (NE1/4 SEC. 27, T 13S, R 11W, WM).

Oct	Nov	Dec	Jan
25.0/90.0	130.0/130.0	130.0/130.0	110.0/110.0
Feb	Mar	Apr	May
110.0/110.0	110.0/110.0	110.0/110.0	70.0/70.0
Jun	Jul	Aug	Sep
45.0/45.0	20.0/20.0	15.0/15.0	15.0/15.0

Comments: EPD

Stream Code: 18094000400090 Cert#:59727 Application: MF 442

Stream Name: DRIFT CR > ALSEA R

Priority: 7/12/1966 Upstream Mile: 4.9 Downstream Mile: 0.0

Condition Code: 03

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN DRIFT CREEK FROM ITS CONFLUENCE WITH WHEELOCK CREEK (NW1/4, SEC. 24, T 13S, R 11W, WM), TO ITS CONFLUENCE WITH THE ALSEA RIVER (NE1/4 SEC. 27, T 13S, R 11W, WM).

Oct	Nov	Dec	Jan
25.0/90.0	90.0/90.0	90.0/90.0	90.0/90.0
Feb	Mar	Apr	May
90.0/90.0	90.0/90.0	90.0/90.0	70.0/70.0
Jun	Jul	Aug	Sep
30.0/30.0	20.0/20.0	15.0/15.0	15.0/15.0

Stream Code: 18094000400090 Cert#: 59742 Application: MF 441

Stream Name: DRIFT CR > ALSEA R

Priority: 7/12/1966 Upstream Mile: 22.0 Downstream Mile: 0.0

Condition Code: 03

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN DRIFT CREEK AND ITS TRIBUTARIES ABOVE USG GAGE NO. 14-3067, (NW1/4, SEC. 24, T 12S, R 10W, WM), MEASURED AT THE GAGE AND MAINTAINED TO THE MOUTH.

Oct	Nov	Dec	Jan
0.0/0.0	0.0/0.0	0.0/0.0	0.0/0.0
Feb	Mar	Apr	May
0.0/0.0	0.0/0.0	0.0/0.0	0.0/0.0
Jun	Jul	Aug	Sep
0.0/0.0	0.0/0.0	5.0/5.0	5.0/0.0

**Stream Code: 18081000500200 Cert#: 73142 Application: IS
71393**

Stream Name: MILL CR > YAQUINA R

Priority : 3/25/1991 Upstream Mile: 0.0 Downstream Mile: 0.0

Condition Code: 0

Purpose: For ANADROMOUS AND RESIDENT FISH REARING

To be maintained

MILL CREEK FROM AN UNNAMED TRIBUTARY (SENW, SECTION 33,
TOWNSHIP 11S, RANGE 10W, WM); TO THE MOUTH AT RIVER MILE 0.0
(NENW, SECTION 28, TOWNSHIP 11S, RANGE 10W WM)

Oct	Nov	Dec	Jan
3.1/3.1	31.2/31.2	61.0/61.0	61.0/61.0
Feb	Mar	Apr	May
58.2/58.2	44.7/44.7	30.1/30.1	15.9/15.9
Jun	Jul	Aug	Sep
9.2/9.2	5.5/5.5	6.3/6.3	3.3/3.3

**Stream Code: 18060000100040 Cert#: 73162 Application: IS
72004**

Stream Name: ROCK CR > DEVILS L

Priority: 11/19/1991 Upstream Mile: 0.0 Downstream Mile: 0.0

Condition Code: 0

Purpose: For ANADROMOUS AND RESIDENT FISH REARING

To be maintained

ROCK CREEK FROM THE FALLS (NENE, SECTION 12, TOWNSHIP 7S, RANGE 11W WM); TO THE MOUTH AT RIVER MILE 0.0 (SECTION 14, TOWNSHIP 7S, RANGE 11W WM)

Oct	Nov	Dec	Jan
7.5/7.5	25.0/25.3	40.0/40.0	40.0/40.0
Feb	Mar	Apr	May
36.2/36.2	35.6/35.6	26.2/26.2	16.6/16.6
Jun	Jul	Aug	Sep
12.1/12.1	9.5/9.5	7.8/7.8	7.8/7.8

Stream Code: 1806100010 Cert#: 59601 Application:MF 495

Stream Name:

Priority: 11/ 3/1983 Upstream Mile: Downstream Mile:

Condition Code: 01

Purpose: For SUPPORTING AQUATIC LIFE AND MINIMIZING POLLUTION

To be maintained

HAVE PRIORITY OVER THE RIGHT TO USE WATER FOR HUMAN CONSUMPTION, LIVESTOCK CONSUMPTION OR THE USE OF WATERS LEGALLY RELEASED FROM STORAGE.

