

# **COMBINED AQUATICS STUDY PLANS**

## **CAWG-8-AMPHIBIANS AND REPTILES<sup>1</sup>**

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<sup>1</sup> All Working Group participants approved the CAWG-8 Technical Study Report except the State Water Resources Control Board.

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**TABLE OF CONTENTS**

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	PAGE
1.0 Executive Summary .....	1
2.0 Study Objectives .....	3
3.0 Study Implementation .....	3
3.1 Study Elements Completed .....	3
3.2 Outstanding Study Elements .....	4
4.0 Study Methodology .....	5
4.1 Review of Existing Information .....	5
4.2 Reconnaissance Surveys .....	6
4.3 Aquatic Habitat Data.....	7
4.4 Preliminary Stream Physical Habitat Map .....	12
5.0 Study Results And Analysis .....	17
5.1 Review of Existing Information .....	17
6.0 Literature Cited.....	31

# CAWG-8 AMPHIBIANS AND REPTILES<sup>1</sup>

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## 1.0 EXECUTIVE SUMMARY

Four special-status amphibians and one special-status aquatic reptile are known to occur or could potentially occur in the Big Creek ALP study area (streams and wet meadows within the Project area or potentially affected by the Project, as well as potential reference streams). These species are foothill yellow-legged frog (*Rana boylei*; FYLF), mountain yellow-legged frog (*Rana muscosa*; MYLF), Yosemite toad (*Bufo canorus*; YT), Mount Lyell salamander (*Hydromantes platycephalus*), and western pond turtle (*Clemmys marmorata*; WPT; CDFG 2002a). Another special-status amphibian, the California red-legged frog (*Rana aurora draytonii*; CRLF), historically occurred in the Project vicinity in the late 1960s, but is now believed to be extirpated (USFWS 2002). Each species is a California species of special concern. The CRLF is also federally threatened; the MYLF and YT are also a federal candidate species; and the WPT and FYLF are also federal species of special concern and Forest Service sensitive species.

Potential habitat for special-status amphibians and reptiles was obtained from aerial photographs, ground surveys, and helicopter reconnaissance surveys. Detailed information on streams in the Big Creek ALP study area was collected as part of the Aquatic Habitat Survey completed in the summer and fall of 2001 and 2002 (refer to CAWG-1, Characterize Stream and Reservoir Habitats). The habitat inventory was used to identify and characterize individual habitat units (mesohabitats) within each stream, including information on habitat type, gradient, substrate, instream cover, and canopy.

For each habitat component, species-specific criteria scores were developed to depict the degree of suitability of the habitat to support individual species over the range of habitat conditions observed in the study streams. A query was developed, in collaboration with the Combined Aquatics Working Group (CAWG), to determine the habitat component scores and use these scores to determine a usability score for each habitat unit by species.

The usability score of each habitat unit in a study stream was plotted to identify stream segments with similar habitat quality for each species. A segment quality rating (good, moderate, or poor) was determined based on the value of the weighted mean of usability scores for the habitat units within a stream segment.

For most species, the segment quality ratings were used to stratify focused survey efforts in 2002. Focused surveys for special-status amphibians and reptiles were conducted using survey protocols approved by the Amphibian and Reptile Subgroup (Subgroup) of the CAWG. Surveys for the MYLF and YT were completed in accordance with *A Standardized Protocol for Surveying Aquatic Amphibians* (Fellers

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and Freel 1995) using the 'Sample Survey' approach (vs. 'Complete' or 'Historical' Surveys) using 'Representative' selection of sites (vs. 'Random' selection of sites). FYLF surveys were completed according to the modified Lind (1997) protocol. WPT surveys were conducted in accordance with *Western Pond Turtle Survey Techniques* (Reese undated).

Focused surveys were conducted in representative stream habitat for FYLF in May and June 2002. Seven stream sites were sampled for FYLF. These include portions of Big Creek, Ely Creek, Jose Creek, Rock Creek, Ross Creek, Stevenson Creek, and the San Joaquin River. The FYLF was observed only in Jose Creek during focused surveys.

Focused surveys were conducted in representative habitat in stream sites and meadows for YT in June and July 2002. Seven meadows were sampled for YT including Jackass Meadow, an unnamed meadow adjacent to Portal Forebay, Hell Hole Meadow, Poison Meadow, Mono Meadow, Balsam Meadow, an unnamed meadow adjacent to Portal Forebay, and an unnamed meadow adjacent to Mono Hot Springs. Five stream sites were surveyed for YT including portions of Big Creek, Crater Creek, Mono Creek, South Fork San Joaquin River, and Tombstone Creek. YT were not detected during focused surveys and no incidental observations were reported while surveying for other special-status amphibians and reptiles.

Focused surveys were conducted in representative habitat in stream sites for MYLF in July 2002. Fourteen stream sites were sampled for MYLF. These include portions of Bear Creek, Big Creek, Bolsillo Creek, Camp 61 Creek, Camp 62 Creek, Chinquapin Creek, Crater Creek, Mono Creek, North Fork Stevenson Creek, North Slide Creek, Pitman Creek, South Fork San Joaquin River, South Slide Creek, and Tombstone Creek. MYLF were not detected during focused surveys and no incidental observations were reported while surveying for other special-status amphibians and reptiles.

Focused surveys were conducted in stream sites for WPT in July 2002. Portions of the following streams were sampled: Big Creek, Pitman Creek, North Fork Stevenson Creek, and the San Joaquin River. Western pond turtle was not detected during focused surveys, but incidental observations were made in Jose Creek, Stevenson Creek, and Ross Creek while surveying for the FYLF.

A site assessment was prepared for the CRLF in summer 2002. The focus of the site assessment was in areas, which were below 5,000 feet in elevation, and within five miles of the study area. The study area was determined to be within the historic range of the CRLF, but not within the current range of the species. With the exception of small sections of Chiquito Creek and Jose Creek, the study area does not support appropriate habitat for CRLF. There are no known records of CRLF within 5 miles of the study area. The nearest historical record is 15 miles from the study area.

The annual temperature regime in Jose Creek and Willow Creek was monitored and correlated with focused surveys, which noted the presence of egg masses to determine the timing of FYLF egg deposition in Jose Creek. On the first day that egg masses were detected in Jose Creek (May 10, 2002) during the FYLF focused surveys, the

water temperatures ranged from 9-13°C with an average of 11°C. This temperature range is similar to data reported in the literature for FYLF egg deposition (ranges from 9-15°C, with an average of 12°C).

## **2.0 STUDY OBJECTIVES**

- Document the occurrence of native and non-native amphibian and reptile populations, their predators, and their habitats.
- Determine the year-round temperature regime for selected locations known to support FYLF populations. Determine the timing of FYLF egg deposition to the extent possible.
- Evaluate the effects of Project operations and proposed protection, mitigation, and enhancement measures on the habitat and different life history stages of special-status amphibians and reptiles and their predators.
- Review literature on cloud seeding chemicals to determine potential effects on special-status amphibians and reptiles.
- Evaluate information collected from other studies to assess the effects on amphibians and reptiles (for example, CAWG-1, Characterize Stream and Reservoir Habitats Study Report; CAWG-2, Geomorphology Study Report; CAWG-3, Determine Flow-related Physical Habitat in Bypass Reaches Study Report; CAWG-4, Chemical Water Quality Study Report; CAWG-5, Water Temperature Study Report; CAWG-7, Characterize Fish Populations Study Report; CAWG-11, Riparian Study Report; TERR-1, Vegetation Communities Study Report; and REC-3, Whitewater Recreation Assessment Study Report).

## **3.0 STUDY IMPLEMENTATION**

### **3.1 STUDY ELEMENTS COMPLETED**

- Compiled information on special-status amphibians and reptiles in conjunction with the literature review for common and special-status wildlife species. Mapped known occurrences of special-status amphibians and reptiles.
- Conducted aerial reconnaissance surveys, aerial photograph review, and ground-truthing in the study area.
- Developed stream habitat criteria for incorporation into the query for FYLF, MYLF, YT, and WPT.
- Queried the Stream Habitat Database to determine habitat unit scores. Identified segments of streams that comprised good, moderate, or poor quality habitat based on visually grouping stream segments of at least 1,000 feet in length with similar habitat scores, taking into account such statistics as the weighted mean.

- Selected representative sampling sites and completed focused surveys for FYLF, MYLF, YT, and WPT.
- Documented the occurrence of native and non-native amphibian and reptile populations and their predators at selected sampling locations.
- Developed a GIS map of potential good, moderate, or poor stream physical habitat reaches for FYLF, MYLF, YT, and WPT based on field surveys and the query results.
- Conducted a California red-legged frog site assessment in accordance with the *Guidance on Site Assessment and Field Surveys for California Red-legged Frogs*.
- Monitored the annual temperature regime in Jose Creek and Willow Creek and determined the timing of FYLF egg deposition in Jose Creek.

### 3.2 OUTSTANDING STUDY ELEMENTS

- Review available literature on cloud seeding chemicals to determine potential effects on special-status amphibians and reptiles. This will be cross-referenced to CAWG-4, Chemical Water Quality Study Report.
- Develop an integrated map of current habitat quality for special-status amphibians and reptiles in the study area that considers physical habitat, water quality, and hydrology data collected as part of other Big Creek ALP studies, as well as biotic data (e.g., presence of predators).
- Evaluate information collected from other studies to assess the effects on amphibians and reptiles (for example, CAWG-1, Characterize Stream and Reservoir Habitats Study Report; CAWG-2, Geomorphology Study Report; CAWG-3, Determine Flow-related Physical Habitat in Bypass Reaches Study Report; CAWG-4, Chemical Water Quality Study Report; CAWG-5, Water Temperature Study Report; CAWG-7, Characterize Fish Populations Study Report; CAWG-11, Riparian Study Report; TERR-1, Vegetation Communities Study Report; and REC-3, Whitewater Recreation Assessment Study Report).
- Additional surveys for FYLF, MYLF, YT, and WPT may be required if potential resource conflicts are identified during the development of protection, mitigation, and enhancement measures. Survey methodologies will be selected by the CAWG, reviewed by CAWG-selected recognized expert(s), and approved by the CAWG.
- This report will be peer reviewed by expert(s) selected by the CAWG. The report may be revised in the future based on peer review comments and input from the CAWG.

- Evaluate the potential effects of Project operations and proposed protection, mitigation, and enhancement measures on the habitat and different life history stages of special-status amphibians and reptiles and their predators.

## 4.0 STUDY METHODOLOGY

This study had several components to address the study objectives. The first component was a literature review to determine the life history, habitat requirements, and known occurrences of special-status amphibians and reptiles in the study area. The study area is the streams and wet meadows within the Project area or potentially affected by the Project (e.g., diverted or flow-augmented streams), as well as potential reference streams. Next, an overview of potential amphibian and reptile habitat was obtained through aerial photograph interpretation, ground surveys, and helicopter surveys. A query was then developed and used to map habitat quality in stream segments throughout the study area. Finally, this query was used to select sampling sites for focused amphibian surveys, which were conducted in the summer of 2002.

### 4.1 REVIEW OF EXISTING INFORMATION

Life history and habitat requirements for special-status amphibians and reptiles potentially occurring in the study area were obtained through a review of literature and consultation with agency personnel and technical experts. The occurrence of native and non-native amphibians and reptiles and their potential habitat in the study area was documented using: (1) CDFG's *California Natural Diversity Database* (CDFG 2002a), (2) CDFG's *Wildlife Habitat Relationship System* (CDFG 2000b), (3) USDA-FS *Threatened, Endangered, and Forest Service Sensitive Species Database for the Amphibian and Reptile Species of the Sierra National Forest* (USDA-FS 2001), (4) University of California Berkeley's *Museum of Vertebrate Zoology Data Access* (U.C. Berkeley 2002), (5) California Academy of Sciences' *Herpetology Holdings* (CAS 2002), (6) California red-legged frog site assessment completed in the Jose Basin (USDA-FS 2000), and (7) other biological information published in scientific journals that is referenced throughout the text. As part of the site assessment for CRLF, a review of historic and known occurrences of this species within five miles of the study area was completed.

#### 4.1.1 AMPHIBIAN AND REPTILE HABITAT ASSESSMENT

Several approaches were utilized to assess habitat quality for FYLF, MYLF, YT, and WPT in streams and adjacent meadows in the study area. These approaches included: (1) conducting reconnaissance ground and helicopter surveys along study streams to provide an overview of habitat quality in the study area; (2) reviewing vegetation community maps developed through photo-interpretation of recent aerial photography in the study area to identify meadows and riparian habitat adjacent to the study streams; and (3) developing a query that integrated instream habitat data collected during aquatic surveys in the study stream with species-specific habitat criteria scores to generate habitat usability ratings by habitat unit and stream segment for FYLF, MYLF, YT, and WPT. The following describes each of these approaches and associated methods.

## 4.2 RECONNAISSANCE SURVEYS

### 4.2.1 GROUND SURVEY METHODOLOGY

Reaches of study streams and potential reference reaches that may possibly support special-status amphibians and reptiles were initially identified from topographic maps. Study streams were determined to be streams that are diverted or flow-augmented by the Project. Potential reference streams were determined by comparing elevation, gradient, and aspect with study streams. Potential for occurrence of each special-status amphibian and reptile was based initially on elevation. Wet meadows were identified from aerial photographs and the USDA-FS GIS meadow layer. The area around the reaches and wet meadows was walked, and the following information recorded: date, time, location, weather, upland habitat, riparian and emergent vegetation characteristics, habitat type (e.g., step pool, cascade, etc.), substrate (e.g., pebble, cobble, boulder, bedrock), qualitative water flow (e.g., still, low, moderate, high), approximate water depth, water temperature, and presence of any amphibians or reptiles. GPS coordinates were recorded, when possible, for each reach or wet meadow visited. The occurrence of native and non-native amphibians and reptiles and their predators was recorded and incorporated into a GIS database.

### 4.2.2 HELICOPTER SURVEY METHODOLOGY

In the fall of 2001, helicopter reconnaissance surveys were conducted in the study area. The purpose of the survey was to obtain an overview of potential amphibian habitat in the study area. The surveys were completed by two biologists in October 2001, and consisted of an overflight of all bypass and flow-augmented stream reaches and adjacent wet meadows in the study area. For each stream reach and wet meadow, the following information was recorded when possible: date, time, location, upland habitat community, riparian and emergent vegetation characteristics, instream habitat type, and substrate composition. GPS coordinates and photographs were recorded for each reach, meadow, or unique habitat feature (e.g., pool, backwater area, side channels, emergent vegetation, and riparian vegetation) when possible, and incorporated into a GIS layer.

### 4.2.3 AMPHIBIAN AND REPTILE STREAM PHYSICAL HABITAT ASSESSMENT QUERY

The information obtained from the ground and helicopter surveys did not provide enough detailed information to map the habitat quality for special-status amphibians and reptiles. Therefore, instream data collected on Project streams was also used. The Subgroup and CAWG used this data to develop an approach using a stream physical habitat query. An overview of this approach for identifying habitat quality for special-status amphibian and reptiles in the study streams (including input and output data) is provided in Figure CAWG-8-1. The overall approach was approved by the Subgroup and CAWG during meetings in 2001 and 2002. The following discussion describes each of the steps in the approach in detail.



### 4.3 AQUATIC HABITAT DATA

Detailed information on stream habitat in the Big Creek ALP study area was collected as part of the Aquatic Habitat Survey completed in the summer and fall of 2001 and 2002, as part of the CAWG-1, Characterize Stream and Reservoir Habitats Study Plan. Refer to CAWG-1, Characterize Stream and Reservoir Habitats Study Plan, for a detailed discussion of survey methodologies and results. A subset of the data collected during the 2001 and 2002 habitat surveys was evaluated to determine instream habitat usability for amphibians and reptiles. Certain habitat components in the Aquatic Habitat Survey (habitat unit type, stream gradient, substrate composition, instream cover and canopy) were ranked for their potential to support FYLF, MYLF, YT, and WPT. The suitability ranks for each habitat component for each species are provided in Table CAWG-8-1. A query was developed to evaluate the suitability of each component within a habitat unit and then determine the usability of each habitat unit for each of the four species in each Project reach. A detailed description of the habitat components evaluated from the Stream Habitat Database, how the query operates and queries the Stream Habitat Database, and the rank assigned to each habitat component in the Stream Physical Habitat Criteria Table by species is provided below.

#### 4.3.1 AMPHIBIAN AND REPTILE STREAM PHYSICAL HABITAT QUERY

The query was run in 2002 and was found to contain errors during the report preparation. These errors have been corrected, and this report contains only the 2003 query methods and results. Appendix A includes details of the errors detected in the original 2002 query, how stream segment quality calculated by the original query compares with the new query, and how the quality of stream segments proposed to be sampled based on the original query compares with the new query. Each of the habitat components evaluated by the query is discussed in detail below.

**Habitat Type.** Most amphibians and aquatic reptiles associate more often with certain stream habitats than others depending on their life history strategies and requirements. Stream habitats during the aquatic surveys were classified using two methodologies, namely the Hawkins classification (Hawkins et al. 1993) and USDA-FS Region 5 habitat classifications (McCain et al. 1990). The more detailed USDA-FS Region 5 habitat classifications system was used in this analysis. In addition, several habitats were mapped during the aquatic surveys (i.e., concrete box culvert, dry, and road crossing) and were including in the database (although they are not part of the Region 5 classification system).

**Gradient.** Most amphibians and aquatic reptiles respond to changes in surface gradient. In general, high gradient streams provide fewer low flow pools and runs than low gradient streams. Surface gradient was measured to the nearest percentile in each habitat unit using a clinometer.

**Substrate.** The size of substrate material within the channel is important for most stream-dwelling amphibians and reptiles, particularly in selection of basking sites and oviposition sites. Channel substrate was classified into standard size classes: fines

(<0.062 mm), sand (0.062 –to <2 mm), gravel (2 to <64 mm), cobble (64 to <256 mm), boulder (256 to <4,096 mm), and bedrock. Gravel, cobble, and boulder are collectively referred to as coarse substrates. In most cases, only the dominant and subdominant substrates in each habitat unit were recorded to the nearest 10 percent.

**Cover.** The presence of cover, especially more than one type, is often critical for amphibians and aquatic reptiles because it provides protection or refuge while foraging or basking. Specific cover types recorded as present in the Aquatic Habitat Survey include boulders/cobbles, woody debris, root wads, aquatic vegetation, undercut banks, and terrestrial vegetation.

**Canopy.** The degree of riparian canopy influences water temperatures and provides shade for riparian species during the hottest part of the day. Leaves and branches that fall from the overhanging canopy into the stream are a significant source of organic matter for aquatic food webs in low-order streams and support a variety of macroinvertebrates, which are consumed by aquatic vertebrates. The percentage of riparian canopy present was measured to the nearest 25 percent in each habitat unit.

#### 4.3.2 AMPHIBIAN AND REPTILE STREAM PHYSICAL HABITAT CRITERIA

For each habitat component listed above, species-specific suitability ranks were developed to depict the degree to which that component supports individual species over the range of habitat conditions observed in the study streams. The ranks for each habitat component ranged from 0-3, with a 0 rank denoting poor habitat suitability, 1 denoting moderate habitat suitability, 2 denoting good habitat suitability, and 3 denoting very good habitat suitability. The species-specific habitat suitability ranks were developed collaboratively in the Subgroup meetings based on a review of habitat preferences of each of the species in the available literature and technical expertise provided by Subgroup members and technical experts.

The following describes how the query assigned habitat suitability ranks for each habitat component within a habitat unit.

**Habitat Type.** Although two different habitat type classifications are delineated in the Stream Habitat Database, the USFSR5 classification provides greater detail in the nature of the habitat observed. The query simply looks up the habitat type directly in the database and assigns a suitability rank by species according to the Stream Physical Habitat Criteria Table.

**Gradient.** The exact surface gradient measured in the field is provided in the Stream Habitat Database; however, the query only evaluates whether the gradient is less than or equal to 5 percent or greater than 5 percent and assigns a suitability rank from the Stream Habitat Criteria Table accordingly.

**Substrate.** The query determines the suitability of substrate in two different ways depending on the species of interest. YT and WPT associate primarily with stream habitats where fines accumulate, while FYLF and MYLF occur most often in stream habitats dominated by coarse materials. Because only data on the dominant and sub-

dominant substrate size classes was recorded in the Stream Habitat Database, a simple evaluation of the total percentage of fines or coarse material present is only possible when 100 percent of the substrate data is accounted for. Therefore, the query ranks substrate suitability based on the presence of certain substrate size classes.

For YT and WPT, the presence of fines is determined first by whether the total substrate accounted for sums to >70 percent. If so, then suitability is determined by the percentage of fines present as shown in the Stream Physical Habitat Criteria Table (Table CAWG-8-1). If <70 percent of the total substrate was classified, then the presence of fines can only be determined if fines were recorded as a dominant or sub-dominant size class. If so, then suitability is determined as shown in Table CAWG-8-1, otherwise, the presence of fines is unknown and substrate suitability is assigned a null value (could not be calculated or missing data).

In evaluating substrate suitability for FYLF and MYLF, a substrate matrix was created indicating the various possible combinations of dominant and sub-dominant substrate size class types that could occur (Table CAWG-8-2). Each combination was then assigned a suitability rank. The query evaluates which size classes are present (indicated as either dominant or sub-dominant) and assigns a suitability rank accordingly.

**Cover.** The percentage of total cover present in a habitat unit is recorded in the Stream Habitat Database as quartiles, and the types of cover comprising the total percent are delineated. The query queries which cover types are present and assigns a suitability rank to each type according to the Stream Physical Habitat Criteria Table. The ranks for each cover type are then summed into a total cover suitability (not to exceed a value of 2).

**Canopy.** The percent of deciduous canopy over each habitat unit was recorded in the Stream Habitat Database. The query simply evaluates this percentage directly and assigns a suitability rank by species according to the Stream Physical Habitat Criteria Table.

#### 4.3.3 USABILITY SCORE CALCULATION AND SEGMENT QUALITY DETERMINATION

In collaboration with the Subgroup, the query was developed to calculate a usability score for each habitat unit by species in the study streams based on comparing habitat component data collected in the field with the suitability of each habitat component as ranked in the Stream Physical Habitat Criteria Table for each species. The assignment of criteria scores for each habitat component in a habitat unit is described above.

The habitat usability score calculated by the query provides a measure of how “usable” or suitable that particular habitat unit is for each species. The habitat usability score is calculated for each habitat unit by summing the criteria scores for each habitat component with two notable exceptions:

- 1) If a suitability rank was zero for any habitat component for FYLF, MYLF, or YT, the habitat usability for that habitat unit was given a score of zero (i.e., a

suitability rank of zero for one habitat component trumped all the other suitability ranks). In other words, the absence of a key habitat component for a species in a habitat unit resulted in the overall habitat quality being deemed poor.

- 2) For WPT, if a suitability rank was zero for any habitat component except substrate (percent fines), the habitat usability for that habitat unit was given a score of zero. When substrate suitability for WPT was poor (0) in a habitat unit, the habitat usability score did not default to zero. Rather, the remaining habitat suitability ranks are summed to obtain the habitat usability score for the habitat unit.

Refer to Table CAWG-8-3 for an example of how a habitat usability score is calculated. The higher the score, the higher the usability, or suitability of the habitat. Habitat usability scores for FYLF and MYLF can range from 0-11. Whereas, usability scores for YT and WPT can range from 0-10. Usability scores should only be used to compare habitat quality within a species.

An important quality control step in the approach was to identify habitat units with missing habitat component data potentially affecting the calculation of accurate habitat usability scores. To address this issue, prior to calculating the final habitat usability score, the query checked whether any habitat component data was missing. The query only calculated a habitat usability score when all habitat component data was present for the habitat unit with following exceptions:

- 1) For all species, if any habitat component data was missing (not recorded) from a habitat unit, but the suitability rank was zero for any of the remaining habitat components, the habitat usability score for that habitat unit was zero (i.e., a suitability rank of zero in any habitat component trumped all other suitability ranks, including a missing value).
- 2) For WPT if any habitat component was missing (not recorded), but the suitability rank was zero for any of the remaining habitat components, with the exception of substrate, the habitat usability score for that habitat unit was zero. If any habitat component is missing and substrate is zero, the habitat usability score is not recorded to reflect the missing data (i.e., a zero substrate suitability rank for WPT does not trump all other suitability ranks). A review of the data revealed that less than 10 percent of the habitat units in the Stream Habitat Database had missing habitat component data that prevented the query from calculating habitat usability scores. Refer to Table CAWG-8-4 for a summary of missing data components in each habitat unit from the study stream.

**Segment Quality.** The overall quality of a stream segment for an individual species was determined by plotting a line chart of the habitat usability combined scores for that reach (example in Figure CAWG-8-2). The line chart delineates specific stream segments of higher or lower quality and depicts the range and distribution of habitat scores, thus providing a quantitative summary of the suitability of the habitat units in a reach. A segment is defined by the occurrence of similar scoring habitat units that

typically span a distance of at least 1,000 feet. Segment quality was determined based on the value of the weighted mean (based on habitat unit length) of the habitat usability scores within the segment (Table CAWG-8-5). As an example, the calculation of segment quality for Camp 61 Creek is illustrated in Table CAWG-8-3, and the location of the segments in that stream is illustrated in Figure CAWG-8-2.

Stream habitat suitability for FYLF as predicted by the query was compared with actual stream habitat conditions observed in the field during focused surveys in 2002 in an effort to evaluate the query results. Specifically, stream segment quality determined by the query in 2003 was compared to stream segment quality defined by surveyors in the field for those sites sampled in 2002. Surveyor-determined evaluations of stream segment quality were based on the availability of suitable habitat features incorporated into the query and known to be important to the species (e.g., substrate composition, canopy, cover, and habitat unit type), as well as general habitat suitability based on expert surveyor opinion. In instances where surveyed sites included more than one habitat quality segment, surveyor-determined habitat quality was delineated by segment.

#### FOOTHILL YELLOW-LEGGED FROG

Habitat suitability and segment quality was determined for the FYLF in the following stream reaches that occur within the species' known elevational range: Adit 8 Creek (Below Diversion), Balsam Creek (Above and Below Diversion), Big Creek (Powerhouse 8 to Dam 5, Powerhouse 2 to Dam 4, and Above Powerhouse 1), Ely Creek (Above and Below Diversion), Jose Creek, Rock Creek (Above and Below Diversion), Ross Creek (Above and Below Diversion), and San Joaquin River (Mammoth Reach and Stevenson Reach), and Stevenson Creek (Below Shaver Lake).

#### MOUNTAIN YELLOW-LEGGED FROG

Habitat suitability and segment quality was determined for the MYLF in the following stream reaches that occur within the species' known elevation range: Adit 2 Creek, Adit 8 Creek (Below Diversion), Balsam Creek (Above and Below Diversion), Bear Creek (Above and Below Diversion), Big Creek (Powerhouse 2 to Dam 4, Above Powerhouse 1, and Below Huntington Lake), Bolsillo Creek (Above and Below Diversion), Camp 61 Creek (Below Portal Forebay), Camp 62 Creek (Above and Below Diversion), Chinquapin Creek (Below Diversion), Crater Creek (Above and Below Diversion), Crater Creek Diversion Reach, East Fork Camp 61 Creek, Ely Creek (Above and Below Diversion), Hooper Creek (Above and Below Diversion), Mono Creek (Below Diversion), North Slide Creek (Below Diversion), North Fork Stevenson Creek (Above and Below Outlet Reach), Pitman Creek (Above and Below Diversion), Rancheria Creek (Above and Below Surge Chamber), South Fork San Joaquin River (Hoffman Creek to Rattlesnake Crossing, Rattlesnake Crossing to Mono Crossing, Mono Crossing to Bear Creek, and Bear Creek to Florence Lake), South Slide Creek (Below Diversion), Stevenson Creek (Below Shaver Lake), Tombstone Creek (Above and Below Diversion), and West Fork Camp 61 Creek.

## YOSEMITE TOAD

Habitat suitability and segment quality was determined for the YT in the following stream reaches that occur within the species' known elevation range: Adit 2 Creek, Balsam Creek (Above and Below Diversion), Bear Creek (Above and Below Diversion), Big Creek (Below Huntington Lake), Bolsillo Creek (Above and Below Diversion), Camp 61 Creek (Below Portal Forebay), Camp 62 Creek (Above and Below Diversion), Chinquapin Creek (Below Diversion), Crater Creek (Above and Below Diversion), East Fork Camp 61 Creek, Hooper Creek (Above and Below Diversion), Mono Creek (Below Diversion), North Slide Creek (Below Diversion), North Fork Stevenson Creek (Above and Below Outlet Reach), Pitman Creek (Above and Below Diversion), Rancheria Creek (Above and Below Surge Chamber), South Fork San Joaquin River (Hoffman Creek to Rattlesnake Crossing, Rattlesnake Crossing to Mono Crossing, Mono Crossing to Bear Creek, and Bear Creek to Florence Lake), South Slide Creek (Below Diversion), Tombstone Creek (Above and Below Diversion), and West Fork Camp 61 Creek.

## WESTERN POND TURTLE

Habitat suitability and segment quality was determined for the WPT in the following stream reaches that occur within the species' known elevation range: Adit 8 Creek (Below Diversion), Balsam Creek (Above and Below Diversion), Big Creek (Powerhouse 8 to Dam 5, Powerhouse 2 to Dam 4, Above Powerhouse 1), Ely Creek (Above and Below Diversion), North Fork Stevenson Creek (Above and Below Outlet Reach), Pitman Creek (Above and Below Diversion), Rock Creek (Above and Below Diversion), Ross Creek (Above and Below Diversion), San Joaquin River (Mammoth and Stevenson Reach), and Stevenson Creek (Below Shaver Lake).

### **4.4 PRELIMINARY STREAM PHYSICAL HABITAT MAP**

A stream physical habitat map for each species was prepared for streams that occur within the elevational range of each species. The stream physical habitat map shows the suitability of physical habitat for each of the four species throughout the study area. This map is based on the segment quality determined by the query that calculated habitat suitability for each species based on the Stream Physical Habitat Criteria Table. Segment distances were rounded to the nearest tenth of a mile. In some cases, the habitat suitability for both above and below the diversion on the same creek was categorized. The physical habitat suitability map does not take into consideration some other factors (i.e., water quality, hydrology, and presence of predators) in evaluating habitat quality. Following completion and review of study results for other studies completed as part of the Big Creek ALP, an overall habitat suitability map will be developed for each species and provided in the 2004 technical reports.

#### **4.4.1 FOCUSED AMPHIBIAN AND REPTILE SURVEYS**

Amphibian and reptile stream sample segments were selected in accordance with guidelines developed and approved by the Subgroup and CAWG. These guidelines are provided for MYLF, YT, and WPT in Appendix B and are summarized below. Although

sample sites for each species had a minimum length or area, each stream sample site was visited for an entire day. If time allowed after surveying the selected sample area, the survey was continued in either the upstream or downstream direction in an effort to more fully document the range of potential stream habitats and increase the possibility of detecting the species.

### FOOTHILL YELLOW-LEGGED FROG

FYLF surveys were completed at 15 sites in accordance with a modified Lind protocol (Lind 1997), as discussed by the Subgroup. These include one or more sites located in Big Creek, Ely Creek, Jose Creek, Rock Creek, Ross Creek, the San Joaquin River, and Stevenson Creek. Refer to Table CAWG-8-6 for a list of each stream and segment selected. Sample sites were stratified across Rosgen Level I type (Tables CAWG-8-7a and b).

Stream sites sampled were stratified according to Rosgen Level 1 channel type and by segment quality. Rosgen Level 1 "Aa+" channels are very steep, deeply entrenched, and transport high debris loads. "A" channels are moderately steep, fairly entrenched, transport moderate debris loads, and result in a sequence of cascades and step-pools. "B" channels are moderately entrenched, have moderate gradient, are dominated by riffles, and have stable banks. "G" channels are entrenched "gullies", have a moderate gradient, are dominated by step pools, and have a low width/depth ratio. "F" channels are entrenched, are low gradient, are dominated by meandering low gradient riffles separated by pools, and typically have a high width/depth ratio. Stream channels classified as "geologic type #1" are dominated by glacially eroded granitic rock, whereas "geologic type #3" channels are primarily non-glaciated granitic rock.

Appropriate timing for surveys was determined based on monitoring of a reference population of known FYLF in Jose Creek. Once egg masses and tadpoles were detected in Jose Creek, surveys in the study area were initiated.

Surveys were conducted between May 10 to 19 and June 4, 2002, using the Lind (1997) survey protocol modified to survey once during the breeding season to determine presence or absence of individuals (following recommendations provided by Fellers and Freel (1995)), rather than repeated surveys throughout the year to document the extent of a known population (as detailed by Lind (1997)), and to include an expanded datasheet during the survey to record additional habitat unit characteristics when various life stages are sighted. The expanded datasheet was approved by Amy Lind on May 9, 2002 (A. Lind pers. comm.), and a similar version is currently in use by the Tahoe National Forest. As outlined in Lind (1997), the sampling technique was a visual encounter search conducted during daytime. In small streams, two surveyors walked slowly along the stream while visually searching both banks for different life history stages. One surveyor walked ahead, searching only for adults and sub-adults, while the other surveyor followed behind, searching only for eggs and tadpoles. In larger streams where it was not practical for surveyors to scan both banks simultaneously, this sampling technique was used along one bank while walking upstream and then on the other bank while walking downstream. Stream surveys were

not time-constrained, and were considered complete when surveyors had searched the segment.

General site and habitat information was recorded on the Fellers and Freel (1995) data form. In all stream segments surveyed, detections of FYLF were recorded on a modified Lind (1997) datasheet, whereas all other amphibians and reptiles were recorded on the Fellers and Freel (1995) survey form. When an adult, juvenile or tadpole of a FYLF was detected, the size, stream habitat type, riparian type, canopy cover class, water depth, water flow, water temperature, and substrate composition within a radius of three feet were recorded onto the modified Lind (1997) datasheet. When an egg mass was detected, additional information was recorded such as the distance from shore, orientation of the egg mass, flow direction, and whether silt was present on the egg mass.

#### MOUNTAIN YELLOW-LEGGED FROG

MYLF sample site selection and surveys were carried out following Fellers and Freel (1995) *A Standardized Protocol for Surveying Aquatic Amphibians*. Selection of sample segments was carried out following the 'Sample Survey' approach (vs. 'Complete' or 'Historical' Surveys) using 'Representative' selection of sites (vs. 'Random' selection of sites). In the study area, representative sites were selected from different geographic areas within the species' elevation range, included different aquatic habitats (as delineated by habitat criteria and geomorphic classification of stream reaches), accounted for accessibility and safety, and incorporated a representative bias toward higher habitat quality segments. Suitable habitat types were sampled and all variables that might affect amphibian distribution and abundance (e.g., segments with and without fish) were considered. Sample sites were stratified by elevation and segment quality. Surveys followed the 'Basic Technique' and were conducted in mid-summer in order to detect all life history stages. Surveys were completed within each good quality segment identified by the Subgroup. Surveys for moderate and poor quality segments were finalized following the geomorphic verification of representative Rosgen Level 1 channel types. The geographic distribution and the presence or absence of fish species in sample sites was considered prior to selection of sample sites.

MYLF surveys were completed at 23 sites, as approved by the Subgroup and CAWG. These include one or more sites within the following: Bear Creek, Big Creek, Bolsillo Creek, Camp 61 Creek, Camp 62 Creek, Chinquapin Creek, Crater Creek, Mono Creek, North Fork Stevenson Creek, North Slide Creek, Pitman Creek, South Fork San Joaquin River, South Slide Creek, and Tombstone Creek. Refer to Table CAWG-8-8 for a list of each stream and segment proposed for sampling.

Use of a reference population to determine appropriate timing for surveys was not possible due to the lack of known MYLF populations in the study area. Appropriate timing of surveys was determined to be July based on review of literature on historic populations in the Project vicinity.



Surveys for MYLF were conducted between July 15 and 24, 2002. Surveys consisted of two daytime sampling techniques: a visual encounter search and dip-netting. The 'Basic Technique' involves using binoculars every 50 feet to scan the banks up to 50 feet ahead for basking individuals, walking slowly along the bank (one surveyor on each bank) while visually searching for eggs, larvae, or adults in the water or along the shore, and using a dip net on a regular basis during the survey to sample aquatic habitats for larvae. Dip-netting is important in stream habitats with emergent or floating vegetation where visual detection of larvae is significantly reduced. At each site sampled, general information such as the date, time, and the surveyors' names were recorded. Other information recorded included directions to the site, topographic map name, land ownership, county, elevation, Universal Transverse Mercator (UTM) coordinates, and distance to the closest mapped trail, public dirt road, and public paved road. Habitat data was also recorded to provide a general description of the site. Habitat information recorded include the following: air and water temperature, weather conditions, any alterations to habitat, habitat type, drainage, site dimensions, water turbidity, any disturbances in watershed, predominant substrate, predominant vegetation, and if fish or evidence of fishing were observed. For each amphibian and/or reptile observed, the life history stage was noted. Captured individuals were weighed, total length was measured, and the method of detection was recorded (i.e., visual, aural, dip net, hand, and seine).

#### YOSEMITE TOAD

YT sample site selection and surveys were carried out following *A Standardized Protocol for Surveying Aquatic Amphibians* (Fellers and Freel 1995). Selection of sample sites was carried out following the 'Sample Survey' approach (vs. 'Complete' or 'Historical' Surveys) using 'Representative' selection of sites (vs. 'Random' selection of sites). In the study area, representative sites were selected from different geographic areas within the species' elevation ranges; included different aquatic habitats as delineated by habitat criteria, and meadows; and accounted for accessibility. All suitable habitat types were sampled and all variables that might affect amphibian distribution and abundance were considered. Aquatic surveys followed the 'Basic Technique' as outlined in Fellers and Freel (1995) and meadow surveys followed the modified 'Basic Technique' and were conducted in mid-summer in order to detect all life history stages of YT.

YT stream and meadow surveys were completed at six stream sites and seven meadows, as approved by the Subgroup and CAWG. These included one or more stream sites in Big Creek, Crater Creek, Mono Creek, South Fork San Joaquin River, and Tombstone Creek (Table CAWG-8-9). Meadows surveyed include Jackass, Poison, Hell Hole, Mono, and Balsam meadows, as well as two unnamed meadows, one located near Mono Hot Springs, and one near Portal Forebay (Table CAWG-8-10).

Appropriate timing for surveys was determined based on monitoring of a reference population of known YT in Kaiser Pass Meadow. Once egg masses and tadpoles were detected in Kaiser Pass Meadow, surveys in the study area were initiated.

Surveys were completed between June 13 to 20 and July 1 to 2, 2002. Sampling technique for streams followed the Fellers and Freel (1995) 'Basic Technique' methodology as described above for MYLF. Meadow surveys followed a modification of the 'Basic Technique.' Surveyors walked in a zig-zag path through the meadow, with 30-foot wide sweeps while visually searching and dip-netting for all life history stages. Additionally, surveyors walked slowly along stream channels meandering through the meadow and around pools while visually searching and dip-netting. Meadow surveys were not time-constrained, as surveyors remained at the meadow until all dry regions had been identified and all wet portions were sampled. Data recorded was the same as that described for MYLF surveys in streams.

### WESTERN POND TURTLE

WPT surveys were carried out following *Western Pond Turtle Techniques* (Reese undated). Representative sites were selected from different geographic areas within the species' elevation range, areas where WPT had not been observed during other surveys and from higher quality stream habitat segments. As outlined in Reese (undated), aquatic surveys followed the visual census technique described for creeks and ponds and was conducted during the most active month (July). A minimum of 30 minutes, and up to two hours (in 30-minute intervals) was spent observing at each sample site. The Subgroup also developed and approved a pool definition to quantify those pools with the highest potential of supporting WPT (Appendix B). A pool (defined according to the USDA-FS Region 5 mesohabitat definition (McCain et al. 1990)) for WPT surveys must meet the following criteria: minimum depth of two feet, support suitable basking sites (e.g., boulders and downed woody debris), and support suitable refugia (e.g., undercut banks, shallow boulders, overhanging or emergent vegetation, and other submerged woody debris).

Although surveys for the WPT were carried out according to the Reese (undated) protocol, field data was recorded on a datasheet provided by Holland (1991a). A total of five sites were sampled for WPT (Table CAWG-8-11). These include one or more stream sites in Big Creek, North Fork Stevenson Creek, Pitman Creek and the San Joaquin River, as approved by the Subgroup and the CAWG.

Appropriate timing of surveys was determined based on the survey protocol. The Reese (undated) protocol requires surveys to be completed in June and July since these are the most active months for the species.

Aquatic surveys for WPT were completed from July 23 to 25, 2002, following the 'Creek Technique' described by Reese (undated). This sampling technique includes a daytime visual encounter search with two surveyors walking slowly along a stream, one on each bank, searching beneath undercut banks, looking for individuals foraging on the benthos, and scanning ahead with binoculars to detect individuals basking. At high quality pools, surveyors observed for up to two hours, or until an individual was detected, before continuing with the search. In general, surveyors made an effort to search for at least 60 minutes per surveyor at each segment sampled where high quality pools were absent.

General site information was recorded on the Holland (1991a) datasheet including: date, time, surveyor(s) name, county, topographic map name, land ownership, and directions to site. Additionally, UTM coordinates were recorded at the start and end of each segment sampled. Habitat information recorded includes site dimensions; air and water temperature; a description of basking site(s); habitat disturbance elements; other amphibians, reptiles, and fish observed; water current; water turbidity; habitat type; aquatic and riparian vegetation present; and predominant substrate. For captured individuals, sex, life history stage, and carapace length were recorded. If individuals were simply observed, but not captured, life history stage was estimated.

#### CALIFORNIA RED-LEGGED FROG SITE ASSESSMENT

A site assessment for CRLF was completed in accordance with USFWS's *Guidelines on Site Assessment and Field Surveys for the California Red-legged Frog* (USFWS 1997). This included completion of a literature review, agency and expert consultation, review of CRLF historic and current distribution, determination of known locations CRLFs within the study area and within five miles of the Project boundaries, and identification of upland and aquatic habitats within the study area and within one mile of the Project boundaries. The site assessment was conducted between May and August in 2002 and is provided as Appendix C.

#### FOOTHILL YELLOW-LEGGED FROG WATER TEMPERATURE MONITORING

Water temperature monitoring was completed in Jose Creek and Willow Creek during 2001 and 2002. Both of these creeks are either known to support FYLF or have historically supported the species. To determine whether egg mass deposition in Jose Creek occurs within a similar temperature range as those reported by Zweifel (1955), water temperature was recorded hourly, with the exception of one unit in which water temperature was recorded every ten minutes. This data was collected from November 2001 to June 2002 at paired monitoring stations in Jose Creek near its confluence with the San Joaquin River and beneath a bridge on Canyon Road that spans Jose Creek and in Willow Creek at the bridge on Road 235. The temperature-logging device used was an Onset Optic Stowaway temperature recorder. Files were downloaded approximately every other month. Daily mean values and maximum and minimum daily values were calculated.

## **5.0 STUDY RESULTS AND ANALYSIS**

### **5.1 REVIEW OF EXISTING INFORMATION**

The potential distribution of the special-status amphibian and reptile species in the study area is presented in Table CAWG-8-12.

#### FOOTHILL YELLOW-LEGGED FROG

The FYLF is a stream-dwelling frog native to California and Oregon (Storer 1925, Zweifel 1955). As a stream obligate species, adult and juvenile FYLF primarily associate with pool and riffle habitats with gently to moderately flowing water. Tadpoles

are often found in shallow near-shore habitats such as eddies, backwaters, and other low velocity areas. In eastern California it ranges from the Sierra Nevada foothills to approximately 4,500 feet. Few studies have investigated the natural history of the FYLF. Jennings and Hayes (1985) quantified the habitat associations of this species in the Sierra Nevada. In a survey of 29 streams in the Sierra Nevada, the FYLF was found to be primarily associated with similar habitat, substrate, and canopy as reported for populations in streams and rivers of the Coast Range. However, they are also found in other stream habitats ranging from small, rocky, high gradient streams no more than 1.5 feet wide, to areas where small tributaries connect with large rivers in the Sierra Nevada (Van Wagner 1996). The FYLF generally associates with low gradient streams with moderate streamflow over coarse substrates. In the Sierra Nevada, individuals have also been observed in steep gradient reaches in habitats such as cascades and bedrock waterfalls. Although such habitats are not optimal for breeding, they may be used in spring while adults migrate downstream to reach breeding habitat near the confluence with larger streams.

The FYLF primarily associates with coarse substrates in streams. Coarse material such as cobbles, boulders, and large woody debris provide suitable sites for oviposition. Larger substrates typically remain stable in spring when stream-flow is high as the winter snowpack melts. During the summer foraging season when flows are low, coarse material protruding above the channel bed provides optimal sites for basking and feeding. Although individuals have been found associated with finer substrates, such as sand and silt near main channel pools or around side channel pools, this association appears to be relatively low compared to coarse substrates.

The canopy in streams that support this species is usually semi-open with riparian vegetation creating dappled shade, thus providing cool cover during the hottest part of the day as well as open areas for basking (Van Wagner 1996). Fitch (1938) suggested that this species may be limited by dense canopy and Moyle (1973) reported that individuals were not found at sites with > 90 percent canopy.

Although usually found in perennial streams, adults will inhabit isolated pools when water flow declines in summer (Fitch 1938, cited *in* Hayes and Jennings 1989). The movements of juveniles can be quite extensive in summer and late fall, as foraging drives individuals into diverse habitats (Van Wagner 1996). Therefore, the stream habitat used by FYLF throughout their life cycle is complex.

Breeding occurs in early spring near tributary confluences in larger river systems in the Coast Range (Kupferberg 1996) and in shallow, low velocity areas in small streams in the Sierra Nevada (Van Wagner 1996). Mating occurs from March to July and egg laying occurs from April to July. Egg masses are attached to cobbles, boulders, and other instream structures at a depth of 4 to 24 inches and in slow to moderately flowing water as low as 9.8° C (Storer 1925, Zweifel 1955, Lind et al. 1996, Lind unpublished data). Hatching occurs five days to 3 weeks after the eggs are laid depending on water temperature. Tadpole stage occurs from May through September.

In the Project vicinity, historic occurrences of FYLF have been reported in the following locations: Kerckhoff Reservoir in 1988, Rush Creek in 1970, and South Fork Willow Creek in 1972 (Figures CAWG-8-3a through d; CDFG 2002a). In addition, a population of FYLF also occurs in Jose Creek (P. Strand, pers. com.).

#### MOUNTAIN YELLOW-LEGGED FROG

The MYLF is endemic to the Sierra Nevada and Transverse ranges in California (Storer 1925). This species is highly aquatic and is closely associated with low-gradient streams, meadows, ponds, and lakes from 4,500 to 12,000 feet in elevation in the Sierra Nevada. In the northern Sierra Nevada, this species is found primarily in streams, whereas in the southern Sierra Nevada it occurs primarily in lakes and ponds (J. Wild pers. com.). Adults are most active during the daytime and often bask in open areas (Bradford 1984). The MYLF is most often found in lakes and streams with gently sloping banks that are moderately rocky and interspersed with sedges (*Carex* spp.), grasses, and low clumps of willows (*Salix* spp.; Mullally and Cunningham 1956). The MYLF is a pond-breeding species that associates primarily with lakes and ponds throughout its southern range and with streams throughout its northern range (J. Wild pers. com.). Due to harsh winters and high spring runoff in the higher elevations of the MYLF's range, only large pools and ponds that maintain the low velocities required through metamorphosis are used for breeding. Tadpoles may transform after their second summer, thus the tadpoles require still, deep-water with fine sediments for overwintering. Adults are commonly observed basking at the edge of pools and along shallow sloped stream margins. Like other pond-breeding frogs and toads, the MYLF is not well adapted to swift flowing water. However, individuals have been noted basking on open, sunny cobbles adjacent to gently flowing riffles during dispersal season.

In the southern Sierra Nevada, adults initially move to breeding sites at thawing lakes and ponds in late spring, and use streams for dispersal to other available aquatic habitats by mid-summer. Population density is greatest at fish-less lakes that are deeper than three feet (important for overwintering) and have warm water habitat along the shore (Pope and Matthews 2001). Adults exhibit a seasonal substrate preference at lakes. Matthews and Pope (1999) reported that adults associate more often with a combination of rock and silt substrates, but associated almost exclusively with rocky habitats in the fall. Other references identify stream segments with rock substrates as preferred (Mullally and Cunningham 1956).

In the northern Sierra Nevada, streams are the preferred habitat for breeding and foraging and are also important for dispersal. However, this species tends to avoid small creeks, perhaps because they are not deep enough to provide adequate habitat for breeding, foraging, and overwintering for adults and tadpoles. In late summer when streams are intermittent, adults often congregate in isolated pools. Stream segments where the bank was less than approximately eight inches in vertical height harbored the most dense population of adults (Mullally and Cunningham 1956). The MYLF often basks in areas with little to moderate canopy to raise their body temperature and elevate their general activity level. Open, sunny reaches with large exposed cobbles, boulders, or bedrock provide ideal basking sites. Due to lower average temperatures at

high elevation, reaches with little to no canopy are preferred. Habitats with moderate canopy allow limited sunlight to reach the stream surface, whereas dense canopies virtually block sun penetration.

Mating and egg laying occurs from March to July. Habitat association and activity patterns of tadpoles in lakes and streams have not been investigated. Tadpoles overwinter for two to three years at high elevation sites before metamorphosis is complete (Wright and Wright 1949). In summary, relatively little information is known about the habitat associations of the different life history stages of this high elevation species.

In the Project vicinity, historic occurrences of MYLF have been reported in Lakecamp Lake and Lakecamp Creek in 1992, Kaiser Pass Meadow in 1974, Kaiser Peak Meadow in 1955, Huntington Lake in 1955, and East Fork Big Creek in 1993 (Figures CAWG-8-3a through d; CDFG 2002a).

### YOSEMITE TOAD

The YT associates with montane meadows, streams, ponds, and lakes in lodgepole pine forests in the Sierra Nevada from 6,400 to 11,300 feet (Camp 1916a, Mullally 1956, Sherman and Morton 1993). Along the western slope of the Sierra Nevada, the northernmost limit of this species is Heather Lake in El Dorado County, and the southernmost limit is approximately five miles south of Kaiser Pass in Fresno County (Karlstrom 1962). This species co-exists with its close relative, the western toad (*Bufo boreas*), near Upper Blue Lake in Alpine County (Karlstrom 1962). Excluding this location, both species are thought to be separated by several thousand feet in elevation throughout the remainder of its distribution (Karlstrom 1962). In Fresno County, YT at Kaiser Peak Meadow (8,000 feet in elevation) and western toads at Huntington Lake (7,000 feet in elevation) are separated by approximately 1,000 feet in elevation. Much of the information on the natural history of this toad is the result of studies conducted at Tioga Pass, Mono County and at Kaiser Peak Meadow, Fresno County.

The preferred habitat of YT is high elevation montane meadows, although individuals do associate with slow flowing, low-gradient stream habitats, such as pools and flatwater, near or adjacent to meadows. Individuals are rarely, if ever, seen in swiftly flowing habitats like cascades or exposed habitats like bedrock sheets. The substrate in streams that meander through montane meadows is predominantly composed of fines occasionally interspersed with sand. Coarse material is rare and probably holds little value for the YT, which breeds in shallow pools in meadows during spring and primarily uses stream habitats during the drier portions of the year. Because YT have a high association with low gradient streams adjacent to meadows, cover types more typical to those habitats were considered to have higher importance in providing refuge sites. Specifically, aquatic and terrestrial vegetation, woody debris, and undercut banks would be more common in meadow-stream complexes and would provide crucial protection from predators.

Adults emerge from winter hibernation in rodent burrows or beneath rocks and willows and move to recently formed snowmelt ponds in late spring (Kagarise Sherman 1980, cited in Davidson 1994). Adults are diurnal and prefer to associate with open areas. Like other amphibians, YT rely primarily on basking in open, sunny areas to elevate their internal body temperature and increase their general activity level. At sunset, they retreat to subterranean rodent burrows (Mullally 1953). Adults are active on the surface for approximately four months.

Breeding occurs from May to mid-August in shallow snowmelt ponds or pools in slow moving streams (Mullally 1953, Karlstrom 1962, Kagarise Sherman 1980, cited in Davidson 1994). In late summer, tadpoles are found on muddy bottom of shallow, warm pools, or in small muddy depressions in meadows. Tadpoles exhibit a daily activity pattern similar to that of adults. During daytime, tadpoles associate with the shallow margins of small pools (presumably where water temperature is warmer), but retreat to deeper water at night and remain quiescent on the benthos (Mullally 1953). Metamorphosis generally occurs in early fall, but some tadpoles at higher elevation probably overwinter (Mullally 1956).

In the Project vicinity, historic occurrences of YT have been reported in Lakecamp Lake and Lakecamp Creek in 1993, Kaiser Pass Meadow in 2002, Kaiser Peak Meadow in 1955, Rancheria Creek in 1993, East Fork Big Creek in 1993, and an unnamed meadow approximately five miles south of Kaiser Pass in 1949 (Figures CAWG-8-3a through d; CDFG 2002a). Biologists from the Sierra National Forest detected this species in Graveyard Meadow in 2000 (P. Strand pers. com.).

#### WESTERN POND TURTLE

The WPT ranges from Baja California to Washington and inland into western Nevada. In the Sierra Nevada, it historically occurred in most of the major drainages along the western slope. Its elevational distribution is from sea level to approximately 6,000 feet, but most populations occur below 4,000 feet (Holland 1991a). Populations found between 4,500 and 6,000 are expected to be transplants (Jennings and Hayes 1994). This turtle occurs in marshes, perennial and intermittent streams, rivers, canals, ponds, vernal pools, and reservoirs, but also can be found nesting or overwintering in adjacent upland habitats (Storer 1930, Holland 1991a, Reese and Welsh 1997). The presence of WPT in aquatic habitat is dependent upon several factors, including distance to the nearest natural water source with a turtle population, structure of the habitat, degree of habitat disturbance, and the presence of suitable basking sites and refugia (Holland 1991a).

The WPT is almost exclusively found in pool and backwater habitats. Their life history strategy focuses entirely on still water and low velocity conditions, and individuals are not well adapted to swiftly flowing currents. In low gradient stream systems, the WPT is more often observed basking on sediments composed of fines than atop coarse materials. The presence of potential basking sites, such as large woody debris in particular, adjacent to or in deep pools with aquatic vegetation can be used to predict the presence of WPT. As with amphibians, basking is a frequent activity, and adjacent

deep pools with underwater cover sites provide protection from predators. Basking is an important behavioral adaptation among reptiles that allows them to raise their body temperature to increase their general activity level. As with other reptiles, the WPT often basks in open, sunny areas.

This species occurs in intermittent and perennial streams, but permanent streams support larger populations (Holland 1991a). In California's Trinity River, favorable habitat for the WPT is characterized by warm, deep, slow flowing pools with underwater cover and basking sites (Reese and Welsh 1998). Holland (1991a) reported that this species is often found in quiet backwater habitats in streams. Such habitats provide shelter from predators and offer basking sites for thermoregulation. The WPT is uncommon in high gradient streams perhaps because water temperature, current velocity, food resources, or any combination may limit their local distribution (Holland 1991a).

Mating generally occurs in late April to early May, but may occur year-round (Holland 1985, Holland 1991b). Adults generally leave aquatic habitats in late summer to locate nesting and overwintering sites in nearby upland areas. Gravid females tend to select nesting sites that are dry, in well-drained soil with significant clay and silt content, and have a low slope (less than 15 percent; Holland 1991a). Along the Trinity River, overwintering sites have been found in upland areas up to 1,640 feet from aquatic habitat (Reese and Welsh 1997). Overwintering outside the stream channel in upland habitats may be a strategy to reduce mortality associated with flood events and predation by raccoons (*Procyon lotor*; Rathbun et al. 1992). Holland (1991a) reported that hatchlings are typically found in shallow water (less than 12 inches deep) with dense emergent vegetation such as rushes (*Juncus* spp.), sedges, cattails, bulrushes, or in areas with associated with willows and alders.

In the Project vicinity, historic occurrences of WPT have been reported in Jose Creek in 1993, at the confluence of Italian Creek and the San Joaquin River in 1993, Stevenson Creek in 2001, Ross Creek in 1993, Kerckhoff Reservoir (undated), and West Fork Chiquito Creek in 1993 (Figures CAWG-8-3a through d; CDFG 2002a).

#### MOUNT LYELL SALAMANDER

The Mount Lyell salamander is distributed in the Sierra Nevada from Sierra County to Tulare County, and ranges from 4,000 to 12,000 feet in elevation (Adams 1942). Unlike some salamanders in the Pacific Northwest, which have a free-living larval stage and require aquatic habitat to complete their life cycle, the Mount Lyell salamander is not dependent on such habitats. Instead, females deposit eggs in moist microhabitats on land and the larval stage is completed within the egg (Adams 1942, Gorman 1956, Stebbins 1985). Adults are nocturnal and active on the ground surface from May to August (Adams 1942). Habitats vary from rock-outcrops at high elevation to Douglas-fir-yellow pine forests at lower elevation (Petranka 1998). Individuals have been found in granite crevices or under rocks on north facing slopes at the edges of snowfields in moist soils (Camp 1916b, Adams 1942). Much of our knowledge of its natural history comes from specimens collected or observed in Yosemite National Park.



In the Project vicinity, Mount Lyell salamander is known to occur southeast of Shaver Lake near Stevenson Creek and near the summit of Bald Mountain southeast of Shaver Lake (Figures CAWG-8-3a through d; CDFG 2002a).

### CALIFORNIA RED-LEGGED FROG

The CRLF historically occurred in aquatic, riparian, and upland habitats throughout much of California and northern Baja California. It currently ranges from sea level to approximately 3,500 feet, although historical sightings have been reported as high as 4,900 feet in the Sierra Nevada (USFWS 2002). Numerous populations exist in the Coast Range from Marin County to Santa Barbara County. Despite over 80 historic locations reported for the CRLF in Southern California south of the Tehachapi Mountains, only a few populations remain. In the foothills along the west slope of the Sierra Nevada, five isolated populations of CRLF are known, compared to over 60 historic locations reported (USFWS 2002). A review of electronic databases from academic institutions and government agencies resulted in no current or historic localities of the CRLF in the Project study area or vicinity (CDFG 2002a, CAS 2002, UC Berkeley 2002). Species experts also reported no known occurrences in the Project study area (G. Fellers pers. comm., M. Jennings pers. comm.). Additionally, there are no localities reported for this species in the Sierra National Forest (H. Eddinger pers. comm.).

The nearest historical records to the Project study area are 30 miles to the south near Minkler and 15 miles to the northwest in Willow Creek near O'Neals. The Minkler record is from 1916. CRLF are presumed extirpated at this site (M. Jennings pers. comm.), but no information exists on when they were last detected. The O'Neals records date back to 1951 with CRLF seen as late as 1968. The nearest known population of CRLF to the Project study area is in Mine Creek (near Mercey Hot Springs), approximately 90 miles to the west in the Coast Range of Fresno County. Jennings also reported CRLF in the San Joaquin Experimental Range and Miami Creek. Through personal communication with USDA-FS, Jennings has also reported sightings in Finegold Creek (Strand Pers. Com.). Refer to Appendix C for more detailed description of the literature review results.

#### 5.1.1 RECONNAISSANCE SURVEY

### GROUND AND HELICOPTER SURVEY RESULTS

Information was collected during ground surveys including: date, time, location, weather, upland habitat, riparian and emergent vegetation characteristics, habitat type (e.g., step pool, cascade, etc.), substrate (e.g., pebble, cobble, boulder, bedrock), qualitative water flow (e.g., still, low, moderate, high), approximate water depth, water temperature, and presence of any amphibians or reptiles. Refer to Appendix D for results.

GPS locations and photographs were provided to the Subgroup and CAWG for review on the compact disk titled *SCE Big Creek ALP Amphibian, Reptile, and Riparian Data*,

*February 2002 (Attachment 1), Version 1.0.* The original purpose of this survey was to determine presence of suitable amphibian habitat in the study area. However, habitat was difficult to identify on small tributaries because of overhanging canopy and access to the entire study area on the ground was not feasible due to access and time constraints. Therefore, this information was used as an overview of the study area, and the determination of habitat suitability was developed through the query.

#### 5.1.2 AMPHIBIAN AND REPTILE STREAM PHYSICAL HABITAT QUERY

Habitat suitability and stream segment quality for FYLF, MYLF, YT, and WPT are provided in Tables CAWG-8-13 through CAWG-8-16. Habitat suitability charts for each stream reach queried were prepared for the FYLF, MYLF, YT, and WPT and are provided in Appendices E through H.

#### 5.1.3 PRELIMINARY PHYSICAL HABITAT MAP

##### FOOTHILL YELLOW-LEGGED FROG

A potential stream physical habitat map was prepared for Project streams that occur in the elevational range of the FYLF (Figures CAWG-8-4a through c). This map is based on habitat usability and segment quality determined for each stream reach queried by the query (Table CAWG-8-13).

Segment quality is good for FYLF along the majority of the San Joaquin River, the upper portion of Jose Creek, the upper and lower portions of Stevenson Creek, and along the majority of Big Creek. Moderate quality occurs along a small stretch of the San Joaquin River below Mammoth Pool Dam, as well as at Rock Creek, upper Ross Creek, the majority of Adit 8 Creek, the upper portions of Ely Creek, middle portion of Stevenson Creek, lower portion of Jose Creek, and Big Creek upstream of the Balsam Creek confluence. Poor quality habitat occurs along lower Balsam Creek, middle and lower Ely Creek, upper Adit 8 Creek, and lower Ross and Rock Creeks.

##### MOUNTAIN YELLOW-LEGGED FROG

A potential stream physical habitat map was prepared for Project streams that occur in the elevational range of the MYLF (Figures CAWG-8-5a through c). This map is based on habitat usability and segment quality determined for each stream reach queried by the query (Table CAWG-8-14).

Segment habitat quality is good for MYLF along the majority of the South Fork San Joaquin River, excluding some portions of the Hoffman to Rattlesnake Crossing Reach. Good quality also occurs along the upper portions of Mono Creek, Bear Creek, the majority of Chinquapin Creek, the middle portion of Camp 61 Creek, Rancheria Creek, and a few small areas on the lower and upper portions of Stevenson Creek, lower North Fork Stevenson Creek, and Big Creek, near the Balsam Creek confluence. Moderate quality occurs along the middle and lower portions of Crater Creek, Camp 62 Creek, the middle portion of Bolsillo Creek, the upper portions of the West and East Forks of Camp 61 Creek, portions of the San Joaquin River from Hoffman to Rattlesnake Crossing, and

the majority of Big Creek, Pitman Creek, and Stevenson Creek. Poor quality occurs at Tombstone Creek, North and South Slide creeks, Hooper Creek, upper Chinquapin Creek, upper and lower Bolsillo Creek, lower Camp 61 Creek, Balsam Creek, North Fork Stevenson Creek, Adit 8 Creek, Ely Creek, and portions of upper Big Creek near Huntington Lake, lower Stevenson Creek near the San Joaquin River confluence, and a small section of the South Fork San Joaquin River in the middle of the Hoffman to Rattlesnake Crossing Reach.

#### YOSEMITE TOAD

A potential stream physical habitat map was prepared for Project streams that occur in the elevational range of the YT (Figures CAWG-8-6a through c). This map is based on habitat usability and segment quality determined for each stream reach by the query (Table CAWG-8-15).

Segment quality was good for YT along the middle portion of Mono Creek, Rancheria Creek, and several portions of the South Fork San Joaquin River, including the southern portion of the Hoffman to Rattlesnake Crossing Reach, the majority of the Rattlesnake Crossing to Mono Crossing Reach, the majority of the Mono Crossing to Bear Creek Reach, the southern half of the Bear Creek to Florence Lake Reach, and the lower portions of Tombstone Creek and Crater Creek. Moderate quality includes the majority of the upper portion of the Hoffman to Rattlesnake Crossing Reach, the lower and upper portions of Mono Creek, the lower portion of Bear Creek, the upper portion of Pitman Creek, and Big Creek from Pitman Creek to Balsam Creek. Poor quality occurs on Hooper Creek, North and South Slide creeks, the upper portions of Tombstone and Crater creeks, the majority of Chinquapin and Camp 62 creeks, lower Bolsillo Creek, Balsam Creek, and the North Fork of Stevenson Creek.

#### WESTERN POND TURTLE

A potential stream physical habitat map was prepared for Project streams that occur in the elevational range of the WPT (Figures CAWG-8-7a through c). This map is based on habitat usability and segment quality determined for each stream reach queried by the query (Table CAWG-8-16).

Segment quality was good for WPT in small portions of the San Joaquin River below Mammoth Pool Reservoir. Moderate quality exists along the remaining portions of the San Joaquin River, as well as along the middle portion of Big Creek, the upper portion of Stevenson Creek, and the middle portion of the North Fork Stevenson Creek. Poor quality occurs on Rock Creek, Ross Creek, Pitman Creek, Balsam Creek, Ely Creek, Adit 8 Creek, the lower portion of Stevenson Creek, the lower and upper portions of North Fork Stevenson Creek, and along Big Creek from the Pitman Creek confluence downstream to the Balsam Creek confluence. Poor habitat also occurs along the lower portion of Big Creek to its confluence with the San Joaquin River.

#### 5.1.4 FOCUSED AMPHIBIAN AND REPTILE SURVEYS

A total of nineteen streams and seven meadows were sampled within the Big Creek ALP study area during focused amphibian and reptile surveys (Figures CAWG-8-8a through c; CAWG-8-9a through c; CAWG-8-10a through c; CAWG-8-11a through c). The FYLF was observed during focused surveys in Jose Creek. The WPT was not detected during focused surveys, but incidental observations were made in Ross Creek, Stevenson Creek, and Jose Creek (a habitat verification creek) while conducting surveys for the FYLF. The MYLF and YT were not detected in streams sampled during focused surveys. There were no incidental observations of MYLF reported. YT was detected incidentally in Hell Hole Meadow. YT was also not detected during meadow surveys. A description of areas sampled for each species and results of focused surveys are provided below.

##### *Foothill Yellow-legged Frog*

A summary of sites sampled is provided in Table CAWG-8-17. Datasheets are provided in Appendix I, and photographs of streams sampled are provided in Appendix J. Eight sites proposed for sampling for the FYLF were not sampled because they were too hazardous or could not be accessed. Alternative sites were identified and approved by the Subgroup.

The distance sampled in some sites was less than the distance proposed to be sampled. Rock Creek (Above and Below Diversion) and the San Joaquin River (Mammoth Reach) were not sampled for at least 1,000 feet, as proposed. Rock Creek (Below Diversion) was too hazardous to survey near its confluence with the San Joaquin River and parts of this segment were not surveyed. The San Joaquin River (Mammoth Reach) was sampled for 730 feet until large pools with precipitous banks prevented surveyors from sampling further.

The FYLF was observed only in Jose Creek (Appendix K). Twelve individuals were detected, of which nine were adult and three were sub-adult. Additionally, two egg masses were found (Appendix K).

##### *Mountain Yellow-legged Frog*

A summary of sites sampled is provided in Table CAWG-8-18. Datasheets are provided in Appendix L, and photographs of streams sampled are provided in Appendix M. There was no deviation in the sample sites proposed to be sampled and those sampled in the field. The MYLF was not observed in any streams sampled.

##### *Yosemite Toad*

A summary of sites sampled is provided in Table CAWG-8-19. Datasheets are provided in Appendix N, and photographs of streams sampled are provided in Appendix O. There was no deviation in the sample sites proposed to be sampled and those sampled in the field. The YT was not observed in any streams or meadows sampled.

However, incidental sightings of YT were made in Hell Hole Meadow by fisheries biologists. Subadult YT were observed in isolated pools near Crater Creek on July 18, 2000. No other YT were observed in any of the other meadows in the study area.

### *Western Pond Turtle*

A summary of sites sampled is provided in Table CAWG-8-20. Datasheets are provided in Appendix P, and photographs of streams sampled are provided in Appendix Q. There was no deviation in the sample sites proposed to be sampled and those sampled in the field. The WPT was not observed in any of the streams sampled for the species.

However, incidental observations of WPT were made in Jose Creek, Ross Creek, and Stevenson Creek while conducting focused surveys for FYLF. Seventeen individuals were detected in Jose Creek (thirteen were adult and four were sub-adult). Most were observed basking on bedrock around mid-channel pools. A hatchling was detected in a side channel pool (Appendix K). Six individuals were observed in Ross Creek (five were adult and one was sub-adult). Most were observed basking on bedrock around mid-channel pools (Appendix K). One turtle was observed basking on a log in a mid-channel pool that was well shaded (Appendix K), and another was observed foraging in a shallow side channel pool. At Stevenson Creek, one adult and one sub-adult were found foraging in mid-channel pools. Other incidental observations of WPT by fisheries biologists were reported for three creeks in 2001 and 2002: Jose Creek, Stevenson Creek, and Camp 62 Creek. Three WPT were observed in Jose Creek on March 28, 2002, just upstream from the bridge that spans Jose Creek. This observation was made in the same segment where individuals were reported. WPT were reported in Stevenson Creek below Shaver Lake on July 25 and 26 of 2001. Another WPT was also reported in Camp 62 Creek below the diversion on July 31, 2001.

### *California Red-legged Frog*

California red-legged frogs were not observed while surveying for other special-status species. Refer to the site assessment (see Appendix C) for known occurrences in the region and the results of the site assessment.

### *Other Amphibians and Reptiles*

During focused surveys for special-status species, three common amphibians (Pacific treefrog (*Hyla regilla*), bullfrog (*Rana catesbeiana*), and California newt (*Taricha torosa*)) and three common snakes (western Aquatic garter snake (*Thamnophis couchii*), western terrestrial garter snake (*Thamnophis elegans*), and western rattlesnake (*Crotalus viridis*)) were detected. Refer to Table CAWG-8-21 for information regarding the locations where common amphibian and reptiles were identified. Each of these species, including locations observed, is described below.

The Pacific treefrog is widespread throughout the Pacific Northwest (Brattstrom and Warren 1955). This frog is highly variable in color and is much smaller than other frogs and toads in the region. It was the most common amphibian observed in the study area and was observed in the following creeks and meadows: Jose Creek, Stevenson Creek,

Ely Creek, Big Creek, Rock Creek, Ross Creek, San Joaquin River, Camp 62 Creek, Tombstone Creek, Hell Hole Meadow, Poison Meadow, Jackass Meadow, Mono Meadow, and at several unnamed meadows adjacent to Mono Hot Springs. The life history stage most often encountered was tadpoles, which were frequently found where breeding habitat existed in meadows or in side channel scour pools along streams.

The bullfrog was introduced into California in the 1800's from eastern and central North America (Storer 1925, Jennings and Hayes 1985). This large frog is a known predator of amphibians and has been implicated in the decline of native frogs throughout California (Moyle 1973). This species was found only in Jose Creek. One sub-adult and 41 tadpoles were found, all upstream of Jose Basin Road. All tadpoles were quite large and appeared to be approximately one year of age. The tadpoles were observed in the mid-channel pools in water approximately 1.5 feet deep.

The California newt, a salamander common in foothill streams along the western slope of the Sierra Nevada (Twitty 1942, Riemer 1958), was observed in Jose Creek. Two adults were observed foraging in a pool approximately two feet deep.

The western aquatic garter snake generally inhabits streams and rivers throughout the Sierra Nevada from the foothills to approximately 8,000 feet (Rossman et al. 1996, Stebbins 1985). This snake feeds primarily on amphibians and fish (Fitch 1941), and was generally present in streams that supported Pacific treefrogs and fish. It was the most common aquatic reptile observed while sampling. This species was present in the following creeks and meadows: Camp 62 Creek, San Joaquin River, Mono Creek, Big Creek, Stevenson Creek, Ross Creek, Jose Creek, Rock Creek, Jackass Meadow, Mono Meadow, and an unnamed meadow by Mono Hot Springs.

The western terrestrial garter snake is associated with perennial and intermittent bodies of water and ranges throughout California from sea level to 12,000 feet (Rossman et al. 1996). This garter snake has a general diet that includes amphibians (Fitch 1941). This species was observed in Crater Creek, Jackass Meadow, and Mono Meadow.

The western rattlesnake is common in the Sierra Nevada foothills. It is associated primarily with oak-woodland, grassland, and occasionally it is found in riparian habitats (Storer and Unsinger 1968). Although suitable habitat existed around most Project reaches, this snake was only observed along the South Fork San Joaquin River at an elevation of approximately 6,400 feet.

#### 5.1.5 QUERY VERIFICATION FOR FOOTHILL YELLOW-LEGGED FROG

Stream habitat suitability for FYLF as predicted by the query was compared with actual stream habitat conditions observed in the field during focused surveys in 2002 in an effort to evaluate the query results. Specifically, stream segment quality determined by the query in 2003 was compared to stream segment quality defined by surveyors in the field for those sites sampled in 2002 (Table CAWG-8-22). Surveyor-determined evaluations of stream segment quality were based on the availability of suitable habitat features incorporated into the query and known to be important to the species (e.g.,

substrate composition, canopy, cover, and habitat unit type), as well as general habitat suitability based on expert surveyor opinion. In instances where surveyed sites included more than one habitat quality segment, surveyor-determined habitat quality was delineated by segment.

In general, surveyor-determined stream segment quality was the same as habitat quality determined by the 2003 query (Table CAWG-8-22). Only four of 14 surveyed sites had differing quality ratings; in each case the surveyor-determined quality was moderate, while the query results indicated the segments provided good quality habitat. In two of these cases (Big Creek Dam 4 to PH 2 reach, R.M. 4.3–5.1 and San Joaquin River Mammoth Reach, R.M. 22.1–22.6), surveyors ranked the segment habitat quality as moderate due to the unusually large size of substrate material (house-sized boulders) and lack of interspersed smaller substrate sizes (gravel, cobble) combined with large, deep, mid-channel pools with little to no overbank areas. These types of details were not available in the Stream Habitat Database and therefore could not be incorporated into the query. Specifically, the query can only calculate habitat suitability based on the presence or absence of boulders and mid-channel pools, not their size, and it cannot evaluate the extent of overbank areas or channel bank slope. In the third and fourth surveyed sites with differing segment quality (Stevenson Creek below Shaver Lake Reach, R.M. 0.7–0.9 and 0.9–1.3), field surveyors felt that the overwhelming amount of woody debris in the channel combined with a large number of deep, narrow, mid-channel pools decreased the habitat usability for the FYLF despite the presence of suitable substrate and partially open canopy conditions. Because the query can only evaluate the presence or absence of loose woody debris, not the extent, the query results indicated this site provided good quality habitat, while surveyors felt it was only moderate.

### *California Red-legged Frog Site Assessment*

The study area was determined to be within the historic range of the CRLF, but not within the current range. With the exception of small sections in Chiquito Creek and Jose Creek, habitats within the study area were determined to be unsuitable to support California red-legged frogs. CRLF are not expected to occur in the study area because it lacks suitable habitat and because the study area is outside the species' current known range. Refer to the site assessment in Appendix C for additional information.

#### 5.1.6 FOOTHILL YELLOW-LEGGED FROG WATER TEMPERATURE MONITORING

In Jose Creek, water temperature at both paired monitoring stations exhibited a similar temperature profile during the monitoring period. The water temperature at the monitoring station near the confluence with the San Joaquin River recorded a minimum of  $-0.8^{\circ}\text{C}$  in January 2002 and a maximum of  $25.26^{\circ}\text{C}$  in November 2001 (Figures CAWG-8-12a and b). The water temperature at the monitoring station beneath the bridge on Canyon Road that spans Jose Creek recorded a minimum of  $0.1^{\circ}\text{C}$  in January and December 2002 and a maximum of  $22.66^{\circ}\text{C}$  in November 2001 (Figures CAWG-8-13a and b). The monitoring station beneath the bridge was sampled for FYLF on May 10, 2002. On this date, water temperatures ranged from  $8.87\text{--}13.04^{\circ}\text{C}$ . The

minimum value for the daily water temperature range was slightly lower than that reported for FYLF egg deposition by Zweifel (1955). However, this value was most likely recorded at night, when sampling did not occur. Daytime water temperature recorded by surveyors using a thermometer was 13.3° C, a value similar to the daytime maximum recorded by the water temperature gage and within the range reported for egg mass deposition.

Two egg masses were found in Jose Creek on May 10, 2002. Each egg mass was attached to a boulder at the downstream end of a pool in water approximately 12 inches deep. Water temperature was measured at 13.3° C using a thermometer. The diameter of one egg mass was three inches and the other was four inches. Both egg masses were estimated to be about one week old.

The water temperature at the monitoring station on Willow Creek by the bridge on Road 235 recorded a minimum of 2°C on February 1, 2002, and a maximum of 25°C and June 20, 2002 (Figures CAWG-8-14a and b). FYLF temperature range is about 7 to 21°C. Egg laying usually commences at about an average of 12°C, but the range is 9 to 21°C.



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## **TABLES**

**Table CAWG-8-1. Stream Physical Habitat Criteria for Special-status Amphibians and Reptiles, Revised 2003<sup>1</sup>**

Habitat Component		Species			
		Yosemite Toad	Foothill Yellow-legged Frog	Mountain Yellow-legged Frog	Western Pond Turtle
<b>Habitat</b>	<i>Cascade</i>				
	Cascade	0	1	0	1
	Bedrock sheet	0	1	0	1
	<i>Pool</i>				
	Main-channel pool	2	1	2	2
	Lateral scour pool	2	1	2	1
	Corner pool	2	1	2	1
	Secondary Channel pool	2	2	2	2
	Dammed pool	2	1	2	2
	Backwater pool	2	2	2	2
	Step pool	2	2	2	1
	Plunge pool	2	2	2	1
	Channel Confluence pool	2	2	2	1
	<i>Flatwater</i>				
	Pocket water	2	1	2	2
	Glide	2	1	2	2
	Run	2	1	2	2
	Step run	2	1	2	2
	Trench chute	2	1	2	2
	Edgewater	2	1	2	2
	<i>Riffle</i>				
	Low gradient riffle	1	2	1	0
	High gradient riffle	1	2	1	0

**Table CAWG-8-1. Stream Physical Habitat Criteria for Special-status Amphibians and Reptiles, Revised 2003<sup>1</sup> (continued)**

Habitat Component	<i>Additional unit designations</i>	Species			
		Yosemite Toad	Foothill Yellow-legged Frog	Mountain Yellow-legged Frog	Western Pond Turtle
	Dry	0	0	0	0
	Road crossing	0	0	0	0
	Conc. Box culvert	0	0	0	0
<b>Gradient</b>	0-5%	2	2	2	2
	> 5%	0	1	1	1
<b>Substrate<sup>2</sup></b>	0-30% Fines	1	See Table 2	See Table 2	0
	30.1-50% Fines	2	See Table 2	See Table 2	1
	> 50% Fines	2	See Table 2	See Table 2	2
<b>Cover</b>	Boulder/cobble	1	2	2	1
	Woody debris	2	2	1	2
	Root wads	1	2	1	2
	Aquatic vegetation	2	2	1	2
	Undercut banks	2	2	2	2
	Terrestrial vegetation	2	1	1	1
	No cover	0	1	0	0
<b>Canopy</b>	0-24.9%	2	1	2	2
	25-49.9%	2	2	1	2
	50-74.9%	1	1	1	1
	75-100%	1	0	0	0

<sup>1</sup>Rank classification: 3 (very good), 2 (good), 1 (moderate), 0 (poor), and NA (not applicable).

<sup>2</sup>See matrix (Table CAWG-8-2) for foothill yellow-legged frog and mountain yellow-legged frog substrate ranks.



**Table CAWG-8-2. Substrate Matrix for Foothill Yellow-legged Frog and Mountain Yellow-legged Frog<sup>1</sup>**

	<b>Fines</b>	<b>Sand</b>	<b>Gravel</b>	<b>Cobble</b>	<b>Boulder</b>	<b>Bedrock</b>
Fines		1	1	2	2	1
Sand	1		1	2	2	1
Gravel	1	1		3	3	1
Cobble	2	2	3		3	2
Boulder	2	2	3	3		2
Bedrock	1	1	1	2	2	

<sup>1</sup>If two elements of gravel, cobble, or boulder are present in any combination, then the rank is 3. If only one element of cobble or boulder is present in any combination, then the rank is 2. For all other combinations (including where 1 element comprises 100% of the substrate), the rank is 1.

**Table CAWG-8-3. Example of a Habitat Score Calculation****Mountain Yellow-legged Frog in Habitat Unit H00101 in Camp 61 Creek Below Portal Forebay**

<b>Variable</b>	<b>Field Data</b>	<b>Rank</b>	<b>Habitat Score</b>
Habitat	High gradient riffle	1	10
Gradient	5%	2	
Substrate	40% Boulder 40% Cobble	3	
Canopy	20%	2	
Cover	Boulder/Cobble	2	

**Yosemite Toad in Habitat Unit H00101 in Hooper Creek Below Diversion**

<b>Variable</b>	<b>Field Data</b>	<b>Rank</b>	<b>Habitat Score</b>
Habitat	Cascade	0	0
Gradient	25%	0	
Substrate	10% Sands 85% Boulder	1	
Canopy	30%	2	
Cover	Boulder/Cobble and Terrestrial Vegetation	2	

**Foothill Yellow-legged Frog in Habitat Unit H001001 in Ross Creek Below Diversion**

<b>Variable</b>	<b>Field Data</b>	<b>Rank</b>	<b>Habitat Score</b>
Habitat	Cascade	1	7
Gradient	30%	1	
Substrate	50% Boulder 50% Bedrock	2	
Canopy	50%	1	
Cover	Boulder/Cobble	2	

**Table CAWG-8-3. Example of a Habitat Score Calculations (continued)****Western Pond Turtle in Habitat Unit H001001 in Ross Creek Below Diversion**

<b>Variable</b>	<b>Field Data</b>	<b>Rank</b>	<b>Habitat Score</b>
Habitat	Cascade	1	5
Gradient	30%	1	
Substrate	50% Boulder 50% Bedrock	0	
Canopy	50%	1	
Cover	Boulder/Cobble	2	

**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
Adit 2 Creek		MYLF	0.00	—
Adit 2 Creek		YT	0.00	—
Adit 8 Creek	Below Diversion	FYLF	0.00	—
Adit 8 Creek	Below Diversion	MYLF	0.00	—
Adit 8 Creek	Below Diversion	WPT	0.00	—
Balsam Creek	Above Diversion	FYLF	0.00	—
Balsam Creek	Above Diversion	MYLF	0.00	—
Balsam Creek	Above Diversion	WPT	0.00	—
Balsam Creek	Above Diversion	YT	0.00	—
Balsam Creek	Below Diversion	FYLF	1.59	—
Balsam Creek	Below Diversion	MYLF	1.59	—
Balsam Creek	Below Diversion	WPT	1.59	—
Balsam Creek	Below Diversion	YT	0.00	—
Bear Creek	Above Diversion	MYLF	0.00	—
Bear Creek	Above Diversion	YT	0.00	—
Bear Creek	Below Diversion	MYLF	1.19	—
Bear Creek	Below Diversion	YT	2.38	—
Big Creek	Above Powerhouse 1	FYLF	6.25	—

**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species (continued)**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
Big Creek	Above Powerhouse 1	MYLF	0.00	—
Big Creek	Above Powerhouse 1	WPT	6.25	—
Big Creek	Below Huntington Lake	MYLF	0.0	-
Big Creek	Below Huntington Lake	YT	0.02	-
Big Creek	Powerhouse 2 to Dam 4	FYLF	1.99	—
Big Creek	Powerhouse 2 to Dam 4	MYLF	1.33	—
Big Creek	Powerhouse 2 to Dam 4	WPT	1.66	—
Big Creek	Powerhouse 8 to Dam 5	FYLF	0.83	—
Big Creek	Powerhouse 8 to Dam 5	WPT	0.83	—
Bolsillo Creek	Above Diversion	MYLF	0.00	—
Bolsillo Creek	Above Diversion	YT	0.00	—
Bolsillo Creek	Below Diversion	MYLF	1.35	—
Bolsillo Creek	Below Diversion	YT	1.35	—
Camp 61 Creek	Downstream of Portal Forebay	MYLF	0.00	—
Camp 61 Creek	Downstream of Portal Forebay	YT	1.33	—
Camp 62 Creek	Above Diversion	MYLF	0.00	—
Camp 62 Creek	Above Diversion	YT	0.00	—
Camp 62 Creek	Below Diversion	MYLF	1.96	—

**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species (continued)**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
Camp 62 Creek	Below Diversion	YT	1.96	–
Chinquapin Creek	Below Diversion	MYLF	1.64	–
Chinquapin Creek	Below Diversion	YT	1.64	–
Crater Creek	Above Diversion	MYLF	0.00	–
Crater Creek	Above Diversion	YT	25.00	1 of 4 habitat units has <70% substrate accounted for
Crater Creek	Below Diversion	MYLF	0.65	–
Crater Creek	Below Diversion	YT	0.65	–
Crater Creek Diversion Channel		MYLF	2.30	–
Crater Creek Diversion Channel		YT	4.60	–
East Fork Camp 61 Creek		MYLF	0.00	–
Ely Creek	Above Diversion	FYLF	33.33	3 of 4 habitat units has missing canopy data
Ely Creek	Above Diversion	MYLF	0.00	–
Ely Creek	Above Diversion	WPT	0.00	–
Ely Creek	Below Diversion	FYLF	0.00	–
Ely Creek	Below Diversion	MYLF	0.00	–
Ely Creek	Below Diversion	WPT	0.00	–

**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species (continued)**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
Hooper Creek	Above Diversion	MYLF	0.00	—
Hooper Creek	Above Diversion	YT	0.00	—
Hooper Creek	Below Diversion	MYLF	0.00	—
Hooper Creek	Below Diversion	YT	0.00	—
Jose Creek	Jose Creek Reach 1	FYLF	0.00	—
Jose Creek	Jose Creek Reach 2	FYLF	0.00	—
Jose Creek	Jose Creek Reach 3	FYLF	0.00	—
Mono Creek	Below Diversion	MYLF	0.75	—
Mono Creek	Below Diversion	YT	1.87	—
NF Stevenson Creek	Above Outlet	MYLF	0.00	—
NF Stevenson Creek	Above Outlet	WPT	6.90	—
NF Stevenson Creek	Above Outlet	YT	0.00	—
NF Stevenson Creek	Below Outlet	MYLF	1.90	—
NF Stevenson Creek	Below Outlet	WPT	1.90	—
NF Stevenson Creek	Below Outlet	YT	1.90	—
North Slide Creek		YT	0.00	—
Pitman Creek	Above Diversion	MYLF	0.00	—
Pitman Creek	Above Diversion	WPT	0.00	—

**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species (continued)**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
Pitman Creek	Above Diversion	YT	0.00	—
Pitman Creek	Below Diversion	MYLF	1.54	—
Pitman Creek	Below Diversion	WPT	1.54	—
Pitman Creek	Below Diversion	YT	1.54	—
Rancheria Creek	Above Diversion	MYLF	0.00	—
Rancheria Creek	Above Diversion	YT	0.00	—
Rancheria Creek	Below Diversion	MYLF	12.50	2 of 16 habitat units has <70% substrate accounted for
Rancheria Creek	Below Diversion	YT	12.50	2 of 16 habitat units has <70% substrate accounted for
Rock Creek	Above Diversion	FYLF	0.00	—
Rock Creek	Above Diversion	WPT	11.11	1 of 9 habitat units has <70% substrate accounted for
Rock Creek	Below Diversion	FYLF	0.00	—
Rock Creek	Below Diversion	WPT	0.00	—
Ross Creek	Above Diversion	FYLF	0.00	—
Ross Creek	Above Diversion	WPT	0.00	—
Ross Creek	Below Diversion	FYLF	0.00	—
Ross Creek	Below Diversion	WPT	0.00	—
San Joaquin River	Mammoth Reach	FYLF	0.64	—



**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species (continued)**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
San Joaquin River	Mammoth Reach	WPT	0.64	—
San Joaquin River	Stevenson Reach	FYLF	0.00	—
San Joaquin River	Stevenson Reach	WPT	0.00	—
SF San Joaquin River	Bear Creek to Florence Lake	MYLF	1.19	—
SF San Joaquin River	Bear Creek to Florence Lake	YT	4.76	—
SF San Joaquin River	Hoffman Creek to Rattlesnake Crossing	MYLF	0.86	—
SF San Joaquin River	Mono Crossing to Bear Creek	MYLF	0.65	—
SF San Joaquin River	Mono Crossing to Bear Creek	YT	0.65	—
SF San Joaquin River	Rattlesnake Crossing to Mono Crossing	MYLF	1.20	—
SF San Joaquin River	Rattlesnake Crossing to Mono Crossing	YT	1.81	—
South Slide Creek		MYLF	0.00	—
South Slide Creek		YT	0.00	—
Stevenson Creek	Below Shaver Lake	FYLF	6.67	—
Stevenson Creek	Below Shaver Lake	MYLF	1.57	—
Stevenson Creek	Below Shaver Lake	WPT	1.57	—
Tombstone Creek	Above Diversion	MYLF	0.00	—
Tombstone Creek	Above Diversion	YT	6.25	—

**Table CAWG-8-4. Percent of Habitat Scores with Null Values (Missing Data or Could Not Be Calculated) for Each Reach and Species (continued)**

Stream Name	Reach Name	Species*	Percent of Null Habitat Scores	Explanation of Percent Null Habitat Scores Over 10%
Tombstone Creek	Below Diversion	MYLF	0.00	—
Tombstone Creek	Below Diversion	YT	0.00	—
West Fork Camp 61 Creek	West Fork Camp 61 Creek	MYLF	0.00	—
West Fork Camp 61 Creek	West Fork Camp 61 Creek	YT	0.00	—

\*FYLF – foothill yellow-legged frog  
 MYLF – mountain yellow-legged frog  
 WPT – western pond turtle  
 YT – Yosemite toad

**Table CAWG-8-5. Weighted Mean and Corresponding Segment Quality**

Habitat Scores	Segment Quality		
	Poor	Moderate	Good
Weighted Mean	$x \leq 3.99$	$4.00 \leq x \leq 7.24$	$x \geq 7.25$

**Table CAWG-8-6. Sites Proposed to be Sampled for Foothill Yellow-legged Frog**

River/Creek	Reach	Segment Quality 2003 Query	Proposed River Miles to be Sampled <sup>1</sup>	Rosgen Level 1 Channel Type (Distance According to 2002 Query) <sup>2</sup>					
				Aa+	Aa+/A	A/B	B	B/G/F #1	B/G/F #3
Big Creek	Powerhouse 8 to Dam 5	Good	0.5-1.7			6,480-8,050			
Big Creek	Powerhouse 2 to Dam 4	Good/ Moderate	2.0-2.7			1,513-5,752			
Ely Creek	Below Diversion	Poor	0.7-1.0	1,921-4,852					
Jose Creek	Reach 1	Moderate	0.7-0.8			0-450			
Jose Creek	Reach 3	Good	1.9-2.1		0-1,031				
Rock Creek	Below Diversion	Poor/Moderate	0-0.3	0-1,699					
Rock Creek	Above Diversion	Moderate	0.5-0.7	0-1,151					
Ross Creek	Below Diversion	Poor	0.3-0.5	1,866-2,796					
San Joaquin River	Stevenson Reach	Good	12.8-13.0						7,925 -9,250
San Joaquin River	Stevenson Reach	Good	13.0-13.1						9,250 - 9.757
San Joaquin River	Mammoth Reach	Good	20.3-23.5					12,810-29,487	
San Joaquin River	Mammoth Reach	Good	26.4-26.5					45,012-45,272	
Stevenson Creek	Below Shaver Lake	Good	0.7-0.9		0-1,087				
Stevenson Creek	Below Shaver Lake	Good	0.9-1.5	1,087-4,118					
Stevenson Creek	Below Shaver Lake	Good/Moderate	2.6-3.6		10,329-14,596				

<sup>1</sup>River mile distances are illustrated on the geomorphology/hydrology map.

<sup>2</sup>Segment distance is based on distances measured by the fish field crew.

**Table CAWG-8-7a. Geomorphic Description of Stream Segments for the Foothill Yellow-legged Frog, Sorted by Segment Quality**

River/Creek	Reach	Distances	Segment Quality	Valley Width (ft)	Reach Slope (%)	Cumulat. Drainage Area (mi <sup>2</sup> )	Stream Order	Dom Geol. Proc.	Sub-Dom Geol. Proc.	Rosgen Level I
Balsam Creek	Below Diversion	1,058 - 1,505	Good	112	18	3.85	3	3	-	Aa+
Ely Creek	Above Diversion	0 - 485	Good	103	25	1.8	1	3	-	Aa+
Big Creek	Above PH 1	0 - 925	Good	109	19.3	78.3	4	1	3	Aa+
Big Creek	Dam 4-PH2	0 - 1,513	Good	60	6.4	131.1	5	3	-	A/B
Big Creek	Dam 4-PH2	5,752 - 6,670	Good	125	6.4	131.1	5	3	-	A/B
Big Creek	Dam 4-PH2	9,037 - 9,787	Good	155	6.4	131.1	5	3	-	A/B
Big Creek	Dam 4-PH2	12,322 - 14,062	Good	80	9.5	109.9	5	3	-	A/B
Big Creek	Dam 4-PH2	15,446 - 16,847	Good	75	9.5	109.9	5	3	-	A/B
Big Creek	Dam 5-PH 8	3,481 - 4,562	Good	200	6.5	131.06	5	3	-	A/B
Big Creek	Dam 5-PH 8	6,480 - 8,050	Good	185	6.5	127	5	3	-	A/B
Jose Creek	Jose Creek 1	450 - 1,936	Good	72	11.6	26.8	3	3	-	A/A+
Jose Creek	Jose Creek 3	0 - 1,031	Good	185	3.7	4.2	2	3	-	B/A/G
Stevenson Creek	Below Shaver L.	1,087 - 4,118	Good	73	46	34.97	3	3	-	Aa+
Stevenson Creek	Below Shaver L.	9,568 - 15,306	Good	146	11	32.79	3	3	-	Aa+/A
Stevenson Creek	Below Shaver L.	16,172 - 18,386	Good	92	10	30.88	3	3	-	Aa+/A
San Joaquin River	Below Dam 6	0 - 2,820	Good	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Below Dam 6	4,155 - 7,925	Good	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Below Dam 6	9,757 - 12,170	Good	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Below Mammoth Pool	0 - 9,956	Good	100	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Below Mammoth Pool	10,796 - 11,921	Good	125	2.2	-	6	3	1,4	B/G/F
San Joaquin River	Below Mammoth Pool	12,810 - 29,487	Good	140	1.6	-	6	1	2,3	B/G/F
San Joaquin River	Below Mammoth Pool	32,154 - 44,898	Good	140	1.6	-	6	1	2,3	B/G/F
Balsam Creek	Below Diversion	0 - 741	Moderate	39	18	3.85	3	3	-	Aa+
Balsam Creek	Above Diversion	0 - 1,850	Moderate	57	20	3.67	3	3	1	Aa+
Balsam Creek	Above Diversion	3,118 - 4,256	Moderate	40	20	3.67	3	3	1	Aa+
Ross Creek	Below Diversion	0 - 1,866	Moderate	115	26	6.49	2	3	-	Aa+
Adit 8 Creek	Below Diversion	1,784 - 2,463	Moderate	61	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	2,923 - 3,406	Moderate	62	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	3,721 - 4,247	Moderate	18	35	0.16	1	3	1	Aa+
Ely Creek	Below Diversion	0 - 1,921	Moderate	104	25	2.7	2	3	-	Aa+
Ely Creek	Above Diversion	485 - 1,350	Moderate	63	25	1.8	1	3	-	Aa+
Rock Creek	Below Diversion	0 - 1,699	Moderate	35	39	16.35	3	3	-	Aa+
Rock Creek	Above Diversion	0 - 1,151	Moderate	95	17	16.29	3	3	-	Aa+

**Table CAWG-8-7a. Geomorphic Description of Stream Segments for the Foothill Yellow-legged Frog, Sorted by Segment Quality (continued)**

River/Creek	Reach	Distances	Segment Quality	Valley Width (ft)	Reach Slope (%)	Cumulat. Drainage Area (mi <sup>2</sup> )	Stream Order	Dom Geol. Proc.	Sub-Dom Geol. Proc.	Rosgen Level I
Big Creek	Dam 4-PH2	1,513 - 5,752	Moderate	60	6.4	131.1	5	3	-	A/B
Big Creek	Dam 4-PH2	6,670 - 9,037	Moderate	90	6.4	131.1	5	3	-	A/B
Big Creek	Dam 4-PH2	9,787 - 12,322	Moderate	123	6.4	131.1	5	3	-	A/B
Big Creek	Dam 4-PH2	14,062 - 15,446	Moderate	133	9.5	109.9	5	3	-	A/B
Big Creek	Dam 4-PH2	16,847 - 20,007	Moderate	141	9.5	109.9	5	3	-	A/B
Big Creek	Dam 5-PH 8	0 - 3,481	Moderate	103	12	133.49	5	3	-	Aa+/A
Big Creek	Dam 5-PH 8	4,562 - 6,480	Moderate	59	6.5	131.06	5	3	-	A/B
Jose Creek	Jose Creek 1	0 - 450	Moderate	175	11.6	27.5	3	3	-	A/A+
Jose Creek	Jose Creek 2	0 - 560	Moderate	100	11.6	25.6	3	3	-	A/A+
Stevenson Creek	Below Shaver L.	0 - 1,087	Moderate	24	46	35.58	3	3	-	Aa+
Stevenson Creek	Below Shaver L.	4,118 - 9,568	Moderate	95	9	34.36	3	3	-	A/B
Stevenson Creek	Below Shaver L.	15,306 - 16,172	Moderate	370	5	31.08	3	3	-	Aa+/A
San Joaquin River	Below Dam 6	2,820 - 4,155	Moderate	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Below Dam 6	7,925 - 9,757	Moderate	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Below Mammoth Pool	9,956 - 10,796	Moderate	100	2.2	-	6	3	1,3	B/G/F
San Joaquin River	Below Mammoth Pool	11,921 - 12,810	Moderate	125	2.2	-	6	3	1,5	B/G/F
San Joaquin River	Below Mammoth Pool	29,487 - 32,154	Moderate	140	1.6	-	6	1	2,3	B/G/F
San Joaquin River	Below Mammoth Pool	44,898 - 45,272	Moderate	140	1.6	-	6	1	2,3	B/G/F
Balsam Creek	Below Diversion	741 - 1,058	Poor	39	18	3.85	3	3	-	Aa+
Balsam Creek	Above Diversion	1,850 - 3,118	Poor	28	20	3.67	3	3	1	Aa+
Ross Creek	Below Diversion	1,866 - 2,796	Poor	197	26	5.76	2	3	-	Aa+
Adit 8 Creek	Below Diversion	0 - 1,784	Poor	61	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	2,463 - 2,923	Poor	62	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	3,406 - 3,721	Poor	62	22	0.28	1	3	-	Aa+
Ely Creek	Below Diversion	1,921 - 4,852	Poor	48	25	1.92	1	3	-	Aa+

**Table CAWG-8-7b. Geomorphic Description of Stream Reach for the Foothill Yellow-legged Frog, Sorted by Reach**

River/ Creek	Reach	Distances	Segment Quality 2002 Query	Valley Width (ft)	Reach Slope (%)	Cum Drainage Area (mi2)	Stream Order	Dom Geol. Proc.	Sub-Dom Geol. Proc.	Rosgen Level I
Balsam Creek	Below Diversion	0 - 741	Moderate	39	18	3.85	3	3	-	Aa+
Balsam Creek	Below Diversion	741 - 1,058	Poor	39	18	3.85	3	3	-	Aa+
Balsam Creek	Below Diversion	1,058 - 1,505	Good	112	18	3.85	3	3	-	Aa+
Balsam Creek	Above Diversion	0 - 1,850	Moderate	57	20	3.67	3	3	1	Aa+
Balsam Creek	Above Diversion	1,850 - 3,118	Poor	28	20	3.67	3	3	1	Aa+
Balsam Creek	Above Diversion	3,118 - 4,256	Moderate	40	20	3.67	3	3	1	Aa+
Ross Creek	Below Diversion	0 - 1,866	Moderate	115	26	6.49	2	3	-	Aa+
Ross Creek	Below Diversion	1,866 - 2,796	Poor	197	26	5.76	2	3	-	Aa+
Adit 8 Creek	Below Diversion	0 - 1,784	Poor	61	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	1,784 - 2,463	Moderate	61	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	2,463 - 2,923	Poor	62	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	2,923 - 3,406	Moderate	62	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	3,406 - 3,721	Poor	62	22	0.28	1	3	-	Aa+
Adit 8 Creek	Below Diversion	3,721 - 4,247	Moderate	18	35	0.16	1	3	1	Aa+
Ely Creek	Below Diversion	0 - 1,921	Moderate	104	25	2.7	2	3	-	Aa+
Ely Creek	Below Diversion	1,921 - 4,852	Poor	48	25	1.92	1	3	-	Aa+
Ely Creek	Above Diversion	0 - 485	Good	103	25	1.8	1	3	-	Aa+
Ely Creek	Above Diversion	485 - 1,350	Moderate	63	25	1.8	1	3	-	Aa+
Rock Creek	Below Diversion	0 - 1,699	Moderate	35	39	16.35	3	3	-	Aa+
Rock Creek	Above Diversion	0 - 1,151	Moderate	95	17	16.29	3	3	-	Aa+
Big Creek	Above PH 1	0 - 925	Good	109	19.3	78.3	4	1	3	Aa+
Big Creek	PH2-Dam 4	0 - 1,513	Good	60	6.4	131.1	5	3	-	A/B
Big Creek	PH2-Dam 4	1,513 - 5,752	Moderate	60	6.4	131.1	5	3	-	A/B
Big Creek	PH2-Dam 4	5,752 - 6,670	Good	125	6.4	131.1	5	3	-	A/B
Big Creek	PH2-Dam 4	6,670 - 9,037	Moderate	90	6.4	131.1	5	3	-	A/B
Big Creek	PH2-Dam 4	9,037 - 9,787	Good	155	6.4	131.1	5	3	-	A/B
Big Creek	PH2-Dam 4	9,787 - 12,322	Moderate	123	6.4	131.1	5	3	-	A/B
Big Creek	PH2-Dam 4	12,322 - 14,062	Good	80	9.5	109.9	5	3	-	A/B
Big Creek	PH2-Dam 4	14,062 - 15,446	Moderate	133	9.5	109.9	5	3	-	A/B
Big Creek	PH2-Dam 4	15,446 - 16,847	Good	75	9.5	109.9	5	3	-	A/B
Big Creek	PH2-Dam 4	16,847 - 20,007	Moderate	141	9.5	109.9	5	3	-	A/B

**Table CAWG-8-7b. Geomorphic Description of Stream Reach for the Foothill Yellow-legged Frog, Sorted by Reach (continued)**

River/ Creek	Reach	Distances	Segment Quality 2002 Query	Valley Width (ft)	Reach Slope (%)	Cum Drainage Area (mi <sup>2</sup> )	Stream Order	Dom Geol. Proc.	Sub-Dom Geol. Proc.	Rosgen Level I
Big Creek	PH 8-Dam 5	0 - 3,481	Moderate	103	12	133.49	5	3	-	Aa+/A
Big Creek	PH 8-Dam 5	3,481 - 4,562	Good	200	6.5	131.06	5	3	-	A/B
Big Creek	PH 8-Dam 5	4,562 - 6,480	Moderate	59	6.5	131.06	5	3	-	A/B
Big Creek	PH 8-Dam 5	6,480 - 8,050	Good	185	6.5	127	5	3	-	A/B
Jose Creek	Jose Creek 1	0 - 450	Moderate	175	11.6	27.5	3	3	-	A/A+
Jose Creek	Jose Creek 1	450 - 1,936	Good	72	11.6	26.8	3	3	-	A/A+
Jose Creek	Jose Creek 2	0 - 560	Moderate	100	11.6	25.6	3	3	-	A/A+
Jose Creek	Jose Creek 3	0 - 1,031	Good	185	3.7	4.2	2	3	-	B/A/G
Stevenson Creek	Below Shaver L.	0 - 1,087	Moderate	24	46	35.58	3	3	-	Aa+
Stevenson Creek	Below Shaver L.	1,087 - 4,118	Good	73	46	34.97	3	3	-	Aa+
Stevenson Creek	Below Shaver L.	4,118 - 9,568	Moderate	95	9	34.36	3	3	-	A/B
Stevenson Creek	Below Shaver L.	9,568 - 15,306	Good	146	11	32.79	3	3	-	Aa+/A
Stevenson Creek	Below Shaver L.	15,306 - 16,172	Moderate	370	5	31.08	3	3	-	Aa+/A
Stevenson Creek	Below Shaver L.	16,172 - 18,386	Good	92	10	30.88	3	3	-	Aa+/A
San Joaquin River	Stevenson Reach	0 - 2,820	Good	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Stevenson Reach	2,820 - 4,155	Moderate	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Stevenson Reach	4,155 - 7,925	Good	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Stevenson Reach	7,925 - 9,757	Moderate	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Stevenson Reach	9,757 - 12,170	Good	75	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Mammoth Reach	0 - 9,956	Good	100	2.2	-	6	3	1,2	B/G/F
San Joaquin River	Mammoth Reach	9,956 - 10,796	Moderate	100	2.2	-	6	3	1,3	B/G/F
San Joaquin River	Mammoth Reach	10,796 - 11,921	Good	125	2.2	-	6	3	1,4	B/G/F
San Joaquin River	Mammoth Reach	11,921 - 12,810	Moderate	125	2.2	-	6	3	1,5	B/G/F
San Joaquin River	Mammoth Reach	12,810 - 29,487	Good	140	1.6	-	6	1	2,3	B/G/F
San Joaquin River	Mammoth Reach	29,487 - 32,154	Moderate	140	1.6	-	6	1	2,3	B/G/F
San Joaquin River	Mammoth Reach	32,154 - 44,898	Good	140	1.6	-	6	1	2,3	B/G/F
San Joaquin River	Mammoth Reach	44,898 - 45,272	Moderate	140	1.6	-	6	1	2,3	B/G/F



**Table CAWG-8-8. Sites Proposed to be Sampled for Mountain Yellow-legged Frog**

River/Creek	Reach	Segment (ft.) <sup>1</sup>	Proposed River Miles to be Sampled <sup>2</sup>	Segment Quality 2003 Query	Approx. Elev. (ft.)
Bear Creek	Below Diversion	7,349 - 8,349	1.4 - 1.5	Good	7,300
Big Creek	Above Powerhouse 1	0 – 925	6.3 – 6.5	Moderate	5,000
Big Creek	Below Huntington Lake	7,204 - 8,126	7.7 – 7.9	Moderate	6,500
Big Creek	Below Huntington Lake	8,126 - 9,126	7.9 – 8.1	Moderate	6,600
Bolsillo Creek	Below Diversion	6,300 - 6,800	1.2 - 1.3	Moderate	7,400
Bolsillo Creek	Below Diversion	6,800 - 7,800	1.3 - 1.5	Moderate	7,300
Camp 61 Creek	Below Portal Forebay	5,718 - 6,718	0.9 - 1.1	Good	6,800
Camp 61 Creek	Below Portal Forebay	6,718 - 7,718	1.1 - 1.3	Good/ Moderate	6,900
Camp 62 Creek	Below Diversion	2,905 - 3,905	0.5 – 0.7	Good	6,800
Chinquapin Creek	Below Diversion	1,837 - 2,837	0.3 – 0.5	Good	7,200
Crater Creek	Below Diversion	0 - 1,000	0.0 – 0.2	Good	6,800
Mono Creek	Below Diversion	5,596 - 6,596	1.0 - 1.2	Good	6,500
North Fork Stevenson Creek	Below Outlet Reach	3,624 - 4,224	1.6 – 2.0	Good	6,400
North Slide Creek	Below Diversion	0 - 1,000	0.0 – 0.2	Poor	7,300
South Fork San Joaquin River	Rattlesnake Crossing to Mono Crossing	2,090 - 3,090	12.0 – 12.2	Moderate/ Poor	6,100
South Fork San Joaquin River	Mono Crossing to Bear Creek	181 – 1926	17.8 – 18.2	Good	6,500
South Fork San Joaquin River	Bear Creek to Florence Lake	12,083 – 13,083	24.5 - 25.0	Good	6,800
South Fork San Joaquin River	Bear Creek to Florence Lake	13,083 – 14,083	25.0 - 25.1	Good	7,100
South Slide Creek	Below Diversion	0 – 1,000	0.0 – 0.2	Poor	7,300
Tombstone Creek	Below Diversion	0 - 1,475	0.0 – 0.3	Moderate	7,100
Tombstone Creek	Below Diversion	1,475 - 3,281	0.3 – 0.6	Good/ Moderate	7,100
Tombstone Creek	Below Diversion	3,281 - 4,281	0.6 – 0.8	Good/ Poor	7,200

<sup>1</sup>Segment distance is based on distances measured by the fish field crew.

<sup>2</sup>River mile distances are illustrated on the geomorphology/hydrology map.

**Table CAWG-8-9. Sites Proposed to be Sampled for Yosemite Toad**

River/Creek	Reach	Segment (ft.) <sup>1</sup>	Proposed River Miles to be Sampled <sup>2</sup>	Segment Quality 2003 Query	Elev. (ft.)
Big Creek	Below Huntington Lake	3,377 – 4,885	8.1 – 8.4	Good	6,600
Crater Creek	Below Diversion	1,072 – 2,323	0.2 – 0.4	Good	6,800
Mono Creek	Below Diversion	11,455 – 12,388	2.2 - 2.3	Moderate	6,700
South Fork San Joaquin River	Bear to Florence	8,761 – 9,761	23.9 – 24.1	Good	6,700
Tombstone Creek	Below Diversion	0 - 1,117	0.0 – 0.2	Good	7,100
Tombstone Creek	Below Diversion	3,961 – 4,961	0.7 – 0.9	Poor	7,200

<sup>1</sup>Segment distance is based on distances measured by the fish field crew.

<sup>2</sup>River mile distances are illustrated on the geomorphology/hydrology map.

**Table CAWG-8-10. Meadows Proposed to be Sampled for Yosemite Toad**

<b>Meadow</b>	<b>Location</b>	<b>Approx. Elev. (ft.)</b>
Jackass Meadow <sup>1</sup>	Near Florence Lake Dam	7,100
Poison Meadow	Below Confluence of Crater Creek with SF San Joaquin River	6,700
Hell Hole Meadow	Above Confluence of Crater Creek with SF San Joaquin River	6,800
Unnamed Meadow <sup>2</sup>	Adjacent to Mono Hot Springs	6,600
Mono Meadow <sup>3</sup>	Adjacent to Mono Creek near Tule Lake	6,700
Unnamed Meadow	Adjacent to Portal Forebay	7,100
Balsam Meadow	Adjacent to Balsam Forebay	6,700
Unnamed meadows <sup>4</sup>	Near Big Creek between Huntington Lake and Powerhouse 1	6,500
Unnamed meadow <sup>5</sup>	Adjacent to Mono Creek near Mono Crossing	6,700

<sup>1</sup>Jackass Meadow is a complex of several adjacent meadows, each meadow was sampled and data was listed on a single survey form for Jackass Meadow.

<sup>2</sup>Several unnamed meadows occur around Mono Hot Springs, each meadow was sampled and data was listed on a single survey form.

<sup>3</sup>Several unnamed meadows are adjacent to Mono Meadow, each meadow was sampled and data was included with the survey form for Mono Meadow.

<sup>4</sup>Two unnamed meadows along Big Creek (between Huntington Lake and above Powerhouse 1) were designated by the Subgroup to be sampled, but surveyors determined that these meadows were overgrown with alders (*Alnus* spp.), and the level of detectability was too low to be considered an effective search. Alternate sites were not selected.

<sup>5</sup>This site was not sampled because it was dry and heavily grazed with little vegetation present and did not resemble a meadow. An alternate site was not selected.

**Table CAWG-8-11. Sites Proposed to be Sampled for Western Pond Turtle**

River/Creek	Reach	Segment (ft.) <sup>1</sup>	Proposed River Miles to be Sampled <sup>2</sup>	Segment Quality 2003 Query	Elev. (ft.)
Big Creek	Powerhouse 8 to Dam 5	100 – 1,100	0 – 0.2	Moderate	2,300
Big Creek	Powerhouse 2 to Dam 4	19,007 – 20,007	5.3 – 5.5	Moderate	4,400
North Fork Stevenson	Below Outlet Reach	0 – 1,000	1.0 – 1.2	Poor	5,600
Pitman Creek	Below Diversion	0 – 1,000	0 – 0.2	Moderate	5,100
San Joaquin River	Mammoth Reach	44,272 – 45,272	26.3 – 26.5	Moderate	3,000

<sup>1</sup>Segment distance is based on distances measured by the fish field crew.

<sup>2</sup>River mile distances are illustrated on the geomorphology/hydrology map.

**Table CAWG-8-12. Potential Distribution of Special-status Amphibians and Reptiles in the Study Area**

Streams	Species (Elevation)			
	Yosemite Toad (6,400-11,300 feet)	Foothill Yellow-legged Frog (0-5,000 feet)	Mountain Yellow-legged Frog (4,500-12,000 feet)	Western Pond Turtle (0-6,000 feet)
Adit 8 Creek		x	x	x
Balsam Creek	x	x	x	x
Balsam Meadow Forebay	x		x	
Bear Creek	x		x	
Big Creek	x	x	x	x
Bolsillo Creek	x		x	
Camp 61 Creek	x		x	
Camp 61 East Creek	x		x	
Camp 61 West Creek	x		x	
Camp 62 Creek	x		x	
Chinquapin Creek	x		x	
Crater Creek	x		x	
Crater Creek Diversion Channel	x		x	
Ely Creek		x	x	x
Florence Lake	x		x	
Hooper Creek	x		x	
Huntington Lake	x		x	
Lake Edison	x		x	
Mammoth Pool		x		x
Mono Creek	x		x	
North Fork Stevenson	x		x	x
North Slide Creek	x		x	
Pitman Creek	x	x	x	x
Portal Forebay	x		x	
Rancheria Creek	x		x	
Rock Creek		x		x
Ross Creek		x		x
San Joaquin River		x		x
Shaver Lake			x	x
South Fork San Joaquin River	x	x	x	x
South Slide Creek	x		x	
Stevenson Creek		x	x	x
Tombstone Creek	x		x	
Warm Creek	x		x	

**Table CAWG-8-13. Habitat Suitability of Stream Segments for the Foothill Yellow-legged Frog  
Sorted by Stream**

River/Creek	Reach	Distance (feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
Adit 8 Creek	Below Diversion	1,784 - 2,890	0.3 - 0.5	1.64	Poor
Adit 8 Creek	Below Diversion	2,890 - 4,247	0.5 - 0.7	4.80	Moderate
Balsam Creek	Above Diversion	0 - 1,505	0.7 - 1.1	5.72	Moderate
Balsam Creek	Below Diversion	0 - 2,077	0.0 - 0.4	5.70	Moderate
Balsam Creek	Below Diversion	2,077 - 4,256	0.4 - 0.7	3.57	Poor
Big Creek	Powerhouse 8 to Dam 5	0 - 8,050	0 - 1.7	7.90	Good
Big Creek	Above Powerhouse 1	0 - 828	6.3 - 6.5	8.81	Good
Big Creek	Powerhouse 2 to Dam 4	0 - 1,659	1.7 - 2.0	9.15	Good
Big Creek	Powerhouse 2 to Dam 4	1,659 - 2,835	2.0 - 2.2	7.08	Moderate
Big Creek	Powerhouse 2 to Dam 4	2,835 - 17,523	2.2 - 5.0	7.88	Good
Big Creek	Powerhouse 2 to Dam 4	17,523 - 18,443	5.0 - 5.2	6.87	Moderate
Big Creek	Powerhouse 2 to Dam 4	18,443 - 22,420	5.2 - 6.2	8.16	Good
Ely Creek	Below Diversion	1,109 - 5,961	0.2 - 1.1	1.82	Poor
Ely Creek	Above Diversion	0 - 1,350	1.1 - 1.3	4.90	Moderate
Jose Creek	Reach 1	0 - 1,936	0.7 - 0.9	7.21	Moderate
Jose Creek	Reach 2	0 - 560	0.9 - 1.0	6.09	Moderate
Jose Creek	Reach 3	0 - 1,031	1.9 - 2.1	8.33	Good
Rock Creek	Below Diversion	0 - 1,690	0.0 - 0.3	2.84	Poor
Rock Creek	Below Diversion	1,690 - 2,699	0.3 - 0.5	5.72	Moderate
Rock Creek	Above Diversion	0 - 1,151	0.5 - 0.7	6.06	Moderate
Ross Creek	Above Diversion	0 - 961	0.8 - 1.0	6.77	Moderate
Ross Creek	Below Diversion	0 - 1,404	0 - 0.3	6.55	Moderate
Ross Creek	Below Diversion	1,404 - 2,796	0.3 - 0.5	2.63	Poor
San Joaquin River	Mammoth Reach	0 - 30,349	17.9 - 23.5	8.59	Good
San Joaquin River	Mammoth Reach	30,349 - 32,214	23.5 - 23.9	7.00	Moderate
San Joaquin River	Mammoth Reach	32,214 - 45,272	23.9 - 26.5	8.44	Good
San Joaquin River	Stevenson Reach	0 - 26,011	11.3 - 16.2	8.26	Good
Stevenson Creek	Below Shaver Lake	3,626 - 7,509	0.7 - 1.4	7.98	Good
Stevenson Creek	Below Shaver Lake	7,509 - 16,403	1.4 - 3.1	7.07	Moderate
Stevenson Creek	Below Shaver Lake	16,403 - 21,712	3.1 - 4.3	8.10	Good

**Table CAWG-8-14. Habitat Suitability of Stream Segments for the Mountain Yellow-legged Frog Sorted by Stream**

River/Creek	Reach	Distance (Feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
Adit 2 Creek		0 - 4,527	0 - 0.9	6.28	Moderate
Adit 8 Creek	Below Diversion	1,784 - 4,247	0.3 - 0.7	1.96	Poor
Balsam Creek	Above Diversion	0 - 1,505	0.7 - 1.1	4.16	Moderate
Balsam Creek	Below Diversion	0 - 4,256	0 - 0.7	3.72	Poor
Bear Creek	Below Diversion	0 - 8,349	0 - 1.5	9.99	Good
Bear Creek	Above Diversion	0 - 1,556	1.5 - 1.8	9.33	Good
Big Creek	Above Powerhouse 1	0 - 925	6.3 - 6.5	7.12	Moderate
Big Creek	Below Huntington Lake	7,573 - 1,6762	7.7 - 9.4	4.13	Moderate
Big Creek	Below Huntington Lake	16,762 - 18,230	9.4 - 9.7	3.37	Poor
Big Creek	Below Huntington Lake	18,230 - 19,085	9.7 - 9.9	5.76	Moderate
Big Creek	Powerhouse 2 to Dam 4	0 - 1,659	1.7 - 2.0	9.49	Good
Big Creek	Powerhouse 2 to Dam 4	1,659 - 3,036	2.0 - 2.2	2.27	Poor
Big Creek	Powerhouse 2 to Dam 4	3,036 - 18,443	2.2 - 5.0	6.92	Moderate
Big Creek	Powerhouse 2 to Dam 4	18,443 - 20,151	5.0 - 5.3	9.58	Good
Big Creek	Powerhouse 2 to Dam 4	20,151 - 22,975	5.3 - 6.2	4.84	Moderate
Bolsillo Creek	Above Diversion	0 - 1,506	1.6 - 2.0	4.90	Moderate
Bolsillo Creek	Below Diversion	0 - 3,431	0 - 0.7	0.48	Poor
Bolsillo Creek	Below Diversion	3,431 - 9,204	0.7 - 1.6	5.55	Moderate
Camp 61 Creek	Below Portal Forebay	0 - 1,608	0 - 0.3	6.29	Moderate
Camp 61 Creek	Below Portal Forebay	1,608 - 2,695	0.3 - 0.5	0.00	Poor
Camp 61 Creek	Below Portal Forebay	2,695 - 7,689	0.5 - 1.3	8.85	Good
Camp 61 Creek	Below Portal Forebay	7,689 - 10,538	1.3 - 2.0	6.03	Moderate
Camp 62 Creek	Above Diversion	0 - 1,515	1.4 - 1.7	4.49	Moderate
Camp 62 Creek	Below Diversion	0 - 5,556	0 - 1.0	8.50	Good
Camp 62 Creek	Below Diversion	5,556 - 7,610	1.0 - 1.4	6.18	Moderate
Chinquapin Creek	Below Diversion	0 - 4,095	0 - 0.7	9.50	Good
Chinquapin Creek	Below Diversion	4,095 - 4,970	0.7 - 0.8	2.28	Poor
Crater Creek	Below Diversion	0 - 2,782	0 - 0.5	8.67	Good
Crater Creek	Below Diversion	2,782 - 4,471	0.5 - 0.8	4.65	Moderate
Crater Creek	Below Diversion	4,471 - 6,235	0.8 - 1.1	8.95	Good
Crater Creek	Below Diversion	6,235 - 12,137	1.1 - 2.3	5.27	Moderate
Crater Creek	Below Diversion	12,137 - 17,902	2.3 - 2.9	2.91	Poor

**Table CAWG-8-14. Habitat Suitability of Stream Segments for the Mountain Yellow-legged Frog Sorted by Stream (continued)**

River/Creek	Reach	Distance (Feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
Crater Creek	Above Diversion	1,058 - 1,515	3.1 - 3.2	2.35	Poor
Crater Creek Diversion Reach		0 - 4,339	0.7 - 1.5	5.66	Moderate
Crater Creek Diversion Reach		4,339 - 9,100	1.5 - 2.2	1.01	Poor
East Fork Camp 61 Creek		0 - 1,440	0 - 0.3	4.10	Moderate
Ely Creek	Below Diversion	1,109 - 5,961	0.2 - 1.1	1.77	Poor
Ely Creek	Above Diversion	0 - 1,350	1.1 - 1.3	0.72	Poor
Hooper Creek	Above Diversion	0 - 1,025	0.8 - 1.0	1.13	Poor
Hooper Creek	Below Diversion	0 - 4,167	0 - 0.8	1.93	Poor
Mono Creek	Below Diversion	0 - 4,748	0 - 0.9	4.61	Moderate
Mono Creek	Below Diversion	4,748 - 10,171	0.9 - 1.9	9.55	Good
Mono Creek	Below Diversion	10,171 - 13,124	1.9 - 2.5	6.03	Moderate
Mono Creek	Below Diversion	13,124 - 31,660	2.5 - 5.8	7.94	Good
North Slide Creek	Below Diversion	0 - 1,951	0 - 0.4	1.16	Poor
North Fork Stevenson Creek	Above Outlet Reach	0 - 1,400	3.6 - 3.9	2.16	Poor
North Fork Stevenson Creek	Below Outlet Reach	0 - 3,624	1.0 - 1.6	3.13	Poor
North Fork Stevenson Creek	Below Outlet Reach	3,624 - 10,077	1.6 - 1.9	8.80	Good
North Fork Stevenson Creek	Below Outlet Reach	10,077 - 14,442	1.9 - 3.6	3.98	Poor
Pitman Creek	Above Diversion	0 - 1,506	1.6 - 2.0	7.78	Good
Pitman Creek	Below Diversion	0 - 2,882	0 - 0.5	6.06	Moderate
Pitman Creek	Below Diversion	2,882 - 4,672	0.5 - 0.8	0.00	Poor
Pitman Creek	Below Diversion	4,672 - 6,202	0.8 - 1.6	6.91	Moderate
Rancheria Creek	Above Surge Chamber	0 - 1,510	2.1 - 2.5	7.97	Good
Rancheria Creek	Below Surge Chamber	0 - 2,012	1.9 - 2.1	6.54	Moderate
South Fork San Joaquin River	Mono X to Bear Creek	0 - 24,614	17.8 - 22.3	9.99	Good
South Fork San Joaquin River	Rattlesnake X to Mono X	0 - 2,538	11.8 - 12.1	0.00	Poor
South Fork San Joaquin River	Rattlesnake X to Mono X	2,538 - 8,126	12.1 - 12.9	5.05	Moderate
South Fork San Joaquin River	Rattlesnake X to Mono X	8,126 - 32,431	12.9 - 17.8	8.88	Good
South Fork San Joaquin River	Bear Creek to Florence Lake	0 - 34,327	22.3 - 28.0	9.22	Good
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	0 - 10,396	7.6 - 9.3	7.11	Moderate
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	10,396 - 13,964	9.3 - 10.1	9.37	Good
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	13,964 - 16,532	10.1 - 10.6	6.20	Moderate
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	16,532 - 22,189	10.6 - 11.8	8.51	Good



**Table CAWG-8-14. Habitat Suitability of Stream Segments for the Mountain Yellow-legged Frog Sorted by Stream (continued)**

River/Creek	Reach	Distance (Feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
South Slide Creek	Below Diversion	0 - 1,741	0 - 0.3	3.43	Poor
Stevenson Creek	Below Shaver Lake	3,326 - 4,436	0.7 - 0.8	0.33	Poor
Stevenson Creek	Below Shaver Lake	4,436 - 6,149	0.8 - 1.2	6.78	Moderate
Stevenson Creek	Below Shaver Lake	6,149 - 7,509	1.2 - 1.4	8.93	Good
Stevenson Creek	Below Shaver Lake	7,509 - 8,847	1.4 - 1.7	1.89	Poor
Stevenson Creek	Below Shaver Lake	8,847 - 15,905	1.7 - 3.0	4.35	Moderate
Stevenson Creek	Below Shaver Lake	15,905 - 18,661	3.0 - 3.5	9.38	Good
Stevenson Creek	Below Shaver Lake	1,8661 - 21,712	3.5 - 4.3	6.58	Moderate
Tombstone Creek	Above Diversion	0 - 1,535	1.2 - 1.5	3.11	Poor
Tombstone Creek	Below Diversion	0 - 1,900	0 - 0.3	4.85	Moderate
Tombstone Creek	Below Diversion	1,900 - 3,767	0.3 - 0.6	8.36	Good
Tombstone Creek	Below Diversion	3,767 - 6,464	0.6 - 1.2	3.51	Poor
West Fork Camp 61 Creek		0 - 1,515	0 - 0.3	4.92	Moderate

\*Habitat suitability could not be calculated for the following reaches: Chinquapin Creek above the diversion due to only one mesohabitat unit measured.

**Table CAWG-8-15. Habitat Suitability of Stream Segments for the Yosemite Toad Sorted by Stream**

River/Creek	Reach	Distance (Feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
Adit 2 Creek		0 - 4,527	0 - 0.9	0.92	Poor
Balsam Creek	Above Diversion	0 - 1,505	0.7 - 1.1	1.86	Poor
Balsam Creek	Below Diversion	0 - 4,256	0.0 - 0.7	1.78	Poor
Bear Creek	Below Diversion	0 - 8,349	0 - 1.5	5.33	Moderate
Bear Creek	Above Diversion	0 - 1,556	1.5 - 1.8	6.38	Moderate
Big Creek	Below Huntington Lake	7,573 - 9,365	7.7-8.0	6.41	Moderate
Big Creek	Below Huntington Lake	9,365 - 12,401	8.0 - 8.6	8.18	Good
Big Creek	Below Huntington Lake	12,401 - 19,085	8.6-9.9	6.92	Moderate
Bolsillo Creek	Above Diversion	0 - 1,506	1.6 - 2.0	5.14	Moderate
Bolsillo Creek	Below Diversion	0 - 5,248	0 - 0.9	3.67	Poor
Bolsillo Creek	Below Diversion	5,248 - 8,164	0.9 - 1.5	6.72	Moderate
Bolsillo Creek	Below Diversion	8,164 - 9,204	1.5 - 1.6	0.57	Poor
Camp 61 Creek	Below Portal Forebay	0 - 1,468	0 - 0.3	1.18	Poor
Camp 61 Creek	Below Portal Forebay	1,468 - 4,133	0.3 - 0.8	8.01	Good
Camp 61 Creek	Below Portal Forebay	4,133 - 5,490	0.8 - 1.0	3.55	Poor
Camp 61 Creek	Below Portal Forebay	5,490 - 10,538	1.0 - 2.0	7.59	Good
Camp 62 Creek	Above Diversion	0 - 1,515	1.4 - 1.7	1.72	Poor
Camp 62 Creek	Below Diversion	0 - 3,309	0 - 0.6	2.27	Poor
Camp 62 Creek	Below Diversion	3,309 - 4,471	0.6 - 0.8	8.44	Good
Camp 62 Creek	Below Diversion	4,471 - 7,610	0.8 - 1.4	3.37	Poor
Chinquapin Creek	Below Diversion	0 - 3,013	0 - 0.5	5.97	Moderate
Chinquapin Creek	Below Diversion	3,013 - 4,970	0.5 - 0.8	2.41	Poor
Crater Creek	Below Diversion	0 - 2,782	0 - 0.5	8.10	Good
Crater Creek	Below Diversion	2,782 - 17,902	0.5 - 2.9	1.23	Poor
Crater Creek	Above Diversion	1,058 - 1,491	3.1 - 3.2	0.00	Poor
Crater Creek Diversion		0 - 1,863	0.7-1.0	6.01	Moderate
Crater Creek Diversion		1,863 - 9,100	1.0-2.2	0.10	Poor
East Fork Camp 61 Creek		0 - 1,440	0 - 0.3	2.48	Poor
Hooper Creek	Above Diversion	0 - 1,025	0.8 - 1.0	0.47	Poor
Hooper Creek	Below Diversion	0 - 4,167	0 - 0.8	0.84	Poor
Mono Creek	Below Diversion	0 - 13,124	0 - 2.5	5.85	Moderate

**Table CAWG-8-15. Habitat Suitability of Stream Segments for the Yosemite Toad Sorted by Stream (continued)**

River/Creek	Reach	Distance (Feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
Mono Creek	Below Diversion	13,124 - 24,059	2.5 - 4.5	8.12	Good
Mono Creek	Below Diversion	24,059 - 31,660	4.5 - 5.8	7.22	Moderate
North Slide Creek	Below Diversion	0 - 1,951	0 - 0.4	0.07	Poor
North Fork Stevenson Creek	Above Outlet Reach	0 - 1,400	3.6 - 3.9	1.62	Poor
North Fork Stevenson Creek	Below Outlet Reach	0 - 4,031	1.0-1.6	3.40	Poor
North Fork Stevenson Creek	Below Outlet Reach	4,031 - 6,523	1.6 - 2.2	8.70	Good
North Fork Stevenson Creek	Below Outlet Reach	6,523 - 14,442	2.2 - 3.6	1.91	Poor
Pitman Creek	Above Diversion	0 - 1,506	1.6 - 2.0	4.82	Moderate
Pitman Creek	Below Diversion	0 - 6,202	0 - 1.6	1.32	Poor
Rancheria Creek	Above Surge Chamber	0 - 1,510	2.1 - 2.5	7.94	Good
Rancheria Creek	Below Surge Chamber	0 - 2,012	1.9 - 2.1	7.47	Good
South Fork San Joaquin River	Mono Crossing to Bear Creek	0 - 24,614	17.8-22.3	8.49	Good
South Fork San Joaquin River	Rattlesnake X to Mono X	0 - 2,538	11.8-12.2	0.00	Poor
South Fork San Joaquin River	Rattlesnake X to Mono X	2,538 - 8,126	12.2 - 13.1	4.90	Moderate
South Fork San Joaquin River	Rattlesnake X to Mono X	8,126 - 32,431	13.1 - 17.8	7.82	Good
South Fork San Joaquin River	Bear Creek to Florence Lake	0 - 8,126	22.3-23.8	6.90	Moderate
South Fork San Joaquin River	Bear Creek to Florence Lake	8,126 -10,014	23.8 - 24.2	8.73	Good
South Fork San Joaquin River	Bear Creek to Florence Lake	1,0014 - 13,220	24.2 - 24.8	2.81	Poor
South Fork San Joaquin River	Bear Creek to Florence Lake	13,220 - 34,327	24.8 - 28.0	8.39	Good
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	0 - 7,370	7.6-9.0	5.19	Moderate
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	7,370 - 8,810	9.0 - 9.2	8.80	Good
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	8,810 - 10,396	9.2 - 9.5	5.99	Moderate
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	10,396 - 12,804	9.5 - 10.0	8.85	Good
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	12,804 - 16,532	10.0 - 10.7	6.09	Moderate
South Fork San Joaquin River	Hoffman Creek to Rattlesnake	16,532 - 22,189	10.7 - 11.8	7.75	Good
South Slide Creek	Below Diversion	0 - 1,741	0 - 0.3	0.09	Poor
Tombstone Creek	Above Diversion	0 - 1,535	1.2 - 1.5	0.30	Poor
Tombstone Creek	Below Diversion	0 - 3,961	0 - 0.7	9.15	Good
Tombstone Creek	Below Diversion	3,961 - 6,464	0.7 - 1.2	0.63	Poor
West Fork Camp 61 Creek		0 - 1,515	0 - 0.3	2.19	Poor

\*Habitat suitability could not be calculated for the following reaches: Chinquapin Creek above the diversion due to only one mesohabitat unit measured.

**Table CAWG-8-16. Habitat Suitability of Stream Segments for the Western Pond Turtle Sorted by Stream**

River/Creek	Reach	Distance (Feet)	River Mile	Total Habitat Scores	
				Wt Mean	Quality
Adit 8 Creek	Below Diversion	1,784 - 4,247	0.3 - 0.7	1.42	Poor
Balsam Creek	Below Diversion	0 - 4,256	0.0 - 0.7	1.75	Poor
Balsam Creek	Above Diversion	0 - 1,505	0.7 - 1.1	2.73	Poor
Big Creek	Above Powerhouse 1	0 - 828	6.3 - 6.5	6.36	Moderate
Big Creek	Powerhouse 2 to Dam 4	0 - 3,036	1.7 - 2.2	3.45	Poor
Big Creek	Powerhouse 2 to Dam 4	3,036 - 22,420	2.2 - 6.2	5.25	Moderate
Big Creek	Powerhouse 8 to Dam 5	0 - 1,262	0.0 - 0.2	5.05	Moderate
Big Creek	Powerhouse 8 to Dam 5	1,262 - 6,546	0.2 - 1.2	3.36	Poor
Big Creek	Powerhouse 8 to Dam 5	6,546 - 8,050	1.2 - 1.7	5.62	Moderate
Ely Creek	Above Diversion	0 - 1,350	1.1 - 1.3	2.36	Poor
Ely Creek	Below Diversion	1,109 - 5,961	0.2 - 1.1	1.11	Poor
North Fork Stevenson Creek	Above Outlet Reach	0 - 1,400	3.6 - 3.9	1.95	Poor
North Fork Stevenson Creek	Below Outlet Reach	0 - 3,624	1.0 - 1.6	2.21	Poor
North Fork Stevenson Creek	Below Outlet Reach	3,624 - 11,473	1.6 - 3.1	5.89	Moderate
North Fork Stevenson Creek	Below Outlet Reach	11,473 - 14,442	3.1 - 3.6	2.31	Poor
Pitman Creek	Above Diversion	0 - 1,506	1.6 - 2.0	5.50	Moderate
Pitman Creek	Below Diversion	0 - 1,751	0 - 0.3	4.61	Moderate
Pitman Creek	Below Diversion	1,751 - 6,202	0.3 - 1.6	3.03	Poor
Rock Creek	Above Diversion	0 - 1,151	0.5 - 0.7	3.38	Poor
Rock Creek	Below Diversion	0 - 2,699	0.3 - 0.5	1.66	Poor
Ross Creek	Above Diversion	0 - 961	0.8 - 1.0	4.27	Moderate
Ross Creek	Below Diversion	0 - 1,404	0 - 0.2	4.37	Moderate
Ross Creek	Below Diversion	1,404 - 2,796	0.2 - 0.5	2.21	Poor
San Joaquin River	Mammoth Reach	0 - 23,219	17.9 - 22.0	5.53	Moderate
San Joaquin River	Mammoth Reach	23,219 - 25,544	22.0 - 22.7	7.37	Good
San Joaquin River	Mammoth Reach	25,544 - 29,487	22.7 - 23.4	5.81	Moderate
San Joaquin River	Mammoth Reach	29,487 - 32,154	23.4 - 23.7	7.43	Good
San Joaquin River	Mammoth Reach	32,154 - 45,272	23.7 - 26.5	5.89	Moderate
San Joaquin River	Stevenson Reach	0 - 17,335	11.3 - 14.5	5.93	Moderate
San Joaquin River	Stevenson Reach	17,335 - 18,669	14.5 - 14.8	2.02	Poor
San Joaquin River	Stevenson Reach	18,669 - 26,011	14.8 - 16.2	5.25	Moderate
Stevenson Creek	Below Shaver Lake	3,553 - 10,087	0.7 - 1.9	2.27	Poor
Stevenson Creek	Below Shaver Lake	10,087 - 21,712	1.9 - 4.3	4.49	Moderate

**Table CAWG-8-17. Distances Sampled for Foothill Yellow-legged Frog in 2002**

River/Creek	Reach	Proposed Distance (ft) to be Sampled	Proposed River Miles to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
Big Creek	Powerhouse 8 to Dam 5	6,480 – 8,050	0.5 – 1.7	Good	1,985	0.5 – 0.7	Good
Big Creek	Powerhouse 2 to Dam 4	1,513 – 5,752	2.0 – 2.7	Good/Moderate	2,278	4.3 – 5.1	Good
Big Creek	Powerhouse 2 to Dam 4	NA	NA <sup>2</sup>	NA	2,640	1.9 – 2.4	Good/Moderate
Big Creek	Powerhouse 2 to Dam 4	NA	NA	NA	990	4.1 – 4.3	Good
Ely Creek	Above Diversion	NA	NA	NA	660	1.1 – 1.2	Moderate
Ely Creek	Below Diversion	1,921 – 4,852	0.7 – 1.0	Poor	1,269	0.8 – 1.1	Poor
Jose Creek	Reach 1	0 – 450	0.7 – 0.8	Good	2,538	0.9 – 1.4	Moderate
Jose Creek	Reach 3	0 – 1,031	1.9 – 2.1	Moderate	2,232	1.6 – 2.1	Good
Rock Creek	Below Diversion	0 – 1,699	0.0 – 0.3	Poor/Moderate	890	0.3 – 0.5	Poor/Moderate
Rock Creek	Above Diversion	0 – 1,151	0.5 – 0.7	Moderate	882	0.5 – 0.8	Moderate

**Table CAWG-8-17. Distances Sampled for Foothill Yellow-legged Frog in 2002 (continued)**

River/Creek	Reach	Proposed Distance (ft) to be Sampled	Proposed River Miles to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
Ross Creek	Below Diversion	1,866 – 2796	0.3 – 0.5	Poor	2,168	0.5 – 0.9	Not Rated
San Joaquin River	Stevenson Reach	7,925 – 9,250	12.8 – 13.0	Good	0	NA	NA
San Joaquin River	Stevenson Reach	9,250 – 9,757	13.0 – 13.1	Good	730	18.2 – 18.4 <sup>3</sup>	Good
San Joaquin River	Mammoth Reach	12,810 – 29,487	20.3 – 23.5	Good	NA	NA	NA
San Joaquin River	Mammoth Reach	45,012 – 45,272	26.4 – 26.5	Good	2,421	22.1 – 22.6	Good
Stevenson Creek	Below Shaver Lake	0 – 1,087	0.7 – 0.9	Good	1,056	0.7 – 0.9	Good
Stevenson Creek	Below Shaver Lake	1,087 – 4,118	0.9 – 1.5	Good	2,058	0.9 – 1.3	Good
Stevenson Creek	Below Shaver Lake	10,329 – 14,596	2.6 – 3.6	Moderate/Good	4,665	2.3 – 3.3	Moderate/Good

<sup>1</sup>Rock Creek (Below Diversion) was too hazardous to survey near its confluence with the San Joaquin River and parts of this segment were not surveyed. San Joaquin River (Mammoth Reach) was sampled for 730 feet until large pools prevented surveyors from sampling further.

<sup>2</sup>San Joaquin River RM 12.8-13.0 could not be sampled. No alternate site was selected. One additional site was sampled on Big Creek between Powerhouse 2 and Dam 4 (RM 1.9-2.4).

<sup>3</sup>This alternate site is located on the Mammoth Reach of the San Joaquin River.

**Table CAWG-8-18. Distances Sampled for Mountain Yellow-legged Frog in 2002**

River/Creek	Reach	Proposed Distance (ft) to be Sampled	Proposed River Miles to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
Bear Creek	Below Diversion	7,349 - 8,349	1.4 - 1.5	Moderate	1,087	1.4 – 1.5	Good
Big Creek	Above Powerhouse 1	0 – 925	6.3 – 6.5	Moderate	732	6.3 – 6.5	Moderate
Big Creek	Below Huntington Lake	7,204 - 8,126	7.7 – 7.9	Moderate	894	8.4 – 8.6	Moderate
Big Creek	Below Huntington Lake	8,126 - 9,126	7.9 – 8.1	Poor	1,137	8.2 – 8.3	Moderate
Bolsillo Creek	Below Diversion	6,300 - 6,800	1.2 - 1.3	Moderate	878	1.2 – 1.3	Moderate
Bolsillo Creek	Below Diversion	6,800 - 7,800	1.3 - 1.5	Poor	1,603	1.3 – 1.5	Moderate
Camp 61 Creek	Below Portal Forebay	5,718 - 6,718	0.9 – 1.1	Good	1,095	1.1 – 1.3	Good
Camp 61 Creek	Below Portal Forebay	6,718 - 7,718	1.1 – 1.3	Moderate	1,102	1.3 – 1.5	Good/Moderate

**Table CAWG-8-18. Distances Sampled for Mountain Yellow-legged Frog in 2002 (continued)**

River/Creek	Reach	Proposed Distance (ft) to be Sampled	Proposed River Miles to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
Camp 62 Creek	Below Diversion	2,905 - 3,905	0.5 – 0.7	Moderate	768	0.5 – 0.7	Good
Chinquapin Creek	Below Diversion	1,837 - 2,837	0.3 – 0.5	Good	2,415	0.0 – 0.5	Good
Crater Creek	Below Diversion	0 - 1,000	0.0 – 0.2	Good	893	0.0 – 0.5	Good
Mono Creek	Below Diversion	5,596 - 6,596	1.0 – 1.2	Good	1,694	1.0 – 1.2	Good
North Fork Stevenson	Below Outlet Reach	3,624 - 4,224	1.6 – 2.0	Good	1,349	2.9 – 3.3	Good
North Slide Creek	Below Diversion	0 - 1,000	0.0 – 0.2	Poor	1,234	0.0 – 0.2	Poor
Pitman Creek	Below Diversion	Not proposed	Not proposed	Not proposed	1,659	0.0 – 0.2	Moderate
South Fork San Joaquin River	Rattlesnake Crossing to Mono Crossing	2,090 - 3,090	12.0 – 12.2	Moderate	1,814	14.1 – 14.3	Moderate/Poor



**Table CAWG-8-18. Distances Sampled for Mountain Yellow-legged Frog in 2002 (continued)**

River/Creek	Reach	Proposed Distance (ft) to be Sampled	Proposed River Miles to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
South Fork San Joaquin River	Mono Crossing to Bear Creek	181 – 1926	17.8 – 18.2	Good	1,764	17.8 – 18.2	Good
South Fork San Joaquin River	Bear Creek to Florence Lake	12,083 – 13,083	24.5 – 25.0	Poor	2,274	23.5 – 23.4	Good
South Fork San Joaquin River	Bear Creek to Florence Lake	13,083 - 14,083	25.0 – 25.1	Good	2,876	24.0 – 24.6	Good
South Slide Creek	Below Diversion	0 – 1,000	0.0 – 0.2	Poor	1,082	0.0 – 0.2	Poor
Tombstone Creek	Below Diversion	0 - 1,475	0.0 – 0.3	Moderate	1,475	0.0 – 0.3	Moderate
Tombstone Creek	Below Diversion	1,475 - 3,281	0.3 – 0.6	Good	1,806	0.3 – 0.6	Good/Moderate
Tombstone Creek	Below Diversion	3,281 - 4,281	0.6 – 0.8	Poor	1,000	0.6 – 0.8	Good/Poor

<sup>1</sup>The distance sampled in Big Creek (Above Powerhouse 1 and Below Huntington Lake), Camp 62 Creek (Below Diversion), and Crater Creek (Below Diversion) was less than the distance proposed to be sampled. Big Creek (Above Powerhouse 1) was not sampled for the entire 925 feet proposed because it was too hazardous to survey after sampling 732 feet. Big Creek (Below Huntington Lake), Camp 62 Creek (Below Diversion) and Crater Creek (Below Diversion) were thought to have been sampled for the entire 1,000 feet proposed, but were not. All other segments were sampled beyond the distance proposed.

