

**Evaluation of Proposed Designation of Critical Habitat
for the California Red-Legged Frog (*Rana aurora draytonii*)
Published on September 11, 2000, 65 Federal Register 54892.**

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Prepared for:

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and
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1. Introduction

LSA Associates, Inc. has reviewed the U.S. Fish and Wildlife Service's ("Service") Proposed Rule for designation of Critical Habitat for the California red-legged frog (*Rana aurora draytonii*), 65 Federal Register 54892, at the request of Sheppard, Mullin, Richter & Hampton, LLP and the Home Builders Association of Northern California ("HBA"). We were asked to:

1. Review the literature cited in the Proposed Rule providing the basis for the Proposed Rule.
2. Identify other relevant studies and scientific data that were available during the Service's consideration of the Proposed Rule and that could have been considered by the Service.
3. Evaluate the Proposed Rule to identify inconsistencies and lack of clarification in the proposed primary constituent element criteria.
4. Evaluate whether the Proposed Rule identifies the areas within the geographical area occupied that are "essential to the conservation" of the red-legged frog.

This report summarizes the results of our review.

2. Review of Data in Rule and Availability of Other Data

1. Our review of the data the Service relied upon was hampered by the failure of the Service to make that data available to us in a timely manner. We first attempted to obtain the information on which the rule was based on September 19, 2000. On October 8, 2000, the Service sent us a list of published references, but no actual documents. We have been able to obtain most, but not all of the published references and have considered these reference to the extent practicable in our review. The Service based many of the key habitat criteria and conclusions on unpublished and otherwise unavailable data referred at times in the Federal Register notice at "in litt." or pers. com. Sheppard, Mullin, Richter & Hampton, LLP filed a Freedom of Information Act request for these materials but was given only the published materials they had previously obtained. We note that the Service has not made available for public review any maps or other information that shows what lands it believes to be currently occupied by red-legged frogs or made available the data on which it made that determination. The lack of availability of the information on occupancy effectively makes it impossible for us to independently review and evaluate the scientific basis for the Service's conclusions on critical habitat.

2. We have determined that the Service did not include in its review scientific studies and other pertinent data that is available and would provide information that should be considered as part of any evaluation of critical habitat.

3. For example, the Service does not appear to have considered all data on population distribution and conservation that it has become available since the California red-legged frog was listed in 1996. Data in this category includes but is not limited to information on the location and distribution of California red-legged frogs in the following data sources:

1. Environmental Impact Statements and environmental assessments compiled under the National Environmental Policy Act ("NEPA") and findings of federal agencies with respect to projects covered by NEPA;

2. Environmental Impact Reports, Initial Studies and Negative Declarations compiled under the California Environmental Quality Act ("CEQA") and findings of state, regional and local agencies with respect to projects covered by CEQA;

3. Surveys conducted to show the presence or absence of California red-legged frogs submitted to the Service, the U.S. Army Corps of Engineers, the Bureau of Reclamation and other federal agencies, the California Department of Fish and Game, the California Coastal Commission and other state agencies and City and County governments;

4. Biological assessments, including maps showing the location of areas surveyed for red-legged frogs and the results of those surveys along with maps showing vegetation, wetlands streams and other features, evaluating the effect of proposed projects on California red-legged frog and its habitat submitted to the Service, the U.S. Army Corps of Engineers, the Bureau of Reclamation and other federal agencies, the California Department of Fish and Game, the California Coastal Commission and other state agencies and City and County governments;

5. Determinations made by the Service pursuant to Section 7 and Section 10 of the Endangered Species Act including determinations of no effect, not likely to adversely effect, informal consultations, Section 7 Opinions and applications and evaluations for Section 10 permits.

This information is needed to determine what lands are currently occupied by California red-legged frogs and to determine population distribution and population trends.