Oct	Nov	Dec	Jan
45.0/67.0	67.0/67.0	67.0/67.0	67.0/67.0
Feb	Mar	Apr	May
67.0/67.0	67.0/67.0	67.0/67.0	45.0/45.0
Jun	Jul	Aug	Sep
45.0/20.0	20.0/20.0	20.0/20.0	45.0/45.0

Stream Code: 1806100030 Cert#: 59603 Application: MF 499

Stream Name: SILETZ R > SILETZ BAY

Priority: 3/26/1974 Upstream Mile: 59.0 Downstream Mile: 0.0

Condition Code: 01

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN SILETZ RIVER FROM ITS CONFLUENCE WITH SUNSHINE CREEK (SE1/4, SEC. 3, T 9S, R 9W, WM), TO THE USGS STATE ENGINEER GAGE NO. 14-3055 AT STREAM MILE 42.6 (SW1/4, SEC. 11, T10S, R10W, WM).

Oct	Nov	Dec	Jan
120.0/190.0	200.0/200.0	200.0/200.0	170.0/170.0
Feb	Mar	Apr	May
170.0/170.0	170.0/170.0	170.0/170.0	170.0/170.0
Jun	Jul	Aug	Sep
100.0/100.0	100.0/100.0	80.0/80.0	80.0/80.0

Stream Code: 1806100030 Cert#: 67712 Application:MF 497

Stream Name: SILETZ R > SILETZ BAY

Priority: 7/12/1966 Upstream Mile: 42.6 Downstream Mile: 0.0

Condition Code: 40

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN THE SILETZ RIVER FROM THE USGS GAGE 14-3005 AT STREAM MILE 42.6 (SW1/4, SEC. 11, T 10S, R 10W, WM), TO THE MOUTH OF THE SILETZ RIVER.

Oct	Nov	Dec	Jan
150.0/200.0	200.0/200.0	200.0/200.0	200.0/200.0
Feb	Mar	Apr	May
200.0/200.0	200.0/200.0	200.0/200.0	200.0/200.0
Jun	Jul	Aug	Sep
135.0/135.0	100.0/100.0	100.0/100.0	100.0/100.0

Comments: EPD

Stream Code: 1806100030 Cert#: 67713 Application: MF 498

Stream Name: SILETZ R > SILETZ BAY

Priority: 3/26/1974 Upstream Mile: 42.6 Downstream Mile: 0.0

Condition Code: 38

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN THE SILETZ RIVER FROM THE USGS GAGE NO. 14-3055 AT STREAM MILE 42.6 (SW1/4, SEC. 11, T10S, R10W, WM), TO THE MOUTH OF THE SILETZ RIVER.

Oct	Nov	Dec	Jan
150.0/200.0	220.0/220.0	220.0/220.0	200.0/200.0
Feb	Mar	Apr	May
200.0/200.0	200.0/200.0	200.0/200.0	200.0/200.0
Jun	Jul	Aug	Sep
135.0/135.0	100.0/100.0	100.0/100.0	100.0/100.0

Comments: EPD

Stream Code: 181000 Cert#: 59608 Application: MF 521

Stream Name: YACHATS R > PACIFIC OCEAN

Priority: 3/26/1974 Upstream Mile: 5.0 Downstream Mile: 0.0

Condition Code: 43

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN THE YACHATS RIVER FROM ITS CONFLUENCE WITH BEAMER CREEK, (SW1/4, SEC. 32, T 14S, R 11W, WM), TO THE MOUTH OF THE YACHATS RIVER.

Oct	Nov	Dec	Jan
25.0/50.0	70.0/70.0	70.0/70.0	65.0/65.0
Feb	Mar	Apr	May
65.0/65.0	65.0/65.0	65.0/65.0	40.0/40.0
Jun	Jul	Aug	Sep
30.0/30.0	20.0/20.0	15.0/15.0	15.0/15.0

Comments: EPD - MUN. RES 1 CFS BELOW RIVER MILE 5

Stream Code: 181000 Cert#: 59609 Application: MF 524

Stream Name: YACHATS R > PACIFIC OCEAN

Priority: 3/26/1974 Upstream Mile: 8.8 Downstream Mile: 0.0

Condition Code: 38

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN THE YACHATS RIVER FROM ITS CONFLUENCE WITH THE NORTH FORK OF THE YACHATS RIVER, (SW1/4, SEC. 35, T 14S, R 11W, WM), TO ITS CONFLUENCE WITH BEAMER CREEK, (SE1/4, SEC. 32, T 14S, R 11W, WM).

