

# Mokelumne River Fish Hatchery

Hazard Analysis Critical Control Point (HACCP) Plan  
for Release of Chinook Salmon and Steelhead Near  
Thornton on the Mokelumne River

February 15, 2006



<b>Activity Description</b>	
Facility: Mokelumne River Fish Hatchery (MRFH)	Site: Mokelumne River Fish Hatchery
Project Leader: Bill Smith (CDFG)	Activity/Management Objective:  -Loading and releasing Chinook salmon ( <i>Oncorhynchus tshawytscha</i> ) and steelhead ( <i>Oncorhynchus mykiss</i> ) at Thornton, on the Mokelumne River without transporting non-targets
Hatchery Supervisor: Bob Anderson (CDFG)	
Address: 25800 McIntire Road Clements, CA 95227	
Phone: (209) 759-3383	

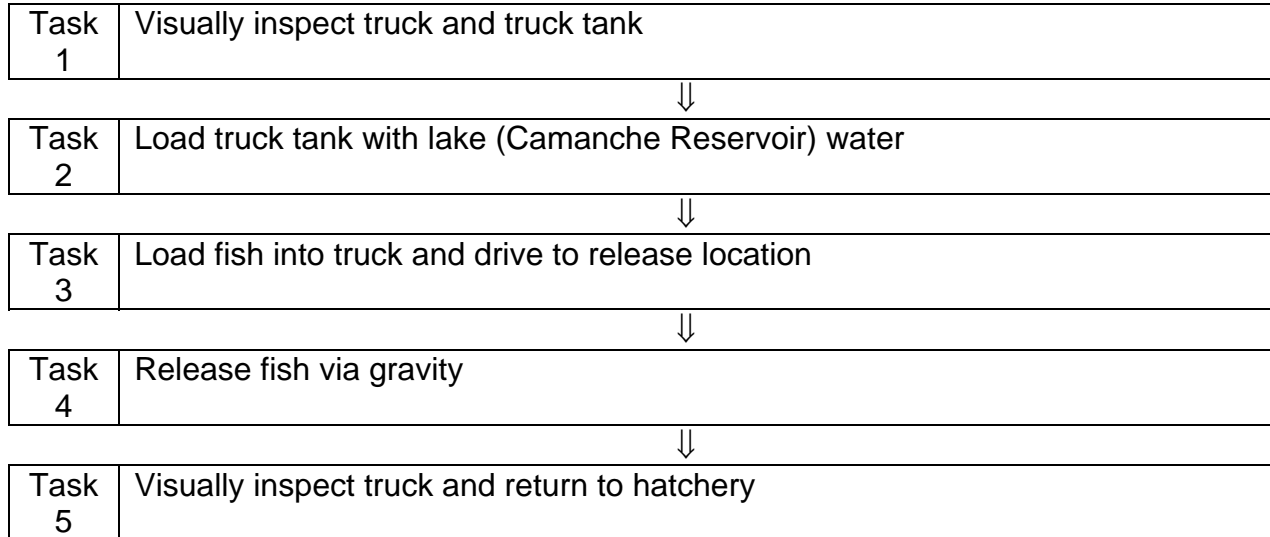
<b>Project Description</b> i.e. Who; What; Where; When; How; Why
<ul style="list-style-type: none"> <li>• <b>Who:</b> MRFH (California Department of Fish and Game staff), East Bay Municipal Utility District (EBMUD) biologists</li> <li>• <b>What:</b> Loading and releasing Chinook salmon and steelhead</li> <li>• <b>Where:</b> Thornton on the Mokelumne River (Walnut Grove Rd.)</li> <li>• <b>When:</b> February through June each year, over 100 truck releases per year</li> <li>• <b>How:</b> Three trucks are used, any borrowed trucks are decontaminated with chlorine on the inside of the tanks, prior to use by the MRFH. Load truck with Camanche Reservoir lake water, use 8" fish pumps through a dewatering tower to load fish into the truck tank. Drive fish to release location. Gravity release fish through a discharge tube (6' long), without coming into contact with river water. Visually inspect and remove plants, snails and other debris from truck and personal equipment. After release of fish the truck returns to the MRFH.</li> <li>• <b>Why:</b> Mitigate for lost Chinook salmon and steelhead spawning habitat resulting from Camanche dam construction</li> </ul>