4. The Service does not appear to have used the best available data on the location and quality of aquatic and other habitats on which the California red-legged frog may rely for breeding, feeding, dispersal and other function. In addition to the data sources identified in Paragraph C, above, data in this category includes, but is not limited to, information in the following data sources:

1. Delineations of waters of the United States prepared for the U.S. Army Corps of Engineers and permits issued under Section 404 of the Clean Water Act;

2. Delineations of waters of the State prepared for the California Department of Fish and Game, applications for streambed alternation agreements prepared under Section 1603 of the California Fish and Game Code and streambed alteration agreements issued under Section 1603;

3. Data contained in aerial photographs, including data in infra-red aerial photographs, digital orthophotographs, classified vegetation maps based on TM Satellite imagery and regional digital data. All of these sources can be evaluated to identify aquatic features such as rivers, streams, ponds, perennial wetlands, seasonal wetlands, vernal pools and other aquatic features. Many of the National Wetlands Inventory maps that the Service used as the baseline are based on data that is more than twenty years old and does not reflect current conditions. Using multispectral high resolution or other best available remote sensing data aerial photography and digital orthophotographs is a common and well-accepted technique for evaluating the presence or absence of aquatic features and should have been used here.

4. Data on stream flows and information from other federal agencies and the State of California on stream flows. One of the factors the Service used in defining critical habitat is the presence of used ?? was "slow moving water". This and other data should be used to evaluate streams flows for candidate areas;

5. Other relevant data maintained and acquired by federal, state, and local agencies;

6. The Service does not appear to have used any data on existing, approved or planned development for residential, commercial, industrial and other, purposes including water supply, transportation, and other infrastructure. We did not obtain from the Service any data related to these kinds of activities, such data is readily available from County and local governments. Among the sources of data that are available are:

1. County and City General Plans;
2. County and City Zoning;
3. Designations of Urban Limit lines;
4. Land subject to Williamson Act Contracts;

5. Ownership maps and management plans of the State Parks Department, and regional park authorities such as the East Bay Regional Park District and lands owned or managed by land trusts and private conservation agencies; and

6. Information available through the Internet such as the Association of Bay Area Governments, www.abag.ca.gov, the California Department of Housing and Community Development, www.hcd.ca.gov, the Center for the Continuing Study of the California Economy, californiaeconomy.com, and UC Berkeley links to planning sites, www.lib.berkeley.edu/ENVI/Cityplan.html. The Contra Costa County General Plan, for

example is available on the Internet at http://elib.cs.berkeley.edu/cgi-bin/doc_home?. Other general plans are similarly available.^{1/}

3. Review of Definition of Primary Constituent Elements

1. The definition of primary constituent elements in proposed Section 17.95 (d) are so broadly defined such that it not possible for LSA to determine with reasonable certainty what constitutes these elements or whether these elements are present on a certain parcel. As a result it is not possible to meaningfully comment on the substance of Proposed Rule and in particular whether too much or too little land has been proposed for critical habitat. The following paragraphs describe the basis for this conclusion.

2. The question of what comprises the "aquatic component" is a major consideration with respect to application of the primary constituent element criteria. The aquatic component element is very poorly defined and the discussions in the preamble and at public hearings only serve to increase the confusion. The Proposed Rule defines the aquatic component of primary constituent element as follows:

Aquatic components consist of all still or slow-flowing freshwater aquatic features possessing minimum water depths of 20 cm (8 in.), with the exception of deep lacustrine water habitat (lakes and reservoirs) inhabited by nonnative predators, that are essential for providing space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, non-breeding subadults, and breeding and nonbreeding adult frogs [we will refer to these areas as "Still or Slow Moving Feature"], and are found in areas with two or more suitable breeding locations and a permanent water source with no more than 2 km (1.25 mi.) separating these locations.

