**ESTIMATE WORKSHEET** FEATURE: PROJECT: Upper San Joaquin River Basin Upper San Joaquin River Basin New K2 Option Powerplant PN PRICE LEVEL: Appraisal

J:\US\_Bureau\_Reclamation\DIO\_01CS20210B\Upper\_San\_Joaquin\_ Apprasial Level Quanity Estimates REGION FILE: R-EIS-EIR\_(Phase\_2)\Reclamation products\TSC products\Cost Plant - Mechanical worksheets\Group 2 - Sept 04\[Powerplant - New K2.xls]Summary PLANT DESCRIPTION CODE QUANTITY UNIT UNIT PRICE AMOUNT PAY 12 Electric traction elevator, overhead, geared, D-8410 UNIT \$500,000.00 \$500,000.00 capacity = 3500 pounds, passenger elevator, travel = 100 feet, landings = 5, speed = 200 ft/min Bulkhead gates, lifting beam, and guides D-8410 (assumes one set of two bulkheads for isolation of 1 turbine, assumes four sets of guides for four units) a. Structural steel A36: \$186,000.00 1. Bulkhead gates = 8,500 #/gate x 2 = 17,000# 46.500 LBS \$4.00 2. Guides (excluding S.S) = 28,000# 3. Lifting frame = 1,500# 2,500 LBS \$10,000.00 b. Embedded anchor bolts, steel = 2,500# \$4.00 c. Stainless steel for guides = 2,500# 2,500 LBS \$15.00 \$37,500.00 HVAC NOT INCLUDED AS SEPARATE ITEM, WILL BE INCLUDED IN UNLISTED ITEMS. ALSO, MONORAIL HOIST FOR BULKHEAD GATE NOT INCLUDED Sheet 10 Subtotal \$733,500.00 Sheet 6 Subtotal \$16,077,600.00 Sheet 7 Subtotal \$12,471,200.00 Sheet 8 Subtotal \$771,000.00 Sheet 9 Subtotal \$3,035,000.00 Powerplant - Mechanical Subtotal \$33,088,300.00 QUANTITIES **PRICES** Alex Ritt/Wayne Delzer CHECKED D. Donaldson CHECKED DATE PREPARED PEER REVIEW DATE PREPARED PEER REVIEW

02/22/05

# **ESTIMATE WORKSHEET**

SHEET\_\_11\_\_ OF \_\_13 \_\_

CC CC		ION		In-a	O.T.			SHEE I_11_OF_13_
Upper -		oaquin River Basi	n	PROJE	<b>CT:</b> Upper San J	loaquin F	River Basin	
		lant at K2	natas	DECION	MB	Innier	1.5751	Annairal
Apprais	saile	vel Quantity Estim	iates	REGION			LEVEL:	Appraisal Opper_San_Joaquin_F
Powerpl	ant - El	ectrical		FILE:	R-EIS-EIR_(Ph	ase_2)\Red	clamation products\TS t 04\[Powerplant - Ne	C products\Cost
F 를	E							
PLANT ACCOUNT	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Furnishing, installing	, & testing 45,600 kVA, 60	D-8430	4	Each	\$2,750,000.00	\$11,000,000.00
		HZ, 360 RPM, 90 p	ercent power factor, 3					
			vertical-shaft, water-cooled					
		AC generator includi	ng static excitation system					
			Cost curves: 1992 [50 mva and	43.75 mva av	g.]		2,260,000	
			Index number: 1992 - 2004	262			1.218605	
				215				
	2	Furnisning and insta	lling 15 KV, 2000 amperes,	D-8430	400	Feet	\$650.00	\$260,000.00
		non-segregated pha		2 0 100	100	1 000	<b>Q000.00</b>	<b>\$200,000.00</b>
	3	-	lling generator neutral	D-8430	4	Each	\$15,000.00	\$60,000.00
		grounding equipmer	t					
_		Furnishing and insta	lling generator metal-clad	D-8430	4	Each	\$62,500.00	\$250,000.00
		switchgear, 15 KV, 2		D-0400		Lacii	\$02,000.00	\$200,000.00
	5	Furnishing and insta	lling Duplex control	D-8430	1	LS	\$500,000.00	\$500,000.00
		switchboard for oper	ation of four generators, and					
		switchyard controls	and protection					
	6	Furnishing and insta	lling indoor double-ended	D-8430	1	Each	\$100,000.00	\$100,000.00
	H		tation with two dry type	D-0400		Lacii	\$100,000.00	Ψ100,000.00
			-480Y277 V; 1,000 KVA					
		a distribution for the	1001211 0, 1,000 1071					
	7	Furnishing and insta	lling plant battery system	D-8430	1	LS	\$6,400.00	\$6,400.00
		125 VDC, 200 amp	ere-hour, with battery charger	batts	50	ea	\$100.00	
				charger	1	ea	\$400.00	
				rack	2	Is	\$500.00	
		Furnishing and insta	lling lighting system	D-8430	1	LS	\$83,400.00	\$83,400.00
_	°	Furnishing and insta	lighting control panelboard	D-6430	1	ea	\$5,000.00	\$65,400.00
			overhead lighting:	**	10,000	ft2	\$7.50	
			emergency lighting units		4	ea	\$650.00	
			exit lighting		4	ea	\$200.00	
		** The square foo	stage is major guess - correct with actual floo	orplan info			0200.00	
			quare foot is a mid-point value from the elect					
			lighting tables. Means elect. Pages 336 - 3					
		Subtotal for items 9	and 10 - from sheet 12					\$252,680.00
		Powerplant - Elect	rical Subtotal					\$12,512,480.00
	QUANTITIES					PRICES		
вү			CHECKED	BY		LP	CHECKED	
	Richard				L. Pedde			
DATE PRI	EPARED		PEER REVIEW	DATE PRE	PARED 02/22/05		PEER REVIEW	
			l		02/22/05			

# **ESTIMATE WORKSHEET**

SHEET\_12\_ OF \_\_13 \_\_

BUREAU OF	RECLAMA:	TION ESTIMATE WORK						
FEATL			PROJE		V 1230	-0.8		
		oaquin River Basin	1	Upper San Joa	quin Rive	er Basin		
		olant at K2 evel Quantity Estimates	REGION	MP	DDICE	LEVEL:	Appraisal	
Applais	sai Le	ver Quantity Estimates	FILE:				Appraisal per_San_Joaquin_FR-	
Switchya	ard		I'ILL	EIS-EIR_(Phase_2	)Reclama	tion products\TSC pro	ducts\Cost	
_				worksneetstoroup	2 - Sept 04	- New K	2.xisjoummary	
PLANT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
	9	Furnishing and installing 3 phase, 480 volt,	D-8430	4	Each	\$13,170.00	\$52,680.00	
		distribution panels include:						
		Main panelboard enclosure: 225A lugs		1	ea.	\$2,400.00		
		Main panelboard enclosure: 100A lugs		1	ea.	\$2,250.00		
		225 Amp frame, 225 amp trip		1	ea.	\$1,100.00		
		100 Amp frame, 100 amp trip		2	ea.	\$530.00		
		100 Amp frame, 60 amp trip		4	ea.	\$530.00		
		100 Amp frame, 20 amp trip		4	ea.	\$530.00		
		100 Amp frame, 15 amp trip		4	ea.	\$530.00		
		M: 16400 800 0170/0190 820 0280/0420						
	40	Suminities and installing on basical cabon control based	D 0400		Fo als	050,000,00	6000 000 0	
	10	Furnishing and installing spherical valve control board	D-8430	4	Each	\$50,000.00	\$200,000.00	
		avg control board cost - insufficent data						
		to know sufficency/accuracy of this value						
		Powerplant - electrical - continued					\$252,680.0	
		not included in sheet 12 subtotal - moved into	sheet 11 su	btotal			0202,000.0	
		ELECTRICAL						
		Switchyard						
		Furnish and Install:						
	1	Oil-filled, conservator-type power	D8440	2	EA	\$2,800,000.00	\$5,600,000.00	
		transformer						
		200 MVA; 115-13.8 kV, 3-phase		200	mva	\$14,000.00		
	2	The state of the s	D8440	6	EA	\$40,000.00	\$240,000.00	
		2000 amp, 3-phase						
		means: 16360 800 3090 161kv - manual	29700					
		means: 16360 800 3110 161kv - mtr-op	41700					
	3	115-kV circuit breakers, 2000 amp	D8440	2	EA	\$250,000.00	\$500,000.00	
	`	means: 16360 800 2080 161kv - oil	242000			4200,000.00	4000,000.0	
		means: 16360 800 2100 161kv - air	204500					
		means: 16360 800 2160 161kv - gas	264500					
	4	SCADA	D8440	Assume covered u	nder unliste	ed items		
		STRUCTURAL	D8120	Assume switchyard	structures	covered under unlist	ed items	
		Switchyard Subtotal					\$6,340,000.0	
		QUANTITIES			Р	RICES		
BY		CHECKED	BY		LP	CHECKED		
Lisa Gamu	ıciello			L. Pedde				
DATE PRE	EPARED	PEER REVIEW	DATE PRE			PEER REVIEW		
				02/22/05				

