Draft

Attachment 3
12.5-foot Raise and Reservoir Area Infrastructure Cost Estimates

Engineering Summary Appendix

Shasta Lake Water Resources Investigation, California

Prepared by:

U. S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region

U.S. Department of the Interior
Bureau of Reclamation

June 2013

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Main (concrete) Dam consists of:					
		12.5-ft mass & reinforced concrete raise of the existing concrete dam					
		between blocks 15 thru 70 (including top of dam details).					
		Bridge over raised spillway (Included with spillway)					
		Extensions of the existing freight and passenger elevator towers					
		Electrical and mechanical features associated with the top of dam					
		and the elevator towers.					
		Extending/drilling foundation drains (Not Included)					
		Excavation/demolition/salvaging of existing features associated with existing main dam					
		Sheets 1 - 3: 86-68120					$6,292,852.00
		Elevator tower extensions, top of dam miscellaneous metal work					
		Sheets 4-6: 86-68130					$29,711,901.50
		Dam raise, top of dam details, gallery					
		Sheets 7 - 10: 86-68410					$4,246,200.00
		Top of dam & towers mechanical features					
		Sheet 11: 86-68430					$725,700.00
		Top of dam & towers electrical features					
		Subtotal 1					**$40,976,653.50**
		Mobilization	5%	+/-			**$2,000,000.00**
		Subtotal 1 with Mobilization					**$42,976,653.50**
		Escalation to Notice to Proceed (NTP): None assumed.	0%				$0.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					**$42,976,653.50**
		Design Contingencies	10%	+/-			**$4,077,860.50**
		Subtotal 3 = Subtotal 2 + Design Contingencies					$47,054,514.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			**$945,486.00**
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 4 = Subtotal 3 + APS					$48,000,000.00
		CONTRACT COST					**$48,000,000.00**
		Construction Contingencies	20%	+/-			$10,000,000.00
		FIELD COST					**$58,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		The following items should be removed from the					
		Existing Dam:					
	1	**Gantry Crane Rails (214-D-8793 & -10216)**					
		Saw cut grout in rail blockout (8-inch deep, ea. side)	68120	7,700	LF	$7.80	$60,060.00
		Remove grout in blockout	68120	145	CY	$350.00	$50,750.00
		Remove 175 lb/yd crane rail (3,850 ft)	68120	224,600	LBS	$0.07	$15,722.00
		Remove 90 splice pl., 224 splice bars, 1970 rail clips,	68120	24,600	LBS	$0.35	$8,610.00
		800 bearing plates, 224 splice bars w/bolts, nuts,					
		& washers, 2 contraction joint plates					
		Assume existing rail will be removed and salvaged					
		by Contractor.					
	2	**Lighted Aluminum Guardrail (214-D-10071)**					
		Remove guardrail from upstream face of dam	68120	2,860	LF	$21.00	$60,060.00
		Assume lighted guardrail is removed and reinstalled					
		on downstream parapet of raised crest.					
	3	**Vehicle Barrier Gates (Bob Gee email dated 10/4/07)**					
		Remove two vehicle barrier gates and controls	68120	2	EA	$21,000.00	$42,000.00
		Assume reinstall Delta Barriers in raised crest of dam.					
		See CLIN 20 of email from Bob Gee. ($305,000)					
	4	**Miscellaneous Metalwork (214-D-9299 thru -9303)**					
		Remove and dispose of miscellaneous metalwork	68120	50,000	LBS	$0.80	$40,000.00
		(hatches, doors, covers and manhole covers)					
		Assume lead based paint on 50% of metalwork.					
	5	**Remove Freight & Passenger Elevator Towers:**					
		(Reference: 214-D-9743 thru -9745))					
		Remove reinforced concrete (f'c = 5,500 psi)	68120	600	CY	$1,200.00	$720,000.00
		Remove/dispose miscellaneous metalwork	68120	1,900	LBS	$1.40	$2,660.00
		Assume lead based paint on 50% of metalwork.					
	6	**Remove Gate Service & Erection Platform Structure:**					
		(Reference: 214-D-10214 & -10362))		1	LS	$22,000.00	$22,000.00
		Reinforced concrete columns, floors, and walls:	68120	55	CY	Included in Lump Sum	
		Wood products:	68120	1	LS	Included in Lump Sum	
		(Plywood infill walls: 790 sq. ft)					
		(Roofing: 420 sq. ft.)					
		(Removable flooring 4"x8" timbers: 325 sq. ft.)					
		Sheet Subtotal =					**$1,021,862.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Gary Snyder	Rodney Barthel	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
4/9/2008 (updated 6/2010)	Dick LaFond, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		The following items should be installed on the					
		Raised Dam:					
	7	**Gantry Crane Rails**					
		Furnish and install 175 lb/yd crane rail (3,850 lin. ft)	68120	224,600	LBS	$2.20	$494,120.00
		Furnish and Install pl, bar, clip, etc., hardware	68120	24,600	LBS	$9.60	$236,160.00
		Furnish and place backfill grout in blockout	68120	145	CY	$380.00	$55,100.00
		Assume new rails and hardware will be required.					
	8	**Lighted Aluminum Guardrail (214-D-10071)**					
		Install lighted guardrail on downstream parapet.	68120	2,860	LF	$36.00	$102,960.00
		Guardrail removed from existing dam.					
	9	**Vehicle Barrier Gates (Bob Gee email dated 10/4/07)**					
		Install two vehicle barrier gates and controls	68120	2	EA	$220,000.00	$440,000.00
		Gates and controls removed from existing dam.					
	10	**Miscellaneous Metalwork (214-D-9299 thru -9303)**					
		Assume replace in-kind plus add stoplog slot covers.					
		Furnish and install new miscellaneous metalwork	68120	61,400	LBS	$8.50	$521,900.00
		including access hatch covers, water tight doors					
		and manhole covers					
		Assume galvanized steel.					
	11	**Extend Freight & Passenger Elevator Towers:**					
		Assume replace in-kind.					
		Furnish and place reinforced concrete (f'c= 4,000 psi)	68120	900	CY	$2,400.00	$2,160,000.00
		Reinforcement (150#/CY)	68120	135,000	LBS	$1.90	$256,500.00
		Cement (0.28T/CY)	68120	250	TONS	$150.00	$37,500.00
		Miscellaneous Metalwork	68120	2,000	LBS	$8.40	$16,800.00
	12	**Construct Two Gate Service & Erection Platform Structures:**					
		Assume two structures similar to existing one.					
		Furnish and place reinforced concrete (f'c= 4000 psi)	68120	110	CY	$2,100.00	$231,000.00
		Reinforcement (150#/CY)	68120	16,500	LBS	$1.70	$28,050.00
		Cement (0.28T/CY)	68120	31	TONS	$160.00	$4,960.00
		Miscellaneous Metalwork (ladders, guardrails,...)	68120	2,000	LBS	$8.40	$16,800.00
		Furnish and install metal roofing panels	68120	840	SF	$17.00	$14,280.00
		Furnish and install metal wall panels	68120	1,580	SF	$17.00	$26,860.00
		Furnish and install structural steel roof supports	68120	5,000	LBS	$6.60	$33,000.00
		Sheet Subtotal =					**$4,675,990.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Gary Snyder	Rodney Barthel	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
4/9/2008 (updated 6/2010)	Dick LaFond, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		The following items should be installed on the					
		Raised Dam:					
	13	**Extend existing concrete Gate Hoist Structure**	86-68120	1	LS	$480,000.00	$480,000.00
		(Dwgs. 214-D-9388 & -9703)					
		(Assumed f'c = 4,000 psi reinforced concrete)					
		Concrete: **136 CY**					
		Reinforcement: **20,400 Lbs** (based on 150 Lbs/CY)					
		Cement: **30.5 Tons** (base on 0.282 Tons/CY ~ 6 sack mix)					
		#6 Adhesive anchored dowel bars 335 EA					
		(based on 1'-0" spacing two faces)					
	14	**Extend existing concrete Gate, Gate Hoist, and**	86-68120	1	LS	$115,000.00	$115,000.00
		Stems Transfer Structure					
		(Dwgs. 214-D-9117 & 9701)					
		(Assumed f'c = 4,000 psi reinforced concrete)					
		Concrete: **37 CY**					
		Reinforcement: **5,550 Lbs** (based on 150 Lbs/CY)					
		Cement: 1**0.5 Tons** (base on 0.282 Tons/CY ~ 6 sack mix)					
		#6 Adhesive anchored dowel bars 124 EA					
		(based on 1'-0" spacing two faces)					
		This Sheet Subtotal =					**$595,000.00**
		Sheet 1 of 3 Subtotal =					**$1,021,862.00**
		Sheet 2 of 3 Subtotal =					**$4,675,990.00**
				Total 86-68120 =>			**$6,292,852.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		EXCAVATION AND REMOVAL					
		Quantities are identical to the most probable					
		feasibility level estimate for the 18.5-foot					
		dam raise					
	1	Demolition, removal, and transportation of top of	86-68130	1	ls	$530,000.00	$530,000.00
		dam materials to waste:					
		Upstream reinforced concrete parapet wall					
		and curb:					
		377 c.y., 2485 lf sawcutting (6-inch,					
		L=2485 lf), Depths: 1.25' horiz, 0.6' vert					
		6-inch sawcuts for 2' x 2' end area at					
		upstream face:					
		2485 lf sawcuts along u/s face and crest,					
		total 4,970 lf					
		Excavation of concrete on u/s face (2' x 2'					
		end area):					
		2485 ft long, total volume 370 yd3					
		SURFACE PREPARATION					
		Quantities are identical to the most probable					
		feasibility level estimate for the 18.5-foot					
		dam raise					
	2	High-pressure water jet for existing dam crest	86-68130	1	ls	$135,000.00	$135,000.00
		surface 30' x 2485', total area 74,550 ft2					
	3	Pressure grout existing roadway drains	86-68130	1	ls	$33,000.00	$33,000.00
		48 drains, 350 ft3 of drains, 350 bags of					
		cement					
		SUBTOTAL THIS SHEET					**$698,000.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
07/12/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__5__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		DRAIN HOLES					
		Quantities are identical to the most probable					
		feasibility level estimate for the 18.5-foot					
		dam raise					
	4	Mobilization and demobilization for drilling 4-inch	86-68130	1	ls	$10,000.00	$10,000.00
		drains (298)					
	5	Drilling 4-inch drains on 10-ft centers from	86-68130	620	lf	$130.00	$80,600.00
		existing dam crest, elev. 1077.5, each hole					
		2.5 feet long (248 holes)					
	6	Drilling 4-inch drains from existing dam crest	86-68130	325	lf	$150.00	$48,750.00
		(1 per block) for surface drainage at d/s					
		overhang; each 6.5 feet long (50 holes)					
		DAM RAISE					
	7	Mass concrete for dam monoliths between	86-68130	25,000	yd3	$380.00	$9,500,000.00
		dam monoliths #15 and #71 (excluding					
		monoliths #39 to #45 thru spillway). Vertical					
		limits between top of existing dam, elev.					
		1077.5 to elev. 1086.5 (anticipating					
		placements of 5- to 7.5-ft vertical lift, 50-ft					
		wide & 30-ft u/s-d/s matching existing Cr. Js,					
		keys across Cr. Js, and no artificial cooling).					
		The concrete will have a minimum					
		compressive strength of 4000 psi at 365					
		days. Includes extending 5-inch formed					
		drains from elev. 1077.5 to the raised					
		concrete dam crest, elev. 1090.0 (with caps).					
		SUBTOTAL THIS SHEET					**$9,639,350.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
07/12/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__6__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		DAM RAISE (continued)					
	8	Furnishing and handling cementitious materials -	86-68130	4,750	ton	$140.00	$665,000.00
		for mass concrete; 50% pozzolan, 50%					
		cement (Type II). Concrete is 4000 psi					
		at 365 days.					
	9	Structural concrete for top of dam (including	86-68130	14,000	yd3	$450.00	$6,300,000.00
		roadway, upstream/downstream parapets,					
		and walkway) between dam monoliths #15					
		and #71 (excluding monoliths #39 to #45					
		thru spillway) above elev. 1086.5. Concrete					
		is 4000 psi at 28 days.					
	10	Furnishing and handling cementitious materials -	86-68130	3,950	ton	$140.00	$553,000.00
		for structural concrete [20% pozzolan, 80%					
		cement (Type II)]. Concrete is 4000 psi at 28					
		days.					
	11	Furnishing and placing reinforcing bars for the:	86-68130				
		Gallery		201,285	lb	$1.90	$382,441.50
		Temperature steel for exposed structural		798,000	lb	$1.90	$1,516,200.00
		concrete surfaces					
	12	Furnishing and installing 6-inch steel top of dam	86-68130	1,850	lf	$190.00	$351,500.00
		drains, 50 drains; standard weight pipe,					
		19 lb/ft; 1 drain per block					
	13	Excavating a 3-foot diameter vertical shaft	86-68130	2	yd3	$1,400.00	$2,800.00
		through concrete, from the existing dam					
		crest to the hoist gallery in Block 47, for					
		service as an electrical conduit.					
		SUBTOTAL THIS SHEET					**$9,770,941.50**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
07/12/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__7__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		POST-TENSIONED ANCHORS IN MAIN DAM					
	14	Mobilization and demobilization for drilling for	86-68130	1	ls	$160,000.00	$160,000.00
		post-tensioned anchors					
	15	Drilling and surveying post-tension anchor holes	86-68130	10,850	lf	$250.00	$2,712,500.00
		140 holes, 12 inches diameter, each 77.5					
		feet long					
	16	Furnishing and installing post-tension anchors	86-68130	12,600	lf	$260.00	$3,276,000.00
		140 anchors, 90 feet long, 56 strands					
		0.6 inch dia. epoxy coated strands					
	17	Primary and secondary grouting for post-	86-68130	12,600	lf	$25.00	$315,000.00
		tensioned anchors 140 holes, 8845 ft3					
		of grout					
	18	Furnishing and handling cementitious materials	86-68130	355	ton	$350.00	$124,250.00
		for grout 0.7:1 by volume mix = 0.85 bags/ft3					
		for anchors					
	19	Furnishing and installing anchor head hardware	86-68130	140	pckg	$11,500.00	$1,610,000.00
		Package includes: Steel bearing plate,					
		anchor head and wedges, and grout pad					
	20	Testing:	86-68130	1	ls	$620,000.00	$620,000.00
		- Water test (entire length - all anchors)					
		- Proof testing (90% of anchors)					
		- Lift-off testing (20% of anchors)					
		- Performance testing (10% of anchors)					
	21	Concrete in anchor head blockouts:	86-68130	131	yd3	$1,500.00	$196,500.00
		140 blockouts, 4000 psi concrete, 37 tons					
		cementitious materials with 80% cement and					
		20% pozzolan, 4.730 lbs reinforcement					
		SUBTOTAL THIS SHEET					**$9,014,250.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**PEER REVIEW**	**PEER REVIEW**
07/12/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__8__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CONTRACTION JOINTS					
	22	Furnishing and installing 12-inch PVC	86-68130	4,900	lf	$28.00	$137,200.00
		waterstops across dam monolith contraction					
		joints and around utility gallery at contraction					
		joints					
	23	Mobilization and demobilization for pressure	86-68130	1	ls	$30,000.00	$30,000.00
		grouting of contraction joints (for monoliths					
		15-38, 46-71)					
	24	Water test and pressure grout system:	86-68130	1	ls	$420,000.00	$420,000.00
		Furnishing and installing metal tubing &					
		fittings, (1-1/2" std pipe; total 27,000 lbs)					
		Hookups to contraction joints (assume 3 per					
		joint) - (48 joints; total 144 hookups)					
	25	Furnishing and handling cement for grouting	86-68130	120	bag	$18.00	$2,160.00
		contraction joints (Type II, final mix 0.9:1;					
		0.7 bags/ft3; 0.58 ft3 per joint) - (Assume 6					
		times final volume to cover waste)					
		This Sheet Subtotal =					**$589,360.00**
		Sheet 1 of 5 Subtotal =					**$698,000.00**
		Sheet 2 of 5 Subtotal =					**$9,639,350.00**
		Sheet 3 of 5 Subtotal =					**$9,770,941.50**
		Sheet 4 of 5 Subtotal =					**$9,014,250.00**
				Total 86-68130 =>			$29,711,901.50

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
07/12/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__9__ OF __13___

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Appraisal**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	***Heating and Ventilating (H&V) Equipment***					
		Assumed ventilation air transferred from the elevator	8410				
		shafts through a motor-operated fire/smoke damper					
		located at each gallery isolating fire door into two					
		roadway galleries, each exhausted through a fan,					
		control damper, stationary louver, and screens.					
		Assumed transfer air will not require heating.					
		Fans and dampers must be wired for control by					
		the dam fire alarm system and smoke control					
		system.					
	1a	F&I Centrifugal fan: rated 1300-cfm at 0.375" wgsp	8410	2	ea	$10,000.00	$20,000.00
		with 1/2-hp 1200-rpm motor and					
		factory mounted disconnect switch and					
		wall mounted starter and Hand-off-auto switch.					
	1b	F&I 24"x24" Combination Fire and smoke damper with	8410	2	ea	$2,500.00	$5,000.00
		motor-actuator and resettable and reusable links.					
	1c	F&I 24"x24" Control damper with motor actuator	8410	2	ea	$2,100.00	$4,200.00
	1d	F&I 24"x24" Stationary steel louvers with screens.	8410	2	ea	$2,100.00	$4,200.00
		Conduit and wiring for H&V in 86-68430 estimate					
		Sheet Subtotal =					**$33,400.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
P. Schlein	R. Stephen	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
10/4/2007 (udated 6/2010)	J. Grass	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__10__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Appraisal**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	2	***GANTRY CRANE:***					
	2a	Furnish and install new crane rails:	8410	1	LS	See 86-68120 Items	
		175# ASCE rail - 3700 ft					
		steel rail clips - 2000					
		steel bearing plates - 800					
		7/8" x 12" anchor bolts - 2000					
		1-1/4" x 6" bolts+nuts - 700					
		steel splice plates - 100					
	2b	Rerope main (125T) and aux. (25T) hooks to	8410	1	LS	$770,000.00	$770,000.00
		accommodate add'l 20.5 ft height					
		Assume 375 ft of lift x 16 parts = 6,000 ft of					
		1" dia. rope (6 x 37 fiber core xip) for main rope					
		Assume 320 ft of lift x 6 parts = 1,920 ft of					
		3/4" dia. rope (6 x 37 fiber core xip) for aux. rope					
		Assume replace drums for both main and aux.					
		ropes, 4,000 lbs. per drum x 4 drums = 16,000 lbs.					
		structural steel, coated.					
	2c	Remove and relocate gantry crane at new	8410	1	LS	$530,000.00	$530,000.00
		top of dam location (crane dead wt = 600 kips)					
		Sheet Subtotal =					**$1,300,000.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
A. Ritt	R. Stephen	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
10/4/2007 (udated 6/2010)	J. Grass	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__11__ OF __ 13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Appraisal**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	3	***ELEVATORS:***					
		For both of the (2) 10,000 lbs. capacity elevators:					
	3a	Remove machinery from existing machine room	8410	1	LS	$69,000.00	$69,000.00
		and store					
	3b	Relocate machinery into new machine room	8410	1	LS	$145,000.00	$145,000.00
	3c	F&I hoist ropes to accommodate add'l 20.5' lift	8410	4,000	ft	$35.00	$140,000.00
		(approx) 500 ft x 8 ropes - 1/2" diam					
	3d	F&I traveling (electrical) cable for 20.5' lift	8410	1,500	ft	$230.00	$345,000.00
	3e	F&I governor rope for 20.5' raise	8410	1,000	ft	$35.00	$35,000.00
		(approx) 1000 ft x 1 rope - 1/2" diam					
	3f	F&I compensation ropes for 20.5' raise	8410	4,000	ft	$38.00	$152,000.00
		(approx) 500 ft x 8 ropes - 1/2" diam					
	3g	F&I guide rail extensions for cars and	8410	2,000	lbs.	$52.00	$104,000.00
		counterweights for 20.5' raise					
		2 rails per car, 2 rails per cwt - 20.5' ea					
		approx 22.5 lbs/ft ==> 2000 lbs					
		Sheet Subtotal =					**$990,000.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
A. Ritt	R. Stephen	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
10/4/2007 (udated 6/2010)	J. Grass	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__12__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Appraisal**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	4	***STOPLOGS AND GUIDES:***					
	4a	F&I Stoplog guides	8410	94,000	lbs.	$8.20	$770,800.00
		Welded structural carbon steel construction					
		with protective coating					
		5 sets of guides @ 18,800 lbs per set					
	4b	F&I Stoplogs	8410	192,000	lbs.	$6.00	$1,152,000.00
		Welded structural carbon steel construction					
		with protective coating					
		4 stoplogs @ 48,000 lbs per log					
		Stoplogs to be used at Shasta are presently at					
		Hungry Horse Dam. They are 258' - 2" tall,					
		stacked height. The new raised height of Shasta					
		Dam would require a stacked height of					
		at least 292' - 0". Four new logs used in conjunction					
		with the stoplogs from Hungry Horse, would extend					
		the stacked height to 293' - 0".					
		This Sheet Subtotal =					**$1,922,800.00**
		Sheet 1 of 4 Subtotal =					**$33,400.00**
		Sheet 2 of 4 Subtotal =					**$1,300,000.00**
		Sheet 3 of 4 Subtotal =					**$990,000.00**
				Total 86-68410 =>			**$4,246,200.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Wayne Delzer	Ryan Stephen	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
10/4/2007 (udated 6/2010)	John Grass	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__13__ OF __ 13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Main (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Appraisal**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Dam crest lighting (56 kw)	8430	110,000	SF	$2.00	$220,000.00
	2	Rigid metal conduit	8430				
		1"		3,300	FT	$34.00	$112,200.00
		2"		3,100	FT	$56.00	$173,600.00
	3	600 volt insulated cable, single-conductor, stranded-copper	8430				
		10 AWG		10,000	FT	$0.55	$5,500.00
		2/0 AWG		13,000	Ft	$8.30	$107,900.00
	4	Power receptacles (gantry crane)	8430				
		480 volt, 3-phase, 200 ampere		18	EA	$2,000.00	$36,000.00
	5	Distribution panelboards	8430				
		480 volt, 3-phase, 400 ampere bus with 400 A main circuit breaker		3	EA	$12,000.00	$36,000.00
		208Y/120 volt, 225 ampere bus with 225 A main circuit breaker		5	EA	$6,900.00	$34,500.00
		Note: Moving elevator equipment included in mechanical estimate.					
		This Sheet and Total 86-68430 =>					**$725,700.00**

QUANTITIES		PRICES	
BY Mike Schuh	**CHECKED** C. Maurer	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 10/1/2007 (updated 6/2010)	**PEER REVIEW** G. Girgis	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable

Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Right Wing (Concrete) Dam consists of:					
		12.5-ft mass & reinforced concrete raise of the existing concrete dam					
		between blocks 70 to right abutment, including top of dam details (cofferdam during constr (Not Included)).					
		Electrical and mechanical features associated with the top of dam					
		and the elevator towers.					
		Extending/drilling foundation drains					
		Gantry Crane and right abutment storage area					
		Access roads					
		Excavation/demolition/salvaging of existing features associated with existing right wing dam					
		Sheet 1 through 4 - 86-68130 (dam raise, top of dam details, galleries, and formed drains)					$2,998,860.00
		Sheet 3 - 86-68140 (access roads)					$615,170.00
		Sheet 4 - 86-68430 (lighting electrical features)					$47,640.00
		Subtotal 1					**$3,661,670.00**
		Mobilization	5%	+/-			**$185,000.00**
		Subtotal 1 with Mobilization					**$3,846,670.00**
		Escalation to Notice to Proceed (NTP): None assumed.	0%				$0.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					**$3,846,670.00**
		Design Contingencies	10%	+/-			**$368,703.00**
		Subtotal 3 = Subtotal 2 + Design Contingencies					$4,215,373.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			**$84,627.00**
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 4 = Subtotal 3 + APS					$4,300,000.00
		CONTRACT COST					**$4,300,000.00**
		Construction Contingencies	20%	+/-			$900,000.00
		FIELD COST					**$5,200,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __ 6__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		EXCAVATION AND REMOVAL					
		Quantities are identical to the most probable					
		feasibility level estimate for the 18.5-foot					
		dam raise					
	1	Demolition, removal, and transportation of top of	86-68130	1	ls	$100,000.00	$100,000.00
		dam and right abutment bench materials to					
		waste:					
		Local excavation of foundation (removing					
		loose materials) 500 c.y. assumed,					
		including asphalt pavement					
		6-inch sawcuts for 2' x 2' end area at					
		upstream face 75 lf sawcuts along u/s					
		face and crest, total 150 lf					
		Excavation of concrete on u/s face (2' x 2'					
		end area) 75 ft long, total volume 11 yd3					
		SURFACE PREPARATION					
		Quantities are identical to the most probable					
		feasibility level estimate for the 18.5-foot					
		dam raise					
	2	High-pressure water jet for existing dam crest	86-68130	1	ls	$3,200.00	$3,200.00
		surface 30' x 75', total area 2250 ft2					
	3	Local use of slush grouting and dental concrete	86-68130	1,000	yd2	$37.00	$37,000.00
		on rock					
		SUBTOTAL THIS SHEET					**$140,200.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
07/15/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __ 6__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		DRAIN HOLES					
		Quantities are identical to the most probable					
		feasibility level estimate for the 18.5-foot					
		dam raise					
	4	Mobilization and demobilization for drilling	86-68130	1	ls	$30,000.00	$30,000.00
		4-inch drains					
	5	Drilling 4-inch drains on 10-ft centers from	86-68130	20	lf	$140.00	$2,800.00
		existing dam crest elev. 1077.5; each hole					
		2.5 feet long (7 holes)					
	6	Drilling 4-inch drains on 10-ft centers from utility	86-68130	500	lf	$260.00	$130,000.00
		gallery, each hole 50 feet long into					
		foundation (10 holes)					
		DAM RAISE					
	7	Mass concrete for right wing dam monoliths	86-68130	4,300	yd3	$350.00	$1,505,000.00
		between dam monoliths #72-73 and #75-#77.					
		Vertical limits between top of existing dam					
		and right abutment bench, elev. 1077.5, to					
		elev. 1086.5 (anticipating placements of 5-					
		to 7.5-ft vertical lift, 50-ft wide & 40-ft					
		u/s-d/s matching existing Cr. Js, keys across					
		Cr. Js, and no artificial cooling). 4,000 psi at					
		365 days. Include 5" formed drains from El.					
		1077.5 to new crest El. 1090.0 (with caps).					
	8	Furnishing and handling cementitious materials -	86-68130	800	ton	$140.00	$112,000.00
		mass concrete; 50% pozzolan, 50% cement					
		(Type II). Concrete is 4000 psi at 365 days					
		SUBTOTAL THIS SHEET					**$1,779,800.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
07/15/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __ 6__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		DAM RAISE (continued)					
	9	Structural concrete for top of dam (including	86-68130	1,750	yd3	$380.00	$665,000.00
		roadway, raised gantry crane storage area,					
		u/s & d/s parapets, and walkway between					
		dam monoliths 72-73 and 75-77 above elev.					
		1086.5.					
	10	Furnishing and handling cementitious materials -	86-68130	494	ton	$170.00	$83,980.00
		for structural concrete; 20% pozzolan, 80%					
		cement (Type II). Concrete is 4000 psi at					
		28 days.					
	11	Furnishing and placing reinforcing bars for the:	86-68130				
		Gallery		18,600	lbs	$1.70	$31,620.00
		Temperature steel for exposed structural		97,000	lbs	$1.70	$164,900.00
		concrete surfaces					
	12	Furnishing and installing 6-inch steel top of dam	86-68130	74	lf	$200.00	$14,800.00
		drains, 2 drains; standard weight pipe, 19					
		lb/ft; 1 drain per block.					
		CONTRACTION JOINTS					
	13	Furnishing and installing 12-inch PVC	86-68130	480	lf	$32.00	$15,360.00
		waterstops across dam monolith contraction					
		joints and around utility gallery at contraction					
		joints					
	14	Mobilization and demobilization for pressure	86-68130	1	ls	$27,000.00	$27,000.00
		grouting of contraction joints (for monoliths					
		72-73, 75-77)					
		SUBTOTAL THIS SHEET					**$1,002,660.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
07/15/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __ 6__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CONTRACTION JOINTS (continued)					
	15	Water test and pressure grout system:	86-68130	1	ls	$72,000.00	$72,000.00
		Furnishing and installing metal tubing &					
		fittings, (1-1/2" std pipe; total 2,700 lbs)					
		Hookups to contraction joints (assume 3 per					
		joint) - (4 joints; total 12 hookups)					
	16	Furnishing and handling cement for grouting	86-68130	15	bag	$280.00	$4,200.00
		contraction joints (Type II, final mix 0.9:1;					
		0.7 bags/ft3; 0.86 ft3 per joint) - (Assume 6					
		times final volume to cover waste)					
		Subtotal this Sheet =					**$76,200.00**
		Subtotal Sheet 1 =					**$140,200.00**
		Subtotal Sheet 2 =					**$1,779,800.00**
		Subtotal Sheet 3 =					$1,002,660.00
				Total 86-68130 =>			**$2,998,860.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
07/15/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__5__ OF __6__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Compacted backfill road embankment	8140	17,500	yd^3	$21.00	$367,500.00
	2	Excavation	8140	190	yd^3	$33.00	$6,270.00
	3	Asphalt Concrete (4" Depth)	8140	760	tons	$190.00	$144,400.00
	4	Aggregate Basecourse (6" Depth)	8140	1,100	tons	$50.00	$55,000.00
	5	W-beam guardrail with 6' wood post	8140	840	lf	$50.00	$42,000.00
		includes two metal beam railing terminal system					
		and two metal beam guard railing connections					
		to bridge railings					
		This Sheet and Total 86-68140 =>					**$615,170.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Nicholas Clough, PE	Mark Leavitt, PE	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
10/11/2007 (Updated 6/2010)	Jesus G. Romero, PE	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__6__ OF __6__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Right Wing (Concrete) Dam

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Parapet lighting fixtures	8430	20	EA	$825.00	$16,500.00
		120 volt, high pressure sodium					
	2	Rigid metal conduit	8430	700	FT	$36.00	$25,200.00
		1-inch					
	3	600 volt insulated cable, single conductor, stranded-	8430	2,200	FT	$2.70	$5,940.00
		copper					
		10 AWG					
		This Sheet and Total 86-68430 =>					**$47,640.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
M. Schuh	C. Maurer	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
9/25/07 (Updated 6/2010)	G. Girgis	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Left Wing Dam

Most Probable

Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Left Wing (embankment) Dam consists of:					
		12.5-ft embankment raise of the existing embankment dam					
		between blocks 15 to left abutment (including tieing into existing concrete core wall).					
		Electrical and mechanical features associated with existing access					
		Access roads (state and county roads, rotunda)					
		Excavation/demolition/salvaging of existing features associated with existing left wing dam					
		86-68140 Sheet (access roads, parapet, sidewalks, curb & gutters, rotunda)					$296,650.00
		86-68311 Sheet (excavation/demolition/salvaging of					$11,467,558.00
		existing features, embankment dam & core wall extension)					
		86-68430 Sheet (top of left wing dam electrical features)					$39,190.00
		Subtotal 1					**$11,803,398.00**
		Mobilization	5%	+/-			$590,000.00
		Subtotal 1 with Mobilization					**$12,393,398.00**
		Escalation to Notice to Proceed (NTP): None assumed.	0%				$0.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					**$12,393,398.00**
		Design Contingencies	10%	+/-			**$1,333,947.00**
		Subtotal 3 = Subtotal 2 + Design Contingencies					$13,727,345.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			**$272,655.00**
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 4 = Subtotal 3 + APS					$14,000,000.00
		CONTRACT COST					**$14,000,000.00**
		Construction Contingencies	20%	+/-			$2,500,000.00
		FIELD COST					**$16,500,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __3__

FEATURE:	PROJECT:
Shasta Lake Water Resources Investigation Feasibility Study	Central Valley Project - CA Shasta Division
Left Wing Dam	REGION: MP / ESTIMATE LEVEL: Feasibility
Most Probable	WOID: SHAEF / PRICE LEVEL: Apr - 10
86-68140 12.5-ft Dam Raise	

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Furnish and place reinforced concrete in retaining walls	8140	200	yd^3	$850.00	$170,000.00
		(f'c = 4,000 psi @ 28 days)					
	2	Furnish and install reinforcement, (fy = 60 ksi)	8140	25,000	lbs	$1.80	$45,000.00
	3	Furnishing and handling cement	8140	285	tons	$190.00	$54,150.00
	4	Furnish and install W-beam guardrail with 6' wood post	8140	550	lf	$50.00	$27,500.00
		includes two metal beam railing terminal system					
			This Sheet and Total 86-68140 =>				**$296,650.00**

QUANTITIES		PRICES	
BY Jesus G Romero	**CHECKED** Nicholas Clough, PE	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 5/14/2008	**PEER REVIEW** Dave K. Edwards, PE	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Left Wing Dam

Most Probable

86-68311 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Mobilization and Preparatory Work					See summary sheet
		Excavation/removal/salvaging:					
	2	Remove guard shack and rotunda	86-68311	1	ls	250,000.00	$250,000.00
	3	Removal of parapet wall	86-68311	580	yd^3	410.00	$237,800.00
	4	Removal of sidewalks and curbs	86-68311	4,500	ln ft	30.00	$135,000.00
	5	Remove roads (asphalt)	86-68311	1,700	yd^3	110.00	$187,000.00
	6	Remove vegetation, trees (~20)	86-68311	1	ls	13,000.00	$13,000.00
	7	Remove topsoil and stockpile	86-68311	114,000	ft^2	0.35	$39,900.00
	8	Foundation stripping (footprint area of raised embankment)	86-68311	210,000	ft^2	1.05	$220,500.00
		Concrete Core Wall					
	9	Corewall common excavation (compacted fill)	86-68311	5,300	yd^3	21.00	$111,300.00
	10	Corewall removal (for weathering/key)	86-68311	35	yd^3	390.00	$13,650.00
	11	Corewall rock excavation	86-68311	1,000	yd^3	55.00	$55,000.00
	12	Extend access shaft vertically (6' diam) - 22 lf extension	86-68311	15	yd^3	1,600.00	$24,000.00
	13	Reinforced concrete (extend wall laterally & vertically)	86-68311	1,000	yd^3	670.00	$670,000.00
	14	Foundation treatment, dental concrete etc.	86-68311	7,000	ft^2	2.70	$18,900.00
	15	Reinforcement for core wall (150 lb/cy)	86-68140	152,000	lb	1.65	$250,800.00
		Left Wing Dam Fill					
	16	Embankment - clayey gravel	86-68311	7,850	yd^3	84.00	$659,400.00
	17	Embankment - filter/transition	86-68311	2,000	yd^3	100.00	$200,000.00
	18	Embankment - rockfill	86-68311	57,400	yd^3	95.00	$5,453,000.00
	19	Embankment - Upstream riprap	86-68311	2,200	yd^3	110.00	$242,000.00
	20	Embankment - Downstream riprap	86-68311	3,200	yd^3	110.00	$352,000.00
	21	Embankment - topsoil and seeding	86-68311	85,000	ft^2	0.65	$55,250.00
		MSE wall					
	22	Facing (shotcrete, precast concrete panel, etc)	86-68311	2,700	ft^2	45.00	$121,500.00
	23	Geogrid	86-68311	26,100	ft^2	0.70	$18,270.00
	24	Granular backfill - filter/transition material	86-68311	2,200	yd^3	90.00	$198,000.00
		Miscellaneous					
	25	Replace roadways - 6" asphalt, 8" base	86-68311	70,000	ft^2	7.80	$546,000.00
	26	Replace parapet wall	86-68311	600	yd^3	910.00	$546,000.00
	27	Replace Rotunda Monument (price from MWH)	86-68311	1	ls	275,000.00	$275,000.00
	28	Replace sidewalks incl. curbs & gutters	86-68311	2,600	ln ft	92.00	$239,200.00
	29	Replace sidewalks without curbs & gutters	86-68311	2,400	ln ft	56.00	$134,400.00
	30	Reinforcement for parapet wall (200 lb/cy)	86-68140	120,000	lb	1.65	$198,000.00
	31	Polypropylene fibers for sidewalk, curb, and gutters (1.5 l/cy)	86-68140	560	lb	4.80	$2,688.00
			This Sheet and Total 86-68311 =>				**$11,467,558.00**

QUANTITIES		PRICES	
BY Leif Dixon	**CHECKED** Roger Torres	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 10/9/2007	**PEER REVIEW** Becky Morfitt	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Left Wing Dam

Most Probable

86-68430 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Parapet lighting fixtures	8430	18	EA	$780.00	$14,040.00
		120 volt, 70 Watt, high pressure sodium					
	2	Rigid metal conduit	8430	600	FT	$34.00	$20,400.00
		1-inch					
	3	600 volt insulated cable, single conductor, stranded-	8430	1,900	FT	$2.50	$4,750.00
		copper					
		10 AWG					
		This Sheet and Total 86-68430 =>					**$39,190.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Mike Schuh	C. Maurer	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
4/14/2008	G. Girgis	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Spillway Quantities
Most Probable

Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Sheets 1 through 3 - 86-68130					$27,477,791.00
		Sheets 4 and 5 - 86-68140					$5,945,700.00
		Sheet 6 - 86-68410					$6,399,100.00
		Sheet 7 - 86-68420					$29,224,800.00
		Sheet 8 - 86-68430					$51,420.00
		Subtotal 1					**$69,098,811.00**
		Mobilization	5%	+/-			$3,500,000.00
		Subtotal 1 with Mobilization					**$72,598,811.00**
		Escalation to Notice to Proceed (NTP): None assumed.	0%				
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					**$72,598,811.00**
		Design Contingencies	10%	+/-			**$6,804,015.00**
		Subtotal 3 = Subtotal 2 + Design Contingencies					$79,402,826.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			**$1,597,174.00**
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 4 = Subtotal 3 + APS					$81,000,000.00
		CONTRACT COST					**$81,000,000.00**
		Construction Contingencies	20%	+/-			$17,000,000.00
		FIELD COST					**$98,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Spillway Quantities
Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Excavation/removal					
	1	Demolition, removal, and transportation of	8130	1	ls	$2,900,000.00	$2,900,000.00
		existing spillway crest, piers, and chute materials:					
		Excavation of upstream reinforced concrete					
		drum gate supports. [1500 yd3, 660 ft of					
		6" saw cuts]					
		Excavation of downstream crest between					
		elevation 1025.68 and 1006.13 (NAVD29)					
		(1185 yd3, 375ft of 6" saw cuts)					
		Limited excavation of existing piers					
		(840 yd3, 810 ft of 6" saw cuts)					
		Excavation of downstream chute between					
		elevation 891.91 and 862.0 (NAVD29)					
		(3,400 yd3, 750 ft of 6" saw cuts)					
		Surface Preparation:					
	2	Backfill concrete existing conduits, shafts, adits and	8130	1,020	yd3	$155.00	$158,100.00
		openings in drum gate chambers and existing piers					
	3	Furnishing and handling cementations materials	8130	290	tons	$145.00	$42,050.00
		[80% cement and 20% pozzolan]					
	4	Mobilization and demobilization for drilling anchor bars and	8130	1	ls	Included in mobilization on summary sheet	
		embedment for reinforcement					
		Spillway Crest Modifications:					
	5	Structural concrete for spillway crest	8130	11,500	yd3	$400.00	$4,600,000.00
		[4000 psi compressive strength]					
	6	Furnishing and handling cementations materials	8130	3,150	tons	$145.00	$456,750.00
		[80% cement and 20% pozzolan]					
	7	Furnishing and placing reinforcing bars	8130	155,000	lbs	$1.80	$279,000.00
	8	Drilling for anchor bars into spillway crest	8130	5,250	lf	$93.00	$488,250.00
		[1.5-inch-diameter hole for #9 bar, 1500 holes 3.5 feet deep]					
		Note: Quantity changes from the 18.5' raise noted in bold					
		Sheet Subtotal =					**$8,924,150.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Thomas Scobell	R. L. Reynolds, P.E.	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
07/20/10		12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __8__

FEATURE:
Shasta Dam Raise - 12.5-foot Raise
Feasibility Study
Spillway Quantities
Most Probable

Civil 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Spillway Crest Piers:					
	9	Structural concrete for spillway piers	8130	10,500	yd3	$500.00	$5,250,000.00
		[4000 psi compressive strength]					
	10	Furnishing and handling cementitious materials	8130	2,900	tons	$145.00	$420,500.00
		[80% cement and 20% pozzolan]					
	11	Furnishing and placing reinforcing bars	8130	1,200,000	lbs	$1.80	$2,160,000.00
	12	Drilling for reinforcement in existing piers	8130	18,760	lf	$135.00	$2,532,600.00
		[2-inch-diameter hole for #11 bar, 1720 holes, min. 5 feet deep]					
		Spillway Aeration System:					
	13	Structural concrete for spillway crest	8130	2,375	yd3	$520.00	$1,235,000.00
		[4000 psi compressive strength]					
	14	Furnishing and handling cementitious materials	8130	870	tons	$145.00	$126,150.00
		[80% cement and 20% pozzolan]					
	15	Furnishing and placing reinforcing bars	8130	145,400	lbs	$1.80	$261,720.00
	16	Drilling for anchor bars into spillway chute	8130	2,365	lf	$135.00	$319,275.00
		[1.5-inch-diameter hole for #9 bar, 675 holes, 3.5 feet deep]					
		Post-Tensioned Anchors in Spillway Piers					
	17	Mobilization and demobilization for drilling for	8130	1	ls	$160,000.00	$160,000.00
		post-tensioned anchors					
	18	Drilling and surveying post-tension anchor holes	8130	7,896	lf	$260.00	$2,052,960.00
		14 anchor units in each of the 5 internal piers					
		7 anchor units in each of the 2 end piers					
		84 holes, 12 inches diameter, each 94-feet in length					
	19	Furnishing and installing post-tension anchors	8130	7,896	lf	$270.00	$2,131,920.00
		84 anchors, 100 feet long, 56 strands					
		0.6 inch dia epoxy coated strands					
		Note: Quantity changes from the 18.5' raise noted in bold					
		Sheet Subtotal =					**$16,650,125.00**

QUANTITIES		**PRICES**	
BY Thomas Scobell	**CHECKED** R. L. Reynolds, P.E.	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 07/20/10	**PEER REVIEW / DATE**	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __8__

FEATURE:
Shasta Dam Raise - 12.5-foot Raise
Feasibility Study
Spillway Quantities
Most Probable

Civil 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	20	Primary and secondary grouting	8130	7,896	lf	$26.00	$205,296.00
		84 holes, 5600 ft3 of grout					
	21	Furnishing and handling cementitious materials for grout	8130	222	tons	$360.00	$79,920.00
		[0.7:1 by volume mix = 0.85 bags/ft^3]					
	22	Furnishing and installing anchor head hardware	8130	84	pckg	$13,500.00	$1,134,000.00
		Package includes: Steel bearing plate, anchor head and wedges, and grout pad					
	23	Testing for 84 anchors	8130	1	ls	$350,000.00	$350,000.00
		- Water test (entire length - all anchors)					
		- Proof testing (90% of anchors)					
		- Lift-off testing (20% of anchors)					
		- Performance testing (10% of anchors)					
	24	Concrete in anchor head blockouts	8130	79	yd3	$1,700.00	$134,300.00
		[84 blockouts, 4000 psi concrete, 22 tons cement, 2,840 lbs reinforcement]					
		Stilling Basin Modifications					
	25	Excavation, rock, for stilling basin extension	8130	0	yd3		$0.00
	26	Structural concrete for stilling basin extension	8130	0	yd3		$0.00
		Assume 5' thick floor; avg 8.4' thick walls, 89' high					
		Basin width is 375 feet; assume new end sill					
		Basin length increased by 55 feet for 400,000 cfs jump					
	27	Structural concrete for higher parapet walls for basin	8130	0	yd3		$0.00
		Assume existing parapet walls increased 3 feet					
		Total basin length is 447 (including extension)					
		Prevents wall overtopping for 400,000 cfs release					
	28	Furnishing and handling cementitious materials for basin	8130	0	tons		$0.00
	29	Furnishing and placing reinforcing bars for basin	8130	0	lbs		$0.00
		Note: Quantity changes from the 18.5' raise noted in bold					
		Sheet Subtotal =					**$1,903,516.00**
		86-68130 Total =					**$27,477,791.00**

QUANTITIES		PRICES	
BY Thomas Scobell	**CHECKED** R. L. Reynolds, P.E.	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 07/20/10	**PEER REVIEW / DATE**	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Spillway Quantities
Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Spillway Bridge:					
		1. Demolition and removal of existing bridge:		1	LS	$1,800,000.00	$1,800,000.00
		Existing bridge is 385 feet long by 40 feet					
		wide, consisting of steel stringers, floor					
		beams and two main girders with a cast-					
		in-place concrete deck. Total weight of					
		steel superstructure is 755,000 lbs. The					
		concrete deck volume is 425 cubic yards.					
		The expansion joints weigh 50,000 lbs &					
		bearings weigh 30,000 lbs. The steel					
		superstructure is coated with lead based					
		paint. Total steel surface area ~ 45,000sf.					
		2. Furnish and install PCI BT-72 Precast					
		prestressed concrete girders in the					
		following lengths:					
		L = 67 feet		12	EA	$50,000.00	$600,000.00
		L = 62 feet		12	EA	$50,000.00	$600,000.00
		L = 57 feet		12	EA	$50,000.00	$600,000.00
		3. Furnish and place concrete in deck, curb		900	CY	$1,250.00	$1,125,000.00
		and parapets (f'c = 4,000 psi @ 28 days)					
		4. Furnish and install epoxy coated		225,000	LBS	$2.00	$450,000.00
		reinforcement, fy = 60,000 psi)					
		5. Furnish and place concrete in end &		250	CY	$2,400.00	$600,000.00
		intermediate diaphragms (f'c = 4,000 psi					
		@ 28 days)					
		6. Furnish and install reinforcement in end &		37,500	LBS	$1.80	$67,500.00
		intermediate diaphragms, fy = 60,000 psi					
		Sheet Subtotal =					**$5,842,500.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Jesus G. Romero, PE	Jeff Baysinger, PE	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
5/20/2008 (Updaged 6/2010)	Dave Edwards, PE	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__5__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Spillway Quantities
Most Probable
86-68140 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Spillway Bridge: (continue)					
		7. Remove, stockpile and reinstall existing		1	LS	$60,000.00	$60,000.00
		downstream parapet railing. This should					
		include expansion or epoxy anchors.					
		(existing anchor spacing is unknown)					
		8. Furnish and install expansion joints, one at		80	LF	$540.00	$43,200.00
		each end of the bridge. The expansion					
		joints should consist of Steelflex strip seal					
		expansion joint, with rail elements SSCM2					
		and A2R-O seal elements, manufactured					
		by D.S. Brown or equal					
		9. Concrete and reinforcement in spillway					
		piers to support bridge superstructure					
		(included in separate worksheet by 8110)					
		Sheet Subtotal =					$103,200.00
		86-68140 Total =					**$5,945,700.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Jesus G. Romero, PE	Jeff Baysinger, PE	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
5/20/2008 (Updaged 6/2010)	Dave Edwards, PE	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__6__ OF __8 __

FEATURE: Shasta Lake Water Resources Investigation Feasibility Study **Spillway Quantities** **Most Probable** 12.5-ft Dam Raise	**PROJECT:** **Central Valley Project - CA** **Shasta Division** **REGION:** **MP** **ESTIMATE LEVEL:** **Feasibility** **WOID:** **SHAEF** **PRICE LEVEL:** **Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	2	**STOPLOGS, SEATS AND GUIDES:**					
	2a	Furnish and install new stoplogs for one 45'-0" wide bay	8410	257,000	lbs.	$5.60	$1,439,200.00
		Welded structural carbon steel construction					
		with protective coating					
		Stoplogs 45'-0" x 40'-9"					
	2b	Furnish and install new stoplogs for one 50'-0" wide bay	8410	306,000	lbs.	$5.60	$1,713,600.00
		Welded structural carbon steel construction					
		with protective coating					
		Stoplogs 50'-0" x 40'-9"					
	2c	Furnish and install new stoplogs for one 55'-0" wide bay	8410	348,000	lbs.	$5.60	$1,948,800.00
		Welded structural carbon steel construction					
		with protective coating					
		Stoplogs 55'-0" x 40'-9"		911,000			
	2d	Furnish and install three new stoplog lifting beams	8410	9,000	lbs.	$6.50	$58,500.00
		Welded structural carbon steel construction					
		with protective coating					
	2e	Furnish and install new stoplog seats and guides for	8410	118,000	lbs.	$10.50	$1,239,000.00
		six bays. Welded structural carbon steel					
		construction with protective coating					
		- 489'-0" of embedded guides					
		- 300'-0" of embedded seats					
		86-68410 Total =					**$6,399,100.00**

