ATTACHMENT #5

Attachment 2: Modeling and Analysis Priorities and Costs

Reference Number	Major Budget Line Items, Feasible Sub-Units, and Project Descriptions	Work Group Priorities current/(prior)	Sub-Unit Groupings After B-Team Meetings current/(prior)	Cost Estimates FY2008	Cumulative Subtotals
HIGH PRIORITIES					
H-1	**Streamgaging** Operation of current streamgage network including 5 mainstem gages and 5 tributary gages. Cost-share: USGS publishes then maintains data indefinitely.	High	A	$ 199,000	$ 199,000
H-2	**Mainstem Sediment Transport** Conduct mainstem sediment monitoring for ROD and Safety of Dams flow releases in Dry and wetter water years. Compute sediment records and produce annual report. Cost estimate assumes a Normal water year.	High	A	$ 333,000	$ 532,000
H-3	**Aerial Photography** 1. Forty mile reach of the Trinity River between the North Fork and Lewiston Dam at 1:4200 scale (same as 2001 photos). 60/30 overlap (stereo pairs), the width of coverage encompasses the 100-year floodplain. 2. Two (2) sets of color contact prints, high resolution (~14 micron; 1,800 dpi) scans - individual TIFF files 3. Date of flight between July 22 and August 31, to match flows that occurred on 7/25/06 (We will specify as we approach this window) 4. Rectified using 2001 DTM, passing control from 2001 photogrammetry (See H-31 & H-32) 5. Mosaic multiresolution image file (Mr. Sid format 0.25 max cell-size)	High	A	$ 55,000	$ 587,000
H-4	**Water Temperature - Trinity River/Rsrvr., Lewiston Rsrvr.** Monitor river water temperatures at approximately 20 locations on the Trinity River. Cost-share: 100% by Reclamation/NCAO.	High	A	$ 13,000	$ 600,000
H-5	**Emigration Estimates - Primary Period** Develop population and migration statistics for juvenile salmonid emigration (condition of smolts, timing, and numbers). Core period is consistent with long-term database and consists of 5 months at Willow Creek/Pear Tree for Chinook. Efficiency-based population estimates require mark recapture and are only effective during peak outmigration period for Chinook. (See M-10, L-11)	High	A	$ 250,000	$ 850,000
H-6	**Chinook Coded Wire Tagging** Maintenance of constant fractional marking (CFM) at TRH provides a direct measure of the proportion of natural origin fish through time. Tags in 2007 cost $79,000 per million. 1.125 million would cost $86,000. 6 months period of tagging fish. Cost-share: In-kind services by CDFG.	High	A	$ 322,000	$ 1,172,000
H-10	**Coded Wire Tag Decoding** Essential to H-6 for population and harvest modeling. Cost-share: In-kind services by CDFG.	High	A	$ 26,000	$ 1,198,000
H-7a	**Tribal Harvest Survey** **Klamath below Trinity** - (Yurok Tribe – estuary plus 44 river miles); Survey data used in estimates of total in-river returns of fall Chinook. Typical fall chinook runs early August to October in this part of river. Pre season Harvest Management Plan used to govern fisheries and includes enforcement of conservation measures for spring chinook and coho. This is a complex harvest involving the estuary as well as mid river and upper tribal monitoring of the net fisheries.August to October – Klamath below Trinity;	High	A	$ 150,000	$ 1,348,000
H-7b	**Tribal Harvest Survey Lower Trinity** - $25,000 for survey; $10,000 for development of initial preseason harvest Plan (Hoopa Valley Tribe – Red Rock to Tish Tang or weir is approximately 12 miles). Only September through October. Is there a Pre-season Harvest Management Plan to indicate methods of managing harvest and monitoring harvest? This is a simpler harvest involving an in-river harvest only over an area with roads on both sides. See L-15	High	H-7	$35,000	$ 1,383,000
H-8	**Weir Operations - Primary Period** The weirs represent a long-term data set useful for analyzing population response to short-term fluctuation in ocean conditions, climate, or other factors. Primarily adult spring/fall Chinook, limited assessment of Steelhead and Coho; includes both WC and JC. See M-11 & L-17 for extension of the time to gain a more accurate assessment of the Coho run. Cost-share: In-kind services by CDFG.	High	A	$ 569,000	$ 1,917,000
	1) Reference numbers were established in the initial list of work group priorities mailed out on January 8, 2007. Current line item positions reflect changes made during B-Team discussions on January 19 and 23. **2) Highlighted cells reflect changes made in response to comments received on the February 13 draft of priorities and cost estimates.**				