# **ESTIMATE WORKSHEET**

SHEET\_13\_OF \_\_13 \_\_

FEAT				PROJE	ECT:			
Upper Power	San J	oaquin River Basir at RM 286	n		Upper San Jos	quin Ri	ver Basin	
Apprai	isal Le	vel Quantity Estim	ates	REGION	MP	PRICE	LEVEL:	Appraisal
Switchy				FILE:	J:\US_Bureau_Rec EIS-EIR_(Phase_2 worksheets\Group	lamationV	DIQ_01CS20210B\Up tion products\TSC pro t\[Powerplant - New K	per_San_Joaquin_FR- ducts\Cost 2.xls]Summary
PLANT	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	7	SCADA		D8440	Unlisted Item	LS	Included in Unlis	ted Items
	_							
	-							
-								
-								
	_							
	-							
	_							
⊢	-							
$\vdash$								
	-							
	_							
			Sheet 13 Subtotal					\$0.00
			Sheet 12 Subtotal					\$6,340,000.00
								*****
			mission Line Subtotal				PICES	\$6,340,000.00
ву		QL	CHECKED	ВУ			RICES CHECKED	
Lisa Gam	uciello		OHEGKED	Bi	L. Pedde		CHECKED	
DATE PR			PEER REVIEW	DATE PR			PEER REVIEW	

# **ESTIMATE WORKSHEET**

SHEET\_1\_ OF \_\_11\_\_

	ATURE: per San Joaquin River Basin				PROJECT:					
Reding	per San Joaquin River Basin dinger Powerplant oraisal Level Quantity Estimates					Upper San .	Joaquin R	River Basin		
Apprais	sal Le	vel Quantity Estim	nates		REGION		PRICE		Appraisal	
Summai	y Shee	t			FILE:	FR-EIS-EIR_(F	hase_2)\R	eclamation produc	10B\Upper_San_Joaquin_ cts\TSC products\Cost werplant - Final Qty	
PLANT ACCOUNT	РАҮ ІТЕМ		DESCRIPTION		CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
		Tailwater Weir & Per	nstock Removal						\$1,253,250.00	
		D 1							044004040	
		Powerplant - Civil/St	ructural Subtotal						\$14,994,010.00	
		Powerplant - Mechai	nical Subtotal						\$5,027,448.00	
		Powerplant - Electric	cal Subtotal						\$1,952,000.00	
		Switchyard & Transn	nission Line Subtotal						\$1,050,000.00	
		•								
		Subtotal							\$24,276,708.00	
		Mobilization		+/-	5%				\$1,200,000.00	
		Subtotal w/Mobilizati	on						\$25,476,708.00	
									<del></del>	
		Unlisted Items		+/-	15%				\$3,523,292.00	
		CONTRACT COST							\$29,000,000.00	
		Contingencies		. /	25%				\$8,000,000.00	
		Contingencies		+/-	25%				\$6,000,000.00	
		FIELD COST							\$37,000,000.00	
		QL	JANTITIES				F	PRICES		
BY			CHECKED		вү	D. Donaldson		CHECKED		
DATE PRI	EPARED		PEER REVIEW		DATE PRE	PARED 05/31/05		PEER REVIEW		

# **ESTIMATE WORKSHEET**

SHEET\_2\_ OF \_\_11 \_\_

		VUKNOHEE				SHEET_2_ OF11
		PROJE	CT:			
Joaquin River Bas owerplant	in		Upper San J	oaquin R	tiver Basin	
	nates	REGION	MP	PRICE I	LEVEL:	Appraisal
		EII E:	E:\US_Bureau_	Reclamation	on\IDIQ_01CS202	10B\Upper_San_Joaqui
Powerplant						
- Circi piani			WOIKSHEELS/GIC	ир 2 - Зер	1 04 (Redinger Fo	Weipiant - Final Qty
	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
CIVIL						
Construct/Remove	Cellular Cofferdam					
Assume coffere	am for this powerplant					
is small enough	to be included within					
the unlisted iten	ns.					
1 Removal of existing	steel penstock pipe	D8120	439,000	LBS	\$1.00	\$439,000.00
2 Removal of penstoo	k pipe steel supports	D8120	36,000	LBS	\$1.00	\$36,000.00
3 Concrete plug for ex	cisting penstock tunnel	D8120	Include	in Unlist	ed Items	
4 Rock Excavation for	Tailwater Weir	D8120	370	CY	\$125.00	\$46,250.00
5 Concrete for Tailwa	er Weir	D8120	1,350	CY	\$500.00	\$675,000.00
6 Cement for Tailwate	er Weir	D8120	380	TONS	\$150.00	\$57,000.00
						\$1,253,250.00
QI	JANTITIES			Р	RICES	
Ruchti	CHECKED	вү	D. Donaldson		CHECKED	
ED .	PEER REVIEW	DATE PRE	<b>PARED</b> 05/31/05		PEER REVIEW	
	owerplant evel Quantity Estin Powerplant  CIVIL  Construct/Remove Assume cofferd is small enough the unlisted item  Removal of existing Removal of penstoc Concrete plug for ex Rock Excavation for Concrete for Tailwate Cement for Tailwate	Joaquin River Basin owerplant evel Quantity Estimates  Powerplant    DESCRIPTION	Joaquin River Basin owerplant evel Quantity Estimates  Powerplant  DESCRIPTION  CODE  CIVIL  Construct/Remove Cellular Cofferdam  Assume cofferdam for this powerplant is small enough to be included within the unlisted items.  1 Removal of existing steel penstock pipe  D8120  2 Removal of penstock pipe steel supports  3 Concrete plug for existing penstock tunnel  4 Rock Excavation for Tailwater Weir  D8120  5 Concrete for Tailwater Weir  D8120  6 Cement for Tailwater Weir  D8120  QUANTITIES  Ruchti  CHECKED  BY	JOAQUIN RIVER BASIN OWER JAINT OW	JOAQUIN RIVER BASIN OWEPJIANT WEIT STILL STATE OF TREINGROUND TO STATE OF THE STATE	Upper San Joaquin River Basin overplant everel Quantity Estimates  REGION MP PRICE LEVEL: FILE:

# **ESTIMATE WORKSHEET**

SHEET\_3\_ OF \_\_11 \_\_

BUREAU OF	RECLAMAT	10N ESTIMATE WORK							
FEAT	JRE:		PROJE	CT:					
		oaquin River Basin werplant		Upper San Jo	oaquin F	River Basin			
,	_	vel Quantity Estimates	REGION	I MP	PRICE	LEVEL:	Appraisal		
		,	FILE:		eclamation	\IDIQ_01CS20210	)B\Upper_San_Joaquin_		
Powerpl	lant - Ci	vil				clamation products 04\[Redinger Power	\TSC products\Cost		
	1			Worksheetstered	D COPT	04(Redinger r owe	i inar Gty		
PLANT ACCOUNT	РАУ ІТЕМ	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
		Realignment of Existing County Road							
		Road Relocation for Service Yard & Access Road							
	1	Clearing and Grubbing	D8140		AC	Included in U	nlisted Items		
	2	Excavation (rock)	D8140	42,000	CY	\$15.00	\$630,000.00		
	3	Compacted embankment	D8140	100	CY	\$50.00	\$5,000.00		
	4	Gravel surfacing	D8140	290	CY	\$50.00	\$14,500.00		
	1	24" dia corrugated metal pipe	D8140	140	LF	\$80.00	\$11,200.00		
	6	Metal Beam Guard Rail	D8140		LF	Included in U	nlisted Items		
		Powerplant Site							
	<del>                                     </del>	Rock excavation to Service Yard El.1253.5	D8120	112,400	CY	\$13.00	\$1,461,200.00		
	-	Rock excavation for penstock pipe trench	D8120		CY	Included in U			
		Backfill for penstock pipe trench	D8120		CY	Included in Ur			
	10	Compacted backfill for Service Yard to El. 1253.5	D8120	14,050	CY	\$10.00	\$140,500.00		
		Structural Excavation and Backfill							
		Assume all rock excavation.							
		Assume stockpile rock for later use as riprap or rockfill.							
	11	Rock excavation for powerplant tailrace (drill & blast)	D8120	9,100	CY	\$30.00	\$273,000.00		
	<del>                                       </del>	Rock excavation for structures (drill & blast)	D8120	93,400	CY	\$13.00	\$1,214,200.00		
	13	Compacted backfill for plant structure (assume local borrow	D8120		CY	Included in U	nlisted Items		
	14	Furnish, place, & compact backfill for penstock pipe	D8120		CY	Included in Ur	nlisted Items		
		(assume local borrow)							
		Sheet Subtotal					\$3,749,600.00		
	QUANTITIES			1	PI	RICES	40,140,000.00		
вү	M. R. O' Mark Le	Shea CHECKED	вү	D. Donaldson		CHECKED			
DATE PR	<b>EPARED</b> 8/11/04		DATE PRE	EPARED 05/31/05		PEER REVIEW			

# **ESTIMATE WORKSHEET**

SHEET\_4\_ OF \_\_11 \_\_

Redinger	an Jo r Pov r Pov tot - Str Wall Lev 15 16	vel Quantity Estimates	REGION FILE:	MP E:\US_Bureau_R FR-EIS-EIR_(Pha	PRICE eclamation ase_2)\Rec	LEVEL:	Appraisal BIUpper_San_Joaquin_ ITSC products\Cost rplant - Final Qty  AMOUNT
Redinger Appraisa Powerplan	r Poval Leval - Strand	werplant vel Quantity Estimates ructural  DESCRIPTION  STRUCTURAL  Construct Powerplant Structure Furnish, form, and place reinforced concrete	REGION FILE:	MP E:\US_Bureau_R FR-EIS-EIR_(Pha worksheets\Group	PRICE   eclamation ase_2)\Rec 2 - Sept (	LEVEL: NDIQ_01CS20210 lamation products 14\[Redinger Power	DB\Upper_San_Joaquin_ \TSC products\Cost erplant - Final Qty
Appraisa Powerplan	nt - Str WHILL WE HAVE 15 16	Vel Quantity Estimates  ructural  DESCRIPTION  STRUCTURAL  Construct Powerplant Structure  Furnish, form, and place reinforced concrete	FILE:	E:\US_Bureau_R FR-EIS-EIR_(Pha worksheets\Grou	eclamation se_2)\Rec o 2 - Sept (	NDIQ_01CS20210 lamation products u4\[Redinger Powe	DB\Upper_San_Joaquin_ \TSC products\Cost erplant - Final Qty
Powerplan	MAY 172	STRUCTURAL  Construct Powerplant Structure  Furnish, form, and place reinforced concrete	FILE:	E:\US_Bureau_R FR-EIS-EIR_(Pha worksheets\Grou	eclamation se_2)\Rec o 2 - Sept (	NDIQ_01CS20210 lamation products u4\[Redinger Powe	DB\Upper_San_Joaquin_ \TSC products\Cost erplant - Final Qty
	15 16	STRUCTURAL  Construct Powerplant Structure  Furnish, form, and place reinforced concrete	1.55.	FR-EIS-EIR_(Pha worksheets\Grou	se_2)\Rec 2 - Sept (	lamation products	\TSC products\Cost erplant - Final Qty
	15 16	STRUCTURAL  Construct Powerplant Structure  Furnish, form, and place reinforced concrete					
PLANT	15 16	STRUCTURAL  Construct Powerplant Structure  Furnish, form, and place reinforced concrete	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	16	Construct Powerplant Structure Furnish, form, and place reinforced concrete					
	16	Furnish, form, and place reinforced concrete					
	16	Furnish, form, and place reinforced concrete					
	16		D8120	16,000	CY	\$400.00	\$6,400,000.00
		i diffisit and place concrete reinforcement.	D8120	1,760,000	LBS	\$0.80	\$1,408,000.00
	17	Assume 110 #/CY	D0120	1,700,000	LDS	ψ0.00	\$1,400,000.00
		Furnish and handle cement (.282T/CY)	D8120	4,512	TONS	\$120.00	\$541,440.00
	18	Furnish & install precast, prestressed double tees for roof	D8120	13	EA	\$30,000.00	\$390,000.00
		8DT 20A+2 = 8' wide & 20" deep - 56' Span					
		Penstock Pipe Encasement					
	19	Furnish, form, and place reinforced concrete	D8120		CY	Included in Ur	l nlisted Items
	20	Furnish and place concrete reinforcement.	D8120		LBS	Included in Ur	nlisted Items
	Assume 125 #/CY	Assume 125 #/CY					
	21	Furnish and handle cement (.282T/CY)	D8120		TONS	Included in Ur	listed Items
		Service Yard Retaining Wall					
	22	Furnish, form, and place reinforced concrete	D8120	4,500	CY	\$400.00	\$1,800,000.00
	23	Cement for Service Yard Retaining Wall	D8120	1,269	TONS	\$130.00	\$164,970.00
	24	Furnish and place concrete reinforcement.	D8120	675,000	LBS	\$0.80	\$540,000.00
		Structural Steel Included in Unlisted Items	D8120		LBS	Included in Ur	listed Items
			50120		- 250	moidaga in Ol	motou nonio
		Miscellaneous Metalwork					
	23	Included in Unlisted Items	D8120		LBS	Included in Ur	nlisted Items
		Sheet 4 Subtotal					\$11,244,410.00
		Sheet 3 Subtotal					\$3,749,600.00
		Powerplant - Civil/Structural Subtotal (Sheets 3 and 4)					\$14,994,010.00
QUANTIT		The second secon			PE	RICES	
		chti & M. R. O'Shea CHECKED	вү	D. Donaldson	1.1	CHECKED	
	DATE PREPARED  8/11/04  PEER REVIEW		DATE PRE	PARED 05/31/05		PEER REVIEW	