QUANTITIES		**PRICES**	
BY Ryan Stephen	**CHECKED** W. Delzer	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 4/22/2008 (Updaged 6/2010)	**PEER REVIEW** D. Hulse/J. Grass	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__7__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Spillway Quantities
Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Remove Existing Drum Gates	8420	3,000,000	lbs	$0.90	$2,700,000.00
		- 3 - 110-feet x 28-feet steel drum gates					
		- Including building a supporting structure in the gate					
		chamber to hold the gates in the raised position.					
		- Including disassembling and cutting the gates into					
		smaller pieces to aid removal.					
		(1,000,000 lbs per gate, 3,000,000 lbs total)					
	2	Furnish and Install 6 New Sloping Fixed Wheel Gates	8420	3,315,600	lbs.	$8.00	$26,524,800.00
		- Furnish and install 2 new 55-feet wide by					
		48-feet high fixed wheel gates.					
		- Including fabrication, shipping, assembly and testing.					
		(495,000 lbs per gate, 990,000 lbs total)					
		(28,000 lbs per gate, 56,000 lbs total)					
		- Furnish and install 2 new 50-feet wide by					
		48-feet high fixed wheel gates.					
		- Including fabrication, shipping, assembly and testing.					
		(450,000 lbs per gate, 900,000 lbs total)					
		(28,000 lbs per gate, 56,000 lbs total)					
		- Furnish and install 2 new 45-feet wide by					
		48-feet high fixed wheel gates.					
		- Including fabrication, shipping, assembly and testing.					
		(405,000 lbs per gate, 810,000 lbs total)					
		(28,000 lbs per gate, 56,000 lbs total)					
		- Furnish and install tracks.					
		- Including fabrication, shipping, assembly					
		and embedment in the pier walls.					
		(6,800 lbs steel per beam, 12 beams for 6 gates,					
		81,600 lbs. total)					
		(10,000 lbs stainless steel per plate, 12 plates for					
		6 gates, 120,000 lbs. total)					
		- Furnish and install stainless steel sill plates.					
		- Including fabrication, shipping, assembly					
		and embedment in the spillway crest.					
		(2 - 55-feet long plates, 900 lbs per plate, 1800 lbs total)					
		(2 - 50-feet long plates, 1,000 lbs per plate, 2,000 lbs total)					
		(2 - 45-feet long plates, 1,100 lbs per plate, 2,200 lbs total)					
		- Furnish and install gate hoists, motor operators, and stems.					
		- Including fabrication, shipping, and assembly					
		(40,000 lbs. per gate, 240,000 lbs. total)					
		86-68420 Total =					**$29,224,800.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Nathan Nakamoto	Charlie Joyce	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
4/23/2008 (Updaged 6/2010)	Gary W. Rood	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__8__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Spillway Quantities
Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Combination, reversing motor starter	8430	6	EA	$6,800.00	$40,800.00
		480 volt, 3-phase, NEMA size 1 starter					
		35 amp thermal-magnetic circuit breaker					
		NEMA type 4 enclosure					
	2	Rigid metal conduit	8430	300	FT	$27.00	$8,100.00
		3/4-inch					
	3	600 volt insulated cable, single-conductor, stranded-copper					
		12 AWG	8430	1,200	FT	$2.10	$2,520.00
		86-68430 Total =					**$51,420.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Mike Schuh	Cory Maurer	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
4/14/2008 (Updaged 6/2010)	George Girgis	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Outlet Works

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Outlet Works consists of:					
		Excavation/demolition/salvaging of existing features associated with the 4 lower tier outlets					
		Replacing the existing tube valves with outlet gates.					
		Mechanical features associated with new outlet gates					
		Electrical features associated with new outlet gates					
		86-68130 Sheet (excavation of gate chamber, reinforced concrete)					$728,220.00
		86-68420 Sheet (removal of existing mechanical equipment, installation of new outlet gates, gate bodies and hydraulic equipment)					$16,751,820.00
		86-68430 Sheet (electrical equipment for new outlet gates)					$33,760.00
		Subtotal					**$17,513,800.00**
		Mobilization				5%	$880,000.00
		Subtotal w/ Mobilization					**$18,393,800.00**
		Design Contingencies				10%	$2,171,833.00
		Allowance for Procurement Strategy				2%	$434,367.00
		Type of solicitation assumed is: Request for Proposal					
		CONTRACT COST					**$21,000,000.00**
		Construction Contingencies				20%	$4,000,000.00
		FIELD COST					**$25,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	8/27/2010	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Outlet Works

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Concrete Excavation:					
	1	Concrete excavation for jet flow gate shrouds (4 each)	8130	293	CY	$1,250.00	$366,250.00
	2	Concrete excavation around the 36-inch-diameter air vent pipes (4 each)	8130	52	CY	$1,300.00	$67,600.00
		Backfill Concrete:					
	3	Backfill concrete around the gate shrouds (4 each) [4000 psi compressive strength]	8130	284	CY	$800.00	$227,200.00
	4	Furnishing and handling cementitious materials [80% cement and 20% pozzolan 6 sacks/cy]	8130	80	Tons	$195.00	$15,600.00
		Outlet Works Gate Support Concrete:					
	5	Structural concrete for the gate and shroud supports (8 each) [4000 psi compressive strength]	8130	21	CY	$2,400.00	$50,400.00
	6	Furnishing and handling cementitious materials [80% cement and 20% pozzolan 6 sacks/cy]	8130	6	Tons	$195.00	$1,170.00
				This Sheet and 86-68130 Total =			**$728,220.00**

QUANTITIES		PRICES	
BY J. Schneider	**CHECKED** M. R. Steers	**BY** Jeff Morris	**CHECKED** Kelly Brom
DATE PREPARED 11/07/07	**PEER REVIEW** T. Hepler	**DATE PREPARED** 8/27/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Outlet Works

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Remove outlet works tube valves @ El. 742.0	8420	576,000	lbs.	$0.85	$489,600.00
		- Disassemble and remove the 4 existing 102-inch					
		diameter tube valves.					
		(144,000 lbs. per tube valve)					
	2	Furnish and install new outlet works gates @ El. 742.0	8420	375,400	lbs.	$39.00	$14,640,600.00
		- Furnish and install 4 new 96-inch diameter					
		jet-flow gates (Note: Estimate based on combined steel and SS					
		gates per manufacturer's budgetary quote).					
		- Including fabrication, shipping, assembly					
		and testing.					
		- Some disassembly and reassembly of the					
		gate will be required for installation					
		(78,000 lbs per jet-flow gate, combined steel and SS, 312,000 lbs total)					
		- Furnish and install 1 new hydraulic power unit					
		for jet flow-gates					
		(1,000 lbs.)					
		- Furnish and install 4 new air shrouds - Stainless Steel					
		- Including fabrication and shipping					
		- Approximate dimensions					
		- Length: 18-feet					
		- Diameter: 10-feet					
		- Wall Thickness: 9/16-inch					
		- Some disassembly and reassembly of the					
		shroud will be required for installation					
		- Some excavation on the downstream end					
		of the gate chamber will be required					
		(15,600 lbs per air shroud, stainless steel, 62,400 lbs total)					
	3	Furnish and install coaster gate guide extensions - steel	8420	178,200	lbs.	$9.10	$1,621,620.00
		- Furnish and install new guide extensions on					
		on the upstream face of the dam for the outlet					
		works 11.05-feet x 11.05-feet coaster gate.					
		- Encase approximately 30-feet of new guides					
		in the upstream face of the dam for each					
		set of existing guides					
		(9,900 lbs per set of steel guides for 18 sets of					
		existing guides)					
				This Sheet and 86-68420 Total =			**$16,751,820.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
N. Nakamoto	C. Joyce	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
10/15/07	D. Read	8/27/2010	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __3__

FEATURE:	**PROJECT:**
Shasta Lake Water Resources Investigation Feasibility Study **Outlet Works**	**Central Valley Project - CA** **Shasta Division**
	REGION: MP / **ESTIMATE LEVEL:** Feasibility
Most Probable	**WOID:** SHAEF / **PRICE LEVEL:** Apr-10
12.5-ft Dam Raise	

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Combination, reversing motor starter	8430	4	EA	$7,000.00	$28,000.00
		480 volt, 3-phase, NEMA size 1 starter					
		35 amp thermal-magnetic circuit breaker					
		NEMA type 12 enclosure					
	2	Rigid metal conduit	8430				
		3/4-inch		160	FT	$26.00	$4,160.00
	3	600 volt insulated cable, single-conductor, stranded-	8430	800	FT	$2.00	$1,600.00
		copper					
		12 AWG					
				This Sheet and 86-68430 Total =			**$33,760.00**

QUANTITIES		**PRICES**	
BY M. Schuh	**CHECKED** C. Maurer	**BY** Jeff Morris	**CHECKED** Kelly Brom
DATE PREPARED 10/4/07	**PEER REVIEW** G. Girgis	**DATE PREPARED** 8/27/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**SHAEF**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		86-68120 Sheet (excavation/demolition/salvaging, TCD extension)					$11,871,495.20
		86-68430 Sheet (electrical features associated with TCD)					$147,000.00
		86-68410 Sheet (mechanical features associated with TCD)					$6,967,500.00
		Subtotal 1					**$18,985,995.20**
		Mobilization	5%	+/-			$950,000.00
		Subtotal 1 with Mobilization					**$19,935,995.20**
		Escalation to Notice to Proceed (NTP): None assumed.	0%				$0.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					**$19,935,995.20**
		Design Contingencies	10%	+/-			**$1,625,412.80**
		Subtotal 3 = Subtotal 2 + Design Contingencies					$21,561,408.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			**$438,592.00**
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 4 = Subtotal 3 + APS					$22,000,000.00
		CONTRACT COST					**$22,000,000.00**
		Construction Contingencies	20%	+/-			$5,000,000.00
		FIELD COST					**$27,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW / DATE**
-	See Group Sheets	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		STRUCTURAL NOTES:					
		1. All new miscellaneous metalwork galvanized.					
		2. All new steel shapes and plates coated.					
		3. Assumed all items installed in dry.					
		4. For TCD Modifications, see TM Figures TCD1 thru-TCD4.					
	1	**Remove Existing Hoist Platform Steel:**		759,700	LBS	$0.60	$455,820.00
		(Dwgs. 214-D-22190 thru -22196 & -22517 thru -22530)					
		Rolled steel W-shapes (ASTM A 36)	86-68120	260,625	LBS	Included above	
		Rolled steel C-, MC- and L-shapes (ASTM A 36)	86-68120	68,250	LBS	Included above	
		Steel plate (3/8" to 2") (ASTM A 36) (Plate Girders)	86-68120	430,825	LBS	Included above	
	2	**Dispose/Salvage existing Hoist Platform Steel:**		20,200	LBS	$0.07	$1,414.00
		(Side gate hoist platform support steel, Dwg. 214-D-22196)					
		Rolled steel W-shapes (ASTM A 36)	86-68120	19,900	LBS	Included above	
		Rolled steel C-, MC- and L-shapes (ASTM A 36)	86-68120	300	LBS	Included above	
	3	**Remove Existing Hoist Platform Miscellaneous Metalwork:**		162,660	LBS	$0.60	$97,596.00
		(Dwgs. 214-D-22135, -22384, -22386, -22389, & -22511)					
		Rolled C- and L-shapes (ASTM A36)	86-68120	2,000	LBS	Included above	
		Grating (2" x 3/16" @ 1-3/16" ctrs, Wt/SF = 15.50)	86-68120	9,690	SF	Included above	
		Grating (1-1/4" x 3/16" @ 1-/16" ctrs, Wt/SF = 9.75)	86-68120	50	SF	Included above	
		Stair Treads (1-1/4" x 3/16" @ 9 3/4")	86-68120	340	LBS	Included above	
		Guardrails 1-1/2" Std. Pipe (ASTM A 53)	86-68120	8,825	LBS	Included above	
		Ladders 1-1/4" Std. Pipe (ASTM A 53)	86-68120	110	LBS	Included above	
		Steel plate (3/16" to 3/4") (ASTM A 36)	86-68120	700	LBS	Included above	
	4	**Dispose/Salvage Existing Hoist Platform Miscellaneous Metalwork:**		12,570	LBS	$0.10	$1,257.00
		(Dwgs. 214-D-22135, -22384, -22386, -22389, & -22511)					
		Rolled C- and L-shapes (ASTM A36)	86-68120	1,300	LBS	Included above	
		Grating (2" x 3/16" @ 1-3/16" ctrs, Wt/SF = 15.50)	86-68120	585	SF	Included above	
		Grating (1-1/4" x 3/16" @ 1-/16" ctrs, Wt/SF = 9.75)	86-68120	50	SF	Included above	
		Stair Treads (1-1/4" x 3/16" @ 9 3/4")	86-68120	340	LBS	Included above	
		Guardrails 1-1/2" Std. Pipe (ASTM A 53)	86-68120	1,120	LBS	Included above	
		Ladders 1-1/4" Std. Pipe (ASTM A 53)	86-68120	110	LBS	Included above	
		Steel plate (3/16" to 3/4") (ASTM A 36)	86-68120	140	LBS	Included above	
	5	**Remove and Dispose Chain Link Fence:**	86-68120	1	LS	$520.00	$520.00
		(Dwgs. 214-D-22135 & 40-D-5410)					
		7+1-ft fence (w/3 strand & 4-point barbed wire) 40 LF					
		Sheet Subtotal =					**$556,607.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		STRUCTURAL (Continued)					
	6	**Remove Existing Trashrack Gate Guides (Side SS1):**		24,410	LBS	$0.60	$14,646.00
		(Dwgs. 214-D-22150 & -22154)					
		Rolled steel W-shapes (ASTM A 36)	86-68120	6,900	LBS	Included above	
		Rolled steel W-shapes (ASTM A 572/50)	86-68120	17,510	LBS	Included above	
	7	**Dispose/Salvage Existing Trashrack Gate Guides:**		24,410	LBS	$0.07	$1,708.70
		(Dwgs. 214-D-22150 & -22154)					
		Rolled steel W-shapes (ASTM A 36)	86-68120	6,900	LBS	Included above	
		Rolled steel W-shapes (ASTM A 572/50)	86-68120	17,510	LBS	Included above	
	8	**Furnish and Erect new Rigid Frame Steel:**		494,265	LBS	$5.60	$2,767,884.00
		Rolled steel shapes (ASTM A992)	86-68120	321,415	LB	Included above	
		Steel plate (3/4" to 2") (A572 Gr 50)	86-68120	172,850	LB	Included above	
	9	**Modify existing Rigid Frame Bracing:**	86-68120	1	LS	$1,310,000.00	$1,310,000.00
		Welding (assume 5/16" fillet) 1985 LF					
		Steel cover plate (used 3/4") (ASTM A 36) 53,600 Lbs					
		Steel cover plate (used 3/4") (ASTM A 572) 2,790 Lbs					
		Sand blast flange surfaces: 27,890 Sq. Ft					
		Re-coat flange surfaces: 27,890 Sq. Ft					
	10	**Reinstall existing Hoist Platform Steel:**		739,500	LBS	$1.40	$1,035,300.00
		Rolled steel W-shapes (ASTM A 36)	86-68120	240,725	LBS	Included above	
		Rolled steel C-, MC- and L-shapes (ASTM A36)	86-68120	67,950	LBS	Included above	
		Steel plate (3/16" to 3/4") (ASTM A36) (Plate Girders)	86-68120	430,825	LBS	Included above	
	11	**Furnish and erect new Hoist Platform Steel:**		49,290	LBS	$7.00	$345,030.00
		Rolled steel W-shapes (ASTM A 992 Gr 50)	86-68120	2,560	LBS	Included above	
		Steel plate (3/8" to 2") (ASTM A36) (Mod Plate Girders)	86-68120	8,000	LBS	Included above	
		Steel plate (3/8" to 2") (ASTM A36) (LL Plate Girders)	86-68120	38,730	LBS	Included above	
	12	**Reinstall existing Miscellaneous Metalwork:**		150,090	LBS	$1.05	$157,594.50
		Rolled steel C- and L-shapes (ASTM A 36)	86-68120	700	LBS	Included above	
		Grating (2" x 3/16" @ 1-3/16" ctrs, Wt/SF = 15.50)	86-68120	9,105	SF	Included above	
		Guardrail (1-1/2-inch Std. pipe)	86-68120	7,705	LBS	Included above	
		Steel plate (3/16" to 3/4") (ASTM A 36)	86-68120	560	LBS	Included above	
	13	**F&I Waterproof Access Doors (Dam Crest-to-TCD)**					
		(2 Doors, Each Opening 3'-6" x 7'-0", Assumed 20 psf)	86-68120	1,000	LBS	$14.50	$14,500.00
		Sheet Subtotal =					**$5,646,663.20**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		STRUCTURAL (Continued)					
	14	**F&I new Miscellaneous Metalwork:**		30,950	LBS	$6.60	$204,270.00
		Grating (2" x 3/16" @ 1-3/16" ctrs, Wt/SF = 15.50)	86-68120	1,075	SF	Included above	
		Grating (1-1/4" x 3/16" @ 1-/16" ctrs, Wt/SF = 9.75)	86-68120	200	SF	Included above	
		Guardrail (1-1/2-inch Std. pipe, ASTM A53)	86-68120	3,400	LBS	Included above	
		Ladders (1-1/2" Std. pipe, ASTM A53)	86-68120	1,455	LBS	Included above	
		Rolled steel C- and L-shapes (ASTM A 36)	86-68120	6,155	LBS	Included above	
		Steel plate (3/16" to 3/4") (ASTM A 36)	86-68120	1,325	LBS	Included above	
	15	**F&I new steel Cladding Panels (Side SS1 & SS5):**	86-68120	1	LS	$880,000.00	$880,000.00
		(Dwgs. 214-D-22317, -22320 & -22379)					
		Steel shapes & plates 129,135 Lbs (assumed 37 psf)					
	16	**F&I to Extend Side Cladding/Gate Guides (SS1 & SS5):**	86-68120	1	LS	$370,000.00	$370,000.00
		(Dwgs. 214-D-22150, -22154, -22158, & -22162)					
		Steel plates (1/2" to 1" Pl. A572 Gr 50 guides) 5,035 Lbs					
		Stainless steel wear strips (1/4" x 3", A304) 610 LF					
		Structural W-Shapes (ASTM A992 Gr 50) 38,310 Lbs					
	17	**F&I to Extend Front Gate Guides (Plate Girders):**	86-68120	1	LS	$2,600,000.00	$2,600,000.00
		(Dwgs. 214-D-22411, -22197 thru -22201)					
		Steel plates (1/2" to 1-3/8" Pl. A36) 289,160 Lbs					
		Stainless steel wear strips (1/4" x 3", A304) 2,280 LF					
		Stainless steel wear strips (1/4" x 6", A304) 2,280 LF					
	18	**Extend new Parapet to Conceal Hoist Equipment**	86-68120	1	LS	$175,000.00	$175,000.00
		(Art wall - Concrete formed artistic features)					
		(Extend from EL. 1102.0 to El. 1107.8 for ~ 294 feet @ TCD's)					
		(Assumed f'c = 4,000 psi reinforced concrete)					
		Concrete: 89 CY					
		Reinforcement: 13,350 Lbs (based on 150 Lbs/CY)					
		Cement: 25 Tons (based on 0.282 Tons/CY)					
	19	**F&I Frame and Waterproof Cover in New Parapet**	86-68120	1	LS	$2,000.00	$2,000.00
		(Access to LL Parallel Shaft Speed Reducer)					
		(Required for O&M Activity, Assumed 2' x 2' opening)					
		Rolled steel L-shapes (ASTM A 36) 60 Lbs					
		Steel plate (3/16) (ASTM A 36) 40 Lbs					
		Sheet Subtotal =					**$4,231,270.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		STRUCTURAL (Continued)					
		F&I Permanent New Rigid Frame Dam Connections (Corbel):					
		(6 DC's, SS1 thru SS5, at new RF main box girders)					
		(1 DC, Above LL Intake No. 1, at new RF main box girder)					
	20	Furnish and Place Reinforced Concrete					
		(Place behind forms attached to face of dam)					
		(2.5-ft high x 3-ft wide x 1.5-ft deep/1 per Rigid Frame)					
		Concrete (Assumed f'c = 4,000 psi concrete)	86-68120	3	CY	$11,000.00	$33,000.00
		Reinforcement (based on 150 Lbs/DC & fy = 60 ksi)	86-68120	1,100	LBS	$4.20	$4,620.00
		Cement (based on 0.282 Tons/CY ~ 6 sack mix)	86-68120	1	TON	$140.00	$140.00
	21	F&I Rigid Frame Dam Connection Steel:		7,680	LBS	$10.50	$80,640.00
		Steel plate (3/4" to 1") (ASTM A572 Gr. 50)	86-68120	6,540	LBS	Included above	
		Steel forgings (5" diameter pins, eyebolts, nuts,	86-68120	940	LBS	Included above	
		sleeve nuts) (ASTM A 668F)					
		Rolled steel L-shapes (ASTM A 36)	86-68120	200	LBS	Included above	
	22	Drill 2.5-inch dia holes for 1-3/8 inch concrete anchor bolts,	86-68120	168	LF	$165.00	$27,720.00
	23	F&I 1-3/8-inch dia. Williams Hollowcore	86-68120	28	EA	$1,500.00	$42,000.00
		(Epoxy coated R1H anchors w/6.0 foot embed)					
		F&I Hollow Core Anchor Below Existing DC2 & DC14 Connections:					
	24	Drill 3.5-inch dia. holes for 2-inch concrete anchor bolts,	86-68120	36	LF	$230.00	$8,280.00
	25	F&I 2-inch dia. Williams Hollowcore	86-68120	6	EA	$2,700.00	$16,200.00
		(Epoxy coated R1H anchors w/6.0 foot embed)					
	26	**F&I New Side Closure/Cladding Panels (SS5):**					
		(Dwgs. 214-D-22379)					
		Steel shapes and plates (assume 20 psf, ASTM A 36)	86-68120	1,060	LBS	$9.00	$9,540.00
		Rolled steel L-shapes (ASTM A 36)	86-68120	565	LBS	$9.00	$5,085.00
		Drill holes for anchors (min 6" emb, 1" dia. anchors)	86-68120	6	LF	Included below in anchors	
		F&I expansion anchors (Assumed 1" dia.)	86-68120	12	EA	$250.00	$3,000.00
		Sheet Subtotal =					**$230,225.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__5__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		STRUCTURAL (Continued)					
		F&I Debris Boom:	86-68120				
	27	Extend existing Trolley Rails on Dam Face:					
		W-Shape structural steel (ASTM A 992 Gr 50) (Coated)	86-68120	2,800	LBS	$7.50	$21,000.00
	28	Retrofit existing Trolleys for Floatation:					
		L-Shape structural steel (ASTM A 36) (Coated)	86-68120	200	LBS	$20.00	$4,000.00
		2436B Utility Float w/ 400# buoyancy	86-68120	4	EA	$2,000.00	$8,000.00
		(Rolyan Buoys and Floats, 800-558-8633)					
	29	Run continuous Wire Rope between Anchor Buoys and Trolleys					
		to take Main Anchor Tension					
		1-1/2 inch diameter 6x37 galv, extra improved plow	86-68120	1,600	LF	$45.00	$72,000.00
		steel, IWRC (Type I, Class 3)					
	30	Extend Mooring and Marker Lines to Anchors 1, 2, and 3					
		1-inch dia. 6x37 galv, extra improved plow steel, IWRC	86-68120	150	LF	$47.00	$7,050.00
		1-1/2 inch dia 6x37 galv, extra improved plow					
		steel, IWRC (Type I, Class 3)	86-68120	100	LF	$80.00	$8,000.00
	31	F&I Debris Boom with 20-ft Precast Concrete Boomsticks	86-68120	65	EA	$4,700.00	$305,500.00
		Concrete per boomstick= 1.5 CY (incl. cement and WWF)					
		Polystyrene foam per boom stick= 45 CF					
		1-inch chain, Type 1, Class 4, zinc-coated = 3 ft/stick					
	32	F&I Anchor Mooring Buoys	86-68120	3	EA	$5,500.00	$16,500.00
		Type MB-Mooring buoy manufactured by Seaward Int'l					
		w/ 10,000 lbs buoyancy (540-667-5191)					
	33	F&I Anchor Marker Buoys	86-68120	3	EA	$4,400.00	$13,200.00
		Type MB-Mooring buoy manufactured by Seaward Int'l					
		w/ 2,500 lbs buoyancy (540-667-5191)					
	34	F&I Gate through Debris Boom					
		HSS hollow shapes ASTM A500, Gr B (galvanized)	86-68120	1,200	LBS	$5.90	$7,080.00
		2436C Utility Float w/ 400# buoyancy	86-68120	2	EA	$2,200.00	$4,400.00
		(Rolyan Buoys and Floats, 800-558-8633)					
		Sheet Subtotal =					**$466,730.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__6__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		STRUCTURAL (Continued)					
	35	**Furnish Marine Trash Skimmer system to remove debris**	86-68120	1	LS	$740,000.00	$740,000.00
		from reservoir and transfer to land based dump trucks:					
		TrashCat 12000 Series System including:					
		Marineskimmer Model MS16-12000B					
		Shore Conveyor Model #C-800 or #AC-800					
		Tilt-Deck Trailer Model T-12T					
		Power Pack Model P-220T					
		Manufactured by United Marine International					
		Ph: 800-243-1406					
		Web: www.trashskimmer.com					
		This Sheet Subtotal =					**$740,000.00**
		Sheet 1 of 6 Subtotal =					**$556,607.00**
		Sheet 2 of 6 Subtotal =					**$5,646,663.20**
		Sheet 3 of 6 Subtotal =					**$4,231,270.00**
		Sheet 4 of 6 Subtotal =					**$230,225.00**
		Sheet 5 of 6 Subtotal =					**$466,730.00**
				Total 86-68120 =>			**$11,871,495.20**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Rodney Barthel	Brad VanOtterloo	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
6/4/2010	Alfred Bernstein, P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__7__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Remove existing electrical control equipment	8430	1	LS	$17,000.00	$17,000.00
		Includes 5 motor control centers and 1 distribution switchboard					
	2	Reinstall existing electrical control equipment	8430	1	LS	$110,000.00	$110,000.00
		Includes 5 motor control centers and 1 distribution switchboard					
	3	Extend existing power feeder	8430				
		600 volt power cable, 1/c stranded-copper, 350 kcmil		300	FT	$30.00	$9,000.00
		Rigid steel conduit, 3-inch		100	FT	$110.00	$11,000.00
		Assumptions: The existing TCD power source will be extended and reused.					
		This Sheet and Total for 86-68430 =>					**$147,000.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Mike Schuh	Eric Vaughn	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
10/24/2007 - Updated 6/2010	George Girgis	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__8__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		The following items shall be removed from the					
		Temperature Control Device:					
	1	**Trashrack, El. 1067.7 to El. 1047.7 (214-D-22258)**	8410	138,000	lbs.	$0.40	$55,200.00
		Remove existing trashracks down to El. 1047.7					
		10 panels @ 13,800 lbs. per panel					
	2	**Trashrack, Shutter No. 1 (214-D-22262)**	8410	24,000	lbs.	$0.40	$9,600.00
		Remove existing trashrack					
		Will be replaced by cladding (8120)					
	3	**Trashrack, Shutter No. 5 (214-D-22261)**	8410	33,000	lbs.	$0.40	$13,200.00
		Remove existing trashrack					
		Will be replaced by cladding (8120)					
		The following items should be installed on the					
		Temperature Control Device:					
	4	**Furnish and install new barrier panels**	8410	465,000	lbs.	$6.30	$2,929,500.00
		El. 1047.7 to El. 1094.7					
		Welded structural carbon steel construction					
		Protective coating					
		5 Units @ 93,000 lbs. per unit					
		Sheet Subtotal =					**$3,007,500.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Wayne Delzer	Ryan Stephen	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
11/27/2007 - Updated 6/2010	John Grass	11/10/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__9__ OF __9__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Temperature Control Device (TCD) Modification