**Table CAWG-8-19. Distances Sampled for Yosemite Toad in 2002**

River/Creek	Reach	Proposed Distance to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Proposed River Miles to be Sampled	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
Big Creek	Below Huntington Lake	3,377 – 4,885	Moderate	8.1 – 8.4	1,673	8.4 – 8.7	Good
Crater Creek	Below Diversion	1,072 – 2,323	Moderate	0.2 – 0.4	2,528	0.0 – 0.5	Good
Mono Creek	Below Diversion	11,455 – 12,388	Poor	2.2 – 2.3	1,812	2.3 – 2.8	Moderate
South Fork San Joaquin River	Bear Creek to Florence Lake	8,761 – 9,761	Moderate	23.9 – 24.1	2,180	23.3 – 23.5	Moderate
Tombstone Creek	Below Diversion	0 – 1,117	Moderate	0.0 – 0.2	1,179	0.0 – 0.2	Good
Tombstone Creek	Below Diversion	3,961 – 4,961	Poor	0.7 – 0.9	1,415	0.7 – 0.9	Poor

<sup>1</sup>All segments were sampled beyond the distance proposed to be sampled.

**Table CAWG-8-20. Distances Sampled for Western Pond Turtle in 2002**

River/Creek	Reach	Proposed Distance (ft) to be Sampled	Proposed River Miles to be Sampled	Quality of Site Proposed to be Sampled 2002 Query	Distance (ft) Sampled <sup>1</sup>	River Miles Sampled	Quality of Site Sampled 2003 Query
Big Creek	Powerhouse 8 to Dam 5	100 – 1,100	0.0 – 0.2	Poor	1,117	0.0 – 0.2	Moderate
Big Creek	Powerhouse 2 to Dam 4	19,007 – 20,007	5.3 – 5.5	Moderate	1,617	5.2 – 5.4	Moderate
North Fork Stevenson	Below Outlet Reach	0 – 1,000	1.0 – 1.2	Poor	1,953	1.0 – 1.2	Poor
Pitman Creek	Below Diversion	0 – 1,000	0.0 – 0.2	Poor	1,028	0.0 – 0.3	Moderate
San Joaquin River	Mammoth Reach	44,272 – 45,272	26.3 – 26.5	Moderate	1,368	26.2 – 26.3	Moderate

<sup>1</sup>All segments were sampled beyond the distance proposed to be sampled.

**Table CAWG-8-21. Sampling Results for Fish, Amphibians, and Reptiles in Summer 2002**

Site	Elevation Range Sampled (feet)	Special-Status Amphibians and Reptiles					Non-Status Amphibians and Reptiles					Fish Trout spp.	
		Foothill Yellow-legged Frog	Mountain Yellow-legged Frog	California Red-legged Frog	Yosemite Toad	Western Pond Turtle	Bullfrog	Pacific Tree Frog	California Newt	Western Terrestrial Garter Snake	Western Aquatic Garter Snake		Western Rattle-snake
Bolsillo Creek	7,300-7,500												X
North Slide Creek	7,100-7,400												
South Slide Creek	7,100-7,400												
Bear Creek	7,200-7,300												X
Chinquapin Creek	7,100-7,300												X
Tombstone Creek	7,100-7,200							X					X
San Joaquin River and South Fork San Joaquin River	2,100-7,200							X			X	X	X
Camp 61 Creek	6,800-6,900												X
Camp 62 Creek	6,800-6,900							X			X		X
Crater Creek	6,800-6,900									X			X

**Table CAWG-8-21. Sampling Results for Fish, Amphibians, and Reptiles in Summer 2002 (continued)**

Site	Elevation Range Sampled (feet)	Special-Status Amphibians and Reptiles					Non-Status Amphibians and Reptiles					Fish	
		Foothill Yellow-legged Frog	Mountain Yellow-legged Frog	California Red-legged Frog	Yosemite Toad	Western Pond Turtle	Bullfrog	Pacific Tree Frog	California Newt	Western Terrestrial Garter Snake	Western Aquatic Garter Snake	Western Rattle-Snake	Trout spp.
Mono Creek	6,500-6,700										X		X
Big Creek	2,300-6,600							X				X	X
NF Stevenson	5,400-6,400												X
Pitman Creek	5,000-5,200												X
Ely Creek	4,800-5,200							X					X
Stevenson Creek	3,400-4,600					X		X				X	X
Ross Creek	3,000-3,400					X		X				X	
Jose Creek	2,600-3,000	X				X	X	X				X	X
Rock Creek	2,400-3,000							X				X	X
Jackass Meadow	7,100							X		X		X	
Portal Meadow	7,100												
Hell Hole Meadow	6,800							X					

**Table CAWG-8-21. Sampling Results for Fish, Amphibians, and Reptiles in Summer 2002 (continued)**

Site	Elevation Range Sampled (feet)	Special-Status Amphibians and Reptiles					Non-Status Amphibians and Reptiles					Fish	
		Foothill Yellow-legged Frog	Mountain Yellow-legged Frog	California Red-legged Frog	Yosemite Toad	Western Pond Turtle	Bullfrog	Pacific Tree Frog	California Newt	Western Terrestrial Garter Snake	Western Aquatic Garter Snake	Western Rattle-Snake	Trout spp.
Poison Meadow	6,700						X						
Mono Meadow	6,700						X		X	X			
Balsam Meadow	6,700												
Unnamed Meadow	6,600						X			X			

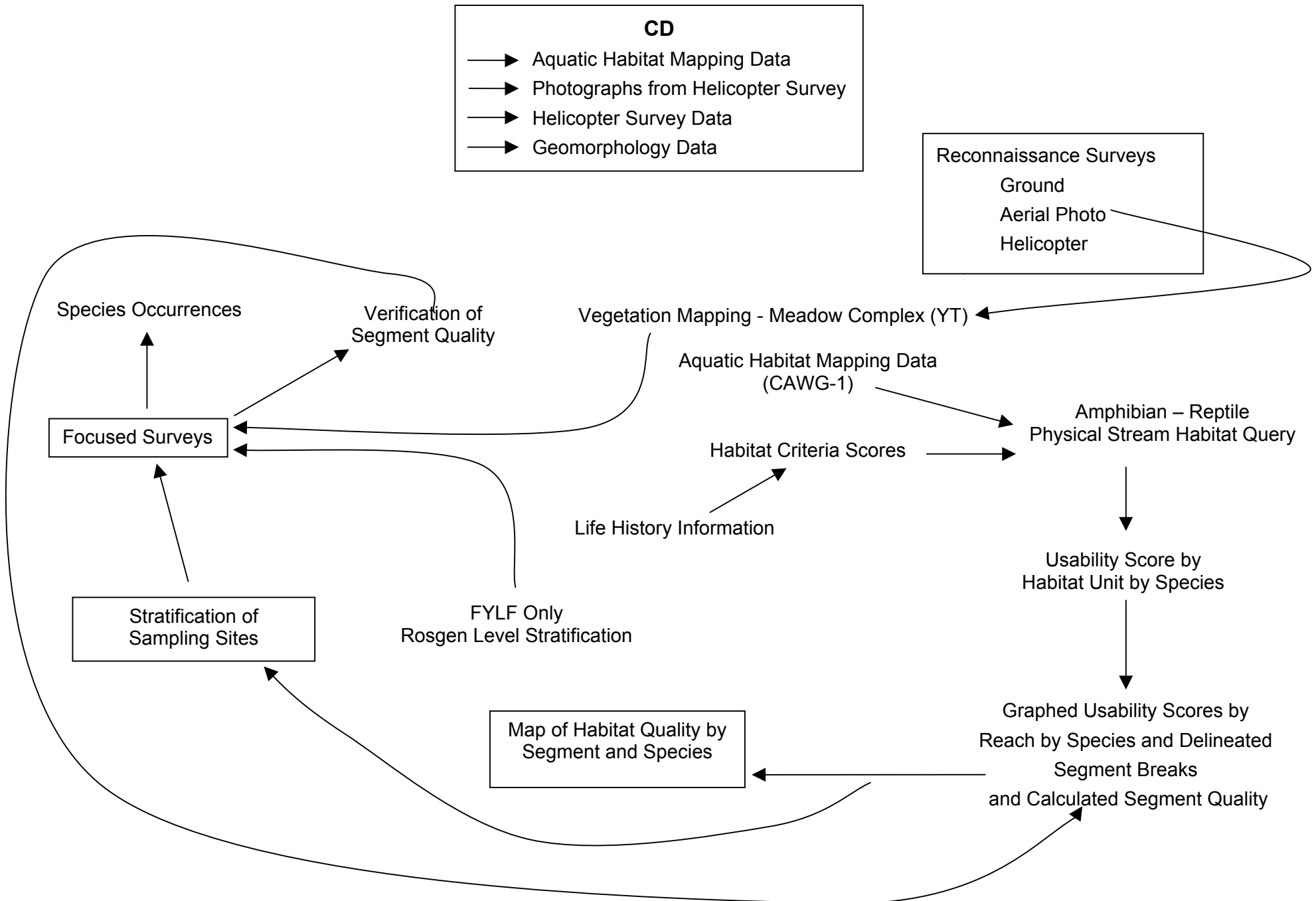
**Table CAWG-8-22. Query Verification for Foothill Yellow-legged Frog in 2002**

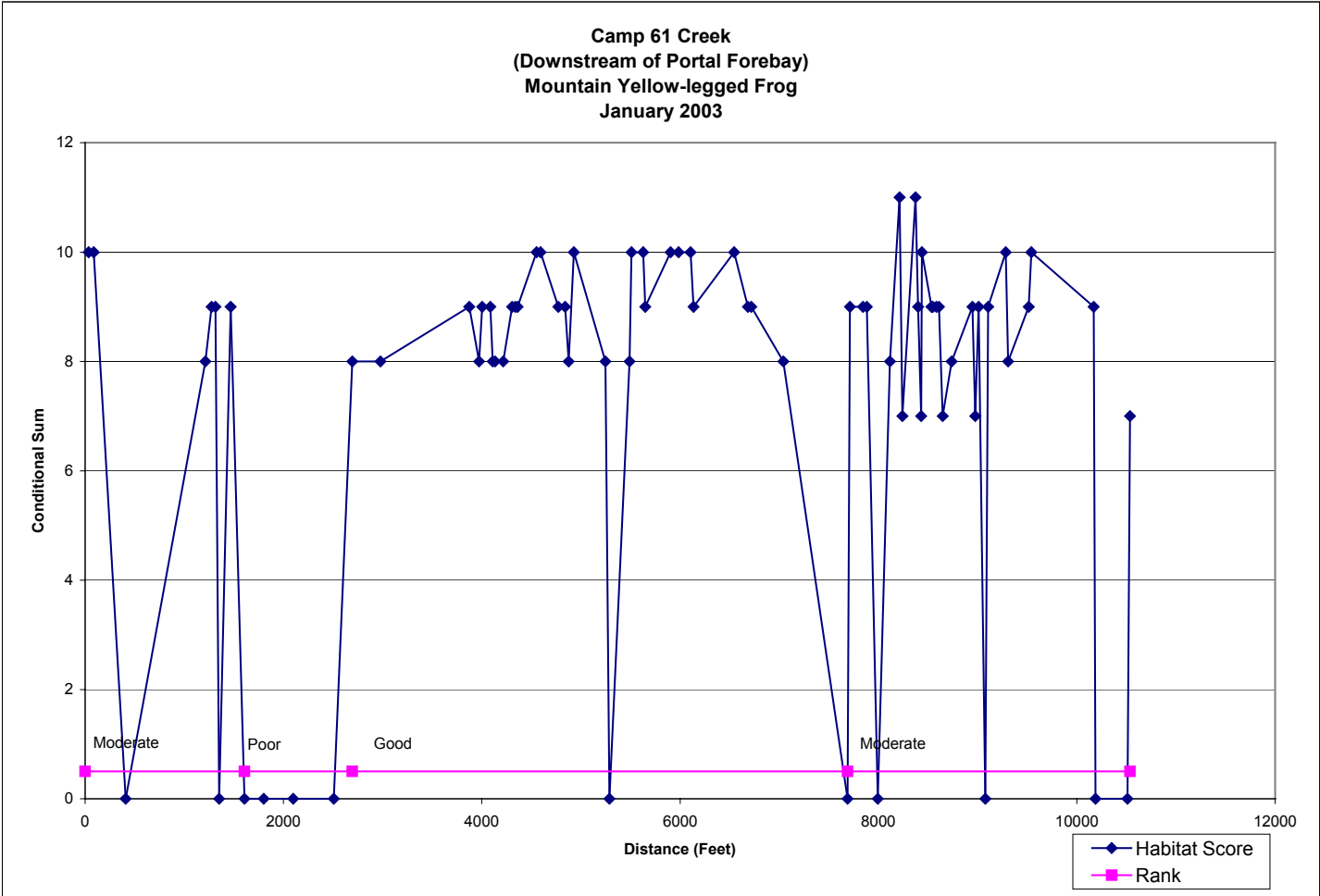
<b>River/Creek</b>	<b>Reach</b>	<b>Distance (ft) Sampled<sup>1</sup></b>	<b>River Miles Sampled</b>	<b>Quality of Site Sampled 2003 Query</b>	<b>Quality of Site Surveyor Determination</b>
Big Creek	Powerhouse 8 to Dam 5	1,985	0.5 – 0.7	Good	Good
Big Creek	Powerhouse 2 to Dam 4	2,640	1.9 – 2.4	Moderate/Good	Moderate
Big Creek	Powerhouse 2 to Dam 4	2,278	4.3 – 5.1	Good	Moderate
Ely Creek	Below Diversion	1,269	0.8 – 1.1	Poor	Poor
Jose Creek	Reach 1	2,538	0.9 – 1.4	Moderate	Moderate/Good
Jose Creek	Reach 3	2,232	1.6 – 2.1	Good	Good
Rock Creek	Below Diversion	890	0.3 – 0.5	Poor/Moderate	Moderate
Rock Creek	Above Diversion	882	0.5 – 0.8	Moderate	Good/Moderate
Ross Creek	Below Diversion	2,168	0.5 – 0.9	Not Rated	Poor/Moderate
San Joaquin River	Mammoth Reach	730	18.2 – 18.4	Good	Good
San Joaquin River	Mammoth Reach	2,421	22.1 – 22.6	Good	Moderate
Stevenson Creek	Below Shaver Lake	1,056	0.7 – 0.9	Good	Moderate
Stevenson Creek	Below Shaver Lake	2,058	0.9 – 1.3	Good	Moderate
Stevenson Creek	Below Shaver Lake	4,665	2.3 – 3.3	Moderate/Good	Good

## FIGURES



**Figure CAWG-8-1. Overview of CAWG-8 Methodology**





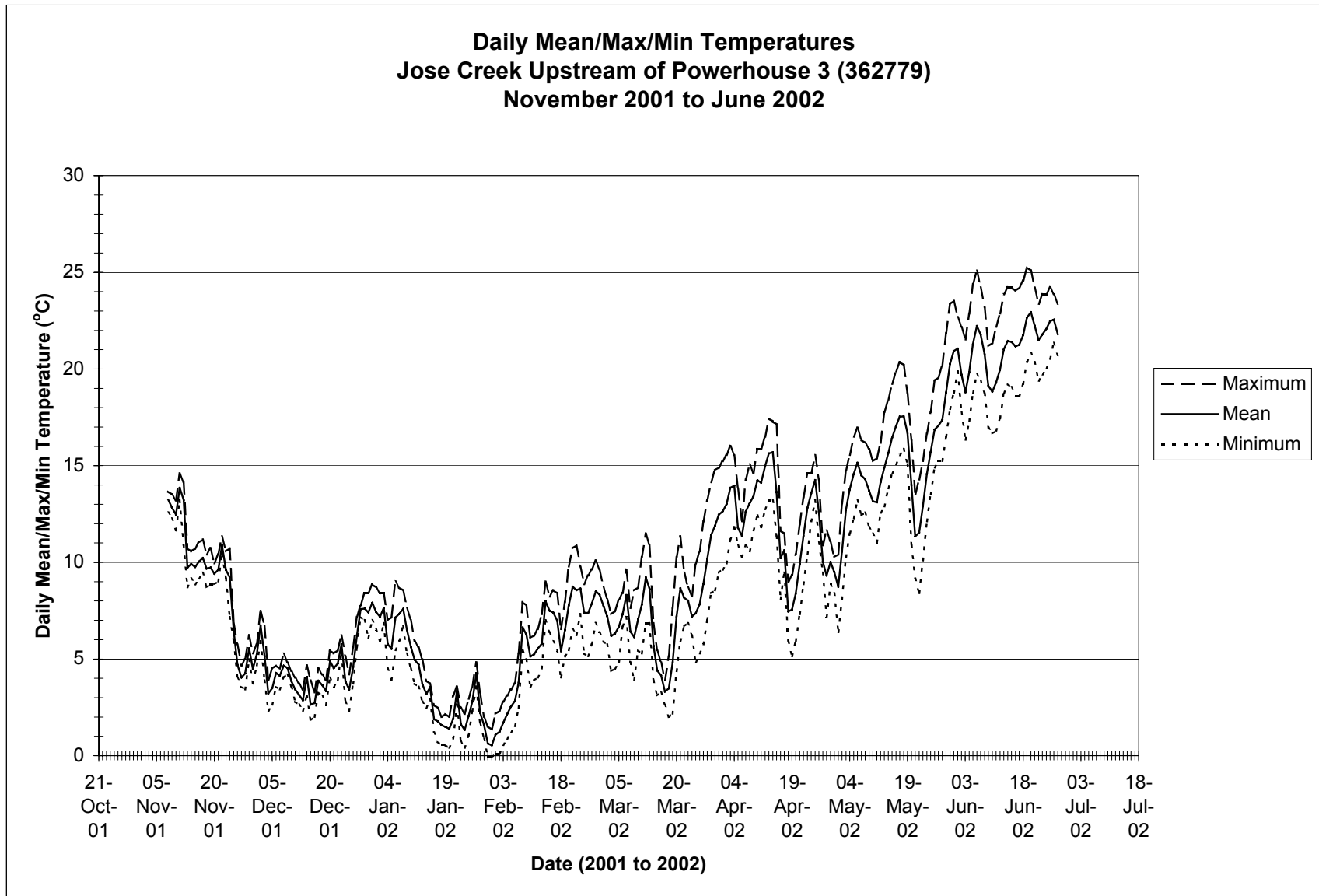
**Figure CAWG-8-2. Example of habitat scores and segment quality in Camp 61 Creek (Below Portal Forebay) as calculated for the mountain yellow-legged frog.**

## **Placeholder for Figures CAWG 8-3a through 11c**

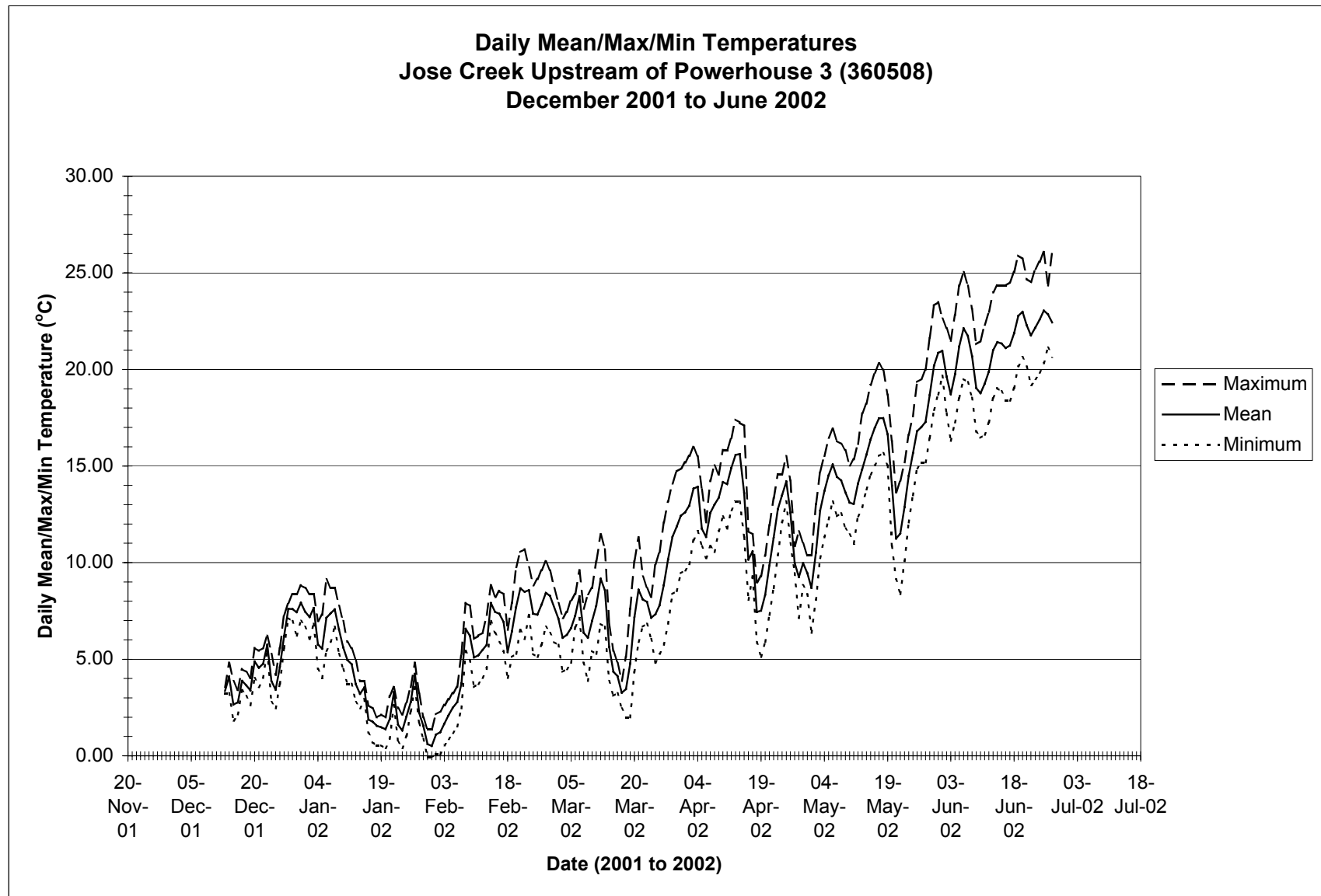
### **Non-Internet Public Information**

These Figures have been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

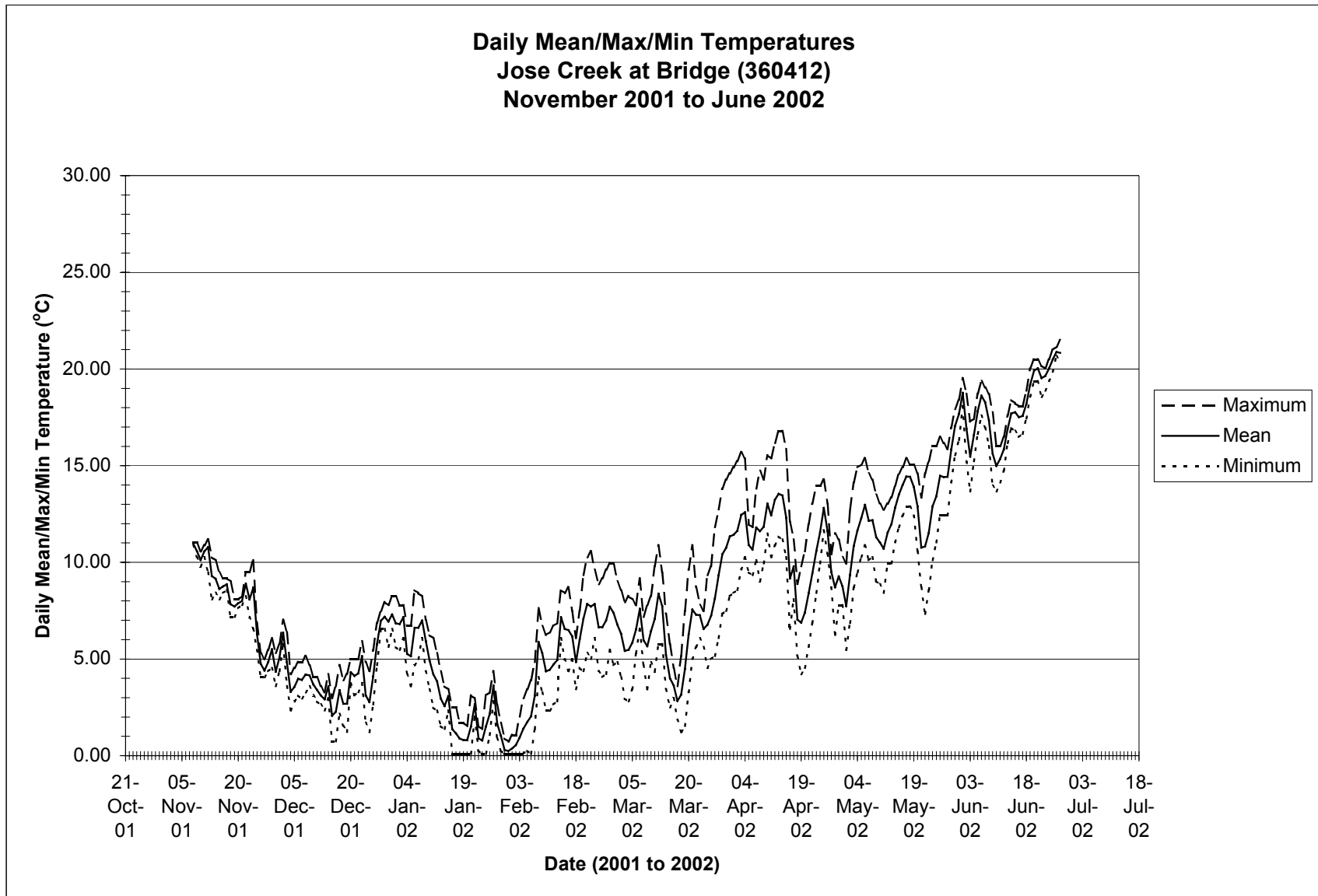
These Figures are considered Non-Internet Public information and should not be posted on the Internet. This information is provided in Volume 4 of the Application for New License and is identified as "Non-Internet Public" information. This information may be accessed from the FERC's Public Reference Room, but is not expected to be posted on the Commission's electronic library, except as an indexed item.



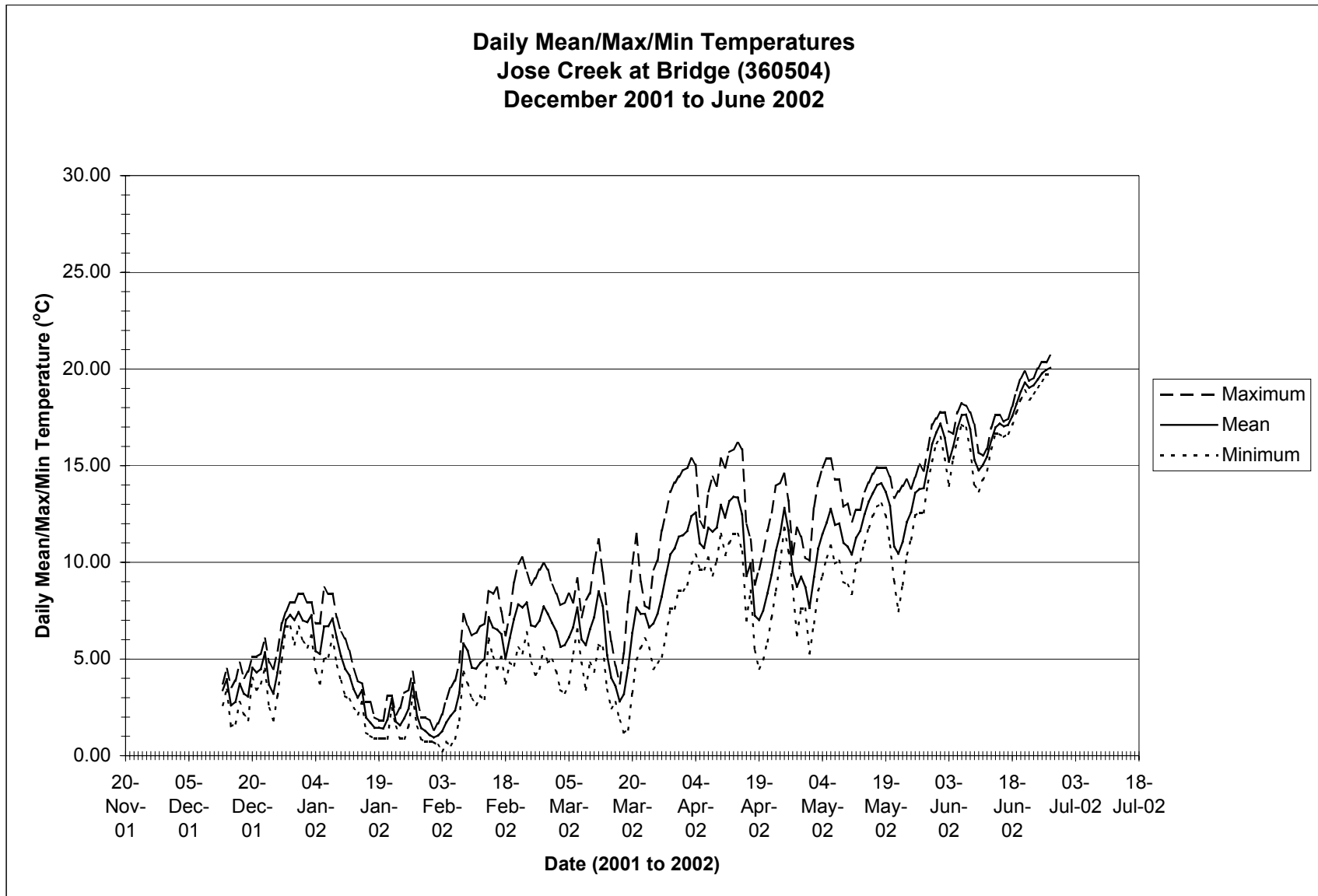
**Figure CAWG-8-12a. Water Temperature Monitoring Results at Jose Creek, Upstream of Powerhouse 3.**



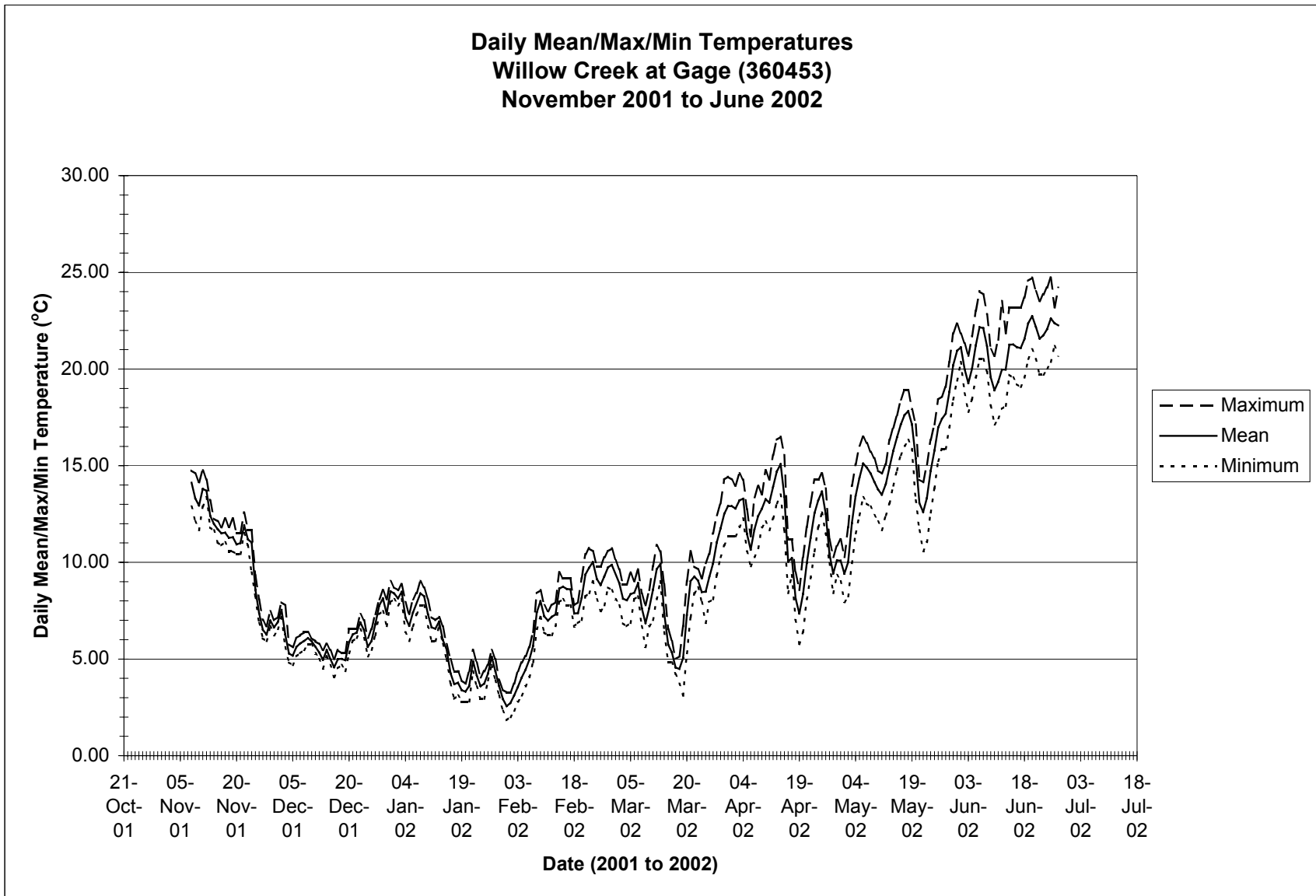
**Figure CAWG-8-12b. Water Temperature Monitoring Results at Jose Creek, Upstream of Powerhouse 3.**



**Figure CAWG-8-13a. Water Temperature Monitoring Results at Jose Creek, at the Bridge.**

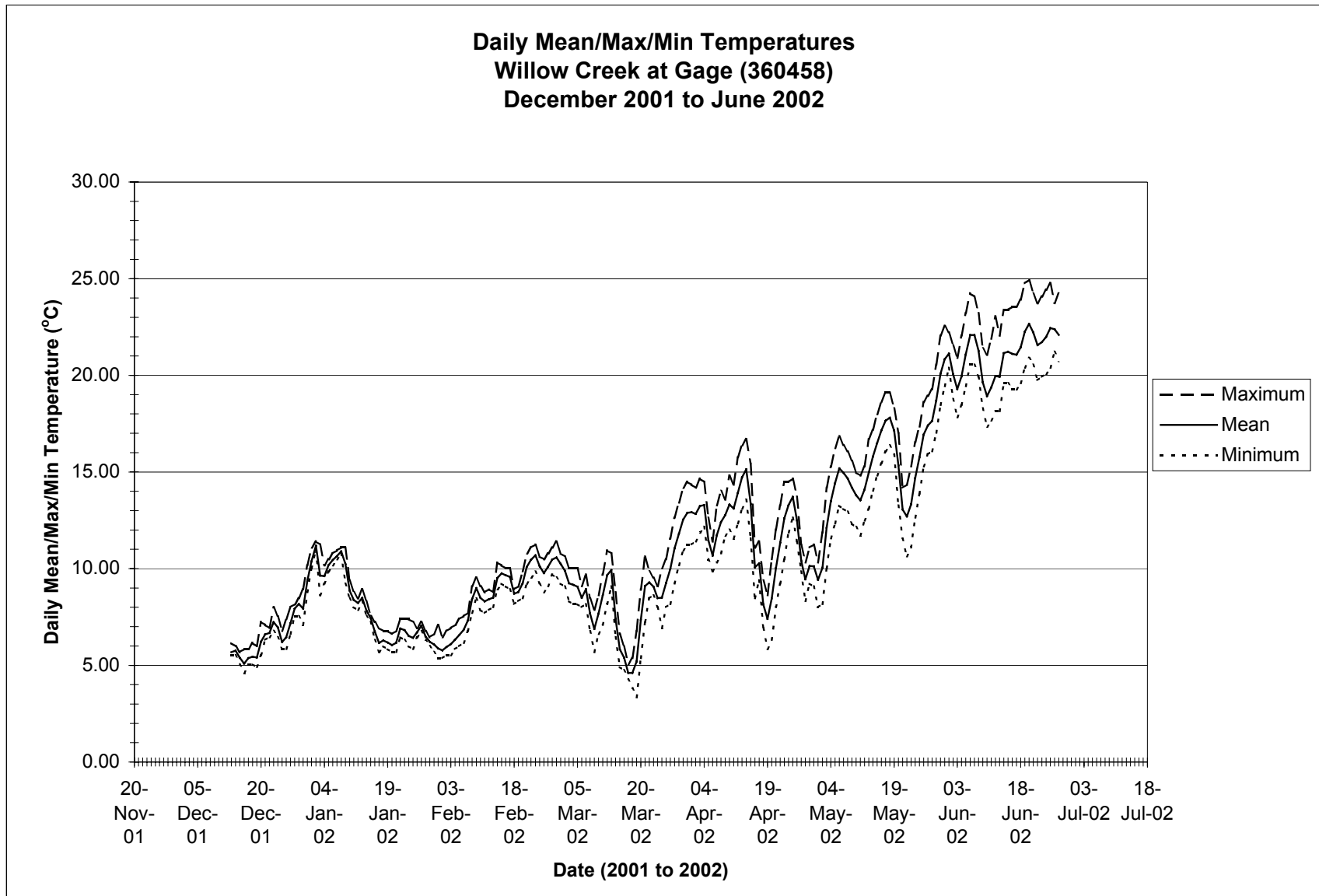


**Figure CAWG-8-13b. Water Temperature Monitoring Results at Jose Creek, at the Bridge.**



**Figure CAWG-8-14a. Water Temperature Monitoring Results at Willow Creek, at the Gage.**





**Figure CAWG-8-14b. Water Temperature Monitoring Results at Willow Creek, at the Gage.**

## **APPENDIX A**

### **Amphibian and Reptile Stream Physical Habitat Query Comparison**

## **Appendix A. QA/QC of Query**

### **Stream Habitat Criteria and Query Evaluation**

An in-depth review of the query developed to query the Stream Habitat Database (Database), collected as part of CAWG-1, Characterize Stream and Reservoir Habitats, was conducted following completion of the focused amphibian and reptile surveys in 2002. Inconsistencies were noted between the Stream Habitat Database, Physical Stream Habitat Criteria Table, and the functionality of the query. Primarily, habitat type and substrate data, as described in the Physical Stream Habitat Criteria Table, did not correlate with the types of stream survey data available in the Stream Habitat Database. As a result, the query incorrectly assessed these components when calculating stream segment quality. Descriptions of amendments to the Physical Stream Habitat Criteria Table and the query are described below.

### **Physical Stream Habitat Criteria**

Two habitat components used in calculating habitat quality, habitat unit type, and substrate were modified in the Stream Habitat Criteria Table in order to precisely match the stream survey data recorded in the Stream Habitat Database. These components are described below.

### **Habitat Component**

The original Physical Stream Habitat Criteria Table did not delineate between USDA-FS Region 5 (USFS R5) habitat types and Hawkins habitat types, but rather assigned suitability ranks to an applicable mixture of types from each classification system. The data from each classification system is available in the Database, (i.e., each habitat unit is assigned both a USFS R5 habitat type and a Hawkins habitat type). However, because of the structure of the Database, the query can only evaluate habitat type suitability based on one habitat classification scheme, either USFS R5 types or Hawkins, but not a mixture of both. Because of the increased detail of the USFS R5 classification, the query designated suitabilities only for USFS R5 types. As a result, the query was not ranking some habitat units (primarily various pool types) for certain species (i.e., mountain yellow-legged frog and Yosemite toad) that were originally assigned a rank only for Hawkins habitat types. Based on this, the Physical Stream Habitat Criteria Table was refined.

The refined Physical Stream Habitat Criteria Table lists (but does not rank) the following habitat categories, which correspond to the more general Hawkins habitat classification system: "Pool", "Cascade", "Riffle", "Flatwater", and "Additional Unit Designations" (previously labeled as "Other"). Each of these habitat categories has been broken down into associated habitat types as defined by the USFS R5 classification scheme. The suitability ranks identified by the Amphibian and Reptile Subgroup and approved by the Combined Aquatics Working Group for the Hawkins habitat types originally listed in the Physical Stream Habitat Criteria Table were carried forward to the corresponding USFS R5 habitat types. The query calculates habitat suitability based on the USFS R5

## Appendix A. QA/QC of Query (continued)

designations only. Specific refinements to the habitat types and ranks include the following:

- The “Pool” category includes USFS R5 pool types (i.e., main channel pool, lateral scour pool, corner pool, secondary channel pool, dammed pool, backwater pool, step pool, plunge pool, and channel confluence pool). For Yosemite toad and mountain yellow-legged frog, all pool types maintain the same rank previously assigned to the “Pool” Hawkins type. Each pool type ranks as good for these species.
- The “Riffle” category includes the USFS R5 riffle types (i.e., low gradient riffle and high gradient riffle). For all four species, both riffle types maintain the same rank previously assigned to the “Riffle” Hawkins type.
- The “Flatwater” category includes the USFS R5 flatwater types (i.e., pocket water, glide, run, step run, trench chute, and edgewater). For all four species, all flatwater types maintain the same rank previously assigned to “Flatwater” Hawkins type.
- The “Cascade” category includes the USFS R5 cascade types (i.e., cascade and bedrock sheet). For all four species, both cascade types maintain the rank previously assigned to the “Cascade” Hawkins type.
- The “Additional Unit Designations” category (previously labeled as “Other”) includes various types (i.e., dry, concrete box culvert, and road crossing). For all four species, these types maintain the same rank previously assigned to the “Other” category.

Three additional Hawkins habitat types, “Eddie”, “Step-pool”, and “Trench chute” have been revised. Specific revisions are described below.

- The “Eddie” habitat type is not a USFS R5 habitat type and therefore was removed.
- Although “Step-pool” is not a USFS R5 habitat type, it is delineated in the Stream Habitat Database as such, and therefore was retained.
- “Trench chute” was incorrectly labeled “trench pool” and placed in the “Pool” category. It has been correctly labeled and placed in the “Flatwater” category.

### Substrate

The substrate ranks assigned to each species in the Physical Stream Habitat Criteria Table were based on the assumption that all substrate present in a habitat unit was recorded. However, the substrate data recorded in the Stream Habitat Database consists of the percent of dominant and subdominant size classes, rather than the total percent of each size class present. For example, the dominant substrate size in a habitat unit might be boulder (50%) and the subdominant size might be sand (30%), but the remaining 20% of substrate material was not delineated. Therefore, the presence or

## **Appendix A. QA/QC of Query (continued)**

absence of other substrate material potentially important to amphibian species, such as cobbles or fines, is unknown.

As a result, the method used to rank substrate for each species was modified. For the foothill yellow-legged frog and mountain yellow-legged frog, the suitability of substrate is based on different combinations of substrate types known to be present. For example, the presence of both cobble and gravel in a habitat unit, delineated in the Database as dominant or subdominant, would rank as very good for both foothill yellow-legged frog and mountain yellow-legged frog.

Modifications to the substrate ranks for the Yosemite toad and western pond turtle were also completed. Although the presence of fines as a dominant or subdominant substrate in a habitat unit is delineated in the Stream Habitat Database, the absence of fines cannot be determined in all cases. However, in general, 70% or greater of the substrate material was accounted for as dominant and sub-dominant. Therefore if fines were not listed as a dominant or subdominant in a habitat unit, fines may have been present in the substrate in some proportion of 0-30%. To account for this, the range of percent fines present used to rank suitability in the Physical Stream Habitat Criteria Table was adjusted. For the Yosemite toad, 0-30% ranks as moderate and >50% ranks as good. For the western pond turtle, 0-30% ranks as poor, 30.1-50% ranks as moderate and >50% ranks as good.

### **Amphibian and Reptile Stream Physical Habitat Query**

Following review of the stream habitat data in the Stream Habitat Database, revisions were made in the query to the logic behind the substrate calculations and for habitat units with missing data.

#### **Substrate**

As discussed above, revisions were made on how the query calculates substrate suitability for each species. For mountain yellow-legged frog and foothill yellow-legged frog, suitability is calculated based on the substrate matrix as discussed above. For western pond turtle and Yosemite toad, logic was incorporated to first determine if at least 70% of the total substrate is accounted for in the substrate data. If 70% or greater of the substrate is typed, then suitability is ranked as shown in the Physical Stream Habitat Criteria Table. If less than 70% of the substrate is accounted for, then the suitability is not ranked, and the field is assigned a null value (no data).

#### **Missing Data**

In general, less than 10% of the habitat units had missing data for associated habitat components in the Stream Habitat Database. However, a few of the Project reaches are missing data on one or two habitat components within a single habitat unit (e.g., cover or gradient). The query previously calculated a habitat suitability score for habitat units with missing data components, which resulted in artificially low habitat scores in

## **Appendix A. QA/QC of Query (continued)**

some cases. To account for this, the query was modified to only calculate a habitat score when all habitat components are present. Logic was incorporated to first determine if a habitat component within a single habitat unit was null. If a habitat component was null, and another habitat component within that habitat unit had a suitability of zero, then the habitat score remained a zero. If a habitat component within the habitat unit was null, but no other habitat component within the unit was zero, then the habitat score was changed to null to reflect the lack of data in that habitat unit.

### **Habitat Suitability of Stream Segments**

The query was used to query the Stream Habitat Database with the above referenced revisions in January 2003. The purpose of this was to determine the effect of revisions to the Physical Stream Habitat Criteria Table and the query on habitat suitability and stream segment quality (i.e., good, moderate, or poor). The revised habitat scores for each habitat unit were plotted versus distance and grouped into stream segments in the same manner as the previous query results were in April and July, 2002. The results from this Database query are attached in Appendix F-I. The differences between each query are discussed below.

#### **Foothill Yellow-legged Frog**

A total of 18 stream reaches were assessed for foothill yellow-legged frog habitat usability. Nine stream reaches did not change, retaining both the same segment boundaries and segment quality. Four reaches (Adit 8 Creek, Big Creek Powerhouse 2 to Dam 4, San Joaquin River Mammoth Reach, and Stevenson Creek) retained the same general range of habitat quality (e.g., alternating between good and moderate quality), but segment boundaries shifted to reflect slight modifications in habitat scores. Two reaches retained the same segment boundaries but changed in segment quality: Ely Creek Above Diversion and the segment just below the diversion on Balsam Creek now average as poor rather than moderate. The remaining three reaches resulted in shifted segment boundaries and changing segment quality: both San Joaquin River Stevenson Reach and Big Creek Powerhouse 8 to Dam 5 have good habitat throughout rather than alternating between good and moderate habitat. Ely Creek Below Diversion is poor habitat throughout rather than a segment of moderate quality and a segment of poor quality.

#### **Mountain Yellow-legged Frog**

A total of 39 stream reaches were evaluated for mountain yellow-legged frog habitat suitability both in 2002 and 2003. One additional stream reach (Big Creek Powerhouse 2 to Dam 4) was evaluated in 2003.

Seventeen stream reaches did not change, retaining both the same segment boundaries and segment quality. Five stream reaches retained the same general range of habitat quality, but segment boundaries shifted to reflect slight modifications in habitat

## **Appendix A. QA/QC of Query (continued)**

scores: Ely Creek Below Diversion, Crater Creek Diversion Channel, Adit 8 Creek Below Diversion, Balsam Creek Below Diversion, and Camp 61 Below Portal Forebay.

Seven reaches retained the same segment boundaries but changed in segment quality: Bear Creek Below Diversion, Bolsillo Creek Above Diversion, Camp 62 Creek Above Diversion, East Fork Camp 61 Creek, Mono Creek Below Diversion, Rancheria Creek Above Surge Chamber, and West Fork Camp 61 Creek. In each case, segment quality increased one level (e.g., moderate to good or poor to moderate) reflecting the increase in rank for certain pool habitat types.

The remaining ten stream reaches showed shifts in segment boundary and segment quality. In general most reaches increased in segment quality due to increased pool ranks, which resulted in fewer segment breaks (i.e., Chinquapin Creek Below Diversion had 3 segments alternating between good and moderate in the 2002 results, this changed to one segment of good quality in the 2003 results). In a few cases (Crater Creek Below Diversion, Pitman Creek Below Diversion, and Stevenson Creek Below Shaver Lake), the increased habitat scores for pool types resulted in previously large segments of poorer habitat breaking out into smaller segments of alternating moderate and poor habitat quality. Only one reach decreased in habitat quality: Pitman Creek Above Diversion contains one segment of moderate quality rather than two small (<1000 feet) segments of good and poor quality.

### **Yosemite Toad**

A total of 34 stream reaches were evaluated for Yosemite toad habitat suitability both in 2002 and 2003. Ten stream reaches did not change, retaining both the same segment boundaries and segment quality. Two stream reaches (Bolsillo Creek Below Diversion and Crater Creek Diversion Channel) retained the same general range of habitat quality, but segment boundaries shifted to reflect slight modifications in habitat scores.

Three reaches retained the same segment boundaries but changed in segment quality: Rancheria Creek Above and Below Surge Chamber and Tombstone Creek Below Diversion. As with the mountain yellow-legged frog, segment quality increased one level (moderate to good) reflecting the increase in rank for certain pool habitat types.

The remaining stream reaches showed shifts in segment boundary and segment quality. In nine reaches, changes in segment length and quality resulted from incorporating small (<1000 feet) reaches into larger reaches. In each case, segment quality changed from alternating moderate and poor to either moderate or poor depending on the distribution of habitat scores. Similar to the mountain yellow-legged frog, many reaches increased in segment quality due to increased pool ranks. Two reaches (Crater Creek Below Diversion and Mono Creek Below Diversion) had fewer segment breaks due to increases in habitat scores, while eight reaches had more segment breaks as previously large segments of moderate habitat could be delineated into smaller segments of alternating good, moderate, and poor quality.

## **Appendix A. QA/QC of Query (continued)**

### **Western Pond Turtle**

A total of 19 stream reaches were assessed for western pond turtle habitat suitability. Thirteen stream reaches did not change, retaining both the same segment boundaries and segment quality. Three reaches (Big Creek Powerhouse 2 to Dam 4, Big Creek Powerhouse 8 to Dam 5, and Stevenson Creek Below Shaver Lake) retained the same general range of habitat quality (e.g., alternating between moderate and poor quality), but segment boundaries shifted to reflect slight modifications in habitat scores. The remaining three reaches had more segment breaks reflecting portions of increased segment quality. Both North Fork Stevenson Creek Below Outlet and Pitman Creek Below Diversion had alternating moderate and poor segments from previously larger poor segments, while San Joaquin River Mammoth Reach had alternating moderate and good reaches from a previously large moderate segment.

### **Segment Quality of Proposed Sample Segments**

The selection of stream segments to be sampled in 2002 was based on a stratification of segment quality across the Project area. Refer to the section titled "Focused Amphibian and Reptile Surveys" in the technical report for a detailed discussion on how sample site selection was completed for each species. Although stream reaches had modified segment qualities following the 2003 query output as discussed above, the general range of segment qualities across stream reaches did not vary significantly. As a result, the large number of stream segments proposed for sampling in 2002 still represent the broad diversity of stream habitats that occur throughout the Project area. Specifically, because the proposed sample segments were fairly short in length (1,000 feet), most segment qualities did not change. A comparison between the segment quality determined from the 2002 and 2003 query results for stream segments proposed to be sampled in 2002 is shown for each species in Tables 1 through 4 and is discussed below.

### **Foothill Yellow-legged Frog**

A total of 15 stream sites were selected by the Amphibian and Reptile Subgroup and the Combined Aquatics Working Group for sampling in 2002. The sample sites ranged from good to poor in segment quality and encompassed the diversity of Rosgen Level 1 channel types that occur within the range of the species in the Project area. A comparison between the segment quality determined from the 2002 query results and the 2003 query results for those stream sites proposed for sampling is summarized in Table 1.

Eight of the 15 proposed stream sites changed in segment quality; however the range of segment qualities across Rosgen channel types did not change. One site increased in segment quality from moderate and good to good, one site increased from moderate to good and moderate, and four sites increased from moderate to good, while one site decreased in segment quality from moderate to moderate and poor, and one site decreased from good to good and moderate. As a result, individual segments of a



## **Appendix A. QA/QC of Query (continued)**

certain Rosgen type changed quality, but the range of qualities within each Rosgen type were still represented.

### **Mountain Yellow-legged Frog**

A total of 22 stream sites were selected for sampling in 2002. The sample sites ranged from good to poor in segment quality and encompassed the range of the species within the Project area (above 5,000 feet in elevation). A comparison between the segment quality determined from the 2002 query results and the 2003 query results for those stream sites proposed for sampling is summarized in Table 2.

Seven of the 22 proposed sample sites increased in segment quality. Three sites increased in segment quality from moderate to good, two sites increased from poor to moderate, one site increased from poor to good, and one site increased from poor to poor and good. As a result, the broad range of qualities across elevation was still represented by the sampling effort, with fewer poor segments sampled.

### **Yosemite Toad**

A total of six stream sites were selected for sampling in 2002. The sample sites ranged from good to poor in segment quality and were located adjacent to meadow complexes within the species range (above 6,500 feet in elevation). A comparison between the segment quality determined from the 2002 query results and the 2003 query results specifically for those stream sites proposed for sampling is summarized in Table 3.

Five of the six proposed sample sites increased in segment quality. Four sites increased in segment quality from moderate to good and one site increased from poor to moderate. As a result, stream segments with varying qualities and not previously sampled for another species, were still represented by the sampling effort, with fewer poor segments sampled.

### **Western Pond Turtle**

A total of five stream sites were selected for sampling in 2002. The sample sites ranged from moderate to poor in segment quality and were primarily selected to cover stream segments not previously surveyed for foothill yellow-legged frog. A comparison between the segment quality from the 2002 query results and the 2003 query results for those stream sites proposed for sampling is summarized in Table 4.

Three of the five proposed sample sites changed in segment quality. Two sites increased in quality from poor to moderate and one site decreased in quality from moderate to poor. As a result, the range of segment quality in proposed sample sites did not change.

**Appendix A Table 1. Sites Proposed to be Sampled for Foothill Yellow-legged Frog in 2002**

River/Creek	Reach	Site Quality 2002 Query	Site Quality 2003 Query	Proposed River Miles to be Sampled <sup>1</sup>	Rosgen Level 1 Channel Type (Distance According to 2002 Query)					
					Aa+	Aa+/A	A/B	B	B/G/F #1	B/G/F #3
Big Creek	Powerhouse 8 to Dam 5	Good	Good	0.5-1.7			6,480 - 8,050			
Big Creek	Powerhouse 2 to Dam 4	Moderate	Good/Moderate	2.0-2.7			1,513 - 5,752			
Ely Creek	Below Diversion	Poor	Poor	0.7-1.0	1,921 - 4,852					
Jose Creek	Reach 1	Moderate	Moderate	0.7-0.8			0 – 450 <sup>2</sup>			
Jose Creek	Reach 3	Good/Moderate	Good	1.9-2.1		0 - 1,031				
Rock Creek	Below Diversion	Moderate	Poor/Moderate	0-0.3	0 – 1,699					
Rock Creek	Above Diversion	Moderate	Moderate	0.5-0.7	0 – 1,151					
Ross Creek	Below Diversion	Poor	Poor	0.3-0.5	1,866 – 2,796					
San Joaquin River	Stevenson Reach	Moderate	Good	12.8 – 13.0						7,925 - 9,250 <sup>3</sup>
San Joaquin River	Stevenson Reach	Moderate	Good	13.0 – 13.1						9,250 – 9.757 <sup>3</sup>
San Joaquin River	Mammoth Reach	Good	Good	20.3 - 23.5					12,810-29,487 <sup>4</sup>	
San Joaquin River	Mammoth Reach	Moderate	Good	26.4 – 26.5					45,012 - 45,272 <sup>4</sup>	
Stevenson Creek	Below Shaver Lake	Moderate	Good	0.7 - 0.9		0-1,087 <sup>5</sup>				

**Appendix A Table 1. Sites Proposed to be Sampled for Foothill Yellow-legged Frog in 2002 (continued)**

River/Creek	Reach	Site Quality 2002 Query	Site Quality 2003 Query	Proposed River Miles to be Sampled <sup>1</sup>	Rosgen Level 1 Channel Type (Distance According to 2002 Query)						
					Aa+	Aa+/A	A/B	B	B/G/F #1	B/G/F #3	
Stevenson Creek	Below Shaver Lake	Good	Good	0.9 – 1.5	1,087 – 4,118 <sup>6</sup>						
Stevenson Creek	Below Shaver Lake	Good	Good/Moderate	2.6 – 3.6		10,329 - 14,596					

<sup>1</sup> River mile distances are illustrated on the geomorphology/hydrology map.

<sup>2</sup> This segment was not sampled. An alternate site (8,976 – 11,088 ft.; 1.7 – 2.1 river miles) on Jose Creek was sampled.

<sup>3</sup> This segment was not sampled because it was too hazardous to access. An alternate site (9,956-10,796 ft.; 18.2-18.8 river miles) on the San Joaquin River and below the confluence with Ross Creek was sampled.

<sup>4</sup> This segment was not sampled. An alternate site (29,487-32,154 ft.; 22.1-22.6 river miles) on the San Joaquin River below the confluence with Rock Creek was sampled.

<sup>5</sup> This segment was too hazardous to sample and no alternate sampling site was selected.

<sup>6</sup> This segment was too hazardous to sample. An alternate site (4,224 – 10,032 ft; 0.8 – 1.9 river miles) on Stevenson Creek was sampled.

**Appendix A Table 2. Sites Proposed to be Sampled for Mountain Yellow-legged Frog in 2002**

River/Creek	Reach	Segment (ft.) <sup>1</sup>	Proposed River		Site Quality 2002 Query	Site Quality 2003 Query	Approx. Elev. (ft.)
			Miles to be Sampled <sup>2</sup>				
Bear Creek	Below Diversion	7,349 - 8,349	1.4 - 1.5		Moderate	Good	7,300
Big Creek	Above Powerhouse 1	0 – 925	6.3 – 6.5		Moderate	Moderate	5,000
Big Creek	Below Huntington Lake	7,204 - 8,126	7.7 – 7.9		Moderate	Moderate	6,500
Big Creek	Below Huntington Lake	8,126 - 9,126	7.9 – 8.1		Poor	Moderate	6,600
Bolsillo Creek	Below Diversion	6,300 - 6,800	1.2 - 1.3		Moderate	Moderate	7,400
Bolsillo Creek	Below Diversion	6,800 - 7,800	1.3 - 1.5		Poor	Moderate	7,300
Camp 61 Creek	Below Portal Forebay	5,718 - 6,718	0.9 - 1.1		Good	Good	6,800
Camp 61 Creek	Below Portal Forebay	6,718 - 7,718	1.1 - 1.3		Moderate	Good/ Moderate	6,900
Camp 62 Creek	Below Diversion	2,905 - 3,905	0.5 – 0.7		Moderate	Good	6,800
Chinquapin Creek	Below Diversion	1,837 - 2,837	0.3 – 0.5		Good	Good	7,200
Crater Creek	Below Diversion	0 - 1,000	0.0 – 0.2		Good	Good	6,800
Mono Creek	Below Diversion	5,596 - 6,596	1.0 - 1.2		Good	Good	6,500
North Fork Stevenson Creek	Below Outlet Reach	3,624 - 4,224	1.6 – 2.0		Good	Good	6,400
North Slide Creek	Below Diversion	0 - 1,000	0.0 – 0.2		Poor	Poor	7,300
South Fork San Joaquin River	Rattlesnake Crossing to Mono Crossing	2,090 - 3,090	12.0 – 12.2		Moderate	Moderate/ Poor	6,100
South Fork San Joaquin River	Mono Crossing to Bear Creek	181 – 1926	17.8 – 18.2		Good	Good	6,500
South Fork San Joaquin River	Bear Creek to Florence Lake	12,083 – 13,083	24.5 - 25.0		Poor	Good	6,800
South Fork San Joaquin River	Bear Creek to Florence Lake	13,083 – 14,083	25.0 - 25.1		Good	Good	7,100
South Slide Creek	Below Diversion	0 – 1,000	0.0 – 0.2		Poor	Poor	7,300

**Appendix A Table 2. Sites Proposed to be Sampled for Mountain Yellow-legged Frog in 2002 (continued)**

<b>River/Creek</b>	<b>Reach</b>	<b>Segment (ft.)<sup>1</sup></b>	<b>Proposed River Miles to be Sampled<sup>2</sup></b>	<b>Site Quality 2002 Query</b>	<b>Site Quality 2003 Query</b>	<b>Approx. Elev. (ft.)</b>
Tombstone Creek	Below Diversion	0 - 1,475	0.0 – 0.3	Moderate	Moderate	7,100
Tombstone Creek	Below Diversion	1,475 - 3,281	0.3 – 0.6	Good	Good/ Moderate	7,100
Tombstone Creek	Below Diversion	3,281 - 4,281	0.6 – 0.8	Poor	Good/ Poor	7,200

<sup>1</sup> Segment distance is based on distances measured by the fish field crew.

<sup>2</sup> River mile distances are illustrated on the geomorphology/hydrology map.

**Appendix A Table 3. Sites Proposed to be Sampled for Yosemite Toad in 2002**

River/Creek	Reach	Segment (ft.) <sup>1</sup>	Site Quality 2002 Query	Proposed River Miles to be Sampled <sup>2</sup>	Site Quality 2003 Query	Elev. (ft.)
Big Creek	Below Huntington Lake	3,377 – 4,885	Moderate	8.1 – 8.4	Good	6,600
Crater Creek	Below Diversion	1,072 – 2,323	Moderate	0.2 – 0.4	Good	6,800
Mono Creek	Below Diversion	11,455 – 12,388	Poor	2.2 - 2.3	Moderate	6,700
South Fork San Joaquin River	Bear to Florence	8,761 – 9,761	Moderate	23.9 – 24.1	Moderate	6,700
Tombstone Creek	Below Diversion	0 - 1,117	Moderate	0.0 – 0.2	Good	7,100
Tombstone Creek	Below Diversion	3,961 – 4,961	Poor	0.7 – 0.9	Poor	7,200

<sup>1</sup> Segment distance is based on distances measured by the fish field crew.

<sup>2</sup> River mile distances are illustrated on the geomorphology/hydrology map.

**Appendix A Table 4. Sites Proposed to be Sampled for Western Pond Turtle in 2002**

<b>River/Creek</b>	<b>Reach</b>	<b>Segment (ft.)<sup>1</sup></b>	<b>Site Quality 2002 Query</b>	<b>Proposed River Miles to be Sampled<sup>2</sup></b>	<b>Site Quality 2003 Query</b>	<b>Elev. (ft.)</b>
Big Creek	Powerhouse 8 to Dam 5	100 – 1,100	Poor	0 – 0.2	Moderate	2,300
Big Creek	Powerhouse 2 to Dam 4	19,007 – 20,007	Moderate	5.3 – 5.5	Moderate	4,400
North Fork Stevenson	Below Outlet Reach	0 – 1,000	Poor	1.0 – 1.2	Poor	5,600
Pitman Creek	Below Diversion	0 – 1,000	Poor	0 – 0.2	Moderate	5,100
San Joaquin River	Mammoth Reach	44,272 – 45,272	Moderate	26.3 – 26.5	Moderate	3,000

<sup>1</sup> Segment distance is based on distances measured by the fish field crew.

<sup>2</sup> River mile distances are illustrated on the geomorphology/hydrology map.

## **APPENDIX B**

### **Methodologies Approved by the Subgroup and CAWG**



**Appendix B. Methodologies Approved by the Subgroup and CAWG.****Definition of a Pool, as Defined by the Subgroup**

- Classified as a pool, according to the USFS Region 5 mesohabitat definition (McCaine and others 1990).
- Minimum depth of two feet.
- Supports suitable basking sites (for example, boulders, down woody debris).
- Supports suitable refugia (for example, undercut banks, shallow boulders, overhanging or emergent vegetation, other submerged woody debris).

## Appendix B. Methodologies Approved by the Subgroup and CAWG.

### Mountain Yellow-legged Frog Methodology

#### Mountain Yellow-legged Frog Methodology for Selection of Sample Segments and Surveys

1. MYLF sample segment selection and surveys will be carried out following Fellers and Freel (1995) *A Standardized Protocol for Surveying Aquatic Amphibians* as previously approved by the CAWG.
2. Selection of sample segments will be carried out following the 'Sample Survey' approach (vs. 'Complete' or 'Historical' Surveys) using 'Representative' selection of sites (vs. 'Random' selection of sites).
3. Representative segments will be selected from different project affected geographic areas within a) MYLF species' elevational range, b) different aquatic habitats (as delineated by habitat criteria and geomorphic classification of stream reaches), and c) accessibility with a representative bias toward higher habitat quality segments.
4. Because sample segments will be selected on a representative basis, a concerted effort will be made to ensure that all variables that might affect MYLF distribution and abundance will be considered. Specifically, all suitable habitats types will be sampled and all variables that might affect amphibian distribution and abundance (e.g. segments with and without trout) will be considered.
5. As outlined in Fellers and Freel (1995) aquatic surveys will follow the 'Basic Technique' and will be conducted in mid-summer in order to detect all life history stages of MYLF with reasonable modification to ensure cost effectiveness.
6. The subgroup has developed a table of proposed MYLF reaches for selection of representative sample segments. Surveys will be completed within each good quality segment identified. Surveys for moderate and poor quality segments will be finalized following the geomorphic verification of representative Rosgen Level I channel types. Geographic distribution and absence of fish in sample segments will be considered prior to selection.
7. The subgroup will assess potential needs for additional surveys in 2002 and 2003 based on:
  - a) Study Plan objectives
  - b) Initial survey results
  - c) Questions identified by the group

Members of the subgroup expect that some additional sampling will be needed to provide information to evaluate Project impacts, mitigation, and resource management. Members of the subgroup will recommend any additional studies deemed necessary to the CAWG for approval.

## Appendix B. Methodologies Approved by the Subgroup and CAWG.

### Western Pond Turtle Methodology

#### Western Pond Turtle Methodology for Selection of Sample Segments and Surveys

1. Western pond turtle surveys will be carried out following Reese (undated) *Western Pond Turtle Survey Techniques* as approved by the CAWG.
2. Selection of representative segments will be geographically distributed in the project area, within the western pond turtle species' elevation range, and on areas where western pond turtle have not been observed during other surveys and higher quality stream habitat segments.
3. As outlined in Reese (undated), aquatic surveys will follow the visual census technique described for creeks and ponds and will be conducted during the most active months (June and July). The Subgroup determined that a minimum of 30 minutes of stationary observation would be spent at each pool (criteria to be defined by subgroup) within the highest quality habitat. This would be followed by a shoreline survey. If western pond turtles are not observed during the first 30 minutes, up to two hours would be spent in 30 minute increments. If a western pond turtle is identified within the first 30 minutes, all appropriate data would be collected and surveys would resume upstream (see attached data sheet).
4. The Subgroup will develop a table of proposed western pond turtle sample segments. Surveys will be completed in each segment identified.
5. The Subgroup will assess potential needs for additional surveys in 2002 and 2003 based on:
  - a) Study plan objectives
  - b) Initial survey results
  - c) Questions identified by the group
  - d) Need to identify reference reaches

The Subgroup agreed that, upon completion of focused western pond turtle surveys and review of incidental sightings from 2002, they would determine if additional focused surveys would be necessary. The Subgroup discussed that additional surveys would "most likely" be necessary.

## Appendix B. Methodologies Approved by the Subgroup and CAWG.

### Yosemite Toad Methodology

#### Yosemite Toad Methodology for Selection of Sample Segments and Surveys

1. Yosemite toad sample segment selection and surveys will be carried out following Fellers and Freel (1995) *A Standardized Protocol for Surveying Aquatic Amphibians* as previously approved by the CAWG.
2. Selection of sample segments will be carried out following the 'Sample Survey' approach (vs. 'Complete' or 'Historical' Surveys) using 'Representative' selection of sites (vs. 'Random' selection of sites).
3. Representative segments will be selected from different project affected geographic areas within a) Yosemite toad species' elevation range, b) different aquatic habitats as delineated by habitat criteria, c) meadows, and d) accessibility.
4. Because sample segments will be selected on a representative basis, a concerted effort will be made to ensure that all variables that may affect Yosemite toad distribution and abundance will be considered. Specifically, all suitable habitat types will be sampled and all variables that might affect amphibian distribution and abundance will be considered.
5. As outlined in Fellers and Freel (1995) aquatic surveys in stream segments will follow the 'Basic Technique' and meadow surveys will follow the modified 'Basic Technique'. This includes the zig zag method described in Fellers and Freel (1995) and successfully implemented by Sierra National Forest biologists. Surveys will be conducted in mid-summer 2002 in order to detect different life history stages of Yosemite toad.
6. The Subgroup has developed a table of proposed Yosemite toad sample stream segments and meadows. Surveys will be completed in each stream segment and meadow identified.
7. The Subgroup will assess potential needs for additional surveys in 2002 and 2003 based on:
  - a) Study plan objectives
  - b) Initial survey results
  - c) Questions identified by the group

## **APPENDIX C**

### **California Red-legged Frog Site Assessment**

DRAFT  
California Red-legged Frog  
(*Rana aurora draytonii*)  
Site Assessment

Big Creek Hydroelectric Project  
Alternative Licensing Process

prepared for:

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May 7, 2003

## TABLE OF CONTENTS

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	Page
1.0 Introduction .....	1
1.1 Project Description.....	1
2.0 Methods .....	1
2.1 Literature Review .....	1
2.2 Agency and Expert Consultation.....	2
2.3 Field Visit .....	2
2.4 CRLF Habitat.....	2
2.5 CRLF Occurrences in the Project Area and within Five Miles of the Project Boundaries.....	3
2.6 Habitats in the Project Area and within One Mile of the Project Boundaries.....	4
2.7 Aquatic Habitat in the Project Area .....	7
3.0 Conclusions.....	12
4.0 References .....	13
4.1 Literature .....	13
4.2 Personal Communications.....	14
4.3 Internet Sites.....	14

## LIST OF TABLES

---

	Page
Table 1. University of California Berkeley’s Museum of Vertebrate Zoology data access records for the California red-legged frog in Madera and Fresno counties <sup>1</sup> . ....	5
Table 2. California red-legged frog site assessment results.....	8
Table 3. Aquatic habitats identified, but not visited. ....	10



## 1.0 INTRODUCTION

This report summarizes the methodology and results of a site assessment conducted for the California red-legged frog (CRLF; *Rana aurora draytonii*) for Southern California Edison's (SCE) relicensing of the Federal Energy Regulatory Commission (FERC) projects composing its Big Creek Hydroelectric system (Project or Big Creek System). This site assessment was prepared in accordance with *Guidance on Site Assessment and Field Surveys for California Red-legged Frogs* (USFWS 1997). The focus of the site assessment is on the Project vicinity within the historic range of the species (i.e., the Project area below 5,000 feet in elevation) and within 5 miles of the Project boundaries, as required by the protocol. The objectives of the site assessment are: (1) to determine whether the Project area is within the range of the CRLF, (2) to determine the known locations of CRLF within the Project vicinity and within 5 miles of the Project boundaries, and (3) to document the upland and aquatic habitats in the Project vicinity and within 1 mile of the Project boundaries. The purpose of the site assessment is to provide the United States Fish and Wildlife Service (USFWS) with sufficient information to make a determination as to whether presence/absence surveys for the federally-listed CRLF would be required for relicensing of the Project FERC licenses.

### 1.1 PROJECT DESCRIPTION

SCE is utilizing the traditional licensing process for relicensing three of its FERC licenses and a collaborative alternative licensing process (ALP) for the re-licensing of the remaining four FERC licenses composing the Big Creek System, located northeast of Fresno, California, in the San Joaquin River watershed in the Sierra Nevada (Figure 1). The seven hydroelectric projects encompass nine powerhouses, 23 generating units, and six large reservoirs and have a combined dependable operating capacity of approximately 1,000 megawatts. The Big Creek System is operated to meet Federal Energy Regulatory Commission (FERC) license conditions, physical constraints, downstream water rights agreements, and power production needs.

Two of the three licenses being relicensed under the traditional process (Vermillion Valley - FERC No. 2086, and Portal Powerhouse - FERC No. 2174) do not have any components located below 5,000 feet in elevation. All studies have been previously completed and the final license application submitted to FERC for the third license under the traditional process (Big Creek No. 4 - FERC 2017). The four ALP projects (Big Creek Nos. 1 and 2 - FERC No. 2175, Big Creek Nos. 2A, 8, and Eastwood - FERC No. 67, Big Creek No. 3 - FERC No. 120, and Mammoth Pool - FERC No. 67) have portions that occur below 5,000 feet in elevation and are therefore included in the site assessment.

## 2.0 METHODS

### 2.1 LITERATURE REVIEW

As part of the site assessment, a review of CRLF historic and known occurrences within 5 miles of the Project was completed. This included a review of: (1) *California Natural*

*Diversity Database* (CNDDDB; CDFG 2002a), (2) University of California Berkeley's *Museum of Vertebrate Zoology Data Access* (UC Berkeley 2002), (3) California Academy of Sciences' *Herpetology Holdings* (CAS 2002), and (4) other biological information published in scientific journals that is referenced as appropriate throughout the text. Additionally, a previous site assessment completed by the U.S. Forest Service (USDA-FS) in the Jose Basin area in 2000 was reviewed (USDA-FS 2000).

## **2.2 AGENCY AND EXPERT CONSULTATION**

As part of the site assessment, species experts familiar with the CRLF were interviewed to determine the location of CRLF occurrences in the Project vicinity. Experts consulted include Dr. Gary Fellers of the U.S. Geological Survey's (USGS) Biological Resources Division and Dr. Mark Jennings of the California Academy of Sciences' Department of Herpetology. Holly Eddinger of the USDA-FS and Jesse Wild of the USFWS were also contacted for information about CRLF occurrences in the Project vicinity. Information obtained from species experts is included in this report and referenced as appropriate.

## **2.3 FIELD VISIT**

All aquatic habitat in the Project vicinity below 5,000 feet and within one mile of Project boundaries were identified and mapped using topographic maps (1:24,000 scale) prepared by the USGS. A field-visit to accessible sites not previously visited during ALP surveys for other special-status amphibians and reptiles in the summer of 2002 was conducted between August 20 and 22, 2002, by biologists from ENTRIX, Inc. Each site was photographed, adjacent upland habitat was described, and each site was evaluated to determine if it contained appropriate habitat to support CRLF.

## **2.4 CRLF HABITAT**

The CRLF historically occurred in aquatic, riparian, and upland habitats throughout much of California and northern Baja California. It currently ranges from sea level to approximately 3,500 feet, although historical sightings have been reported as high as 4,900 feet in the Sierra Nevada (USFWS 2002). Jennings and Hayes (1994) suggested that populations at the upper elevational limit may represent translocations. Numerous populations exist in the Coast Range from Marin County to Santa Barbara County. Despite over 80 historic locations reported for the CRLF in Southern California south of the Tehachapi Mountains, only a few populations remain. In the foothills along the west slope of the Sierra Nevada, 5 isolated populations of CRLF are known, compared to over 60 historic locations reported (USFWS 2002). However, much of the land in the Sierra Nevada foothills is privately owned and has not been surveyed. Therefore, the actual distribution in this region is unknown.

Information on the life history and habitat requirements of the CRLF is relatively limited. Juveniles tend to be active during day and night, whereas adults are primarily nocturnal (Hayes and Tennant 1986). Habitat use by the CRLF varies seasonally and geographically. Hayes and Jennings (1989) report that the CRLF occur more often at sites that are free of introduced predators such as bullfrog (*Rana catesbeiana*),

mosquito fish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), and brown trout (*Salmo trutta*); sites that are influenced by a small drainage area ( $\leq 20$  mi<sup>2</sup>); sites that have a low local gradient ( $\leq 2\%$  gradient); and in streams having a low number stream order. Breeding typically occurs at night from November to May (Storer 1925). Breeding habitat is generally characterized as deep ( $\geq 2$  feet), still or slow-moving water, with cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), and willows (*Salix* spp.) close to water level and shading the water surface (Hayes and Jennings 1989). Tadpoles are typically concealed in submergent vegetation and organic debris in shallow, open aquatic habitat. In summer, adults and juveniles seldom venture from ponds or isolated pools in intermittent streams (Storer 1925). However, adults have been found in streams up to 1.5 miles away from breeding sites, and have been found as far as 100 feet from water in dense riparian vegetation, for up to 77 days (Rathbun et al. 1993). Hayes and Jennings (1989) suggested that the introduction of predators into perennial aquatic habitats may force the CRLF to associate with intermittent aquatic habitats. In streams, this frog is closely associated with plunge pools bordered by willows (Jennings 1988b). If a pond or stream dries during summer, they may be found in cavities under rocks and logs, in small mammal burrows, or under industrial debris. During or following periods of rainfall, adults and juveniles often make overland excursions at night to forage in upland habitats. The manner in which upland habitats are used, amount of time spent in upland habitats, pattern of use, and whether there is differential use by juveniles, sub-adults, and adults is poorly understood and requires further investigation (USFWS 2002).

## **2.5 CRLF OCCURRENCES IN THE PROJECT AREA AND WITHIN FIVE MILES OF THE PROJECT BOUNDARIES**

The Project is within the historic range, but not within the current known range of the CRLF. The historic range extends through Coast Range drainages from Marin County to northwestern Baja California (USFWS 2002). Its historical range extended inland to foothill drainages along the western slope of the Sierra Nevada. The current range of this frog is primarily restricted to drainages in the Coast Range. Several isolated populations are known to occur in drainages in the foothills of the Sierra Nevada. The nearest to population is in Weber Creek in El Dorado County, approximately 150 miles north of the Project area. The nearest critical habitat is Critical Habitat Unit 5, approximately 50 miles north of the Project.

The Project is located within the Sierra Nevada Foothills and Central Valley Recovery Unit for the CRLF (USFWS 2002). This unit includes the western foothills and Sierra Nevada foothills to approximately 5,000 feet elevation in the Central Valley hydrographic basin. However, the Project is not within a core recovery area. The nearest core areas to the Project are East San Francisco Bay, Tuolumne River, and Piney Creek. The East San Francisco Bay core area is approximately 100 miles west, whereas the Tuloumne River and Piney Creek core areas are approximately 75 miles to the north of the Project.

A review of electronic databases from academic institutions and government agencies resulted in no current or historic localities of the CRLF in the Project area or within 5

miles of the Project boundaries (CDFG 2002a; CAS 2002; UC Berkeley 2002). Species experts also reported no occurrences in the Project area or within 5 miles of the Project boundaries (G. Fellers, pers. comm.; M. Jennings, pers. comm.). Additionally, there are no localities reported for this species in the Sierra National Forest, which encompasses the entire Project area (H. Eddinger, pers. comm.).

The nearest historical records to the Project are 30 miles to the south near Minkler and 15 miles to the northwest in Willow Creek near O'Neals. The Minkler record is from 1916. CRLF are presumed extirpated at this site, but no information exists on when they were last detected. The O'Neals records date back to 1951 with CRLF seen as late as 1968. However, they are presumed extirpated (M. Jennings, pers. comm.). The nearest known population of CRLF to the Project is in Mine Creek (near Mercey Hot Springs), approximately 90 miles to the west in the Coast Range of Fresno County.

A review of a previous site assessment conducted in the Jose Basin area in 2000 identified 307.70 acres of potential suitable breeding habitat in Jose Creek south of Jose Basin Road (USDA-FS 2000). Additionally, several ponds, springs, and intermittent drainages south of Jose Basin Road and in the vicinity of Sugarloaf hill were identified as having suitable habitat. However, all potential suitable breeding habitat was considered marginal and occurred more than one mile beyond the Project boundaries.

## **2.6 HABITATS IN THE PROJECT AREA AND WITHIN ONE MILE OF THE PROJECT BOUNDARIES**

Seven vegetation communities occur in the Project area below 5,000 feet elevation. These include forest and woodland vegetation types, chaparral vegetation types, meadow vegetation types, and riparian vegetation types. Forest and woodland vegetation types include blue oak woodland, gray pine-chaparral woodland, westside ponderosa pine forest, and Sierran mixed conifer forest. The chaparral vegetation type in the Project area is mixed montane chaparral. Meadow types in the Project area include dry montane meadow and wet montane meadow.

### **2.6.1 FOREST AND WOODLAND VEGETATION TYPES**

#### **SIERRAN MIXED CONIFER FOREST**

Sierran mixed conifer forest is a lower montane coniferous forest type, typically found between 5,000 and 7,000 feet in elevation. This forest type has several dominant species including ponderosa pine (*Pinus ponderosa*), fir (*Abies* spp.), and sugar pine (*P. lambertiana*). Other species present include incense cedar (*Calocedrus decurrens*),

**Table 1. University of California Berkeley's Museum of Vertebrate Zoology Data Access Records for the California Red-legged Frog in Madera and Fresno Counties<sup>1</sup>**

County	Catalog Number	Accounting Number	Locality	Latitude	Longitude	Date	Collector
Fresno	6211	1136	Minkler, CA	36.716600	-119.464100	7 Oct. 1916	J. S. Dixon
Fresno	77978	10319	3 mi. N Mercey Hot Springs, CA	36.731700	-120.880400	10 Aug. 1963	R.R. Montanucci
Fresno	77979	10319	3 mi. N Mercey Hot Springs, CA	36.731700	-120.880400	10 Aug. 1963	R.R. Montanucci
Fresno	77980	10319	3 mi. N Mercey Hot Springs, CA	36.731700	-120.880400	10 Aug. 1963	R.R. Montanucci
Fresno	77981	10319	3 mi. N Mercey Hot Springs, CA	36.731700	-120.880400	10 Aug. 1963	R.R. Montanucci
Fresno	77982	10319	3 mi. N Mercey Hot Springs, CA	36.731700	-120.880400	10 Aug. 1963	R.R. Montanucci
Fresno	77983	10319	3 mi. N Mercey Hot Springs, CA	36.731700	-120.880400	10 Aug. 1963	R.R. Montanucci
Madera	55515	8558	O'Neals, CA	37.128279	-119.693568	20 Nov. 1951	H.E. Childs Jr.
Madera	55516	8558	O'Neals, CA	37.128279	-119.693568	6 Nov. 1951	H.E. Childs Jr.
Madera	57361	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57362	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57363	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57364	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57365	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57366	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57367	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.
Madera	57368	8691	O'Neals, CA	37.128279	-119.693568	15 Aug. 1952	H.E. Childs Jr.

<sup>1</sup>None of these occurrences is in the Project area or within 5 miles of the Project boundaries.

madrone (*Arbutus menziesii*), black oak (*Quercus kelloggii*), Jeffrey pine (*P. jeffrei*), and Douglas fir (*Pseudotsuga menziesii*). The understory is usually sparse and may include young trees as well as shrub and herbaceous species found in Jeffrey pine forest.

#### BLUE OAK WOODLAND

Blue oak woodland is a community dominated by blue oaks (*Quercus douglasii*) but usually consisting of several other oaks as well as gray pine (*Pinus sabiniana*). This community is found in the lower elevations of the Project area, usually occurring below 3,000 – 4,000 feet. It varies from open savannas with grassy understories to fairly dense woodlands with shrubby understories. Some common species found in this vegetation community are California buckeye (*Aesculus californica*), Mariposa manzanita (*Arctostaphylos viscida* spp. *mariposa*), Yerba Santa (*Eriodictyon californicum*), and black oak.

#### WESTSIDE PONDEROSA PINE FOREST

Westside ponderosa pine forest is a lower montane coniferous forest typically found between 4,500 – 6,500 feet in elevation. This forest is an open forest dominated by ponderosa pine. The understory usually consists of scattered chaparral shrubs and young trees. This community usually occupies coarse, well-drained soils.

#### GRAY PINE-CHAPARRAL WOODLAND

This vegetation community is dominated by mariposa manzanita, ceanothus, and oak, with scattered gray pine. The shrub layer can vary from a sparse to thick layer. Other common species in this community are California buckeye, California coffeeberry (*Rhamnus californica*), and foothill ash (*Fraxinus dipetala*).

#### CHAPARRAL VEGETATION TYPES

Chaparral vegetation in the Project area is a mosaic of low to medium shrubs variously dominated by manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), scrub oaks, and young trees. The same shrubs that are the dominant species of the shrublands also form the understory of adjacent forested areas. Due to the intermingling of the shrub species and the gradations in dominance found within the Project area, all the montane shrub areas have been designated as Mixed Montane Chaparral.

#### MIXED MONTANE CHAPARRAL

Mixed montane chaparral is found between elevations of 4,000 and 11,000 feet in elevation. This chaparral often forms a dense thicket, although it is also found more sparsely distributed on rocky sites within the Project area. Mixed montane chaparral is dominated by Sierra chinquapin (*Chrysolepis sempervirens*) and any of several species of manzanita or ceanothus, particularly greenleaf manzanita (*A. patula*), whiteleaf manzanita (*A. viscida*), mountain whitethorn (*C. cordulatus*), and deerbrush (*C. integerrimus*). Herbaceous understory is usually sparse, except in the few years immediately following fire.

## 2.6.2 MEADOW VEGETATION TYPES

Meadows in the Project area are generally wet meadows. However, dry meadows dominated by upland grass species rather than by sedges (*Carex* spp.) and wet meadow grasses are present in a few areas. Wet and Dry Meadow types may occur in the same meadow.

### DRY MONTANE MEADOW

Dry montane meadows are found between 3,000 and 9,000 feet in elevation in this part of the Sierra Nevada. These meadows are vegetated by a dense growth of perennial herbs and grasses, including horkelias (*Horkelia* spp.), Sierra mousetail (*Ivesia santolinoides*), bluegrasses (*Poa* spp.), and mat muhly (*Muhlenbergia richardsonis*).

### WET MONTANE MEADOW

Wet montane meadows are found between 3,000 and 9,000 feet in elevation in this part of the Sierra Nevada. These meadows are vegetated by a dense growth of sedges and other perennial herbs, including rushes (*Juncus* spp.), mannagrass (*Glyceria* spp.), California corn lily (*Veratrum californicum* var. *californicum*), and spearleaf arnica (*Arnica longifolia*). Wet montane meadows have soils that remain saturated throughout the year.

## 2.6.3 RIPARIAN VEGETATION TYPES

Riparian vegetation in the Project area includes several vegetation types including montane riparian scrub, aspen riparian forest, montane black cottonwood riparian forest, and montane freshwater marsh. Riparian vegetation is generally found in narrow bands along the streams and is often separated by rocky, unvegetated reaches. Where the terrain is level and open, the riparian zone is usually wide, and may merge into montane meadows. The most extensive riparian vegetation is Montane Riparian Scrub, generally dominated by white alder (*Alnus rhombifolia*). Willows may be interspersed with alders, or may occasionally form mono-specific stands. Black cottonwood (*Populus trichocarpa*), is found in small, scattered stands from Florence Lake to Redinger Lake.

## 2.7 AQUATIC HABITAT IN THE PROJECT AREA

Thirty-five sites were identified on topographic maps and aerial photographs as being potentially suitable habitat for the CRLF. Twenty sites (Table 2 and Figures 2 - 4) were visited during the summer of 2002. The location of these sites is illustrated on maps (Figures 2 - 4). Fifteen sites (Table 3 and Figures 2 - 4) identified were not visited because they occur on private property or were otherwise inaccessible. These sites were evaluated to the extent possible using false-color infrared aerial photographs (1-m pixel resolution in NAD83, Zone 11, and Universal Transverse Mercator (UTM) projection), topographic maps, and vegetation community maps.

**Table 2. California Red-legged Frog Site Assessment Results**

Site	Location	Date	Surveyors <sup>1</sup>	Time	Vegetation Community	Water Permanence	Suitable Habitat <sup>2</sup>	Project affected Reach <sup>3</sup>
Adit 8 Creek	Below Diversion	8/20/02	DD & AN	1530–1600	Sierran Mixed Conifer Forest	Intermittent	No	Yes
Balsam Creek	Confluence with Big Creek to impoundment near Camp Sierra	8/20/02	DD & AN	1630–1700	Gray Pine-Chaparral Woodland	Perennial	No	Yes
Big Creek	From confluence with the San Joaquin River to Powerhouse 1	7/24/02	DD & PF	0910 –1200	Gray Pine-Chaparral Woodland	Perennial	No	Yes
		7/23/02	DD & PF	1400–1630				
		5/19/02	SY & AL	1215–1315				
		5/18/02	SY & AL	0935–1405				
		5/15/02	DD & PF	0858–1501				
Chiquito Creek	From Lake to 5,000 feet elevation	8/21/02	DD & AN	1230–1300	Westside Ponderosa Pine Forest	Perennial	Yes	No
Dalton Creek	From confluence with Mammoth Pool Reservoir to 500 feet upstream	8/21/02	DD & AN	1500–1530	Sierran Mixed Conifer Forest	Intermittent	No	Yes
Ely Creek	500 feet downstream of Diversion	8/20/02 5/14/02	DD & AN DD & PF	1600–1630 0930–1200	Gray Pine-Chaparral Woodland	Intermittent	No	Yes
Fish Creek	From Fish Creek Campground to 500 feet downstream of campground	8/21/02	DD & AN	1030–1100	Sierran Mixed Conifer Forest	Perennial	No	No
Jose Creek	From Italian Bar Road to 2,000 feet upstream of Jose Basin Road	8/20/02 5/11/02 5/10/02	DD & AN DD & SY DD & SY	1200–1230 1035–1332 1100–1410	Blue Oak Woodland	Perennial	Yes	No
Mill Creek	100 feet upstream of confluence with Jose Creek	8/22/02	DD & AN	1000–1030	Blue Oak Woodland	Intermittent	No	No
Rock Creek	From the confluence with San Joaquin River to Diversion.	8/21/02 5/16/02	DD & AN SY & AL	1100–1130 1050–1330	Sierran Mixed Conifer Forest & Gray Pine-Chaparral Woodland	Perennial	No	Yes
Ross Creek	1,500 feet downstream of diversion	8/21/02 5/17/02	DD & AN DD & PF	1550–1620 0835–1012	Gray Pine-Chaparral Woodland	Intermittent	No	Yes
San Joaquin River	1,500 feet segments From near Mammoth Pool Reservoir, confluence with Rock Creek, and near confluence with Ross Creek	8/21/02	DD & AN	0900–0930	Gray Pine-Chaparral Woodland	Perennial	No	Yes
		7/25/02	DD & PF	1005–1230				
		6/04/02	DD & PF	1045–1200				
		5/17/02	SY & AL	0930–1145				
Stevenson Creek	From confluence with San Joaquin River to Shaver Lake Dam	8/22/02 5/13/02 5/12/02	DD & AN DD & SY DD & SY	0900–0930 1045–1356 1012–1318	Sierran Mixed Conifer Forest & Gray Pine-Chaparral Woodland	Perennial	No	Yes
Shakeflat Creek	100 feet upstream of confluence with San Joaquin River	8/21/02	DD & AN	1320–1350	Gray Pine-Chaparral Woodland	Intermittent	No	No



**Table 2. California Red-legged Frog Site Assessment Results (continued)**

Site	Location	Date	Surveyors <sup>1</sup>	Time	Vegetation Community	Water Permanence	Suitable Habitat <sup>2</sup>	Project affected Reach <sup>3</sup>
Sheep Thief Creek	500 feet upstream of confluence with Big Creek	7/17/02	DD	0800 – 0830	Gray Pine-Chaparral Woodland	Intermittent	No	No
Mammoth Pool	From Boat launch to Dam Spillway	8/21/02	DD & AN	1430–1500	Gray Pine-Chaparral Woodland	Perennial	No	Yes
Redinger Lake	Drove the road along the shoreline.	8/20/02	DD & AN	1030–1100	Gray Pine-Chaparral Woodland	Perennial	No	Yes
Dawn Meadow	Walked all around meadow	8/20/02	DD & AN	1500–1530	Sierran Mixed Conifer Forest	Intermittent	No	-- <sup>4</sup>
Snowslide Creek	100 feet upstream of confluence with Pitman Creek	7/15/02	DD & DC	1400-1415	Sierran Mixed Conifer Forest	Perennial	No	No
Pitman Creek	1,500 feet upstream of Powerhouse 1	7/15/02	DD & DC	1400-1610	Sierran Mixed Conifer Forest	Perennial	Yes	Yes

<sup>1</sup>DD = Darrin Doyle, AN = Allison Nabours, PF = Pierre Fidenci, SY = Sarah Yarnell, AL =Audra Loyal, and DC = Daniel Corcoran.

<sup>2</sup>Suitable habitat criteria include deep pools that will persist through summer, have emergent aquatic vegetation along the shoreline, have gradual sloping banks, and some overhanging canopy.

<sup>3</sup>An ALP Project Reach is a bypass, flow-augmented, or flow-modified reach.

<sup>4</sup>-- means not applicable.

**Table 3. Aquatic Habitats Identified, but Not Visited**

Site	USGS 7.5 Minute Series Map	Access Issue	Water Permanence <sup>1</sup>	% Slope <sup>2</sup>	Project affected Reach <sup>3</sup>	Vegetation Community	Presence of Suitable Habitat <sup>4</sup>
Logan Meadow	Mammoth Pool Dam	Private Property	Intermittent	2%	--	Westside Ponderosa Pine Forest	Unlikely
Mill Creek	Mammoth Pool Dam	Remote	Perennial	20%	No	Sierran Mixed conifer Forest	Unlikely
Kaiser Creek	Mammoth Pool Dam	Remote	Perennial	30%	No	Sierran Mixed conifer Forest	Unlikely
Jackass Creek	Mammoth Pool Dam	Remote	Perennial	10%	No	Sierran Mixed conifer Forest	Unlikely
Fuller Meadow	Mammoth Pool Dam	Private Property	Intermittent	2%	--	Sierran Mixed conifer Forest	Unlikely
Aspen Creek	Mammoth Pool Dam	Remote	Intermittent	45%	No	Sierran Mixed conifer Forest	Unlikely
Horse Thief Creek	Mammoth Pool Dam	Remote	Intermittent	40%	No	Gray Pine-Chaparral Woodland	Unlikely
Slot Creek	Mammoth Pool Dam	Remote	Intermittent	45%	No	Gray Pine-Chaparral Woodland	Unlikely
Saddle Creek	Mammoth Pool Dam	Remote	Intermittent	40%	No	Gray Pine-Chaparral Woodland	Unlikely
Camp Creek	Mammoth Pool Dam	Remote	Intermittent	40%	No	Gray Pine-Chaparral Woodland	Unlikely
Douglas Fir Creek	Mammoth Pool Dam	Remote	Intermittent	45%	No	Gray Pine-Chaparral Woodland	Unlikely
Kinsman Flat Pond	Musick Mtn.	Private Property	Perennial	--	No	Gray Pine-Chaparral Woodland	Unlikely
Black Creek	Musick Mtn.	Remote	Intermittent	50%	No	Gray Pine-Chaparral Woodland	Unlikely
Ordinance Creek	Musick Mtn.	Remote	Intermittent	25%	No	Gray Pine-Chaparral Woodland	Unlikely
Hookers Creek	Musick Mtn.	Remote	Intermittent	30%	No	Gray Pine-Chaparral Woodland	Unlikely

<sup>1,2</sup>Estimated from USGS 7.5-minute series maps.

<sup>3</sup>An ALP Project Reach is a bypass, flow-augmented, or flow-modified reach.

<sup>4</sup>Suitable habitat estimation based on water permanence and slope. Sites listed as unlikely to have suitable habitat are creeks that are likely to be intermittent in summer and have a steep gradient.

Each site visited was photographed (Attachment A) and evaluated for suitable habitat (i.e., a water body that will persist throughout summer, has a gently sloping shoreline, has deep pools with emergent aquatic vegetation for egg attachment, and has some overhanging vegetation to provide shade and cover) for the CRLF. With the exception of small sections in Jose Creek and Chiquito Creek, suitable habitat was not found. In Jose Creek, a large pool approximately 10 feet downstream of the bridge on Italian Bar Road that spans Jose Creek provides suitable habitat. This pool is approximately eight feet deep and surrounded by a dense growth of cattails around 50% of its shoreline. In Chiquito Creek, suitable habitat occurs approximately 50 feet upstream of the bridge that is adjacent to Mammoth Pool Campground. The shoreline for approximately 100 feet on both sides supported dense cattails. Willows and alders also grow along the shoreline. There were some areas of undercut bank which could provide cover. Water flow in this reach was slow. Water depth where cattails were growing was approximately 1-2 feet deep. Jose Creek and Chiquito Creek are not project affected reaches (i.e., not bypass, flow-augmented, or flow-modified streams).

The following creeks did not have suitable habitat for the CRLF because they were usually intermittent by late summer, had shallow isolated pools, and had a moderate to steep gradient: Adit 8 Creek, Dalton Creek, Ely Creek, Fish Creek, Shakeflat Creek, Mill Creek (near Jose Creek), Ross Creek, and Snowslide Creek. Balsam Creek and Pitman Creek did not have suitable habitat for the CRLF because they were moderate to high gradient and have deep pools that lack emergent aquatic vegetation for cover and egg attachment. In addition, both of these streams support CRLF predators (e.g., fish species). The following perennial creeks did not have suitable habitat for the CRLF because they were deeply scoured by high flows and had deep pools that lacked aquatic vegetation: Big Creek, San Joaquin River, Rock Creek, and Stevenson Creek. Big Creek and Stevenson Creek are also known to support extensive fish populations. Sheep Thief Creek is perennial, but did not have suitable habitat because it has a steep gradient, has little to no canopy cover, and lacks deep pools. Mammoth Pool Reservoir did not have suitable habitat. When the reservoir is drawn down, the steep exposed shoreline consists of barren ground that may extend for 100 feet or more to reach the tree-line. Additionally, there is no emergent aquatic vegetation along the shoreline and there is an extensive fish population within the reservoir. Redinger Lake did not have suitable habitat primarily because the shoreline around the lake is mostly bedrock interspersed with oak trees. There were few shallow areas, as the water became deep just a few feet from shore. Redinger Lake also lacked emergent aquatic vegetation along the shoreline and support an extensive fish population. Dawn Meadow did not have suitable habitat. It was dry in summer and the only water present was a concrete water holding tank (2 feet wide by 5 feet long) used by livestock.

Several meadows and streams located within one mile of project boundaries were not accessible (i.e., located on private property, remote location, etc.) Meadows that were identified in Table 3, but not visited, are expected to be similar to meadows that are within the project area and accessible and therefore are unlikely to have suitable habitat for the CRLF. However, because these sites were not visited, it is assumed that these meadows represent potential habitat. All of the creeks listed in Table 3 have high stream gradient and do not likely support deep pools with emergent aquatic vegetation.

Based on calculations from topographic maps, stream gradient was moderate in Mill Creek (20%) and Jackass Creek (10%). Stream gradient was steep in Kaiser Creek (30%), Aspen Creek (45%), Horse Thief Creek (40%), Slot Creek (45%), Saddle Creek (40%), Camp Creek (40%), Douglas Fir Creek (45%), Black Creek (50%), Ordinance Creek (25%), and Hookers Creek (30%). Because Mill Creek and Jackass Creek have moderate slopes and were not accessible, these creeks are assumed to represent potential habitat for CRLF.

### **3.0 CONCLUSIONS**

The Project is within the historic range, but not within the current known range, of the CRLF. With the exception of small sections in Jose Creek and Chiquito Creek, the Project vicinity is unsuitable for the CRLF. Jose Creek and Chiquito Creek are not Project affected reaches (i.e., bypass, flow-augmented, or flow-modified). CRLF is not expected to occupy the Project vicinity due to the lack of suitable habitat and because the Project is outside of the species' current known range. The CRLF was last reported in this region near O'Neals in 1952, approximately 15 miles northwest of the Project.

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#### **4.2 PERSONAL COMMUNICATIONS**

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Jennings, M. 2001. President and Herpetologist/Fisheries Biologist, Rana Resources, Davis,

California; Research Associate, Department of Herpetology, California Academy of Sciences, San Francisco, California.

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**Attachment A**

**California Red-legged Frog Site Assessment Photographs**

**Attachment A. California Red-legged Frog Site Assessment Photographs**



Adit 8 Creek downstream of diversion



Adit 8 Creek downstream of diversion



Balsam Creek downstream of diversion



Balsam Creek downstream of diversion



**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



Big Creek downstream of Powerhouse 1



Big Creek downstream of Powerhouse 1



Chiquito Creek near Mammoth Pool Campground  
(looking downstream from bridge)



Chiquito Creek near Mammoth Pool Campground  
(looking upstream from bridge)



**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



Dalton Creek



Dalton Creek



Ely Creek downstream of diversion



Ely Creek at diversion (dry)



**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



Fish Creek at Fish Creek Campground



Fish Creek at Fish Creek Campground



Jose Creek. Pool surrounded by cattails



Jose Creek. Downstream of pool with cattails



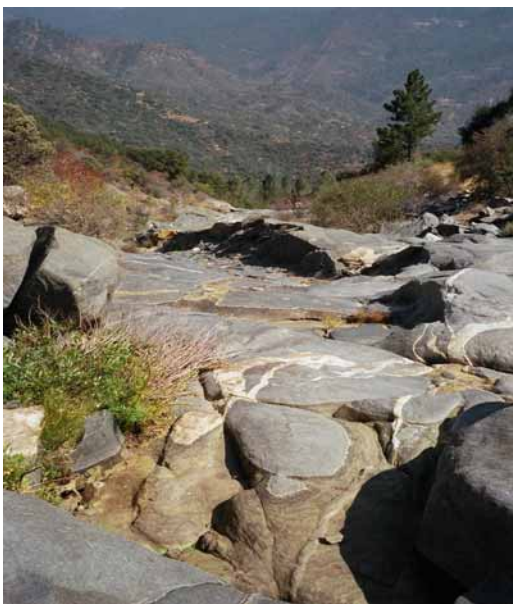
**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



Rock Creek upstream of diversion near Rock Creek Campground



Rock Creek upstream of diversion



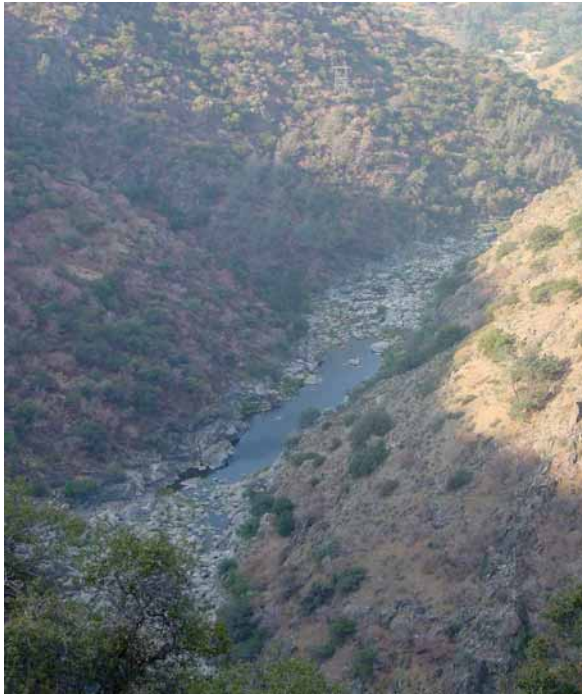
Ross Creek at diversion



Ross Creek downstream of diversion



**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



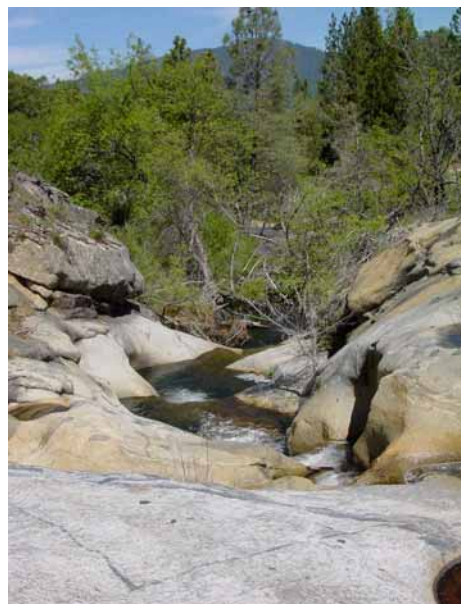
San Joaquin River Stevenson Reach



San Joaquin River Mammoth Reach



Stevenson Creek downstream of Shaver Lake



Stevenson Creek downstream of Shaver Lake

**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



Shakeflat Creek



Shakeflat Creek



Sheep Thief Creek



Mammoth Pool Reservoir



**Attachment A. California Red-legged Frog Site Assessment Photographs  
(continued)**



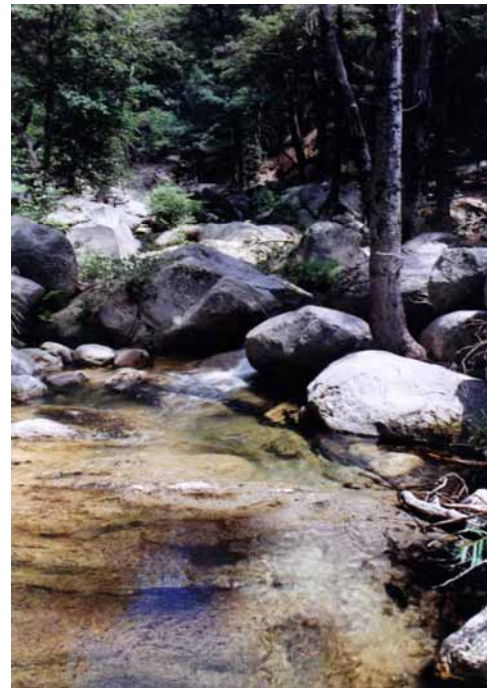
Redinger Lake



Redinger Lake



Dawn Meadow



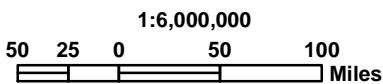
Pitman Creek

**Non-Internet Public**



- County
- Major City

Project Number: 506637  
 Date: 2/18/03  
 Prepared By: Shruti Mukhtyar  
 Projection: Geographic Datum: NAD 83



**CAWG-8 Appendix C Figure 1  
 Location of Big Creek Study Area  
 Relative to Major California Cities**

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## **Placeholder for Figures Appendix C-2 through 4**

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**APPENDIX D**  
**Ground Survey Results**

Appendix D. Amphibian and Reptile Ground Habitat Survey

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions			Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow						
Pitman Creek	US of diversion	WP 59	10/23/2001	1630	1730	Cool (60's, clear)	7200	LT, SF		Lodgepole	Lodegpole	Mix	0-1	Still	8	Willows, low water level, good habitat but probably normally fast, not much vegetation, grazing evidence	Moderate habitat. Water flow too high; no wet meadows, lakes, or ponds nearby.	Good habitat. Some slower areas; some areas with cobble substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.
Pitman Creek	US of diversion	DS of above	10/23/2001	1630	1730	Cool (60's, clear)	7200	LT, SF		Lodgepole	Lodegpole	Boulder, bedrock	0-1	Still	8	Bad habitat, bedrock, not too swift now, but looks like it usually is	Poor habitat. Bedrock substrate; no wet meadows, lakes, or ponds nearby.	Moderate habitat. Some pools, some areas with cobble substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.
Pitman Creek	US of diversion	DS of above	10/23/2001	1630	1730	Cool (60's, clear)	7200	LT, SF		Lodgepole	Lodegpole	Boulder, bedrock	0-2	Still	8	Flat area again, good habitat, rocky, not much vegetation on sides	Moderate habitat. Water flow too high; no wet meadows, lakes, or ponds nearby	Good habitat. Some slower areas; some areas with cobble substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.
Stevenson Creek	DS of Shaver	DS of dam	10/23/2001	1515	1600	Clear, Warm (70's)	5000	LT, SF		Mixed conifer	Pine, Willow	Cobble	0-1	Low to Moderate	15	Pretty swift, some pools, good habitat, willows and emergent veg present, bad odor from water, lots of algae	Outside of the elevation range of the species.	Moderate habitat. Some pools, riparian and emergent veg; swift water, bad odor and lots of algae.	Outside of the elevation range of the species.	Poor habitat. No pools.
Stevenson Creek	DS of Shaver	WP57	10/23/2001	1515	1600	Clear, Warm (70's)	5000	LT, SF		Mixed coniferous/hardwood	Pine, Oak, Willow	Silt	0-2	Still	15	Good habitat, still pools, emergent veg, warm water, marshy	Outside of the elevation range of the species.	Good habitat. Slow water, emergent veg.	Outside of the elevation range of the species.	Good habitat. Slow water, emergent veg, deep, long glide.
Stevenson Creek	DS of Shaver	DS of road	10/23/2001	1515	1600	Clear, Warm (70's)	5000	LT, SF		Mixed coniferous/hardwood	Pine, Oak, Willow	Silt	3	Still	15	Riparian, deep pool, marshy sides	Outside of the elevation range of the species.	Good habitat. Slow water, emergent veg.	Outside of the elevation range of the species.	Good habitat. Slow water, emergent veg, deep pool.
Stevenson Creek	DS of Shaver	Farther DS	10/23/2001	1515	1600	Clear, Warm (70's)	5000	LT, SF		Mixed conifer, hardwoods	Pine, Oak, Willow	Silt	0-1	Still to low	15	Good habitat, overgrown with alder and willow	Outside of the elevation range of the species.	Moderate habitat. Slow water, riparian.	Outside of the elevation range of the species.	Poor habitat. Slow water, riparian, no deep pools.
Stevenson Creek	DS of Shaver	DS of gaging station	10/23/2001	1515	1600	Clear, Warm (70's)	5000	LT, SF		Mixed coniferous/hardwood; Bare rock with pine	Pine, Oak, Willow	Bedrock, Boulder	0-2	Fast to Moderate	14	Poor habitat, swift bedrock, boulders, some riparian	Outside of the elevation range of the species.	Poor habitat. Bedrock, swift water.	Outside of the elevation range of the species.	Poor habitat. Bedrock, swift water.
Stevenson Creek	US of Shaver	WP 55	10/23/2001	1330	1530	Clear, Warm (70's)	5400	LT, SF		Mixed conifer, riparian	Cedar, Pine, Alder	Silt	0-0.5	Still	8	Good habitat. Nice, still pool, lots of riparian	Outside of the elevation range of the species.	Good habitat. Slow water, riparian, silt bottom though.	Outside of the elevation range of the species.	Moderate habitat. Nice pool, but shallow.
Stevenson Creek	US of Shaver	Upstream	10/23/2001	1330	1530	Clear, Warm (70's)	5400	LT, SF		Mixed conifer, riparian	Cedar, Pine, Alder, Willow	Bedrock, Boulder	0-2	Still	Didn't take	Nice deep pools, several fish, not good habitat for amphibians, but maybe turtle	Outside of the elevation range of the species.	Moderate habitat. Slow water, riparian, bedrock bottom though.	Outside of the elevation range of the species.	Good habitat. Nice pool, but shallow.
Stevenson Creek	US of Shaver	WP 56, Farther US	10/23/2001	1330	1530	Clear, Warm (70's)	5400	LT, SF		Mixed conifer	Pine, Cedar	Bedrock	0-2	Still to moderate	Didn't take	Bedrock, step pools, waterfall, nice deep pool at bottom, moderate habitat	Outside of the elevation range of the species.	Moderate habitat. Some pools, but swift water.	Outside of the elevation range of the species.	Poor habitat. Some pools, but small and shallow.
N Fork Stevenson Creek	Above Stevenson - Ward Tunnel Output	WP 48	10/23/2001	900	1000	Cool, (50's), Clear	5600-6600	LT, SF		Mixed conifer	White Fir, Jeffrey	Cobble	0-1	Low to still	4	Good habitat, lots of vegetation, alder, willow, pools, wood debris	Poor habitat; no meadows, lakes, or ponds nearby.	Good habitat. Lots of vegetation, slow water, cobble.	Outside of the elevation range of the species.	Outside of the elevation range of the species.
N Fork Stevenson Creek	Below Stevenson - Ward Tunnel Output	DS of tunnel input	10/23/2001	900	1000	Cool, (50's), Clear	5600-6600	LT, SF		Mixed conifer	White Fir, Jeffrey	Bedrock, Boulder	0-2	Fast to Moderate	Didn't take	Poor habitat, swift water, bedrock	Poor habitat; bedrock, swift water.	Poor habitat. Bedrock, swift water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.
N Fork Stevenson Creek	Below Stevenson - Ward Tunnel Output	US Eastwood PH	10/23/2001	900	1000	Cool, (50's), Clear	5600-6600	LT, SF		Mixed coniferous/hardwood	Cedar, Black Oak, Pine, Fir	Bedrock	0-3	Fast to low	9	Swift, steep, bedrock, some pools, poor habitat, probably even faster usually, some alder, willow, in spots with pools	Poor habitat; bedrock, swift water.	Poor habitat. Bedrock, swift water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.
Stevenson Creek	Railroad Grade Road	US of road	10/24/2001	1230	1500	Clear, Warm (70's)	4000	LT, SF		Mixed coniferous/hardwood	Cedar, Black Oak, Pine	Bedrock	0-2	Fast to still	10	Moderate habitat, some pools, but swift, bedrock, some vegetation, not much riparian	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Swift water.	Poor habitat. Pools are tiny and shallow.
Stevenson Creek	Railroad Grade Road	DS of waterfall	10/24/2001	1230	1500	Clear, Warm (70's)	4000	LT, SF		Chapparal	Manzanita, Black Oak	Bedrock	2	Still	10	Log jam, moderate habitat, not much vegetation, still water, woody debris	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Deep pool.	Good habitat. Deep pool, but surrounded by swift bedrock channel.
Stevenson Creek	Railroad Grade Road	Farther US	10/24/2001	1230	1500	Clear, Warm (70's)	4000	LT, SF		Chapparal	Manzanita, Black Oak	Bedrock	0-3	Fast to low	10	Poor amphibian habitat, bedrock, waterfalls, swift water	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Swift water, bedrock.	Moderate habitat. Swift water, bedrock.
Stevenson Creek	Railroad Grade Road	DS of road	10/24/2001	1230	1500	Clear, Warm (70's)	4000	LT, SF		Mixed coniferous/hardwood	Alder trees, Pine, Cedar	Cobble, sand	0-2	Still	10	Good habitat, slow, low gradient, but water dark in color (deep red), murky	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Slow water.	Moderate habitat. No deep pools.
Stevenson Creek	Railroad Grade Road	Farther DS	10/24/2001	1230	1500	Clear, warm (70's)	4000	LT, SF		Mixed coniferous/hardwood	Alder trees, Pine, Cedar	Boulder, bedrock	0-1	Fast to Moderate	10	Poor habitat, swift, rocky, not much vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Swift, rocky.	Moderate habitat. Swift, rocky, no pools.
Pitman Creek	Gaging Station	Low gradient part above diversion	10/24/2001	1530	1615	Clear, partly cloudy, cool (70's)	7000	LT, SF		Lodgepole	Lodegpole	Boulder, bedrock	0-1	Low to still	7	Moderate habitat, some pooling and backwater habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Some pools and cobble areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.

Appendix D. Amphibian and Reptile Ground Habitat Survey (continued)

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions				Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow	Temperature (Celsius)						
Pitman Creek	Gaging Station	DS diversion	10/24/2001	1530	1615	Clear, partly cloudy, cool (70's)	7000	LT, SF		Lodgepole	Lodgepole	Bedrock	0-1	Low	Didn't take	Poor habitat, steep bedrock, cascade, fast water	Poor habitat. No meadows, lakes, or ponds nearby and steep bedrock cascade.	Poor habitat. Steep bedrock cascade.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Rock Creek	Rock Creek	DS of diversion	10/11/2001	1230	1300	Partly cloudy, warm (80's)	3400	LT, AN		Valley foothill hardwood-conifer	Black Oak, Ponderosa	Bedrock	0-1	Still to moderate	13	Moderate habitat, bedrock sheet flow when high, some small pools on side, some overhanging vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock sheet.	Poor habitat. Bedrock sheet.	
Rock Creek	Rock Creek	US of diversion	10/11/2001	1230	1300	Partly cloudy, warm (80's)	3400	LT, AN		Valley foothill hardwood-conifer	Black Oak, Ponderosa, Willow	Sand, bedrock	0-5	Still	11	Deep pool, no vegetation on sides, poor habitat for amphibians	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Deep pool with no vegetation on sides.	Good habitat. Deep pool.	
Rock Creek	Rock Creek	~100' US of diversion	10/11/2001	1230	1300	Partly cloudy, warm (80's)	3400	LT, AN		Valley foothill hardwood-conifer	Black Oak, Ponderosa, Willow	Cobble, boulder	0-1	Still to low	11	Overhanging vegetation, pools, undercut banks, moderate habitat	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Undercut banks, overhanging vegetation.	Moderate habitat. Deep pool nearby, slow water	
Rock Creek	Rock Creek	~200' US of diversion	10/11/2001	1230	1300	Partly cloudy, warm (80's)	3400	LT, AN		Valley foothill hardwood-conifer	Black Oak, Ponderosa, Willow	Cobble, boulder	0-1	Low to moderate	11	Moderate habitat, faster flow, some pools, some vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Faster flow, rockier.	Poor habitat. No deep pools.	
Rock Creek	Rock Creek	Up to 500' DS	10/11/2001	1230	1300	Partly cloudy, warm (80's)	3400	LT, AN		Valley foothill hardwood-conifer	Black Oak, Ponderosa, Willow	Bedrock	Shallow	Still to fast	11	Bedrock, cascades, few small pools, moderate habitat, hard to access	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock cascade.	Poor habitat. Bedrock cascade.	
Mammoth Pool	Mammoth Pool	Mammoth Pool	10/11/2001	800	1030	Cloudy, cool (70's)	3300	LT, AN		Chapparal, Ponderosa Pine	Ponderosa Pine, Manzanita	Bedrock, Boulder	Unknown	Still	Didn't take	Poor habitat for amphibians, bedrock-boulder banks, no backwater pools, some good creeks for amphibian flow into the reservoir however	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. No backwater pools, little vegetation along banks.	Poor habitat. No backwater pools, little vegetation along banks.	
Ross Creek	Ross Creek	DS of Diversion	10/11/2001	1600	1630	Overcast, cool (70's-80's)	3300	LT, AN		Chapparal	Live Oak, Ceanothus	Bedrock	Dry	NA	NA	Poor habitat, steep bedrock, fast flow if water in creek	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock, dry.	Poor habitat. Bedrock, dry.	
Ross Creek	Ross Creek	US of Diversion	10/11/2001	1600	1630	Overcast, cool (70's-80's)	3300	LT, AN		Chapparal	Live Oak, Ceanothus	Bedrock	Dry	NA	NA	Poor habitat, steep bedrock, fast flow if water in creek	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock, dry.	Poor habitat. Bedrock, dry.	
Fish Creek	Fish Creek	WP 30	10/11/2001	1430	1500	Partly cloudy, warm (80's)	4400	LT, AN		Valley foothill hardwood-conifer, Chapparal	Ponderosa Pine, oak, manzanita	Bedrock	0-2	Still to low	9	Good reference for Rock Creek, not such good habitat here or DS, but good US for all spp because pools, some emergent vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Bedrock, but some pools and vegetation.	Moderate habitat. Some pools, but shallow.	
Portal Tailrace	Portal Tailrace	DS of PH	10/15/2001	1330	1345	Warm (80's), clear	7000	LT, AN		Bare rock with Ponderosa Pine	Ponderosa Pine	Boulder, cobble	5-20'	Fast	13	Poor habitat, swift water, little vegetation	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Very fast water, deep, no backwater areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Portal Tailrace	Portal Tailrace	DS of bridge	10/15/2001	1330	1345	Warm (80's), clear	7000	LT, AN		Tiny riparian, Ponderosa Pine	Alder, White Fir, Ponderosa Pine	Sand, boulder	5-20'	Fast	13	Poor habitat, swift, rocky, little vegetation or pools	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Very fast water, deep, no backwater areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Rancheria Creek	Rancheria Creek	Confluence with tailrace	10/15/2001	1330	1400	Clear, Warm (80's)	7000	LT, AN		Riparian, Ponderosa pine	Willow, Ponderosa Pine	Boulder, cobble	0-2	Fast	Didn't take	Swift, rocky, not much vegetation or pools, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Swift water, rocky.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Rancheria Creek	Rancheria Creek	By structure	10/15/2001	1330	1400	Clear, Warm (80's)	7000	LT, AN		Riparian, Lodgepole, White Fir	Willow, Lodgepole, White Fir	Sand, cobble	0-1	Slow to moderate	7.5	Moderate habitat, not too swift, some pools and vegetation, lots of willow	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Cobble, vegetation on sides, slower water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Rancheria Creek	Rancheria Creek	US of confluence	10/15/2001	1330	1400	Clear, Warm (80's)	7000	LT, AN		Riparian, Lodgepole	Willow, Lodgepole, Ponderosa Pine	Boulder, cobble	0-1	Fast to slow	Didn't take	Poor habitat, rocky, little vegetation, swift in spring	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Swift water, rocky.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Big Creek	US of Hungtington Lake	By bridge	10/15/2001	1445	1500	Clear, Warm (80's)	7200	LT, AN		Lodgepole/White Fir	Lodgepole	Cobble	0-0.5	Still	13	Good habitat, slow water, some riparian and other vegetation	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Cobble, slow water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Balsam Meadow Forebay	Balsam Meadow Forebay	S side	10/15/2001	1515	1600	Partly cloudy, warm (70's)	6800	LT, AN		Ponderosa, Lodgepole	Ponderosa Pine and Lodgepole	Sand	Unknown	Still	15	Poor habitat, not much vegetation on sides	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. No backwater areas, water level fluctuates daily.	Outside of the elevation range of the species.	Moderate habitat. Not much vegetation on sides, no woody debris, water level fluctuates drastically.	
Balsam Meadow Forebay	Balsam Meadow Forebay	N side	10/15/2001	1515	1600	Partly cloudy, warm (70's)	6800	LT, AN		Mixed coniferous/hardwood	Ponderosa Pine, Fir, Black Oak	Sand	Unknown	Still	Didn't take	Poor habitat, not much vegetation on sides	Poor habitat. Not much vegetation on sides, no backwater areas, water level fluctuates drastically.	Poor habitat. No backwater areas, water level fluctuates daily.	Outside of the elevation range of the species.	Moderate habitat. Not much vegetation on sides, no woody debris, water level fluctuates drastically.	
Balsam Meadow Creek	Balsam Meadow Creek	Creek DS of dam	10/15/2001	1515	1600	Partly cloudy, warm (70's)	6800	LT, AN		Mixed coniferous	Ponderosa Pine, Cedar, Fir	Sand	0-2	Low to Moderate	14	Good habitat, emergent vegetation, pools, seeps along sides	Poor habitat. No wet meadows, lakes, or ponds nearby	Good habitat. Pools, seeps, but sandy substrate.	Outside of the elevation range of the species.	Moderate habitat. No deep pools.	

Appendix D. Amphibian and Reptile Ground Habitat Survey (continued)

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions				Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow	Temperature (Celsius)						
Big Creek	US of PH1	By bridge and PH1	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Mixed coniferous	Ponderosa Pine	Boulder, cobble	0-1	Moderate to fast	Didn't take	Poor habitat, steep, fast flow in spring, rocky	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Rocky, looks like fast flowing spring.	Poor habitat. No deep pools.	
Big Creek	US of PH1	By PH1 and dam	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Mixed coniferous	Ponderosa Pine	Unknown	Unknown	Still	Didn't take	Poor habitat, forebay but no vegetation on sides and pools	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. No backwater pools, little vegetation along banks.	Moderate habitat. Deep pool but no vegetation on sides and no woody debris.	
Big Creek	US of PH2	US of bridge	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Mixed coniferous	Ponderosa Pine	Boulder, cobble	0-1	Moderate to fast	Didn't take	Some willow, riparian, poor habitat, steep, swift	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Rocky, looks like fast flowing spring.	Poor habitat. No deep pools.	
Big Creek	US of PH2	By PH2 bridge	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Bare rock with Live Oak and chapparal	Live Oak	Mix	0-3	Slow to moderate	Didn't take	Poor habitat, looks like usually swift, some riparian and emergent vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Rocky, looks like fast flowing spring	Poor habitat. No deep pools.	
Big Creek	US of PH2	By PH2 bridge	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Rock with Live Oak and chapparal	Live Oak	Mix	0-1	Still	Didn't take	Some small backwater pools, moderate habitat but probably flushes out in spring	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Backwater pool, but looks like fast flowing spring.	Poor habitat. No deep pools.	
Big Creek	US of PH8	By PH8 bridge	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Chapparal	Live Oak, Gray Pine	Bedrock, gravel	0-2	Still to fast	Didn't take	Some nice pools, riparian, alder, willow, shallow riffle, moderate habitat	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Shallow riffle, pools.	Poor habitat. No deep pools.	
Big Creek	US of PH8	By PH8	10/15/2001	800	1200	Windy, cold (40's), partly cloudy to warm (70's), clear	5000-2600	LT, AN		Chapparal	Live Oak	Bedrock	Sheet flow	Fast	Didn't take	Poor habitat, rocky, sheet flow, little vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock sheet.	Poor habitat. No deep pools.	
Pitman Creek	By town of Big Creek	By bridge by BC	10/16/2001	815	830	Partly cloudy, cold (40's), breezy	5000	LT, AN		Mixed coniferous/hardwood	Oak, Fir, Pine	Boulder	0-2	Still to moderate	Didn't take	Poor habitat, rocky, little vegetation, pool but fast	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Boulder, swift water.	Poor habitat. No deep pools.	
Balsam Creek	DS of Forebay	By Sierra Camp	10/16/2001	845	900	Partly cloudy, cool (50's)	5000	LT, AN		Mixed coniferous/hardwood	Cedar, Alder, Oak	Bedrock	0-1	Moderate to fast	7	Poor habitat, swift, bedrock, no emergent vegetation, little riparian, swift even at low flow time	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Swift, bedrock.	Poor habitat. No deep pools.	
Balsam Creek	DS of Forebay	By main BC road	10/16/2001	845	900	Partly cloudy, cool (50's)	5000	LT, AN		Mixed coniferous/hardwood	Cedar, Alder, Oak	NA	NA	NA	NA	Can't find, underground?	NA	NA	NA	NA	
Ely Creek	DS Diversion	By gated road	10/16/2001	900	1430	Partly cloudy, cool (50's)	5000	LT, AN		Mixed coniferous/hardwood	Ponderosa Pine, Oak, Cedar	Bedrock, cobble	0-0.5	Low	10	Good habitat, low gradient, not fast, riparian and emergent vegetation	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Cobble, slow water, emergent vegetation.	Poor habitat. No deep pools.	
Ely Creek	DS Diversion	By Railroad Road (US)	10/16/2001	900	1430	Partly cloudy, cool (50's)	5000	LT, AN		Mixed coniferous/hardwood	Pine, Oak, Fir	Sand, boulder	Dry	NA	NA	Moderate habitat, lots of riparian, slow water	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Moderate habitat. Slow water but sand and coulder substrate.	Poor habitat. No deep pools.	
Ely Creek	DS Diversion	DS Railroad Road	10/16/2001	900	1430	Partly cloudy, cool (50's)	5000	LT, AN		Mixed hardwood, coniferous	Pine, Oak, Fir	Bedrock	Almost dry	NA	NA	Bedrock sheet, poor habitat, lots of riparian	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock sheet.	Poor habitat. No deep pools.	
Adit 8	DS of Diversion	By gated road	10/16/2001	915	1430	Cool (50's), Partly cloudy	5000	LT, AN		Mixed hardwood, coniferous	Maple, Pine, Cedar	Bedrock, cobble	0-1	Fast	Didn't take	Poor habitat, very fast water, cascade on bedrock	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock cascade.	Poor habitat. No deep pools.	
Adit 8	DS of Diversion	DS gated road	10/16/2001	915	1430	Cool (50's), Partly cloudy	5000	LT, AN		Mixed hardwood, coniferous	Maple, Pine, Cedar	Bedrock	0-1	Fast	Didn't take	Poor habitat, very fast water, cascade on bedrock	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock cascade.	Poor habitat. No deep pools.	
Adit 8	DS of Diversion	By Railroad Road	10/16/2001	915	1430	Cool (50's), Partly cloudy	5000	LT, AN		Mixed hardwood, coniferous	Cedar, Maple, Pine, Oak	Bedrock	Dry, but rushing below			Poor habitat, steep, rocky, hear water rushing below, diverted under road via culvert or tunnel	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Poor habitat. Bedrock cascade.	Poor habitat. No deep pools.	

Appendix D. Amphibian and Reptile Ground Habitat Survey (continued)

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions				Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow	Temperature (Celsius)						
Jose Creek	Jose Creek	WP 43	10/17/2001	900	1000	Clear, cool (50's-60's)	About 2200	LT, AN		Chaparral, mixed hardwood/coniferous	Oak, Gray Pine	Bedrock	0-5	Low to still	12.5	Good habitat, known pond turtle area, emergent vegetation, alder, willow	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Bedrock, but slow water and pool area.	Good habitat. Known to occur here, nice pool, emergent vegetation.	
Jose Creek	Jose Creek	WP 44	10/17/2001	900	1000	Clear, cool (50's-60's)	About 2200	LT, AN		Chaparral, mixed hardwood/coniferous	Oak, Pine	Bedrock	0-1	Low to still	12	Good habitat, nice pools in bedrock, known foothill yellow legged frog area, nice emergent vegetation, some alder	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Bedrock, but pools in area.	Good habitat. Known to occur US, pools but separated by bedrock.	
Willow Creek	Willow Creek	WP 45	10/17/2001	1015	1115	Clear, warm (70's-80's)	About 1800	LT, AN		Chaparral, Oakwoodland	Live Oak, Grass	Sand, boulder, cobble	0-1	Low to still	15	Good habitat, fish, crawdads, two big tadpoles, nice emergent vegetation, alder and willow riparian, potential red-legged frog habitat	Outside of the elevation range of the species.	Outside of the elevation range of the species.	Good habitat. Slow water, emergent veg, cobble.	Good habitat. Long pool, but not deep.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	WP 1	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Meadow	Willow, Lodgepole, Grass	Sand, gravel	0-3	Still, low (shallow)	7	Potential toad habitat, evidence of grazing	Good habitat. Nice wet meadow but heavily grazed.	Poor habitat. Sand and gravel substrate, dry.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	US of above	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Meadow	Grass, Willow, Lodgepole	Sand, organic, silt	dry	NA	NA	Overgrown with willow	Moderate habitat. Nice wet meadow but heavily grazed.	Poor habitat. Sand and gravel substrate, dry.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	US of above	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Riparian	Alder	Sand	dry	NA	NA	Open channel, some limited riparian	Moderate habitat. Nice wet meadow nearby but overgrown with willow.	Poor habitat. Sand and gravel substrate, dry.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	WP3	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Mixed coniferous	Lodgepole, Aspen, Ponderosa	Sand	0-1	Still, low	9	Meandering, debris, shallow, slow, maybe mountain yellow legged frog habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Shallow, slow, but sandy substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	WP3	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Mixed coniferous	Lodgepole, Aspen, Ponderosa	Sand, gravel	0-1	Low	9	Meandering, debris, shallow, slow, maybe mountain yellow legged frog habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Shallow, slow, but sandy substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	US of above	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Riparian	Alder	Sand, boulder	0-1	Fast to low	Didn't take	Not potential habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Steep boulder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Tombstone Creek	Jackass Meadow, near campground to the diversion	US of above	9/23/2001	920	1230	Clear, cool (70's), became partly cloudy	7200-7700	LT, KY		Riparian	Alder, Willow	Cobble, boulder	0.3-0.8	Fast	Didn't take	Too swift, no habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Steep boulder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	DS of dam	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Riparian	Willow, Alder	Boulder, gravel, bedrock	3-10'	Low to Moderate	16	Backwater pool, maybe mylf	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Backwater pool may be good, river too deep and fast.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	US of bridge by campground	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Riparian	Willow, Alder	Gravel, bedrock	1-5'	Low to Moderate	Didn't take	Riparian, run, pool	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Backwater pool may be good, river too deep and fast.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	DS of bridge by campground	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Riparian	Willow, Alder	Gravel	0-6	Low	Didn't take	Long glide	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Backwater pool may be good, river too deep and fast.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	By road crossing	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Riparian, Lodgepole	Willow, Lodgepole	Gravel, cobble	0-3	Low to Moderate	16	Road crossing, run, glide	Moderate habitat. Adjacent marshy area and some wet meadows nearby.	Good habitat. Adjacent marshy area, cobble and gravel substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	Backwater pool by road crossing	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Riparian, emergent	Sedges, Pondweed	Organic	0-2	Low	16	Backwater pool, maybe toad habitat, 5-6 H. regilla adults	Good habitat. Adjacent marshy area and some wet meadows nearby.	Good habitat. Adjacent marshy area, cobble and gravel substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	Farther DS	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Lodgepole, Wetland	Lodgepole, Sedges	Sand, silt	0-1	Still to low	Didn't take	Good pool, maybe mylf or toad	Good habitat. Nice pool, wet meadow nearby.	Good habitat. Nice pool but sand and silt substrate.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	

Appendix D. Amphibian and Reptile Ground Habitat Survey (continued)

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions				Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow	Temperature (Celsius)						
South Fork San Joaquin River	DS of Florence Lake	Farther DS	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Meadow/ Emergent Wetland	Tule, Sedges, Grasses	Organic	Dry	NA	NA	High abundance of H. regilla, Potential toad habitat	Good habitat. Nice wet meadow.	Poor habitat. No creek.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Florence Lake	Farther DS	9/23/2001	1330	1500	Partly cloudy	7200	LT, KY		Mixed Coniferous	Jeffrey, white fir	Boulder	0-1	Low to Moderate	Didn't take	Poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Boulder, swift water usually.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Slide Creek	South Slide Creek	South Slide Creek	9/23/2001	1530	1545	Partly cloudy	7200	LT, KY		Riparian, Aspen	Willow, Aspen	Cobble, sand	Dry	NA	NA	Poor habitat, only looked at road crossing	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Steep, rocky, dry.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
North Slide Creek	North Slide Creek	North Slide Creek	9/23/2001	1530	1545	Partly cloudy	7200	LT, KY		Riparian, Aspen	Aspen	Boulder, cobble	0.1-1	Still	Didn't take	Very overgrown, maybe mylf, gets very steep, cascades uphill	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Cobble, but steep.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	DS of diversion	At diversion	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian	Alder, Willow	Bedrock	1-2'	Fast	Didn't take	Poor habitat, sheet, cascade	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock sheet and cascade.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of diversion	Above diversion	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian	Alder, Willow	Cobble	0.1-1	Fast	Didn't take	When operating, pooling behind diversion	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Cobble, pooling behind dam when in use.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	DS of diversion	Below diversion	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian	Alder, Willow	Bedrock, organic	1-3'	Fast to low	Didn't take	Woody debris, some pooling	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Swift, bedrock, but some pooling.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	At road, above	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian, Ponderosa, White Fir	Alder	Sand, gravel, cobble	0.1-1	Low to still	9	Run, but slow and good amphibian habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Cobble riffle and run, shallow, slow water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	At road, ~50' above	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian	Alder	Cobble, gravel, sand	0.1-0.3	Low	9	Run - riffle, maybe good mylf	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Nice cobble riffle, slow, shallow.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	~100' above road	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Ponderosa	Ponderosa	Sand with cobble and boulder	0.1-1	Moderate to fast	Didn't take	Riffle with some pooling, moderate habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Riffle, slow, shallow, pools.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	~150' above road	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Ponderosa	Ponderosa	Boulder	0.1-1	Fast	Didn't take	Step pools	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Step pools, but swift water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	Side channel	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Ponderosa	Ponderosa, Fern	Boulder	0.1-0.3	Low to still	Didn't take	Still backwater areas with lots of vegetation	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Backwater areas, lots of emergent vegetation.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	~200' from road	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian, cascade	Alder	Bedrock, Boulder	0.1-1	Fast to Moderate	Didn't take	Some limited pooling	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Bedrock and boulder but some pools.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	Side channel	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian	Alder	Boulder, cobble	0.1-0.5	Low to still	Didn't take	Good amphibian habitat, except not for mountain yellow-legged frog	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Boulder and some cobble, low flow water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Hooper Creek	US of road	250' from road	9/23/2001	1610	1730	Partly cloudy	7600	LT, KY		Riparian	Alder	Sand with boulders	0.3-1	Fast to Moderate	Didn't take	plunge pool	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Plunge pool.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Crater Creek Diversion Channel	Crater Creek Diversion Channel	Trailhead Intersection	9/24/2001	1330	1630	Partly cloudy, warm (80's)	7800-8200	LT, KY		Montane chapparal with Jeffrey	Manzanita, Jeffrey	Gravel, cobble	Dry	NA	NA	Diversion during spring and early summer only, poor habitat even if wet	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Water present only during high flows in early summer.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Crater Creek Diversion Channel	Crater Creek Diversion Channel	Second Trail Intersection	9/24/2001	1330	1630	Partly cloudy, warm (80's)	7800-8200	LT, KY		Jeffrey	Jeffrey, White Fir	Cobble, boulder	Dry	NA	NA	Steep, dry now, if wet would be high gradient riffle	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Water present only during high flows in early summer.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	US of Florence Lake	Above footbridge	9/24/2001	1000	1100	Clear to partly cloudy, warm (80's)	7400	LT, KY		Bare rock, Jeffrey	Jeffrey Pine	Bedrock	1-10'	Fast	Didn't take	Poor habitat, cascades, swift runs	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock, swift, cascades.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	US of Florence Lake	Below footbridge	9/24/2001	1000	1100	Clear to partly cloudy, warm (80's)	7400	LT, KY		Bare rock, Jeffrey	Jeffrey Pine	Bedrock	10-15'	Still	Didn't take	Deep pool, plunge pool	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Deep plunge pool, bedrock.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	US of Florence Lake	50' below bridge	9/24/2001	1000	1100	Clear to partly cloudy, warm (80's)	7400	LT, KY		Bare rock, Jeffrey	Jeffrey Pine	Bedrock	1-2'	Low	Didn't take	Slow riffle and long run, shallow	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Riffle, but bedrock.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	US of Florence Lake	Backwater area	9/24/2001	1000	1100	Clear to partly cloudy, warm (80's)	7400	LT, KY		Bare rock, Jeffrey	Jeffrey Pine	Cobble	0.1-1	Still	Didn't take	Backwater area with some grasses	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Backwater area with cobble.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	US of Florence Lake	To confluence with lake	9/24/2001	1000	1100	Clear to partly cloudy, warm (80's)	7400	LT, KY		Jeffrey	Jeffrey Pine	Cobble, boulder	0.1-2	Low	Didn't take	Some willow and grasses on side, riffles, runs	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Some cobble riffle, but probably too swift.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	

Appendix D. Amphibian and Reptile Ground Habitat Survey (continued)

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions				Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow	Temperature (Celsius)						
South Fork San Joaquin River	US of Florence Lake	Pool up unnamed tributary to SFSJ	9/24/2001	1000	1100	Clear to partly cloudy, warm (80's)	7400	LT, KY		Riparian	Alder	Silt	1-4'	Still	Didn't take	Woody debris, overgrown with alder in most, good wpt, but too high	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Deep pool, silty bottom.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Florence Lake	Florence Lake	Florence Lake	9/24/2001	900	1000	Clear to partly cloudy	7400	LT, KY		Bare rock, Juniper	Juniper	Bedrock	Unknown	Still	16	Poor habitat, bedrock bottom and banks, no emergent wetlands or backwater areas	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock banks, no backwater areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Florence Lake	Florence Lake	NE end	9/24/2001	900	1000	Clear to partly cloudy	7400	LT, KY		Bare rock, Juniper	Juniper	Bedrock	Dry	NA	NA	Area with grass, may be seasonal wetland during high flows	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. May be seasonal wetland, but still bedrock all around.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Bear Creek	DS of Diversion	WP 15	9/25/2001	1300	1400	Clear, warm (80's), breezy	6800	LT, KY		Bare rock with Juniper, Lodgepole, and Jeffrey	Mixed	Boulder	1-3'	Fast to still	14	Deep cut canyon, boulder and bedrock, some pooling, poor habitat, maybe Mt. Lyell salamander	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock, boulder, steep cascade.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Gaging Station	DS gaging station	9/25/2001	1230	1600	Clear, warm (80's), breezy	7600	LT, KY		Mixed conifer, bare rock, montane chaparral	Jeffrey Pine and others	Boulder	0.2-3	Fast	15	Poor habitat, fast pocket water, and few to no backwater areas	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock, boulder, no backwater areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Poison Meadow	Poison Meadow	WP 11, Poison Meadow	9/25/2001	1230	1600	Clear, warm (80's), breezy	7600	LT, KY		Wet meadow	Sedges, willow	NA	NA	NA	NA	Good toad habitat, didn't see frogs but thick grass	Good habitat. Large wet meadow, only old grazing.	Poor habitat. No stream.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Poison Meadow Creek	Poison Meadow Creek	WP 13, East of creek, in meadow	9/25/2001	1230	1600	Clear, warm (80's), breezy	7600	LT, KY		Lodgepole	Lodgepole	Silt	0.1-1	Still	11	Great amphibian habitat, garter snake	Good habitat. Large wet meadow, only old grazing.	Nice slow creek with overhanging vegetation and undercut banks, but silt bottom.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
South Fork San Joaquin River	DS of Gaging Station	Bear Creek Confluence	9/25/2001	1230	1600	Clear, warm (80's), breezy	7600	LT, KY		Bare rock with mixed conifer	Lodgepole	Boulder, bedrock	1-10'	Fast	Didn't take	Poor habitat, fast riffles	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock, boulder, no backwater areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Bear Creek Diversion Forebay	Bear Creek Diversion Forebay	Bear Bay	9/25/2001	900	1030	Cloudy, cool (60's), light rain	7400	LT, KY		Jeffrey	Jeffrey, White Fir	Silt	Unknown	Still to low	11	Some seasonal wetland adjacent, good habitat	Moderate habitat. Small lake, some emergent wetland on sides.	Poor habitat. Deep pool, silty bottom.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Bear Creek	US of diversion	US of Bay	9/25/2001	900	1030	Cloudy, cool (60's), light rain	7400	LT, KY		Jeffrey	Jeffrey, White Fir	Bedrock	Unknown	Still to fast	Didn't take	Swift riffles, some pooling on sides, not good habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Swift riffles, some pooling on sides.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Bear Creek	DS of Diversion	DS of Dam	9/25/2001	900	1030	Cloudy, cool (60's), light rain	7400	LT, KY		Lodgepole, Riparian	Lodgepole, Willow, Alder	Silt, cobble	Unknown	Low to fast	Didn't take	Deep swift water, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Deep, swift water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Bear Creek	DS of Diversion	About 200' DS of dam	9/25/2001	900	1030	Cloudy, cool (60's), light rain	7400	LT, KY		Riparian, Mixed	Alder, Lodgepole, Jeffrey	Bedrock	Unknown	Fast	Didn't take	Swift, deep, bedrock, boulder bank, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock, deep, swift water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Chinquapin Creek	DS of Diversion	By road	9/26/2001	1500	1630	Clear, warm (80's)	7100	LT, CL		Mixed conifer	All	Silt, gravel	0.1-0.5	Still to low	12	Good amphibian habitat, pools, still water, emergent vegetation	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Pools, emergent veg, but silt and gravel.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Chinquapin Creek	DS of Diversion	100' US of rd	9/26/2001	1500	1630	Clear, warm (80's)	7100	LT, CL		Riparian	Alder	Logs, cobbles	0.1-0.5	Still to low	Didn't take	Very overgrown with alders, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Cobble, but overgrown with riparian and woody debris.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Chinquapin Creek	DS of Diversion	WP 21, 200' US	9/26/2001	1500	1630	Clear, warm (80's)	7100	LT, CL		Riparian	Alder	Silt, cobble	0.1-2	Still to low	Didn't take	Nice pool, lots of fish, moderate for amphibians (Saw lots of trout in pools, 1"-8")	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Pools, cobble.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Chinquapin Creek	DS of Diversion	250' US	9/26/2001	1500	1630	Clear, warm (80's)	7100	LT, CL		Mixed conifer	All	Bedrock	0.1-1	Moderate	Didn't take	Poor habitat for amphibians, bedrock sheet	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Bedrock sheet.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Chinquapin Creek	DS of Diversion	400' US	9/26/2001	1500	1630	Clear, warm (80's)	7100	LT, CL		Mixed conifer	Fir	Boulder, bedrock	0.5-1	Moderate	Didn't take	Poor habitat, boulder, bedrock, fast flows in spring	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Boulder, bedrock, fast water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Chinquapin Creek	DS of Diversion	DS of road	9/26/2001	1500	1630	Clear, warm (80's)	7100	LT, CL		Mixed conifer	Mixed	Mixed	0.1-1	Low	Didn't take	Poor habitat, low now but high flows, lots of woody debris	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Woody debris, mixed substrate, but usually high flows.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Camp 62 Creek	DS of Diversion	US, by road	9/26/2001	1700	1730	Clear, warm (80's)	7100	LT, CL		Mixed conifer	Alder, willow	Cobble, boulder	0.1-0.5	Low	Didn't take	Poor habitat, high gradient, fast flow	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. High gradient, fast water.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Camp 62 Creek	DS of Diversion	DS of road	9/26/2001	1700	1730	Clear, warm (80's)	7100	LT, CL		Mixed conifer, Riparian	Alder, Willow	Cobble, boulder	0.1-1	Low to still	Didn't take	Poor habitat, rocky, very little flow	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Very little water, cobble, boulder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Crater Creek	DS of Diversion	WP 19	9/26/2001	1200	1400	Clear, warm (80's)	7000	LT, CL		Riparian	Alder	Gravel, sand, silt	0.1-1	Still to low	11	Good habitat for amphibians, especially myff, pools, shallow riffle	Good habitat. Adjacent wet meadow, low gradient, riffle creek.	Good habitat. Gravel riffle, low gradient, gentle flow.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Crater Creek	DS of Diversion	By Florence Road	9/26/2001	1200	1400	Clear, warm (80's)	7000	LT, CL		Bare rock	Juniper	Boulder	Dry	NA	NA	Poor habitat, steep gradient, boulder	Poor habitat. Steep, boulder.	Poor habitat. Steep, boulder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Bolsillo Creek	DS of Diversion	By SFSJ	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Bare rock with mixed conifer	Mixed	Bedrock, boulder	Dry	NA	NA	Poor habitat, bedrock, sheet	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Steep, boulder, bedrock sheet.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Bolsillo Creek	Bolsillo Diversion	By diversion	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Mixed	White Fir	Bedrock, Boulder	Minimal	Low	Didn't take	Poor habitat, bedrock, boulder, comes through fast	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. Steep, boulder, bedrock sheet.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	



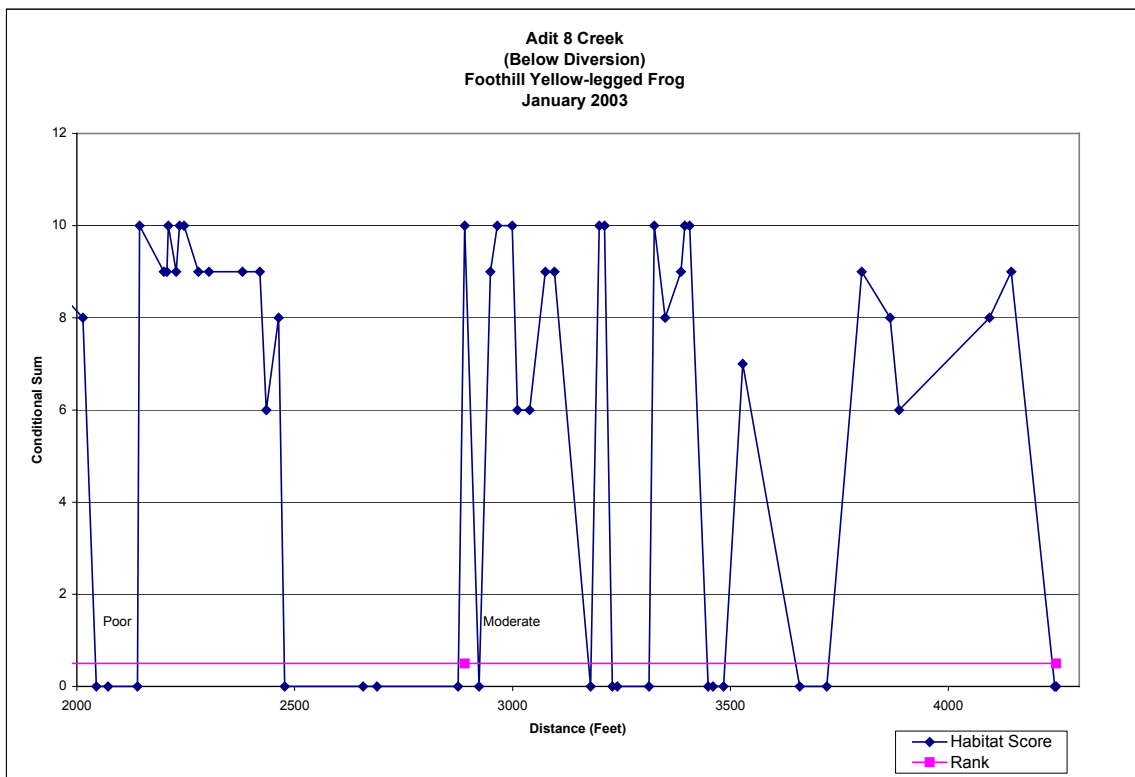
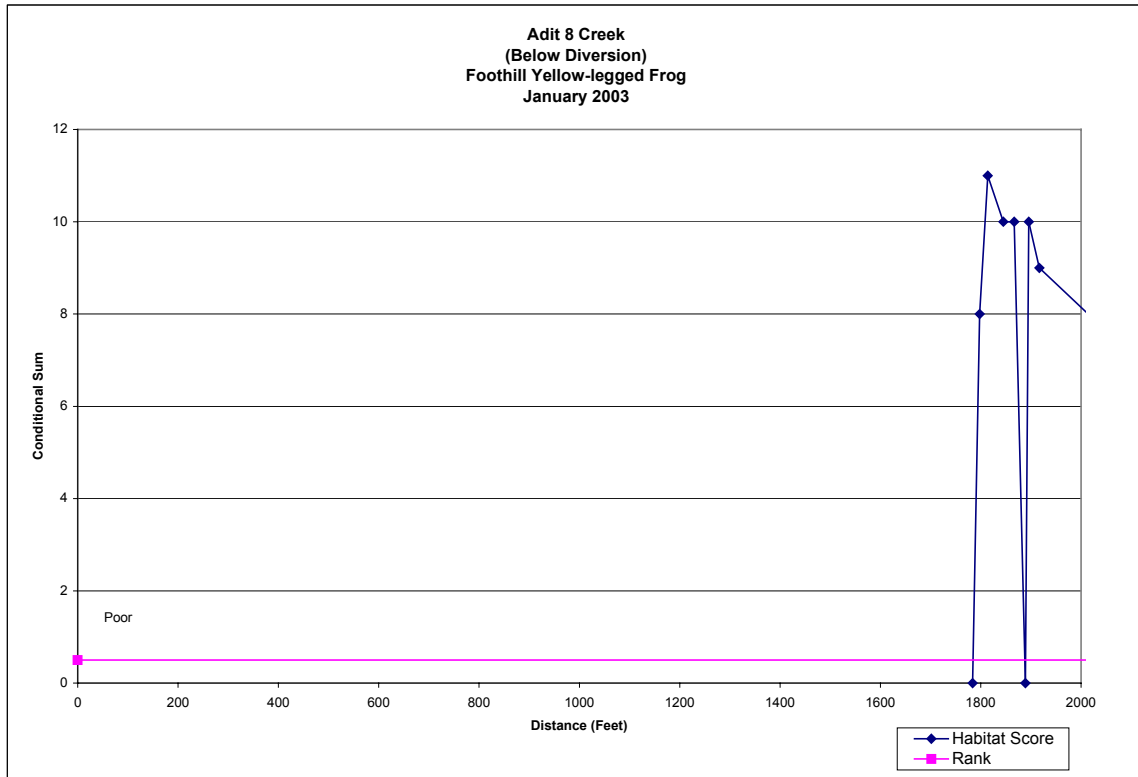
Appendix D. Amphibian and Reptile Ground Habitat Survey (continued)

Water body	Reach	GPS	Date	Start time	End time	Weather	Elevation (feet)	Surveyors	Data:	Upland Habitat Information		Water Body Conditions				Comments	Data analysis:	Yosemite toad	Mountain yellow-legged frog	Foothill yellow-legged frog	Western pond turtle
										Surrounding habitat type	Dominant vegetation	Substrate	Depth (feet)	Flow	Temperature (Celsius)						
Bolsillo Creek	Bolsillo Diversion	By road US	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Mixed	Pine, Fir	Cobble	01-0.5	Low to still	9	Good habitat, slow, low gradient, some riparian and grasses	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Cobble riffle, low gradient.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Bolsillo Creek	Bolsillo Diversion	By road DS	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Riparian	Alder	Cobble, woody debris	0.1-2	Low to still	Didn't take	Good habitat, slow, woody debris	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Cobble riffle, low gradient, woody debris.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Meadow by Mono Hot Springs	Meadow by Mono Hot Springs	WP 23	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Wet meadow	Grasses	Silt, organic	0.1-2	Low to still	36	Springs, runoff, good habitat for toads, hot springs	Good habitat. Wet meadow.	Poor habitat. No creek.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
South Fork San Joaquin River	By Mono Hot Springs	DS of above	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Wetland, Riparian	Grasses, emergent vegetation	Silt, cobble	1-3'	Still	Didn't take	Good backwater, pool, good habitat	Good habitat. Adjacent wet meadows.	Good habitat. Backwater pool.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
South Fork San Joaquin River	By Mono Hot Springs	DS of above	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Wet meadow	Grasses	Cobble	1-4'	Still to low	Didn't take	Riffle, cobble, with some pools	Moderate habitat. Adjacent wet meadows.	Good habitat. Pools, cobble.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Meadow by Mono Hot Springs	Meadow by Mono Hot Springs	DS of above	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Dry Meadow	Grasses	NA	NA	NA	NA	Poor habitat	Poor habitat. Not a wet meadow.	Poor habitat. No creek.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Meadow by Mono Hot Springs	Meadow by Mono Hot Springs	DS of above	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Wet meadow	Grasses, Rushes	NA	NA	NA	NA	Close to Chinquapin	Good habitat. Wet meadow.	Poor habitat. No creek.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
South Fork San Joaquin River	By Mono Hot Springs	WP 26	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Seep	Grasses	Silt	0.1-0.2	Still	Didn't take	Nice seep, still wet	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. No creek.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
South Fork San Joaquin River	By Mono Hot Springs	Before Bolsillo	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Riparian	Alder	Cobble	0.2-1	Low	Didn't take	Nice side channel, but high flows, usually tributary may be moderate habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Cobble, but flows may be too high.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
South Fork San Joaquin River	By Mono Hot Springs	Before Bolsillo	9/27/2001	1045	1130	Clear, warm (80's)	6600	LT, CL		Seep	Grasses	Organic	0.1-0.2	Low	Didn't take	Nice seep, maybe mt lyell salamander	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. No creek.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Chinquapin Creek	DS of Diversion	Near confluence	9/27/2001	945	1030	Clear, cool (70's)	6600	LT, CL		Riparian	Alder	Sand, gravel, cobble	0.5-3	Low to Moderate	10	Looks nice now but probably high flows, nice for mylf, undercut banks, riffle, pool	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Cobble riffle, but may be too swift in spring.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Chinquapin Creek	DS of Diversion	WP 24, 100-200 US of above	9/27/2001	945	1030	Clear, cool (70's)	6600	LT, CL		Riparian	Alder	Boulder	0.1-0.5	Moderate	Didn't take	Boulder, steep, moderate flow, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Boulder, steep.	Outside of the elevation range of the species.	Poor habitat. No deep pools.	
Portal Leakage Channel	Portal Leakage Channel	WP 27, leakage channel	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Lodgepole	Lodgepole	Silt, gravel	0.1-2	Low to still	14	Some emergent vegetation, lots of alders, nice pools DS of weir, iron channel, moderate habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Good pools, emergent veg, but lots of iron.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Camp 61 Creek	DS of Portal Forebay	Camp 61, Second Campground	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		White Fir	White Fir	Boulder, bedrock	0.1-1	Low to still	Didn't take	Good habitat now, pools, emergent vegetation, but high usually	Poor habitat. No wet meadows, lakes, or ponds nearby.	Good habitat. Good pools, but bedrock and boulder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
Portal Forebay	Portal Forebay	Portal Forebay	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Lodgepole, White Fir	Lodgepole, White Fire	Sand	Unknown	Low to still	Didn't take	Not good habitat, fish stock, no emergent vegetation	Poor habitat. No wet meadows, lakes, or ponds nearby.	Poor habitat. No backwater areas.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
West Fork Camp 61 Creek	US of Portal Forebay	Camp 61, W Fork, N of road	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Riparian	Alder	Boulder	0.1-0.5	Moderate	Didn't take	Overgrown with alder, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Overgrown with alder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
West Fork Camp 61 Creek	US of Portal Forebay	Camp 61 W Fork, S of road	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Riparian	Alder	Bedrock	0.1-0.5	Moderate to fast	Didn't take	Cascade, poor habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Bedrock cascade.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
West Fork Camp 61 Creek	US of Portal Forebay	Camp 61 W Fork, S of road	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Riparian	Alder	Boulder	0.1-0.5	Moderate to fast	Didn't take	Not good habitat, fast, all rock	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Bedrock, swift.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
East Fork Camp 61 Creek	US of Portal Forebay	Camp 61 E Fork, S of road	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Riparian	Alder	Boulder, cobble	0.1-1	Low to Moderate	Didn't take	Some pooling, some grasses, moderate habitat	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Pools, cobble, boulder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	
East Fork Camp 61 Creek	US of Portal Forebay	Camp 61 E Fork, N of road	9/27/2001	1500	1600	Clear, warm (80's), windy	7200	LT, CL		Riparian	Alder	Boulder, cobble	0.1-2	Low to still	Didn't take	Good pool, overgrown with alder	Poor habitat. No wet meadows, lakes, or ponds nearby.	Moderate habitat. Good pool, but overgrown with alder.	Outside of the elevation range of the species.	Outside of the elevation range of the species.	

