



- Project Facilities**
- Powerhouse
  - Dam
  - Tunnel
  - Penstock
- Transportation**
- Major Highway
  - Minor Highway
- Hydrography**
- Watercourse with river miles (5 mi. increments)
  - Water Body
- Study Reach Locations\***
- Temperature Modeling Study Reach
  - Inaccessible Stream Segments




Placer County Water Agency  
Middle Fork American River Project

**Map AQ 4-1**

**Temperature Modeling Study Reaches**

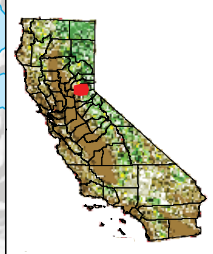




Miles

Projection: CA State Plane, Zone 2  
Datum: NAD 83

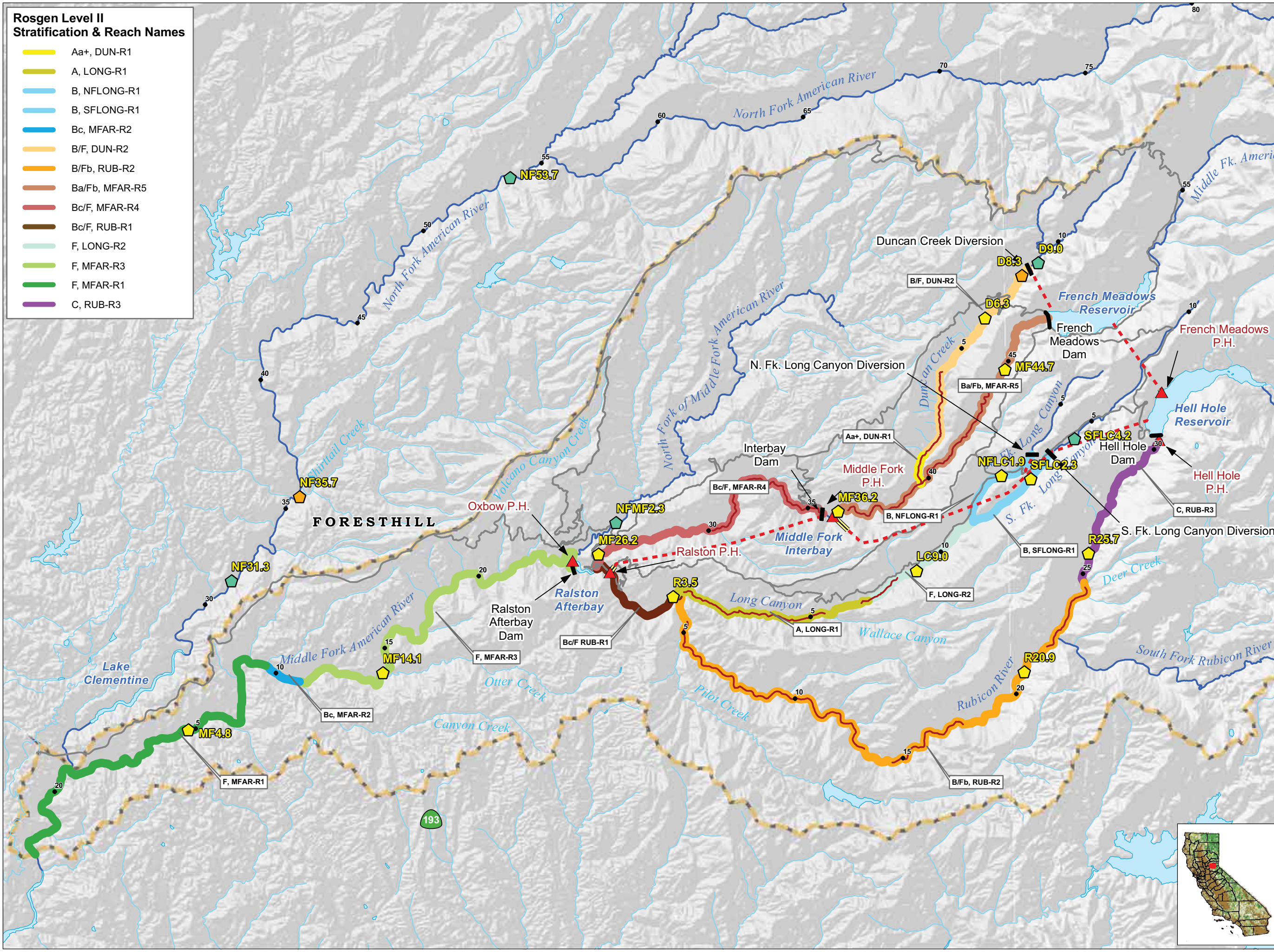
Date: 11/7/07




- ### Rosgen Level II Stratification & Reach Names
- Aa+, DUN-R1
  - A, LONG-R1
  - B, NFLONG-R1
  - B, SFLONG-R1
  - Bc, MFAR-R2
  - B/F, DUN-R2
  - B/Fb, RUB-R2
  - Ba/Fb, MFAR-R5
  - Bc/F, MFAR-R4
  - Bc/F, RUB-R1
  - F, LONG-R2
  - F, MFAR-R3
  - F, MFAR-R1
  - C, RUB-R3

