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July 17, 2007

Mr. Michael E. Wheeler, Supervisor Planner  
Humboldt County Community Development Services  
3015 H Street  
Eureka, California 95501-4484

Dear Mr. Wheeler:

### **Humboldt County General Plan Update**

On January 25, 2007, the Department of Fish and Game (DFG) received from the Humboldt County Department of Community Development Services a notice of preparation (NOP) of a draft environmental impact report (DEIR) for the Humboldt County General Plan Update (Update). This Update is a long-term policy document with a 20-year planning horizon. Its purpose is to guide the County's public policies and conservation goals relative to designated land uses and community development within unincorporated areas of the County. Because the fish and wildlife habitats within the County and the species that use them extend well beyond the borders of the County, the impacts of this Update will have significant regional environmental importance.

The Update projects that by the year 2025, the County population will increase by more than 16,000 people. To accommodate this projected population increase, the County anticipates a demand for 274 additional acres of commercial/industrial lands, approximately 6,000 new housing units, and the development of 2,100 additional acres of residential space by the year 2025. The Update Public Services Report anticipates water demand over this period will increase 62% from 30 million gallons a day (mgd) to 49 mgd.

DFG has reviewed the DEIR NOP, and Update supporting technical background reports and related documents and is providing comments on the Update and DEIR as both a trustee and responsible agency pursuant to the California Environmental Quality Act (CEQA). As a trustee for the State's fish and wildlife resources, DFG has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and the habitat necessary to sustain their populations. As a responsible agency, DFG administers the California Endangered Species Act (CESA) and other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife public trust resources.

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DFG commends the County for developing supporting technical background reports that adequately describe the County's extensive and diverse biological resources, the current and projected threats and impacts to these resources, and potential policy recommendations to protect, enhance, or restore them, as the County continues to grow and develop.

### **Support for Sketch Plan A**

The County has determined the Update DEIR "Sketch Plan A" is the environmentally superior project alternative because it focuses future growth and development into areas where there is existing infrastructure, such as roads, domestic water and sewer, and services such as schools, retail shopping, police and fire protection. By encouraging future development where urban services are already in place, Sketch Plan A would minimize the need for future construction of transportation, sewer, water and electrical distribution infrastructure and stream crossings, as well as minimize the fragmentation and loss of agricultural and forest lands ("resources lands"), which are important fish and wildlife habitat. As such, Sketch Plan A would, among the alternatives under consideration, most feasibly minimize the significant environmental effects of urbanization (listed below) and therefore would have the least impacts on fish and wildlife habitat. For these reasons, DFG supports the adoption of Sketch Plan A.

Habitat fragmentation from urban development has substantial environmental effects on fish and wildlife habitats. Encroachment effects of roads and structures into natural areas include wildlife road-kill, increased garbage and roadside dumping, light and noise disturbance, the introduction of invasive species, the killing of and disturbance to wildlife by domestic animals, and an increase in urban predator fauna such as corvids (jays, crows, and ravens). These affect the long-term sustainability of wildlife populations, e.g., northern spotted owl and marbled murrelet. Furthermore, the placement of residential developments in natural areas typically leads to human conflict with wildlife such as black bear, mountain lion, and fox. This conflict often results in depredation of these animals. DFG therefore recommends the DEIR specifically evaluate the direct and indirect impacts of habitat fragmentation that will result from the Update.

### **Standards and Ordinances**

DFG understands the County intends to develop implementing standards and ordinances concurrent with the drafting of the Update and DEIR so that when the Update is approved, it will be fully enforceable. To best protect fish and wildlife resources and to give the public regulatory certainty and clarity, DFG supports the County's effort to establish clear, specific, and enforceable implementation standards and ordinances concurrent with preparation of the DEIR.

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Understanding these specific implementation standards and ordinances is critical to evaluating the effectiveness and potential impacts of Update policies on fish and wildlife resources. DFG therefore requests continued opportunities to review and comment during their development. DFG recommends that the standards and ordinances developed for the Update be incorporated into approved community plans, such as the 2002 McKinleyville and 1995 Eureka Community Plans, if they currently lack the enforceable standards or ordinances developed in this Update.

### **Guiding Principles**

According to Chapter 1 of the Preliminary Hearing Draft for the February 15, 2007, Update Workshop, nine guiding principles were developed to guide the drafting of the goals and policies of the Update, as well as to create a desired future vision. Of these nine guiding principles, four are directly related to the conservation of fish and wildlife resources. DFG applauds the inclusion and use of the following guiding principles and supports their retention in the final Update:

“3) The plan must ensure the efficient use of water and sewer services and focus development in those areas and discourage low density residential conversion of resources lands and open space.”

“6) The plan must contain long-term agricultural and timber land protections such as increased restrictions on resource land subdivisions and patent parcel development.”

“7) The plan must include unambiguous natural resource protections; especially for open space, water resources, water quality, scenic beauty, and salmonids.”

“9) The plan must provide a clear statement of County land values and policies to provide clarity in the County’s permitting processing system and to simplify review of projects that are consistent with the General Plan.”

### **Significance of Humboldt County’s Aquatic and Riparian Habitats**

As noted in the Update Natural Resources and Hazards Report (NR &H Report), Humboldt County has numerous ecologically and economically important aquatic resources, including wetlands, lagoons, streams, rivers, estuaries and the Pacific Ocean. These resources have both regional and statewide significance. Humboldt Bay for instance, is California’s second largest estuary, and combined with surrounding agricultural lands and the Eel River estuary, is one of the most important migratory waterfowl stopovers along the Pacific Flyway. Humboldt County also has some of the largest and most ecologically important coastal lagoons in the state. The NR &H Report

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notes that two of California's three largest river systems flow through the County and that County streams, rivers and estuaries are habitat for more than 20 State-and-Federally-listed threatened and endangered species. Even smaller streams adjacent to urban areas can have significant fisheries values. For instance, DFG 2005 stream survey data for Freshwater Slough records the presence of 28 fish species, many with important commercial and recreational fisheries value.