1. The overall definition is unclear because of the use of the clause "that are essential for providing space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, non-breeding subadults, and breeding and nonbreeding adult frogs" in the definition leaves the determination of what is or is not a "Still or Slow Moving Feature" undefined. For example, would an aquatic feature that is at least 20 centimeters deep be included if the temperature in the pool is too hot during the breeding season? What about an area that is suitable for nonbreeding adults, but not for breeding? What about an area that has been repeatedly surveyed for red-legged frogs and shown by data to be unoccupied? Are any of these areas "essential" as provided in the Proposed Rule? The Proposed Rule provides no guidance on these kinds of issues.

2. The term "minimum water depth" of 20 centimeters is susceptible to at least three alternative definitions--having the depth at any time during a year, having that depth for the entire year and having that depth for specified part of the year. If a seasonal

^{1/} A list of California's County and General Plan Internet Sites is attached to this report as Ex. A and a List of Land Use, Planning and Zoning Information Internet Sites is attached as Ex. B.

depth is intended, further clarification is needed whether that depth must be present annually, or if not, at what recurrence interval in terms of annual rainfall.

3. The Proposed Rule gives no standard for what constitutes "still" or "slow-flowing" either in terms of flow levels or frequency and provides no method for measuring flow. Any test based solely on visual observations will necessarily lead to arbitrary results.

4. The Proposed Rule does not include a requirement that the aquatic component contain an appropriate vegetative component--either aquatic or emergent for attachment of egg masses. Without some vegetative element for attachment of egg masses an area cannot serve as breeding habitat and therefore seems likely to fall out of the essential category.

5. The Proposed Rule indicates that "all" Still and Slow Moving Feature" should be considered primary constituent elements. This is not consistent with the statement in the preamble that "virtually all" of these features are included. If the standard is virtually all, there is no guidance on what would be in and what would be out.

6. The Proposed Rule does not indicate that man-made features are covered. The preamble specifically includes such features.

7. As part of our review, the Service provided LSA with a copy of the Power Point presentation used in the public hearings to illustrate the interpretation of the primary constituent elements.

1. In the presentation, concentric 1.25 mi. radius circles are drawn around "suitable breeding habitat" (shown in blue on the slides) in order to define the two or more suitable breeding sites. The presentation assumed but did not define why these sites were suitable breeding habitat.

2. The slide also shows several other aquatic habitats in "green" but does not include these areas as "suitable breeding habitat" because these areas represent "other aquatic habitat that is not suitable for breeding because it dries out too early or is not of sufficient depth" (Service, Power Point presentation text). The presentation did not define when "too early" is for purposes of identifying suitable breeding habitat.

3. The next two slides proceed to add a 150 m (500-foot) upland habitat component and movement corridor to both the "blue" breeding habitat and the "green" aquatic non-breeding habitat, ultimately including and defining all of these aquatic habitats as critical habitat.

4. This addition of other aquatic habitats is contrary to the stated criteria in the Proposed Rule. These areas may dry too early or do not have water of sufficient depth for breeding and as a result, these aquatic sites would not provide essential space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, or breeding adults. Their value to non-breeding sub-adult and adult frogs is unknown.

5. This conflict between the Proposed Rule and the presentation is extremely significant in evaluating the Proposed Rule because the “green” areas most likely represent “seasonal wetlands” (typically classified as Palustrine, Emergent, Seasonally flooded or Seasonally Saturated in the National Wetland Inventory [NWI] system) and would not qualify as Still or Slow Moving Features. Such seasonal wetlands are common throughout the range of the California red-legged frog.

6. Typically, seasonal wetlands are characterized by saturated soils and/or short-duration ponding during the rainy season (November through March or April) and herbaceous plants (grasses and forbs). In many cases such conditions do not create areas typically considered to be swamps, marshes, or bogs and contain vegetation cover that is often not significantly different in terms of height or density (the primary difference is often plant species composition) than adjacent uplands.

7. Such areas are typically dry when juveniles disperse and juvenile and adult movement typically occurs at night and during periods of rain when ground surface and vegetation in both uplands and seasonal wetlands are wet. None of the literature cited in the Proposed Rule or other literature that we are aware of has documented any specific value of these types of winter/rainy season seasonal habitats to the California red-legged frog.

