

Joint TAMWG-TMC Action Items

1. Follow up on letters
 - a. Brian Person shared response to Trinity Lake Alliance
2. TMC take up communication issue - TAMWG
3. Guides letter – status Formal response
 - a. TMC conference call agenda
 - i. Guide liaison
 - ii. Phase II analysis increase talk about budget implementation
4. TRRP goals – in IAP provided to TMC and TAMWG
5. Timeline of 2010 report
6. Goal statement from IAP dev. objectives
7. Notion of Secretary level “person”

Summary of TRRP Watershed Implementation, FY2008-2011

FY 2008 Projects	TRRP (\$)	Match (\$)
Conrad Gulch Road Decommissioning	10,000	25,000
Lowden Implementation	60,000	240,000
Soldier Creek Storm Proofing	150,000	56,000
Jessup Gulch Road Upgrade	25,000	0
Browns Fire Outreach/Inventory	5,000	5,000
Junction/Oregon Fire Outreach/Inventory	5,000	5,000
North Fork Road Upgrade/Storm Proofing	40,000	25,000
Lowden SPI	30,000	30,000
BLM/Democrat Gulch Storm Proofing	55,000	20,000
Little Grass Valley Creek Feasibility/Site Assessment	25,000	0
Total FY2008	405,000	406,000

FY 2009 Projects	TRRP (\$)	Match (\$)
Grass Valley and Indian Creek Road Upgrade	10,000	30,000
Democrat Gulch Phase II Stormproofing	50,000	20,000
Junction City 2008 Fire Rehab	75,000	273,000
Dark Gulch Sediment Basin, Sediment Removal	30,000	10,000
China Gulch-Dutch Creek Sediment Reduction	50,000	32,000
Total FY2009	280,000	365,000

FY 2010 Projects	TRRP (\$)	Match (\$)
Coffin Fire Road Rehab	30,000	10,000
Phillips Gulch Road Rehab	20,000	0
Bierce Creek Road Rehab	30,000	10,000
Soldier Creek Main Haul Road Sediment Reduction	75,000	476,000
Indian Creek Rehabilitation and Sediment Control, Phase I	25,000	0
Lower Sidney Gulch Rehabilitation and Sediment Control, Phase I	73,000	10,000
Total FY2010	253,000	506,000

FY 2011 Projects	TRRP (\$)	Match (\$)
Middle Trinity Road Decommissioning and Upgrade	150,000	70,000
Union Hill Road Improvement	87,500	27,000
Indian Creek Rehabilitation and Sediment Control, Phase 2	107,000	0
West Weaver Creek Rapid Assessment	55,500	35,000
Conner Creek Migration Barrier	50,000	495,000
Browns Creek Road Sediment Assessment	42,300	0
Total FY2011	492,300	627,000

TRRP Watershed Contributions, FY 2008-2011:	\$1,438,000
Leveraged funds, FY 2008-2011:	\$1,904,000



Trinity River Restoration Program

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MEMORANDUM

TO: TRINITY MANAGEMENT COUNCIL (TMC)
ROBIN SCHROCK, EXECUTIVE DIRECTOR, TRINITY RIVER RESTORATION
PROGRAM (TRRP)

FROM: ANDREAS KRAUSE, FLOW SCHEDULE WORKGROUP COORDINATOR

SUBJECT: 2011 FALL FLOW RELEASE RECOMMENDATIONS

CC: TRRP FLOW SCHEDULE TECHNICAL WORKGROUP

DATE: JULY 20, 2011

Summary and Recommendations

The Flow Schedule Workgroup met on July 13, to determine whether a proactive fall flow release was warranted based on the criteria developed in 2010 (flow < 2,800 cfs and projected adult Fall Chinook run size < 170,000). The minimum projected flow for the Klamath River at river kilometer (rkm) 13 is 2,740 cfs for the migration time period August 1 to September 30, 2011. The projected adult Fall Chinook run size is 110,390 fish. The proactive release criteria will not be met and the Flow Schedule Workgroup does not recommend a proactive fall flow release at this time. The flow of the Lower Klamath River will be monitored on a bi-weekly basis through September 30 to ensure the recommended secondary criterion of a 2,500 cfs minimum is met.