A sampling of the listed species occurring in Humboldt County and their listing status include: coho salmon (*Oncorhynchus kisutch*) a State-and-Federally-threatened species; Chinook salmon (*Oncorhynchus tshawytscha*) a Federally-threatened species; coastal cutthroat trout (*Oncorhynchus clarki clarki*), a California species of special concern; steelhead trout (*Oncorhynchus mykiss*) a Federally-threatened species; tidewater goby (*Eucyclogobius newberryi*) a Federally-endangered species and California species of special concern; green sturgeon (*Acipenser medirostris*) a Federally-threatened species and California species of special concern; and willow flycatcher (*Empidonax traillii*) a State-endangered species.

The anadromous salmonids listed above are iconic species that help define California's north coast and form an integral part of the County's natural ecosystems, cultural heritage, and local economy. California's commercial salmon fishery is an estimated \$100 million-a-year industry. Yet despite their importance, salmonids are also some of the County's most imperiled species. Most of the County's anadromous salmonid stocks have, for multiple reasons, precipitously declined over the past 100 years. Coho salmon, for example, have undergone at least a 70% decline in abundance since the 1960s, and is currently at 6 to 15% of its abundance during the 1940s (DFG 2004). The region's commercial and recreational fishing industry have been severely impacted by this decline. In 2006, the US Commerce Department declared a commercial fishery failure for coastal Oregon and California, and recently the US Congress approved and President Bush signed, a \$60 million emergency disaster relief package for the Pacific salmon industry.

Many of the County's larger water bodies, such as Humboldt Bay, Freshwater, Jacoby, and Redwood creeks, and the Eel, Elk, Klamath, Mad, Mattole, Trinity and Van Duzen rivers are designated by the US Environmental Protection Agency as sediment-impaired pursuant to the Clean Water Act §303(d) or are otherwise impaired by high water temperatures, water diversions, loss of riparian habitat, or barriers to fish passage. A number of these waters, such as Humboldt Bay and its principal tributaries and the lower Eel, Mad, and Van Duzen rivers maintain important coho salmon populations that

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have been designated by DFG as key populations to maintain or improve (DFG 2004). Humboldt Bay and many of these important fish-bearing rivers and streams are situated in or adjacent to areas serviced by existing water and sewer services and therefore are in the areas most likely to be impacted by the future development envisioned in the Update.

### **Impacts to Aquatic and Riparian Habitats**

Given the regional importance of the County's riparian and aquatic habitats, DFG recommends the DEIR thoroughly evaluate potential direct and indirect impacts to aquatic and riparian habitats and give special attention to impacts to all salmonid life stages. The DEIR should specifically address the impacts from the indirect effects of urbanization and the conversion of agricultural and timber lands on these resources.

Urbanization has adverse effects on streams and other aquatic habitats. These impacts fall into four general categories: hydrologic, physical, water quality, and biological. In short, without effective mitigations, urbanization and increased impervious surfaces in a watershed lead to increased peak flows and decreased summer low flows, increased water diversions, bank erosion, flooding, sedimentation and the filling of cold-water pools, habitat simplification, loss of functional riparian habitat (including decreases in large wood inputs and habitat complexity), decreased shade leading to higher water temperatures, increases in point source and non-point pollution, and in barriers to fish passage.

DFG finds, with some exceptions, much of the information in the Update Water Resources Technical Background Report (Water Report) appears to be useful and accurate. Notable exceptions include the following statements in the Trinidad Planning Watershed assessment. Regarding current sediment runoff, the Water Report states: "Due to low-volume and slow-moving streamflow through the Trinidad Watershed, sediment is negligible." Regarding Watershed Management Problems, the Water Report states: "No problems are in evidence. The vast majority of the watershed is zoned TPZ, but no timber-related problems are in evidence."

DFG disagrees with this characterization. Streams in the Trinidad and Westhaven area have documented water quality impairments including sediment from forest and unpaved residential roads, antiquated septic systems functioning below current standards, and residential stream diversions which in some cases have dewatered streams. The City of Trinidad and a multiple stakeholder team including DFG, the Coastal Commission and the Redwood Community Action Agency are currently working to characterize, monitor, and rectify these impairments.

## **Natural Communities Conservation Plan and Habitat Conservation Plan**

To provide for the conservation, management, and ultimate recovery of listed and potentially listed species, the California Legislature enacted the Natural Communities Conservation Planning Act, (Fish and Game Code §2800 *et seq*). This act allows for the development of a Natural Communities Conservation Plan (NCCP), which conserves natural communities at the ecosystem scale while accommodating compatible land use. The NR&H Report discusses the potential for County-permitted rural subdivisions in areas with habitat for special status species to be covered under an NCCP. Typically, NCCPs are developed in conjunction with a Federal Habitat Conservation Plan (HCP).

DFG finds that over the life of the Update, the County is likely to undertake or permit projects pursuant to CEQA that may result in the incidental take of listed salmonids, such as coho salmon. Pursuant to CESA, the incidental take of State-listed species requires project proponents obtain an incidental take permit (ITP) from DFG. The issuance of an ITP is typically a lengthy and complicated process best incorporated into an NCCP/HCP process rather than on a project by project basis.

The NCCP program is a voluntary cooperative effort that seeks to anticipate and prevent the controversies caused by species' listings by focusing on the long-term stability of wildlife and plant communities and by including key stakeholders in the process. Presently, Contra Costa, Placer, Santa Clara, and Yolo Counties are developing NCCPs and a number of other California counties are already implementing them. DFG recommends the County meet with DFG, the National Marine Fisheries Service, and the US Fish and Wildlife Service to explore developing a County-wide NCCP/HCP.