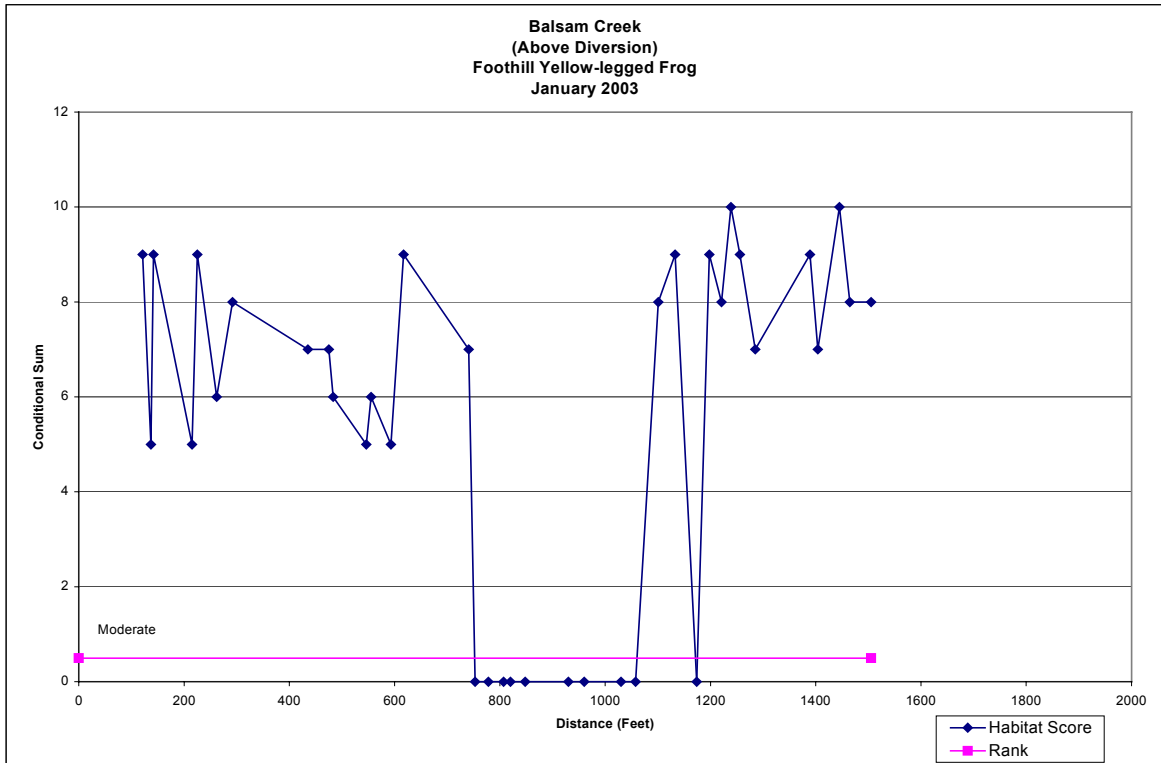
## **APPENDIX E**

### **Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog**

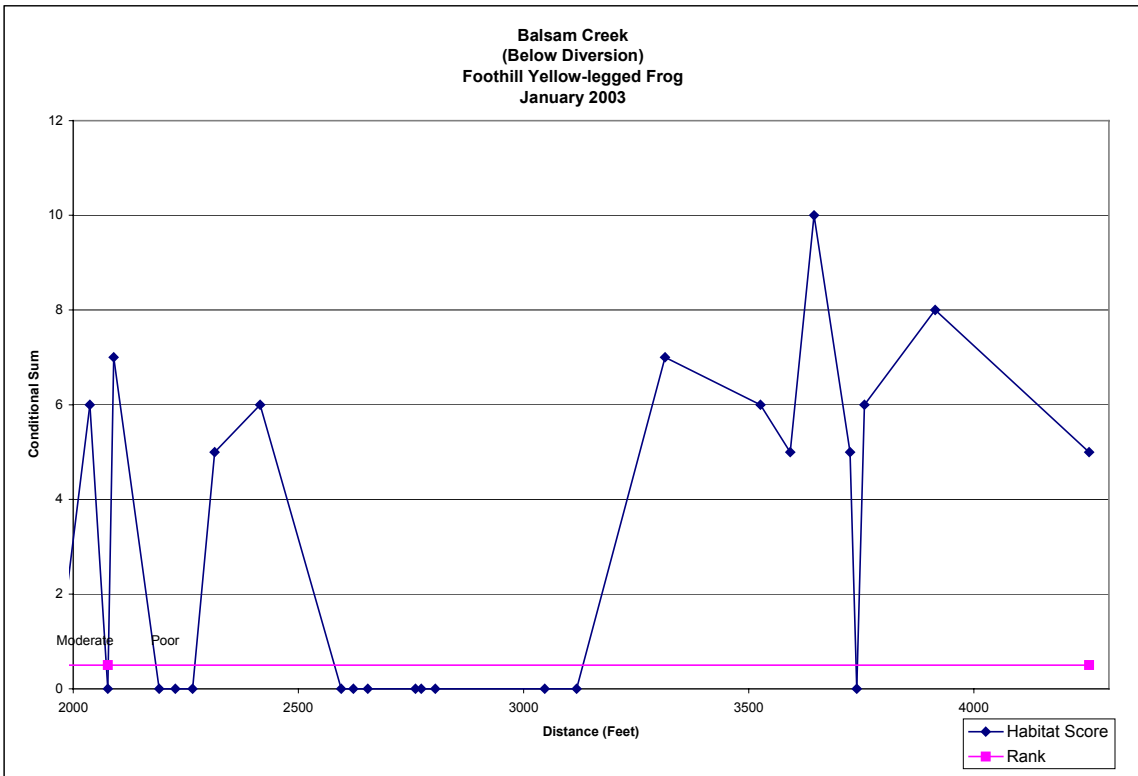
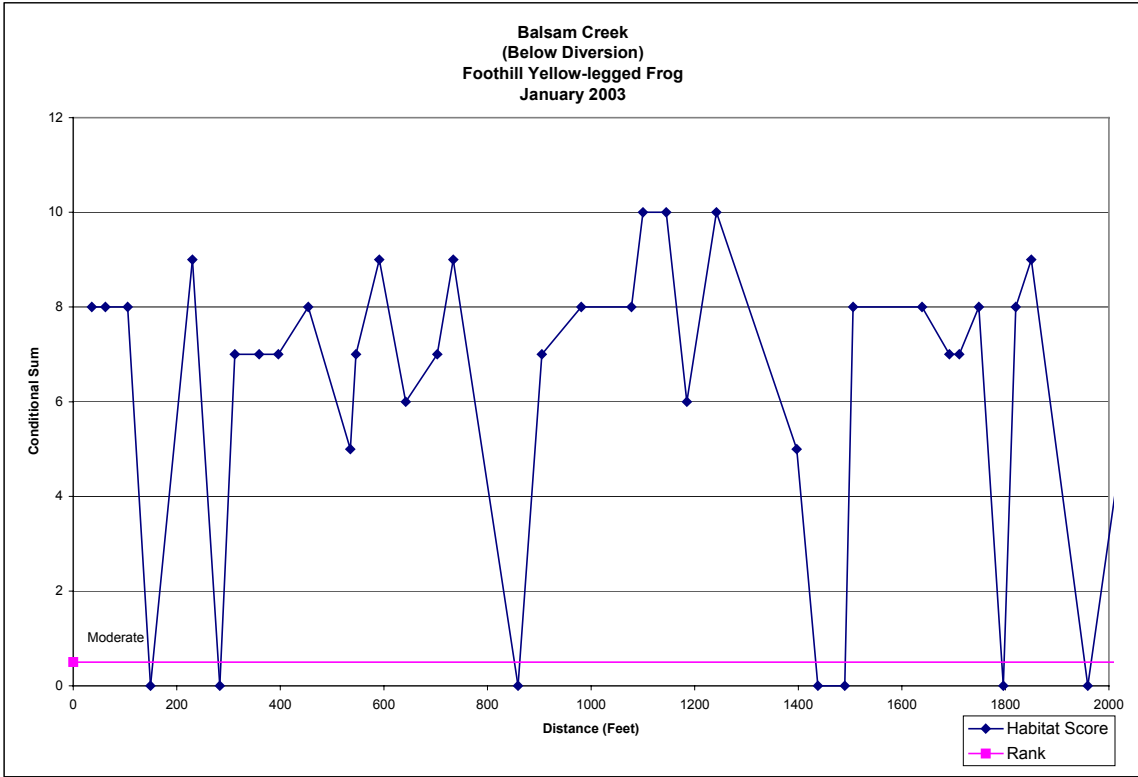
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog



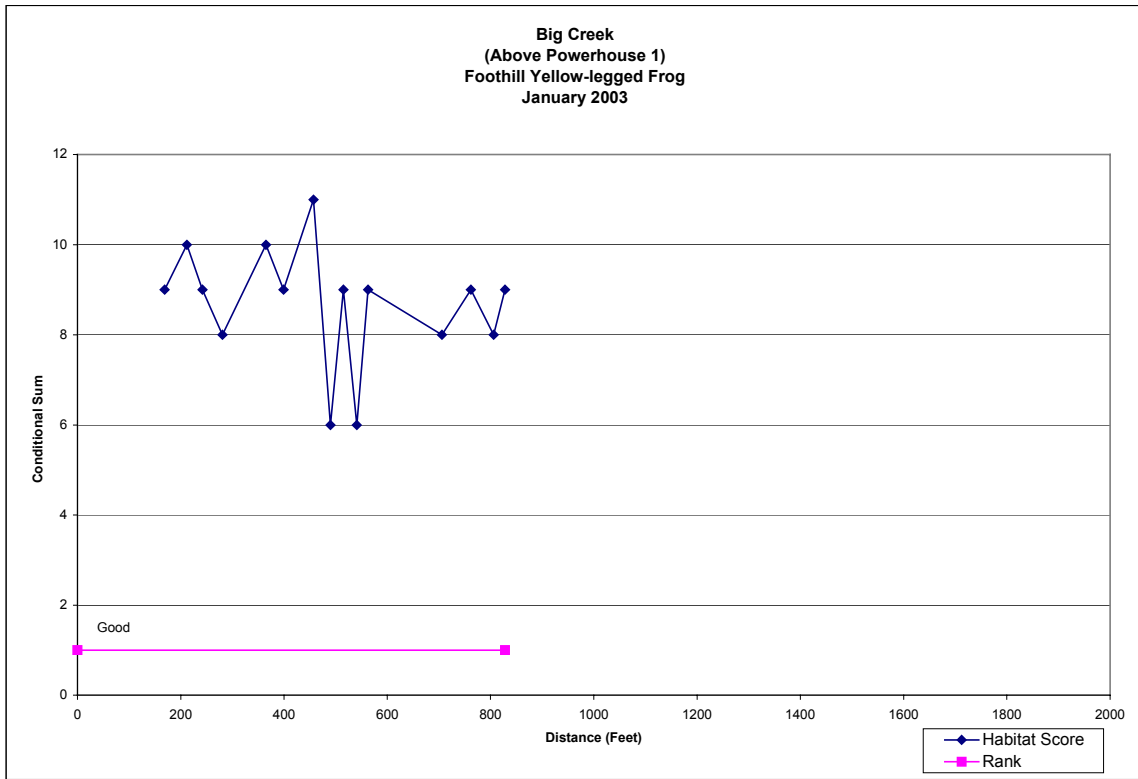
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



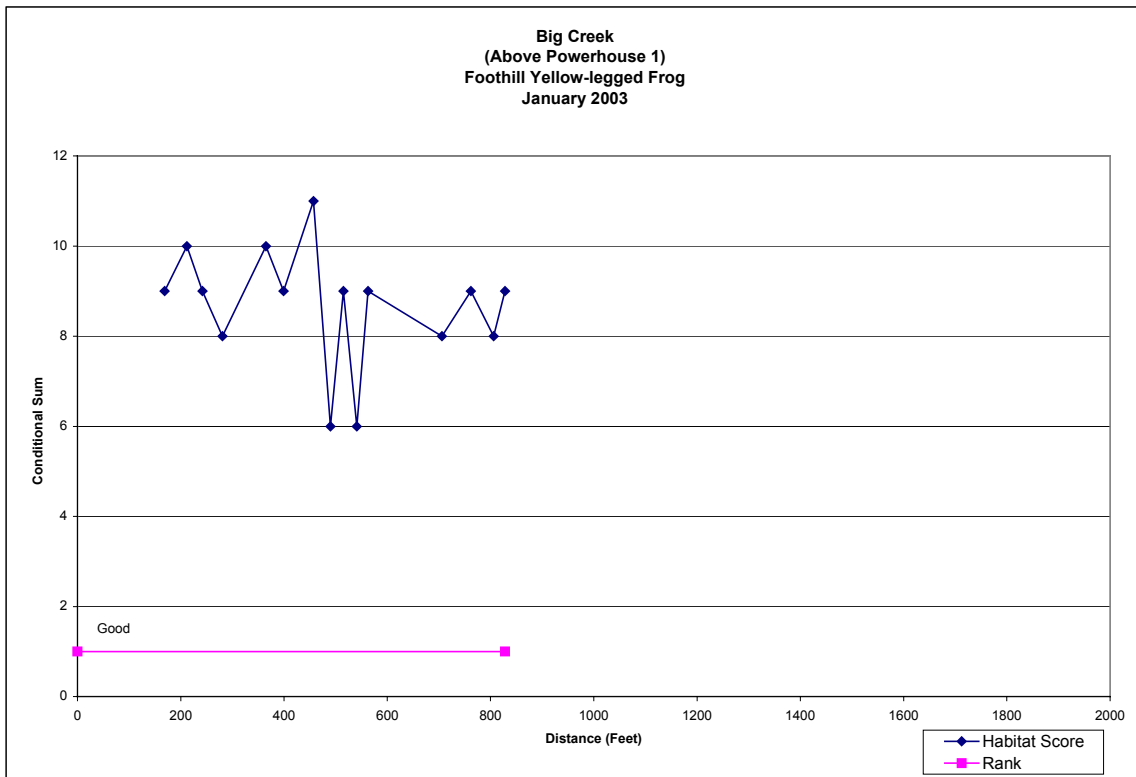
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



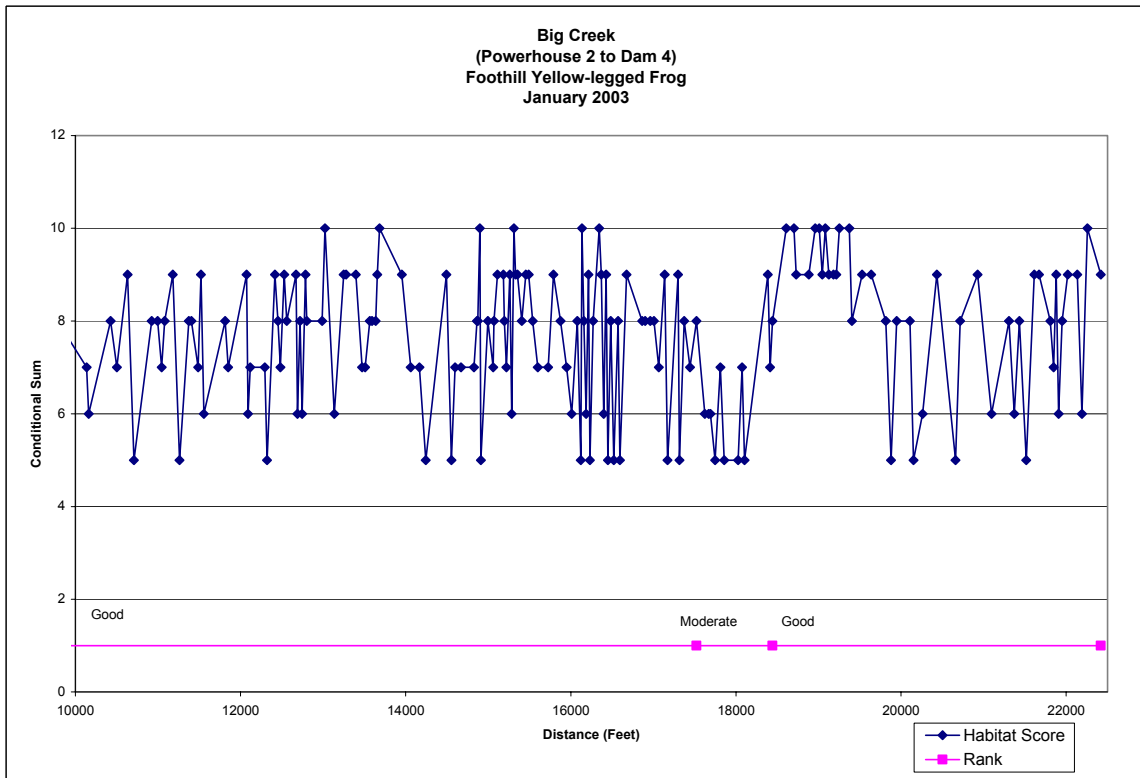
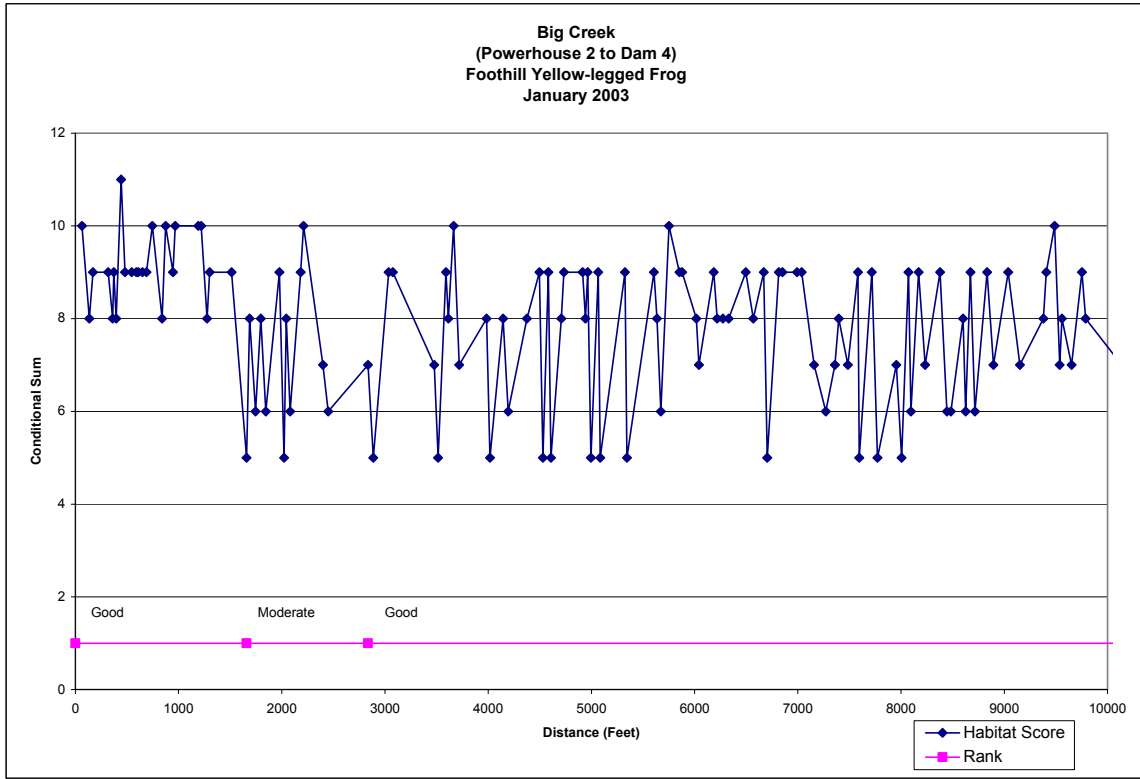
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)

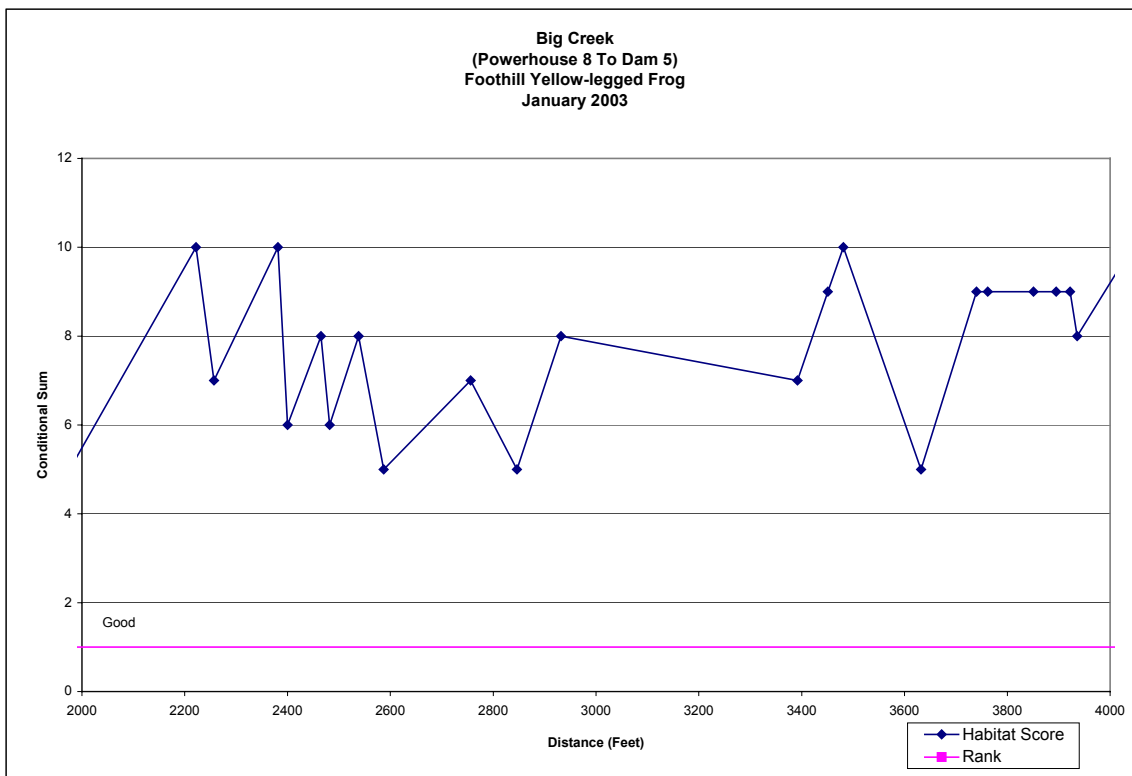
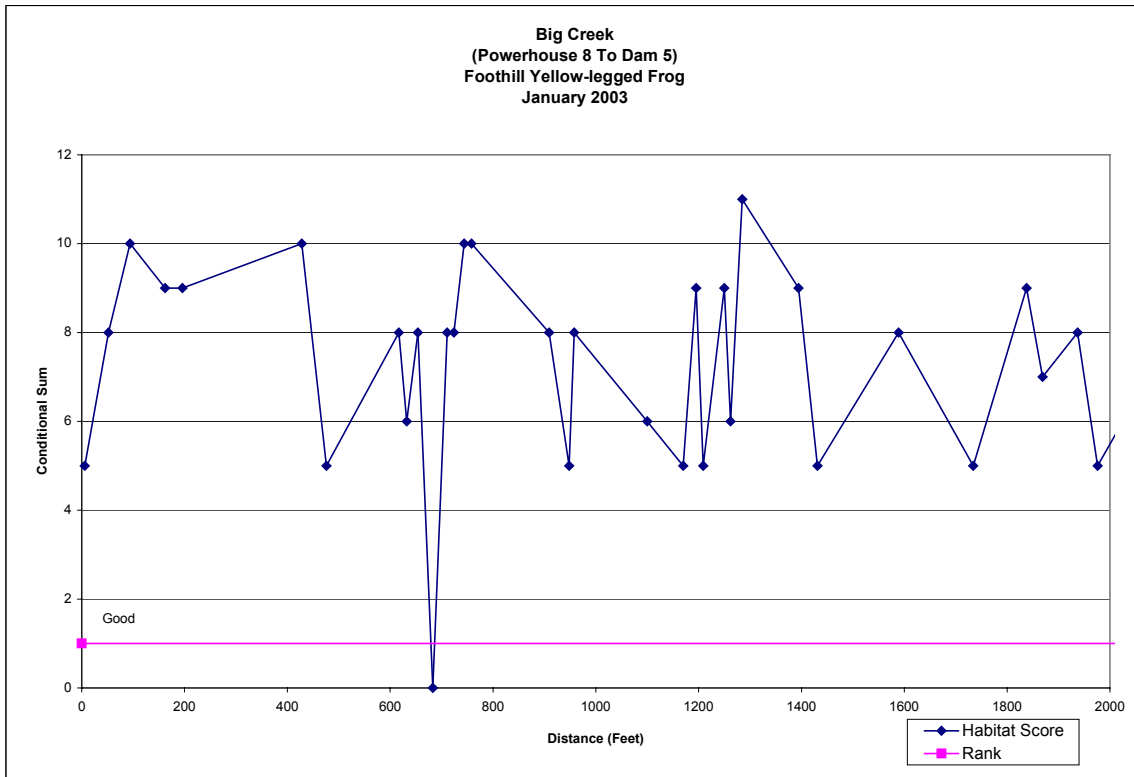


### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill Yellow-legged Frog (continued)

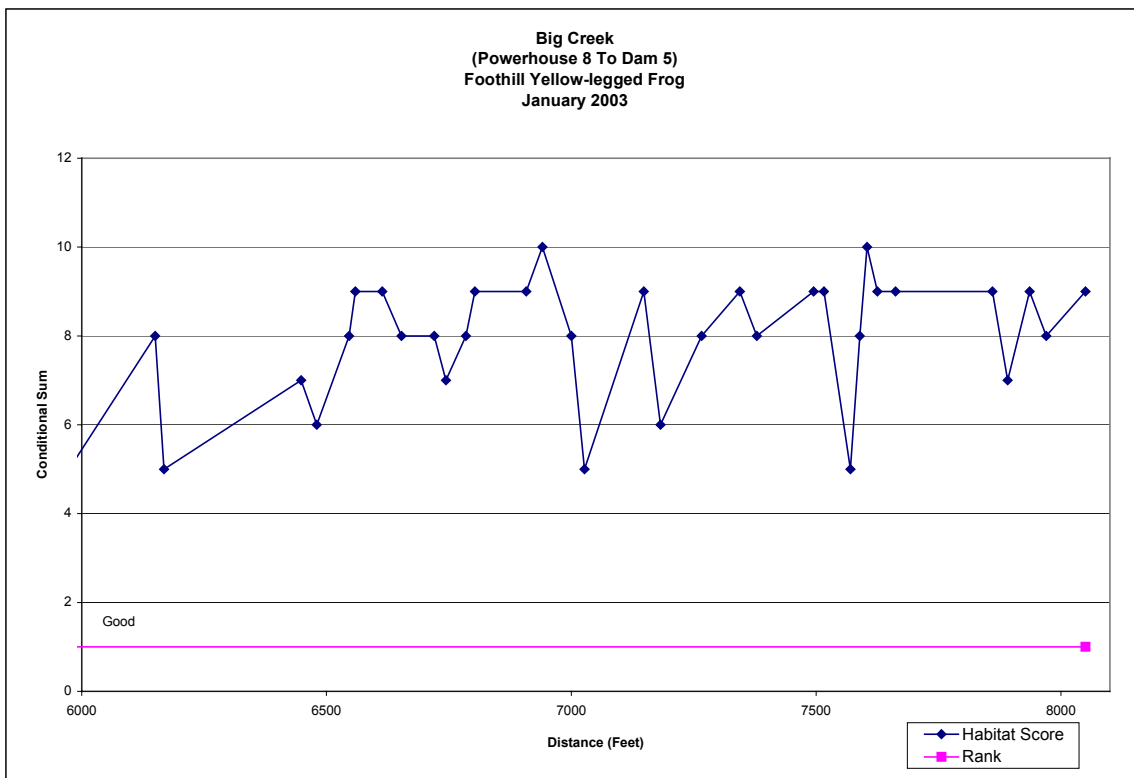
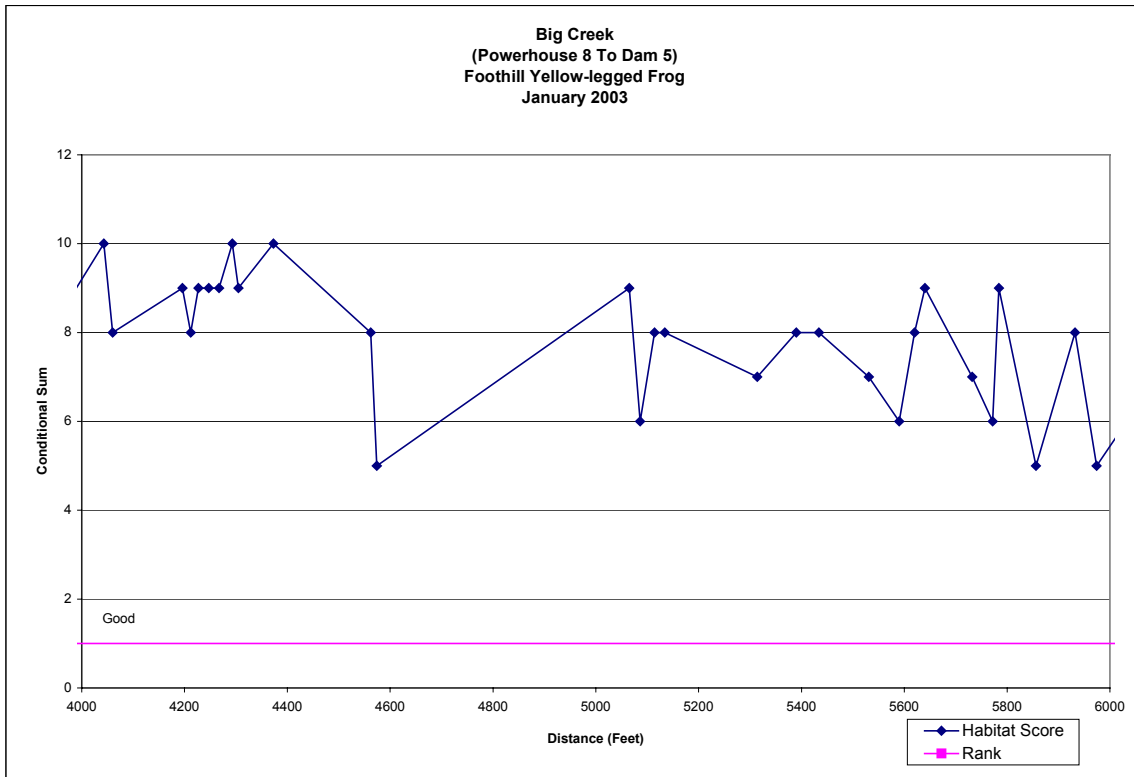




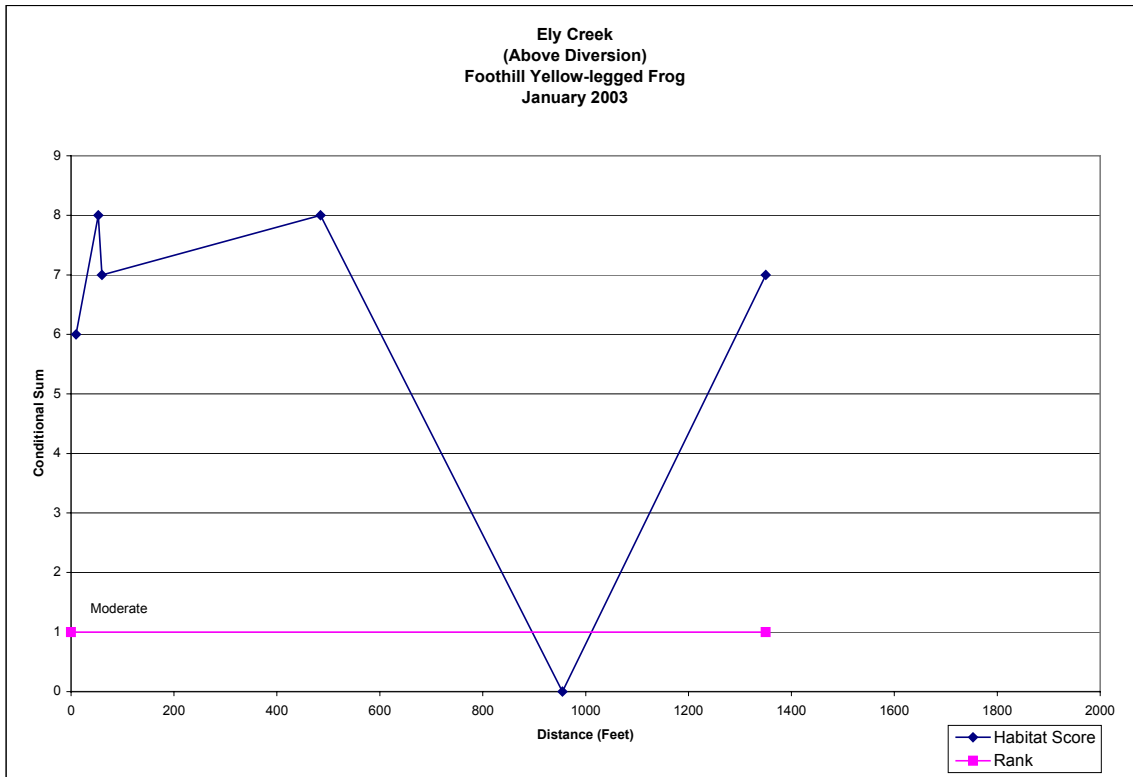
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



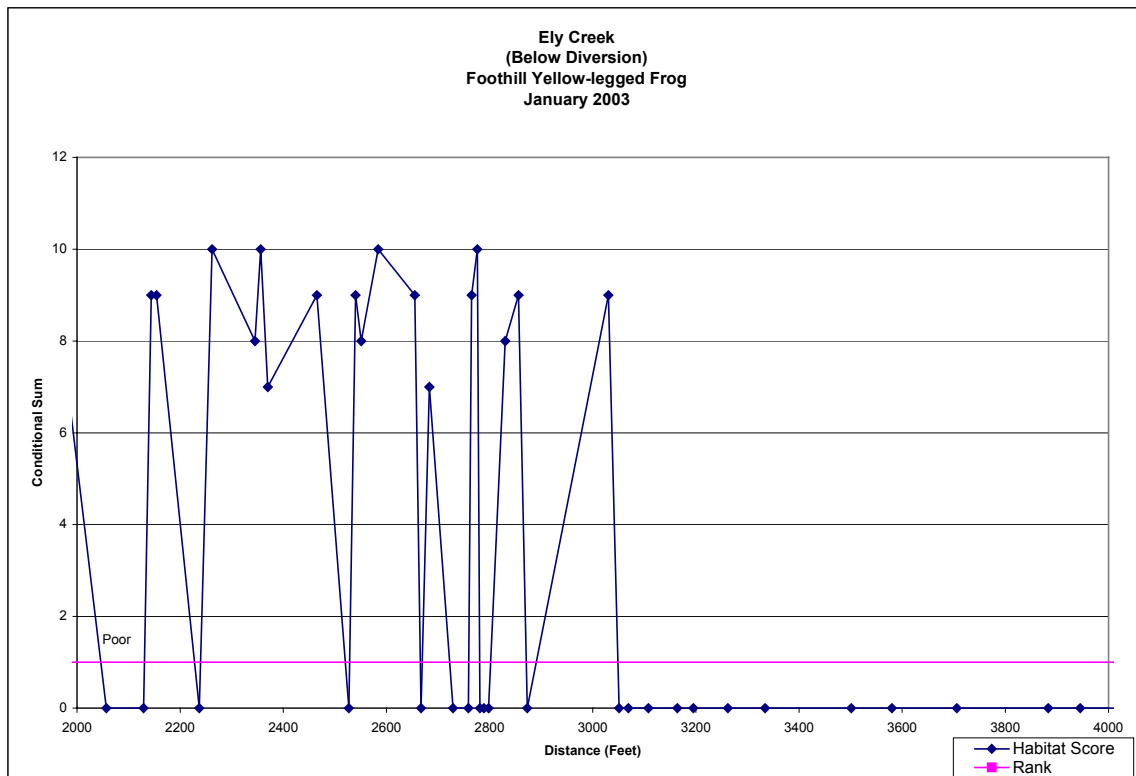
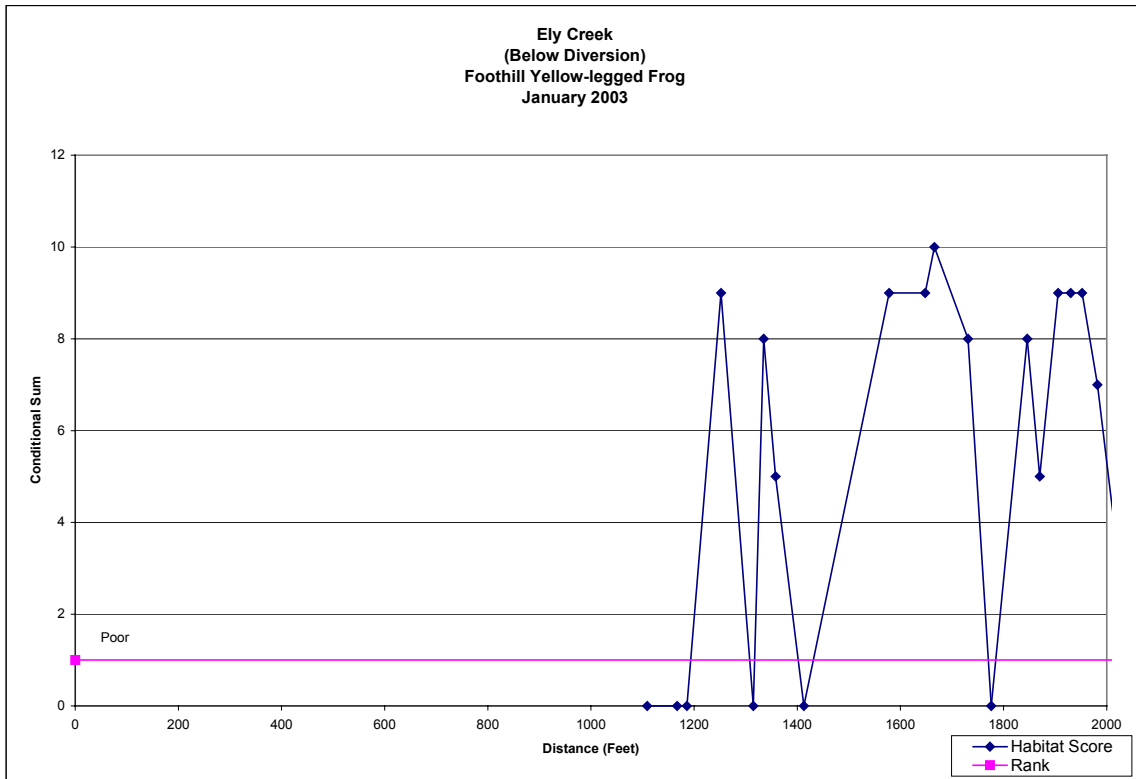
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



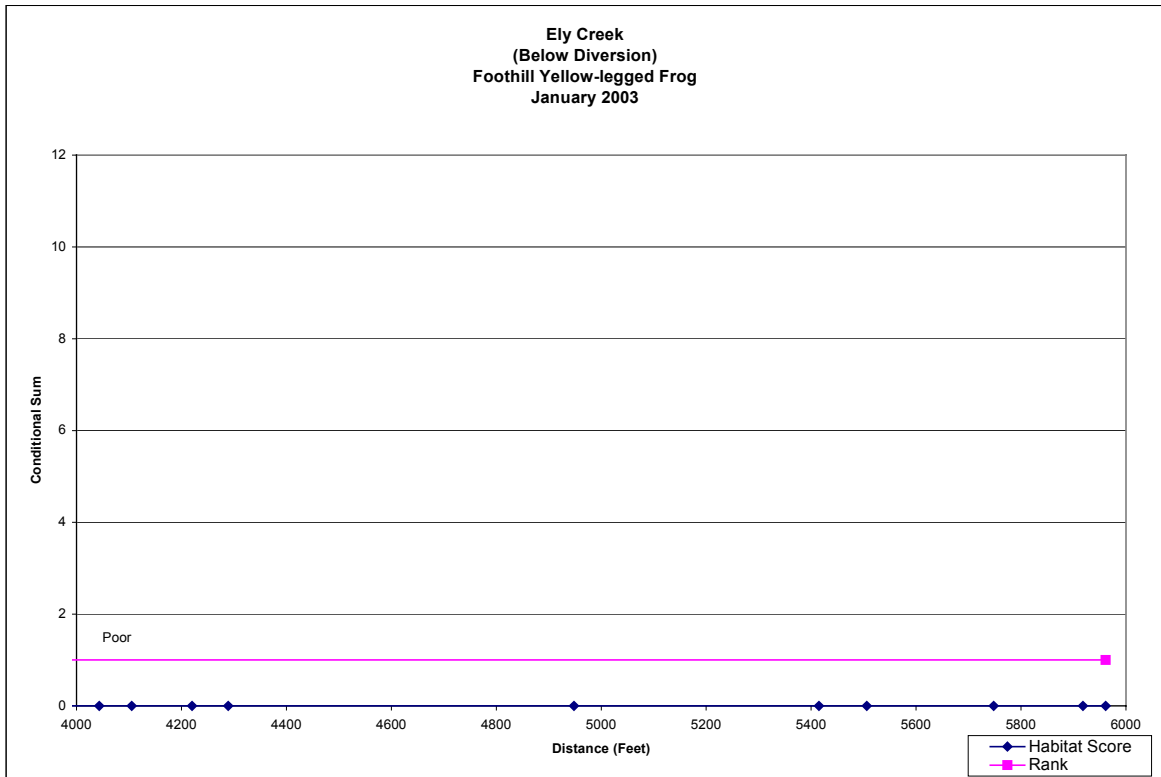
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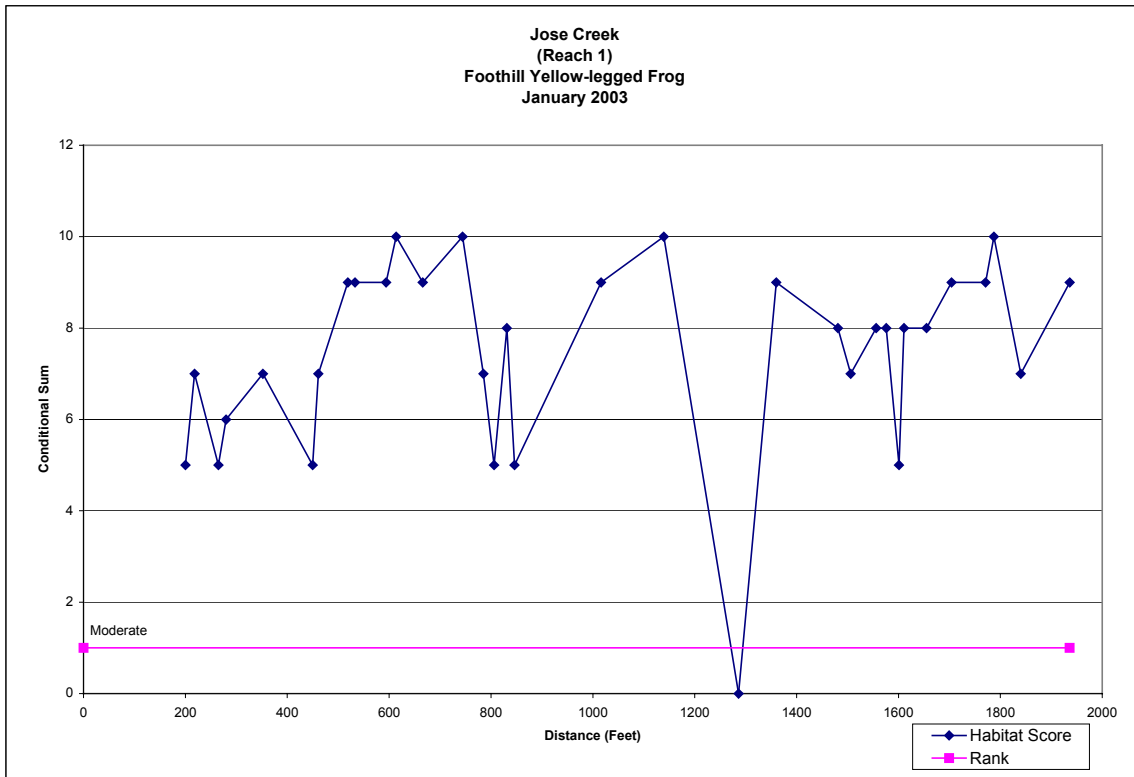
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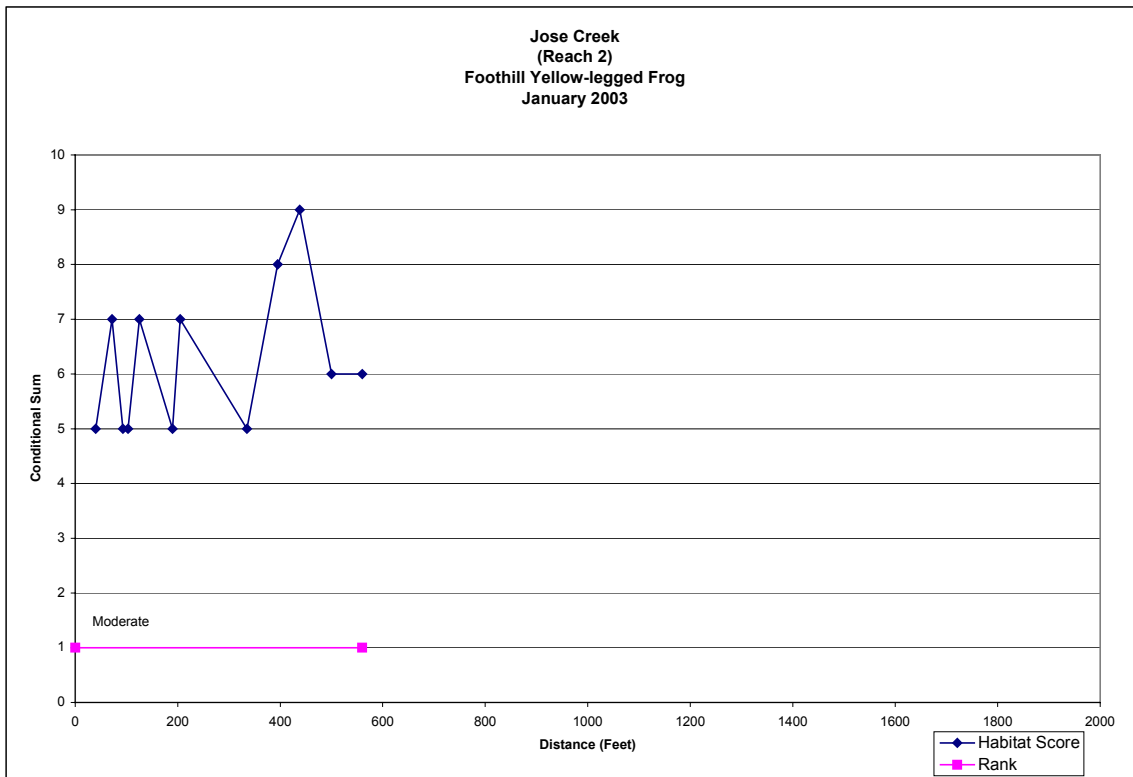
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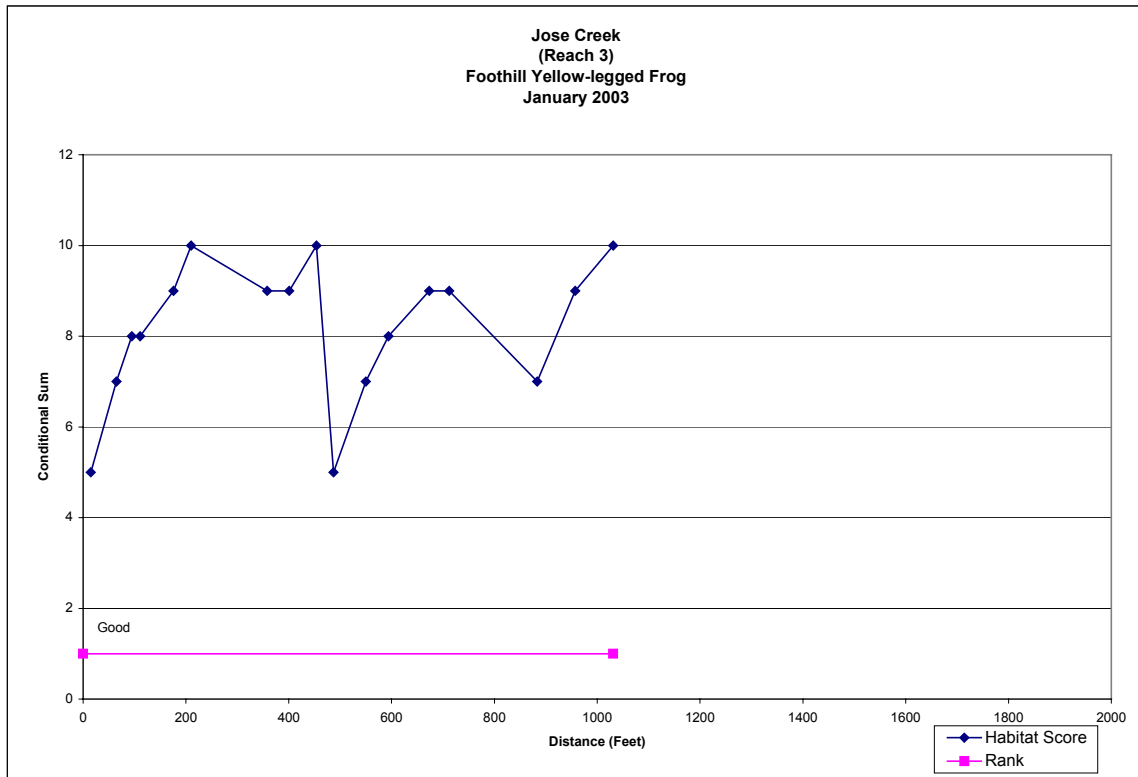
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)

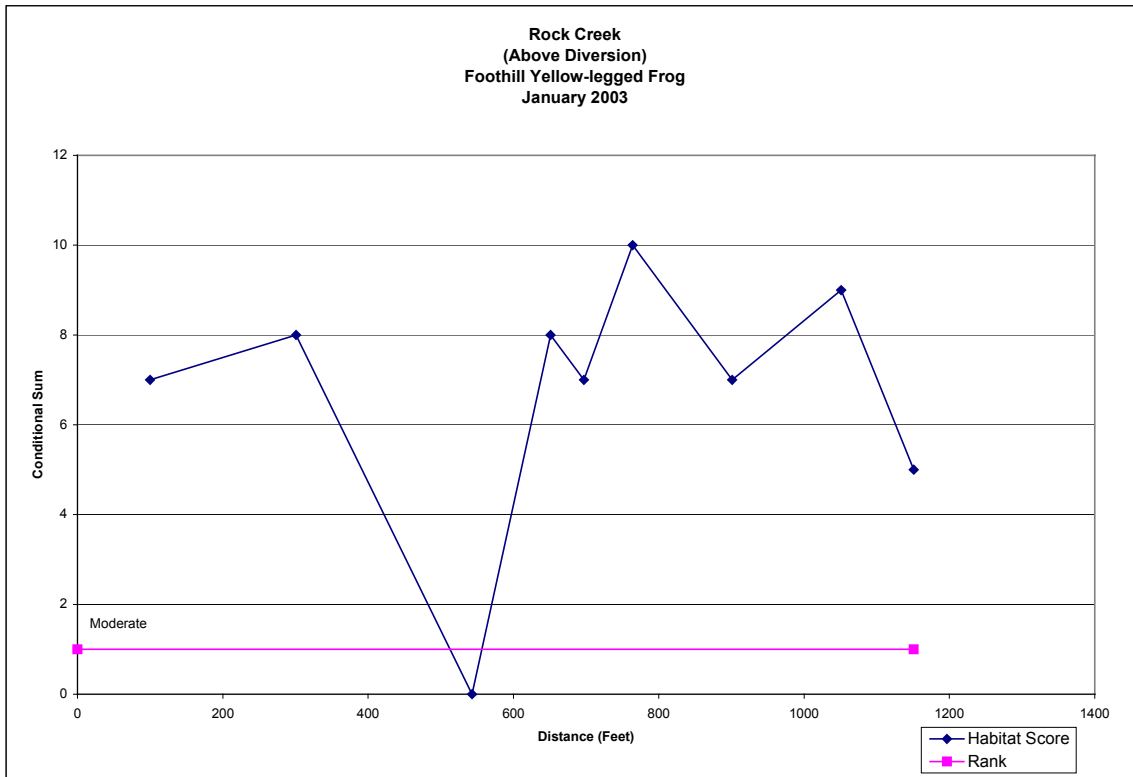


### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)

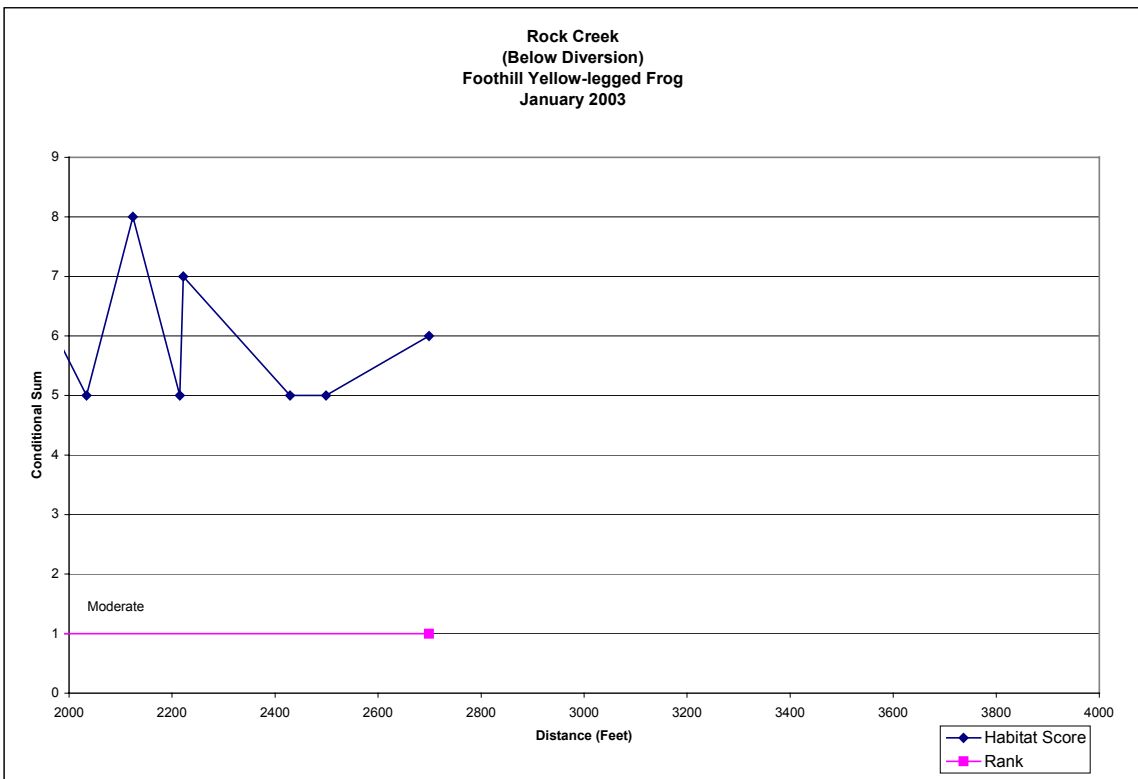
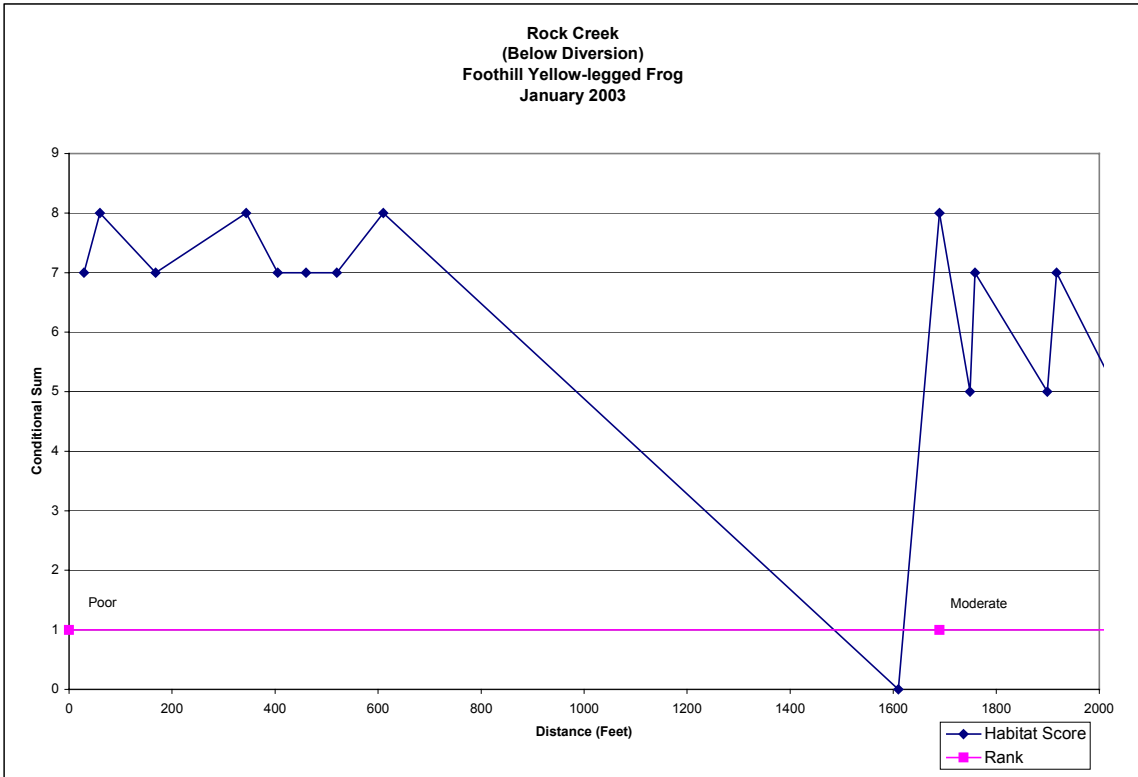




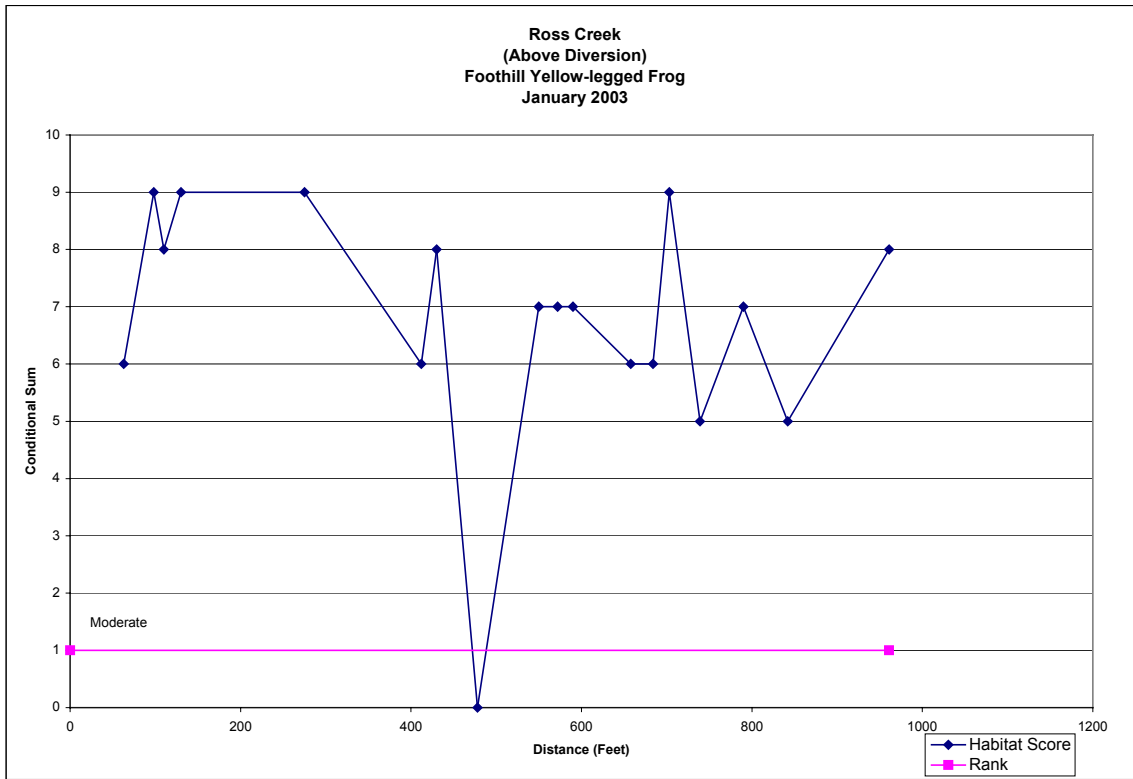
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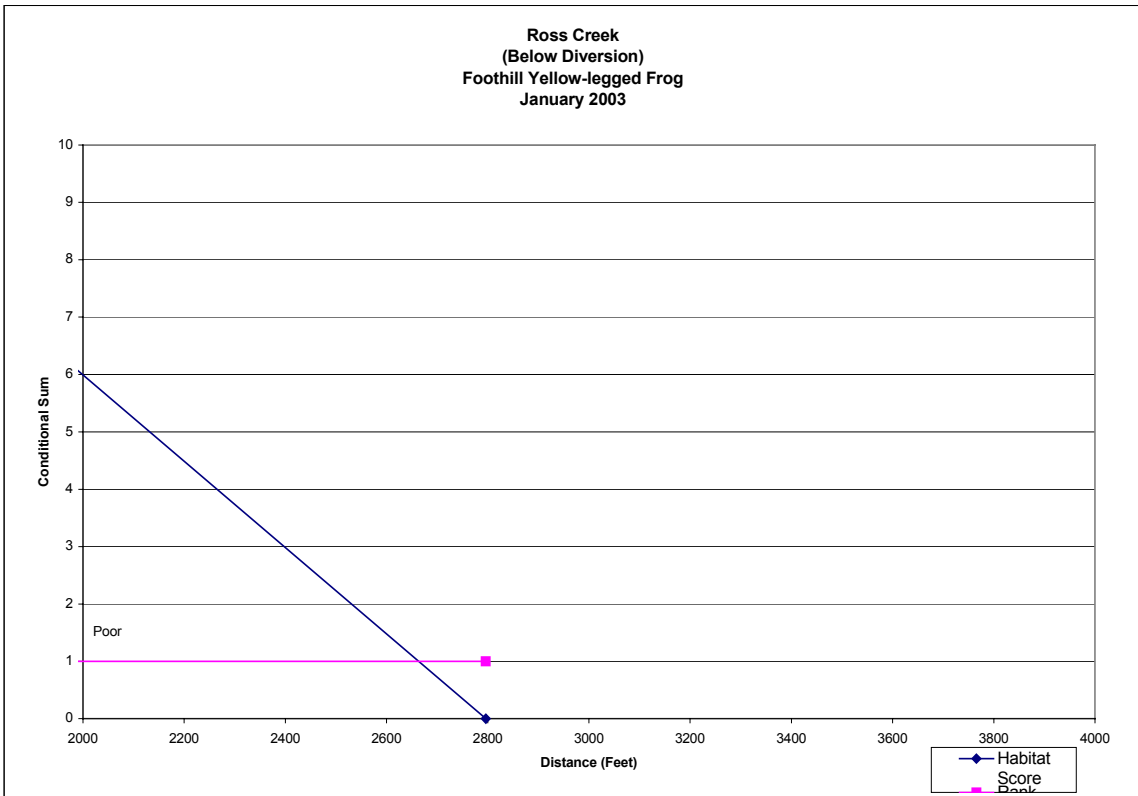
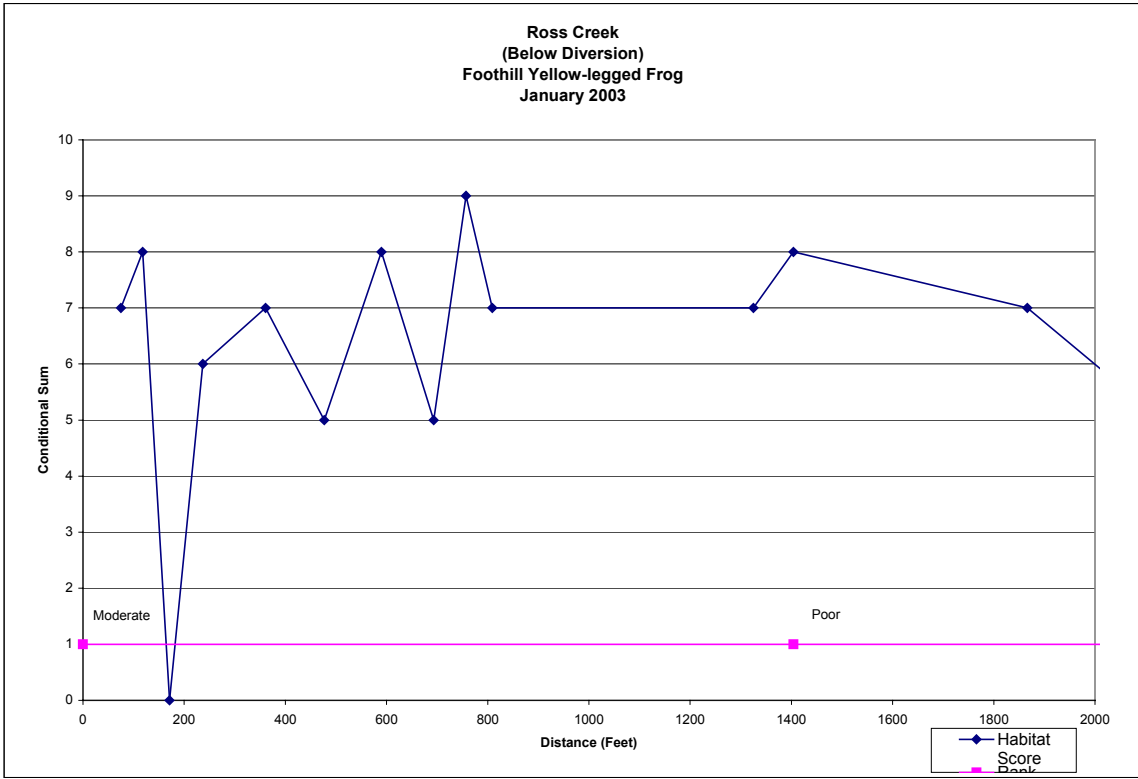
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



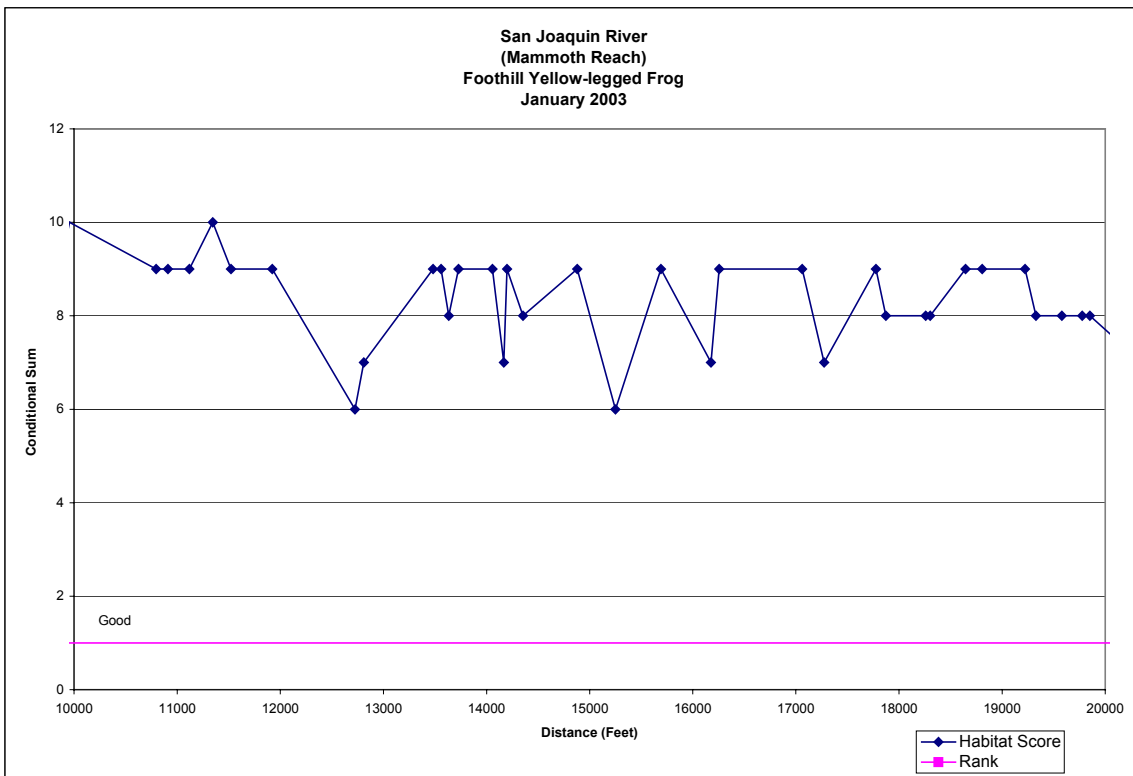
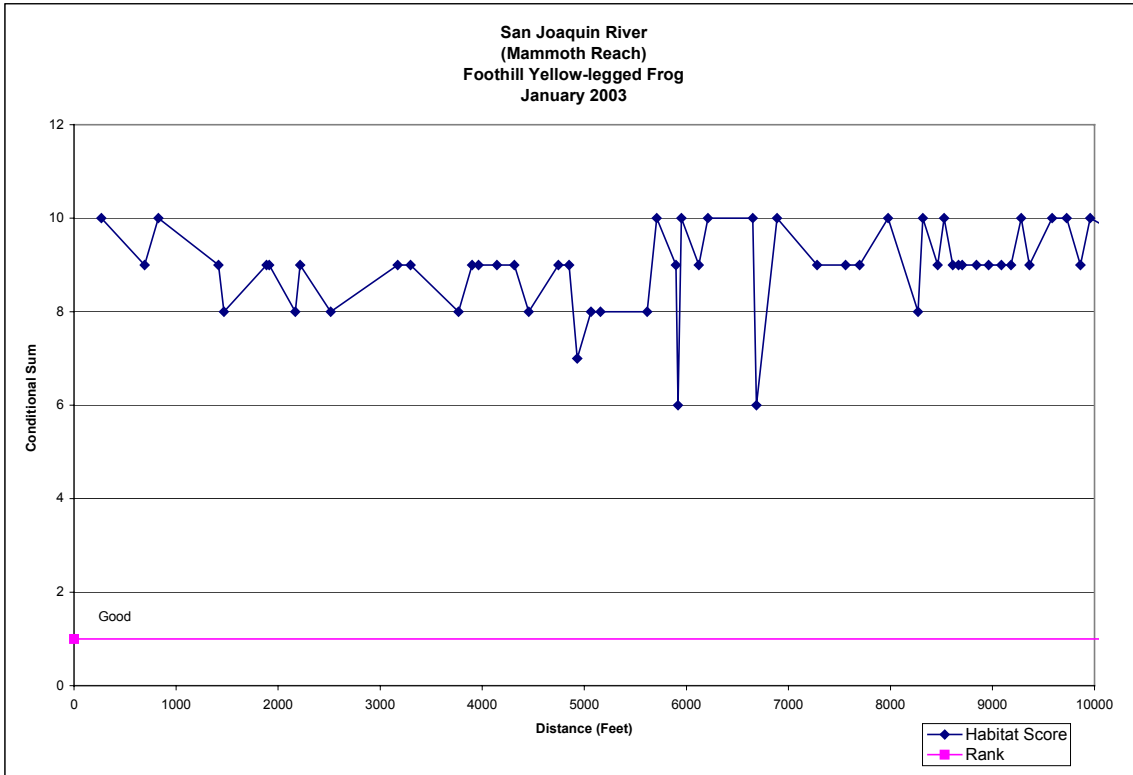
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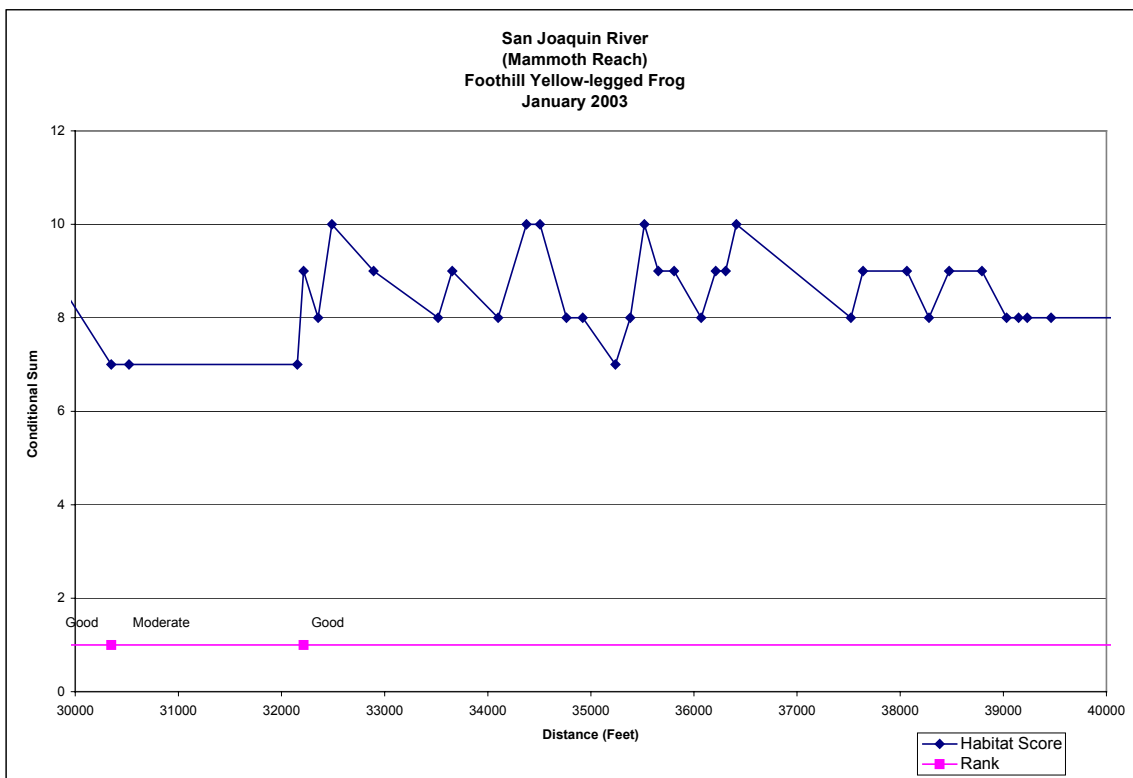
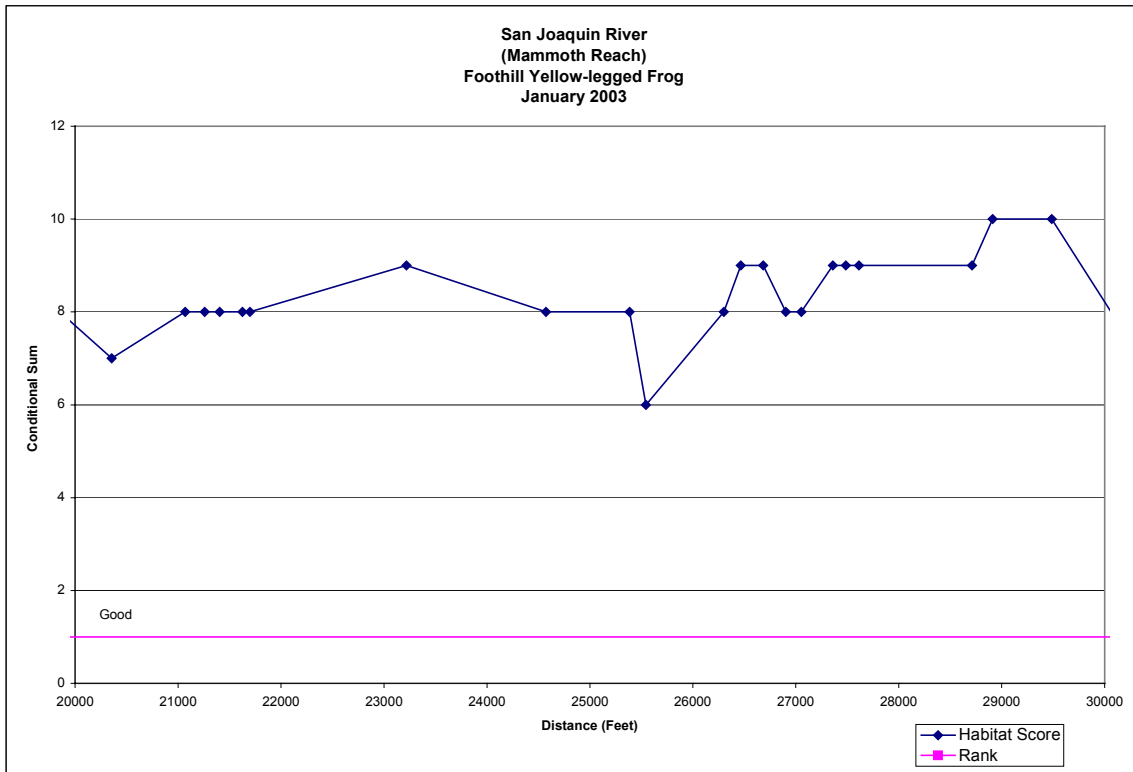
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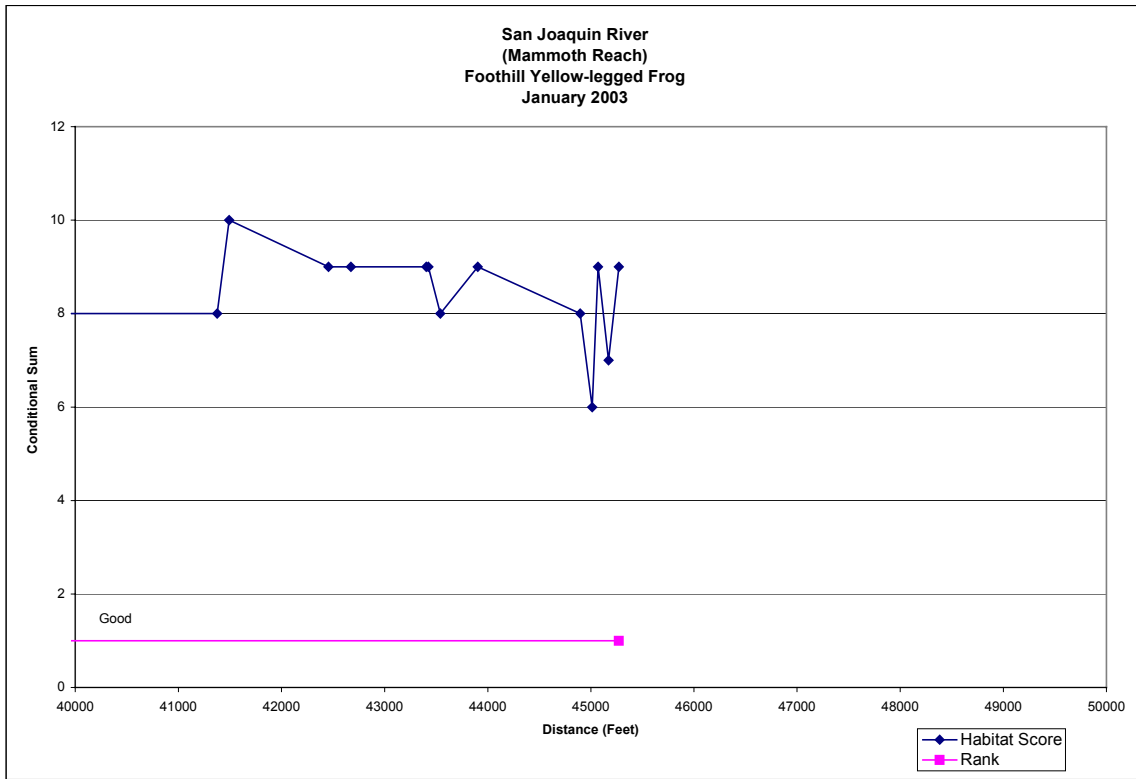
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



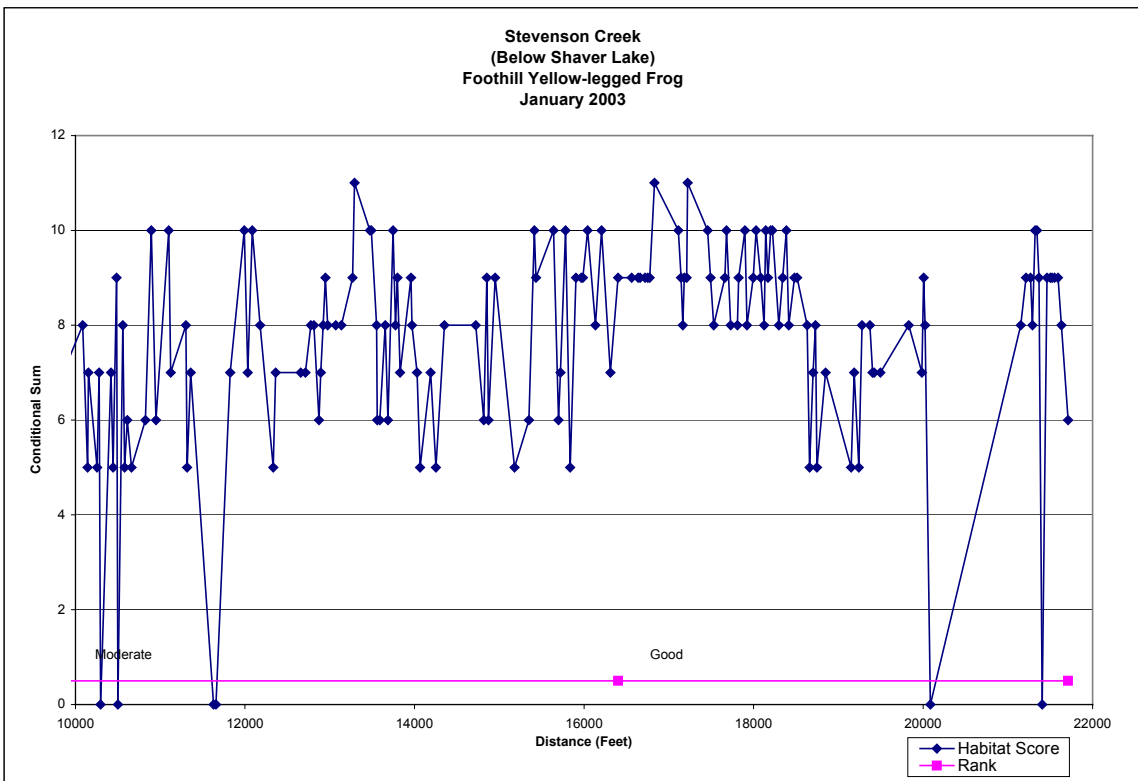
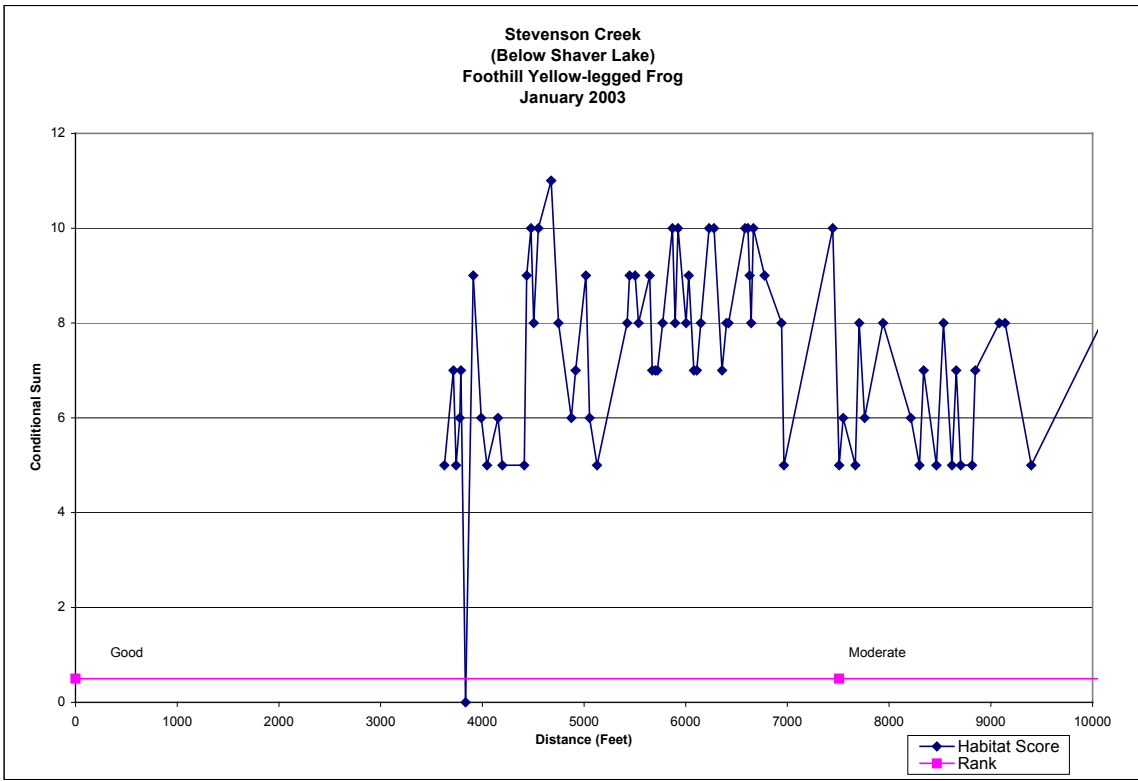
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill Yellow-legged Frog (continued)

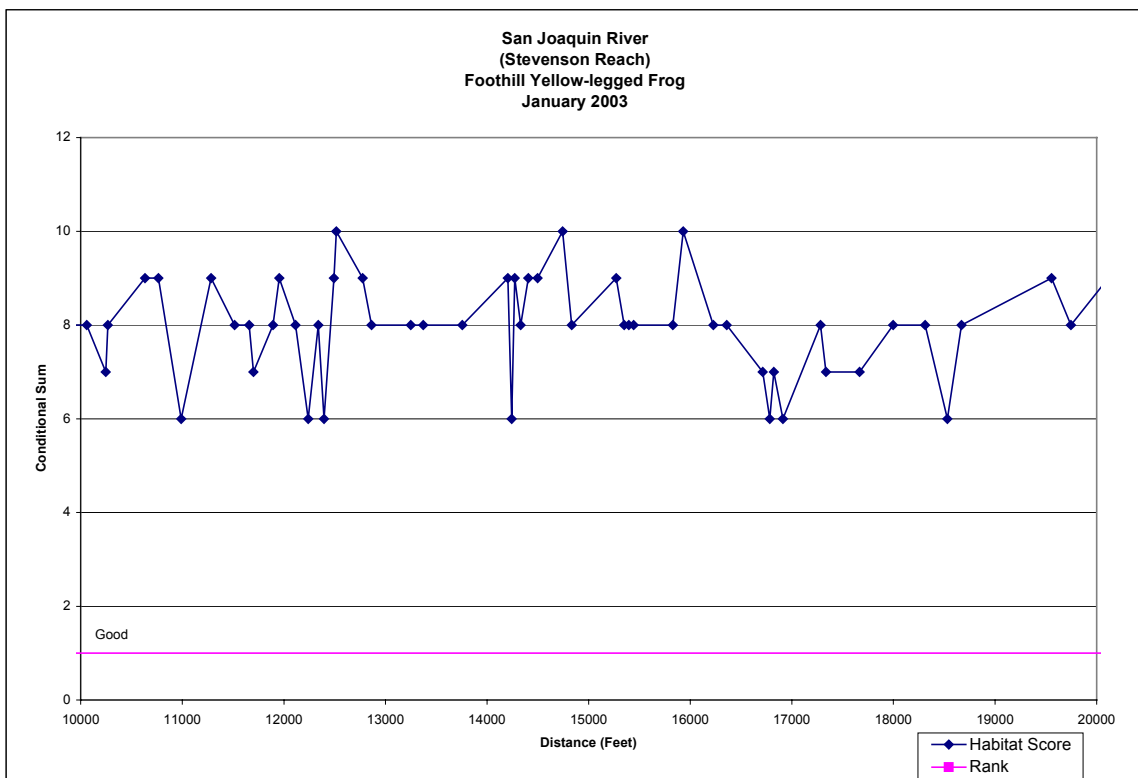
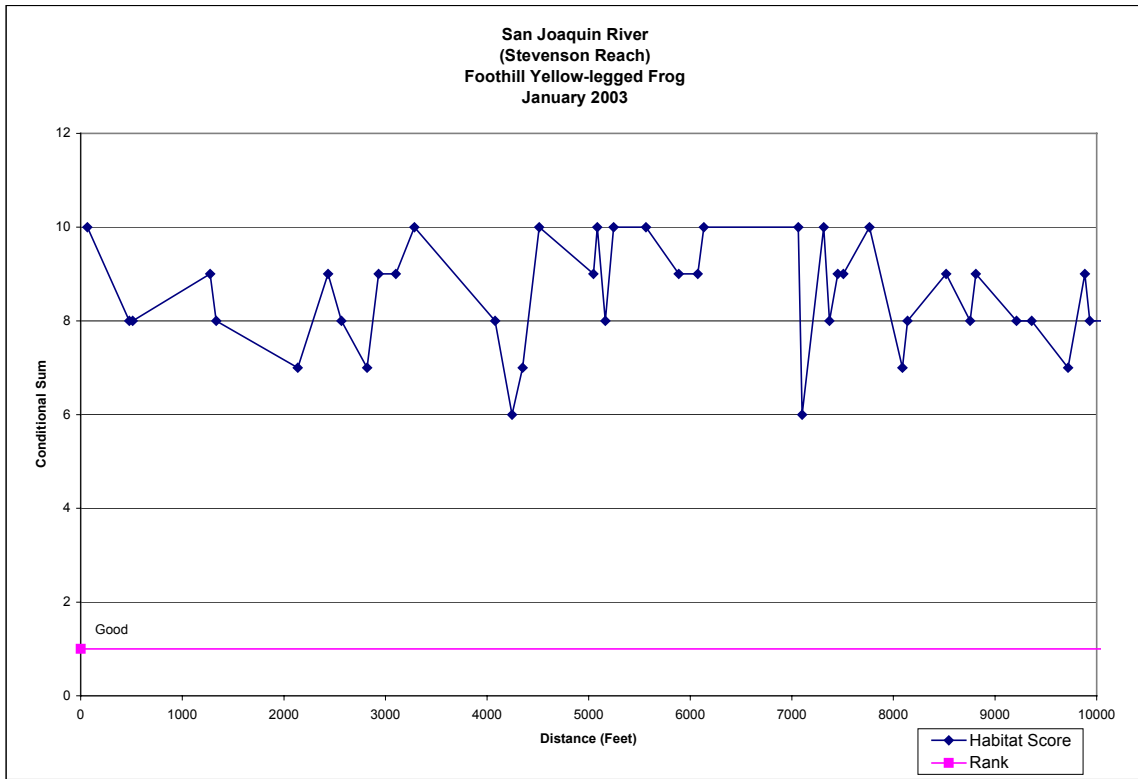


### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)

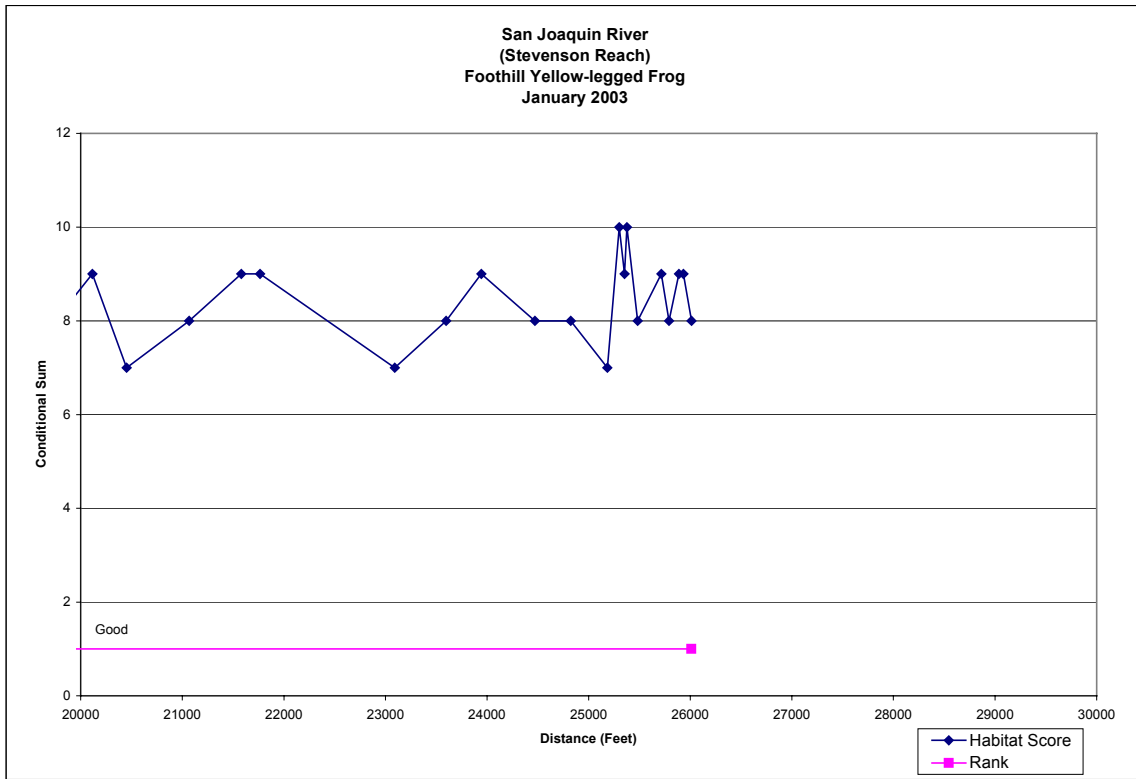




### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill Yellow-legged Frog (continued)



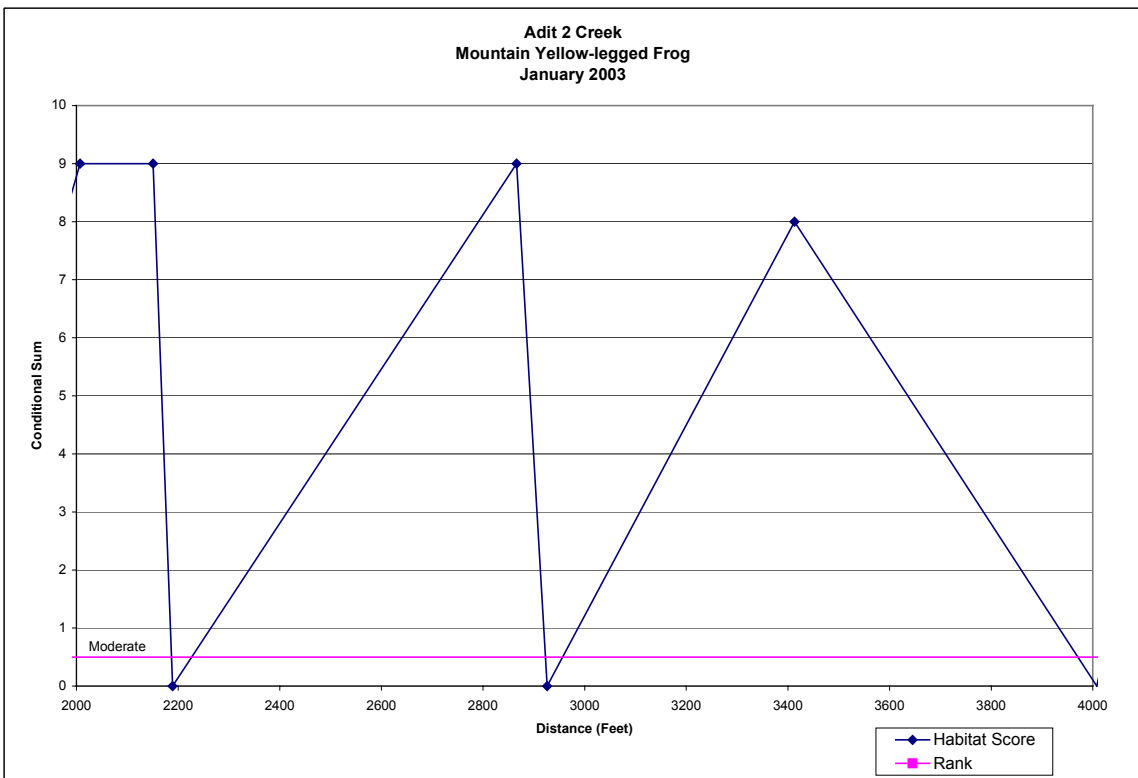
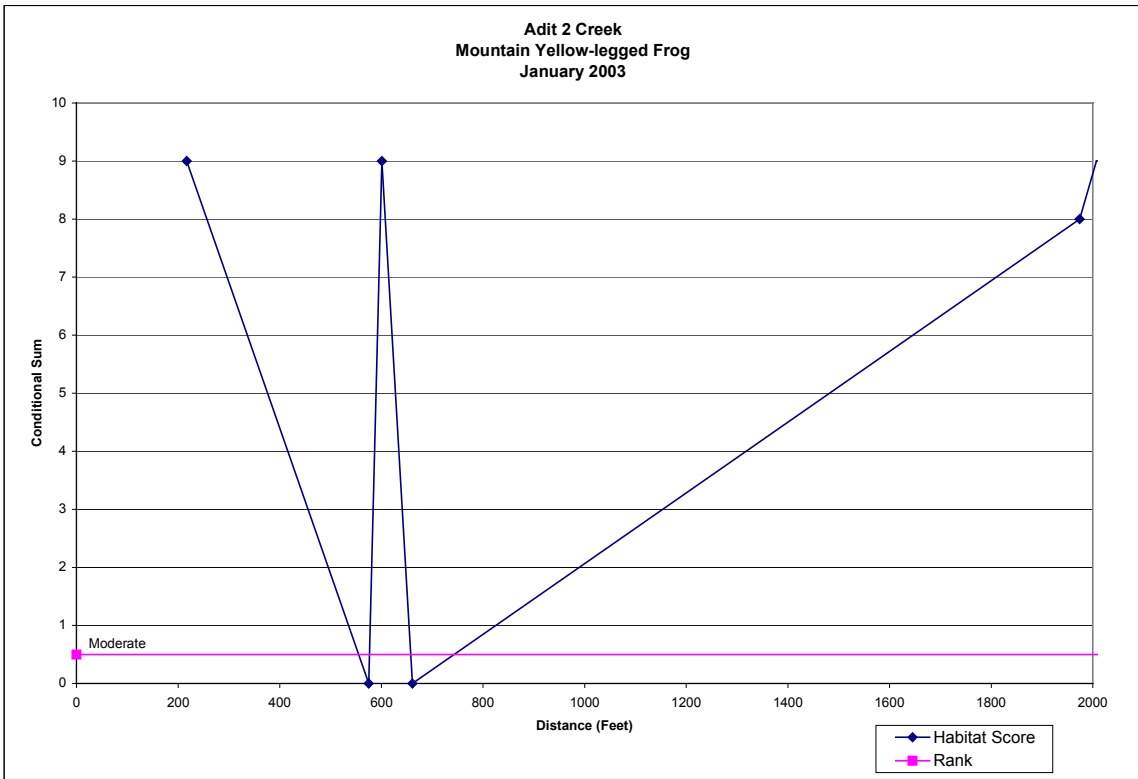
### Appendix E. Habitat Suitability and Segment Quality Charts for the Foothill-Yellow-legged Frog (continued)



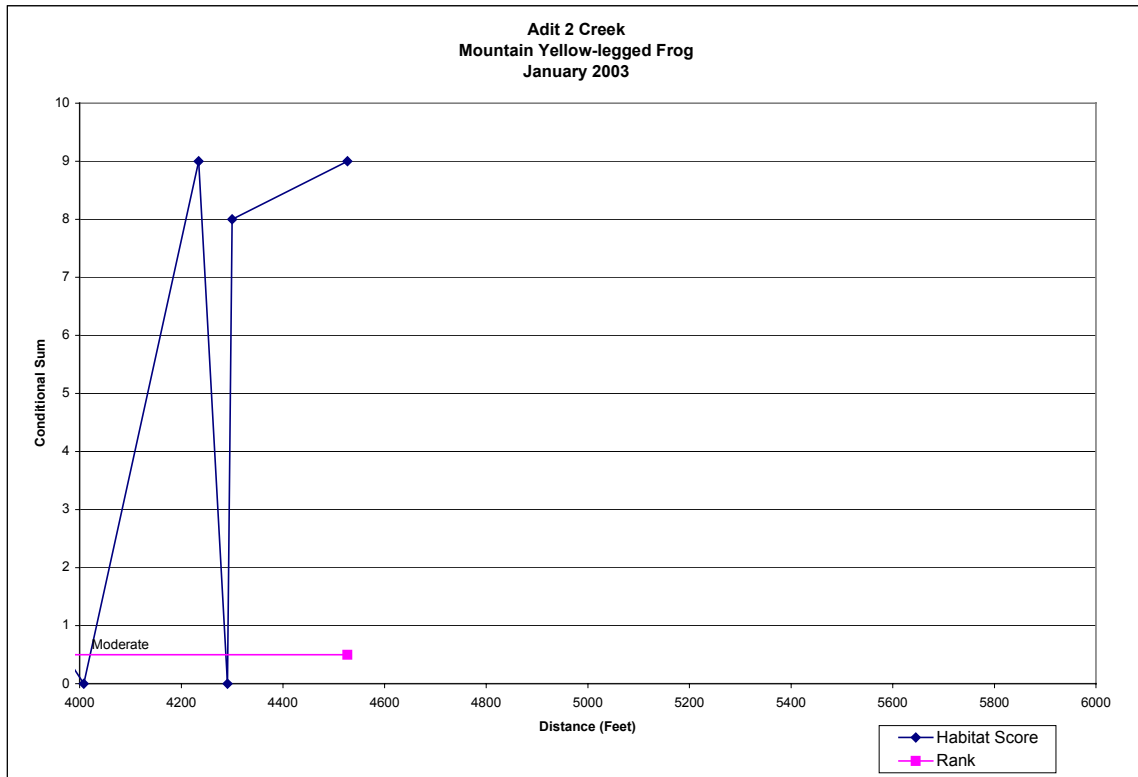
## **APPENDIX F**

### **Habitat Suitability and Segment Quality Charts**

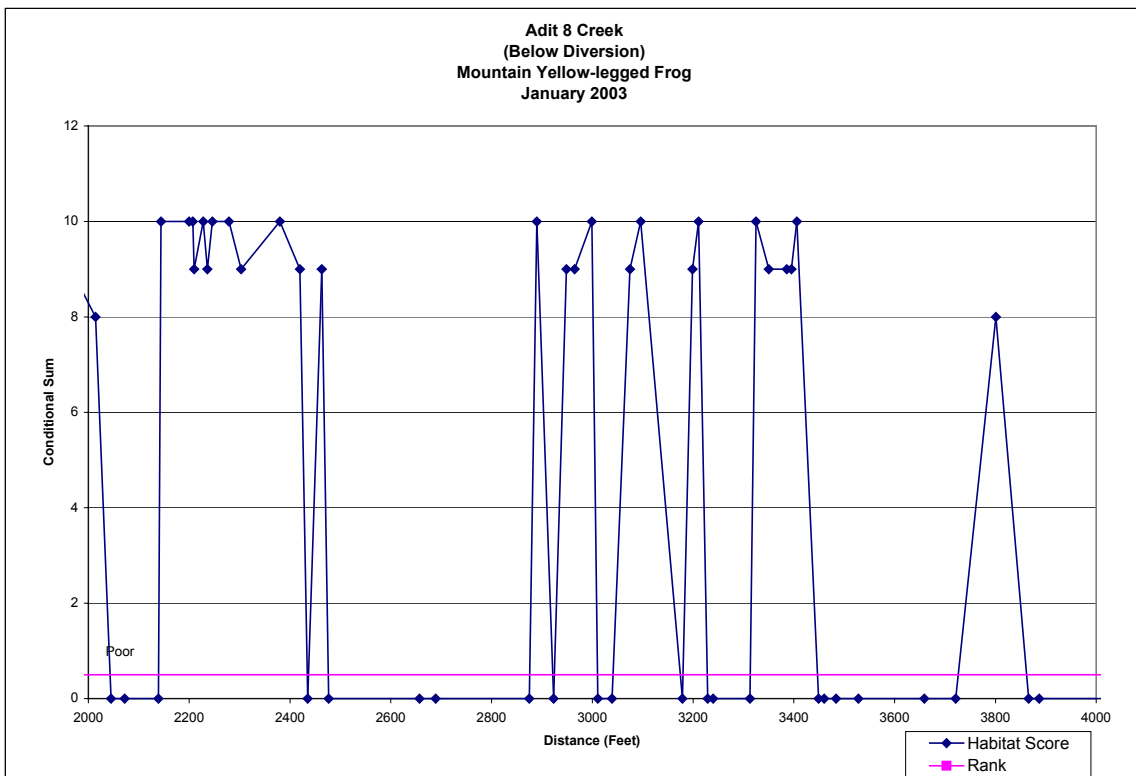
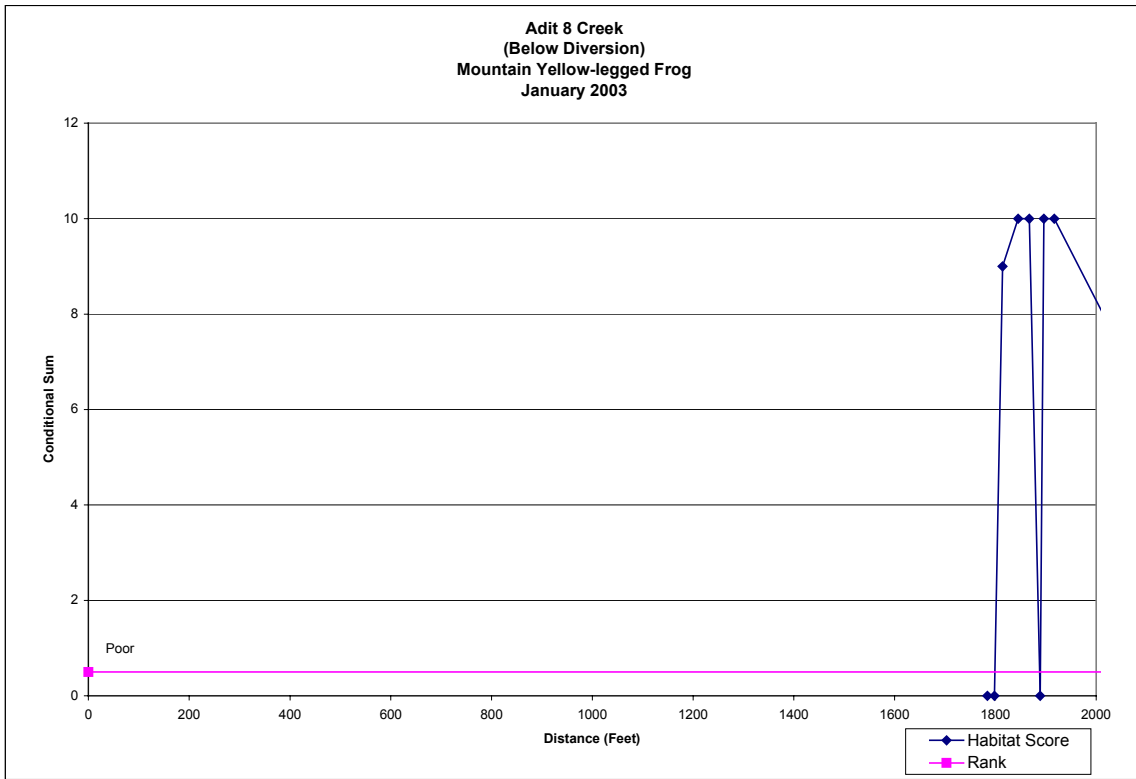
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog



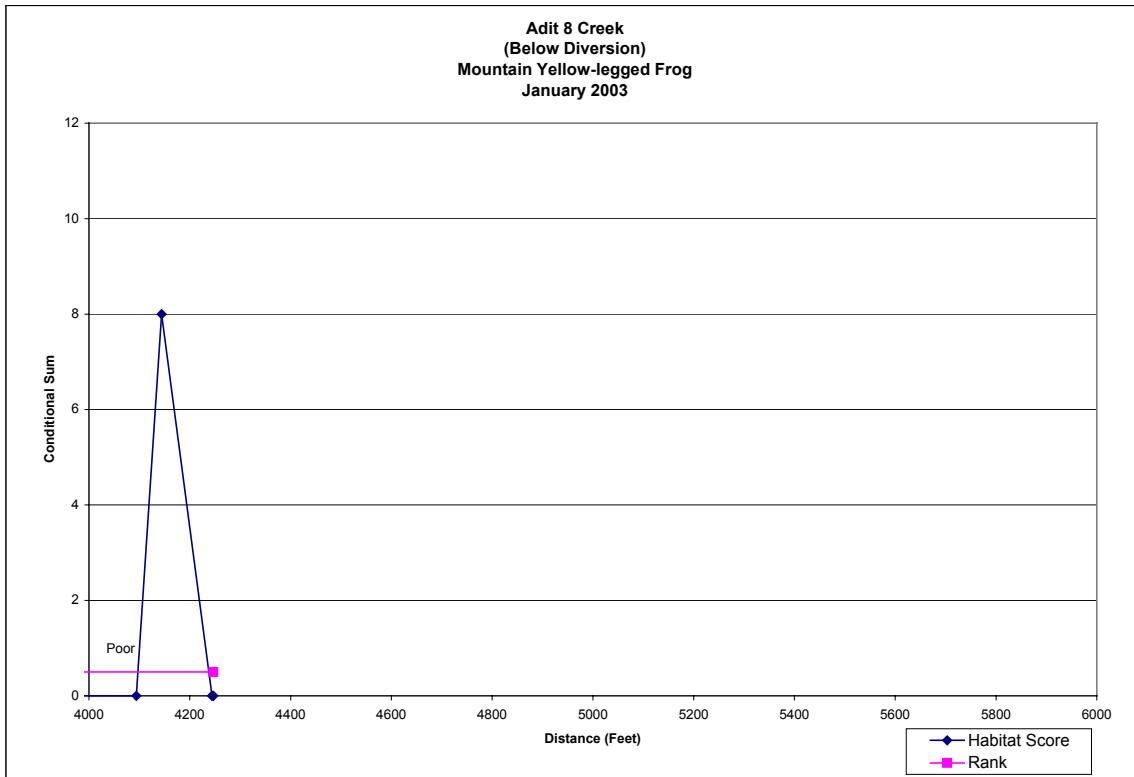
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



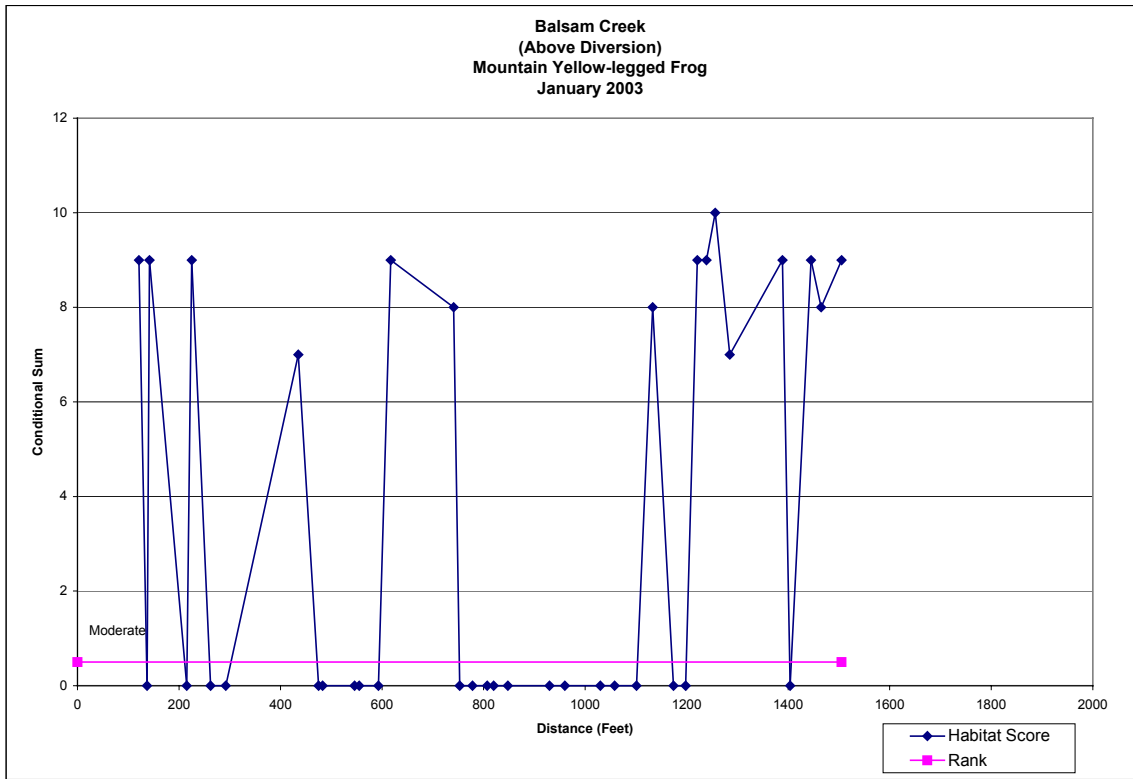
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

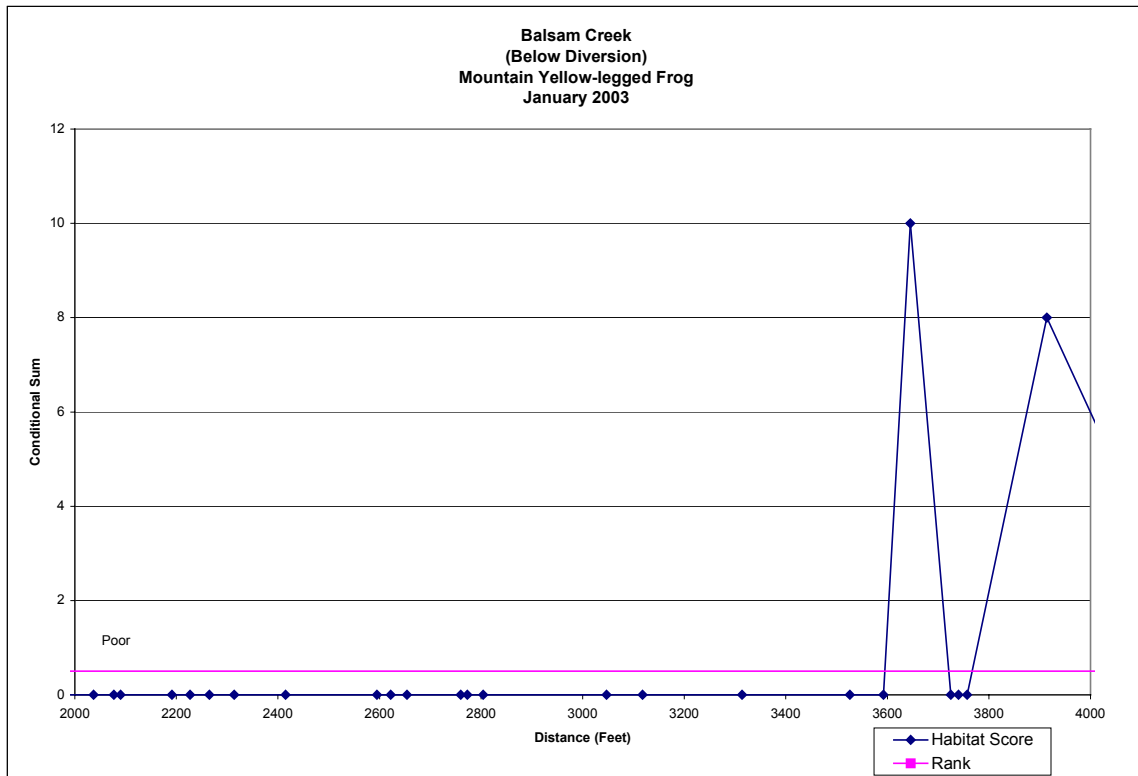
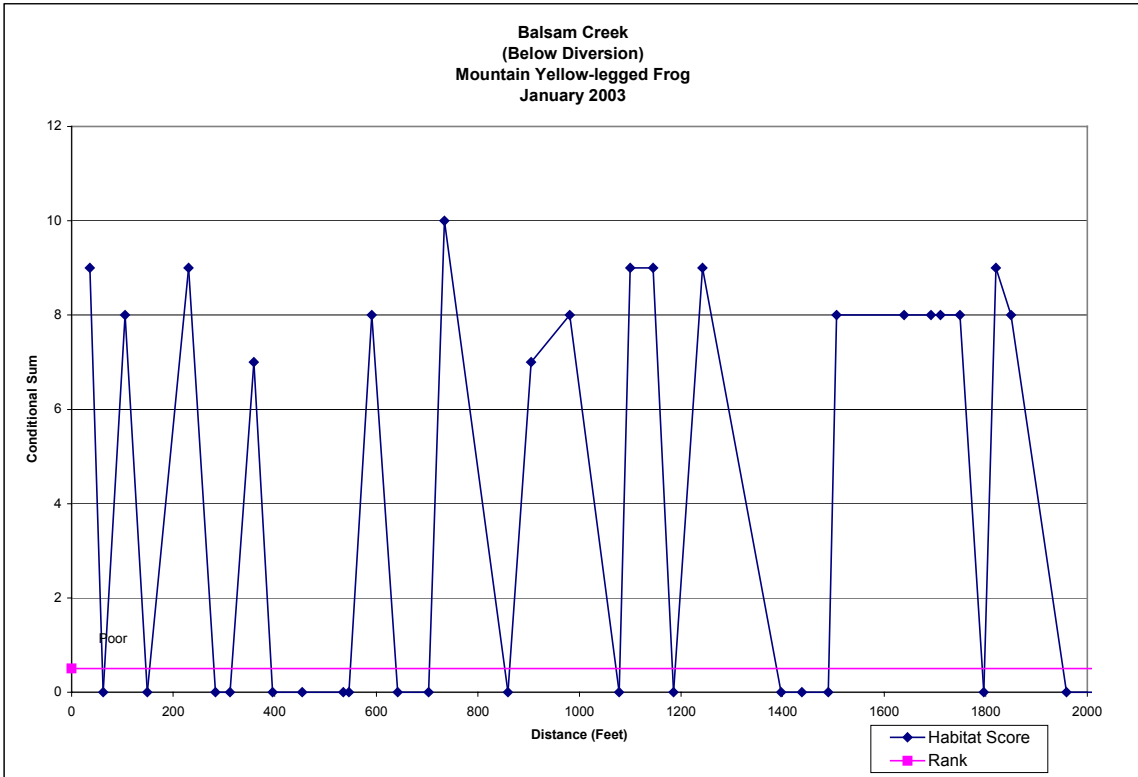


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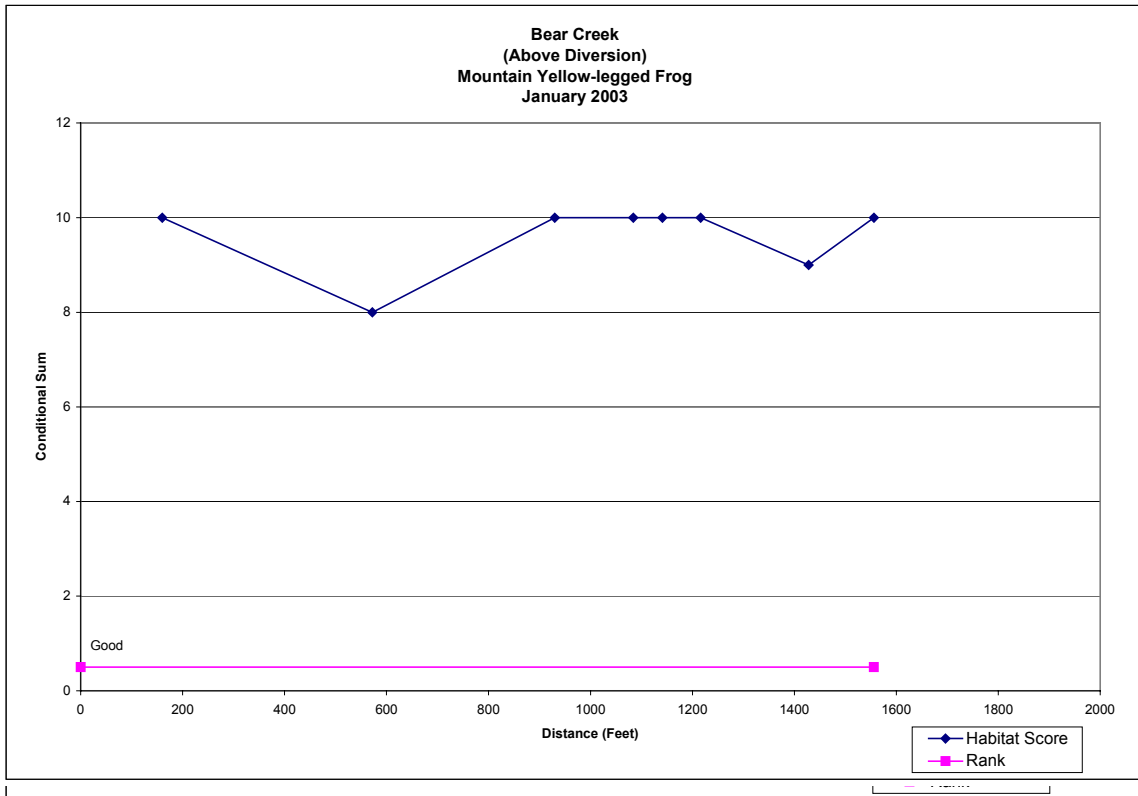




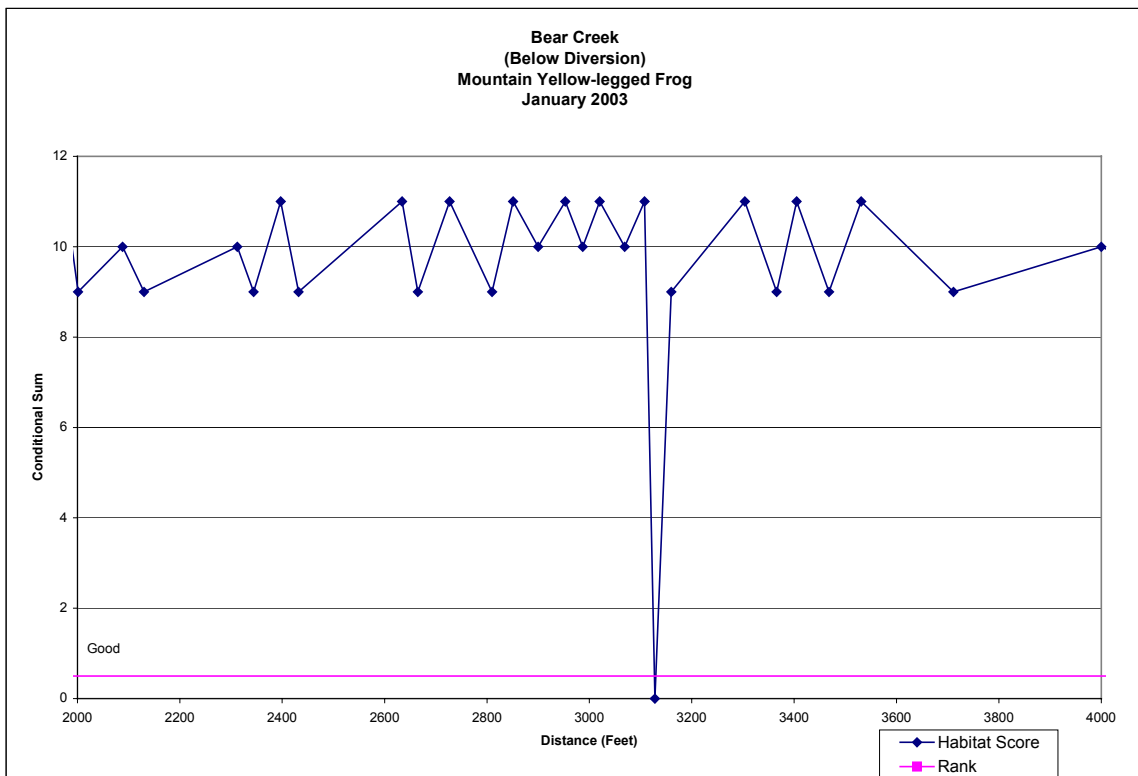
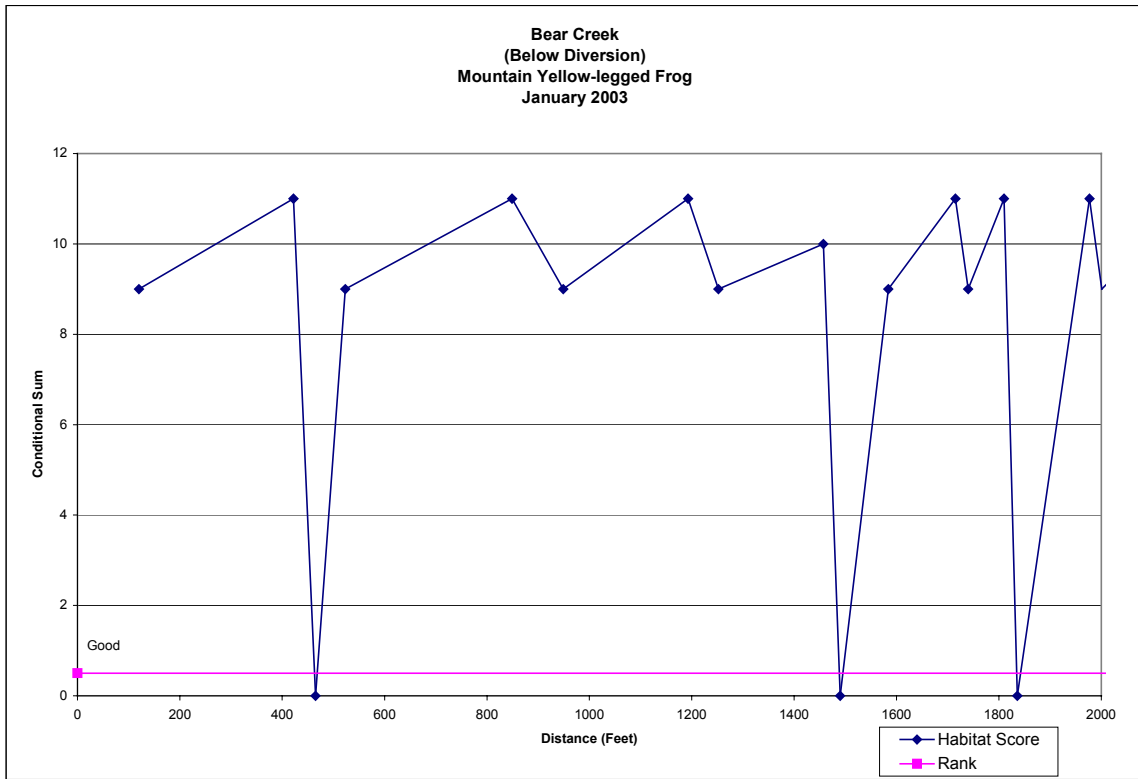
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