# **ESTIMATE WORKSHEET**

SHEET\_5\_ OF \_11 \_

	AU OF RECLAMATION ESTIMATI		LO I IIVIA I E V					SHEET_5_ OF11
FEAT	TURE: r San Joaquin River Basin nger Powerplant			PROJE	CT:			
Upper Reding	San J	oaquin River Basin werplant			Upper San Jo	aquin Rive	er Basin	
		vel Quantity Estimat	29	REGION	MP	PRICE L	FVFI ·	Appraisal
, tppiai	oui Lo	voi Quartity Estimat	20	FILE:				per_San_Joaquin_FR-
D		a alta a de a l		FILE:	EIS-EIR (Phase	2)\Reclama	tion products\TSC pro	ducts\Cost
		echanical			worksheets\Group	2 - Sept 04	4\[Redinger Powerplan	t - Final Qty
PLANT	РАҮ ІТЕМ	DE	SCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
							***	
	1	Turbine Weight - 1 unit		D-8420	180,400	lbs	\$13.00	\$2,345,200.00
		CF3 18-8 stainless Run						
		Turbine-Vertical Francis						
		300 rpm, 280 ft. Design						
		Gross head range, 350	- 150 feet					
	2	Digital Governor - 1 unit		D-8420	17,600	lbs	\$11.50	\$202,400.00
		57,884 ft-lb capacity			,230		Ţ <b>30</b>	, ,_,,,,,,,,,
	3	Steel piping		D-8420				
	i	108" Dia. t = .500", Wt.	= 579 lb/ft		110	lin ft.	\$2.00	\$220.00
		186" Dia., t = .563", Wt.			24	lin ft.	\$2.00	\$48.00
	4	Flange		D-8420	5,770	lb.	\$4.00	\$23,080.00
		2 -108" AWWA Class	O flanges,					
		2884 lb. per flange						
	5	Valve		D-8420	41,000	lb.	\$10.00	\$410,000.00
		108" Dia. AWWA Clas	s 150, Butterfly					
		valve with hydraulic cy	linder operator,					
		41,000 lb. ea.						
			eet Subtotal			ᆜ	DICES	\$2,980,948.00
DV	D-: 11		NTITIES		D. Danaili	T T	RICES	
вү	Dave Hu Rick Fris		ECKED	BY	D. Donaldson		CHECKED	
DATE PR	EPARED			DATE PRE	PARED 05/31/05		PEER REVIEW	
				05/31/05				

# **ESTIMATE WORKSHEET**

SHEET\_6\_ OF \_\_11 \_\_

	RECLAMAT	TION ESTIMATE WOR					SHEET_6_ OF11
FEATU			PROJE	CT:			
		loaquin River Basin werplant		Upper San J	oaquin R	iver Basin	
	•	vel Quantity Estimates	REGION	I MP	PRICE I	LEVEL:	Appraisal
' ' ' '		•	FILE:	E:\US_Bureau_l	Reclamation	\IDIQ_01CS20210B\U	pper_San_Joaquin_FR-
Powerpla	ant - M	echanical		EIS-EIR_(Phase worksheets\Gro	e_2)\Reclama up 2 - Sept 0	ation products\TSC pr I4\[Redinger Powerpla	oducts\Cost .nt - Final Qty
μŻ	Σ						
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	CO2 High Pressure Fire Extinguishing System:	D-8410	1	L.S.	\$18,000.00	\$18,000.00
		6 - 100# Storage Cylinders w/ control panel					
		and appurtenances and 300 lbs. of					
		sch. 80 carbon steel pipe, valves & fittings					
	2	Fire Suppression System:	D-8410	1	L.S.	\$48,000.00	\$48,000.00
		6 - Fire hose reels w/ 75 feet of hose					
		10 - Portable hand-held 20# extinguishers					
		1,500 lbs. of sch. 40 carbon steel pipe, valves & fittings					
		1 - Fire pump, split-case, 500 gpm @ 300 ft of head					
	3	Unit Cooling Water System:	D-8410	1	L.S.	\$110,000.00	\$110,000.00
		2 - Cooling water pumps, end-suction type, 150 gpm					
		2 - 6-inch automatic, self-cleaning strainers					
	4,000 lbs. of sch. 40 carbon steel pipe, valves & fit						
		600 lbs. of ductile iron, mechanical joint pipe & fittings					
	4	Lubricating Oil System:	D-8410	1	L.S.	\$21,000.00	\$21,000.00
		2 - 500 gal carbon steel storage tanks					
		1 - 10 gpm @ 100 psi oil pump					
		1 - lube oil filter					
		1,000 lbs. of sch. 40 carbon steel pipe, valves & fittings			1		
					1		
	5	Compressed Air System:	D-8410	1	L.S.	\$53,000.00	\$53,000.00
		2 - 100 cfm @ 125 psi rotary screw air compressors					
		1 - 250 gal. carbon steel air receiver					
		1 - 100 cfm air dryer					
		500 lbs. of sch. 40 carbon steel pipe, valves & fittings					
	6	Service Water System:	D-8410	1	L.S.	\$58,000.00	\$58,000.00
		1 - Service water pump, 75 gpm @ 200 ft. of head					
		1 - Hydropneumatic Tank, 300 gal.					
		400 lbs. of type K copper tubing, valves & fittings			1		ļ
	<u> </u>		1		1	<b>A.</b>	<u> </u>
	7	Gravity Drainage System:	D-8410	1	L.S.	\$42,000.00	\$42,000.00
		20 - Floor drains, cast iron			1		ļ
		4,000 lbs. of cast iron hub & spigot, service weight		-	+		
	-	soil pipe	-		1		-
			-		1		-
	-	Sheet Subtotal	+		+		\$250,000,00
					<u> </u>	RICES	\$350,000.00
	QUANTITIES		DV.	D. Danalda	F		
BY	John Gr	rass CHECKED	BY	D. Donaldson		CHECKED	
DATE 55			DATE 55-	-04050		DEED DE: "=:	
DATE PRI	EPARED	'	DATE PRE			PEER REVIEW	
				05/31/05	)		