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H-9	**Carcass/Redd Surveys – Primary Area** Annual redd abundance and distribution information is critical to assess the effectiveness of ROD flows and other flow management actions on adult salmon and steelhead spawning in the Trinity River. Peak period for spring/fall Chinook; focus on area where 80% of spawning occurs - reaches 1-5, Lewiston to NF. See M-4 and M-5 for time and spatial extensions. Cost-share: In-kind services by CDFG.	High	A	$ 110,000	$ 2,027,000
H-11	**Integrated Information Management System (IIMS)** The IIMS is a multi-disciplinary data portal/warehouse for centralizing data acquired by the TRRP. Funding matched 5:1. This is the last year of the three year project. Cost-share: Reclamation S&T (50%), KBAO (16.7%), SCCAO (16.7%).	High	A	$ 50,000	$ 2,077,000
H-15	**Juvenile Salmon Health** Part of a Klamath basin wide cooperative assessment of the health of Trinity smolts within their migration corridor. (See M-23) Cost-share: In-kind services by USFWS, NMFS, Karuk, Hoopa Valley and Yurok Tribes, USBR/KBAO.	High	A/(B)	$ 50,000	$ 2,127,000
H-25	**Science Framework - IAP: ESSA & Others** Completion of IAP-Part 2 following THE PLAN. Includes ESSA and some partners in addition to TMC Support. Cost-share: TMC support costs; In-kind services by various partners.	High	A/(C)	$ 150,000	$ 2,277,000
H-35 (new)	**SAB/IAP Follow-up Actions – Workshops & Evaluations** External review, aided by program partners and staff, of various program elements. Similar to FY07 RST review. Budget covers 2 reviews @ $20k each. Cost-share: TMC support costs; In-kind services by various partners.	High	A	$ 40,000	$ 2,317,000
H-20	**Adult Fish Health** - Monitoring in the Klamath from Blue Creek to Weitchpec can give us early warning of a potential outbreak of ich or columnaris. Monitoring during peak migration period for Trinity Fall chinook will give cost effective real time information on health of migrating fish. Scott Foott only called if disease is found.	High	B/(C)	$ 20,000	$ 2,337,000
H-13	**Integrated Geomorphic Mapping** In 2008 includes application of methods and geomorphic map units developed in FY07, with some additional refinement possible in early FY08. The mapping strategy will be hierarchical in nature, in that morphological/habitat units will be defined via detailed mapping at the reach scale, then applied toward mapping of the full 40 miles above the North Fork. TMAG will lead development of this strategy, incorporating input from SAB, work groups, scientific literature, workshops, and IAP development. Costs are for associated digitizing, mapping, etc. of this integrated effort. Integration with Habitat Assessment/Mapping (H-14) includes assessment/mapping of aquatic habitat on portions of the mainstem Trinity River from Lewiston Dam (RM 112.0) to the confluence of the North Fork Trinity River (RM 72.4). Cost-share: TMAG staff salaries.	High	B	$ 57,000	$ 2,394,000
H-14	**Core Habitat Assessment/Mapping** Assessment/Mapping of aquatic habitat on portions of the mainstem Trinity River from Lewiston Dam (RM 112.0) to the confluence of the North Fork Trinity River (RM 72.4). This is at a sufficient level to develop a baseline via extrapolation or modeling at baseflow and to integrate with geomorphic mapping. This assessment/mapping should also be sufficient to provide input to system-wide cumulative effects monitoring required under NEPA/CEQA guidelines and will allow minimum levels of integration with H-13 (Geomorphic Mapping). Cost-share: TMAG staff salaries. See M-9.	High	B	$ 66,000	$ 2,460,000
H-16	**Estimation of Fry Survival (Primary Effort)** Evaluate whether newly created habitat results in increased survivorship of fry. Estimate recent baseline of fry mortality associated with existing habitat in the upper 40 miles. Primary estimation of density based on statistical sub-sampling of sites and times, will allow calculation of changes in survival associated with habitat restoration. Study plan written by SAm Williamson is in review with USFWS, Yurok Tribe. See M-6, L-19.	High	B	$ 60,000	$ 2,520,000