## **Master Lake or Streambed Alteration Agreement**

Pursuant to Fish and Game Code §1600 *et seq*, if a project will result in the substantial modification to a lake or streambed, bank, or channel, DFG must be notified, and in a majority of cases, a Lake or Streambed Alteration Agreement (LSAA) issued. DFG is the "responsible agency" under CEQA for the issuance of LSAs. Given the County maintains more than 1,500 miles of roads, 100 bridges, and three levee systems, and the frequency in which the County requests LSAs, DFG recommends the County, pursuant to Fish and Game Code §1600 *et seq*., work with DFG to develop a county-wide master LSAA. A long-term master LSAA would provide the County with greater operational flexibility, certainty, and cost savings, while better protecting aquatic resources.

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## **Stormwater Quality and Intensification**

Development that results in the covering of permeable soil on vegetated land with impervious surfaces such as structures, streets, sidewalks, and parking lots, tends to intensify storm water runoff volumes and velocities. These effects typically result in higher stream peak flows, increased bank instability, erosion, channel incision, flooding, discharge of fine sediment, and the introduction of pollutants such as hydrocarbons, heavy metals, garbage, pathogens, nutrients, pesticides, and domestic animal feces.

The nonpoint point source pollution found in urban runoff is now a leading threat to the nation's water quality (US EPA 1999). A significant overall reduction in stream and wetland quality indicators when impervious cover in a watershed exceeds 10%, with severe degradation expected beyond 25% impervious cover (Arnold and Gibbons 1996; Watershed Protection Research Monograph No. 1, 2003). The following statement in the NR &H Report demonstrates the County's awareness of the adverse effects that urbanization has on local water quality:

“Although water quality is relatively high, many water bodies are sediment, temperature, or pollution impaired. Nonpoint source pollution from stormwater and agricultural runoff is the greatest cause of water quality problems in the county.”

The following warning on the County Division of Environmental Health, Ocean Monitoring Program website also demonstrates the County's public health concerns over stormwater impairment to local waters:

“After a significant rainfall, stormwater runoff draining into creeks and the ocean can contain high levels of bacteria and pollutants. Please avoid contact with ocean and creek water until at least 3 days after a heavy rainfall.”

In addition to stormwater pollution, development projects are often designed to rapidly discharge storm and flood water offsite and into natural drainage features such as streams or Humboldt Bay. Unless intentionally designed to do so, development typically leads to decreases in groundwater and local aquifer recharge. Since on the North Coast, groundwater is the principal summer water source for streams, rivers, and wetlands, increases in impervious surfaces and stormwater facilities designed for rapid drainage of

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stormwater off-site tend to result in decreased summer low flows, higher stream temperatures, and loss or even elimination of aquatic habitat during the summer. DFG therefore recommends the DEIR thoroughly evaluate potential direct and indirect impacts of increased stormwater runoff and altered hydrology to receiving waters.

DFG recommends the County include a clear policy and implementation ordinances or standards which require developments be designed and managed to minimize the introduction of pollutants and increases in runoff to receiving waters. DFG recommends these standards prohibit developments, to the maximum extent practicable, from altering the hydrologic regime of streams by increasing peak flows or decreasing summer low flows.

To accomplish these objectives, DFG recommends the Update include a standard that requires the use of low-impact development (LID) elements such as pervious surface technologies for driveways and walkways, vegetated (green) roofs (Hutchinson et al. 2006, Voelz 2006), disconnected downspouts, water gardens and grassy swales to maximize pervious surfaces and capture and maintain on-site stormwater percolation and treatment, thus maintaining to the greatest extent practicable, post-project pervious surfaces. Utilizing LID elements will benefit aquatic resources by: 1) filtering out pollution and increasing the quality of stormwater runoff, 2) decreasing peak flows and erosion in downstream waters and 3) increasing ground water recharge and therefore helping maintain biologically-important summer low flows. DFG recommends that the Update, require projects to the maximum extent practicable, treat all stormwater from at least two-year rain events (Q2) on-site through detention and percolation.

The City of Portland, Oregon, Bureau of Environmental Services internet site (<http://www.portlandonline.com/bes/index.cfm?c=29323>) provides good examples of LID designs and urban stormwater enhancement policies and technologies, which, given its Pacific Northwest climate, may also be appropriate for Humboldt County. Sonoma County, the City of Santa Rosa, and the Russian River Watershed Counsel have also jointly developed a comprehensive set of urban stormwater mitigation guidelines for the Santa Rosa area (Sonoma County 2005).

The Update Preliminary Hearing Draft, April 19th, 2007, Workshop Safety Element policy (S-P12 Natural Vegetation) states: "Natural vegetation within and immediately adjacent to the bankfull stream channel shall be maintained except for flood control and public safety purposes." Riparian and wetland vegetation provide important wildlife

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habitat values as well as flood water storage capacity which helps ameliorate the downstream effects of flooding. DFG recommends the County standards allow riparian vegetation removal only in very limited circumstances. In all cases, the substantial removal of riparian vegetation from the bed, bank, or channel of a stream will require a LSAA.

### **Riparian Habitat Protection and Streamside Management Areas**

As mentioned above, many County streams and rivers are documented to be significantly impaired. Because these impairments are, in part, a consequence of the degradation or removal of riparian habitat, DFG finds the maintenance, restoration, and enhancement of waters of the State is largely dependant upon improving riparian habitat conditions.