Oct	Nov	Dec	Jan
20.0/40.0	50.0/50.0	60.0/60.0	50.0/50.0
Feb	Mar	Apr	May
50.0/50.0	50.0/50.0	50.0/50.0	30.0/30.0
Jun	Jul	Aug	Sep
20.0/20.0	10.0/10.0	10.0/10.0	10.0/10.0

Comments: EPD

Stream Code: 181000 Cert#: 59739 Application: MF 520

Stream Name: YACHATS R > PACIFIC OCEAN

Priority: 7/12/1966 Upstream Mile: 5.0 Downstream Mile: 0.0

Condition Code: 03

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN THE YACHATS RIVER FROM STATE ENGINEER TEMPORARY GAGE AT RIVER MILE 5, (SW1/4, SEC. 32, T 14S, R 11W, WM), TO THE MOUTH.

Oct	Nov	Dec	Jan
150.0/50.0	70.0/70.0	70.0/70.0	65.0/65.0
Feb	Mar	Apr	May
65.0/65.0	65.0/65.0	65.0/65.0	40.0/40.0
Jun	Jul	Aug	Sep
30.0/30.0	20.0/15.0	15.0/15.0	15.0/15.0

Comments: 1 CFS RESERVED FOR MUNI PURPOSES BELOW RM 5.

Stream Code: 181000 Cert#: 59740 Application: MF 523

Stream Name: YACHATS R > PACIFIC OCEAN

Priority: 7/12/1966 Upstream Mile: 8.8 Downstream Mile: 0.0

Condition Code: 03

Purpose: For SUPPORTING AQUATIC LIFE AND RECREATION

To be maintained

IN THE YACHATS RIVER FROM ITS CONFLUENCE WITH THE NORTH FORK OF THE YACHATS RIVER (SW1/4, SEC. 35, T 14S, R 11W, WM), TO ITS CONFLUENCE WITH BEAMER CREEK, (SE1/4, SEC. 32, T 14S, R 11W, WM).

Oct	Nov	Dec	Jan
6.0/40.0	50.0/50.0	60.0/60.0	50.0/50.0
Feb	Mar	Apr	May
50.0/50.0	50.0/50.0	50.0/50.0	30.0/30.0
Jun	Jul	Aug	Sep
15.0/15.0	6.0/6.0	6.0/6.0	6.0/6.0

Comments: 1 CFS RESERVED MUNIC PURPOSE BELOW RIVER MI 5

Stream Code: 181000 Cert#: 73160 Application: IS 71426

Stream Name: YACHATS R > PACIFIC OCEAN

Priority: 3/25/1991 Upstream Mile: 15.2 Downstream Mile: 8.8

Condition Code: 0

Purpose: For ANADROMOUS AND RESIDENT FISH REARING

To be maintained

YACHATS RIVER FROM AN UNNAMED TRIBUTARY AT RIVER MILE 15.2 (NESE, SECTION 12, TOWNSHIP 15S, RANGE 11W WM); TO NORTH FORK AT RIVER MILE 8.8 (SWNW, SECTION 35, TOWNSHIP 14S, RANGE 11W WM)

Oct	Nov	Dec	Jan
10.1/10.1	20.5/20.5	90.0/82.0	82.0/82.0
Feb	Mar	Apr	May
82.0/82.0	82.0/82.0	82.0/82.0	46.0/46.0
Jun	Jul	Aug	Sep
29.7/29.7	16.2/16.2	10.2/10.2	10.1/10.1

Stream Code: 181000 Cert#: 73161 Application: IS 71427

Stream Name: YACHATS R > PACIFIC OCEAN

Priority: 3/25/1991 Upstream Mile: 8.8 Downstream Mile: 0.0

Condition Code: 0

Purpose: For ANADROMOUS AND RESIDENT FISH REARING

To be maintained

YACHATS RIVER FROM NORTH FORK AT RIVER MILE 8.8 (SWNW, SECTION 35, TOWNSHIP 14S, RANGE 11W WM); TO THE MOUTH AT RIVER MILE 0.0 (SECTION 27, TOWNSHIP 14S, RANGE 12W WM)

Oct	Nov	Dec	Jan
49.1/49.1	132.0/132.0	132.0/132.0	132.0/132.0
Feb	Mar	Apr	May
132.0/132.0	132.0/132.0	132.0/132.0	63.0/63.0
Jun	Jul	Aug	Sep
63.0/42.0	40.2/40.2	25.6/25.6	24.9/24.9