- ### 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\*
  - Inaccessible Stream Segment
- \*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

- ### Study Site Locations
- ◆ Instream Flow Study Site
  - ◆ Limited Purpose Instream Flow Study Site
  - ◆ Comparison Reach Riparian Study Site







Placer County Water Agency  
Middle Fork American River Project

**Map AQ-4-2**

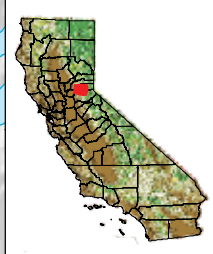
**AQ1 Instream Flow Study Sites and Rosgen Channel Types**

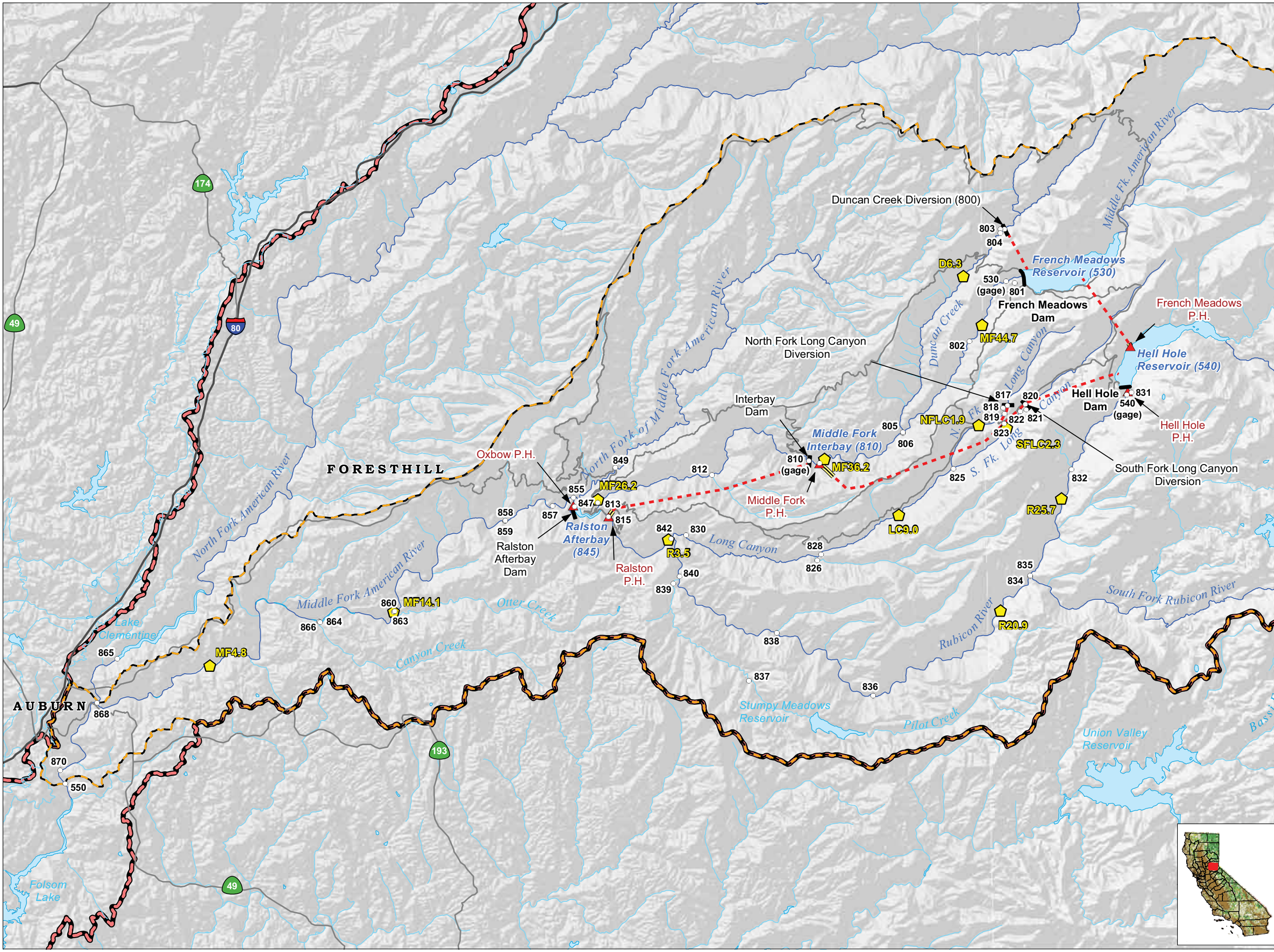


Date: 4/8/10



Projection: CA State Plane, Zone 2  
Datum: NAD 83





**Project Facilities**

- Powerhouse
- Dam
- Tunnel
- Penstock

**Transportation**

- Major Road
- Minor Road

**Hydrography**

- Watercourse (with river miles)
- Water Body

**Watershed Boundary**

- Middle Fork American River Watershed\*
- North Fork American River Watershed\*\*

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

\*\*Modified from Calwater Ver. 2.2 to represent drainage above Folsom Dam and including the Middle Fork American River Watershed

