

**POLICIES AND PROCEDURES FOR PROTECTING
ANADROMOUS SALMONID HABITAT IN
DEL NORTE, HUMBOLDT, MENDOCINO, TRINITY AND SISKIYOU COUNTIES**

Final Phase I Report



Prepared for Five Counties Salmonid Conservation Program

By

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INTRODUCTION

The Five Counties Salmonid Conservation Program (5C) is a conservation strategy initiated by the five northwestern California counties of Del Norte, Humboldt, Mendocino, Trinity and Siskiyou. It was created in response to the 1997 listing of the coho salmon as a threatened species under the federal Endangered Species Act (ESA). The goal of 5C is "To strive to protect the economic and social resources of Northwestern California by providing for the conservation and restoration of salmonid populations to healthy and sustainable levels and to base decisions on watershed rather than county boundaries. Some overarching program objectives include:

- Evaluate options for improving county plans, policies, and practices for the benefit of salmonid habitat and water quality throughout the region.
- Provide training on "best management practices" (BMPs) to county staff engaged in activities that could adversely affect salmonid habitat.
- Improve the quality and quantity of salmonid habitat monitoring and reporting procedures.

Some specific program environmental and economic objectives include:

- Identify sites that cause impacts to salmonid habitat through systematic inventories of fish passage barriers and potential erosion sources on county maintained roads.
- Improve county road maintenance polices and practices.
- Increase the accessibility to salmonid habitat by migrating fish through replacement of inadequate stream crossings with structures that provide for full passage.
- Protect riparian habitat corridors through education and incentive programs.
- Provide training to county staff on road management, fish passage, water quality management and land use planning.
- Secure grant program and project funding from a variety of federal, state, and local sources to undertake projects.
- Devise methods to streamline permitting procedures, specifically under the federal ESA and Clean Water Act, and State Porter-Cologne Water Quality Control Act (Porter-Cologne) and California Fish and Game (DFG) Code.

Over the past 10 years, the counties have met many of these objectives. Fish barrier surveys have been completed in all counties. All counties have either completed or will soon complete inventories of problems on their road systems. Between 1998 and 2007 51 migration barriers were improved restoring access to 125 miles of habitat and "A Water Quality and Stream Habitat Protection Manual for County Road Maintenance in Northwestern California Watersheds" (Roads Manual) was written and has been implemented within the program area. The Roads Manual is considered a guide and framework for implementing improved road maintenance practices and has received ESA approval under the NOAA Fisheries 4(d) rule.

A hallmark of the program has been fostering collaboration among the counties and good working relationships with federal and state regulatory agencies. There has been an increased understanding among county leaders and departmental staff that protecting the heritage of anadromous salmonids in the northern counties ultimately provides benefits to the community, the environment and local economies.

UCCE ASSESSMENT OF COUNTY LAND USE POLICIES AND PRACTICES

One of the first steps taken by 5C in 1997 was to undertake an assessment of member counties' land use management policies and practices insofar as they affected salmonid habitat. The University of California, Cooperative Extension (UCCE) with funding from the State Resources Agency and UC Center for Water and Wildland Resources, conducted the assessment. It had three components:

- A review of all county policies, ordinances and development standards applicable to land use activities potentially affecting salmonid habitat. The focus of the review was on the degree to which policies and regulations recognized and protected salmonid habitat.
- An analysis of the environmental review process results for typical land development projects. This entailed the selection of several case studies, procurement of project files and environmental documents and evaluation of mitigation measures applied to protect salmonid habitat.
- A field evaluation of typical land development and county maintenance activities occurring in the vicinity of salmonid habitat. Interdisciplinary teams comprised of county staff, UCCE researchers and environmental specialists did this evaluation.

A report was published in 1998 and the results were presented to 5C and member counties. It contained a series of findings and recommendations for improving policies and practices.

OBJECTIVES OF THIS STUDY

It has been 10 years since the UCCE assessment. As noted in the introduction to this report, under the purview of 5C the counties have accomplished several important tasks during that period. To date, however, there had not been a comprehensive appraisal of the degree to which the counties have followed the recommendations of the original assessment. In early 2008, 5C initiated a second assessment to be conducted in two phases: 1) a review of policies and project environmental documentation and 2) a study of practices in the field. This report presents the results of the first phase. The objectives were:

- To determine the extent to which county land use policies and practices have changed in response to the recommendations of the first assessment.
- To determine the effects of state agency regulatory and policy initiatives implemented since 1998 on local management of salmonid habitat. These include:
 - The listing by the state of the coho salmon as an endangered species and subsequent publication by DFG of the "Coho Salmon Recovery Strategy" (Coho Strategy).
 - The adoption of "Total Maximum Daily Load" (TMDL) recovery strategies for several watersheds in the region listed as "impaired" under section 303-d of the federal Clean Water Act.
 - The evolution of non-point source pollution controls implemented through requirements for obtaining a General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) from the State Water Board on project sites where one acre or more of land disturbance may occur.

- The finding that DFG Streambed Alteration Permits must undergo analysis pursuant to the California Environmental Quality Act (CEQA) to ensure that no significant impacts occur.

One substantial change that has occurred over the past 10 years that is not directly related to land use management is the emergence of de facto county policy promoting fish habitat restoration. Counties have expended substantial funds derived from grants and from their operating budgets to undertake habitat improvement projects. Another change has been increased county staffing directed towards protection and improvement of salmonid habitat.

To conduct this second assessment, the program retained the services of the principal investigator who conducted the original study.

This study is not an evaluation of the effectiveness of 5C but rather is an assessment of the degree to which the counties have responded to a need for improving salmonid habitat management. 5C has however, been a catalyst for many of the beneficial results obtained by the counties over the past decade.

STUDY PROCESS

Since the original assessment, there have been other studies modeled on it (Harris et al. 2000; Harris and Kocher 2006). There has also been a paper published that reviews how various jurisdictions responded to these assessments (Kocher and Harris 2007). That paper provides some information on the progress made by the five northwestern counties but is not sufficiently detailed to meet the objectives of this study.

The process used for this study included the following tasks:

- A questionnaire based on the recommendations in the original report was prepared and distributed to each county to ascertain if and how policies and practices had changed in each county.
- After analysis of questionnaire responses, follow up interviews were conducted with county staff to clarify and expand upon the responses.
- In cases where changes in policy and procedures resulted in revised or new planning documents or ordinances, the pertinent documents were obtained and reviewed to determine their relationship to protection of salmonid habitat.
- A selection of environmental and planning documents prepared for public and private development projects proposed after the initial assessment was obtained and reviewed.

As previously noted, Phase 1 did not include any field studies. In Phase 2, there will be a comprehensive field evaluation. The timing of the second phase has not been established but it will occur after funding is secured. Consequently, the results presented here should be considered preliminary in some respects and the conclusions may be changed by the second phase.

RESULTS

INTRODUCTION

Over the 10 years since the UCCE assessment was done there have been profound social, economic, regulatory and environmental changes in the five county region. Some of these changes have been in direct response to listings of salmonids as endangered or threatened. Others reflect changing demographics and economies in the region. Still others reflect regional responses to trends prevalent throughout California.

Perhaps the most important change relevant to this assessment has been the recognition by the general public, regulatory agencies and land managers that the heritage of wild salmon is at risk. This recognition directly or indirectly triggered several regulatory changes. Ones affecting county activities such as TMDLs, etc. were previously mentioned but there have been several others affecting land uses that are not directly regulated by the counties. For example, special Forest Practice rules applicable to “impaired” watersheds or watersheds with listed salmonids have been in effect for a number of years. Compliance with these rules has altered timber harvesting on private lands that comprise a large proportion of the land base. Some owners of industrial timberland have developed “Habitat Conservation Plans” (HCPs) that include management for recovery of listed species. These HCPs allow continuation of forest management operations while permitting some level of “incidental take” of listed fish and wildlife species. HCPs apply to hundreds of thousands of acres in the region.

Another important factor affecting the status of salmonid habitat is the management of federal lands. On federal lands administered by the USDA Forest Service, National Park Service and Bureau of Land Management, management practices have been adopted that are generally aimed at habitat protection and enhancement. Timber management has been curtailed on National Forests and National Parks are involved with extensive restoration projects. The federal lands contain essentially all designated “critical habitat” for listed salmonids and their management will play an important role in future recovery.

On private and public lands, the number of publicly funded fisheries habitat restoration projects has increased dramatically over the past decade. These projects have included in-stream habitat improvement, road erosion control, fish barrier replacements, riparian habitat restoration and streambank stabilization. Projects have been funded by the Fisheries Restoration Grant Program (FRGP) administered by DFG, the Coastal Conservancy and State and Regional Water Quality Control Boards. The California Habitat Restoration Program Database maintained by DFG contains an inventory of most projects (<http://www.calfish.org/portals/2/ProgramsProjects/CHRPD.pdf>). There have been many privately funded restoration projects as well and local agencies, including the counties, have undertaken projects at their own expense.



Merrill Creek fish passage barrier (left) was replaced with a bridge and the channel was restored to its natural gradient (right), a project undertaken by Siskiyou County.



On both public and private lands, many migration barriers have been replaced with “fish friendly” culverts (left, Graham Gulch, Humboldt County) and bridges (right, Del Norte County) thereby restoring access to many miles of stream habitat.

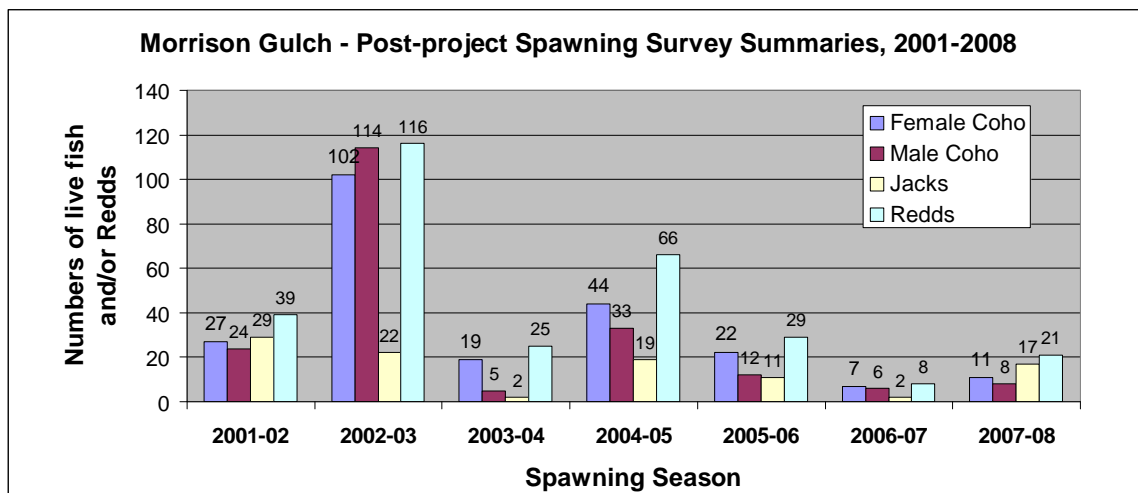


Other innovations over the past 10 years have included storm water and bio-filtration basins (Sidney Gulch, Trinity County, above left). In some locations, road outslipping has been done to reduce hydrologic impacts (Ten Mile Road, Mendocino County, right).



Although not directly related to anadromous salmonid habitat, there have also been wetland restoration and construction projects implemented (Weaverville)

Commensurate with the increased attention to the status of anadromous salmonids there has been an increase in the amount of monitoring directed towards detecting trends in habitat and populations. Implementation and effectiveness monitoring of restoration projects has also increased over the past decade.



Results of spawning surveys performed in Morrison Gulch, Humboldt County after removal of a barrier indicated successful restoration of access to habitat.

Finally, there have been major social and economic changes in the region. Although still a region dependent on natural resources, there has been a large decline in forestry operations, many mill closures and changes in ownership. This trend has been offset to some extent by new business development but the counties are among the poorest in California as measured by per capita income. The region participated to some degree in the housing “boom-bust” cycle that affected California during the 1990’s but its remoteness negated large changes in land use.

Work on fish habitat restoration has generated employment in the region but has not offset the losses caused by a declining timber industry.

Taken altogether, the social, economic, regulatory and environmental changes that the five counties have experienced since the 1998 UCCE assessment have been tremendous. A number of these changes have been either directly or indirectly aimed at improving or protecting salmonid habitat. In streams where restoration has been done, particularly removal of barriers, monitoring has disclosed local increases in populations of anadromous salmonids.

In consideration of the many different land managers and factors affecting salmonid habitat in the region, the role of the counties overall must be kept in perspective. To set the stage for the current assessment it is therefore essential to evaluate county policies and practices in the context of the scope and extent of activities they are responsible for regulating. One measure of that scope is the extent of development occurring within the counties.

DEVELOPMENT ACTIVITIES IN THE FIVE COUNTIES

Private land development and public works projects provide the context for evaluating the management of impacts on salmonid habitat. There is a gradient of development pressures in the region with most growth occurring in Mendocino County and the urbanized areas of Humboldt County surrounding Humboldt Bay. Most county public works projects potentially affecting salmonid habitat consist of infrastructure maintenance, particularly on county roads. Over the past 10 years, all counties have undertaken numerous public works projects with the objective of reducing sediment delivery to streams and eliminating migration barriers. Otherwise, major public works projects have been limited although there are some in the planning stages.

Within the scope of this study it was not feasible to document county growth in detail. Data readily available from county staff and county websites were used to prepare the following summary. Readers should realize that the growth in the northern counties has not been nearly as great as the growth experienced in other regions such as the Sierra foothills and southern California over the past decade.

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

The number of subdivisions processed by a county is an indicator of development pressure. Over the past decade, Trinity and Siskiyou Counties each processed fewer than 10 subdivision (>5 lots) and parcel maps (<5 lots) per year. Del Norte County also processed fewer than 10 subdivisions per year but had a relatively large number of parcel maps (281 between 1998-2008).

The number of building permits issued for new construction is another indicator of growth. The number of building permits issued for new single-family residences ranged from less than 50/year in Trinity County to about 80/year in Siskiyou and Del Norte Counties. Data on industrial

and commercial development were only readily available for Del Norte County where 68 permits for commercial and industrial construction were issued between 1998 and 2006.

Data on subdivision activity in Mendocino County are available for 2000-2007 from a staff report prepared for the Planning Commission. During that period, 11 applications for subdivisions (>5 lots) proposing 957 lots were received for processing. A total of 206 parcel map applications (<5 lots) proposing 601 lots were submitted during the same period. Not all of these were approved. The actual number of subdivisions completed (final maps) was six, creating 236 lots. The actual number of land divisions completed was 73, creating 221 lots. An additional 80 lots were created during 2000-2007 by lot splits. Building permit data were not readily available for the county.