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	5	***TCD HOISTS:***					
	5a	Remove from existing location and store	8410	1	LS	$280,000.00	$280,000.00
		- 17 hoists total, weight=57 kips/ea					
		- 17x57 = 969 kips total					
		- includes disassembly into components:					
		32 rope drums					
		20 sheave pairs					
		17 worm-gear reducers					
		17 electric motors					
		32 parallel shaft reducer gearboxes					
		84 flexible couplings					
		17 instrumentation assemblies					
		68 wire ropes					
		steel shafts, bearings, supports					
		- *Dispose/slavage ropes, drums					
	5b	F&I new wire ropes to accommodate	8410	1	LS	$870,000.00	$870,000.00
		additional 20.5 ft height (each Hoist)					
		SG: 1000 ft of 1.5" diam rope x 2 hoists					
		MG: 800 ft of 1.625" diam rope x 5 hoists					
		UG: 650 ft of 1.5" diam rope x 5 hoists					
		PR: 1400 ft of 1.625" diam rope x 5 hoists					
		All rope is:					
		6x37, IWRC, XIP, galvanized					
		terminated with speltered sockets					
	5c	Replace existing hoist drums (32)	8410	1	LS	$2,200,000.00	$2,200,000.00
		SG: 11000 lbs/drum x 1 /hoist x 2 hoists					
		MG: 6000 lbs/drum x 2 /hoist x 5 hoists					
		UG: 3200 lbs/drum x 2 /hoist x 5 hoists					
		PR: 10500 lbs/drum x 2 /hoist x 5 hoists					
		total wt = 220,000 lbs (weights are for replacement drums)					
	5d	Reassemble and reinstall 17 hoists on new	8410	1	LS	$610,000.00	$610,000.00
		hoist deck					
		1000 kips approx total weight					
		This Sheet Subtotal =					**$3,960,000.00**
		Sheet 1 of 2 Subtotal =					**$3,007,500.00**
		This Sheet and Total for 86-68410 =					**$6,967,500.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Alex Ritt	Ryan Stephen	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW / DATE**
11/27/2007 - Updated 6/2010	John Grass	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Powerplant and Penstocks

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

Most Probable

Summary 12.5-ft Dam Raise

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Powerplant and Penstocks consists of:					
		Relocate hydraulic hoist systems					
		Furnish and install 5 extra lengths of stainless steel stems					
		Furnish and install new guide tracks for the 15' x 19.05' penstock coaster gates					
		Remove existing coaster gate oil pump controlboards					
		Reinstall existing coaster gate oil pump controlboards					
		Extend existing coaster gate controlboard power feeder					
		86-68420 Sheet (relocate hydraulic systems)					$740,000.00
		86-68430 Sheet (removal and reinstall of existing coaster oil pump controlboards)					$58,870.00
		(extend existing coaster gate controlboard power feeders)					
		Subtotal 1					$798,870.00
		Mobilization	5%	+/-			$40,000.00
		Subtotal 1 with Mobilization					**$838,870.00**
		Design Contingencies	10%	+/-			$83,887.00
		Subtotal 2 = Subtotal 1 + Design Contingencies					$922,757.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			$18,455.00
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 3 = Subtotal 2 + APS					$941,212.00
		CONTRACT COST					**$940,000.00**
		Construction Contingencies	20%	+/-			$210,000.00
		FIELD COST					**$1,150,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES

BY	CHECKED
See Group Sheets	See Group Sheets
DATE PREPARED	**PEER REVIEW**
---	See Group Sheets

PRICES

BY	CHECKED
Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**
08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _1_ OF _2_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Powerplant and Penstocks

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Relocate hydraulic hoist systems		105,000	lbs	$3.00	$315,000.00
		Remove and reinstall the hydraulic cylinder hoist					
		systems for the 15' x 19.05' penstock coaster gates.					
		5 Hoist systems (21,000 lbs. each)					
	2	Furnish and install 5 extra lengths of stainless steel stems		12,500	lbs	$14.00	$175,000.00
		to connect the existing stems to the relocated hoists					
		5 - 20-foot lengths of 6-1/2-inch diameter					
		stainless steel stems (2,500 lbs. each)					
	3	Furnish and install new guide tracks for the 15' x 19.05'		1	LS	$250,000.00	$250,000.00
		penstock coaster gates					
		-10 new bronze guide tracks, 20-feet long each					
		(51 lbs. per foot of track: 10,200 lbs total)					
		Guide tracks anchored with 1-1/2-inch diameter					
		steel anchor bolts, approx. 200 sets of anchors					
		(24 lbs. per set of anchor: 4,800 lbs total)					
				This Sheet and 86-68420 Total =			**$740,000.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Nathan Nakamoto	C. Sayer	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
11/15/07	Don Read	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _2_ OF _

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Powerplant and Penstocks

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Remove existing coaster gate oil pump controlboards	8430	5	EA	$4,000.00	$20,000.00
	2	Reinstall existing coaster gate oil pump controlboards	8430	5	EA	$5,800.00	$29,000.00
	3	Extend existing coaster gate controlboard power feeder: 600 volt power cable, 8 AWG	8430	150	FT	$3.70	$555.00
	4	Extend existing coaster gate controlboard power feeder: 600 volt power cable, 6 AWG	8430	450	FT	$4.70	$2,115.00
	5	Extend existing coaster gate controlboard power feeder: Rigid steel conduit, 1-inch	8430	150	FT	$48.00	$7,200.00
					This Sheet and 86-68420 Total =		**$58,870.00**

QUANTITIES

BY	CHECKED
Mike Schuh	Cory Maurer
DATE PREPARED	**PEER REVIEW**
12/12/07	George Girgis

PRICES

BY	CHECKED
Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**
08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
UPRR Railroad Realignment

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Subtotal 1					$5,241,770.00
		Mobilization	5%	+/-			$260,000.00
		Subtotal 1 with Mobilization					**$5,501,770.00**
		Design Contingencies	10%	+/-			$550,177.00
		Subtotal 2 = Subtotal 1 + Design Contingencies					$6,051,947.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			$121,039.00
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 3 = Subtotal 2 + APS					$6,172,986.00
		CONTRACT COST					**$6,200,000.00**
		Construction Contingencies	20%	+/-			$1,200,000.00
		FIELD COST					**$7,400,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Nick Clough, P.E.	Mark Leavitt, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
5/6/2010	Jesus G. Romero, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _1_ OF _1_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
UPRR Railroad Realignment

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Clearing and Grubbing	86-68140	44,000	SY	$0.75	$33,000.00
	2	Stripping (6" depth)	86-68140	7,400	CY	$5.30	$39,220.00
	3	Excavation	86-68140	35,000	CY	$6.10	$213,500.00
	4	Compacted Backfill	86-68140	7,500	CY	$13.50	$101,250.00
	5	Railroad Track (136lb/yd(linear), 2 rails, 8400 track feet)	86-68140	390	Tons	$3,000.00	$1,170,000.00
	6	Concrete Railroad Ties (9ftx10inx12in)	86-68140	4,200	EA	$270.00	$1,134,000.00
	7	Ballast (22in-12in depth at 135 lb/ft^3)	86-68140	13,500	Tons	$40.00	$540,000.00
	8	Sub-Ballast (12" depth at 135 lb/ft^3)	86-68140	13,000	Tons	$40.00	$520,000.00
	9	Removal of Existing Railroad Track (131 lb/yd, 2 rails, 8400 track feet)	86-68140	370	Tons	$590.00	$218,300.00
	10	Removal of Timber Railroad Ties (9.5ftx12inx10in)	86-68140	5,100	EA	$55.00	$280,500.00
	11	Removal of Ballast (12in-3in depth at 135 lb/ft^3)	86-68140	6,400	Tons	$155.00	$992,000.00
		SUBTOTAL THIS SHEET					**$5,241,770.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Nick Clough, P.E.	Mark Leavitt, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
5/6/2010	Jesus G. Romero, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		537.5, 5 ft long, five span structure, supported on drilled shafts					
		Sheet 1					$2,036,800.00
		Sheet 2					$3,541,747.50
		Sheet 3					$3,401,262.50
		Sheet 4					$3,671,562.50
		Sheet 5					$2,297,700.00
		Sheet 6					$10,878,200.00
		Sheet 7					$5,188,000.00
		Sheet 8					$800,000.00
		Subtotal 1					$31,815,272.50
		Mobilization	10%	+/-			$3,200,000.00
		Subtotal 1 with Mobilization					**$35,015,272.50**
		Design Contingencies	15%	+/-			$5,252,290.50
		Subtotal 2 = Subtotal 1 + Design Contingencies					$40,267,563.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			$805,352.00
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 3 = Subtotal 2 + APS					$41,072,915.00
		CONTRACT COST					**$41,000,000.00**
		Construction Contingencies	25%	+/-			$10,000,000.00
		FIELD COST					**$51,000,000.00**
	Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.						
	Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.						

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Jesus G. Romero P.E.	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/22/2010	Joseph M. Gemperline	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _1_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		The existing bridge will be replaced with a new bridge. The new bridge has 5 spans (108'-3", 107'-0", 107'-0". 107'-0", & 108'-3") with an overall length of 537'-6" (back to back of abutments). The superstructure consists of four 9'-0" deep steel plate girders with cast-in-place reinforced concrete deck. Piers and abutments are supported on drilled shafts.					
		Mobilization	86-68140	1	LS	Included on sheet 8.	
		Earthwork					
		Excavation for structures (abutments+wingwalls)	86-68140	630	YD^3	Included below	
		Backfill about structures (abutments+wingwalls)	86-68140	2,200	YD^3	$140.00	$308,000.00
		Compact backfill around structures (abutments+ww)	86-68140	2,200	YD^3	Included above	
		ABUTMENT #1 - Structure is stem wall (~50'H x 10'T x 25'W), beam seat type abutment supported on two, 6-foot diameter drilled shafts. Wingwalls (~33'L x 43'H x 3'T) are connected to stem wall and extend back, perpendicular to stem wall to form a "box" that contains and supports fill and railway subgrade (similar to the existing bridge).					
		Concrete for Abutment 1, f'c = 4,000 psi					
		Substructure (abutment and wingwalls)	86-68140	650	YD^3	$1,500.00	$975,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	183	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	162,500	LBS	$2.40	$390,000.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Drilled Shafts					
		6'-0" Diameter @ abutments, A_c = 28.27 ft^2/lf	86-68140	107	LF	$3,400.00	$363,800.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement, concrete, reinforcement and integrity testing. Drilled shafts require 112 cy concrete, 32 tons cement, and 51,000 lbs epoxy coated reinforcement (~450 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	112	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$2,036,800.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _2_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement
537.5, 5 ft long, five span structure, supported on drilled sha
Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIERS: Each pier consists of a single 14-foot diameter (A_c = 154 ft^2, V_c = 5.7 cy/lf) column/drilled shaft socketed into bedrock. The reservoir water surface on Shasta Dam fluctuates throughout the year. A reservoir water surface Elevation of 1012.5' is assumed for drilled shaft construction.					
		PIER 1 - Top of column El. 1080.0, Drilled shaft tip El. 872.0'. Overall length (including drilled shaft), L_p ~208.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$3.90	$234,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 67.5 lf), f'c = 4,000 psi).	86-68140	382	YD^3	$1,300.00	$496,600.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	108	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	85,950	LBS	$3.90	$335,205.00
		@ 225 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 21.5 lf), f'c = 4,000 psi).	86-68140	123	YD^3	$370.00	$45,510.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	35	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	27,675	LBS	$3.90	$107,932.50
		@ 225 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, ϕ = 14', f'c = 4,000 psi					
		Drilled shaft length below OGS is 119 lf.	86-68140	119	LF	$17,500.00	$2,082,500.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 680 cy concrete, 192 tons cement, and 153,000 lbs epoxy coated reinf (~225 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	680	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$3,541,747.50**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _3_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 2 - Top of column El. 1080.0, Drilled shaft tip El. 872.0'. Overall length (including drilled shaft), Lp ~208.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$3.90	$234,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 67.5 lf), f'c = 4,000 psi).	86-68140	382	YD^3	$1,300.00	$496,600.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	108	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	85,950	LBS	$3.90	$335,205.00
		@ 225 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 55.5 lf), f'c = 4,000 psi).	86-68140	317	YD^3	$370.00	$117,290.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	89	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	71,325	LBS	$3.90	$278,167.50
		@ 225 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, ϕ = 14', f'c = 4,000 psi					
		Drilled shaft length below OGS is 85 lf.	86-68140	85	LF	$20,000.00	$1,700,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 485 cy concrete, 137 tons cement, and 110,000 lbs epoxy coated reinf (~225 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	485	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$3,401,262.50**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _4_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 3 - Top of column El. 1080.0, Drilled shaft tip El. 872.0'. Overall length (including drilled shaft), Lp ~208.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$3.90	$234,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 67.5 lf), f'c = 4,000 psi).	86-68140	382	YD^3	$1,300.00	$496,600.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	108	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	85,950	LBS	$3.90	$335,205.00
		@ 225 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 34.5 lf), f'c = 4,000 psi).	86-68140	197	YD^3	$370.00	$72,890.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	44,325	LBS	$3.90	$172,867.50
		@ 225 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, ϕ = 14', f'c = 4,000 psi					
		Drilled shaft length below OGS is 106 lf.	86-68140	106	LF	$20,000.00	$2,120,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 605 cy concrete, 170 tons cement, and 136,000 lbs epoxy coated reinf (~225 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	605	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$3,671,562.50**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _5_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 4 - Top of column El. 1080.0, Drilled shaft tip El. 920.0'. Overall length (including drilled shaft), Lp ~160.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$820.00	$164,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$3.00	$180,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (This pier concrete column/drilled shaft can be constructed entirely out of the influence of water surface El. 1012.5. L = 160-106 ~ 54 lf), f'c = 4,000 psi).	86-68140	308	YD^3	$850.00	$261,800.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	87	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	69,300	LBS	$3.00	$207,900.00
		@ 225 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, ϕ = 14', f'c = 4,000 psi					
		Drilled shaft length below OGS is 106 lf.	86-68140	106	LF	$14,000.00	$1,484,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 605 cy concrete, 170 tons cement, and 136,000 lbs epoxy coated reinf (~225 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	605	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$2,297,700.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _6_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ABUTMENT #2 - Structure is stem wall (~42'H x 10'T x 25'W), beam seat type abutment supported on two, 6-foot diameter drilled shafts. Wingwalls (~33'L x 43'H x 3'T) are connected to stem wall and extend back, perpendicular to stem wall to form a "box" that contains and supports fill and railway subgrade (similar to the existing bridge).					
		Concrete for Abutment 2, f'c = 4,000 psi					
		Substructure (abutment and wingwalls)	86-68140	570	YD^3	$1,500.00	$855,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	161	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	142,500	LBS	$2.40	$342,000.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Drilled Shafts					
		6'-0" Diameter @ abutments, A_c = 28.27 ft^2/lf	86-68140	123	LF	$3,400.00	$418,200.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement, concrete, reinforcement and integrity testing. Drilled shafts require 129 cy concrete, 37 tons cement, and 58,000 lbs epoxy coated reinforcement (~450 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	129	YD^3	Included above	
		SUPERSTRUCTURE					
		Steel for girders, Fy = 50 ksi, ASTM A709W	86-68140	2,250,000	LBS	$3.70	$8,325,000.00
		Structural concrete, f'_c = 4,000 psi	86-68140	350	YD^3	$1,900.00	$665,000.00
		Furnishing and handling cementatious material	86-68140	99	Tons	Included above	
		Furnishing and placing reinforcment bars (300 lbs/cy)	86-68140	105,000	LBS	$2.60	$273,000.00
		(fy = 60 ksi, epoxy coated)					
		SUBTOTAL THIS SHEET					**$10,878,200.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _7_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Removal of Existing Concrete and Reinforcement	86-68140	185	YD^3	$400.00	$74,000.00
		in Abutment 1					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Abutment down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	3,000	YD^3	$1,200.00	$3,600,000.00
		in Pier 1					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	1,200	YD^3	$1,200.00	$1,440,000.00
		in Pier 2					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	185	YD^3	$400.00	$74,000.00
		in Abutment 2					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Abutment down to 3'					
		below ground surface.					
		SUBTOTAL THIS SHEET					**$5,188,000.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Joseph M. Gemperline	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/22/2010	Jesus G. Romero P.E.	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET _8_ OF _8_

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Doney Creek UPRR Bridge Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Removal of Existing Steel Truss Bridge	86-68140	2,000,000	LBS	$0.40	$800,000.00
		Bridge consists of members with riveted connections.					
		The structural steel grade is unknown, but can					
		assume Fy=33 ksi. The existing steel appears to					
		be painted.					
		SUBTOTAL THIS SHEET					**$800,000.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Joseph M. Gemperline	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**CHECKED**
4/22/2010	Jesus G. Romero P.E.	07/26/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Pit River Bridge Pier 3 and 4 Protection

Most Probable

Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**AF399**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Pit River Bridge Modification					
		(protection of bearings on piers (#3 & #4) in deepest part of old Pit River channel.					
		86-68140 Sheet (bridge protection),					$12,527,848.00
		86-68410 Sheet (bridge protection)					$309,350.00
		Subtotal					**$12,837,198.00**
		Mobilization				10%	$1,300,000.00
		Subtotal w/ Mobilization					**$14,137,198.00**
		Design Contingencies				15%	$2,084,825.00
		Allowance for Procurement Strategy				2%	$277,977.00
		Type of solicitation assumed is: Request for Proposal					
		CONTRACT COST					**$16,500,000.00**
		Construction Contingencies				25%	$4,500,000.00
		FIELD COST					**$21,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	10/6/2010	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Pit River Bridge Pier 3 and 4 Protection

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**AF399**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Pier 3					
	1	Core 4-inch diameter hole through existing pier for	86-68140	1,100	LF	$450.00	$495,000.00
		3-#11 bundled bars. 60 holes are 15-feet long and 40					
		holes are 5 feet long. Total number of holes is 100 for					
		a total length of 900 + 200 = 1,100 lf					
	2	Surface preparation of existing concrete consisting of	86-68140	1,172	SF	$7.00	$8,204.00
		low pressure water (pressure less that 5,000 psi)					
		cleaning. Perimeter is 146.5 feet, height is 8 feet.					
	3	Hydrotite waterstop, CJ-0725-3K (Greenstreak)	86-68140	300	LF	$20.00	$6,000.00
	4	Furnish and place concrete, f'c = 6,000 psi @ 28 days	86-68140	1,460	CY	$2,400.00	$3,504,000.00
		(add 10% to estimate for mix proportion and					
		admixtures to increase water tightness)					
	5	Furnish and install 60 ksi epoxy coated reinforcement	86-68140	438,000	LBS	$4.80	$2,102,400.00
	6	Furnishing and handling cement (.282 tons/cy)	86-68140	412	Tons	$360.00	$148,320.00
	7	Furnishing sump pump, alarm system and piping	86-68140	2	EA	See Group 86-8410 Sheets	
		Pier 4					
	8	Core 4-inch diameter hole through existing pier for	86-68140	1,100	LF	$450.00	$495,000.00
		3-#11 bundled bars. 60 holes are 15-feet long and 40					
		holes are 5 feet long. Total number of holes is 100 for					
		a total length of 900 + 200 = 1,100 lf					
	9	Surface preparation of existing concrete consisting of	86-68140	1,172	SF	$7.00	$8,204.00
		low pressure water (pressure less than 5,000 psi)					
		cleaning. Perimeter is 146.5 feet, height is 8 feet.					
	10	Furnish and place concrete, f'c = 6,000 @ 28 days	86-68140	1,460	CY	$2,400.00	$3,504,000.00
		(add 10% to estimate for mix proportion and					
		admixtures to increase water tightness)					
	11	Furnish and install 60 ksi epoxy coated reinforcement	86-68140	438,000	LBS	$4.80	$2,102,400.00
	12	Furnishing and handling cement (.282 tons/cy)	86-68140	412	Tons	$360.00	$148,320.00
	13	Furnishing sump pump, alarm system and piping	86-68140	2	EA	See Group 86-8410 Sheets	
	14	Hydrotite waterstop, CJ-0725-3K (Greenstreak)	86-68140	300	LF	$20.00	$6,000.00
				This Sheet and 86-68140 Total =			**$12,527,848.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Jesus G. Romero, PE	Nicholas Clough, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
9/27/2010	Joseph Gemperline, PE	10/6/2010	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Pit River Bridge Pier 3 and 4 Protection

