

Attachment D3

**PCWA Alternative Condition No. 28 – Monitoring Program
Western Pond Turtle Monitoring Plan**

Placer County Water Agency Middle Fork American River Project (FERC Project No. 2079)

WESTERN POND TURTLE MONITORING PLAN



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List of Acronyms

CDFG	California Department of Fish and Game
CNDDDB	California Natural Diversity Database
Commission	Federal Energy Regulatory Commission
FERC	Federal Energy Regulatory Commission
FRMP	Flow and Reservoir Monitoring Plan
GIS	Geographic Information System
GPS	Global Positioning System
m	meters
MFP	Middle Fork American River Project
PCWA	Placer County Water Agency
Project	Middle Fork American River Project
SD	Supporting Document
State Water Board	State Water Resources Control Board
TSR	Technical Study Report
USDA-FS	United States Department of Agriculture-Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WPT	Western Pond Turtle
WPTMP	Western Pond Turtle Monitoring Plan
WTMP	Water Temperature Monitoring Plan

1.0 INTRODUCTION

This Western Pond Turtle Monitoring Plan (WPTMP) was developed for the Placer County Water Agency's (PCWA) Middle Fork American River Project (MFP or Project) located on the west slope of the Sierra Nevada range primarily in Placer County, California. Western pond turtle (*Emys marmorata*, formally called *Clemmys marmorata*) (hereafter, WPT), is a United States Department of Agriculture-Forest Service (USDA-FS) Sensitive Species and California Species of Special Concern.

The goal of the WPTMP is to periodically characterize WPT distribution and abundance in selected bypass and peaking reaches and Project reservoirs associated with the MFP during the term of the new license. This information will also be presented with the historic WPT data collected during MFP relicensing (AQ 12 – Special-Status Amphibian and Aquatic Reptile Technical Study Report – 2007 [AQ 12 – TSR] PCWA 2011a; Supporting Document [SD] B).

2.0 WPTMP ORGANIZATON

The WPTMP is organized into the following sections:

Section 3.0 WPTMP Objective: This section defines the purpose of the WPTMP.

Section 4.0 Monitoring Approach: This section describes locations, schedule, and sampling and analytical methods for monitoring WPT in bypass and peaking reaches, and Project reservoirs associated with the MFP.

Section 5.0 Reporting and Consultation: This section outlines reporting that will be required over the term of the new license and describes agency consultation that would be conducted following the completion of each monitoring period.

Section 6.0 Literature Cited: This section provides a list of documents or other resources that are referenced in the WPTMP.

3.0 WPTMP OBJECTIVES

The objectives of the WPTMP are to:

- Document the distribution of WPT in the vicinity of the MFP;
- Define existing WPT relative abundance and size/age class conditions; and
- Monitor WPT relative abundance and size/age class conditions at select sites in the bypass and peaking reaches, and Project reservoirs associated with the MFP, for the duration of the license.

4.0 MONITORING APPROACH

This section describes the WPT monitoring approach, including: (1) documenting distribution of WPT (Phase I); (2) defining existing conditions (Phase II); and (3) conducting monitoring through the term of the license (Phase III). Each of these is described below.

4.1 PHASE I – DISTRIBUTION ASSESSMENT

The Phase I monitoring locations and schedule, sampling methods, and analysis methods are discussed below.

4.1.1 Monitoring Locations and Schedule

The WPT distribution surveys will be conducted in the bypass and peaking reaches and Project reservoirs associated with the MFP within the appropriate elevation (below 6,000 feet in elevation). These sites are listed in WPTMP Table 1 and are shown on WPTMP Map 1.

The WPT distribution assessment will be conducted in year two after license issuance.

4.1.2 Sampling Methods

Potential WPT habitat was identified along the bypass and peaking river reaches and around Project reservoirs based on analyses completed for the AQ 12 – TSR (PCWA 2011a; SD B). A combination of Geographic Information System (GIS), aerial orthophotography, and field-verification were used to identify areas with suitable habitat conditions for WPT. The distribution surveys will be conducted at selected monitoring sites in the bypass and peaking reaches and around Project reservoirs where suitable WPT habitat was identified.

Surveys for WPT will be conducted at each of the monitoring sites between late May and the end of July. At the bypass and peaking reach monitoring sites, at least 250 meters (m) will be surveyed in each monitoring site (including the mouth of tributaries near their confluence with the mainstem). In French Meadows Reservoir and Hell Hole Reservoir, at least three 250-m-long sites will be surveyed. In Ralston Afterbay and Middle Fork Interbay, two 250-m-long sites will be surveyed.