Development pressures have been somewhat greater in Humboldt County although they have declined over the past few years. Data for the period of 1998-2008 were not available. According to background reports prepared for the current round of General Plan revisions, 334 subdivisions and parcel maps were approved between 1985-1999 or an average of more than 20/year. Over 2800 new lots were created by these subdivisions. Over 500 lots were created in one year (1993). Building permits issued for new single-family residences ranged from about 200/year to a high of 450/year during the same period, peaking in 1990. About 140 acres of commercial development and 140 acres of industrial development occurred between 1985-1999.

In addition to new development, all counties process numerous proposals related to existing development that could potentially impact salmonid habitat. These include variances, use permits, encroachment permits and various ministerial projects such as building permits for remodeling buildings. On occasion, the counties process projects potentially providing benefits to salmonid habitat. These include the many projects undertaken by public and private entities to reduce sediment delivery to streams, remove barriers to fish passage and improve in-stream habitat.

Growth in the region is affected by the remote location of the counties, limited employment opportunities and the California and national economies. As witnessed in Humboldt County, there can be times when growth accelerates. Therefore, although a dormant housing market currently affects the counties (and the entire state) that is not a permanent situation. Future growth could increase demands on the ability of the counties to regulate impacts on salmonid habitat.

QUESTIONNAIRE RESPONSES

Questionnaires were distributed to county public works and planning departments. The synthesis below summarizes the responses. Questionnaires from each county are available for review on request.

The reader should note that not all questionnaires were completed and returned. Consequently, there may be some omissions in the following summary.

General Plans and Ordinances

Over the past 10 years, one county (Del Norte) adopted revisions to its General Plan that are pertinent to protection of salmonid habitat. Two (Humboldt and Mendocino Counties) are in the

process of updating their General Plans. Adopted and proposed changes are reviewed in the following section on **Changes in County Policies and Regulations**.

Only two counties have adopted one or more new ordinances or revised an existing ordinance applying to land development impacts on salmonid habitat (Humboldt and Trinity Counties). Mendocino County is currently in the process of adopting a revised floodplain management ordinance. Mendocino County proposed a grading ordinance in 2002. It went through several revisions, the latest being in 2007. It has not been adopted. Siskiyou County is in the process of preparing a Land Development Manual that will have the power of an ordinance when it is adopted (expected within the next year). That document and the Humboldt County and Trinity County ordinances are reviewed in the section on **Changes in County Policies and Regulations**.

At least one county (Mendocino) is engaged in a storm water management program that will ultimately result in the preparation of a storm water pollution prevention ordinance that will apply to urban areas. Urban areas of Humboldt County (McKinleyville) are also involved with this program although there was no indication of that in questionnaire responses. All counties seek to manage the impacts of non-point source water pollution. In addition, restrictions on storm water pollution are implemented through Regional and State Water Board requirements (discussed below under **Changes in State Policies and Regulations**).

Participation in 5C Activities

All of the counties have participated in 5C activities, including grant writing, road assessments, attendance at meetings and workshops, review of project reports, presentations, and documentation of project results. Public works staff have benefited from training opportunities and projects involving road assessment, identification of fish barriers and implementation of the Roads Manual and low impact hydrology standards (LITH). Planning staff have participated in annual conferences and training on mitigating land development impacts. In some instances, 5C has intervened on behalf of counties in resolving issues with state and federal agencies.

One of the outstanding accomplishments of 5C has been to attract a large amount of public funding to address deficiencies in county infrastructure. These funds have been used for identifying problems (county road inventories), prioritizing treatments (migration barrier removals) and implementing solutions.

The counties were actively engaged in the development of the Roads Manual (described in the section on **Changes in County Policies and Regulations**). Two of the counties have adopted the Roads Manual by Board of Supervisors' resolution but all county department heads responsible for road management have adopted it for instructing their road maintenance activities. To some degree, BMPs outlined in the Manual are applied to private development projects. In one county (Mendocino) it has been used as the basis for an MOU with the Regional Water Board for compliance with a TMDL Action Plan (Garcia River). It is expected to play the same role (along with 5C sponsored road assessments) in other watersheds subject to sediment TMDLs.

Environmental Review Procedures

Emphasis on protection of salmonid habitat has increased in CEQA and NEPA environmental review procedures for both public and private projects. Environmental review associated with issuance of DFG Stream Alteration Agreements has increased substantially over the past

decade. This change is discussed in more detail in the section of this report on **Changes in State Policies and Regulations**. There have been some instances where timely processing of these agreements has been impaired by limited DFG staffing.

All counties report increased involvement of professional biologists and hydrologists in environmental reviews and in designing both public and private projects. For example, on county road projects and barrier replacements, biologists are retained to conduct biological assessments. Design reports and drawings for these projects are subject to approval by a registered professional. Projects in designated Coastal Zones in the counties receive a higher level of scrutiny by resource agencies, the Coastal Commission and the public. Consequently, there is a tendency for greater involvement by professional biologists and environmental specialists in Coastal Zone environmental reviews. The 5C program has resource professionals on contract that are available to assist the counties on their projects.

One major change in county staffing has been the employment of resource professionals and “environmental compliance specialists”. Mendocino, Trinity and Siskiyou Counties all have staff designated to do permitting and environmental processing for public works projects. These include fisheries biologists and registered geologists.

Development Impact Avoidance and Mitigation

In the prior assessment, there were inconsistencies throughout the region in the use of stream setbacks or buffers to prevent development impacts on streams. This has been resolved in Humboldt County where a comprehensive ordinance designating “Streamside Management Areas” is now applied county-wide. Del Norte County had a “resource conservation area” designation in effect at the time of the last assessment that is still a tool for avoiding impacts of development. Trinity, Siskiyou and Mendocino Counties do not have county-wide riparian ordinances or grading ordinances (provisions for controlling grading are included in the Building Code for counties without ordinances). Therefore, in those counties, the primary way in which impacts are avoided and mitigated is through CEQA environmental review.

All coastal counties had procedures for protecting riparian zones and streams within the Coastal Zone as of the last assessment. Staff report that the enforcement of these restrictions i.e., requirement for buffers, is more consistent now than it was in the past. There are numerous riparian reserves in the Coastal Zone, some of which are within conservation easements. As was true in the past, management recommendations for these reserves are rarely required other than the stipulation that they be “avoided” or that development is prohibited within them.

There can be inconsistencies between staff, Planning Commission and Board of Supervisors’ approaches to development impact avoidance. For example, in one county, planning staff and the commission generally discourage encroachment by development within floodplains. When conditions to that effect reach the Board of Supervisors during project approval hearings or on appeal, they may not be adopted.

For public projects such as road maintenance and upgrading, counties incorporate erosion and sediment control measures into all of their projects, largely based on the Roads Manual and/or CALTRANS manuals. These include restrictions on grading during winter. In-stream or near-stream construction is generally limited to periods of low flow (June-October). As described in the section on **Changes in State Policies and Regulations** additional tools have emerged over the past decade that also effect mitigation.

Some county staff were uncertain if actual on-the-ground effectiveness of impact avoidance and mitigation has improved over the past 10 years on private development projects. This would indicate that post-implementation monitoring of mitigation effectiveness is limited. All counties commonly require mitigation monitoring. On some projects, this is delegated to the developer or property owner. On others, county staff or DFG are designated to conduct monitoring. Actual follow-through on monitoring is uncertain.

County Maintenance Procedures

All counties report substantial improvements in maintenance practices over the past 10 years with respect to protection of salmonid habitat. This is attributed in large part to 5C training and incorporation of management principles contained in the Roads Manual. Some examples of improved maintenance practices include changes in the timing of maintenance activities, control of spoils, implementation of BMPs to control storm water pollution and spills and exotic plant control.

County Infrastructure Upgrading

All the counties have completed inventories of fish barriers and all will have completed inventories of problem sites on their roads by next year. They have taken steps to upgrade their roads in response to these inventories. In addition to eliminating barriers, projects have included upgrading of culverts, installation of additional ditch relief culverts, out-sloping roads, road surfacing, re-vegetation of road cut and fill slopes, wetland construction, use of bioengineering, and placement of LWD. More projects are in the planning and implementation stages.

New road construction planned or completed includes designs that are intended to minimize impacts on fish habitat and water quality. On one project in Trinity County, some diverted streams were restored to their natural channel during road reconstruction.

Counties report instances of improvements to benefit fisheries on state and federally managed roads as well. These include barrier removals and replacement of conventional culverts with "fish friendly" bottomless or simulated stream bottom culverts.

State and Federal Agency Involvement

The counties varied in their responses regarding the involvement of state and federal agencies in their land management activities and/or the attention that these agencies pay to salmonid habitat protection. All counties consult with DFG to advise them on fisheries and habitat issues. In regard to CEQA processing, it appears that the ability of DFG to provide comments, conduct field reviews and make recommendations is limited by availability of local staff. In cases where DFG does provide comments and recommendations, these are commonly used to set conditions for project approval or require changes in design.

Obtaining input from state and federal agency staff on projects in the field is deemed essential. In Mendocino County, county and DFG staff conduct a monthly review of pending projects. In Siskiyou and Mendocino Counties, field reviews by NOAA Fisheries staff have contributed to improved coordination for public works projects.

Siskiyou County reported less direct interaction with DFG staff due to a recent retirement and transfer of responsibilities to Redding. Humboldt and Mendocino Counties reported increased involvement by DFG staff or no significant change over the past 10 years.

Siskiyou County reported little “on-the-ground” involvement by Regional or State Water Board staff. None of the other counties commented on this, but all counties report an increase in regulatory activities by the Water Boards due to requirements for erosion control on construction sites and TMDLs (these two things are discussed below in **Changes in State Policies and Regulations**).

Some counties report increased emphasis on protection of salmonid habitat in their dealings with CALTRANS (state and federally-funded road projects) and the US Army Corps of Engineers (“404” permits and floodway management). In Trinity County, the Corps, county and DFG successfully negotiated changes in floodway management on Weaver Creek that would retain some riparian vegetation.

NOAA Fisheries staff is directly involved with some counties developing in-stream mining plans and permits. Formal ESA consultation is apparently rarely required. When formal consultation does occur, it is always associated with a federally-funded project. This creates a cumbersome relationship for the county since it must consult through an intermediary agency e.g., CALTRANS or Federal Emergency Management Agency (FEMA).

Two instances were reported in which NOAA Fisheries staff provided field review of proposed projects outside of ESA consultation. At least one county reported a steadily improving relationship with NOAA Fisheries due to a willingness of their staff to work issues out “on-the-ground”.

In the prior assessment, FEMA procedures for approving and funding disaster-related damage to infrastructure were found to be lacking in terms of salmonid habitat protection. Although still cumbersome, counties report some flexibility in these procedures now that allows more “fish-friendly” designs. Also, FEMA now develops “programmatic consultation programs” with NOAA Fisheries for disaster events that may expedite processing to some degree on smaller projects.

CHANGES IN COUNTY POLICY AND REGULATION

In this section, documented changes in county policies and regulation are reviewed. The review includes policy initiatives that 5C has promulgated, primarily the development of guidelines for county public road management. These guidelines are in use by all the counties and have become de facto regional policy. Changes in the building code that apply to all counties and that affect grading are also briefly reviewed.

There have been few substantive changes in regulations and general planning documents over the past 10 years. Only Del Norte and Trinity Counties have actually adopted new general plan language. Humboldt and Mendocino Counties are in the process of revising their general plans. Trinity County will soon embark on a general plan revision process that will include a “water resources technical report” evaluating several issues pertinent to salmonid habitat. Humboldt and Trinity County have revised existing ordinances. Humboldt County is the only one that has developed new ones. Siskiyou County is preparing a “land development manual” that will have the force of an ordinance when adopted.

Changes in the Building Code

Only one county has adopted a formal grading ordinance but all counties concur that the potential for control over construction-related impacts on erosion and sedimentation has increased due to State and Regional Water Board regulations. Also, there have been changes

in the Building Code that have increased controls on grading. These changes are in the California Building Code Appendix 33. As of January 1, 2008 all counties were required to adopt the California Building Code. Counties had the option, however, to adopt the entire code or to choose not to adopt specific sections. One of the optional sections is Appendix 33. Appendix 33 establishes thresholds at which a grading permit is required.

The counties vary in the portions of the code that they have adopted. Del Norte County has adopted Appendix 33 as its grading regulation. In Siskiyou County, as of July 2008, the Building Department was reviewing the new code for integration with existing code and developing a proposal for adoption by the Board of Supervisors. As of then, there was no decision whether or not Appendix 33 will be included in that proposal. In any event, requirements for a grading permit, if adopted, will only apply to projects where a building permit is involved.

In Mendocino County, portions of the California Building Code applicable to grading have been adopted but certain exemptions from requirements for a permit are proposed. These exemptions are stated below:

- On other than residential subdivisions or building pads, commercial, industrial or critical facility building pads, an excavation that (1) is less than 2 feet (610 mm) in depth or (2) does not create a cut slope greater than 5 feet (1524 mm) in height and steeper than 1 unit vertical in 1½ units horizontal (66.7% slope).
- On other than residential subdivisions or building pads, commercial, industrial or critical facility building pads, a fill less than 1 foot (305 mm) in depth and placed on natural terrain with a slope flatter than 1 unit vertical in 5 units horizontal (20% slope), or less than 3 feet (914 mm) in depth, not intended to support structures, that does not exceed 50 cubic yards (38.3 m³) on any one lot and does not obstruct a drainage course.

Essentially, these exemptions would not apply to land development but could apply to other grading such as road and driveway construction and agricultural activities. The exemptions are rather limited, however, and if adopted the county would have authority to require grading permits for projects other than land development.

According to the Trinity County Building Department, no optional Building Code sections were adopted and grading standards remain the same.

No information was received from Humboldt County in regard to its adoption of the California Building Code grading requirements. The county has adopted its own grading ordinance.

5C Roads Manual and LITH Guidelines

All of the counties are using the Roads Manual as a basis for their public works road maintenance and upgrading efforts. The "Road Design Guidelines for Low Impact to Hydrology" (LITH guidelines) provide recommendations for construction of new roads and re-construction of existing roads. In addition to applying the Roads Manual and the LITH guidelines to county roads, they are sometimes used for environmental review of proposed private development projects and to provide design suggestions to project proponents.

The Roads Manual was prepared to directly respond to the findings of the 1998 UCCE assessment. It is intended to address mitigating the impacts of routine road maintenance practices on salmonid habitat. It does not cover construction of new roads or use of pesticides for vegetation management. Its main focus is on BMPs to eliminate fish passage barriers and to

reduce erosion and sedimentation. It also describes measures to protect the traveling public such as snow and ice removal.