**Water Supply Modelling and Instream Flow Study Locations**

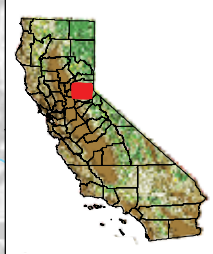
- Node with ID
- Instream Flow Study Site



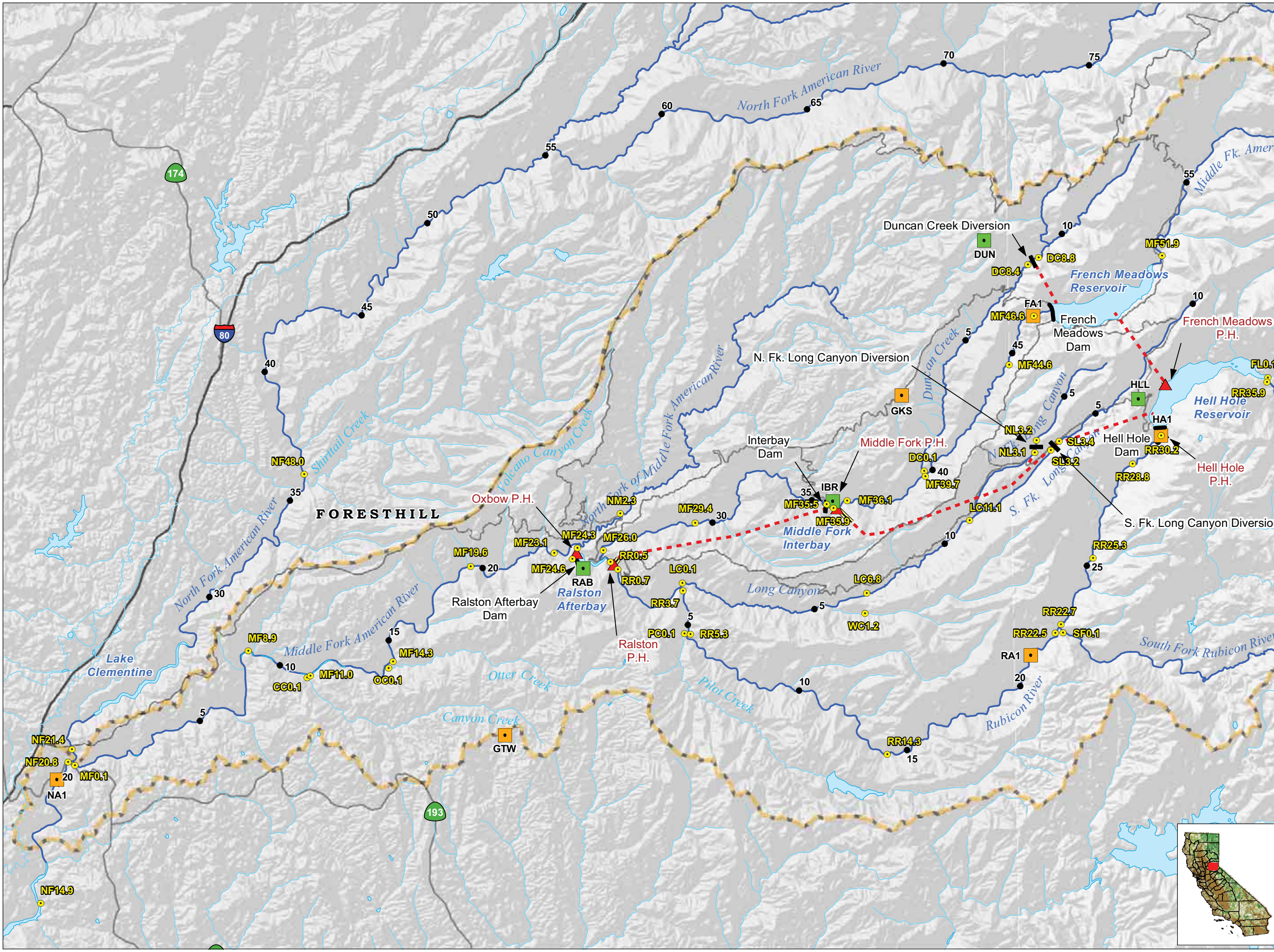
Placer County Water Agency  
Middle Fork American River Project

Map AQ 4-3

**Hydrology / Operations Model Nodes and Instream Flow Study Site Locations**



Projection: CA State Plane, Zone 2  
Datum: NAD 83  
Date: 4/9/10



- Project Facilities**
- Powerhouse
  - Dam
  - Tunnel
  - Penstock
- Transportation**
- Major Highway
  - Minor Highway
- Hydrography**
- Watercourse with river miles (5 mi. increments)
  - Water Body
- Water Temperature Monitoring Sites**
- Label denotes river name and river mile location  
Ex. RR5.3 = Rubicon River at mile 5.3
- Meteorological Stations**
- Full Station  
(Air temperature, Relative humidity, Solar radiation, Wind speed, Wind direction, Precipitation)
  - Partial Station  
(Air temperature, Relative humidity)



Placer County Water Agency  
Middle Fork American River Project

**Map AQ 4-4**

**Water Temperature Monitoring and Meteorological Station Locations**





Miles



Projection: CA State Plane, Zone 2  
 Datum: NAD 83  
 Date: 4/9/10

Water Temperature and Dissolved Oxygen Profile Sampling Locations (2005-2008)