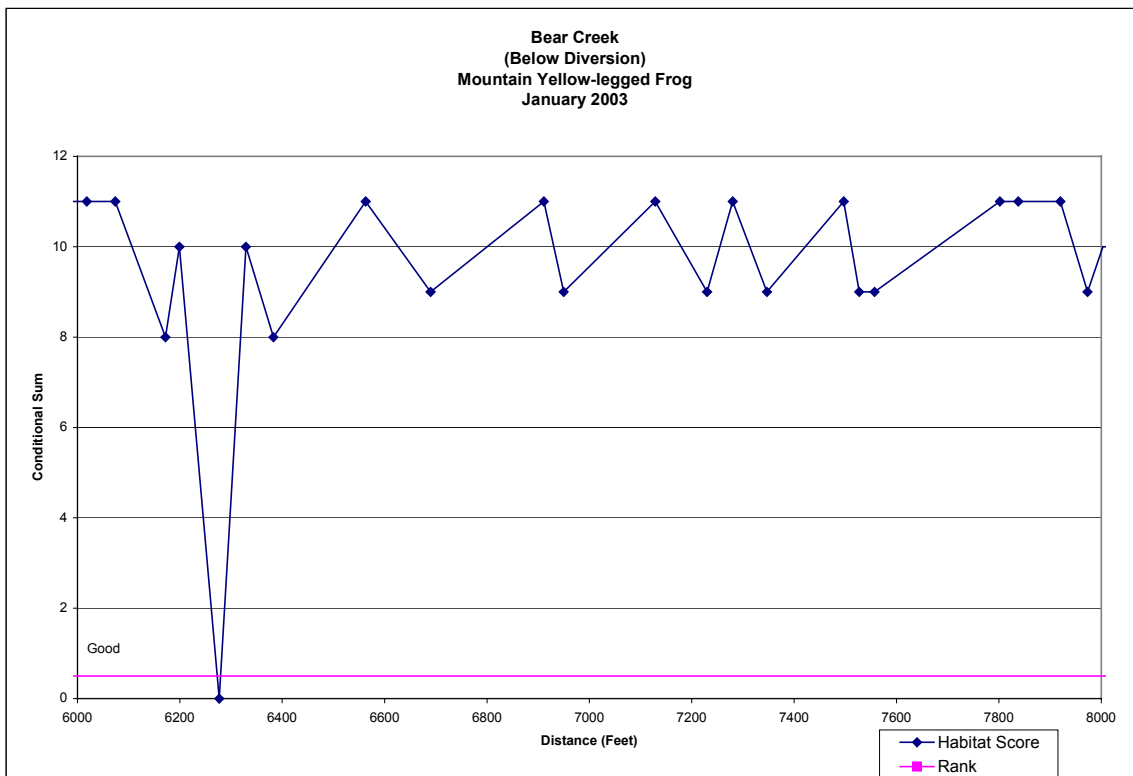
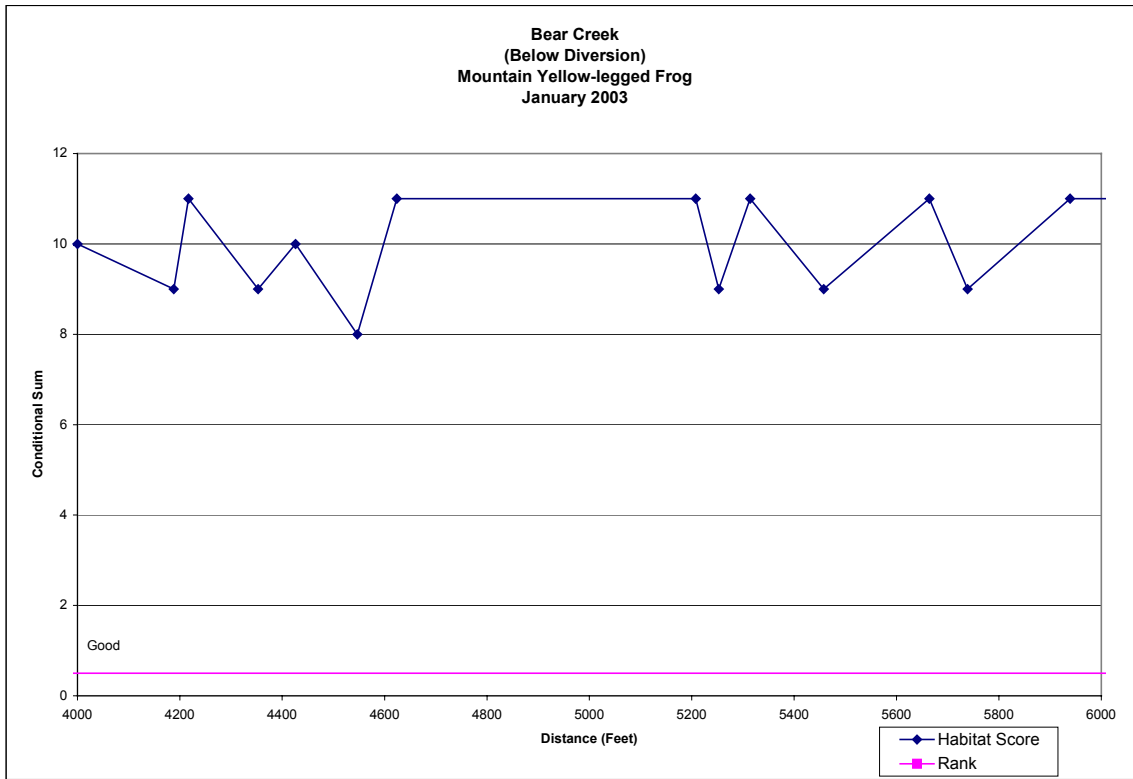
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



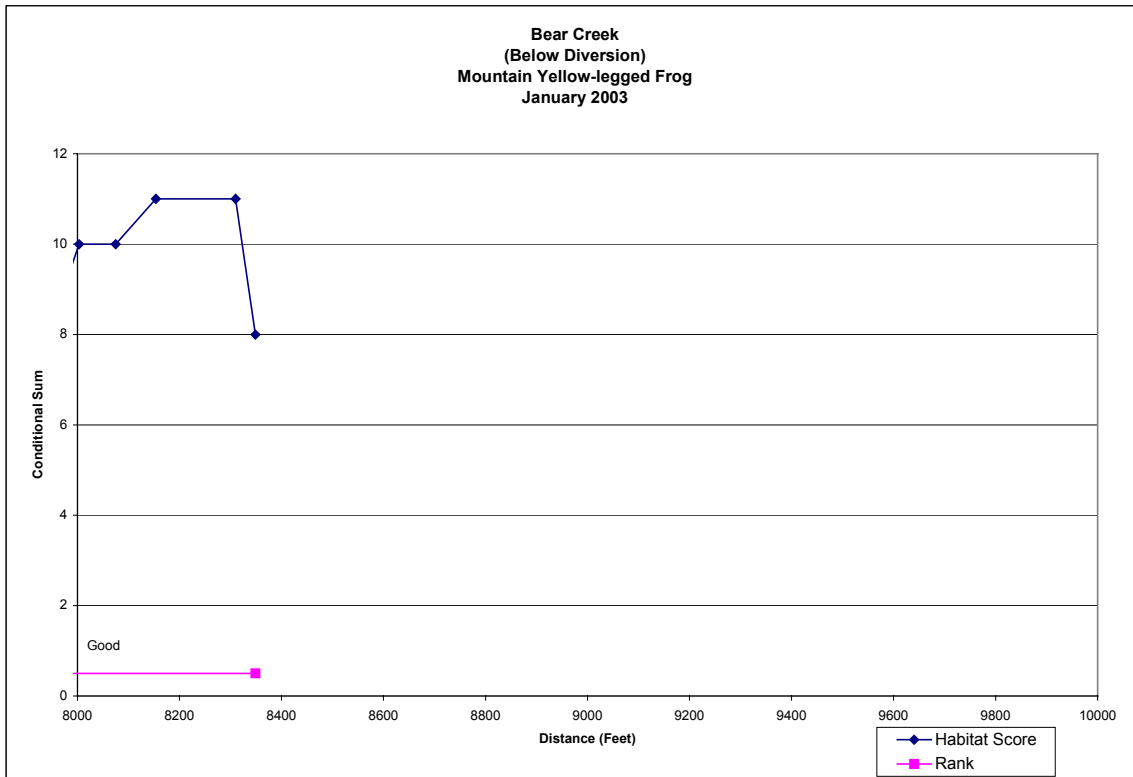
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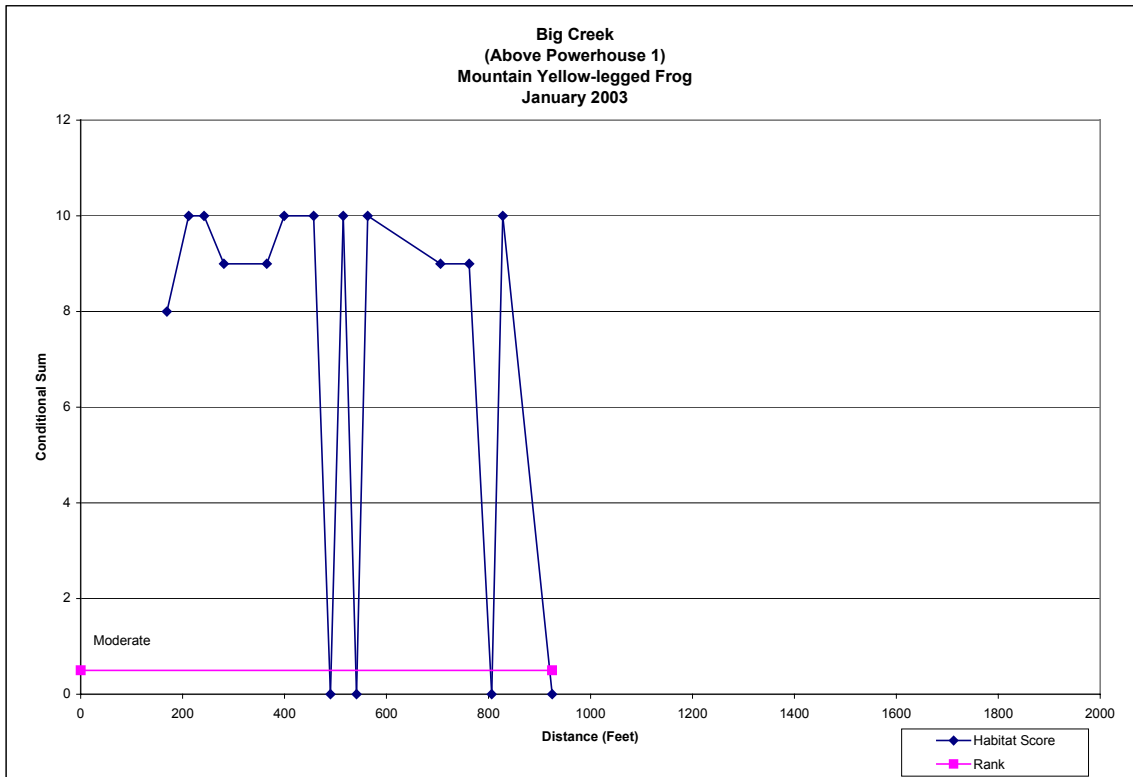
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



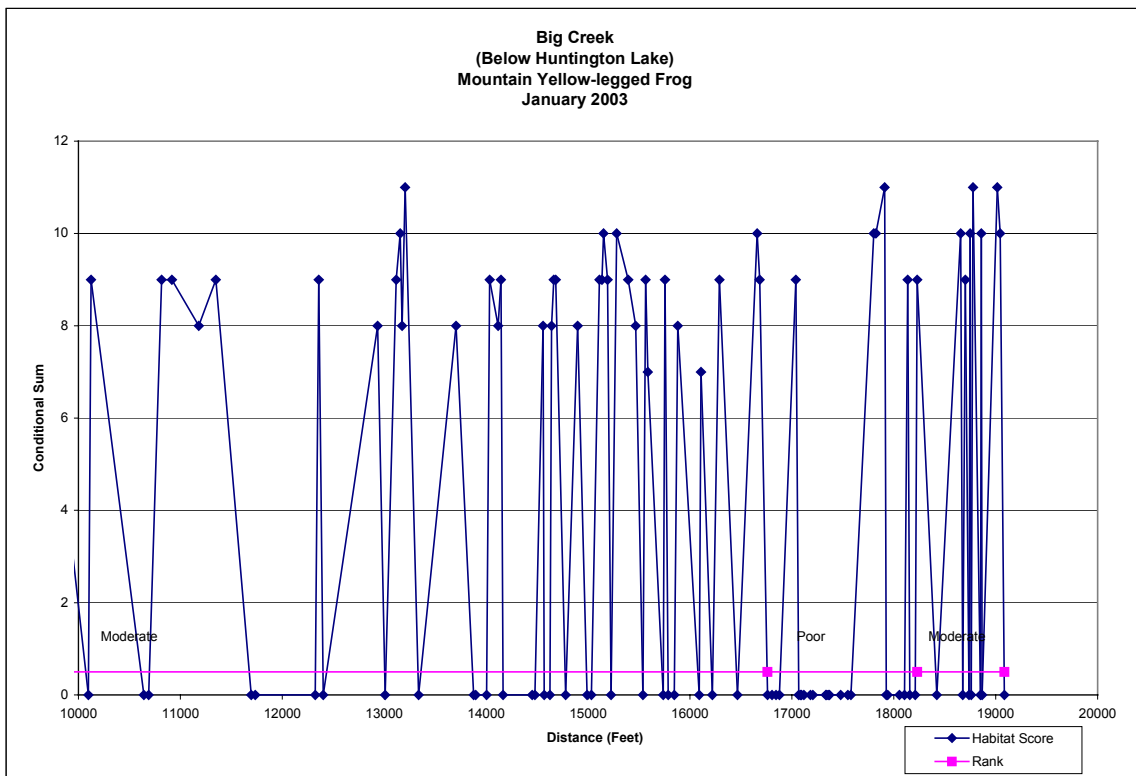
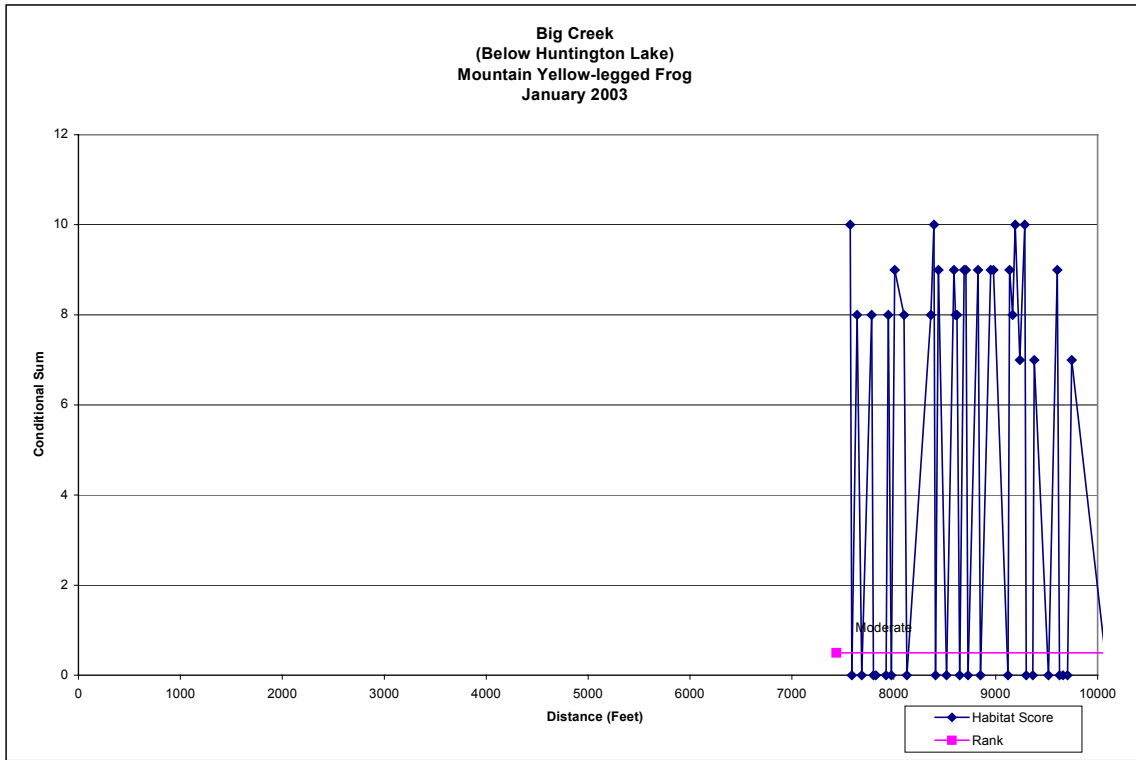
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



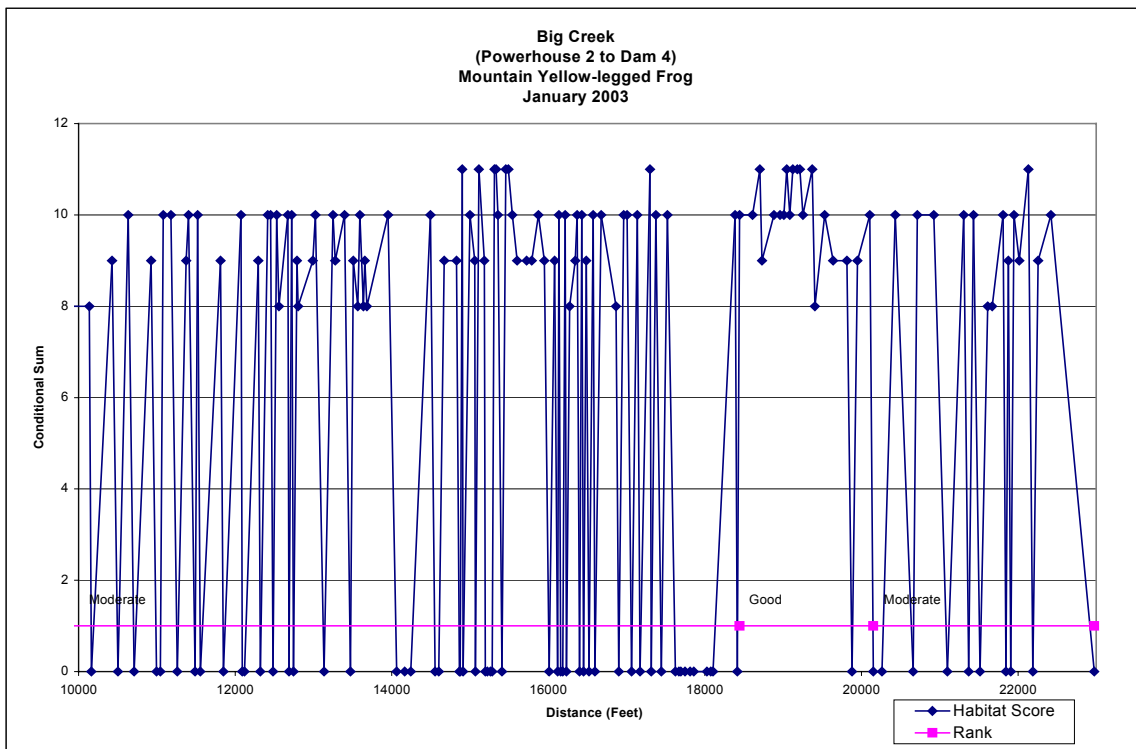
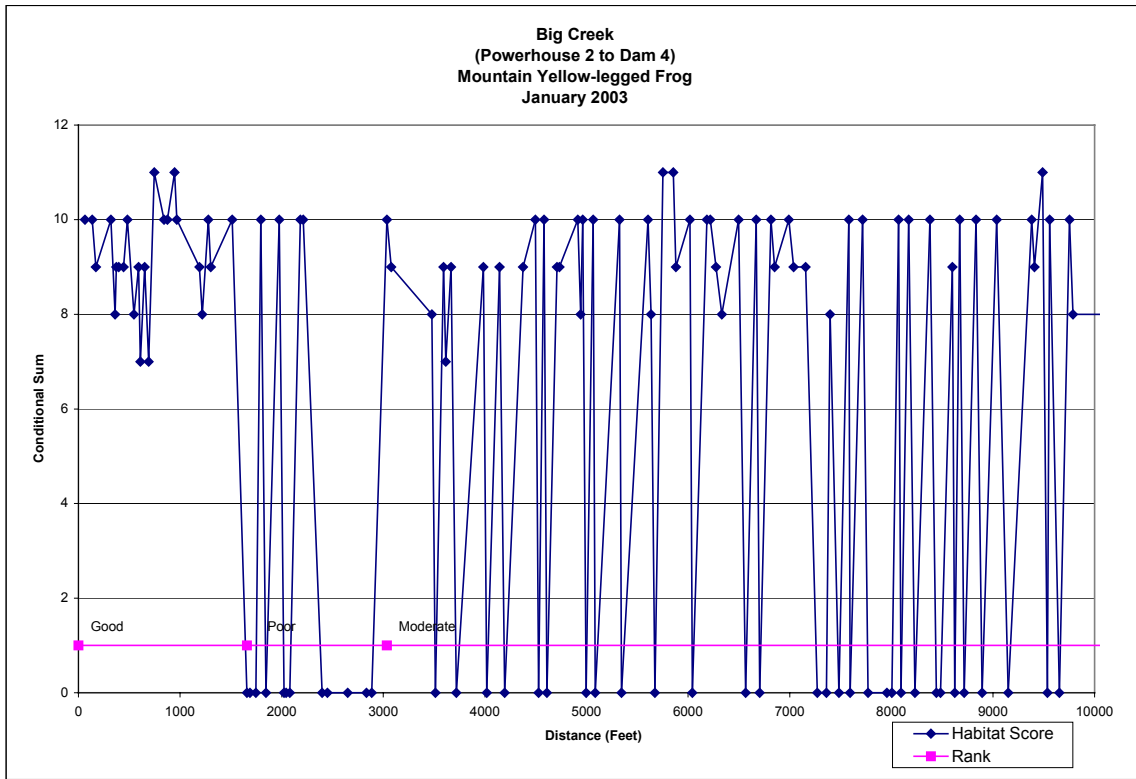
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

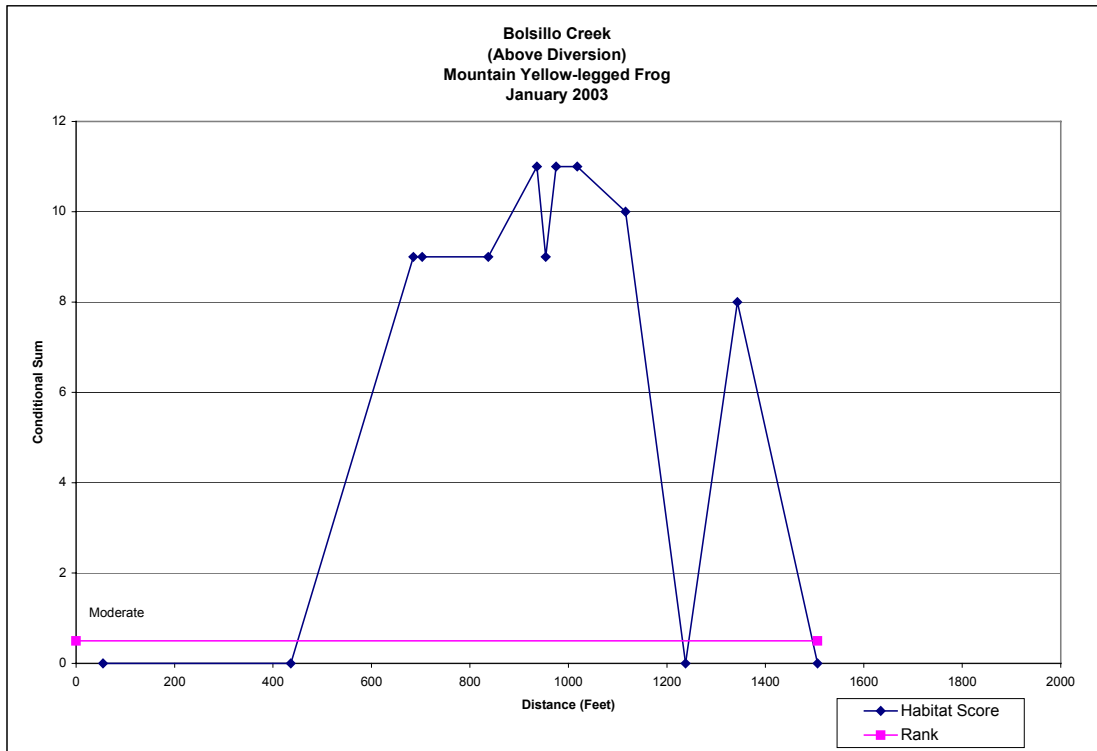


### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

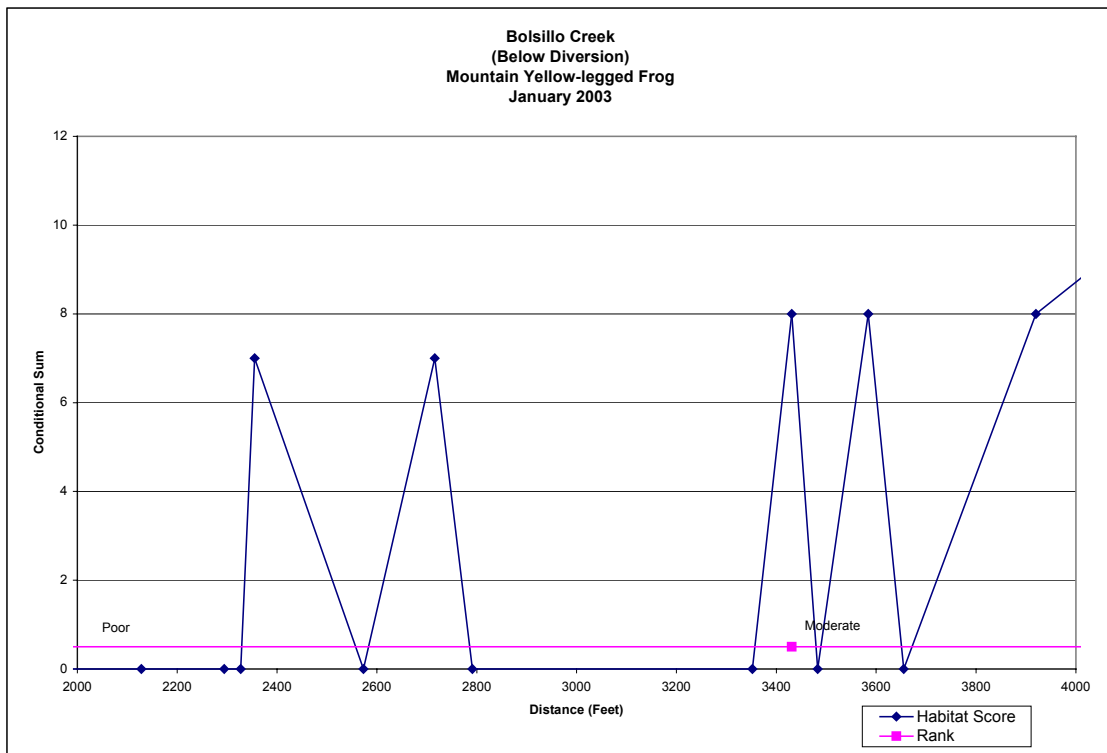
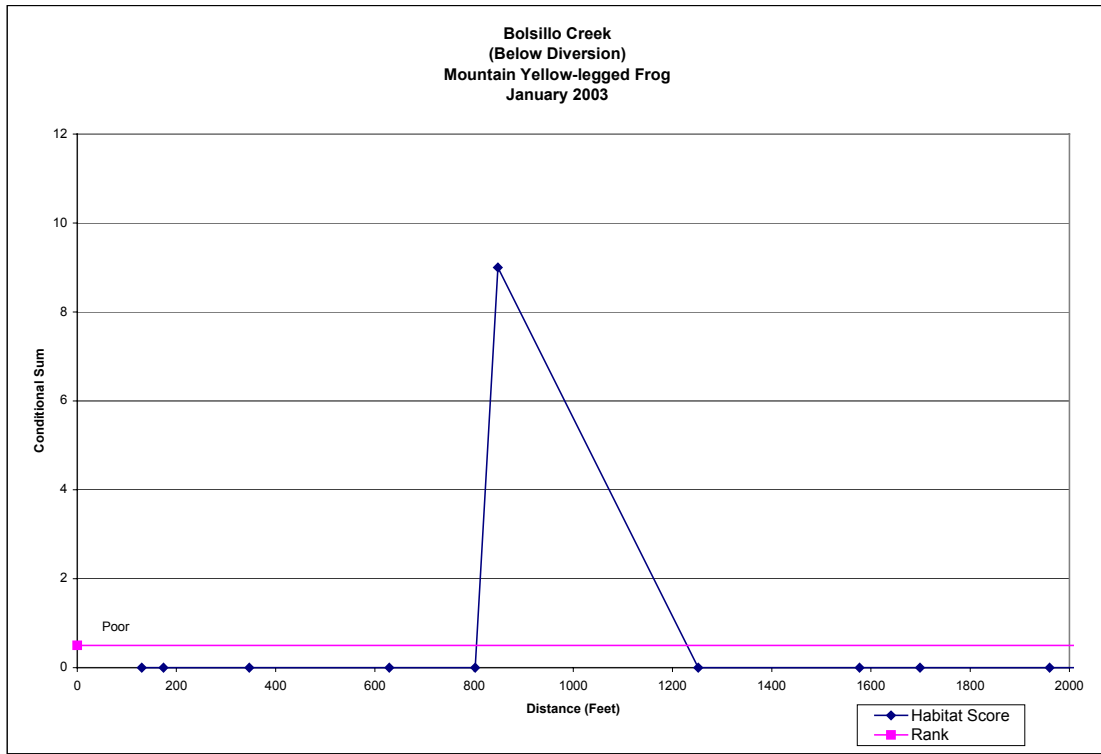




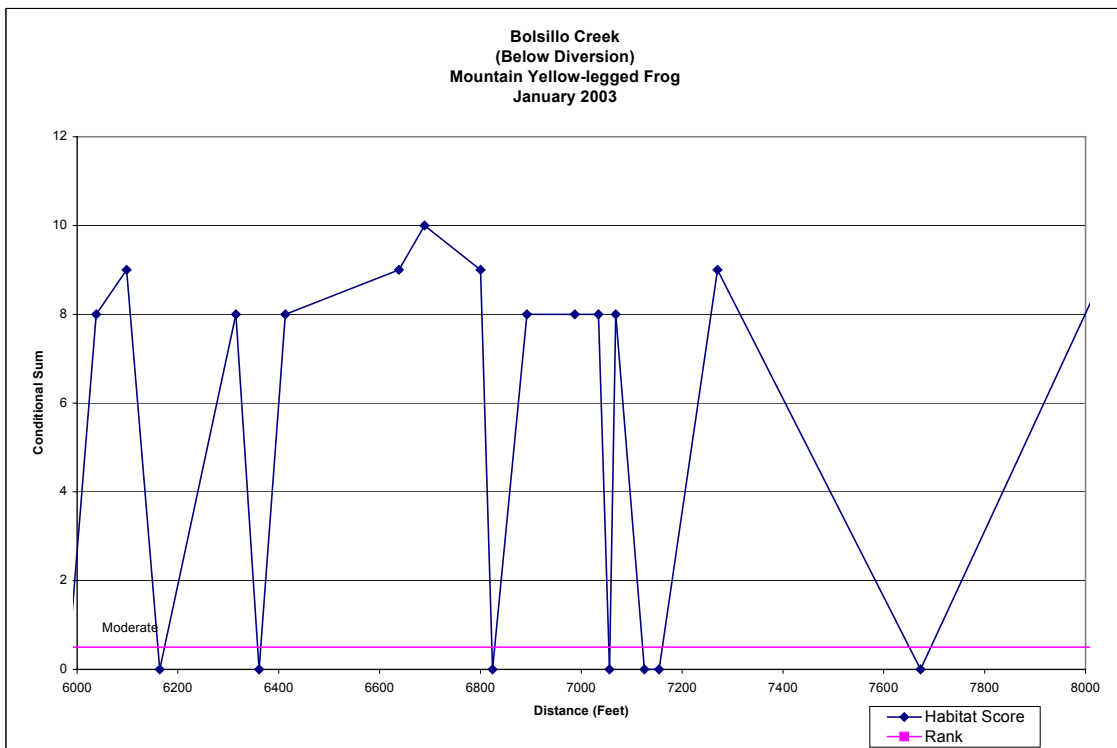
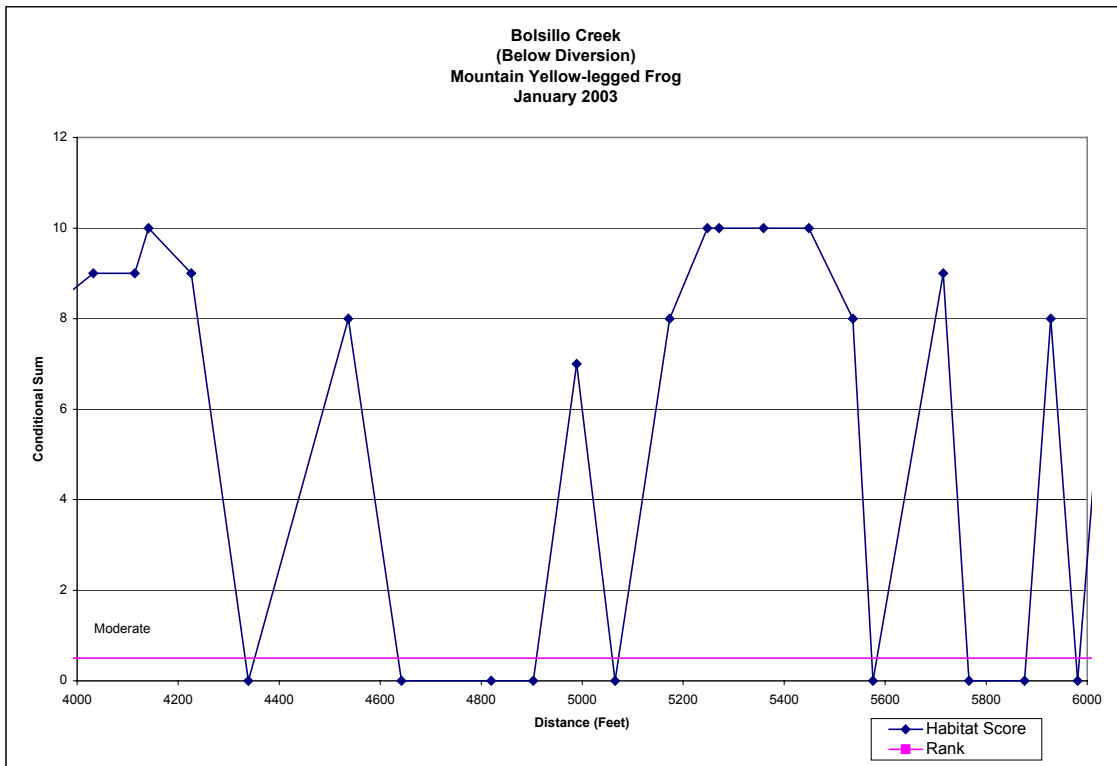
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



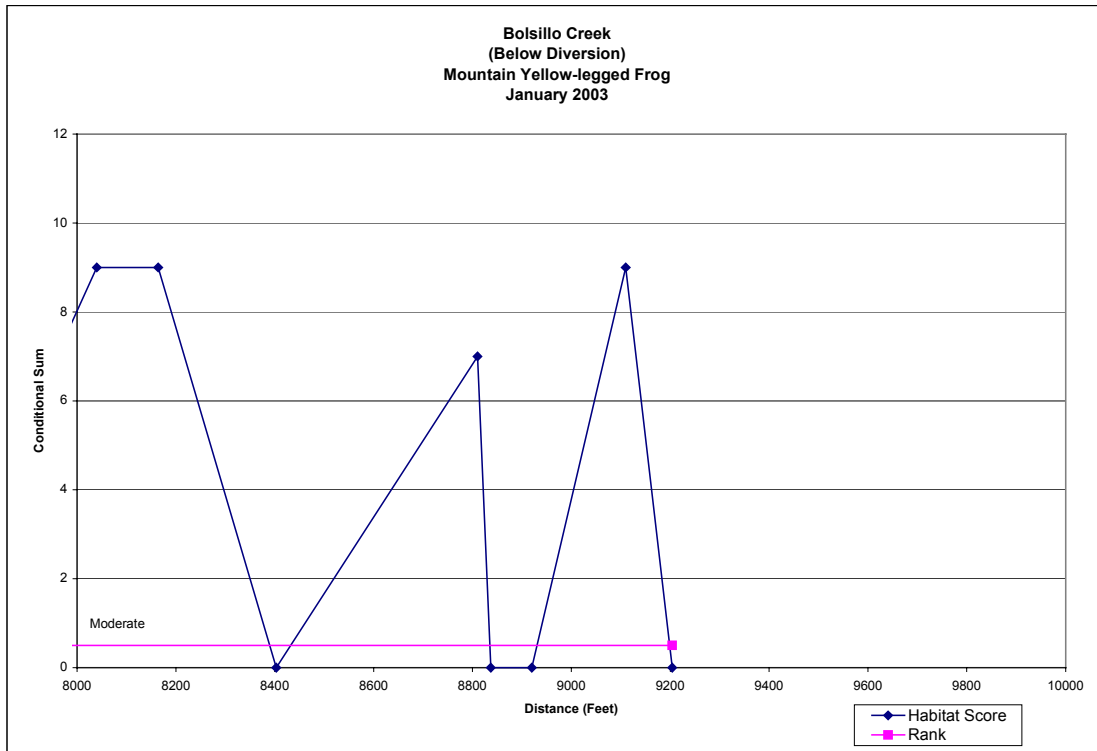
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



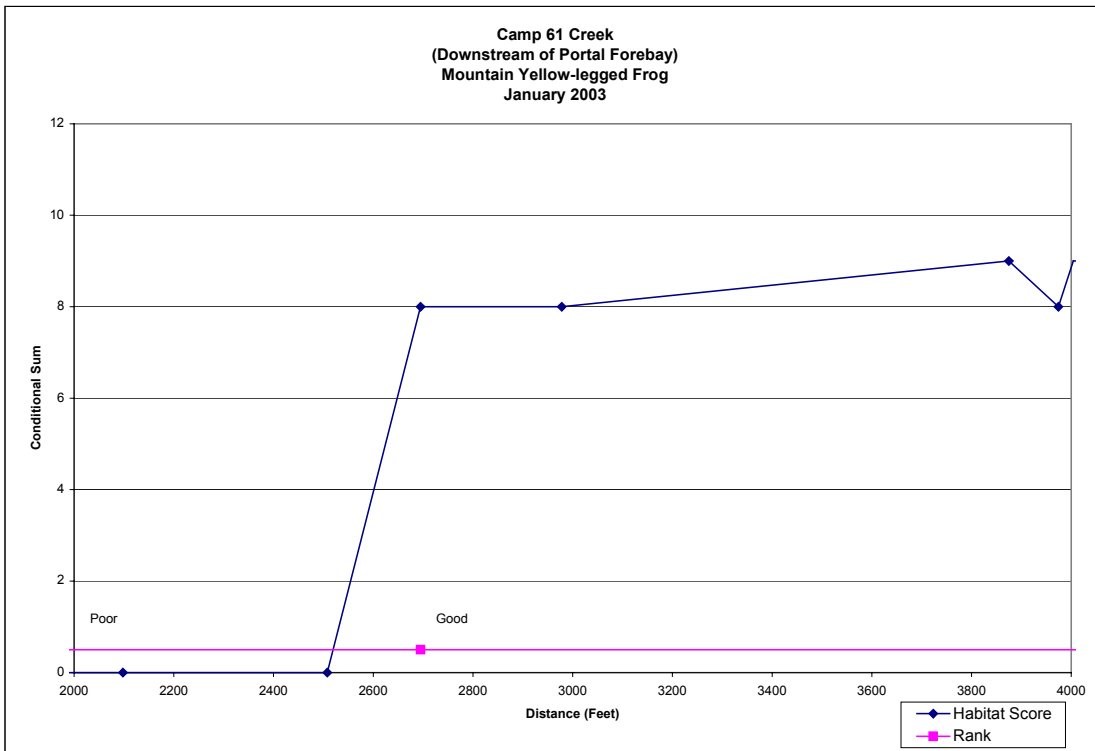
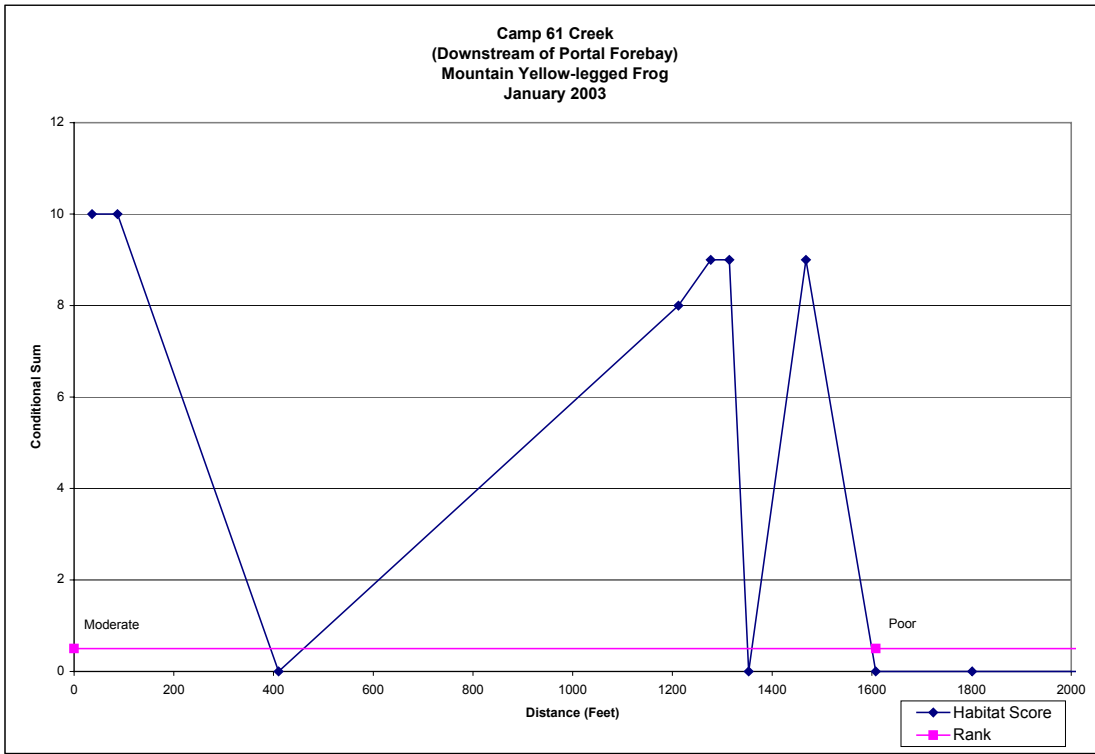
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



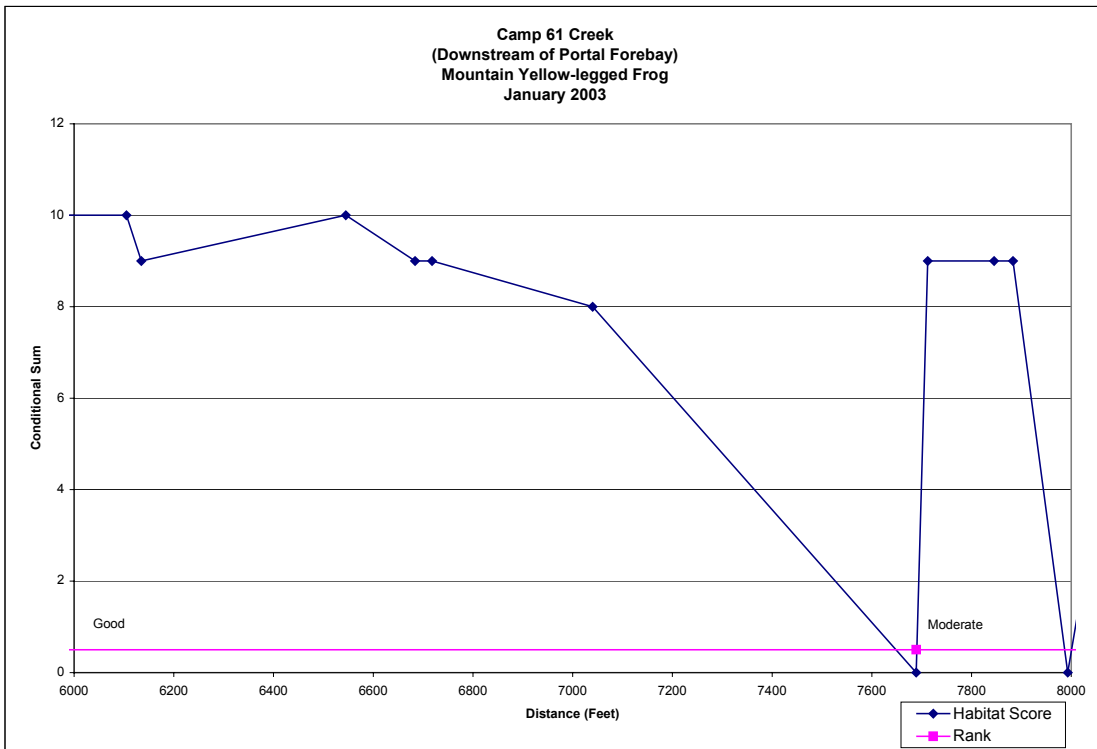
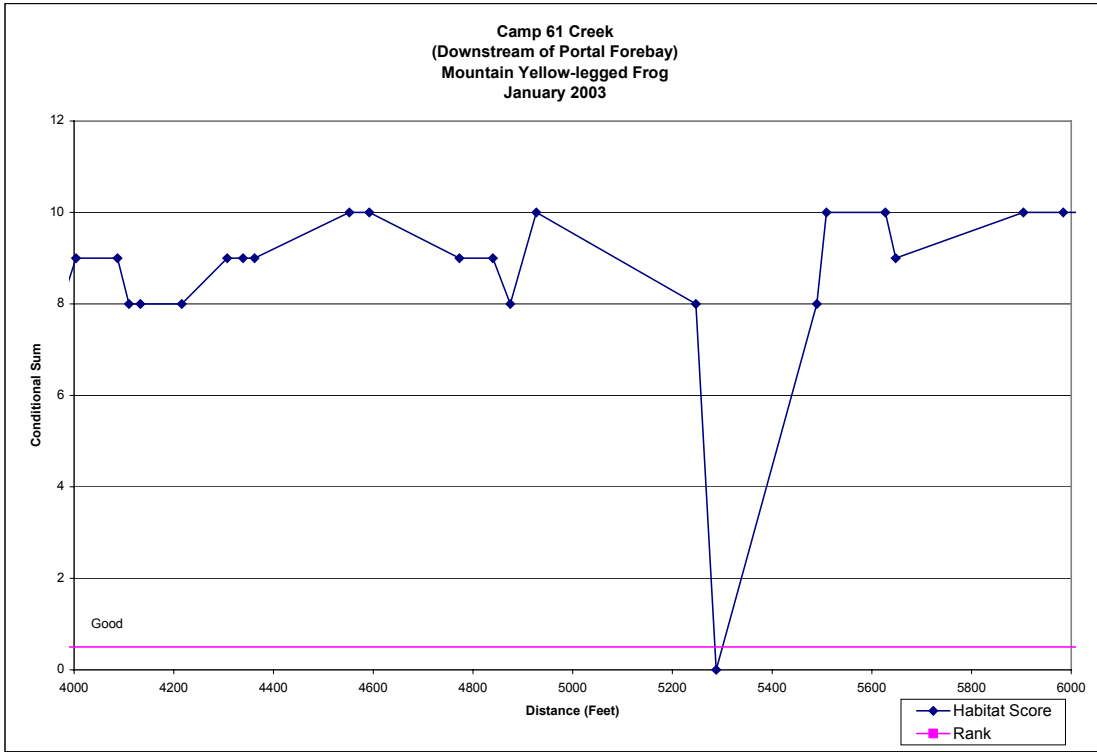
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



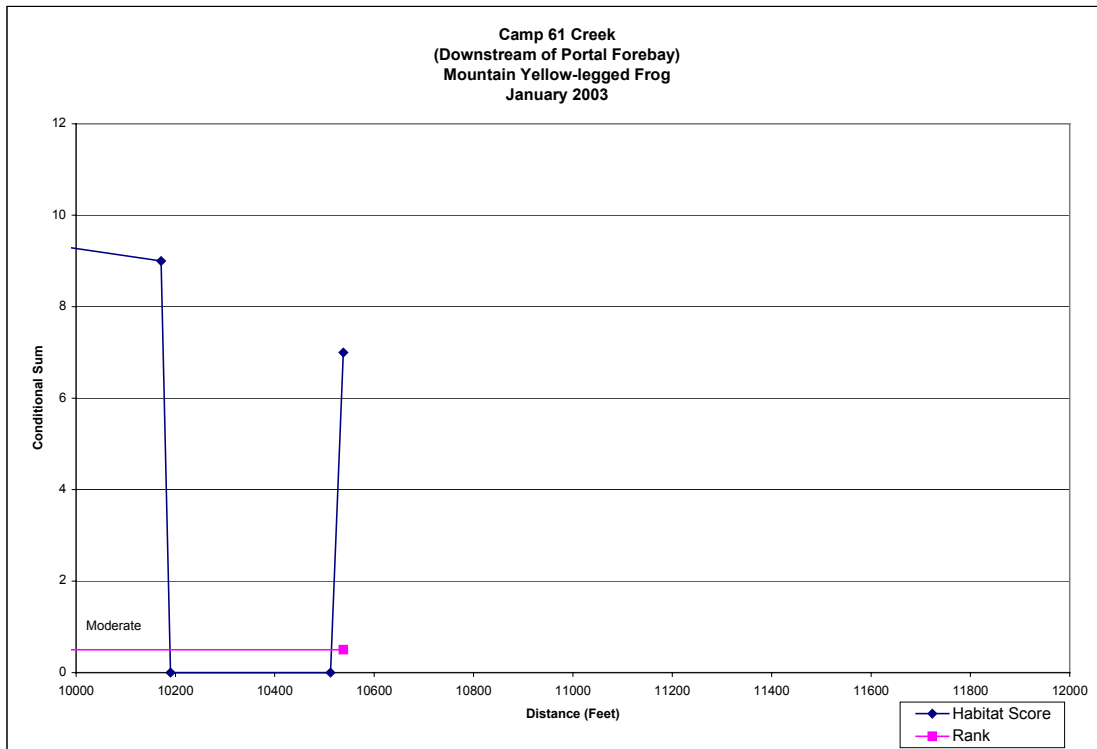
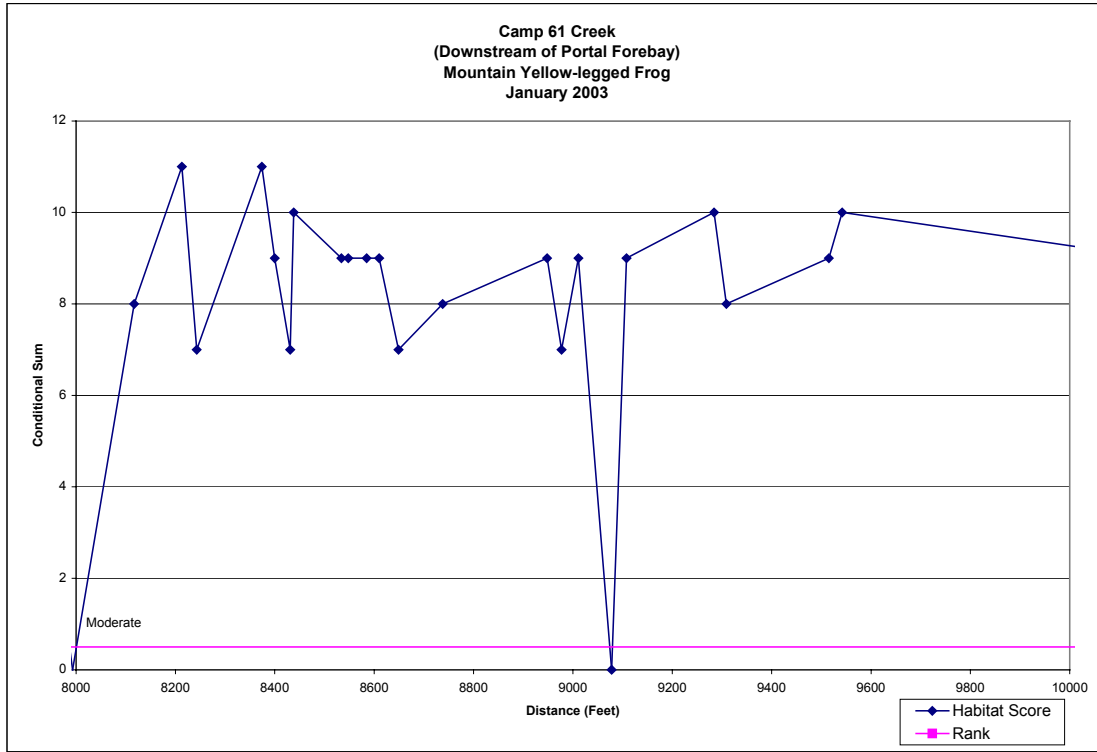
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



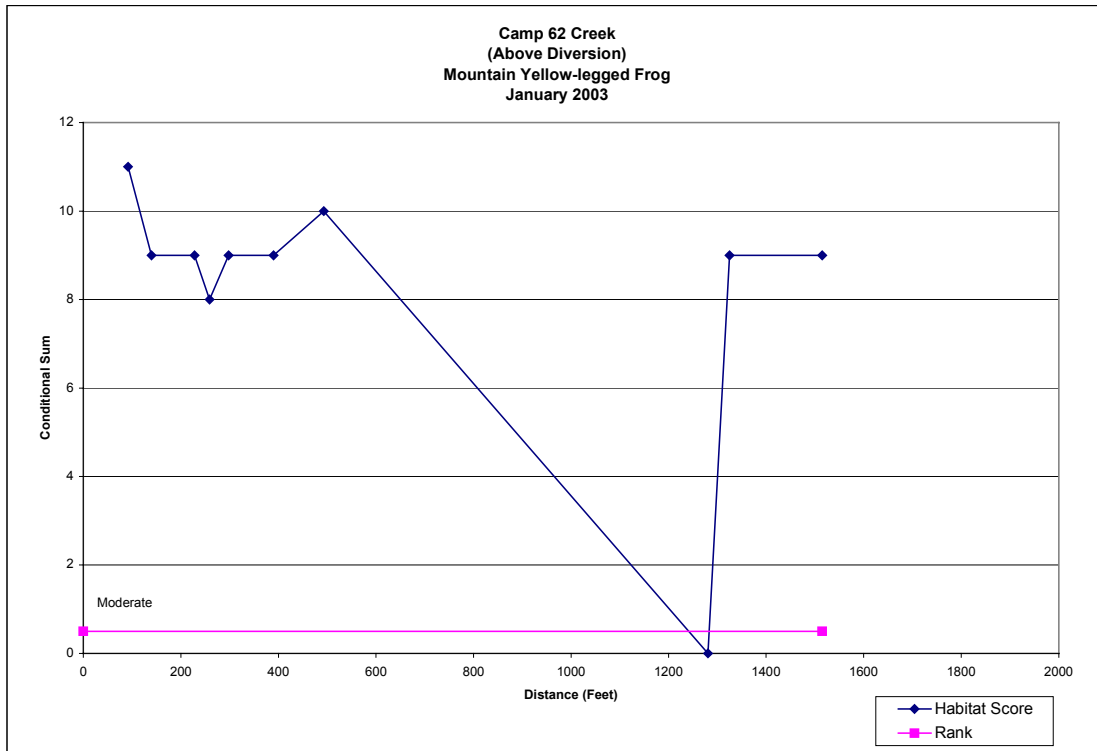
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

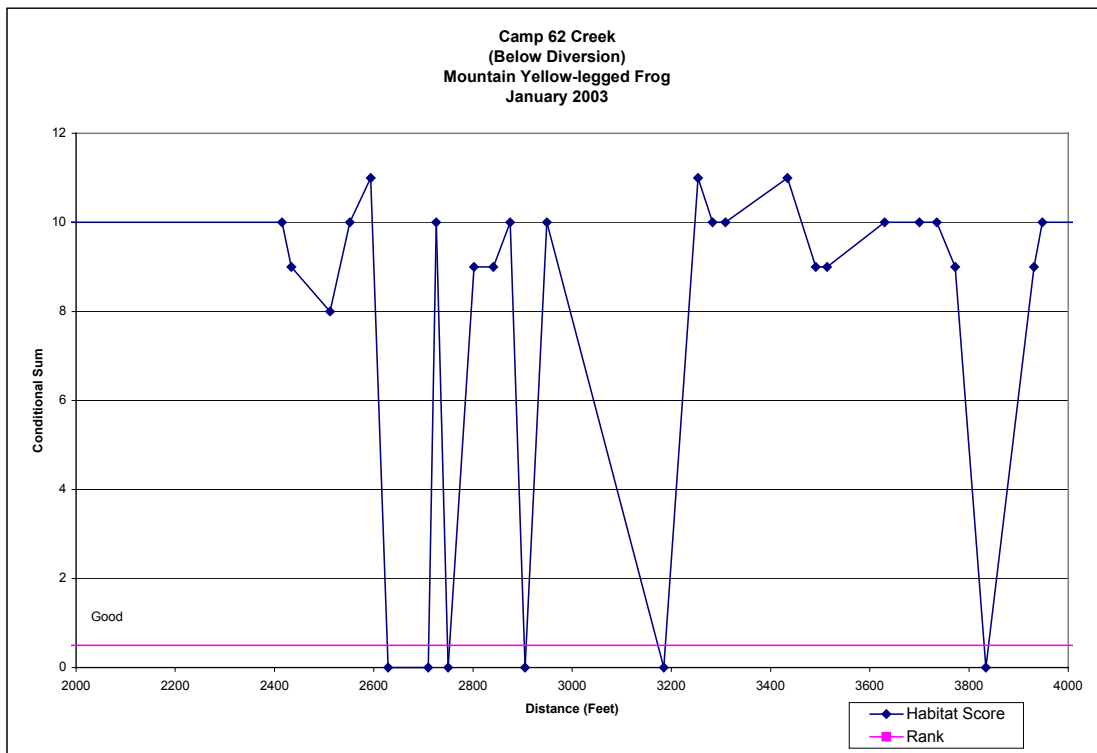
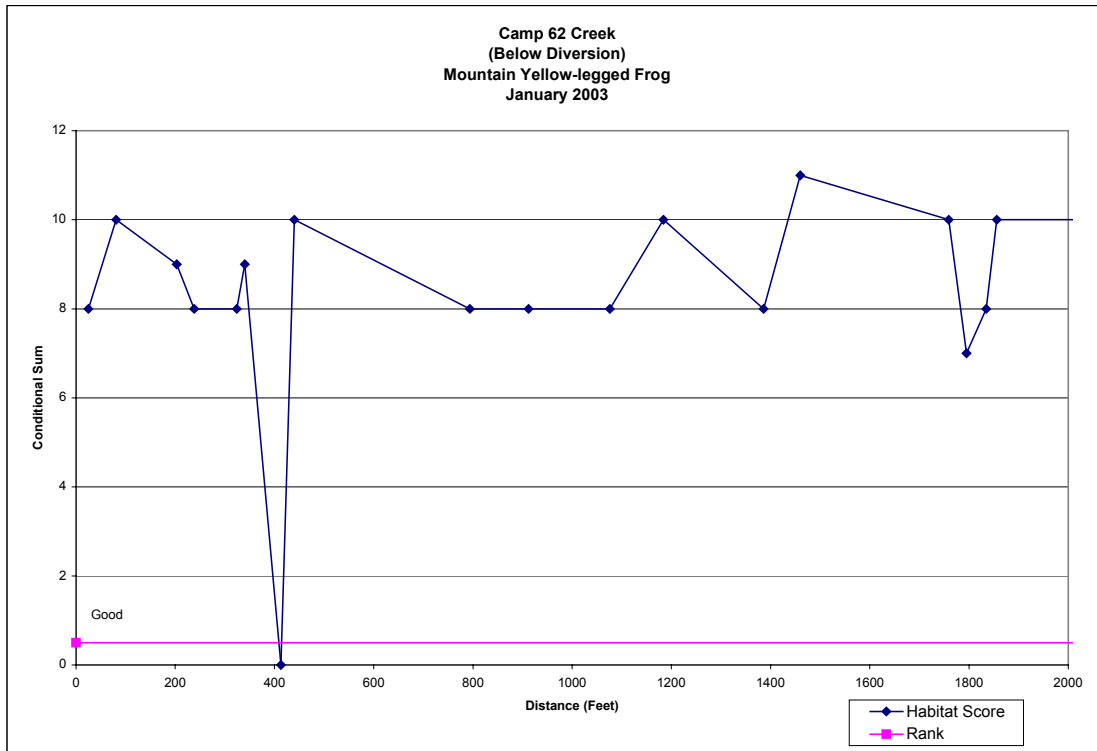


### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

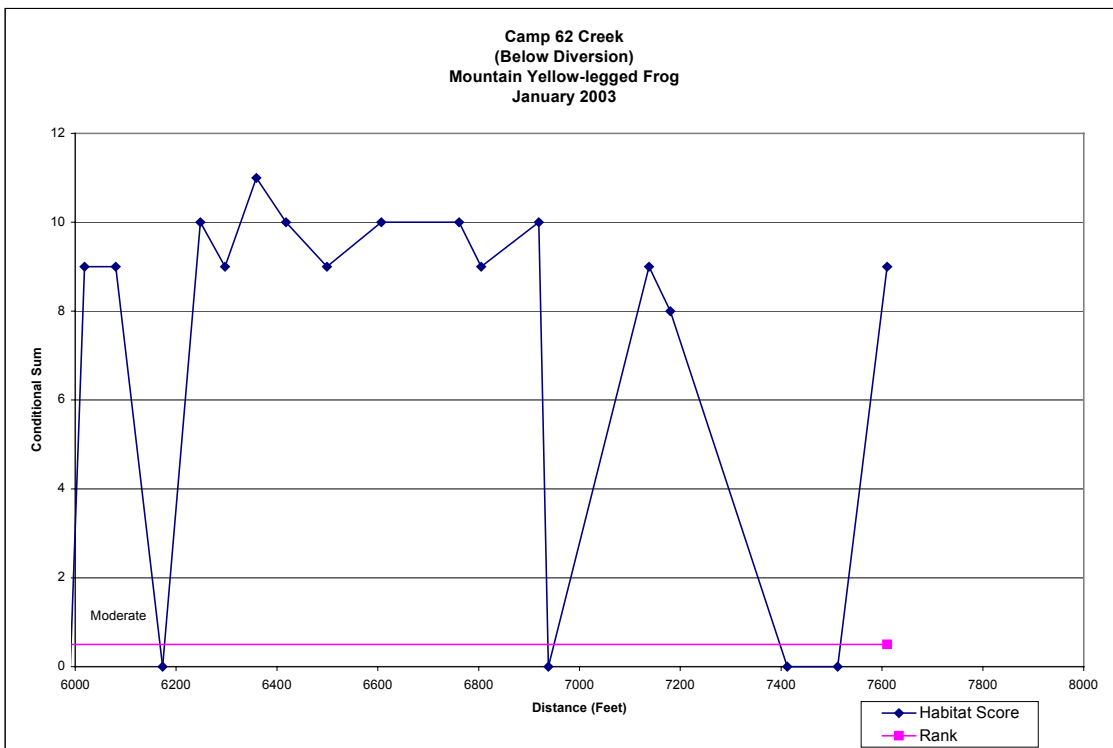
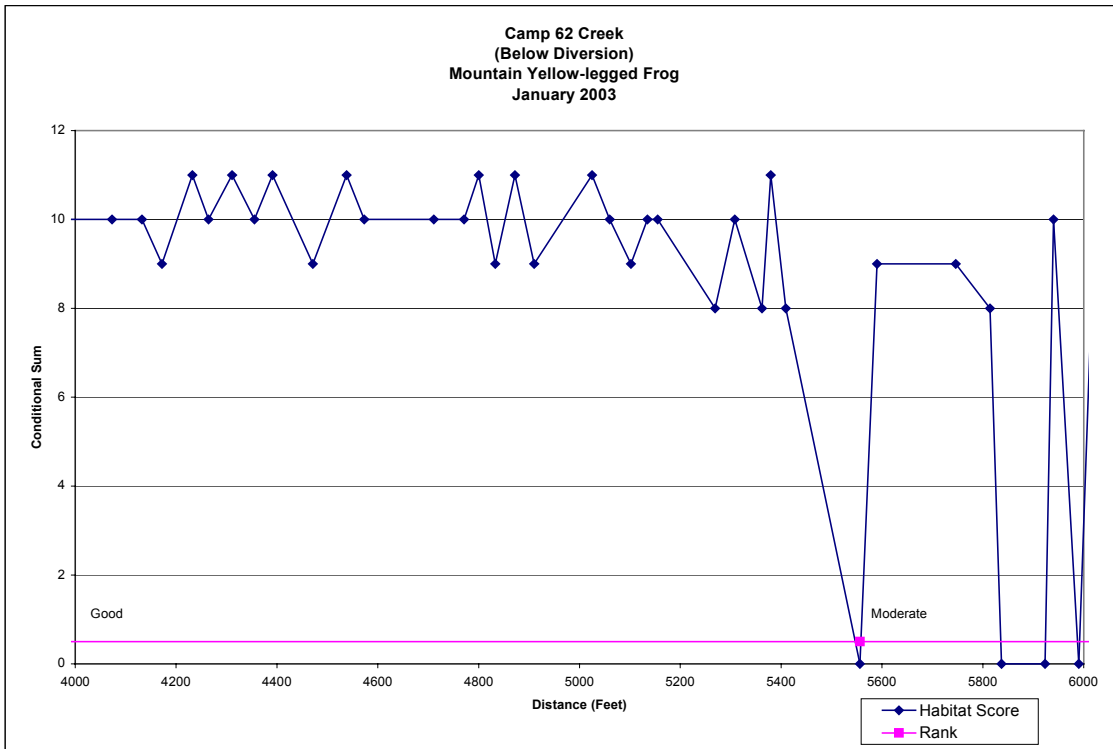




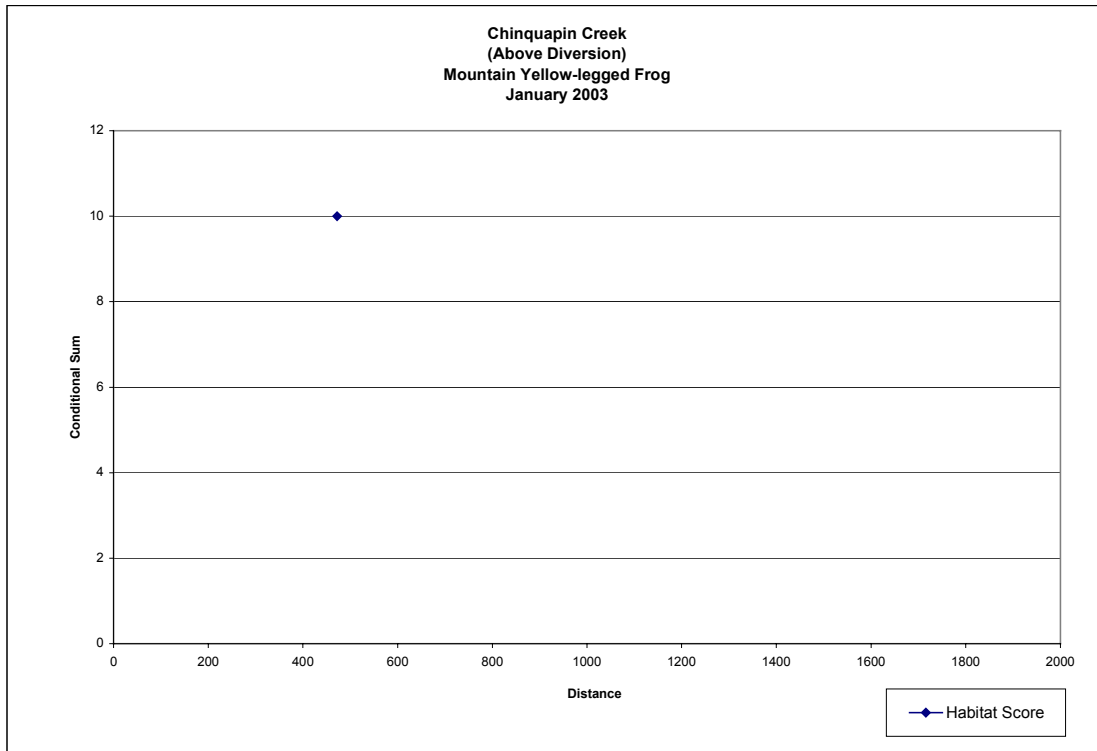
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



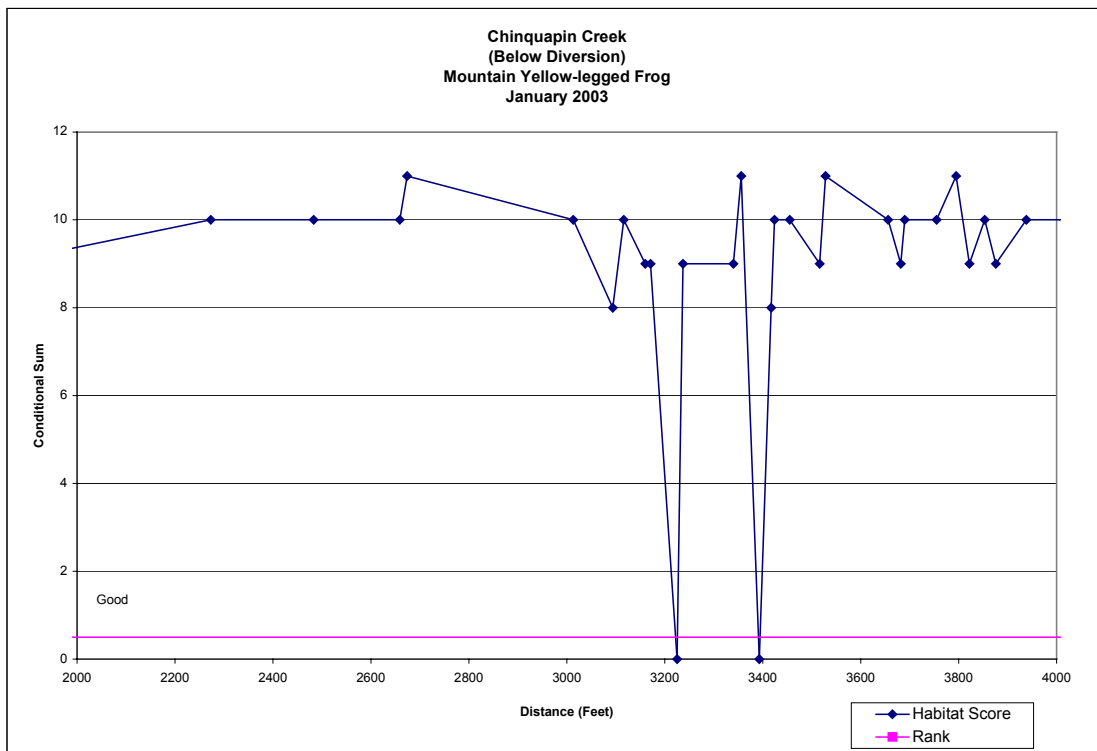
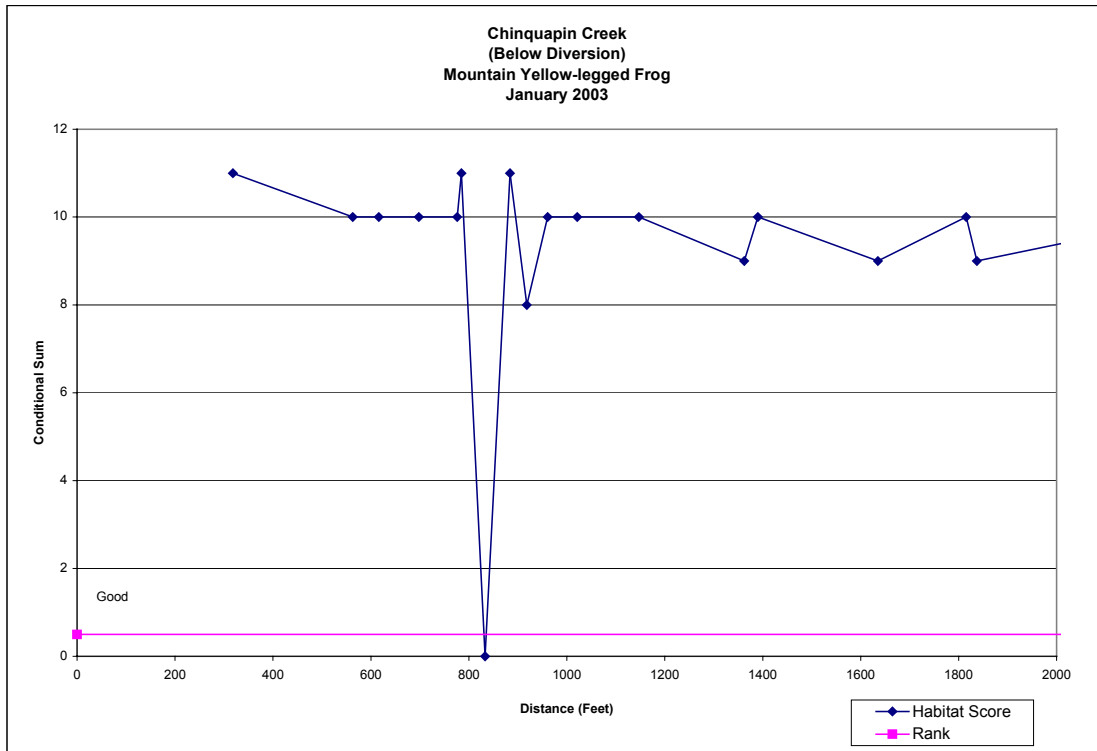
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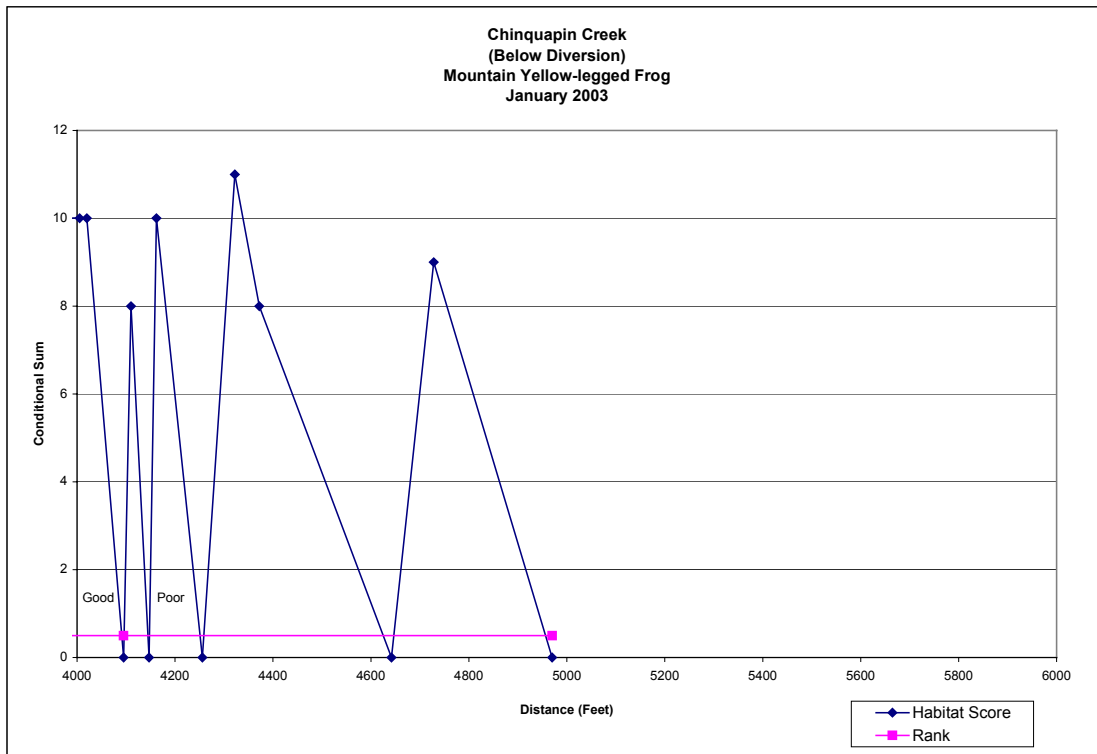
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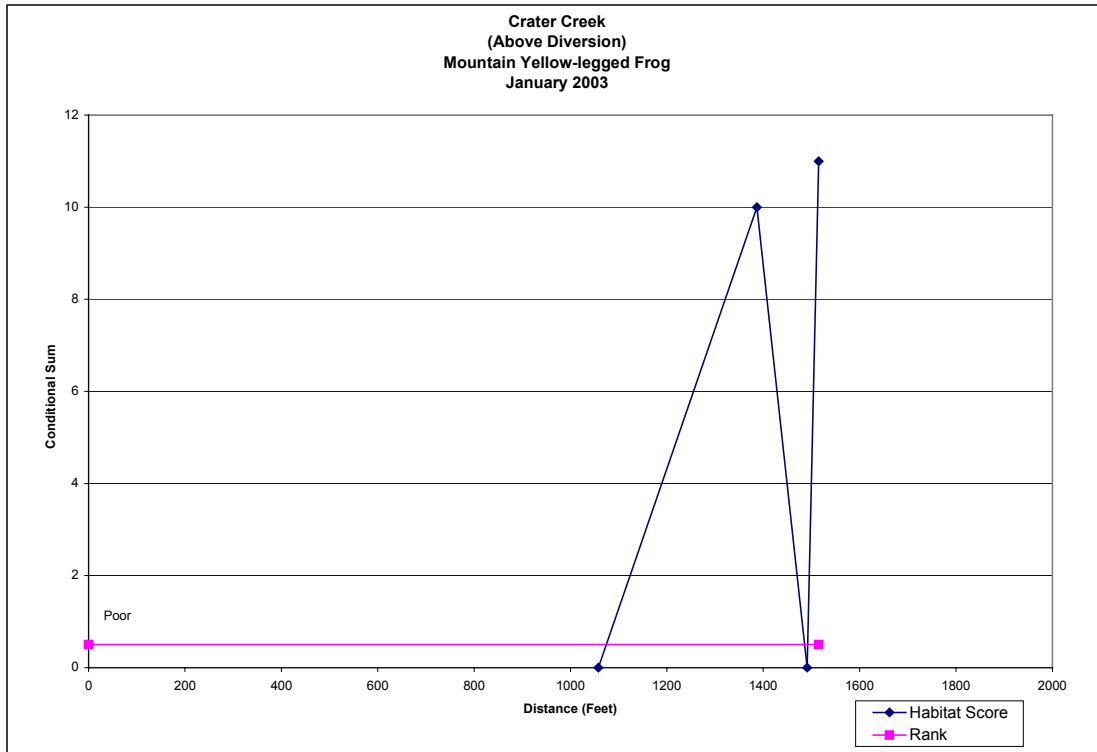
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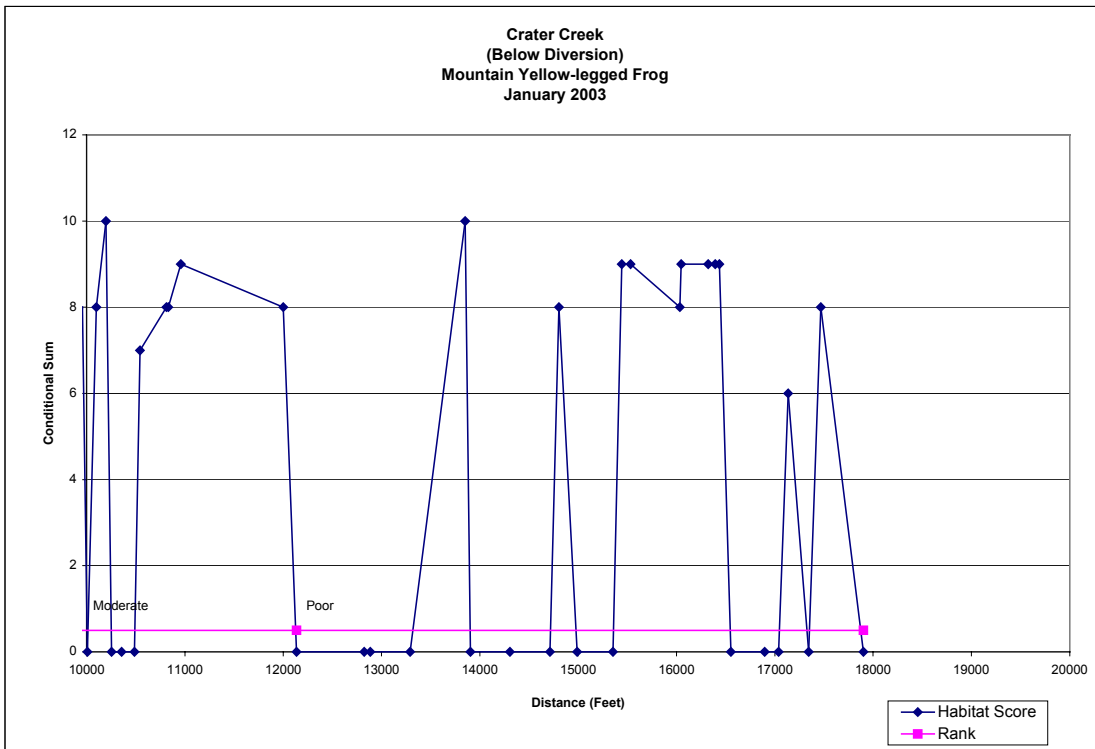
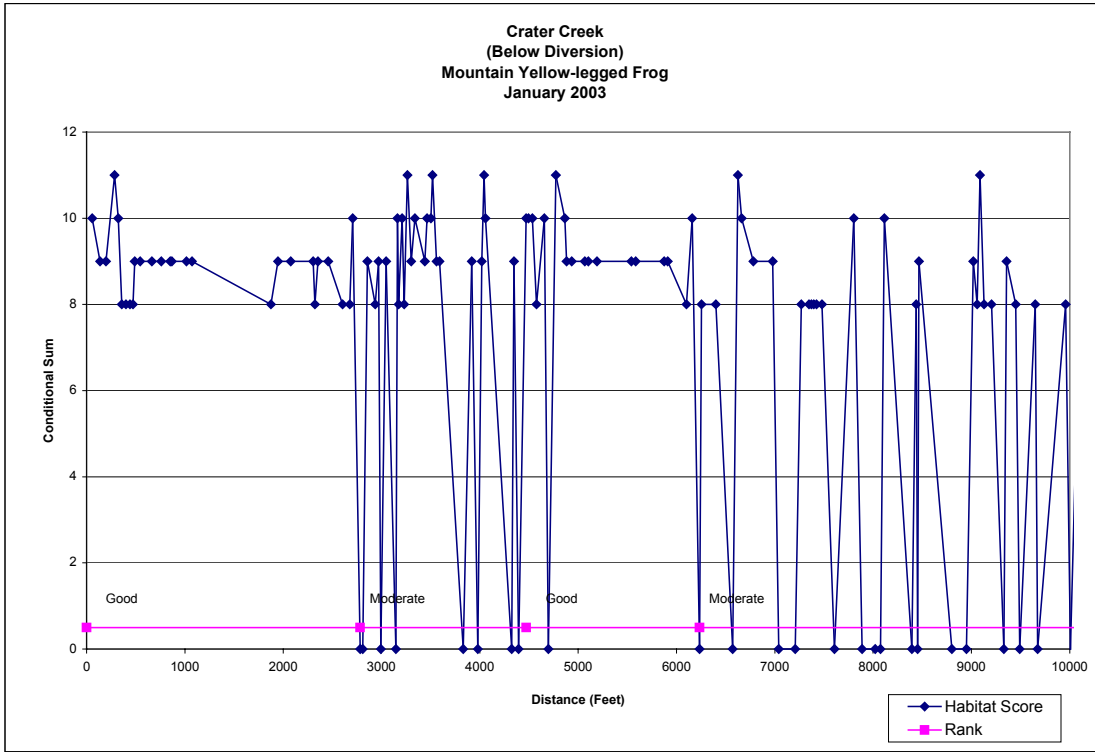
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



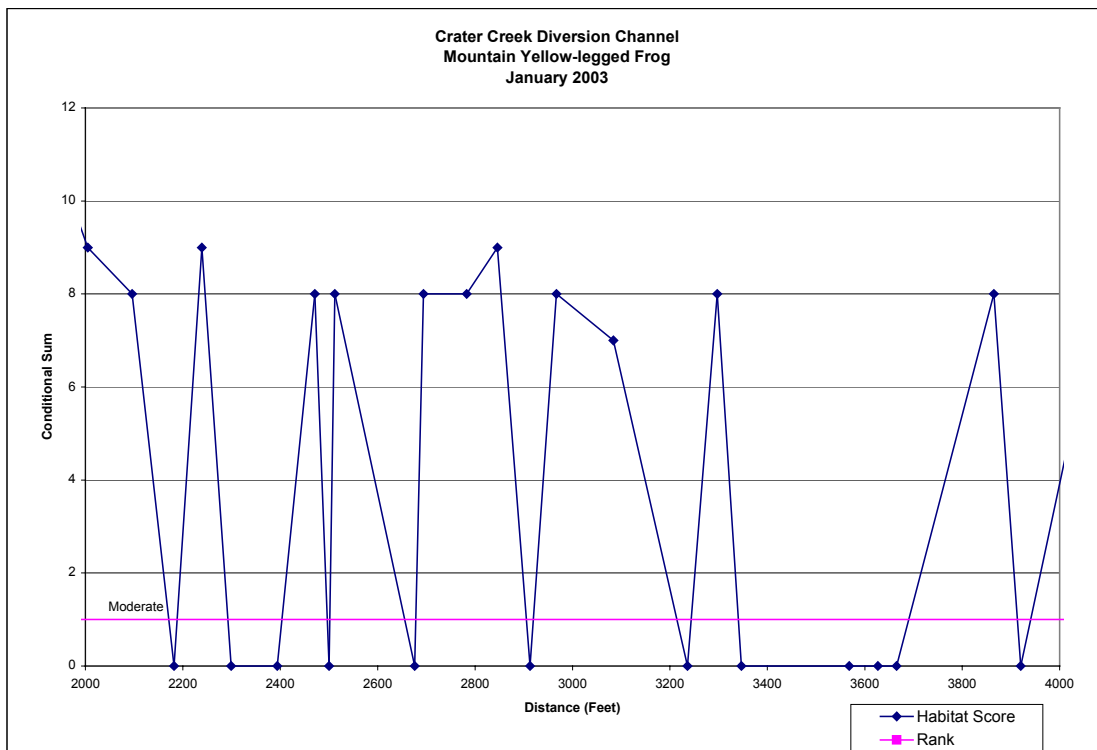
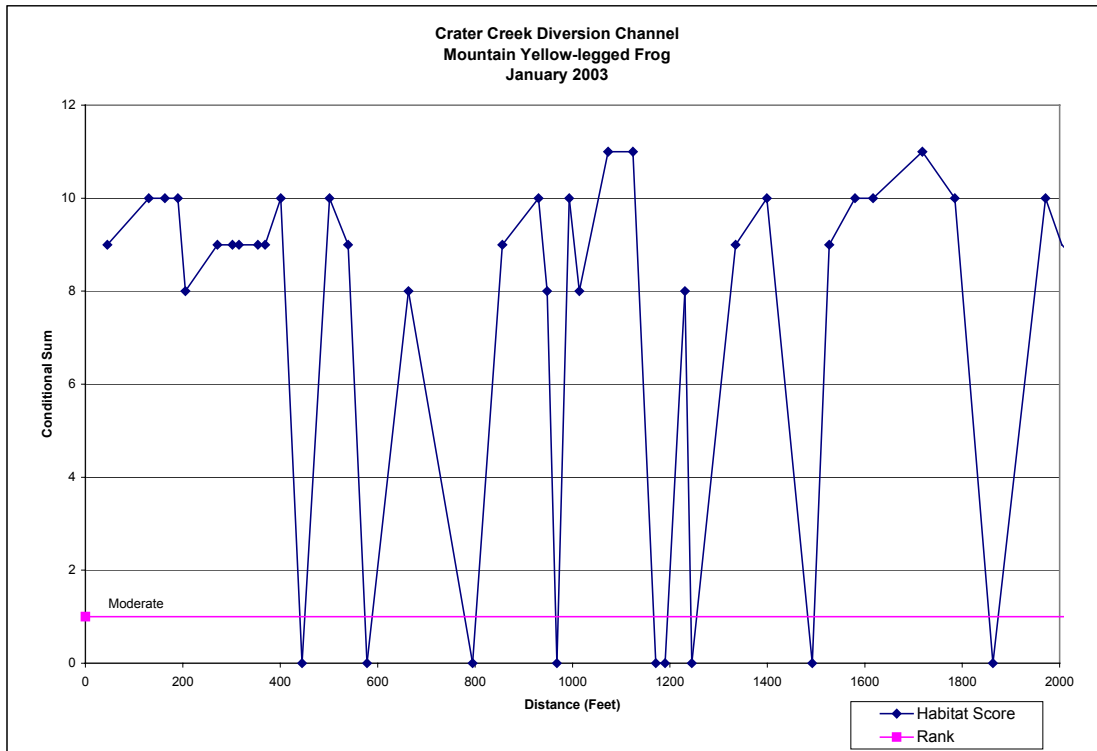
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

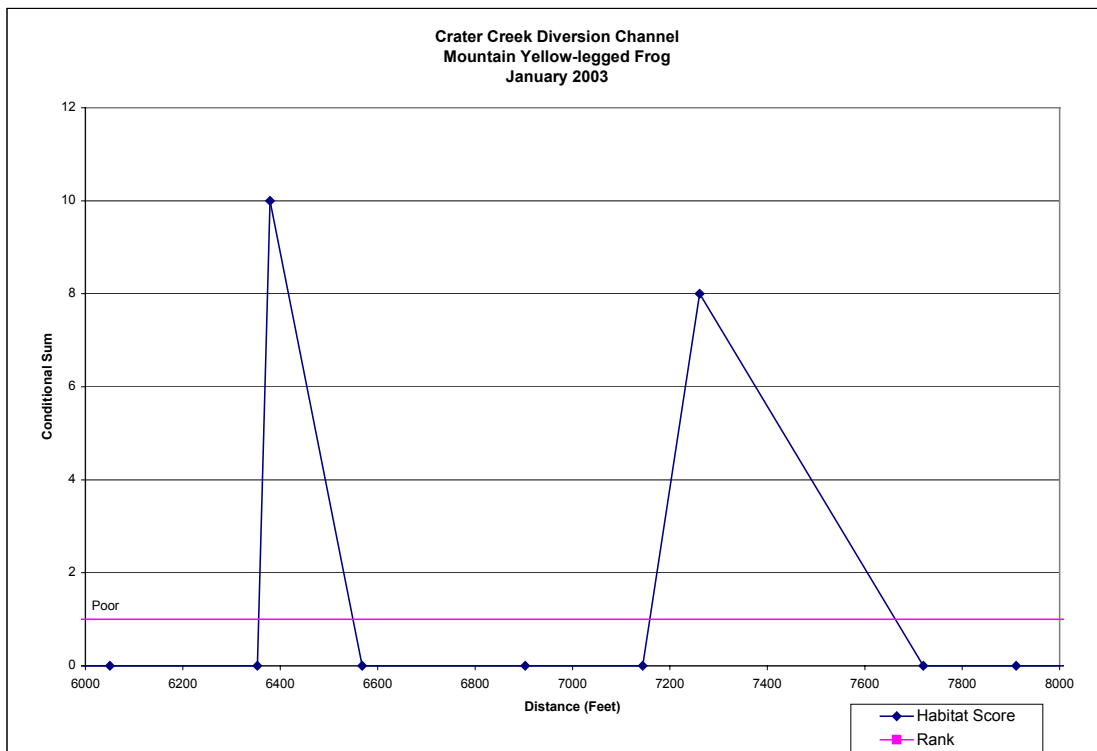
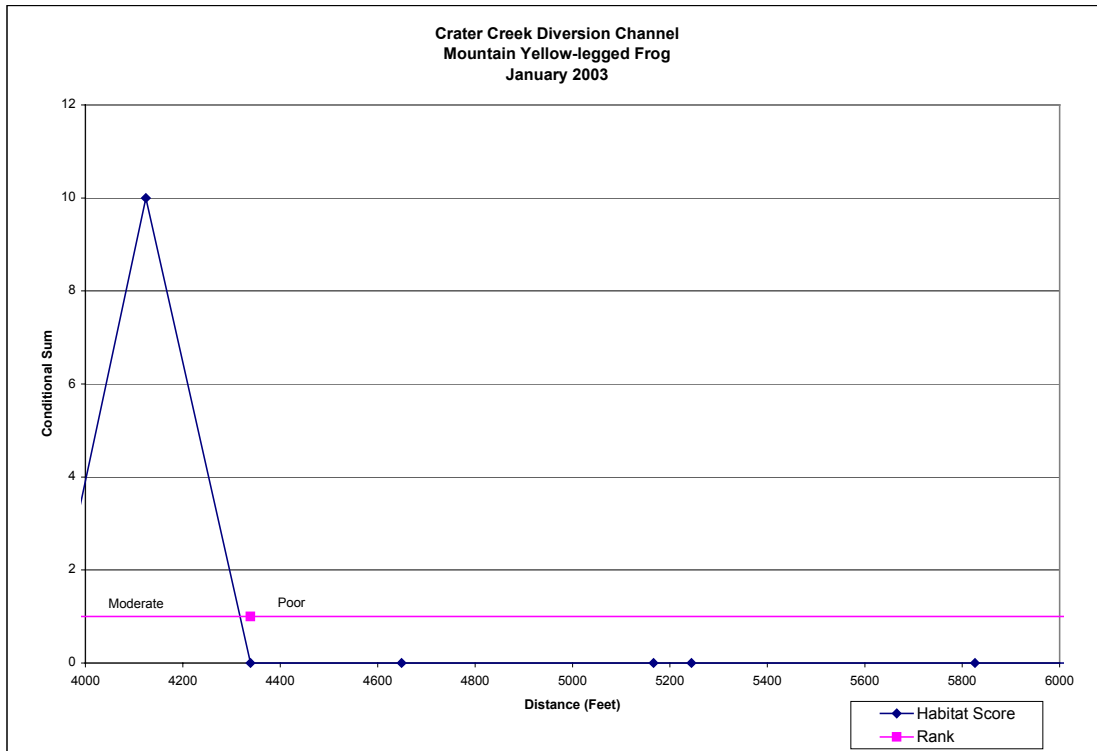


### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

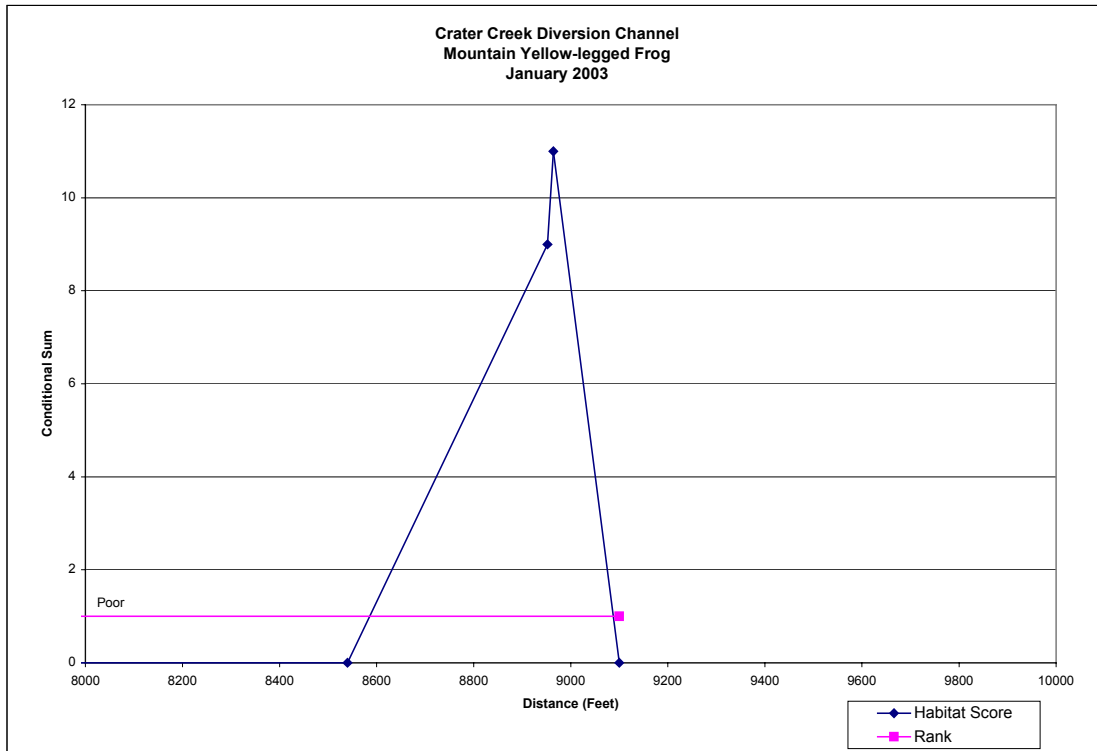




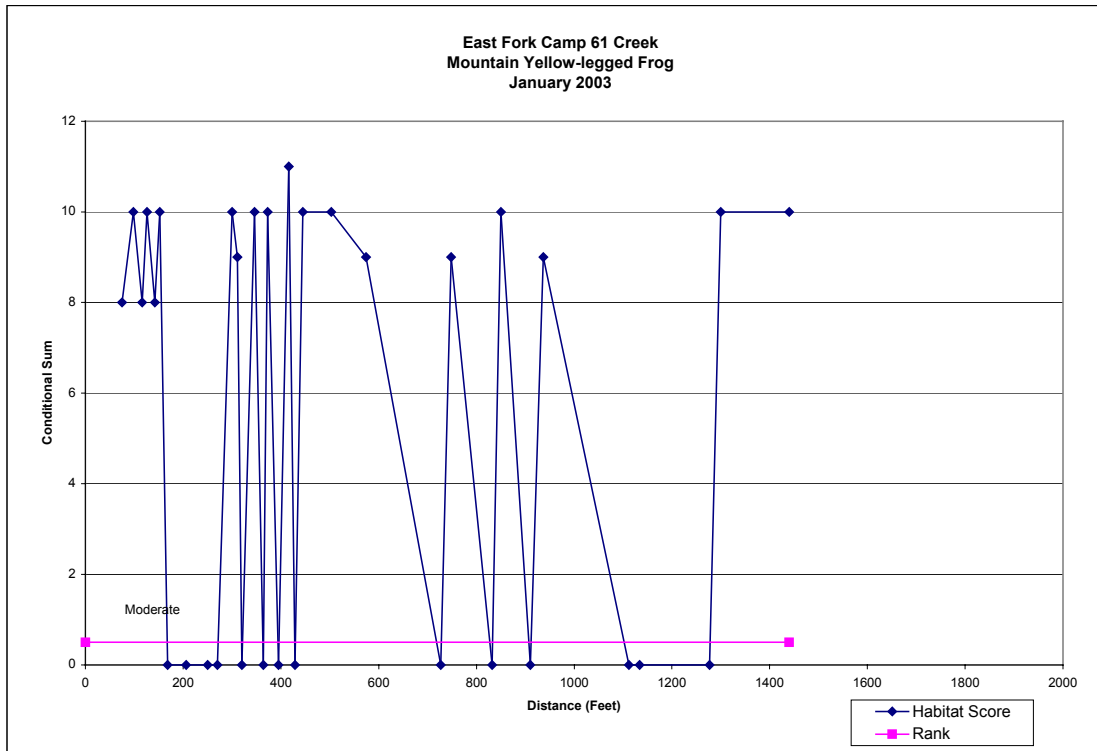
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



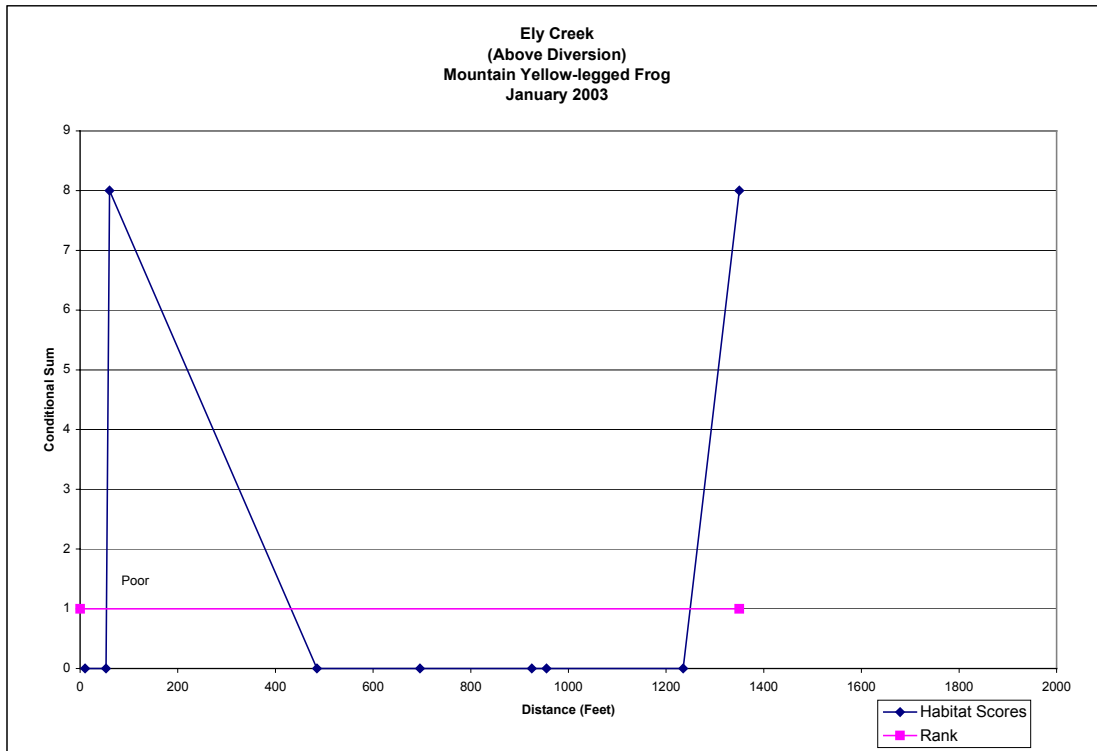
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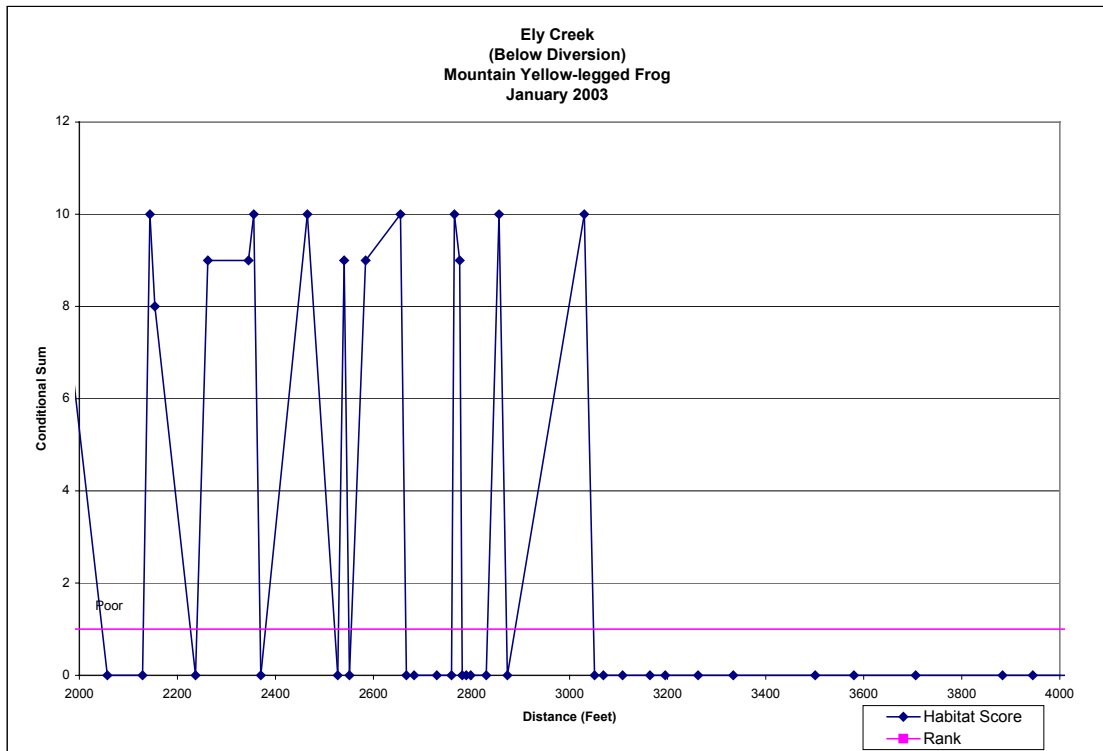
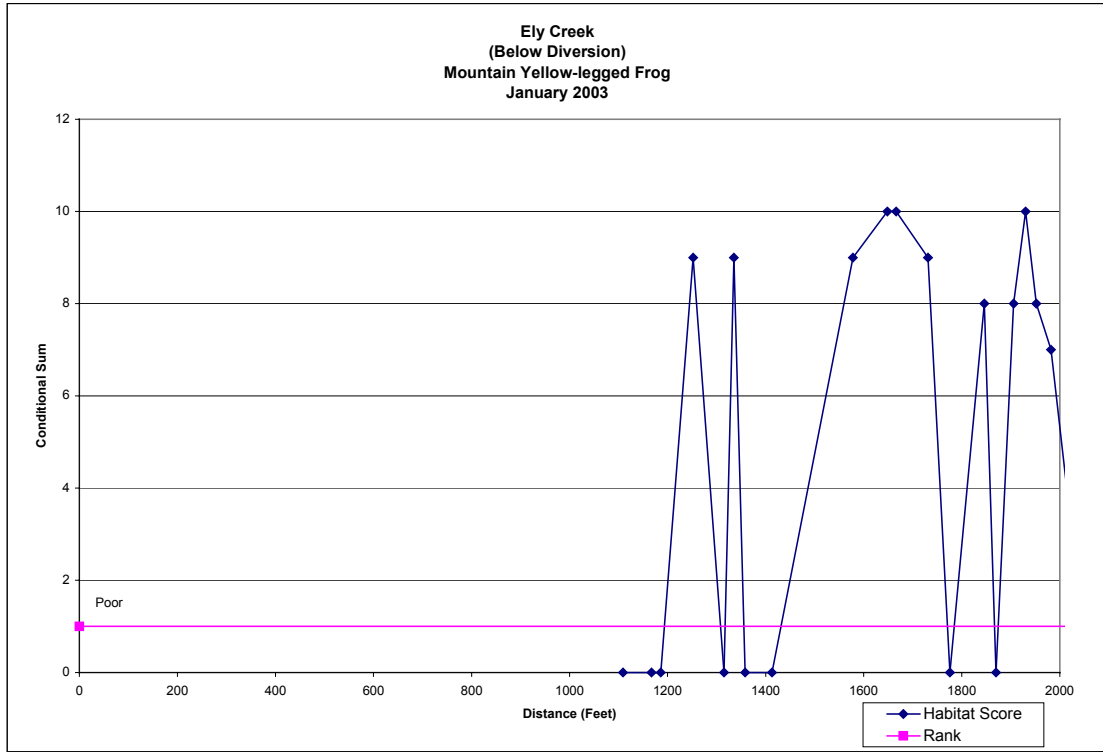
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



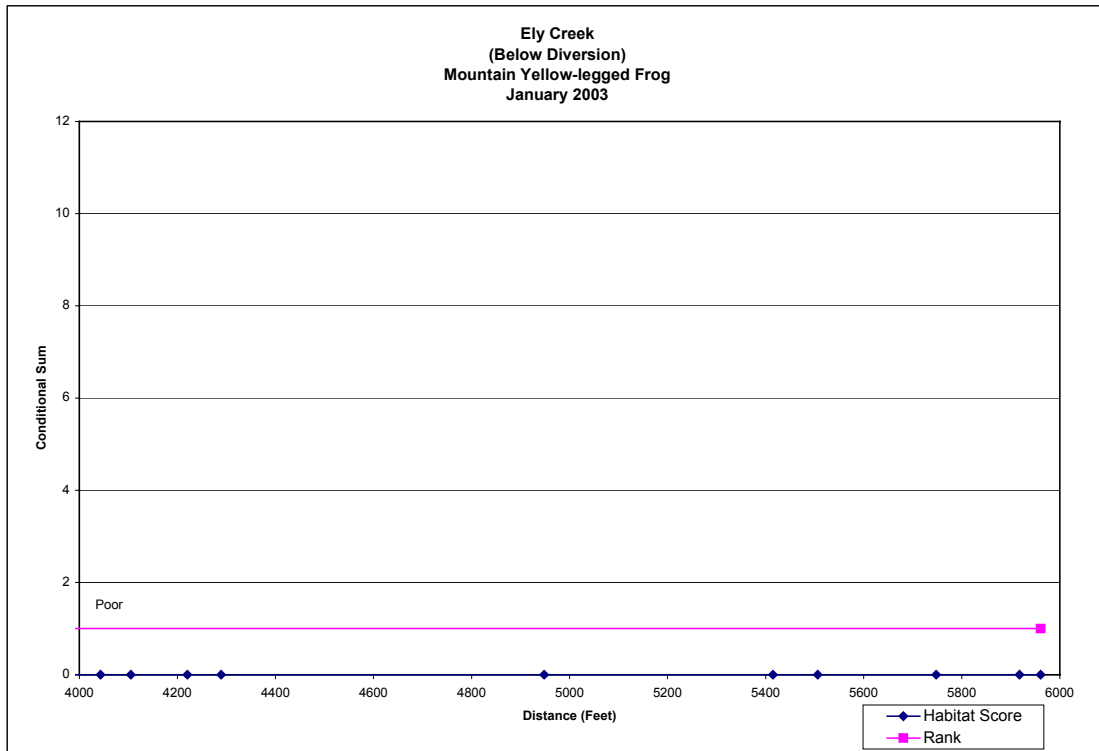
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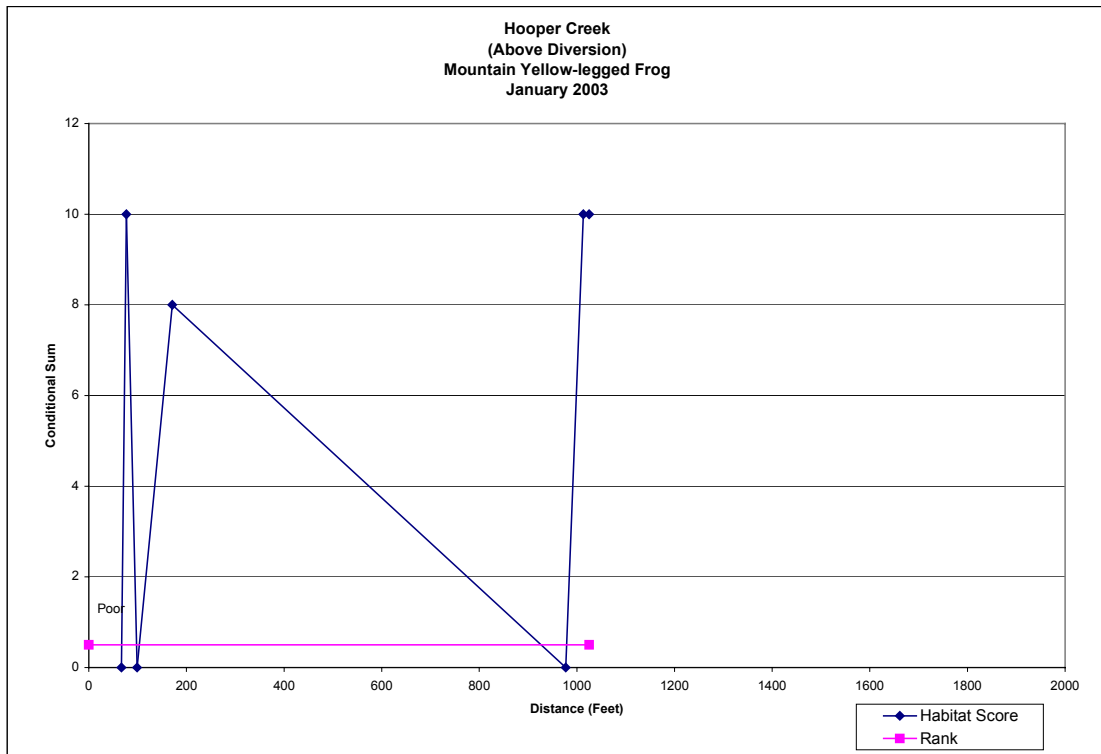
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



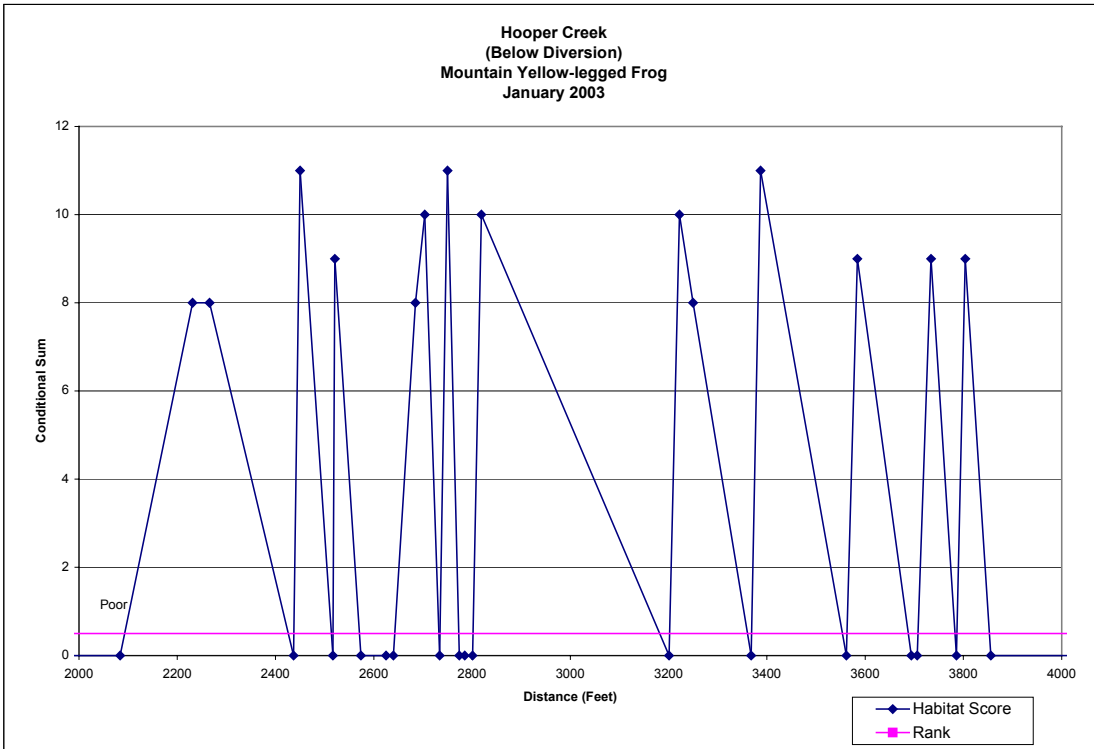
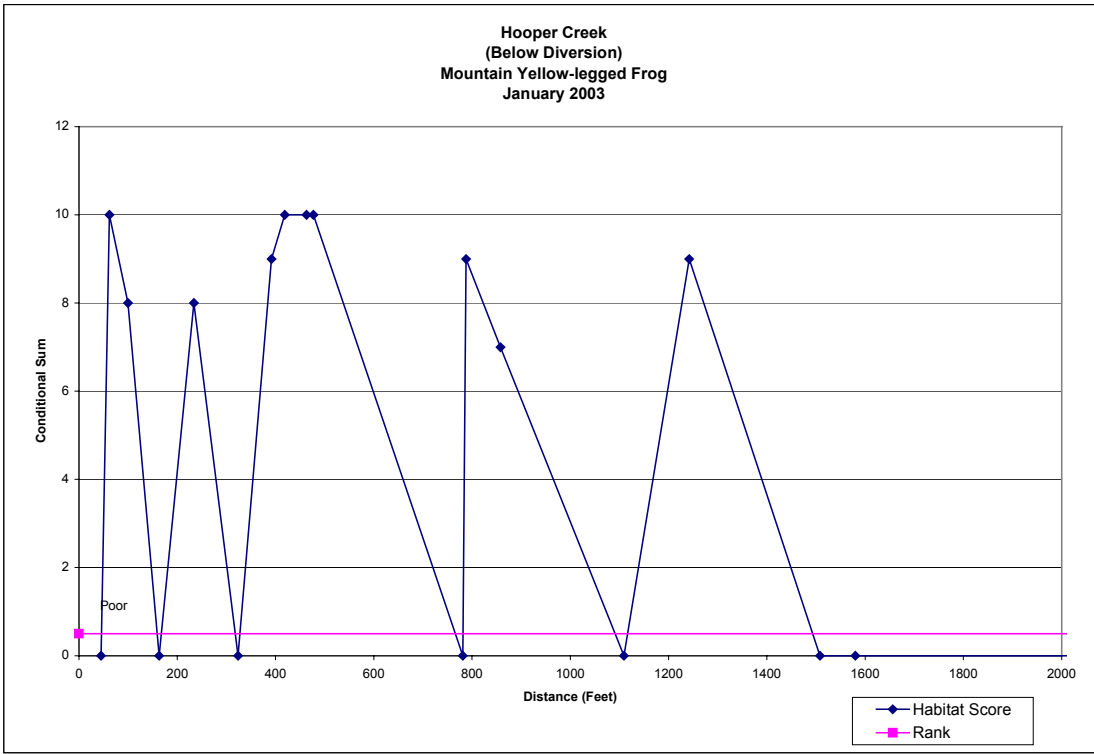
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain-Yellow-legged Frog (continued)

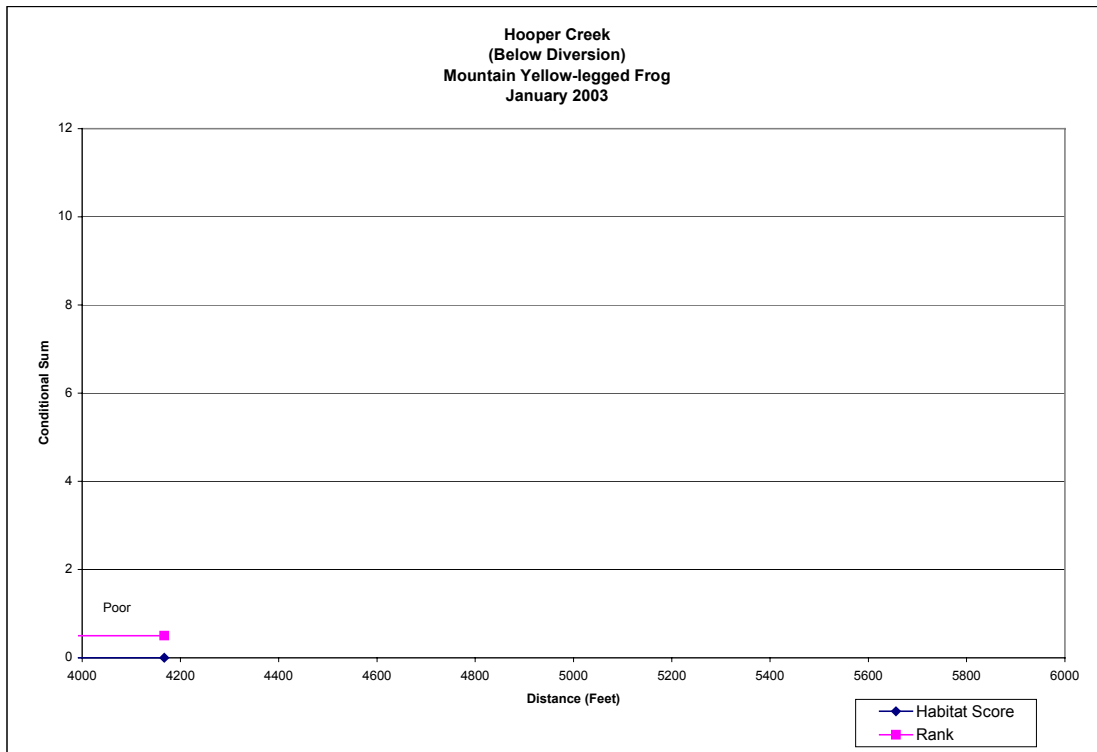


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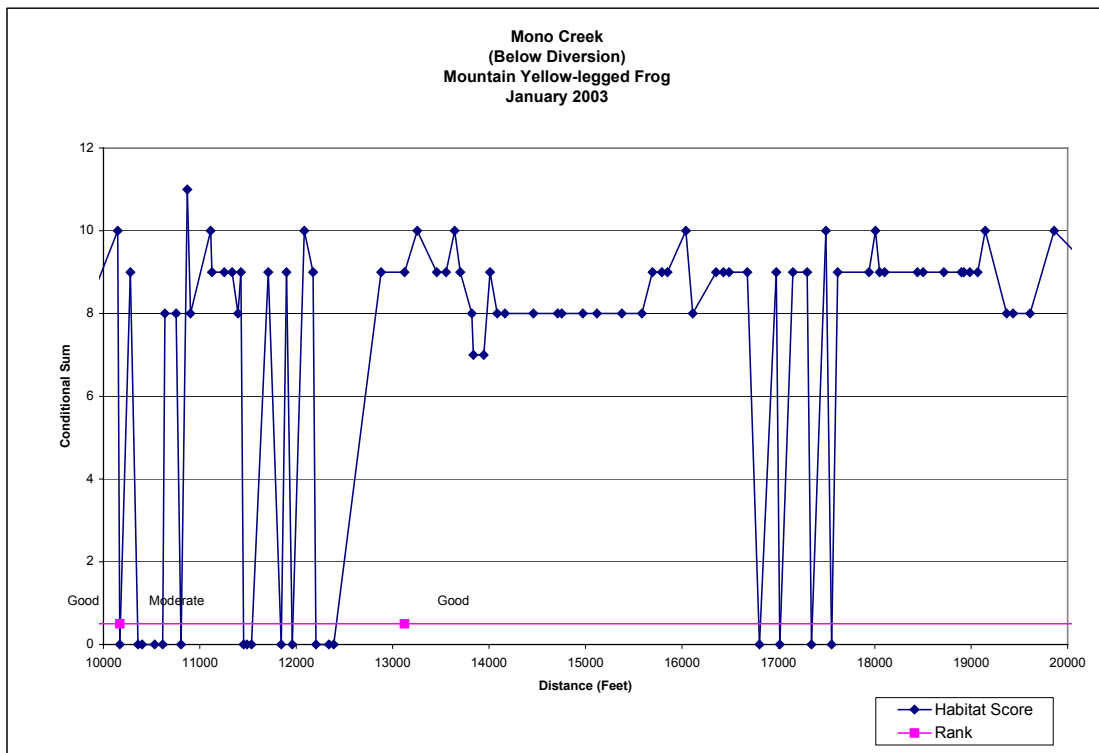
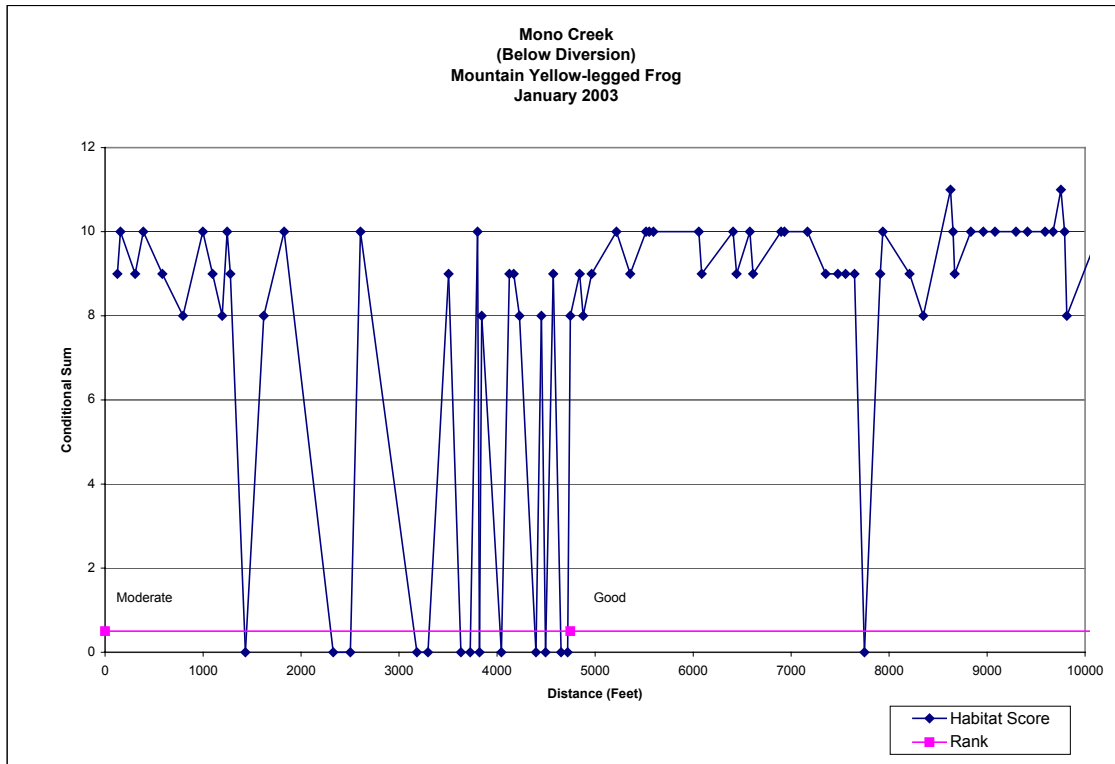




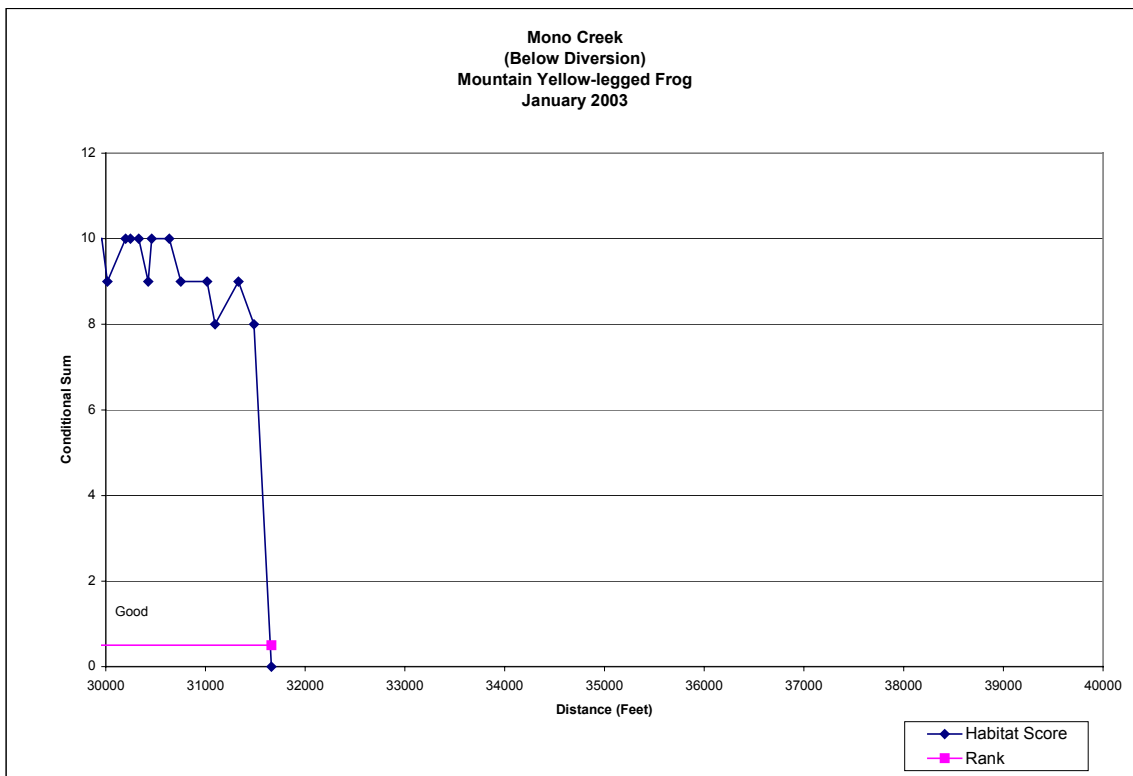
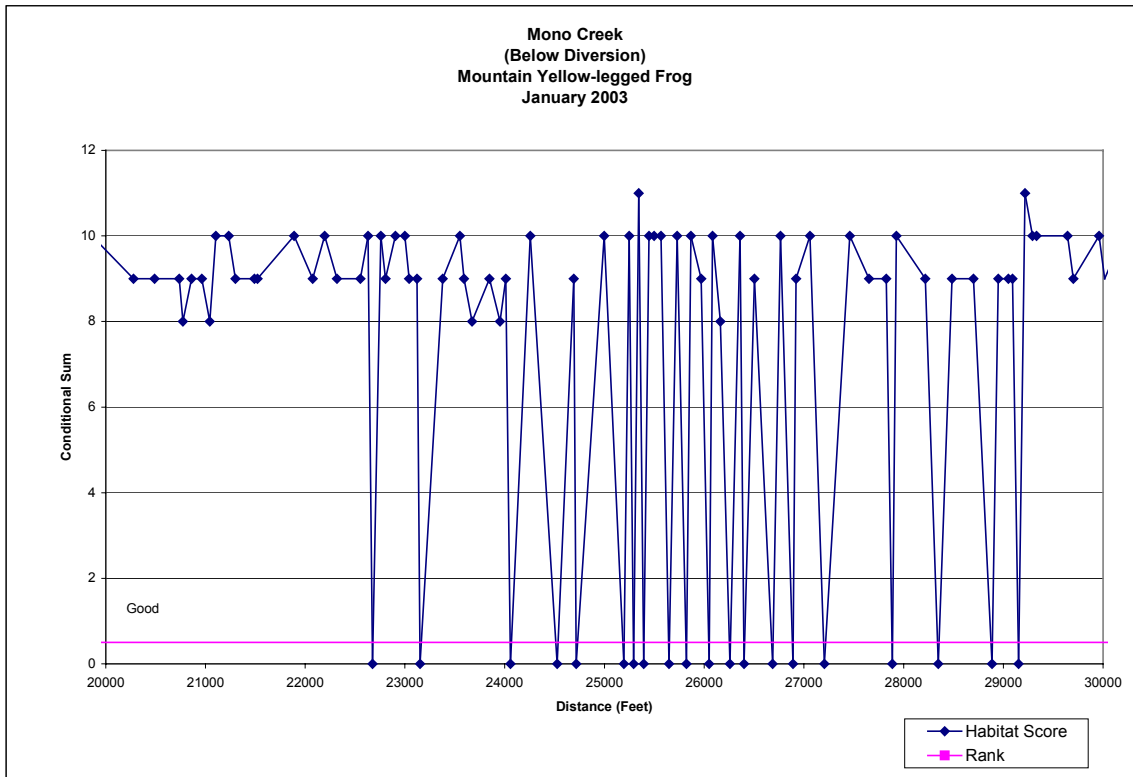
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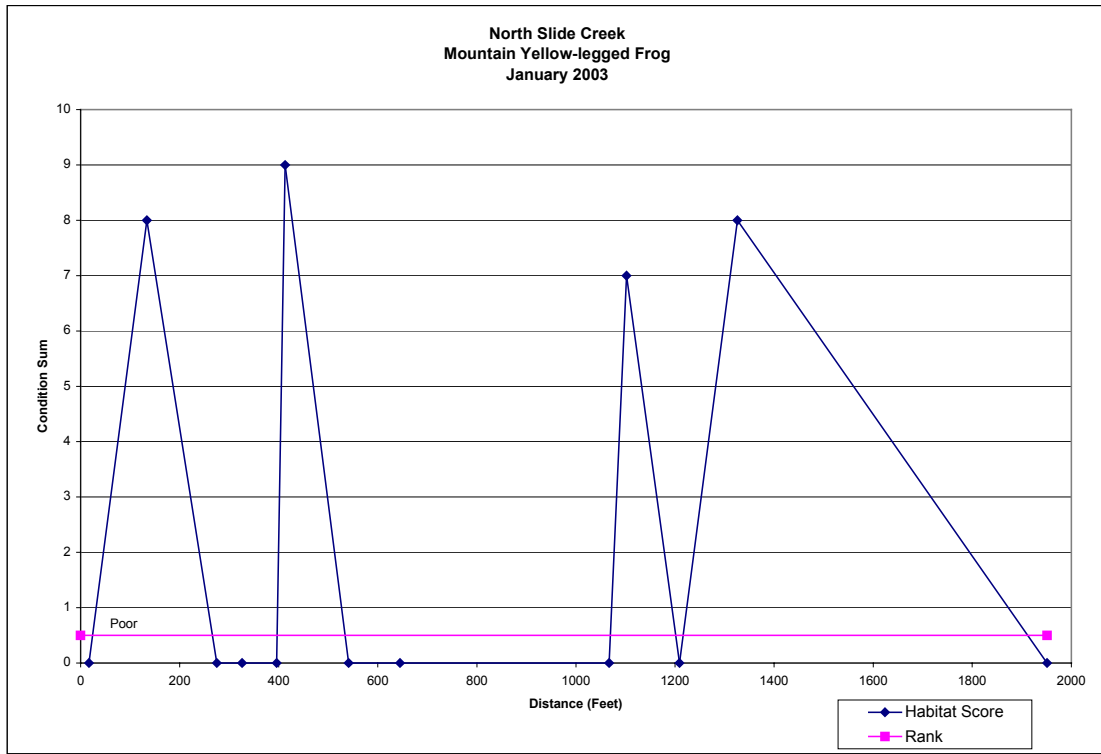
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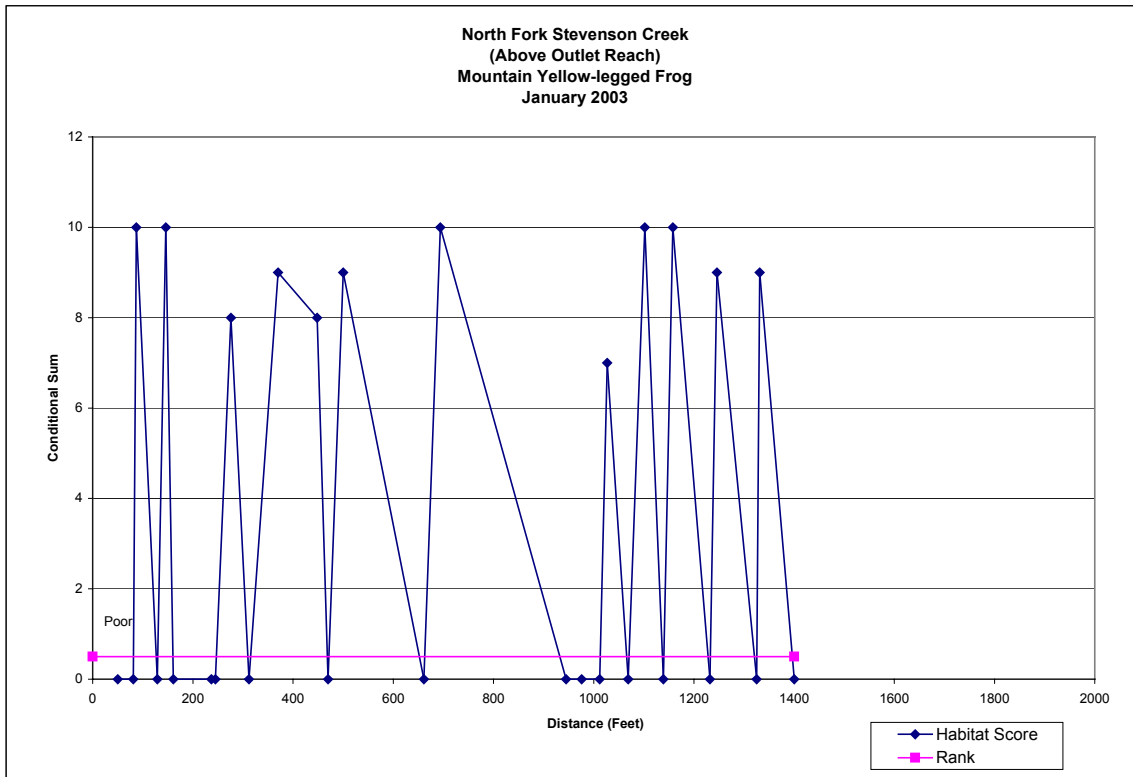
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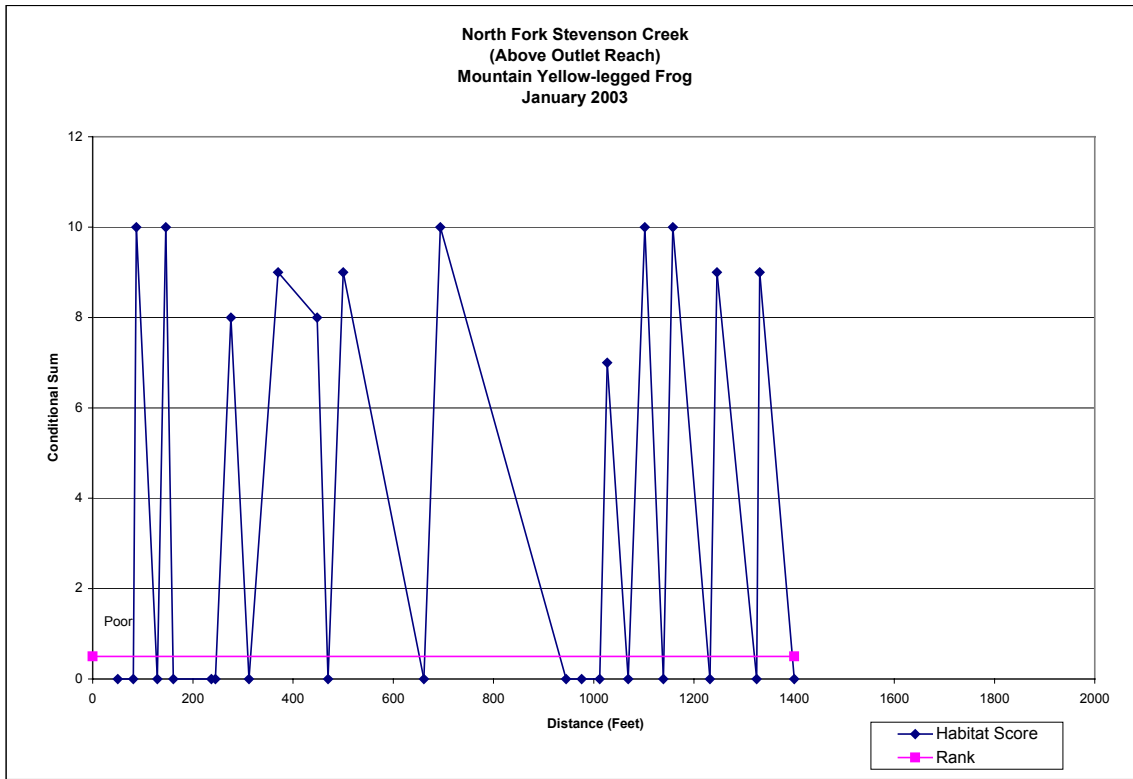
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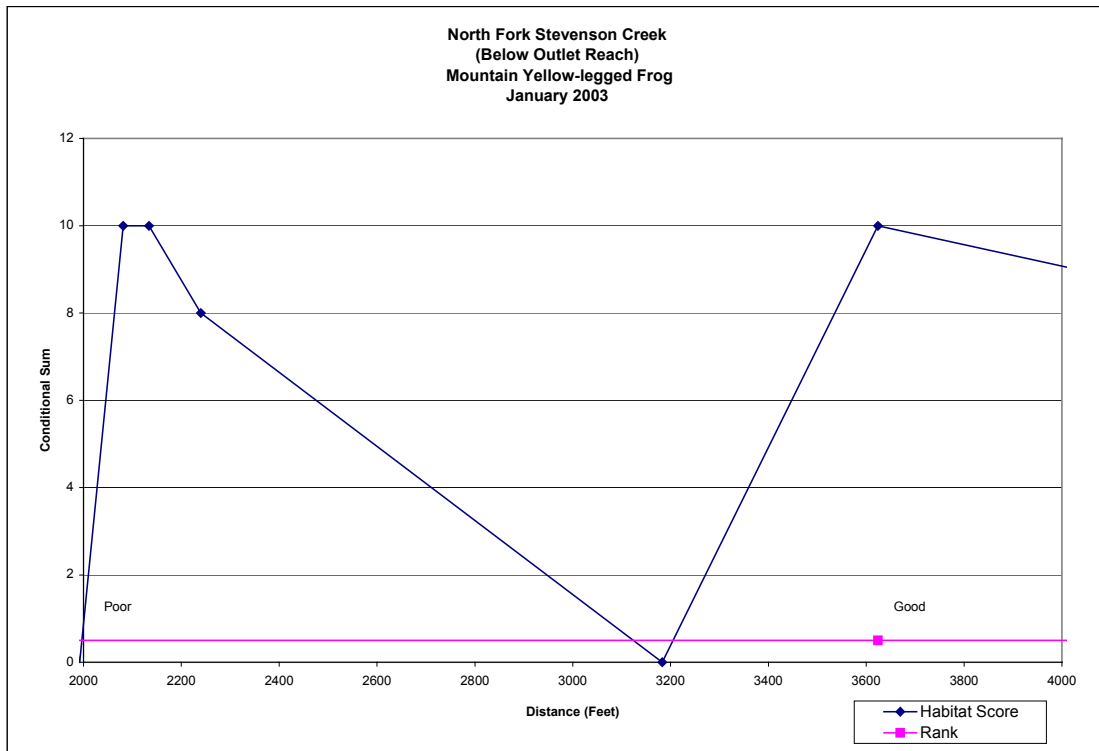
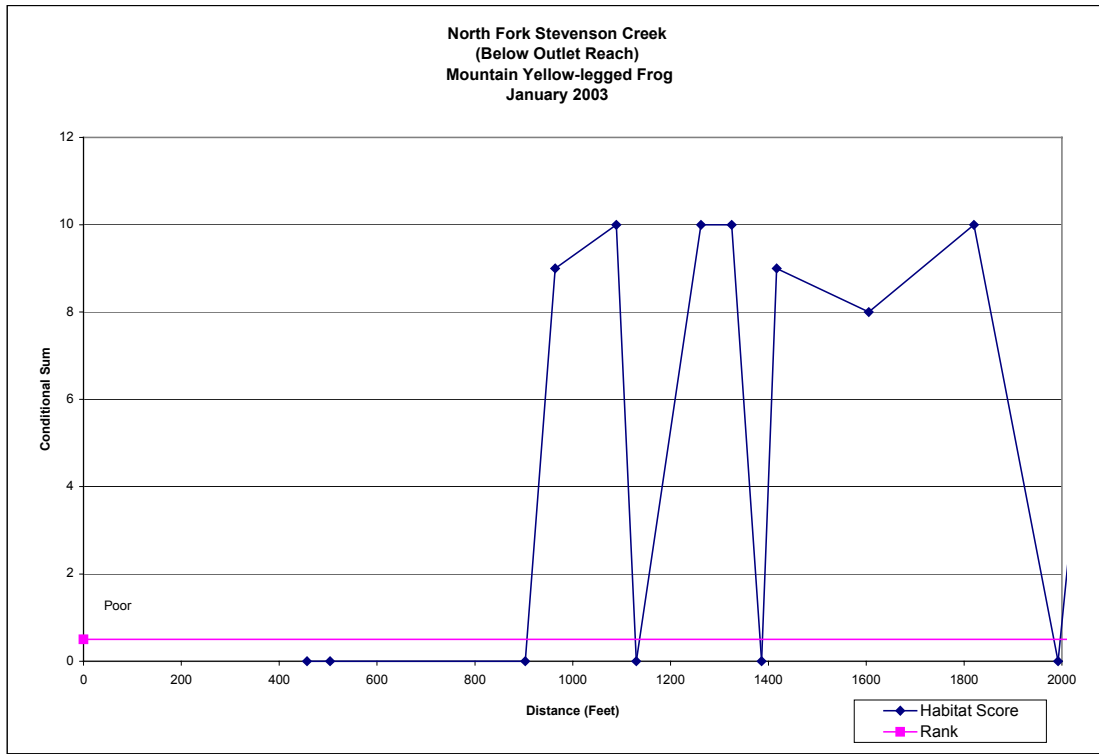
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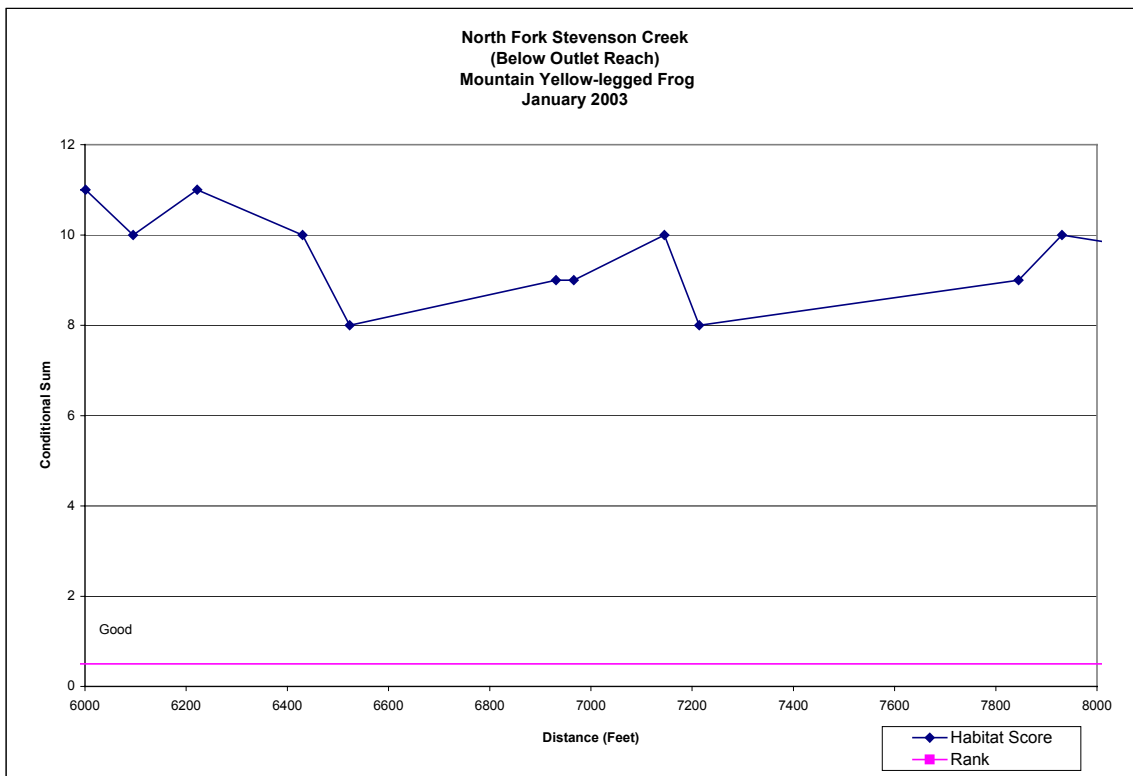
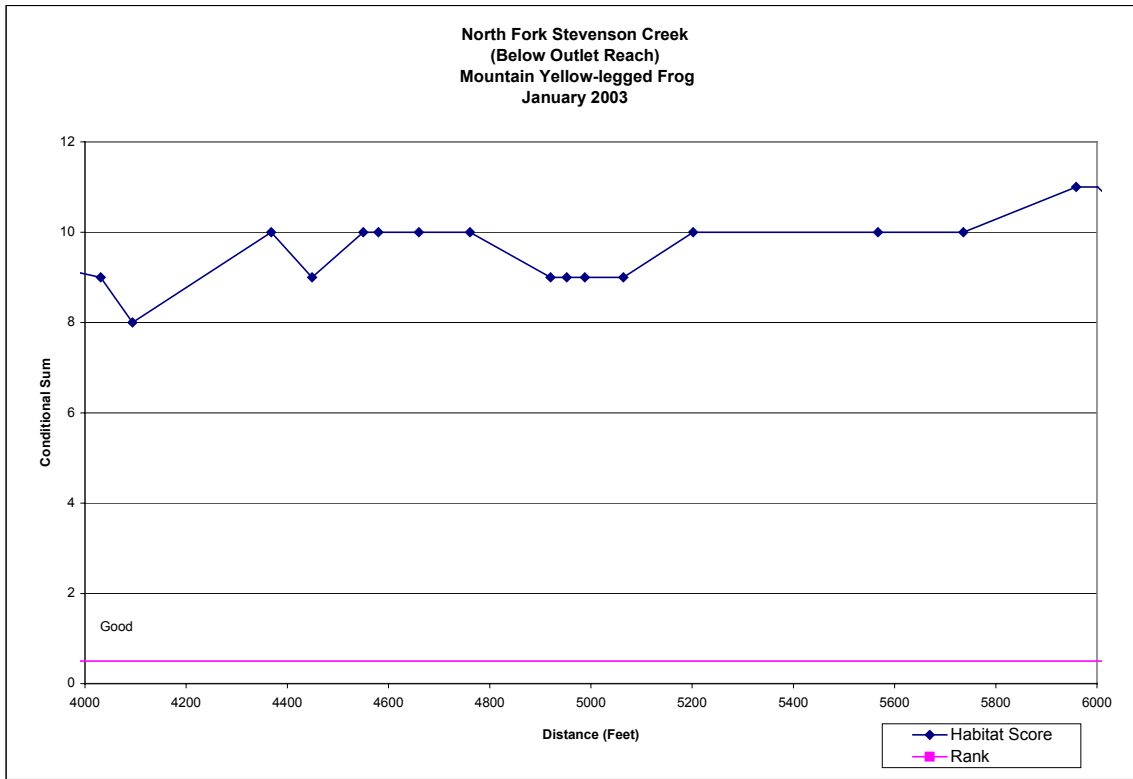
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)