H-22	**Watershed Coordination** The watershed coordinator will engage local agencies and other stakeholders in developing watershed restoration projects that benefit the Trinity River fishery, and coordinate efforts to use TRRP funds to leverage additional funds from other sources. Cost-share: Substantial in-kind services by RCD, USFS, BLM, Trinity County, and successful grant applications.	High	B/(C)	$ 50,000	$ 2,570,000

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H-23	**Watershed Implementation (Priority Sediment Control Projects)** The recipient of these funds will administer the implementation of high-priority watershed sediment-control projects identified and selected through the watershed coordination agreement and the TRRP Watershed Workgroup. Cost-share: Substantial in-kind services by RCD, USFS, BLM, Trinity County, and successful grant applications. See M-7, L-22.	High	B/(C)	$ 100,000	$ 2,670,000
H-27	**Rehabilitation Site Monitoring (Minimum/Critical)** Multi-disciplinary (physical/geomorphic, riparian, fish habitat) tasks in pre-construction (FY08 and early FY 09 projects), Implementation (FY08 and early FY 09 projects), effectiveness (FY07 and earlier projects) framework. (See M-2) 1. Pre-Construction - Describe pre-construction site conditions. Includes low-resolution field mapping of riparian vegetation and physical habitat, plus wetland delineation and sensitive species monitoring required by law. 2. Implementation: As-built drawings of the terrestrial portion of sites are conducted as part of the construction contracts. Includes low-resolution field mapping of riparian vegetation and physical habitat. 3. Effectiveness: Repeat low-resolution field mapping of geomorphology/habitat/vegetation annually for first 2-3 years following construction. Subsequent monitoring can become less frequent (e.g., year 5, 7, 10, etc, or after major flow event). 4. Validation: None Cost-share: TMAG staff salaries. See M-2, M-12, M-17.	High	B/(D)	$ 15,000	$ 2,685,000
H-21a	**Sport Harvest Survey (Primary Period)** Annual collection of sport fishery data supplements information collected basin-wide to estimate the annual returns of anadromous fish. Access points along 44 miles of river monitored. 50% of angler harvest for fall Chinook in Klamath basin is Lower Klamath. Contributes to Trinity annual run-size estimation, historic fishery data indirectly related to abundance (i.e. Steelhead), provides ancillary public relation benefit. (See M-14, L-16).	High	B/(C)	$ 45,000	$ 2,715,000
H-21b	**Sport Harvest Survey (Primary Period)** Trinity River sport harvest represents 33% of the angler harvest in the Klamath Basin. Voluntary cards are placed on cars parked at outtakes by HVT. Salmon punch card for Chinook salmon and steelhead report card are required in Klamath Basin thus covering this part of the river. Only 10 miles of river monitored (Red Rock to Willow Creek weir). Monitors angler harvest in the lower Trinity where indirect estimates by weir are not attainable (below weir locality.) Roads on both sides of the river. (See M-14, L-16).	High	B/(C)	$ 15,000	$ 2,700,000
H-17	**Foothill Yellow-Legged Frogs** Change in habitat quantity/quality and/or population abundance, distribution, or reproductive success due to TRRP management actions. Cost-share: In-kind services by USFS/RSL (1:1 matching funds). See L-27.	High	B	$ 20,000	$ 2,720,000
H-19	**Gravel Augmentation Monitoring/Analysis - Bucktail** Monitoring activities to determine the fate of coarse sediment augmented as part of the Dark Gulch channel restoration, and to assess the effectiveness of that augmentation for altering/improving habitat conditions at un-treated sites downstream.	High	C	$ 60,000	$ 2,780,000
H-36 (new)	**Equipment Replacement**: Periodic replacement of major equipment on a multi-year rotation, such as CWT machines, rafts, rotary screw traps. Does not include disposable supplies which are included in routine project costs.	High	C	$ 25,000	$ 2,805,000
H-28	**Age Composition/Scale Analysis (Primary Period)** Focus on fall Chinook only. Due to coded wire tag calculation of age composition of hatchery runs, scale collections from hatchery fish can be reduced. Reduction in the number of hours per day, the number of scales collected, fewer days per week early and late in the run, archiving scales have all been suggested as cost saving measures. Includes Trinity Fish in the Klamath (See M-20, L-18)	High	D	$ 65,000	$ 2,870,000