FM1

FM2

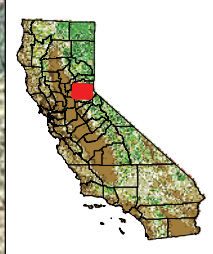
FM3



Placer County Water Agency  
Middle Fork American River Project

Map AQ 4-5a

**French Meadows Reservoir  
Water Temperature and Dissolved Oxygen  
Profile Sampling Locations (2005-2008)**



0 250 500 1,000  
Feet

Projection: CA State Plane, Zone 2  
Datum: NAD 83

Date: 4/9/10

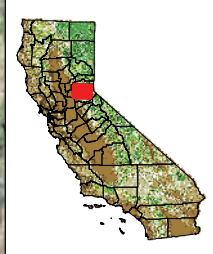
Water Temperature and Dissolved Oxygen Profile Sampling Locations (2005-2008)



Placer County Water Agency  
Middle Fork American River Project

Map AQ 4-5b

**Hell Hole Reservoir**  
Water Temperature and Dissolved Oxygen Profile Sampling Locations (2005-2008)

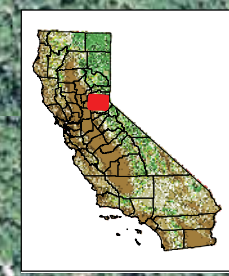


0 250 500 1,000  
Feet

Projection: CA State Plane, Zone 2  
Datum: NAD 83

Date: 4/9/10

Water Temperature and Dissolved  
Oxygen Profile Sampling Locations  
(2005-2008)



Placer County Water Agency  
Middle Fork American River Project

Map AQ 4-5c

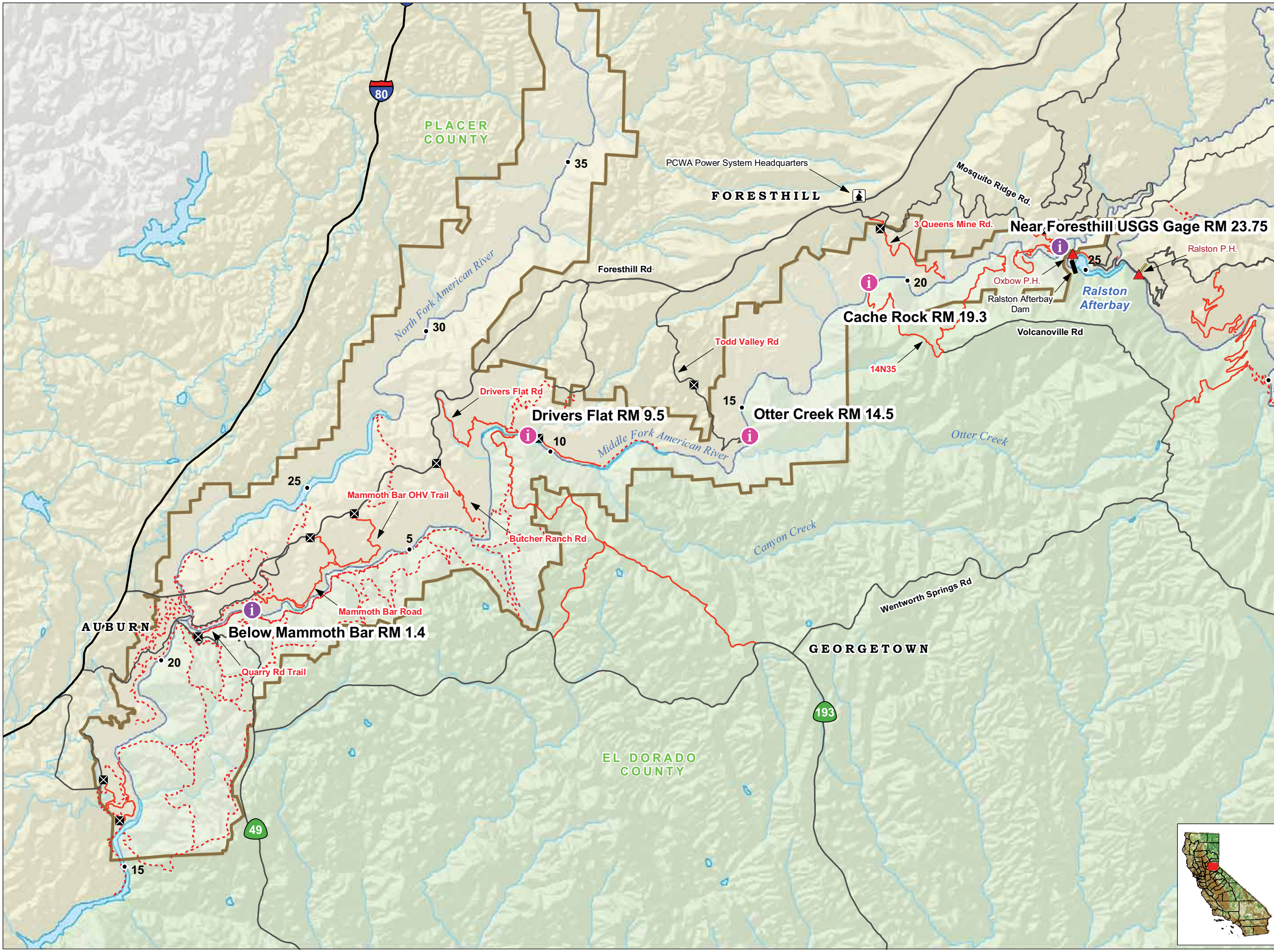
**Ralston Afterbay**  
Water Temperature and Dissolved Oxygen  
Profile Sampling Locations (2005-2008)