The five counties applied to NOAA Fisheries for exemption of routine road maintenance from incidental take provisions under ESA section 4(d) stating that they would use the Roads Manual to govern their maintenance practices. NOAA Fisheries granted this approval in 2007. The approval letter states that "...routine road maintenance activities carried out in accordance with the 5C Manual will adequately conserve..." all threatened and endangered salmonids within the five counties. Under the 4(d) approval conditions, counties are to prepare annual reports documenting the effectiveness of BMPs in protecting water quality and stream habitat.

The LITH guidelines are intended to influence the design of new roads or upgrading of existing roads. The guidelines advocate the use of design elements such as outsloping and rolling dips to disperse road runoff as opposed to inboard ditches and relief culverts. Essentially, the main objective is to reduce the hydrologic effects of roads by disconnecting them from streams. The guidelines are meant to apply to low volume local roads and collectors with average daily traffic levels of 400 vehicles/day or less. Application is limited by environmental conditions such as topographic steepness and susceptibility to snow and ice.

Taken together, the Roads Manual and LITH guidelines provide a solid policy background for addressing many of the relevant recommendations in the 1998 UCCE assessment. It is especially noteworthy that all counties use the Roads Manual, thereby achieving regional consistency that was lacking 10 years ago.

General Plan and Ordinance Changes

The following table indicates adopted or pending changes in General Plans and ordinances for the five counties:

County	General Plan Changes Adopted	General Plan Changes Pending	Ordinances Revised	New Ordinances Adopted
Mendocino	No	Yes	No	No
Humboldt	No	Yes	Yes	Yes
Del Norte	Yes	No	No	No
Siskiyou	No	Revisions Planned	No	Manual in Preparation
Trinity	Yes	Revisions Planned	Yes	No

Mendocino County

General Plan Revisions

At the time of the UCCE assessment in 1998, Mendocino County was the only county that had specific policies related to anadromous salmonids. The "Salmon and Steelhead Management

Plan” has been in place for over 20 years. No changes to that plan are proposed in the current round of general plan revisions.

Relevant new policies are mainly contained in the draft Resource Management Element of the Mendocino County General Plan. The element advocates protection of the county’s natural resources, including stream corridors. It proposes to implement restrictions on vegetation removal and grading through adoption of a grading ordinance. New development is to be limited on properties with slopes >15% and avoided on slopes >30%. It further states that soil erosion and sedimentation associated with county lands, facilities and operations is to be reduced. The Resource Management Element indicates support for the 5C and for TMDL implementation. Additional language supports implementation of the Summer Steelhead Management Plan for the middle fork of the Eel River and for the county’s own Salmon and Steelhead Management Plan.

Humboldt County

General Plan Revisions

Provisions for management and protection of anadromous fish habitat are incorporated into the draft Humboldt County General Plan Water Resources (Chapter 13) and Biological Resources (Chapter 14) sections. The plan is currently in review and revision phases but is scheduled for adoption within the next year. Each of these chapters consists of policies, performance standards and implementation measures.

Policies in the Water Resources Chapter advocate prevention of erosion and sediment delivery to streams, minimizing non-point source pollution and protection of natural watercourses. There are policies promoting best management practices for county road and infrastructure maintenance.

Support is expressed for fisheries enhancement projects on small Humboldt County streams and flow releases from reservoirs that sustain downstream fisheries.

Performance standards in the Water Resources Chapter relate to project review and requirements for erosion control measures, prevention of non-point source pollution and an assessment of factors limiting anadromous fishery production in Humboldt County streams.

The means to implement the policies of the Water Resources Chapter largely reside in the county “Grading, Erosion Control, Geological Hazards, Streamside Management Areas” ordinance package that was adopted in 2002 (described in a following section). Additional implementation measures advise the county to design, construct and maintain its facilities in ways that minimize erosion and non-point source pollution. Cooperative working relationships with the Regional Water Board and other entities are recommended to reduce storm water runoff from existing and new development and to minimize non-point source pollution.

Some other specific implementation measures include recommendations for restoration of degraded areas and water conservation and run-off control through on-site retention of storm water.

It should be noted that these policies, standards and implementation measures are included in the plan draft currently recommended for adoption by staff. More stringent provisions for riparian

corridor protection and avoidance of impacts to floodplains are included in plan "Alternative A" which is not recommended for adoption at this time.

The Biological Resources Chapter contains additional substantive policies, standards and implementation measures. It addresses permissible development within stream channels and defines Streamside Management Area and Wetland Combining Zones (mapped and not mapped). Virtually all of the language in the Biological Resources Chapter related to streams and riparian vegetation is identical to the language in the Streamside Management Areas ordinance, adopted in 2002 and described below.

Grading, Erosion Control, Geological Hazards, Streamside Management Areas Ordinance Revisions

One finding of the 1998 UCCE assessment was that protection for streams and riparian areas was stronger within designated Coastal Zones than in areas outside of the Coastal Zone. In 2002, Humboldt County adopted a comprehensive revision of its regulations to address this inequity. Revisions to the building code, implementation of general plan policies and management of development in sensitive areas were topics that were considered. The revision was intended to complement and support the regulatory requirements of state and federal agencies such as enforcement of the Endangered Species Acts and TMDLs.

Provisions for controlling grading, excavation, erosion and sediment are included in Title III, Land Use and Development, Building Regulations, Section 331-12. The ordinance applies if: grading exceeds one acre; topographic slope is 15 percent or more; the site is located in a Streamside Management Area or other wet area or floodplain; if a proposed driveway or road exceeds 300 feet in length; or if grading is proposed during October 15-April 15. If the ordinance applies, an Erosion and Sediment Control Plan or Storm Water Pollution Prevention Plan is required. Standard drawings for BMPs are provided in an attachment to the ordinance.

For protection of riparian areas and wetlands, the county utilizes the Streamside Management Area Ordinance (Title III, Land Use and Development, Division I, Planning Zoning Regulations, Chapter 6-General Provisions and Exceptions, Section 314-61.1) adopted in 2002. In addition, the County has a Streamside Management Areas and Wetlands (WR) Combining Zone (Humboldt County Code 314-38-1) that is applied to known resource areas.

The Streamside Management Area Ordinance applies to any area with year-round standing water or with riparian vegetation. In essence, it creates an overlay on the principal zoning, similar to a floodplain zone. It covers all unincorporated areas outside of the Coastal Zone (which is already covered by similar protection) and any discretionary permit issued by the County. It establishes riparian setbacks or buffers of variable size based on the type of stream, perennial or intermittent. Buffers may be expanded up to 200 feet in width to include unstable areas or areas of riparian vegetation.

Certain activities are exempted from the ordinance. These include routine maintenance when conducted pursuant to an approved DFG Streambed Alteration Agreement. Routine maintenance does not include removal of trees >12 inches diameter breast height, removal of more than 6000 square feet of trees, or activities on slopes >15 percent slope or where 2000 square feet of soil will be exposed to erosion. Wells and septic systems are exempt if other permits have been obtained. Any grading or construction applied for before April 25, 1995 or any project where discretionary and environmental review occurred after the effective date of the 1984 General Plan are exempt if all conditions have been met. If private roads constructed

in conjunction with an approved Timber Harvest Plan exceed standards imposed by CALFIRE the road is not exempt. Exemptions contained in the Grading Ordinance do not apply in Streamside Management Areas or other wet areas. Minor additions or construction not increasing the development footprint are exempt.

Projects undertaken by the County Public Works Department are subject to the regulations. The Director of Public Works is responsible for environmental review and permitting.

Any disputed application for exemption must be accompanied by a written report justifying the exemption. The report must be referred to DFG and a formal review of the exemption may be requested.

Allowable uses in stream channels include restoration and enhancement projects, road crossings, flood control facilities, mineral extraction, small scale hydropower, agricultural diversions and wells, fencing, bank protection (least damaging), other public projects (least damaging) and improvements to non-conforming uses. Within Streamside Management Areas development is confined to allowable uses within channels, timber management and harvest, firewood harvesting, clearing for pasture (provided that cottonwoods are retained and willows, alders and other species are protected from unreasonable damage), road and bridge replacement or construction (least damaging) and removal of vegetation for disease control or public safety.

Bank protection measures are permitted. The least damaging alternative should be chosen with preference given to bioengineering or selective bank hardening as opposed to continuous revetment.

Mitigation measures are required to protect the values of the Streamside Management Area. These may include retention of snags and downed logs and retention of wildlife nesting trees. Disturbed areas must be replanted with native species if natural regeneration is not adequate. Erosion control measures are required. For any lost riparian habitat or wetland, replacement of the same amount is required.

The ordinance prohibits deleterious discharges of soil, vegetation or other materials into a Streamside Management Area.

Projects proposed in Streamside Management Areas must submit a written biological assessment. Its recommendations are required as conditions on issuance of a development permit. The ordinance includes an outline for the required report.

A mitigation and monitoring plan is required. It should include performance standards. Five years of post-project monitoring is required and all mitigation measures must be implemented. A performance bond may be required.

Floodplain Ordinance

Humboldt County revised its floodplain ordinance in 2000 to create a "flood hazard combining zone" (Title III, Division I of HCC, Section 315-8). The combining (i.e., overlay) zone applies to all FEMA-designated floodplains or areas designated "F" on zoning maps. The revisions prohibit certain types of development within floodways (mobilehome parks) and within 100-year floodplains (health care facilities, solid wastes disposal, etc.). They do not explicitly prohibit other uses but those uses would be subject to conditions ensuring against changes in flood

stage due to development and public safety. There are no provisions specifically requiring protection of salmonid habitat or other ecological functions.

Del Norte County

General Plan Revisions

The county adopted a revised General Plan on January 28, 2003. Anadromous fish habitat is specifically addressed in Section I: Natural Resources Conservation – Onshore Fisheries Resources – Goal 1C, Policies 1.C.1 through 1.C.13, and New Implementation Programs 1.2 through 1.4.

Goal 1C states that the county seeks “to achieve the long-term goal of maintaining viable runs of anadromous fisheries through the protection, maintenance, enhancement or restoration of anadromous fisheries spawning and nursery habitat.” Policies address protection of stream habitat and riparian corridors, removing fish barriers, obtaining funding for stream restoration, revising road maintenance practices and restricting winter grading. Alternative drainage and flood control designs and floodplain management policies that preserve fish habitat are recommended. Proposed implementation programs include adoption of a “fish-friendly” road maintenance and drainage systems manual (i.e., 5C Roads Manual and LITH guidelines), amendment of zoning ordinances and maps to reflect established riparian corridors and evaluation of habitat restoration needs.

Siskiyou County

Land Development Manual

There have been no changes to relevant General Plan elements or Community Plans in Siskiyou County. The new regulatory tool on the horizon is the draft “Land Development Manual” which is in the process of completion and ultimately will be adopted with the force of an ordinance. The manual contains several provisions that are protective of salmonid habitat. It includes a section on grading that states “...the work must be in compliance with the requirements of the California Water Quality Control Board, California Department of Fish and Game, US Army Corps of Engineers...and any other agency as appropriate.” It further requires a re-vegetation and slope stabilization plan for all graded areas and mandates a two-year maintenance period. Road standards in the manual allow construction of cross-sloped i.e., outsloped, roads at the discretion of the Director of Public Works.

Hydraulic design criteria state that there shall be “...no net increase in runoff exiting the development. Retention/detention basins shall be designed to retain flows in excess of existing pre-development conditions for all storm flows”. Exceptions may be permitted if it can be demonstrated that no adverse downstream impacts will occur.

The Land Development Manual has an entire section allocated to Riparian and Wetland Protection. Riparian setbacks shall include all riparian vegetation and a minimum 25-foot upland buffer. Where jurisdictional wetlands are present, a qualified professional must delineate them according to US Army Corps of Engineers procedures. Avoidance of any development in the 100-year floodplain is “strongly recommended”. Additional riparian setback standards are as follows:

- Primary rivers (e.g., Sacramento, Klamath): 75 feet from the outer edge of the riparian vegetation.
- Other fish-bearing streams: 50 feet from the outer edge of existing riparian vegetation.
- Non-fish-bearing perennial streams and lakes: 25 feet from the outer edge of existing riparian vegetation.
- Ephemeral or intermittent streams: 25 feet from the outer edge of existing riparian vegetation.

Similar setbacks are stipulated for jurisdictional wetlands.

Trinity County

General Plan Changes

In 2002 the Trinity County Board of Supervisors amended the General Plan Open Space and Conservation Elements. The amendments modified existing language and added new language expressing the county's interests in groundwater management and conservation. The principal intent was to identify the export of groundwater from Trinity County as an action that could adversely affect the economy and environment of the county. The hydrologic relationship and interdependency between surface water and groundwater is noted. There is no particular emphasis on protecting fish and wildlife habitat in the revised language.

To implement the new policies, the revised Open Space and Conservation Elements propose adoption of an ordinance regulating the exploitation and transfer of groundwater. A policy prohibiting export of groundwater from Trinity County for use outside the county is included in the revised Elements.

Floodplain Ordinance

Trinity County revised its Floodplain Management Ordinance in 2000 (Ordinance No. 315, Section 29.4). The revised ordinance contains a statement that says one of its purposes is to protect fish and wildlife resources: "Minimize impacts to fish and wildlife resources that are associated with floodplains where such resources do not conflict with public health and safety". As with all counties, the jurisdiction of the ordinance is based on FEMA floodplain and flood insurance program mapping. Within the "regulatory floodplain" a Flood Hazard Zoning overlay applies. Any projects proposed within the regulatory floodplain are required to demonstrate that they, in conjunction with all other development and uses, will not increase base flood levels by more than one foot. In cases where there is no feasible alternative location for a project outside of the regulatory floodplain new development may be permitted.

Within the 100-year floodplain, the ordinance creates a Flood Hazard Overlay Zoning District. All uses in the underlying zoning are permitted subject to specified development standards. Creation of new parcels with no building sites outside of the 100-year floodplain is prohibited. Parcels exclusively for open space may be approved. Fisheries or wildlife habitat improvement projects are permitted. A project within a 100-year floodplain must demonstrate that it will not increase base flood elevations by more than one foot. A finding to approve a project requires that the development does not adversely impact fish or wildlife associated with riparian vegetation.

CHANGES IN STATE POLICIES AND REGULATIONS

Department of Fish and Game

Coho Salmon Coho Recovery Strategy

The listing of the coho salmon under the federal (1997) endangered species act created a regulatory nexus when projects involving federal funding or permits could result in taking of the species. All of the five counties must comply with the requirements of the Endangered Species Act. When a taking is possible, formal consultation with NOAA Fisheries and/or the US Fish and Wildlife Service may be required, often through an intermediary such as CALTRANS or FEMA. According to county staffs, formal consultation has occurred in some cases (e.g., in-stream mining projects in Del Norte and Humboldt Counties, road project in Trinity County, FEMA-funded disaster repairs). NOAA Fisheries or US Fish and Wildlife Service have issued letters in other situations stating that an incidental take is not likely.