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**AF399**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Pier 3					
		Furnish, install, and test the following					
		components:					
	1	Sump pump: Submersible type, cast iron body	8410	2	each	$10,500.00	$21,000.00
		with corrosion resistant components, minimum rated					
		operating performance of 140 gal/min at 33 feet					
		head, automatic float or pressure switch,					
		20-foot electrical cord & plug, single phase,					
		60 Hz, 115 Volts AC.					
	2	Pipe, copper tubing, ASTM B88, Type K, with					
		insulated stainless steel pipe hangers and supports					
		4-inch	8410	20	lin ft	$420.00	$8,400.00
		5-inch	8410	65	lin ft	$750.00	$48,750.00
	3	Pipe fittings, copper or bronze, ASME B16.18 or					
		ASME B16.22, Type K					
		4-inch 90 degree elbow	8410	8	each	$1,450.00	$11,600.00
		5-inch 90 degree elbow	8410	4	each	$4,100.00	$16,400.00
		4 x 4 x 5 reducing tee	8410	1	each	$5,400.00	$5,400.00
		4-inch ball valve	8410	2	each	$2,000.00	$4,000.00
		5"-check valve	8410	1	each	$4,200.00	$4,200.00
	4	High water level alarm, with single float operated switch,	8410	1	each	$29,000.00	$29,000.00
		associated controls and telemetry cabling to					
		telephone line on bridge					
	5	2 protective grates constructed of 1/8" by 1 inch	8410	75	lbs	$78.00	$5,850.00
		galvanized steel each measuring 2.5 ft square by 1 inch					
		deep with bars spaced at 1 inch on center by 4 inches					
		on center with cutouts for sump discharge and cord					
		Sheet Subtotal =					**$ 154,600.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Randall Egan	Ryan Stephen	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
11/19/2007	Dave Hulse	7/26/2010	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Pit River Bridge Pier 3 and 4 Protection

Most Probable

12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**AF399**	**PRICE LEVEL:**	**10-Apr**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Pier 4					
		Furnish, install, and test the following					
		components:					
	6	Sump pump: Submersible type, cast iron body	8410	2	each	$10,500.00	$21,000.00
		with corrosion resistant components, minimum rated					
		operating performance of 140 gal/min at 33 feet					
		head, automatic float or pressure switch,					
		20-foot electrical cord & plug, single phase,					
		60 Hz, 115 Volts AC.					
	7	Pipe, copper tubing, ASTM B88, Type K, with					
		insulated stainless steel pipe hangers and supports					
		4-inch	8410	20	lin ft	$420.00	$8,400.00
		5-inch	8410	65	lin ft	$750.00	$48,750.00
	8	Pipe fittings, copper or bronze, ASME B16.18 or					
		ASME B16.22, Type K					
		4-inch 90 degree elbow	8410	8	each	$1,450.00	$11,600.00
		5-inch 90 degree elbow	8410	4	each	$4,100.00	$16,400.00
		4 x 4 x 5 reducing tee	8410	1	each	$5,400.00	$5,400.00
		4-inch ball valve	8410	2	each	$2,000.00	$4,000.00
		5"-check valve	8410	1	each	$4,200.00	$4,200.00
	9	High water level alarm, with single float operated switch,	8410	1	each	$29,000.00	$29,000.00
		associated controls and telemetry cabling to					
		telephone line on bridge					
	10	2 protective grates constructed of 1/8" by 1 inch	8410	75	lbs	$80.00	$6,000.00
		galvanized steel each measuring 2.5 ft square by 1 inch					
		deep with bars spaced at 1 inch on center by 4 inches					
		on center with cutouts for sump discharge and cord					
		This Sheet Subtotal =					**$154,750.00**
		Sheet 1 Subtotal =					**$154,600.00**
				Total 86-68410 =>			**$309,350.00**

QUANTITIES

BY	CHECKED
Randall Egan	Ryan Stephen
DATE PREPARED	**PEER REVIEW**
11/19/2007	Dave Hulse

PRICES

BY	CHECKED
Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW**
7/26/2010	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge
Most Probable
Summary 12.5-ft Dam Raise

PROJECT:	**Central Valley Project - CA Shasta Division**		
WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		982.0-ft long, nine span structure supported on drilled shafts					
		Sheet 1					$1,301,400.00
		Sheet 2					$912,880.00
		Sheet 3					$2,318,035.00
		Sheet 4					$4,726,400.00
		Sheet 5					$4,955,600.00
		Sheet 6					$4,934,600.00
		Sheet 7					$4,693,400.00
		Sheet 8					$2,083,725.00
		Sheet 9					$819,520.00
		Sheet 10					$21,108,800.00
		Sheet 11					$8,590,700.00
		Sheet 12					$8,432,500.00
		Sheet 13					$1,320,000.00
		Subtotal 1					$66,197,560.00
		Mobilization	10%	+/-			$6,600,000.00
		Subtotal 1 with Mobilization					**$72,797,560.00**
		Design Contingencies	15%	+/-			$10,919,634.00
		Subtotal 2 = Subtotal 1 + Design Contingencies					$83,717,194.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			$1,674,344.00
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 3 = Subtotal 2 + APS					$85,391,538.00
		CONTRACT COST					**$85,000,000.00**
		Construction Contingencies	25%	+/-			$20,000,000.00
		FIELD COST					**$105,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Jesus G. Romero P.E.	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/21/2010	Joseph M. Gemperline	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	Feasibility
		The existing bridge will be replaced with a new bridge. The new bridge has 9 spans (105', 55', 135'. 135, 135', 135', 135', 90' & 57') with an overall length of 982'-0" (back to back of abutments). The superstructure consists of four steel plate girders (varying in depth from 12-ft for the 135-foot spans, to 4-foot for the 55-foot span) with cast-in-place reinforced concrete deck. Piers and abutments are supported on drilled shafts.					
		Mobilization	86-68140	1	LS	Included on sheet 13.	
		Earthwork					
		Excavation for structures (abutments+wingwalls)	86-68140	2,100	YD^3	$50.00	$105,000.00
		Backfill about structures (abutments+wingwalls)	86-68140	1,900	YD^3	Included above	
		Compact backfill around structures (abutments+ww)	86-68140	1,900	YD^3	Included above	
		ABUTMENT #1 - Structure is stem wall (~44'H x 10'T x 25'W), beam seat type abutment supported on two, 6-foot diameter drilled shafts. Wingwalls (~33'L x 34'H x 3'T)are connected to stem wall and extend back, perpendicular to stem wall to form a "box" that contains and supports fill and railway subgrade (similar to the existing Doney Creek UPRR bridge).					
		Concrete for Abutment 1, f'c = 4,000 psi					
		Substructure (abutment and wingwalls)	86-68140	500	YD^3	$1,200.00	$600,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	141	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	125,000	LBS	$2.40	$300,000.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Drilled Shafts					
		6'-0" Diameter @ abutments, A_c = 28.27 ft^2/lf	86-68140	78	LF	$3,800.00	$296,400.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement,, concrete, reinforcement and integrity testing. Drilled shaft require 82 cy concrete, 23 tons cement, and 37,000 lbs epoxy coated reinforcement (~450 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	82	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$1,301,400.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIERS: Piers consist of a single column/drilled shaft (8-foot, 12-foot & 16-foot diameter depending on it's height and location) socketed into bedrock. The reservoir water surface on Shasta Dam fluctuates throughout the year. An Elevation of 1012.5' is assumed for drilled shaft construction.					
		PIER 1 - ϕ = 8', A_c = 50.27 ft^2/ft, V_c = 1.9 cy/lf. (Top of column el 1079.5, Drilled shaft tip El. 973.0'). Overall length (including drilled shaft), L_p ~ 106.5 lf. This column/drilled shaft can be constructed entirely out of the influence of water surface El. 1012.5.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 14' thick by 22.5' high	86-68140	290	YD^3	$660.00	$191,400.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	82	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	87,000	LBS	$2.40	$208,800.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above OGS, L_c = 64 lf), f'c = 4,000 psi).	86-68140	122	YD^3	$1,600.00	$195,200.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	34	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	42,700	LBS	$2.40	$102,480.00
		@ 350 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 42.5 lf.	86-68140	43	LF	$5,000.00	$215,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 82 cy concrete, 23 tons cement, and 28,000 lbs epoxy coated reinforcement (~350 lbs/cy)					
		Rock excavation for drilled shaft (inside casing)	86-68140	82	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$912,880.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 2 - φ = 12', A_c = 113.1 ft2/ft, V_c = 4.2 cy/lf. (Top of column el 1079.0, Drilled shaft tip El. 940.0'). Overall length (including drilled shaft), Lp ~ 139.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 14' thick by 21' high	86-68140	275	YD^3	$1,200.00	$330,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	78	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	82,500	LBS	$3.90	$321,750.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 66.5 lf), f'c = 4,000 psi).	86-68140	280	YD^3	$1,400.00	$392,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	79	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	70,000	LBS	$3.90	$273,000.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 12.5 lf), f'c = 4,000 psi).	86-68140	53	YD^3	$370.00	$19,610.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	15	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	13,250	LBS	$3.90	$51,675.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 60 lf.	86-68140	60	LF	$15,500.00	$930,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 252 cy concrete, 71 tons cement, and 63,000 lbs epoxy coated reinforcement (250 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	250	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$2,318,035.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 3 - φ = 16', A_c = 201.6 ft2/ft, V_c = 7.5 cy/lf. (Top of column el 1081.7, Drilled shaft tip El. 859.0'). Overall length (including drilled shaft), Lp ~ 223.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$4.00	$240,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 69 lf), f'c = 4,000 psi).	86-68140	520	YD^3	$1,100.00	$572,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	147	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	143,000	LBS	$4.00	$572,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 84.0 lf), f'c = 4,000 psi).	86-68140	630	YD^3	$380.00	$239,400.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	178	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	173,250	LBS	$4.00	$693,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 70 lf.	86-68140	70	LF	$31,000.00	$2,170,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 525 cy concrete, 148 tons cement, and 144,000 lbs epoxy coated reinforcement (275 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	525	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$4,726,400.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__5__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 4 - φ = 16', A_c = 201.6 ft2/ft, V_c = 7.5 cy/lf. (Top of column el 1081.7, Drilled shaft tip El. 834.0'). Overall length (including drilled shaft), Lp ~ 248.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$4.00	$240,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 69 lf), f'c = 4,000 psi).	86-68140	520	YD^3	$1,000.00	$520,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	147	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	143,000	LBS	$4.00	$572,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 109.0 lf), f'c = 4,000 psi).	86-68140	820	YD^3	$380.00	$311,600.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	231	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	225,500	LBS	$4.00	$902,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 70 lf.	86-68140	70	LF	$31,000.00	$2,170,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 525 cy concrete, 148 tons cement, and 144,000 lbs epoxy coated reinforcement (275 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	525	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$4,955,600.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__6__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 5 - φ = 16', A_c = 201.6 ft2/ft, V_c = 7.5 cy/lf. (Top of column el 1080.7, Drilled shaft tip El. 834.0'). Overall length (including drilled shaft), Lp ~ 247.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$4.00	$240,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 68 lf), f'c = 4,000 psi).	86-68140	510	YD^3	$1,000.00	$510,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	144	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	140,250	LBS	$4.00	$561,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 109.0 lf), f'c = 4,000 psi).	86-68140	820	YD^3	$380.00	$311,600.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	231	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	225,500	LBS	$4.00	$902,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 70 lf.	86-68140	70	LF	$31,000.00	$2,170,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 525 cy concrete, 148 tons cement, and 144,000 lbs epoxy coated reinforcement (275 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	525	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$4,934,600.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__7__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 6 - φ = 16', A_c = 201.6 ft2/ft, V_c = 7.5 cy/lf. (Top of column el 1079.7, Drilled shaft tip El. 859.0'). Overall length (including drilled shaft), Lp ~ 221.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 18' thick by 12' high	86-68140	200	YD^3	$1,200.00	$240,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	56	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	60,000	LBS	$4.00	$240,000.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 67 lf), f'c = 4,000 psi).	86-68140	505	YD^3	$1,100.00	$555,500.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	142	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	138,875	LBS	$4.00	$555,500.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 84.0 lf), f'c = 4,000 psi).	86-68140	630	YD^3	$380.00	$239,400.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	178	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	173,250	LBS	$4.00	$693,000.00
		@ 275 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 70 lf.	86-68140	70	LF	$31,000.00	$2,170,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 525 cy concrete, 148 tons cement, and 144,000 lbs epoxy coated reinforcement (275 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	525	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$4,693,400.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__8__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 7 - φ = 12', A_c = 113.1 ft2/ft, V_c = 4.2 cy/lf. (Top of column el 1079.0, Drilled shaft tip El. 940.0'). Overall length (including drilled shaft), Lp ~ 139.0 lf.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 14' thick by 13.5' high	86-68140	175	YD^3	$1,200.00	$210,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	49	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	52,500	LBS	$3.90	$204,750.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above El. 1012.5, L = 66 lf), f'c = 4,000 psi).	86-68140	280	YD^3	$1,400.00	$392,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	79	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	70,000	LBS	$3.90	$273,000.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (below El. 1012.5, L = 13.0 lf), f'c = 4,000 psi).	86-68140	55	YD^3	$370.00	$20,350.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	16	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	13,750	LBS	$3.90	$53,625.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 60 lf.	86-68140	60	LF	$15,500.00	$930,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 252 cy concrete, 71 tons cement, and 63,000 lbs epoxy coated reinforcement (250 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	250	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$2,083,725.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__9__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		PIER 8 - φ = 8', A_c = 50.3.1 ft2/ft, V_c = 1.9 cy/lf. (Top of column el 1079.0, Drilled shaft tip El. 973.0'). Overall length (including drilled shaft), Lp ~ 106.0 lf. This column/drilled shaft can be constructed entirely out of the influence of water surface El. 1012.5.					
		Structural concrete for pier cap, f'c = 4,000 psi					
		Pier cap is 25' wide by 14' thick by 17' high	86-68140	220	YD^3	$660.00	$145,200.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	62	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	66,000	LBS	$2.40	$158,400.00
		@ 300 lbs/cy (fy = 60 ksi)					
		Structural concrete for pier (above OGS, L = 36 lf), f'c = 4,000 psi).	86-68140	68	YD^3	$1,600.00	$108,800.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	19	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	23,800	LBS	$2.40	$57,120.00
		@ 350 lbs/cy (fy = 60 ksi)					
		Drilled Shaft, f'c = 4,000 psi					
		Drilled shaft length below OGS is 70 lf.	86-68140	70	LF	$5,000.00	$350,000.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement concrete, reinforcement and integrity testing drilled shaft require 135 cy concrete, 38 tons cement, and 48,000 lbs epoxy coated reinforcement (350 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	135	YD^3	Included above	
		SUBTOTAL THIS SHEET					**$819,520.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__10__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ABUTMENT #2 - Structure is stem wall (~50'H x 10'T x 25'W), beam seat type abutment supported on two, 6-foot diameter drilled shafts. Wingwalls (~33'L x 40'H x 3'T) are connected to stem wall and extend back, perpendicular to stem wall to form a "box" that contains and supports fill and railway subgrade (similar to the existing bridge).					
		Concrete for Abutment 2, f'c = 4,000 psi					
		Substructure (abutment and wingwalls)	86-68140	660	YD^3	$1,200.00	$792,000.00
		Furnish & handle cementatious materials (.282T/cy)	86-68140	186	Tons	Included above	
		Furnishing & handling epoxy coated reinforcement	86-68140	165,000	LBS	$2.40	$396,000.00
		@ 250 lbs/cy (fy = 60 ksi)					
		Drilled Shafts					
		6'-0" Diameter @ abutments, A_c = 28.3 ft^2	86-68140	51	LF	$3,800.00	$193,800.00
		Cost/lf includes mobilization for drilling, drilling, casing and removal of water if required, cement,, concrete, reinforcement and integrity testing. Drilled shaft require 54 cy concrete, 15 tons cement, and 24,000 lbs epoxy coated reinforcement (~450 lbs/cy).					
		Rock excavation for drilled shaft (inside casing)	86-68140	54	YD^3	Included above	
		SUPERSTRUCTURE					
		Steel for girders, Fy = 50 ksi, ASTM A709W	86-68140	4,750,000	LBS	$3.80	$18,050,000.00
		Structural concrete, f'_c = 4,000 psi	86-68140	650	YD^3	$1,800.00	$1,170,000.00
		Furnishing and handling cementatious material	86-68140	183	Tons	Included above	
		Furnishing and placing reinforcment bars (300 lbs/cy)	86-68140	195,000	LBS	$2.60	$507,000.00
		(fy = 60 ksi, epoxy coated)					
		SUBTOTAL THIS SHEET					**$21,108,800.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Roman M. Koltuniuk, P.E.	Jesus G. Romero, PE	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/16/2010	Nick Clough, PE	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__11__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Removal of Existing Concrete and Reinforcement	86-68140	100	YD^3	$500.00	$50,000.00
		in Abutment 1					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Abutment down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	390	YD^3	$380.00	$148,200.00
		in Pier 1					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	1,750	YD^3	$710.00	$1,242,500.00
		in Pier 2					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	5,500	YD^3	$1,300.00	$7,150,000.00
		in Pier 3					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		SUBTOTAL THIS SHEET					**$8,590,700.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Joseph M. Gemperline	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW / DATE**
4/21/2010	Jesus G. Romero P.E.	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__12__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Removal of Existing Concrete and Reinforcement	86-68140	5,400	YD^3	$1,300.00	$7,020,000.00
		in Pier 4					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	1,750	YD^3	$710.00	$1,242,500.00
		in Pier 5					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	350	YD^3	$380.00	$133,000.00
		in Pier 6					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Pier down to 3'					
		below ground surface.					
		Removal of Existing Concrete and Reinforcement	86-68140	74	YD^3	$500.00	$37,000.00
		in Abutment 2					
		Remove in blocks weighing approximately 20 tons					
		(A block with dimensions of 6'5" x 6'5" x 6'5"					
		weighs 19.8 tons). Remove Abutment down to 3'					
		below ground surface.					
		SUBTOTAL THIS SHEET					**$8,432,500.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Joseph M. Gemperline	Jeff Morris	Kelly Brom
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW / DATE**
4/21/2010	Jesus G. Romero P.E.	08/27/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__13__ OF __13__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Sacramento 2nd Crossing UPRR Bridge

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Removal of Existing Steel Truss and Girder Bridge	86-68140	3,300,000	LBS	$0.40	$1,320,000.00
		Bridge approach spans consist of built up girders and the main spans consist of built up truss members.					
		All members have riveted connections. The structural steel grade is unknown, but can assume Fy=33 ksi.					
		The existing steel appears to be painted.					
		SUBTOTAL THIS SHEET					**$1,320,000.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
Carly M. Wegher	Joseph M. Gemperline	Jeff Morris	Kelly Brom - 7/29/10
DATE PREPARED	**PEER REVIEW / DATE**	**DATE PREPARED**	**PEER REVIEW**
4/21/2010	Jesus G. Romero P.E.	07/23/10	Dan Donaldson - 8/30/10

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Sheet 1 - Site Work					156,210.00
		Sheet 2 - Site Work					585,180.00
		Sheet 3 - Site Work					1,468,280.00
		Sheet 4 - Structure					414,375.00
		Sheet 5 - Structure					651,245.00
		Sheet 6 - Structure					447,073.60
		Sheet 7 - Structure					392,310.00
		Sheet 8 - Structure					1,197,587.50
		Subtotal 1					**$5,312,261.10**
		Mobilization	5%	+/-			$270,000.00
		Subtotal 1 with Mobilization					**$5,582,261.10**
		Escalation to Notice to Proceed (NTP): None assumed.	0%				$0.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					**$5,582,261.10**
		Design Contingencies	15%	+/-			**$789,346.90**
		Subtotal 3 = Subtotal 2 + Design Contingencies					$6,371,608.00
		Allowance for Procurement Strategies (APS)	2.0%	+/-			**$128,392.00**
		Type of solicitation assumed is: Request for Proposal					
		Subtotal 4 = Subtotal 3 + APS					$6,500,000.00
		CONTRACT COST					**$6,500,000.00**
		Construction Contingencies	20%	+/-			$1,400,000.00
		FIELD COST					**$7,900,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY Joe Gemperline J Neumaier	**CHECKED** JF Pattie	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED** 12/07/10	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Site Work Not included in these quatities:					
		Embankment for dam raise, parapet					
		wall, Shasta Dam Blvd. re-alignment, traffic					
		signs, and covered Pedestrain bridge.					
	1	Strip 3" existing asphalt and recycle	86-68120	1,420	yd3	$12.00	$17,040.00
	2	Strip 6" existing aggregate base material and					
		recycle	86-68120	2,840	yd3	$8.00	$22,720.00
	3	Excavation for parking lot sub-grade	86-68120	3,150	yd3	$8.00	$25,200.00
	4	Compacted embankment for parking lot					
		subgrade, using material from excavation	86-68120	3,150	yd3	$10.00	$31,500.00
	5	Excavation in rock for visitor center footings					
		(assume 3/4 of total excavation for footings)	86-68120	1,350	yd3	$12.00	$16,200.00
	6	Common excavation for visitor center footings					
		(assume 1/4 of total excavation for footings)	86-68120	450	yd3	$7.00	$3,150.00
	7	Compacted backfill for visitor center building	86-68120	1,100	yd3	$10.00	$11,000.00
	8	12" thick gravel fill under building floor slab	86-68120	300	yd3	$58.00	$17,400.00
	9	Strip 6" topsoil and stockpile on site	86-68120	210	yd3	$15.00	$3,150.00
	10	Remove and dispose concrete flatwork					
		and curbing	86-68120	160	yd3	$10.00	$1,600.00
	11	Remove and dispose parking lot light poles,					
		bases, and buried electrical lines	86-68120	25	ea	$290.00	$7,250.00
		SUBTOTAL THIS SHEET					**$156,210.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
JF Pattie	R Dham	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
06/28/10	Al Bernstein P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	12	6" thick Aggregate base material under asphalt					
		pavement and concrete flatwork	86-68120	2,400	yd3	$70.00	$168,000.00
	13	Reinforced concrete flatwork. Batch plant					
		within 1 mile of job site	86-68120	130	yd3	$360.00	$46,800.00
	14	3" thick asphalt concrete pavement	86-68120	1,100	yd3	$230.00	$253,000.00
	15	Place topsoil from site stockpile	86-68120	200	yd3	$20.00	$4,000.00
	16	Furnish and place topsoil, commercial source	86-68120	400	yd3	$56.00	$22,400.00
	17	Corrugated high-density re-cycled polyethylene					
		drian pipe, similar to Hancor, Inc. type-S					
		15" diam.	86-68120	1,500	ft	$20.00	$30,000.00
	18	Corrugated high-density re-cycled polyethylene					
		storm drain inlet riser and drain grate, similar					
		to Hancor, Inc. - type-S. 6' length, 12" diam.	86-68120	15	ea	$175.00	$2,625.00
	19	15" diam. HDPE flared end sections	86-68120	9	ea	$95.00	$855.00
	20	1"-6" diam. river rock	86-68120	600	yd3	$67.00	$40,200.00
	21	12"-24" diam. boulders, from government source					
		within 1 mile	86-68120	300	yd3	$10.00	$3,000.00
	22	7'X6" pre-cast concrete parking bumpers	86-68120	130	ea	$110.00	$14,300.00
		SUBTOTAL THIS SHEET					**$585,180.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
JF Pattie	R Dham	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
06/28/10	Al Bernstein P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**UNIT PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	23	2" caliper deciduous shade trees and staking	86-68120	65	ea	$350.00	$22,750.00
	24	1" caliper deciduous trees and staking	86-68120	45	ea	$290.00	$13,050.00
	25	6' height coniferous trees and guying	86-68120	40	ea	$340.00	$13,600.00
	26	Drip irrigation system. 10 zone valves, vacuum breaker, valve boxes, drains, controller 10,000 ft. pvc laterals, 450 pvc drip emitters	86-68120	1	LS	$35,000.00	$35,000.00
	27	Broadcast seeding	86-68120	45,000	ft2	$0.08	$3,600.00
	28	6" thick topsoil placed on green roof	86-68120	70	ft2	$22.00	$1,540.00
	29	Metal parking shade canopy structures	86-68120	14,720	ft2	$20.00	$294,400.00
	30	Solar panels mounted on parking canopies with associated electrical equipment	86-68120	11,800	ft2	$65.00	$767,000.00
	31	Water, wastewater, power, and communication line hook-ups to existing building. Within 300 feet of visitor center	86-68120	1	LS	$195,000.00	$195,000.00
	32	Pole mounted parking lot lighting, bases, and buried power lines	86-68120	25	ea	$4,700.00	$117,500.00
	33	Paint striping on asphalt pavement, 4" wide	86-68120	7,000	ft	$0.62	$4,340.00
	34	Accessible parking symbols on pavement	86-68120	10	ea	$50.00	$500.00
		SUBTOTAL THIS SHEET					**$1,468,280.00**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
JF Pattie	R Dham	Greg Akins	Kelly Brom
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
06/28/10	Al Bernstein P.E.	12/07/10	Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		VISITOR CENTER STRUCTURE	86-68120				
		BUILDING DESCRIPTION -					
		The new 11,000 square foot Visitor Center will be home to exhibit					
		spaces, archival storage, a 200-seat theater/conference space, a					
		a souvenir shop/cashier counter, staff offices, meeting/work room,					
		kitchen/break/vending areas, dam security offices, toilets rooms,					
		storage rooms, and a four-story elevator with enclosed security					
		observation deck at the upper level. The building structure will be a					
		composition of diverse shapes creating a serpentine flow pattern					
		accented by a two-story serrated pyramidal core. Sustainable and					
		energy efficient elements such as natural diffused lighting, recycled					
		construction materials, green vegetative roofs, solar panels, and					
		building orientation will be incorporated into the overall design concept.					
		BUILDING MATERIALS EXTERIOR-					
	1	**Glass Curtain Wall:**	86-68120	4,000	ft2	$50.00	$200,000.00
		Reflective, light weight, multi-cavity insulating					
		glass. (north & west theater walls)					
		Similar to:					
		Serious Materials					
		PH: 800-797-8159					
		Website: www.Serious Windows.com					
	2	**Exterior Metal Composite Skin**	86-68120	6,125	ft2	$35.00	$214,375.00
		Natural metal composite panels					
		north wall_elevator towers - 1500					
		south wall_elevator towers - 1125					
		east wall_elevator towers - 1375					
		west wall_elevator towers - 1750					
		tower connection walls - 375					
		Similar to:					
		Alcoa Architectural Products 'Reynobond'					
		PH: 478-374-4746					
		Website: www.alcoaarchitecturalproducts.com					
		Sheet Subtotal					**$414,375.00**