0 250 500  
Feet

Projection: CA State Plane, Zone 2  
Datum: NAD 83

Date: 4/9/10



**Project Facilities**

- Powerhouse
- Dam
- Penstock

**Hydrography**

- Watercourse (with river miles)
- Water Body

**Transportation**

- Interstate
- Road
- River Access Road
- Trail
- Gate

**Designated Boundary**

- Auburn State Recreation Area\*

\*Disclaimer: State park boundaries are approximate and should not be considered legal descriptions. Maps are intended for study purposes only.

**Transducer Sites**

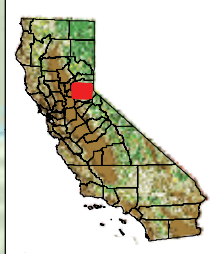
- Water Surface Level Logger Location
- Water Surface Level Logger and Barometric Pressure Logger Location



Placer County Water Agency  
Middle Fork American River Project

Map AQ 4-6

**Water Surface Level Logger  
(Pressure Transducer) Sites**

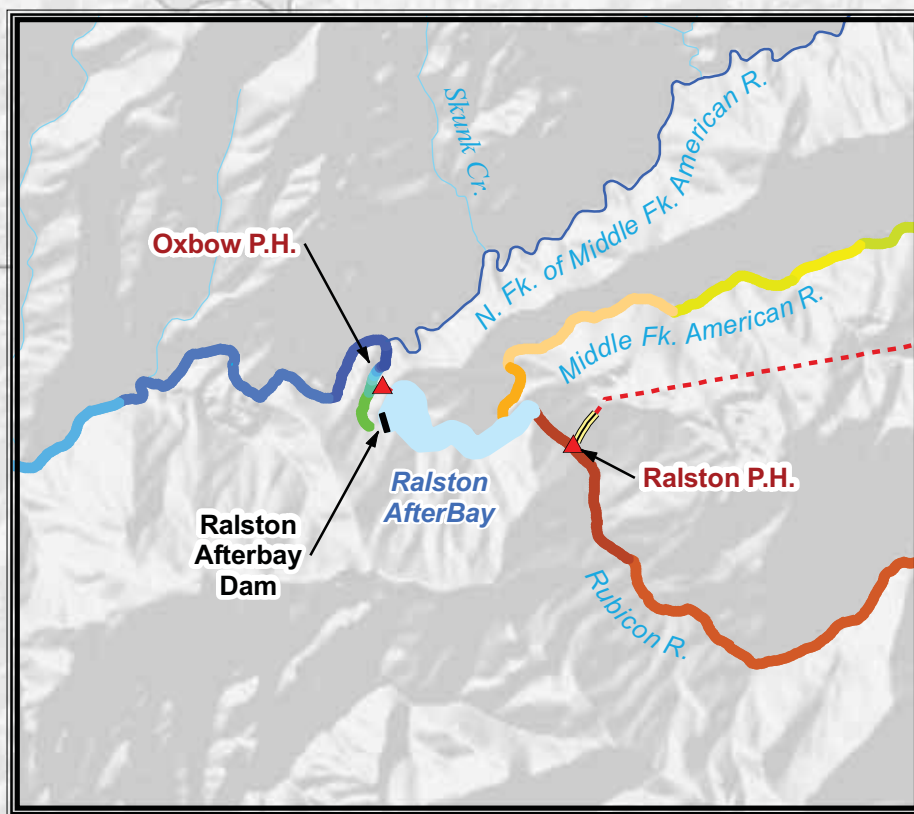
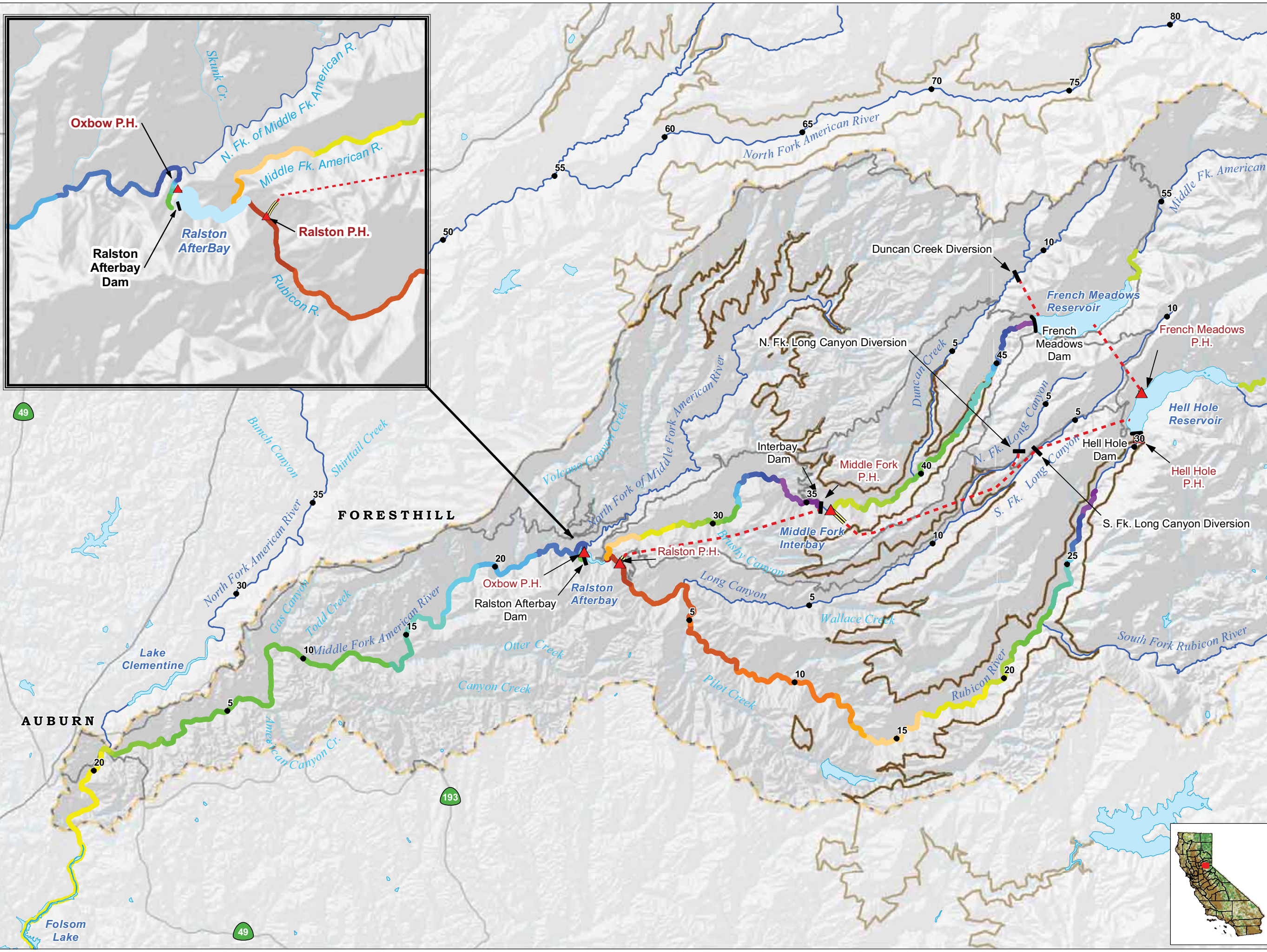