8. As a result of the prominence of these features in the landscape, their inclusion or exclusion can have a profound influence on the interpretation of the Proposed Rule.

9. We note that the Service’s presentation example, shows approximately 880 acres of critical habitat (based on planimetry of the shaded area) when all of the suitable breeding habitat and non-suitable breeding aquatic habitat is considered. If seasonal wetlands are excluded, the total critical habitat shown on the illustration is approximately 304 acres, or 35 percent of the critical habitat shown in the presentation example. Such differences are compounded if linear aquatic habitats such as ephemeral and intermittent streams, lacking persistent plunge pools or other water sources, are included in the analysis. It is not possible to evaluate the Proposed Rule without knowing which interpretation is correct.

3. The Proposed Rule uses the term "suitable breeding locations" as a key phrase. The term is not defined. Is a location suitable for breeding based on some data which actually shows past or present breeding or is it based on some undisclosed set of criteria. Is an area a suitable breeding location if it is inhabited by nonnative predators since the Service has determined that presence of nonnative predators disqualifies deep water lacustrine habitats? Is there a difference between a Still and Slow Moving Feature and a suitable breeding location? Can a Still and Slow Moving Feature be used as one of the two qualifying suitable breeding locations? How does one identify suitable breeding habitat in unoccupied habitat? There is no information available to answer these questions. It is not possible to evaluate the Proposed Rule without knowing which interpretation is correct.

4. The term "permanent water source" is poorly defined in the Proposed Rule. A permanent water source is a required element of the aquatic component. It is not clear whether the permanent water source is a separate feature from the Slow or Still Moving Feature and the suitable breeding location. If a permanent water source is not also a suitable breeding location, what is the standard for a permanent water source in terms of potential use by red-legged frogs.

5. The two kilometer standard in the rule is not clear. There are at least two possible interpretations of this requirement. The first interpretation is that the permanent water source and the two "suitable breeding locations" must each be within two kilometers of each other. The second interpretation is that each of the suitable breeding locations must be within two kilometers of each other but only one of the suitable breeding locations must be within two kilometers of the permanent water source. It is not possible to evaluate the Proposed Rule without knowing which interpretation is correct.

6. The Proposed Rule does not establish the relationship between aquatic, dispersal and upland habitat. The Rule does not state whether the combination of all three of these elements must be present in order to constitute a primary constituent element entitled to special management considerations as provided for in 50 C.F.R. § 17.95(c) or whether the presence of one or more elements is sufficient. It is not possible to evaluate the Proposed Rule without knowing which interpretation is correct.

7. The Proposed Rule does not establish the relationship or distinction between upland habitat and dispersal habitat or whether they are separate elements or the same element. It is not possible to evaluate the Proposed Rule without knowing which interpretation is correct.

1. The Proposed Rule says that the dispersal habitat component consists of upland and aquatic areas "free of barriers, essential for providing connectivity between the aquatic areas described above".

2. The Proposed Rule does not contain any definition of the term barrier. The barrier definition is a key factor. What is a barrier? Do features such as orchards, farmed areas, disced areas, constitute a barrier? At what intensity does residential development constitute a barrier?

3. The Proposed Rule does not define a minimum size for how wide the area of connection might be. The Proposed Rule implies what the maximum size might be through the definition of an "upland habitat" extending up to 150 meter from the edge of the aquatic element primary constituent" but clearly does not provide a minimum width for a dispersal area. The difficulty of determining the width standard for dispersal habitat is made even more unclear because the Proposed Rule provides an exception to the 150 meter rule where "the watershed boundary is less than 150 meters from suitable habitat."

4. Evaluation of Whether the Proposed Rule Identifies the Specific Areas Within the Geographical Area Occupied by the Red-Legged Frog on Which Are Found Physical

or Biological Features Which Are Essential to the Conservation of the Red-Legged Frog.