QUANTITIES		**PRICES**	
BY JF Pattie	**CHECKED** R Dham 6/28/10	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 6/28/2010	**PEER REVIEW** Al Bernstein P.E. 6/28/10	**DATE PREPARED** 12/7/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__5__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Continued					
	3	**Glass Window Bands**	86-68120	411	lin.ft	$60.00	$24,660.00
		48" high, reflective to match glass curtain wall.					
		elevator tower - 232					
		back wall offices - 80					
		security office wall - 80					
		Tower connecting walls - 19					
		Exterior Doors	86-68120				
	4	Glsass 8' high x 36" wide, reflective		9	ea	$5,000.00	$45,000.00
	5	Steel, Insulated 8'X36"		4	ea	$3,200.00	$12,800.00
		Interior Doors	86-68120				
	6	Steel, 8'X36"		17	ea	$1,900.00	$32,300.00
	7	**Roof Hatch** 36" x 36", insulated	86-68120	1	ea	$3,700.00	$3,700.00
	8	**Steel Louvers (elevator tower)**	86-68120	364	ft2	$95.00	$34,580.00
	9	**Metal Roofing**	86-68120	13,545	ft2	$19.00	$257,355.00
		elevator tower - 625					
		theater - 12180					
		metal fascia- 740					
	10	**Roof Clerestory Glass**	86-68120	425	ft2	$73.00	$31,025.00
		16" high, insulated					
	11	**Vegatative Green Roof**	86-68120	4,236	ft2	$30.00	$127,080.00
		north roof - 1941					
		south roof - 2295					
	12	**Solar Panels**					
		elevator tower roof - 625	86-68120	625	ft2	$65.00	$40,625.00
		theater roof - 5065					
	13	**Roof Soffit Panels**	86-68120	3,120	ft2	$13.50	$42,120.00
		Sheet Subtotal					**$651,245.00**

QUANTITIES		**PRICES**	
BY JF Pattie	**CHECKED** R Dham	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 6/28/2010	**PEER REVIEW** Al Bernstein P.E.	**DATE PREPARED** 12/7/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__6__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Continued					
	14	**Structural Theater Floor**	86-68120	2,274	ft2	$50.00	$113,700.00
		24" deep					
	15	**Structural Elevator Floors**	86-68120	1,446	ft2	$40.00	$57,840.00
		2nd floor, 12" deep - 999					
		3rd floor, 12" deep - 447					
	16	**Major Structural Roof Members**	86-68120	511	lin ft	$200.00	$102,200.00
		1-center stl support beam -24" deep, 65 lin ft					
		2-side stl support beams -24" deep, 186 lin ft					
		5-stl roof support tension rods 2" dia, 260 lin ft					
		BUILDING MATERIALS INTERIOR -					
	17	**Interior Wall Systems:**	86-68120	8,400	ft2	$2.50	$21,000.00
		1 1/4" x 6", 20 ga. steel studs @ 16' o.c.					
		w/5/8" type 'xp' gypbd. ea. side , 10' high,					
		1st floor - 5520					
		2nd floor & elevator floors- 2880					
	18	**Carpet Squares:**	86-68120	8,290	ft2	$6.60	$54,714.00
		18"x 18" self adhesive					
		Theater - 2475					
		VC Offices - 1975					
		Security Offices - 920					
		Exhibit Area - 2920					
	19	**Ceiling Tile:**	86-68120	5,000	ft2	$8.50	$42,500.00
		24" x 24" accoustical w/mtl grid, seismic clps					
	20	**Gypsum Board Ceiling:**	86-68120	6,000	ft2	$5.50	$33,000.00
		5/8" type 'xp'					
	21	**Painted Surfaces:**	86-68120	18,433	ft2	$1.20	$22,119.60
		walls - 16,600					
		ceilings - 1,833					
		Sheet Subtotal					**$447,073.60**

QUANTITIES		**PRICES**	
BY JF Pattie	**CHECKED** R Dham	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 6/28/2010	**PEER REVIEW** Al Bernstein P.E.	**DATE PREPARED** 12/7/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__7__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Continued					
	22	**Hand & Guard Railing:**	86-68120	228	lin.ft	$600.00	$136,800.00
		Brushed aluminum rails w/glass panels,					
		46" high					
		Similar to:					
		Julius Blum & Company, Inc					
		PH: 800-527-6293					
		Website: www.juliusblum.com					
	23	**Custom Counters and Cabinetry:**	86-68120	296	lin ft	$660.00	$195,360.00
		cashier & information counters - 40 lin ft					
		souvenir display cases - 50 lin ft					
		shelving displays - 100 lin ft					
		kitchen base & wall cabinets - 16 lin ft					
		work counters in security office - 90 lin ft					
	24	**Wall and Floor tile:**	86-68120	1,650	ft2	$11.00	$18,150.00
		wall tile - 1200					
		floor tile - 450					
		BUILDING SPECIALITY ELEMENTS -					
	25	**Theater Screen:**	86-68120	1	ea	$42,000.00	$42,000.00
		8'-0"x 14'-6" retractable screen mounted in a					
		aluminum housing, which will be fitted to a					
		custom designed bracket and attached to a					
		motorized cable system in the ceiling.					
		Similar to:					
		Vutec, model Lectric I-C					
		PH: 800-770-4700					
		Website: www.vutec.com					
		Sheet Subtotal					**$392,310.00**

QUANTITIES		**PRICES**	
BY JF Pattie	**CHECKED** R Dham	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 6/28/2010	**PEER REVIEW** Al Bernstein P.E.	**DATE PREPARED** 12/7/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__8__ OF __8__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Visitor Center Replacement

Most Probable
12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

WOID:	**SHAEF**	**ESTIMATE LEVEL:**	**Feasibility**
REGION:	**MP**	**PRICE LEVEL:**	**Apr-10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Continued					
	26	**Toilet Rooms:**	86-68120	560	ft2	$85.00	$47,600.00
		Men/Women/Janitor Closet					
		6 - water closets					
		3 - urinals					
		2 - 3 basin pre-formed lavatories					
		2 - paper towel dispr/trash recepticals					
		6 - toilet paper dispensers					
		2 - 42"high x 72" mirrors					
		1 - 36" x 36" mop sink					
	27	**Elevator:**	86-68120	1	ea	$195,000.00	$195,000.00
		Telescopic Holeless Hydraulic, 3 stops,					
		6'-8"x 5'-5" car, 3500 lbs maximum load,					
		6'-0"x 7'-6" machine room and 7'-6" deep pit.					
		6'-8"x 5'-5" car, 3500 lbs maximum load,					
		6'-0"x 7'-6" machine room and 7'-6" deep pit.					
		Similar to:					
		Otis Elevator Company					
		PH: 303-298-9300					
		Website: www.otis.com					
	28	**Elevator Staircase (5 flights):**	86-68120	8,375	lbs	$12.50	$104,687.50
		14 stringers @ 11' lg x 25#/lf =3500#					
		70T @4' lg x 20#/lf =3200#					
	29	**Theater Staircase (custom):**	86-68120	6,050	lbs	$10.00	$60,500.00
		23T @5' lg x 20#/lf =2300#					
		4 landings @ 5'x5' x 20#/sf =2000#					
		2 stringers @ 35' lg x 25#/lf =1750#					
	30	**Cast in Place Reinforced Concrete**	86-68120	718	yd3	$1,100.00	$789,800.00
		Roof Support Structure and Footing - 181					
		Visitor Center and Elevator Tower Footings					
		for Walls and Columns - 240					
		6 inch thick Floor Slabs - 157					
		Curved Exterior Walls, Columns,& Facias - 140					
		Sheet Subtotal					**$1,197,587.50**

QUANTITIES		PRICES	
BY JF Pattie	**CHECKED** R Dham	**BY** Greg Akins	**CHECKED** Kelly Brom
DATE PREPARED 6/28/2010	**PEER REVIEW** Al Bernstein P.E.	**DATE PREPARED** 12/7/2010	**PEER REVIEW** Dan Donaldson

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Vehicle Bridge Replacements

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir area vehicle bridges:					
		Remove/Replace Charlie Creek Bridge					
		Remove/Replace Doney Creek Bridge					
		Remove/Replace McCloud River Bridge					
		Fenders Ferry Bridge Demolition/Improvements					
		MWH-001 Sheet (1)					$12,850,100.00
		MWH-001 Sheet (2)					$5,552,900.00
		MWH-001 Sheet (3)					$3,512,800.00
		Subtotal					**$21,915,800.00**
		Mobilization & General Conditions				10%	$2,190,000.00
		Subtotal w/ Mobilization					**$24,105,800.00**
		Design Contingencies				20%	$4,813,000.00
		Allowance for Procurement Strategy				2%	$481,000.00
		CONTRACT COST					**$29,400,000.00**
		Construction Contingencies				8%	$2,400,000.00
		FIELD COST					**$31,800,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Vehicle Bridge Replacements

Most Probable

MWH-001 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		New Bridge Construction					
		Charlie Creek Bridge					
	1	Access Requirements/Water Based Support Ewuip	MWH-001	1	ls	$100,000.00	$100,000.00
	2	Temporary Measures / Cofferdam Work	MWH-001	1	ls	$100,000.00	$100,000.00
	3	Pier Foundation Structural Excavation	MWH-001	1,200	cys	$55.00	$66,000.00
	4	Furnish/Install Class 140 Fdn Piles	MWH-001	1,080	lf	$250.00	$270,000.00
	5	Furnish/Insall CISS Piles	MWH-001	3,600	lf	$400.00	$1,440,000.00
	6	Foundation Backfill	MWH-001	576	cys	$40.00	$23,040.00
	7	F/P/S/F Foundation Concrete	MWH-001	724	cys	$500.00	$361,825.00
	8	F/PS/F Pier Concrete	MWH-001	918	cys	$800.00	$734,240.00
	9	F/P/S/F Abutment Concrete	MWH-001	353	cys	$650.00	$229,450.00
	10	F/P/S/F Box Grider Concrete	MWH-001	1,412	cys	$800.00	$1,129,600.00
	11	F/P/S/F Bridge Rail Barrier Concrete	MWH-001	212	cys	$1,200.00	$254,160.00
	12	Reinforcing Steel (Epoxy Coated)	MWH-001	1,124,000	lbs	$1.50	$1,686,000.00
	13	Prestressting Steel	MWH-001	26,000	lbs	$3.00	$78,000.00
	14	Approach Paving	MWH-001	1	ls	$100,000.00	$100,000.00
	15	Barrier Fence Railing	MWH-001	782	lf	$30.00	$23,460.00
	16	Expansion Joints	MWH-001	1	ls	$10,000.00	$10,000.00
	17	Bridge Misc. (Signage, Striping, Anti-Graffiti Coating)	MWH-001	1	ls	$10,000.00	$10,000.00
		Doney Creek Bridge					
	18	Access Requirements/Water Based Support Ewuip	MWH-001	1	ls	$100,000.00	$100,000.00
	19	Temporary Measures / Cofferdam Work	MWH-001	1	ls	$100,000.00	$100,000.00
	20	Pier Foundation Structural Excavation	MWH-001	550	cys	$55.00	$30,250.00
	21	Furnish/Install Class 140 Fdn Piles	MWH-001	1,080	lf	$250.00	$270,000.00
	22	Furnish/Insall CISS Piles	MWH-001	3,600	lf	$400.00	$1,440,000.00
	23	Foundation Backfill	MWH-001	480	cys	$40.00	$19,200.00
	24	F/P/S/F Foundation Concrete	MWH-001	681	cys	$500.00	$340,300.00
	25	F/PS/F Pier Concrete	MWH-001	863	cys	$800.00	$690,560.00
	26	F/P/S/F Abutment Concrete	MWH-001	332	cys	$650.00	$215,800.00
	27	F/P/S/F Box Grider Concrete	MWH-001	1,328	cys	$800.00	$1,062,400.00
	28	F/P/S/F Bridge Rail Barrier Concrete	MWH-001	199	cys	$1,200.00	$239,040.00
	29	Reinforcing Steel (Epoxy Coated)	MWH-001	1,006,000	lbs	$1.50	$1,509,000.00
	30	Prestressting Steel	MWH-001	25,000	lbs	$3.00	$75,000.00
	31	Approach Paving	MWH-001	1	ls	$100,000.00	$100,000.00
	32	Barrier Fence Railing	MWH-001	760	lf	$30.00	$22,800.00
	33	Expansion Joints	MWH-001	1	ls	$10,000.00	$10,000.00
	34	Bridge Misc. (Signage, Striping, Anti-Graffiti Coating)	MWH-001	1	ls	$10,000.00	$10,000.00
		Sheet Subtotal =					**$12,850,125.00**

QUANTITIES		**PRICES**	
BY M. Xie	**CHECKED** D. Hutchings	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 6/15/2008	**PEER REVIEW** R. Filgas	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Vehicle Bridge Replacements

Most Probable

MWH-001 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		New Construction					
		McCloud River Bridge					
	1	Access Requirements/Water Based Support Ewuip	MWH-001	1	ls	$50,000.00	$50,000.00
	2	Temporary Measures / Cofferdam Work	MWH-001	1	ls	$50,000.00	$50,000.00
	3	Pier Foundation Structural Excavation	MWH-001	820	cys	$55.00	$45,100.00
	4	Furnish/Install Class 140 Fdn Piles	MWH-001	1,080	lf	$250.00	$270,000.00
	5	Furnish/Insall CISS Piles	MWH-001	1,600	lf	$400.00	$640,000.00
	6	Foundation Backfill	MWH-001	636	cys	$40.00	$25,440.00
	7	F/P/S/F Foundation Concrete	MWH-001	476	cys	$500.00	$237,800.00
	8	F/PS/F Pier Concrete	MWH-001	603	cys	$800.00	$482,560.00
	9	F/P/S/F Abutment Concrete	MWH-001	232	cys	$650.00	$150,800.00
	10	F/P/S/F Box Grider Concrete	MWH-001	928	cys	$800.00	$742,400.00
	11	F/P/S/F Bridge Rail Barrier Concrete	MWH-001	139	cys	$1,200.00	$167,040.00
	12	Reinforcing Steel (Epoxy Coated)	MWH-001	757,000	lbs	$1.50	$1,135,500.00
	13	Prestressting Steel	MWH-001	0	lbs	$3.00	$0.00
	14	Approach Paving	MWH-001	1	ls	$100,000.00	$100,000.00
	15	Barrier Fence Railing	MWH-001	490	lf	$30.00	$14,700.00
	16	Expansion Joints	MWH-001	1	ls	$10,000.00	$10,000.00
	17	Bridge Misc. (Signage, Striping, Anti-Graffiti Coating)	MWH-001	1	ls	$10,000.00	$10,000.00
		Didallas Creek Bridge					
	18	Access Requirements/Water Based Support Ewuip	MWH-001	1	ls	$50,000.00	$50,000.00
	19	Temporary Measures / Cofferdam Work	MWH-001	1	ls	$50,000.00	$50,000.00
	20	Pier Foundation Structural Excavation	MWH-001	440	cys	$55.00	$24,200.00
	21	Furnish/Install Class 140 Fdn Piles	MWH-001	1,080	lf	$250.00	$270,000.00
	22	Furnish/Insall CISS Piles	MWH-001	0	lf	$400.00	$0.00
	23	Foundation Backfill	MWH-001	216	cys	$40.00	$8,640.00
	24	F/P/S/F Foundation Concrete	MWH-001	156	cys	$500.00	$77,900.00
	25	F/PS/F Pier Concrete	MWH-001	198	cys	$800.00	$158,080.00
	26	F/P/S/F Abutment Concrete	MWH-001	76	cys	$650.00	$49,400.00
	27	F/P/S/F Box Grider Concrete	MWH-001	304	cys	$800.00	$243,200.00
	28	F/P/S/F Bridge Rail Barrier Concrete	MWH-001	46	cys	$1,200.00	$54,720.00
	29	Reinforcing Steel (Epoxy Coated)	MWH-001	208,000	lbs	$1.50	$312,000.00
	30	Prestressting Steel	MWH-001	0	lbs	$3.00	$0.00
	31	Approach Paving	MWH-001	1	ls	$100,000.00	$100,000.00
	32	Barrier Fence Railing	MWH-001	115	lf	$30.00	$3,450.00
	33	Expansion Joints	MWH-001	1	ls	$10,000.00	$10,000.00
	34	Bridge Misc. (Signage, Striping, Anti-Graffiti Coating)	MWH-001	1	ls	$10,000.00	$10,000.00
		Sheet Subtotal =					**$5,552,930.00**

QUANTITIES		**PRICES**	
BY M. Xie	**CHECKED** D. Hutchings	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 6/15/2008	**PEER REVIEW** R. Filgas	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Vehicle Bridge Replacements

Most Probable

MWH-001 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		New Bridge Construction					
		Fenders Ferry Bridge					
	1	Access Requirements/Water Based Support Ewuip	MWH-001	1	ls	$100,000.00	$100,000.00
	2	Temporary Measures / Superstructure Support	MWH-001	1	ls	$150,000.00	$150,000.00
	3	Pier Foundation Structural Excavation	MWH-001	75	cys	$100.00	$7,500.00
	4	Drill & Bond Dowels	MWH-001	540	lf	$60.00	$32,400.00
	5	F/P/S/F Structural Concrete	MWH-001	230	cys	$1,000.00	$230,000.00
	6	Concrete Surface Preparation	MWH-001	2,150	sf	$20.00	$43,000.00
	7	Reinforcing Steel (Epoxy Coated)	MWH-001	66,400	lbs	$1.50	$99,600.00
	8	Remove Portion of Steel Tower	MWH-001	1	ls	$100,000.00	$100,000.00
	9	Structural Steel	MWH-001	130	lbs	$10.00	$1,300.00
	10	Lead Paint Containment	MWH-001	1	ls	$50,000.00	$50,000.00
		Existing Bridge Demolition					
	11	Demolish Charlie Creek Bridge	MWH-001	3,500	cys	$250.00	$875,000.00
	12	Demolish Doney Creek Bridge	MWH-001	3,300	cys	$250.00	$825,000.00
	13	Demolish McCloud Creek Bridge	MWH-001	2,300	cys	$250.00	$575,000.00
	14	Demolish Didallas Creek Bridge	MWH-001	800	cys	$250.00	$200,000.00
	15	Demolish Second Creek Bridge	MWH-001	1	ls	$224,000.00	$224,000.00
		Sheet Subtotal =					**$3,512,800.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
M. Xie	D. Hutchings	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
6/15/2008	R. Filgas	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Vegetation Clearing

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir area clearing:					
		Remote tree cutting/skidding/helicopter removal					
		Brush removal					
		Local tree cutting/skidding/staging					
		Burn remote slash piles					
		MWH-002 Sheet (1)					$4,309,100.00
		Subtotal					**$4,309,000.00**
		Mobilization/General Conditions				10%	$430,000.00
		Subtotal w/ Mobilization					**$4,739,000.00**
		Design Contingencies				25%	$1,168,000.00
		Allowance for Procurement Strategy				2%	$93,000.00
		CONTRACT COST					**$6,000,000.00**
		Construction Contingencies				8%	$500,000.00
		FIELD COST					**$6,500,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __1__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Vegetation Clearing

Most Probable

MWH-002 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir Clearing					
		Remote Areas					
	1	Remote Tree Cutting Crew	MWH-002	1,130	hr	$250.00	$282,500.00
	2	Tree Removal Via Helicopter	MWH-002	1,130	hr	$3,300.00	$3,729,000.00
	3	Shore Staging Crew	MWH-002	1,130	hr	$125.00	$141,250.00
	4	Brush Clearing (Machine)	MWH-002	30	ac	$2,500.00	$75,000.00
	5	Brush Burining	MWH-002	30	hr	$250.00	$7,500.00
		Local Areas					
	7	Tree Cutting/Staging Crew	MWH-002	150	hr	$250.00	$37,500.00
	8	Brush Clearing (Machine)	MWH-002	11	ac	$3,300.00	$36,300.00
		Sheet Subtotal =					**$4,309,050.00**

QUANTITIES		PRICES	
BY I. Buck	**CHECKED** C. Wallace	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 11/23/2010	**PEER REVIEW**	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Dikes

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir area dikes consists of:					
		Site clearing & grubbing, precompaction and earthworks					
		Embankment core and shell materials					
		Miscellaneous drainage improvements					
		MWH-003 Sheet (1)					$779,900.00
		MWH-003 Sheet (2)					$1,881,900.00
		MWH-003 Sheet (3)					$5,589,900.00
		MWH-003 Sheet (4)					$1,374,100.00
		Subtotal					**$9,625,800.00**
		Mobilization/General Conditions				10%	$960,000.00
		Subtotal w/ Mobilization					**$10,586,000.00**
		Design Contingencies				25%	$2,606,000.00
		Allowance for Procurement Strategy				2%	$208,000.00
		CONTRACT COST					**$13,400,000.00**
		Construction Contingencies				8%	$1,100,000.00
		FIELD COST					**$14,500,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __4___