0 0.5 1 2 Miles

Projection: CA State Plane, Zone 2  
Datum: NAD 83

Date: 4/9/10



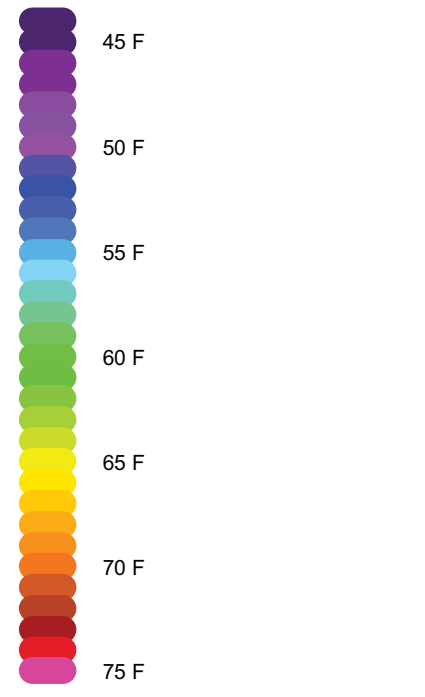


- Project Facilities**
- Powerhouse
  - Dam
  - Tunnel
  - Penstock
- Transportation**
- Major Highway
  - Minor Highway
- Hydrography**
- Watercourse with river miles (5 mi. increments)
  - Water Body
  - Middle Fork American River Watershed\*