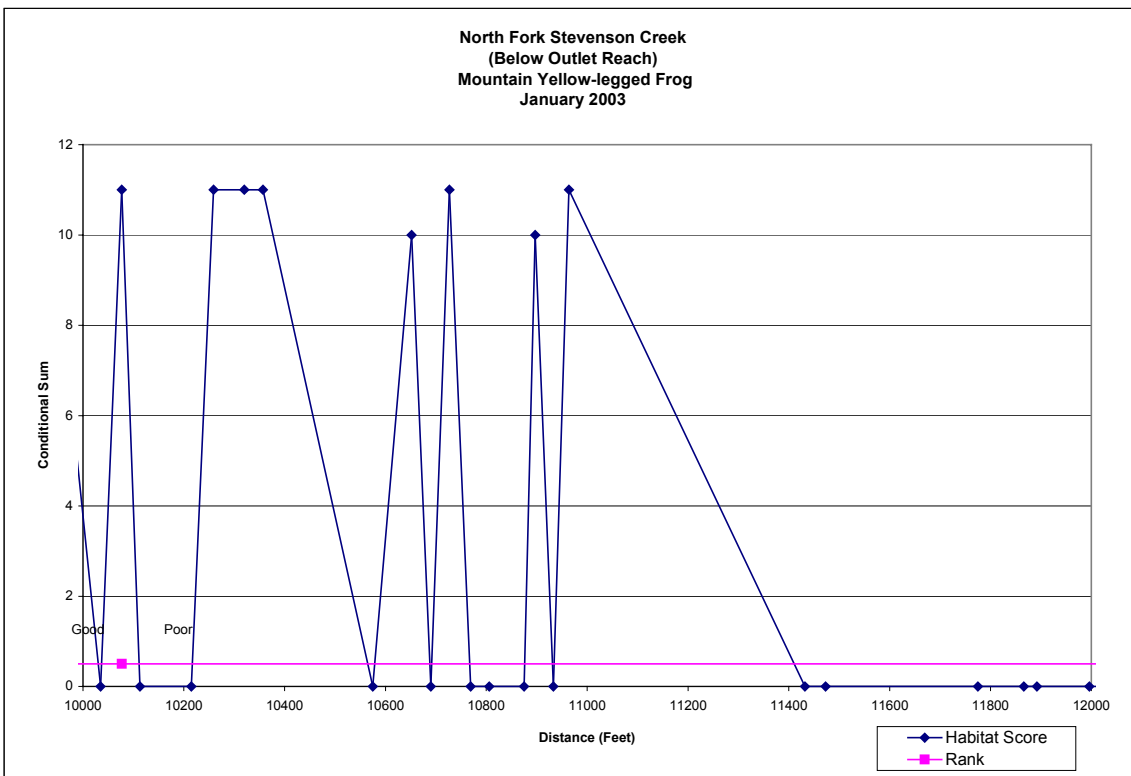
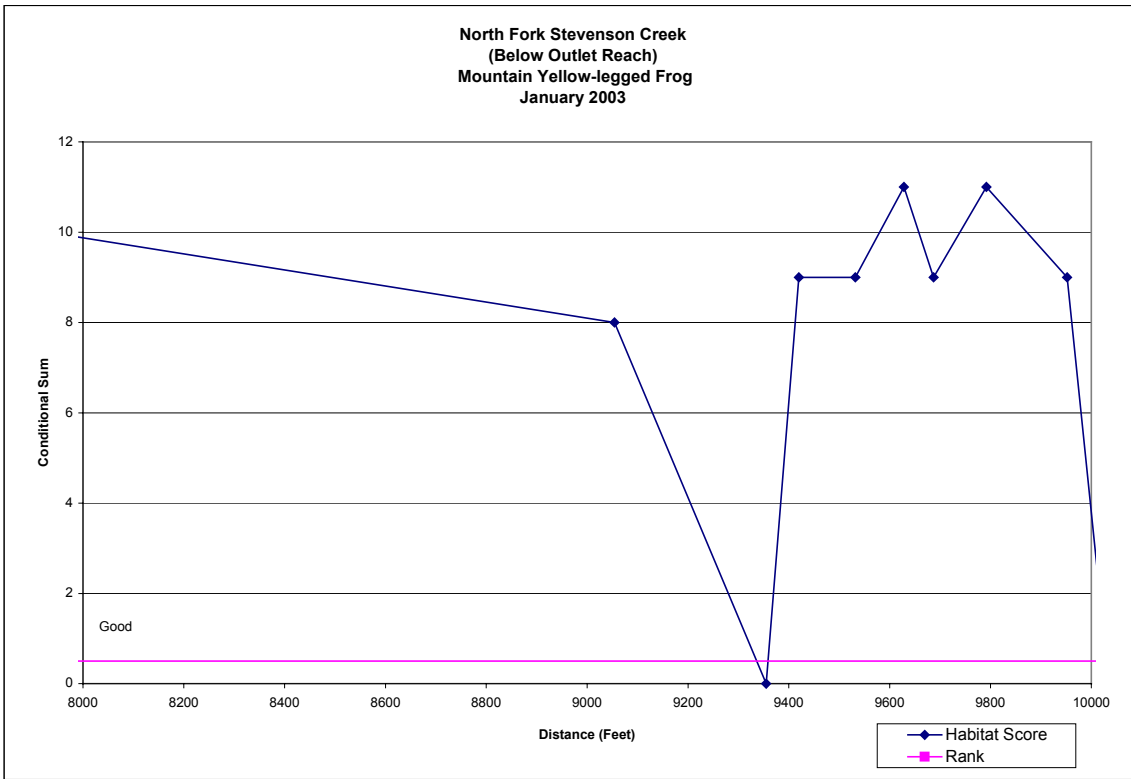


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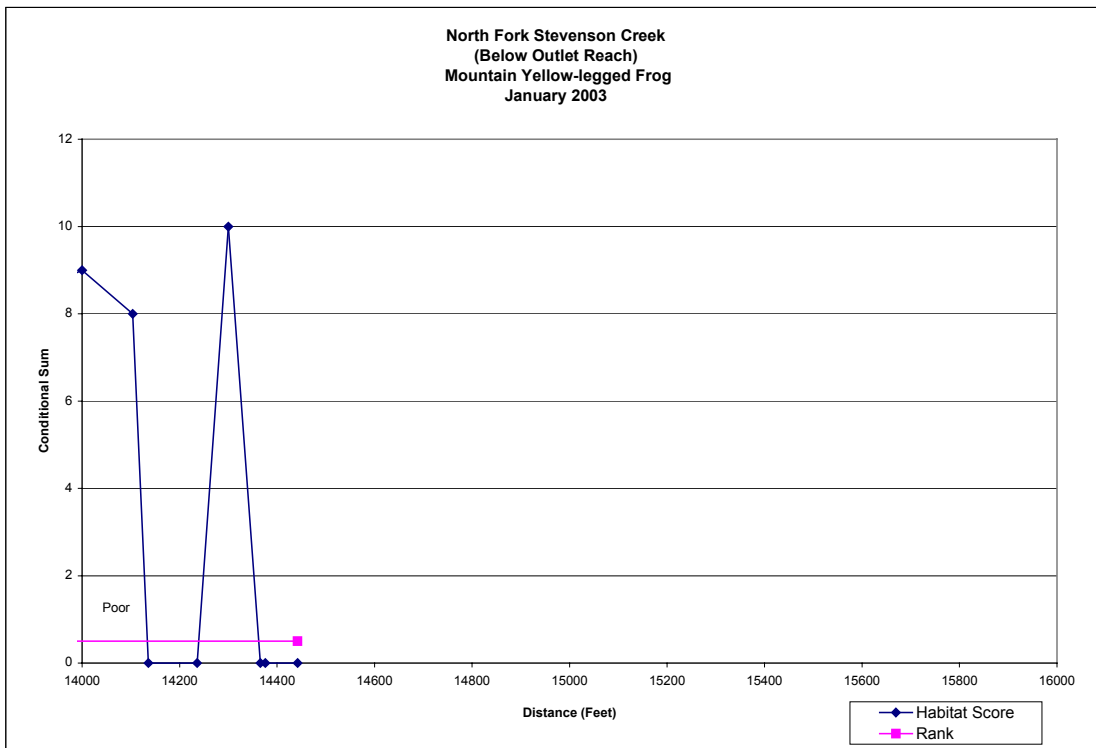
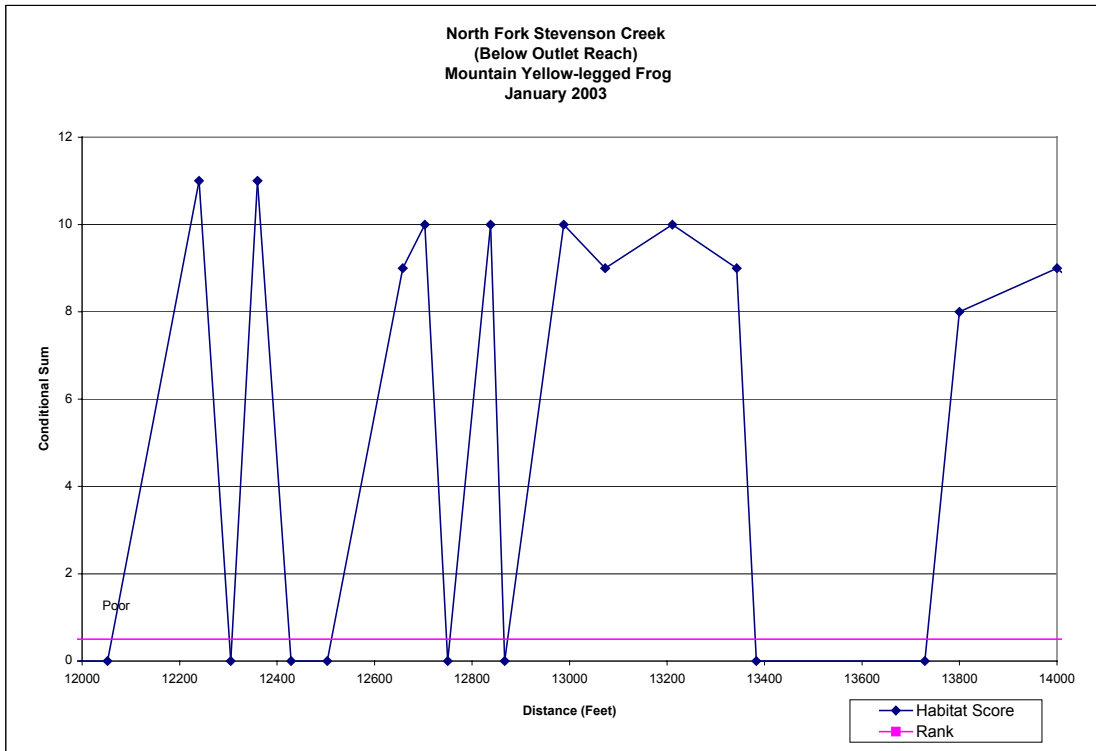




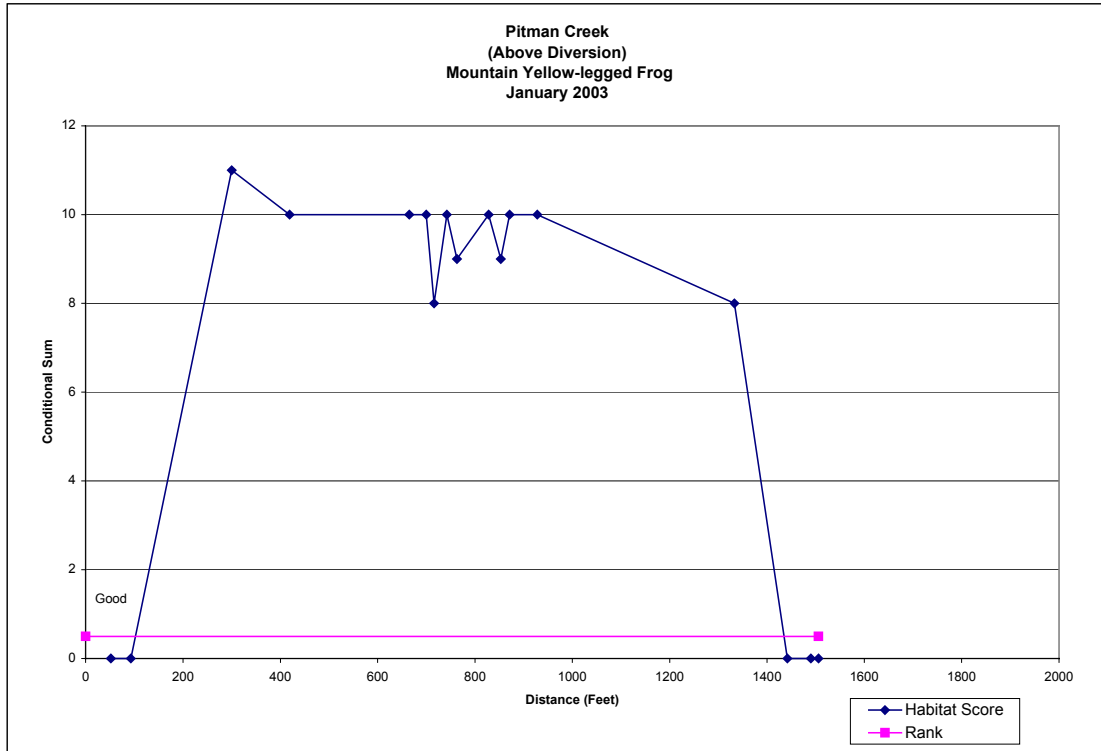
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



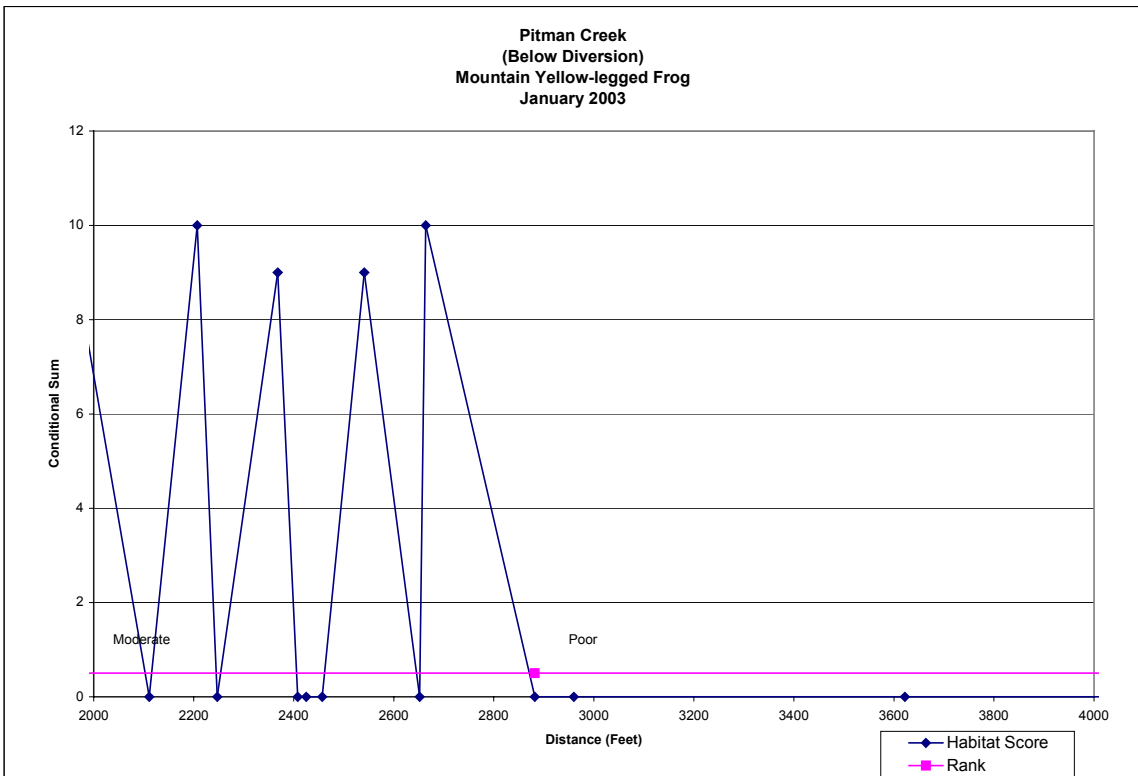
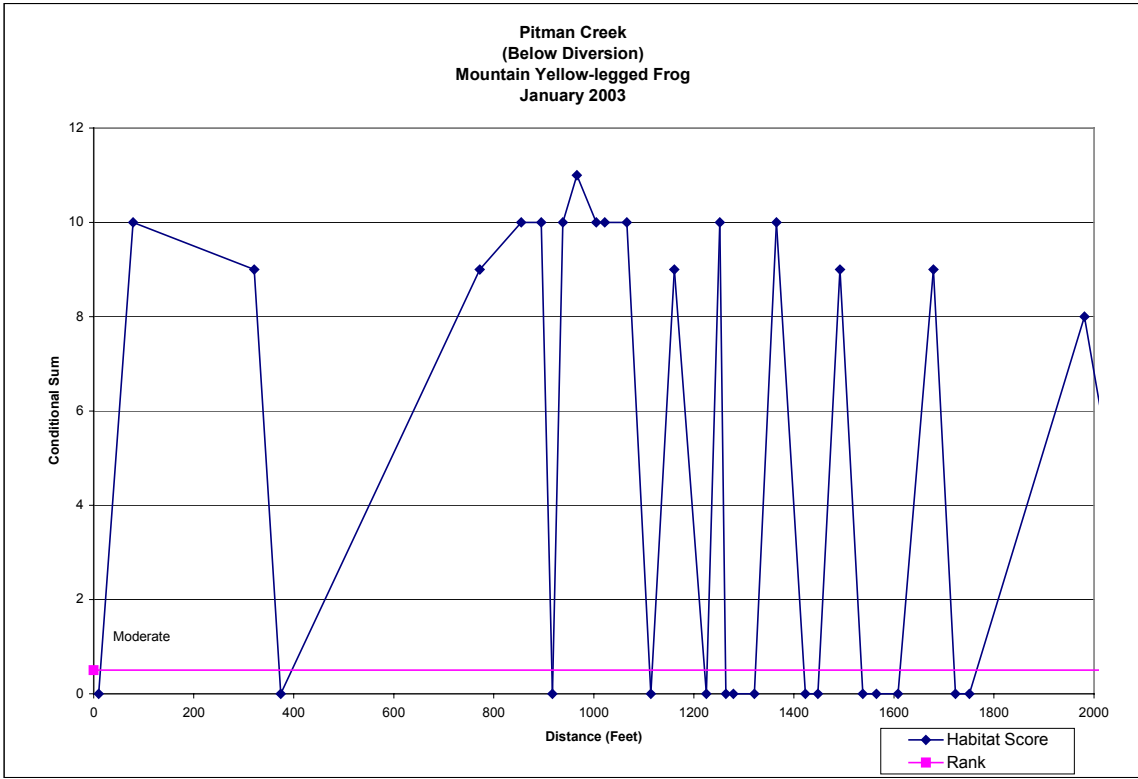
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



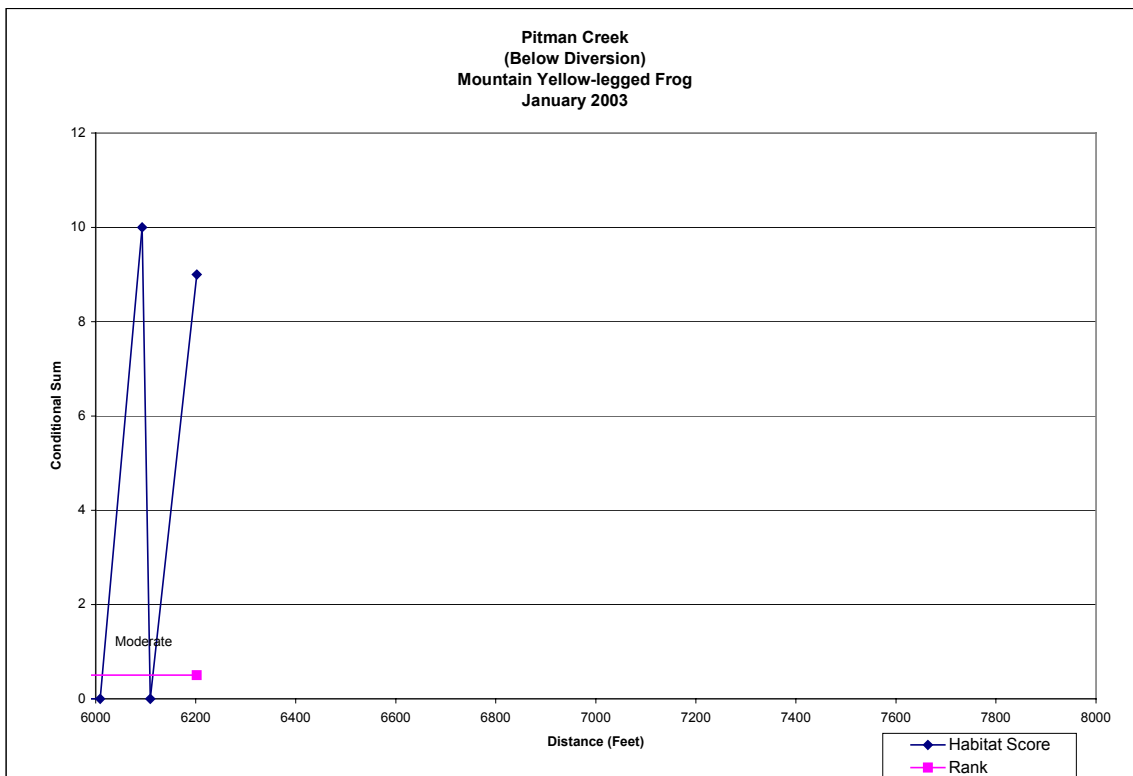
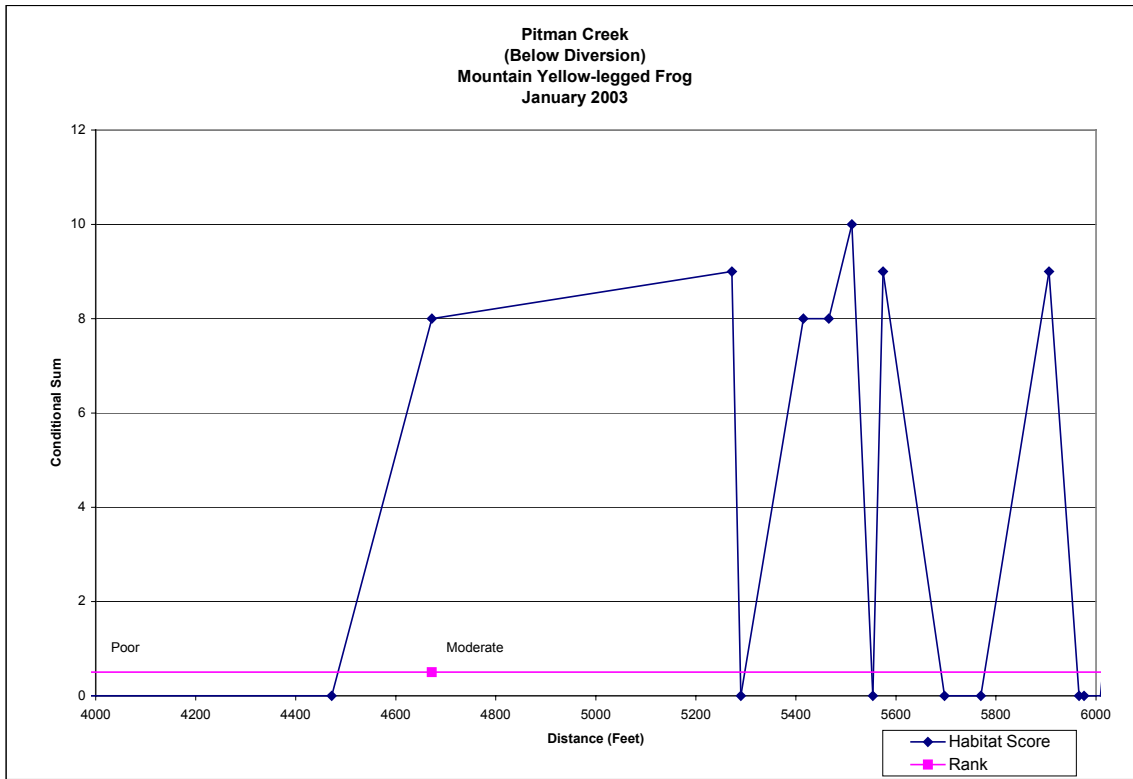
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



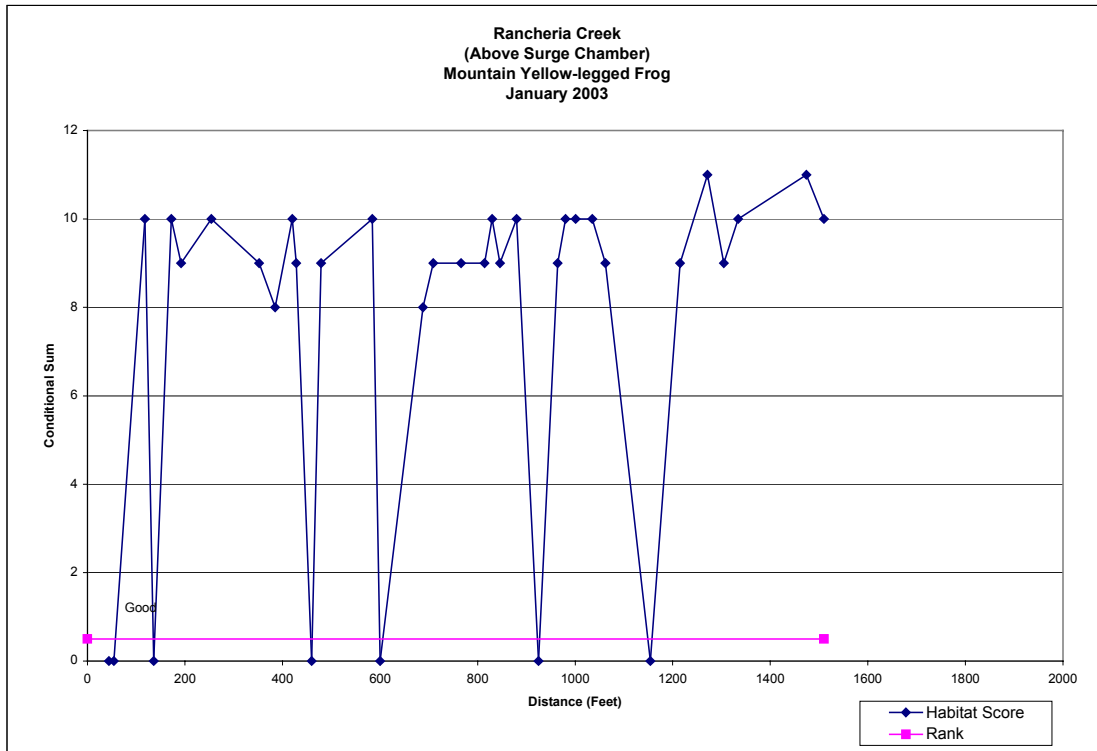
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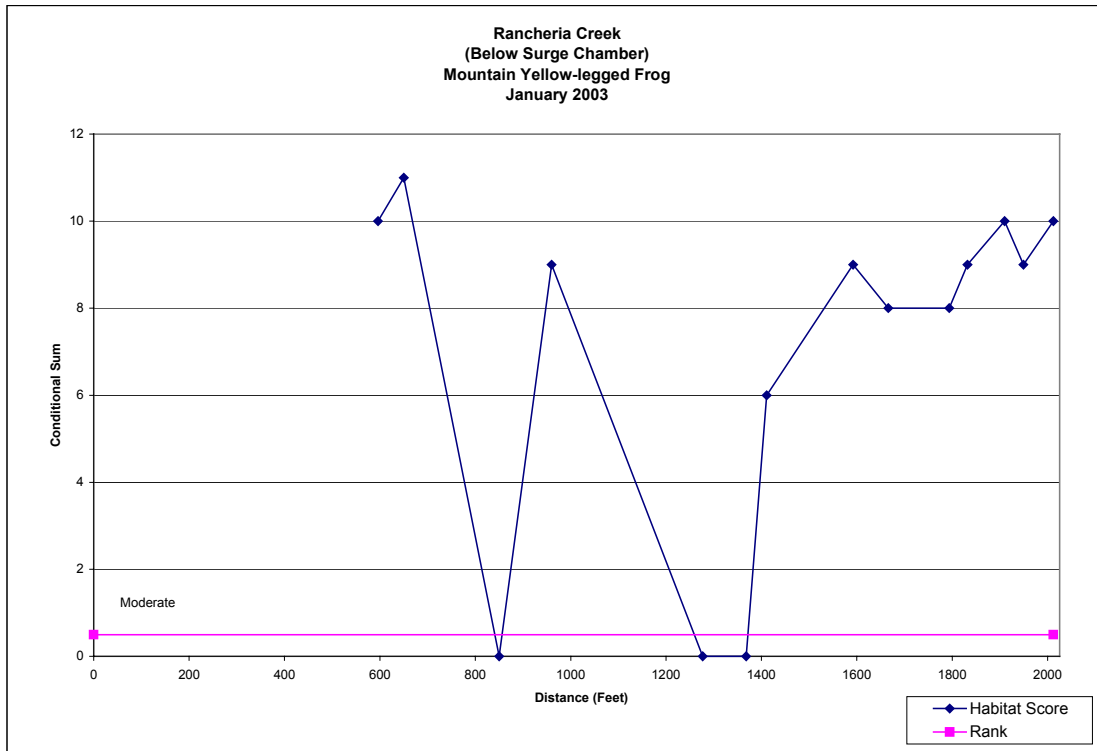
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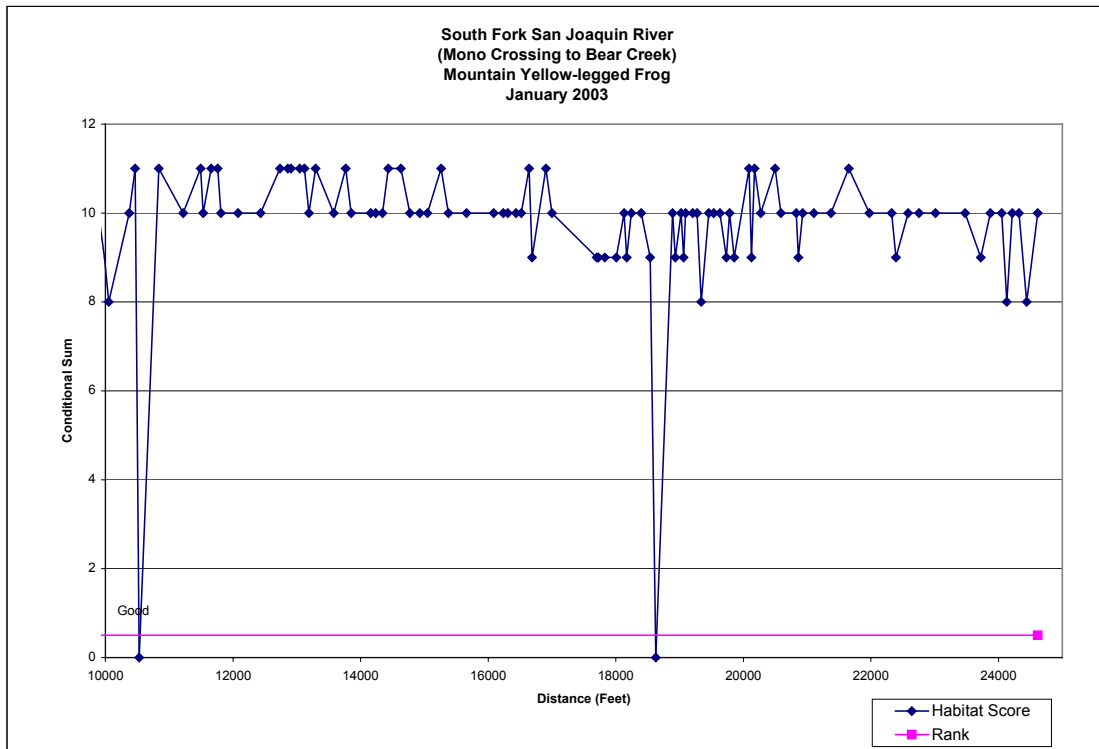
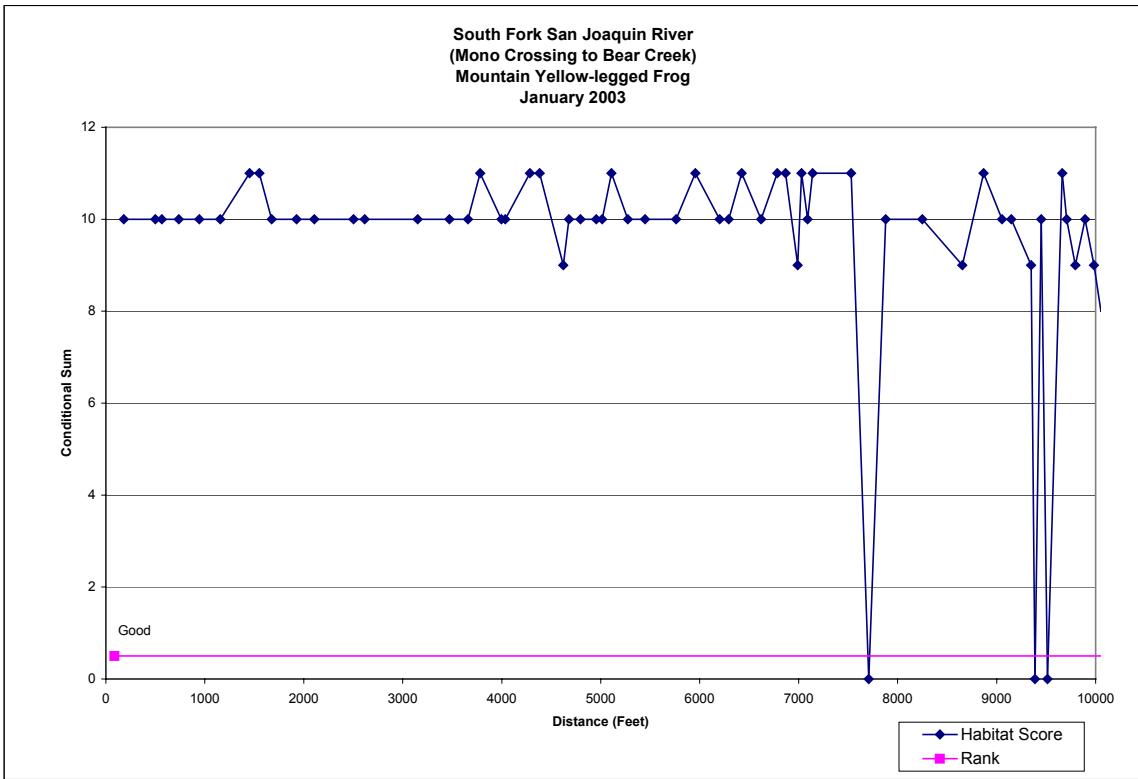
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)

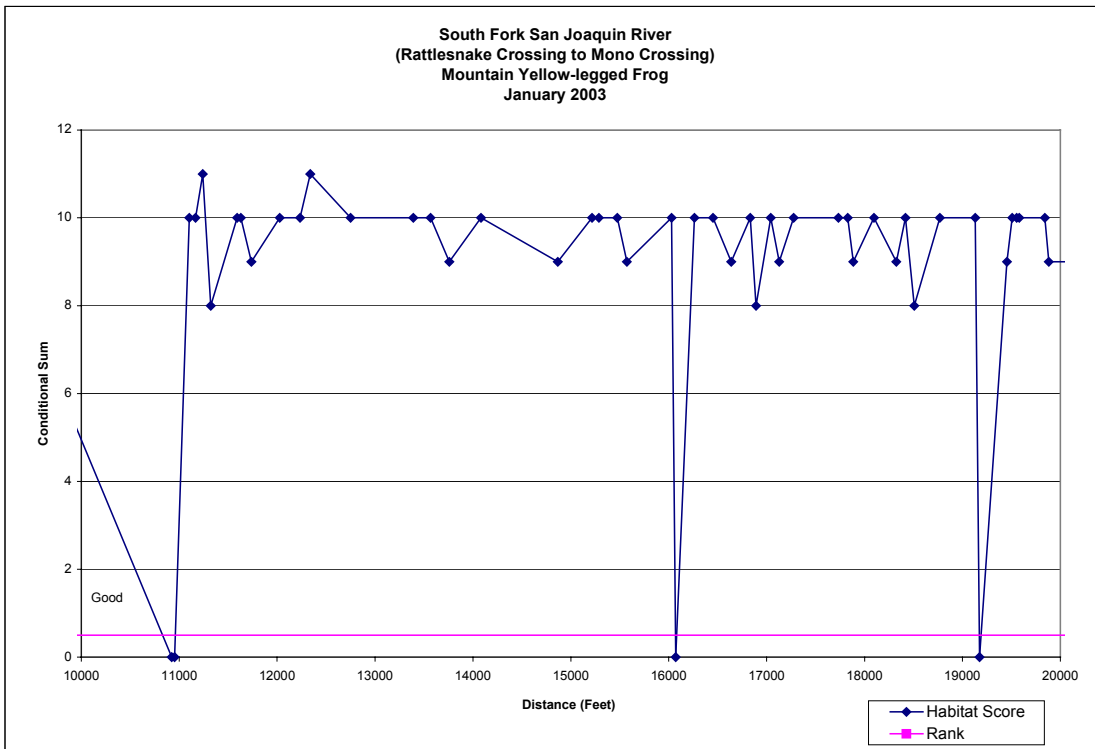
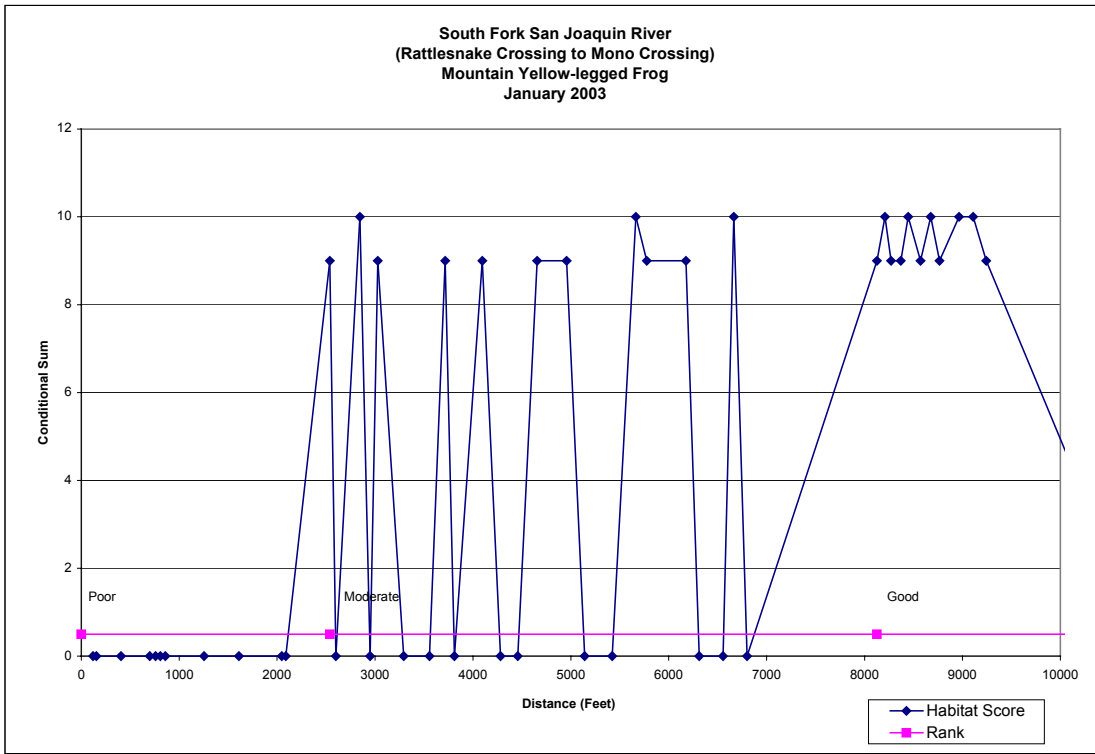


### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)

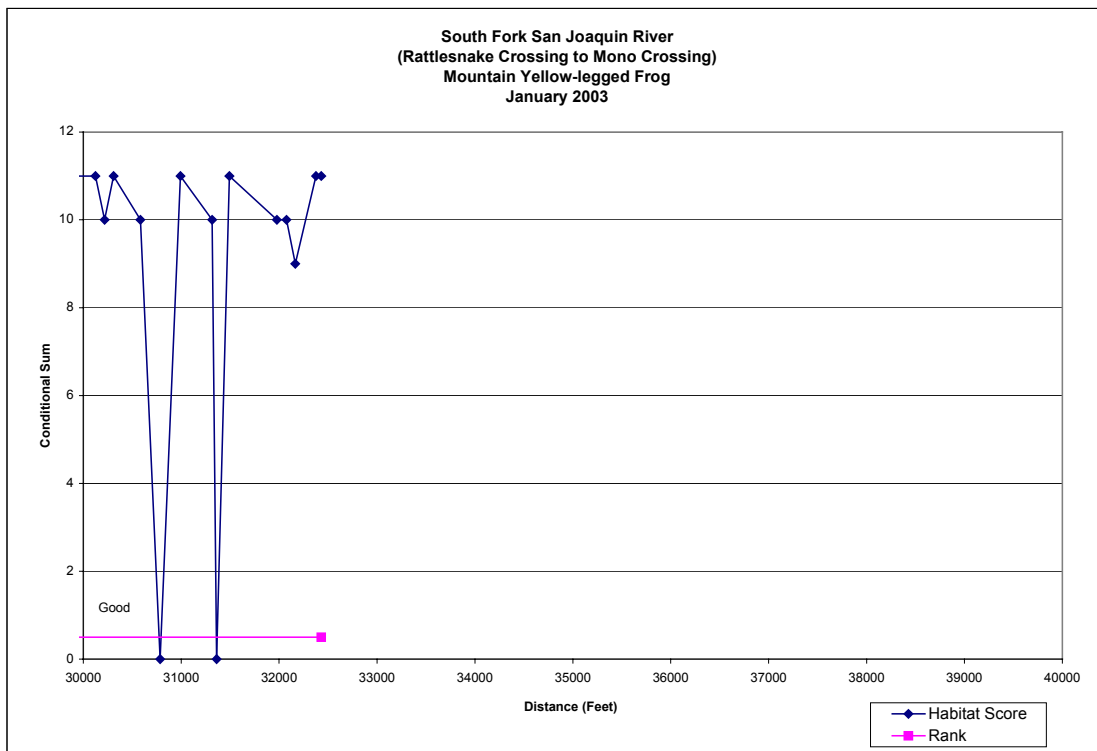
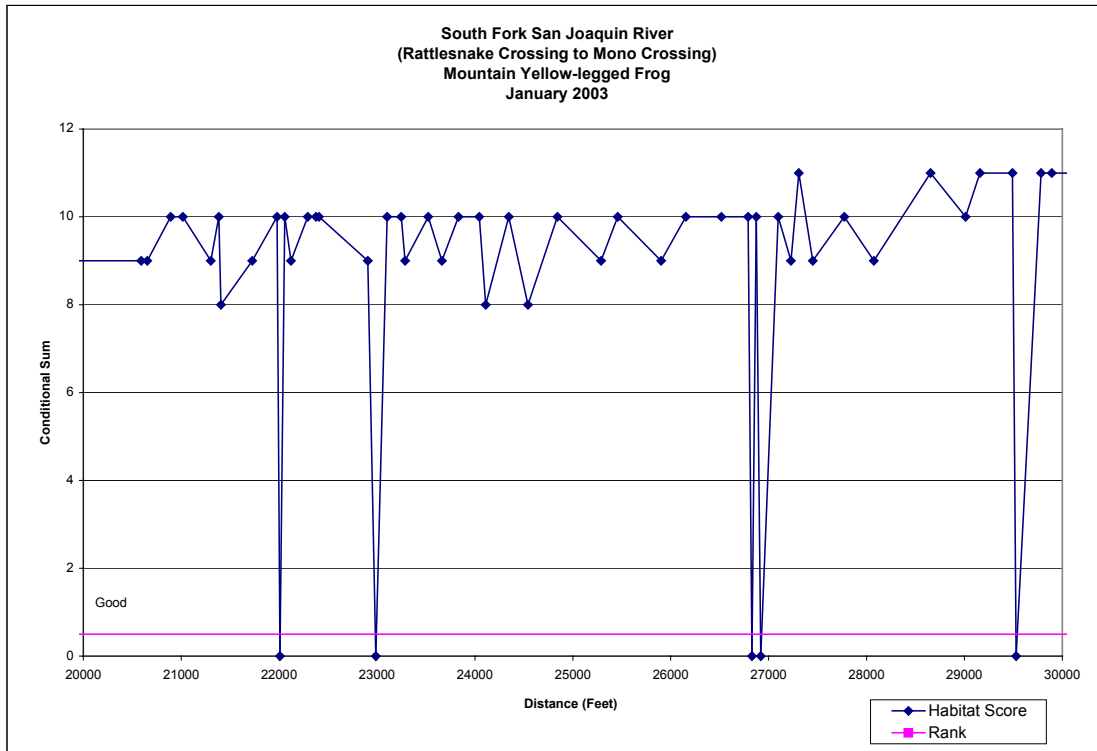




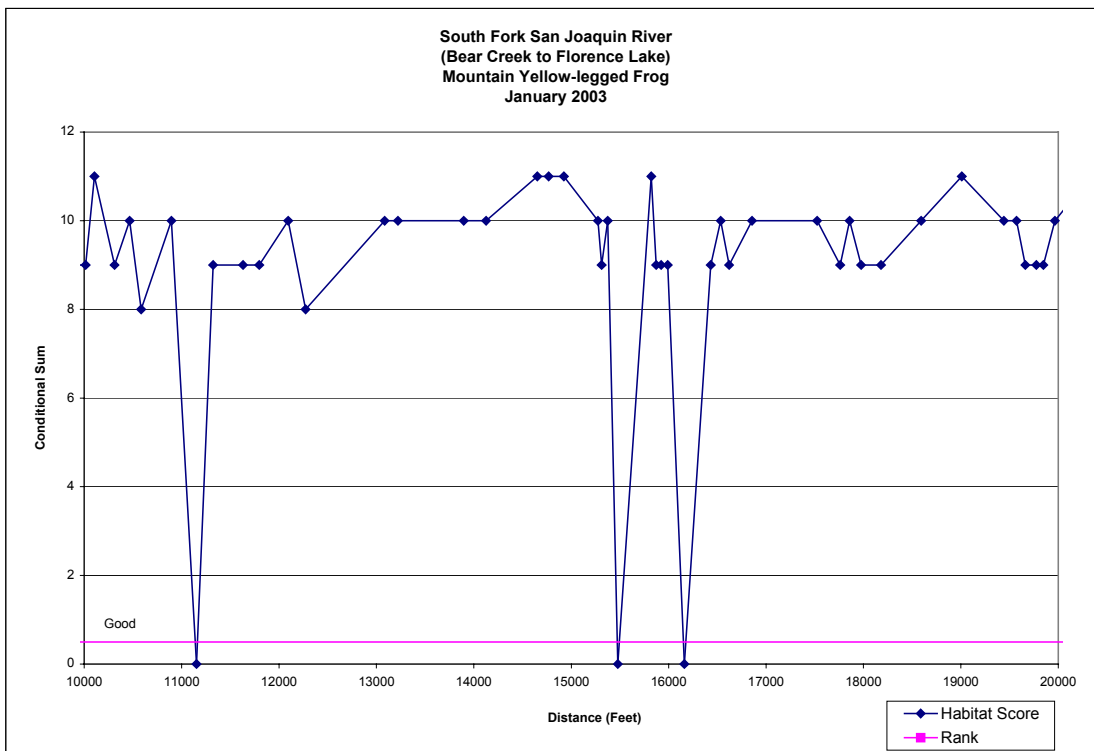
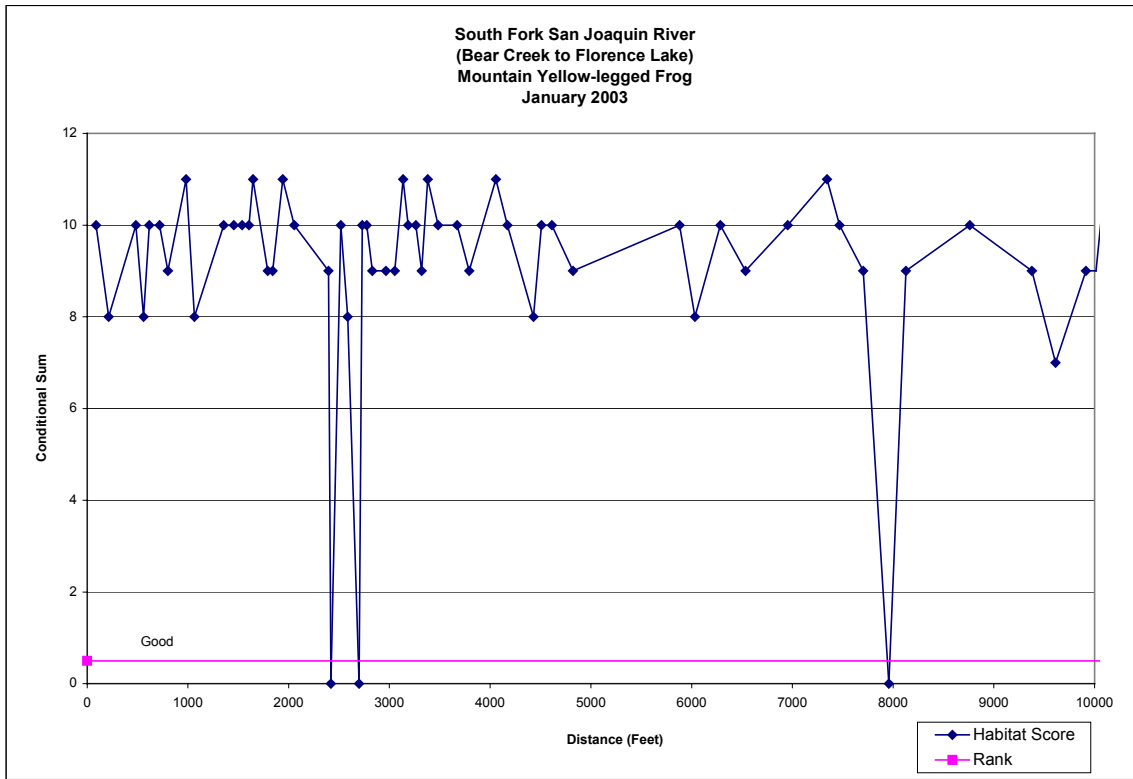
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



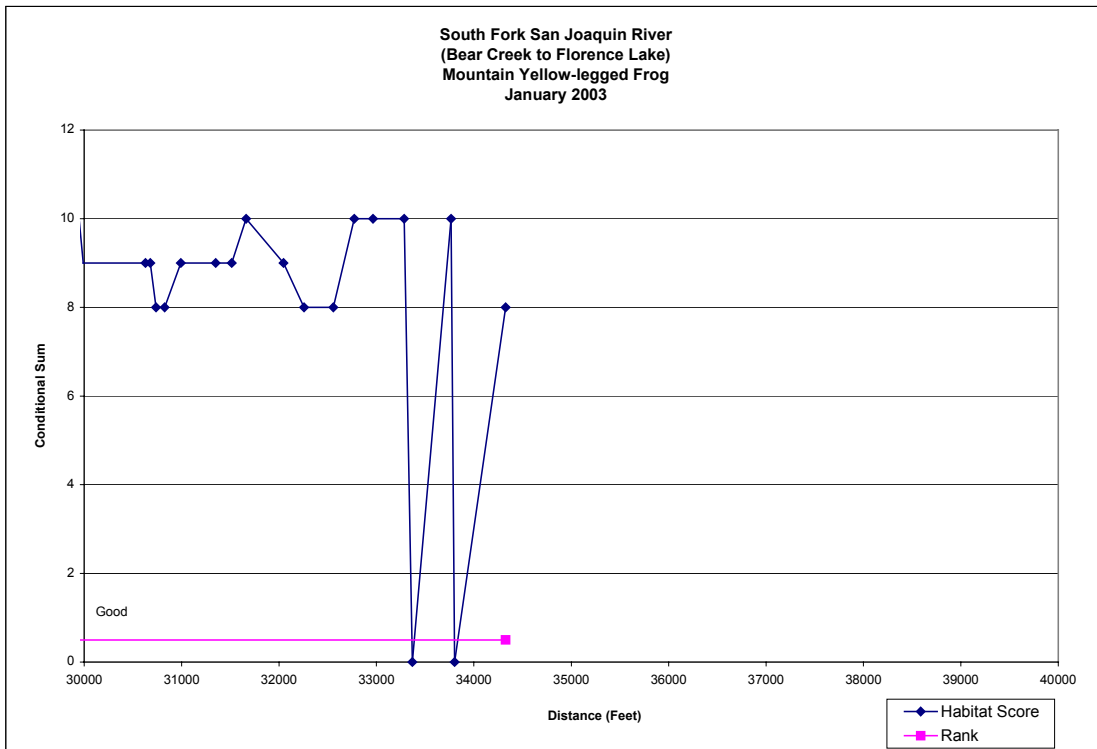
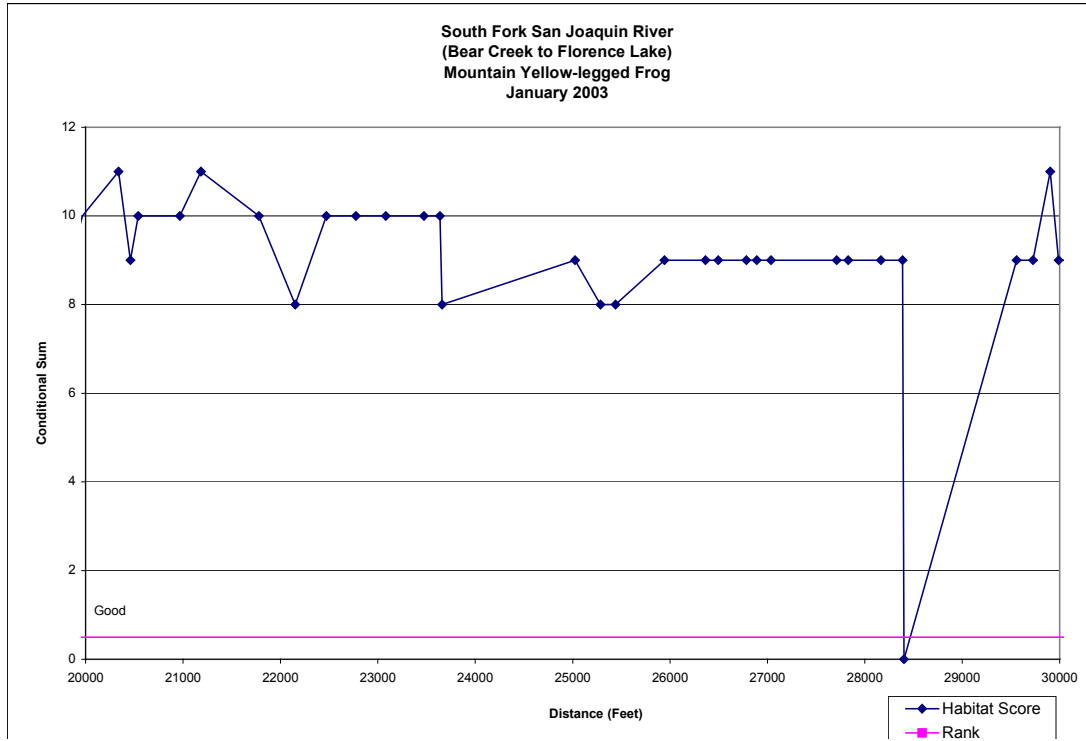
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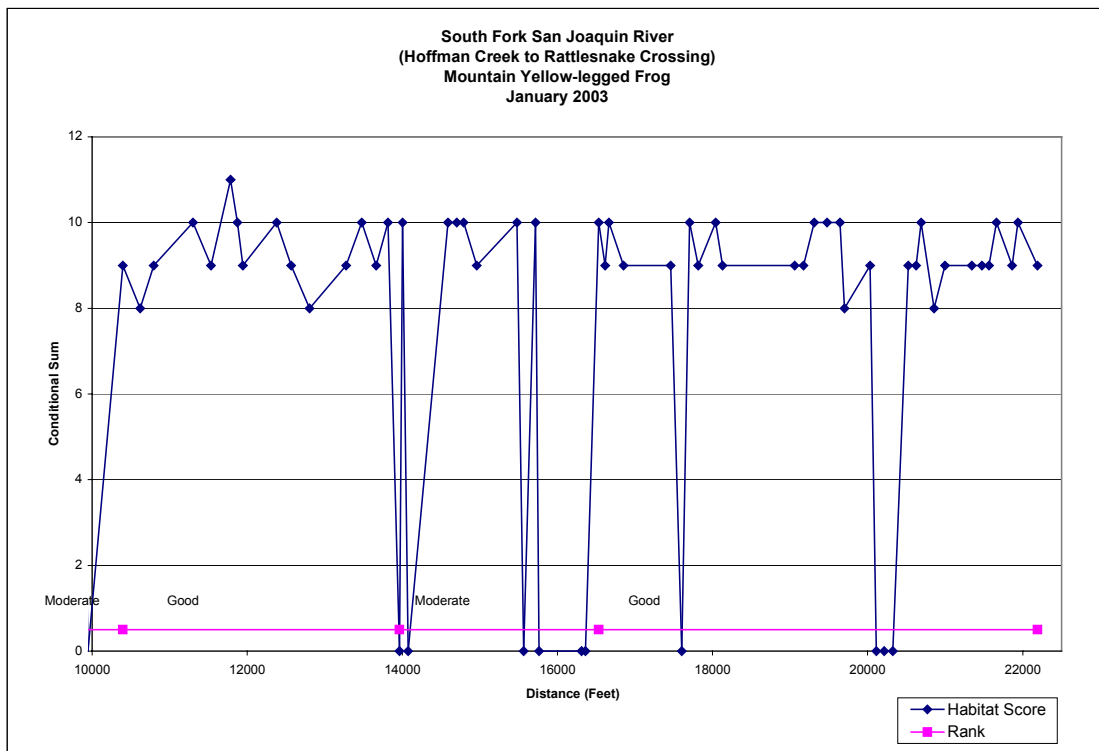
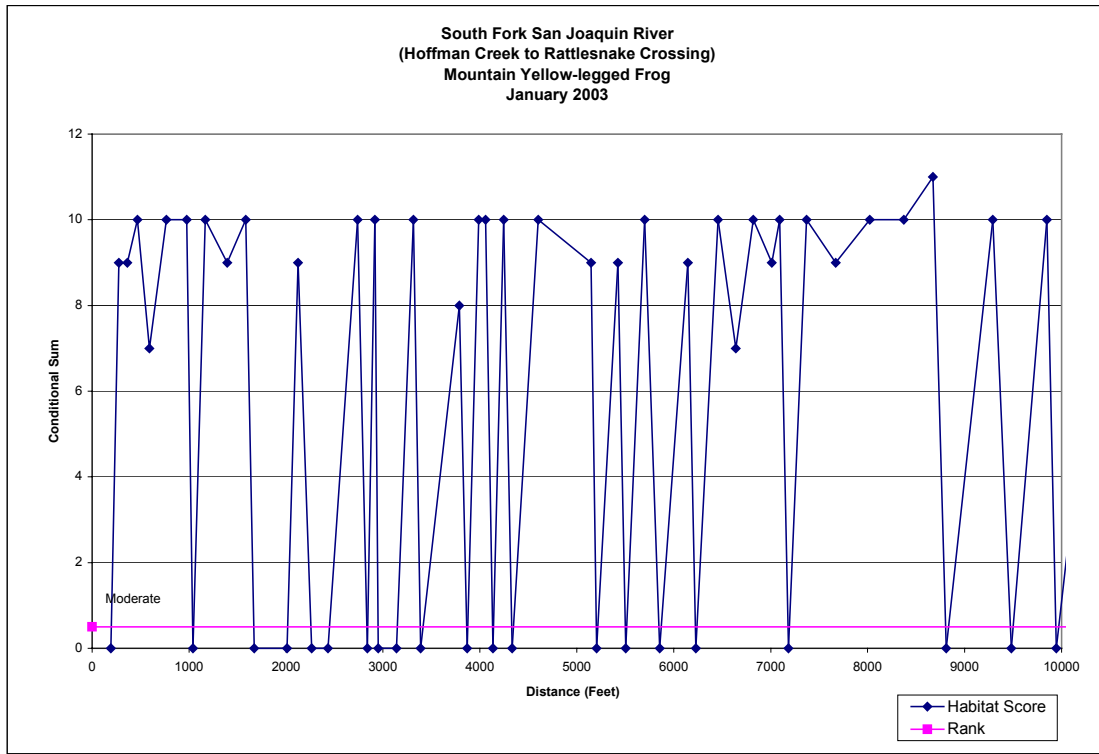
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



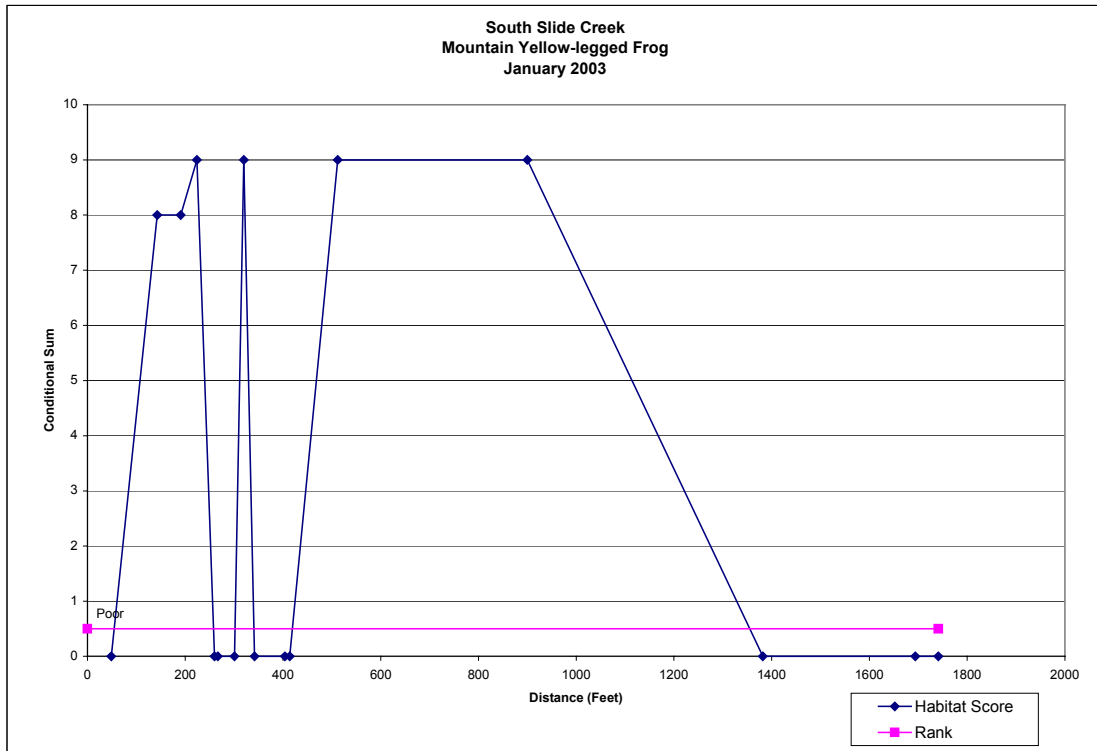
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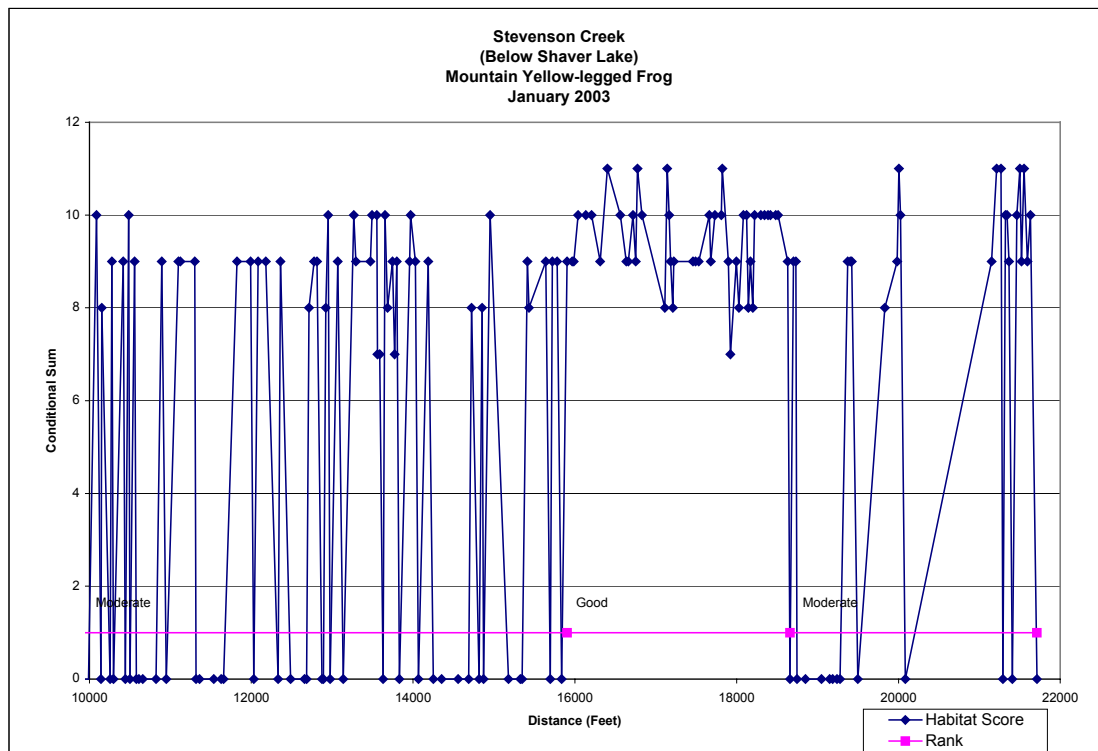
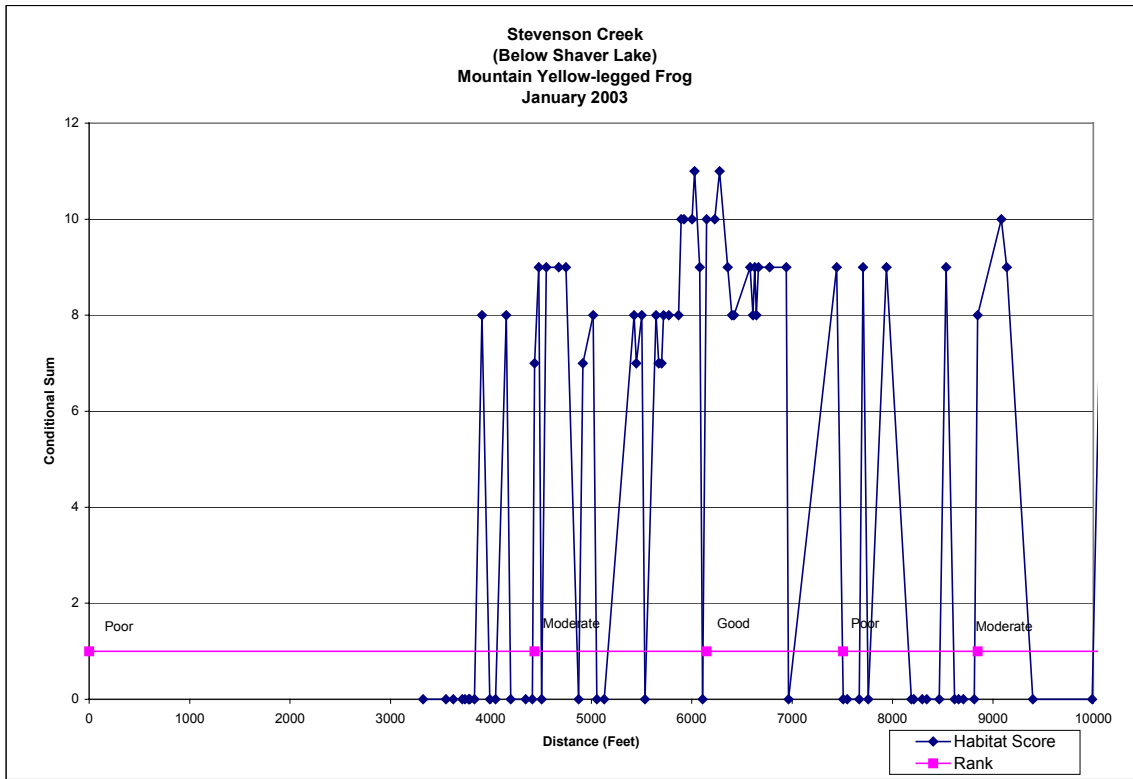
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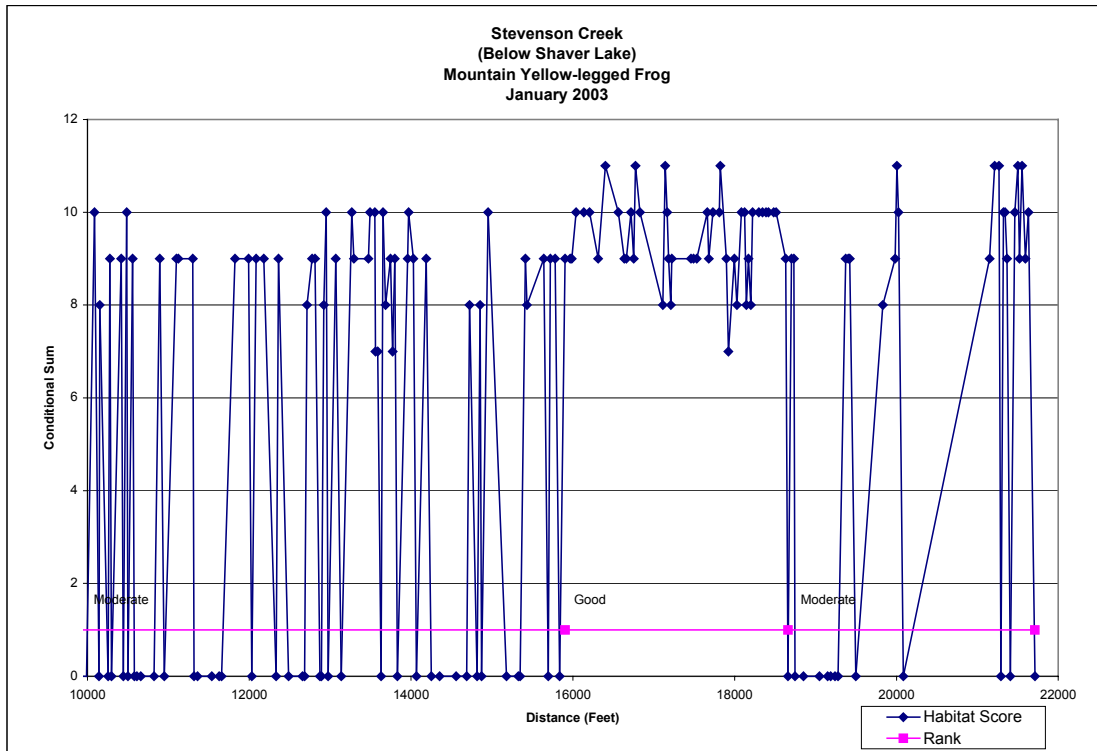
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)

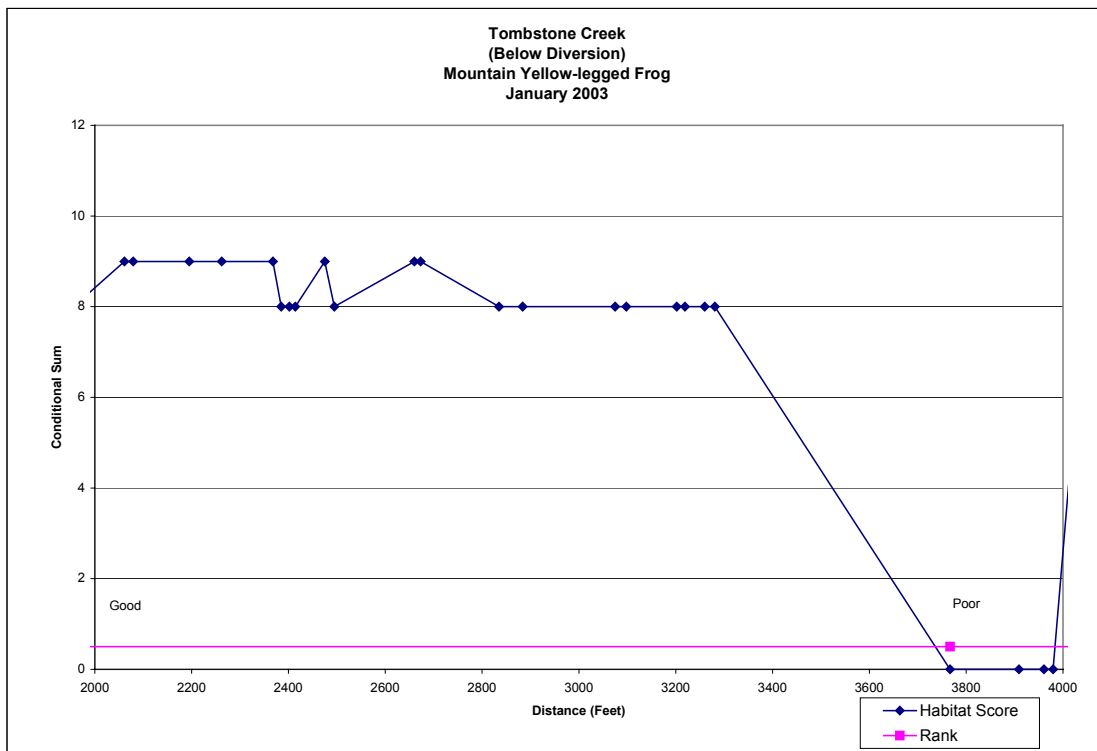
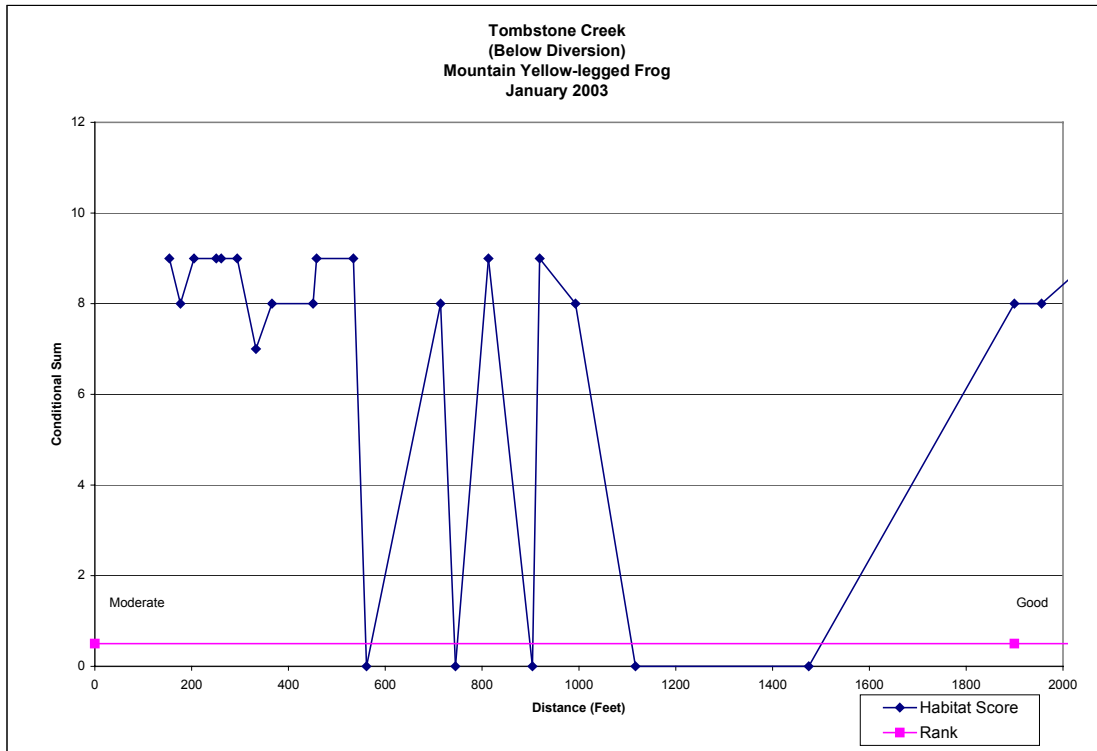


### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)

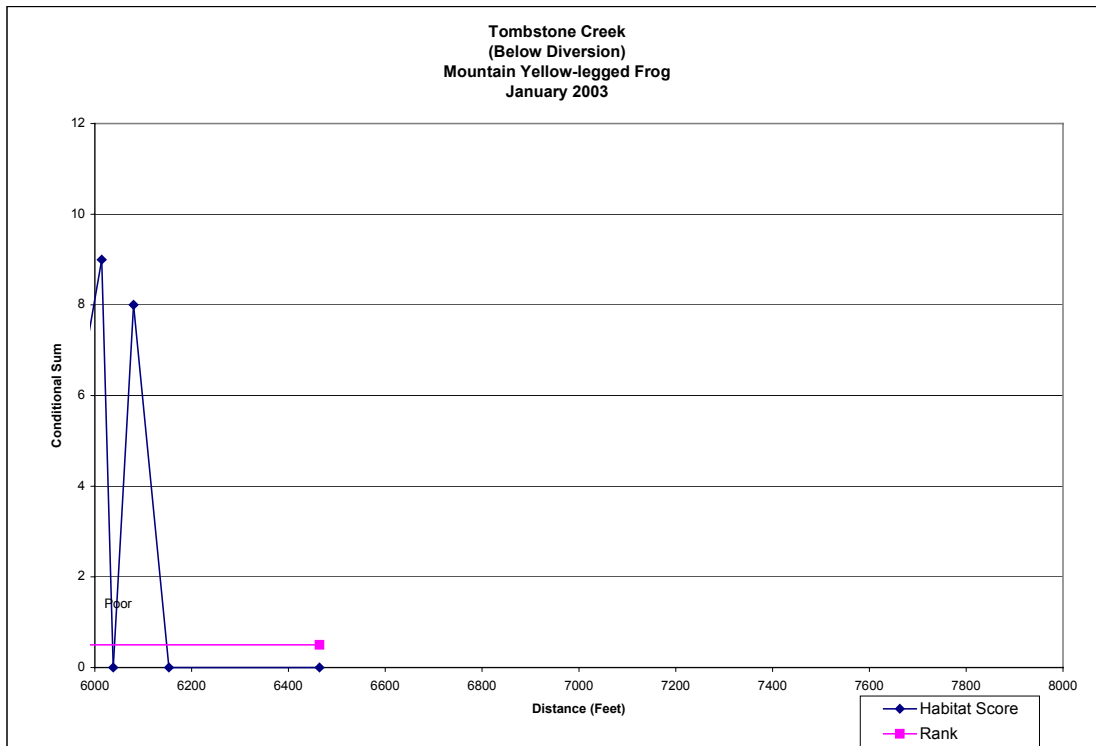
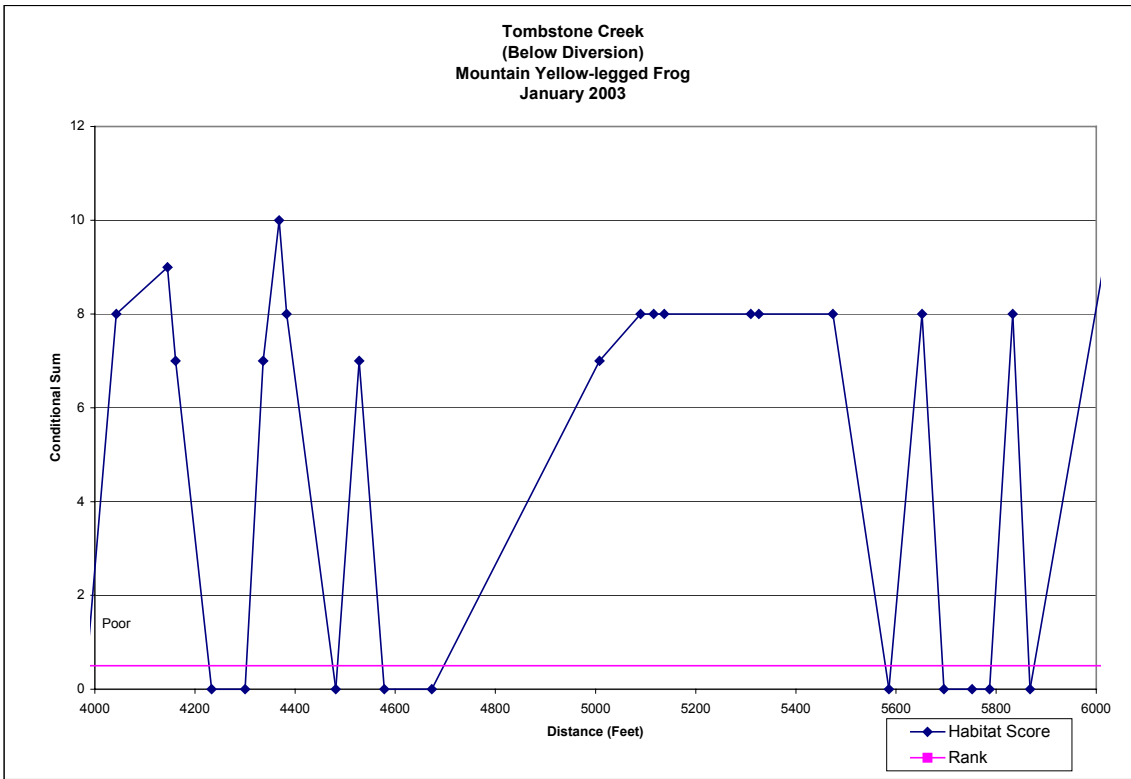




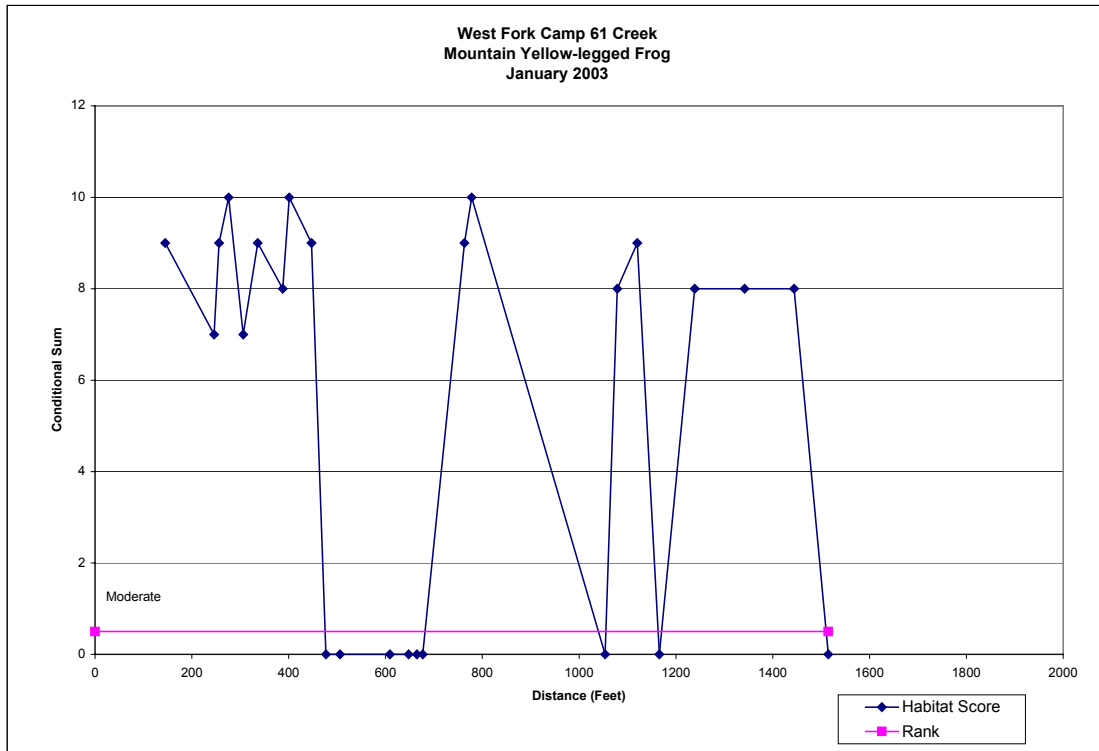
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



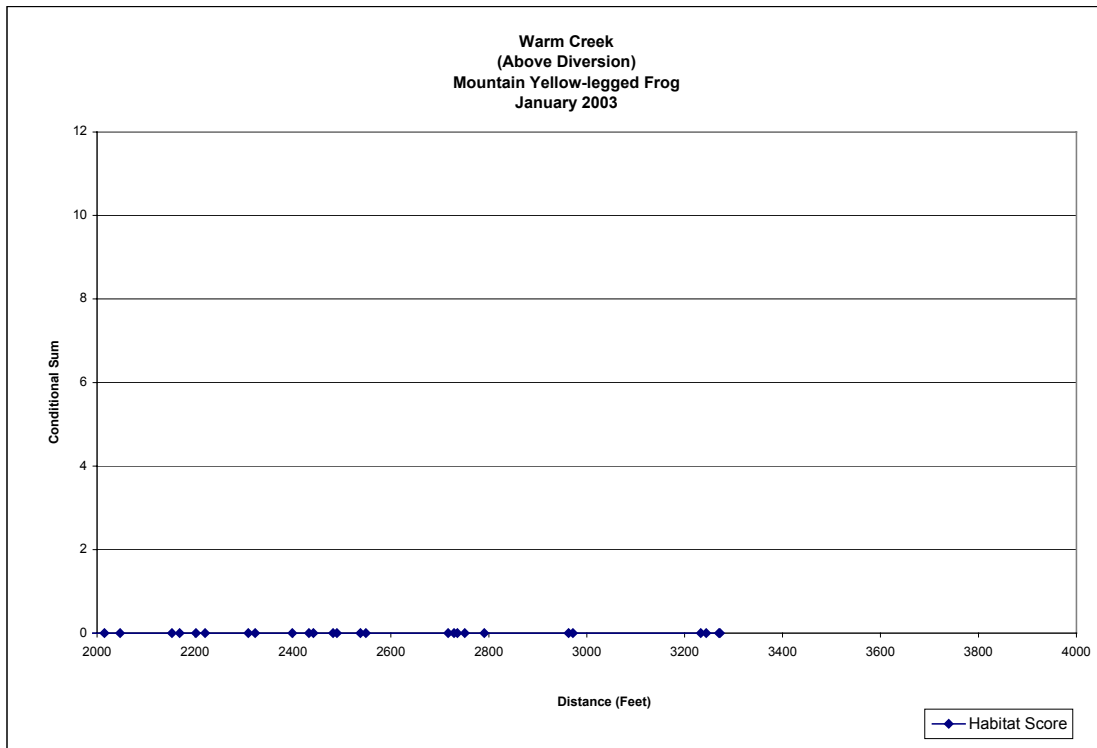
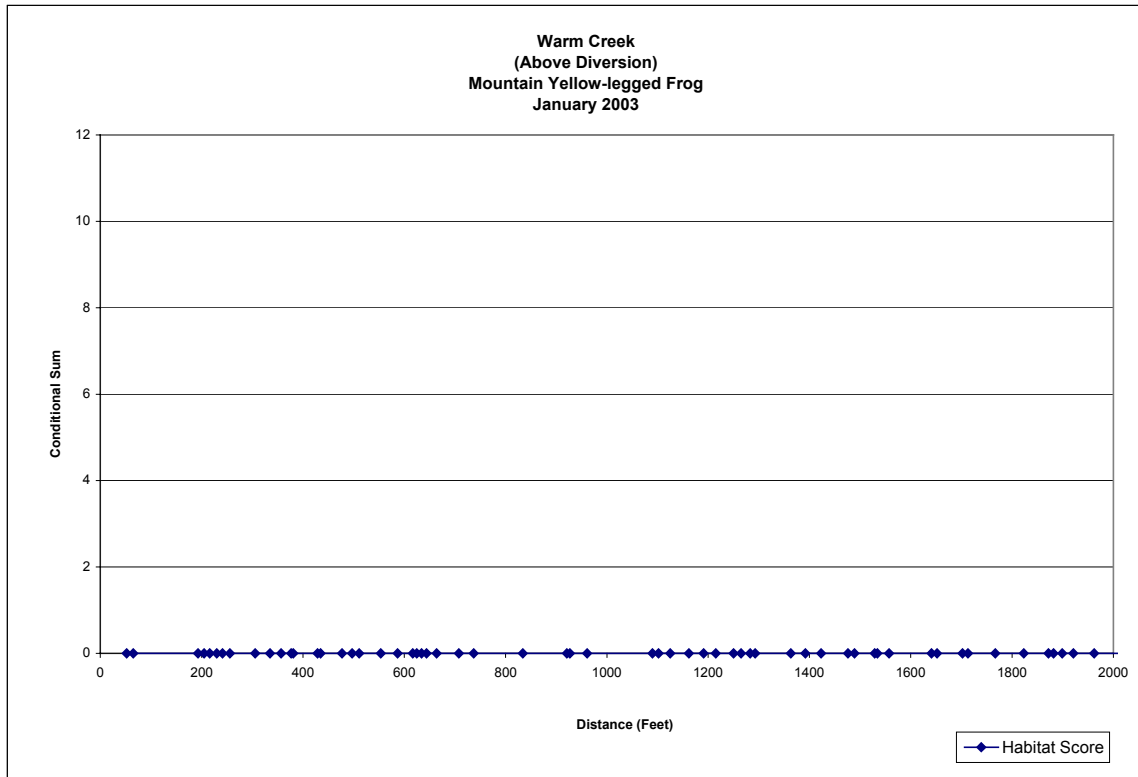
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



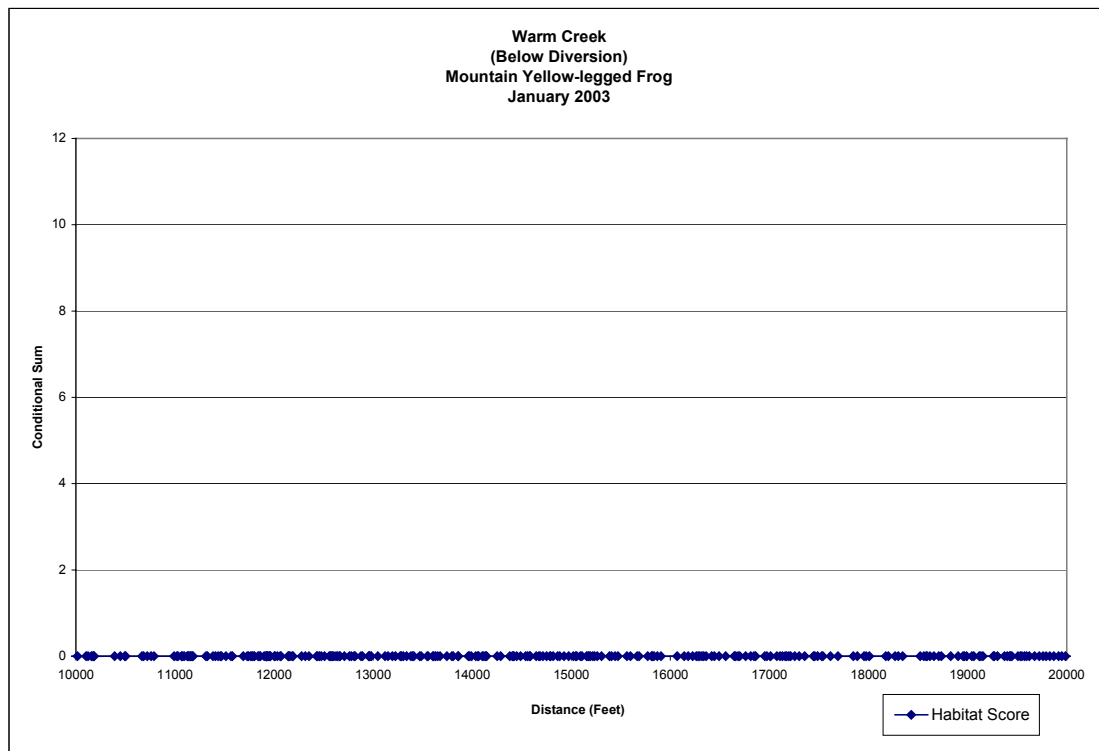
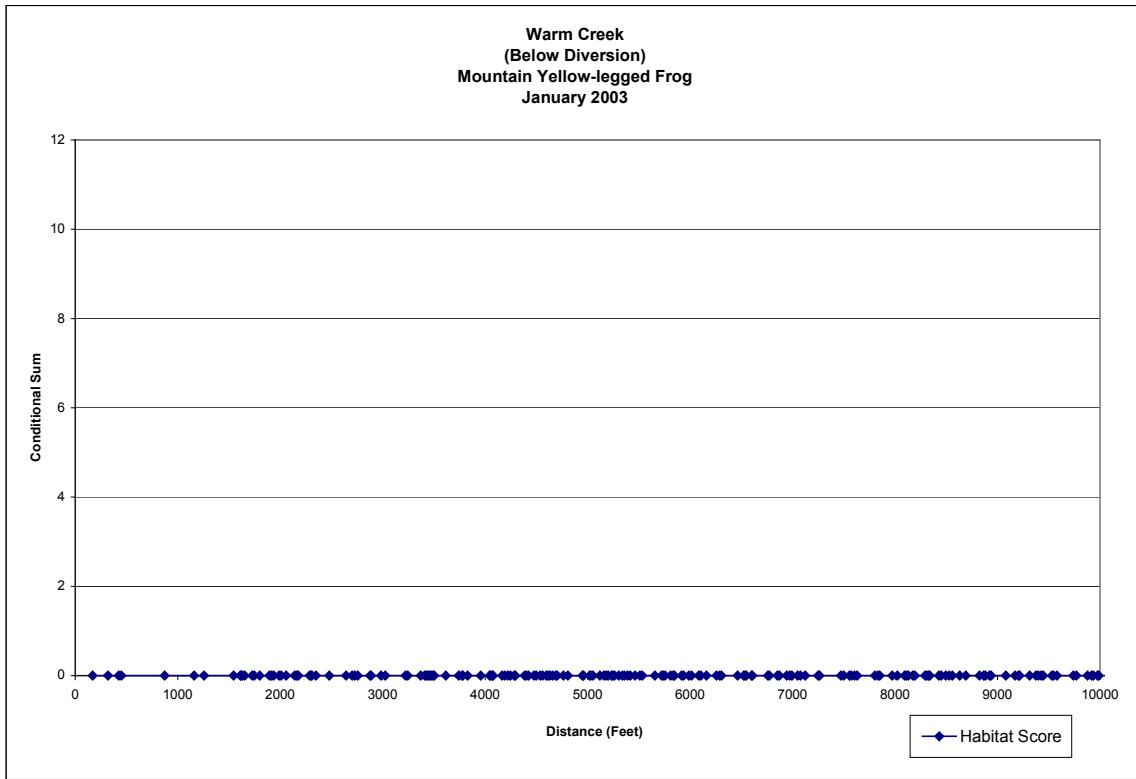
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



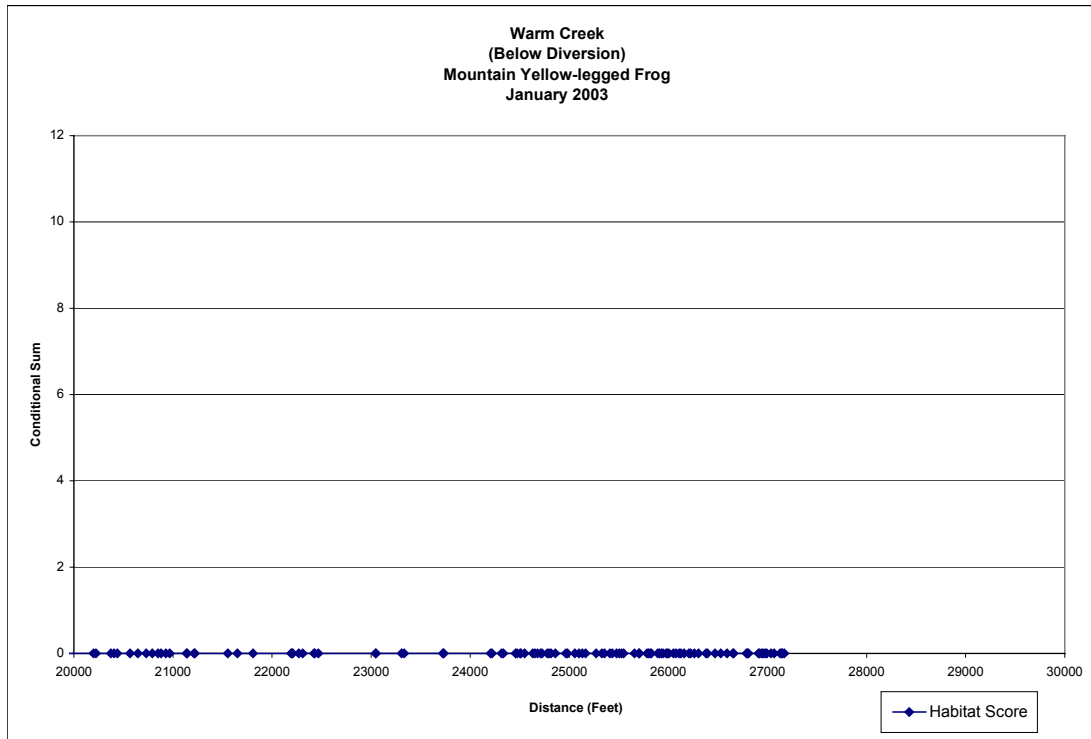
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



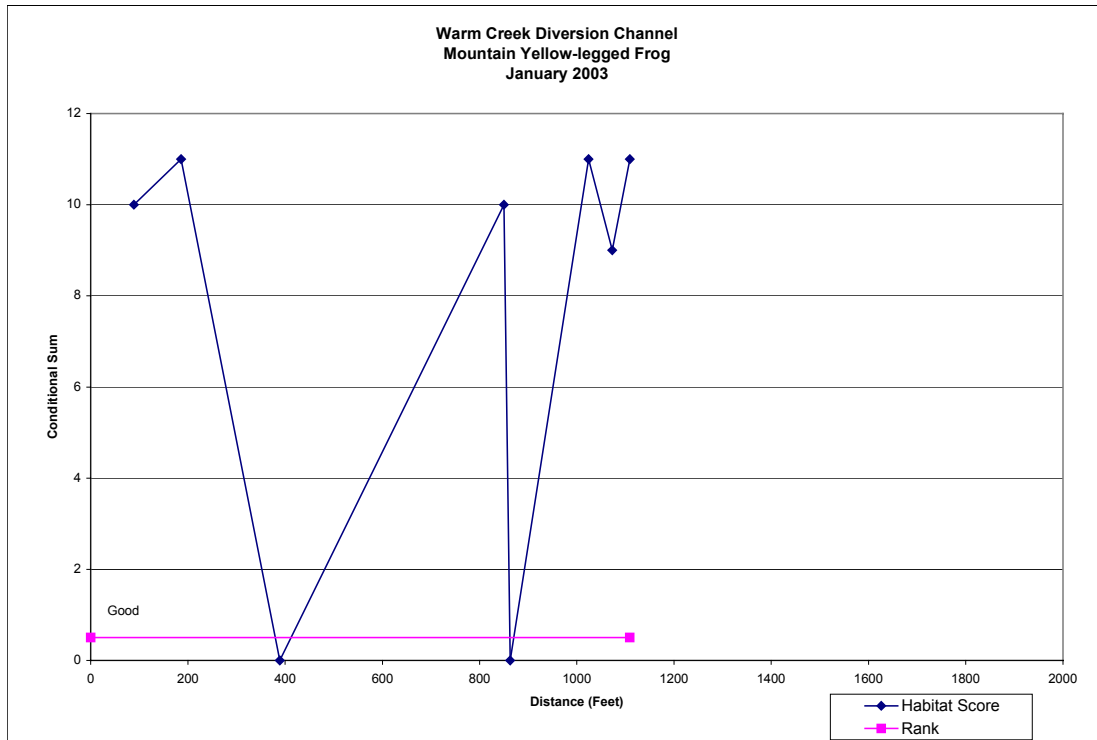
### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)



### Appendix F. Habitat Suitability and Segment Quality Charts for the Mountain Yellow-legged Frog Charts (continued)

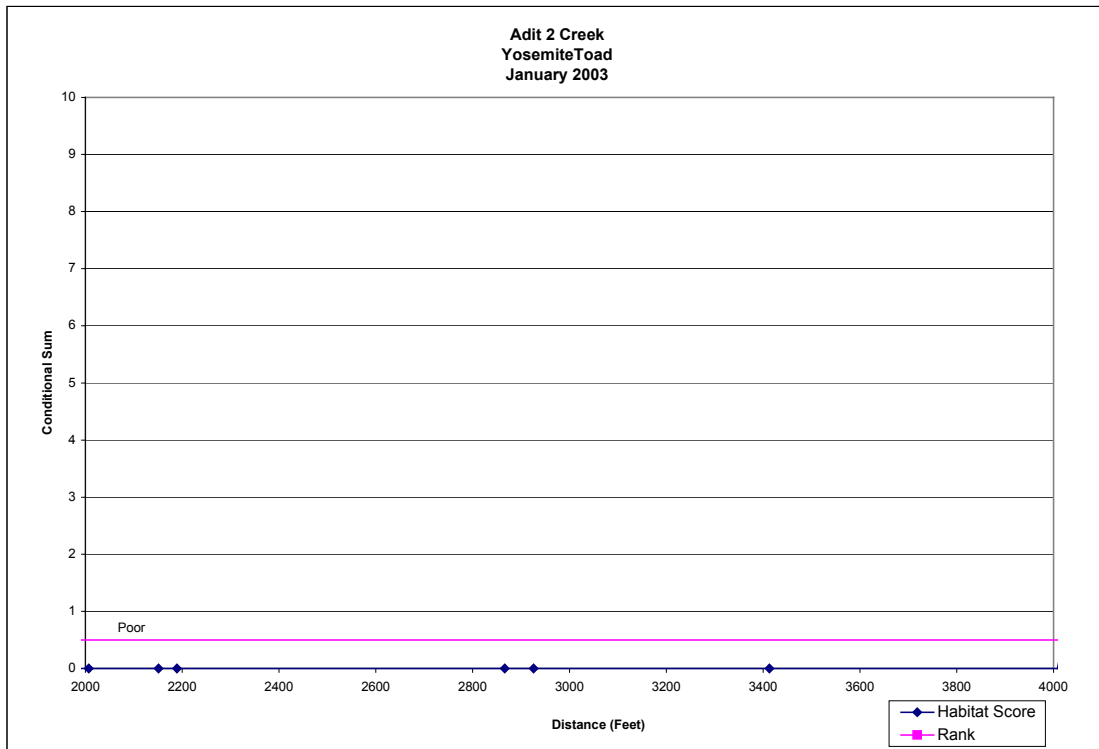
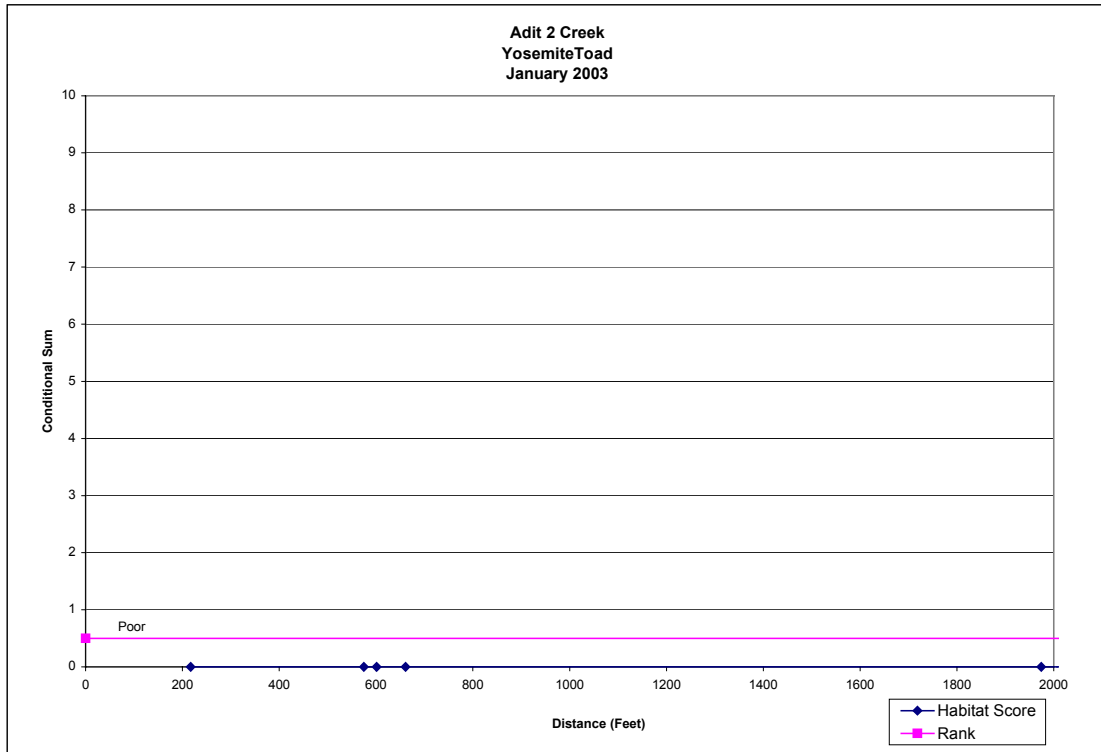


## **APPENDIX G**

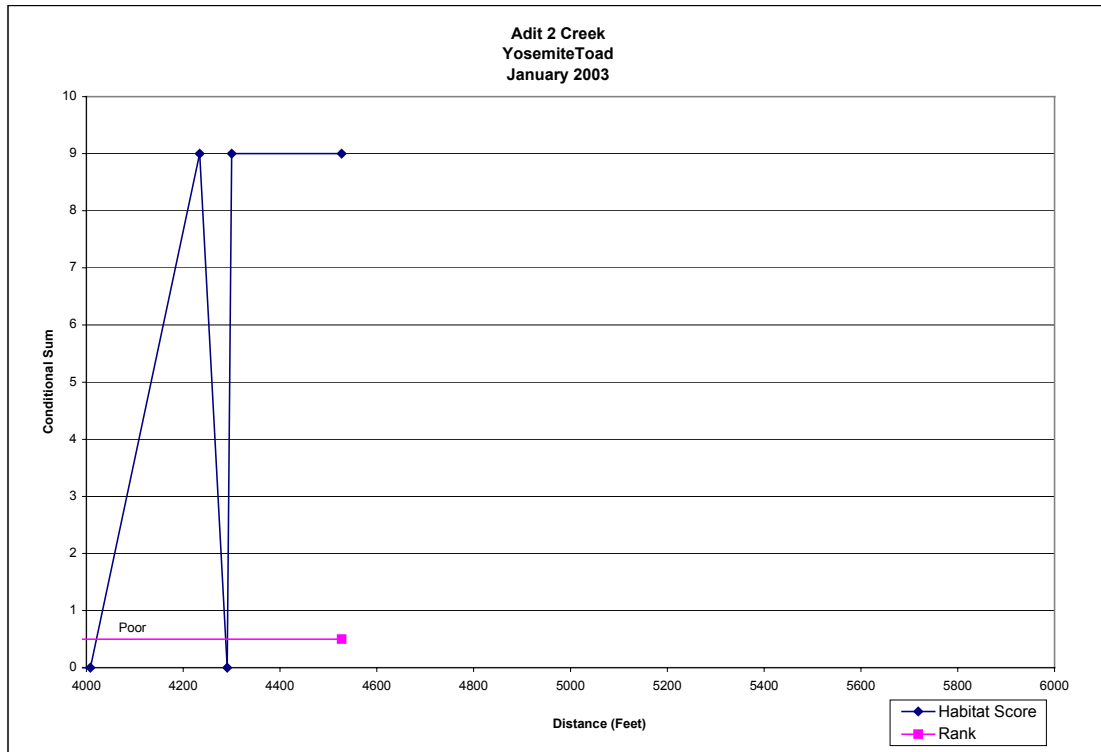
### **Habitat Suitability and Segment Quality Charts for the Yosemite Toad**



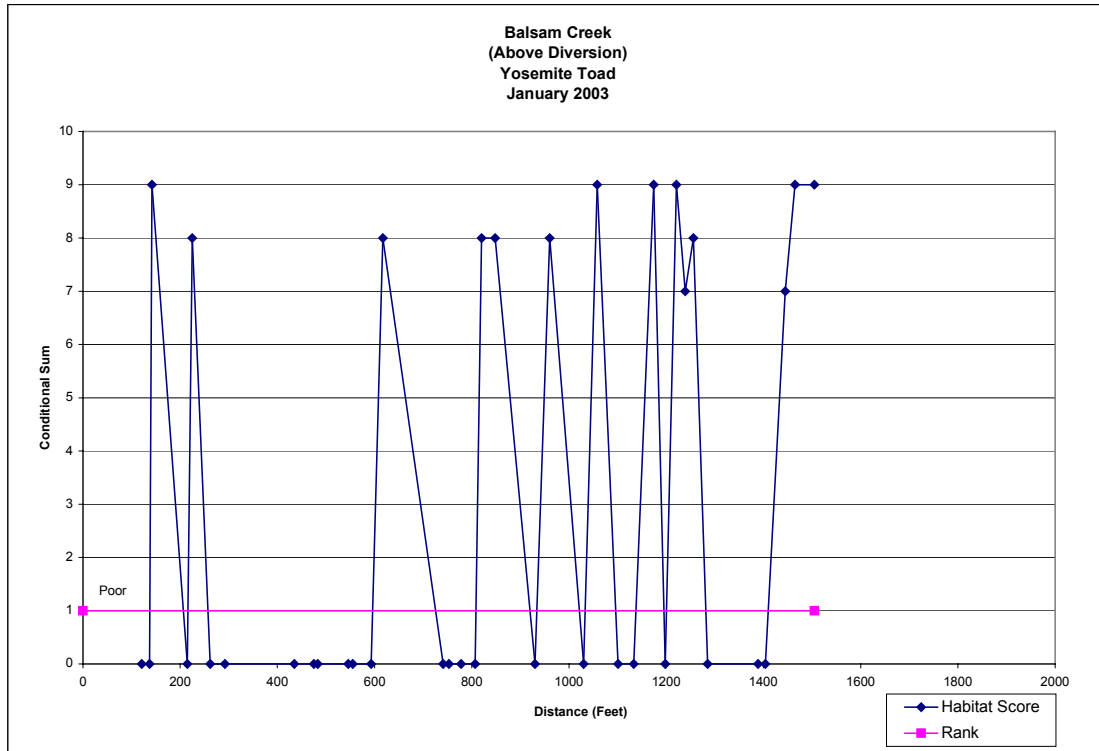
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad



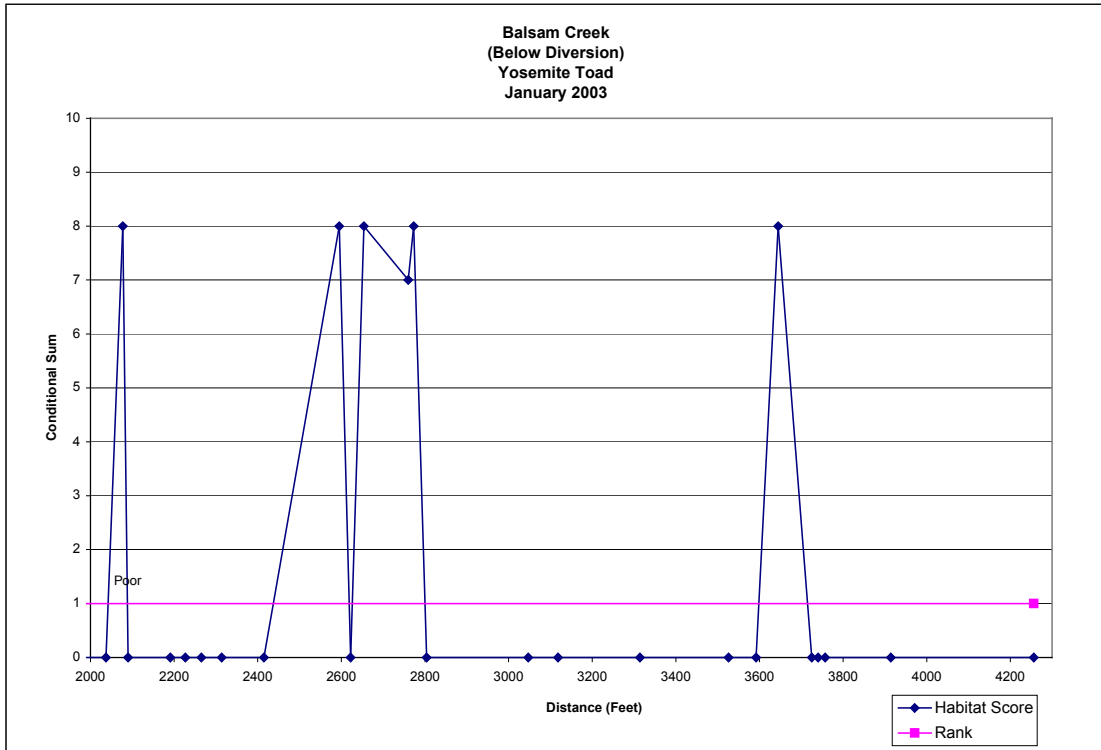
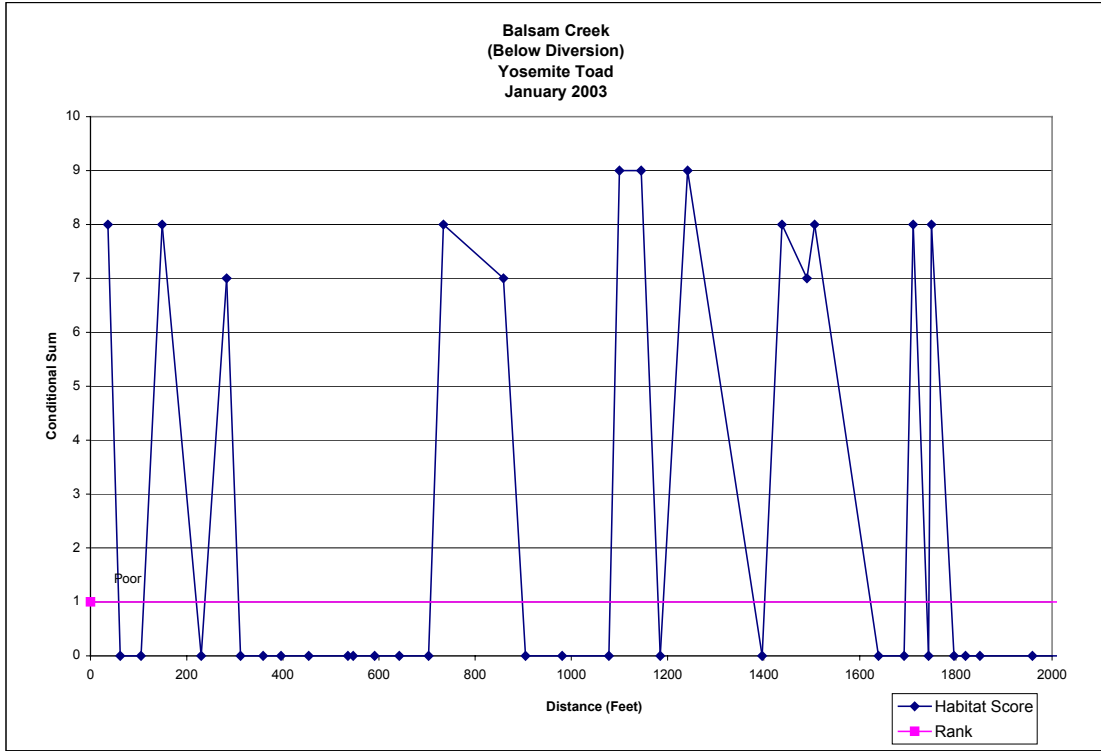
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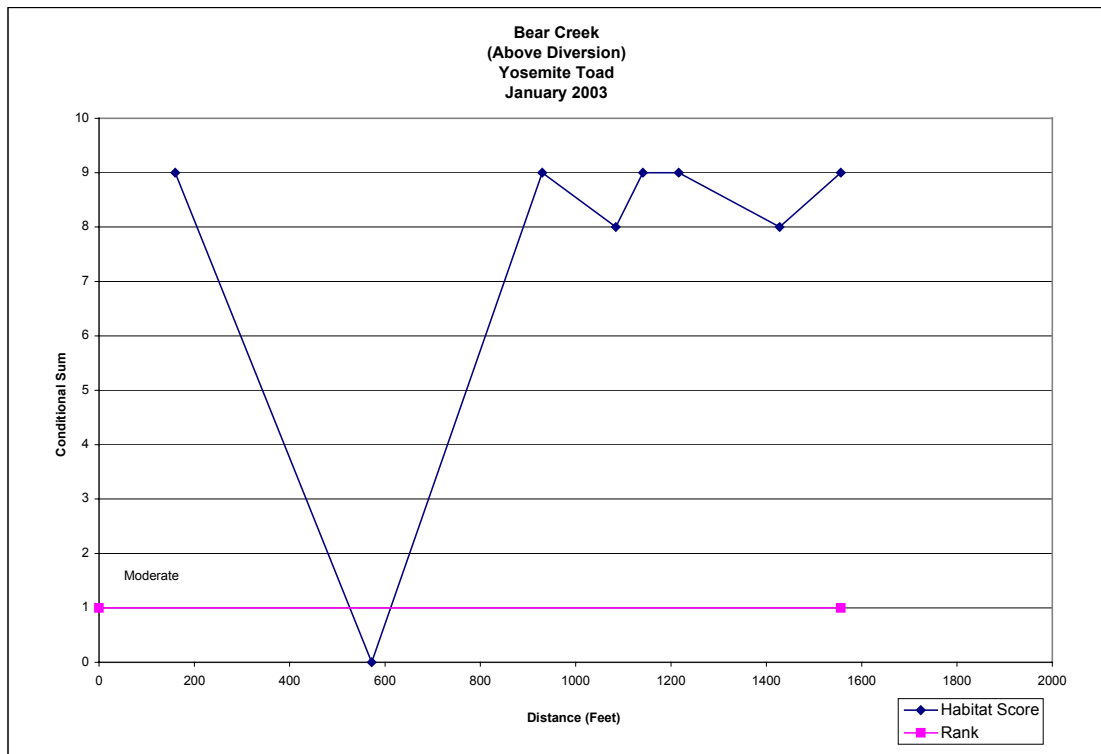
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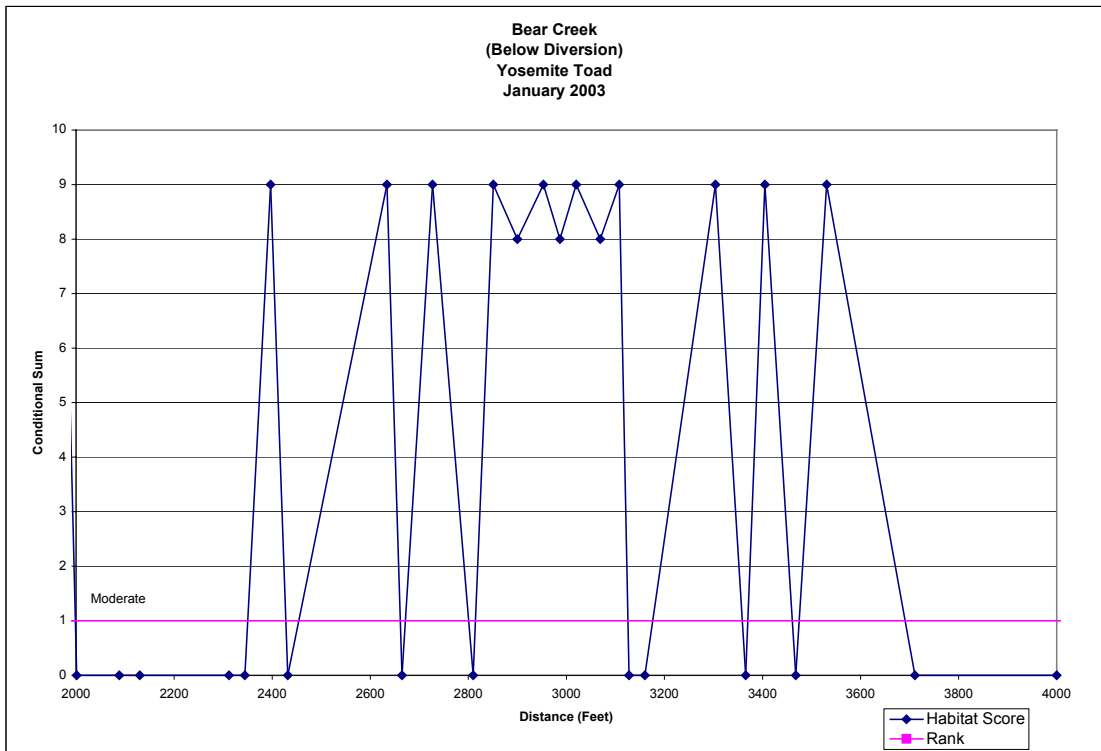
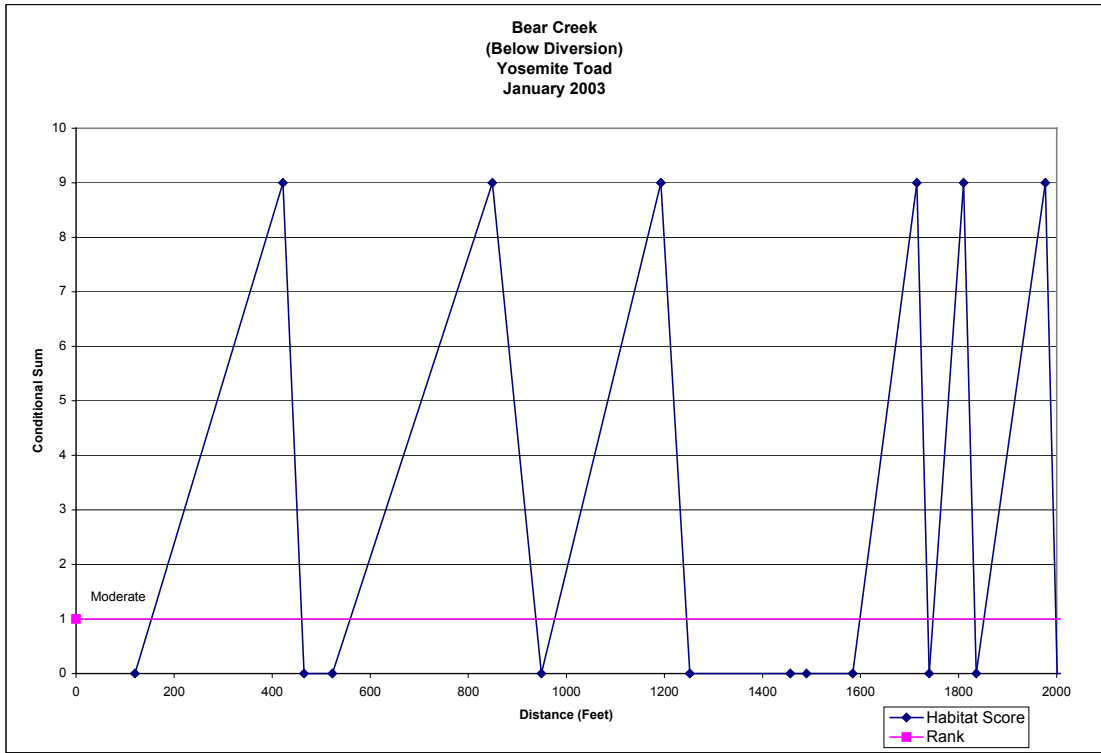
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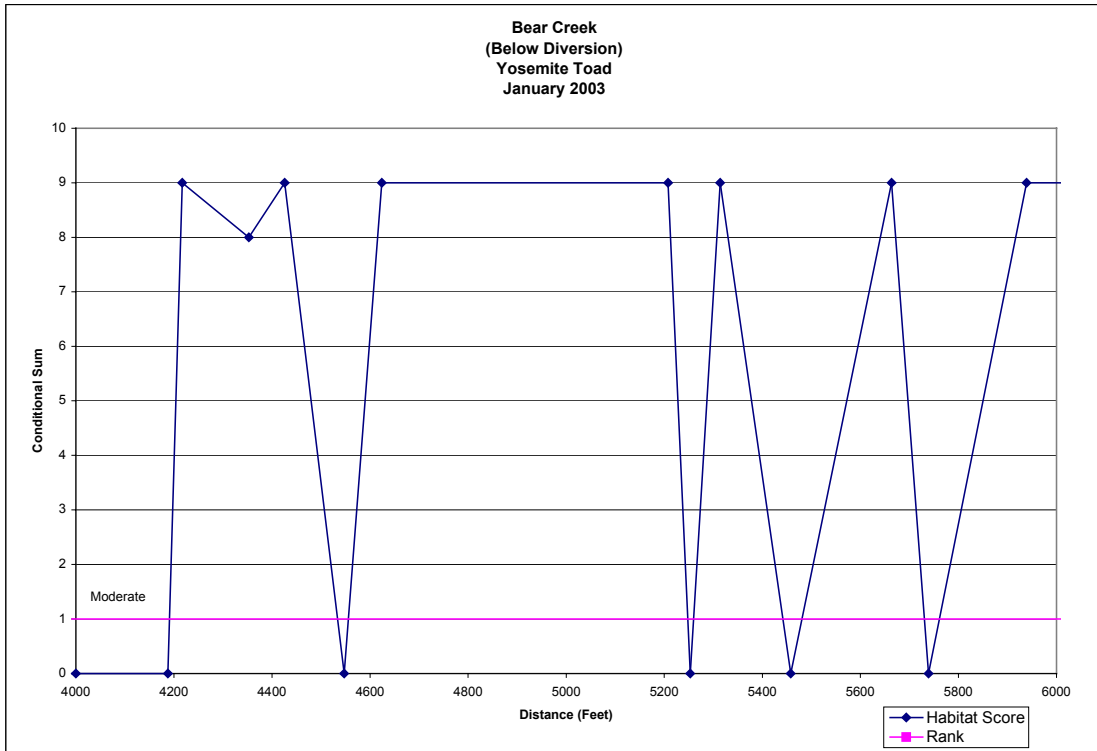
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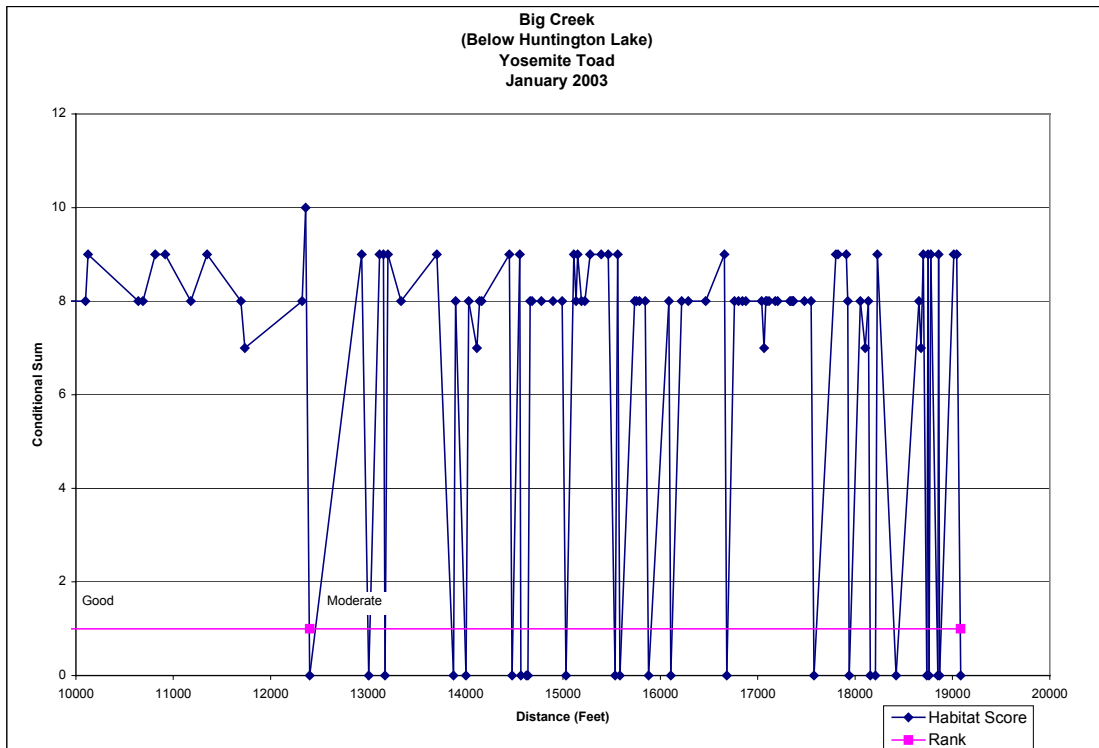
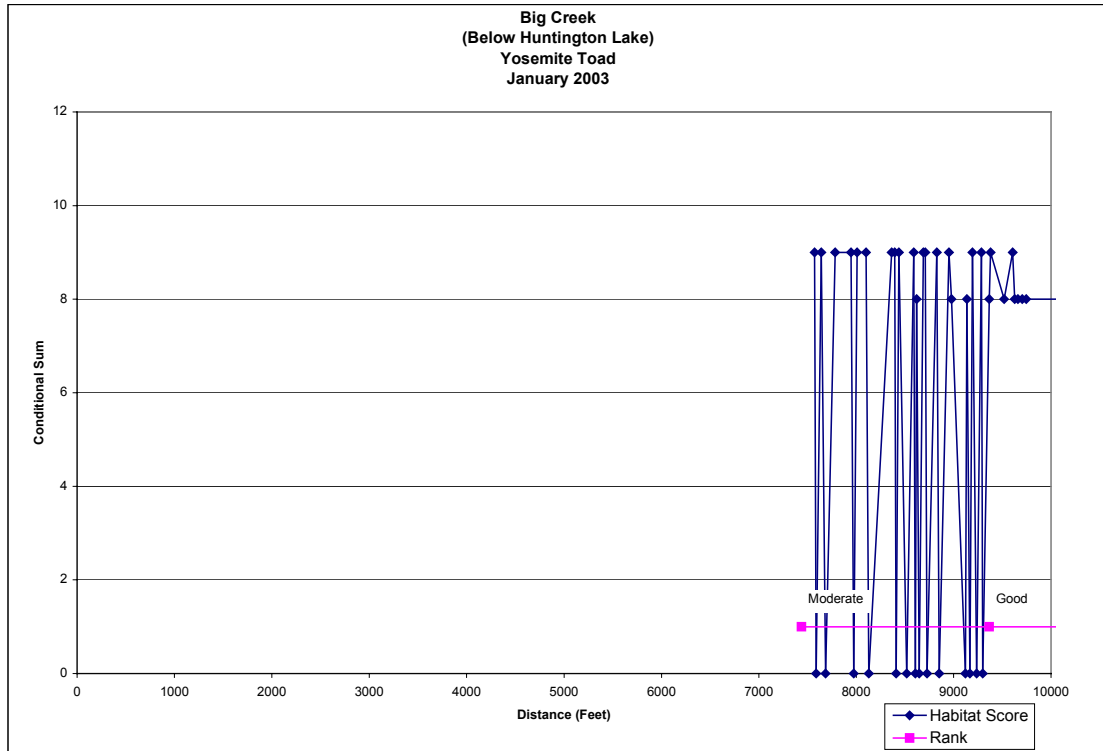
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### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

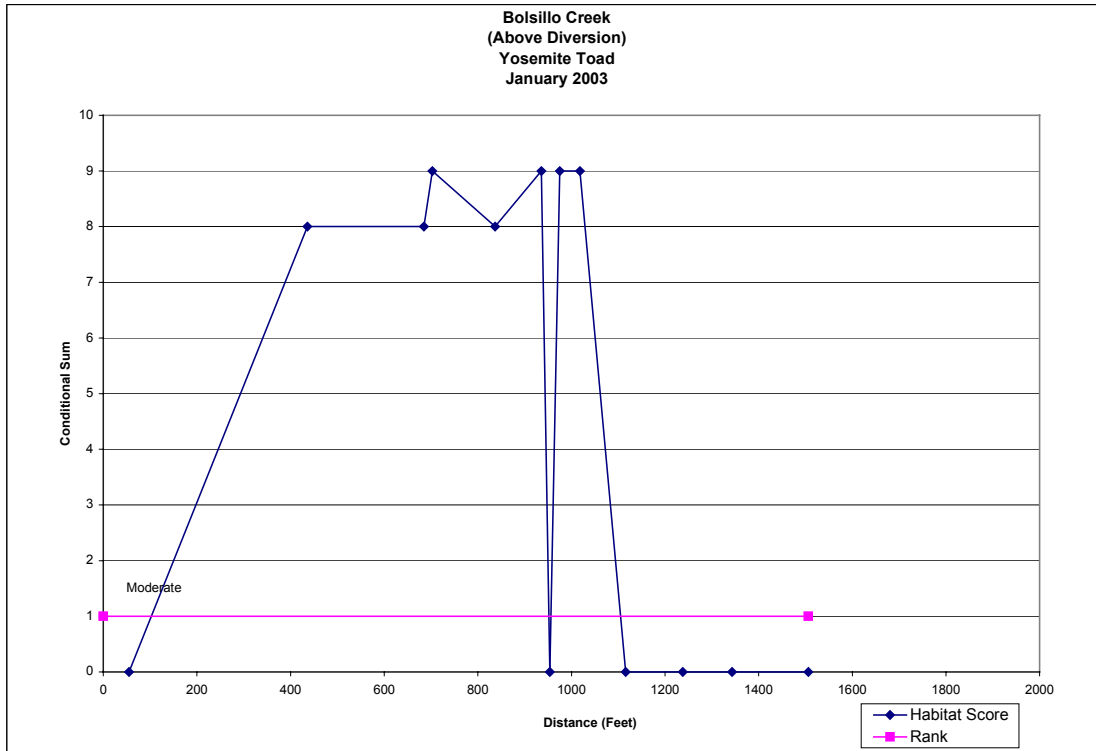


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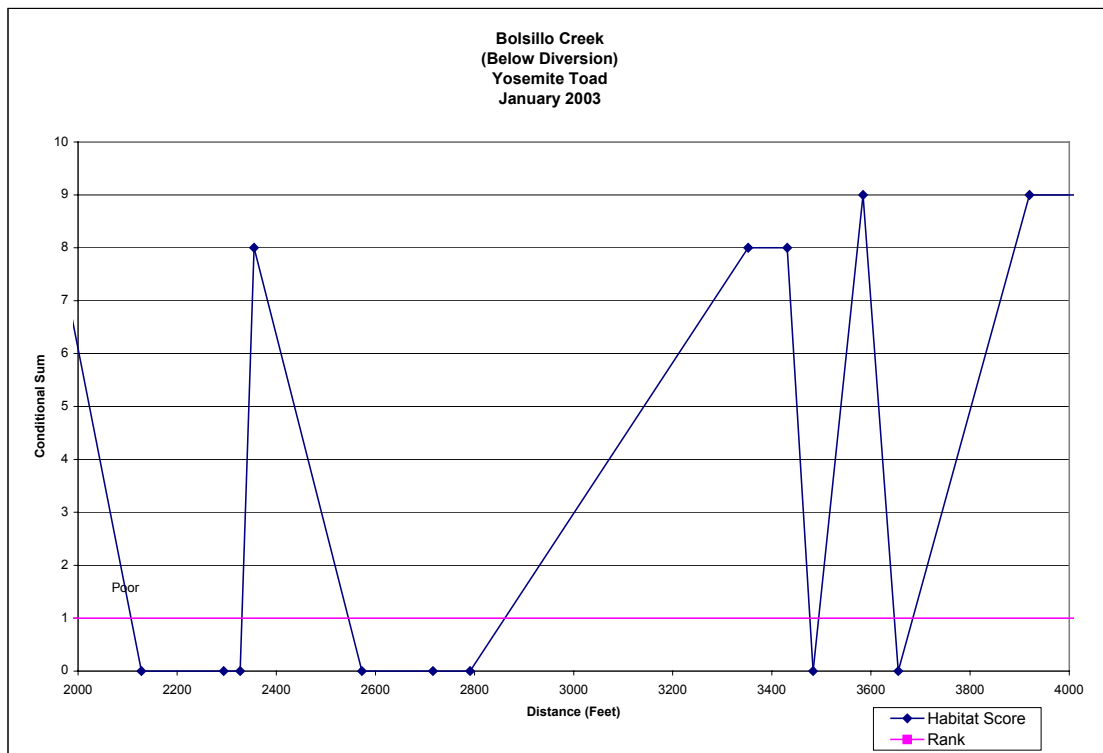
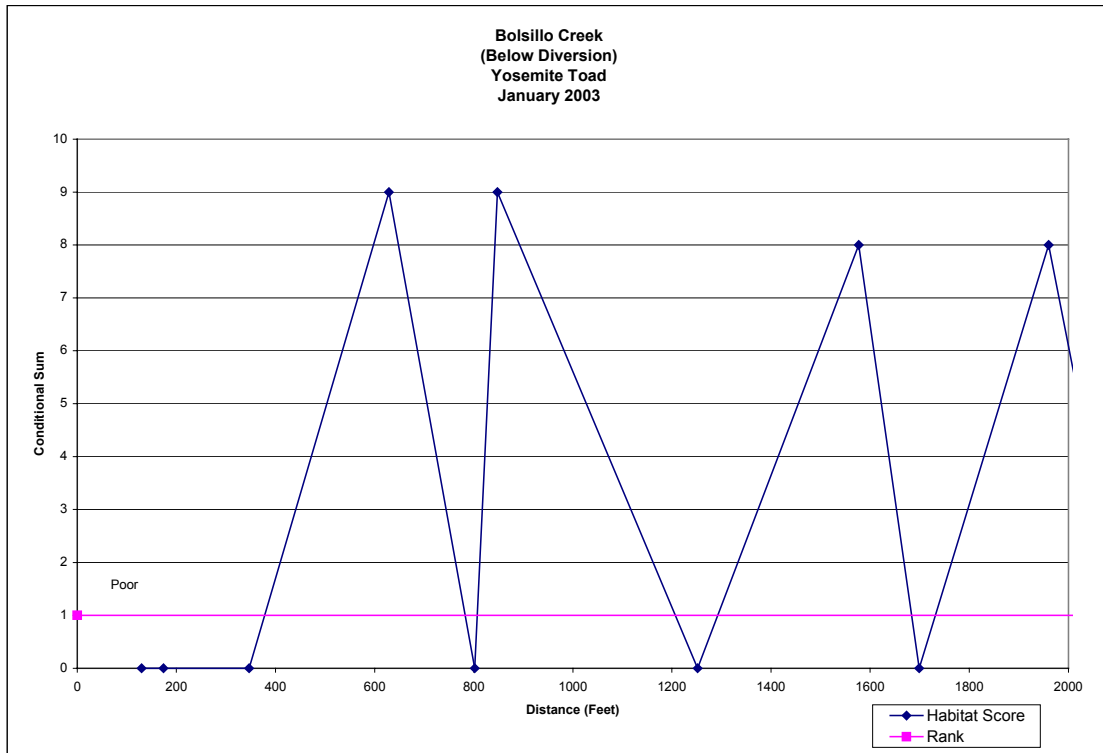