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Dikes

Most Probable

MWH-003 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Excavation & Grading					
		Doney Creek Dike					
	1	Site Clearing & Grubbing Below Dikes	MWH-003	1.50	ac	$3,500.00	$5,250.00
	2	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	1	ls	$30,000.00	$30,000.00
	3	Top Soil Excavation	MWH-003	2,500	cy	$10.00	$25,000.00
	4	Shear Key Excavation	MWH-003	543	cy	$20.00	$10,860.00
	5	V-Ditch Excavation	MWH-003	65	cy	$15.00	$973.50
	6	Drain Excavation	MWH-003	0	cy	$15.00	$0.00
	7	Embankment Precompaction	MWH-003	3,200	sy	$1.50	$4,800.00
	8	Import/Place/Compact Shell Materials	MWH-003	2,600	cy	$40.00	$104,000.00
	9	Import/Place/Compact Core Materials	MWH-003	8,313	cy	$50.00	$415,625.00
	10	Import/Place/Compact Filter Sand	MWH-003	1,333	cy	$60.00	$80,000.00
	11	Import/Place Rip Rap	MWH-003	980	cy	$80.00	$78,400.00
	12	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	13	Install 42" CMP	MWH-003	0	lf	$250.00	$0.00
	14	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	15	Replace Top Soil Materials	MWH-003	2,500	cy	$10.00	$25,000.00
	16	Cast-In Place Concrete for Retaining Wall	MWH-003	0	cy	$650.00	$0.00
	17	Reinforcing Steel	MWH-003	0	lb	$1.50	$0.00
		Antlers Dike					
	18	Site Clearing & Grubbing Below Dikes	MWH-003	0	ac	$3,500.00	$0.00
	19	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	0	ls	$30,000.00	$0.00
	20	Top Soil Excavation	MWH-003	0	cy	$10.00	$0.00
	21	Shear Key Excavation	MWH-003	0	cy	$20.00	$0.00
	22	V-Ditch Excavation	MWH-003	0	cy	$15.00	$0.00
	23	Drain Excavation	MWH-003	0	cy	$15.00	$0.00
	24	Embankment Precompaction	MWH-003	0	sy	$1.50	$0.00
	25	Import/Place/Compact Shell Materials	MWH-003	0	cy	$40.00	$0.00
	26	Import/Place/Compact Core Materials	MWH-003	0	cy	$50.00	$0.00
	27	Import/Place/Compact Filter Sand	MWH-003	0	cy	$60.00	$0.00
	28	Import/Place Rip Rap	MWH-003	0	cy	$80.00	$0.00
	29	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	30	Install 42" CMP	MWH-003	0	lf	$250.00	$0.00
	31	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	32	Replace Top Soil Materials	MWH-003	0	cy	$10.00	$0.00
		Sheet Subtotal =					**$779,908.50**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
A. Nishihara	P. Richards	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
12/13/2010	-	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __4___

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Dikes

Most Probable

MWH-003 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Excavation & Grading					
		North Railroad Embankment					
	1	Site Clearing & Grubbing Below Dikes	MWH-003	1.15	ac	$3,500.00	$4,025.00
	2	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	1	ls	$30,000.00	$30,000.00
	3	Top Soil Excavation	MWH-003	1,150	cy	$10.00	$11,500.00
	4	Shear Key Excavation	MWH-003	304	cy	$20.00	$6,080.00
	5	V-Ditch Excavation	MWH-003	49	cy	$15.00	$735.00
	6	Drain Excavation	MWH-003	0	cy	$15.00	$0.00
	7	Embankment Precompaction	MWH-003	3,000	sy	$1.50	$4,500.00
	8	Import/Place/Compact Shell Materials	MWH-003	0	cy	$40.00	$0.00
	9	Import/Place/Compact Core Materials	MWH-003	16,375	cy	$50.00	$818,750.00
	10	Import/Place/Compact Filter Sand	MWH-003	767	cy	$60.00	$46,000.00
	11	Import/Place Rip Rap	MWH-003	410	cy	$80.00	$32,800.00
	12	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	13	Install 42" CMP	MWH-003	350	lf	$250.00	$87,500.00
	14	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	15	Replace Top Soil Materials	MWH-003	1,150	cy	$10.00	$11,500.00
		Middle Railroad Embankment					
	16	Site Clearing & Grubbing Below Dikes	MWH-003	2.88	ac	$3,500.00	$10,080.00
	17	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	1	ls	$30,000.00	$30,000.00
	18	Top Soil Excavation	MWH-003	2,800	cy	$10.00	$28,000.00
	19	Shear Key Excavation	MWH-003	1,065	cy	$20.00	$21,300.00
	20	V-Ditch Excavation	MWH-003	120	cy	$15.00	$1,800.00
	21	Drain Excavation	MWH-003	0	cy	$15.00	$0.00
	22	Embankment Precompaction	MWH-003	6,800	sy	$1.50	$10,200.00
	23	Import/Place/Compact Shell Materials	MWH-003	0	cy	$40.00	$0.00
	24	Import/Place/Compact Core Materials	MWH-003	12,750	cy	$50.00	$637,500.00
	25	Import/Place/Compact Filter Sand	MWH-003	600	cy	$60.00	$36,000.00
	26	Import/Place Rip Rap	MWH-003	320	cy	$80.00	$25,600.00
	27	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	28	Install 42" CMP	MWH-003	0	lf	$250.00	$0.00
	29	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	30	Replace Top Soil Materials	MWH-003	2,800	cy	$10.00	$28,000.00
		Sheet Subtotal =					**$1,881,870.00**

QUANTITIES		PRICES	
BY A. Nishihara	**CHECKED** P. Richards	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 12/13/2010	**PEER REVIEW** -	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

FEATURE: Shasta Lake Water Resources Investigation Feasibility Study **Reservoir Area Dikes** **Most Probable** **MWH-003** 12.5-ft Dam Raise	**PROJECT:** **Central Valley Project - CA** **Shasta Division** **REGION:** **MP** **ESTIMATE LEVEL:** **Feasibility** **WOID:** **SHAEF** **PRICE LEVEL:** **Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Excavation & Grading					
		South Railroad Embankment					
	1	Site Clearing & Grubbing Below Dikes	MWH-003	6.22	ac	$3,500.00	$21,770.00
	2	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	1	ls	$30,000.00	$30,000.00
	3	Top Soil Excavation	MWH-003	6,700	cy	$10.00	$67,000.00
	4	Shear Key Excavation	MWH-003	1,626	cy	$20.00	$32,520.00
	5	V-Ditch Excavation	MWH-003	177	cy	$15.00	$2,655.00
	6	Drain Excavation	MWH-003	0	cy	$15.00	$0.00
	7	Embankment Precompaction	MWH-003	19,600	sy	$1.50	$29,400.00
	8	Import/Place/Compact Shell Materials	MWH-003	0	cy	$40.00	$0.00
	9	Import/Place/Compact Core Materials	MWH-003	97,375	cy	$50.00	$4,868,750.00
	10	Import/Place/Compact Filter Sand	MWH-003	4,567	cy	$60.00	$274,000.00
	11	Import/Place Rip Rap	MWH-003	2,460	cy	$80.00	$196,800.00
	12	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	13	Install 42" CMP	MWH-003	0	lf	$250.00	$0.00
	14	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	15	Replace Top Soil Materials	MWH-003	6,700	cy	$10.00	$67,000.00
		Sheet Subtotal =					**$5,589,895.00**

QUANTITIES		PRICES	
BY A. Nishihara	**CHECKED** P. Richards	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED	**PEER REVIEW** -	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __4__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Dikes

Most Probable

MWH-003 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Excavation & Grading					
		Bridge Bay Dike West					
	1	Site Clearing & Grubbing Below Dikes	MWH-003	1.38	ac	$3,500.00	$4,830.00
	2	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	1	ls	$30,000.00	$30,000.00
	3	Top Soil Excavation	MWH-003	3,540	cy	$10.00	$35,400.00
	4	Shear Key Excavation	MWH-003	508	cy	$20.00	$10,160.00
	5	V-Ditch Excavation	MWH-003	59	cy	$15.00	$885.00
	6	Drain Excavation	MWH-003	860	cy	$15.00	$12,900.00
	7	Embankment Precompaction	MWH-003	3,300	sy	$1.50	$4,950.00
	8	Import/Place/Compact Shell Materials	MWH-003	0	cy	$40.00	$0.00
	9	Import/Place/Compact Core Materials	MWH-003	7,050	cy	$50.00	$352,500.00
	10	Import/Place/Compact Filter Sand	MWH-003	611	cy	$60.00	$36,666.67
	11	Import/Place Rip Rap	MWH-003	780	cy	$80.00	$62,400.00
	12	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	13	Install 42" CMP	MWH-003	0	lf	$250.00	$0.00
	14	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	15	Replace Top Soil Materials	MWH-003	3,540	cy	$10.00	$35,400.00
	16	Specialty Jet Grouting Equipment Mobilization	MWH-003	1	ls	$50,000.00	$50,000.00
	17	Jet Grouting Material (102, 5'D columns with 1' overlap)	MWH-003	2,500	cy	$200.00	$500,000.00
		Bridge Bay Dike East					
	16	Site Clearing & Grubbing Below Dikes	MWH-003	0.63	ac	$3,500.00	$2,205.00
	17	Misc Removals (Included in Unlisted Items Allowance)	MWH-003	1	ls	$30,000.00	$30,000.00
	18	Top Soil Excavation	MWH-003	1,440	cy	$10.00	$14,400.00
	19	Shear Key Excavation	MWH-003	196	cy	$20.00	$3,920.00
	20	V-Ditch Excavation	MWH-003	26	cy	$15.00	$396.00
	21	Drain Excavation	MWH-003	340	cy	$15.00	$5,100.00
	22	Embankment Precompaction	MWH-003	1,300	sy	$1.50	$1,950.00
	23	Import/Place/Compact Shell Materials	MWH-003	0	cy	$40.00	$0.00
	24	Import/Place/Compact Core Materials	MWH-003	2,763	cy	$50.00	$138,125.00
	25	Import/Place/Compact Filter Sand	MWH-003	244	cy	$60.00	$14,666.67
	26	Import/Place Rip Rap	MWH-003	160	cy	$80.00	$12,800.00
	27	Install 36" CMP	MWH-003	0	lf	$200.00	$0.00
	28	Install 42" CMP	MWH-003	0	lf	$250.00	$0.00
	29	Install Flap Gates	MWH-003	0	ea	$7,500.00	$0.00
	30	Replace Top Soil Materials	MWH-003	1,440	cy	$10.00	$14,400.00
		Sheet Subtotal =					**$1,374,054.33**

QUANTITIES		**PRICES**	
BY A. Nishihara	**CHECKED** P. Richards	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 12/13/2010	**PEER REVIEW** -	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Pit 7 Modifications

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Pit 7 Mechanical Modifications					
		MWH-004 Sheet (1)					$139,980.00
		Subtotal					**$139,980.00**
		Mobilization/General Conditions				10%	$14,000.00
		Subtotal w/ Mobilization					**$154,000.00**
		Design Contingencies				25%	$43,000.00
		Allowance for Procurement Strategy				2%	$3,000.00
		CONTRACT COST					**$200,000.00**
		Construction Contingencies				8%	$10,000.00
		FIELD COST					**$210,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __1 __

FEATURE: Shasta Lake Water Resources Investigation Feasibility Study **Pit 7 Modifications** **Most Probable** **MWH-004** 12.5-ft Dam Raise	**PROJECT:** **Central Valley Project - CA** **Shasta Division** **REGION:** **MP** **ESTIMATE LEVEL:** **Feasibility** **WOID:** **SHAEF** **PRICE LEVEL:** **Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Mechanical Modifications					
	1	6" Check Valve	MWH-004	2	EA	$4,000.00	$8,000.00
	2	6" "Red Valve" at end of pipe	MWH-004	1	EA	$4,500.00	$4,500.00
	3	6" Gate Valve	MWH-004	2	EA	$3,500.00	$7,000.00
	4	8" 90 Deg. Elbow	MWH-004	1	EA	$360.00	$360.00
	5	8" 180 Deg. Bend	MWH-004	1	EA	$360.00	$360.00
	6	8" Pipe	MWH-004	22	LF	$160.00	$3,520.00
	7	8" Check Valve	MWH-004	2	EA	$4,500.00	$9,000.00
	8	8" "Red Valve" at end of pipe	MWH-004	1	EA	$6,000.00	$6,000.00
	9	8" Gate Valve	MWH-004	2	EA	$6,000.00	$12,000.00
	10	10" 90 Deg. Elbow	MWH-004	1	EA	$450.00	$450.00
	11	10" 180 Deg. Bend	MWH-004	1	EA	$450.00	$450.00
	12	10" Pipe	MWH-004	22	LF	$200.00	$4,400.00
	13	4" Check Valve	MWH-004	4	EA	$2,500.00	$10,000.00
	14	4" Gate Valve	MWH-004	2	EA	$3,000.00	$6,000.00
	15	6" Pipe	MWH-004	200	LF	$120.00	$24,000.00
	16	6" Gate Valve	MWH-004	4	EA	$3,000.00	$12,000.00
	17	6" Tee (Steel)	MWH-004	2	EA	$270.00	$540.00
	18	Water Level Sensors	MWH-004	4	EA	$350.00	$1,400.00
	19	Air Compressor System (200 cfm + 6000 gal tank)	MWH-004	1	ls	$30,000.00	$30,000.00
		Sheet Subtotal =					**$139,980.00**

QUANTITIES		PRICES	
BY M. Xie	**CHECKED** D. Hutchings	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 6/15/2008	**PEER REVIEW** R. Filgas	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Recreation (Removals / Relocations)

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir area recreation facilities consists of:					
		Demolishing or relocating boating ramps					
		Removal or restoration of camp grounds / RV Sites					
		Removal or relocation of miscellanous structures					
		New Recreation Facilities					
		MWH-005 Sheet (1)					$8,648,800.00
		MWH-005 Sheet (2)					$50,197,900.00
		MWH-005 Sheet (3)					$11,128,500.00
		MWH-005 Sheet (4)					$19,616,500.00
		Subtotal					**$89,591,700.00**
		Mobilization/General Conditions				10%	$8,960,000.00
		Subtotal w/ Mobilization					**$98,552,000.00**
		Design Contingencies				25%	$24,674,000.00
		Allowance for Procurement Strategy				2%	$1,974,000.00
		CONTRACT COST					**$125,200,000.00**
		Construction Contingencies				8%	$10,000,000.00
		FIELD COST					**$135,200,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __4__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Recreation (Removals / Relocations)

Most Probable

MWH-005 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Selective Demolition & Replacement					
		Public Boat Ramps					
	1	Boat Ramp / Parking Area Excavation	MWH-005	136,539	cys	$10.00	$1,365,387.00
	2	Boat Ramp / Parking Area Fill	MWH-005	94,111	cys	$15.00	$1,411,671.80
	3	Boat Ramp / Parking Area Aggregate Base	MWH-005	31,720	tns	$45.00	$1,427,400.00
	4	Parking Area Asphaltic Concrete	MWH-005	17,035	tns	$150.00	$2,555,250.00
	5	Boat Ramp Concrete Paving	MWH-005	2,034	cys	$350.00	$711,900.00
	6	Boat Ramp / Parking Area Concrete Retaining Walls	MWH-005	0	cys	$650.00	$0.00
	7	Boat Ramp / Parking Area Reinforcing Steel	MWH-005	355,927	lbs	$1.50	$533,890.50
	8	Demo Marina Area Non-floating Structures	MWH-005	1,776	sf	$10.00	$17,760.00
	9	Demo Marina Area Restrooms	MWH-005	600	sf	$10.00	$6,000.00
	10	Demo Marina Area Other Land Structures	MWH-005	0	sf	$7.50	$0.00
	11	Demo Swimming Pool	MWH-005	0	sf	$5.00	$0.00
	12	New Marina Area Floating Structures	MWH-005	0	sf	$450.00	$0.00
	13	New Marina Area Non-Floating Structures	MWH-005	1,776	sf	$300.00	$532,800.00
	14	New Marina Area Restrooms	MWH-005	600	sf	$125.00	$75,000.00
	15	New Marina Area Other Land Structures	MWH-005	0	sf	$225.00	$0.00
	16	New Swimming Pool	MWH-005	0	sf	$30.00	$0.00
	17	Demo/Move Dock Anchors	MWH-005	0	ea	$1,000.00	$0.00
	18	On-Site Modification to Picnic Sites	MWH-005	0	ea	$8,000.00	$0.00
	19	On-Site Modification to Campsites	MWH-005	0	ea	$14,000.00	$0.00
	20	On-Site Modification to RV Sites	MWH-005	0	ea	$16,500.00	$0.00
	21	On-Site Modification to Boat-In Sites	MWH-005	0	ea	$7,100.00	$0.00
	22	Demo Picnic Sites	MWH-005	0	ea	$4,000.00	$0.00
	23	Demo Campsites	MWH-005	0	ea	$5,000.00	$0.00
	24	Demo RV Sites	MWH-005	0	ea	$5,000.00	$0.00
	25	Demo Boat-In Sites	MWH-005	0	ea	$3,600.00	$0.00
	26	New Picnic Sites	MWH-005	0	ea	$4,000.00	$0.00
	27	New Campsites	MWH-005	0	ea	$9,000.00	$0.00
	28	New RV Sites	MWH-005	0	ea	$11,500.00	$0.00
	29	New Boat-In Sites	MWH-005	0	ea	$3,500.00	$0.00
	30	New Trails	MWH-005	0	sf	$2.00	$0.00
	31	New Trailheads	MWH-005	0	ea	$10,000.00	$0.00
	32	Local Road Construction Excavation	MWH-005	0	cys	$10.00	$0.00
	33	Local Road Construction Fill	MWH-005	0	cys	$15.00	$0.00
	34	Local Road Construction Aggregate Base	MWH-005	111	tns	$45.00	$4,995.00
	35	Local Road Construction Asphaltic Concrete	MWH-005	45	tns	$150.00	$6,750.00
		Sheet Subtotal =					**$8,648,804.30**

QUANTITIES		**PRICES**	
BY I. Buck	**CHECKED** C. Wallace	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 12/9/2010	**PEER REVIEW**	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __4__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Recreation (Removals / Relocations)

Most Probable

MWH-005 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Selective Demolition & Replacement					
		Marinas					
	1	Boat Ramp / Parking Area Excavation	MWH-005	567,144	cys	$10.00	$5,671,440.00
	2	Boat Ramp / Parking Area Excavation to Waste	MWH-005	430,584	cys	$20.00	$8,611,680.00
	3	Boat Ramp / Parking Area Aggregate Base	MWH-005	57,966	tns	$45.00	$2,608,470.00
	4	Parking Area Asphaltic Concrete	MWH-005	31,130	tns	$150.00	$4,669,500.00
	5	Boat Ramp Concrete Paving	MWH-005	1,420	cys	$350.00	$497,000.00
	6	Boat Ramp / Parking Area Concrete Retaining Walls	MWH-005	8,609	cys	$650.00	$5,595,850.00
	7	Boat Ramp / Parking Area Reinforcing Steel	MWH-005	1,755,062	lbs	$1.50	$2,632,593.00
	8	Demo Marina Area Non-floating Structures	MWH-005	43,091	sf	$10.00	$430,910.00
	9	Demo Marina Area Restrooms	MWH-005	617	sf	$10.00	$6,170.00
	10	Demo Marina Area Other Land Structures	MWH-005	3,791	sf	$7.50	$28,432.50
	11	Demo Swimming Pool	MWH-005	0	sf	$5.00	$0.00
	12	New Marina Area Floating Structures	MWH-005	36,993	sf	$450.00	$16,646,850.00
	13	New Marina Area Non-Floating Structures	MWH-005	6,098	sf	$300.00	$1,829,400.00
	14	New Marina Area Restrooms	MWH-005	617	sf	$125.00	$77,125.00
	15	New Marina Area Other Land Structures	MWH-005	3,791	sf	$225.00	$852,975.00
	16	New Swimming Pool	MWH-005	0	sf	$30.00	$0.00
	17	Demo/Move Dock Anchors	MWH-005	22	ea	$1,000.00	$22,000.00
	18	On-Site Modification to Picnic Sites	MWH-005	0	ea	$8,000.00	$0.00
	19	On-Site Modification to Campsites	MWH-005	0	ea	$14,000.00	$0.00
	20	On-Site Modification to RV Sites	MWH-005	0	ea	$16,500.00	$0.00
	21	On-Site Modification to Boat-In Sites	MWH-005	0	ea	$7,100.00	$0.00
	22	Demo Picnic Sites	MWH-005	0	ea	$4,000.00	$0.00
	23	Demo Campsites	MWH-005	0	ea	$5,000.00	$0.00
	24	Demo RV Sites	MWH-005	0	ea	$5,000.00	$0.00
	25	Demo Boat-In Sites	MWH-005	0	ea	$3,600.00	$0.00
	26	New Picnic Sites	MWH-005	0	ea	$4,000.00	$0.00
	27	New Campsites	MWH-005	0	ea	$9,000.00	$0.00
	28	New RV Sites	MWH-005	0	ea	$11,500.00	$0.00
	29	New Boat-In Sites	MWH-005	5	ea	$3,500.00	$17,500.00
	30	New Trails	MWH-005	0	sf	$2.00	$0.00
	31	New Trailheads	MWH-005	0	ea	$10,000.00	$0.00
	32	Local Road Construction Excavation	MWH-005	0	cys	$10.00	$0.00
	33	Local Road Construction Fill	MWH-005	0	cys	$15.00	$0.00
	34	Local Road Construction Aggregate Base	MWH-005	0	tns	$45.00	$0.00
	35	Local Road Construction Asphaltic Concrete	MWH-005	0	tns	$150.00	$0.00
		Sheet Subtotal =					**$50,197,895.50**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
I. Buck	C. Wallace	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
12/9/2010		12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __4__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Recreation (Removals / Relocations)

Most Probable

MWH-005 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Selective Demolition & Replacement					
		Campgrounds / Day Use / Boat-In Facilities					
	1	Boat Ramp / Parking Area Excavation	MWH-005	0	cys	$10.00	$0.00
	2	Boat Ramp / Parking Area Fill	MWH-005	3,525	cys	$15.00	$52,877.75
	3	Boat Ramp / Parking Area Aggregate Base	MWH-005	4,405	tns	$45.00	$198,225.00
	4	Parking Area Asphaltic Concrete	MWH-005	2,365	tns	$150.00	$354,750.00
	5	Boat Ramp Concrete Paving	MWH-005	0	cys	$350.00	$0.00
	6	Boat Ramp / Parking Area Concrete Retaining Walls	MWH-005	1,412	cys	$650.00	$917,800.00
	7	Boat Ramp / Parking Area Reinforcing Steel	MWH-005	247,145	lbs	$1.50	$370,717.50
	8	Demo Marina Area Non-floating Structures	MWH-005	3,861	sf	$10.00	$38,610.00
	9	Demo Marina Area Restrooms	MWH-005	2,381	sf	$10.00	$23,810.00
	10	Demo Marina Area Other Land Structures	MWH-005	0	sf	$7.50	$0.00
	11	Demo Swimming Pool	MWH-005	0	sf	$5.00	$0.00
	12	New Marina Area Floating Structures	MWH-005	0	sf	$450.00	$0.00
	13	New Marina Area Non-Floating Structures	MWH-005	4,311	sf	$300.00	$1,293,300.00
	14	New Marina Area Restrooms	MWH-005	1,931	sf	$125.00	$241,375.00
	15	New Marina Area Other Land Structures	MWH-005	0	sf	$225.00	$0.00
	16	New Swimming Pool	MWH-005	0	sf	$30.00	$0.00
	17	Demo/Move Dock Anchors	MWH-005	0	ea	$1,000.00	$0.00
	18	On-Site Modification to Picnic Sites	MWH-005	12	ea	$8,000.00	$95,262.72
	19	On-Site Modification to Campsites	MWH-005	21	ea	$14,000.00	$294,470.40
	20	On-Site Modification to RV Sites	MWH-005	28	ea	$16,500.00	$462,000.00
	21	On-Site Modification to Boat-In Sites	MWH-005	22	ea	$7,100.00	$154,316.51
	22	Demo Picnic Sites	MWH-005	9	ea	$4,000.00	$34,022.40
	23	Demo Campsites	MWH-005	80	ea	$5,000.00	$401,145.60
	24	Demo RV Sites	MWH-005	0	ea	$5,000.00	$0.00
	25	Demo Boat-In Sites	MWH-005	14	ea	$3,600.00	$50,480.64
	26	New Picnic Sites	MWH-005	9	ea	$4,000.00	$34,022.40
	27	New Campsites	MWH-005	80	ea	$9,000.00	$722,062.08
	28	New RV Sites	MWH-005	0	ea	$11,500.00	$0.00
	29	New Boat-In Sites	MWH-005	9	ea	$3,500.00	$31,578.40
	30	New Trails	MWH-005	201,062	sf	$2.00	$402,124.80
	31	New Trailheads	MWH-005	2	ea	$10,000.00	$20,000.00
	32	Local Road Construction Excavation	MWH-005	34,865	cys	$10.00	$348,650.00
	33	Local Road Construction Fill	MWH-005	224,084	cys	$15.00	$3,361,260.00
	34	Local Road Construction Aggregate Base	MWH-005	11,627	tns	$45.00	$523,215.00
	35	Local Road Construction Asphaltic Concrete	MWH-005	4,683	tns	$150.00	$702,450.00
		Sheet Subtotal =					**$11,128,526.20**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
I. Buck	C. Wallace	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
12/9/2010		12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__4__ OF __4__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Recreation (Removals / Relocations)