# **ESTIMATE WORKSHEET**

SHEET\_7\_ OF \_\_11\_\_

BUREAU O	F RECLAMA	TION ESTIMATE WOR	_				SHEET_7_ OF11
FEAT	URE:		PROJ	ECT:			
		oaquin River Basin werplant		Upper San Jo	oaquin R	iver Basin	
	-	I Quanity Estimates	REGION	N PN	PRICE	LEVEL:	Appraisal
, pp. an			FILE:				pper_San_Joaquin_FR-
Plant	Mechan	ical	''	EIS-EIR_(Phase_	_2)\Reclam	ation products\TSC pro	oducts\Cost
_		I I		worksheets\Grou	p 2 - Sept (	04\[Redinger Powerpla	nt - Final Qty
PLANT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	8	Plant Unwatering System:	D-8410	1	L.S.	\$96,000.00	\$96,000.00
		2 - Vertical turbine type sump pump, 500 gpm @ 100 ft h				****	¥ = 1, = 1 = 1
	1	1 - Drainage jet type drainage pump					
		500 lbs. of type K copper tube, valves & fittings					
		2,000 lbs. of ductile iron, mechanical joint pipe & fittings			i		
		2,000 lbs. of ductile from, mechanical joint pipe & fittings					
	9	Demostic Water and Conitory Waste System:	D 0410	1	L.S.	\$60,000,00	\$60,000,00
-	9	Domestic Water and Sanitary Waste System:	D-8410	1	L.S.	\$60,000.00	\$60,000.00
-	-	2 - Water Closets			1		
		1 - Urinal					
		2 - Lavatories & accessories					
		1 - Duplex Sewage Ejector					
		2,800 lbs. of cast iron hub & spigot service weight					
		sewer pipe					
		300 lbs. of type K copper tubing, valves & fittings					
	10 60 Ton Overhood Cropp, 52' 0" coop, 110 ft long rolle						
	10	· · · · · · · · · · · · · · · · · · ·		1	LS	\$900,000.00	\$900,000.00
		a. Crane: 100,000 lbs (includes 10T aux.)					
		b. Trolley: 35,000 lbs					
		c. 110 ft x 2 = 220 ft of 135# (per yd.) rail= 10,000 lb	s				
	11	Electric traction elevator, overhead, geared,	D-8410	1	UNIT	\$500,000.00	\$500,000.00
	+ ''	· · · · · · · · · · · · · · · · · · ·	D-0410	'	OIVIII	\$300,000.00	ψ300,000.00
		capacity = 3500 pounds, passenger elevator,					
	1	travel = 66 ft., landings = 5, speed = 200 fpm	-				
	12	Bulkhead gates, lifting beam, and guides					
		(assumes one set of two bulkheads for isolation of 1			i i		
		turbine, assumes two sets of guides for one unit)					
		a. Structural steel A36:					
		1. Bulkhead Gates = 8,000 #/gate x 2 = 16,000 #		30,000	LBS	\$4.00	\$120,000.00
	-	2. Guides (excluding S.S.) = 12,500 #	-				
		3. Lifting frame = 1,500 #					
		b. Embedded anchor bolts, steel = 1,100#		2,500	LBS	\$4.00	\$10,000.00
	$\pm$	c. Stainless steel for guides = 700#	$\pm$	700	LBS	\$15.00	\$10,500.00
	-	HVAC NOT INCLUDED AS SEPARATE ITEM, WILL BE			ITEMS		
	+	ALSO, MONORAIL HOIST FOR BULKHEAD GATE NOT	INCLUDED	) 			
	1	Sheet Subtotal					\$1,696,500.00
	QUANTITIES			•	F	PRICES	
вү	John Gi	ass/Wayne Delzer CHECKED	вү	D. Donaldson		CHECKED	
DATE P	DATE PREPARED PEER REVIEW		DATE PRI			PEER REVIEW	
	<u> </u>			05/31/05			

# **ESTIMATE WORKSHEET**

SHEET 8 OF 11

	TREOD WINT							G.E.E.IO G
FEATL				PROJE	CT:			
Upper Reding	San J	oaquin River Basi werplant	n		Upper San J	oaquin R	iver Basin	
				DEGIGN	DN	Innior	L EVEL .	A
Apprasia	ai Levei	I Quanity Estimates		REGION		PRICE		Appraisal
				FILE:			ation products\TSC p	Upper_San_Joaquin_FR-
Plant - M	/lechani	ical			worksheets\Grou	_2) (Reciaiii ip 2 - Sept 0	04\[Redinger Powerpl	lant - Final Qty
ς.	Σ							
PLANT ACCOUNT	РАҮ ІТЕМ		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
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			Sheet 7 Subtotal					\$1,696,500.00
			Sheet 6 Subtotal					\$350,000.00
			Sheet 5 Subtotal					\$2,980,948.00
						1		1
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		1				1	1	1
		Powerplant - Mecha	anical Subtotal			1	<b>-</b>	\$5,027,448.00
							DICEC	ψυ,υΖ1,440.00
<u> </u>		QL	JANTITIES			F	RICES	
вү			CHECKED	ву	D. Donaldson		CHECKED	
DATE PRI	EPARED	1	PEER REVIEW	DATE PRE	PARED		PEER REVIEW	
					05/31/05		I	
					22,2.700			

# **ESTIMATE WORKSHEET**

SHEET\_9\_ OF \_\_11 \_\_

BUREAU OF		LOTIMATE WOR	IDDO IECT.					
FEAT	JRE:		PROJE	CT:				
		oaquin River Basin werplant		Upper San J	Ioaquin F	River Basin		
		vel Quantity Estimates	REGION	MP	PRICE	LEVEL:	Appraisal	
1							B\Upper_San_Joaquin_	
Powerp	lant - El	ectrical		FR-EIS-EIR_(F worksheets\Gr	'hase_2)\R oup 2 - Ser	eclamation products\1 ot 04\[Redinger Power	ΓSC products∖Cost plant - Final Qty	
ΓĘ	Σ							
PLANT	РАҮ ІТЕМ	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
	1	Furnishing, installing, & testing 13,444KVA, 60	D-8430	1	Each	\$1,450,000.00	\$1,450,000.00	
		cycle, 276.9 RPM, 90 percent power factor, 3						
		phase, 6,900 Volt, vertical-shaft, water-cooled						
		AC generator including static excitation system						
	2	Furnisning and installing 15 KV, 1200 amperes,	D-8430	100	Feet	\$850.00	\$85,000.00	
		non-segregated phase bus						
	3	Furnishing and installing generator neutral	D-8430	1	Each	\$15,000.00	\$15,000.00	
		grounding equipment						
	4	Furnishing and installing generator metal-clad	D-8430	1	Each	\$25,000.00	\$25,000.00	
		switchgear, 15 KV, 1200 amperes						
	5	Furnishing and installing Duplex control	D-8430	1	LS	\$175,000.00	\$175,000.00	
		switchboard for operation of one generators, and						
		switchyard controls and protection						
	6	Furnishing and installing indoor	D-8430	1	Each	\$70,000.00	\$70,000.00	
		unit substation with one dry type						
		transformer 6.9 KV-480Y277 V; 500 KVA						
	7	Furnishing and installing plant battery system	D-8430	1	LS	\$3,500.00	\$3,500.00	
		125 VDC, 100 ampere-hour, with battery charger						
	8	Furnishing and installing lighting system	D-8430	1	LS	\$65,000.00	\$65,000.00	
	9	Furnishing and installing 3 phase, 480 volt,	D-8430	1	LS	\$13,500.00	\$13,500.00	
		distribution panels include:						
-		1 - 225 Amp frame, 225 amp trip						
-		2 - 100 Amp frame, 100 amp trip						
		4 - 100 Amp frame, 60 amp trip				<u> </u>		
		4 - 100 Amp frame, 20 amp trip						
		4 - 100 Amp frame, 15 amp trip						
-	40	Provide transport to the first of the second	D 0400	4	E	<b>#50.000.00</b>	<b>#50,000,00</b>	
-	10	Furnishing and installing spherical valve control board	D-8430		Each	\$50,000.00	\$50,000.00	
<u> </u>	1				-	<del>                                     </del>		
-					1	+		
-						<del>                                     </del>		
	1	Powerplant - Electrical Subtotal			+	<del> </del>	\$1,952,000.00	
<b>—</b>	Powerplant - Electrical Subtotal					PRICES	ψ1,332,000.00	
BY	QUANTITIES  BY CHECKED		ву	L Pedde		CHECKED		
Γ'	Richard		<b> </b>	LIGUUE		O. ILORED		
DATE PR			DATE PRE	PARED		PEER REVIEW		
				05/31/05				
		<u> </u>		03/31/03		I		