In 2002, the coho salmon was listed as a threatened (northern coast) and endangered (central coast) species under the state Endangered Species Act (CESA). This created an additional regulatory nexus for projects not requiring federal permits or using federal funds. CESA stipulates that no listed species may be taken without authorization by DFG and procurement of a CESA 2081 permit.

Subsequent to the state listing, a “coho recovery team” was formed to develop a Coho Recovery Strategy. Over a period of about 10 months the team met and deliberated over measures that could be taken to promote recovery and de-listing. The final result of their work is the “Recovery Strategy for California Coho Salmon: Report to the California Fish and Game Commission” (Coho Strategy) which is available at the DFG website. The Fish and Game Commission accepted this report on February 4, 2004.

The Coho Strategy creates no regulatory authority per se, but instead consists of a set of recommendations that could be implemented to enhance chances of recovery. As such, it does not mandate actions for compliance. To date, one of the main effects of the Coho Strategy has been to identify priority watersheds for funding habitat restoration projects. Many county restoration projects, especially removal of fish passage barriers, have benefited from funding based on these priorities.

There are many recommendations under many different categories in the Coho Strategy that apply throughout the species' range. There are also numerous recommendations that apply to hydrologic units and watersheds within them. Some recommendations that would apply to county land use regulation and management include:

- Controlling the extraction of water from streams for purposes of dust control when there are potential impacts on coho.
- Identifying and correcting barriers to fish passage.
- Regulating diversions and development of water sources when coho could be adversely affected.
- Minimizing non-point source pollution.
- Identifying and correcting road-related sediment sources.

- Restricting removal of large woody debris from streams and where appropriate, installing debris to enhance habitat.
- Preserving resource uses and minimizing land use conversions to other uses less compatible with recovery.
- Evaluating the adequacy of existing stream buffers.
- Revising general plans and area plans to direct new development away from coho streams.
- Promoting flexible design standards in new development to encourage protection of streams and associated riparian vegetation.

The Coho Strategy specifically recommends that 5C activities be continued and supported. This includes a recommendation that the counties adopt the Roads Manual and that activities undertaken using its recommended BMPs be granted incidental take authorization.

Watershed-level recommendations that pertain to the counties include:

- Mendocino County should evaluate the impacts of subdivisions on coho habitat. It should promote cluster development that protects habitat where appropriate.
- For both Mendocino and Trinity Counties, it is recommended that the Roads Manual be adopted for county maintenance practices and that a grading ordinance be adopted.
- It is recommended that Trinity County amend its general plan and ordinances to more fully protect coho habitat.

Most of the watershed-level recommendations are related to habitat improvement such as barrier removal, restoration of channelized reaches, habitat restoration and sediment source treatment. There is a separate "Shasta and Scott River Pilot Program for Coho Salmon Recovery: with Recommendations Relating to Agriculture and Agricultural Water Use" that was developed by the Shasta-Scott Coho Salmon Recovery Team. The status of that pilot program is uncertain at present. Implementation is pending the completion of environmental studies and procurement of incidental take permits.

Although the Coho Strategy has no regulatory status, it has influenced land use management in the counties. For example, recommendations in the Coho Strategy are sometimes cited in comments by DFG on environmental documents prepared by the counties. None of the counties knew of instances where specific projects were denied in direct response to Coho Strategy recommendations. There are examples, however, where some of the provisions of the Coho Strategy such as restrictions on water withdrawals for dust control on county roads, denial of diversions for domestic water use and elimination of passage barriers have been implemented by the counties.

The Notice of Preparation for the EIR on the Humboldt County General Plan update elicited a 27-page letter from DFG that commented on a large number of issues. Interestingly, none of the comments referred directly to the Coho Strategy.

DFG Streambed Alteration Agreement

Over the past 10 years, the Streambed Alteration Agreement process (1601-1603 of the State Fish and Game Code) has changed substantially since a finding was made that it was subject to

CEQA. Except in cases where a passage barrier retrofit or replacement required the input of a biologist, Streambed Alteration Agreements were formerly issued by DFG wardens. As a consequence of the finding that CEQA applied, DFG has been required to conduct a CEQA analysis for these agreements and biologists or environmental specialists review them. As part of that analysis, DFG now requires implementation of mitigation measures sufficient to offset any potential significant impacts.

Streambed Alteration Agreements for projects potentially affecting streams with salmonid habitat include extensive standard provisions for mitigating impacts to in-stream habitat, resident fish, riparian vegetation, riparian-dependent wildlife and water quality both during and after construction. In cases where there are resident fish or other dependent species such as western pond turtle, relocation by qualified personnel is required. If construction occurs when streamflow is present, it must be diverted around the construction site. Additional limitations are placed on timing of construction, use of rock slope protection and energy dissipating devices and total amount of vegetation removal.

Although counties report delays in project implementation and reporting requirements due to the changes in the Streambed Alteration Agreement process, it is evident from documentation that the new process has resulted in more consistent and affirmative prevention of impacts to streams.

State and Regional Water Board Initiatives

In December 1999, the State Water Board adopted the "Plan for California's Non-point Source Pollution Control Program" (NPS Program Plan). That action brought the State into compliance with the requirements of section 319 of the Clean Water Act and section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990.

The Porter-Cologne Act designates the State and Regional Water Boards as the agencies with primary responsibility for water quality control in California and obligates them to address all discharges of waste that could affect the quality of the waters of the State, including potential non-point sources of pollution. The Boards carry out this mandate by designating beneficial uses of the waters of the state, establishing water quality objectives to protect those uses and implementing regulatory programs in the form of waste discharge requirements (WDRs), waivers of WDRs and basin plan prohibitions. There are two regulatory initiatives currently affecting management of salmonid habitat in the five counties: Total Maximum Daily Loads in watersheds with impaired water quality (TMDLs) and General Permits for Storm Water Discharges Associated with Construction Activity (General Permits). Regulation of urban non-point source pollution in urban areas through Non-point Source Discharge Elimination System (NPDES) Phase II will not be discussed here in detail.

Total Maximum Daily Load (TMDL) Requirements

In the late 1990's, US EPA designated numerous watersheds in the five counties as "impaired" under Section 303-d of the Clean Water Act. Sources of impairment varied by watershed but included sediment, nutrients and temperature. Subsequent to these designations, inventories were conducted in the watersheds to identify causes of impairment. The resultant inventory and allocation documents assign "loads" to various natural and anthropogenic sources and are referred to as "Total Maximum Daily Load" or TMDL source analyses. For example, in a watershed designated as impaired by excessive sediment, the analysis would estimate the

relative contributions of natural erosion, mass wasting and human-caused erosion to total sediment loads.

The regulatory step in a TMDL process is the preparation and adoption of a "Basin Plan Action Plan" which includes an implementation plan to reduce impairment. To date, Action Plans have been prepared for the Garcia River in Mendocino County and the Scott and Shasta Rivers in Siskiyou County. Others are in various stages of preparation including Freshwater Creek and Elk River in Humboldt County and for the entire Klamath River watershed. As discussed below under **Pending State Policy and Regulatory Actions** staff from the North Coast Regional Water Board have proposed a sediment control strategy that would take the place of Regional Water Board adopted Action Plans for those sediment-impaired watersheds for which Action Plans were not previously adopted.

Action Plans advise responsible parties (both public and private) to reduce the sources of impairment under their control to eventually improve and restore watershed conditions. Recommendations may include developing inventories and implementation actions to identify and correct sediment sources (e.g., Erosion Control Plans), adapting land management to prevent discharge from land disturbance and evaluating existing permits to determine if they provide sufficient protection against further impairment (e.g., permits associated with wastewater treatment plants).

In the Garcia River watershed, an MOU between Mendocino County and the North Coast Regional Water Quality Control Board was signed in October 2005. The MOU applies to the management of county roads in the watershed. It includes an Erosion Control Plan (ECP) and a Site Specific Management Plan (SSMP). The primary data source upon which these documents is based is the 5C Program's Direct Inventory of Roads and Treatments (DIRT) which was conducted from 2000-2003 in Mendocino County and has been completed in all of the other counties except Siskiyou and Humboldt. The recommended BMPs in the ECP and SSMP are derived mainly from the Roads Manual, LITH guidelines and the "Handbook for Forest and Ranch Roads" (Weaver and Hagans 1994). In addition, the SSMP stipulates the ways in which county road maintenance will comply with all of the provisions of the Garcia TMDL Action Plan. It is possible that the Roads Manual and LITH guidelines will be used in a similar way in other watersheds where sediment is the source of impairment. It should be noted that the counties have used the sediment source TMDL reports to guide both their road inventories and improvement projects in several watersheds.

General Construction Storm Water Permits

On November 16, 1990, US EPA published final regulations that established storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. Regulations (Phase II Rule) that became final on December 8, 1999 expand the existing NPDES program to address storm water discharges from construction sites that disturb land equal to or greater than one (1) acre and less than five (5) acres (small construction activity). The regulations require that small construction activity, other than that regulated under an individual or Regional Water Board General Permit must be subject to permitting no later than March 10, 2003.

In 1999, the State Water Board adopted the General Permit for Storm Water Discharges Associated with Construction Activity (ORDER 99-08-DWQ; General Permit) for any project involving one acre or more of potential land disturbance. This General Permit requires:

- Development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that specifies BMPs that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.
- Elimination or reduction of non-storm water discharges to storm sewer systems and other waters of the nation.
- Inspections of all BMPs.

This General Permit may be implemented and enforced by the nine California Regional Water Boards.

Review of SWPPP documents prepared for projects in the five counties indicates consistency in the requirement for BMPs to prevent erosion and sedimentation during and after construction. The detail of a SWPPP varies depending on the scope of the project and its location. Specific BMPs include use of fiber, seed and water (hydromulching), straw mulch, and stabilizing emulsion for preventing erosion. Sediment delivery is prevented with silt fences, silt basins and straw bale barriers. Permanent measures applied after construction may include use of detention basins to minimize off-site runoff and re-vegetation of disturbed areas. Monitoring to ensure implementation may be required along with filing of monitoring reports with the Regional or State Water Board, as applicable.

With the exception of Trinity County, all counties place a standard condition on approval of discretionary projects stipulating that if more than one acre of disturbance will occur, the applicant must obtain a General Permit and prepare a SWPPP. In most instances, the county requires that the applicant submit the SWPPP or equivalent to the county for review and potential enforcement. In Del Norte County, a standard condition is that "The drainage and grading plans shall be completed in compliance with the State Water Board's Water Quality Control Plans (Basin Plans)". Also, "Any grading that disturbs more than one acre of land is required to obtain a General Permit". Similar language is found on approved parcel maps in Siskiyou County. Humboldt County's grading ordinance explicitly requires an erosion and sediment control plan which may suffice to meet the SWPPP requirement.

If waters of the nation, including jurisdictional wetlands are present within a project site the US Army Corps of Engineers has authority under Section 404 of the Clean Water Act. State water quality certification (a finding by the Regional Water Board that the project is compliant with state water quality regulations) is also required under CWA Section 401 before the 404 permit can be authorized. The 401 certification process is administered by the Regional Water Board for all projects except those regulated by the Federal Energy Regulatory Commission. Even if a General Permit is involved, there may be additional conditions imposed to control erosion and sedimentation associated with 401 certification. For example, in cases where suspended sediment releases are possible, restrictions on allowable increases in turbidity may be imposed (DFG imposes similar restrictions on 1600 agreements). Monitoring may be required in the event that a visible plume is created.

Pending State and Regional Water Board Policy and Regulatory Actions

There are no known pending policy or regulatory actions currently in process at federal agencies or at DFG that could affect county management of salmonid habitat. Revisions to the State Water Board General Permit are underway but will not be discussed in detail here. The fact sheet on the proposed new permit is available at http://www.waterboards.ca.gov/water_issues/programs/storm_water.

The North Coast Regional Water Board staff has proposed two Basin Plan amendments that could eventually have an impact on county land use management and public works activities. Neither has yet been considered during the formal rule making process. In general, both amendments would appear to provide additional guidance to landowners and managers (e.g., county government) on various means to comply with existing state law, such as preventing unauthorized discharge of waste.

Policy on Wetlands and Riparian Areas

Since 2005, North Coast Board staff have been developing a "Stream and Wetland System Protection Policy" in coordination with San Francisco Bay Regional Water Board and State Water Board staff. The need for state-wide and regional policy on protection of streams and wetlands is predicated on jurisdictional and historical issues indicating that sufficient protection for certain beneficial uses is not occurring under existing regulatory approaches. Three beneficial uses considered at risk are "flood peak attenuation/flood water storage", "water quality enhancement" (i.e., filtering of sediments and pollutants) and "wetland habitat" (e.g., for wildlife, aquatic species, etc.). The North Coast Regional Water Board adopted these beneficial uses in 2003. The proposed approaches (water quality objectives) to protecting them are termed "hydrologic connectivity (maintaining connectivity of streamflow upstream to downstream, between surface water and groundwater and from channels across the floodplain); "stream equilibrium" (maintaining the hypothetical dynamic equilibrium between streamflow and sediment that prevents excessive erosion or sedimentation); and "wetland and riparian area integrity" (protecting, enhancing and restoring habitat values).

As currently envisioned, protection would initially be implemented through existing regulatory and project review mechanisms e.g., 401 certification, General Permits, timber harvest plan review, etc. The goal would be to avoid, minimize and mitigate impacts and achieve "no net loss" of wetlands and riparian areas. The implementation framework would include "standard identification methods for streams, wetlands and riparian areas" comparable to the US Army Corps of Engineers procedures for delineating jurisdictional wetlands. The framework would also include performance criteria, requirements for mitigation and stipulations for monitoring and adaptive management. Provisions for "certifying" local plans and policies as qualifying for "waivers" from regulatory requirements of the policy may be allowed. North Coast Board staff has indicated that additional regulatory tools may be required to fully implement the policy.

Work Plan to Control Excess Sediment

On April 8, 2008, a proposed final "Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds" (Plan) was released by staff from the North Coast Board. The Board adopted the Work Plan in June 2008. The Staff Work Plan is intended to fulfill the requirements of a Board Resolution establishing policy for sediment TMDL implementation. The Plan consists of "region-wide sediment control tasks" as well as "watershed-specific sediment control tasks".