Numerous regional planning and recovery reports describe the current status of the County's aquatic habitats, identify their causes of impairment, and make recommendations to address these causes (DFG 2004; RCAA 2005, 2006; WQCB 2005; University of California Cooperative Extension 1998). A wide diversity of stakeholders, including DFG, Coastal Commission, National Marine Fisheries Service, The Pacific Lumber Company, Green Diamond Resource Company, Humboldt State University, the Redwood Community Action Agency, and the County itself, contributed to one or more of these reports. These reports support the use of Streamside Management Area (SMA) buffers to protect waters of the State, and support evaluating their effectiveness and revising them, as necessary.

No-disturbance riparian buffers have been widely used for many years as a principal tool to protect sensitive habitats such as wetlands and streams, as well as help maintain public health and safety. Since 1994, DFG Region 1 has promoted a suite of no-disturbance buffer zone recommendations to maintain and protect aquatic and riparian habitats from the impacts of adjacent development. These riparian habitat recommendations are currently under review and revision.

DFG has evaluated the County's current SMA buffers and related grading ordinance and finds that they should be modified if they are to be consistently effective in adequately minimizing the impacts of development on riparian and aquatic habitats. The current SMA buffer widths are, in some circumstances, significantly narrower than DFG-recommended riparian habitat buffers. For instance, DFG recommends a 150-foot no-disturbance buffer on major rivers such as the Eel, Mad, and Trinity rivers; 100-foot buffers on smaller tributaries that provide habitat for fish; and 50-foot buffers on non-fish

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habitat streams. The current County SMA standard provides for 100-foot buffers on perennial streams and 50-foot buffers on intermittent streams outside urban development and expansion areas (urban areas), and 50-foot and 25-foot buffers, respectively for streams inside urban development and expansion areas.

DFG finds the current County SMA buffers are unlikely to effectively minimize significant impacts of development projects on streams and rivers. Without more effective mitigations, these projects may result in take of listed species such as coho salmon due to increased water temperatures, loss and degradation of habitat, non-point source pollution inputs, and altered hydrology. These impacts will likely result in cumulatively considerable impacts on riparian and aquatic species, as defined in CEQA §15065(a)(3). Furthermore, DFG finds no biological rationale to reduce the SMA width by half within urban areas, versus outside urban areas, for streams with the same habitat, the same listed species present, and the same need for riparian buffer protection. DFG finds that by adopting effective SMA buffers, such as those in DFG's 1994 riparian habitat recommendations, the Update will be implementing feasible mitigation measures which are likely to minimize impacts to streams and rivers to a less than significant level.

To put the County's SMA buffers in perspective, streams with listed salmonids, flowing through timberlands are subject to the Forest Practice Rules, Title 14, California Code of Regulations, §916.9 Protection and Restoration in Watersheds with Threatened or Impaired Values (known as T&I Rules). Pursuant to the T&I Rules, these streams receive a 150-foot buffer, where in the first 75 feet nearest the streams, at least 85% of the forest canopy must be retained, and in the outer 75 feet, at least 65% of post-harvest overstory canopy must be retained.

Under the current County SMA riparian buffers, and using Elk River as an example, in the Coastal Zone it would receive at least a 100-foot buffer; lower reaches adjacent to the Eureka urban area but outside the Coastal Zone would receive a 50-foot buffer; further up-stream and outside the urban area, it would receive a 100-foot buffer; and once in timberlands, it would receive a 150-foot buffer.

Thus development projects that are likely to cause a permanent conversion of vegetated open space to a hard-surface urban setting of buildings, roads, and other infrastructure, would have the narrowest buffers, while headwater areas which are most likely to remain in a forested condition would have the widest buffers. Consequently, DFG recommends that at a minimum, the County incorporate the DFG Region 1, 1994 no-disturbance riparian buffer recommendations into the County SMA ordinance.

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The County Grading Ordinance uses so-called “blue line streams” as identified on US Geological Survey (USGS) maps as one means to designate streams during project review. Use of USGS blue line streams is a coarse, and often erroneous means to determine the existence or habitat values of a stream, e.g., whether a stream is perennial or intermittent, or fish bearing or not. To implement County SMA standards, DFG recommends that stream designations be determined by qualified biologists in the field, in addition to using the most recently available stream and fish habitat data, such as the DFG Eureka Office stream files, and “CalFish,” the multi-agency cooperative fish and aquatic habitat on-line data program. When habitat determinations for a given stream reach are in question, we recommend the County consult with DFG.

### **Encroachment and Development within Floodplains**

The NR &H Report includes a policy option to update the flood hazard regulations to restrict development in floodplains. DFG finds the floodplains of wetlands, streams and rivers provide significant biological functions to these waters and that development within floodplains is largely incompatible with the maintenance and enhancement of riparian, wetland, and aquatic habitats.

Development within floodplains is at significant risk from flood damage. Regional climate change models for California and the Pacific Northwest predict higher sea levels, wetter winters, increased high runoff events and a higher frequency of flooding (Kim et al. 2002, Snyder et al. 2002, Bell et al.. 2004, Kim 2005, Projecting Future Sea Level 2005). The northern California Coast Range and the Sierra Nevada are expected to experience the largest increase in “heavy and extreme precipitation events” and the largest increases in annual precipitation in the region (Kim et al. 2002, Kim 2005). It is therefore reasonable to expect more frequent and more severe flood events over the life of the Update.

Development within floodplains often results in future flood control measures such as channel dredging, bank armoring, riparian vegetation removal, and berm or dike construction, intended to protect floodplain property, but deleterious for the maintenance of functional riparian and floodplain habitat. To minimize the potential impacts of future projects on Humboldt Bay and County streams and rivers, DFG supports Update standards which restrict development in floodplains.