H-29	**Riparian Birds** Change in habitat quantity/quality and/or population abundance, distribution, or reproductive success due to TRRP management actions. Cost-share: In-kind services by USFS/RSL (1:1 matching funds). See M-26.	High	D	$ 71,000	$ 2,941,000
H-24	**Riverine Birds** Change in habitat quantity/quality and/or population abundance, distribution, or reproductive success due to TRRP management actions. Cost-share: In-kind services by USFS/RSL (1:1 matching funds). See M-21, L-27.	High	E/(C)	$ 36,000	$ 2,977,000

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H-30	**Gravel Augmentation Monitoring/Analysis – Hatchery** Monitoring activities to determine the fate of coarse sediment augmented as part of the Hatchery riffle construction project. This construction was designed to provide useable habitat as-built and is located immediately upstream from a heavily-used spawning area. Monitoring is needed to 1) assess if the design functions as planned, 2) identify any positive or negative effects on adjacent spawning beds, and 3) assess the fate of the added coarse sediment. It may be most practical to assign objectives 1-2 and objective 3 to separate agreements.	High	E	$ 25,000	$ 3,002,000
H-31	**Air Photo Ground Control** (See System-Wide Physical Monitoring - Aerial Photography, H-3) Specific ground control may be necessary in areas of significant change (since 2001) where RIG or TMAG needs updated DTM for current terrestrial topography. Cost-share: In-kind services by DWR, Hoopa Valley and Yurok Tribes.	High	E	$ 35,000	$ 3,037,000
H-32	**Orthorectification of Air Photos** (See System-Wide Physical Monitoring - Aerial Photography, H-3) Re-rectify discrete portions of photos with distortion due to significant change (since 2001) where RIG or TMAG needs updated DTM for current terrestrial topography.	High	E	$ 35,000	$ 3,072,000
H-33	**General Fund - Water-Year Specific (fish, physical, other)** The general fund would cover water-year specific monitoring not foreseeable when developing TRRP budgets several months in advance of the water year classification. Example tasks (and costs) include: adult fish disease monitoring in dry years ($25k), increased level of effort for sediment monitoring required in wet years ($100k), or special AEAM experiments related to the ROD spring releases (e.g. the riparian bench flow experiment conducted in May 2006 ($35k).	High	E	$ 160,000	$ 3,232,000
H-34	**SALMOD (Primary)** Redevelop predictive capability of an up-to-date SALMOD to evaluate effects of flow, temperature, and habitat creation on Trinity River salmonids. This task maintains and expands SALMOD expertise, and related field investigations to update and improve SALMOD. The in-river habitat has changed, temperature regimes are different, and many more Trinity specific studies on Chinook, Coho and Steelhead have been conducted since SALMOD was created for the Flow Evaluation Study. SALMOD integrates many parts of the fisheries program including habitat, carcass surveys, smolt outmigration, and fish utilization (See M-19, L-20). Cost-share: In-kind services by USGS.	High	E	$ 15,000	$ 3,247,000
H-37 (new)	**Western Pond Turtles** See M-27			$ 28,000	$ 3,275,000
	SUBTOTAL HIGH PRIORITIES			**$ 3,355,000**	

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MEDIUM PRIORITIES					
M-1	**Acquire & Scan Historical Aerial Photos** A search for aerial photography at USGS, USDA, NARA, USFWS, USBR, and other federal and state agencies. Compile a comprehensive list of aerial photography for the area of interest along the Trinity River, above and below Lewiston, pre and post-dam. Historical maps and cadastral surveys are a valuable resource that will be included in the original search. We will use established criteria such as scale, photo type, and areal extent to sort the comprehensive list. Consultation with TRRP to determine which sets of aerial photography to acquire. High Resolution Scanning: TBD (not included in this estimate). Cost-share: Coupled with on-going USBR Dam Safety Paleoflood study, summer 2007, amount TBD.	Medium	A	$ 20,000	$ 3,267,000