It is not possible to present details on all of the regional and watershed-specific tasks in the Plan within the scope of this report. There are some key elements, however, that could potentially affect land use management and public works projects undertaken by the counties. For example, there is a task that would develop an exemption for restoration projects that are not already exempt under programs such as the Fisheries Restoration Grant Program. This could expedite the issuance of permits associated with restoration activities. There is also a proposal to produce "Guidance for Excess Sediment Control" which would provide prescribed methods for conducting inventories of sediment sources and for treating them. Waste discharge requirements and conditional waivers would be developed for county road maintenance. These would include provisions for inventory, prioritization, scheduling repair and prevention of new sediment sources. The Plan mentions that the Roads Manual might serve as a portion of the required elements of these waste discharge requirements. Another task would be to "work with counties to update their General Plans" to ensure that the goals and objectives of sediment control are reflected in them.

The Office of Administrative Law must approve the Plan before it can be implemented. Ongoing tasks already have an impact on the counties. It is not possible to determine the long-term implications of the Plan for the counties.

COUNTY DEVELOPMENT REVIEW AND MITIGATION PROCEDURES

Meetings were held with Siskiyou, Trinity, Del Norte and Mendocino Counties to follow up on responses to questionnaires. One purpose for the meetings was to obtain documents pertinent to project environmental review and approval procedures. Staff from Humboldt County was not available for meeting but the Planning Department provided information for further review. Data sources included staff reports, resolutions and conditions for approval and letters from responsible agencies. Information about both public (county) and private projects was reviewed.

Pre-Application Consultation in All Counties

One recommendation of the UCCE assessment was that counties should consider pre-application consultation on projects potentially affecting salmonid habitat so that design considerations could be incorporated to avoid impacts. At the time of the last assessment, only one county (Del Norte) had a formal process for pre-application consultation. Since then, Mendocino County has instituted pre-application consultation procedures. It is likely that the other counties do pre-application consultation as well on potentially sensitive sites or projects. During pre-application consultation, counties will commonly seek counsel from other agencies such as DFG. Section 15060.5 of the CEQA Guidelines encourages pre-application consultation.

In Del Norte County a pre-application consultation can be initiated by an applicant providing certain specified information and paying a fee. According to the brochure for the process "a goal of the Pre-application Review is to identify potential significant impacts prior to application submittal to reduce the need for lengthy environmental documents." The Pre-application Review consists of a meeting between the applicant and county and outside agency representatives giving all a chance to "identify issues which could affect project viability."

Mendocino County has both formal and informal pre-consultation procedures. Every two weeks a "roundtable forum" is held where representatives from planning, DOT, environmental health and other departments convene to meet with potential project applicants. At the forum, potential processing issues and concerns can be discussed informally, at no charge to applicants.

Fisheries issues can be aired at these forums and some problems can be solved in advance of formal application.

Mendocino County also conducts “custom pre-application conferences” with applicants for which it charges a fee. These conferences may be held for specific projects. As appropriate, outside agencies such as DFG, CALFIRE and NOAA Fisheries may be invited to participate. This process too can be used to help avoid processing problems and fisheries issues.

Environmental review documents provided by Humboldt County contain evidence that both before and after formal applications are submitted, there can be considerable exchange between the applicant, county and other agencies. This dialogue can lead to modifications in project designs to reduce potential impact and/or public controversy.

It is important to recognize the potential role of pre-application consultation in protecting salmonid habitat and other environmental resources. According to some county staff, this process can be used to change projects to the extent that environmental review under CEQA is simplified. For example, adaptations to project design can be used as the basis for a Mitigated Negative Declaration. This is advantageous to both the county and the applicant. Moreover, it is far preferable to avoid impacts on salmonid habitat through changes in design than to try and minimize or compensate for impacts with measures such as restoration, planting, etc.

Siskiyou County

Private Development

Review of several approved development projects and parcel maps disclosed that Siskiyou County consistently applies a number of mitigation measures that are aimed at protecting salmonid habitat. Discretionary projects disturbing more than one acre are advised to obtain the required General Construction Activity Storm Water Permit from the State Water Board and prepare a SWPPP. The county also imposes standard requirements for erosion control and prevention of sediment delivery. Increases in turbidity are to be minimized.

The county consistently refers development plans and CEQA documents to DFG and generally adopts its recommendations. This commonly includes requiring buffers along streams, the size of which varies depending on whether riparian vegetation and/or fish are at risk. For example, in one project on the Klamath River, a 150-foot building setback from the top of bank or 75 feet from the outer edge of the riparian vegetation was required. In some cases, DFG recommendations are negotiated with the county to achieve a consensus on protection. Reference to DFG’s wetland policy (adopted in 1992) is often made in environmental documents along with DFG’s “standard conditions” for protecting wetlands and riparian habitat (100-foot buffer from riparian and wetland areas exceeding 5.1 acres). Buffers, including 100-year floodplain delineations are recorded on the approved parcel map and development is generally prohibited therein. A Mitigation Monitoring and Reporting Plan is required for documenting adherence to mitigation measures.

Evidence obtained from Siskiyou County and discussions with county staff indicate that there have been improvements over the past 10 years in protection of riparian vegetation, erosion control on construction sites and design of projects directly affecting fish habitat such as bank stabilization and stream crossings.

Public Projects


Environmental documents for one public project in Siskiyou County were reviewed. The project is a bridge replacement on a stream where listed fish and wildlife species were present or potentially present. An estimated 4.5 acres would be disturbed by construction, including unavoidable removal of some riparian vegetation. Several studies were conducted as part of the process to obtain a 404 permit, 401 water quality certification and Streambed Alteration Agreement. These included a water quality study, floodplain study, biology study, jurisdictional wetlands delineation and a hazardous materials study. In addition, cultural resources were at issue and a Historic Property Survey Report was required.

As of July 2008, this project was out to bid for construction. The contract package includes numerous mitigation measures to control erosion and sedimentation. A separate section provides details on replacement of lost riparian habitat. Trees removed during construction are to be replaced at a 3:1 ratio with planted trees. Specifications for re-vegetation with willow cuttings are also provided.

A mitigation monitoring and reporting program is required. The program is to be implemented by the county. Mitigation measures pertain to dust control, protection of listed fish (shortnose and Lost River suckers) and wildlife (foothill yellow-legged frog; nesting special status birds), erosion control, replacement of lost riparian vegetation and protection of riparian vegetation outside of the construction area. There is no indication that the results of monitoring will be provided to regulatory agencies although that is generally the case with monitoring required as part of 401 certification.

In a letter to the county and CALTRANS, the US Fish and Wildlife Service stated that impacts to listed species are so unlikely as to be discountable, based on proposed mitigation measures and conditions at the project site.

The county consistently applies mitigation measures to projects that it carries out to improve fish passage or reduce sediment discharge to streams. On one bridge replacement, it installed step pools to enhance passage.



Bridge replacement on a stream in Siskiyou County. Step pools were installed at the site to facilitate upstream passage (on right).

For projects involving bank stabilization and slide repair, plantings of willow and other riparian species are commonly incorporated into the design.



For this slide repair project, streamflow was temporarily diverted away from the bank. Fish were relocated and construction occurred during low flows. Willow stakes were placed at the foot of the installation to improve riparian cover. Spawning salmon were observed at the site the following year.

Humboldt County

Private Development

Humboldt County Planning Department provided electronic copies of Planning Commission resolutions and staff reports for all projects undertaken over the past 10 years. From these, 22 were selected for review. These included applications for Coastal Development Permits, use permits and variances, subdivisions and parcel maps.

Coastal Development Permits are required in addition to any other use entitlements for public or private projects in the Coastal Zone. In the several cases that were reviewed, there were some consistent features. Biological reports and recommendations were required for projects involving streams, riparian zones and wetlands. If wetland or riparian vegetation would be lost, compensation was required. Streamside Management Areas and wetlands were required to have buffers, as stipulated by county ordinance. These buffer areas were recorded on maps as “non-buildable”. In one instance, county planning staff conducted field visits to verify buffer widths proposed by the applicant. Erosion control measures and implementation of water quality BMPs were required for all projects involving construction. Where applicable, these conditions were to be specified on Building Permit plot maps, not just on subdivision or parcel maps.

Both inside and outside the Coastal Zone, a professional biologist usually did the delineation of Streamside Management Areas. Justifications were required for any proposed reductions in buffer widths. SMAs were required to be shown on parcel or plot maps and designated “non-buildable”. One interesting instance occurred on an important anadromous fish stream where the buffer on one side of the creek was twice as wide as on the other because one side of the creek was within the “Urban Limit Line” of the local community plan.

For all projects, conditions for erosion and sedimentation control and mitigation for storm water pollution and runoff were usually derived from technical studies provided by the applicant. Reference to requirements for obtaining a General Construction Storm Water Permit from the State Water Board was common. In situations where downstream flooding or flood conveyance facilities were at issue, hydraulic analyses were required to demonstrate no change in flooding due to development. If changes were predicted e.g., increase by one cubic foot/second in flood flows, increase in flood stage by one foot or more, etc. on-site retention was required. Even roof-top drainage was required to be dissipated in some projects. For on-site detention and sediment basins, maintenance was delegated to Homeowners' Associations or other property managers.

In one project, the role of DFG and professional consultants in modifying project plans to mitigate impacts prior to formal submittal was well documented. The project proposed reducing the SMA from 100 to 70 feet to accommodate parking and access improvements for a retail store. A "riparian buffer" between the development and the stream was prescribed along with performance criteria for planting and survival. Re-vegetation of the buffer with a mix of native species was stipulated. Five years of monitoring was required with annual reports and a final report submitted to the DFG and county.

A "Mitigated Negative Declaration" for a proposed 25-lot subdivision in the McKinleyville area was reviewed. The project would not directly affect any streams or riparian vegetation. The document acknowledged that erosion and sedimentation and non-point source water pollution could have impacts off-site. Several mitigation measures were proposed to offset potential impacts on water quality. These included submittal of an "Engineered Grading and Erosion Control Plan" to the county and preparation and submittal of a "Storm Water Management Plan" to the State Water Board, County and DFG. Provisions for minimizing grading, on-site storm water detention (no off-site increase in peak flows), discharge of runoff from impervious surfaces onto vegetated surfaces and containment within subdivision boundaries, and BMPs for erosion and sedimentation control were to be included in the plan.

DFG comments were usually incorporated into staff reports and conditions for approval. It was evident that staffing limitations imposed a necessity for DFG to choose which projects to comment on. On one subdivision located in the headwaters of a stream with populations of coho salmon, steelhead and coastal cutthroat trout it expressed concern that there were no mitigation measures that would prevent vegetation clearing on parcels after subdivision approval. Clearing for defensible space to meet "fire safe" requirements of PRC 4291 could encroach into proposed 50-foot setbacks on several intermittent streams. Other DFG recommendations included consolidating riparian buffers into a single parcel rather than fragmenting the riparian zone by including buffers within lots and requiring the project to maintain pre-development runoff rates. Use of "low-impact" development strategies was recommended to treat, retain and infiltrate runoff.



An in-line, bio-treatment site being constructed along Central Avenue, McKinleyville, Humboldt County.

A second project that DFG commented on was a proposed subdivision of a 386 acre parcel with an eventual development of >1400 housing units and >300,000 square feet of commercial space. This project is located on Martin Slough, a tributary to the Elk River. DFG commented that both Martin Slough and Elk River are considered important streams for attaining coho recovery in the Coho Strategy. The project site has suitable coho spawning habitat and suitable water temperatures for rearing. DFG conducts annual fish sampling within the project area to monitor the coho population.

DFG was responding to a request for input on required environmental analysis. In recommending that a full EIR be prepared, DFG suggested that stream buffers should be no less than 100 feet from the edge of existing riparian vegetation or encompass the entire 100-year floodplain, whichever is greater on all fish-bearing stream reaches. On secondary, non-fish-bearing reaches, it recommended buffers of 50 feet.

DFG comments indicated concern over the impacts of the project on peak flows, bank erosion, flooding, fine sediment discharge and non-point source pollution. It recommended on-site retention and treatment of storm water runoff and prohibition against use of pesticides. Any alterations to a stream would require a Streambed Alteration Agreement. Crossings of Martin Slough, if any, should be by bridge and may still require an incidental take permit for coho.

There were many other issues of concern to DFG on this project unrelated to salmonid habitat. As of July 2008, an EIR for the project was being prepared.

In a third letter, DFG commented on a minor subdivision (four lots) located on the Mattole River. In this instance, its primary concern was the existence of domestic water diversions and the project's proposal to create more. Diversions and low water during the summer are considered major limitations on salmonid production in the Mattole. The tributaries in the sub-basin in which this project is located support more coho than those in any other sub-basin. DFG stated that since the Mattole is considered a key stream in the Coho Strategy and diversions cause mortality, an EIR should be required for the project.

Overall, review of staff reports, conditions placed on projects and agency letters indicated major changes in development impact documentation and mitigation for projects in Humboldt County as compared to 10 years ago. Specific provisions for riparian zone protection (as required by ordinance), erosion control during and after construction, prevention of non-point source pollution and avoidance of changes in runoff rates from developments were consistently applied.

Public Projects

Two CALTRANS projects involving replacement of culverts required Coastal Development Permits from the county. Both were on anadromous fish streams and both were aimed at improving fish passage. Conditions placed on these permits by the county generally were in deference to the requirements of other agencies including DFG, Regional Water Board and US Army Corps of Engineers.

A Coastal Development Permit was required for a major expansion of facilities at the College of the Redwoods. Part of the proposal was a reduction in a Streamside Management Area buffer to accommodate the development. Mitigation measures to offset potential impacts were incorporated into the design prior to submittal of the application based on the findings of technical studies. These measures included locating structures outside of riparian areas and

wetlands to the extent possible, controlling runoff and off-site sedimentation with a retention basin and planting willows to compensate for lost riparian habitat. Some additional conditions placed on the project included a limitation on impervious surface (<25 percent of the lot); extensive provisions for erosion control; restrictions on the rate of runoff to adjacent wetlands; and dissipation of storm water outfalls. Most of these performance standards were derived from the Humboldt Bay Area Plan to which the project was subject.



A large bio-engineered bank stabilization project on the Mad River undertaken by Humboldt County Public Works Department

Mendocino County

Private Development

Mendocino County Planning Department provided Planning Commission staff reports for a major subdivision/variance, a parcel map for project proposing three lots, two Coastal Development permits and a parcel map proposing four lots within a 100-year floodplain.

The major subdivision proposed 62 lots ranging from >3000 square feet to >15,000 square feet on an 11.9 acre parcel near but not within the designated 100-year floodplain of the West Fork Russian River. There is a small wetland area but no riparian vegetation on the site.