Adult Fall Chinook disease monitoring throughout the summer will be used to evaluate occurrence and severity of Ich infections. The US Fish and Wildlife Service - Fish Health Center may recommend an Emergency Flow Release for the purpose of averting or minimizing disease related impacts to adult Fall Chinook populations, if warranted based occurrence and severity of Ich infections. The recommendation for an emergency release, as developed in 2010, calls for a 7 day duration release to double pre-existing base flows, followed by a bench release to maintain a minimum of 2,500 cfs for the remainder of the migration season.

The Flow Schedule Workgroup is still working to review and update the fall flow criteria and recommendations, as directed by the TMC. Once completed, the recommendations will be presented to TMC for adoption. In addition to the Flow Schedule Workgroup recommendations, an implementation plan is needed for the Bureau of Reclamation to be able to implement a proactive or emergency release. The implementation plan would identify the decision making tree, amount of water required, source of water, release schedules from Iron Gate Dam and/or Trinity Dam, the timing of the releases considering travel time from the dams to the Lower Klamath River, and address any environmental permitting issues. The Flow Schedule Workgroup recommends such an implementation plan be developed. However, developing such an implementation plan requires broader participation than the TRRP, and thus requires additional direction from the TMC.

Background

1. In September 2002, a significant fish kill occurred in the lower Klamath River. Though estimates vary, the US Fish and Wildlife Service reported that over 34,000 adult fish died, comprised primarily of fall-run Chinook salmon. Carcasses were observed between September 18 and October 1, 2002 within the lower 36 river miles, extending from the estuary upstream to Coon Creek Falls.
2. In the 2004 report released by the California Department of Fish and Game, the die-off was attributed to the pathogens Ich and Columnaris, though several other contributing factors were cited; including an above-average run size, low river flow levels, and correspondingly high river temperatures in the lower Klamath River.
3. "Preventative" Fall Flow releases were implemented by the Bureau of Reclamation in 2003 and 2004.
4. In 2010, under the direction of the TMC, the TRRP developed an action plan to consider special fall flow releases to reduce the risk of another epizootic disease outbreak in adult fall-run Chinook salmon in the lower Klamath River, review and refine biological and physical management triggers, develop a two-stage flow release strategy and develop a process for future fall flows management.
5. The 2010 Fall Flow Team developed the following recommendations for future management; 1) annual reporting of recommendations/actions, 2) use of 2010 recommendation as a starting point, 3) annual review of release criteria and protocols to incorporate new information and data as appropriate, 4) consideration of two-step proactive criteria dependent on projected fall-run Chinook run size, 5) use of NOAA river flow forecast tool and other estimates to predict lower Klamath River flow levels.
6. The 2011 Fall Flow Subgroup of the Flow Schedule Workgroup convened its initial organizational conference call on June 8, 2011. The purpose of the Fall Flow Subgroup is to evaluate and forecast expected physical and biological conditions in the lower Klamath River in order to assess the risk of adult disease outbreaks and recommend river flow releases for the purpose of averting or minimizing disease related impacts to adult fall Chinook populations.
7. Participants discussed the role of the Subgroup and its interaction with the Flow Schedule Workgroup. Participants agreed that the Subgroup works under the authority and direction of the Flow Schedule Workgroup and that the Subgroup would forward all updates, forecasts and recommendations to the Flow Schedule Workgroup for final consideration. The Flow Schedule Workgroup is responsible for any flow management recommendations to the TRRP and TMC. The TMC is ultimately responsible for providing flow management recommendations to the Area Manager and/or CVO for consideration and implementation.

2011 Fall Flow Assessment

In 2011, the Fall Flows Subgroup evaluated management criteria/triggers to determine the need for proactive fall flow release, which is designed to avert a fish die-off. Criteria developed in 2010 were utilized.

Proactive release criteria:

1. Flows projected above 2,800 cfs at rkm 13 during the adult fall-run Chinook migration season = no Proactive fall flow release;
2. Flows projected below 2,800 cfs at rkm 13 during the migration season and projected fall Chinook run-size at or above 170,000 fish (estimated run size during the 2002 fish kill year) = implement Proactive fall flow release to increase base flows to 2,800 cfs during primary fall Chinook migration season (3rd week August-Sept 30);
3. Flows projected below 2,500 cfs at rkm 13 during the migration season = implement Proactive fall flow release to increase base flows to at least 2,500 cfs during migration season regardless of projected fall Chinook run-size.