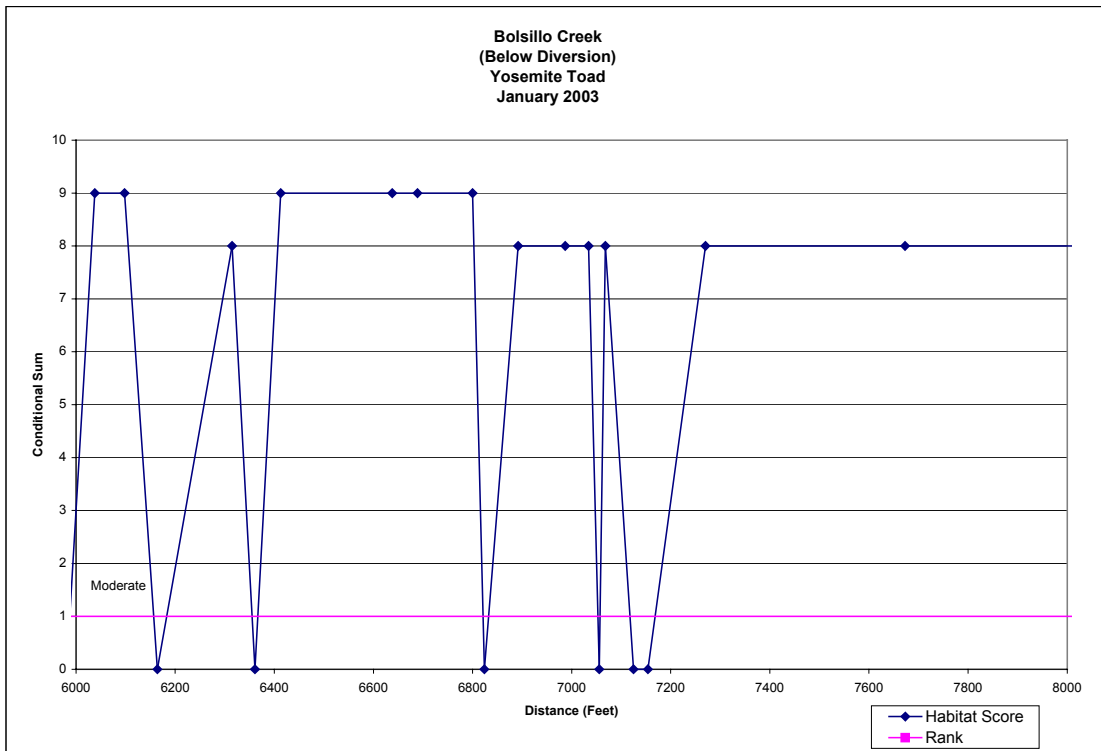
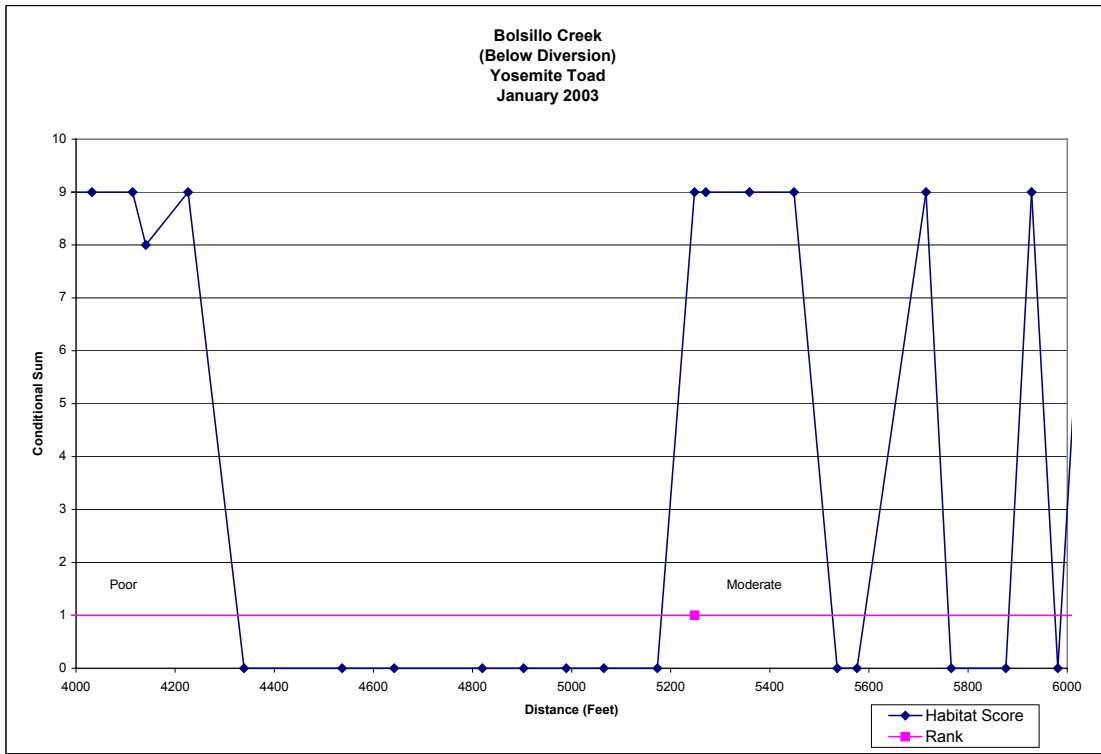
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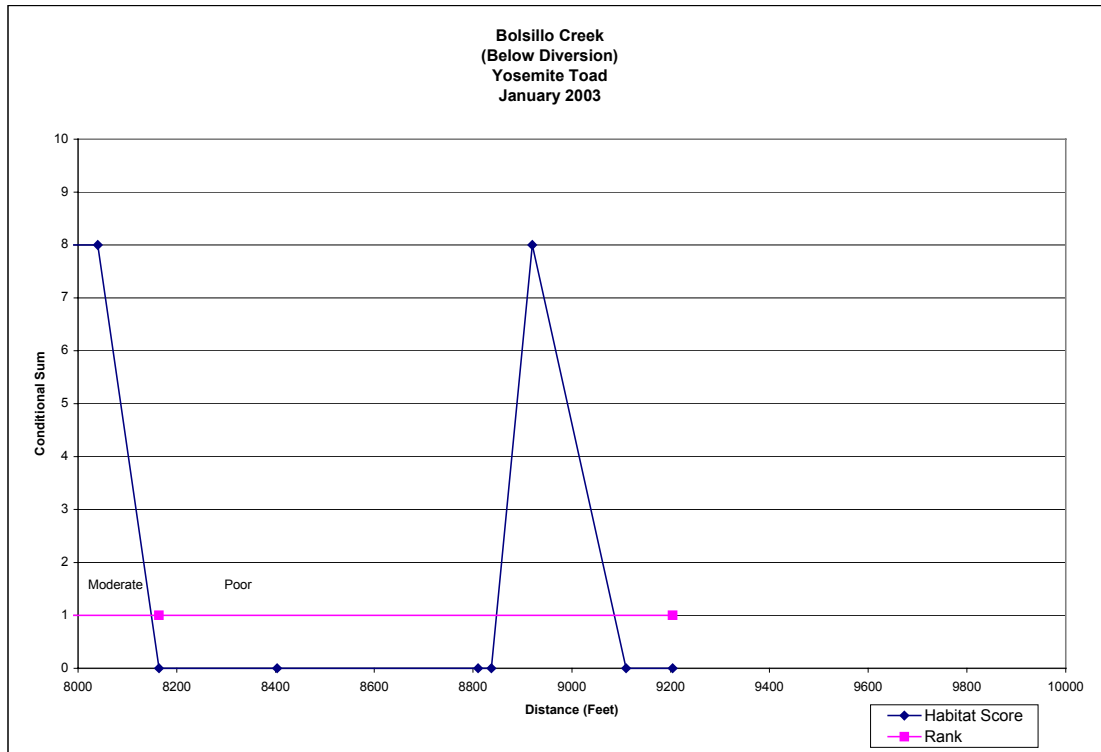
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



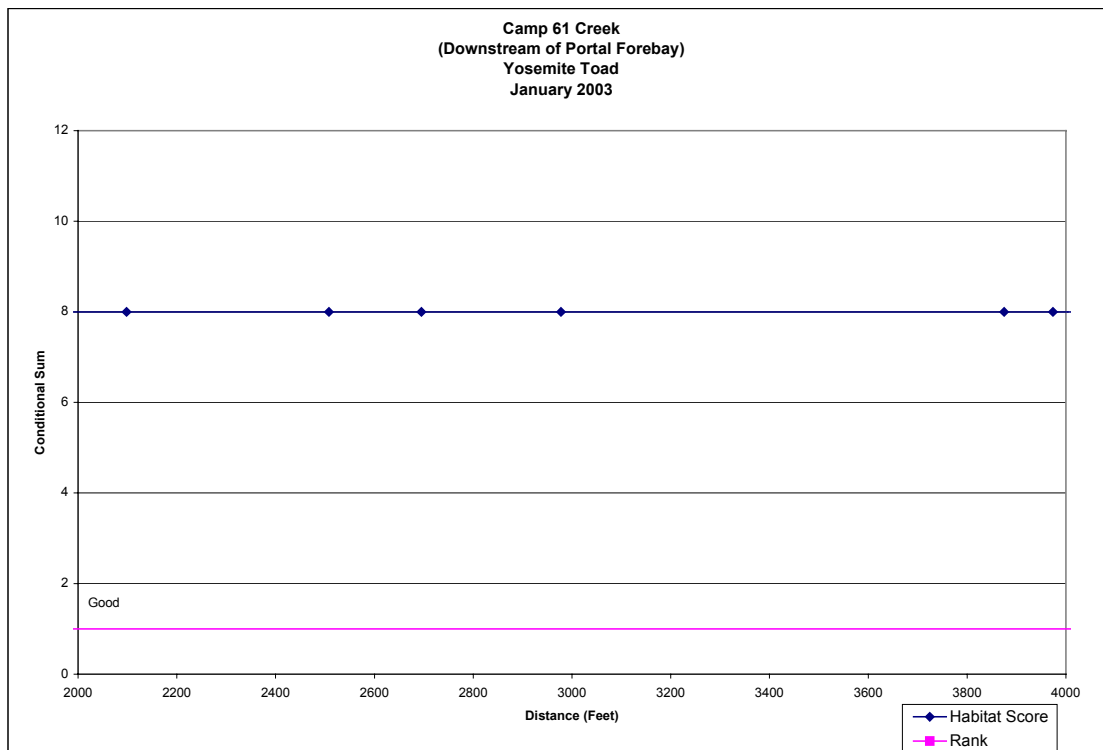
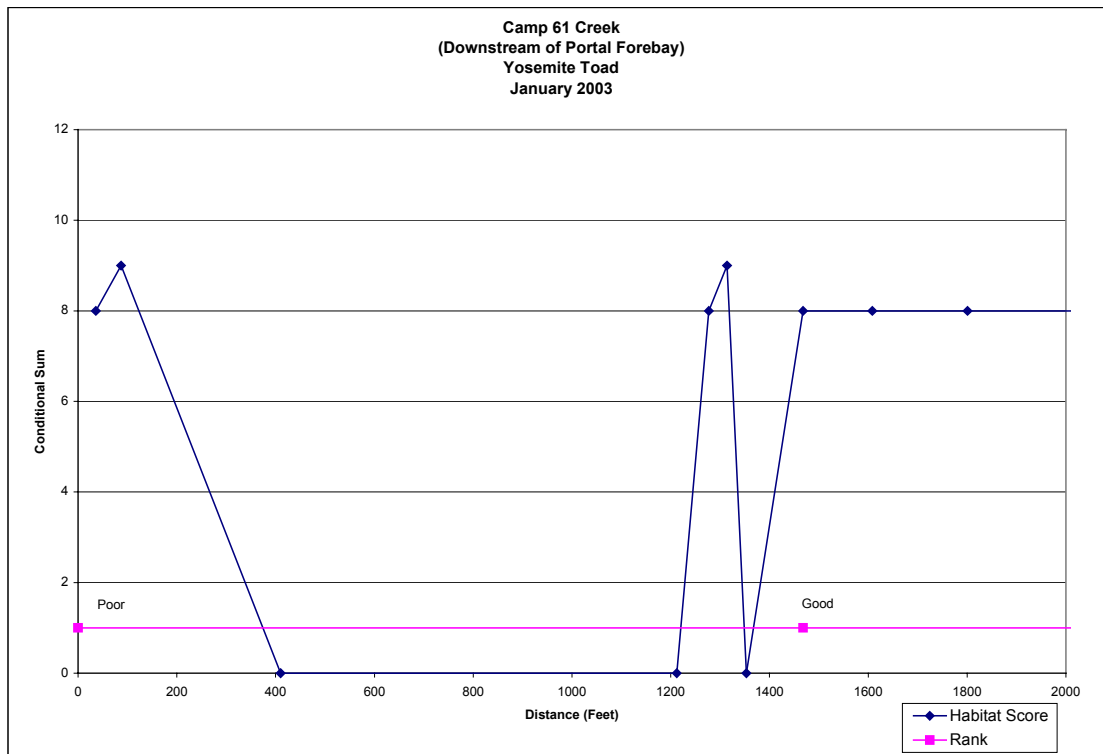
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



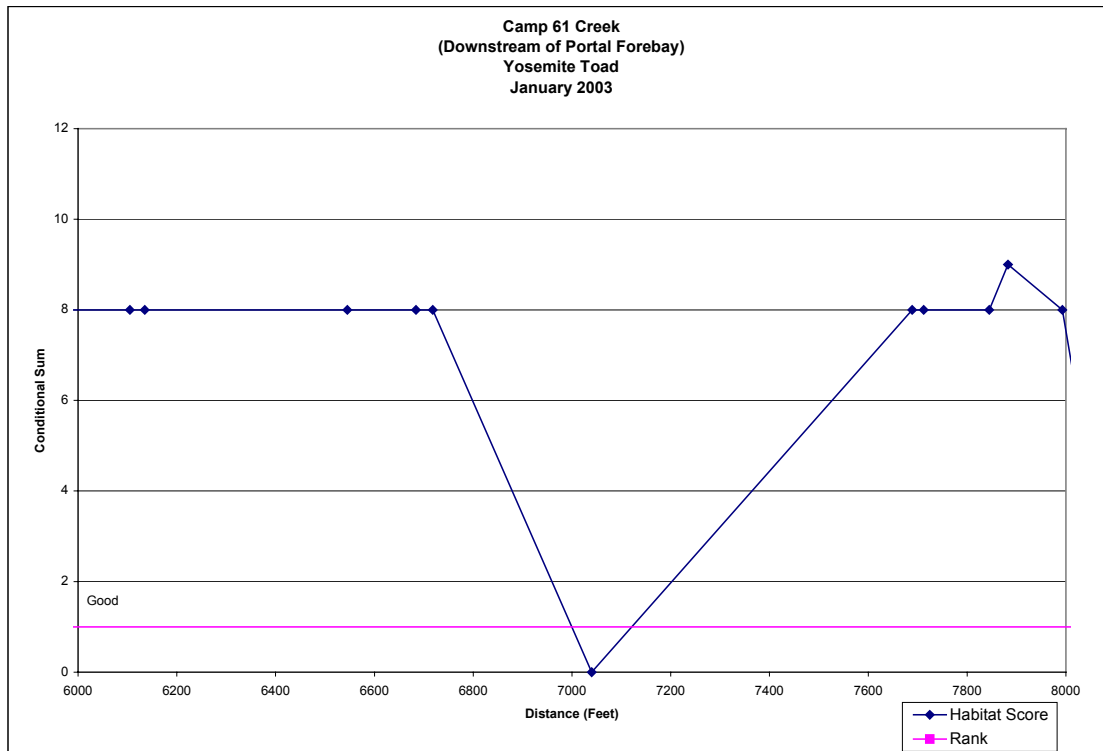
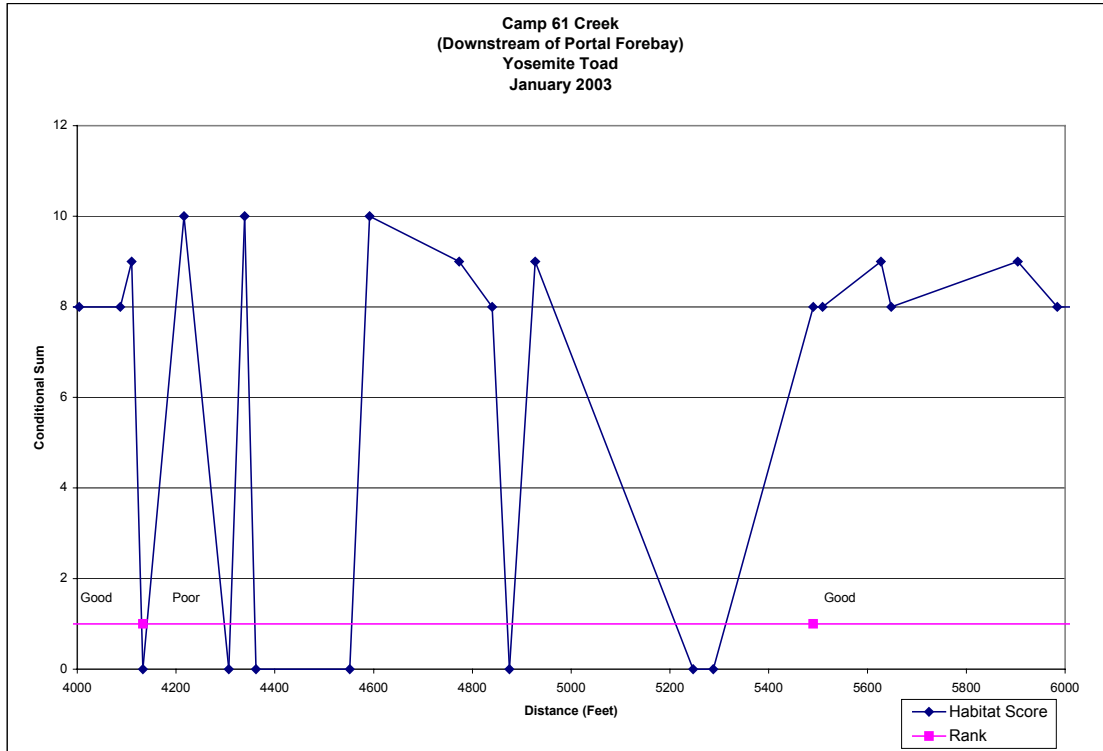
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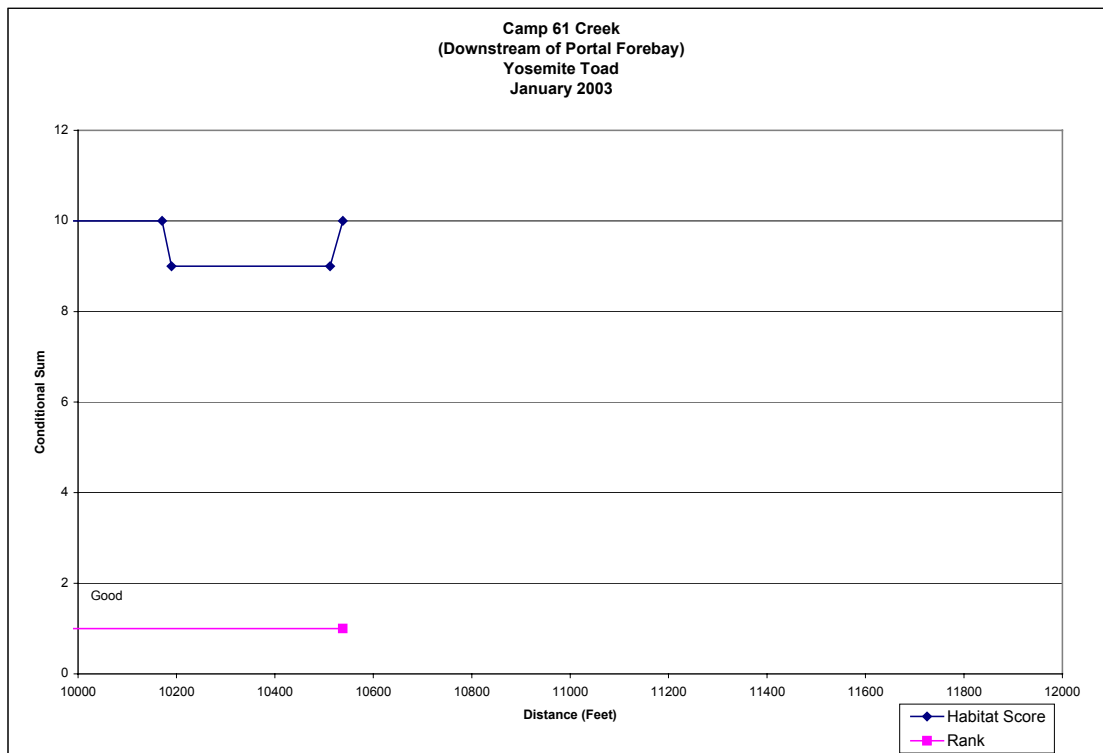
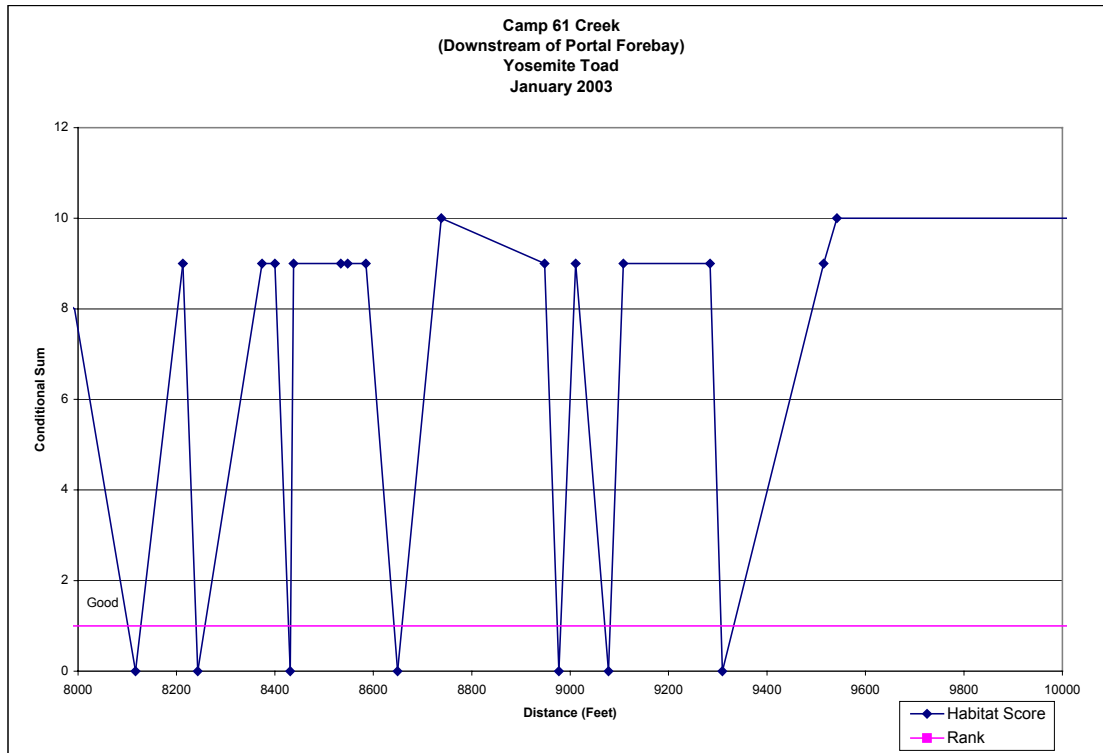
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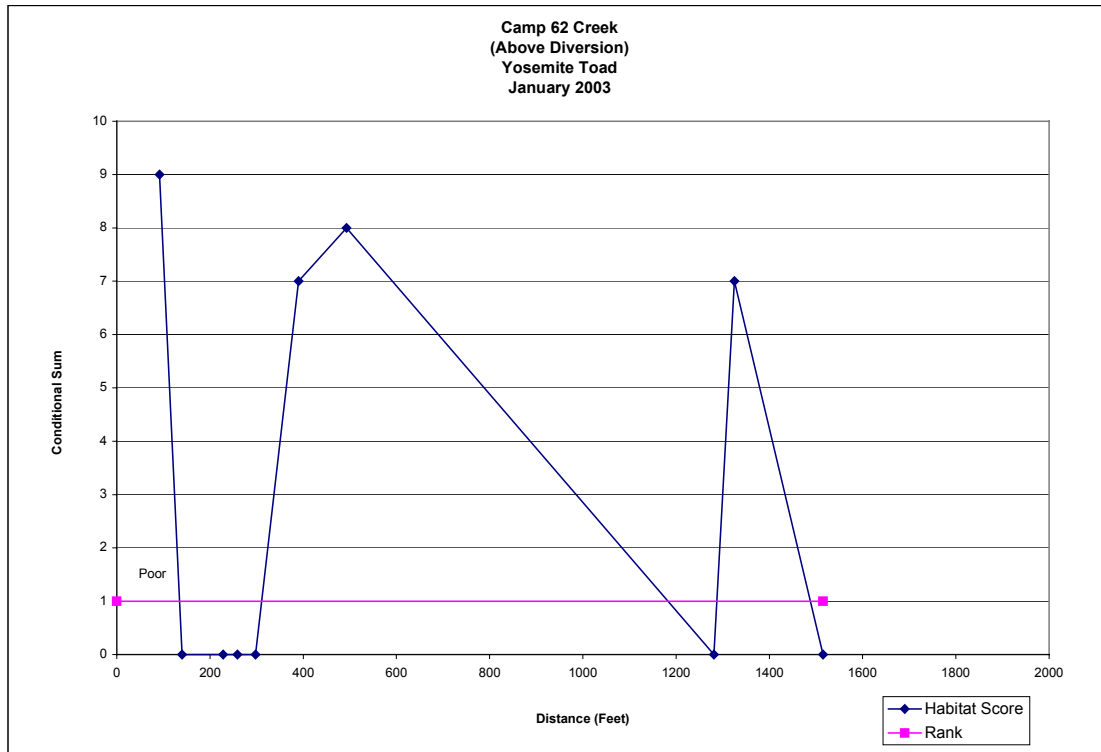
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### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

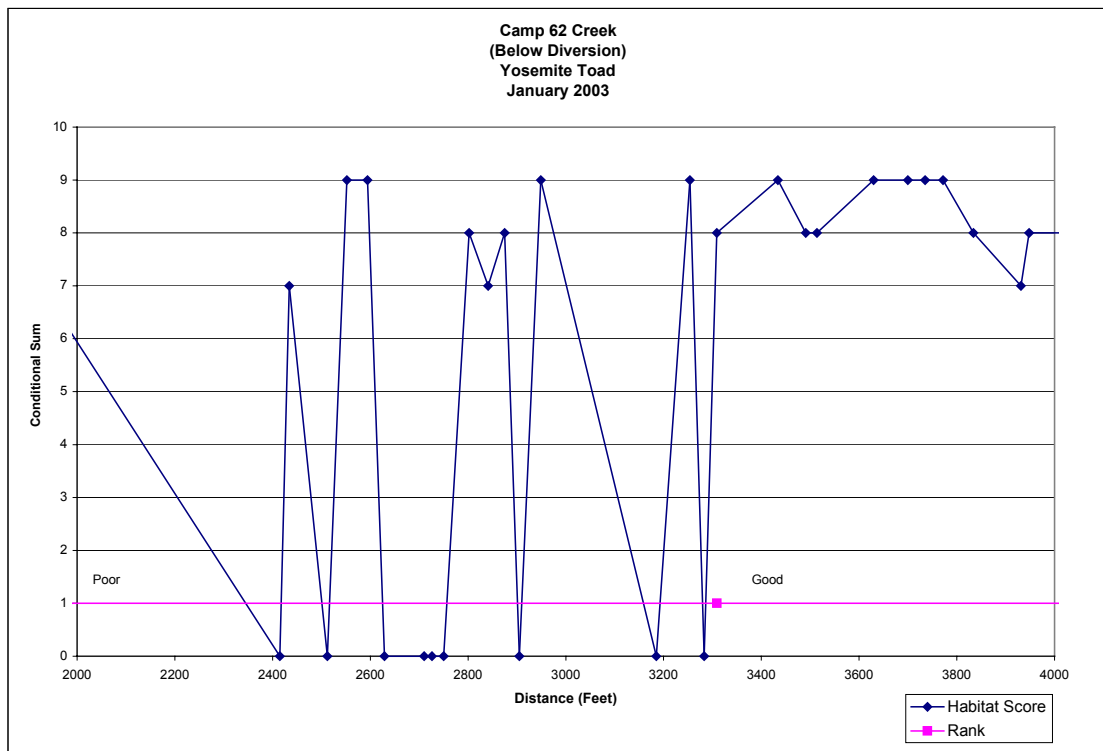
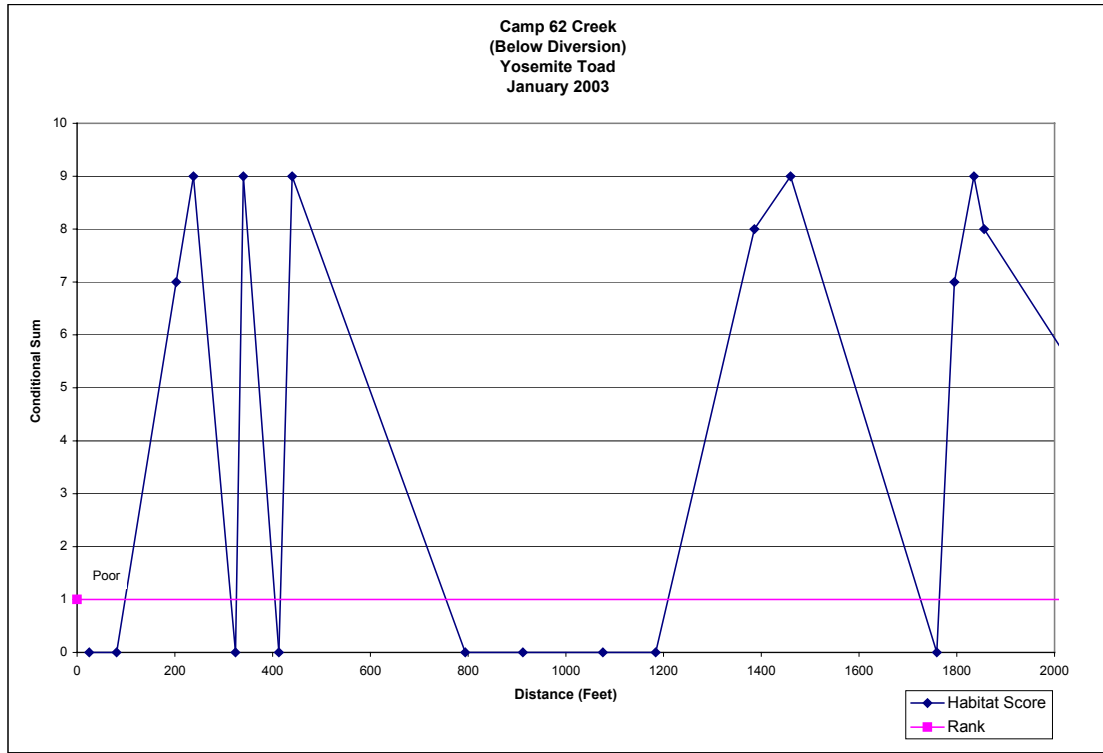


### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

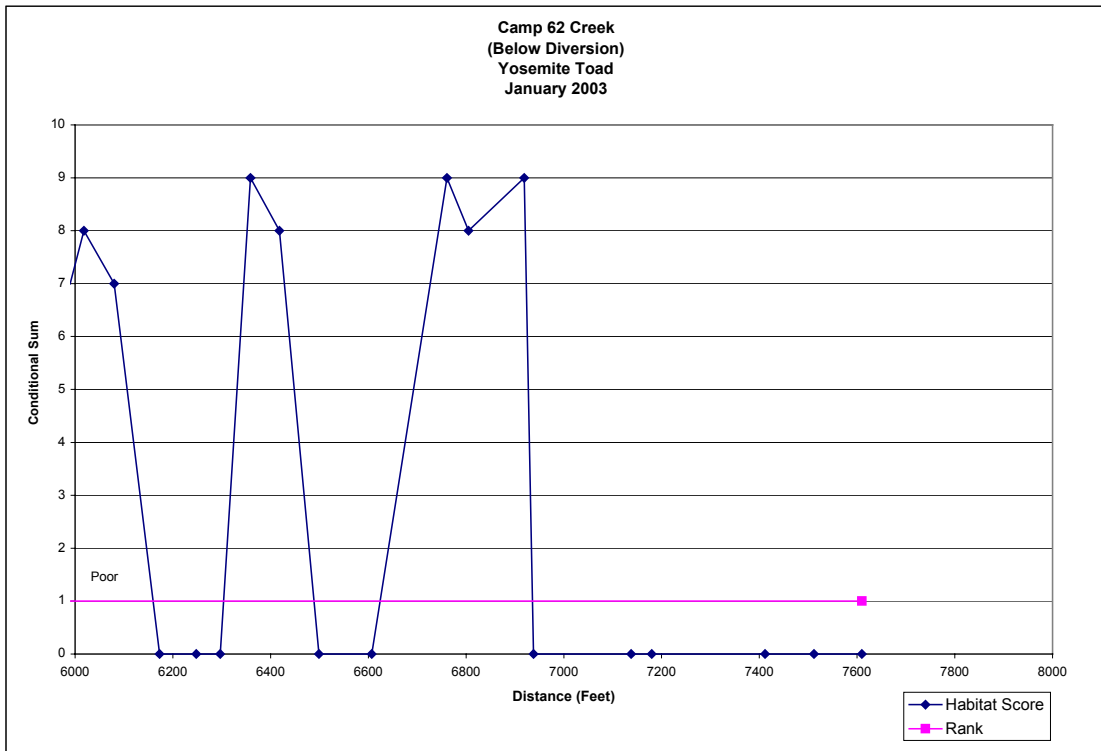
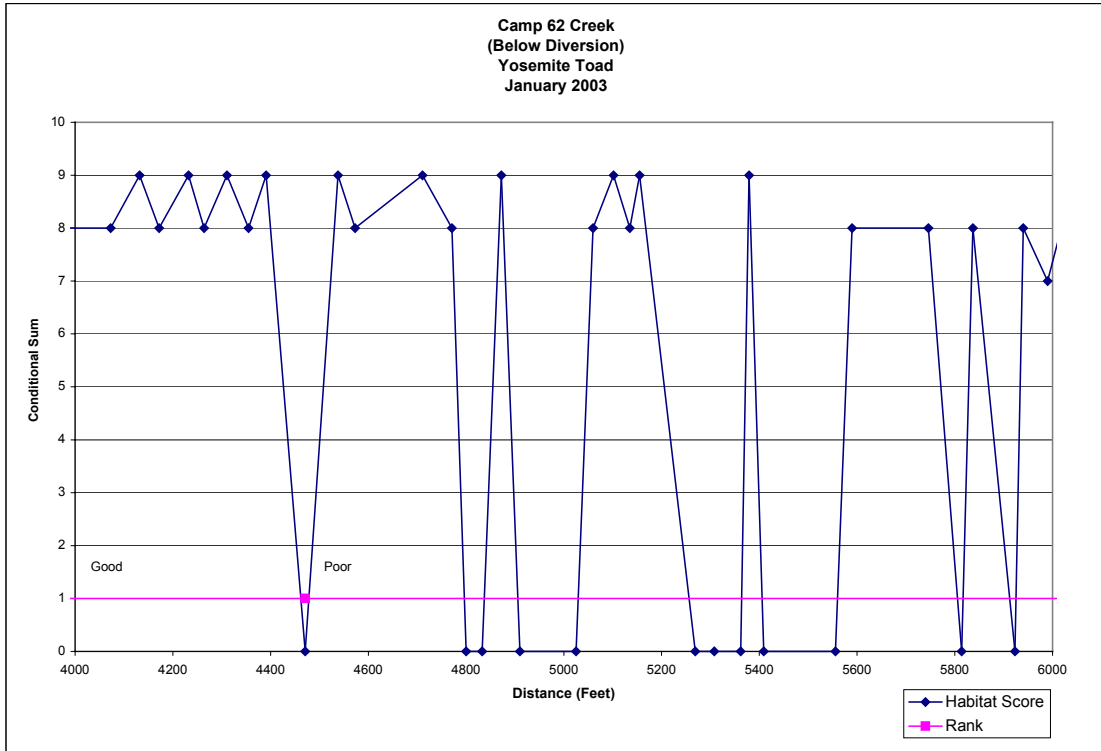




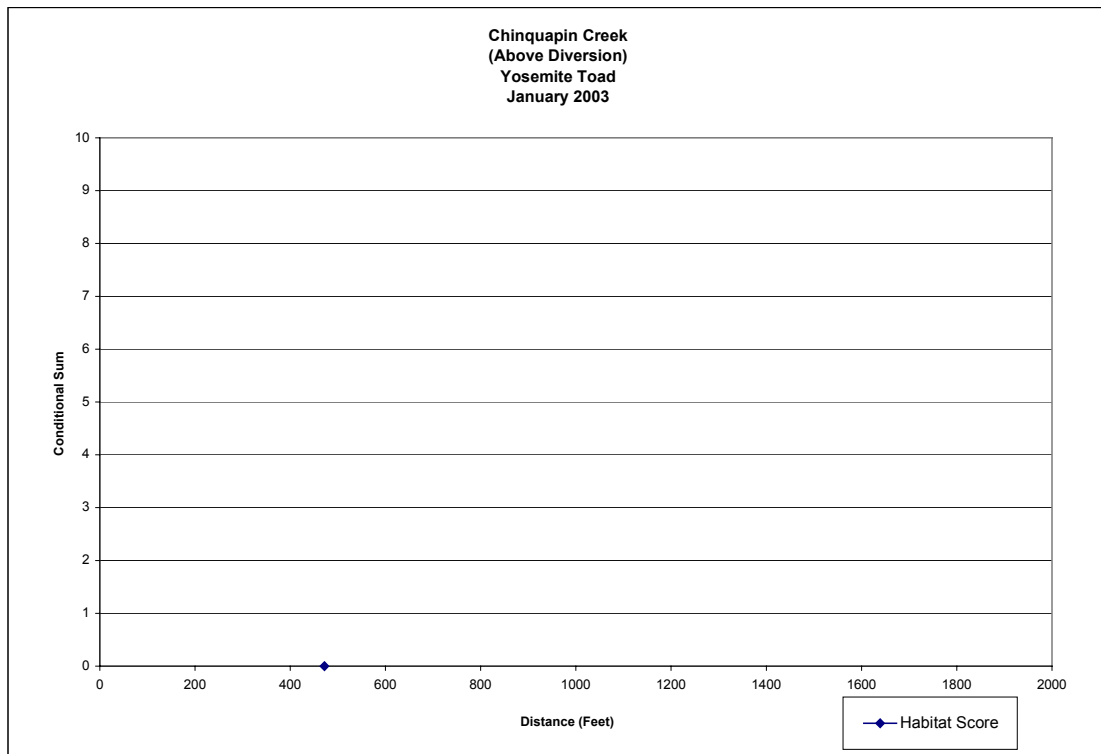
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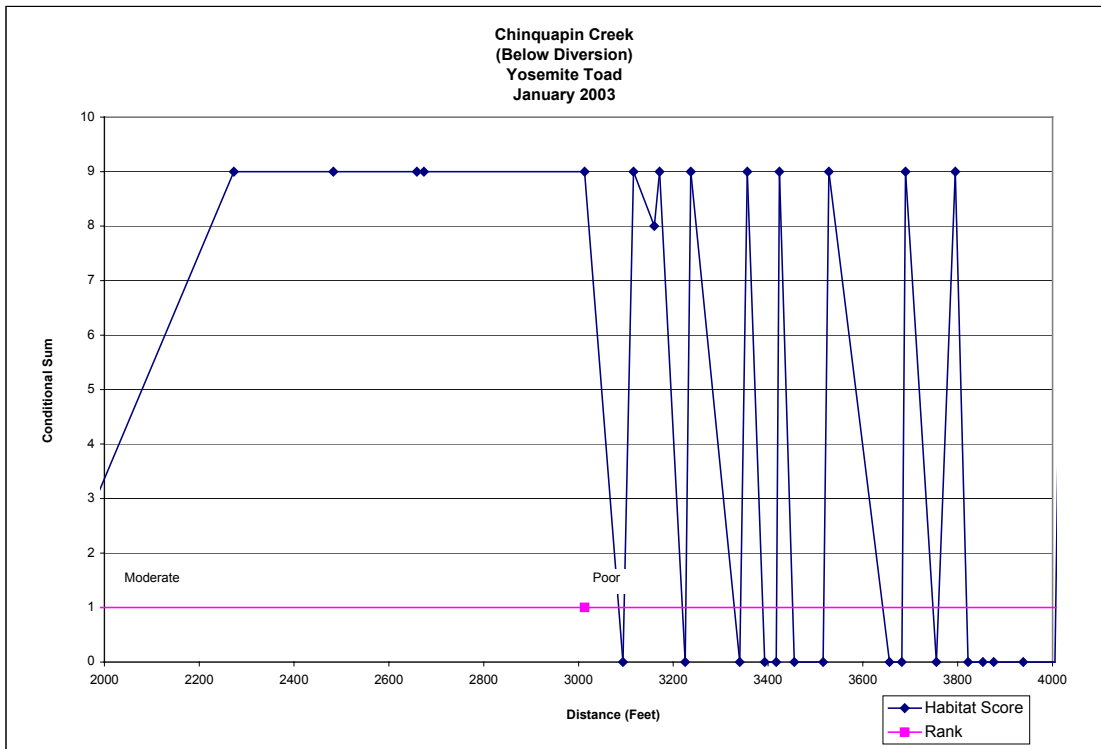
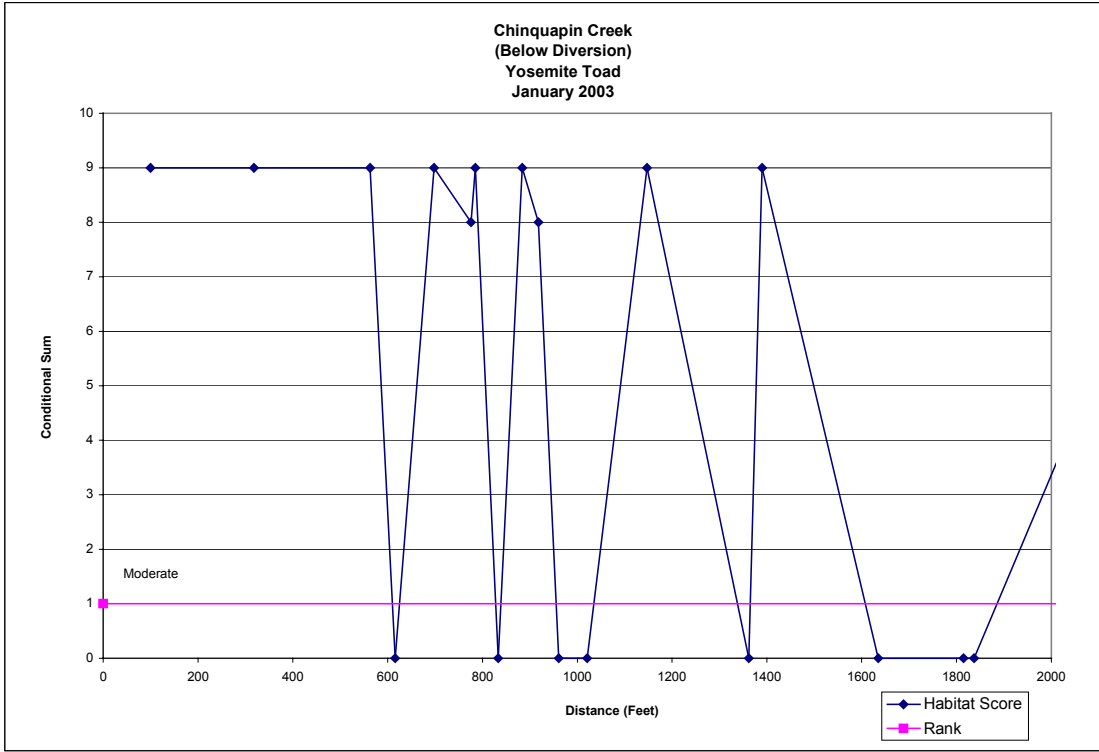
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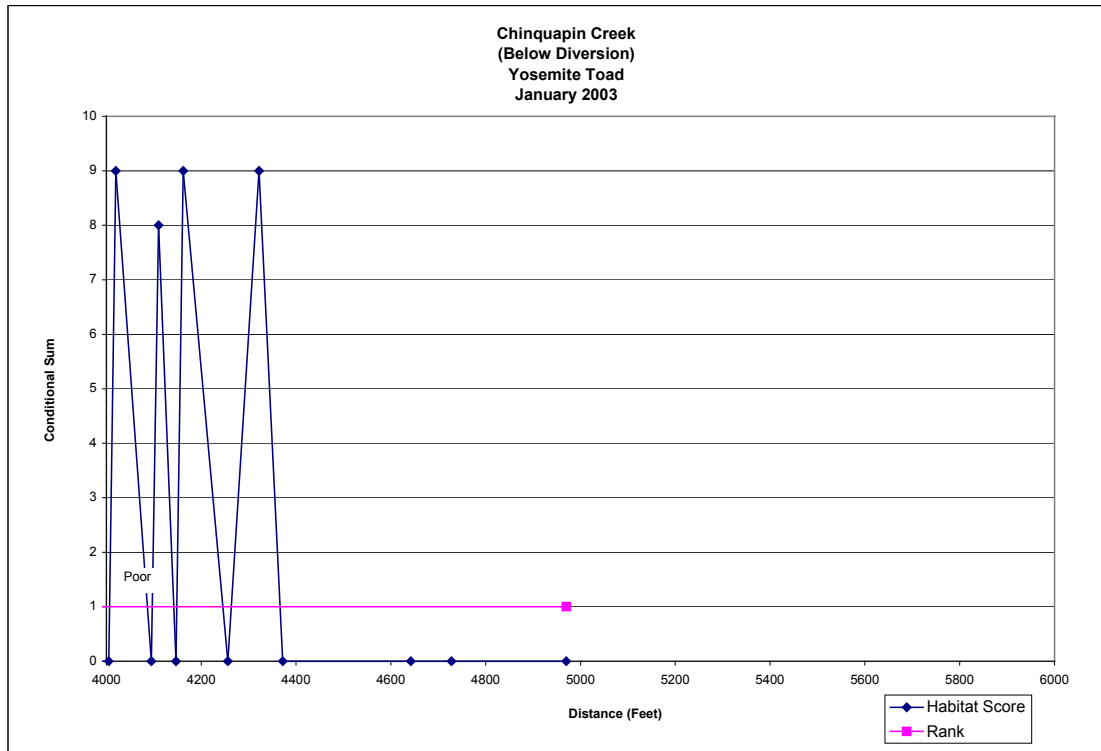
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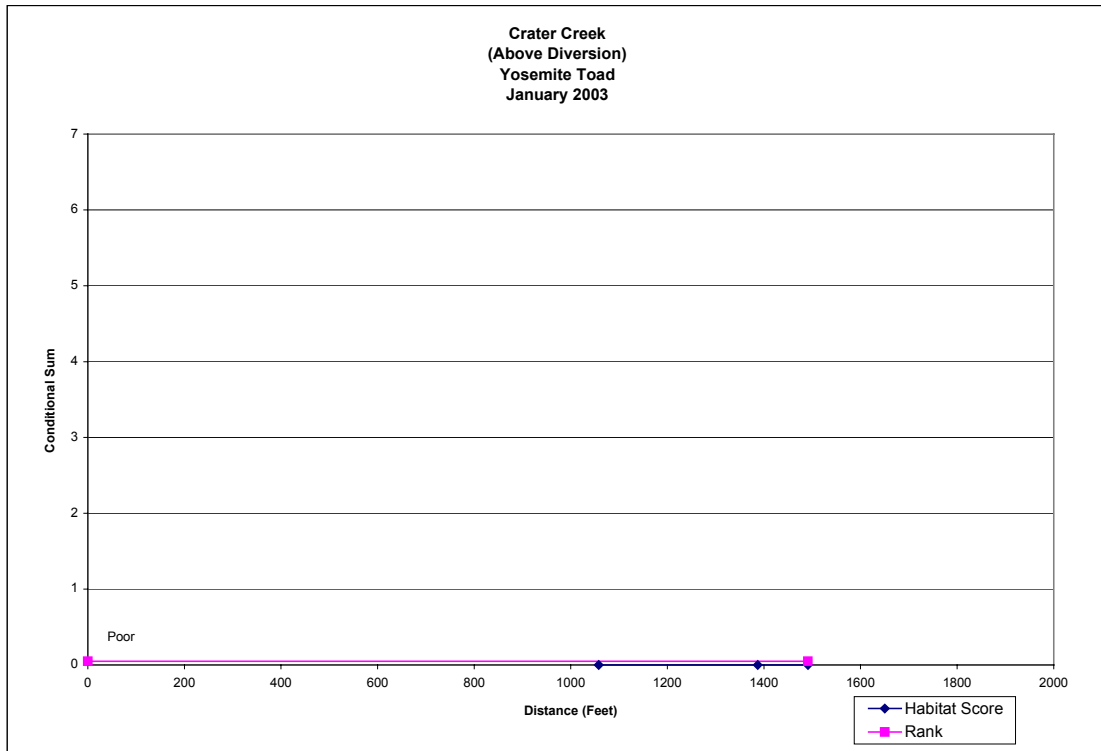
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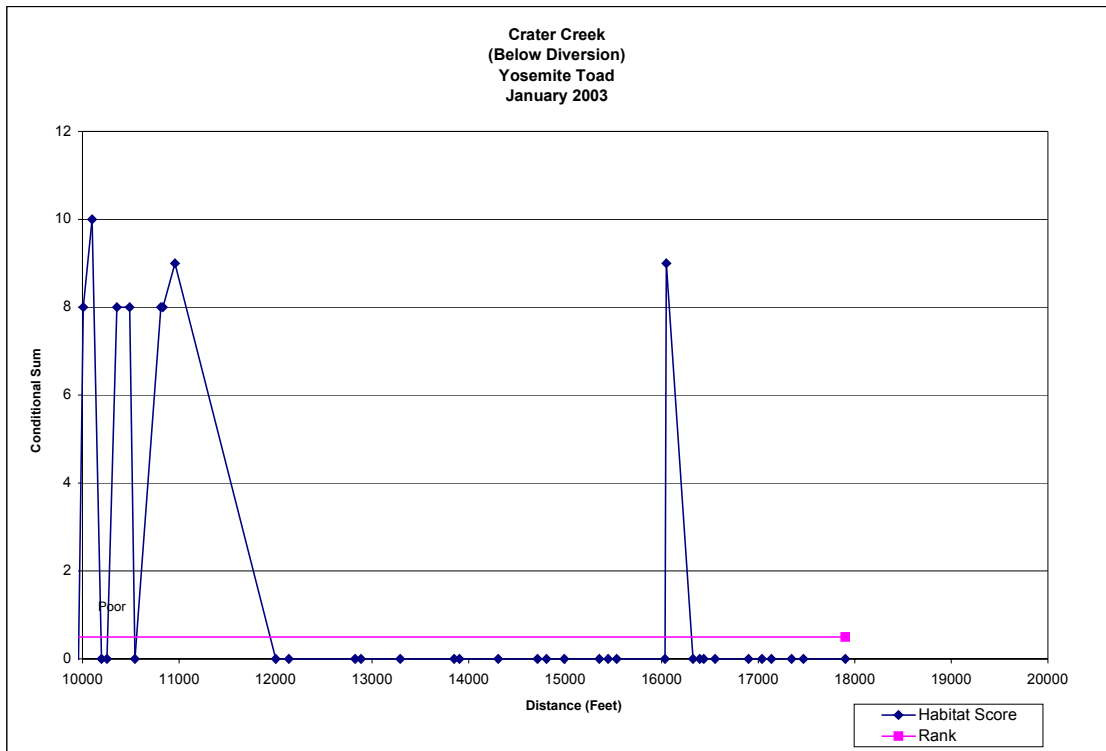
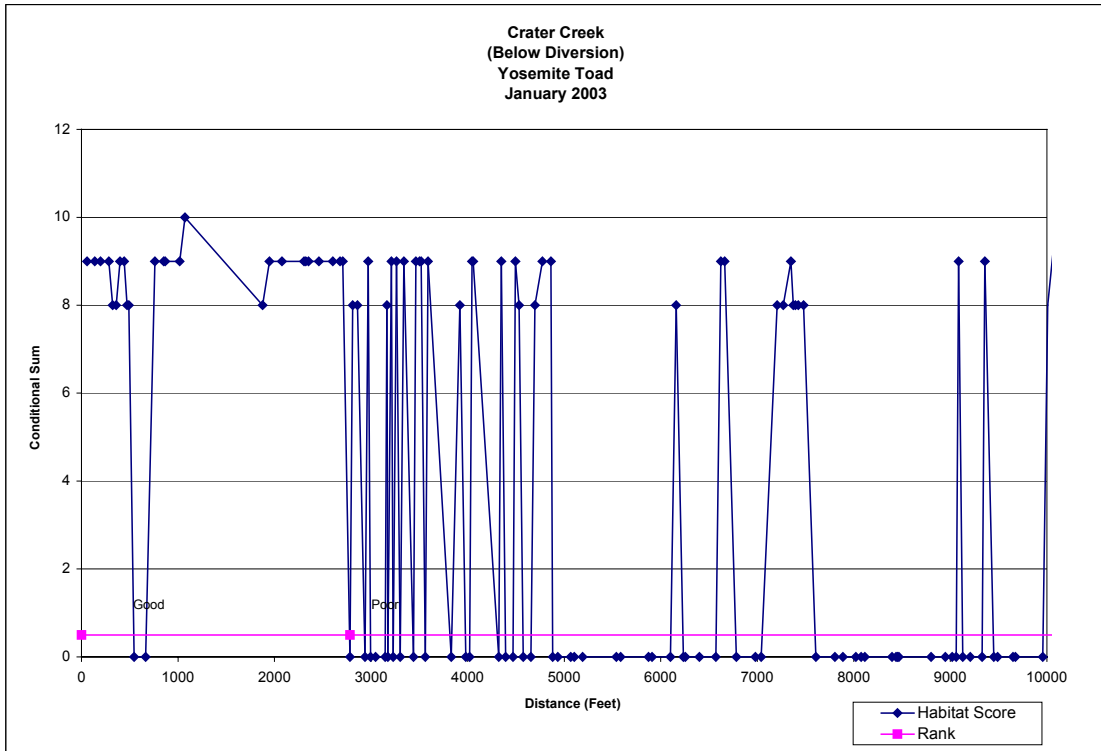
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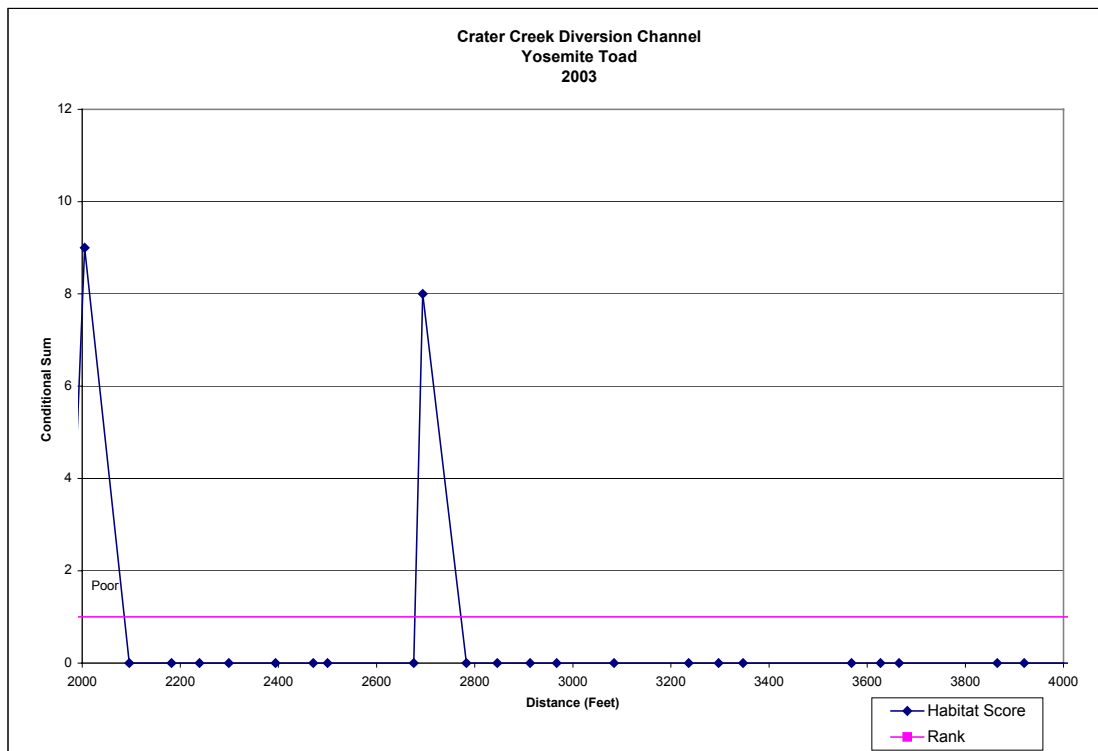
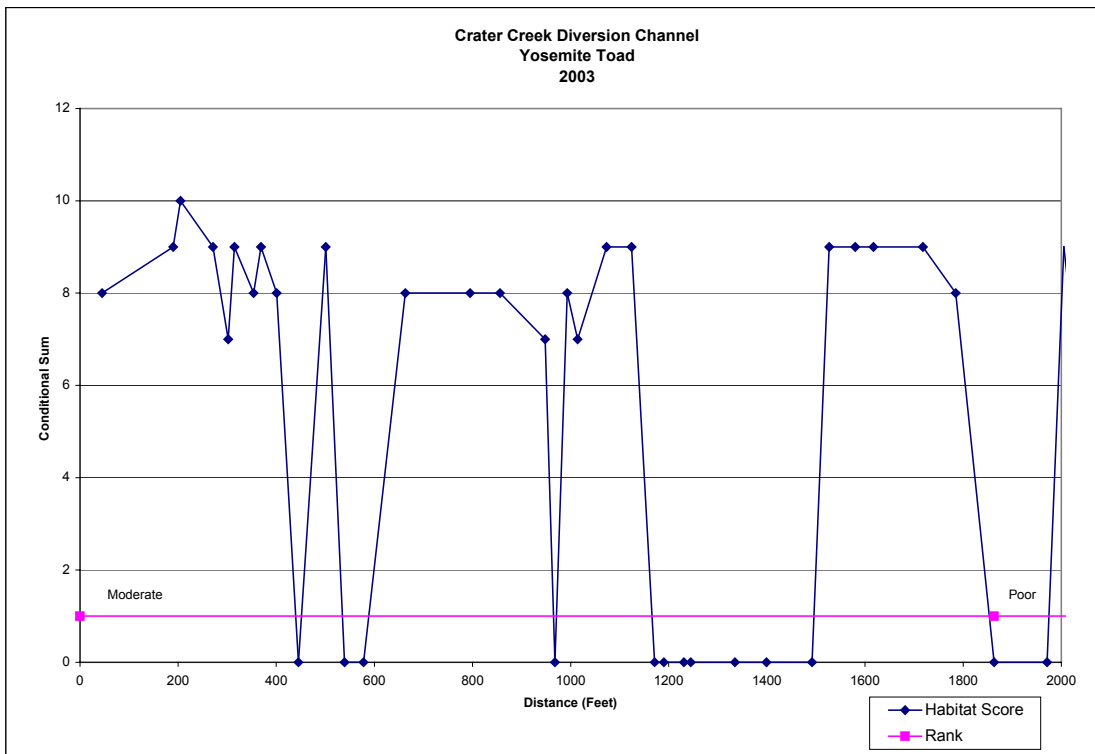
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

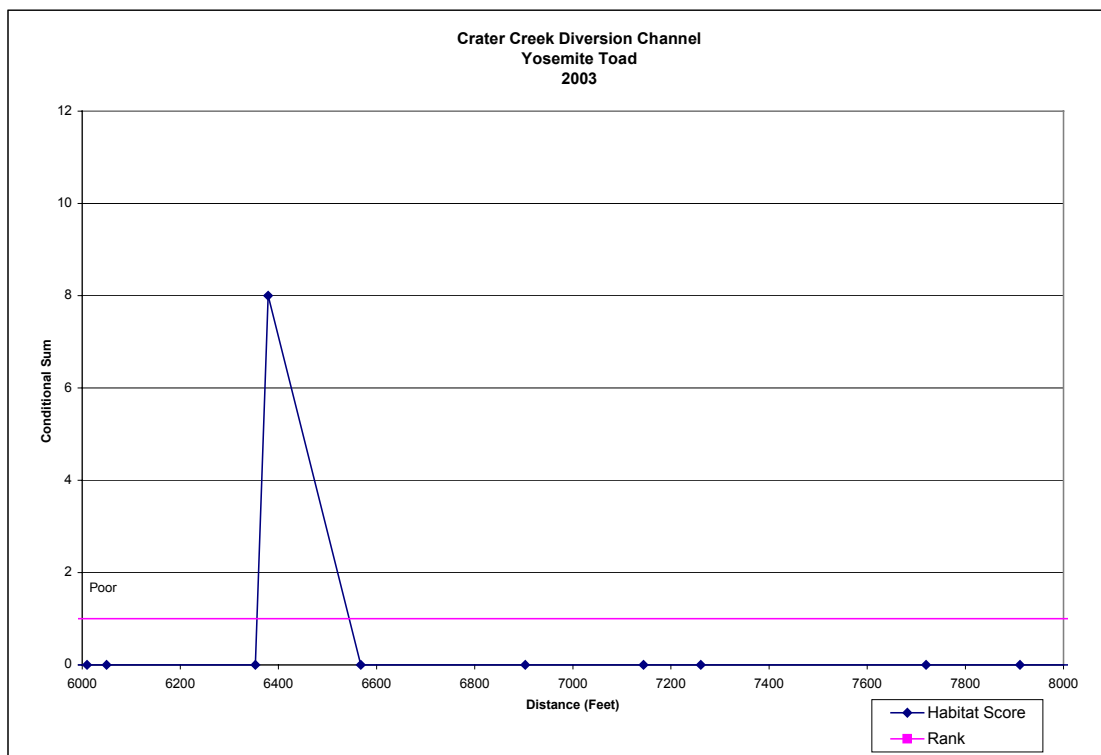
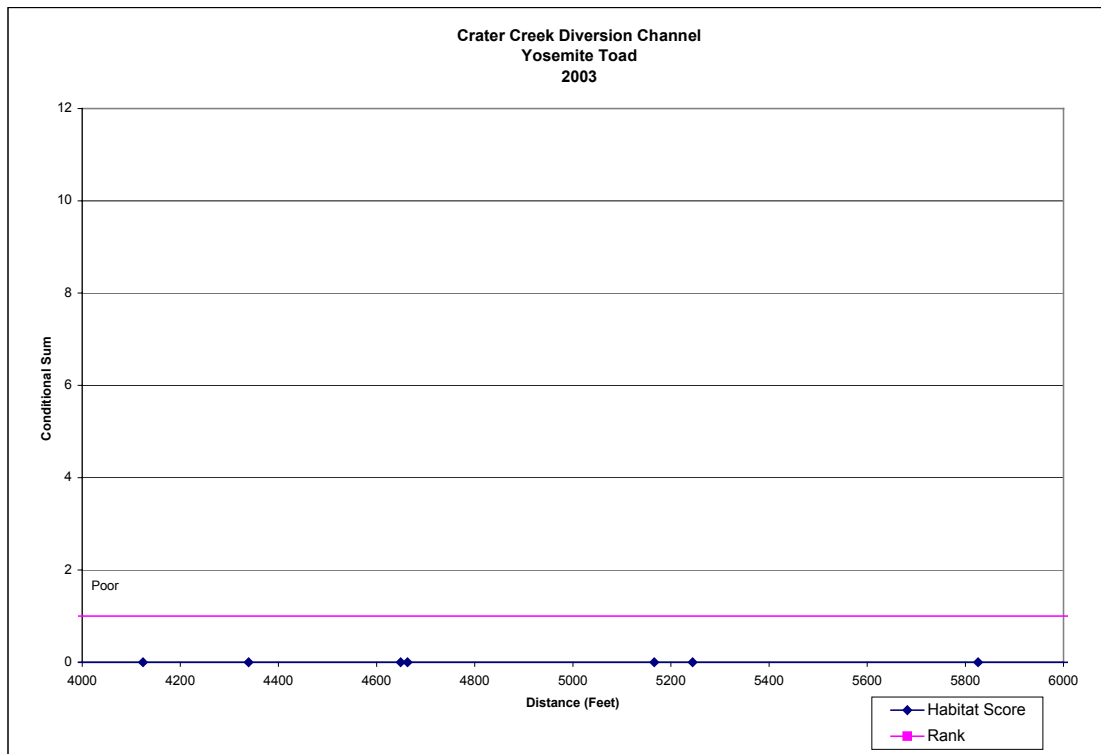


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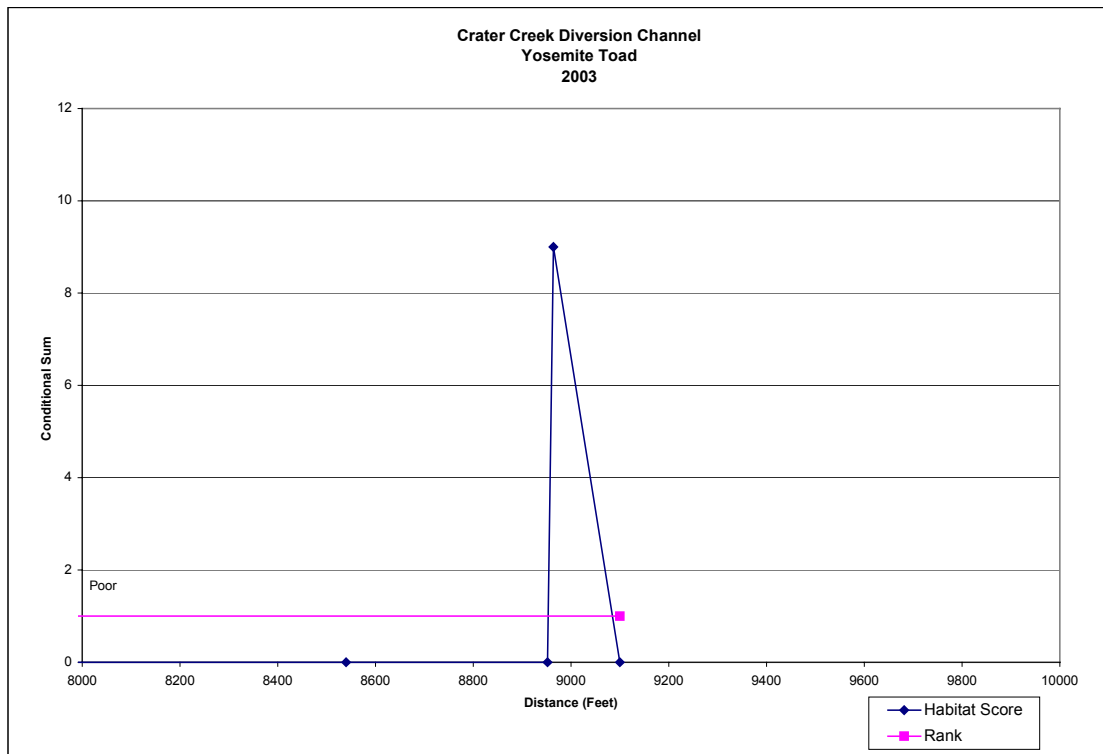




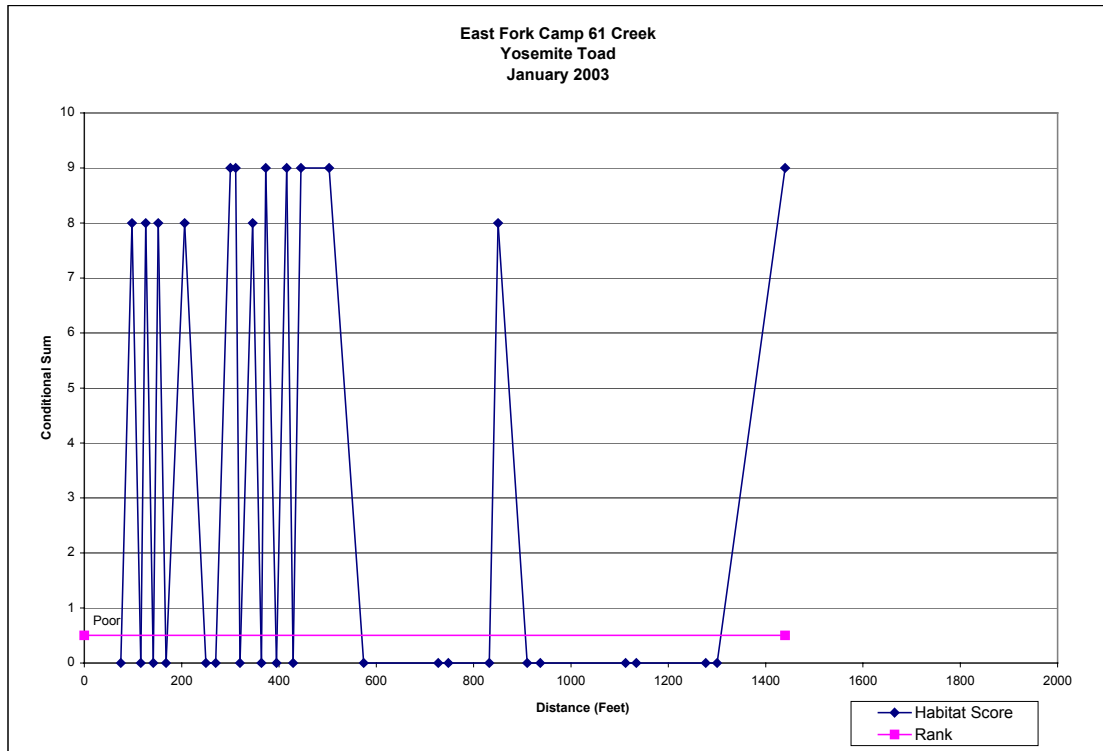
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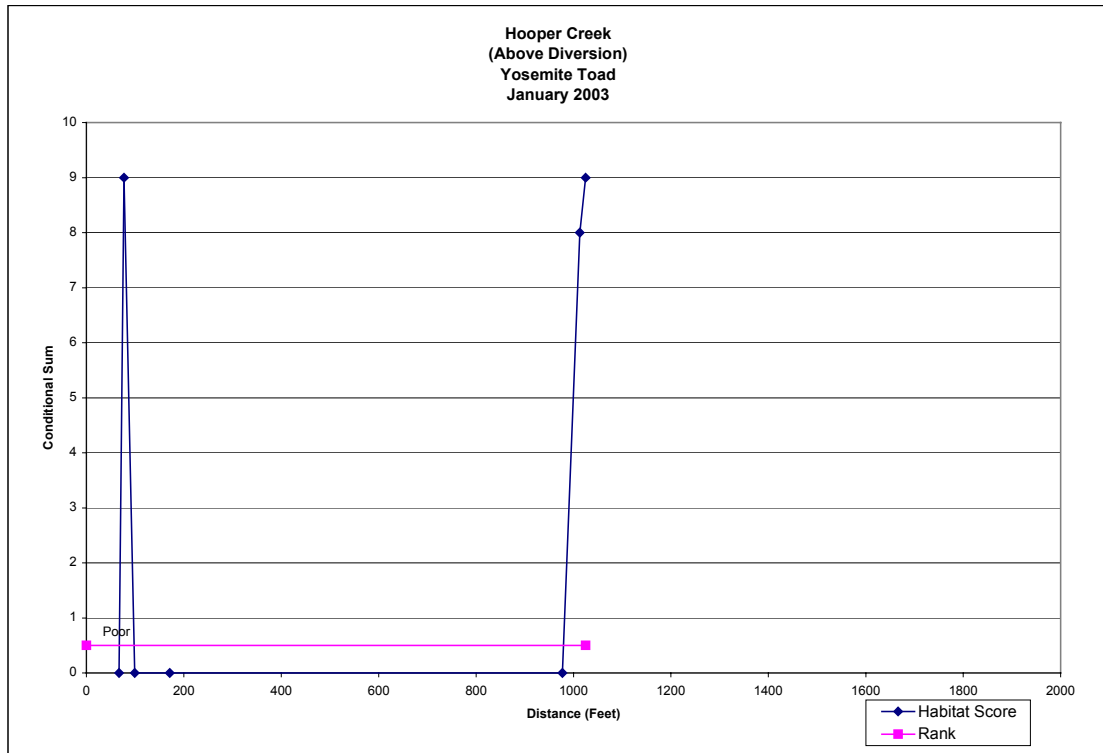
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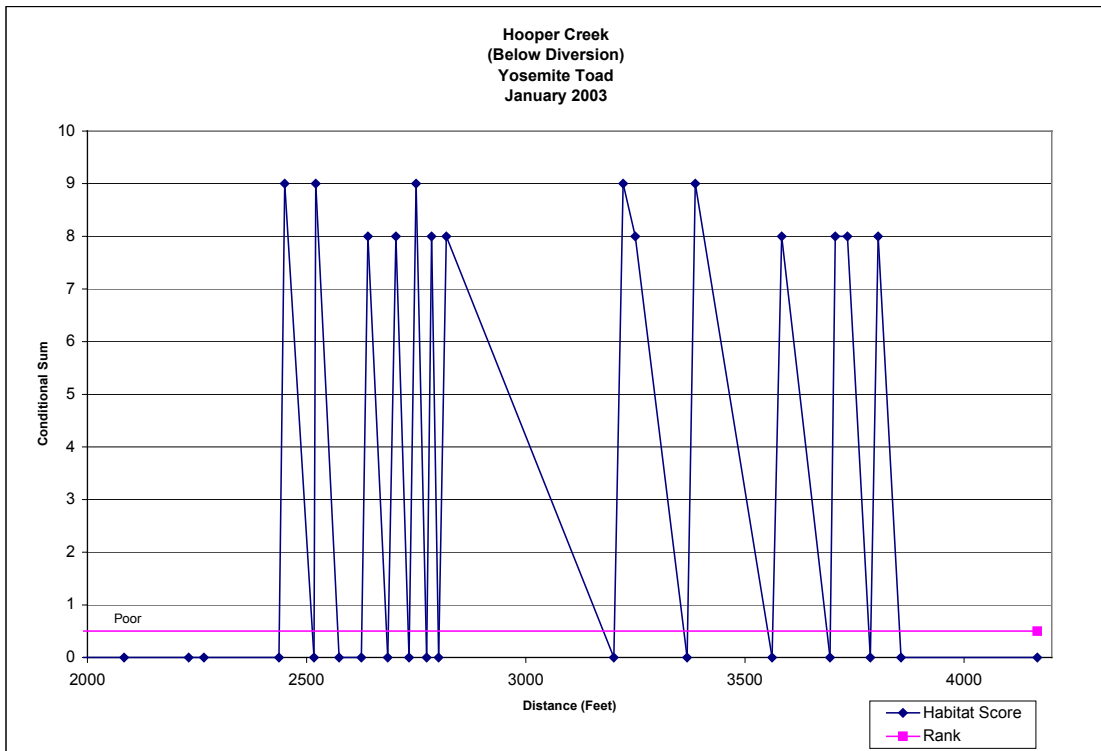
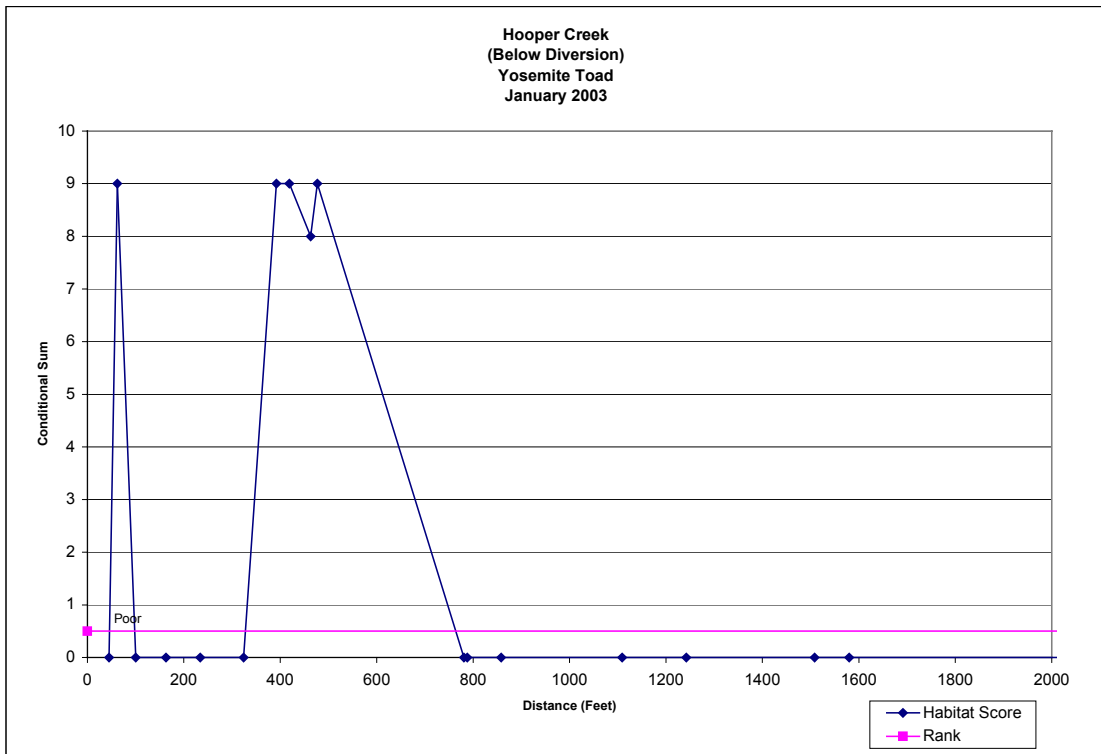
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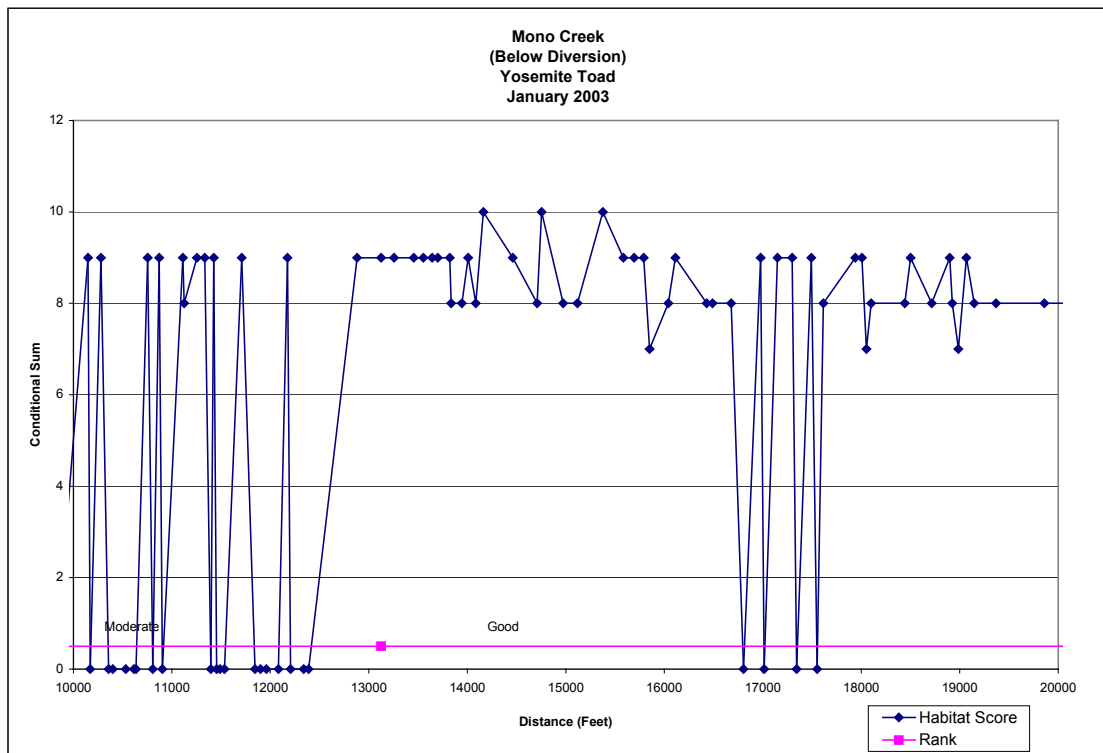
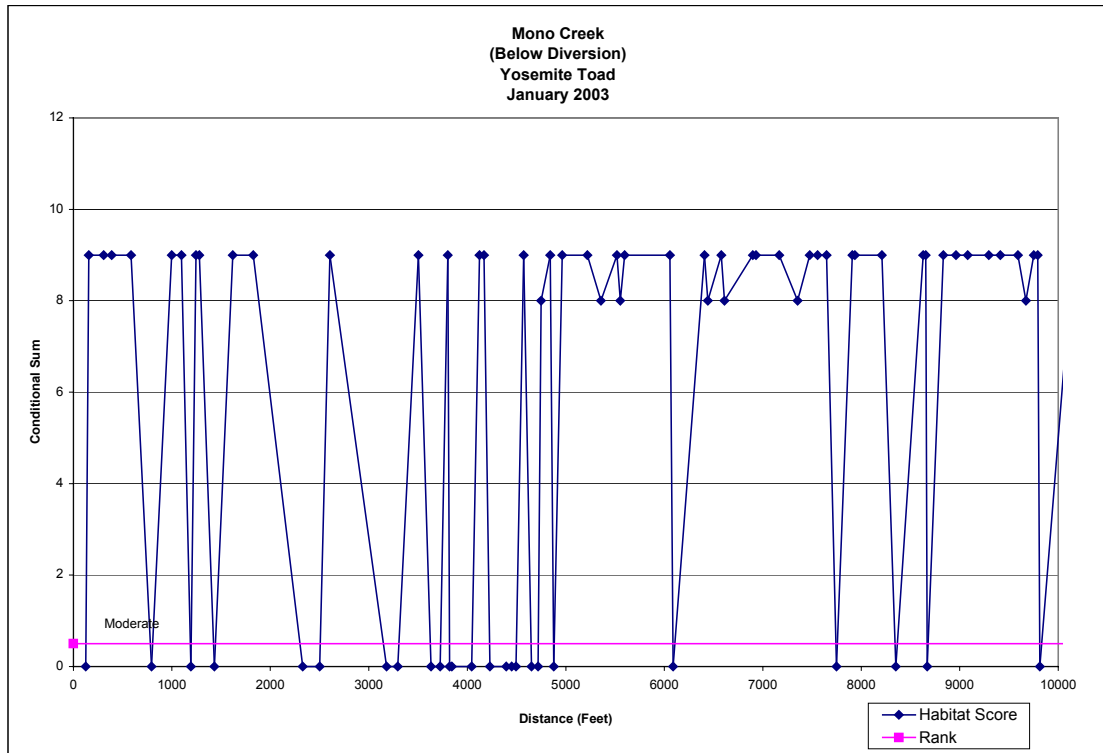
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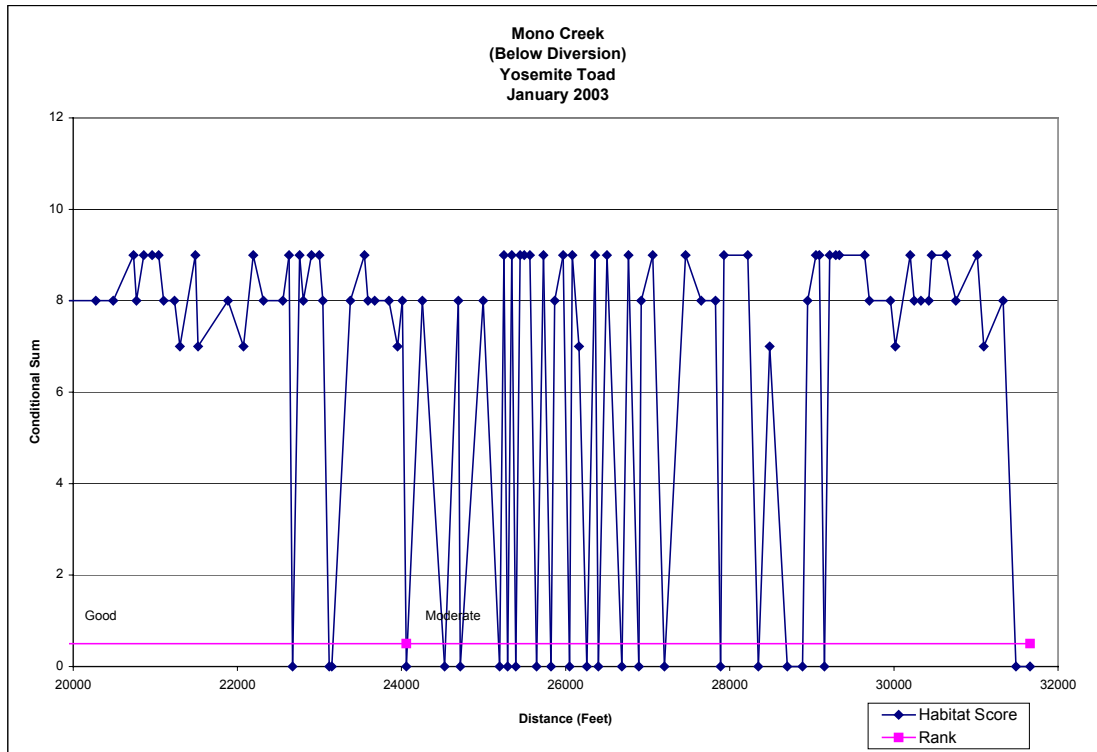
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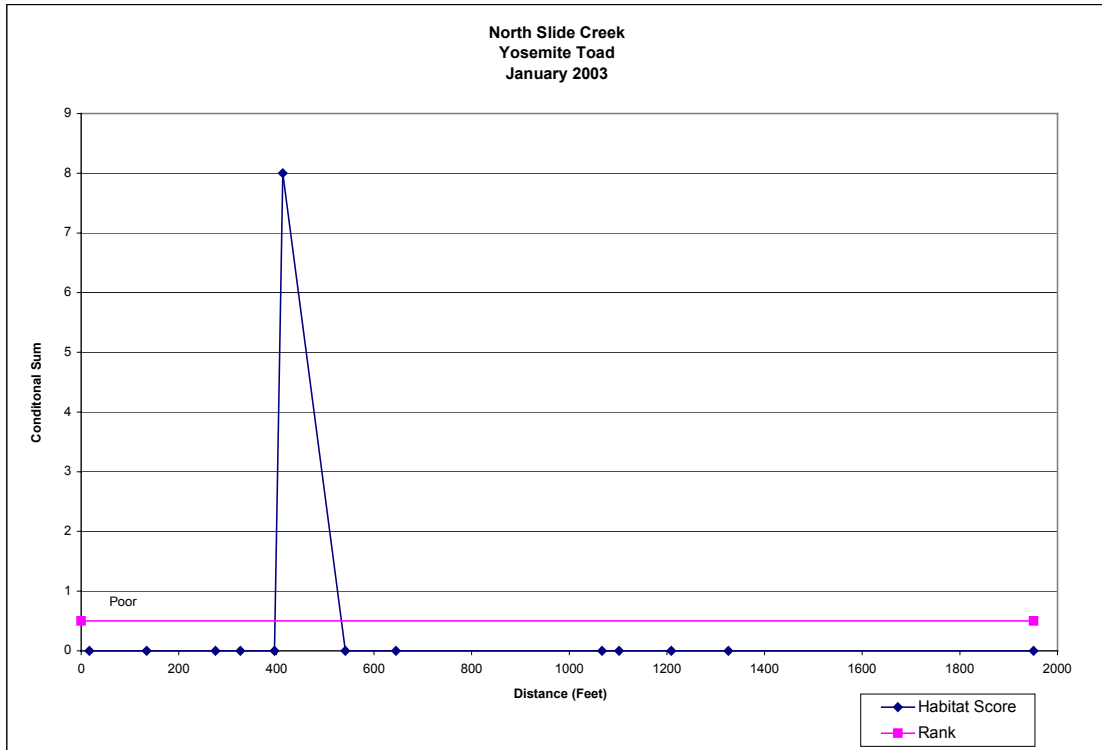
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

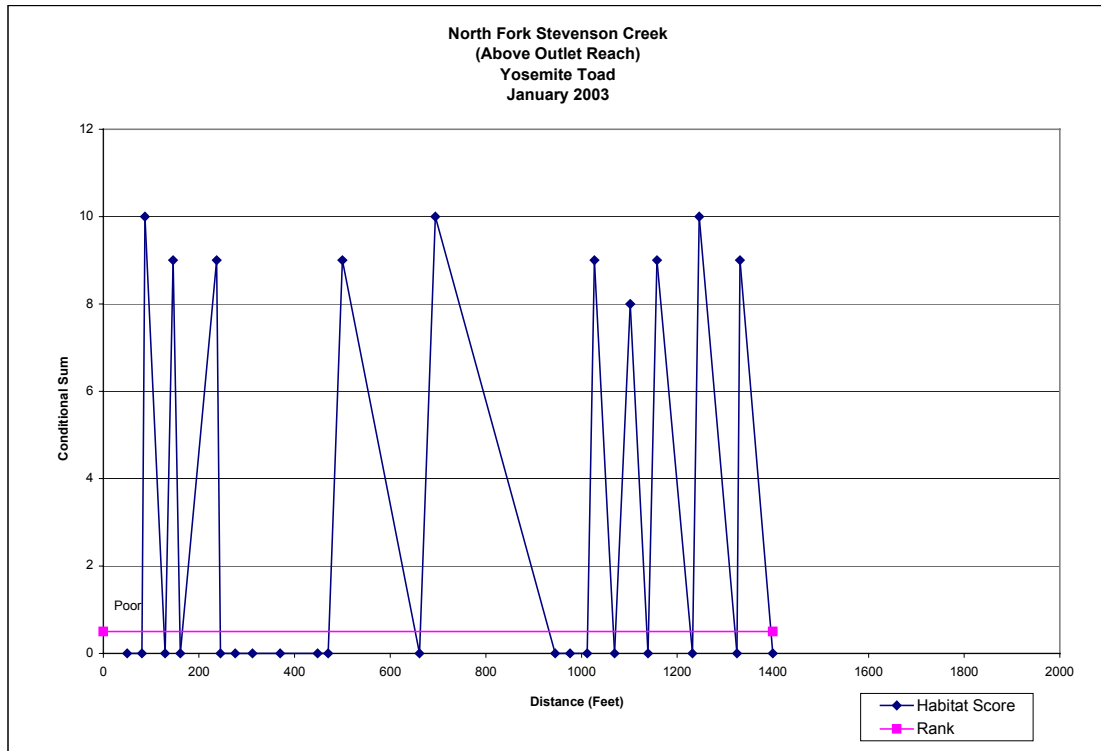


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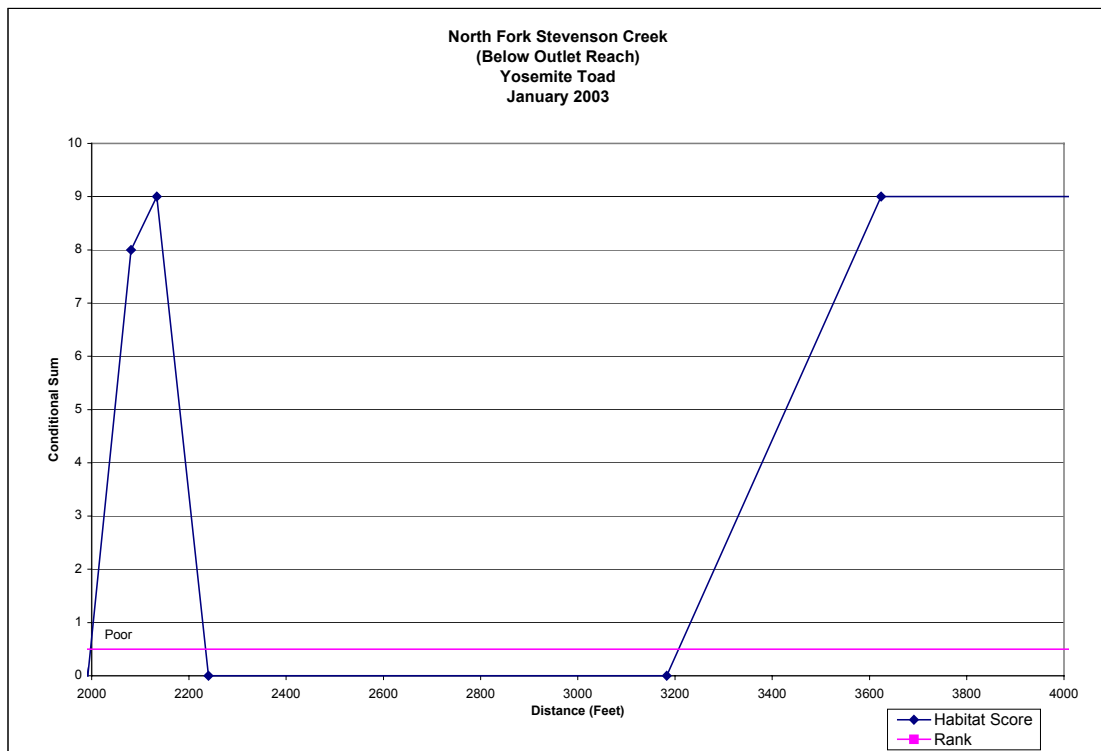
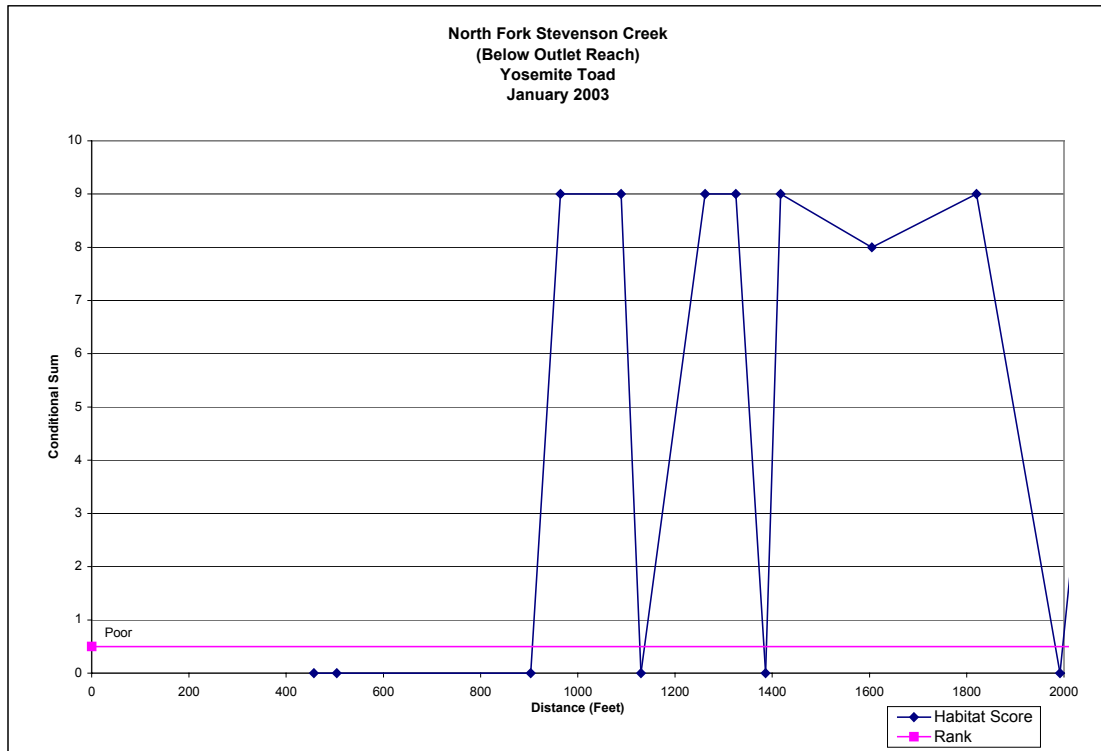




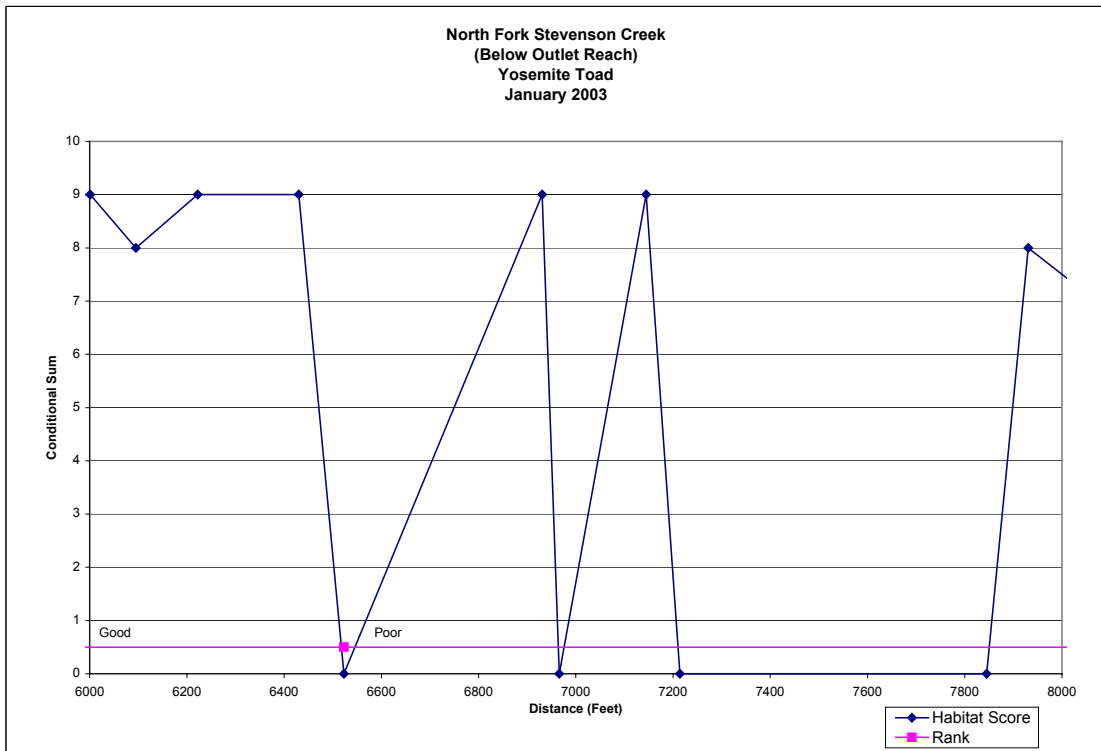
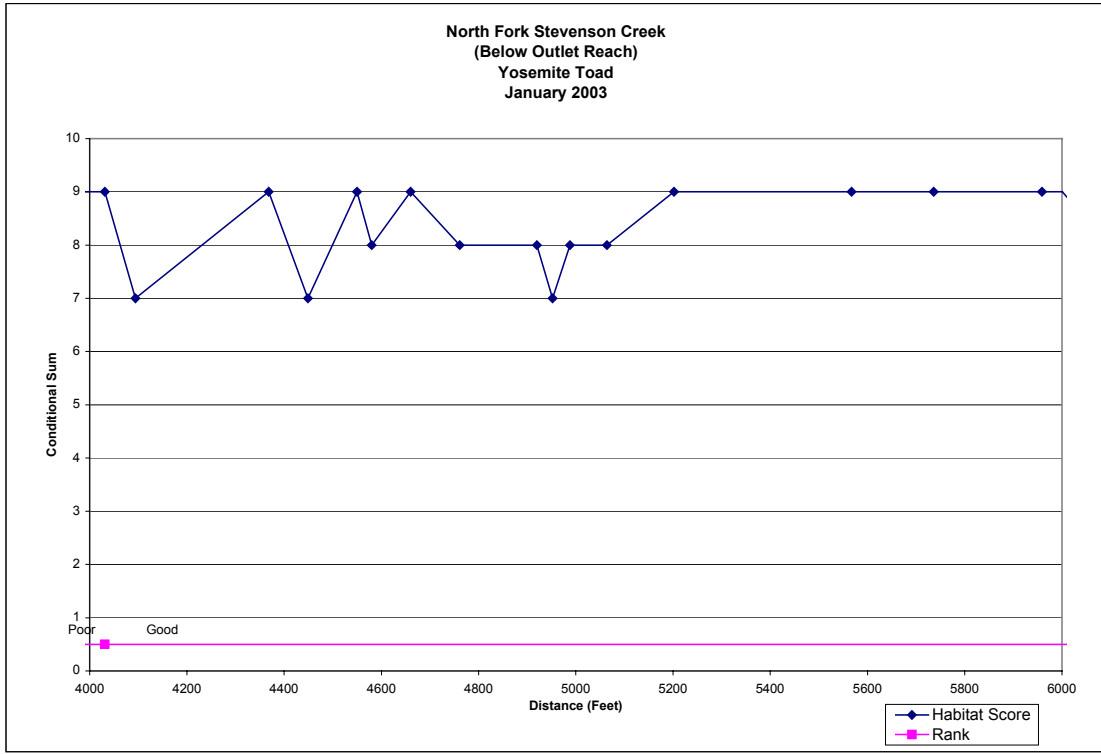
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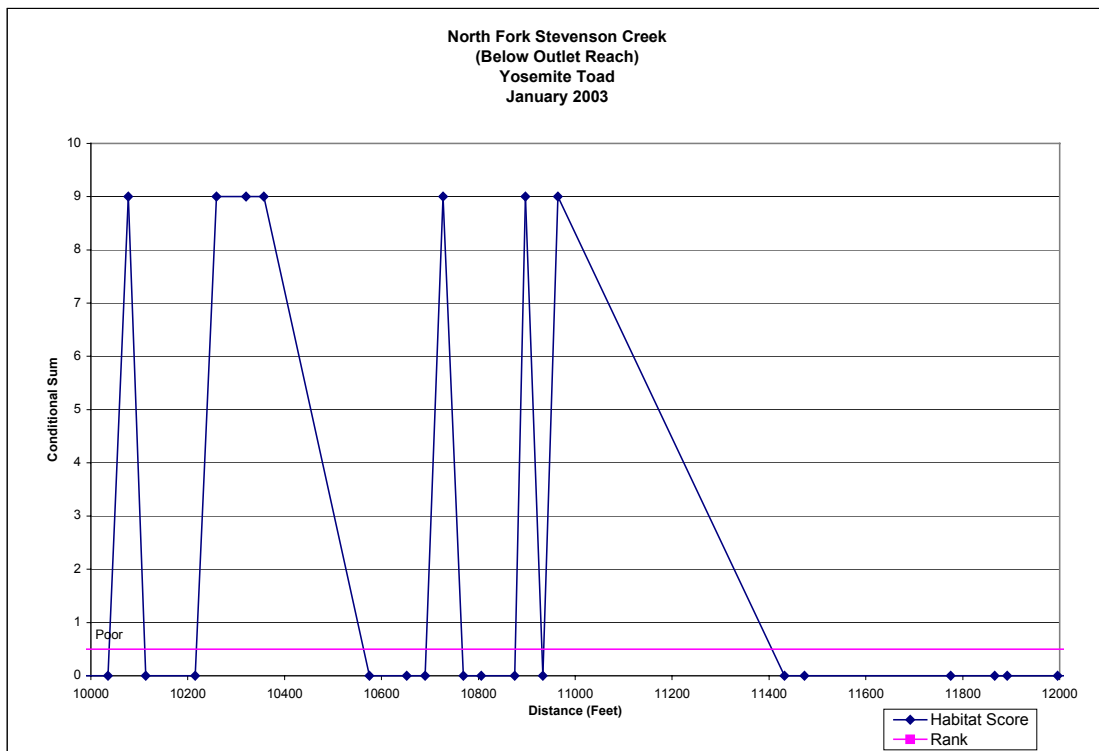
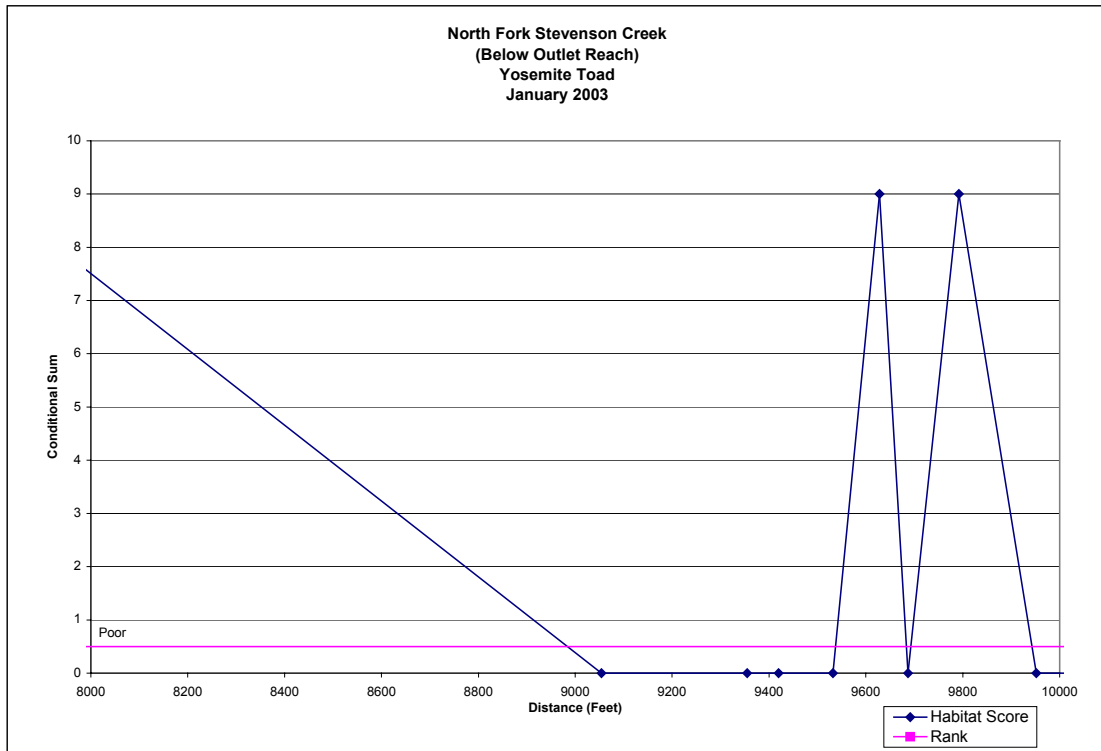
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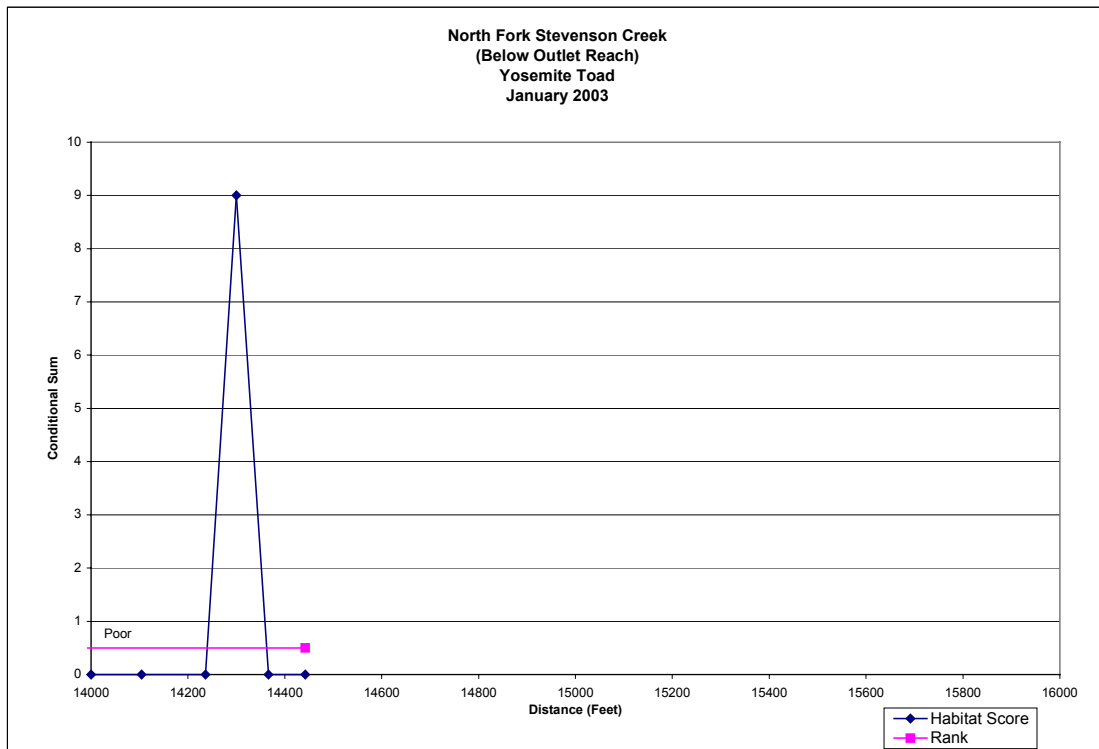
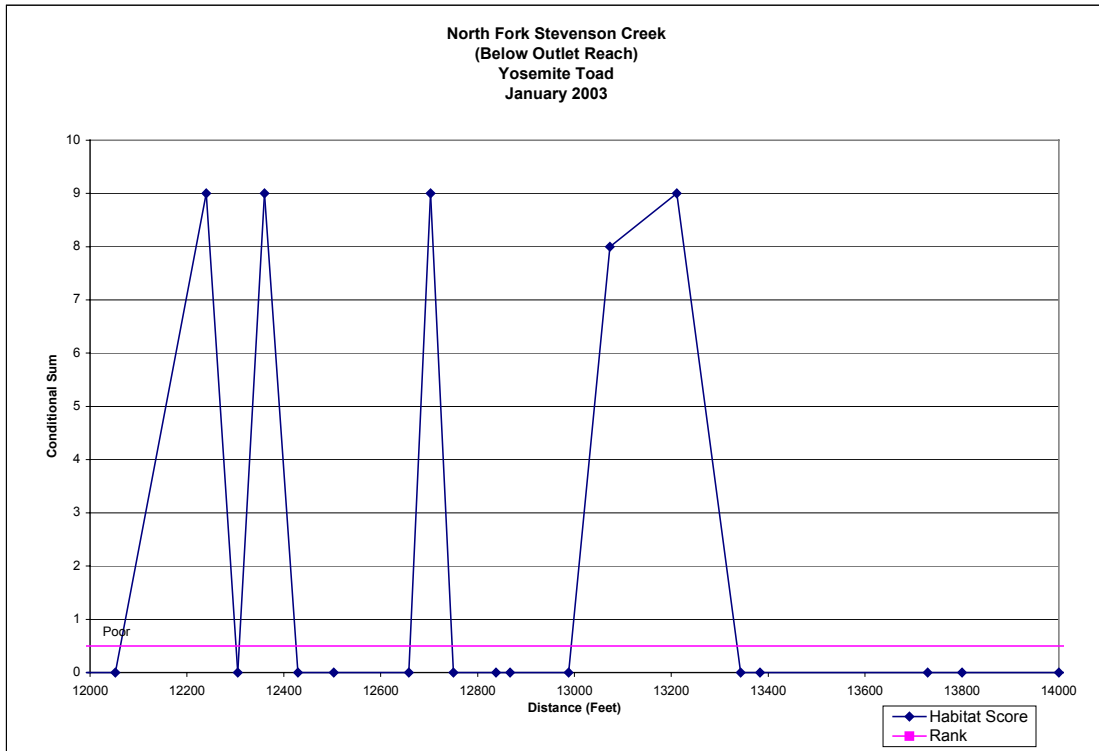
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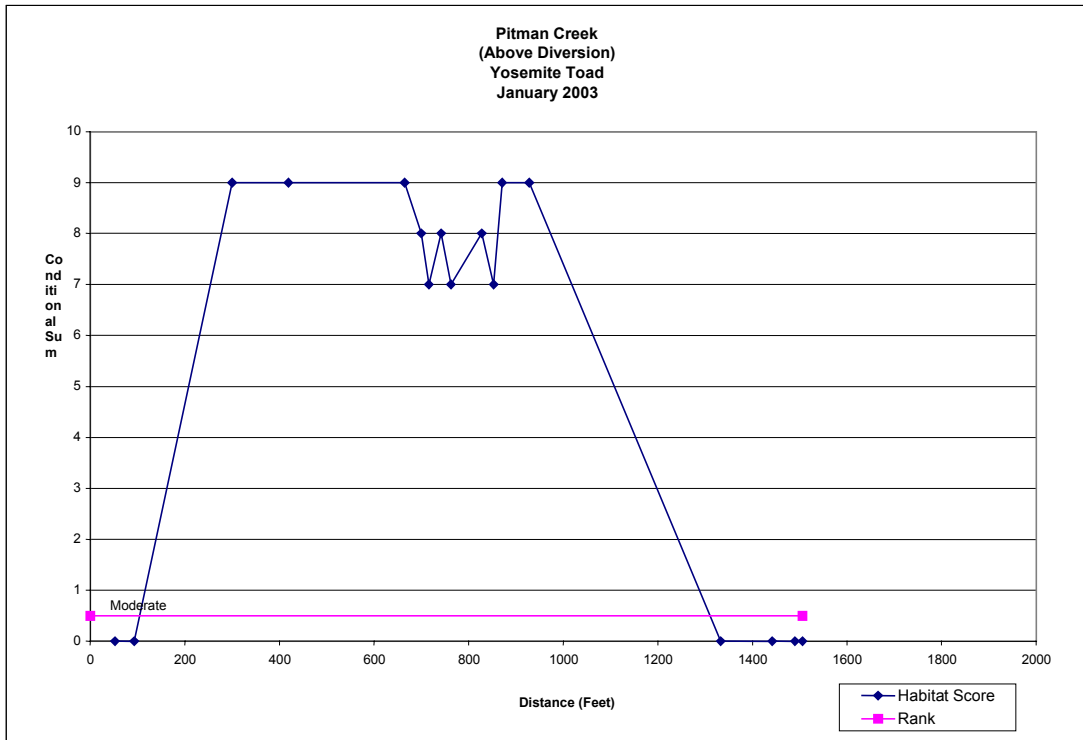
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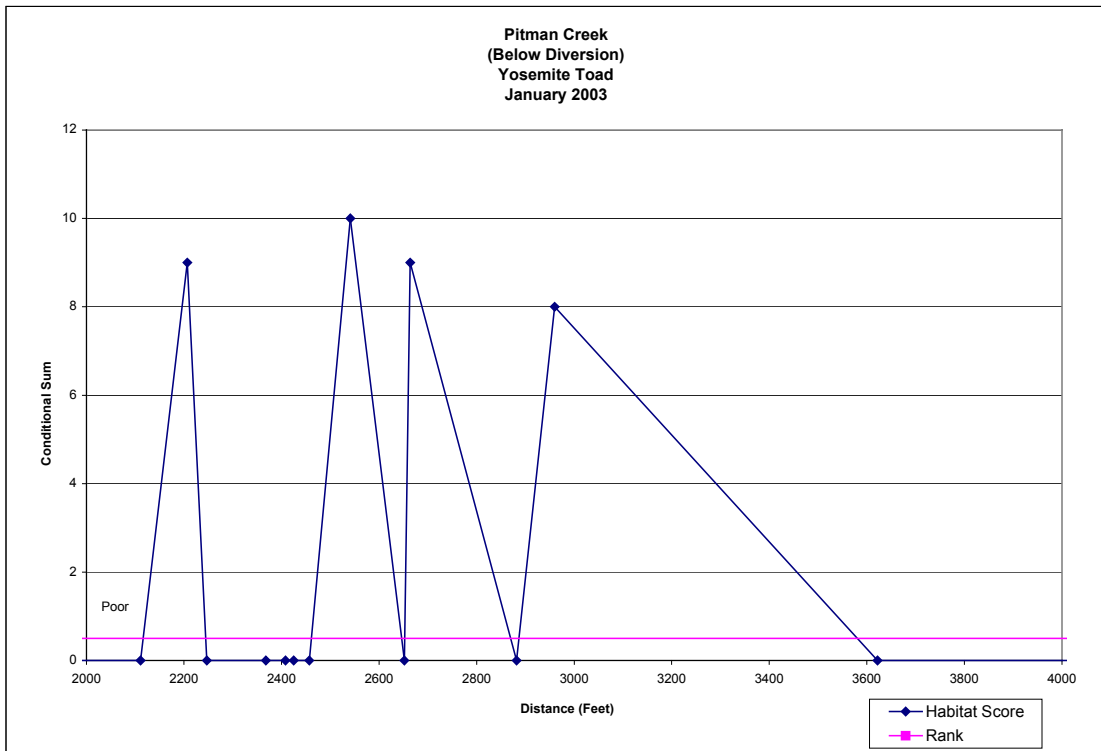
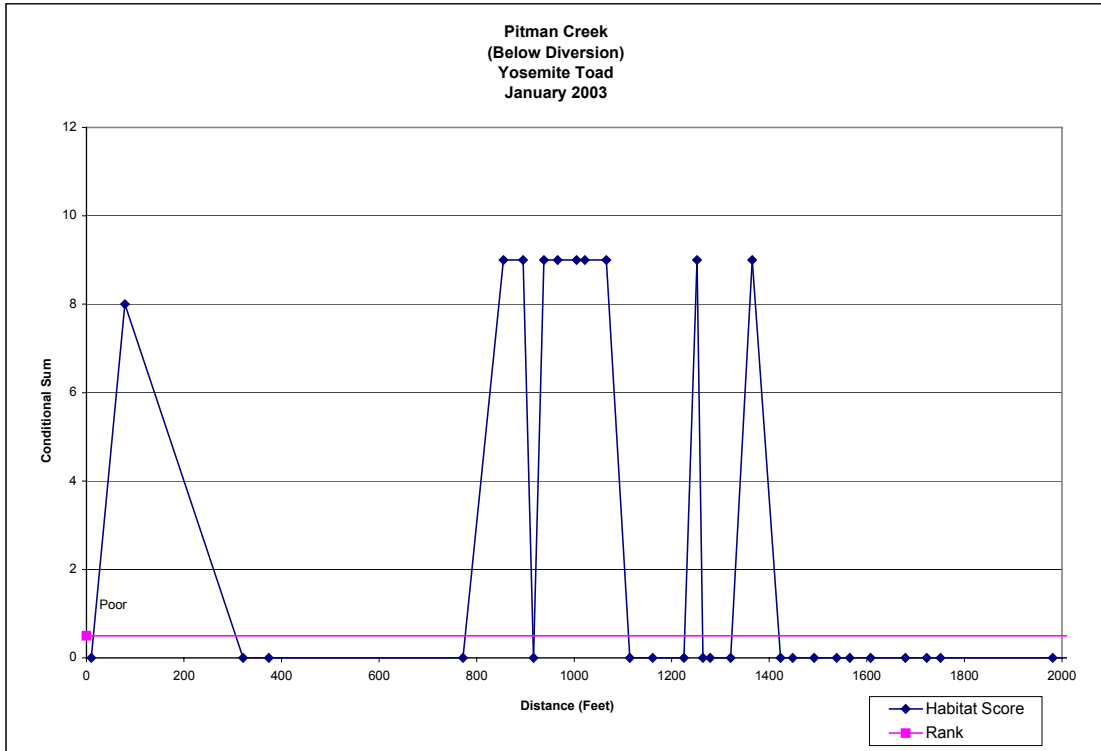
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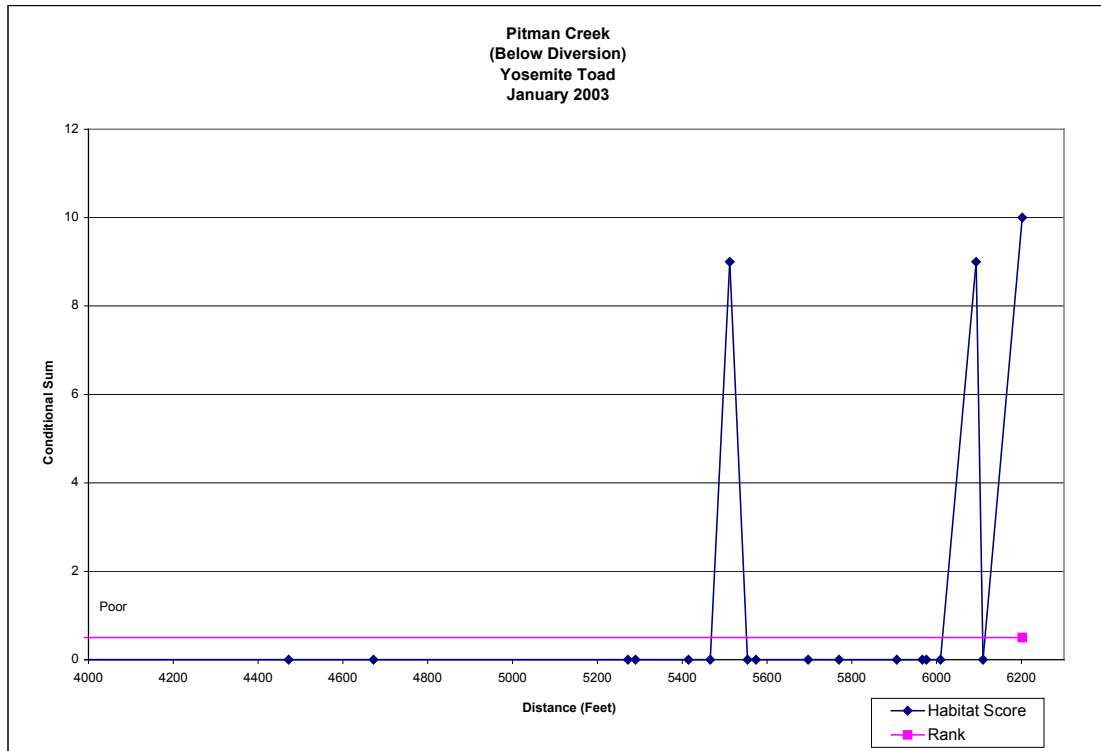
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

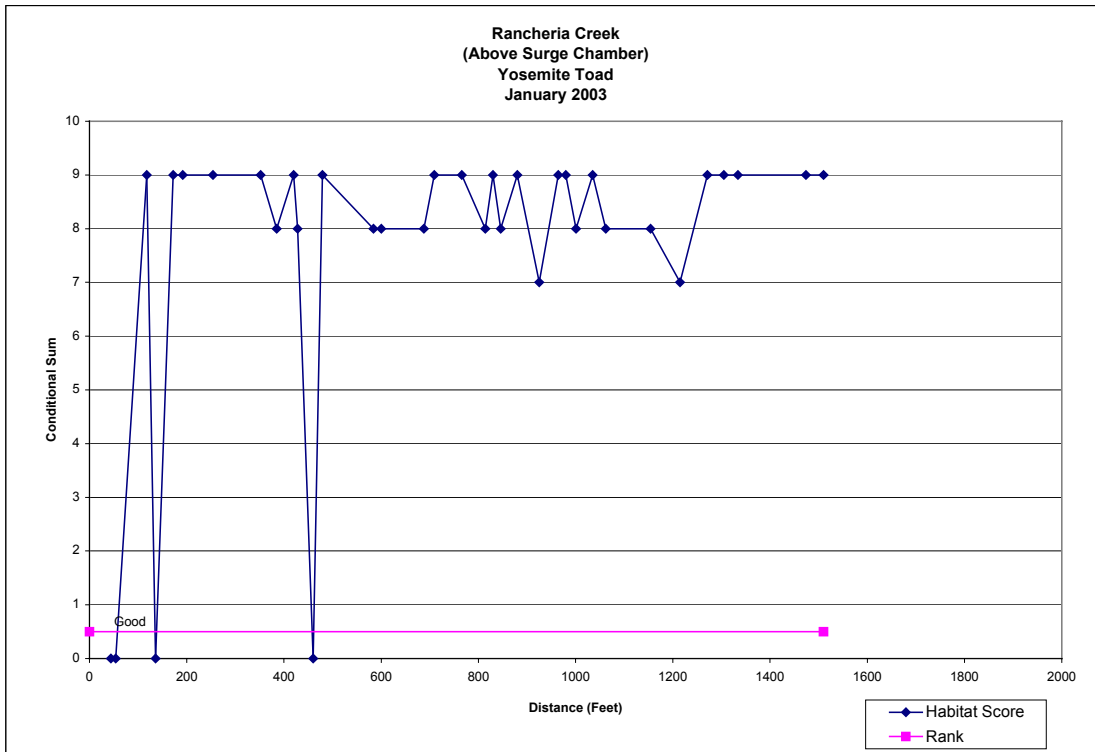


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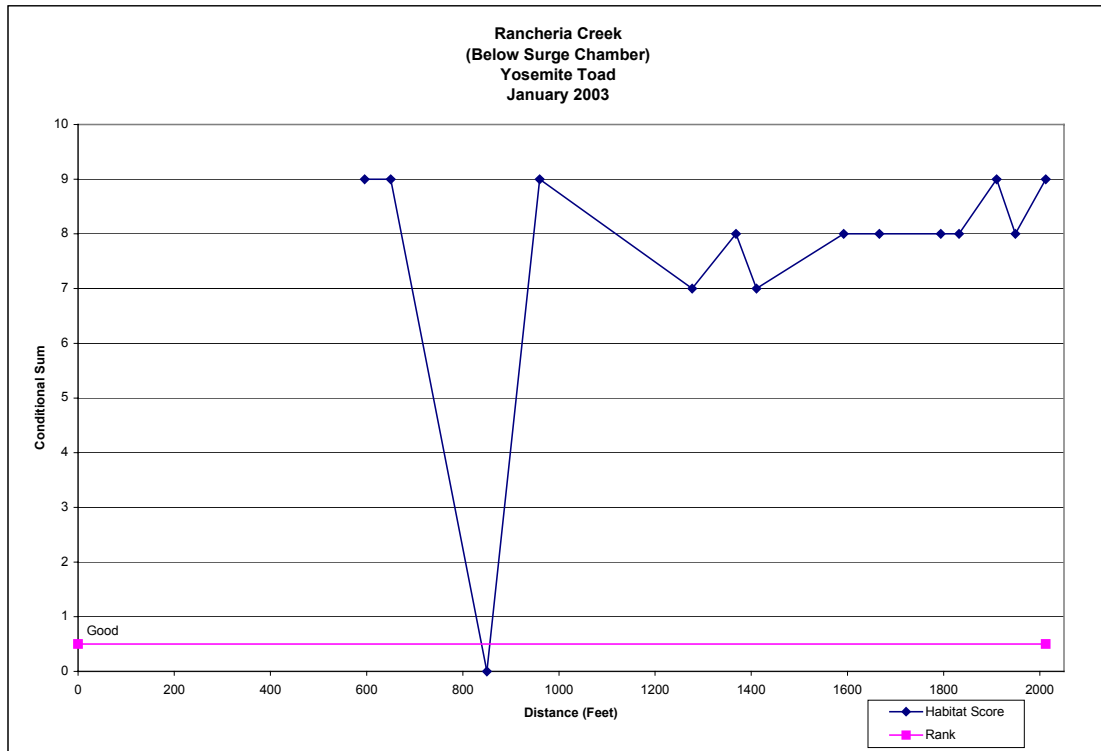




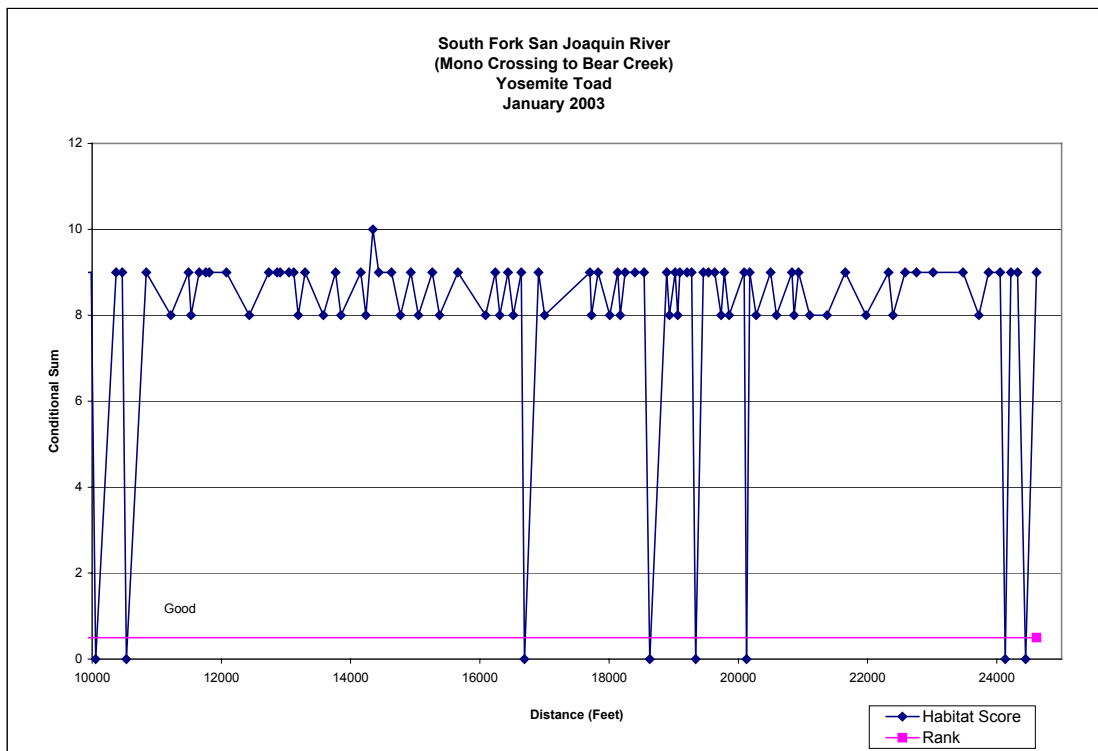
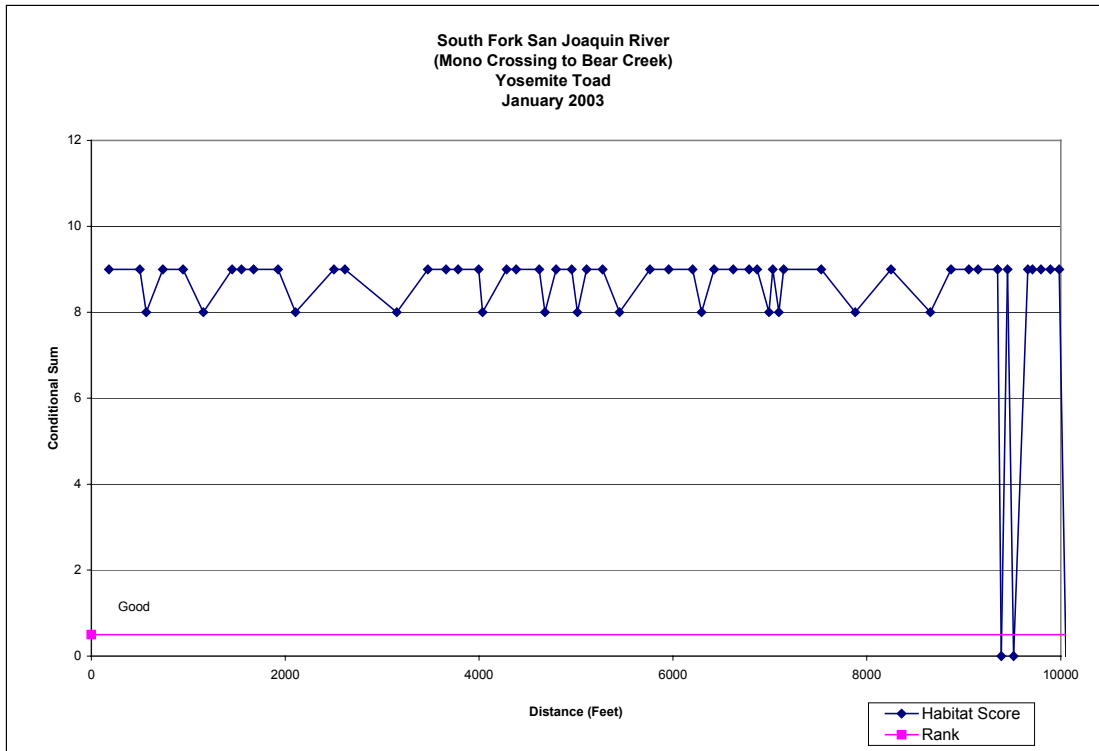
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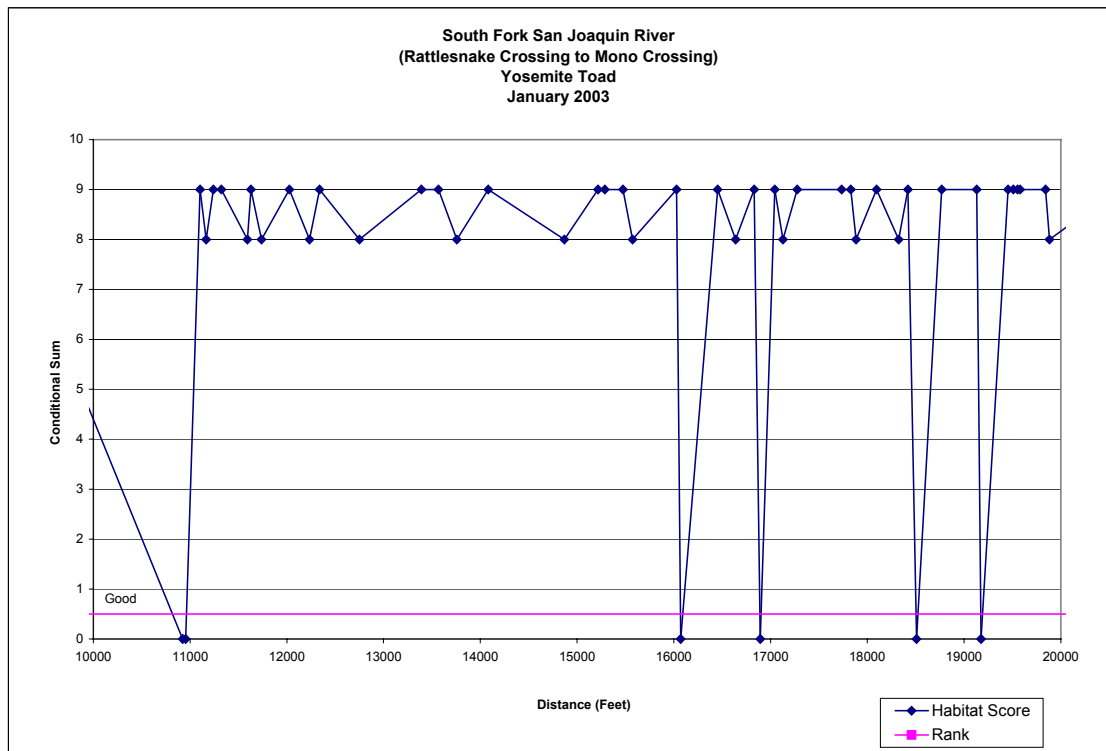
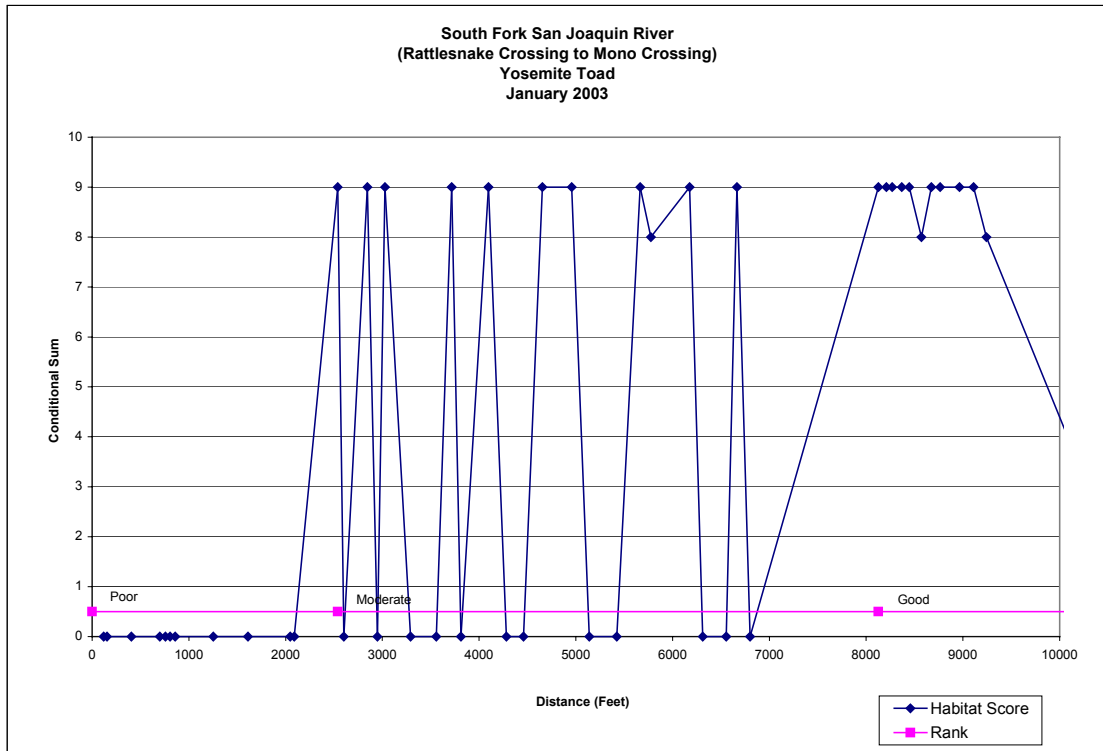
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



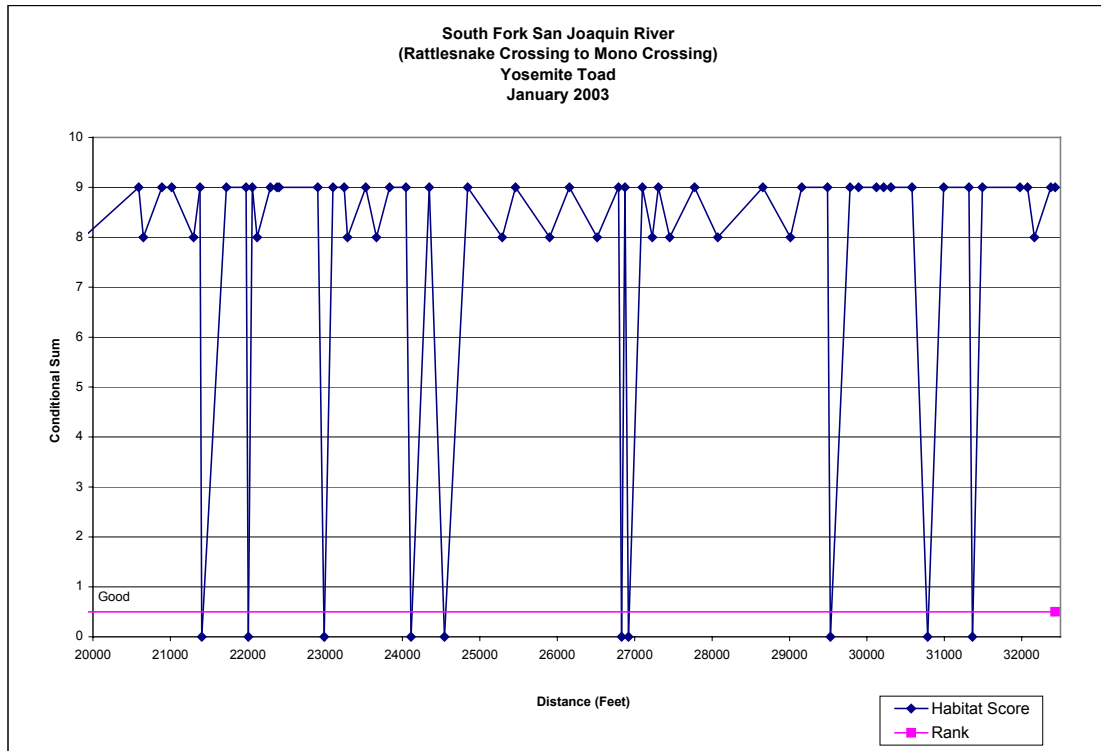
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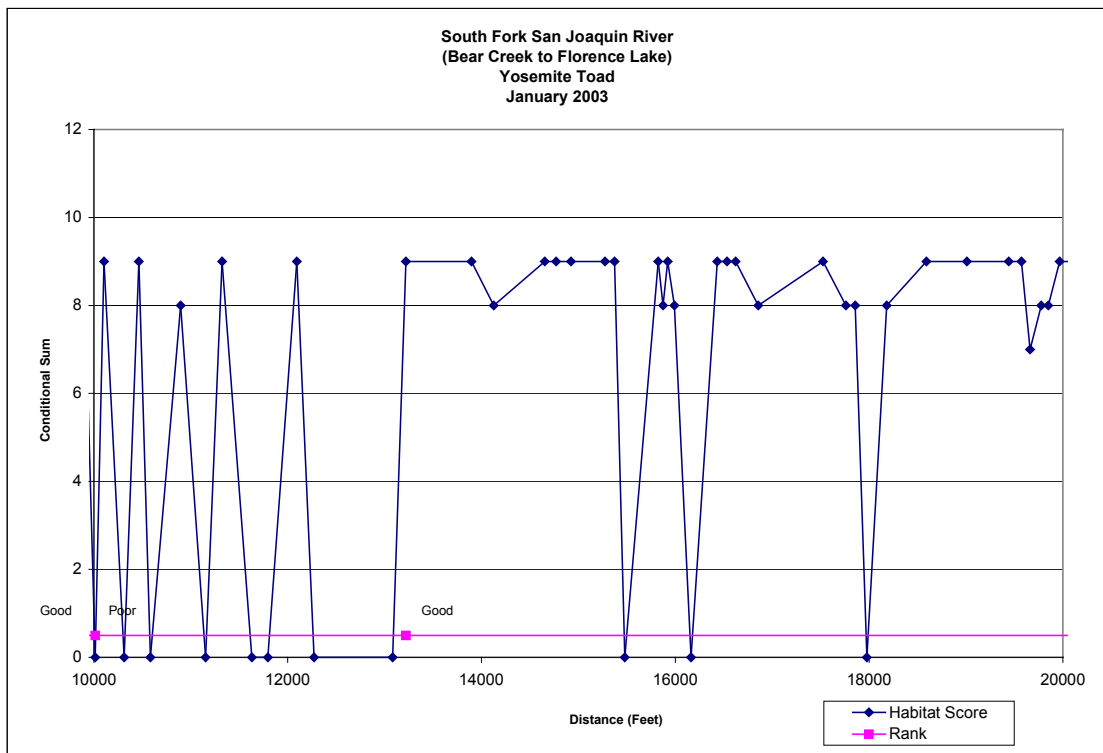
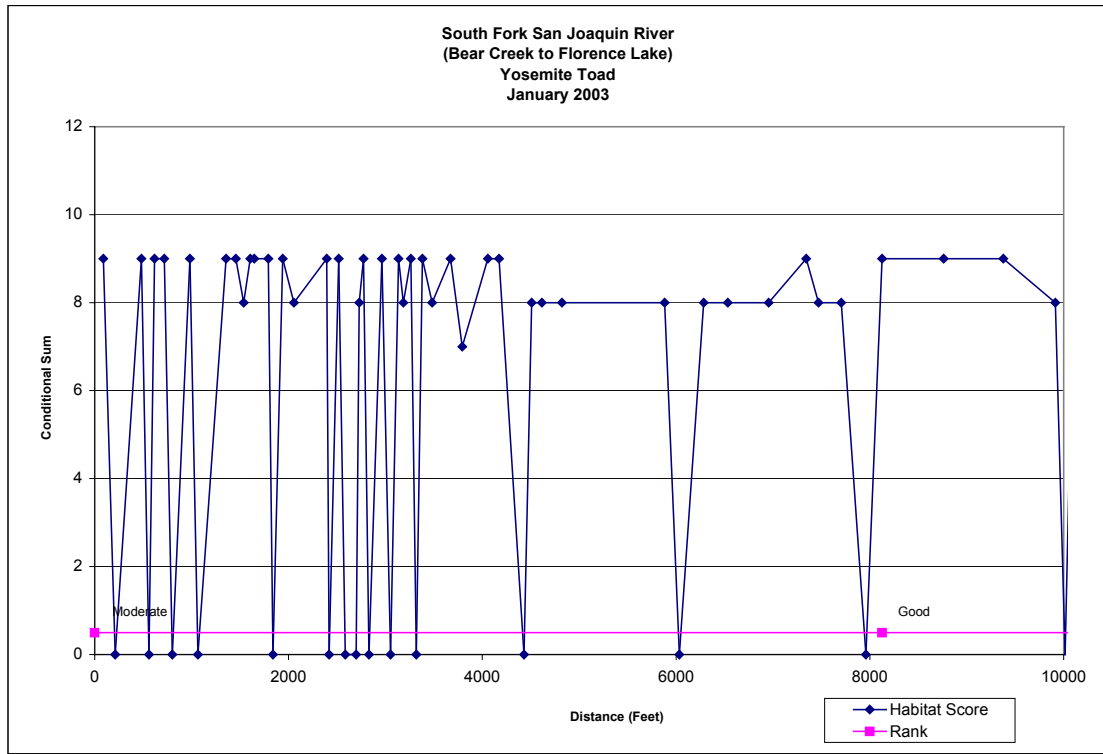
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