The main issue related to fish habitat cited in the staff report and Negative Declaration was the potential for erosion and sediment delivery ultimately to the Russian River during construction. The report notes that a SWPPP is required. The preliminary SWPPP submitted by the applicant proposed a combination of curb and gutter flow, vegetated bioswales and underground storage basins to treat storm runoff. Runoff would be transported to bioswales through curb cuts thence to underground catch basins. During heavier precipitation events, the capacity of bioswales could be exceeded and runoff would be conveyed into an existing easement and into the Russian River. Calculations indicated that post-development runoff rates would not exceed pre-development runoff rates for a two-year storm.

Additional concerns were expressed about the amount of impervious surface that would be created by the project. The initial design proposed that >50 percent of the site would be covered with impervious surfaces. After consultation with the DOT and Mendocino County Water Agency the amount of impervious surface was lowered by reducing street widths (allowing an exception to county development standards) and employing pervious material for driveways with only

strips of asphalt or concrete to accommodate vehicle wheels. A condition to approval required that the project CC&Rs include a provision for maintaining pervious materials.

The project approval was contingent on other conditions one of which stipulated that the developer must file a Notice of Intent for a General Construction Storm Water Permit with the State Water Board and provide the county with a copy of the final SWPPP. Conditions to control erosion and sedimentation and to restrict grading to the dry season were listed.

The second project was a minor subdivision on a site zoned for industrial uses draining via an intermittent tributary to the Russian River. In the staff report for the project potential impacts of grading were described as minor and subject to mitigation through adherence to the grading standards contained in the California Building Code. Another issue was the proposed installation of a well to provide domestic water. According to the staff report the concern was that the well could tap flow from the Russian River and that an appropriative right would be required. The Mendocino County Water Agency expressed concern over non-point source pollution and potential for hazardous materials to be transported off-site in the event of flooding due to upstream dam failure.

A number of conditions addressing these issues were required for approval. These represent "standard conditions" applied to virtually any project:

"The subdivider shall acknowledge in writing to the Department of Planning and Building Services that all grading activities and site preparation, at a minimum, shall adhere to the following "Best Management Practices". The applicant shall submit to the Department of Planning and Building Services an acknowledgement of these grading and site preparation standards.

- That adequate drainage controls be constructed and maintained in such a manner as to prevent contamination of surface and/or ground water, and to prevent erosion.
- The applicant shall endeavor to protect and maintain as much vegetation on the site as possible, removing only as much as required to conduct the operation.
- All concentrated water flows, shall be discharged into a functioning storm drain system or into a natural drainage area well away from the top of banks.
- Temporary erosion and sediment control measures shall be established and maintained until permanent protection is established.
- Erosion control measures shall include, but are not limited to, seeding and mulching exposed soil on hill slopes, strategic placement of hay bales below areas subject to sheet and rill erosion, and installation of bioengineering materials where necessary. Erosion control measures shall be in place prior to October 1st.
- All earth-moving activities shall be conducted between May 15th and October 15th of any given calendar year unless wet weather grading protocols are approved by the Department of Planning and Building Services or other agencies having jurisdiction.

Pursuant to the California Building Code and Mendocino County Building Regulations a grading permit will be required unless exempted by the Building Official or exempt by one of the following:

- An excavation that (1) is less than 2 feet (610 mm) in depth or (2) does not create a cut slope greater than 5 feet (1524 mm) in height and steeper than 1 unit vertical in 1½ units horizontal (66.7% slope).
- A fill less than 1 foot (305 mm) in depth and placed on natural terrain with a slope flatter than 1 unit vertical in 5 units horizontal (20% slope), or less than 3 feet (914 mm) in depth, not intended to support structures, that does not exceed 50 cubic yards (38.3 m³) on any one lot and does not obstruct a drainage.

Applicant shall submit to the Department of Planning and Building Services, a letter from Regional Water Quality Control Board demonstrating compliance with the National Pollutant Discharge Elimination System (INPDES) Phase II regulations regarding storm water runoff. Drainage and storm water runoff plans should be submitted to the County Water Agency and the Department of Transportation for review and approval.

An additional condition required development of a "Hazard Mitigation Plan identifying the manner in which hazardous material will be secured to eliminate transport or mobilization during a flood event resulting from failure of Coyote Dam".

Two private development projects requiring Coastal Development Permits were reviewed. One was the construction of a single-family residence and attached garage plus driveway. A variance was requested to reduce front and rear yard setbacks. The parcel was within 100 feet of a designated ESHA (riparian zone) located on an adjacent property. Several biological assessments were conducted in conjunction with the Coastal Development Permit. To accommodate a 50-foot buffer on the ESHA as required by the County Coastal Zoning Code, removal of several redwood trees would be required. To preserve the trees, a reduced buffer of 36 feet was proposed. This was permissible for cases of existing subdivisions according to county code:

"Where an existing subdivision or other development is largely built-out and the buildings are a uniform distance from a habitat area, at least that same distance shall be required as a buffer zone for any new development permitted. However, if that distance is less than one hundred (100) feet, additional mitigation measures (e.g., planting of native vegetation) shall be provided to ensure additional protection. Where development is proposed in an area that is largely undeveloped, the widest and most protective buffer zone feasible shall be required".

A biological assessment for the project determined that buffers on other parcels within the subdivision ranged from 6-20 feet. DFG reviewed the project and concluded that a buffer of 36 feet was adequate protection for the resource. DFG recommended that erosion control measures be implemented during construction.

Because the ESHA was on an adjacent property under different ownership, no conditions could be placed on this project to protect it in perpetuity. The one special condition imposed requirements for erosion control measures including silt fences and straw mulch. Because the site is less than one acre, a General Construction Storm Water Permit would not be required.

The third Coastal Development Permit was for demolition of an existing residence and garage and replacement with a new, larger house and attached garage. Additional improvements would include a detached workshop, new septic system, upgraded driveway and fencing. The site was located within 100 feet of an ESHA. Biological assessments were conducted to determine

resource conditions. A wetland of about 0.5 acre was located on the site. A buffer of 100 feet as required by the County was not feasible so a biologist conducted an analysis justifying a reduced buffer. It was determined that existing improvements were located 10-15 feet from the wetland and the same buffer was proposed for the new construction. Other residences in the same subdivision had buffers of 10-20 feet from ESHAs.

Four mitigation measures were proposed to protect the wetland. One would re-direct drainage to allow natural flow to the wetland. The second would involve installation of fencing, including silt fences, to protect the wetland during demolition and construction. The third measure would encourage wetland vegetation growth by not mowing the area. A fourth measure would require installation of a permanent fence at the wetland boundary to protect it from disturbance after construction (this was a recommendation of Regional Water Board staff).

DFG and the Regional Water Board were both consulted on this project and concurred with the proposed mitigation. The project agent also agreed to implement the mitigation measures. The mitigation measures were incorporated into conditions for approval of the project.

In all these projects, the County's approach to environmental evaluation in the Coastal Zone is demonstrated. Biological assessments and/or consultation with DFG and other agencies are required so that sensitive resources can be identified and avoided to the extent feasible.

The final project reviewed was a proposed minor subdivision for a 7.89-acre parcel located entirely within a 100-year floodplain and Floodplain Combining District. None of the site is in the floodway. There had been a number of similar projects within the vicinity of the project that had been recommended for denial by the Planning Commission but approved on appeal to the Board of Supervisors.

The principal environmental concern was the potential for filling on the site to cause changes in downstream flood behavior. DFG reviewed the project and offered no comments or suggestions for mitigation.

Staff recommended denial of the project but the Planning Commission reversed its usual position on similar projects and approved the project with conditions. The conditions required the applicant to obtain a "Letter of Map (flood hazard) Revision from FEMA" and to conduct drainage studies that indicate no offsite effects on flooding. No filling of the floodplain was permitted and each structure must be structurally elevated out of the Base Flood Elevation. In essence, the conditions are intended to ensure that pre-development flooding conditions are not changed.

Public Projects

Two public works projects were reviewed. The North State Street emergency repair project is the replacement of a culvert damaged during the winter storms of 2005-06. It is located on an intermittent tributary to the Russian River. Although categorically exempt under CEQA, the project has been subject to permitting requirements of the Army Corps of Engineers (404 permit), DFG (Streambed Alteration Agreement) and Regional Water Board (401 certification). It can be considered typical for many projects carried out by the Department of Transportation (DOT).

DFG's Streambed Alteration Agreement contained "general conditions for all encroachments" that stipulate operating procedures and implementation of measures to prevent erosion and

sedimentation. Since the site is located on a tributary to the Russian River there could be sedimentation effects on downstream fish habitat. The only site-specific condition in the Agreement was a standard requirement for culvert sizing (adequate to pass 100 year storm) and placement.

The county's application to the Corps for a 404 permit included a letter from NOAA Fisheries regarding potential impacts on listed salmonids. NOAA Fisheries staff sometimes provides this "informal" consultation for both public and private projects. On this project, NOAA Fisheries determined that the project would have no effect because the stream was not fish bearing, work would be conducted when the stream was not flowing, there would be no sediment delivery to the Russian River and that armoring at the culvert would reduce sediment delivery below that presently occurring. NOAA Fisheries had no recommendations for further mitigation.

The Corps granted the 404 permit with the condition that 401 certification be received from the Regional Water Board. As of July 2008, that certification had not been received.

A second DOT project was the replacement of a low water crossing on a fish-bearing stream with a bottomless arch structure. There are nine low water crossings on this stream and the project is intended to be a prototype for eventual replacement of others. Partial re-routing of the road to avoid crossings is also being considered. The project was triggered by concerns expressed over impacts on fisheries and water quality by NOAA Fisheries, DFG and the Regional Water Board. In addition to turbidity caused by vehicles passing through the stream, there was direct mortality to fish, including Chinook salmon and steelhead. Spawning Chinook were actually observed within the crossings since they were located at pool tails.

The design of the new structure will allow anadromous fish passage at all life stages while passing sediment. It will be sized to withstand a 100-year storm event flow without structural damage. In addition to reducing turbidity, direct impacts on fish habitat will be avoided.

The project received a Mitigated Negative Declaration from the county. The Initial Study and Negative Declaration contained an extensive list of mitigation measures categorized as follows: measures to minimize disturbance from in-stream construction (e.g., limitation of construction to the dry season); measures to minimize degradation of water quality (e.g., erosion control devices); measures to minimize impacts to aquatic habitat and species during dewatering of the project site (e.g., minimizing the duration of dewatering); and measures to minimize injury and mortality of fish and amphibian species during dewatering (e.g., fish and amphibian relocation). Guidance on minimizing impacts to riparian vegetation and birds was also provided.

In the 401 certification granted by the Regional Water Board, no additional conditions beyond those included in the Mitigated Negative Declaration were imposed. There were specific conditions in the Streambed Alteration Agreement. The design of the crossing was to be based on "culvert criteria for fish passage" as described in DFG's Salmonid Stream Habitat Restoration Manual. It should accommodate the 100-year flood flow plus debris and sediment without diverting. Relocation of aquatic species was to be coordinated with a DFG biologist at least 31 days in advance. A riparian re-vegetation plan was required, subject to approval by DFG.

The required riparian re-vegetation plan was prepared based on a biological assessment prepared by a consultant to the county. Proposed treatments include brush layer bank protection at one site and rock slope protection with willow poles at another. Additional planting of oak and buckeye seeds is proposed. Three years of post-treatment monitoring will be done.

The Regional Water Board funded this project. As a condition to the grant, a monitoring program was required. The program objectives are to evaluate the effectiveness of the design along with environmental changes caused by the installation. The monitoring program was still in development as of July 2008.

DOT has standard contract language that it includes for all projects that are put out to bid. The language is adopted from CALTRANS Standard Specifications with minor revisions applicable to Mendocino County. Any project disturbing more than an acre is required to file a Storm Water Pollution Prevention Plan with the county and State Water Board. If less than an acre will be disturbed, the county requires a "water pollution control program" (WPCP) addressing erosion and sedimentation control. The contract language is:

"The objectives of the WPCP shall be to identify pollution sources that may adversely affect the quality of storm water discharges associated with the project and to identify, construct, implement and maintain water pollution control measures, hereafter referred to as control measures, to reduce to the extent feasible pollutants in storm water discharges from the construction site during construction under this contract."

For a specific contract, BMPs may be listed. Categories of BMPs are soil stabilization, sediment control, sediment tracking, wind erosion control and non-storm water management and waste management.

Standard conditions require limitation of work in and around waterways to the dry season, use of barrier fencing to preclude equipment entry into sensitive areas, installation of sediment control devices such as silt fences, soil salvage, and re-vegetation of disturbed areas. Erosion and sediment control measures must be provided and maintained throughout the winter. No area greater than one acre can remain soil-disturbed during the winter. Inactive disturbed areas must be protected within 10 days of discontinuance or prior to onset of precipitation. Inspections of protection measures must be conducted prior to a forecast storm, after storms, daily during extended precipitation events and routinely, every two weeks. Deficiencies must be corrected immediately.

Contractors are advised to consult the CALTRANS Storm Water Quality Handbooks for required BMPs. Failure to comply creates a liability to the contractor for any resulting costs e.g., fines imposed by the Regional Water Board for unauthorized discharge. Payments may be withheld for non-compliance with an approved SWPPP or WPCP.

Mendocino DOT has been upgrading its roads, removing fish migration barriers and adapting its maintenance practices over the past 10 years. One staff person in the department is almost exclusively assigned to developing and implementing projects of this nature. A fisheries biologist is also on staff to assist with permitting.

This culvert in Mendocino County was retrofit with baffles and otherwise modified to allow fish passage at all life stages.



As with all the counties, BMPs in the Roads Manual are implemented for DOT betterment projects along with permit requirements. These entail dewatering of construction sites, relocation of fish, if required, and erosion control measures.



The pictures show a culvert replacement on the Albion River. A silt fence and seeding was used to control erosion (left). Erosion control fabric was installed on the fill slope prior to winter rains (right).

The last public project reviewed was a Coastal Development Permit for several actions within a State park some of which were proposed to solve problems caused by flooding during January 2006. The work included the removal and/or relocation of log jams that were causing erosion or threatening damage to a bridge. A new footbridge over the Little River was also proposed. Project components were to be located within a designated “Environmentally Sensitive Habitat Area” (ESHA) and an analysis was required to justify development within a 50-foot wide buffer along the Little River consisting of red alder riparian forest, the stream and associated wetland. The analysis is required by the Mendocino County Coastal Zoning Code. Because no riparian vegetation would be removed and there would be no feasible alternatives to location of project components in the buffer, the encroachment was permissible.

Removal and/or relocation of log jams required a Stream Alteration Permit. It was determined by DFG that the work in the stream would entail restoration and would improve fish passage.