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

- Hypsography**
- 4500' Elevation

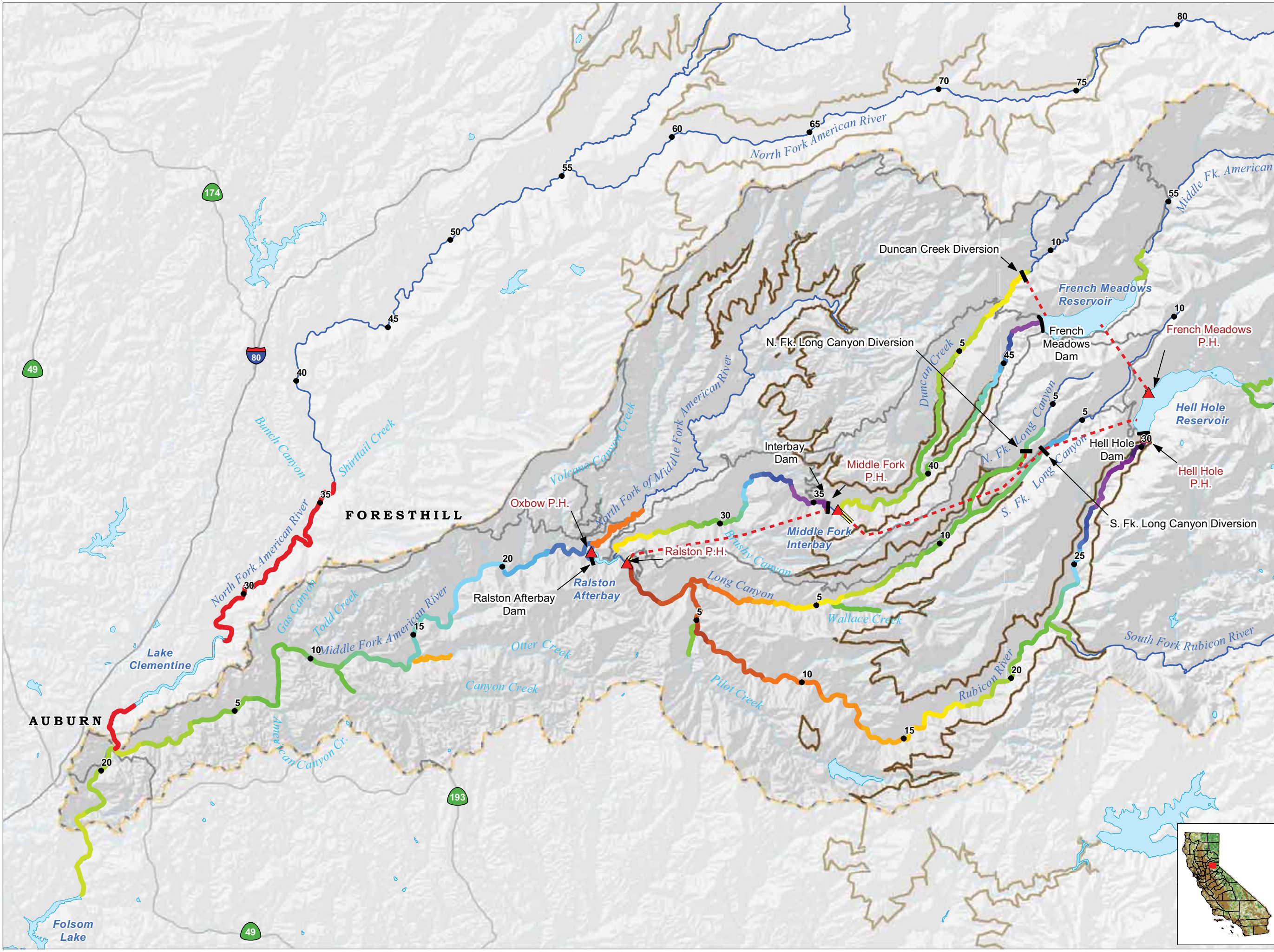
**Average Water Temperature Impaired Flow August 2007**



**PCWA**  
Placer County Water Agency  
Middle Fork American River Project

**Map AQ 4-7**  
Modeled August 2007 Average Water Temperature in Project Streams

Projection: CA State Plane, Zone 2  
Datum: NAD 83  
Date: 4/9/10

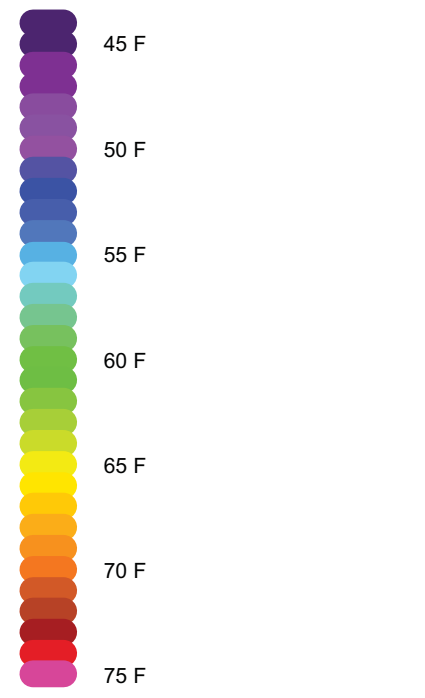


- Project Facilities**
- Powerhouse
  - Dam
  - Tunnel
  - Penstock
- Transportation**
- Major Highway
  - Minor Highway
- Hydrography**
- Watercourse with river miles (5 mi. increments)
  - Water Body
  - Middle Fork American River Watershed\*