# **ESTIMATE WORKSHEET**

SHEET\_10\_ OF \_\_11 \_\_

BUREAU OF RECLAMATION ESTIMATE VVC										
FEAT	JRE:		PROJECT:							
Upper Reding	San J ger Po	oaquin River Basin werplant		Upper San Joa	quin Rive	er Basin				
		vel Quantity Estimates	REGION MP PRICE			E LEVEL: Appraisal				
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ou. <b>_</b> o	To Quantity Islands	FILE:	pper_San_Joaquin_FR-						
Switchy	ard		l	EIS-EIR_(Phase_2)\Reclamation products\TSC proc worksheets\Group 2 - Sept 04\[Redinger Powerplant						
	1	Ι	+	worksneets\Group	2 - Sept 04	KRedinger Powerplan	t - Finai Qty			
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT			
		STRUCTURAL	D8120	1	LS	*				
		Assume switchyard structures covered under	- 20.20		1-0					
		•								
		unlisted items.								
		ELECTRICAL								
		Switchward								
		Switchyard								
		Furnish and Install:								
	1	Oil-filled, conservator-type power	D8440	1	EA	\$700,000.00	\$700,000.00			
		transformer								
		50 MVA; 230-6.9kV, 3-phase								
	2	230-kV disconnect switches,	D8440	2	EA	\$50,000.00	\$100,000.00			
		1200 amp, 3-phase	D0440		LA	ψ30,000.00	\$100,000.00			
		1200 amp, 3-phase								
	3	230-kV circuit breakers, 1200 amp	D8440	1	EA	\$250,000.00	\$250,000.00			
		20404	20110			*				
	4	SCADA	D8440	1	LS	-				
		Assume covered by unlisted items.								
	-									
		Chapt Cultivital					£4 050 000 00			
		Sheet Subtotal  QUANTITIES		l		RICES	\$1,050,000.00			
ву		CHECKED	BY	L Pedde		CHECKED				
Lisa Gam	uciello	OIL GILLD	ľ'	0000		0.120,120				

# **ESTIMATE WORKSHEET**

SHEET\_11\_ OF \_\_11 \_

FEATURE:				PROJECT:						
Upper	San Josef Por	oaquin River Basii werplant	n	PROJE	Upper San Joa	quin Rive	er Basin			
Appraisal Level Quantity Estimates		ates	REGION	I MP	PRICE LEVEL:		Appraisal			
Switchya		voi Quantity Louis			E:\US_Bureau_Re EIS-EIR_(Phase_2	cclamation\IDIQ_01CS20210B\U 2)\Reclamation products\TSC pro 2 - Sept 04\[Redinger Powerpla		pper_San_Joaquin_FR- oducts\Cost		
				1		<u> </u>	Troumger i ewerpian	i i ii i ii i i i i i i i i i i i i i		
PLANT ACCOUNT	РАҮ ІТЕМ		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
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				1	<del> </del>			+		
			Sheet 11 Subtotal	1		<u> </u>		\$0.00		
			Sheet 10 Subtotal	1				\$1,050,000.00		
				1				Ţ:,;:::,::0i0		
		Switchyard & Trans	smission Line Subtotal	Ì		İ		\$1,050,000.00		
			IANTITIES			P	RICES			
вү			CHECKED	вү	L Pedde		CHECKED			
DATE PRI	EPARED		PEER REVIEW	DATE PRE	DATE PREPARED 05/31/05			PEER REVIEW		

# CONTRACT COST FOR VARIOUS SIZES OF NEW KERCKHOFF POWERHOUSE AT MILLERTON LAKE

180MW Powerhouse Contrat Cost (from MILL LK\_NEW PH\_1) \$115,000,000

Description	Amount
New Kerckhoff 90MW Powerhouse at Millerton Lake	
Conversion Factor (square root of MW ratio)	0.71
Adjusted Contract Cost for 90MW Powerhouse @ Millerton Lake (Jul-2004 costs)	\$81,000,000
New Kerckhoff 40MW Powerhouse at Millerton Lake	
Conversion Factor (square root of MW ratio)	0.47
Adjusted Contract Cost for 40MW Powerhouse @ Millerton Lake (Jul-2004 costs)	\$54,000,000

# CONTRACT COSTS FOR KERCKHOFF AND REDINGER POWERHOUSES

Redinger 13MW PH Contrat Cost (from RED\_NEW PH\_1) \$29,000,000

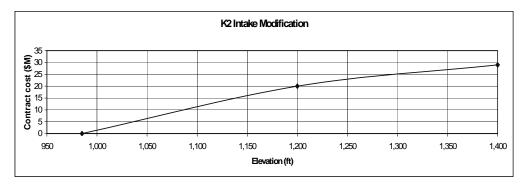
Description	Amount
New 20MW Powerhouse at Kerckhoff Dam	
Conversion Factor (square root of MW ratio)	1.24
Adjusted Contract Cost for 20MW Powerhouse @ Kerckhoff Dam (Jul-2004 costs)	\$36,000,000
80 MW Redinger Powerhouse	
Conversion Factor (square root of MW ratio)	2.48
Adjusted Contract Cost for 80MW Redinger Powerhouse (Jul-2004 costs)	\$72,000,000
30 MW Redinger Powerhouse	
Conversion Factor (square root of MW ratio)	1.52
Adjusted Contract Cost for 30MW Redinger Powerhouse (Jul-2004 costs)	\$44,000,000

# KERCKHOFF POWERHOUSE NO. 2 DIVERSION

Description	Amount
Extension of Kerckhoff PH2 Diversion Tunnel to below RM279	
4.7 miles at \$13M per mile (unit cost from 2004 SCE scoping comment)	\$61,100,000
Mobilization (5%)	\$3,055,000
Subtotal	\$64,155,000
Unlisted items (~15%)	\$9,845,000
Contract Cost for Extension of Kerckhoff No. 2 Powerhouse Diversion Tunnel (Jul-2004	\$74,000,000

Description			Amount
Steel Liner, Contract Cost (for specified reservoir surface elevation)	Reservr Elev	Elev Diff	(\$M)
reference KER_PH2_DIV TNL_7	1,400	415	\$105
	985	0	\$0
	1,100	115	\$29
Contract Cost for Kerckhoff No.2 Powerhouse Diverstion Tunnel, Steel Liner (Jul-2004 c	1,200	215	\$54
CONTINUE COST TO THE CATION NO.2 POWER TOUSE DIVERSION TURING, Steel Line (Jul-2004 C	1,275	290	\$73
	1,300	315	\$80
Ratio (Contract Cost : Elev Diff)		0.25	

Description		Amount
Modify Kerckhoff No. 2 Diversion Intake (1100 and 1115 Foot Options) (Jul-2004 costs)	Elevation	(\$M)
	985	\$0
reference KER_PH2_DIV TNL_5	1,200	\$20
reference KER_PH2_DIV TNL_7	1,400	\$29
Contract Cost to Modify Kerckhoff No. 2 Diversion Intake for 1300 Foot Option (Jul-2004	1,300	\$25
Approximate Contract Cost to Modify Intake for 1100 and 1115 Foot Options (see graph	1,100	\$11