1. The Proposed Rule does not identify which specific geographic areas are to be designated as critical habitat. The only lands that are designated are those located within the area that the Service describes as containing 5.4 million acres. Because of lack of any further specificity, we are unable to identify which lands within that broad area would actually qualify as critical habitat. To the extent the Service is relying on the description of primary constituent elements to provide that specificity, that description is ambiguous and incomplete and we cannot use it to accurately estimate the location and amount of the specific areas. In fact, this is the very analysis that the Service acknowledges has not done.

2. Even if we were able to identify which lands would actually be critical habitat, for the reasons stated in Parts II and III of this Report, we would not be able to express an opinion as to whether the selected lands are or are not essential for conservation of the California red-legged frog or what part of those lands are needed to ensure survival if the scope of critical habitat was reduced for economic reasons as allowed under the ESA.

3. The Proposed Rule uses key terms such as "survival," "recovery" and "essential," but does not objectively define those terms in a manner that is specific to the California red-legged frog. We cannot determine for example what the Service is using as the standard to evaluate the amount of land that is essential for survival and recovery.

1. If the goal is to identify the smallest possible area in which a population of red-legged frogs should be able to persist essentially in perpetuity, the amount of land identified should be responsive to that goal. If the goal is to identify the maximum amount of land in which it would be theoretically possible to maintain a population of California red-legged frog for even a minimal period of time, the amount of land identified should be responsive to that goal. It appears that the Proposed Rule is directed to the former goal and not the latter.

2. Apart from the consideration of what goal should be used, to provide a more meaningful evaluation of survival and recovery, the Service should analyze the effects of different areas of designation. One alternative that should be considered would be to evaluate whether lands designated as critical habitat can be limited to lands that are located outside of existing urban limit lines and outside of areas that have a general plan/ zoning designation for residential, commercial and industrial purposes. A second alternative which could be considered would be to limit critical habitat to the central coast from San Francisco to Santa Barbara. According to the draft recovery plan, this is the area that supports the greatest numbers of currently occupied drainages. If the goal is protection of this sub-species of frog, why would protection of these populations alone not be the "essential". We note that the Service proposed to delist the Bald Eagle even though recovery plan goals had not been achieved in all sub-recovery areas. 64 Federal Register 36462.

3. As more fully described in the Report of the Proposed Designation of Critical Habitat by Adina Merenlender and Jeff Opperman, the Service does not provide an analysis of species distribution and population structure, does not use existing data to develop

a habitat suitability model, does not include a meta population viability analysis and did not use a sensitivity analysis to evaluate how input data would change the results of these analyses.

4. The areas which are identified as being essential to survival and recovery should be evaluated for the potential for management to provide California benefit for the red-legged frog. The Service should explicitly analyze what effect control of bullfrogs and other exotic predators would have on the amount of designated as critical habitat. At sites in the East Bay, for example, control of bullfrogs has resulted in significant increases in California red-legged frog populations. The assumptions the Service makes on bullfrog eradication will have a great effect on survival of California red-legged frogs in many areas yet the Service has not considered this factor in the Proposed Rule.

4. The Proposed Rule does not provide the basis for the minimum water depth of 20 cm nor the time or period of the year when the minimum water depths must be present.

1. Based on our field experience and studies of California red-legged frog previously provided to the Service, we believe the 20 centimeter requirement is too shallow to allow for consistent use of an aquatic area for breeding, especially if the standard applies to aquatic features which are seasonal. The draft recovery plan uses 0.7 meters as the applicable depth standard. As a result, the inclusion of features with only 20 centimeters of depth would not be essential for either survival or recovery.