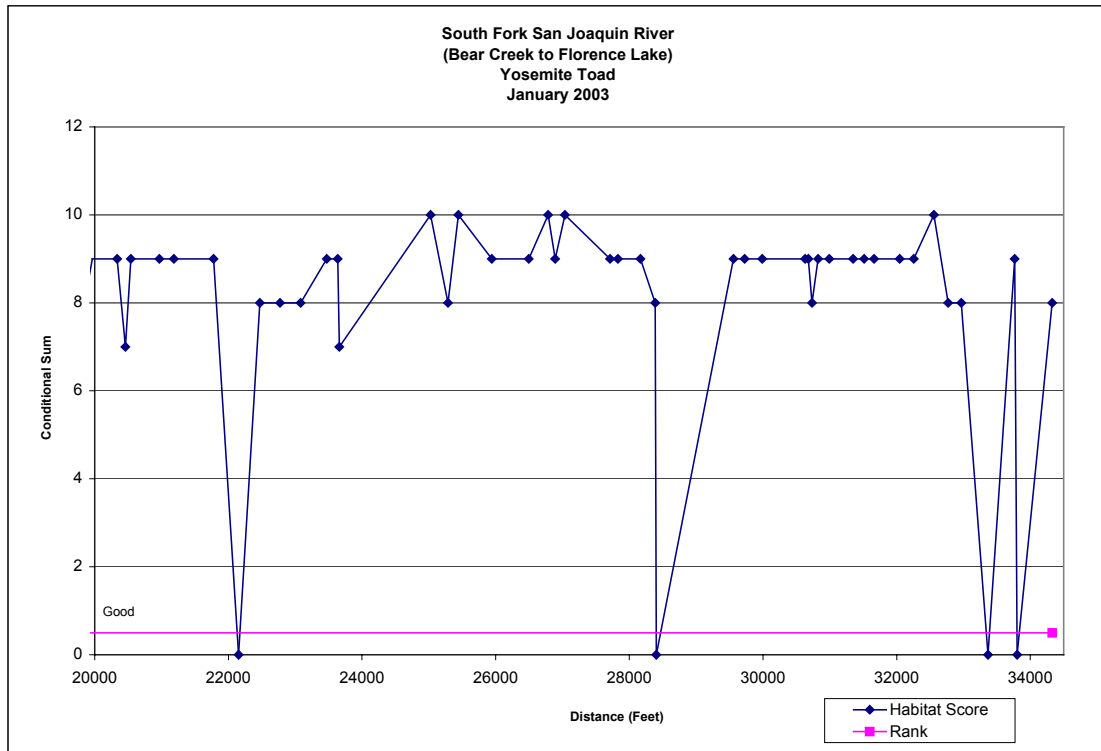
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



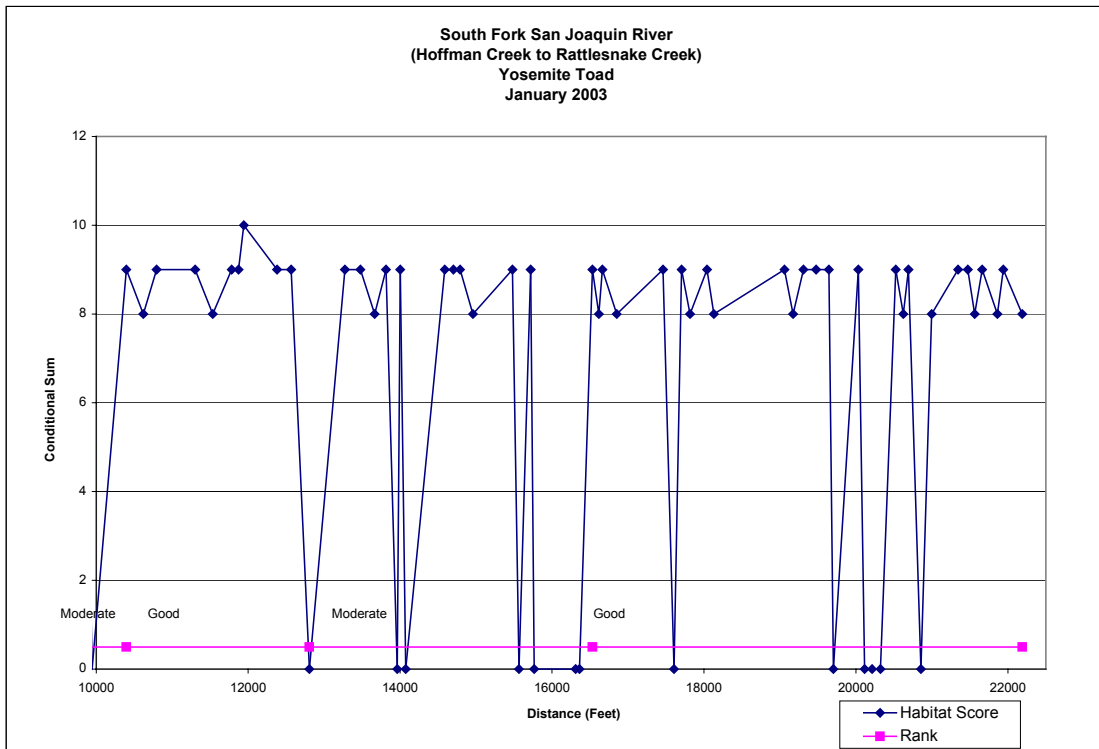
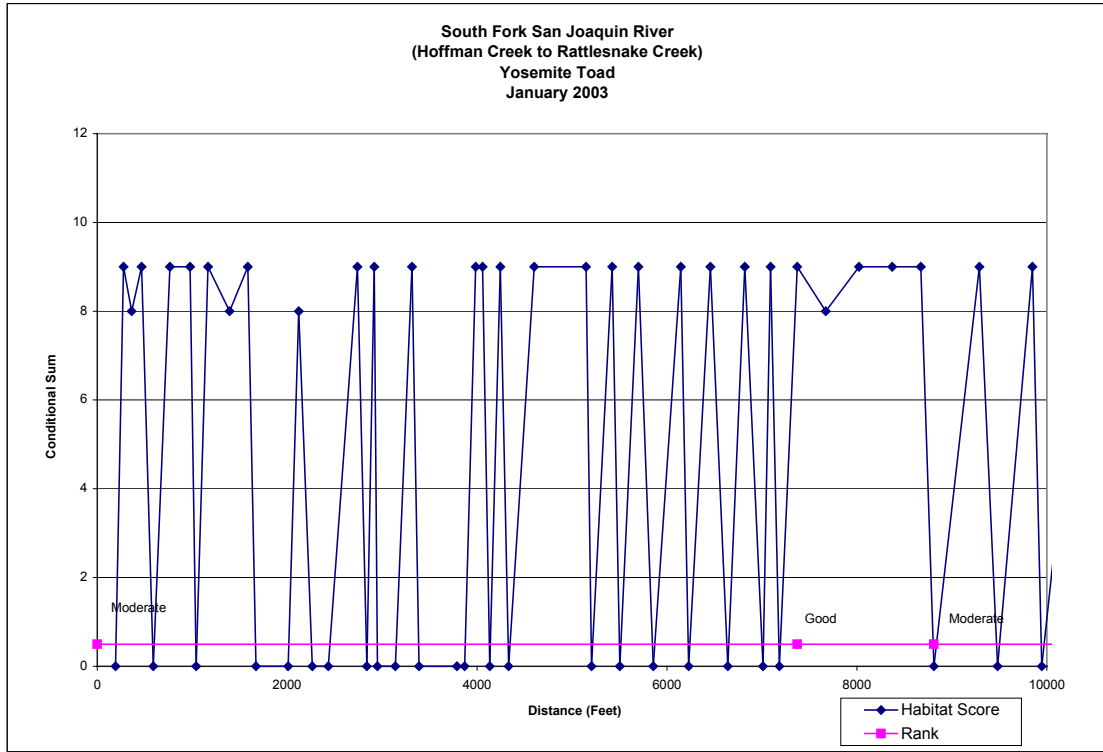
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

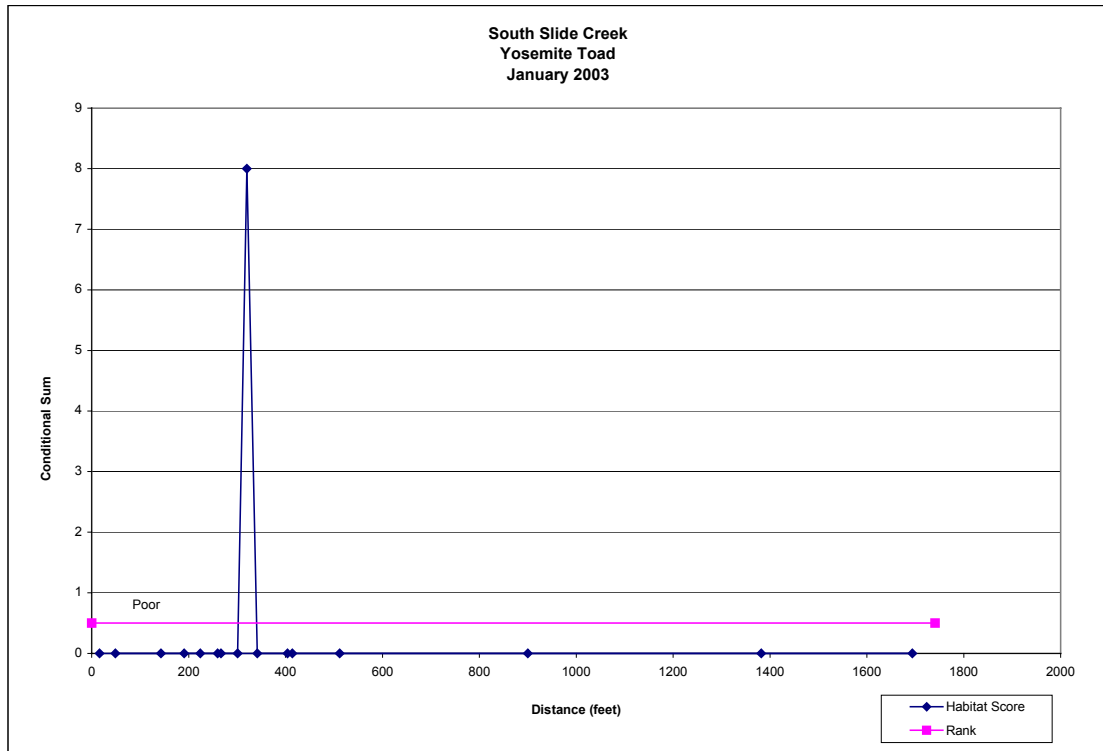


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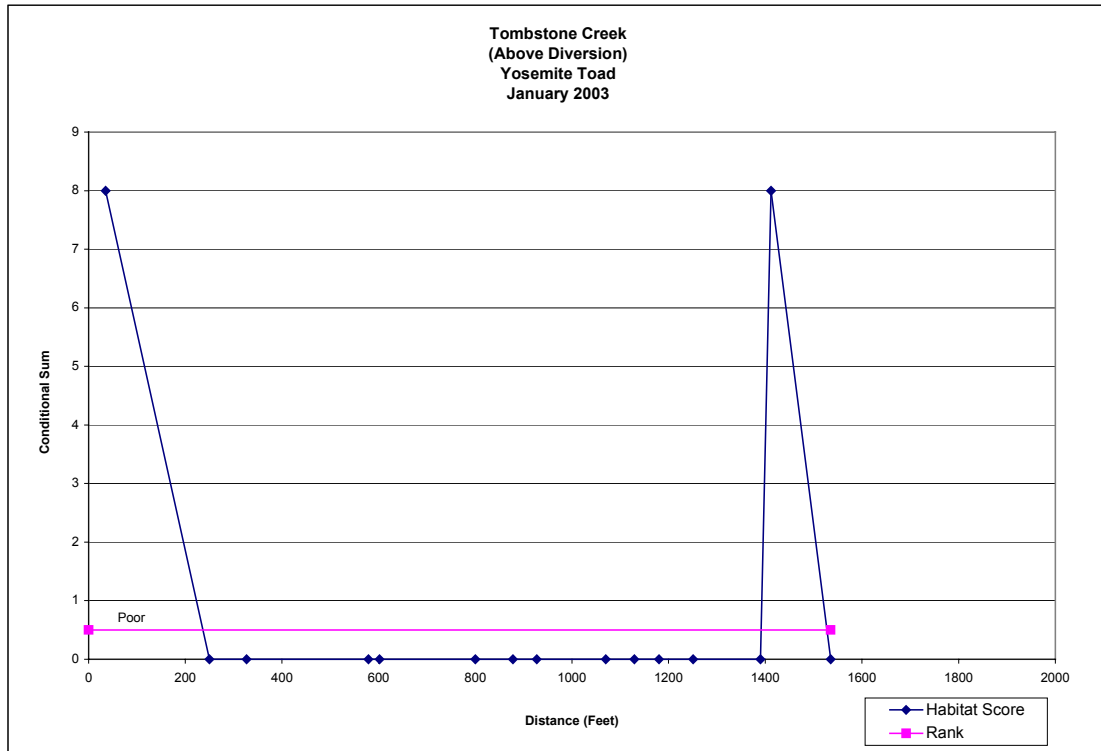




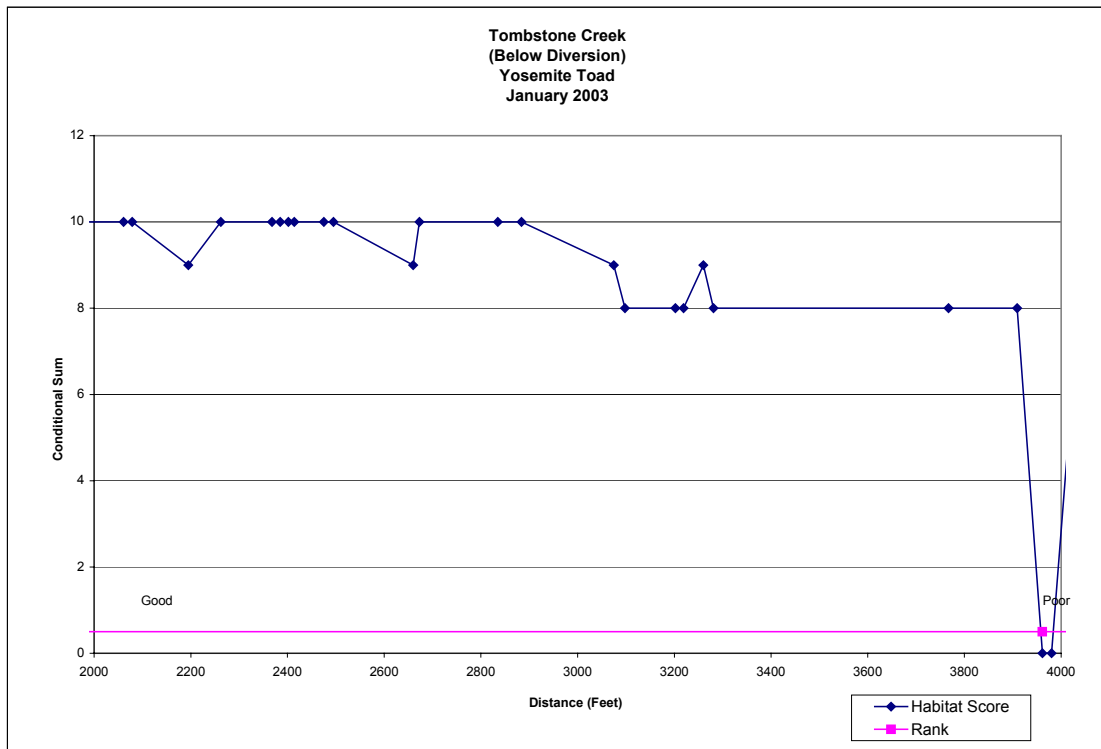
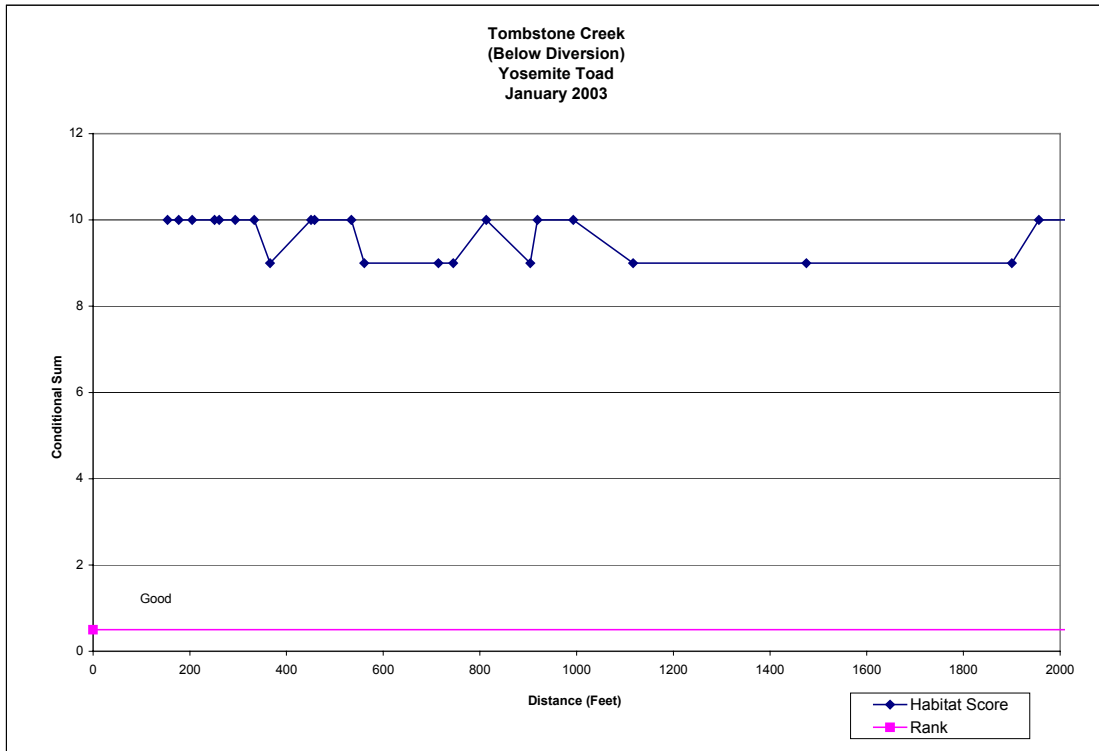
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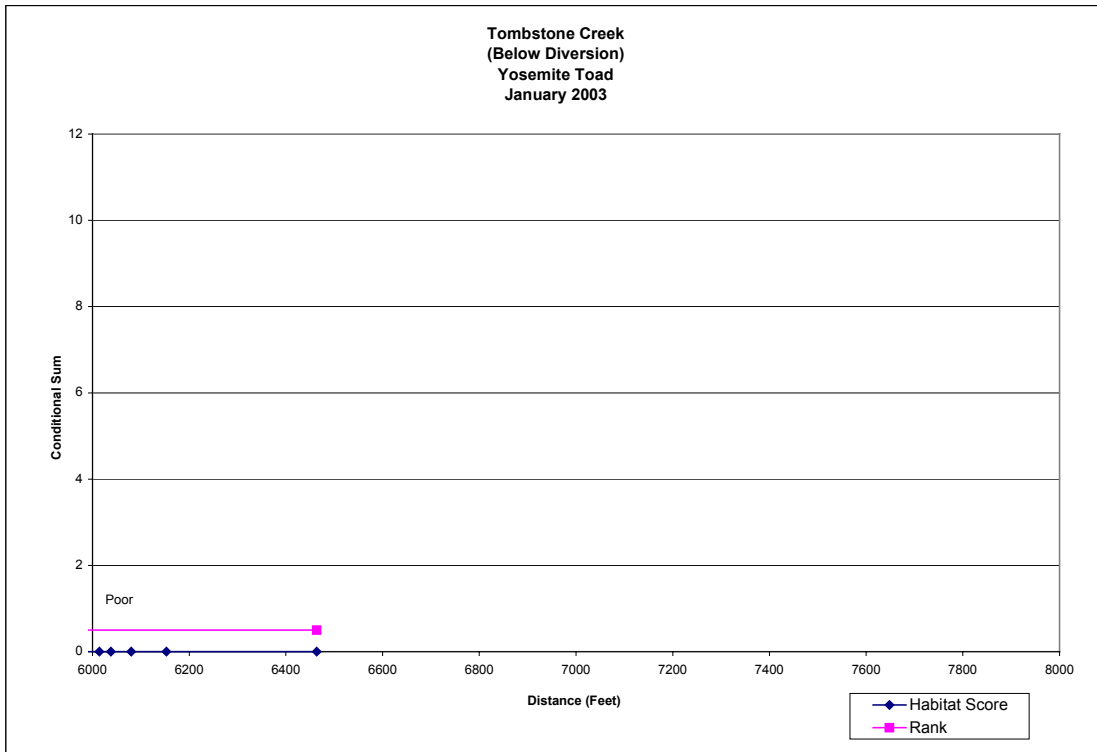
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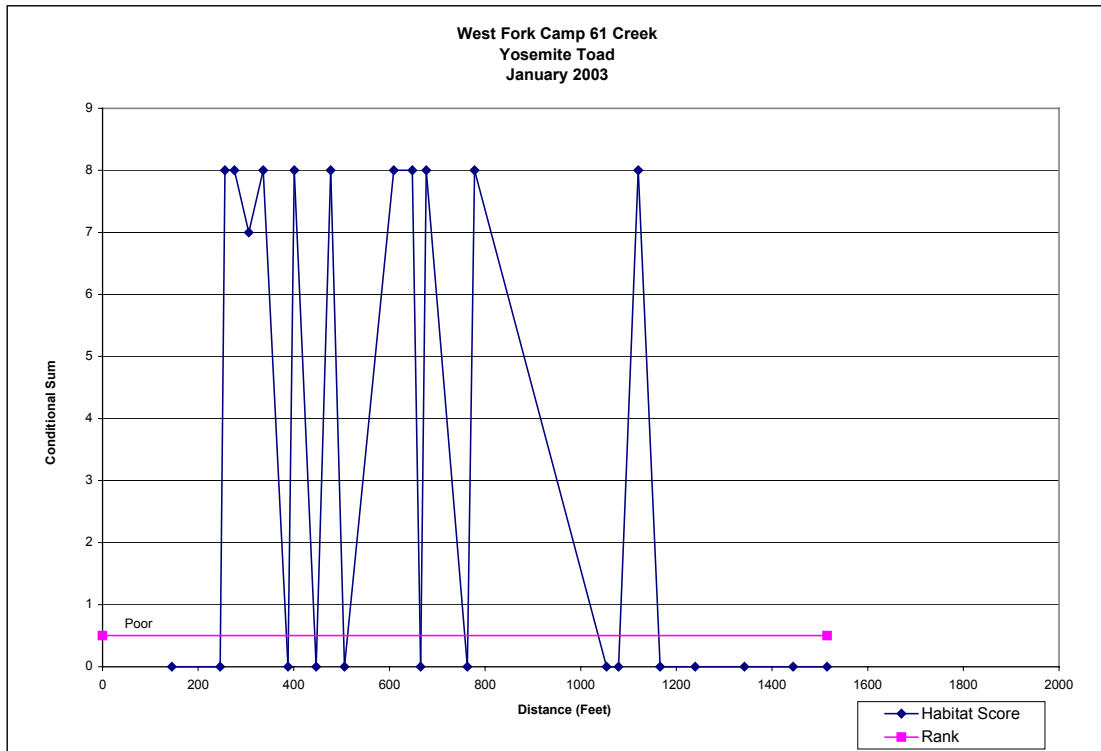
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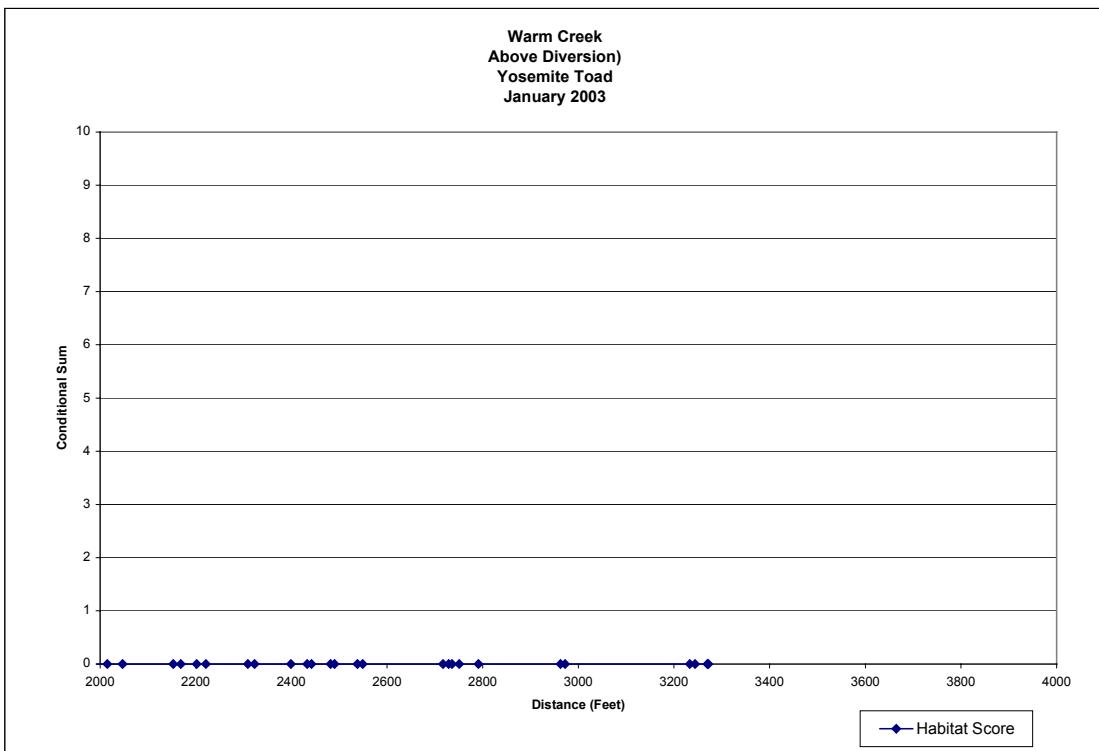
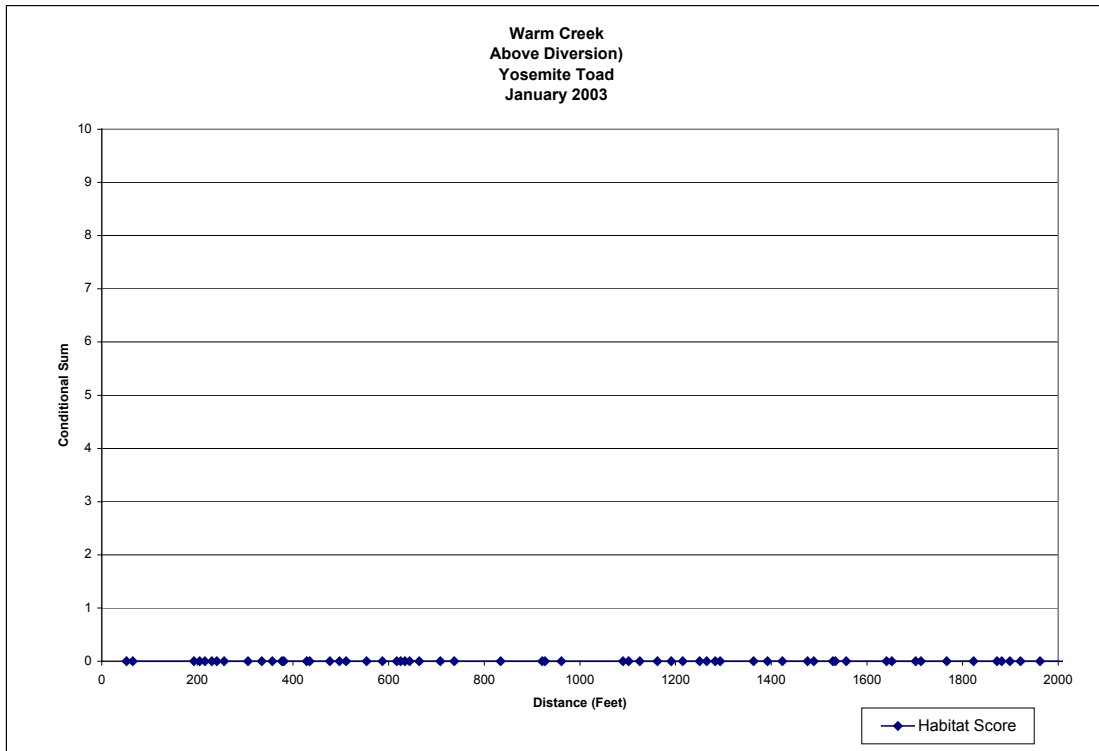
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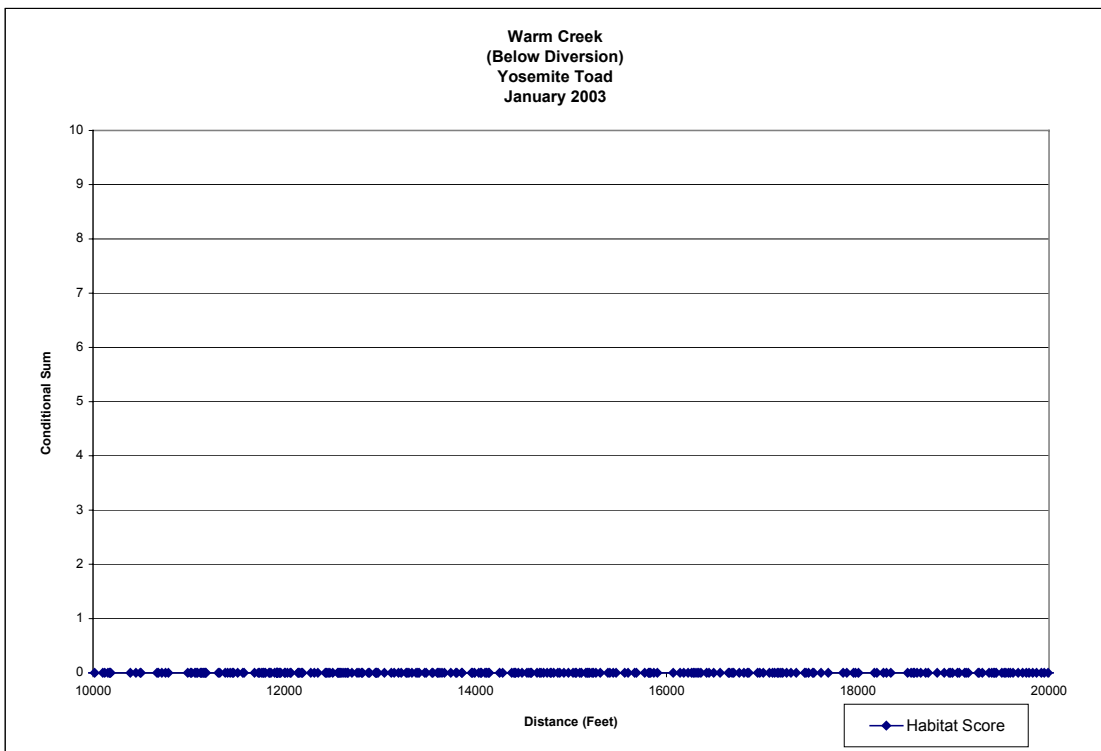
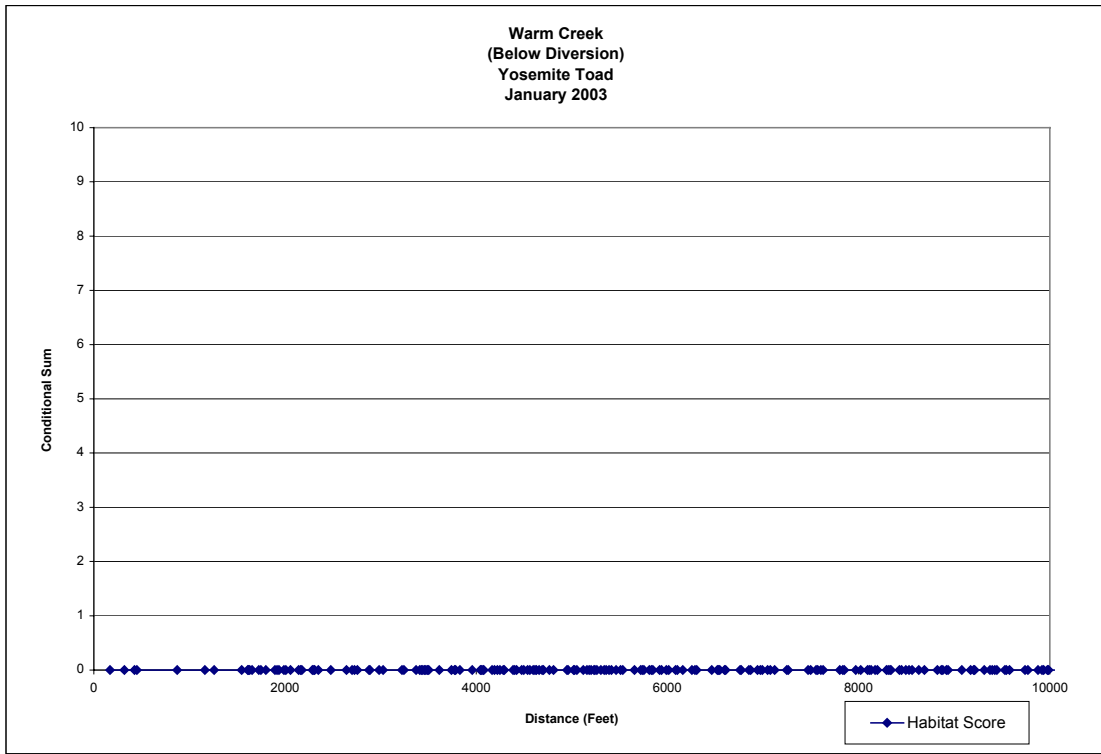
### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)



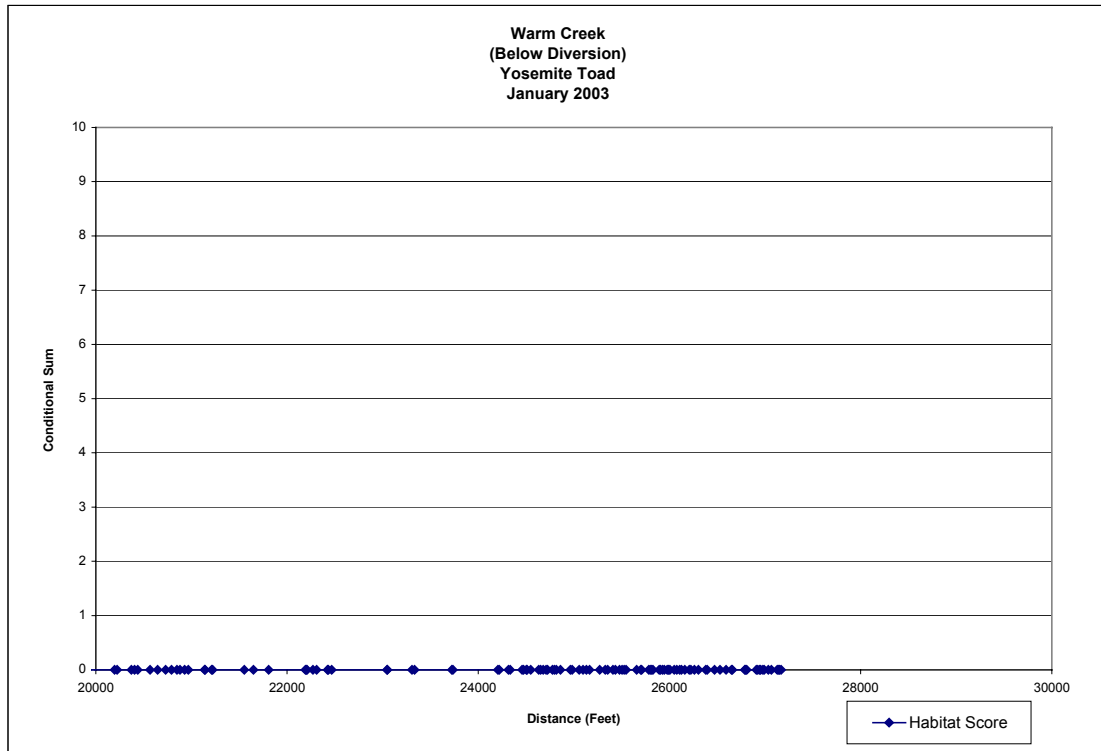
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### Appendix G. Habitat Suitability and Segment Quality Charts for the Yosemite Toad (continued)

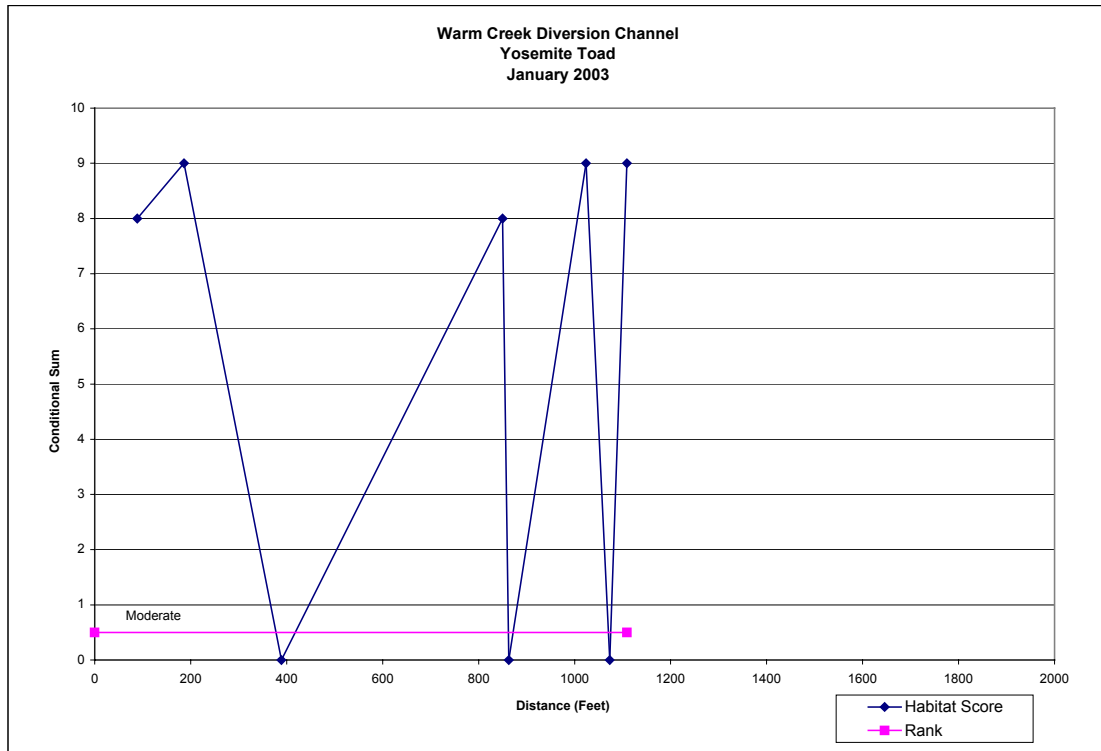


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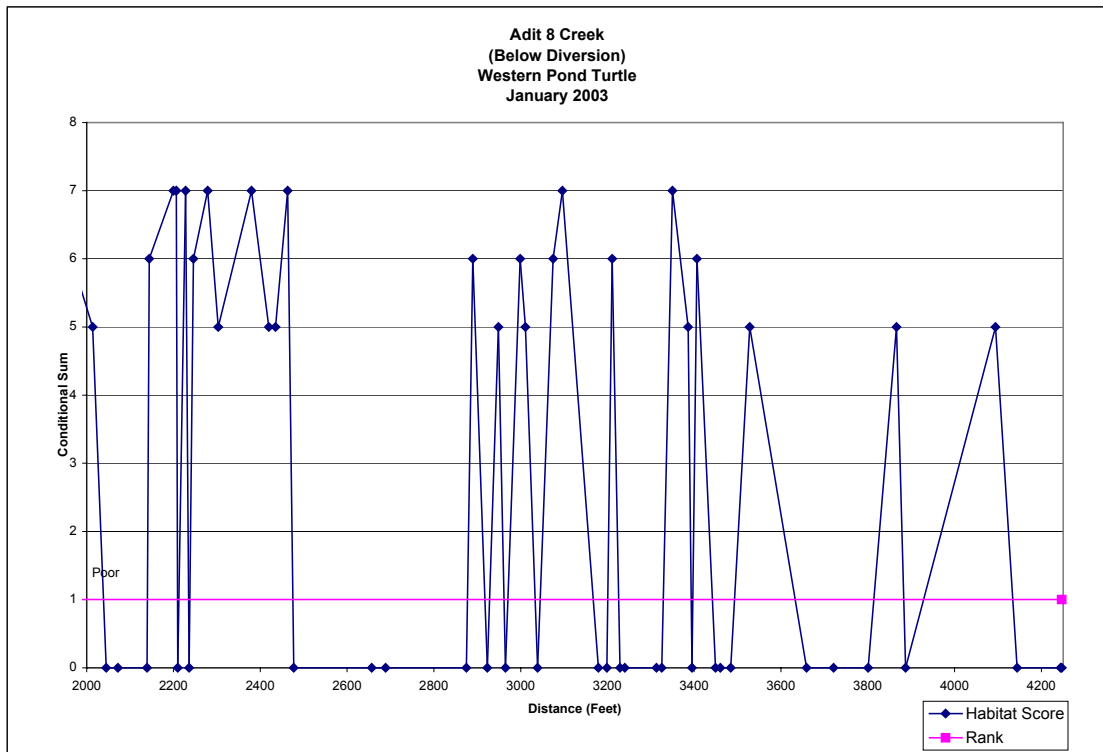
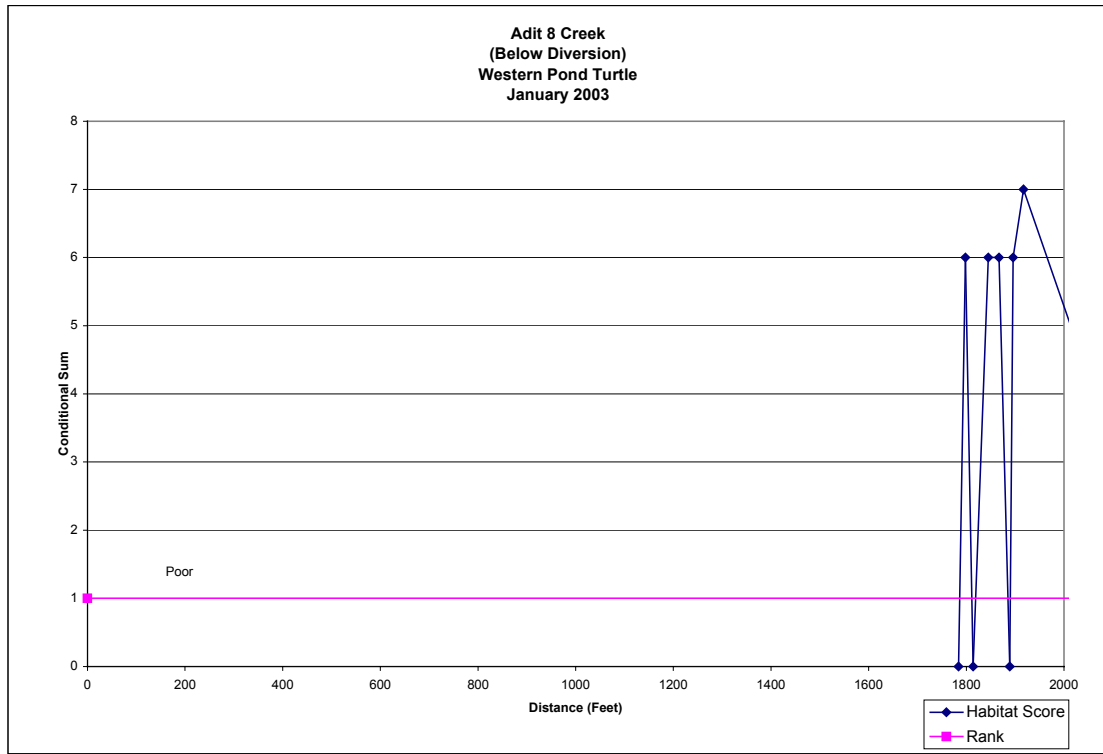
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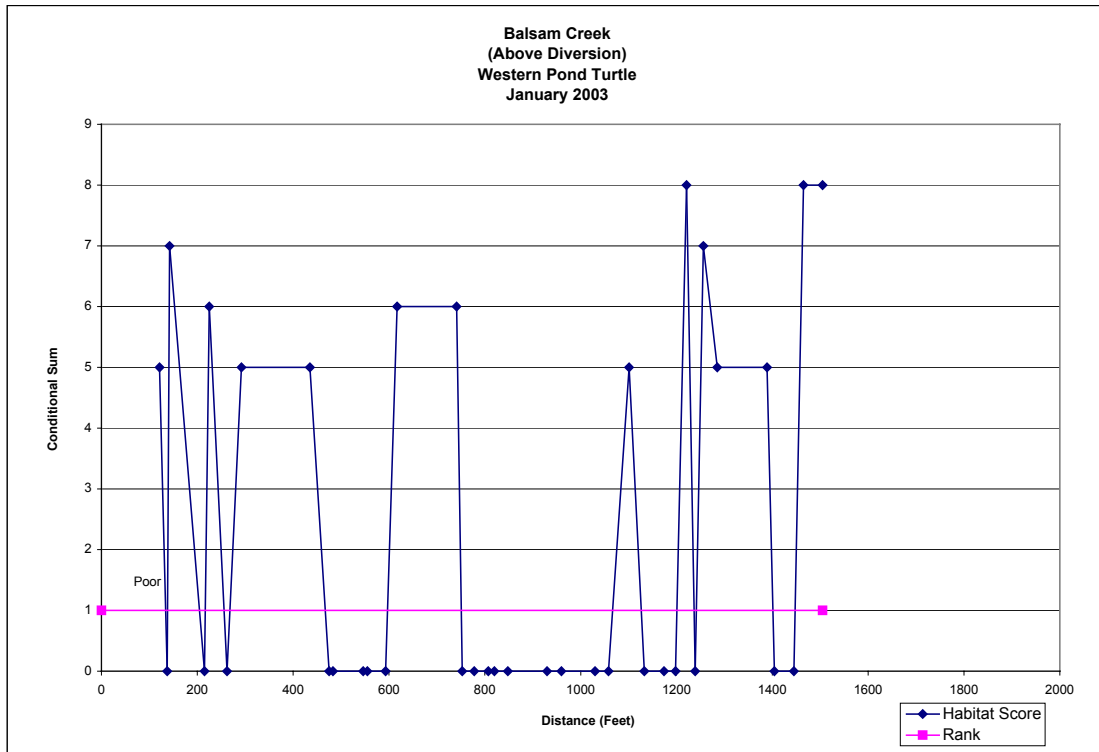
## **APPENDIX H**

### **Habitat Suitability and Segment Quality Charts for the Western Pond Turtle**

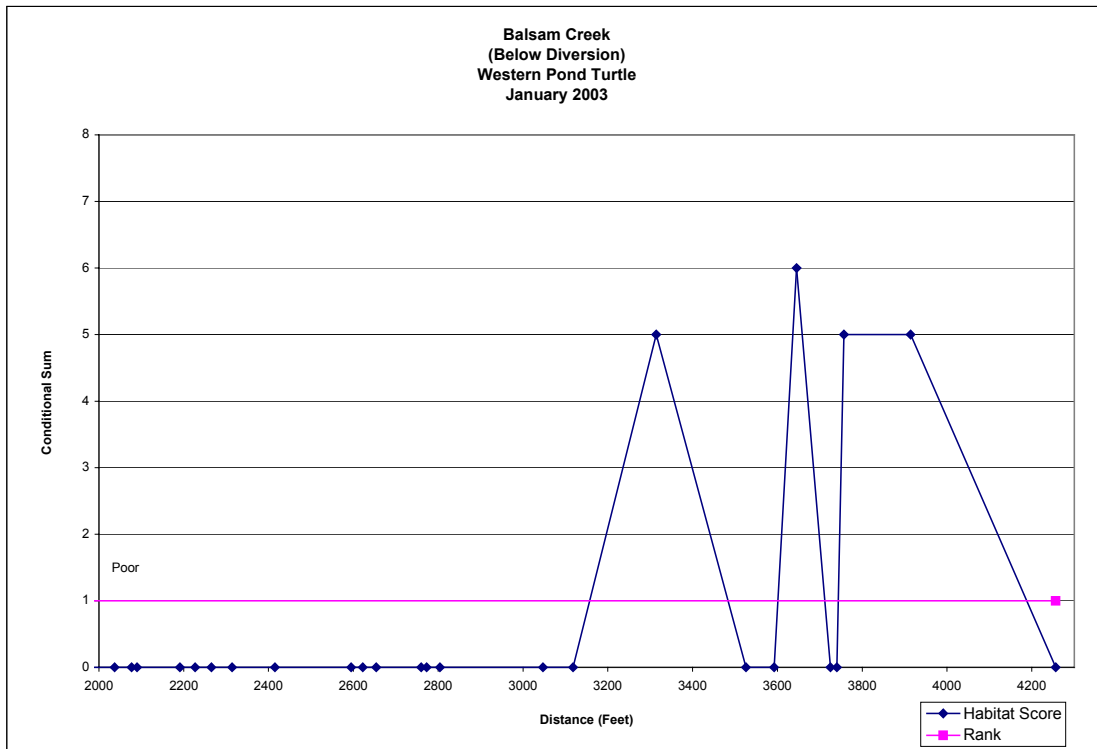
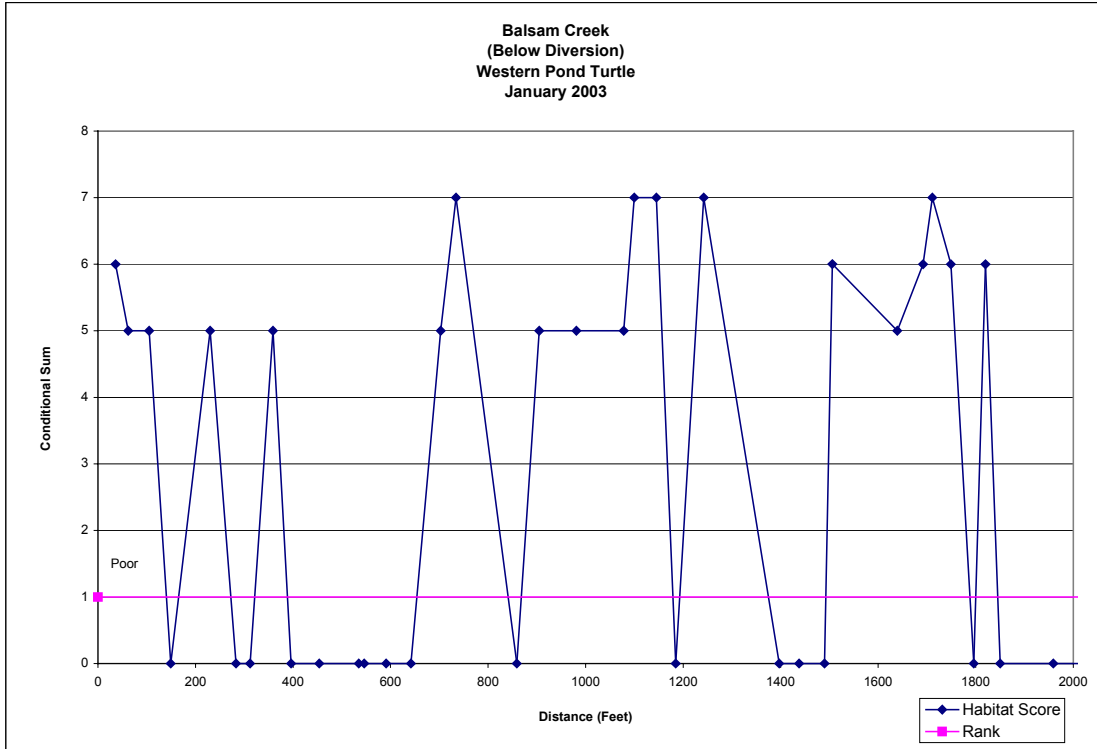
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle



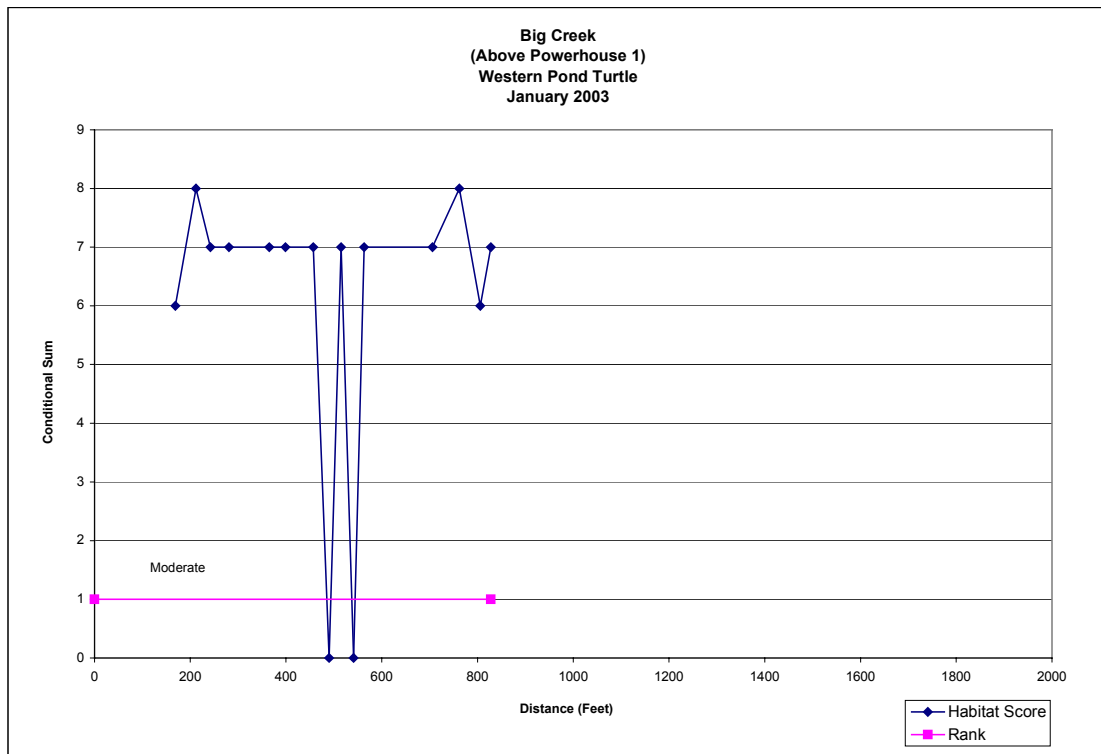
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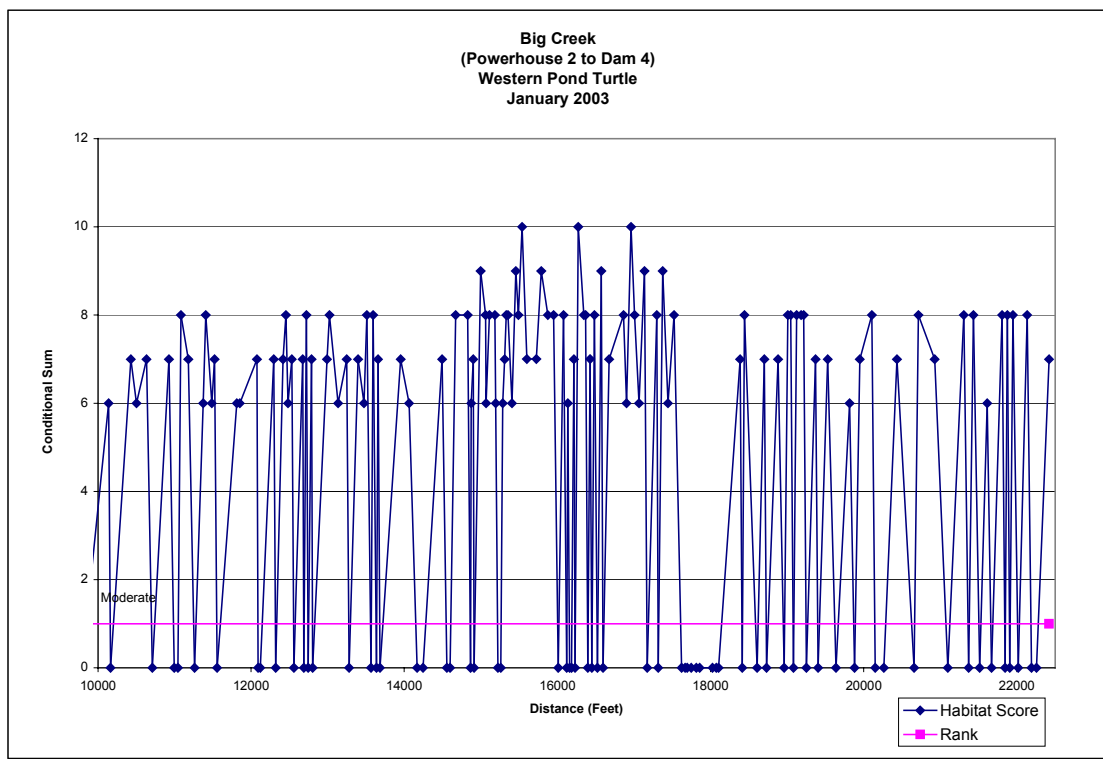
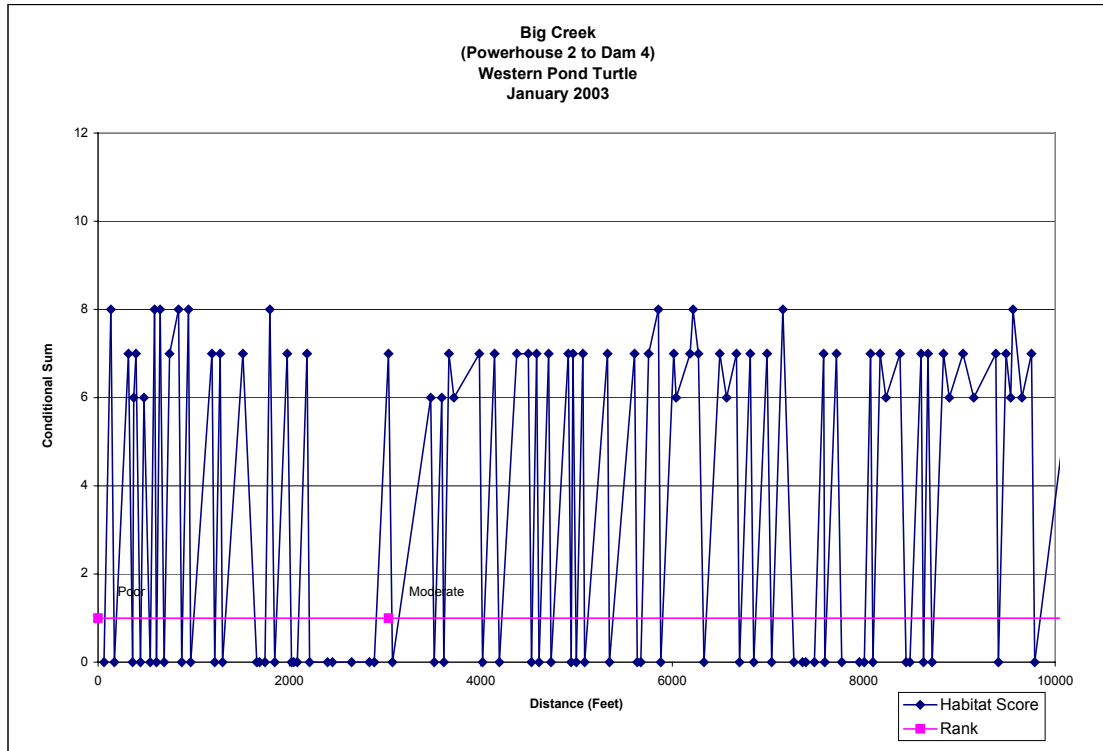
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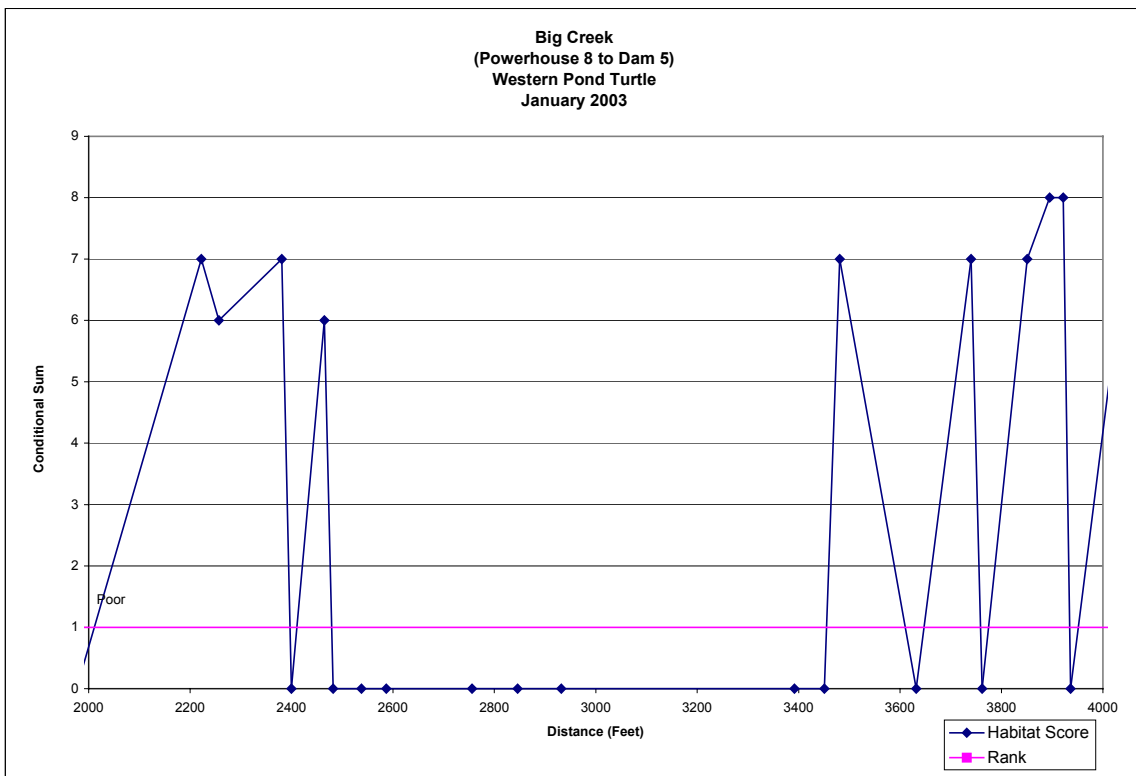
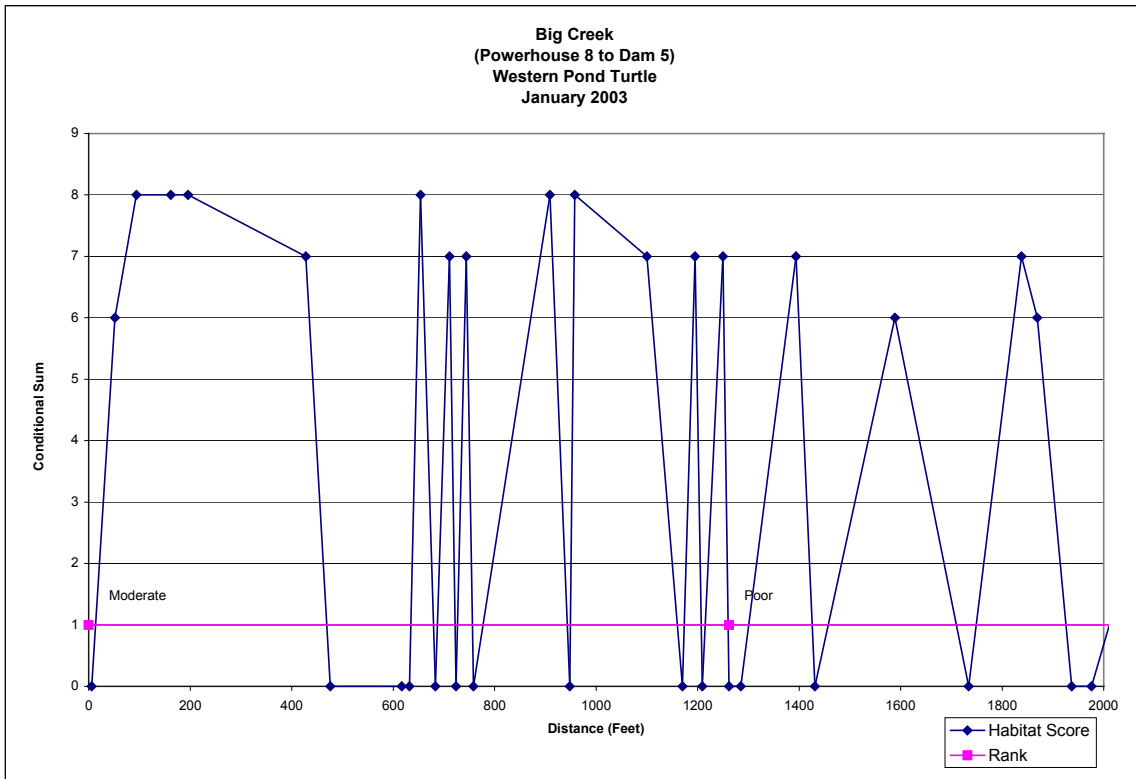
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### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)

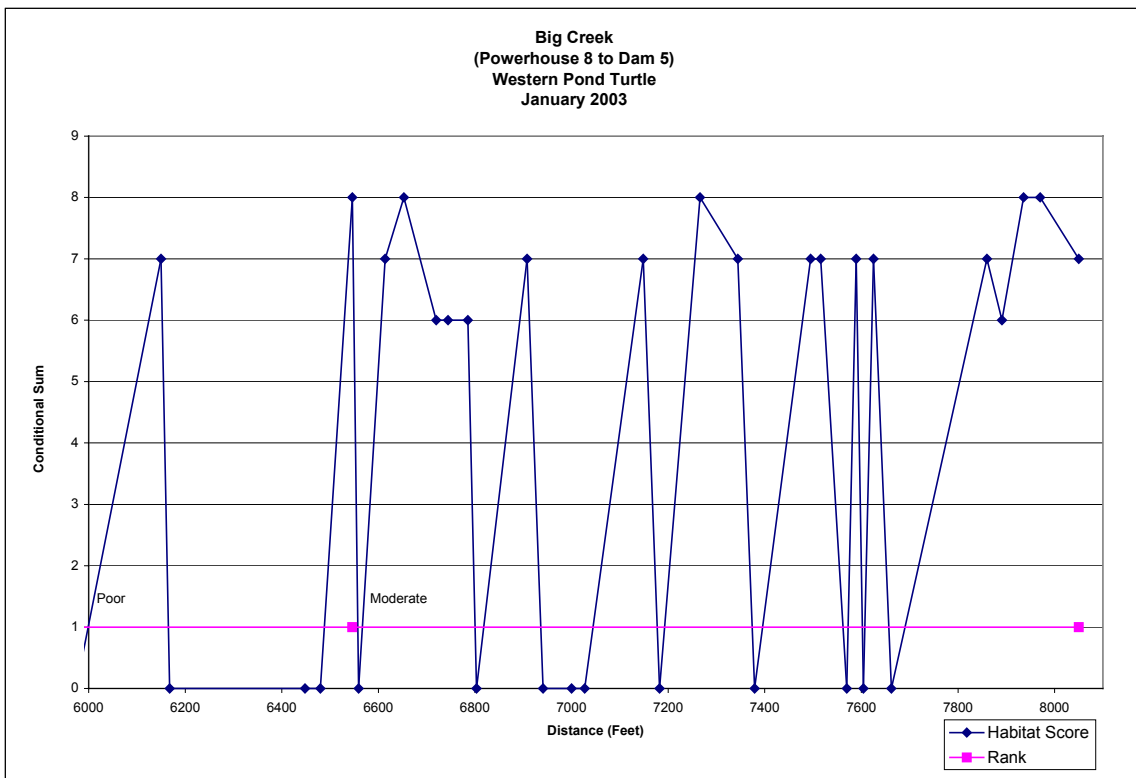
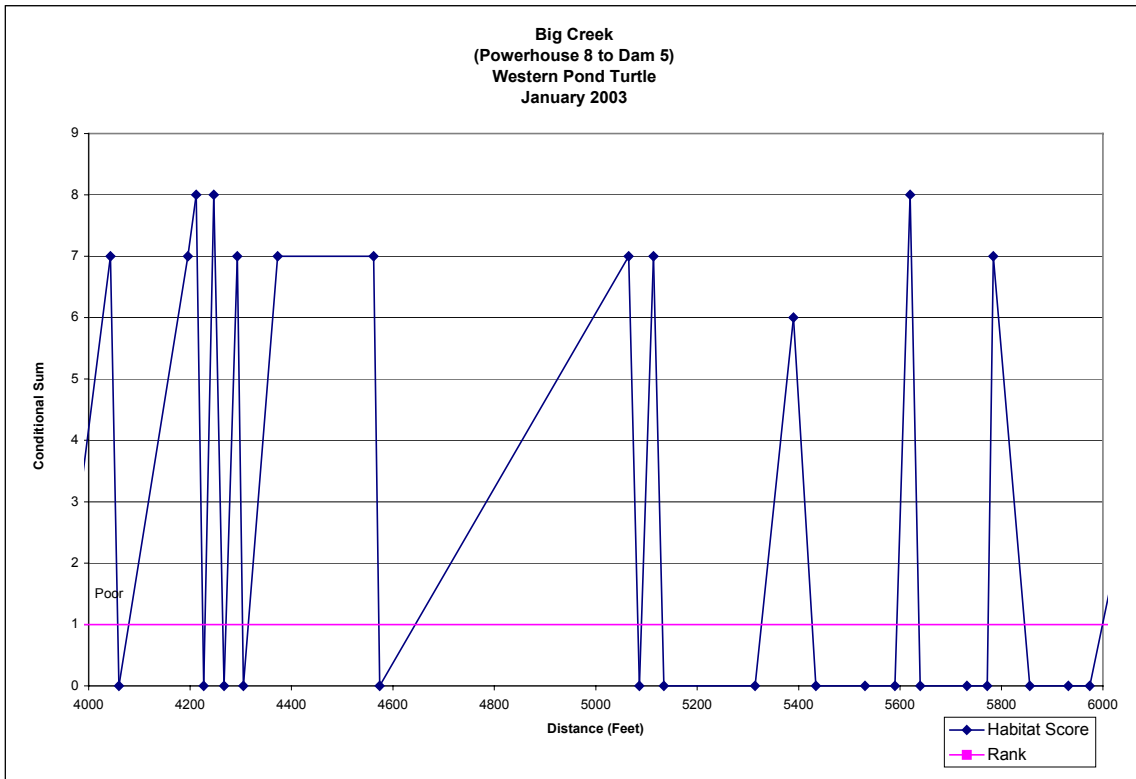


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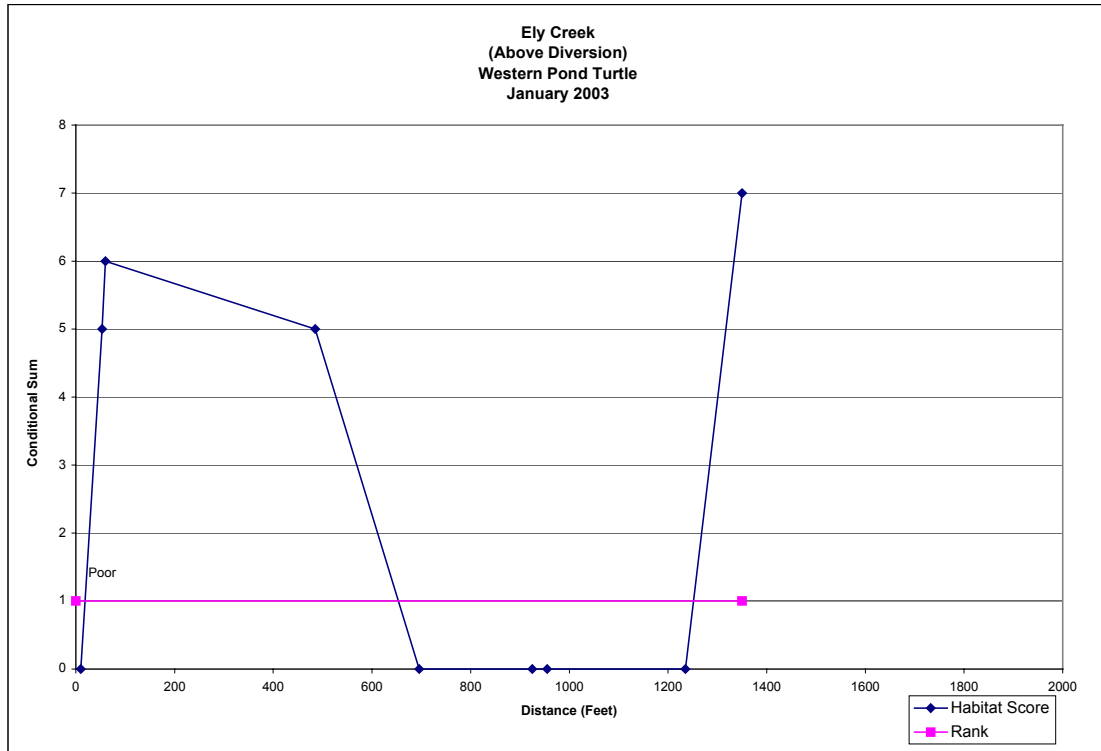




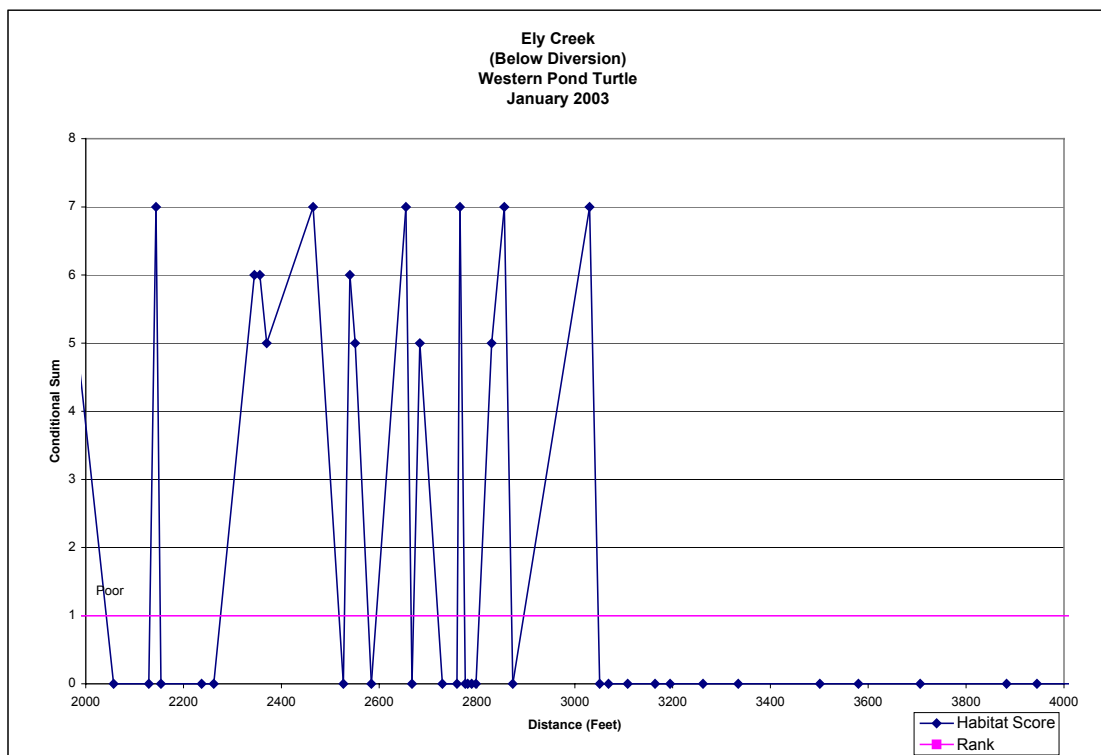
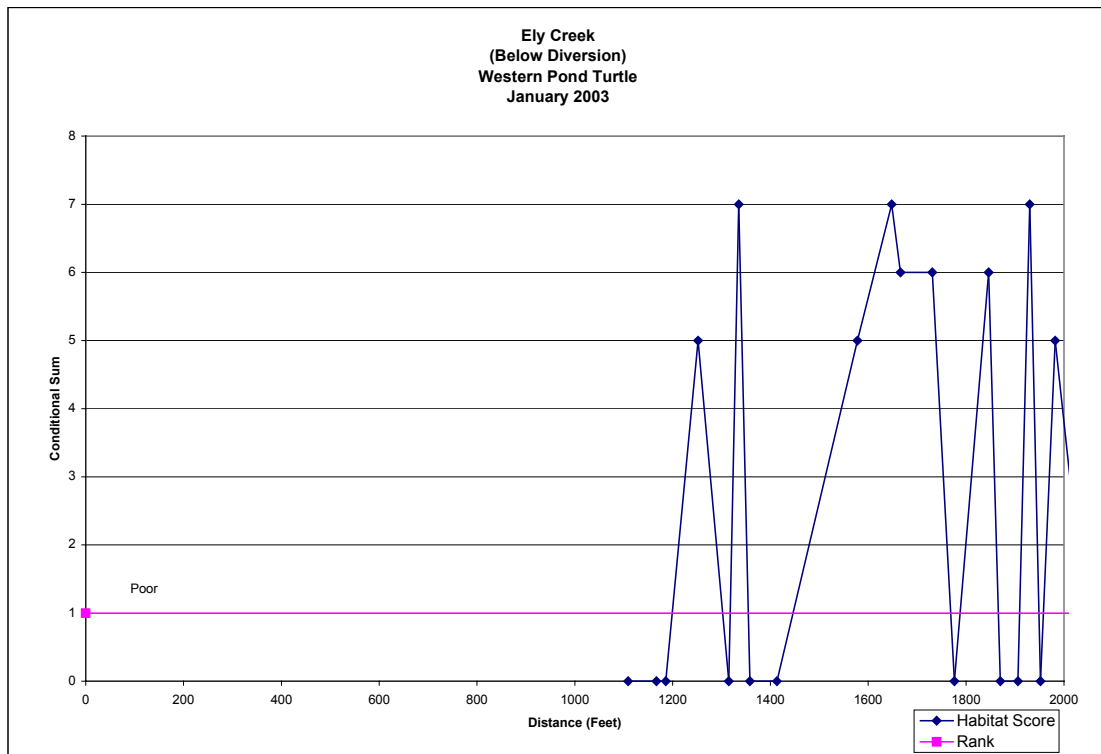
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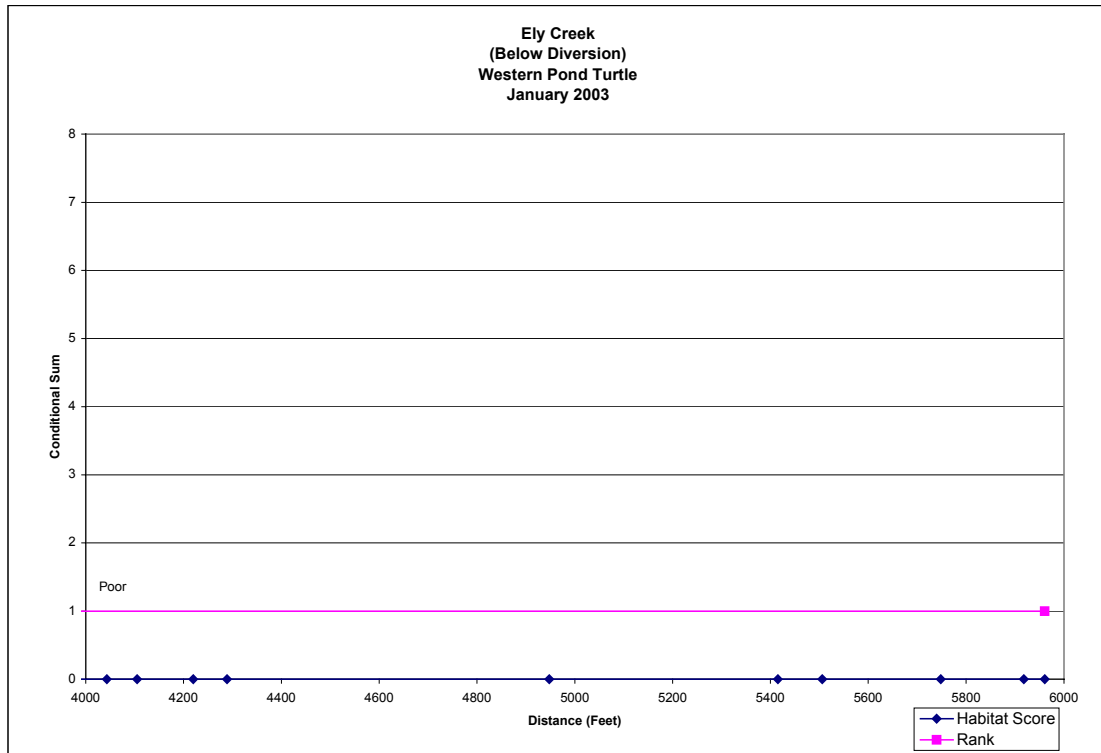
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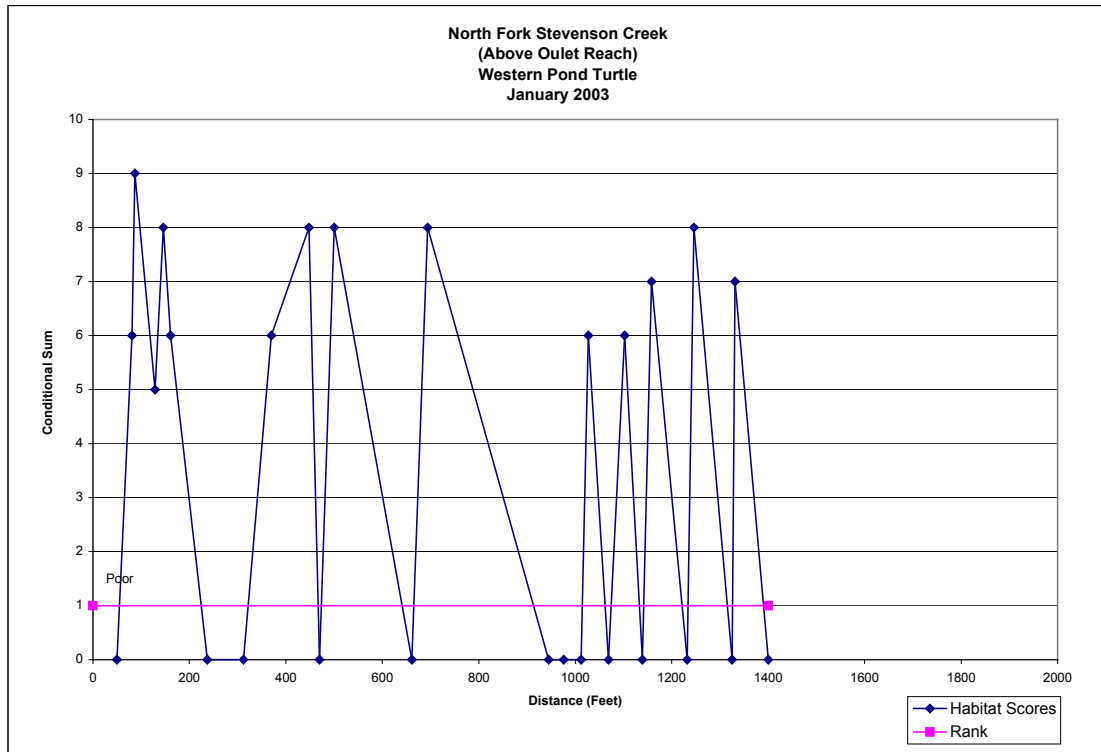
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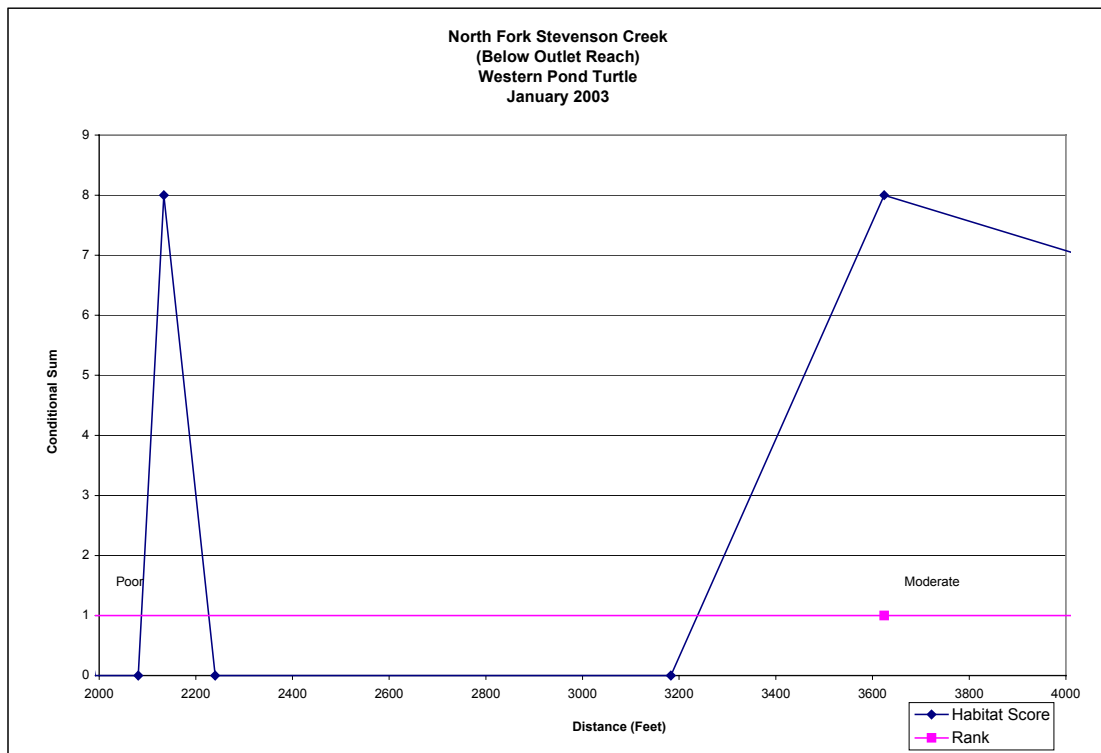
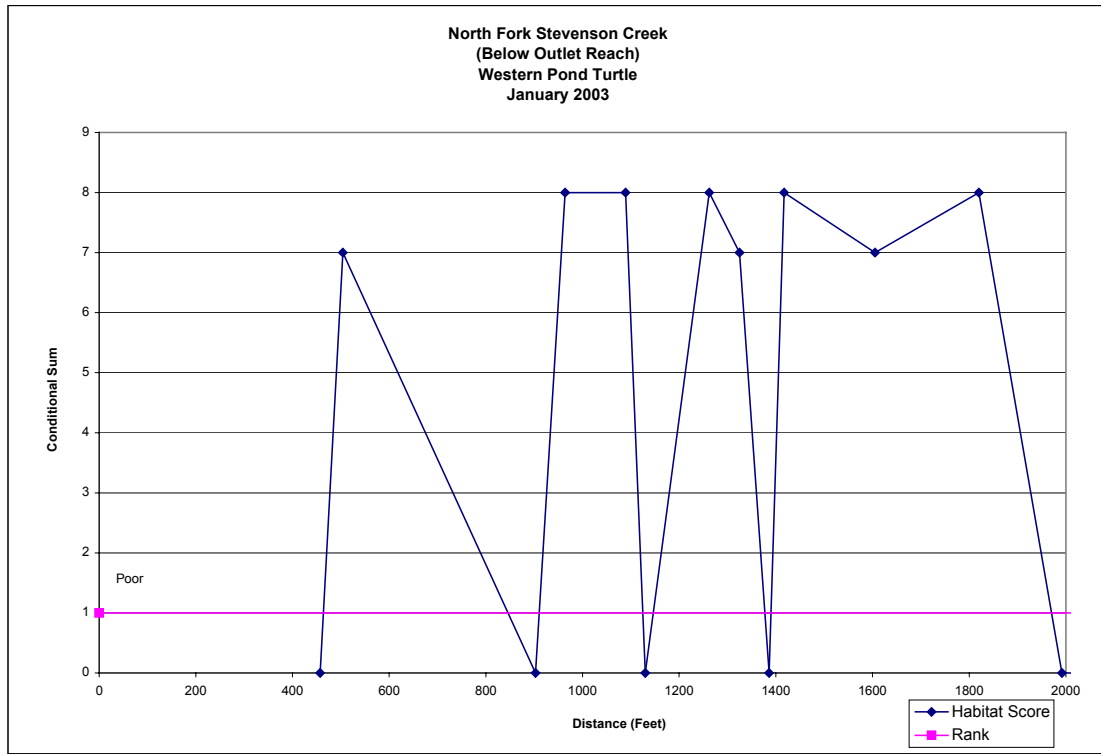
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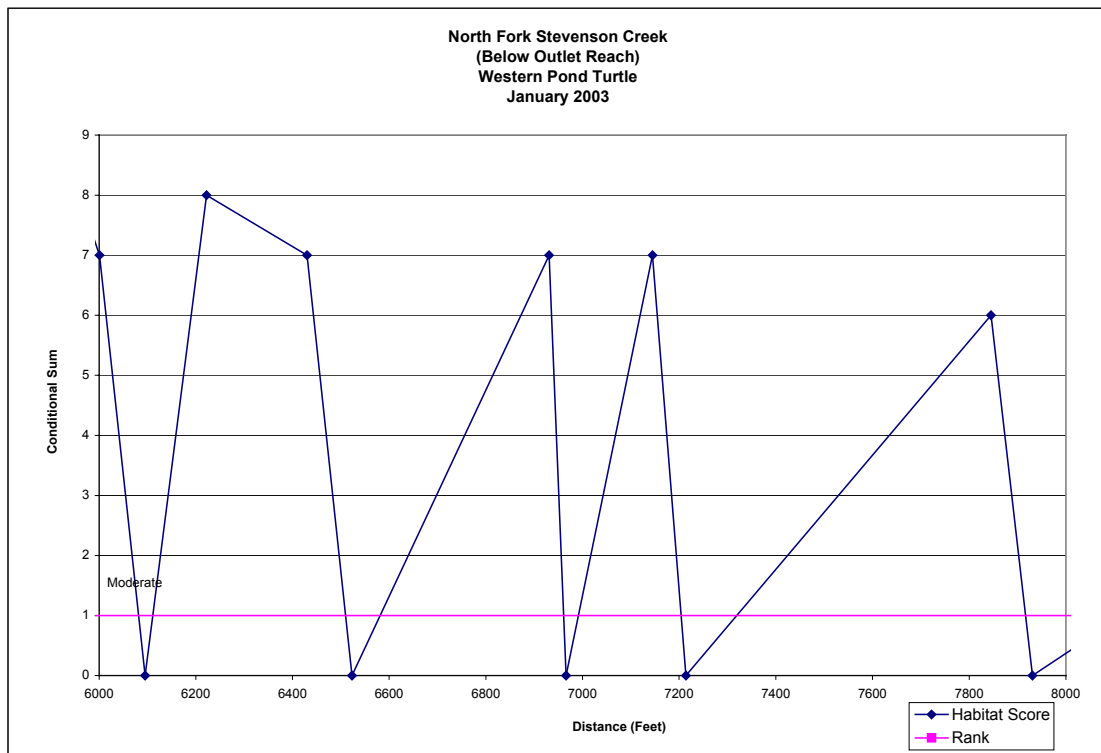
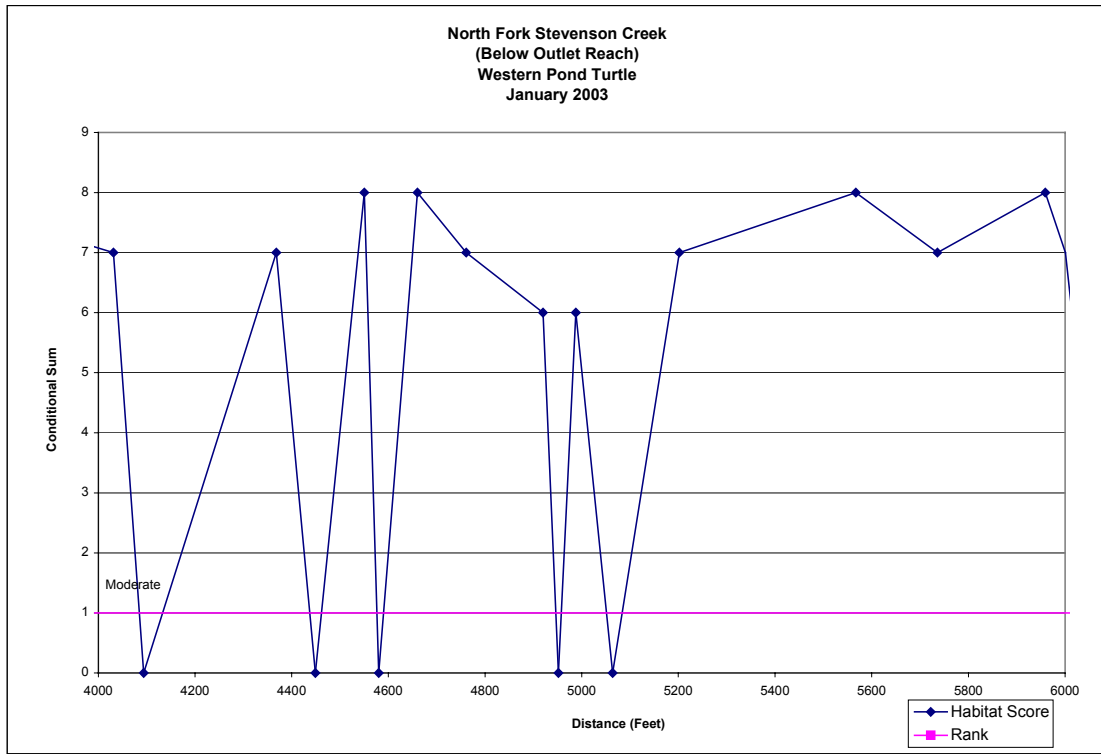
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



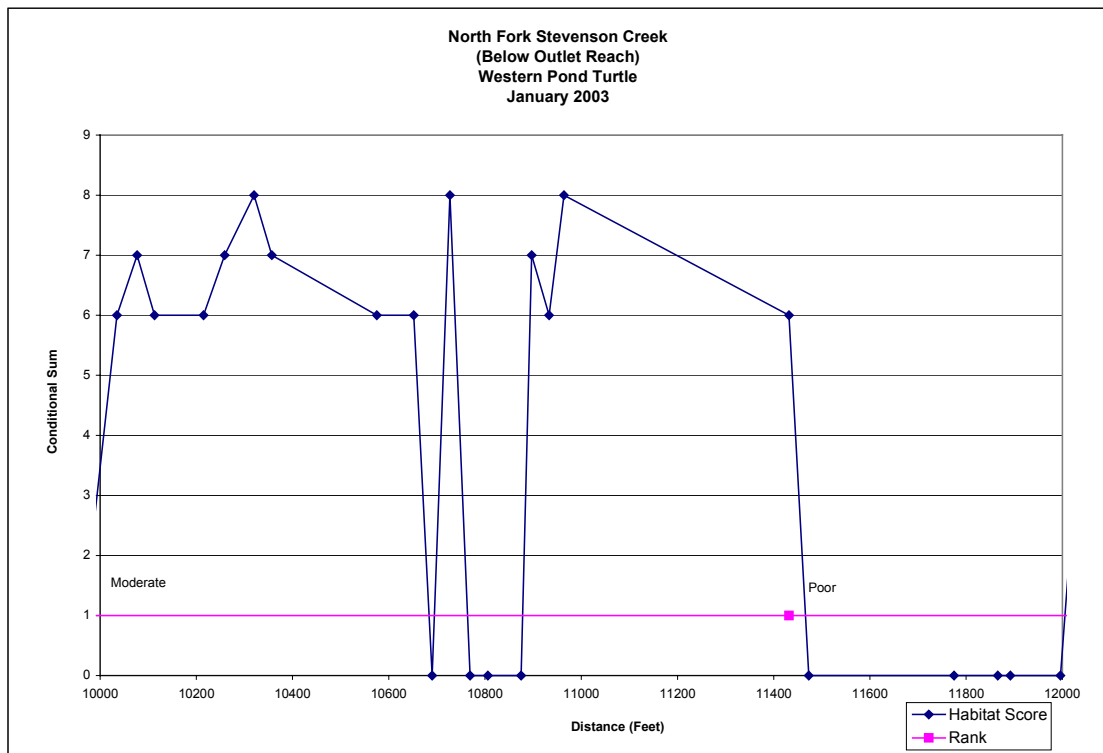
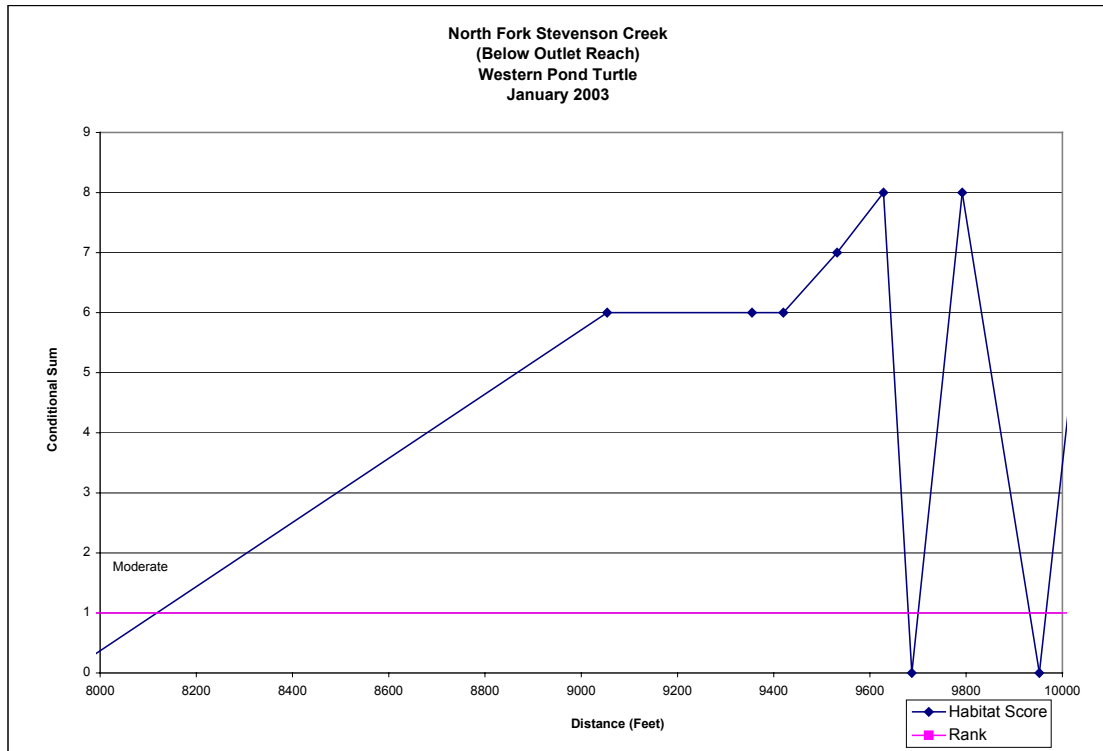
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)

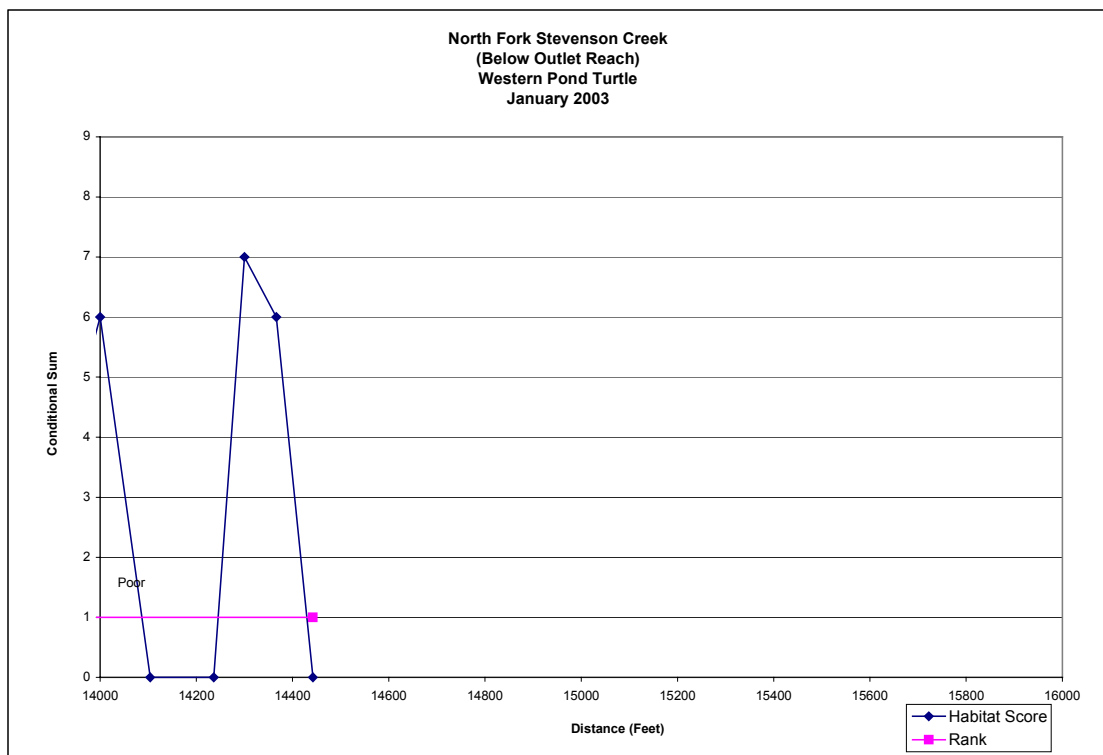
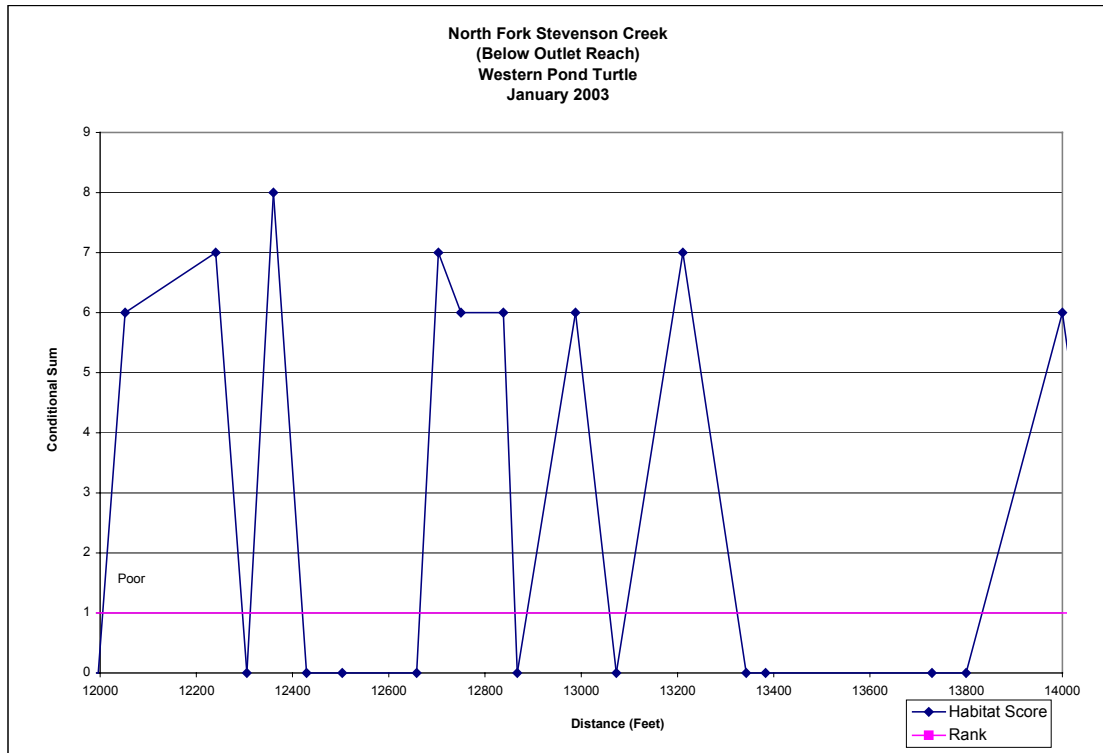


### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)

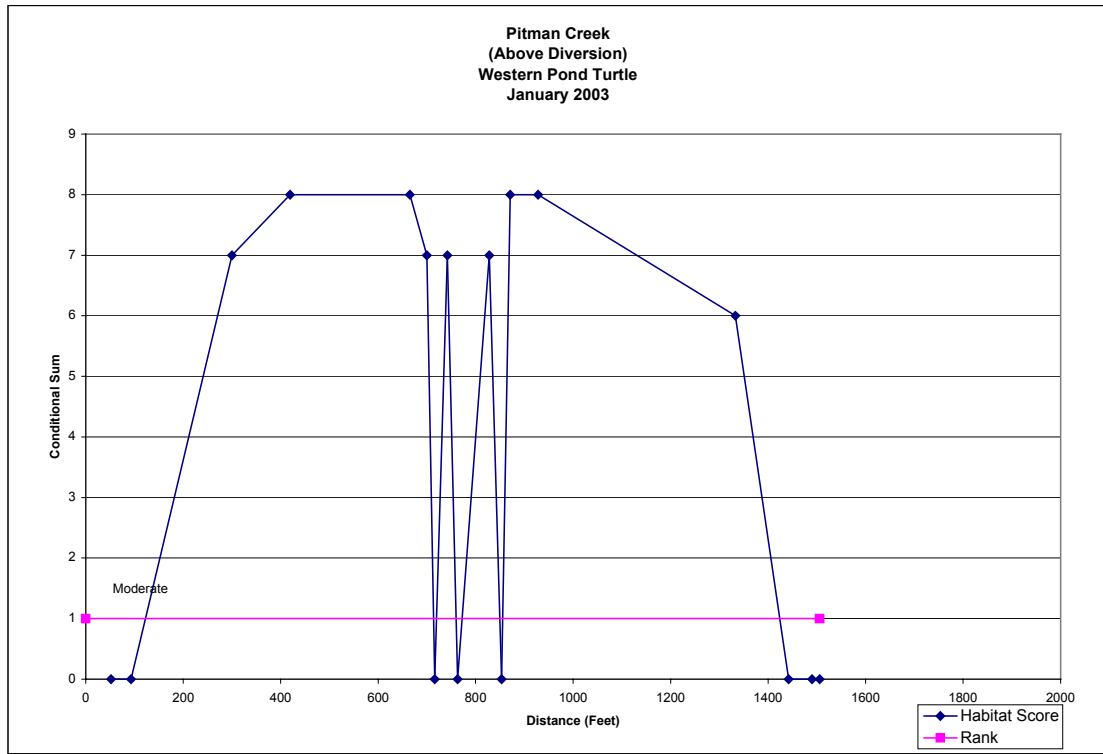




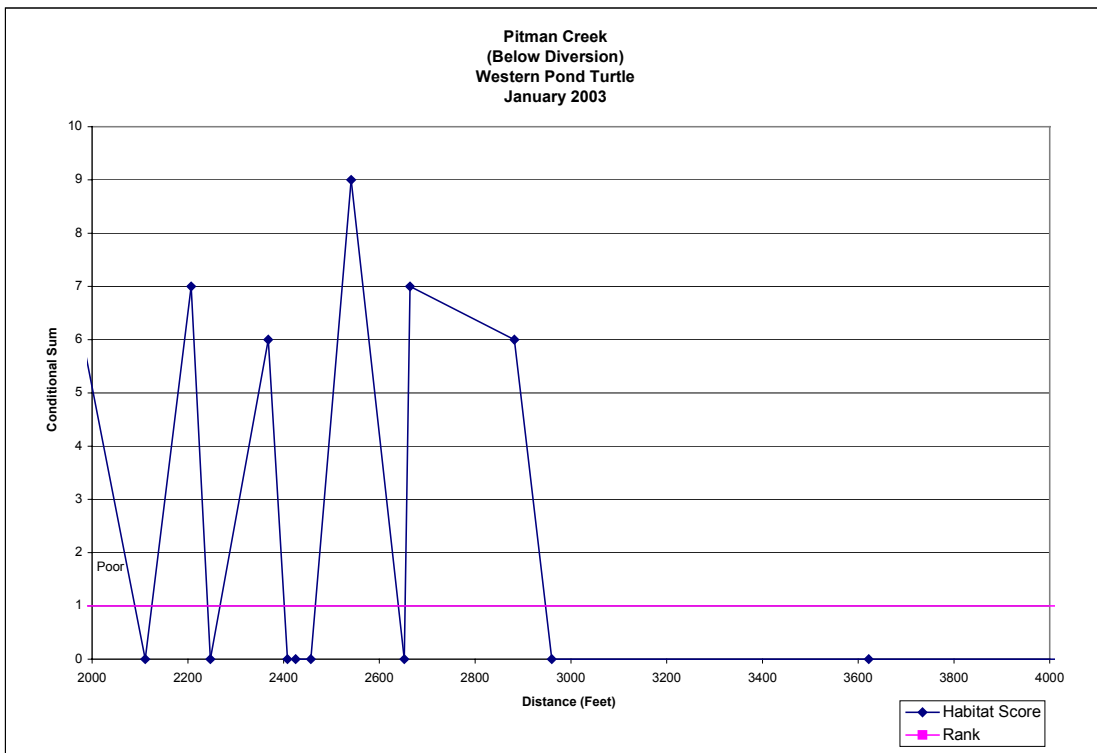
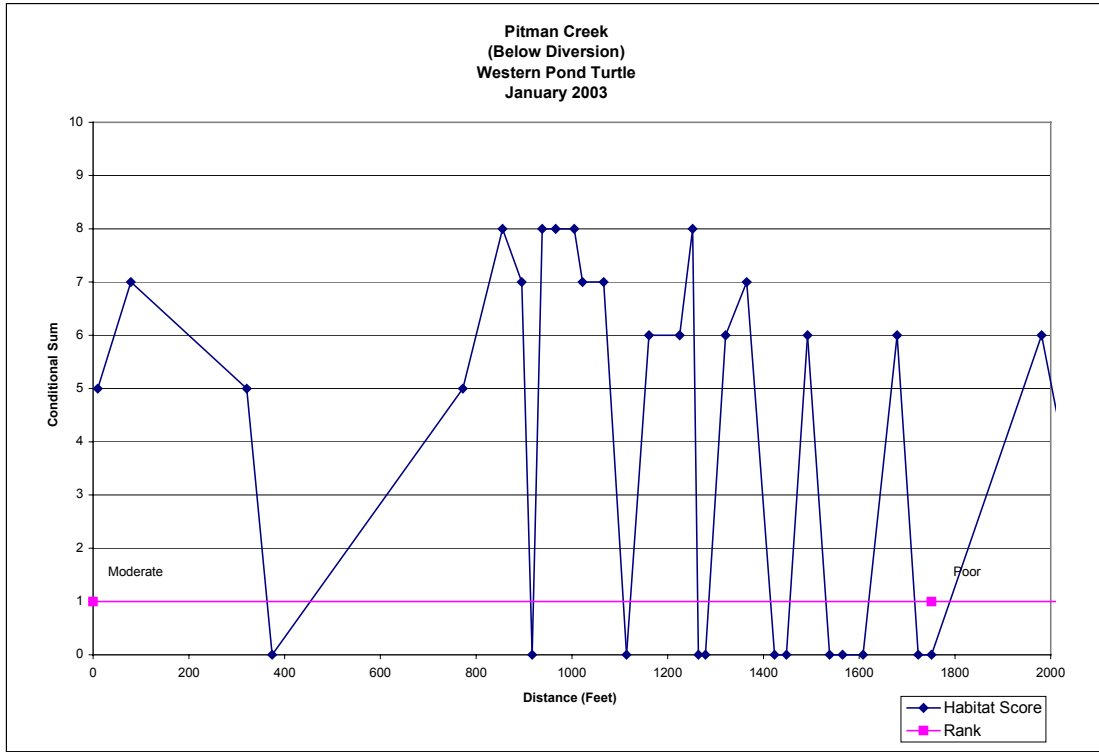
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



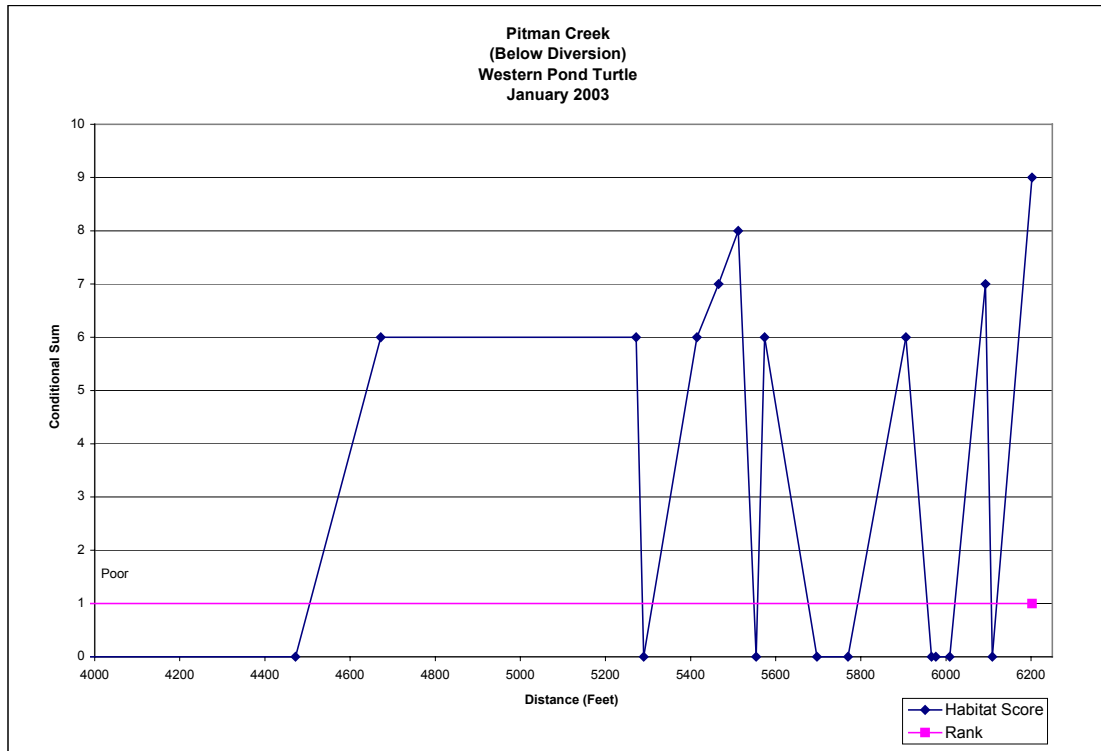
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



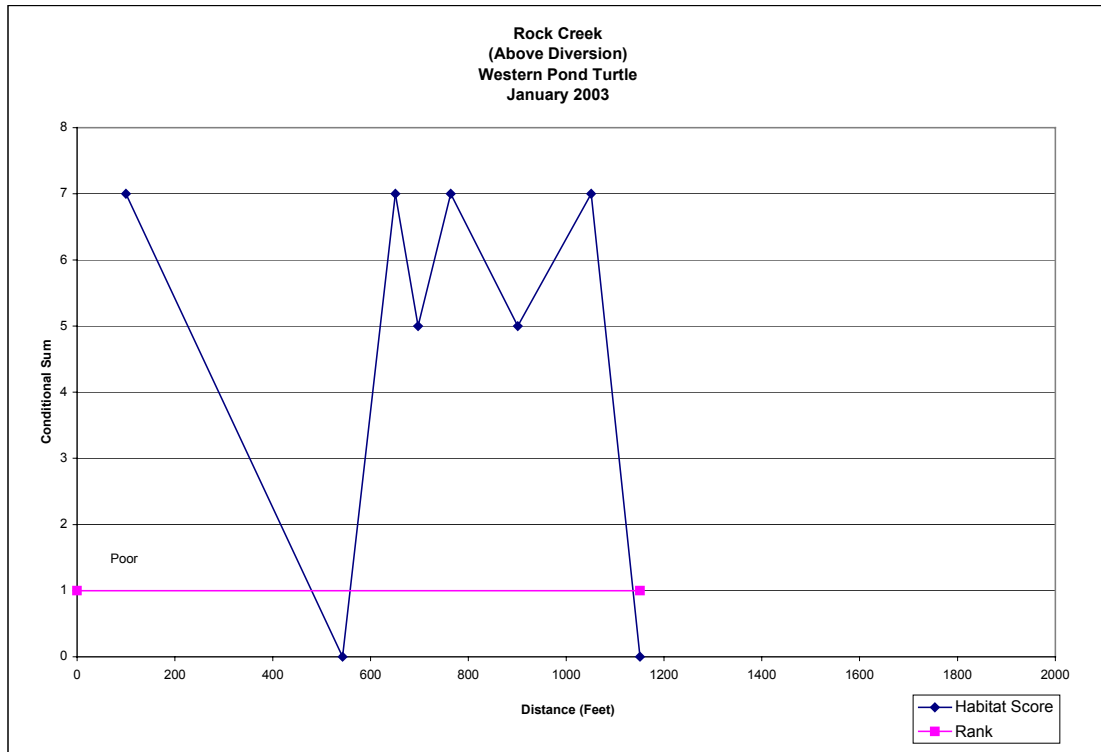
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



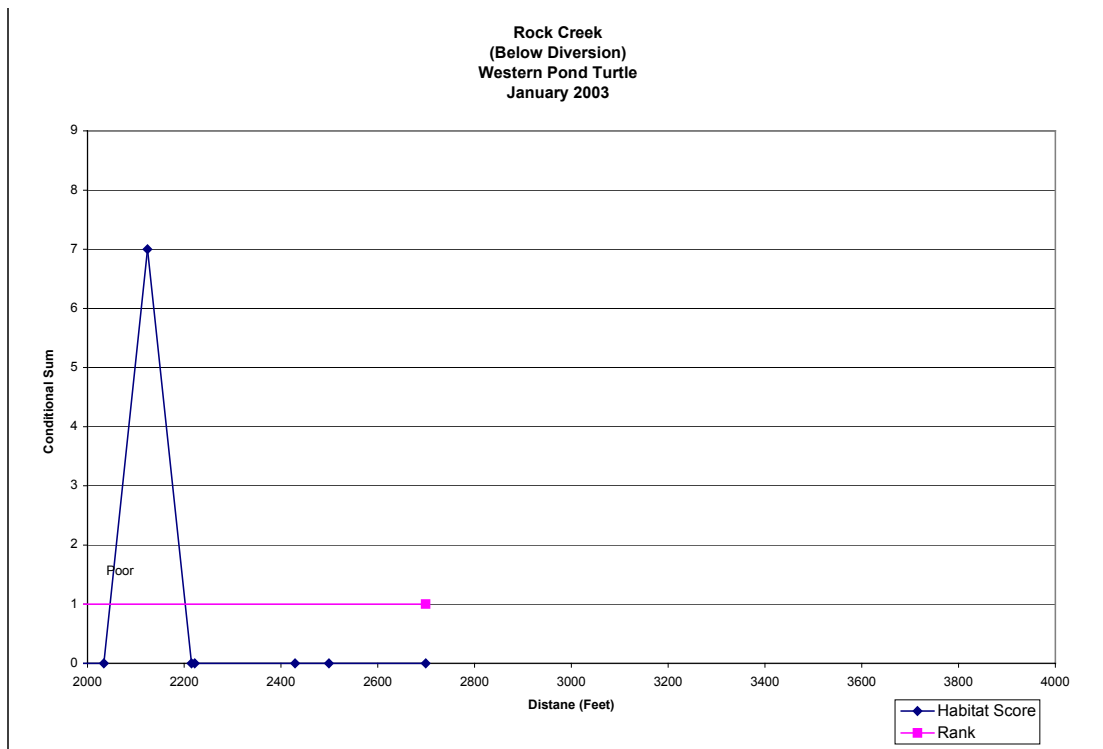
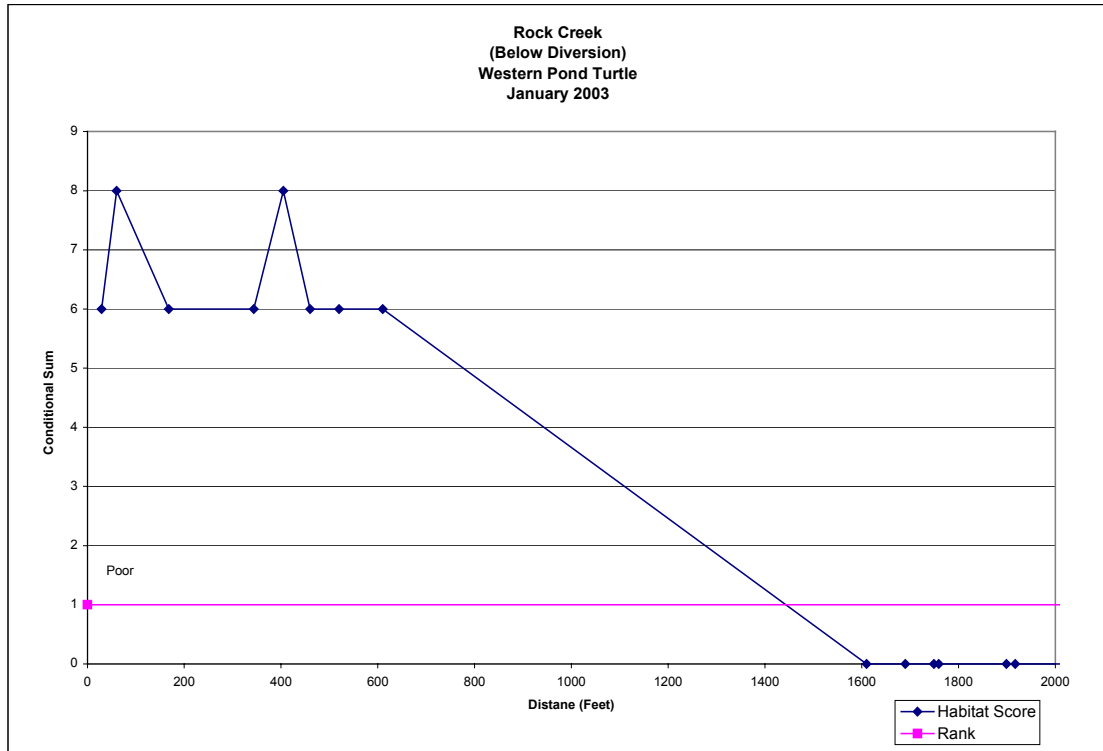
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



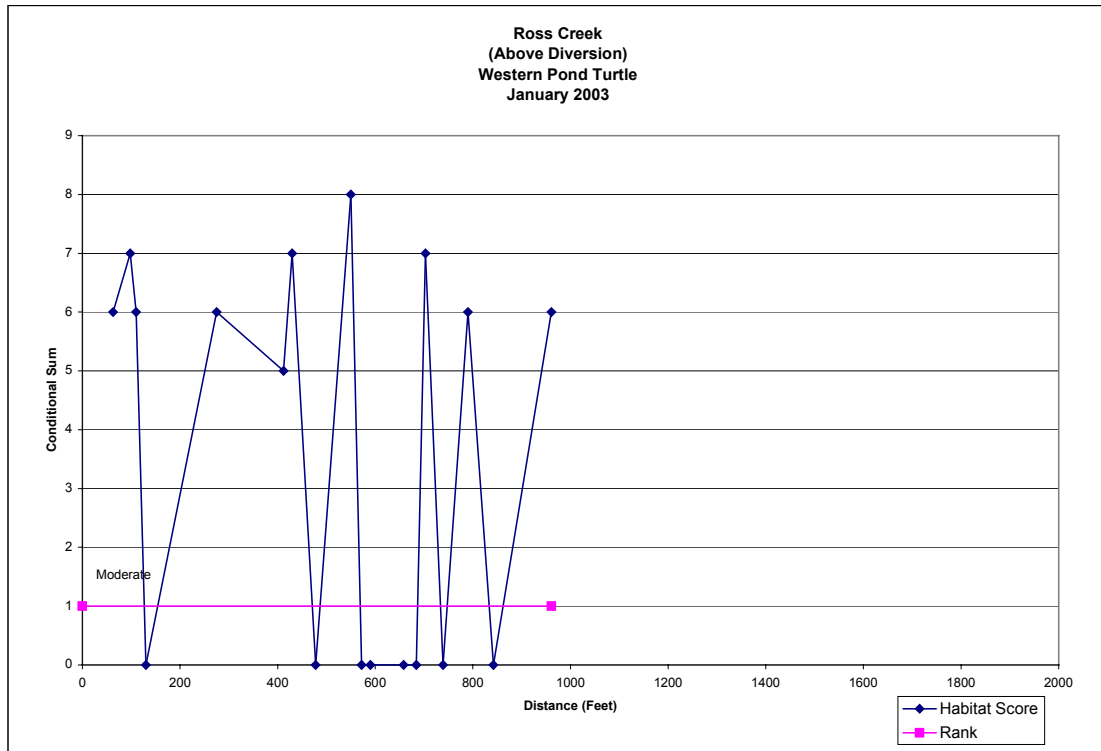
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



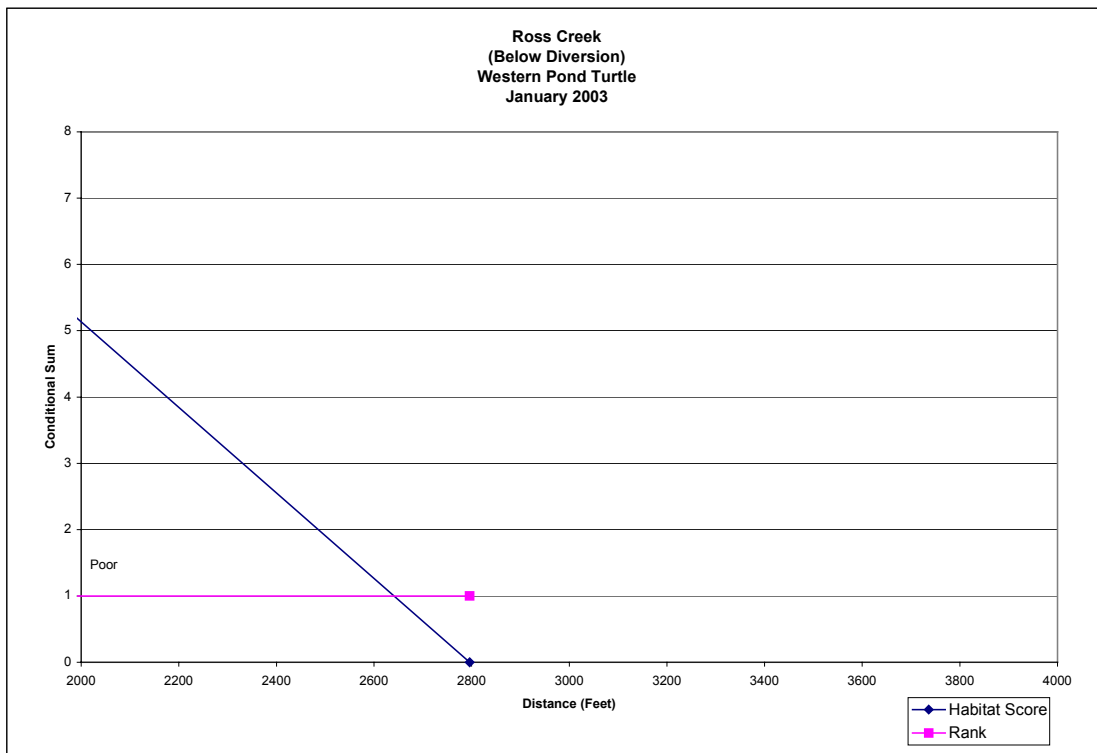
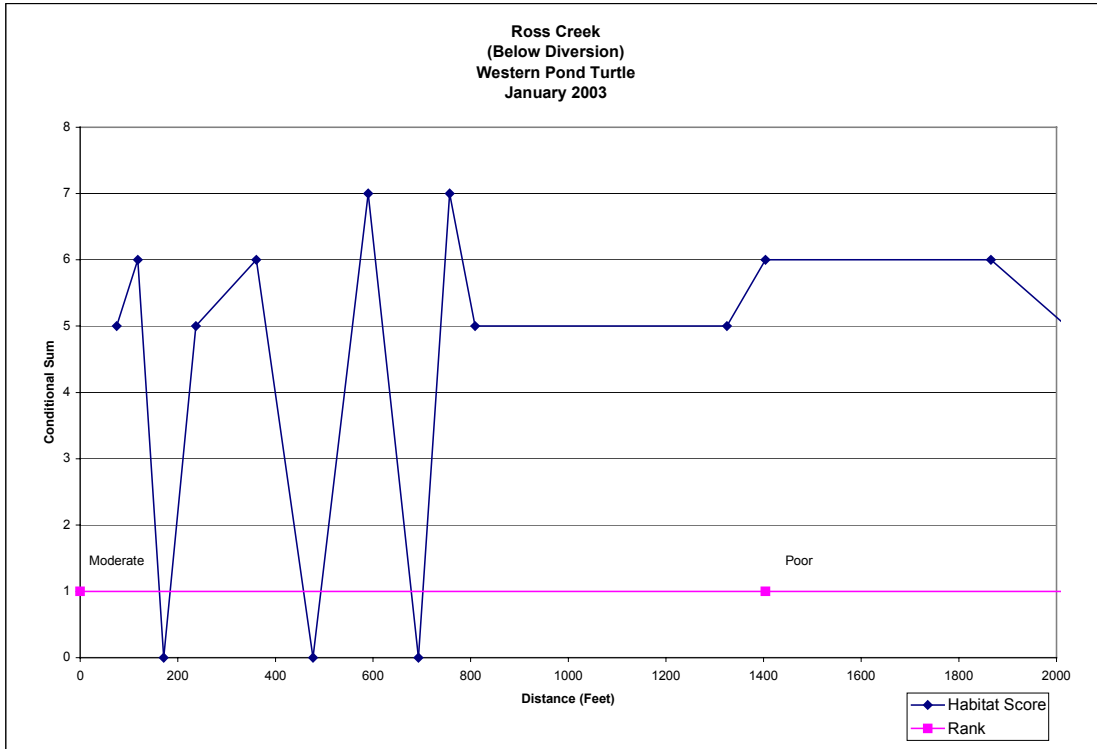
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)

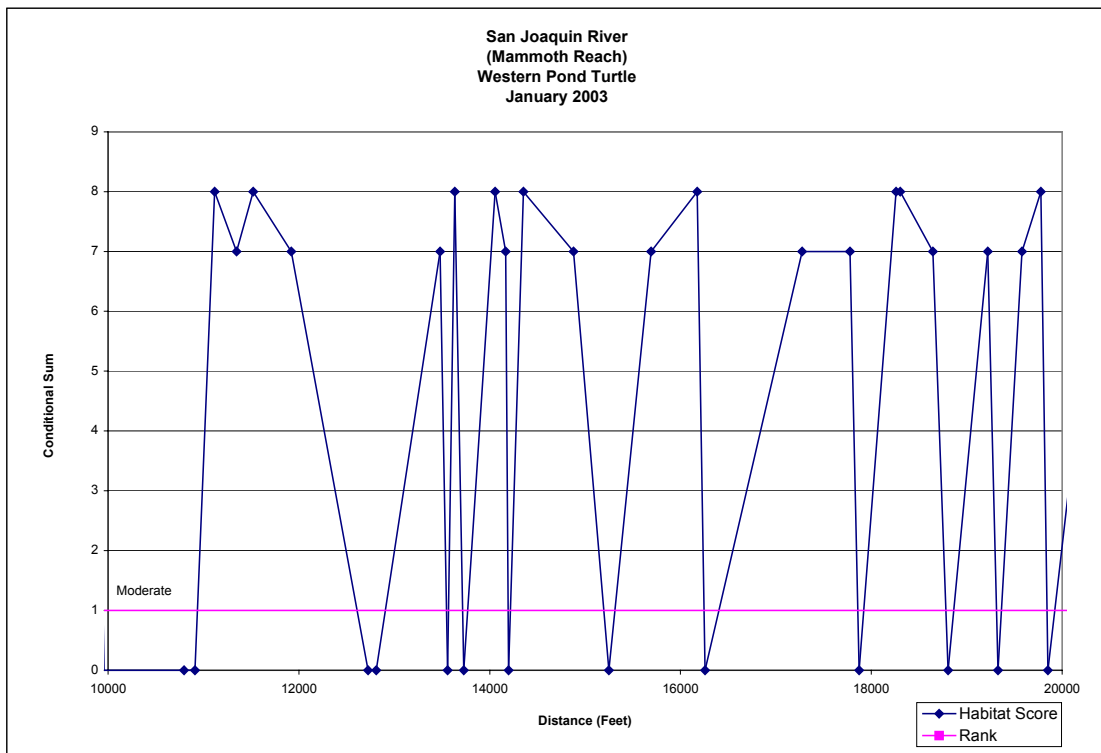
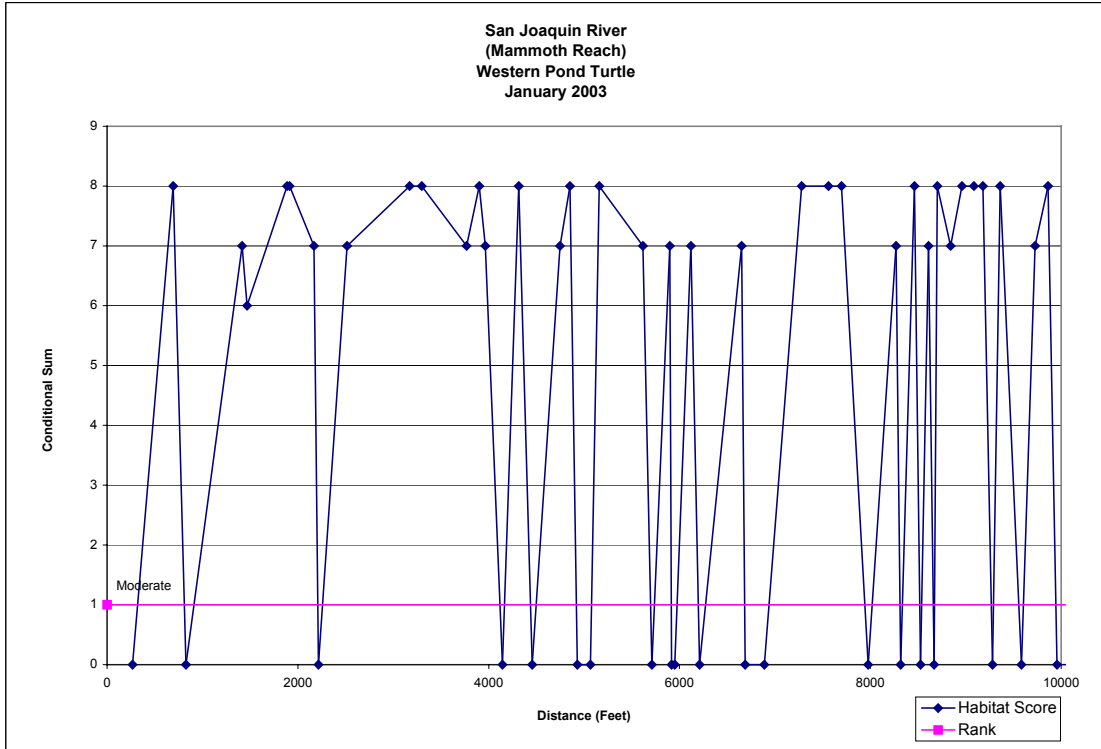


### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)

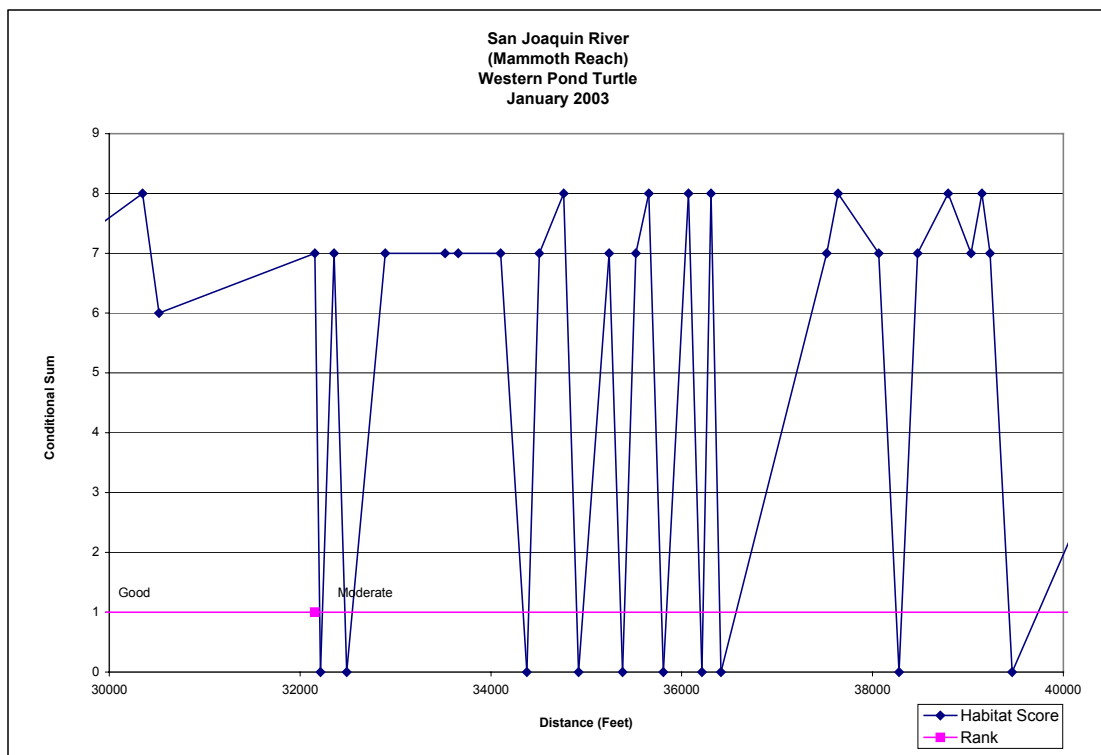
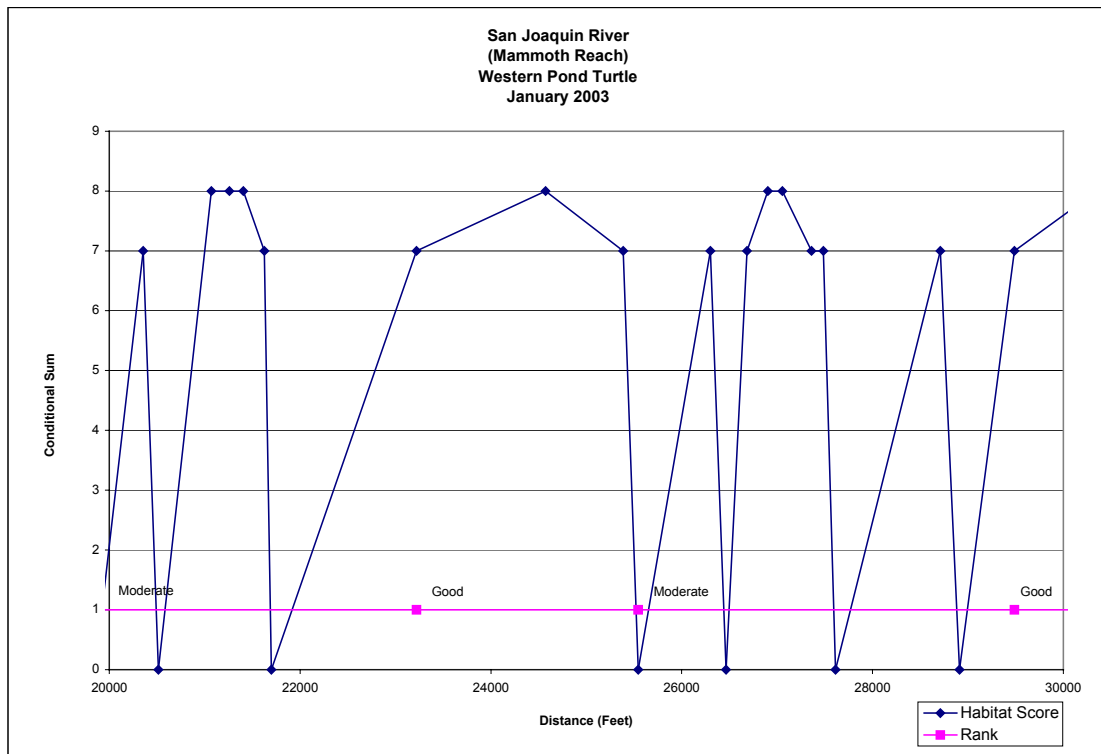




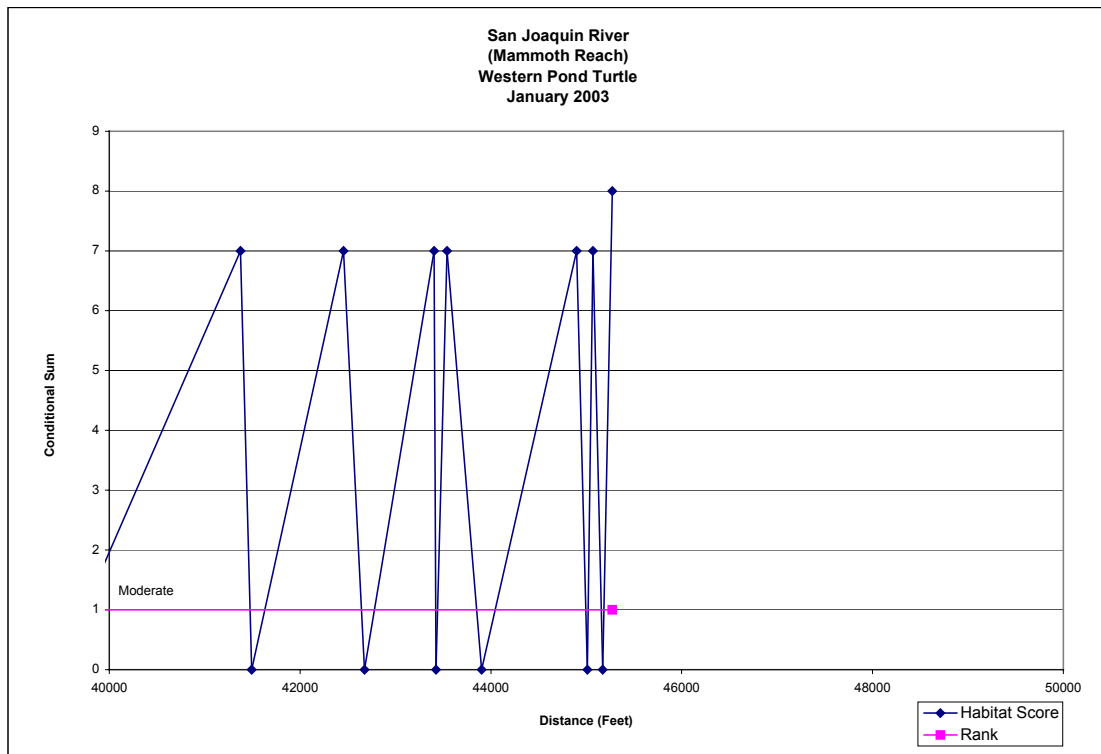
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



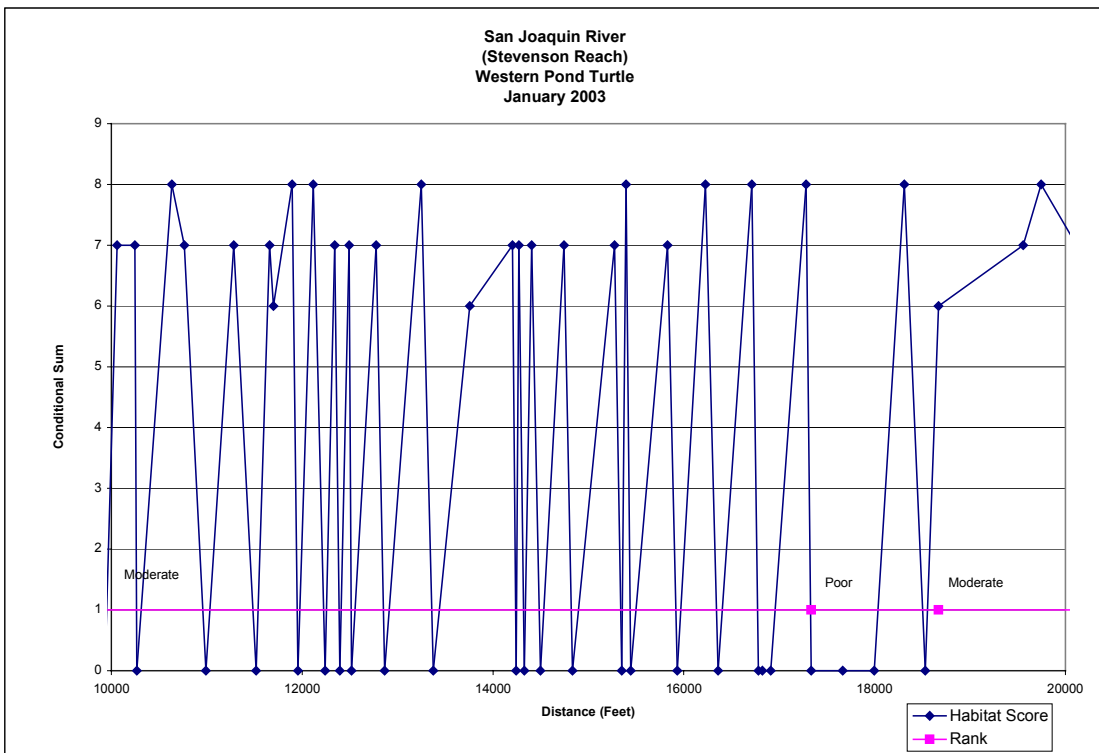
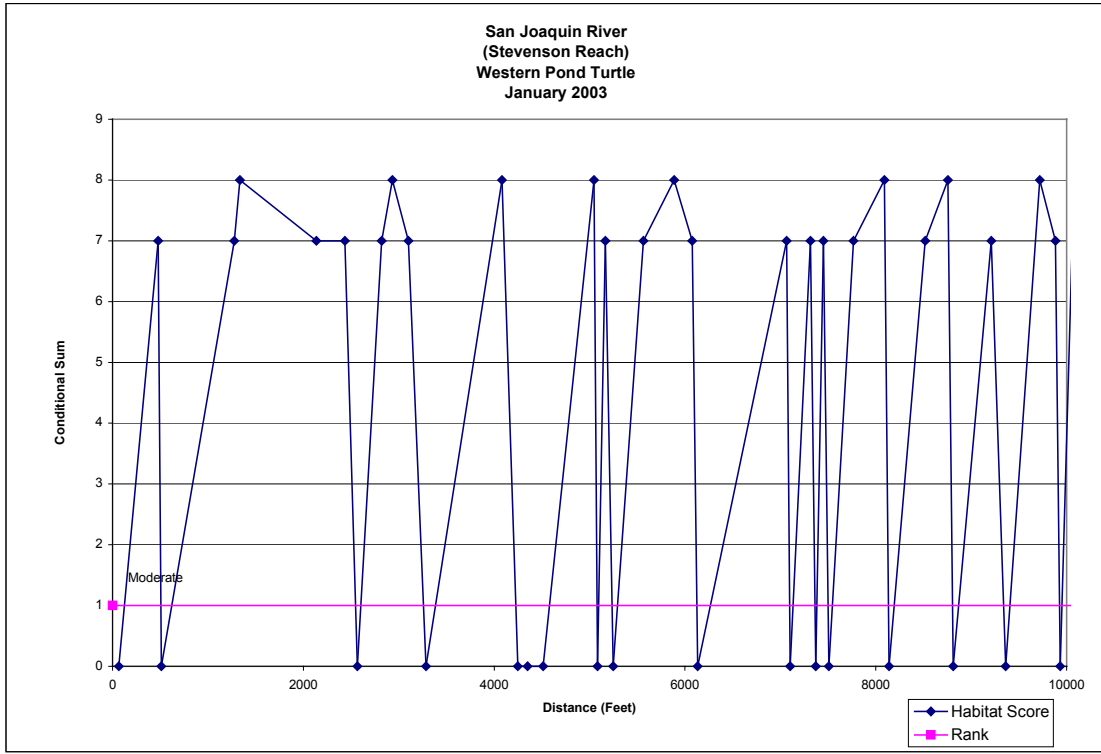
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



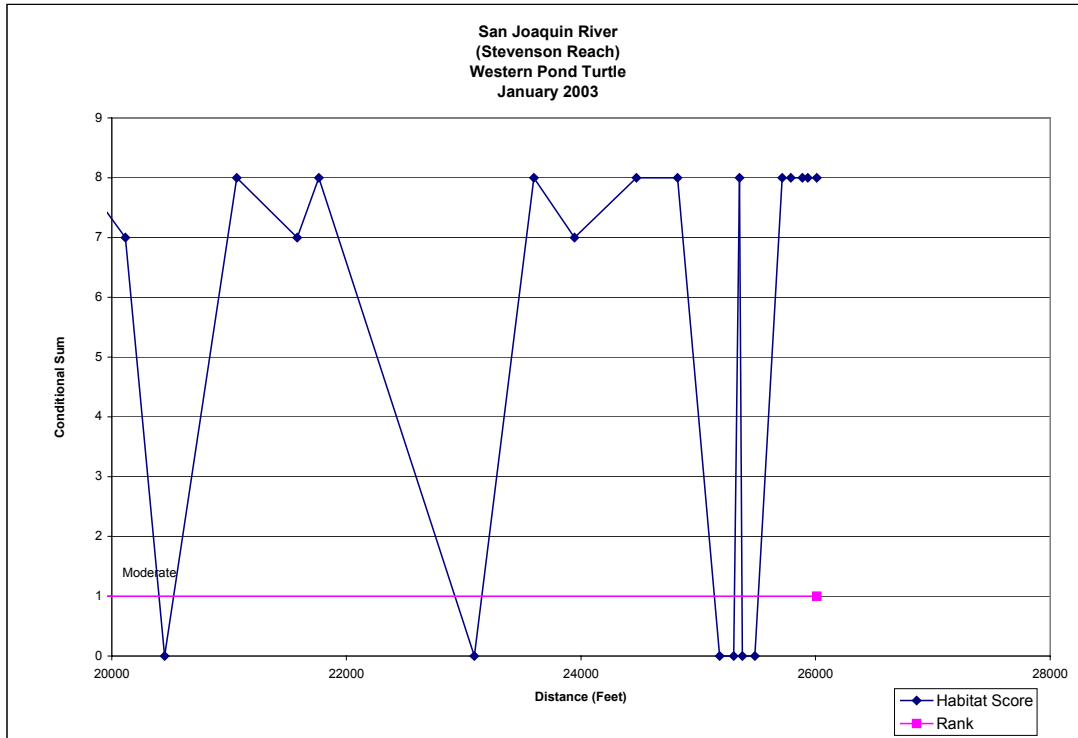
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



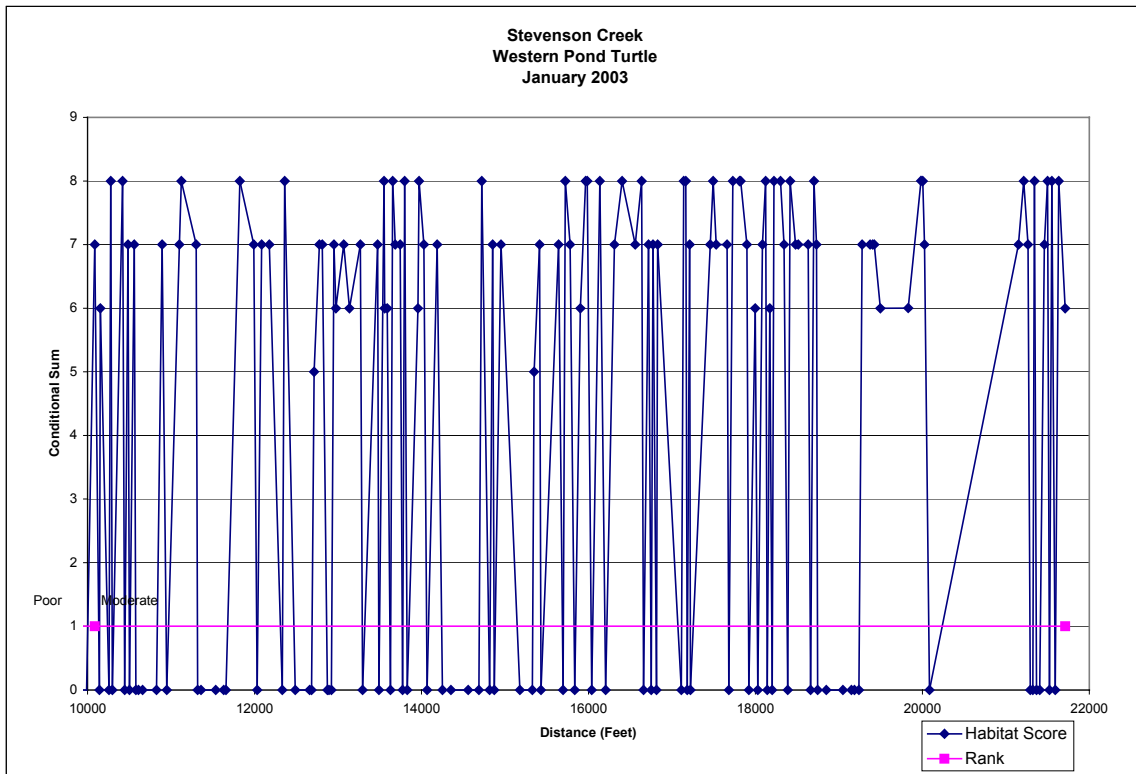
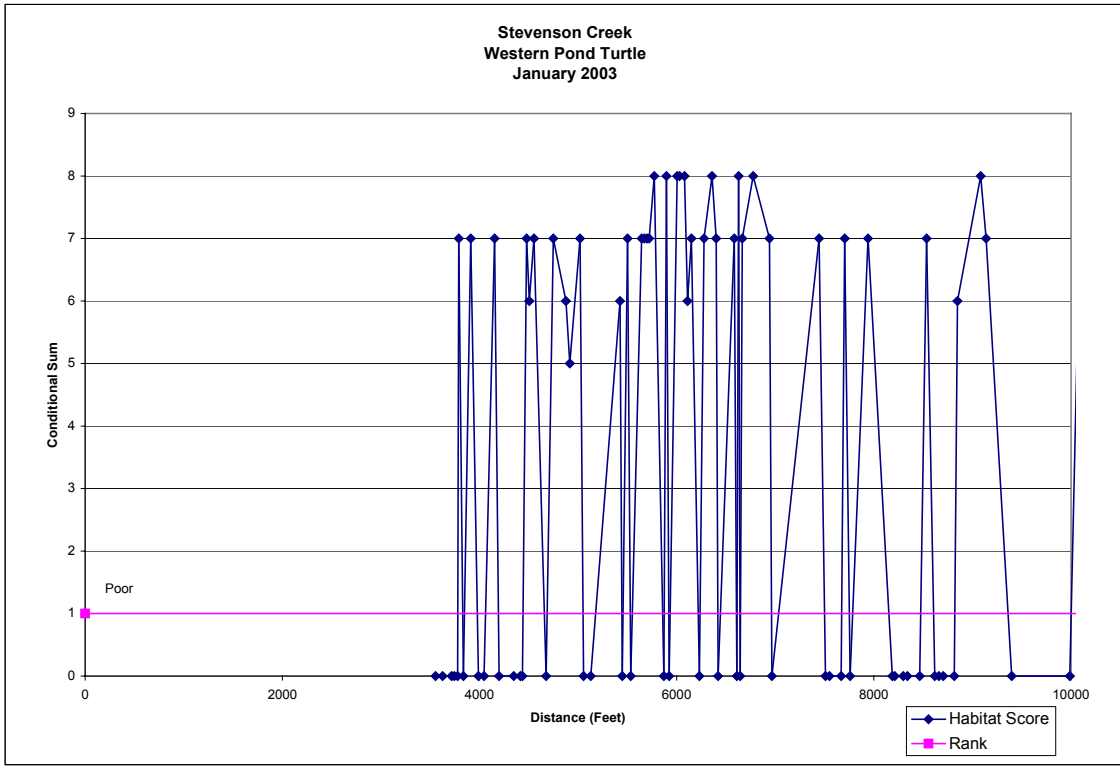
### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



### Appendix H. Habitat Suitability and Segment Quality Charts for the Western Pond Turtle (continued)



## **APPENDIX I**

### **Foothill Yellow-legged Frog Data Forms**

### Appendix I. Foothill Yellow-legged Frog Data (Site Characteristics)

Site	Start UTM	End UTM	Elevation (ft)	Ave Stream Width (m)	Ave Stream Depth (m)	Observers	Date	Survey Start Time	Survey End Time	Weather	Air Temp (F)	Water Temp (F)	Bullfrogs	Fish
Jose Creek, Reach 3	N - 4112092 0288895	E - N - 4111444 E - 0288657	2925	5	0.25	Sarah Yarnell Darrin Doyle	5/11/2002	1035	1330	breezy, clear, sunny	65	54	Yes	Yes
Jose Creek, Reach 1	N - 4113165 0288427	E - N - 4112670 E - 0288910	2600	5	0.25	Sarah Yarnell Darrin Doyle	5/10/2002	1100	1410	clear, sunny, warm	75	51	No	Yes



## Appendix I. Foothill Yellow-legged Frog Data (Detections)

Site	Life Stage/Sex	Number	Length (mm)	Meso-habitat Type	Riparian Type	Substrate	Local Depth (m)	Local Width (m)	Local Velocity (m/s)	Local Water Temp (F)	Canopy Cover Class	Comments
Jose Creek, Reach 3	SA	1	32	POO	open alder	COB	1.5	5	0	62	1	in pool with small turtle (see pictures)
Jose Creek, Reach 3	AU	1	44	LGR	willow/alder	MXD	0.25	1.5	0.5	57	1	
Jose Creek, Reach 3	AU	1	44	SCP	Open	BDX	0.25	1.5	0	66	1	
Jose Creek, Reach 1	AM	1	50	CAS	Bedrock	BDX	0.5	Not recorded	0.5	51	1	top end of pool, below sheet cascade
Jose Creek, Reach 1	AF	1	56	SPO	Bedrock	BDX	0.5	Not recorded	0.25	53	1	below boulder step pool
Jose Creek, Reach 1	AM	1	50	SPO	Bedrock	BDX	0.25	Not recorded	0-1	54	1	base of large pool downstream of cascade
Jose Creek, Reach 1	AU	1	~50	POO	willow/alder	BDX	1	3	~1	56	1	sitting on bedrock outcrop in mid-pool
Jose Creek, Reach 1	AF	1	65	SPO	willow/alder	BLD	0.5	1.5	1	56	1	big, but doesn't look gravid
Jose Creek, Reach 1	E	1	60	POO	willow/alder	BLD	0.3	4	<1	56	1	New
Jose Creek, Reach 1	AM	1	43	POO	willow/alder	SND	0.2	4	<1	56	1	
Jose Creek, Reach 1	E	1	80	POO	willow/alder	BLD	0.27	4	<1	56	1	older
Jose Creek, Reach 1	AU	1	31	POO	Bedrock	BDX	2.5	4	<1	57	1	Next to cascade
Jose Creek, Reach 1	SA	1	25	OTH	Bedrock	BDX	0.01	0.25	0	85	1	Disconnected side pool on cascade between 2 lg pools. Saw on way back downstream just US from bridge.
Jose Creek, Reach 1	SA	1	31	CAS	willow/alder	BDX	0.1	2	0.5	60	1	

# Appendix I. Foothill Yellow-legged Frog

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Jose Creek

Date (mm-dd-yy): 5/10/2002	Begin Time: 1100	Total Time (min.): 380	Observer(s): Darrin Doyle and Sarah Yarnell						
Locality: Not recorded.							Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 2,600 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4113165			Start East UTM: GPS Map Zone 11S: 0288427			
Topographic Map: Mariposa, CA		7.5" 15"	End North UTM: GPS Map Zone 11S: 4112670			End East UTM: GPS Map Zone 11S: 0288910			
Distance (km) to mapped trail: Not recorded			Distance (km) to public dirt road: Not recorded			Dist. (km) to pub. paved road: 0.1			

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		75 C F	51 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch				Drainage:
	1 2 3 4 5		Pond	Stream	Grassland	Spring	Seasonal Permanent
Site Length (m):	Average Width (m):		Average Depth (m):	Maximum Depth (m):	Water Flow 0 7-11 sec.		
1,500	5		0.25	2	sec./10 ft. <7 sec > 11 sec.		
Water	Clear	Turbid (1-5)	% Mid-day Shade: 5		% Emerg. Veg.: 1	% Floating Vegetation: 1	
1 2 3 3 4 5							
Watershed:	Natural	Grazed	Logged (last 15 years)		Substrate	Silt	< 2 mm 2-75 mm
	Urban	Agriculture	Other-		75-300 mm	>300 mm	Bedrock
Predominant Vegetation: Alder and willows in the riparian; oak-woodland upslope from riparian.							
Comments: Lower Jose Creek Reach. Large still pools; sunny open sand bottoms. Some good looking pond turtle habitat through here - sedges, pools, silt bottom, sandy beaches.							