M-2	**Rehabilitation Site Monitoring - (Standard/Core)** Multidisciplinary (physical/geomorphic, riparian, fish habitat) tasks in pre-construction (FY08 and early FY 09 projects), Implementation (FY08 and early FY 09 projects), effectiveness (FY07 and earlier projects), validation framework (FY07 and earlier projects). Includes minimum tasks (H-27) + additional work. Cost-share: TMAG staff salaries. 1. Describe pre-construction site conditions. Include field mapping of riparian vegetation and physical habitat, plus sensitive species monitoring required by law. Also measure pre-project fish use via snorkel, other observation, electroshocking surveys or seining/trapping at appropriate time of year. 2. Implementation: As-built drawings of the terrestrial portion of sites are conducted as part of the construction contracts. Includes in-channel surveys, and integrated field mapping of riparian vegetation and physical habitat. 3. Effectiveness: Repeat integrated field mapping geomorphology/habitat/vegetation maps and repeat topographic survey annually for first 2-3 years following construction. Subsequent monitoring can become less frequent (e.g., year 5, 7, 10, etc, or after major flow event). 4. Validation: Document fish use of site after 1 storm season. Possibly include other species. Follow up as part of broader effort after a second and 3rd storm season (could be year 2, 3, 5). See H-27, M-12, M-17.	Medium	A	$ 75,000	$ 3,342,000
M-3	**Temperature Modeling - Lewiston Reservoir CE-QUAL-W2 Model Development** Develop a two-dimensional CE-QUAL-W2 water temperature model for Lewiston Reservoir. The existing reservoir water temperature model (BETTER) does not adequately model the complex heating dynamics under various reservoir operational scenarios. The end goal is to have an updated suite of temperature models for Trinity Reservoir, Lewiston Reservoir, and the Trinity River that simulates water temperature impacts of various dam operations and drought planning scenarios. The updated Trinity River water temperature model will be complete in 2007. Cost-share: In-kind services by Trinity County.	Medium	A	$ 100,000	$ 3,442,000
M-4	**Carcass/Redd Surveys (Secondary Area)** Peak period for spring/fall Chinook, adds area to H-9 to encompass 90% of spawning - reaches 6-10 (NF-Cedar Flat). Cost-share: In-kind services by CDFG.	Medium	A	$ 20,000	$ 3,462,000
M-6	**Estimation of Fry Survival (Secondary Effort)** Evaluation of fry density/survival in sites before and after restoration will follow the study plan to be completed in 2007 by USGS (Sam Williamson). This addition will allow more in depth field work to assess mortality over time associated with different habitats. See H-16.	Medium	A	$ 50,000	$ 3,512,000
M-5	**Carcass/Redd Surveys (Secondary Period, Tertiary Area)** Adds time to H-9 & M-4 for fall Chinook and early part of Coho run and lower Trinity. Cost-share: In-kind services by CDFG.	Medium	A	$ 71,000	$ 3,533,000
M-7	**Watershed Implementation - Sediment-Control and Other Watershed Projects** Incrementally higher funding level to support additional watershed sediment-control activities. Cost-share: In-kind services by RCD, USFS, BLM, Trinity County. See H-23, L-22.	Medium	A	$ 100,000	$ 3,612,000
M-8	**Mainstem Surface Fines Assessments** Assess quantity of fine sediment (primarily sand sizes) stored on the bed of the mainstem Trinity River. The fraction of the streambed area covered with sand will be visually estimated and mapped in the field. Sand coverage by area will be converted to sand volumes using grain-size data for the gravel and cobble fractions of the bed surface obtained through geomorphic mapping and an analytical technique based on bed elevation hypsometry. The TRFE and the ROD identify excessive fine sediment inputs to the Trinity River as an important factor in the decline of the Trinity River fishery, and instructs the Program to reduce fine sediment storage in the mainstem Trinity River. Cost-share: In-kind services by RCD and Trinity County.	Medium	B	$ 10,000	$ 3,622,000

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M-9	**Core Habitat Assessment/Mapping (Secondary)** Habitat mapping/assessment sufficient to develop baseline and provide integration with geomorphic mapping, + additional work to further integration, provide input to modeling efforts as required, and to support of development/refinement of habitat targets associated with geomorphic potential and program smolt production goals. This includes mapping as in H-14, plus potentially additional sites as required. Cost-share: TMAG staff salaries. See H-14.	Medium	B	$ 20,000	$ 3,642,000