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

- Hypsography**
- 4500' Elevation

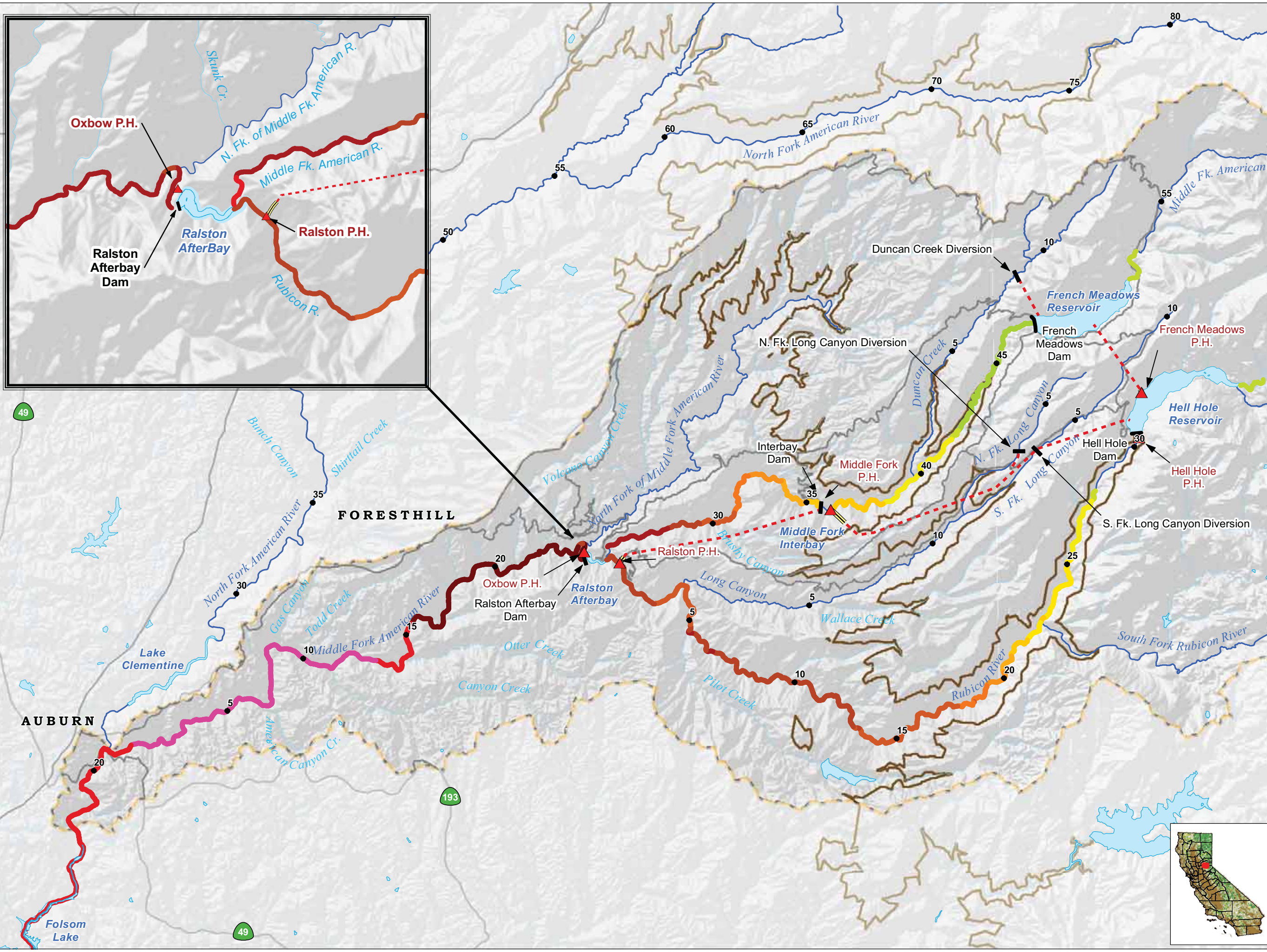
**Average Water Temperature August 2007**



**PCWA**  
Placer County Water Agency  
Middle Fork American River Project  
Map AQ 4-8

Measured August 2007 Average Water Temperature in Project Streams (Temperature Values Linearly Interpolated between Monitoring Locations)

Projection: CA State Plane, Zone 2  
Datum: NAD 83  
Date: 4/9/10

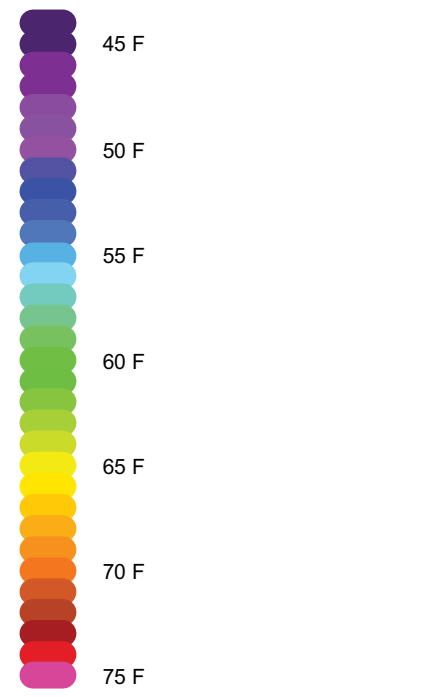


- Project Facilities**
- Powerhouse
  - Dam
  - Tunnel
  - Penstock
- Transportation**
- Major Highway
  - Minor Highway
- Hydrography**
- Watercourse with river miles (5 mi. increments)
  - Water Body
  - Middle Fork American River Watershed\*

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

- Hypsography**
- 4500' Elevation

**Average Water Temperature Unimpaired Flow August 2007**



**PCWA**  
 Placer County Water Agency  
 Middle Fork American River Project

**Map AQ 4-9**

**Modeled Unimpaired August 2007  
 Water Temperature in Project Streams**

**Projection: CA State Plane, Zone 2  
 Datum: NAD 83**

Date: 4/9/10