## **Climate Change and Sea Level Rise**

Current models predict climate change effects during the life of the Update that will result in warmer conditions and drier summers in California and the western United States (IPCC 2001, Schlenker et al. 2007, Bell et al. 2004, Vanrheenen et al. 2004). A warmer, drier climate is predicted to result in an increased frequency (i.e., shorter return period) and more severe summer droughts in California. This in turn is likely to result in lower stream flows during the dry summer period, and summer water shortages (Schlenker et al. 2007) as well as a greater frequency and intensity of wildfires. DFG therefore recommends the DEIR cumulative effects analysis evaluate the effects of climate change on aquatic and forest ecosystems in combination with the effects of development and conversion of agricultural and forest lands.

Average sea level rise, determined from several climate models, ranges from 10-80 cm over the 2000-2100 period (Projecting Future Sea Level 2005). A higher sea level will have significant effects on the County, including more coastal land occurring within flood-prone areas and salt water intrusion into previously freshwater areas. Increased sea levels, especially in combination with storm-driven surges, extreme waves, intense low-pressure autumn or winter storms, and high tides, is predicted to result in extensive flooding in coastal regions of California (Projecting Future Sea Level 2005).

While assessing the effects of sea level rise on the County's coastal ecosystems is beyond the scope of the DEIR, changing environmental conditions during the life of the Update are foreseeable. Therefore, DFG recommends the DEIR evaluate the Update's anticipated landscape changes and impacts to coastal fish and wildlife species and their habitats in the context of the sea level rise predictions included in Projecting Future Sea Level (2005). Specific habitats to be evaluated should include coastal dunes, estuaries, and adjacent brackish and freshwater wetlands.

## **Water Budget**

Currently many rural residences permitted by the county draw their water supplies from local streams. Increasingly, the County will encounter the well-documented problem of unpermitted diversions and State Water Code violations so prevalent in counties to the south (Guidelines 2002). Stream water diversions can result in significantly decreased flows, higher water temperatures, diminished aquatic habitat values, and in extreme cases, dewatering of stream reaches. The County currently takes the majority of its commercial and residential water from streams and rivers. According to the Update Public Services Report, the Humboldt Bay Municipal Water District, which takes its water from the Mad River, serves 77,000 residents, or 59% of the County.

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As stated above, the Public Services Report anticipates County water demand will increase from approximately 30 mgd in the year 2000 to 49 mgd by 2025, an increase of 62% over current capacity. However, the County bases its projected 2025 water capacity on the 2000 (current) capacity. Given future climate projections, at mentioned above, which anticipate a warmer and drier summers than at present, and the increasingly chronic problem of illegal water diversions, DFG recommends the County reevaluate its 2025 water capacity assumption.

DFG disagrees with the statement in the Water Resources Report (page I-53): "Water resources are plentiful enough in the County that withdrawal of any kind is not considered an issue of great importance for the foreseeable future." On the contrary, DFG staff have direct experience with headwater streams being entirely dewatered or with significantly impaired flows resulting from domestic or agricultural water diversions. Unpermitted homes, especially in southern areas of the County, combined with illegal stream diversions for marijuana growing and other agricultural uses, is a significant, yet difficult to quantify problem. DFG notes that although they do require the issuance of an LSAA, water diversions pursuant to riparian rights do not require a permit from the State and actual diversion rates are largely unregulated and unknown.

Based on the above, DFG finds there are compelling reasons to believe that too much water is diverted from many headwater streams in the County. Furthermore, water diversions are likely to become an increasingly significant issue for fish, wildlife and rural residents during the life of the Update, as water rights applications increase.

To maintain adequate stream and river flows for fish and wildlife species during the Update period, DFG recommends the County develop a water budget for each of the County's 12 planning watersheds. DFG recommends the County develop enforceable standards requiring proposed projects provide evidence of adequate long-term water availability prior to approval. DFG supports the development of a County policy that ensures stream water diversions for rural development and agriculture maintain sufficient stream flows for fish and wildlife species. To maintain adequate water supplies for fish and wildlife species, DFG supports a County policy prohibiting the large-scale export of river water. DFG also recommends the Update include specific policies and standards for water conservation and reuse.

### **Impacts to Wetlands**

Over the past 200 years, the contiguous 48 states have lost an estimated 53% of their original wetlands, with California losing the largest percentage (91%) (Dahl 1990). In Humboldt County, this trend also holds; due to diking and filling, Humboldt Bay salt

marsh habitat has been reduced by 85-90% since 1897 (Barnhart et al. 1992). The Fish and Game Commission (Commission) finds that California's remaining wetlands provide significant and essential habitat for a wide variety of important resident and migratory fish and wildlife species. The Commission also finds that projects that impact wetlands are damaging to fish and wildlife resources if they result in a net loss of wetland acreage or wetland habitat value. Therefore, it is the policy of the Commission to seek to provide for the protection, preservation, restoration, enhancement and expansion of wetland habitat in California.

It is DFG's policy to ensure that proposed projects will result in no net loss of wetland habitat values or acreage. DFG disagrees with the NR &H Report assertion that very few potential development sites in the County are situated on wetlands. On the contrary, DFG finds the County has permitted projects that impact wetlands. DFG recommends the DEIR analyze the Update's potential impacts to wetlands and sensitive wetland species including an evaluation of the potential for direct, indirect, and cumulative impacts to these habitats. Potential direct and indirect effects from development adjacent to wetlands include, but are not limited to: altered hydrology; diminished water quality from the discharge of pollutants such as sediment, pesticides, petroleum products, pathogens and other toxic substances; vegetation removal; disturbance to wildlife from noise, night lighting, and domestic animals; introduced invasive plant and animal species; altered microclimate; and human intrusion such as off-road vehicle use, homeless encampments, trash dumping, and illegal filling.