FEAT	FRECLAN	:	ESTIMATE WO	PROJECT:						
Uppe Repla	er San	Joaquin River E ent K2	Basin		Upper San	Joaquin	River Basin			
4100	Feet	Steel Liner in Tu	ınnel	REGION	MP	PRICE	LEVEL:	Appraisal		
	NEW			FILE:	worksheets\Add	ditional Iten	Reclamation produns - Nov 04\{D-84	icts\TSC products\Cost 20 - 4100 LF Tunnel		
. 5	Σ		HEVY		Steel Liner.xls]	age1		1		
PLANT	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
		Furnish and instal	I the following:							
	1	Steel Liner Pipe for	Tunnel	D8420						
	ť	Steel plate used fo		50420						
			= 36,000 psi Sa = 18,000 psi							
		(All pipe sizes are	inside diameters)							
	a		rall, L= 404.7 ft., 5,100 lbs/ft		2,063,848	LBS				
	b	272" Dia., 1-5/8" wa	all, L= 410.3 ft., 5,305 lbs/ft		2,176,880	LBS				
	С	272" Dia.,1-11/16" v	wall, L= 410.0 ft., 5,510 lbs/ft		2,259,085	LBS				
	d	272" Dia., 1-3/4" wa	all, L= 409.6 ft., 5,716 lbs/ft		2,341,199	LBS				
	е	272" Dia., 1-13/16"	wall, L= 409.2 ft., 5,921 lbs/ft		2,423,189	LBS				
	f	272" Dia., 1-7/8" wa	all, L= 408.9 ft., 6,127 lbs/ft		2,505,067	LBS				
	g	272" Dia., 1-15/16"	wall, L= 408.5 ft., 6,332 lbs/ft		2,586,831	LBS				
	h	272" Dia., 2" wall, L	= 408.2 ft., 6,538 lbs/ft		2,668,503	LBS				
	i	272" Dia., 2-1/16" w	/all, L= 407.8 ft., 6,744 lbs/ft		2,750,049	LBS				
	j	272" Dia., 2-1/8" wa	all, L= 407.4 ft., 6,950 lbs/ft		2,831,496	LBS				
	k	272" Dia., 2-3/16" w	/all, L= 15.4 ft., 7,156 lbs/ft		109,867	LBS				
		TOTAL steel pipe w	reight		24.716.014	LBS				
		Rounded stee			24,720,000	LBS	\$3.50	\$86,520,000.0		
			Sheet Subtotal					\$86,520,000.0		
			QUANTITIES			P	RICES			
вү	Ken Sr	nith, D8420	CHECKED	ву	D. Donaldson		CHECKED			
DATE P	2004 (	ED October 22		DATE PRE	PARED 02/23/05		PEER REVIEW			

FEATURE:			PROJECT:						
Upper San Joaquin River Basin Replacement K2						Upper San			
		Steel Liner in Tu	nnel		REGION	MP.	PRICE	LEVEL:	Appraisal
			NEW		FILE:	J:\US_Bureau _FR-EIS-EIR_	_Reclamation\IDIO_01CS20210B\Uppe (Phase_2)\Reclamation products\TSC  ditional Items - Nov 04\[D-8420 - 4100		10B\Upper_San_Joaquir ucts\TSC products\Cost 20 - 4100 LE Tuppel
. 5	×					WOIKSHEELSVAG	T T T T T T T T T T T T T T T T T T T	15-1400 0440-04	20 - 4100 EF Tuillei
PLANT	DESCRIPTION			CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
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$\vdash$									
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							-		
_							-		
							-		
		Subtotal (from She	et 1 of 1)						\$86,520,000.00
		Cabiciai (iroin one							400,020,000.00
		Mobilization		+/-	5%				\$4,300,000.00
		Subtotal w/ mobilizat	tion						\$90,820,000.00
		Unlisted Items		+/-	15%				\$14,180,000.00
		CONTRACT COST							\$105,000,000.00
		CONTRACTOOST							\$105,000,000.00
		Contingencies		+/-	25%		1		\$25,000,000.00
		J							.,,==,,==,,===
		FIELD COST							\$130,000,000.00
							-		
$\vdash$			UANTITIES				<u> </u>	RICES	
BY	Ken Sn	nith, D8420	CHECKED		BY			CHECKED	
Ĭ.	AGI OII	, 50120			ľ.	D. Donaldson			
DATE PE	REPARE	ED			DATE PRE			PEER REVIEW	
	2004 October 22			02/23/05					

FEAT			Nov. 1, 2004	PROJECT:					
			N. M. Mariana	Upper San Joaquin River Basin					
New P	ensto	ck Intake Struc	ture for Kerckhoff			e de l'asserte de l'accionna			
Power	plant i	No. 2, with RM2	286 Dam at	REGION	REGION: MP PRICE LEVEL: Appraisal				
Eleva				FILE:	J:\US_Bureau_	Section Control of the Control of th		10B\Upper_San_Joaqu	
	NEW						2)\Reclamation prod		
PLANT	PAY				products(Cost)	vorksneet	s\Additional Items - UNIT	Nov 04 ų K∠ Intake	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
7,001.	11 = 101		DESCRIPTION	CODE	40/11/11		TRIOL	7 IIVIOOITI	
	-	Size and length	n of shaft and tunnel not prov	ided					
		U.EU U.I.U IUIIGU	To the control of the	I			140		
	1	Excavation, op	en cut, for control structure	8130	2,500	су	\$50.00	\$125,000.00	
		15 17	den, mostly rock)			,	· · · · · · · · · · · · · · · · · · ·		
	2	Excavation of s	AP 9777 PA 1071	8130	14,000	су	\$300.00	\$4,200,000.00	
			ock to enlarge existing	8130	1,000	су	\$300.00	\$300,000.00	
		tunnel		90210 SEE SE	######################################	200	And #35995000500 77	AMERICA CARACTER (M. 1990), CARACTER (M. 1990)	
	4	Concrete in tur	nnel lining	8130	1,000	су	\$500.00	\$500,000.00	
	5	Concrete in lini	ing of shaft	8130	3,100	су	\$500.00	\$1,550,000.00	
		Concrete in gat	. 100	8130	1,800	су	\$500.00	\$900,000.00	
	7	Concrete in co	ver at top of shaft	8130	200	су	\$750.00	\$150,000.00	
	8	Concrete in co	ntrol structure building	8130	120	су	\$750.00	\$90,000.00	
	9	Concrete in cer	nter pier of tunnel	8130	225	су	\$750.00	\$168,750.00	
	10	Concrete in inte	erior walls of shaft	8130	1,100	су	\$500.00	\$550,000.00	
	11	Furnish cemen	t	8130	2,000	tons	\$140.00	\$280,000.00	
	12	Furnish reinford	cing steel	8130	1,320,000	lbs	\$1.00	\$1,320,000.00	
	13	Drill 3-inch drai	in holes in shaft and	8130	4,000	lf	\$70.00	\$280,000.00	
		gate chamber							
	14	Furnish and ins	stall two 10.75 ft by	8420	700,000	lbs	\$5.00	\$3,500,000.00	
		24.5 ft high pre	ssure gates						
	15	Furnish and ins	stall hydraulic control	8420	6,000	lbs	\$15.00	\$90,000.00	
		system							
	16	Furnish and ins	stall two 10.75 ft by 24.5 ft	8420	180,000	lbs	\$5.00	\$900,000.00	
		wheel-mounted	d guard gates						
	17	Furnish and ins	stall tracks for wheel-	8420	62,000	lbs	\$5.00	\$310,000.00	
		mounted gates							
	18	Furnish and ins	stall stems for wheel-	8420	110,000	lbs	\$5.00	\$550,000.00	
		mounted gates	7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -						
	19		stall hoists for wheel-	8420	150,000	lbs	\$5.00	\$750,000.00	
		mounted gates							
	20		stall miscellaneous	8420	60,000	lbs	\$7.00	\$420,000.00	
		equipment for \	wheel-mounted gates						
	6		Chant Cubtatal					\$46 022 750 00	
		QUAN'	Sheet Subtotal				L L CES	\$16,933,750.00	
DV		QUAN		nv.		רתוי	1		
BY David His	a a biliser		CHECKED	ВҮ	D Donaldas-		CHECKED		
Dave Hir	ANY PROPERTY.	423	A DDD CVCD	DATE	D. Donaldson		DEED DEVE		
DATE P	KEPARI		APPROVED	DATE			PEER REVIEW		
-		11/01/04	I.		02/23/05				