Surveys will be based on the visual survey techniques described in the *United States Geological Survey (USGS) western pond turtle (Emys marmorata) visual survey protocol for the southcoast ecoregion* (USGS 2006). Two surveyors will search aquatic habitat both with and without binoculars looking for the presence of basking or underwater WPTs. Open pools or possible basking areas will first be observed from a distance and then approached slowly and quietly to help prevent disturbance of basking turtles. If a splash of water is heard (i.e., possible unseen turtles entering the water), then additional time will be spent observing the area for a turtle to resurface. A minimum time of two hours (four-person hours) will be spent observing each site. Observations will occur on sunny days between 9 AM and 5 PM. If no basking areas

and no WPT are observed at a study site, then two basking platforms (Alvarez 2006) will be placed in two pools and revisited. A maximum of eight of the survey sites will be resurveyed in this manner. At each monitoring site, the time of each survey (start, end, and total search effort) and Global Positioning System (GPS) locations (start and end of reach) will be recorded. Photographs will be taken of each surveyed pool and potential basking sites.

The size and age of WPT observed will be estimated, if possible, during the surveys. Any WPT encountered during the surveys will (if possible) be captured and photographed. WPT body weight and carapace length and width will be determined. Sex will be determined by tail shape and plastron structure, and age will be determined by scute annular ring counts.

Any incidental sightings of WPT during other monitoring (e.g., foothill yellow-legged frogs or fish population) will be recorded and included in the distribution summary. A California Native Species Field Survey Form for all WPT recorded will be prepared and submitted to the California Natural Diversity Database (CNDDDB).

4.1.3 Analysis Methods

The distribution survey data, including data from any incidental sightings during other monitoring surveys and from previous studies (e.g., PCWA 2011a; SD B), will be used to develop a distribution map for WPT. Recent hydrology, water temperature, and other data collected as part of the surveys will be reviewed, summarized, and presented with the distribution patterns, as appropriate.

4.2 PHASE II – RELATIVE ABUNDANCE AND AGE CLASS EXISTING CONDITIONS MONITORING

The Phase II monitoring locations and schedule, sampling methods, and analysis methods are discussed below.

4.2.1 Monitoring Locations and Schedule

Data from the Phase I surveys will be used to refine the locations for site-specific monitoring of WPT relative abundance and size/age class conditions, as appropriate. Specifically, if no WPT were observed during Phase I survey, the sites will not be monitored further as part of the Phase II monitoring. The locations of the Phase II monitoring sites will be selected in consultation with the USDA-FS, State Water Resources Control Board (State Water Board), and California Department of Fish and Game (CDFG). A maximum of eight sites will be monitored.

The Phase II WPT monitoring will occur in year 3, following license issuance.

4.2.2 Sampling Methods

Sampling methods for WPT relative abundance and age class distribution will be the same methods described in Phase I (Section 4.1.2) with one modification. For the

monitoring sites selected for Phase II that utilized basking platforms in Phase I, two platforms will be placed in each of two pools at least one week prior to the surveys.

4.2.3 Analysis Methods

The number of observations of WPT by age class, size, and sex by monitoring site will be summarized in tabular format. WPT densities (average number of observations per m and per observation hour) at each monitoring site will be summarized. The size distributions of the WPT by monitoring site will also be summarized. The relative abundance and age class data will be presented with data collected as part of the AQ 12 – TSR (PCWA 2011a; SD B) and those from the previous WPT monitoring surveys. Hydrology and water temperature data will be reviewed, summarized, and presented with the abundance and size/age class data.

4.3 PHASE III – LICENSE PERIOD MONITORING

The Phase III monitoring locations and schedule, sampling methods, and analysis methods are discussed below.

4.3.1 Monitoring Locations and Schedule

Data from the Phase I and II survey locations will be used to refine the locations for WPT monitoring over the license term (Phase III), as appropriate. The locations of the Phase III monitoring sites will be selected in consultation with the USDA-FS, State Water Board, and CDFG. A maximum of eight sites will be monitored.

The Phase III WPT monitoring will occur every five years after the Phase II studies. In addition, the distribution of WPT will be reassessed during every other five-year monitoring event (i.e., one time per ten years). A maximum of eight additional study sites (compared to the previous Phase II or Phase III sampling) will be surveyed for WPT distribution. The additional distribution survey sites will be determined in consultation with the USDA-FS, State Water Board, and CDFG. Water temperature and hydrology data will be collected in years when the WPTMP is implemented, as described in the Water Temperature Monitoring Plan (WTMP) (PCWA 2011b; SD A) and the Flow and Reservoir Monitoring Plan (PCWA 2011c; SD A).