To best protect wetland habitat values, DFG recommends the Update include a clear wetland protection ordinance or standard that incorporates no-disturbance wetland buffers where no structures, grading, pavement, vegetation removal, septic systems, stormwater facilities, or other development would be permitted. These wetland buffers must minimize project impacts on wetlands to a less than significant level. Although currently under review and revision, DFG recommends that at a minimum, the County implement the DFG Region 1, 1994 wetland buffer recommendations.

### **Wetland Banking**

In working with County Community Development Services staff, builders, developers, and environmental consultants to prevent the loss of wetlands and wetland habitat values, DFG has determined there is a strong interest and need for a wetland mitigation bank in the Humboldt Bay-Eel River Delta area. While it is DFG's policy to provide for the protection, preservation, restoration, enhancement and expansion of natural wetland habitat, DFG finds that in certain limited instances, utilization of a local wetland bank may be the most environmentally sound, feasible, and cost-effective approach to mitigate for impacts to wetlands. DFG therefore recommends the County

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consider working with local, State, and Federal agencies and private stakeholders in promoting or facilitating the development of a wetland bank for the Humboldt Bay-Eel River Delta area. DFG supports the Biological Resources Report Option 2.5 (establishment of a habitat mitigation banking program) and is willing to provide technical support for the creation of a local wetland bank.

### **Pharmaceutical and Personal Care Product Disposal**

DFG finds the Preliminary Hearing Draft Waste Management Chapter 18, makes no mention of the disposal of household pharmaceuticals and personal care products (PPCPs). DFG recommends that the Update address this issue by developing a feasible program for the proper disposal of unwanted PPCPs. A 1996 survey on the expired medication disposal habits of 500 patients and 100 pharmacies, found 35% of those surveyed flushed their expired medicines down the toilet, and only 5% of pharmacies had a consistent recommendation for patients on drug disposal (Kuspis and Krenzelok 1996).

Pharmaceuticals flushed down the toilet often enter surface waters such as streams, rivers, Humboldt Bay, and the ocean. Even after passing through wastewater treatment facilities, many pharmaceutical compounds remain biologically active and can be semi-persistent in aquatic environments. Once in these environments, these pollutants can affect a wide range of organisms and have acute and chronic toxic effects on fish and wildlife. For example, antibiotic-resistant bacterial strains now occur in American streams and rivers due to the presence of antibiotics in waste water, and many forms of hormone-disrupting environmental pollutants, such as from pharmaceuticals, in aquatic ecosystems are demonstrated to have significant adverse effects on amphibian development and reproduction.

In March 2007, DFG Environmental Scientist Gordon Leppig called 10 pharmacies in Humboldt County and the Humboldt Waste Management Authority (HWMA) to assess local residential PPCPs disposal options and pharmacy recommendations. Of the 10 pharmacies queried, three recommended disposal by flushing unwanted medications down the toilet. Only one pharmacy would take back all pharmaceuticals for disposal. The HWMA Household Hazardous waste collection facility will accept PPCPs, but for various reasons, they do not advertise, promote or encourage people to use the HWMA as a PPCP collection facility.

San Mateo County has developed a convenient, inexpensive, year-round, and permanent program for the proper disposal of household PPCPs. This program was launched in September 2006, and by the end of 2006, had collected more than 250 pounds of unwanted medicines that otherwise could have ended up in the wrong hands or the wastewater stream and eventually in the environment. DFG recommends the County, perhaps working with the HWMA, develop a PPCPs waste disposal program that will help avoid the improper disposal of these pollutants into waters of the State.

## **Exterior Lighting Standards and Photo-pollution**

The adverse ecological effects of artificial night lighting on terrestrial and aquatic resources such as fish, birds, mammals, and plants are well documented (Rich and Longcore 2006). Some of these effects include altered migration patterns and reproductive rates, changes in foraging behavior and predator-prey interactions, altered wildlife species richness and community composition, and phototaxis (attraction and movement towards light). Much of the future development envisioned in the Update will take place on land in close proximity to resources areas with significant wildlife habitat values. DFG therefore recommends the DEIR evaluate the direct and cumulative effects that photo-pollution from artificial night lighting will have on fish and wildlife species.

To minimize the ecological consequences of artificial night lighting and glare on wildlife species and their habitats, DFG recommends the County adopt a standard that requires exterior lighting fixtures and street standards (both for residential and commercial areas) be fully-shielded and designed and installed to minimize off-site photo-pollution. DFG supports the Update Public Services Report Policy Option (8.7.a) that proposes establishing exterior lighting performance standards. As an example, DFG recommends the County consider the McKinleyville Community Services District Ordinance 51.07, adopted on June 30, 2000:

“Street lighting fixture standards shall be in accordance with the recommendation of the International Dark-Sky Society [sic], specifically selected and specified to minimize the potential for light pollution, and shall include external glare shields, and/or internal louvers to controlled [sic] direct glare and/or uplight.”

## **Locally Significant Populations and Natural Communities**

State planning priorities are intended to promote protecting, preserving, and enhancing the State’s most valuable natural resources, including “...landscapes with locally unique features and areas identified by the State as deserving protection,” according to Government Code §65041.1, State Planning and Zoning Law. CEQA Guidelines §15125(c), states “Knowledge of the regional setting is critical to the assessment of environmental impacts. Special emphasis should be placed on environmental resources that are rare or unique to that region and would be affected by the project.”

Plant and wildlife populations and natural communities that are rare or unique to a region can have significant biological value because of their high potential for genetic divergence from other populations or unusual community structure and composition. Consequently, plant and wildlife populations that are locally rare or unique can provide the following environmental services: unusual evolutionary potential, enhanced local biodiversity and community structure, maintenance of genetic variation within a species, and contribution to long-term species survival (Leppig and White 2006).