2. The Proposed Rule does not provide the basis for the conclusion that the minimum requirement for two breeding sites and one permanent water source is adequate to allow for re-colonization of areas where localized extinctions may occur and therefore essential for either survival and recovery. The Proposed Rule appears to include relatively small and geographically-isolated areas as critical habitat. Such small areas would not appear to meet the stated goals of critical habitat (existence of multiple, interconnected populations which allow for re-colonization after localized extinctions which are necessary for long-term survival and recovery of the species). While questions of interpretation of the rule discussed above make it difficult to determine the smallest possible area that could qualify as critical habitat, an area with two "suitable breeding locations" (one of which was perennial) separated by 100 feet and buffered by 500 feet on all side would be approximately 27 acres. If this 27-acre parcel was essentially isolated from any other populations, we do not believe an area of this kind would be essential to either conservation or recovery. The potential absurdness of the criteria is underlined if such an area is classified as critical habitat even though it is unoccupied.

3. The Proposed Rule contains examples of small isolated areas within the identified map units. One of these areas is the area known as Hunter Hill in Unit 11 in Napa and Solano counties. Hunter Hill is bordered by Interstate Highway 80 on the south, residential development in the cities of Vallejo and American Canyon on the west and north, and rural residential development and a heavily traveled local road (American Canyon Road) on the east. Within this unit, American Creek and an old live stock reservoir could be considered to be "suitable breeding locations" Perennial water sources also appear to be present at several springs/seeps. All of the aquatic habitats have the upland component and

are interconnected by undeveloped lands greater than 500 feet in width. Therefore, Hunter Hill appears to fall within the area designated and considered critical habitat by the FWS.

4. The Hunter Hill area is effectively isolated by existing development and high traffic volume roads, yet it is included in the boundaries of Unit 11. Further, as far as we are aware, there are no records of red-legged frogs in this area. Hunter Hill is not appear to be essential to either survival or recovery of the California red-legged frog.

5. The best available data supports the conclusion that the proposed standards will not accurately identify the areas essential to survival or recovery unless they are changed to include much larger areas of connected habitat. Two ponds or breeding sites in proximity or nearby watersheds would be subject to similar climatic patterns, rainfall, and perturbations from man-induced events and colonization of aquatic habitats by widely dispersed non-native predators/competitors. Semlitsch (2000) recommends an array of ponds (i.e., aquatic breeding habitats) in order to provide a variety of breeding habitats with different hydroperiods. Jennings et al. (1992) discusses the local extinctions from 30 watersheds in the eastern and western foothills of the Central Valley since the 1960's because of a number of confounding factors. Many, if not all of these watersheds likely had more than two suitable breeding sites and at least one perennial water source. Jennings (1988) actually attributes these localized extinctions to the expansion of macrofauna predators (introduced fish and bullfrogs) in existing and created perennial water habitats.

6. Given the documented extinctions from sizable watersheds where multiples of the primary constituent elements are present, the current proposed critical habitat definition would not appear to achieve the stated goals for species persistence and recovery and establishment of multiple local populations which could serve as sources to repopulate areas subject to local extinctions.

7. We recommend that the Service base critical habitat on a more in-depth analysis of the characteristics in watersheds/regions which have a long history of California red-legged frog occupancy and have survived past periods of land form alteration, drought, existing introduced predator populations, livestock grazing and other cited causes of local extinction and population reductions.

5. The data the Proposed Rule cites does not provide a basis for the spatial relationship of the permanent water source to the breeding sites (assuming the breeding sites are not the permanent water source).

1. The Proposed Rule says that “two or more suitable breeding locations and a permanent water source with no more than 2 km (1.25 mi.) separating these locations.” We believe that the goal of including a perennial water source is to provide essential hydration habitat for red-legged frogs during periods of drought or after the primary aquatic habitats have dried in the late summer or fall. Adult and juvenile frogs cannot survive more than a few weeks without moisture.

2. While adult frogs have been documented to make pronounced overland movements, most overland movement occurs during periods of wet weather when the

presence of hydration habitat would be less important. As discussed in the Proposed Rule (p. 54894), evidence of marked frogs suggests that upland movements of about 1.6 km (1 mi.) are possible over the course of a wet season (cited as N. Scott and G. Rathburn, USGS, BRD, *in litt.* 1998). Other sources suggest dispersing frog movements of up to 3.3 km (2 mi.) are possible. The Proposed Rule (p. 54894) also acknowledges that these movements are “likely dependent upon rainfall and moisture levels upon and immediately following dispersal events and on habitat availability and environmental availability.”