4.3.2 Sampling Methods

Sampling methods will follow the sampling methods described in Phase II monitoring of existing conditions (Section 4.2.2).

In the sampling years when additional distribution sampling occurs, the methods will be the same as those for the Phase I distribution surveys (Section 4.1.2) for the sites that are identified as distribution survey sites.

4.3.3 Analysis Methods

Analyses methods will follow the sampling methods described in Phase II monitoring of existing conditions (Section 4.2.3).

In the sampling years when additional distribution sampling occurs, the analysis methods will be the same as those for the distribution surveys (Section 4.1.3).

5.0 REPORTING AND CONSULTATION

A WPT Monitoring Report will be prepared and distributed to the USDA-FS, State Water Board, and CDFG for review and comment within 120 days following the completion of each monitoring year. A 60-day review period will be provided to the agencies. Based on the results of the monitoring and comments received during the review process, PCWA and the agencies may hold a meeting to discuss the results or modify the monitoring program. Within 60 days of receipt of comments, or within 60 days following any meeting, comments will be addressed and the final report will be filed by PCWA with the agencies (USDA-FS, State Water Board, United States Fish and Wildlife Service [USFWS], and CDFG) and the Federal Energy Regulatory Commission (FERC or Commission).

6.0 LITERATURE CITED

- Alvarez, J.A. 2006. Use of artificial basking substrate to detect and monitor western pond turtles (*Emys marmorata*). *Western North American Naturalist* 66:129-131.
- Placer County Water Agency (PCWA). 2011a. AQ 12 – Special-Status Amphibian and Aquatic Reptile Technical Study Report (2007). Available in PCWA's Application for New License – Supporting Document B.
- _____. 2011b. Water Temperature Monitoring Plan. Available in PCWA's License Application for New License – Supporting Document A.
- _____. 2011c. Flow and Reservoir Monitoring Plan. Available in PCWA's License Application for New License – Supporting Document A.
- United States Geological Survey (USGS). 2006. USGS western pond turtle (*Emys marmorata*) visual survey protocol for the southcoast ecoregion – Draft. U. S. Geological Survey protocol. San Diego, CA. 56 pp.