For examples of county ordinances and policies that protect locally rare or significant populations, DFG recommends the County review the natural resource elements of the Santa Cruz and Ventura counties general plans. Santa Cruz County has a "Sensitive Habitats Protection Ordinance" that requires that no development activities or land disturbance that results in disturbance to "...locally unique plants and animals or their habitats" can occur until a biotic review is conducted and necessary mitigation measures are developed to protect the habitat (Santa Cruz County Planning Department 2005). The Ventura County General Plan specifies that "locally important species/communities" are a significant biological resource to preserve and protect, and provides for protection measures (Ventura County 1988). DFG recommends the Update include a policy and standard, similar to Santa Cruz and Ventura counties that provides for the evaluation of impacts to locally rare or significant populations and requires mitigations, when necessary.

### **Heritage Landscapes**

The DEIR notice of preparation states the Update will include a policy to protect "heritage landscapes." DFG supports the inclusion of a heritage landscapes protection policy in the Update because certain areas of the county have unusually significant or multiple biological resources (biological hotspots). Projects proposed in these areas therefore merit heightened environmental review. Because of their unusual habitats, wildlife values, or concentrations of listed species, DFG recommends the County consider the following for heritage landscape status: Humboldt Bay, coastal dune systems, the Humboldt Lagoons area (Big, Dry, Stone and Freshwater lagoons), Table Bluff, and the High Prairie/Lake Prairie area. DFG wishes to assist the County in the development of its heritage landscapes protection policy and recommends the US Fish and Wildlife Service also be invited to participate.

### **Fire Safe Zones, Vegetation Management, and Invasive Species Introductions**

Recent changes to Public Recourses Code §4291 expand the defensible space clearance requirement maintained around buildings and structures from 30 feet to a distance of 100 feet. These guidelines also recommend more vegetation (fuels) clearing on lands with steeper terrain and larger and more dense fuels. County Fire Safe

regulations require that developments which propose greenbelts must locate them strategically as a separation between wildland fuels and structures. Defensible space areas, typically require on-going vegetation management to reduce fuel loads. For subdivisions and other development projects proposed in forestlands, defensible space areas increases the ecological footprint and environmental effects of these projects.

The NR &H Report notes that more than 80% of Humboldt County is forested; the County is one of the most seismically active areas in the country; and that more than half of the County's land is on slopes of 30% or greater. DFG is concerned that designating defensible space areas that coincide with steep slopes and requiring periodic fuels-reducing vegetation removal will result in increased surface erosion and gullies and slope instability.

Furthermore, areas routinely managed for vegetation removal are prone to infestation by invasive exotic species and noxious weeds. Invasive plant species are widely regarded as one of the most significant global threats to biodiversity. Horticultural plants used for landscaping are a principal cause of invasive plant introductions, and a recent estimate puts economic cost of invasive plants in the United States at \$35 billion per year (Mack and Lonsdale 2001; Reichard and White 2001). Ironically, one way invasive plants can affect native ecosystems is by changing fuel properties, which can in turn affect fire behavior and, ultimately, alter fire regime characteristics such as frequency, intensity, extent, type, and seasonality of fire (Brooks et al. 2004).

For the above reasons, DFG recommends the Update incorporate defensible space standards that minimize the risk of erosion, slope instability, and the introduction of invasive plants. DFG recommends the Update include landscaping guidelines or recommendations that assist developers, landscapers, and the public in minimizing the risk of invasive exotic and noxious weed introductions from developments requiring defensible space areas. Because of the need for routine vegetation clearing within defensible space areas, DFG recommends the County develop a standard that requires fire safe zones be placed outside of SMAs and wetland buffers.

### **Oak Woodlands Conservation**

Oak woodlands are a diverse, ecologically important and widely distributed habitat type in Humboldt County. According to the Biological Resources Report, oak woodlands comprise at least 20% of seven of the County's twelve planning watersheds. Oak woodlands provide habitat for numerous game and non-game species such as black-tailed deer, Roosevelt elk, black bear, squirrels, quail, turkey, band-tailed pigeons and a diversity of other migratory bird species. However, the distribution, acreage, and quality of the County's oak woodlands, like much for the rest of California, have declined

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considerably over the past 150 years. The reasons for this decline include fire suppression and encroachment by conifers, wood cutting, and conversion to industrial timberlands, other agricultural uses and residential and commercial development. Statewide more than a third of all oak woodlands have been lost since the settlement of California by Europeans; of an estimated 10-12 million original acres, seven million remain. Of the remaining oak woodlands, most have been modified or degraded, and only about four percent are formally protected.

Based upon recent trends in Sonoma and Mendocino counties, vineyard conversions of southern Humboldt County's oak woodlands and associated coastal prairies appears likely to accelerate during the Update time period. Sudden Oak Death, detected in 2002, in the Redway-Garberville area, is another potentially serious threat to County oak woodlands.

In recognizing both the importance of oak woodlands and their continuing statewide loss, the California Legislature in 2002, passed the Oak Woodlands Conservation Act (Oak Act) Fish and Game Code §1360-1375. The legislative intent of this act is to support and encourage the voluntary, long-term, private stewardship and conservation of California's oak woodlands. The Oak Act encourages local land use planning that is consistent with the preservation of oak woodlands and provides incentives to protect and encourage farming and ranching that promotes healthy oak woodlands.

As part of the Oak Act, the Oak Woodlands Conservation Fund was established to provide grant funds for: 1) public education and outreach, 2) the purchase of oak woodland conservation easements, 3) land improvement, and 4) for cost-sharing incentive payments to private landowners who enter into long-term conservation agreements. To qualify for this grant funding, the County would need to meet the conditions set forth in Fish and Game Code §1366. DFG finds the County, in developing the Update and related environmental reports, may have already met, or will meet, some of these conditions. DFG encourages the County to satisfy the requirements of Fish and Game Code §1366 to allow participation in the Oak Woodlands Conservation Fund and to facilitate coordination with local organizations such as the Buckeye Conservancy, land trusts, and the Humboldt County Resource Conservation District to promote the conservation of this valuable and dwindling resource.