## Identified Potential Hazards

Hazards: Species or Contaminants Which May Potentially Be Moved/Introduced
<p><b>Vertebrates:</b> bullfrog tadpoles (<i>Rana catesbeiana</i>), Ictalurids (cat fishes), Centrarchids (sun fishes), gobies (any sp.), sculpin (any sp.), shiners (any sp.), threadfin shad (<i>Dorosoma petenense</i>), mosquito fish (<i>Gambusia affinis</i>), snakes (any)</p>
<p><b>Invertebrates:</b> New Zealand mudsnail (<i>Potamopyrgus antipodarum</i>), mitten crabs (<i>Eriocheir sinensis</i>), crayfish (any sp.), Asian clam (<i>Corbicula fluminea</i>), aquatic insects (any), glass shrimp (<i>Palaemonetes kadiakensis</i>), exotic snails (any), freshwater jelly (ex. <i>Craspedacusta sowerbii</i>), zooplankton (any)</p>
<p><b>Plants: <u>Aquatic:</u></b> Brazilian waterweed (<i>Egeria densa</i>), water hyacinth (<i>Eichhornia crassipes</i>), Eurasian watermilfoil (<i>Myriophyllum spicatum</i>), algae (any) and other aquatic plants.</p> <p><b><u>Terrestrial:</u></b> yellow star thistle (<i>Centaurea solstitialis</i>), common cattail (<i>Typha latifolia</i>), Himalayan blackberry (<i>Rubus discolor</i>), prickly lettuce (<i>Lactuca serriola</i>), radish (<i>Rafanus sativus</i>), field bindweed (<i>Convolvulus arvensis</i>), nutsedge (<i>Cyperus rotundus</i>), curley dock (<i>Rumex crispus</i>), smartweed (<i>Polygonum sp.</i>), pigweed (<i>Amaranthus sp.</i>) and other terrestrial weeds.</p>
<p><b>Other Biologics:</b> Infectious hematopoietic necrosis virus (IHN), Columnaris (<i>Flexibacter columnaris</i>), Costia (Ichthyobodo), Whirling disease (<i>Myxobolus cerebralis</i>), anchor worm (<i>Lernea sp.</i>), cold water disease (<i>Vibrio sp.</i>), Bacterial Kidney Disease (<i>Renibacterium salmoninarum</i>, BKD)</p>
<p><b>Others (non-biological contaminants):</b> Chlorine, iodine, oil, gasoline, diesel, potassium permanganate (KMnO<sub>4</sub>), hydrogen peroxide, salt, antibiotics (ex. Oxytetracycline), roundup (Glyphosate)</p>

## Activity/Project Flow Diagram

Flow Diagram Outlining Sequential Tasks to Complete Activity/Project  
As Described in Activity Description (on page 2)



## Hazard Analysis Worksheet for Task 1

<b>1</b> Tasks (from HACCP Step 3 - Flow Diagram)	<b>2</b> Potential hazards identified in HACCP Step 2	<b>3</b> Are any potential hazards significant? (yes/no)	<b>4</b> Justify evaluation for column 3	<b>5</b> What control measures can be applied to prevent undesirable results?	<b>6</b> Is this task a critical control point? (yes/no)
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Task 1 Visually inspect truck and truck tank	Vertebrates rats, etc.	No	Has not happened		No
	Invertebrates insects	No	Insects common in area		No
	Plants weed seeds	No	Plants common throughout area		No
	Other Biologics	n/a	No other biologics show up		No
	Others dead fish	No	No opportunity for spread		no

## Hazard Analysis Worksheet for Task 2

<b>1</b> Tasks (from HACCP Step 3 - Flow Diagram)	<b>2</b> Potential hazards identified in HACCP Step 2	<b>3</b> Are any potential hazards significant? (yes/no)	<b>4</b> Justify evaluation for column 3	<b>5</b> What control measures can be applied to prevent undesirable results?	<b>6</b> Is this task a critical control point? (yes/no)
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Task 2 Load truck with lake water	Vertebrates small fish (ex. sculpin)	No	Same water system	Most fish can not survive passage from deep water source	No
	Invertebrates snails, zooplankton, freshwater jelly	No	Source water system is the same as release water		No
	Plants aquatic plant fragment, algae	No	No unique species found upstream, no plant fragments have been observed		No
	Other Biologics whirling disease, IHN	No	Water already moves through system, no added risk		No
	Others none known	n/a	None known		No

### Hazard Analysis Worksheet for Task 3

<b>1</b> Tasks (from HACCP Step 3 - Flow Diagram)	<b>2</b> Potential hazards identified in HACCP Step 2	<b>3</b> Are any potential hazards significant? (yes/no)	<b>4</b> Justify evaluation for column 3	<b>5</b> What control measures can be applied to prevent undesirable results?	<b>6</b> Is this task a critical control point? (yes/no)
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Task 3 Load fish into truck and drive to release location	Vertebrates sculpin	No	Species are common throughout system		No
	Invertebrates snails, zooplankton	No	Species are common throughout system		No
	Plants algae	No	Species are common throughout system		No
	Other Biologics disease	No	Already present throughout system		No
	Others oil, automotive fluids	Yes	Last opportunity to make repairs, before leaving the MRFH	Pre-trip inspection and repairs if necessary	Yes

### Hazard Analysis Worksheet for Task 4

<b>1</b> Tasks (from HACCP Step 3 - Flow Diagram)	<b>2</b> Potential hazards identified in HACCP Step 2	<b>3</b> Are any potential hazards significant? (yes/no)	<b>4</b> Justify evaluation for column 3	<b>5</b> What control measures can be applied to prevent undesirable results?	<b>6</b> Is this task a critical control point? (yes/no)
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Task 4 Release fish via gravity	Vertebrates sculpin	No	Species are common throughout system		No
	Invertebrates snails, zooplankton	No	Species are common throughout system		No
	Plants algae	No	Species are common throughout system		No
	Other Biologics disease	No	Species are common throughout system		No
	Others oil, automotive fluids	No	Vehicle already checked before leaving hatchery	check for leaking of fluids	No



## Hazard Analysis Worksheet for Task 5

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards significant? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Task 5 Visually inspect truck and equipment then return to hatchery	Vertebrates none	No	No opportunity for transport		No
	Invertebrates New Zealand mudsnail	Yes	Could be transported upstream through contact with water/mud, but unlikely to survive transport on truck tires	avoid contact with water, mud for equipment and personnel, visually inspect truck and equipment	Yes
	Plants weed seeds, aquatic plant fragments	No	Common throughout system		No
	Other Biologics none	No	Concrete boat ramp, no opportunity for transport		No
	Others none	No	Concrete boat ramp, no opportunity for transport		no