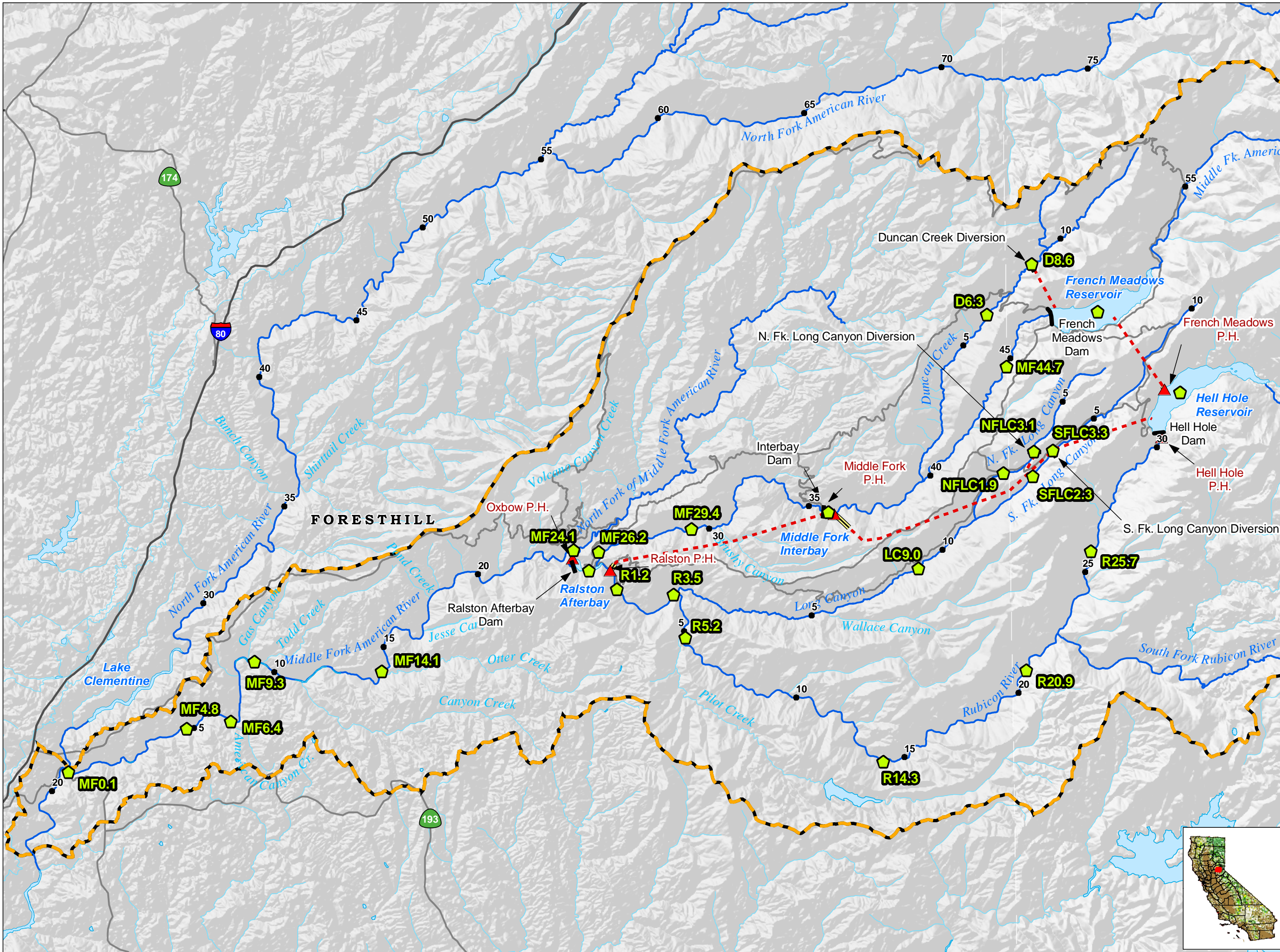
TABLES

WPTMP Table 1. Phase I Western Pond Turtle Distribution Survey Locations.

River and Monitoring Sites ¹ (River Mile)	Reach Type			Monitoring Site Type	Tributary Confluence Site
	Bypass Reach	Peaking Reach	Reservoir		
Middle Fork American River					
French Meadows Reservoir			•	Reservoir	No
MF44.7	•			Mainstem	No
Middle Fork Interbay			•	Reservoir	No
MF29.4	•			Mainstem	No
MF26.2	•			Mainstem	No
Ralston Afterbay			•	Reservoir	No
MF24.1		•		Tributary/Mainstem	North Fork of the Middle Fork American River
MF14.1		•		Tributary/Mainstem	Otter Creek
MF9.3		•		Tributary/Mainstem	Todd Creek Gas Canyon Slug Canyon
MF6.4		•		Tributary/Mainstem	American Canyon Creek
MF4.8		•		Mainstem	No
MF0.1		•		Tributary/Mainstem	North Fork American River
Rubicon River					
Hell Hole Reservoir			•	Reservoir	No
R25.7	•			Mainstem	No
R20.9	•			Mainstem	No
R14.3	•			Mainstem	No
R5.2	•			Mainstem	Pilot Creek
R3.5	•			Mainstem	Long Canyon Creek
R1.2	•			Mainstem	No
Duncan Creek					
D8.6	•			Mainstem	No
D6.3	•			Mainstem	No
Long Canyon Creek					
NFLC3.1	•			Mainstem	No
NFLC1.9	•			Mainstem	No
SFLC3.3	•			Mainstem	No
SFLC2.3	•			Mainstem	No
LC9.0	•			Mainstem	No

¹All study sites will be surveyed a minimum of 1,000 m in stream length. Phase II and III monitoring sites will be determined based on the results of the Phase I surveys and in consultation with the resource agencies.


MAPS



- Project Facilities**
- Powerhouse
 - Dam
 - Tunnel
 - Penstock
- Transportation**
- Major Highway
 - Minor Highway
- Hydrography**
- Watercourse with river miles (5 mi. increments)
 - Water Body
 - Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

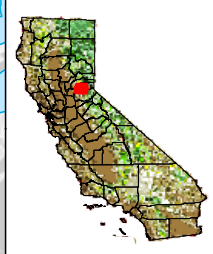
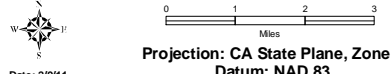
- Phase 1 Distribution Survey Locations**
- WPT Survey Location



Placer County Water Agency
Middle Fork American River Project

WPTMP Map 1

Phase I Western Pond Turtle Distribution Survey Locations

Projection: CA State Plane, Zone 2
Datum: NAD 83
Date: 2/9/11