M-10	**Emigration Estimates (Secondary Period)** Two-month period in addition to the Primary time period, total 7 months at Willow Creek/Pear Tree for Chinook and Coho; mark recapture is suggested only during peak outmigration for Chinook and hatchery Coho (500 smolts/day minimum). (See H-5, L-11)	Medium	B	$ 90,000	$ 3,732,000
M-11	**Weir Operations (Secondary Period)** Extends H-8 JC season earlier to June and later to November, heavily dependent on flows, for more accurate assessment of fall Chinook, Coho, and fall Steelhead. Cost-share: In-kind services by CDFG. See H-8, L-17.	Medium	B	$ 40,000	$ 3,772,000
H-12	**Tributary Winter Storm Sampling - Falling Limb** Compute coarse and fine sediment delivery from Rush Creek and Indian Creek based on wading measurements taken on the falling limb of major storm events. Compare results with tributary delta surveys. Cost estimate assumes a Normal water year. Direct measurement of tributary sediment transport because tributary delta surveys are logistically problematic and provide poor estimates of coarse sediment delivery in Wet and Extremely Wet water years. Tributary delta surveys do not provide any information on fine sediment delivery.	Medium/ (High)	B	$ 47,000	$ 3,819,000
M-12	**Standard Rehabilitation Site Monitoring plus Targeted Physical Hypothesis Testing (geomorphic, riparian, habitat)** 1. Pre-Construction: Standard Pre-construction data plus additional detailed work needed to define a baseline for subsequent geomorphic hypothesis testing. For example, detailed characterization of riparian communities for later use in assessing differences between communities established under pre- and post- ROD flow conditions. 2. Implementation: All standard Implementation monitoring, plus additional work related to specific geomorphic hypothesis testing. For example, obtaining relatively high-resolution topography in a portion of a site where project designs were developed to produce a particular geomorphic response. 3. Effectiveness: All standard Effectiveness monitoring, plus additional work related to specific geomorphic hypothesis testing. Following the example from Implementation above, this could involve repeated high-resolution topography in the portion of the site where a particular geomorphic response was predicted. Cost-share: TMAG staff salaries. See H-27, M-2, M-17.	Medium	C	$ 50,000	$ 3,869,000
M-13	**Temperature Modeling - Trinity Reservoir WQRSS Model Enhancement** Update and re-calibrate WQRSS water temperature model for Trinity Reservoir. The last update was 2001. Part of an updated suite of temperature models for Trinity Reservoir, Lewiston Reservoir, and the Trinity River simulating water temperature impacts of various dam operations and drought planning scenarios. The updated Trinity River water temperature model will be completed in 2007. Includes model runs to investigate reservoir operations and drought planning scenarios. Cost-share: In-kind services by Trinity County.	Medium	C	$ 70,000	$ 3,939,000
M-14	**Sport Harvest Survey (Secondary Period)** More time in the survey season in addition to H-21. Annual collection of sport fishery data supplements information collected basin-wide to estimate the annual returns of anadromous fish. Sport harvest in the lower Klamath represents a greater percentage than the Trinity River. Trinity River represents 17% of the harvest in the Klamath Basin. Contributes to Trinity annual run-size estimation, historic fishery data indirectly related to abundance (i.e. Steelhead), provides ancillary public relation benefit; monitor fish harvest in the lower Trinity where indirect estimates by weir are not attainable (below weir locality) (See H-21a, H-21b, L-16). Split between Lower Klamath and Lower Trinity.	Medium	C	$ 20,000	$ 3,959,000
H-18	**Tributary Sediment Monitoring - Delta Surveys** Topographic surveys of Deadwood Creek, Rush Creek, and Indian Creek deltas twice annually. Cost-share: In-kind services by DWR.	Medium/ (High)	C	$ -	$ 3,959,000
M-15	**Sediment Monitoring: USGS Peer Review and Publication of Samples** Independent review of field sampling and lab processing of sediment samples. USGS publishes and archives those samples meeting USGS standards. See L-3.	Medium	D	$ 28,000	$ 3,987,000