Another component of the project was relocation of a sewer line away from the stream to avoid erosion. Trenching within the riparian zone for approximately 2500 linear feet would be required. State Parks staff proposed to mitigate impacts on riparian vegetation by replanting. The county concluded that this would mitigate the potential impacts of the trenching. A condition to approval stipulated 1:1 replacement planting for all lost riparian vegetation including both trees and ferns.

As with all the counties, Mendocino County projects are subject to controls over erosion and sedimentation that were not in place 10 years ago. The county has implemented additional improvements in environmental processing and mitigation. These include innovative approaches to runoff management.

Del Norte County

Private Development

As of the last UCCE assessment, Del Norte County was the only county that had a regulation requiring special treatment in defined “resource conservation areas”, generally wetlands and

riparian zones. At that time and up until the present, these treatments have had two objectives. One is to protect important biological resources including riparian and wetland vegetation and the other is to reduce non-point source pollution. This treatment is exhibited as “buffers on buffers”, that is, development is set back from riparian zones and wetlands to the extent that the intervening area can serve both to filter and retain runoff.



Examples of development set backs from riparian zones in which the intervening grassy area is intended to filter and retain runoff.

Del Norte County has aggressively pursued the use of retention basins to prevent increased runoff rates from development sites. These basins can serve as sediment traps both during and after construction. As a standard practice, it allows no net increase in runoff and requires grading and drainage plans that indicate how runoff will be accommodated. Grading and drainage plans must be prepared in compliance with the Regional Water Board Basin Plan. Both above and below ground retention basins have been required.



Retention basin serving to store runoff from parking lot (left).

Underground storm water retention facility storing runoff from commercial development (right).

Property owners or homeowner associations are responsible for maintaining retention basins. There have been three residential subdivisions in the past 10 years where retention basins have been installed.

For commercial and industrial projects, the county also requires runoff from impervious surfaces to be treated before discharge to the storm drainage system. This is normally done with oil-

water separation basins. Again, responsibility for maintaining these is delegated to the property owner.

BMPs are routinely applied to private developments to control erosion and sediment transport. Every discretionary project is required to obtain a General Construction Storm Water Permit from the State Water Board and prepare a SWPPP. Every building permit involving grading must have a sedimentation control plan. The BMPs outlined in those documents must be implemented as conditions to approval. Because of the climatic conditions in Del Norte County, erosion control measures may be required to be applied during any time when rain occurs.



Temporary erosion control measures applied during road construction (left).
Silt fence and hay bales installed to prevent sediment delivery to channel (right).

County Planning provided four examples of projects approved since the UCCE assessment. Three of these were land development projects and the last was an expansion of an existing WalMart store.

One project consisted of an application for re-subdivision of a 321-acre parcel to reduce the number of lots from 203 to 70. The county requested a wetland determination and biological study. Wetlands exist both on the site and off site. The biological study recommended 100-foot buffers for larger wetlands and 25-foot buffers for small isolated wetlands. A buffer of 100 feet was also recommended for a drainage ditch traversing the property. As conditions to approval, all building sites and associated improvements were required to be located outside the buffers. An additional condition required removal of a stream crossing (culvert). Prescribed buffers were in compliance with requirements of the county's Local Coastal Program. The approved subdivision map had an annotation that "Wetland buffers are not approved for development and no disturbance of the area is allowed without approval from the county".

Another project was a minor subdivision of 197 acres located on a hillside into four two-acre parcels and a remainder of 189 acres. Of the total parcel, 161 acres were zoned as Timber Production Zone and rest was zoned rural residential, two-acre lot size. As with most of the county's projects, a biological assessment was required. The assessment disclosed the presence of four streams, three of which are Class II perennial streams. Required buffers on streams within the portion of the property within the Coastal Zone were 100 feet. Outside the Coastal Zone, buffers of 50 feet were required. There were no wetlands on the site and the streams were not fish-bearing. Development was subject to the County's Hillside Development Standards. The Hillside Development Standards stipulate that no construction can occur on slopes >30%. A geotechnical report is required. As with the previous project, the subdivision map had an annotation that "The riparian buffer is not approved for development and no disturbance of the area is allowed other than approved drainage improvements without approval from the County of Del Norte".

In the third project, an amendment to an approved subdivision was requested to allow a change in access and construction of a stream crossing. DFG was consulted on the project and provided recommendations

for the crossing. A consultant conducted a biological assessment. Some trees would be removed at the crossing site and the developer was required to do vegetation restoration. Additional recommendations pertained to construction BMPs and equipment exclusion from sensitive riparian and wetland areas.

All of these land development projects illustrate some standard procedures implemented by the county. As previously described, the county requires grading and drainage plans for developments and mitigation for potential erosion, sedimentation and hydrologic impacts. Biological assessments are required for projects where wetlands and/or riparian areas may be involved. Riparian and wetland setbacks are enforced with their size depending on whether or not the project is in the Coastal Zone and the recommendations of biological assessments.

The last project reviewed was an expansion of an existing WalMart store. The proposed expansion would double the existing store size. An Environmental Impact Report was required for the project. The Final EIR has been certified and final approval was pending as of July 2008.

When the existing store was built in the early '90s it was subject to the requirements of the resource conservation area overlay zoning. The site of the existing store is bounded by a tributary to Elk Creek, an important anadromous fish stream. A substantial wetland is also present at the mouth of Elk Creek. As conditions to approval of the original project, a 50-foot buffer from the existing tributary riparian zone was required. Additional conditions stipulated treatment of storm water before discharge to the tributary.

The proposed expansion will not affect the existing buffer. Expansion will occur on an adjacent parcel where there are no riparian or wetland communities.

As conditions to project approval, the county is requiring that fencing be installed along the setback boundary to prevent inadvertent damage during construction. Any disturbance that does occur must be restored to the undisturbed condition. DFG concurred with this recommendation.

The expansion of the store and parking area will increase the impervious surface on the site and potentially change the rate of runoff during storm events. DFG responded to the Notice of Preparation for the EIR stating its concern that this impact be thoroughly evaluated. Additional concerns related to the potential non-point source pollution associated with runoff from the impervious surface.

Increased runoff will be accommodated with existing facilities. These include three outfalls to the Elk Creek tributary and on-site retention.

Conditions to approval included a requirement to prepare and submit to the county a SWPPP including temporary erosion control measures, sediment retention, handling of hazardous materials and effectiveness monitoring of BMP performance. A storm water plan is required to include pollution control devices such as: underground in-line treatment, green roofs, curb cuts in parking areas (to drain runoff to filter strips), rock-lined swales, vegetated swales and check dams, oil/grease separators, retention/detention ponds and proper containment of fertilizer and agricultural chemicals.

Public Projects

As with all the counties, Del Norte County has been upgrading its infrastructure to improve fish passage and reduce sources of impairment to salmonid habitat. On these projects, the county engineering department routinely applies BMPs as outlined in the Roads Manual. These include use of silt fences, erosion control fabric and mulch to reduce erosion and sediment transport from graded areas and re-vegetation of disturbed areas. Spoils disposal sites have been designated, mainly on US Forest Service lands to avoid potential water quality impacts.



Straw mulch, silt fences and armoring at upgraded stream crossing (top). Erosion control fabric, armoring and willow staking on channel downstream from crossing (bottom).



Detail of erosion control and willow staking (left).
Re-vegetation with ferns at upgraded stream crossing (right).

During the winter of 2005-06 Del Norte County experienced severe flooding and flood damage in the vicinity of the Klamath River. A boat ramp and associated bank protection on the river was damaged by the flooding and the county applied to FEMA for disaster assistance. The project area included designated critical habitat for coho salmon. Other listed species, including stellar sea lion were also at risk of impact. FEMA conducted formal consultation pursuant to Section 7 of the ESA with both NOAA Fisheries and US Fish and Wildlife Service. A contractor to FEMA prepared a biological assessment and numerous recommendations for mitigating impacts on listed species were provided. As a condition to funding the project, FEMA required the county to adopt these recommendations. To avoid impacts on coho, construction was limited to a period when coho would not be present (July 15- October 15). In addition to the FEMA "General Conservation Measures" and specific measures intended to minimize impacts to listed species, the county is required to obtain a Streambed Alteration Agreement from DFG, a 404 permit from the Corps of Engineers and 401 certification from the Yurok Tribe who administers the Clean Water Act within its reservation. The county must prepare and implement a SWPPP and Spill Prevention Control and Countermeasure Plan. As a final mitigation measure, a biological monitor is required to be on site during construction.

Trinity County

Private Projects

Trinity County Planning Department provided documentation for one land development project. The land development consisted of a rezoning to amend an approved Specific Unit Development plan for a 27-acre parcel. The intent was to relocate an approved building site and access road. The site was identified as “geologically unstable” in some areas. It is approximately 1000 feet from Weaver Creek, an anadromous fish stream. Two ephemeral streams are located on the property and they support some riparian shrubs. Existing access to the site consists of a dirt road that is experiencing surface erosion.

The Initial Study for the project indicated that there were no environmental impacts that could not be mitigated below the level of significance. Mitigation measures included use of dust control practices during construction, limitation of activities affecting streams (road crossings) to periods of low or no flow, decommissioning of the existing road (employing LITH guidelines), and re-vegetation of disturbed areas, as necessary. In addition, the applicant was required to monitor the new road’s performance during and after rainfall events to identify and correct any erosion problems. Additional BMPs for use during construction and in project design were contained within a geotechnical report prepared for the project. Department of Fish and Game comments on the project indicated that the proposed mitigation measures would be sufficient to avoid significant impacts.

The staff report for the project recommended approval but did not include any conditions mandating implementation of mitigation measures. For an action limited to a rezoning, it is not possible to impose conditions on approval. According to the project planner, adoption of mitigation measures is presumed.



Small scale stream bank stabilization project using bioengineering methods in progress (left) and two years later (right), Sidney Gulch, Trinity County

Public Projects

Trinity County Department of Transportation provided documentation for a road construction project, a fish barrier replacement and a road sediment reduction project.

Several years ago, Trinity County proposed the construction of a limited access arterial road that would essentially serve as an alternative to State Route 299 through Weaverville for travelers connecting to State Route 3. An Environmental Impact Report (EIR) was prepared and

certified by the Board of Supervisors but no final decision had been made on the project as of July 2008. The project is unique in the sense that virtually no major road construction has occurred in Trinity County for many years.

For this project, the principal issue related to salmonid habitat is the proposed crossing of East Weaver Creek, an anadromous fish stream. The proposed crossing would be a bridge that “will meet all NOAA Fisheries fish passage criteria, passing the 50-year flow with at least three feet of clearance for debris, and the 100-year flow with approximately one foot of clearance for debris.” Two additional culvert stream crossings on a non-fish bearing stream would be constructed. According to the project description in the EIR, “direct discharge of surface runoff to East Weaver Creek and associated drainages would be avoided” both during and after construction. The drainage design would include elements such as vegetated swales and at least one detention basin to control runoff. Erosion control measures applied during and after construction would conform to the requirements of CALTRANS guidelines and specifications as well as conditions imposed through the General Construction Activity Storm Water Permit and SWPPP, 401 certification, 404 permit and 1600 Streambed Alteration Agreement. Construction would not occur during the winter and interim “winterization” erosion control measures would be implemented. During bridge construction, all activities would be confined to areas outside the low flow channel. Construction would occur between June 15 and October 15. All construction materials would be removed from the vicinity of the stream by October 15, prior to high flows. Measures to prevent discharge of excavated or stockpiled materials, cement or hazardous substances into East Weaver Creek were included in the project description.

Since the Federal Highway Administration (FHWA) would fund this project, NEPA clearance would be required. Documentation provided by the Department of Transportation did not indicate whether or not this has been accomplished. Along with NEPA compliance, FHWA would be required to conduct a formal consultation with NOAA Fisheries (probably via CALTRANS) regarding potential impacts to federally-listed coho salmon. FHWA would be required to consult separately with DFG pursuant to the state listing of the coho salmon.

Three sections of the EIR were reviewed to determine the potential impacts of the project and what measures were proposed to offset those impacts. The Hydrology, Water Quality and Storm Water Runoff section described potential permanent impacts as creation of six acres of impermeable surface and generation of non-point source pollution. Mitigation measures proposed to offset these impacts included incorporation of a detention/sedimentation basin and vegetated ditches and swales into the design. Temporary construction-related impacts included potential discharges of sediment, construction materials and chemicals into East Weaver Creek and another non-fish bearing stream. Mitigation measures proposed to avoid or minimize these impacts included adherence to permit requirements and SWPPP recommendations as well as any conditions forthcoming from ESA consultation with NOAA Fisheries.

The Vegetation, Invasive Species and Wildlife section of the EIR states that depending on the final alternative chosen, approximately one acre of riparian habitat located along East Weaver Creek would be removed or disturbed. To mitigate these losses, access to the riparian zone would be restricted to areas directly within the construction area. Efforts would be made to prune riparian vegetation within the area of construction rather than removing it outright. A “detailed Riparian Re-vegetation Plan will be developed” with the goal of replacing any lost riparian species at a 2:1 ratio. The plan will include provisions for two years of monitoring.

The Threatened and Endangered Species section of the EIR identifies potential direct and indirect impacts to listed coho salmon, and unlisted steelhead and Chinook salmon that would

result from riparian vegetation removal. These impacts would be mitigated below the level of significance by measures previously described. Long-term water quality impacts would be mitigated by preventing direct discharge of road runoff to East Weaver Creek. Construction activities in and near East Weaver Creek could disturb salmonid habitat. Impacts could include elevated turbidity, sedimentation, direct mortality, increased water temperature (due to riparian vegetation removal), and fish stranding in depressions caused by construction. To mitigate these impacts, no construction would occur within flowing water, no equipment will operate in the live stream and no stream diversions will be required. Additional measures to protect fish and their habitat may be imposed by NOAA Fisheries and DFG.

The second project reviewed was the Little Brown's Creek Migration Barrier Removal Project that was completed in 2007. It entailed the replacement of an existing crossing (three culverts) with a bridge to allow full passage for all life stages of coho salmon and steelhead. Elimination of fill at the crossing and upstream accumulated sediment with potential for downstream delivery was part of the project. An engineered channel was constructed upstream and downstream from the new bridge. Documents provided for review included a project progress report covering September 2007-February 2008, the Streambed Alteration Agreement and the NOAA Fisheries Biological Opinion on the project. The project site was visited in July 2008.



Salmonid migration barrier removal and upslope bioengineered stream bank stabilization and restored channel installed at stream crossing, Little Brown's Creek.