2011 River Flow and Run-size Projections

River Flows Forecast

Lower Klamath River flows for the period from August 1 through September 30 were estimated by summing:

1. The National Weather Service Advanced Hydrologic Prediction Services prediction for lower Klamath River flows excluding reservoir releases
90% Exceedence Forecast estimates for tributary flow range from 1,350cfs-3,000cfs. The minimum forecast flow of 1,350 was used for evaluating the proactive release criteria.
2. Estimated Iron Gate flow releases using the Variable Flow Release Procedure as described in the 2011 Klamath River Operations Plan
Range from 942cfs-1067cfs. The minimum release of 942 cfs was used for evaluating the proactive release criteria.
3. 2011 TRRP summer base-flow releases from Lewiston Dam.
Summer base-flows: Aug 1- Sept 20 = 450 cfs

Based on the range of values above, Klamath River Flows were projected to be at least **2,742 cfs**.

2011 Fall Chinook Run-size Projections

The ocean escapement of Klamath Basin fall Chinook in 2011 is projected at 102,000 adult fish (Klamath Ocean Harvest Model, 12 April 2011, SIT-PFMC). In addition to the adult escapement, the expected age-2 (jack) return may be estimated by assuming the inter-annual proportion of jacks relative to the total run from 1978 through 2010. In 2010, the Fall Flow Augmentation Ad Hoc Group concluded that variability in the jack proportion was high when considering all years of record. However, in years of moderate to high adult run sizes ($\geq 100,000$), the post-season estimated jack proportion was much less variable and somewhat stable at larger run sizes (Polos, Memorandum to Fall Flow Augmentation Ad Hoc Group, 29 June 2010).

Given the moderately high projected adult ocean escapement in 2011, an expected proportion of jacks based on the average historic observations during moderate to high run size years is 0.076.

Hence, Total Run Size may be estimated as:

(Adult Forecast)/(1-jack proportion),

Or

$(102,000)/(1-0.076) = 110,390$

Emergency release

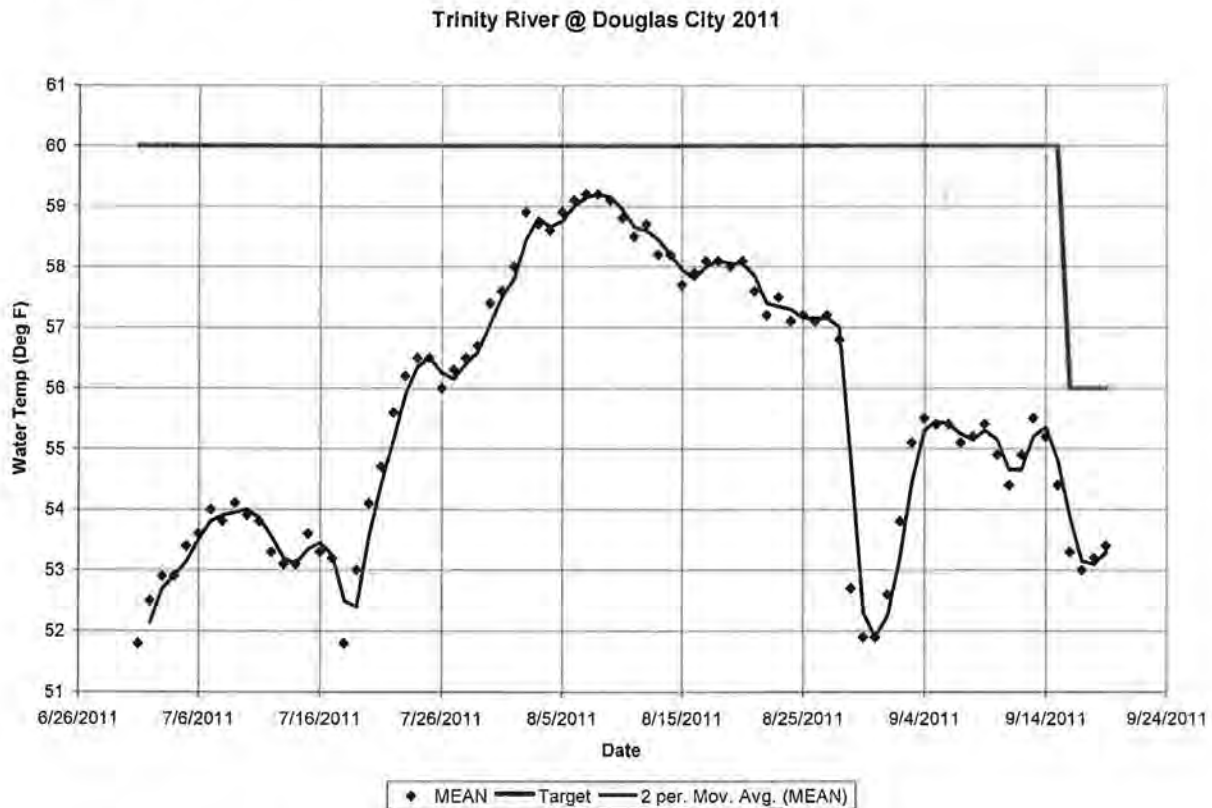
An emergency release is designed to decrease the severity of a fish die-off if real-time monitoring indicates a rapid spread of the incidence of Ich. Criteria include:

1. No preventative release planned;
2. Multiple severe confirmed Ich infections = implement immediate Emergency fall flow release with a 7 day duration pulsed spike to double pre-existing base flows followed by a bench release to increase base flows to the minimum recommended level of 2,500 cfs for the remainder of the migration season. A single incidence of Ich would lead to greater effort and confirmation by fish disease experts, which would trigger an emergency release if multiple severe infections were documented. The duration of the 7 day (total duration with ramping) peaked flow release is determined by the life cycle of Ich, which takes 7 days to complete at 20°C.

Such a release may be necessary based occurrence and severity of Ich infections.

Trinity Temperature Update

2011 Target Performance



Lewiston Appraisal Study Status

Trinity Lake Management

Reclamation could perform studies to develop a plan for preserving the cold-water pool. This type of planning needs to consider safety of dam concerns and flood storage requirements, and whether these could be encroached upon under certain conditions. Operation and Maintenance practices also need to be revisited. There is a temperature model for Trinity, which is considered sufficient to reasonably simulate lake temperatures.

Trinity Lake release requirements are currently exclusively based on inflow conditions which are determined based on a specific date. Neither existing soil moisture conditions, nor Trinity storage levels are currently taken into account in determining discharge requirements. A probabilistic decision-making component might be an additional factor in deciding the level of discharges from Trinity Dam.

Lewiston Lake Management

The current key to controlling release temperatures from Lewiston Lake is to decrease residence time of water within the lake, which can be accomplished by diverting more water to the CVP. These diversions count toward the required 52 percent split.

Options for controlling temperatures through lake management include:

- In-lake dredging, enhancing the plunging of cold-water out of Trinity, and the transmission of that cold-water through Lewiston to the River and Carr tunnel. Modeling of this alternative requires an accurate temperature model. The existing temperature model for Lewiston Lake does not have sufficient definition to provide reasonably predictive results. A new model (CE-Qual-W2) is under development by the TRRP that could provide guidance for possible dredging operations.
- Drop lake levels in the summer to create more of a riverine, rather than lake condition. This would impact recreation and may not be acceptable to the local community.

Physical Modifications

- Construction of a pipeline from Trinity Power Plant to the Lewiston Dam to divert the flows to be discharged to the Trinity River directly below Lewiston Dam is a possibility. This could be accompanied by a pipeline to the Judge Francis Carr diversion, which would open up a pump-back possibility. This would be a very expensive solution.
- Construction of a 450 cubic feet per second pipeline buried in the bottom of the channel may also address the issue.
- Enlargement of the small power plant at Lewiston, which might provide temperature control benefits.
- Installation of vertical curtains to channel the current of cold water thru the reservoir to the Carr/Trinity River forebay.

Investigation of Issues

- Investigate functioning of existing Lewiston temperature control device. Could it be improved?
- Status of Trinity County Public Utility District's power plant needs to be investigated and its impact on temperature of river releases.

Model Development

- Development of the CE-Qual-W2 temperature model of Lewiston Lake continues. TRRP staff and the contractor, Water Course Engineering (Davis, CA), are busy working on the model.
- The RMA 2/11 model of the Trinity River will be activated this fall as well for the purpose of examining calibration requirements prior to next year's flow scheduling.