M-16	**Technical Consultation and Review (geomorphic, riparian, sediment, temperature)** Short-term utilization of external experts for technical support or review services related to TRRP modeling, monitoring, and assessment activities.	Medium	D	$ 20,000	$ 4,007,000

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M-17	**Standard Rehabilitation Site Monitoring Plus Additional Targeted Biological Hypothesis Testing (Fish and Wildlife Habitat Use and/or Population Response)** 1. Pre-Construction: Standard pre-construction data plus additional detailed work needed to define a baseline for subsequent biological hypothesis testing. For example, obtaining detailed fish use data for later use in assessing the ecological consequences of particular design elements. 2. Implementation: Same as above. 3. Effectiveness: All standard Effectiveness monitoring. 4. Validation: All standard Validation monitoring, plus additional work related to specific biological hypothesis testing. For example, obtaining detailed fish use data to assess the effectiveness of particular design elements for increasing fish use or production. Cost-share: TMAG staff salaries. See H-27, M-2, M-12.	Medium	D	$ 50,000	$ 4,057,000
M-18	**Adult Fish Health** - If a dry or below normal year developes more funds should be allocated to monitoring adults. This is especially true for a year where predetions are for a good run as we have this year. See H-20, L-12.	Medium	D	$ 20,000	$ 4,077,000
M-19	**SALMOD (Secondary)** The TRRP needs the predictive capability of an up-to-date SALMOD to evaluate effects of flow, temperature, and habitat creation on Trinity salmonids. This funding is meant to keep SALMOD experts in the Trinity River engaged in reviewing field investigations to update and improve SALMOD. The in river habitat has changed, temperature regimes are different and many more Trinity specific studies on chinook, coho and steelhead have been conducted since the model was run for the Flow Evaluation Study. SALMOD can integrate many parts of the fisheries program including habitat, carcass surveys, smolt outmigration, and fish utilization. In addition to H34 then this would be AFA or agreements for participation in a workshop on SALMOD as per the statements in the IAP. (See H-34, L-20) Cost-share: In-kind services by USGS.	Medium	D	$ 15,000	$ 4,092,000
M-20	**Age Composition/Scale Analysis (Secondary Period)** - no longer treated separately, part of H-28, with emphasis on overall cost-saving measures.	Medium	D	$ -	$ 4,092,000
M-26 (new)	**Riparian Birds** - See H-29.	Medium		$ 33,000	$ 4,125,000
M-27 (new)	**Western Pond Turtles** - See H-37.	Medium		$ 30,000	$ 4,155,000
M-21	**Riverine Birds** - covered in H-24 and L-27.	Medium	D	$ 10,000	$ 4,102,000
H-26	**Tributary Sediment Monitoring – Turbidity** Monitor Rush Creek and Indian Creek turbidity. Turbidity provides a real-time sediment surrogate trace that greatly enhances both the ability and accuracy of computing the tributary suspended sediment delivery estimates. This information helps determine if we are meeting TRRP fine sediment management objectives and evaluate the long-term effectiveness of watershed restoration activities. Cost estimate assumes a Normal water year.	Medium/ (High)	D	$ 9,500	$ 4,111,500
M-22	**Tributary Sediment Monitoring - Box Samples** Box samples are single suspended sediment monitoring samples collected on Rush Creek and Indian Creek throughout major storm events - both rising and falling limbs. Box samples are collected in addition to the sediment samples collected under the "Tributary Winter Storm Monitoring - Falling Limb" task to enhance temporal resolution of sediment samples used to estimate tributary fine sediment yield estimate. Cost estimate assumes a Normal water year.	Medium	E	$ 10,500	$ 4,122,000
M-23	**Juvenile Salmon Health (Secondary)** More resources to the coordinated monitoring effort (See H-15). Cost-share: In-kind services by USFWS, NMFS, Hoopa Valley and Yurok Tribes, USBR/KBAO. See H-15	Medium	E	$ 30,000	$ 4,152,000

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~~M-24~~	~~Juvenile fish health monitoring - covered in revised H-15.~~	Medium	E	$ -	$ 4,152,000
~~M-25~~	~~Juvenile fish health monitoring - covered in revised H-15.~~	Medium	E	$ -	$ 4,152,000