3. This is the only data the Service relies on to establish the 2 km standard. It appears likely that the perennial water source needs to be closer than the 2 km (1.25 mi.) as described in the Proposed Rule.

6. The Proposed Rule does not provide the basis for using the 1500 meter elevation as the limit for the species.

1. The recovery plan says that most populations are found below the 1050 meter level and only rarely were red-legged found up to 1500 meters.

2. The Proposed Rule essentially, without explanation uses 1500 meter elevation as the boundary for critical habitat. The record does not support the conclusion that area between 1050 and 1500 meters is essential for either survival or recovery.

7. The Proposed Rule does not provide the basis for using a 500-foot buffer zone from the edge of the aquatic habitat as the standard for uplands habitat.

1. The upland component of the primary constituent elements is a key component of the Proposed Rule. The preamble states:

Associated uplands are essential to maintain the integrity of California red-legged frog aquatic habitat, by providing the conditions essential for providing food, water, nutrients, and protection from disturbance necessary for normal behavior, and provide shelter to frogs inhabiting upland areas adjacent to suitable aquatic habitat.

2. While we agree that adjacent upland habitats are important for protection of aquatic habitats and have been recommended by others for management of aquatic breeding amphibians (see Semlitsch 2000); many of these recommendations are based in large part on providing upland habitat for amphibian species which adult life stages use terrestrial/upland habitats most of the year and typically only use aquatic habitats for short periods for breeding. These references do not apply to red-legged frogs which have different habitat requirements.

3. The rationale for the 500-foot distance for the associated upland habitat within the watershed of suitable aquatic habitat is not documented in the Proposed Rule and appears arbitrary. We note that the Service also includes buffers of a minimum of 500 feet for plants and animals covered in the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (Service 1998). No specific justification for this buffer distance is provided in that document.

4. The 500-foot wide associated upland is 200 to 300 feet beyond the maximum area of documented upland use noted in the Proposed Rules (328 feet in adjacent dense riparian vegetation and typically within 200 feet of water [cited as Bulger et al. *in litt.* 2000]). The Proposed Rules do not discuss how the findings cited by Bulger et al. would relate to other surrounding habitats such as grasslands where overhead cover (dense vegetation, leaf litter) may not be present.

5. Five hundred feet is also not a sufficient distance to “discourage the colonization of exotic species such as bullfrogs” which can move farther overland distances. Bullfrogs have been documented making long distance movements of 800 to 3,000 feet (Raney 1940).

6. With respect to protecting water quality, the National Marine Fisheries Service (NMFS) expressed similar concerns for protecting timing, duration, and extent of water moving within the system, filtering capacity, and maintaining the habitat essential for providing food, water, and nutrients in their designation of critical habitat for 19 evolutionarily significant units of salmon and steelhead. Federal Register Vol. 65. No.32. NMFS originally proposed a 300 foot buffer of the adjacent riparian and upland from normal high water line of suitable aquatic habitat water.

7. Based on comments that this 300-foot wide zone was arbitrary and excessive, the final critical habitat designation included only the water, substrate and adjacent riparian zone of estuarine and riverine suitable habitat. Since steelhead and salmon are much more sensitive to water quality concerns than the California red-legged frog, the justification for designating upland zones as critical habitat does not appear to be supported by the record. Assuming the designation of this kind of habitat is intended to be a mandatory element of the Service's proposal, the reduction of this standard would have clear affects on the amount of lands that would actually be designated as critical habitat.

8. If the 500-foot standard is intended to be a minimum for a dispersal corridor, the proposed standard may exclude areas which, in fact have value for conservation purposes and which may or may not be essential for survival and recovery.