### **County Staff Biologist or Environmental Scientist**

The diversity and ubiquity of significant fish and wildlife resources in Humboldt County, often makes the evaluation and, where necessary, mitigation of potential impacts to them a large component of the County's permitting process pursuant to CEQA. Given staff limitations, DFG often cannot provide the County Community Development Services staff and project consultants the degree of technical support or consultation that recurring resources issues merit.

DFG recommends the County Community Development Services department hire a broadly trained biologist or environmental scientist to assist permitting staff in the project review and permitting process. By interfacing and coordinating with County planners, project proponents and their environmental consultants, and the wildlife agencies, this scientist could facilitate the protection of trust resources while expediting the review and permitting of projects.

#### **Specific Recommendations:**

- 1) Implement "Sketch Plan A" of the four Update alternatives because it is defined by the County, pursuant to CEQA, as the most environmentally superior alternative.
- 2) Establish clear, unambiguous, and enforceable standards and ordinances to enforce the Update's policies. These standards and ordinances should be developed concurrently with the DEIR or as soon as practicable.
- 3) Utilize guiding principles 3, 6, 7, and 9 to draft the Update and retain them in the final Update.
- 4) Meet with DFG, the National Marine Fisheries Service, and the US Fish and Wildlife Service to explore developing a County-wide Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP).
- 5) Work with DFG to develop a county-wide master lake or streambed alteration agreement (LSAA).
- 6) Include in the DEIR a thorough evaluation of potential direct and indirect impacts of increased stormwater runoff and altered hydrology on waters of the State.
- 7) Include Update standards that prohibit projects from altering the hydrologic regimes of streams by increasing peak flows or decreasing summer low flows by treating all stormwater from at least a two-year rain event (Q2) on-site through detention and percolation.

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- 8) Include Update standards requiring low-impact design elements that maintain, to the greatest extent feasible, post-project pervious surfaces.
- 9) Incorporate no-disturbance riparian buffers into the County SMA ordinance which are at least as protective as the DFG Region 1, 1994 riparian habitat recommendations.
- 10) Eliminate use of the term "blue line streams" as identified on US Geological Survey maps, to define or evaluate county streams.
- 11) Develop and strengthen flood hazard regulations to restrict development in floodplains.
- 12) The DEIR cumulative effects analysis should evaluate the effects of climate change on aquatic and forest ecosystems in combination with the effects of development and conversion of agricultural and forest lands.
- 13) The DEIR should evaluate the Update's anticipated landscape changes and impacts to coastal fish and wildlife species and their habitats in the context of current sea level rise predictions.
- 14) The Update and DEIR should reevaluate the 2025 water capacity assumption.
- 15) Develop a water budget for each planning watershed to ensure that stream water diversions for rural development and agriculture maintain sufficient stream flows for fish and wildlife species.
- 16) Include in the Update enforceable standards which require a proposed project provide evidence of adequate long-term water availability prior to approval.
- 17) Include in the Update a policy prohibiting the large-scale export of river water.
- 18) Include in the DEIR an analysis of the Update's potential impacts to wetlands and sensitive wetland species including an evaluation of the potential for direct, indirect, and cumulative impacts to these habitats.
- 19) Strengthen the County wetland protection policy and standards to include an effective no-disturbance buffer where grading, vegetation removal and other development shall be prohibited.

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- 20) Consider working with DFG and other state, local, and federal agencies and private stake holders in promoting or facilitating the development of a wetland bank for the Humboldt Bay-Eel River Delta area.
- 21) Include in the Update a program for the proper disposal of unwanted household pharmaceuticals and personal care products.
- 22) Include in the Update a standard that requires exterior lighting fixtures and street standards (both for residential and commercial areas) be fully-shielded and designed and installed to minimize off-site photo-pollution.
- 23) Include in the Update a standard that provides for the evaluation of impacts to locally significant populations and natural communities and requires mitigations, when necessary.
- 24) Include in the Update a heritage landscapes protection policy that includes, among other sensitive landscapes, coastal dunes, Humboldt Bay, the Humboldt Lagoons area (Big, Dry, Stone and Freshwater lagoons), Table Bluff, and the High Prairie/Lake Prairie areas.
- 25) Incorporate defensible space standards in the Update that minimize the risk of erosion, slope instability, and the introduction of invasive plants.
- 26) Include in the Update landscaping guidelines or recommendations that assist developers, landscapers, and the public in minimizing the risk of invasive exotic and noxious weed introductions.
- 27) Include in the Update a standard that requires fire safe zones be placed outside of SMA and wetland buffers.
- 28) Satisfy the requirements of the Oak Woodlands Conservation Fund to allow for grant funding that encourages the voluntary, long-term, private stewardship and conservation of the County's oak woodlands.
- 29) Hire a broadly-trained biologist or environmental scientist for the Community Development Services Department to work with the wildlife agencies and assist County permitting staff in the project review and permitting process.

By adopting the recommendations set forth in this letter, DFG finds the County will feasibly minimize potentially significant impacts to fish and wildlife resources from the future development and land use changes anticipated in the Update. Furthermore, DFG

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finds that by implementing the riparian and aquatic protection measures listed above, the County will likely avoid take of listed anadromous salmonids, will actively help bring about their recovery and eventual down-listing, and consequently, spur a revival of the regional commercial and recreational fishing industries.

If you have any questions or comments regarding this matter, please contact Staff Environmental Scientist Gordon Leppig at 619 Second Street, Eureka, California, 95501 or telephone (707) 441-2062.

Sincerely,

**GARY B. STACEY**  
Regional Manager

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