Fishing Tackle:	Fish Present:	Species and Approximate Number: Unknown: 3 salmonid minnows.
Yes No	Yes No ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Clemmys marmorata</i>	13 (in mid channel pools)				Not recorded	SVL: TL: 30.5 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>		1 (in mid channel pool)			Not recorded	SVL: TL: 15.25 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>		1 (hatchling in side channel pool)			Not recorded	SVL: TL: 3.75 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>				2	Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>			100		Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	5				Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Rana boylei</i>	7	2		2	See Lind form	SVL: TL: See Lind form	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Jose Creek Reach #3

Date (mm-dd-yy): 5/11/2002	Begin Time: 1035	Total Time (min.): 354	Observer(s): Darrin Doyle and Sarah Yarnell									
Locality: From top of waterfall below Jose Basin Road to upstream of bridge.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 2,925 m <input type="checkbox"/> ft.		Start North UTM: Map Datum WGS 84 GPS <input type="checkbox"/> Map Zone 11S: 4112092				Start East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0288895					
Topographic Map: Cascadel Point		7.5" 15"		End North UTM: GPS <input type="checkbox"/> Map Zone 11S: 4111444				End East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0288657				
Distance (km) to mapped trail: NA			Distance (km) to public dirt road: 0.1				Dist. (km) to pub. paved road: 0					

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input checked="" type="checkbox"/> 5-20	Air Temperature	Water temperature	
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow			> 20 mph	65 C <input type="checkbox"/> F	54 C <input type="checkbox"/> F	

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch				Drainage:				
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input checked="" type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
800	5		0.25		2.5		sec./10 ft. <7 sec		> 11 sec.		
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 25			% Emerg. Veg.: 5		% Floating Vegetation: 2			
1	2	3	3	4	5	Substrate		Silt	< 2 mm	2-75 mm	
Watershed: <input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Grazed		<input type="checkbox"/> Logged (last 15 years)			75-300 mm		>300 mm	<input checked="" type="checkbox"/> Bedrock	
Urban		Agriculture		Other-							

**Predominant Vegetation:** Riparian: Alder and willow; Upslope: oak-woodland  
**Comments:** Bedrock controlled boulder - step pools below bridge, sand in pools, channel is fairly narrow w/ mixed riparian at edges of steps. Whole sector looks really good - nice habitat, no frogs yet. Overall, habitat is great for turtles, only moderate for Foothill Yellow Legged Frog. Problem is slope is so low that pools are huge and still w/ many off-channel stagnant pools. Tons and tons of sand in pools - by far dominant substrate. So only decent frog habitat is where flows and velocities are high enough to move sand out and create clear, moving water

Fishing Tackle:	Fish Present:		Species and Approximate Number: 1 rainbow trout	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> ? <input type="checkbox"/>			

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Clemmys marmorata</i>		1			Not recorded	SVL: TL: 15.25	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>		1 (foraging in mid-channel pool)			Not recorded	SVL: TL: 10	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Taricha torosa</i>	2				Not recorded	SVL: TL: 15.25	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Rana catesbeiana</i>		1			Not recorded	SVL: TL: Not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Rana catesbeiana</i>			41		Not recorded	SVL: TL: Not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: Not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>	2				Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>			205		Not recorded	SVL: TL: Not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Rana boylei</i>	2	1			See Lind form	SVL: TL: See Lind form	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix I. Foothill Yellow-legged Frog (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Stevenson Creek

Date (mm-dd-yy): 5/12/2002	Begin Time: 1012	Total Time (min.): 372	Observer(s): Darrin Doyle and Sarah Yarnell									
Locality: Stevenson Creek from top of huge waterfall to upstream of power lines. From Shaver Lake, drive FS RD 8 about 7.3 miles.										Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 2,100 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4115713					Start East UTM: GPS Map Zone 11S: 0291089				
Topographic Map: Musick Mtn., CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4115138					End East UTM: GPS Map Zone 11S: 0291797				
Distance (km) to mapped trail: 0			Distance (km) to public dirt road: 1 km					Dist. (km) to pub. paved road: 1.8				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature	
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		76 C F	49 C F	

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch					Drainage:			
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
1,500	4		0.25		2		sec./10 ft. <7 sec		> 11 sec.		
Water	Clear	Turbid (1-5)	% Mid-day Shade: 50			% Emerg. Veg.: 1		% Floating Vegetation: 1			
1	2	3	3	4	5						
Watershed:	Natural	Grazed	Logged (last 15 years)			Substrate		Silt	< 2 mm	2-75 mm	
	Urban	Agriculture	Other-Hydroelectric project			75-300 mm		>300 mm	Bedrock		
Predominant Vegetation: Willow and alders in riparian; oak-woodland upslope											
Comments: Stevenson Creek below Shaver - lower reach. Lower end here above falls is bedrock plunge pool with heavy vegetation, little riparian vegetation slope is gradual above falls <2% pools are fairly deep, 1-2 m. Upstream hit heavily vegetated boulder/bedrock area w/ many pools and cascades - heavy vegetation cover (~75-100%). Below next bedrock section opens up some into a big debris field with logs and dead vegetation (Loose Woody Debris) everywhere, cobbles, boulders and side pools. Step pools upstream, then valley really widens out and channel becomes a step-run sequence with fairly uniform width and deep pools - vegetation goes down to banks which are slightly entrenched and steep. Very mellow gradient through here											
Fishing Tackle:			Fish Present:			Species and Approximate Number: 7 rainbow trout.					
Yes	No		Yes	No		?					

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
<i>Hyla regilla</i>			250		Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
<i>Hyla regilla</i>				5 (in side channel pool)	Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
<i>Thamnophis couchii</i>	6				Not recorded	SVL: TL: all about 75	Not recorded	Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
<i>Clemmys marmorata</i>	1 (foraging in mid channel pool)				Not recorded	SVL: TL: 30.5 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

# Appendix I. Foothill Yellow-legged Frog (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Stevenson Creek

Date (mm-dd-yy): 5/13/2002	Begin Time: 1045	Total Time (min.): 382	Observer(s): Darrin Doyle and Sarah Yarnell									
Locality: Drive Huntington Lake Road about 3 miles. Drive FS RD 8 about 7.3 miles. Park near bridge over Stevenson Creek and survey upstream.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 4,240 m <input type="checkbox"/> ft.		Start North UTM: Map Datum WGS 84 GPS <input type="checkbox"/> Map Zone 11S: 4114590				Start East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0293415					
Topographic Map: Musick Mtn., CA		7.5" <input type="checkbox"/> 15"	End North UTM: GPS <input type="checkbox"/> Map Zone 11S: 3967				End East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0294219					
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: 0 (FS RD 8)				Dist. (km) to pub. paved road: 15 (Huntington Lake Road)					

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	Water temperature	
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph		72	C	<input type="checkbox"/> F
									50
									C
									F

Habitat:	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch					Drainage:			
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input checked="" type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
300	3		0.25		3		sec./10 ft.		<7 sec		> 11 sec.
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 30			% Emerg. Veg.: 1		% Floating Vegetation: 1			
1	2	3	3	4	5						
Watershed:	<input type="checkbox"/> Natural	<input type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)			Substrate		Silt	< 2 mm		2-75 mm
	<input type="checkbox"/> Urban	<input type="checkbox"/> Agriculture	<input checked="" type="checkbox"/> Other-Hydroelectric projects			75-300 mm	>300 mm	<input checked="" type="checkbox"/> Bedrock			
<b>Predominant Vegetation:</b> Alder and willow in riparian; oak-woodland in upslope.											
<b>Comments:</b> Stevenson Creek Upper Reach. Great habitat. Open, sunny, cobbles, gravel sand, riffles, pools. Hit large bedrock pool, just downstream of pool for ~50-100 m habitat better. More open, less willow. Large boulders, cobbles, riffles and higher velocities. Large boulders upstream of bedrock pool											

Fishing Tackle:	Fish Present:		Species and Approximate Number: 200 rainbow trout.	
Yes	<input checked="" type="checkbox"/> No	Yes	No	?

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>	4				Not recorded	SVL: TL: all about 76	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>		1 (foraging in mid channel pool)			Not recorded	SVL: TL: 18 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		1			Not recorded	SVL: TL: 30.5	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

**Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)**

Site: Ely Creek above diversion

Date (mm-dd-yy): 5/14/2002	Begin Time: 1115	Total Time (min.): 45	Observer(s): Darrin Doyle and Pierre Fidenci
Locality: Take Huntington Lake RD from Shaver Lake. Drive FS RD 8 about 0.6 mile to Ely Creek.			Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?
County: Fresno	Elevation: 5,000 m <input type="checkbox"/> ft.	Start North UTM: Map Datum WGS 84 GPS <input type="checkbox"/> Map Zone 11S: 4117566	Start East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0297075
Topographic Map: Musick Mtn., CA	7.5" <input type="checkbox"/> 15"	End North UTM: GPS <input type="checkbox"/> Map Zone 11S: 4117439	End East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0296992
Distance (km) to mapped trail: Not recorded.	Distance (km) to public dirt road: 0 (FS RD 8)		Dist. (km) to pub. paved road: 1 (Huntington Lake Road)

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	20	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	10	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph									

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch				Drainage:	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent	
1	2	3	4	5	Pond	<input checked="" type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring		
Site Length (m): 200		Average Width (m): 3		Average Depth (m): 0.15		Maximum Depth (m): 1		Water Flow 0		
								sec./10 ft. <7 sec > 11 sec.		
Water		<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 30		% Emerg. Veg.: 0		% Floating Vegetation: 0		
1	2	3	3	4	5	Substrate		Silt	< 2 mm	2-75 mm
Watershed:		<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)		75-300 mm		>300 mm	<input checked="" type="checkbox"/> Bedrock	
Urban		Agriculture		Other-						
Predominant Vegetation: Alders and conifers										
Comments: Not recorded.										

Fishing Tackle:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Fish Present:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> ?	Species and Approximate Number: Unknown salmonid about 8 inches in length.
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Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other	
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

**Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)**

Site: Ely Creek below diversion

Date (mm-dd-yy): 5/14/2002	Begin Time: 0930	Total Time (min.): 50	Observer(s): Darrin Doyle and Pierre Fidenci
Locality: Drive about 0.6 mile on FS RD 8 to reach Ely Creek. Surveyed starting about 300 meters downstream of dirt road (FS RD 8).			Owner: NPS <input type="checkbox"/> FS <input checked="" type="checkbox"/> BLM <input type="checkbox"/> St. Pvt. Other ?
County: Fresno	Elevation: 4,800 m <input type="checkbox"/> ft.	Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4117708	Start East UTM: GPS Map Zone 11S 0297172
Topographic Map: Musick Mtn., CA 7.5" 15"		End North UTM: GPS Map Zone 11S: 4117566	End East UTM: GPS Map Zone 11S: 0297075
Distance (km) to mapped trail: Not recorded.		Distance (km) to public dirt road: 0 (FS RD 8)	Dist. (km) to pub. paved road: 1 (Huntington Lake Road)

Weather	Clear <input checked="" type="checkbox"/> Overcast <input type="checkbox"/> Rain <input type="checkbox"/>	Wind: 0 < 5 5-20 > 20 mph	Air Temperature 18 C <input type="checkbox"/> F <input type="checkbox"/>	Water temperature 8.5 C <input type="checkbox"/> F <input type="checkbox"/>
	Pt. Cloudy <input type="checkbox"/> Mostly Cloudy <input type="checkbox"/> Snow <input type="checkbox"/>			

Habitat:	Natural <input type="checkbox"/> Altered (1-5) <input checked="" type="checkbox"/>	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/Wetland <input type="checkbox"/> Ditch <input type="checkbox"/>	Drainage:
	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	Pond <input type="checkbox"/> Stream <input checked="" type="checkbox"/> Grassland <input type="checkbox"/> Spring <input type="checkbox"/>	Seasonal <input type="checkbox"/> Permanent <input type="checkbox"/>
Site Length (m): 300	Average Width (m): 1	Average Depth (m): 0.15	Maximum Depth (m): 0
Water: Clear <input checked="" type="checkbox"/> Turbid (1-5) <input type="checkbox"/>	% Mid-day Shade: 50	% Emerg. Veg.: 0	% Floating Vegetation: 0
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	Watershed: Natural <input type="checkbox"/> Grazed <input type="checkbox"/> Logged (last 15 years) <input type="checkbox"/>	Substrate: 75-300 mm <input type="checkbox"/> >300 mm <input checked="" type="checkbox"/>	Silt: < 2 mm <input type="checkbox"/> 2-75 mm <input type="checkbox"/>
	Urban <input type="checkbox"/> Agriculture <input type="checkbox"/> Other-Hydroelectric project <input checked="" type="checkbox"/>	Bedrock <input type="checkbox"/>	
Predominant Vegetation: Alders and conifers			
Comments: Not recorded.			

Fishing Tackle:	Fish Present:	Species and Approximate Number: NA
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ? <input type="checkbox"/>	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>	1 (incidental)				Not recorded		Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
								Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

Site: Big Creek Dam 5 to  
Powerhouse 8

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 5/15/2002	Begin Time: 0858	Total Time (min.): 246	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Huntington Lake Road from Highway 168. Take Upper Canyon Road (FS RD 8). Drive 1 mile past turnout to Powerhouse 8. Hike down gated dirt road to stream (easy hike).										Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 2,720 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4120220					Start East UTM: GPS Map Zone 11S: 0294225				
Topographic Map: Musick Mtn., CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 411 9797					End East UTM: GPS Map Zone 11S: 0294424				
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: 3 (FS RD 8)					Dist. (km) to pub. paved road: 12 (Huntington Lake Road)				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		17 C F	9.5 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch					Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent	
Site Length (m):	700		Average Width (m):		4	Average Depth (m):	1	Maximum Depth (m):	3	Water Flow	0	7-11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 10				% Emerg. Veg.: 0		% Floating Vegetation: 1			
Watershed:	Natural	Grazed	Logged (last 15 years)			Substrate	Silt	< 2 mm	2-75 mm			
	Urban	Agriculture	Other-Hydroelectric project			75-300 mm	>300 mm	Bedrock				

**Predominant Vegetation:** Willows and alders in riparian; oak-woodland upslope.  
**Comments:** Good RABO (mountain yellow-legged frog) habitat for 0.5 mile upstream, but then becomes poor habitat because stream is dominated by a sequence of deep-narrow pools with very steep slope and separated by 6-10 feet high waterfalls. Pools are only traversable via a raft. We stopped survey about 0.25 mile below powerhouse 8 because we were unable to scale waterfall at a particular pool and by-passing the pool was too hazardous because of the extremely steep slope.

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	10 rainbow trout.

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>	2				Not recorded	SVL: TL: 76	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>			100		Not recorded	SVL: TL: Not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo



# Appendix I. Foothill Yellow-legged Frog (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Rock Creek above diversion

Date (mm-dd-yy): 5/16/2002	Begin Time: 1200	Total Time (min.): 90	Observer(s): Sarah Yarnell and Audra Loyal									
Locality: Diversion to waterfall.											Owner: NPS FS BLM St. Pvt. Other ?	
County: Madera	Elevation: 3,200 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4127906					Start East UTM: GPS Map Zone 11S: 0292556				
Topographic Map: Mammoth Pool Dam 7.5" 15"			End North UTM: GPS Map Zone 11S: 4127976					End East UTM: GPS Map Zone 11S: 0292333				
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: 0					Dist. (km) to pub. paved road: Not recorded.				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		79 C F	57 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch					Drainage:			
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
	Not recorded		2		0.5		2.5		sec./10 ft. <7 sec		> 11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 40			% Emerg. Veg.: 10		% Floating Vegetation: 0			
1	2	3	3	4	5						
Watershed:	Natural	Grazed	Logged (last 15 years)			Substrate		Silt		< 2 mm 2-75 mm	
	Urban	Agriculture	Other-			75-300 mm		>300 mm		Bedrock	
Predominant Vegetation: Oak, willow, and alders in riparian.											
Comments: Not recorded.											

Fishing Tackle: Not recorded.	Fish Present: Not recorded.	Species and Approximate Number: Not recorded.
Yes No	Yes No ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 60	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 100	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

Site: Rock Creek below diversion

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 5/16/2002	Begin Time: 1050	Total Time (min.): 55	Observer(s): Sarah Yarnell and Audra Loyal
Locality: Top of Rock Creek waterfall to diversion.			Owner: NPS FS BLM St. Pvt. Other ?
County: Madera	Elevation: 3,000 m ft.	Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4127917	Start East UTM: GPS Map Zone 11S: 0292784
Topographic Map: Mammoth Pool Dam 7.5" 15"		End North UTM: GPS Map Zone 11S: 4127906	End East UTM: GPS Map Zone 11S: 0292556
Distance (km) to mapped trail: Not recorded.		Distance (km) to public dirt road: 0	Dist. (km) to pub. paved road: Not recorded.

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		76 C F	65 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch	Drainage:	Seasonal	Permanent		
1	2	3	4	5	Pond	Stream	Grassland	Spring
Site Length (m): 350		Average Width (m): 1		Average Depth (m): 0.1	Maximum Depth (m): 1	Water Flow	0	7-11 sec.
Water		Clear	Turbid (1-5)	% Mid-day Shade: 0	% Emerg. Veg.: 0	% Floating Vegetation: 0	sec./10 ft. <7 sec. > 11 sec.	
Watershed:		Natural	Grazed	Logged (last 15 years)	Substrate	Silt	< 2 mm	2-75 mm
		Urban	Agriculture	Other-hydroelectric project, by road	75-300 mm	>300 mm	Bedrock	
Predominant Vegetation: Scrub oak and madrone along channel edges.								
Comments: Rock Creek Below Diversion. Habitat here is open cascades, all bedrock with little riparian vegetation except at channel edges. Very exposed and larger pools have fish. Habitat looks great. Sunny to dappled shade. Complex substrate. Many perches and side pool.								

Fishing Tackle: Not recorded.	Fish Present:	Species and Approximate Number: Not recorded.
Yes	No	Yes
		No
		?

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>			100		Not recorded	SVL: TL: 2.5	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 55	35	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix I. Foothill Yellow-legged Frog (continued)

Site: San Joaquin River  
upstream of Mammoth Pool  
Powerhouse

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 5/17/2002	Begin Time: 0930	Total Time (min.): 285	Observer(s): Sarah Yarnell and Audra Loyal									
Locality: Not recorded.											Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?	
County: Fresno/ Madera	Elevation: 2,100 m <input type="checkbox"/> ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4122933				Start East UTM: GPS Map Zone 11S: 0292653					
Topographic Map: Musick Mtn., CA <input type="checkbox"/> 7.5" <input type="checkbox"/> 15"			End North UTM: GPS Map Zone 11S: 4122908				End East UTM: GPS Map Zone 11S: 0293032					
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: 2				Dist. (km) to pub. paved road: 0					

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	Water temperature	
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph		76	C	<input type="checkbox"/> F
									62
									C
									F

Habitat:	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input checked="" type="checkbox"/> Woodland <input type="checkbox"/> Meadow/Wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:				
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
Not recorded	7		1		3		sec./10 ft.		<7 sec		>11 sec.
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 10			% Emerg. Veg.: 2		% Floating Vegetation: 0			
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	Watershed: Natural <input type="checkbox"/> Grazed <input type="checkbox"/> Logged (last 15 years) <input type="checkbox"/>		Substrate		Silt	< 2 mm	2-75 mm
Urban <input type="checkbox"/>		Agriculture <input type="checkbox"/>		Other-Hydroelectric project <input checked="" type="checkbox"/>		75-300 mm		<input checked="" type="checkbox"/> >300 mm		Bedrock <input type="checkbox"/>	
Predominant Vegetation: Willows and scrub oak in riparian											
Comments: San Joaquin River upstream of MPPH. Just upstream - large cobble bars and pools on right bank. Several nice gently flowing side pools among boulders and cobbles. Very open - only shade/cover from cobbles/boulders. Bar is excellent egg habitat - no signs of eggs, tads or adults though!											

Fishing Tackle: Not recorded.	Fish Present:	Species and Approximate Number: Not recorded.
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>			50		Not recorded	SVL: TL: 1	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>	1				Not recorded	SVL: TL: 40	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	2				Not recorded	SVL: TL: 100; 65	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 100	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

Site: Ross Creek below diversion

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 5/17/2002	Begin Time: 0835	Total Time (min.): 194	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: From Mammoth Pool Powerhouse, drive past gate and continue for about 3 miles uphill to the diversion. Park at the diversion and survey downstream.											Owner: NPS FS BLM St. Pvt. Other ?	
County: Madera	Elevation: 3,200 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4123458					Start East UTM: GPS Map Zone 11S: 0292021				
Topographic Map: Musick Mtn., CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4122952					End East UTM: GPS Map Zone 11S: 0292415				
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: 1					Dist. (km) to pub. paved road: 2				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	67	C	F	Water Temperature	14	C	F
	Pt. Cloudy	Mostly Cloudy	Snow			> 20 mph								

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch										Drainage:	
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Water Flow	0	7-11 sec.	Seasonal	Permanent
Site Length (m):	500		Average Width (m):			Average Depth (m):		Maximum Depth (m):		sec./10 ft.		<7 sec	> 11 sec.	
	Water	Clear	Turbid (1-5)		% Mid-day Shade: 90			% Emerg. Veg.: 1		% Floating Vegetation: 0				
Watershed:	Natural	Grazed	Logged (last 15 years)				Substrate		Silt	< 2 mm	2-75 mm			
	Urban	Agriculture	Other-Hydroelectric project				75-300 mm		>300 mm	Bedrock				
<b>Predominant Vegetation:</b> Alders, willows, ferns in riparian; oak and manzanita in upslope.														
<b>Comments:</b> 0 - 100 meters below diversion is poor RABO (foothill yellow-legged frog) habitat, but Hyla regilla tadpoles are abundant in shallow bedrock pools. No vegetation in bedrock areas. From 100 - 500 meters, stream has more vegetation, but steep slope results in little habitat diversity. Stream is dominated by pools and cascades. Overall, habitat for RABO is moderate. Lots of western pond turtles found in stream. I took lots of habitat photos as we as photos of western pond turtles. Ended survey at a 200 feet tall cascade that is too hazardous to descend. We stopped about 1/4 mile short of confluence with the SJR.														

Fishing Tackle:	Fish Present:		Species and Approximate Number: Not recorded.											
Yes	No	Yes	No	?										

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>			1,500		Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>	1 (basking on bedrock) N=4123261; E=0292157				Not recorded	SVL: TL: 30.5 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>	1 (at base of 15' cascade) N=4123287; E=0292157				Not recorded	SVL: TL: 33 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>	1 (bask. in mid channel pool) N=4123065; E=0292332				Not recorded	SVL: TL: 30.5 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>				20	Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>	2 (bask. on bed rock) N=4122988; E=0292377				Not recorded	SVL: TL: 30.5 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Clemmys marmorata</i>		1 (in mid channel pool) N=4123155; E=0292301			Not recorded	SVL: TL: 6.5 carapace	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>	7				Not recorded	SVL: TL: 50	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix I. Foothill Yellow-legged Frog (continued)

Site: Big Creek Dam 4 to  
Powerhouse 2

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 5/18/2002	Begin Time: 0935	Total Time (min.): 270	Observer(s): Sarah Yarnell and Audra Loyal									
Locality: Big Creek powerhouse 2.											Owner: NPS FS BLM St. Pvt. Other ?	
County: Fresno	Elevation: 3,000 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4119509				Start East UTM: GPS Map Zone 11S: 0295437					
Topographic Map: Musick Mtn., CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4119275				End East UTM: GPS Map Zone 11S: 0295915					
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: Not recorded.				Dist. (km) to pub. paved road: 8					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	70	C	F	Water temperature	56	C	F
	Pt. Cloudy	Mostly Cloudy	Snow			> 20 mph								

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch										Drainage:	
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal Permanent				
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0	7-11 sec.				
	Not recorded.		3		0.75		2.5		sec./10 ft. <7 sec > 11 sec.					
Water	Clear	Turbid (1-5)	% Mid-day Shade: 40				% Emerg. Veg.: 15		% Floating Vegetation: 0					
1	2	3	3	4	5									
Watershed:	Natural	Grazed	Logged (last 15 years)				Substrate		Silt	< 2 mm	2-75 mm			
	Urban	Agriculture	Other-Flow regulated				75-300 mm		>300 mm	Bedrock				
Predominant Vegetation: Willow, alder, blackberry, and oak chapparel/connifer														
Comments: Big Creek Dam 4 - PH 2. Great Pond Turtle habitat upstream of bridge - 2 nice pools with emergent vegetation and emergent rocks. Large deep pool with side pools. Habitat upstream also good Foothill Yellow Legged Frog. Channel starts to narrow here and larger boulders dominat														

Fishing Tackle: Not recorded.	Fish Present:			Species and Approximate Number: Not recorded.		
Yes	No	Yes	No	?		

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
<i>Hyla regilla</i>			2		Not recorded	SVL: TL: 1.5	Not recorded	Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

**Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)**

Site: Big Creek Dam 4 to PH 2

Date (mm-dd-yy): 5/19/2002	Begin Time: 1440	Total Time (min.): 80	Observer(s): Sarah Yarnell and Audra Loyal						
Locality: Big Creek waterfall to Balsam tributary.						Owner: NPS FS BLM St. Pvt. Other ?			
County: Fresno	Elevation: 3,400 m ft.	Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4118992			Start East UTM: GPS Map Zone 11S: 0298990				
Topographic Map: Musick Mtn., CA 7.5" 15"		End North UTM: GPS Map Zone 11S: 4119025			End East UTM: GPS Map Zone 11S: 0299343				
Distance (km) to mapped trail: Not recorded.		Distance (km) to public dirt road: 1			Dist. (km) to pub. paved road: 1				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		75 C F	62 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch				Drainage:
	1	2	3	4	5	Pond Stream Grassland Spring	Seasonal Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):	Water Flow	0 7-11 sec.
500	4		1		1.5	sec./10 ft. <7 sec > 11 sec.	
Water	Clear	Turbid (1-5)	% Mid-day Shade: 20		% Emerg. Veg.: 5	% Floating Vegetation: 0	
1	2	3	4	5			
Watershed:	Natural	Grazed	Logged (last 15 years)		Substrate	Silt	< 2 mm 2-75 mm
	Urban	Agriculture	Other-		75-300 mm >300 mm	Bedrock	
<b>Predominant Vegetation:</b> Conifers, oaks, and small willows. Sparse alders in the riparian zone.							
<b>Comments:</b> Big Creek. Habitat here is open, sunny, but dominated by boulders. Little to no cobble, gravel - a huge boulder cascade (boulders size of cars), no littler overbank areas or asymmetric channels, very moderate to poor Foothill Yellow Legged Frog habitat, moderate Wester Pond Turtle habita							

Fishing Tackle: Not recorded.	Fish Present: Not recorded.	Species and Approximate Number: Not recorded.
Yes No	Yes No ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 100	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix I. Foothill Yellow-legged Frog (continued)

Site: Big Creek Downstream of Balsam Creek

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 5/19/2002	Begin Time: 1215	Total Time (min.): 75	Observer(s): Sarah Yarnell and Audra Loyal
Locality: Big Creek: From Sheep Thief Creek to left bank tributary			Owner: NPS FS BLM St. Pvt. Other ?
County: Fresno	Elevation: 3,880 m ft.	Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4119205	Start East UTM: GPS Map Zone 11S: 0298702
Topographic Map: Musick Mtn., CA	7.5" 15"	End North UTM: GPS Map Zone 11S: 4119063	End East UTM: GPS Map Zone 11S: 0298711
Distance (km) to mapped trail: Not recorded.		Distance (km) to public dirt road: 1	Dist. (km) to pub. paved road: 1.5

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		77 C F	56 C F

Habitat:	Natural	Altered (1-5)	Description: Lake	River	Woodland	Meadow/Wetland	Ditch	Drainage:
	1	2	Pond	Stream	Grassland	Spring		Seasonal Permanent
Site Length (m):	300	Average Width (m):	4	Average Depth (m):	0.75	Maximum Depth (m):	3	Water Flow
								0
								7-11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 30	% Emerg. Veg.: 2	% Floating Vegetation: 0			
Watershed:	Natural	Grazed	Logged (last 15 years)	Substrate	Silt	< 2 mm	2-75 mm	
	Urban	Agriculture	Other-Hydroelectric project	75-300 mm	>300 mm		Bedrock	
Predominant Vegetation: Alders and blackberry in riparian zone; oak and ponderosa pine in upslope areas.								
Comments: Not recorded.								

Fishing Tackle: Not recorded.	Fish Present:	Species and Approximate Number: Not recorded.
Yes No	Yes No ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix I. Foothill Yellow-legged Frog (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: San Joaquin River below Rock Creek confluence

Date (mm-dd-yy): 6/4/2002	Begin Time: 1045	Total Time (min.): 150	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive FS RD 81 to Rock Creek Campground. Follow road with sign that reads "road dead-ends at 4 miles". Look for trail in trees that heads down to the San Joaquin River.											Owner: NPS St. ? FS Pvt. BLM Other	
County: Fresno/Madera	Elevation: 2,400 m ft.		Start North UTM: Map Datum WGS 84 GPS Map Zone 11S: 4127898				Start East UTM: GPS Map Zone 11S: 0293215					
Topographic Map: Mammoth Pool Dam 7.5" 15"			End North UTM: GPS Map Zone 11S: 4127416				End East UTM: GPS Map Zone 11S: 0293714					
Distance (km) to mapped trail: Not recorded.			Distance (km) to public dirt road: 0.25 (FS RD 81)				Dist. (km) to pub. paved road: 1 (FS RD 81)					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		25 C F	11 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/Wetland Ditch				Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site Length (m):	Average Width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
800	25		0.5		2		sec./10 ft. <7 sec		> 11 sec.		
Water	Clear	Turbid (1-5)	% Mid-day Shade: 0			% Emerg. Veg.: 1		% Floating Vegetation: 0			
1	2	3	3	4	5	Substrate		Silt	< 2 mm	2-75 mm	
Watershed:	Natural	Grazed	Logged (last 15 years)			75-300 mm		>300 mm	Bedrock		
Predominant Vegetation: Very little riparian vegetation present. A few willows. Predominant upslope vegetation is manzanita and oak											

Comments: This stream segment is not very good R. boylei habitat. Lots of boulders, but very little riparian vegetation. Very little sand, gravel, pebble, or cobble present (very little rock particle size diversity in this segment). My overall impression of this segment is that it should rank as moderate. Did not survey upstream (above confluence with Rock Creek) because it is a sequence of deep pools with steep sides and looked like poor habitat

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	Unknown salmonids. About 100 adult and fry.

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophi couchii</i>	1				Not recorded	SVL: TL: 100	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophi couchii</i>		1			Not recorded	SVL: TL: 40	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophi couchii</i>		1			Not recorded	SVL: TL: 40	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo



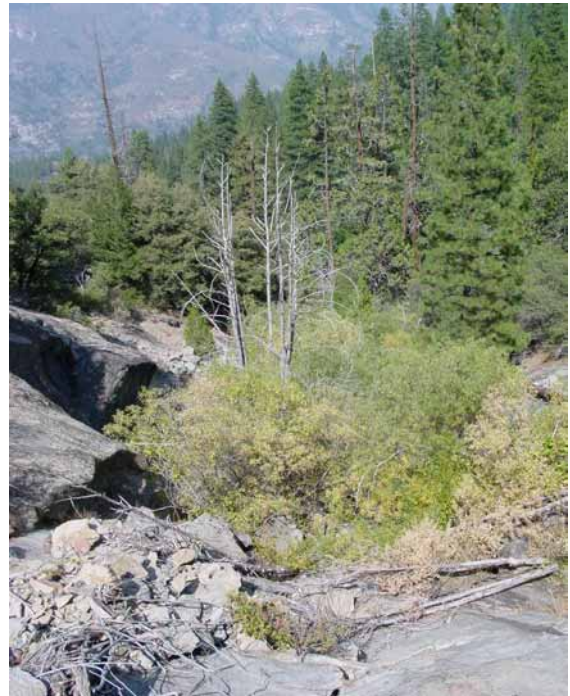
## **APPENDIX J**

### **Photographs of Sites Sampled for the Foothill Yellow-legged Frog**

**Appendix J. Photographs of Sites Sampled for the Foothill Yellow-legged Frog**



San Joaquin River  
(approx. 2,100 ft. elevation, RM 18.3)



Ely Creek  
(approx. 4,800 ft. elevation, RM 1.0)



Stevenson Creek  
(approx. 4,200 ft. elevation, RM 2.3)



Big Creek  
(approx. 4,000 ft. elevation, RM 4.6)



**Appendix J. Photographs of Sites Sampled for the Foothill Yellow-legged Frog (continued)**



Jose Creek  
(approx. 3,000 ft. elevation, RM 1.9)



Jose Creek  
(approx. 3,000 ft. elevation, RM 1.9)



Ross Creek  
(approx. 3,200 ft. elevation, RM 0.7)



Rock Creek  
(approx. 3,000 ft. elevation, RM 0.5)

## **APPENDIX K**

### **Photographs of Species Detected during Surveys**



## Appendix K. Photographs of Species Detected during Surveys



Adult Foothill Yellow-legged Frog in Jose Creek



Egg Mass of Foothill Yellow-legged Frog in Jose Creek



Hatchling Western Pond Turtle in Jose Creek



Adult Western Pond Turtle basking in Ross Creek

**APPENDIX L**

**Mountain Yellow-legged Frog Data Forms**

# Appendix L. Mountain Yellow-legged Frog

Site: Pitman Creek below diversion

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/15/2002	Begin Time: 1405	Total Time (min.): 150	Observer(s): Darrin Doyle and Dan Corcoran									
Locality: Park near bridge crossing Pitman Creek. Hike down stream channel to large pool upstream of Powerhouse 1.										Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 5,000 m ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4120016					Start East UTM: GPS Map Zone 11S: 0300765				
Topographic Map: Huntington Lake, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4119128					End East UTM: GPS Map Zone 11S: 0301858				
Distance (km) to mapped trail: 8 (Kaiser Loop Trail)			Distance (km) to public dirt road: 4 ("Grouse Creek Road")					Dist. (km) to pub. paved road: 0				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		28 C F	21 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch					Drainage:								
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent					
Site length (m):	300				Average width (m):	3		Average Depth (m):	0.25		Maximum Depth (m):	0.5		Water Flow	0	7-11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 15				% Emerg. Veg.: 1		% Floating Vegetation: 0							
Watershed:	Natural	Grazed	Logged (last 15 years)				Substrate	Silt	< 2 mm	2-75 mm						
	Urban	Agriculture	Other-Hydroelectric project				75-300 mm	>300 mm	Bedrock							
Predominant Vegetation: Alder																

Comments: This segment looks like good habitat for MYLF (mountain yellow-legged frogs). There are numerous pool-cascade sequences which are partially shaded. There are lots of side channel pools that appear to be suitable for breeding. Some pools are separated by shallow riffles. The farther we moved upstream, the poorer the habitat became. Toward the end of the segment, bedrock dominated the stream channel. Stream flow is moderate.

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	Unknown salmonids: 25 were about 6 inches in length and 25 were about 2 inches in length.

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: Bear Creek below diversion

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/16/2002	Begin Time: 1530	Total Time (min.): 120	Observer(s): Darrin Doyle and Dan Corcoran									
Locality: From Huntington Lake, turn onto FS RD 80 (Kaiser Pass Road) and drive about 15 miles to Mono Hot Springs - Florence Lake junction. Drive road to Mono Hot Springs and continue driving for another 2 miles. Turn onto Bear Creek Diversion Road (4x4 road). Park at Diversion.										Owner: NPS <input type="checkbox"/> FS <input type="checkbox"/> BLM <input type="checkbox"/> St. Pvt. Other ?		
County: Fresno	Elevation: 7,320 m ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4133593					Start East UTM: GPS Map Zone 11S: 0325121				
Topographic Map: Florence Lake, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4133714					End East UTM: GPS Map Zone 11S: 0324811				
Distance (km) to mapped trail: 0 (Bear Diversion Pack Trail)			Distance (km) to public dirt road: 0					Dist. (km) to pub. paved road: 8				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				28 C F	18 C F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow					

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:	
	<input type="checkbox"/>	<input type="checkbox"/>					Seasonal	
	<input type="checkbox"/>	<input type="checkbox"/>	Pond	Stream	Grassland	Spring	Permanent	
Site length (m):	Average width (m):		Average Depth (m):	Maximum Depth (m):	Water Flow 0 7-11 sec.			
400	4		0.2	1	sec./10 ft. <7 sec > 11 sec.			
Water	Clear	Turbid (1-5)	% Mid-day Shade: 15	% Emerg. Veg.: 2	% Floating Vegetation: 0			
1	2	3	4	5				
Watershed:	Natural	Grazed	Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm
	Urban	Agriculture	Other-Hydroelectric project		75-300 mm	>300 mm	Bedrock	
Predominant Vegetation: Willows								

Comments: This segment looks good for MYLF. Best habitat is found close to Bear Creek Diversion Dam. This area has shallow low gradient riffles and backwater areas. Further downstream, the stream is dominated by cascade-pool sequences and the gradient is higher. Canopy cover is low and only shades creek along shore. Stream flow is moderate. Shoreline slope is gradual near dam, but becomes steep downstream where stream gradient is high

Fishing Tackle:	Fish Present:	Species and Approximate Number: Unknown: 10 adult salmonids about 8 inches in length.
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo



# Appendix L. Mountain Yellow-legged Frog (continued)

Site: Big Creek below Huntington Lake

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/16/2002	Begin Time: 0900	Total Time (min.): 180	Observer(s): Darrin Doyle and Dan Corcoran									
Locality: From Shaver Lake, drive Highway 168 about 16 miles. Turn onto unmarked dirt road ("Grouse Creek Road") which has a stop sign and gate. Drive about 4 miles to terminus at pentstock crossing Big Creek. Hike along channel to survey.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other ?		
County: Fresno	Elevation: 6,600 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4121534					Start East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0303621				
Topographic Map: Huntington Lake, CA <input type="checkbox"/> 7.5" <input type="checkbox"/> 15"			End North UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4122048					End East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0303562				
Distance (km) to mapped trail: 8 (Kaiser Loop Trail)			Distance (km) to public dirt road: 0					Dist. (km) to pub. paved road: 8				

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	18	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	15	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph									

Habitat:	Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:					
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input checked="" type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input checked="" type="checkbox"/> Permanent	
Site length (m):	700		Average width (m):		3	Average Depth (m):	0.25	Maximum Depth (m):	1	Water Flow	0	7-11 sec.
										sec./10 ft.	<input checked="" type="checkbox"/> <7 sec	<input type="checkbox"/> > 11 sec.
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 50				% Emerg. Veg.: 25		% Floating Vegetation: 0			
Watershed:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm	
	<input type="checkbox"/> Urban		<input type="checkbox"/> Agriculture		<input type="checkbox"/> Other-Hydroelectric project		75-300 mm	<input checked="" type="checkbox"/> >300 mm	Bedrock			

**Predominant Vegetation:** Alders and willows

**Comments:** This reach of Big Creek below Huntington Lake is extremely difficult to survey due to dense groves of alders in the stream channel. Detectability level is low, consequently. Habitat does not change between moderate and poor segments. Both are choked with alders and willows. Both segments are dominated by cascade-pool sequences. No backwater or side channel pools found. Stream flow is slow. Lots of scour holes in boulders in stream channel.

Fishing Tackle:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Fish Present:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> ?	Species and Approximate Number: Unknown salmonids: 50 adults and 50 fry.
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Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other	
No detections								SVL:	Visual	Hand	Voucher
								TL:	Aural	TCS	Pathology
									Dip net	Seine	Photo
								SVL:	Visual	Hand	Voucher
								TL:	Aural	TCS	Pathology
									Dip net	Seine	Photo
								SVL:	Visual	Hand	Voucher
								TL:	Aural	TCS	Pathology
									Dip net	Seine	Photo
								SVL:	Visual	Hand	Voucher
								TL:	Aural	TCS	Pathology
									Dip net	Seine	Photo
								SVL:	Visual	Hand	Voucher
								TL:	Aural	TCS	Pathology
									Dip net	Seine	Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: North Fork Stevenson Creek below outlet reach

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/16/2002	Begin Time: 1200	Total Time (min.): 150	Observer(s): Darrin Doyle and Dan Corcoran						
Locality: From Shaver Lake, drive Highway 168 about 7 miles to Balsam Meadow Trailhead parking lot. Hike about 200 feet (east) along HWY 168 to an unmarked dirt road on right side of road (with an SCE gate). Take the first road on right then hike down to stream channel.							Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 5,800 m ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4114370			Start East UTM: GPS Map Zone 11S: 0301576			
Topographic Map: Huntington Lake, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4114340			End East UTM: GPS Map Zone 11S: 0301091			
Distance (km) to mapped trail: 2 (Balsam Meadow trail)			Distance (km) to public dirt road: 2			Dist. (km) to pub. paved road: 0.5			

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		26 C F	17 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
500	4		0.25		2		sec./10 ft.		<7 sec > 11 sec.		
Water	Clear	Turbid (1-5)	% Mid-day Shade: 5		% Emerg. Veg.: 1		% Floating Vegetation: 0				
Watershed:	Natural	Grazed	Logged (last 15 years)		Substrate		Silt		< 2 mm		2-75 mm
	Urban	Agriculture	Other-hydroelectric project		75-300 mm		>300 mm		Bedrock		

Predominant Vegetation: Willows  
 Comments: This segment looks like very good habitat for MYLF (mountain yellow-legged frogs). There are many backwater areas with riparian vegetation. Stream gradient is moderate and provides a variety of stream mesohabitat types. Not a lot of riparian vegetation present along this segment, except for some backwater areas. Shoreline along most of segment has gradual slope, allowing numerous basking sites along shoreline. Stream is dominated by large boulders - cascade sequences. Stream flow is moderate.

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	50 unknown salmonids about 8 inches in length.

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Chinquapin Creek below diversion

Date (mm-dd-yy): 7/17/2002	Begin Time: 1415	Total Time (min.): 120	Observer(s): Darrin Doyle and Dan Corcoran									
Locality: From Huntington Lake, drive FS RD 80 (Kaiser Pass Road) about 15 miles to Mono Hot Springs/Florence Lake junction. Drive about 100 yards past this junction (taking the road to Florence Lake). Park and survey.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other <input type="checkbox"/> ?		
County: Fresno	Elevation: 7,280 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4130828					Start East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0320992				
Topographic Map: Mt. Givens, CA 7.5" 15"			End North UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4131343					End East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0320676				
Distance (km) to mapped trail: 1 (Mono Hot Springs Trail)			Distance (km) to public dirt road: 7 (Camp 61 campground)					Dist. (km) to pub. paved road: 0 (FS RD 80)				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	28	15
	Pt. Cloudy	Mostly Cloudy	Snow			> 20 mph	C F	C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch					Drainage:	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pond		Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow 0 7-11 sec.		
400	3		0.1		0.5		sec./10 ft. <7 sec > 11 sec.		
Water	Clear	Turbid (1-5)	% Mid-day Shade: 40			% Emerg. Veg.: 1		% Floating Vegetation: 0	
1	2	3	4	5	Substrate		Silt	< 2 mm	2-75 mm
Watershed: Natural Grazed			Logged (last 15 years)			75-300 mm		>300 mm	Bedrock
Urban			Agriculture			Other-Hydroelectric projects			
Predominant Vegetation: Alders and willows									

Comments: Overall, this segment looks like good habitat for MYLF (mountain yellow-legged frog) and agrees with the stream habitat criteria rating. Stream channel has alternating areas of open and closed canopy. Stream gradient is low and a variety of mesohabitat types occur. Lots of pools. Stream channel upstream of the road is initially clogged with down-woody debris, but opens up further upstream. Fish are present in large numbers throughout the stream even above 6 foot high cascades. Lots of backwater habitats in stream. Stream flow is slow

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> ? <input type="checkbox"/>	About 300 brook trout fry and about 100 brook trout adults.

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: North Slide Creek below diversion

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/17/2002	Begin Time: 1015	Total Time (min.): 60	Observer(s): Darrin Doyle
Locality: From Huntington Lake, drive FS RD 80 (Kaiser Pass Road) 21 miles to Florence Lake. Turn and follow road to about 1/4 mile to Jackass Meadow Campground. Turn onto Hooper Diversion Road and drive about 2 miles. Park.			Owner: NPS FS BLM St. Pvt. Other ?
County: Fresno	Elevation: 7,200 m ft.	Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4129434	Start East UTM: GPS Map Zone 11S: 0326785
Topographic Map: Florence Lake, CA	7.5" 15"	End North UTM: GPS Map Zone 11S: 4129225	End East UTM: GPS Map Zone 11S: 0326988
Distance (km) to mapped trail: 3 ("Ward Lake Trail")	Distance (km) to public dirt road: 0 (Hooper Diversion Road)	Dist. (km) to pub. paved road: 2 (FS RD 80)	

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		22 C F	13 C F

Habitat:	Natural	Altered (1-5)	Description:	Lake	River	Woodland	Meadow/wetland	Ditch	Drainage:		
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	350		Average width (m):	2		Average Depth (m):	0.05		Maximum Depth (m):	0.1	
Water	Clear	Turbid (1-5)	% Mid-day Shade: 75	% Emerg. Veg.: 0		% Floating Vegetation: 0		Water Flow	0	7-11 sec.	> 11 sec.
Watershed:	Natural	Grazed	Logged (last 15 years)	Substrate		Silt	< 2 mm	2-75 mm	Bedrock		
Predominant Vegetation: Alders and willows											

Comments: Overall, this creek looks like good habitat for MYLF (Mountain yellow-legged frogs). Stream is well shaded with lush riparian vegetation along shore. Stream has a variety of mesohabitats, but is dominated by cascade-pool sequences. Stream channel has lots of woody debris. Stream goes subsurface for about 100 feet (near diversion). Stream gradient is relatively constant along the 1,000 feet segment surveyed. Began survey at confluence with SF SJR. Stream flow is slow

Fishing Tackle:	Fish Present:	Species and Approximate Number: Not Applicable		
Yes	No	Yes	No	?

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other	
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

# Appendix L. Mountain Yellow-legged Frog (continued)

Site: South Slide Creek below diversion

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/17/2002	Begin Time: 1008	Total Time (min.): 48	Observer(s): Dan Corcoran
Locality: From Huntington Lake, drive FS RD 80 (Kaiser Pass Road) 21 miles to Florence Lake. Turn and follow road to Jackass Meadow Campground. Turn onto Hooper Diversion Road and drive about 2 miles. Park and survey.			Owner: NPS <input type="checkbox"/> FS <input type="checkbox"/> BLM <input type="checkbox"/> St. Pvt. Other ?
County: Fresno	Elevation: 7,200 m <input type="checkbox"/> ft.	Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4129294	Start East UTM: GPS Map Zone 11S: 0326759
Topographic Map: Florence Lake, CA	7.5" 15"	End North UTM: GPS Map Zone 11S: 4129090	End East UTM: GPS Map Zone 11S: 0326979
Distance (km) to mapped trail: 3 ("Ward Lake Trail")	Distance (km) to public dirt road: 0 (Hooper Diversion Road)	Dist. (km) to pub. paved road: 2	

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow			> 20 mph	22 C F	13 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch	Drainage:	Seasonal					
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	Pond	Stream	Grassland	Spring	<input type="checkbox"/> Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0	7-11 sec.
350	1.5		0.2		0.5		sec./10 ft.		<7 sec	> 11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 50		% Emerg. Veg.: 0		% Floating Vegetation: 0			
1	2	3	4	5	Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm
Watershed: Natural		Grazed		Other-Hydroelectric project		75-300 mm	>300 mm	Bedrock		
Predominant Vegetation: Willows										
Comments:										

Fishing Tackle:	Fish Present:	Species and Approximate Number: Not Applicable
Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

**Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)**

Site: Tombstone Creek below diversion

Date (mm-dd-yy): 7/17/2002	Begin Time: 1210	Total Time (min.): 140	Observer(s): Darrin Doyle and Dan Corcoran									
Locality: From Huntington Lake, drive FS RD 80 (Kaiser Pass Road) 21 miles to Florence Lake. Park at Jackass Meadow Campground. Start survey at confluence with the SF SJR and surveyed 4,281 feet upstream on Tombstone Creek.											Owner: NPS FS BLM St. Pvt. Other ?	
County: Fresno	Elevation: 7,160 m ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4127631					Start East UTM: GPS Map Zone 11S: 0326124				
Topographic Map: Florence Lake, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4127278					End East UTM: GPS Map Zone 11S: 0326445				
Distance (km) to mapped trail: 2 ("Dutch Lake Trail")			Distance (km) to public dirt road: 0.1 (Hooper Diversion Road)					Dist. (km) to pub. paved road: 0 (FS RD 80)				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature	
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		23	C	F
							15	C	F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
	1,500		1		0.1		0.5	sec./10 ft.	<7 sec	> 11 sec.	
Water	Clear	Turbid (1-5)	% Mid-day Shade: 20			% Emerg. Veg.: 5		% Floating Vegetation: 5			
Watershed:	Natural	Grazed	Logged (last 15 years)			Substrate		Silt	< 2 mm	2-75 mm	
	Urban	Agriculture	Other-Hydroelectric project			75-300 mm		>300 mm	Bedrock		

**Predominant Vegetation:** Grasses, willows, alders, and lodgepole pine  
 noticeable difference between the moderate and good segment. The poor segment looks good. The poor segment has a higher gradient, is more shaded, and is dominated by boulders. The good and moderate segments are characterized by low gradient, low canopy cover, and the substrate is dominated by 300 mm particles. The good and moderate segments are intermittent. There are several side channel pools and backwater habitats in the moderate and good segments.

Fishing Tackle:	Fish Present:	Species and Approximate Number: 25 Unknown salmonid fry
Yes	No	Yes
		No
		?

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>		1 (in moderate segment)			Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: Bolsillo Creek below diversion

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/18/2002	Begin Time: 0930	Total Time (min.): 120	Observer(s): Darrin Doyle and Dan Corcoran						
Locality: From Shaver Lake, drive Highway 168 about 21 miles to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) and drive about 15 miles to High Sierra Ranger Station. Park there to access the creek nearby.							Owner: NPS <input type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other <input type="checkbox"/> ?		
County: Fresno	Elevation: 7,340 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4131526			Start East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0319144			
Topographic Map: Mt. Givens, CA <input type="checkbox"/> 7.5" <input type="checkbox"/> 15"			End North UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4132187			End East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0319004			
Distance (km) to mapped trail: 0.25 (Mono Hot Springs Trail)			Distance (km) to public dirt road: 0			Dist. (km) to pub. paved road: 0 (FS RD 80)			

Weather	Clear <input type="checkbox"/>	Overcast <input type="checkbox"/>	Rain <input type="checkbox"/>	Wind: 0 <input type="checkbox"/> < 5 <input type="checkbox"/> 5-20 <input type="checkbox"/> > 20 mph	Air Temperature 17 <input type="checkbox"/> C <input type="checkbox"/> F	Water temperature 14 <input type="checkbox"/> C <input type="checkbox"/> F
	Pt. Cloudy <input type="checkbox"/>	Mostly Cloudy <input type="checkbox"/>	Snow <input type="checkbox"/>			

Habitat:	Natural <input type="checkbox"/>	Altered (1-5) <input type="checkbox"/>	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>	Drainage: Seasonal <input type="checkbox"/> Permanent <input type="checkbox"/>
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	Pond <input type="checkbox"/> Stream <input type="checkbox"/> Grassland <input type="checkbox"/> Spring <input type="checkbox"/>			
Site length (m): 500	Average width (m): 1	Average Depth (m): 0.1	Maximum Depth (m): 0.25	Water Flow 0 <input type="checkbox"/> 7-11 sec. <input type="checkbox"/> > 11 sec. <input type="checkbox"/>
Water <input type="checkbox"/> Clear <input type="checkbox"/> Turbid (1-5) <input type="checkbox"/>	% Mid-day Shade: 40		% Emerg. Veg.: 0	% Floating Vegetation: 0
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	Watershed: Natural <input type="checkbox"/> Grazed <input type="checkbox"/> Logged (last 15 years) <input type="checkbox"/>		Substrate	Silt < 2 mm <input type="checkbox"/> 2-75 mm <input type="checkbox"/>
Urban <input type="checkbox"/> Agriculture <input type="checkbox"/> Other-Hydroelectric project <input type="checkbox"/>		75-300 mm <input type="checkbox"/> >300 mm <input type="checkbox"/>	Bedrock <input type="checkbox"/>	

Predominant Vegetation: Alders and ferns

Comments: Entire segment surveyed looks like good MYLF (mountain yellow-legged frogs) habitat. Lots of down woody debris in stream channel, coupled with a moderate amount of alders along channel. Stream gradient was low along entire segment. Lot of shallow low-gradient riffles seperated by pools. There were numerous areas where the stream bank is undercut. Gradient of stream bank is gradual along most of segment sampled. This stream does not exhibit much variation along segment sample

Fishing Tackle:	Fish Present:	Species and Approximate Number: Brook trout: 100 adult and fry.
Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> ? <input type="checkbox"/>	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Camp 61 Creek below diversion

Date (mm-dd-yy): 7/18/2002	Begin Time: 1100	Total Time (min.): 120	Observer(s): Darrin Doyle and Dan Corcoran						
Locality: From Portal Forebay, park at trailhead that leads to Rattlesnake Crossing. Where the trail intersects Camp 61 Creek, begin surveying upstream. It is a 15 minute hike to reach the intersection.							Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Oth. ?		
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft.	Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4133602			Start East UTM: GPS Map Zone 11S: 0316804				
Topographic Map: Mt. Givens, CA 7.5" 15"		End North UTM: GPS Map Zone 11S: 4133086			End East UTM: GPS Map Zone 11S: 0316687				
Distance (km) to mapped trail: 0 (Mono Crossing and Rattlesnake Crossing trailhead)		Distance (km) to public dirt road: 0.5			Dist. (km) to pub. paved road: 2				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	22	15
	Pt. Cloudy	<input checked="" type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow			> 20 mph	C F	C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:
	<input type="checkbox"/>	<input checked="" type="checkbox"/>					Seasonal Permanent
Site length (m):	Average width (m):		Average Depth (m):	Maximum Depth (m):	Water Flow	0	7-11 sec.
500	1		0.1	0.25	sec./10 ft.	<7 sec	> 11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 40	% Emerg. Veg.: 0	% Floating Vegetation: 0		
1	2	3	4	5			
Watershed:	Natural	Grazed	Logged (last 15 years)	Substrate	Silt	< 2 mm	2-75 mm
	Urban	Agriculture	Other-Hydroelectric project	75-300 mm	>300 mm	Bedrock	
Predominant Vegetation: Alders							
Comments: Looks like very good habitat in both segments for MYLF (mountain yellow-legged frog). Lots of undercut bank. Stream has a variety mesohabitats and is well shaded. Stream flow is slow with many pools separated by shallow low-gradient riffles. Stream is heavily choked with alders. Lots of down woody debris in channel.							

Fishing Tackle:	Fish Present:	Species and Approximate Number: 100 unknown salmonid fry
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> ? <input type="checkbox"/>	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo



### Appendix L. Mountain Yellow-legged Frog (continued)

**Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)**

Site: Crater Creek below diversion

Date (mm-dd-yy): 7/22/2002	Begin Time: 1350	Total Time (min.): 40	Observer(s): Sarah Yarnell and Lourraine Tigas									
Locality: Began at confluence with SF SJR. Walked upstream through Hell Hole Meadow.											Owner: NPS FS BLM St. Pvt. Other ?	
County: Fresno	Elevation: 6,800 m ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4131312				Start East UTM: GPS Map Zone 11S: 0324823					
Topographic Map: Florence Lake, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4131076				End East UTM: GPS Map Zone 11S: 0324946					
Distance (km) to mapped trail: 1			Distance (km) to public dirt road: 1				Dist. (km) to pub. paved road: 2					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		29 C F	14 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:					
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent	
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.	
	400		1		0.25		1		sec./10 ft. <7 sec		> 11 sec.	
Water	Clear	Turbid (1-5)	% Mid-day Shade: 10			% Emerg. Veg.: 20		% Floating Vegetation: 75				
1	2	3	4	5	Logged (last 15 years)		Substrate		Silt < 2 mm		2-75 mm	
Watershed:			Urban		Agriculture		Other-diversion upstream		75-300 mm		>300 mm	Bedrock
Predominant Vegetation: Riparian: alder, willow, grasses, and sedges. Upslope: pine and white fir.												
Comments:												

Fishing Tackle:	Fish Present:		Species and Approximate Number: brown trout?									
Yes	No	Yes	No	?								

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: South Fork San Joaquin River (Bear Creek to Florence Lake)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/22/2002	Begin Time: 1000	Total Time (min.): 210	Observer(s): Sarah Yarnell and Lourraine Tigas										
Locality: Begin at Hooper Gaging Station and end near confluence with Crater Creek.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?			
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4131119					Start East UTM: GPS Map Zone 11S: 0326128					
Topographic Map: Florence Lake, CA		7.5" 15"		End North UTM: GPS Map Zone 11S: 4131312					End East UTM: GPS Map Zone 11S: 0324823				
Distance (km) to mapped trail: 0			Distance (km) to public dirt road: 0					Dist. (km) to pub. paved road: 6					

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature	
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		> 20 mph		22	<input checked="" type="checkbox"/> C	<input type="checkbox"/> F
							13	<input checked="" type="checkbox"/> C	<input type="checkbox"/> F

Habitat:	Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake <input checked="" type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch				Drainage:						
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Water Flow	0	7-11 sec.	
Site length (m):	1,000		Average width (m):		8	Average Depth (m):	0.5	Maximum Depth (m):	2	% Emerg. Veg.:10	% Floating Vegetation: 3	<7 sec	> 11 sec.
Water	Clear	<input checked="" type="checkbox"/> Turbid (1-5)	% Mid-day Shade:30										
Watershed:	Natural	Grazed	Logged (last 15 years)			Substrate	Silt	< 2 mm	2-75 mm				
	Urban	Agriculture	<input checked="" type="checkbox"/> Other-Dammed			75-300 mm	>300 mm	Bedrock					
Predominant Vegetation: Riparian: dominated by alders and some willows, Upslope: jeffrey pine, ponderose pine, and white fir													
Comments: Not recorded.													

Fishing Tackle:	Fish Present:		Species and Approximate Number: Not recorded.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	?

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>		1			Not recorded	SVL: TL: 61	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		1			Not recorded	SVL: TL: 38	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		1			Not recorded	SVL: TL: 53	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: Big Creek upstream of Powerhouse 1

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/23/2002	Begin Time: 1045	Total Time (min.): 60	Observer(s): Darrin Doyle and Dan Corcoran									
Locality: Park at pull-out near bridge over Pitman Creek (first bridge crossed on way to Big Creek) and walk along road about 30 meters to bridge (second bridge) that crosses Big Creek. Hike downstream to confluence with pool at Powerhouse 1.										Owner: NPS <input type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other <input type="checkbox"/> ?		
County: Fresno	Elevation: 5,000 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4119843					Start East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0301351				
Topographic Map: Huntington Lake, CA <input type="checkbox"/> 7.5" <input type="checkbox"/> 15"			End North UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4119939					End East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0301546				
Distance (km) to mapped trail: 6 (Kaiser Loop Trail)			Distance (km) to public dirt road: 2 ("Grouse Creek Road")					Dist. (km) to pub. paved road: 0 (Big Creek Road)				

Weather	<input type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	<input type="checkbox"/> 25	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	<input type="checkbox"/> 11	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph									

Habitat:	Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>		Drainage:	Seasonal	Permanent			
1	2	3	4	5	Pond	Stream	Grassland	Spring		
Site length (m): 250		Average width (m): 2		Average Depth (m): 0.5	Maximum Depth (m): 2	Water Flow: 0		7-11 sec.		
Water: <input checked="" type="checkbox"/> Clear		<input checked="" type="checkbox"/> Turbid (1-5)		% Mid-day Shade: 21	% Emerg. Veg.: 1	% Floating Vegetation: 0				
1	2	3	4	5	Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm
Watershed: Natural <input type="checkbox"/> Grazed <input type="checkbox"/> Urban <input type="checkbox"/> Agriculture <input type="checkbox"/> Other-Hydroelectric project <input type="checkbox"/>					75-300 mm		>300 mm		Bedrock	
Predominant Vegetation: Alders and willows										

Comments: This segment appears to be poor breeding habitat for MYLF (Mountain yellow-legged frogs). Enormous boulders in channel near base of waterfall. Stream channel is dominated by large boulders in most segments surveyed. Trench chutes in bedrock funnel water at fast flow rate in some spots. Gradient is very steep, creating step pool-cascade sequences. Side channel is mostly dry, but has isolated pools that appear better looking habitat than any habitats in the main stream.

Fishing Tackle:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Fish Present:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> ?	Species and Approximate Number: Unknown: 50 salmonid fry and 50 salmonid adults.
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Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

# Appendix L. Mountain Yellow-legged Frog (continued)

Site: Camp 62 Creek below diversion

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/23/2002	Begin Time: 1610	Total Time (min.): 45	Observer(s): Sarah Yarnell and Lourraine Tigas							
Locality: Camp 62 Creek from Mono Hot Springs Trail to 1,000 feet downstream.							Owner: NPS <input checked="" type="checkbox"/> FS <input checked="" type="checkbox"/> BLM St. Pvt. Other ?			
County: Fresno	Elevation: 6,900 m <input checked="" type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input checked="" type="checkbox"/> Map Zone 11S: 4131971				Start East UTM: GPS <input checked="" type="checkbox"/> Map Zone 11S: 0320492			
Topographic Map: Mt. Givens, CA 7.5" 15"			End North UTM: GPS <input checked="" type="checkbox"/> Map Zone 11S: 4132132				End East UTM: GPS <input checked="" type="checkbox"/> Map Zone 11S: 0320504			
Distance (km) to mapped trail: 0 (Mono Hot Springs Trail)			Distance (km) to public dirt road: 3 (FS RD out of Mono Hot Springs)				Dist. (km) to pub. paved road: 1(FS RD 80)			
Weather		Clear <input checked="" type="checkbox"/> Overcast <input type="checkbox"/> Rain <input type="checkbox"/>		Wind: 0 <input type="checkbox"/> < 5 <input type="checkbox"/> 5-20 <input type="checkbox"/> > 20 mph		Air Temperature 26 <input checked="" type="checkbox"/> C <input type="checkbox"/> F		Water temperature 15 <input checked="" type="checkbox"/> C <input type="checkbox"/> F		
Pt. Cloudy <input type="checkbox"/>		Mostly Cloudy <input type="checkbox"/> Snow <input type="checkbox"/>								

Habitat:	Natural <input type="checkbox"/>	Altered (1-5) <input checked="" type="checkbox"/>	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage: Seasonal <input type="checkbox"/> Permanent <input type="checkbox"/>		
1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>		Pond <input type="checkbox"/> Stream <input checked="" type="checkbox"/> Grassland <input type="checkbox"/> Spring <input type="checkbox"/>							
Site length (m): 400		Average width (m): 1.25		Average Depth (m): 0.2		Maximum Depth (m): 0.5		Water Flow 0 <input type="checkbox"/> 7-11 sec. <input type="checkbox"/> > 11 sec. <input type="checkbox"/>	
Water <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Turbid (1-5) <input type="checkbox"/>		% Mid-day Shade: 75		% Emerg. Veg.: 10		% Floating Vegetation: 0			
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>		Watershed: Natural <input type="checkbox"/> Grazed <input type="checkbox"/> Logged (last 15 years) <input type="checkbox"/>		Substrate		Silt < 2 mm <input type="checkbox"/> 2-75 mm <input type="checkbox"/>			
Urban <input type="checkbox"/> Agriculture <input type="checkbox"/> Other-Diversion upstream <input type="checkbox"/>		75-300 mm <input type="checkbox"/> >300 mm <input type="checkbox"/>		Bedrock <input type="checkbox"/>					
Predominant Vegetation: Riparian: dominated by alder (heavy canopy). Upslope: pine, fir, aspen									
Comments:									

Fishing Tackle:	Fish Present:		Species and Approximate Number: Minnows and adults (6 inches in length)	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> ? <input type="checkbox"/>			

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>		1			Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 61	Not recorded	Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
<i>Hyla regilla</i>		1			Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net Hand TCS Seine	Voucher Pathology Photo

# Appendix L. Mountain Yellow-legged Frog (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Mono Creek below diversion at Mono Crossing

Date (mm-dd-yy): 7/23/2002	Begin Time: 1200	Total Time (min.): 105	Observer(s): Sarah Yarnell and Lourraine Tigas						
Locality: Mono Creek about 1,000 feet downstream of crossing to about 2,500 feet upstream of crossing.							Owner: NPS <input checked="" type="checkbox"/> FS <input checked="" type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,700 m <input checked="" type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4135463				Start East UTM: GPS Map Zone 11S: 0318014		
Topographic Map: Mt. Givens, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4135426				End East UTM: GPS Map Zone 11S: 0318396		
Distance (km) to mapped trail: 0 (Mono Hot Springs Trail)			Distance (km) to public dirt road: 2				Dist. (km) to pub. paved road: 2		

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input checked="" type="checkbox"/> 5-20	Air Temperature	<input type="checkbox"/> 27	<input checked="" type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	<input type="checkbox"/> 13	<input checked="" type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph									

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:	
1 2 3 4 5		Pond <input checked="" type="checkbox"/> Stream <input checked="" type="checkbox"/> Grassland		Spring		Seasonal <input type="checkbox"/> Permanent <input checked="" type="checkbox"/>		
Site length (m):	Average width (m):		Average Depth (m):	Maximum Depth (m):	Water Flow 0			7-11 sec.
1,170	10		0.5	1.5	sec./10 ft. <7 sec			> 11 sec.
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 10		% Emerg. Veg.: 20		% Floating Vegetation: 0	
1 2 3 4 5	Watershed: Natural Grazed		Logged (last 15 years)		Substrate		Silt	< 2 mm 2-75 mm
Urban Agriculture		Other-Dammed and diverted		75-300 mm		>300 mm		Bedrock
Predominant Vegetation: Riparian: alder, willow, sedges, and grasses. Upslope: Jeffrey pine, fir, cedars.								
Comments:								

Fishing Tackle:	Fish Present:		Species and Approximate Number: minnows and adults	
Yes No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: South Fork San Joaquin River at Mono Crossing

Date (mm-dd-yy): 7/23/2002	Begin Time: 1005	Total Time (min.): 65	Observer(s): Sarah Yarnell and Lourraine Tigas									
Locality: Reach of SF SJR about 1,000 feet downstream of Mono Crossing to about 1,000 feet upstream of Mono Crossing.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,400 m ft.		Start North UTM: Map Datum GWS 84 GPS Map Zone 11S: 4134898					Start East UTM: GPS Map Zone 11S: 0317414				
Topographic Map: Mt. Givens, CA 7.5" 15"			End North UTM: GPS Map Zone 11S: 4134633					End East UTM: GPS Map Zone 11S: 0317861				
Distance (km) to mapped trail: 0 (Trail at Mono Crossing)			Distance (km) to public dirt road: 3					Dist. (km) to pub. paved road: 4				

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	<input type="checkbox"/> 23	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	<input type="checkbox"/> 15	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph									

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake <input checked="" type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch					Drainage: <input type="checkbox"/> Seasonal <input checked="" type="checkbox"/> Permanent	
Site length (m):	1 2 3 4 5	Average width (m):	Pond	Stream	Grassland	Spring	Water Flow	0	7-11 sec.
700		15					sec./10 ft.	<7 sec	> 11 sec.
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 20		% Emerg. Veg.: 10		% Floating Vegetation: 5		
Watershed:	1 2 3 4 5	Natural	Grazed	Logged (last 15 years)	Substrate	Silt	< 2 mm	2-75 mm	
		Urban	Agriculture	Other-dams upstream	75-300 mm	>300 mm	Bedrock		
Predominant Vegetation: Riparian: willows, alders, and shrubs. Upslope: Jeffrey pine, white fir, and incense cedar.									
Comments: Not recorded.									

Fishing Tackle: Not recorded.	Fish Present:	Species and Approximate Number: minnows
Yes No	Yes No ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Crotalus viridis</i>	1				Not recorded	SVL: TL: Coiled, and big	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>		1			Not recorded	SVL: TL: 1.5	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix L. Mountain Yellow-legged Frog (continued)

Site: South Fork San Joaquin River Mono X to Bear

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/24/2002	Begin Time: 1030	Total Time (min.): 90	Observer(s): Sarah Yarnell and Lourraine Tigas										
Locality: Just downstream of Rattlesnake Crossing to about 1,500 feet upstream (of Rattlesnake Crossing).										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?			
County: Fresno	Elevation: 6,100 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4137413					Start East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0313805					
Topographic Map: Mt. Givens, CA		7.5" 15"		End North UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4137101					End East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0314221				
Distance (km) to mapped trail: 0 (Rattlesnake Crossing Trail)			Distance (km) to public dirt road: 8 (Camp 61 campground)					Dist. (km) to pub. paved road: 9 (FS RD 80)					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	24	C	F	Water temperature	18	C	F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow			> 20 mph								

Habitat:	Natural	Altered (1-5)	Description: Lake <input type="checkbox"/> River <input checked="" type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:	Seasonal	Permanent		
1	2	3	4	5	Pond	Stream	Grassland	Spring	Water Flow	0	7-11 sec.
Site length (m): 500		Average width (m): 15		Average Depth (m): 0.5		Maximum Depth (m): 2		sec./10 ft. <7 sec >11 sec.			
Water		Clear		Turbid (1-5)		% Mid-day Shade:25		% Emerg. Veg.:40		% Floating Vegetation: 5	
1	2	3	4	5	Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm	
Watershed:		Natural		Grazed		Other-Dammed		75-300 mm	>300 mm	Bedrock	
Predominant Vegetation: Riparian: willow, alder, sedges, and grasses. Upslope: jeffrey pine, lodgepole pine, and fir.											
Comments: Not recorded.											

Fishing Tackle: Not recorded.	Fish Present:		Species and Approximate Number: Adults and minnows	
Yes	No	Yes	No	?

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

## **APPENDIX M**

### **Photographs of Sites Sampled for the Mountain Yellow-legged Frog**



**Appendix M. Photographs of Sites Sampled for the Mountain Yellow-legged Frog**



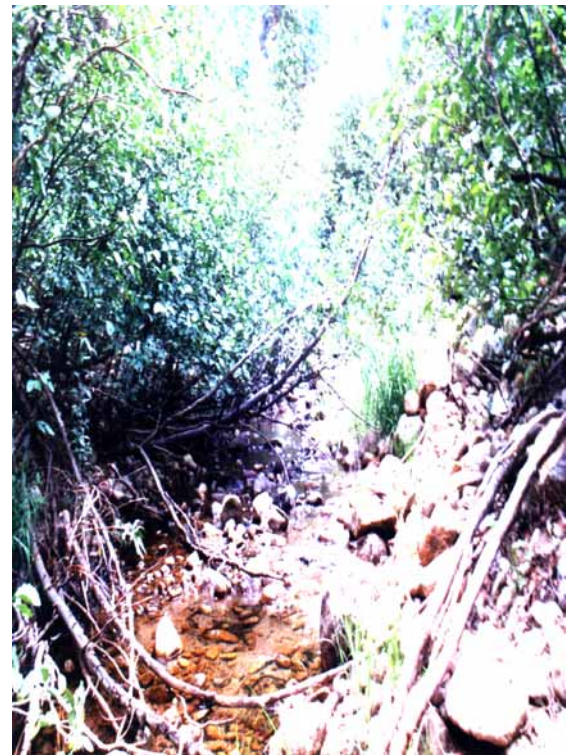
Big Creek  
(approx. 5,100 ft. elevation, RM 6.5)



Bear Creek  
(approx. 7,300 ft. elevation, RM 1.4)



Bolsillo Creek  
(approx. 7,400 ft. elevation, RM 1.3)



Chinquapin Creek  
(approx. 7,200 ft. elevation, RM 0.3)



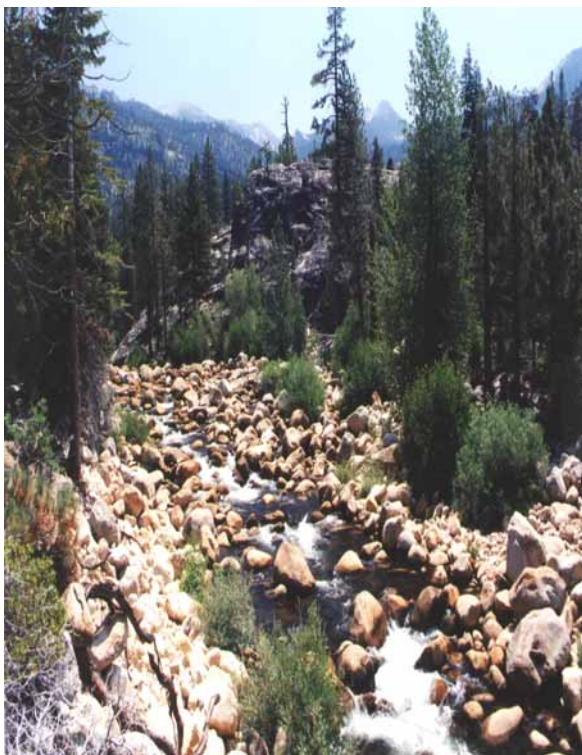
**Appendix M. Photographs of Sites Sampled for the Mountain Yellow-legged Frog  
(continued)**



North Fork Stevenson Creek  
(approx. 6,400 ft. elevation, RM 3.2)



Pitman Creek  
(approx. 5,000 ft. elevation, RM 0.2)



South Fork San Joaquin River  
(approx. 7,000 ft. elevation, RM 24.5)



Tombstone Creek  
(approx. 7,100 ft. elevation, RM 0.5)

**APPENDIX N**  
**Yosemite Toad Data Forms**

# Appendix N. Yosemite Toad

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Meadow complex by Mono Hot Springs

Date (mm-dd-yy): 6/13/2002	Begin Time: 0915	Total Time (min.): 360	Observer(s): Darrin Doyle and Sarah Yarnell									
Locality: Drive Highway 168 from Shaver Lake to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass RD) at Rancheria Creek intersection and drive to Mono Hot Springs. Park at Mono Hot Springs and survey meadows on both sides of the SF SJR.										Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,560 m ft.		Start North UTM: Map Datum GWS 84 GPS Map See comments					Start East UTM: GPS Map See comments				
Topographic Map: Mt. Givens, CA 7.5" 15"		End North UTM: GPS Map See comments					End East UTM: GPS Map See comments					
Distance (km) to mapped trail: 0 (Mono Hot Springs Trail)			Distance (km) to public dirt road: 0.1					Dist. (km) to pub. paved road: 0				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		24 C F	32 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
1,000	500		0.5		1		sec./10 ft.		<7 sec		> 11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 2			% Emerg. Veg.: 70		% Floating Vegetation: 1			
1	2	3	4	5	Watershed: Natural Grazed Logged (last 15 years)		Substrate		Silt	< 2 mm	2-75 mm
Urban Agriculture Other-recreation at hot springs					75-300 mm		>300 mm		Bedrock		

Predominant Vegetation: Sedges and grasses in meadow; upland habitats dominated by lodgepole pine and ponderose pine.

Comments: This meadow complex does not look like good habitat. Natural hot springs are too hot for frogs to breed in or for eggs to develop. No cold water pools were found. The soil is saturated with water. This meadow complex appears to have high recreational use because of the presence of the hot springs. GPS points in zone 11:S were recorded at the following points: (1) N = 4132942; E = 0321586 (2) N = 4132921; E = 0321516 (3) N = 4132825; E = 0321530 (4) N = 4132804; E = 0321446 (5) N = 4132779; E = 0321297 (6) N = 4132864; E = 0321301 (6) N = 4132938; E = 0321418 (7) N = 4133024; E = 0321315 (8) N = 4133059; E = 0321148 (9) N = 4133111; E = 0321110 (10) N = 4133282; E = 0321109 (11) N = 4133520; E = 0321117;

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	Not Applicable

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>		2 in cell "4"			Not recorded	SVL: TL: 24 and 36	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		3 in cell "5"			Not recorded	SVL: TL: all about 24	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>			25 in cell "5"		Not recorded	SVL: TL: 2.5	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix N. Yosemite Toad (continued)

Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Balsam Meadow

Date (mm-dd-yy): 6/18/2002	Begin Time: 0851	Total Time (min.): 138	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 about 7 miles beyond Shaver Lake. Park at Balsam Meadow Snow Park. Hike past gate on gravel road and hike for about 500 meters on road. Road terminates at Balsam Meadow Forebay.											Owner: NPS FS BLM St. Pvt. Other ?	
County: Fresno	Elevation: 6,640 m ft.		Start North UTM: Map Datum GWS 84					Start East UTM:				
Topographic Map: Musick Mtn, CA 7.5" 15"			GPS Map See comments					GPS Map See comments				
Distance (km) to mapped trail: Not recorded.			End North UTM:					End East UTM:				
			GPS Map See comments					GPS Map See comments				
			Distance (km) to public dirt road: Not recorded.					Dist. (km) to pub. paved road: 0.1				

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		C F	C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
	500		50		0.01		0.05		sec./10 ft. <7 sec		> 11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 5			% Emerg. Veg.: 75		% Floating Vegetation: 0			
1	2	3	3	4	5	Substrate		Silt	< 2 mm	2-75 mm	
Watershed:	Natural	Grazed	Logged (last 15 years)			75-300 mm		>300 mm	Bedrock		
	Urban	Agriculture	Other-Hydroelectric project								

Predominant Vegetation: Sedges and grasses  
 Comments: This "meadow" is mostly dry and does not look like a typical meadow. There are no pools of water in the meadow to support breeding by amphibians. The following GPS points in zone 11 S were recorded: (1) N = 4114986; E = 0300358 (2) N = 4115013; E = 0300131 (3) N = 4114727; E = 0300067 (4) N = 4114870; E = 0299891

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	Not Applicable

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other	
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix N. Yosemite Toad (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Meadow by Portal Forebay

Date (mm-dd-yy): 6/18/2002	Begin Time: 1105	Total Time (min.): 130	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 to Rancheria Creek (adjacent to Huntington Lake). Turn right onto FS RD 80 (Kaiser Pass RD) and drive about 15 miles to Camp 61 Campground at Portal Forebay. Park at campground and hike about 0.1 km across quarry to meadow.											Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other ?	
County: Fresno	Elevation: 7,040 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4132781					Start East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0316784				
Topographic Map: Mt. Givens, CA <input type="checkbox"/> 7.5" <input type="checkbox"/> 15"			End North UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 4132736					End East UTM: GPS <input type="checkbox"/> Map <input type="checkbox"/> Zone 11S: 0316882				
Distance (km) to mapped trail: 0.1 Rattlesnake Crossing Trailhead)			Distance (km) to public dirt road: 0					Dist. (km) to pub. paved road: 0.1				

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0 <input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	25 <input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	19 <input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow		<input type="checkbox"/> > 20 mph						

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input checked="" type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:				
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0 <input type="checkbox"/> 7-11 sec.		
200	200		0.05		0.1		sec./10 ft. <7 sec		> 11 sec.		
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 1			% Emerg. Veg.: 75		% Floating Vegetation: 0			
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
Watershed:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)			Substrate		<input type="checkbox"/> Silt	<input type="checkbox"/> < 2 mm	<input type="checkbox"/> 2-75 mm	
	<input type="checkbox"/> Urban	<input type="checkbox"/> Agriculture	<input type="checkbox"/> Other-Hydroelectric project			75-300 mm		<input type="checkbox"/> >300 mm	Bedrock		
Predominant Vegetation: Sedges and grasses with lodgepole pines surrounding the meadow.											
Comments: This meadow lacks pools, thus, it does not appear to be conducive to breeding. Only one stream meanders through the meadow (along the western edge).											

Fishing Tackle:	Fish Present:		Species and Approximate Number: Not Applicable	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ?			

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other	
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

# Appendix N. Yosemite Toad (continued)

Site: Tombstone Creek below diversion

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 6/18/2002	Begin Time: 1319	Total Time (min.): 132	Observer(s): Darrin Doyle and Pierre Fidenci
Locality: Drive Highway 168 to Rancheria Creek (adjacent to Huntington Lake). Turn onto FS RD. 80 (Kaiser Pass Road) and drive 21 miles to Florence Lake. Follow road sign to Jackass Meadow. Park at campground and hike into meadow to Tombstone Creek.			Owner: NPS FS BLM St. Pvt. Other ?
County: Fresno	Elevation: 7,160 m ft.	Start North UTM: Map Datum GWS 84 GPS Map 4127442	Start East UTM: GPS Map 0325998
Topographic Map: Florence Lake, CA 7.5" 15"		End North UTM: GPS Map 4127282	End East UTM: GPS Map 0326443
Distance (km) to mapped trail: 1 (Trail to Dutch Lake)		Distance (km) to public dirt road: 0.2	Dist. (km) to pub. paved road: 0.1

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		24 C F	12 C F

Habitat:	Natural	Altered (1-5)	Description:	Lake	River	Woodland	Meadow/wetland	Ditch	Drainage:
	1	2		Pond	Stream	Grassland	Spring		Seasonal Permanent
Site length (m):	Average width (m):		Average Depth (m):	Maximum Depth (m):	Water Flow	0	7-11 sec.		
1650	2		0.2	0.5	sec./10 ft.	<7 sec	> 11 sec.		
Water	Clear	Turbid (1-5)	% Mid-day Shade: 75	% Emerg. Veg.: 1	% Floating Vegetation: 0				
1	2	3	4	5					
Watershed:	Natural	Grazed	Logged (last 15 years)	Substrate	Silt	< 2 mm	2-75 mm		
	Urban	Agriculture	Other-Hydroelectric project	75-300 mm	>300 mm		Bedrock		
Predominant Vegetation: Alders, willows, and currants									
Comments: We surveyed both the moderate and poor segment. The moderate segment looks like moderate habitat and agrees with the stream habitat criteria. Has mostly gravel and silt bottom. The poor segment is steep with lots of brush in channel and looks like poor habitat and agrees with the stream habitat criteria. Substrate is mostly boulders.									

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	Not Applicable

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix N. Yosemite Toad (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Mono Creek - below diversion

Date (mm-dd-yy): 6/19/2002	Begin Time: 1255	Total Time (min.): 140	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) at intersection with Rancheria Creek. Drive road about 16 miles to Mono Hot Springs. Park and take Mono Creek Trail to Ansel Adams Wilderness (2 mile hike).										Owner: NPS FS BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,640 m ft.		Start North UTM: Map Datum GWS 84 GPS Map 4135495				Start East UTM: GPS Map 0319782					
Topographic Map: Mt. Givens, CA 7.5" 15"		End North UTM: GPS Map 4135122				End East UTM: GPS Map 0319435						
Distance (km) to mapped trail: 0 (Mono Creek Trail)			Distance (km) to public dirt road: 4				Dist. (km) to pub. paved road: 5					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		25 C F	15 C F

Habitat:	Natural	Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch				Drainage:				
	1	2	3	4	5	Pond	Stream	Grassland	Spring	Seasonal	Permanent
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.
700	5		0.3		2		sec./10 ft.		<7 sec		> 11 sec.
Water	Clear	Turbid (1-5)	% Mid-day Shade: 10			% Emerg. Veg.: 5		% Floating Vegetation: 1			
1	2	3	4	5	Logged (last 15 years)		Substrate		Silt	< 2 mm	2-75 mm
Watershed:		Natural	Grazed	Other-		75-300 mm		>300 mm		Bedrock	
Urban		Agriculture									

Predominant Vegetation: Alders, willows, sedges, and surrounded by lodgepole pine forest.

Comments: This segment looks like good habitat for frogs, one excludes large fish population. Looks good for mountain yellow-legged frogs. This segment exhibits a high amount of habitat heterogeneity and has a mixture of open and shaded areas. There appears to be ample room (=habitat) for breeding in back water areas. However, no detections were made during the survey. I took 3-4 photos of the creek to illustrate the different habitats. More pools were encountered as we moved upstream, particularly above where Mono Hot Springs Trail intersects Mono Creek. Shoreline slope is gradual allowing many basking sites.

Fishing Tackle:	Fish Present:	Species and Approximate Number:
Yes No	Yes No ?	500 adult and fingerling brown trout.

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>	1				Not recorded	SVL: TL: 61	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		3			Not recorded	SVL: TL: 46	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo



# Appendix N. Yosemite Toad (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Mono Meadow

Date (mm-dd-yy): 6/19/2002	Begin Time: 1045	Total Time (min.): 124	Observer(s): Darrin Doyle										
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) and drive approximately 16 miles to Mono Hot Springs. Park there, and hike to the Mono Hot Springs Trail (about a 1 mile hike).											Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other <input type="checkbox"/>		
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft. <input type="checkbox"/>	Start North UTM: Map Datum GWS 84	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments								Start East UTM:	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments	
Topographic Map: Mt. Givens, CA	7.5" <input type="checkbox"/> 15" <input type="checkbox"/>	End North UTM:	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments								End East UTM:	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments	
Distance (km) to mapped trail: 0 (Mono Hot Springs Trail)	Distance (km) to public dirt road: 2				Distance (km) to pub. paved road: 3								

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0 <input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	26 <input type="checkbox"/> C <input type="checkbox"/> F	Water temperature	17 <input type="checkbox"/> C <input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow						

Habitat:	Natural <input type="checkbox"/>	Altered (1-5) <input type="checkbox"/>	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:	Seasonal <input type="checkbox"/>		Permanent <input type="checkbox"/>	
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0 <input type="checkbox"/> 7-11 sec. <input type="checkbox"/>		
600	75		0.1		0.6		sec./10 ft. <7 sec <input type="checkbox"/> > 11 sec. <input type="checkbox"/>				
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 5			% Emerg. Veg.: 50		% Floating Vegetation: 1			
Watershed:	Natural <input type="checkbox"/>	<input checked="" type="checkbox"/> Grazed	Logged (last 15 years)			Substrate		Silt <input type="checkbox"/> < 2 mm <input type="checkbox"/> 2-75 mm <input type="checkbox"/>			
	Urban <input type="checkbox"/>	Agriculture <input type="checkbox"/>	Other- <input type="checkbox"/>			75-300 mm <input type="checkbox"/> >300 mm <input type="checkbox"/>		Bedrock <input type="checkbox"/>			
Predominant Vegetation: Sedges and grasses surrounded by lodgepole pines.											
Comments: Mono Meadow "A" (Zone 11 S: N = 4135110; E = 0321603). This meadow is 99% dry and 1% wet. Only 1 pool (10 m wide x 20 m long suitable for breeding was found. Habitat data on data form was taken from Mono Meadow "A". Unnamed meadow "B" (Zone 11 S: N = 4134997; E = 0321099). This meadow is 100 m long x 25 m wide and is 50% wet and 50% dry. It is surrounded by tules, but has no open pools. Unnamed meadow "C" (Zone 11 S: N = 4135392; E = 0319791) is 100% dry and does not resemble a meadow. This meadow is 500 m in diameter and is 100 % dry											

Fishing Tackle:	Fish Present:		Species and Approximate Number: Not Applicable	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ?			

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>			50 in Mono Meadow "A"		Not recorded	SVL: TL: not recorded	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		3 in Mono Meadow "A"			Not recorded	SVL: TL: 46	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis elegans</i>		1 in Unnamed meadow "B"			Not recorded	SVL: TL: 30.5	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix N. Yosemite Toad (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Jackass Meadow

Date (mm-dd-yy): 6/20/2002	Begin Time: 0940	Total Time (min.): 520	Observer(s): Darrin Doyle and Pierre Fidenci						
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) at intersection with Rancheria Creek and drive 21 miles to Florence Lake. Park at Jackass Meadow Campground.							Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 7,160 m <input type="checkbox"/> ft.	Start North UTM: Map Datum GWS 84	GPS Map See comments				Start East UTM:	GPS Map See comments	
Topographic Map: Florence Lake, CA	7.5" <input type="checkbox"/> 15"	End North UTM:	GPS Map See comments				End East UTM:	GPS Map See comments	
Distance (km) to mapped trail: 2 (Dutch Lake Trail)	Distance (km) to public dirt road: 0		Distance (km) to pub. paved road: 0						

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	25	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	17	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow											

Habitat:	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch		Drainage:	<input type="checkbox"/> Seasonal						
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Water Flow	0	<input type="checkbox"/> 7-11 sec.
Site length (m):	500		Average width (m):		300		Average Depth (m):	0.1		Maximum Depth (m):	0.3	
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 2		% Emerg. Veg.: 98		% Floating Vegetation: 2					
Watershed:	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)		Substrate	<input type="checkbox"/> Silt	<input type="checkbox"/> < 2 mm	<input type="checkbox"/> 2-75 mm				
	<input type="checkbox"/> Urban	<input type="checkbox"/> Agriculture	<input type="checkbox"/> Other-		75-300 mm	<input type="checkbox"/> >300 mm	Bedrock					

Predominant Vegetation: Sedges, grasses, willows, and surrounded by lodgepole pine forest.

Comments: Of the meadows that comprise the Jackass Meadow complex, only meadow "E" appears to be suitable for amphibians. It is large with lots of water and covered by tules. The other meadows in the complex lack water and resemble dry grasslands which are heavily grazed by cattle and horses. Approximately 20 horses were observed in meadow "D" during survey. GPS points in zone 11 S were recorded in meadow "A" at (1) N = 4127245; E = 0326116 (2) N = 4127478; E = 0326085 (3) N = 4127586; E = 0326191 (4) N =

Fishing Tackle:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Fish Present:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	?	Species and Approximate Number: NA
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Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Thamnophis couchii</i>		12 in meadow "E"			Not recorded	SVL: TL: 46	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis elegans</i>	2 in meadow "A"				Not recorded	SVL: TL: 61	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Thamnophis couchii</i>		2 in meadow "A"			Not recorded	SVL: TL: 46	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>			75 in meadow "E"		Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
<i>Hyla regilla</i>			30 in meadow "A"		Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix N. Yosemite Toad (continued)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Big Creek (below Huntington Lake)

Date (mm-dd-yy): 7/1/2002	Begin Time: 1430	Total Time (min.): 80	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 (heading west) about 2 miles past Cal-Trans Work station. Turn onto unmarked FS RD ("Grouse Creek RD"). This road has a sign that reads "Closed from Dec - May to vehicles". Drive 4 miles along Grouse Creek to terminus at Penstock that crosses Big Creek.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,500 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map 4121328					Start East UTM: GPS <input type="checkbox"/> Map 0303050				
Topographic Map: Huntington Lake, CA 7.5" 15"			End North UTM: GPS <input type="checkbox"/> Map 4121598					End East UTM: GPS <input type="checkbox"/> Map 0303368				
Distance (km) to mapped trail: 10 (Kaiser Loop Trail)			Distance (km) to public dirt road: 0					Dist. (km) to pub. paved road: 8 (Highway 168)				

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	29 <input type="checkbox"/> C <input type="checkbox"/> F		Water temperature	16 <input type="checkbox"/> C <input type="checkbox"/> F	
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow									

Habitat:	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch					Drainage:				
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	Seasonal Permanent		
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0	7-11 sec.		
200	1		0.25		0.5		sec./10 ft.		<input checked="" type="checkbox"/> <7 sec	<input type="checkbox"/> > 11 sec.		
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 70			% Emerg. Veg.: 30		% Floating Vegetation: 0				
1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	Watershed: Natural Grazed Logged (last 15 years)			Substrate		Silt	< 2 mm	2-75 mm
Urban			Agriculture		Other-Hydroelectric			75-300 mm		>300 mm		Bedrock

**Predominant Vegetation:** Alders, horsetails, sword fern  
**Comments:** This segment of Big Creek is 98% unsurveyable due to extremely dense growth of alders. The nearby "meadow" that the GIS maps indicate are not meadows at all - they are dense groves of young alders, which are not surveyable. We recommend selecting alternate meadows and a stream segment that are surveyable. We took two photos of the stream channel to show dense alders

Fishing Tackle:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Fish Present:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> ?	Species and Approximate Number: 25 unknown salmonids
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Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other	
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix N. Yosemite Toad (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Crater Creek below diversion

Date (mm-dd-yy): 7/2/2002	Begin Time: 1216	Total Time (min.): 88	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) at Rancheria Creek and drive approximately 18 miles to Ward Lake. Park at campground and hike poorly maintained trail about 1.1 miles to Crater Creek.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS Map 4131312				Start East UTM: GPS Map 0324835					
Topographic Map: Florence Lake, CA 7.5" 15"			End North UTM: GPS Map 4130845				End East UTM: GPS Map 0324848					
Distance (km) to mapped trail: 1 (Ward Lake Trail)			Distance (km) to public dirt road: 4 (Hooper Diversion Road)				Dist. (km) to pub. paved road: 3					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature	
	<input checked="" type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow			> 20 mph	26	<input type="checkbox"/> C	<input type="checkbox"/> F
							27	<input type="checkbox"/> C	<input type="checkbox"/> F

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake River Woodland Meadow/wetland Ditch					Drainage:				
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input checked="" type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent	
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0		7-11 sec.	
500	1		0.1		0.5		sec./10 ft.		<7 sec		> 11 sec.	
Water	Clear	<input checked="" type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 10			% Emerg. Veg.: 20		% Floating Vegetation: 5				
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	Logged (last 15 years)		Substrate		Silt		< 2 mm	<input checked="" type="checkbox"/> 2-75 mm
Watershed:			<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Grazed		<input type="checkbox"/> Urban		<input type="checkbox"/> Agriculture		<input type="checkbox"/> Other-	
			75-300 mm		>300 mm		Bedrock					

Predominant Vegetation: Sedges and grasses

Comments: This creek is intermittent as it meanders through Hell Hole Meadow. It has numerous pools which appear suitable for breeding by amphibians, but none were detected. Overall, this segment looks like good habitat for Yosemite toads. Flow is slow, or none at all. The creek is surrounded by meadow. Near the confluence with the SF SJR, the creek does not look like good habitat for Yosemite toads. The water is orange colored in some places

Fishing Tackle:	Fish Present:	Species and Approximate Number: NA
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> ? <input type="checkbox"/>	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)		Other
<i>Thamnophis elegans</i>	1				Not recorded	SVL: TL: 61	Not recorded	Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine	Voucher Pathology Photo

### Appendix N. Yosemite Toad (continued)

#### Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Hell Hole Meadow

Date (mm-dd-yy): 7/2/2002	Begin Time: 1315	Total Time (min.): 120	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) at intersection with Rancharia Creek and drive approximately 18 miles to Ward Lake. Park at campground and hike poorly maintained trail about 1 mile to Hell Hole Meadow.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. Pvt. Other ?		
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft.	Start North UTM: Map Datum GWS 84	GPS <input type="checkbox"/> Map Zone 11 S: 4130798							Start East UTM: GPS <input type="checkbox"/> Map Zone 11 S: 0324880		
Topographic Map: Florence Lake, CA 7.5" 15"		End North UTM:	GPS <input type="checkbox"/> Map Zone 11 S: 4130913							End East UTM: GPS <input type="checkbox"/> Map Zone 11S: 0324981		
Distance (km) to mapped trail: 1 (Ward Lake Trail)		Distance (km) to public dirt road: 4 (Hooper Diversion Road)					Dist. (km) to pub. paved road: 3					

Weather	Clear	Overcast	Rain	Wind: 0	< 5	5-20	Air Temperature	Water temperature
	Pt. Cloudy	Mostly Cloudy	Snow		> 20 mph		26 C F	27 C F

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch				Drainage:	
	1	2	3	4	5	Pond <input type="checkbox"/> Stream <input type="checkbox"/> Grassland <input type="checkbox"/> Spring <input type="checkbox"/>	Seasonal <input type="checkbox"/> Permanent <input type="checkbox"/>	
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):	Water Flow	0	
400	400		0.1		0.3	sec./10 ft.	<7 sec > 11 sec.	
Water	Clear	<input checked="" type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 20		% Emerg. Veg.: 10	% Floating Vegetation: 5		
1	2	3	4	5				
Watershed:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm
	Urban	Agriculture	Other-		75-300 mm	>300 mm	Bedrock	
Predominant Vegetation: Sedges and grasses								

Comments: This meadow has tall grasses and sedges growing about 2 ft. tall and covering most of meadow. The streams meandering through the meadow appear to have suitable pools for breeding by amphibians. The pond appearing at the southeast corner on the topographic map is mostly dry and made up of several mud puddles. This meadow has dense groves of willows near the center of the meadow. Overall, a good meadow for amphibians

Fishing Tackle:	Fish Present:	Species and Approximate Number: Not Applicable
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ?	

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>			2		Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

### Appendix N. Yosemite Toad (continued)

Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Site: Poison Meadow

Date (mm-dd-yy): 7/2/2002	Begin Time: 1015	Total Time (min.): 134	Observer(s): Darrin Doyle and Pierre Fidenci										
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) at Rancheria Creek and drive approximately 18 miles to Ward Lake. Park at campground and hike unmaintained trail about 1 mile to Poison Meadow.											Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other ?		
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft. <input type="checkbox"/>	Start North UTM: Map Datum GWS 84	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments							Start East UTM:	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments		
Topographic Map: Florence Lake, CA	7.5" <input type="checkbox"/> 15" <input type="checkbox"/>	End North UTM:	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments							End East UTM:	GPS <input type="checkbox"/> Map <input type="checkbox"/> See comments		
Distance (km) to mapped trail: 0 (Ward Lake trail)		Distance (km) to public dirt road: 4 (Hooper Diversion Road)					Dist. (km) to pub. paved road: 3						

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	27	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	20	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow											

Habitat:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:	Seasonal <input type="checkbox"/> Permanent <input type="checkbox"/>		
Site length (m):	1 2 3 4 5	Average width (m):	Average Depth (m):	Maximum Depth (m):	Water Flow	0	7-11 sec.			
700	500	0.1	0.25	sec./10 ft.	<7 sec	> 11 sec.				
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 5	% Emerg. Veg.: 30	% Floating Vegetation: 5					
Watershed:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)		Substrate	Silt	< 2 mm	2-75 mm		
	<input type="checkbox"/> Urban	<input type="checkbox"/> Agriculture	<input type="checkbox"/> Other-		75-300 mm	>300 mm	Bedrock			
Predominant Vegetation: Grasses, sedges, and willows										
Comments: This meadow has several stream channels meandering through which appear to provide suitable breeding habitat for amphibians. The northern most stream slowly meanders through the meadow. Its banks are gradual. This meadow only has one pool suitable for breeding by amphibians, and is located at GPS point #5. The following GPS points in zone 11S were recorded: (1) N = 4131635; E = 0324735 (2) N = 4131784; E = 0324790; (3) N = 4131951; E = 0324892 (4) N = 4131893; E = 0324762 (5) N = 4131753; E = 0324924										

Fishing Tackle:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Fish Present:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	?	Species and Approximate Number: Not Applicable
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Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
<i>Hyla regilla</i>			6		Not recorded	SVL: TL: 2	Not recorded	Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

# Appendix N. Yosemite Toad (continued)

Site: SF SJR (Bear Creek - Florence Lake)

## Amphibian and Reptile Aquatic Habitat Survey Form (Fellers and Freel 1995)

Date (mm-dd-yy): 7/2/2002	Begin Time: 1131	Total Time (min.): 78	Observer(s): Darrin Doyle and Pierre Fidenci									
Locality: Drive Highway 168 to Huntington Lake. Turn right onto FS RD 80 (Kaiser Pass Road) at intersection with Rancheria Creek. Drive approximately 18 miles to Ward Lake. Park at campground and hike about 1 mile down a poorly maintained trail to the SF SJR.										Owner: NPS <input checked="" type="checkbox"/> FS <input type="checkbox"/> BLM St. <input type="checkbox"/> Pvt. <input type="checkbox"/> Other ?		
County: Fresno	Elevation: 6,800 m <input type="checkbox"/> ft.		Start North UTM: Map Datum GWS 84 GPS <input type="checkbox"/> Map 4131610					Start East UTM: GPS <input type="checkbox"/> Map 0324653				
Topographic Map: Florence Lake, CA 7.5" 15"			End North UTM: GPS <input type="checkbox"/> Map 4131464					End East UTM: GPS <input type="checkbox"/> Map 0325119				
Distance (km) to mapped trail: 0 (Ward Lake Trail)			Distance (km) to public dirt road: 4 (Hooper Diversion Road)					Dist. (km) to pub. paved road: 3				

Weather	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Overcast	<input type="checkbox"/> Rain	Wind: 0	<input type="checkbox"/> < 5	<input type="checkbox"/> 5-20	Air Temperature	26	<input type="checkbox"/> C	<input type="checkbox"/> F	Water temperature	18	<input type="checkbox"/> C	<input type="checkbox"/> F
	<input type="checkbox"/> Pt. Cloudy	<input type="checkbox"/> Mostly Cloudy	<input type="checkbox"/> Snow											

Habitat:	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> Altered (1-5)	Description: Lake <input type="checkbox"/> River <input type="checkbox"/> Woodland <input type="checkbox"/> Meadow/wetland <input type="checkbox"/> Ditch <input type="checkbox"/>				Drainage:					
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> Pond	<input type="checkbox"/> Stream	<input type="checkbox"/> Grassland	<input type="checkbox"/> Spring	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Permanent	
Site length (m):	Average width (m):		Average Depth (m):		Maximum Depth (m):		Water Flow		0	7-11 sec.		
600	6		0.3		1		sec./10 ft.		<input checked="" type="checkbox"/> <7 sec	<input type="checkbox"/> > 11 sec.		
Water	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid (1-5)	% Mid-day Shade: 10			% Emerg. Veg.: 1		% Floating Vegetation: 0				
1	2	3	4	5								
Watershed:	<input type="checkbox"/> Natural	<input type="checkbox"/> Grazed	<input type="checkbox"/> Logged (last 15 years)			Substrate		Silt	< 2 mm	2-75 mm		
	<input type="checkbox"/> Urban	<input type="checkbox"/> Agriculture	<input checked="" type="checkbox"/> Other-Hydroelectric project			75-300 mm		<input checked="" type="checkbox"/> >300 mm	Bedrock			

**Predominant Vegetation:** Alders and willows  
**Comments:** This segment appears to be poor habitat for the Yosemite toad. The stream channel is dominated by boulders and is essentially a continuous low gradient riffle. Water flow is too high and would wash any eggs and tadpoles downstream if breeding ever took place. Very few backwater habitats were found.

Fishing Tackle:	Fish Present:		Species and Approximate Number: 15 adult and minnows salmonids
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Species	Adults	Subadults	Larvae	Eggs	Sex	Length (cm)	Weight (g)	Survey Method(s)	Other
No detections						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo
						SVL: TL:		Visual Aural Dip net	Hand TCS Seine Voucher Pathology Photo

## **APPENDIX O**

### **Photographs of Sites Sampled for the Yosemite Toad**



**APPENDIX P**  
**Western Pond Turtle Data Forms**

### Appendix O. Photographs of Sites Sampled for the Yosemite Toad



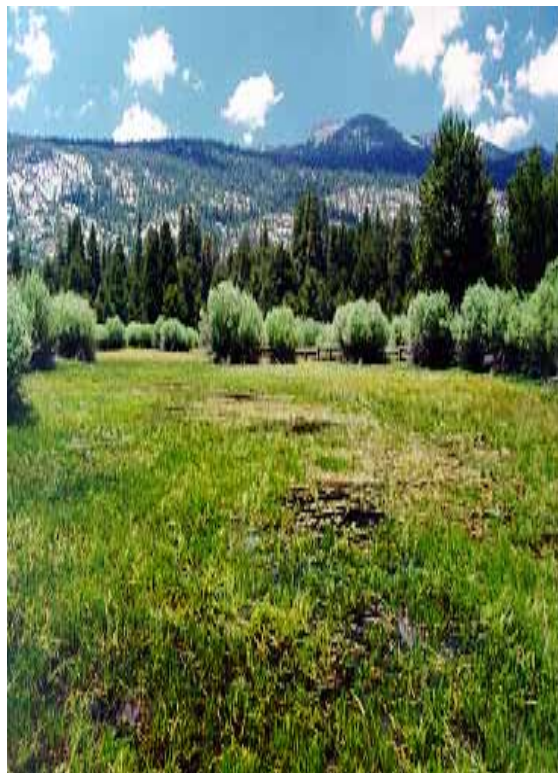
Mono Creek  
(approx. 6,700 ft. elevation, RM 2.4)



Hell Hole Meadow  
(approx. 6,800 ft. elevation)



Jackass Meadow  
(approx. 7,100 ft. elevation)



Jackass Meadow  
(approx. 7,100 ft. elevation)



**Appendix O. Photographs of Sites Sampled for the Yosemite Toad (continued)**



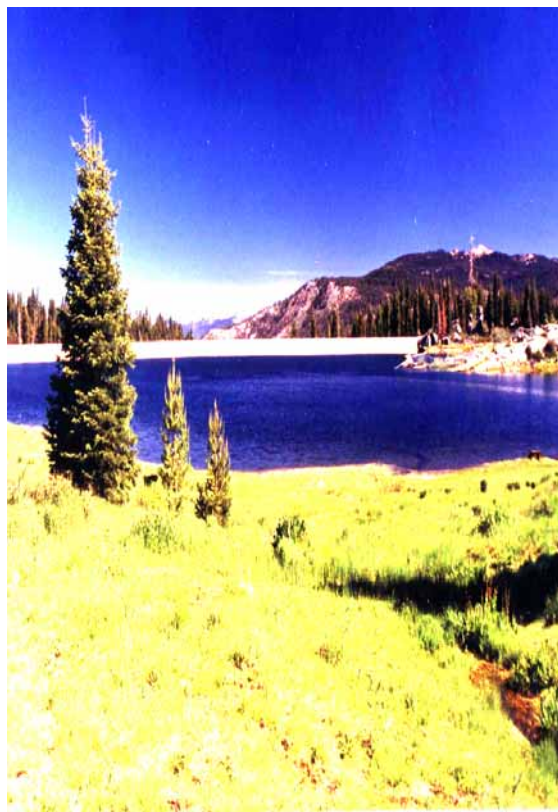
Poison Meadow  
(approx. 6,700 ft. elevation)



Mono Meadow  
(approx. 6,700 ft. elevation)



Unnamed Meadow by Portal Forebay  
(approx. 7,100 ft. elevation)



Balsam Meadow  
(approx. 6,700 ft. elevation)



**Appendix O. Photographs of Sites Sampled for the Yosemite Toad (continued)**



South Fork San Joaquin River  
(approx. 6,700 ft. elevation, RM 23.4)



Tombstone Creek  
(approx. 7,100 ft. elevation, RM 0.2)



Big Creek  
(approx. 6,600 ft. elevation, RM 8.7)



Crater Creek  
(approx. 6,800 ft. elevation, RM 0.5)

## Appendix P. Western Pond Turtle

Big Creek Powerhouse 8 to Dam 5

<b>Date (mm-dd-yy):</b> 7/23/2002	<b>Begin Time:</b> 1400	<b>End Time:</b> 1630	<b>Observer(s):</b> Darrin Doyle and Pierre Fidenci						
<b>Exact Site Location:</b> We surveyed approximately 500 meters of Big Creek upstream of powerhouse 8 . Accessed by driving Upper Canyon Road (SCE gated). (Near confluence with San Joaquin River)							<b>Ownership / Contact</b> NPS <input checked="" type="checkbox"/> FS <input checked="" type="checkbox"/> BLM St. Pvt. Other ?		
<b>County:</b> Fresno			<b>Start North UTM:</b> Map Datum GWS 84 GPS <input checked="" type="checkbox"/> Map Zone 11S: 4120666				<b>Start East UTM:</b> GPS <input checked="" type="checkbox"/> Map Zone 11S: 0293475		
<b>Site Location (Topographic Map Reference):</b> Musick Mtn., CA 7.5" 15"			<b>End North UTM:</b> GPS <input checked="" type="checkbox"/> Map Zone 11S: 4120588				<b>End East UTM:</b> GPS <input checked="" type="checkbox"/> Map Zone 11S: 0293681		
<b>Township / Range / Section:</b> Not recorded			<b>Photo Reference Roll:</b> Not recorded				<b>Photo # Orientation:</b> Not recorded		

		<b>Air Temperature</b>		<b>Water temperature</b>	
Start	28	C	Start	18	C
End	27	C	End	18	C

<b>Water Source Type:</b> Reservoir Pond Lake <input checked="" type="checkbox"/> Stream River						<b>Drainage:</b> Seasonal <input checked="" type="checkbox"/> Permanent			
<b>Site length (m):</b> 500		<b>Average width (m):</b> Not recorded		<b>Average Depth (m):</b> Not recorded		<b>Maximum Depth (m):</b> Not recorded		<b>Current:</b> <input checked="" type="checkbox"/> Slow <input checked="" type="checkbox"/> Moderate <input checked="" type="checkbox"/> Fast	
<b>Water</b> <input checked="" type="checkbox"/> Clear <input checked="" type="checkbox"/> Turbid (1-5)		<b>Vegetation:</b> Woody Dom. Alder		<b>Non-Woody Elements</b> Blackberry		<b>Aquatics</b> None			
<b>Habitat Disturbances:</b> Fire Logged						<b>Substrate</b> 75-300 mm <input checked="" type="checkbox"/> >300 mm		<b>Silt</b> < 2 mm 2-75 mm	
<b>Natural</b>		<b>Structures</b>		<b>Agriculture</b>		<b>Other-Hydroelectric projects</b>		<b>Bedrock</b>	
<b>Basking Site Description:</b> Three pools at bridge crossing Big Creek (about 100 meters upstream of powerhouse 8) provide suitable basking habitat for the western pond turtle. Each was observed for two hours. Bedrock around pools is gently sloping with large boulders for basking present around the shoreline. Many submergent boulders in pools provide refugia. Area is very sunny (low canopy). Each pool is about 5 feet deep and 30 feet in diameter.									

<b>Bullfrogs present:</b> Yes <input checked="" type="checkbox"/> No			<b>Fish Present:</b> Yes <input checked="" type="checkbox"/> No		<b>Grazed:</b> Yes <input checked="" type="checkbox"/> No		<b>Other Species Noted:</b> 1 adult <i>Thamnophis couchii</i> 1 juvenile <i>Thamnophis couchii</i>		
<b>Adults</b>		<b>Subadults</b>		<b>Tadpoles</b>		<b>Salmonids</b>		<b>Bass</b>	
						<b>Sunfish</b>		<b>Carp</b>	

Turtle Species	Adults	Subadults	Sex	Carapace (cm)	Weight (g)	Animal Marked?	
No detections							

### Appendix P. Western Pond Turtle (continued)

Big Creek Powerhouse 2 to Dam 4

<b>Date (mm-dd-yy):</b> 7/23/2002	<b>Begin Time:</b> 0940	<b>End Time:</b> 1030	<b>Observer(s):</b> Darrin Doyle and Pierre Fidenci						
<b>Exact Site Location:</b> We surveyed approximately 400 meters upstream of impoundment at powerhouse 2.							<b>Ownership / Contact</b> NPS FS BLM St. Pvt. Other ?		
<b>County:</b> Fresno			<b>Start North UTM:</b> Map Datum GWS 84 GPS Map Zone 11S: 4119813				<b>Start East UTM:</b> GPS Map Zone 11S: 0301370		
<b>Site Location (Topographic Map Reference):</b> Musick Mtn., CA			<b>End North UTM:</b> GPS Map Zone 11S: 4119852				<b>End East UTM:</b> GPS Map Zone 11S: 0301664		
<b>Township / Range / Section:</b> Not recorded			<b>Photo Reference Roll:</b> Not recorded				<b>Photo # Orientation:</b> Not recorded		

<b>Air Temperature</b>				<b>Water temperature</b>	
<b>Start</b>	20	<b>C</b>	<b>Start</b>	14	<b>C</b>
<b>End</b>	23	<b>C</b>	<b>End</b>	14	<b>C</b>

<b>Water Source Type:</b> Reservoir Pond Lake Stream River						<b>Drainage:</b> Seasonal Permanent	
<b>Site length (m):</b> 400		<b>Average width (m):</b> Not recorded		<b>Average Depth (m):</b> Not recorded		<b>Maximum Depth (m):</b> Not recorded	
<b>Current:</b> Slow Moderate Fast		<b>Water:</b> Clear Turbid (1-5)		<b>Vegetation:</b> Woody Dom. Alders		<b>Non-Woody Elements:</b> Ferns	
<b>Substrate:</b> 75-300 mm >300 mm		<b>Silt:</b> < 2 mm 2-75 mm		<b>Bedrock:</b>		<b>Aquatics:</b> None	
<b>Habitat Disturbances:</b> Fire Logged		<b>Natural Structures:</b> Agriculture Other-Hydroelectric Project		<b>Bedrock:</b>		<b>Basement Site Description:</b> No suitable pools. All pools are marginal (I.e. high canopy cover and lacking basking sites).	

<b>Bullfrogs present:</b> Yes No			<b>Fish Present:</b> Yes No			<b>Grazed:</b> Yes No		<b>Other Species Noted:</b> None	
Adults Subadults Tadpoles			Salmonids Bass Sunfish Carp						

Turtle Species	Adults	Subadults	Sex	Carapace (cm)	Weight (g)	Animal Marked?
No detections						

### Appendix P. Western Pond Turtle (continued)

Pitman Creek Below Diversion

<b>Date (mm-dd-yy):</b> 7/24/2002	<b>Begin Time:</b> 0910	<b>End Time:</b> 1200	<b>Observer(s):</b> Darrin Doyle and Pierre Fidenci						
<b>Exact Site Location:</b> From General Store at Big Creek, take paved road behind store and turn left immediately at the fork in the road. Road turns to dirt and winds around the heliport and then drops in elevation, terminating at Big Creek (about 2 mile drive). Survey upstream about 400 meters.							<b>Ownership / Contact</b> NPS FS BLM St. Pvt. Other ?		
<b>County:</b> Fresno		<b>Start North UTM:</b> Map Datum GWS 84 GPS Map Zone 11S: 4119160				<b>Start East UTM:</b> GPS Map Zone 11S: 0299897			
<b>Site Location (Topographic Map Reference):</b> Musick Mtn., CA		<b>End North UTM:</b> GPS Map Zone 11S: 4119232				<b>End East UTM:</b> GPS Map Zone 11S: 0300359			
<b>Township / Range / Section:</b> Not recorded		<b>Photo Reference Roll:</b> Not recorded				<b>Photo # Orientation:</b> Not recorded			

<b>Air Temperature</b>			<b>Water Temperature</b>		
<b>Start</b>	27	C	<b>Start</b>	21	C
<b>End</b>	29	C	<b>End</b>	21	C

<b>Water Source Type:</b> Reservoir Pond Lake <b>Stream</b> River						<b>Drainage:</b> Seasonal Permanent	
<b>Site length (m):</b> 400		<b>Average width (m):</b> Not recorded		<b>Average Depth (m):</b> Not recorded		<b>Maximum Depth (m):</b> Not recorded	
<b>Current:</b>		<b>Slow</b> <b>Moderate</b> <b>Fast</b>					
<b>Water</b> Clear Turbid (1-5)		<b>Vegetation:</b> Woody Dom. Alder Oaks		<b>Non-Woody Elements</b> Blackberry		<b>Aquatics</b> None	
<b>Habitat Disturbances:</b> Fire		Logged		<b>Substrate</b>		<b>Silt</b> < 2 mm 2-75 mm	
Natural Structures Agriculture		Other-Hydroelectric projects		75-300 mm >300 mm		<b>Bedrock</b>	
<b>Basking Site Description:</b> We observed three large pools (10 feet deep x 50 feet in diameter) for two hours each. Gentle sloping bedrock around scour pools provide basking habitat. All pools in sunny areas. Bottom pool has a woody debris jam at outlet channel, providing basking opportunities. Pools are located about 200 meters upstream from the dirt road intersection with Big Creek.							

<b>Bullfrogs present:</b> Yes <b>No</b>			<b>Fish Present:</b> Yes <b>No</b>			<b>Grazed:</b> Yes <b>No</b>		<b>Other Species Noted:</b> None	
Adults	Subadults	Tadpoles	Salmonids	Bass	Sunfish	Carp			

Turtle Species	Adults	Subadults	Sex	Carapace (cm)	Weight (g)	Animal Marked?
No detections						

### Appendix P. Western Pond Turtle (continued)

North Fork Stevenson Creek Below Outlet

<b>Date (mm-dd-yy):</b> 7/24/2002	<b>Begin Time:</b> 1250	<b>End Time:</b> 1430	<b>Observer(s):</b> Darrin Doyle and Pierre Fidenci														
			1	2	3	4	5	6	7	8	9	10					
<b>Exact Site Location:</b> From Eastwood Powerhouse, hike about 100 feet to access stream. We surveyed about 500 m downstream, almost to confluence with Shaver Lake.										<b>Ownership / Contact</b> NPS <input type="checkbox"/> FS <input type="checkbox"/> BLM <input type="checkbox"/> St. Pvt. Other <input type="checkbox"/> ?							
<b>County:</b> Fresno		<b>Start North UTM:</b> Map Datum GWS 84					<b>Start East UTM:</b>										
		<b>GPS Map</b> Zone 11S: 4112260					<b>GPS Map</b> Zone 11S: 0299367										
<b>Site Location (Topographic Map Reference):</b>										<b>End North UTM:</b>			<b>End East UTM:</b>				
Musick Mtn., CA										<b>GPS Map</b> Zone 11S: 411908					<b>GPS Map</b> Zone 11S: 0299000		
<b>Township / Range / Section:</b> Not recorded										<b>Photo Reference Roll:</b> Not recorded			<b>Photo # Orientation:</b> Not recorded				
										<b>Air Temperature</b>			<b>Water temperature</b>				
										Start 30 C			Start 17.5 C				
										End 31 C			End 19 C				

<b>Water Source Type:</b>										<b>Drainage:</b>			
Reservoir <input type="checkbox"/> Pond <input type="checkbox"/> Lake <input type="checkbox"/> Stream <input checked="" type="checkbox"/> River <input type="checkbox"/>										Seasonal <input type="checkbox"/> Permanent <input type="checkbox"/>			
<b>Site length (m):</b> 500		<b>Average width (m):</b> Not recorded			<b>Average Depth (m):</b> Not recorded		<b>Maximum Depth (m):</b> Not recorded		<b>Current:</b>		Slow <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Fast <input type="checkbox"/>		
<b>Water</b>		<b>Turbid (1-5)</b>			<b>Vegetation:</b>		<b>Woody Dom.</b>		<b>Non-Woody Elements</b>		<b>Aquatics</b>		
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>					Alders Willows		None		Cattails (1% around pool)				
<b>Habitat Disturbances:</b>										<b>Substrate</b>		<b>Silt</b>	
Natural <input type="checkbox"/> Structures <input type="checkbox"/> Agriculture <input type="checkbox"/> Other-Hydroelectric Projects <input checked="" type="checkbox"/>										75-300 mm		>300 mm	
										Bedrock		< 2 mm 2-75 mm	
<b>Basking Site Description:</b> For two hours, we observed a pool (50 m long x 20 m wide x 1 m deep). Many submerged boulders in water 1 m deep. Sunny area, good for basking. Site is about 100 m downstream of Eastwood Powerhouse. A patch of cattails along margin of pool. Lots of dragonflies flying around pool. Pool is fed by water cascading over bedrock.													

<b>Bullfrogs present:</b>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<b>Fish Present:</b>		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<b>Grazed:</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<b>Other Species Noted:</b>	
Adults <input type="checkbox"/> Subadults <input type="checkbox"/> Tadpoles <input type="checkbox"/>		Salmonids <input type="checkbox"/> Bass <input type="checkbox"/> Sunfish <input type="checkbox"/> Carp <input type="checkbox"/>								None	

Turtle Species	Adults	Subadults	Sex	Carapace (cm)	Weight (g)	Animal Marked?
No detections						



**Appendix P. Western Pond Turtle (continued)**

San Joaquin River Mammoth Reach

<b>Date (mm-dd-yy):</b> 7/25/2002	<b>Begin Time:</b> 1005	<b>End Time:</b> 1230	<b>Observer(s):</b> Darrin Doyle and Pierre Fidenci						
<b>Exact Site Location:</b> Starting at Mammoth Pool Dam, we surveyed about 400 meters downstream from dam.							<b>Ownership / Contact</b> NPS FS BLM St. Pvt. Other ?		
<b>County:</b> Fresno / Madera		<b>Start North UTM:</b> Map Datum GWS 84 GPS Map 11S: 4132910				<b>Start East UTM:</b> GPS Map Zone 11S: 0294364			
<b>Site Location (Topographic Map Reference):</b> Mammoth Pool Dam		<b>End North UTM:</b> GPS Map Zone 11S: 0294364				<b>End East UTM:</b> GPS Map Zone 11S: 0294013			
<b>Township / Range / Section:</b> Not recorded		<b>Photo Reference Roll:</b> Not recorded				<b>Photo # Orientation:</b> Not recorded			

<b>Air Temperature</b>		<b>Water temperature</b>	
Start	27 C	Start	17 C
End	29 C	End	17 C

<b>Water Source Type:</b>	Reservoir	Pond	Lake	Stream	River	<b>Drainage:</b>	Seasonal Permanent
<b>Site length (m):</b> 400	<b>Average width (m):</b> Not recorded		<b>Average Depth (m):</b> Not recorded		<b>Maximum Depth (m):</b> Not recorded		<b>Current:</b> Slow Moderate Fast
<b>Water</b> 1 Clear 2 Turbid (1-5)		<b>Vegetation:</b> Woody Dom. Willows Alders	<b>Non-Woody Elements</b> None		<b>Aquatics</b> Alders (flooded)		
<b>Habitat Disturbances:</b> Natural Structures Agriculture		Fire	Logged Other-		<b>Substrate</b> 75-300 mm	Silt >300 mm	< 2 mm 2-75 mm Bedrock
<b>Basking Site Description:</b> For two hours, we observed a large pool (about 100 m long x 30 m wide x 10 m deep) for two hours at the base of the overflow spillway. About 25 alders emerging from pool at upstream end. Bedrock around pool is gradual, providing potential basking sites. Shoreline around downstream end of pool is dominated by large boulders. This segment of river is confined to a narrow gorge and does not seem likely that turtles could nest outside of stream channel.							

<b>Bullfrogs present:</b>	Yes	No	<b>Fish Present:</b>	Yes	No	<b>Grazed:</b> Yes No	<b>Other Species Noted:</b>
Adults	Subadults	Tadpoles	Salmonids Sunfish	Bass Carp			Crayfish

Turtle Species	Adults	Subadults	Sex	Carapace (cm)	Weight (g)	Animal Marked?
No detections						

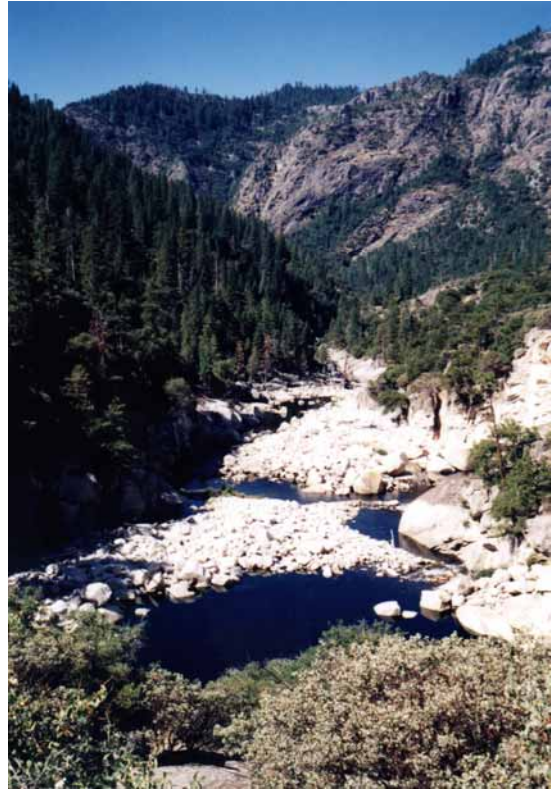
## **APPENDIX Q**

### **Photographs of Sites Sampled for the Western Pond Turtle**

**Appendix Q. Photographs of Sites Sampled for the Western Pond Turtle**



North Fork Stevenson Creek  
(approx. 5,600 ft. elevation, RM 1.2)



San Joaquin River  
(approx. 3,000 ft. elevation, RM 26.2)



Pitman Creek (approx. 4,900 ft. elevation, RM 0.0)



**Appendix Q. Photographs of Sites Sampled for the Western Pond Turtle  
(continued)**



Big Creek (approx. 2,300 ft. elevation, RM 0.2)



Big Creek (approx. 4,400 ft. elevation, RM 5.4)

# **CAWG-8 ATTACHMENT 1**

## **HABITAT MAPS AND DATA**

**(Provided in electronic format on the CAWG-8 NIP CD-ROM)**

### **Electronic Format Only**

**This data is available in this submittal only on CD-ROM**

This information has been removed in accordance with the Commission regulations at 18 CFR Section 388.112.

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