1. If the single breeding location criteria is interpreted to be a discrete feature such as an individual creek or pond, then the lower approximately 1.5 miles of Pilarcitos Creek in Half Moon Bay, San Mateo County (Map Unit 14) would not appear to be critical habitat. Under this interpretation, Pilarcitos Creek would appear to constitute a single “breeding site.” Because of existing roads and development in Half Moon Bay, there are no 500-foot wide barrier-free movement corridors between Pilarcitos Creek and other breeding sites outside of the city limits.

2. While Frenchman's Creek is to the north and within 1.25 miles of lower Pilarcitos Creek, a 500-foot wide barrier-free movement corridor is lacking between the two sites as existing development and roads extend essentially to the edge of the sea bluffs between the two creeks. The creek also lacks a minimum 500-foot wide associated upland habitat through the City limits.

3. We have documented California red-legged frogs and active breeding during the 2000 breeding season in Pilarcitos Creek near the Half Moon Bay waste water treatment plant on the western edge of the city and near the mouth of the creek. There are also other records for the frog as well as the endangered San Francisco garter snake in this area of the creek dating back a number of years. It is a site of apparently long term occupancy by the frog.

4. As the criteria are now stated, this known habitat area on Pilarcitos Creek would not contain the necessary primary constituent elements (two suitable breeding sites within 1.25 miles that are connected by barrier-free dispersal habitat that is at least 500 feet in width) even though there is a narrow, but continuous riverine and riparian corridor through the City of Half Moon Bay.

5. Several authors have recommended narrower vegetative buffer distance for stream corridors, in the range of 30 to 100 m (93 to 328 feet), adjusted for stream width, slope and site use (Rudolph and Dickson 1990, McComb et al. 1993, and deMaynadier and Hunter 1995 as reported in Semlitsch 2000) as being adequate to increase the probability of species persistence.

5. The Proposed Rule does not provide an adequate basis for asserting in the preamble that roads are barriers to California red-legged frog movements.

1. The Proposed Rule provides considerable discussion on the effects of roads on amphibian populations.

2. The Proposed Rule provides a good summary of the documented negative effects of roads on amphibian populations although it is not clear in the preamble discussion how the Service arrived at the 30 cars per hour threshold as the barrier level. Several of the studies cited such as Kuhn (1987) and Hinde (1987) report substantial effects on toads with traffic intensities in the range 24 to 40 cars per hour and 26 cars per hour, respectively, while other cited literature such as Hitchings and Beebee (1997) either do not report traffic volumes or Fahrig et al. (1995) who use annual average daily (24 hour) traffic volumes to classify traffic intensity.

3. Because California red-legged frogs tend to move at night and during rainy weather, the intensity of traffic volumes during night hours would be more relevant than traffic intensity based on averages of daily or peak volumes (the typical measurements for traffic analyses).

4. While the negative effects of roads on amphibian populations is well documented, the Proposed Rule probably overly emphasizes the effects of roads as a complete barrier and does not acknowledge the ability of amphibians to effectively use narrower corridors or passages under roads such as bridged stream crossings for dispersal. Fahrig et al. (1995) for example notes that barriers in conjunction with underpasses have been used in Europe for facilitating movement.

5. Many existing roads may be significant barriers particularly where creek crossings via bridges and large culverts are absent or limited. However, the ability to provide safe passage through use of bridges, barriers, and other measures should be an important consideration particularly when determining where and if new roads would adversely effect critical habitat.

6. Conclusion.

Our basic conclusion is that the Proposed Rule and the information that has been made available to us does not provide us with the opportunity to meaningfully comment on the central issue in the Proposed Rule -- whether the Service has or has not identified that lands that should be designated as critical habitat. We cannot tell what lands have been so designated and we cannot tell the extent to which designated lands are essential to either survival or recovery of the California red-legged frog.

Exhibit A

List of California County and General Plan Internet Sites

Exhibit B

List of Land Use, Planning and Zoning Information Internet Sites

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