Because federal funding was involved, the project was subject to both CEQA and NEPA. It was determined to be Categorical Exempt from CEQA under Section 15333 (Small Habitat Restoration Projects) of the CEQA Guidelines. Required permits included a Streambed Alteration Agreement, a non-reporting Nationwide 27 Permit from the Army Corps of Engineers and 401 water quality certification. Formal consultation with NOAA Fisheries was required and was conducted by US Fish and Wildlife Service, one of the funding agencies. No consultation with DFG pursuant to the state listing of coho salmon apparently was conducted.

The deficient culverts were replaced with a cast in place concrete bridge on pile footings. An engineered "roughened" channel was installed upstream and downstream from the new bridge to facilitate fish passage at all flows. Stream bank stabilization was accomplished using bioengineering techniques. Post-project monitoring is underway and includes out-migrant fish trapping, photo-points, redd surveys and channel surveys with longitudinal profiles.

This project required extensive excavation and channel reconstruction. Fish and amphibian relocation was conducted prior to construction and netting was installed above and below the construction area and at a tributary to prevent in-migration during construction. There was little

surface flow during the period of construction, which was completed between June 30 and November 1. Therefore, the stream was not dewatered. Significant stream flows were not recorded until December 4. Potential erosion and sedimentation was mitigated during excavation of the existing culverts and channel fill by installing silt fences and straw bales. Plastic sheeting was placed over exposed banks. No substantial rainfall events occurred during construction.

The sediment accumulation upstream of the existing culverts was excavated for 250 feet above from the crossing. This required removal of 0.1 acres of riparian and other vegetation. The re-constructed channel upstream and downstream from the crossing was placed at a five percent grade. It was constructed with rock grade-control structures, "constriction" rock, large wood and streambed material sized to be stable at 100-year flows. Some excavated material was utilized to create the new channel and some was used to improve an existing road that was contributing sediment to the stream. After completion of all construction, bioengineered bank protection was installed on approximately 150 feet of stream bank.

In its Biological Opinion on the project, NOAA Fisheries stated that it did not consider the project to jeopardize continued existence of coho salmon or destroy critical habitat. It did indicate that incidental take would occur. The principal concern was mortality due to fish relocation or dewatering. Potential impacts from sediment discharge were considered minor. The level of incidental take (juvenile mortality) was not determined but was felt unlikely to affect returns. NOAA Fisheries considered the removal of the barrier and improved access to upstream habitat as a distinct benefit to the fisheries. The Biological Opinion included specific mandatory measures to be taken to reduce mortality during relocation.

Since dewatering did not occur, the potential for mortality was reduced. Also, the relocation did not involve any coho salmon but only coastal rainbow trout (possibly steelhead) and amphibians.

The Streambed Alteration Agreement for the project contained standard measures to prevent impacts on fish and their habitat. No conditions specific to the project were included.

No documentation of mitigation measures required for 401 water quality certification was available for review. There was no indication that a General Construction Activity Storm Water Permit was required.

The last project evaluated was a "sediment reduction" on a county road. This watershed has a high priority for sediment reduction since the stream draining it provides domestic water for the community of Hayfork and is an anadromous fish stream. The road was inventoried to identify potential sediment sources in 2001. A total of 22 road related sediment sources were selected for treatment in 2003. The project was completed in 2005.

The project focused on improving road drainage and surfacing on approximately 2.4 miles of road. It included out-sloping nearly two miles of road, rock surfacing the entire treated segment, improving insloped sections, installing ditch relief culverts, removing spoils and several other actions.



Completed out-sloping and rolling dips on treated low traffic volume county roads
(China Gulch on left and Indian Creek Road on right).

All work was completed in compliance with the requirements of the Roads Manual and LITH Guidelines.

The county and DFG determined that the project was Categorically Exempt from CEQA under Section 15333, Class 33 of the CEQA Guidelines. The only available environmental documentation was the Streambed Alteration Agreement issued by DFG. It is unknown whether or not 401 water quality certification and/or a General Construction Activity Storm Water Permit were required. The Streambed Alteration Agreement contained standard provisions and no specific measures related to the project.

CONCLUSIONS

In this section, the recommendations of the original UCCE assessment are presented along with commentary on how county policies and practices have changed over the past 10 years to address those recommendations. In some instances, the original recommendations have been edited for clarity. At the close of this section, overview conclusions are presented along with recommendations for further study or evaluation.

EVALUATION OF UCCE RECOMMENDATIONS

Recommendation 1A: Revise General Plans to include goals, policies and implementation measures that protect salmonid habitat.

Comments: This has been done in Del Norte County. Relevant revisions are pending in Mendocino and Humboldt Counties. Trinity County will be revising its General Plan over the next few years.

Recommendation 1B: As an alternative, the five county conservation planning effort could promote regional policy consistency that currently does not exist. Possible vehicles for this include the interim conservation plan itself, habitat conservation plans, or a watershed element of each general plan.

Comments: Watershed elements or the equivalent are included in the pending revisions to the Mendocino and Humboldt County General Plans. A watershed technical report is currently being prepared in Trinity County.

Regional consistency in road maintenance practices has been achieved through the counties' adoption of the 5C Roads Manual.

The emergence of state controls for mitigating impacts of construction-related erosion has the potential for creating regional consistency. The efficacy of these controls has not been validated.

Finally, changes in the Streambed Alteration Agreement environmental review process have mandated more consistency throughout the region in the application of mitigation measures.

Recommendation 2A: Coastal Zone riparian protection regulations should be considered as models for protection of streamside riparian zones throughout the five county region.

Comments: Riparian zone protections are afforded through the Humboldt County 2002 Streamside Management Areas ordinance. Siskiyou County is proposing similar protection in its Land Development Manual. Otherwise, all of the counties implement protection in response to DFG and other comments on projects through the CEQA process.

Recommendation 2B: Additional development standards may be needed to fully address the potential range of impacts on anadromous salmonids.

Comments: Codified development standards exist in Humboldt County and are pending in Siskiyou County. Del Norte County has Hillside Development Standards. Otherwise, the counties have not formally adopted development standards that reduce impacts on salmonid habitat beyond those included in their subdivision and zoning ordinances.

In practice, however, development standards have changed substantially over the past 10 years. Through the CEQA process and other approaches such as pre-application consultation, innovative approaches are being taken to manage post-development hydrologic impacts and protect riparian and other resources. These approaches include relaxation of road standards to reduce impervious surfaces, use of retention basins to minimize off-site hydrologic impacts and required compensation for lost riparian and wetland habitat.

Recommendation 2C: Flood management regulations should be changed to address protection of anadromous salmonids and their habitats. This may involve prohibition of development in secondary floodplains as well as floodways on critical streams or stream reaches.

Comments: Trinity County has revised its flood management ordinance to include language advocating protection of salmonid habitat and riparian vegetation. It also prohibits creation of lots that only have building sites within the 100-year floodplain. Humboldt County has created a flood hazard combining zone which can affect development potential. It has also prohibited certain uses within floodplains.

Recommendation 3A: Environmental review procedures for projects in floodplains of anadromous fish streams or other sensitive areas should be adjusted so that fisheries issues are considered early in the project planning process. CEQA Initial Study checklists should be revised to incorporate salmonid issues. Locations critical to salmonid habitat conservation should be identified by county staff in advance and trigger pre-consultation on projects located there, as is done in Del Norte County with Resource Conservation Area zones.

Comments: 5C has proposed an Initial Study checklist that more specifically addresses salmonid habitat. This checklist is in review at all counties and pending adoption in Trinity County.

Pre-consultation on development projects is not mandated but is available to applicants in Del Norte and Mendocino Counties. Evidence indicates that pre-consultation has been used to modify designs and reduce potential impacts on riparian vegetation, wetlands and salmonid habitat in Humboldt County.

The counties and DFG have conducted inventories over the past 10 years that have identified critical streams and watersheds. This includes work performed as part of the Coho Strategy.

Overall, sensitivity to salmonid habitat issues has increased substantially in the past 10 years.

Recommendation 3B: Counties should consider ways to obtain consistent professional hydrologic and biological review of projects potentially affecting anadromous salmonids. The Department of Fish and Game and other state agencies are not necessarily dependable sources of timely input.

Comments: The counties still depend on DFG in particular to provide input during CEQA review. Judging from the administrative record, DFG has increased its participation in projects in Siskiyou and Humboldt Counties.

The counties are employing professional expertise in both design of public projects and in environmental and project review procedures. For example, Humboldt County requires a biological report for projects in Streamside Management Areas. SWPPP documents must be

prepared by a registered professional to be acceptable to the State Water Board. SWPPP documents are not necessarily submitted to the State Water Board for review but are commonly reviewed by county staff.

Counties have added staff specifically to address fisheries and permitting issues.

Finally, 5C retains the services of professionals on behalf of the counties for project design and implementation.

Recommendation 4: Counties should continue to use all available tools to prevent development within riparian zones and floodplains. Avoiding location of development in these areas should be a priority over mitigating developments in these areas.

Comments: See previous comments regarding riparian zone protection and floodplain management. There is evidence that some projects in floodplains are conditioned to avoid potential off-site impacts.

Recommendation 5A: Formation of a five county technical workgroup focused on exchange of information could capture innovative practices and procedures. These could then be implemented more consistently as mitigations through the CEQA process.

Comments: 5C offers training every year that includes providing information on mitigating development impacts. The Roads Manual and associated training provide a basis for regional consistency in offsetting the impacts of routine road maintenance.

Recommendation 5B: The counties should explore mechanisms to curtail winter grading, such as grading ordinances, or standardized mitigations on grading imposed through the CEQA process.

Comments: Although only one county has adopted a formal grading ordinance, all are subject to State and Regional Water Board requirements for erosion control on construction sites over one acre. This State and Regional Water Board authority has evolved over the past several years. It is uncertain if it has resulted in significant improvements in controlling impacts. As a standard condition, all counties require that grading be limited to the dry season unless specific approval for winter operations is granted.

Recommendation 6: The counties should develop specific standards for long-term management of riparian corridors that may be adopted as development conditions or covenants, codes, and restrictions.

Comments: This occurs on a case-by-case basis in all of the counties. None of the counties mandate specific terms of protection or management for riparian zones.

In Trinity County, the existence of a riparian reserve may be designated on a parcel map or deed but other than prohibiting development therein, no prescription for management is required.

In Siskiyou County, riparian reserves remain in private ownership and no management requirements are imposed.

In Humboldt County, Streamside Management Areas may be designated and management guidelines may be recommended. Placement in a conservation easement is sometimes recommended.

Del Norte County Resource Conservation Areas may be placed in public or non-profit ownership but they may not have specific management guidelines.

Recommendation 7A: Some maintenance procedures can be improved, especially through implementation of the five county workgroup and training, previously described.

Recommendation 7B: Road and bridge maintenance policies should be institutionalized so that they become standard organizational practice, rather than the result of individual initiative.

Recommendation 7C: There should be a continuing emphasis on education and training of personnel in biological resources management. Exceptional cases of fish friendly road improvements already existing in the counties, such as Siskiyou County's French Creek project, should be used as examples.

Recommendation 8A: The counties should consider conducting an inventory of roads, culverts, and bridges located in or near anadromous fish streams and determine which could be economically relocated or eliminated without a significant loss of public benefit.

Recommendation 8B: In cases where county roads are to be terminated or abandoned, provision should be made for erosion control and drainage.

Comments: All of these recommendations are addressed by the inventories of roads and migration barriers conducted in all of the counties over the past 10 years, by the widespread implementation of upgrading and habitat restoration projects, by adoption of the Roads Manual and LITH standards and by the yearly training offered by 5C to county staff.

Recommendation 9A: Federal and state agencies need to take the lead in improving their own guidelines and standards for fish-friendly practices. Specifically, FEMA should amend its reconstructed as built requirements for roads and bridges to be more fish friendly. Fish-friendly alternatives to generic CALTRANS and ASHTO road standards should be developed. The US Army Corps of Engineers should work with counties to change levee maintenance agreements to be more conservative of fish habitat.

Comments: This recommendation is not within the counties' responsibilities but there is evidence that improvements have been made.

FEMA has adapted its procedures to comply with the ESA. That has increased its flexibility in prioritizing and funding emergency repair work. (Note that this is not always true and there have been instances of contention between FEMA and counties over design and funding of projects.)

County staff reported increased sensitivity and flexibility on the part of CALTRANS and the US Army Corp of Engineers in terms of construction standards, BMPs and maintenance. For example, on Weaver Creek in Weaverville, the Corps has relaxed its vegetation clearing policies for the flood channel to allow persistence of riparian vegetation.

SUMMARY

Along with the many social and economic changes that have occurred over the past 10 years in far northern California there has been a definite improvement in the management of land use impacts on salmonid habitat. The improvement has several aspects: changes in regulations administered by the state and counties, changes in environmental review procedures and changes in project designs and maintenance activities to be more fish-friendly. It is not just the private lands regulated by the counties that are affected by these changes. It is also managed forests and federal and state lands. Yet, according to NOAA Fisheries, there have not been demonstrable changes for the better in populations of anadromous salmonids. There are many dimensions to the recovery problem and the five counties have little to do with many of the issues.

The counties are addressing some of the most important issues that are within their powers. Streams and associated riparian zones are receiving more protection than they did 10 years ago. Hydrologic impacts of development are being mitigated. Water quality impacts due to erosion and sedimentation are being mitigated to a much greater extent than 10 years ago. Finally, all of the counties have taken responsibility for reducing the direct and indirect impacts of their infrastructure maintenance on salmonid habitat.

RECOMMENDATIONS

The research and analysis that went into this report cannot provide complete results because there was no field verification involved. A key finding from the 1998 assessment was that there was sometimes a “disconnect” between theory i.e., policies and regulations, and practice i.e., how projects actually turn out on the ground. The current research suggests some hypotheses that may be tested through field work in the counties. Therefore, the next step should be an environmental audit at project sites.

The key element of an environmental audit should be an evaluation of the effectiveness of erosion and sedimentation control measures on both public and private development sites. In particular, the practices applied and their effectiveness in counties with and without grading ordinances should be compared. Also, there should be an evaluation of the compliance of development projects with the recommendations contained in SWPPP documents.

Another element of an audit would be an evaluation of the conditions in streams and riparian zones set aside from development. This could take the form of longitudinal monitoring of selected sites or through selection and comparison of reserves set aside at different times (post hoc study). The benefit of the first type of study is that initial baseline conditions can be established. The drawback of it is that it could take several years to obtain results. A post hoc study can yield immediate results but no pre-set aside data will be available.

Finally, for projects undertaken by the counties primarily to benefit salmonid habitat consideration should be given to streamlining permitting processes. NOAA Fisheries has certified county road maintenance (including replacement of barriers) as exempt from incidental take under the ESA. The possibilities of providing blanket 401 and General Permit authorization for these activities should be explored.

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