	SUBTOTAL MEDIUM PRIORITIES			**$ 1,039,000**	
LOW PRIORITIES					
L-1	Bathymetric Surveying	Low	No groupings assigned to Low Priorities	$ 300,000	$ 4,452,000
L-2	System Wide Vegetation Inventory	Low		$ 90,000	$ 4,542,000
L-3	Sediment Sampling USGS peer review and publication - sediment computations. See M-15.	Low		$ 20,000	$ 4,562,000
L-4	Rehab Site Substrate characterization	Low		$ 30,000	$ 4,592,000
L-5	Tributary sediment monitoring - Full winter storm sampling	Low		$ 30,000	$ 4,622,000
L-6	Tributary sediment monitoring - Grab samples, non-gage sites, major storms	Low		$ 8,000	$ 4,630,000
L-7	Tributary sediment monitoring - Pump samples	Low		$ 25,000	$ 4,655,000
L-8	Full habitat mapping and assessment program: Above habitat mapping and assessment tasks, plus additional work as identified in Spring 08, to include in-house 2 d and 1-d modeling of proposed sites using transects and system wide bathymetry (assumes this task is also funded) to obtain more detailed habitat by flow relationships as well as additional tasks to be determined.	Low		$ 500,000	$ 5,155,000
L-9	Fish Habitat Mapping - combined with L-8.	Low		$ -	$ 5,155,000
L-10	Aquatic Habitat Mapping - combined with L-8.	Low		$ -	$ 5,155,000
L-11	Emigration Estimates (Tertiary Period) - This two-month period is in addition to the 7 months (total 9 months) at Willow Creek/Pear Tree for Chinook/Coho smolts; mark recapture during peak outmigration period for Chinook and for hatchery Coho. (See H-5, M-10)	Low	A	$ 90,000	$ 5,245,000
L-12	Adult Fish Health - Contribute to the monitoring of adult disease at the estuary and as they move upriver to contribute to a basin wide effort to track reinfection patterns. See H-20, M-18.	Low	B	$ 30,000	$ 5,275,000
L-13	Adult Salmon Migration Response - validate entry/run timing for chinook/coho, validate changes in use of holding areas and thermal refugia. Part of a Klamath basin wide coordinated effort on coho.	Low	A	$ 60,000	$ 5,335,000
L-14	Fish Response to Hydrograph - fall flows, spring bench, summer/winter base flows	Low		$ 40,000	$ 5,375,000
L-15	Tribal Harvest Survey - Lower Trinity, extends season to springers or coho. See H-7b.	Low	A	$ 30,000	$ 5,405,000
L-16	Sport Harvest Survey - Extends monitoring over a longer time during fishing season. See H-21a, H-21b, M-14.	Low		$ 30,000	$ 5,435,000
L-17	Weir operations - extend operation to June or later in year when logistically feasible to capture fall chinook and coho. See H-8, M-11.	Low	E	$ 50,000	$ 5,485,000
L-18	Age Composition/Scale Analysis - An extended effort to validate scale aging of the natural runs with CWT aging. An extensive effort every five years to collect scales from tributries, hatchery and weirs. See H-28.	Low	E	$ 40,000	$ 5,525,000
L-19	Fry Survival Study - upper 40 miles; multiple sites, at least 4 repetitions. See H-16, M-6.	Low	A	$ 140,000	$ 5,665,000
L-20	SALMOD model development - Support of an initial Trinity Workshop to assess data available for SALMOD. Cost-share: In-kind services by USGS. See H-34, M-19.	Low	B	$ 25,000	$ 5,690,000
L-21	Genetic Evaluation of Fish Populations. Participate in Klamath wide study of coho genetics, fitness and effects on production.	Low	C	$ 100,000	$ 5,790,000
L-22	Watershed Implementation - Watershed Projects and Reconnaissance - Efficiently fund implementation of the watershed restoration component of TRRP and assist in the development of watershed projects. This item provides a higher funding level to support reconnaissance activities needed to guide an effective watershed restoration strategy, and/or to support additional watershed sediment-control activities that could not otherwise be implemented. Cost-share: In-kind services by RCD, USFS, BLM, Trinity County. See H-23, M-7.	Low		$ 100,000	$ 5,890,000
L-23	Riparian bird habitat - extent of habitat under pre-dam conditions	Low		$ -	$ 5,890,000
L-24	Western pond turtle - change in populations due to TRRP actions	Low	C	$ -	$ 5,890,000
L-25	Invasive wildlife species - influence of TRRP actions on habitat availability	Low	C	$ -	$ 5,890,000
L-26	Non-target wildlife species - research change detection methods	Low		$ -	$ 5,890,000
L-27	Foothill Yellow-Legged Frogs - See H-17	Low		$ 27,000	$ 5,917,000
L-28	Riverine Birds - See H-24, M-27.	Low		$ 10,000	$ 5,927,000
	SUBTOTAL LOW PRIORITIES			**$ 1,775,000**	
	TOTAL ALL PRIORITIES			**$ 6,169,000**	