Most Probable

MWH-005 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Selective Demolition & Replacement					
		Resort Areas & Other Non-Marina Commercial Recreation					
		USFS Fire/Ranger Facilities & Leased Cabins					
	1	Boat Ramp / Parking Area Excavation	MWH-005	0	cys	$10.00	$0.00
	2	Boat Ramp / Parking Area Fill	MWH-005	22,103	cys	$15.00	$331,546.88
	3	Boat Ramp / Parking Area Aggregate Base	MWH-005	1,350	tns	$45.00	$60,750.00
	4	Parking Area Asphaltic Concrete	MWH-005	725	tns	$150.00	$108,750.00
	5	Boat Ramp Concrete Paving	MWH-005	0	cys	$350.00	$0.00
	6	Boat Ramp / Parking Area Concrete Retaining Walls	MWH-005	0	cys	$650.00	$0.00
	7	Boat Ramp / Parking Area Reinforcing Steel	MWH-005	0	lbs	$1.50	$0.00
	8	Demo Marina Area Non-floating Structures	MWH-005	90,587	sf	$10.00	$905,868.55
	9	Demo Marina Area Restrooms	MWH-005	0	sf	$10.00	$0.00
	10	Demo Marina Area Other Land Structures	MWH-005	0	sf	$7.50	$0.00
	11	Demo Swimming Pool	MWH-005	6,072	sf	$5.00	$30,360.12
	12	New Marina Area Floating Structures	MWH-005	0	sf	$450.00	$0.00
	13	New Marina Area Non-Floating Structures	MWH-005	52,787	sf	$300.00	$15,836,056.51
	14	New Marina Area Restrooms	MWH-005	0	sf	$125.00	$0.00
	15	New Marina Area Other Land Structures	MWH-005	0	sf	$225.00	$0.00
	16	New Swimming Pool	MWH-005	6,072	sf	$30.00	$182,160.73
	17	Demo/Move Dock Anchors	MWH-005	1	ea	$1,000.00	$1,000.00
	18	On-Site Modification to Picnic Sites	MWH-005	0	ea	$8,000.00	$0.00
	19	On-Site Modification to Campsites	MWH-005	0	ea	$14,000.00	$0.00
	20	On-Site Modification to RV Sites	MWH-005	0	ea	$16,500.00	$0.00
	21	On-Site Modification to Boat-In Sites	MWH-005	0	ea	$7,100.00	$0.00
	22	Demo Picnic Sites	MWH-005	0	ea	$4,000.00	$0.00
	23	Demo Campsites	MWH-005	13	ea	$5,000.00	$66,606.40
	24	Demo RV Sites	MWH-005	62	ea	$5,000.00	$308,492.80
	25	Demo Boat-In Sites	MWH-005	0	ea	$3,600.00	$0.00
	26	New Picnic Sites	MWH-005	0	ea	$4,000.00	$0.00
	27	New Campsites	MWH-005	13	ea	$9,000.00	$119,891.52
	28	New RV Sites	MWH-005	62	ea	$11,500.00	$709,533.44
	29	New Boat-In Sites	MWH-005	0	ea	$3,500.00	$0.00
	30	New Trails	MWH-005	0	sf	$2.00	$0.00
	31	New Trailheads	MWH-005	0	ea	$10,000.00	$0.00
	32	Local Road Construction Excavation	MWH-005	7,749	cys	$10.00	$77,490.00
	33	Local Road Construction Fill	MWH-005	40,368	cys	$15.00	$605,520.00
	34	Local Road Construction Aggregate Base	MWH-005	2,584	tns	$45.00	$116,280.00
	35	Local Road Construction Asphaltic Concrete	MWH-005	1,041	tns	$150.00	$156,150.00
		Sheet Subtotal =					**$19,616,456.95**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
I. Buck	C. Wallace	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
12/9/2010		12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Major Road Relocations/Parking Area Improvements

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir area vehicle roads:					
		Remove/Replace Lakeshore Drive					
		Remove/Replace Turntable Bay Area					
		Remove/Replace Gilman Road					
		Remove/Replace Salt Creek Road					
		Misc Parking Areas					
		MWH-006 Sheet (1)					$9,948,900.00
		MWH-006 Sheet (2)					$2,554,900.00
		MWH-006 Sheet (3)					$3,347,700.00
		Subtotal					**$15,851,500.00**
		Mobilization & General Conditions				10%	$1,590,000.00
		Subtotal w/ Mobilization					**$17,441,500.00**
		Design Contingencies				20%	$3,508,000.00
		Allowance for Procurement Strategy				2%	$351,000.00
		CONTRACT COST					**$21,300,000.00**
		Construction Contingencies				8%	$1,700,000.00
		FIELD COST					**$23,000,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES

BY	CHECKED
See Group Sheets	See Group Sheets
DATE PREPARED	**PEER REVIEW**
---	See Group Sheets

PRICES

BY	CHECKED
I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**
12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Major Road Relocations/Parking Area Improvements

Most Probable

MWH-006 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		New Road Construction					
		Lakeshore Drive					
	1	Remove Existing Asphalt Concrete Pavement/Base Materials	MWH-006	7	ac	$3,500.00	$24,500.00
	2	Clearing & Grubbing (New Alingment)	MWH-006	7	ac	$1,500.00	$10,500.00
	3	Establish Traffic Controls	MWH-006	1	ls	$35,000.00	$35,000.00
	4	Excavation to Embankment	MWH-006	55,100	cy	$15.00	$826,500.00
	5	Embankment Fill	MWH-006	145,875	cy	$20.00	$2,917,500.00
	6	Aggregate Base Course	MWH-006	12,975	tn	$60.00	$778,500.00
	7	Asphaltic Concrete	MWH-006	6,647	tn	$120.00	$797,640.00
	8	Road Striping	MWH-006	13,063	lf	$2.50	$32,657.50
	9	Culvert Pipe -36" CMP	MWH-006	295	lf	$216.00	$63,720.00
	10	Culvert Pipe -48" CMP	MWH-006	75	lf	$288.00	$21,600.00
	11	Culvert Pipe -54" CMP	MWH-006	300	lf	$324.00	$97,200.00
	12	Culvert Pipe -60" CMP	MWH-006	240	lf	$360.00	$86,400.00
	13	Culvert Pipe -72" CMP	MWH-006	110	lf	$432.00	$47,520.00
	14	Culvert Pipe - 84" CMP	MWH-006	215	lf	$504.00	$108,360.00
	15	Misc Roadway Signage	MWH-006	1	ls	$10,000.00	$10,000.00
	16	Guardrail	MWH-006	650	lf	$35.00	$22,750.00
	17	Concrete Retaining Walls	MWH-006	0	cy	$850.00	$0.00
	18	Concrete Retaining Walls Rebar	MWH-006	0	lbs	$1.50	$0.00
	19	Geotextile Fabric	MWH-006	56,058	sf	$0.50	$28,029.00
	20	Filter Bed Material Type I	MWH-006	1,038	cy	$60.00	$62,280.00
	21	Rip Rap Type II	MWH-006	2,076	cy	$85.00	$176,460.00
		Turntable Bay Area					
	22	Remove Existing Asphalt Concrete Pavement/Base Materials	MWH-006	2	ac	$3,500.00	$7,000.00
	23	Clearing & Grubbing (New Alingment)	MWH-006	2	ac	$1,500.00	$3,000.00
	24	Establish Traffic Controls	MWH-006	1	ls	$35,000.00	$35,000.00
	25	Excavation to Embankment	MWH-006	19,000	cy	$15.00	$285,000.00
	26	Embankment Fill	MWH-006	71,500	cy	$20.00	$1,430,000.00
	27	Aggregate Base Course	MWH-006	4,517	tn	$60.00	$271,026.00
	28	Asphaltic Concrete	MWH-006	0	tn	$120.00	$0.00
	29	Road Striping	MWH-006	0	lf	$2.50	$0.00
	30	Culvert Pipe -36" CMP	MWH-006	0	lf	$216.00	$0.00
	31	Culvert Pipe -48" CMP	MWH-006	0	lf	$288.00	$0.00
	32	Culvert Pipe -54" CMP	MWH-006	0	lf	$324.00	$0.00
	33	Culvert Pipe -60" CMP	MWH-006	0	lf	$360.00	$0.00
	34	Culvert Pipe -72" CMP	MWH-006	0	lf	$432.00	$0.00
	35	Culvert Pipe - 84" CMP	MWH-006	0	lf	$504.00	$0.00
	36	Misc Roadway Signage	MWH-006	1	ls	$5,000.00	$5,000.00
	37	Guardrail	MWH-006	0	lf	$35.00	$0.00
	38	Concrete Retaining Walls	MWH-006	409	cy	$850.00	$347,650.00
	39	Concrete Retaining Walls Rebar	MWH-006	71,575	lbs	$1.50	$107,362.50
	40	Geotextile Fabric	MWH-006	275,410	sf	$0.50	$137,705.00
	41	Filter Bed Material Type I	MWH-006	5,100	cy	$60.00	$306,000.00
	42	Rip Rap Type II	MWH-006	10,200	cy	$85.00	$867,000.00
		Sheet Subtotal =					**$9,948,860.00**

QUANTITIES		**PRICES**	
BY I. Buck	**CHECKED** C. Wallace	**BY** I. Buck	**CHECKED** J. Loucks
DATE PREPARED 11/23/2010	**PEER REVIEW**	**DATE PREPARED** 12/20/10	**PEER REVIEW** C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__2__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Major Road Relocations/Parking Area Improvements

Most Probable

MWH-006 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		New Road Construction					
		Gilman Drive					
	1	Remove Existing Asphalt Concrete Pavement/Base Materials	MWH-006	1	ac	$3,500.00	$3,500.00
	2	Clearing & Grubbing (New Alingment)	MWH-006	1	ac	$1,500.00	$1,500.00
	3	Establish Traffic Controls	MWH-006	1	ls	$35,000.00	$35,000.00
	4	Excavation to Embankment	MWH-006	0	cy	$15.00	$0.00
	5	Embankment Fill	MWH-006	28,500	cy	$20.00	$570,000.00
	6	Aggregate Base Course	MWH-006	1,144	tn	$60.00	$68,640.00
	7	Asphaltic Concrete	MWH-006	544	tn	$120.00	$65,280.00
	8	Road Striping	MWH-006	1,246	lf	$2.50	$3,115.00
	9	Culvert Pipe -36" CMP	MWH-006	0	lf	$216.00	$0.00
	10	Culvert Pipe -48" CMP	MWH-006	0	lf	$288.00	$0.00
	11	Culvert Pipe -54" CMP	MWH-006	0	lf	$324.00	$0.00
	12	Culvert Pipe -60" CMP	MWH-006	180	lf	$360.00	$64,800.00
	13	Culvert Pipe -72" CMP	MWH-006	0	lf	$432.00	$0.00
	14	Culvert Pipe - 84" CMP	MWH-006	0	lf	$504.00	$0.00
	15	Misc Roadway Signage	MWH-006	1	ls	$10,000.00	$10,000.00
	16	Guardrail	MWH-006	200	lf	$35.00	$7,000.00
	17	Concrete Retaining Walls	MWH-006	163	cy	$850.00	$138,380.00
	18	Concrete Retaining Walls Rebar	MWH-006	28,490	lbs	$1.50	$42,735.00
	19	Geotextile Fabric	MWH-006	0	sf	$0.50	$0.00
	20	Filter Bed Material Type I	MWH-006	0	cy	$60.00	$0.00
	21	Rip Rap Type II	MWH-006	0	cy	$85.00	$0.00
		Jones Valley & Silverthorn Areas					
	22	Remove Existing Asphalt Concrete Pavement/Base Materials	MWH-006	1	ac	$3,500.00	$2,820.00
	23	Clearing & Grubbing (New Alingment)	MWH-006	1	ac	$1,500.00	$1,209.00
	24	Establish Traffic Controls	MWH-006	1	ls	$35,000.00	$35,000.00
	25	Excavation to Embankment	MWH-006	0	cy	$15.00	$0.00
	26	Embankment Fill	MWH-006	41,250	cy	$20.00	$825,000.00
	27	Aggregate Base Course	MWH-006	1,732	tn	$60.00	$103,920.00
	28	Asphaltic Concrete	MWH-006	649	tn	$120.00	$77,880.00
	29	Road Striping	MWH-006	1,950	lf	$2.50	$4,875.00
	30	Culvert Pipe -36" CMP	MWH-006	0	lf	$216.00	$0.00
	31	Culvert Pipe -48" CMP	MWH-006	170	lf	$288.00	$48,960.00
	32	Culvert Pipe -54" CMP	MWH-006	0	lf	$324.00	$0.00
	33	Culvert Pipe -60" CMP	MWH-006	0	lf	$360.00	$0.00
	34	Culvert Pipe -72" CMP	MWH-006	235	lf	$432.00	$101,520.00
	35	Culvert Pipe - 84" CMP	MWH-006	0	lf	$504.00	$0.00
	36	Misc Roadway Signage	MWH-006	1	ls	$5,000.00	$5,000.00
	37	Guardrail	MWH-006	0	lf	$35.00	$0.00
	38	Concrete Retaining Walls	MWH-006	0	cy	$850.00	$0.00
	39	Concrete Retaining Walls Rebar	MWH-006	0	lbs	$1.50	$0.00
	40	Geotextile Fabric	MWH-006	71,182	sf	$0.50	$35,591.00
	41	Filter Bed Material Type I	MWH-006	1,318	cy	$60.00	$79,080.00
	42	Rip Rap Type II	MWH-006	2,636	cy	$85.00	$224,060.00
		Sheet Subtotal =					**$2,554,865.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
I. Buck	C. Wallace	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
11/23/2010		12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__3__ OF __3__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Major Road Relocations/Parking Area Improvements

Most Probable

MWH006 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		New Road Construction					
		Salt Creek Road					
	1	Remove Existing Asphalt Concrete Pavement/Base Materials	MWH-006	1	ac	$3,500.00	$3,500.00
	2	Clearing & Grubbing (New Alingment)	MWH-006	1	ac	$1,500.00	$1,500.00
	3	Establish Traffic Controls	MWH-006	1	ls	$35,000.00	$35,000.00
	4	Excavation to Embankment	MWH-006	4,050	cy	$15.00	$60,750.00
	5	Embankment Fill	MWH-006	34,563	cy	$20.00	$691,250.00
	6	Aggregate Base Course	MWH-006	2,336	tn	$60.00	$140,160.00
	7	Asphaltic Concrete	MWH-006	0	tn	$120.00	$0.00
	8	Road Striping	MWH-006	0	lf	$2.50	$0.00
	9	Culvert Pipe -36" CMP	MWH-006	65	lf	$216.00	$14,040.00
	10	Culvert Pipe -48" CMP	MWH-006	0	lf	$288.00	$0.00
	11	Culvert Pipe -54" CMP	MWH-006	0	lf	$324.00	$0.00
	12	Culvert Pipe -60" CMP	MWH-006	325	lf	$360.00	$117,000.00
	13	Culvert Pipe -72" CMP	MWH-006	125	lf	$432.00	$54,000.00
	14	Culvert Pipe - 84" CMP	MWH-006	0	lf	$504.00	$0.00
	15	Misc Roadway Signage	MWH-006	1	ls	$10,000.00	$10,000.00
	16	Guardrail	MWH-006	0	lf	$35.00	$0.00
	17	Concrete Retaining Walls	MWH-006	0	cy	$850.00	$0.00
	18	Concrete Retaining Walls Rebar	MWH-006	0	lbs	$1.50	$0.00
	19	Geotextile Fabric	MWH-006	0	sf	$0.50	$0.00
	20	Filter Bed Material Type I	MWH-006	0	cy	$60.00	$0.00
	21	Rip Rap Type II	MWH-006	0	cy	$85.00	$0.00
		Remaining Road Segments					
	19	Remove Existing Asphalt Concrete Pavement/Base Materials	MWH-006	1	ac	$3,500.00	$3,500.00
	20	Clearing & Grubbing (New Alingment)	MWH-006	1	ac	$1,500.00	$1,500.00
	21	Establish Traffic Controls	MWH-006	1	ls	$35,000.00	$35,000.00
	22	Excavation to Embankment	MWH-006	120	cy	$15.00	$1,800.00
	23	Embankment Fill	MWH-006	76,126	cy	$20.00	$1,522,525.00
	24	Aggregate Base Course	MWH-006	1,866	tn	$60.00	$111,960.00
	25	Asphaltic Concrete	MWH-006	529	tn	$120.00	$63,480.00
	26	Road Striping	MWH-006	2,280	lf	$2.50	$5,700.00
	27	Culvert Pipe -36" CMP	MWH-006	0	lf	$216.00	$0.00
	28	Culvert Pipe -48" CMP	MWH-006	206	lf	$288.00	$59,328.00
	29	Culvert Pipe -54" CMP	MWH-006	0	lf	$324.00	$0.00
	30	Culvert Pipe -60" CMP	MWH-006	0	lf	$360.00	$0.00
	31	Culvert Pipe -72" CMP	MWH-006	0	lf	$432.00	$0.00
	32	Culvert Pipe - 84" CMP	MWH-006	0	lf	$504.00	$0.00
	33	Misc Roadway Signage	MWH-006	1	ls	$5,000.00	$5,000.00
	34	Guardrail	MWH-006	180	lf	$35.00	$6,300.00
	35	Concrete Retaining Walls	MWH-006	0	cy	$850.00	$0.00
	36	Concrete Retaining Walls Rebar	MWH-006	0	lbs	$1.50	$0.00
	37	Geotextile Fabric	MWH-006	84,977	sf	$0.50	$42,488.50
	38	Filter Bed Material Type I	MWH-006	1,574	cy	$60.00	$94,440.00
	39	Rip Rap Type II	MWH-006	3,147	cy	$85.00	$267,495.00
		Sheet Subtotal =					**$3,347,716.50**

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
I. Buck	C. Wallace	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
11/23/2010		12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SUMMARY SHEET 1 OF 1

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Utilities (Removals & Relocations)

Most Probable
Summary 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Reservoir area utilities consists of:					
		Demolishing or relocating u/g utilities or wells					
		Removal or restoration of wastewater facilities					
		Removal or relocation of power distribution facilities					
		New Water Treatment Plant Costs					
		MWH-007 Sheet (1)					$15,651,700.00
		Subtotal					**$15,651,700.00**
		Mobilization/General Conditions				10%	$1,570,000.00
		Subtotal w/ Mobilization					**$17,222,000.00**
		Design Contingencies				25%	$4,331,000.00
		Allowance for Procurement Strategy				2%	$347,000.00
		CONTRACT COST					**$21,900,000.00**
		Construction Contingencies				8%	$1,700,000.00
		FIELD COST					**$23,600,000.00**
		Note: Escalation from published price level to notice to proceed is excluded. Estimates may include discrepancies due to rounding.					
		Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.					

QUANTITIES		PRICES	
BY	**CHECKED**	**BY**	**CHECKED**
See Group Sheets	See Group Sheets	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
---	See Group Sheets	12/20/10	C. Wallace

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET__1__ OF __1__

FEATURE:
Shasta Lake Water Resources Investigation
Feasibility Study
Reservoir Area Utilities (Removals & Relocations)

Most Probable

MWH-007 12.5-ft Dam Raise

PROJECT:
Central Valley Project - CA
Shasta Division

REGION:	**MP**	**ESTIMATE LEVEL:**	**Feasibility**
WOID:	**SHAEF**	**PRICE LEVEL:**	**Apr - 10**

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Selective Demolition & Replacement					
		All Areas					
	1	Demolish Buildings (Residential/Commercial)	MWH-007	21,452	sf	$6.00	$128,712.00
	2	Demolish Potable Water Pipes <6" (Abandon In Place)	MWH-007	5,610	lf	$6.00	$33,660.00
	3	Demolish Potable Water Pipes >6" (Sand Fill)	MWH-007	5,610	lf	$18.00	$100,980.00
	4	Relocate Potable Water Pipes 6"	MWH-007	8,450	lf	$90.00	$760,500.00
	5	Demolish Wells (200' ar 15 gpm)	MWH-007	10	ea	$550.00	$5,500.00
	6	Relocate Wells (200' at 15 gpm)	MWH-007	6	ea	$10,000.00	$60,000.00
	7	Demolish Tanks (2500 gal)	MWH-007	1	ea	$1,875.00	$1,875.00
	8	Demolish Potable Water Pump Station	MWH-007	2	ea	$3,500.00	$7,000.00
	9	Relocate Potable Water Pump Station	MWH-007	2	ea	$25,000.00	$50,000.00
	10	Demolish Residential Well System (200' at 15 gpm)	MWH-007	17	ea	$550.00	$9,350.00
	11	Relocate Residential Well System (200' at 15 gpm)	MWH-007	7	ea	$10,000.00	$70,000.00
	12	Demolish Wastewater Pipes (8")	MWH-007	2,340	lf	$24.00	$56,160.00
	13	Relocate Wastewater Pipes (8")	MWH-007	430	lf	$120.00	$51,600.00
	14	Demolish Wastewater Pump Station	MWH-007	2	ea	$3,500.00	$7,000.00
	15	Demolish Residential Tank/Leach Field (Including Local Piping)	MWH-007	167	ea	$750.00	$125,250.00
	16	Relocate Residential Tank/Leach Field (Including Local Piping)	MWH-007	2	ea	$3,500.00	$7,000.00
	17	Demolish Resort Tank/Leach Field (Including Local Piping)	MWH-007	72	ea	$1,000.00	$72,000.00
	18	Relocate Resort Tank/Leach Field (Including Local Piping)	MWH-007	17	ea	$4,500.00	$76,500.00
	19	Relocate Holding Tank with Pump Replacement	MWH-007	1	ea	$2,500.00	$2,500.00
	20	Demolish Vault Pit	MWH-007	2	ea	$2,500.00	$5,000.00
	21	Relocate Valve Pit	MWH-007	2	ea	$7,500.00	$15,000.00
	22	Demolish Low Voltage Power Wires	MWH-007	28,565	lf	$5.00	$142,825.00
	23	Relocate Low Voltage Power Wires	MWH-007	28,565	lf	$10.00	$285,650.00
	24	Demolish High Voltage Power Wires	MWH-007	5,140	lf	$10.00	$51,400.00
	25	Relocate High Voltage Power Wires	MWH-007	7,740	lf	$20.00	$154,800.00
	26	Demolish Power Towers	MWH-007	6	ea	$15,000.00	$90,000.00
	27	Relocate Power Towers	MWH-007	6	ea	$125,000.00	$750,000.00
	28	Demolish U/G Telecommunications Wire	MWH-007	27,810	lf	$1.00	$27,810.00
	29	Relocate U/G Telecommunications Wire	MWH-007	30,205	lf	$5.00	$151,025.00
	30	Demolish U/G Fiberoptics	MWH-007	5,180	lf	$1.00	$5,180.00
	31	Relocate U/G Fiberoptics	MWH-007	5,840	lf	$5.00	$29,200.00
	32	Demolish U/G Tanks	MWH-007	9	ea	$1,500.00	$13,500.00
	33	Relocate U/G Tanks	MWH-007	9	ea	$8,750.00	$78,750.00
	34	Demolish Misc Tanks	MWH-007	1	ea	$2,000.00	$2,000.00
	35	Relocate Misc Tanks	MWH-007	1	ea	$10,000.00	$10,000.00
	36	Close Mine Entrances	MWH-007	2	ea	$5,000.00	$10,000.00
	37	Wastewater Treatment Plant Costs (Appendix B - Utilities Report)	MWH-007	1	ls	$12,204,000.00	$12,204,000.00
		Sheet Subtotal =					**$15,651,727.00**

QUANTITIES		**PRICES**	
BY	**CHECKED**	**BY**	**CHECKED**
I. Buck	C. Wallace	I. Buck	J. Loucks
DATE PREPARED	**PEER REVIEW**	**DATE PREPARED**	**PEER REVIEW**
1/19/2011		12/20/10	C. Wallace

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