FEATURE: Nov. 1, 2004			PROJECT:							
					Upper San Joaquin River Basin					
New Penstock Intake Structure for Kerckhoff										
Power	olant N	No. 2, with RM2	86 Dam at		REGION:	e and a	PRICE		Appraisal	
Eleva	tion 1	1200			FILE:	TILE: J:\US_Bureau_Reclamation\\DIQ_01CS20210B\\Upper_San_Join_FR-EIS-EIR_(Phase_2)\Reclamation products\TSC				
			NEW			products\Cost v	_(Pnase_2 vorksheets	)\Reciamation p \Additional Item	roducts\15C s - Nov 04\[K2 Intake	
PLANT	PAY							UNIT		
ACCT.	ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	PRICE	AMOUNT	
									1 22	
	e .									
									-	
									s e	
	e.									
,		Corbantal (forms	Object 4 of 4)						#4C 022 750 00	
		Subtotal (from	Sneet 1 of 1)						\$16,933,750.00	
		Mobilization		+/-	5%				\$850,000.00	
	7	WIODINZACION		17-	570				\$000,000.00	
		Subtotal w/ mol	bilization						\$17,783,750.00	
		Unlisted Items		+/-	15%				\$2,216,250.00	
		CONTRACT C	OST						\$20,000,000.00	
									5 5	
		Contingencies		+/-	25%				\$6,000,000.00	
									****	
		FIELD COST							\$26,000,000.00	
	v									
		QUAN	TITIES				PRIC	CES		
BY			CHECKED		вү			CHECKED		
Dave Hin	chliff					D. Donaldson				
DATE PR	REPARE	ĒD	APPROVED		DATE			PEER REVIEW	B	
11/01/04					02/23/05					

CODE:D-81		ESTIMATE WO							
FEAT	URE:	Nov. 1, 2004	PROJECT:						
			Upper San Joaquin River Basin						
New Pe	ensto	ck Intake Structure for Kerckhoff							
Power	olant l	No. 2, with RM286 Dam at	REGIO	MP	PRICE	LEVEL:	Appraisal		
Eleva	tion	1400	FILE:				0B\Upper_San_Joaquin_F		
		NEW		R-EIS-EIR_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Additional Items - Nov 04\[K2 Intake 1400 11-01-04.xls]A					
PLANT	PAY					UNIT			
ACCT.	ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
7		Size and length of shaft and tunnel not provi	ided.						
	1	Excavation, open cut, for control structure	8130	2,500	су	\$50.00	\$125,000.00		
0 00		(some overburden, mostly rock)	1		-,	7.3.13	*		
	2	Excavation of shaft, in rock	8130	25,000	су	\$300.00	\$7,500,000.00		
		Excavation of rock to enlarge existing	8130	1,000	-	\$300.00	\$300,000.00		
		tunnel	02 4/50	.,,	-7	#. F. F. F. F. F.	4.5.5.15.5.5.5		
	4	Concrete in tunnel lining	8130	1,000	су	\$500.00	\$500,000.00		
		Concrete in lining of shaft	8130	6,000	су	\$500.00	\$3,000,000.00		
	6	Concrete in gate chamber	8130	1,800		\$500.00	\$900,000.00		
		Concrete in cover at top of shaft	8130	200	су	\$750.00	\$150,000.00		
	8	Concrete in control structure building	8130	120	су	\$750.00	\$90,000.00		
	9	Concrete in center pier of tunnel	8130	225	су	\$750.00	\$168,750.00		
	10	Concrete in interior walls of shaft	8130	2,100	су	\$500.00	\$1,050,000.00		
	11	Furnish cement	8130	3,100	tons	\$140.00	\$434,000.00		
	12	Furnish reinforcing steel	8130	2,110,000	lbs	\$1.00	\$2,110,000.00		
	0.01993	Drill 3-inch drain holes in shaft and	8130	7,500	lf	\$70.00	\$525,000.00		
		gate chamber							
	14	Furnish and install two 10.75 ft by	8420	700,000	lbs	\$5.00	\$3,500,000.00		
		24.5 ft high pressure gates							
	15	Furnish and install hydraulic control	8420	6,000	lbs	\$15.00	\$90,000.00		
		system							
	16	Furnish and install two 10.75 ft by 24.5 ft	8420	180,000	lbs	\$5.00	\$900,000.00		
		wheel-mounted guard gates							
	17	Furnish and install tracks for wheel-	8420	120,000	lbs	\$5.00	\$600,000.00		
		mounted gates							
	18	Furnish and install stems for wheel-	8420	212,000	lbs	\$5.00	\$1,060,000.00		
		mounted gates							
	19	Furnish and install hoists for wheel-	8420	150,000	lbs	\$5.00	\$750,000.00		
		mounted gates							
	20	Furnish and install miscellaneous	8420	60,000	lbs	\$7.00	\$420,000.00		
		equipment for wheel-mounted gates							
		Sheet Subtotal			<u> </u>		\$24,172,750.00		
		QUANTITIES			PRIC	ESTRE VARIOUS DEV			
BY		CHECKED	вү			CHECKED			
Dave Hin	10 NOVE 100 IN			D. Donaldson					
DATE PR	REPARI		DATE			PEER REVIEW			
		11/01/04		02/23/05					

FEAT	URE:	Nov. 1, 2004	PROJECT:										
				Upper San	Joaquir	River Basin							
		ck Intake Structure for Kerckhoff			I		1.07.1000.00.00.00.00						
12		No. 2, with RM286 Dam at	REGIO			LEVEL:	Appraisal						
Eleva	tion	1400 NEW	FILE:	R-EIS-EIR_(Ph	ase_2)\Re	eclamation product	210B\Upper_San_Joaquin_F ts\TSC products\Cost ntake 1400 11-01-04.xls]A						
PLANT	PAY					UNIT							
ACCT.	ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT						
			$\vdash$										
			-										
-7.			-										
			$\vdash$										
							************						
-		Subtotal (from Sheet 1 of 1)					\$24,172,750.00						
		Mobilization +/	- 5%				\$1,200,000.00						
		Subtotal w/ mobilization					\$25,372,750.00						
		Unlisted Items +/	- 15%				\$3,627,250.00						
		CONTRACT COST					\$29,000,000.00						
		Contingencies +/	- 25%				\$7,000,000.00						
		FIELD COST					\$36,000,000.00						
		QUANTITIES			PRI	CES							
вү		CHECKED	вү			CHECKED	CHECKED						
Dave Hi	V00 0.00V4.000 JP1	ED APPROVED	DATE	D. Donaldson		DEED DEMEN							
DATE PI	KEPAKI	11/01/04	DATE	02/23/05		PEER REVIEW							

CODE:D-8140			ESTIMATE WORKSHE									
FEATURE			23-Feb-05	PROJ	ECT:							
					Upper San Joaqu	in River I	Basin					
Tunnel Lir	ing, 4	,100 feet										
		e between new s	teel liner and	REGIO	N:		PRICE LEVEL:	Appraisal				
existing tu			mer min	l L	MP		THE COLD TOO	, pp mon				
existing tu	uner w	all		FILE:	oaquin_FR-EIS-							
				FILE.	sheets\Additional Items							
			NEW		Nov 04\[D-8140 - 410	0 LF Tunne	ducts\TSC products\Cost work el Backfill Concrete.XLS]Grout					
PLANT	PAY						UNIT					
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT				
		4,100 LF of Tunn	el Lining	-								
			ength provided by									
		Montgomery-W										
		- carring among your										
	1	DealeCil Consumb		D-8140	6.250		5250.00	£1 542 500 00				
		Backfill Concrete		D-8140	6,250	cy	\$250.00	\$1,562,500.00				
	2	Cement		D-8140	1,765	tons	\$140.00	\$247,100.00				
				-								
			Sheet Subtotal					1,809,600.00				
		QUANTIT	ES	PRICES								
BY Art Streifel			CHECKED	BY	D. Donaldson	СНЕСКЕ	D					
DATE PREF	ARED		APPROVED	DATE		PEER REV	VIEW					
11/8/2004					2/23/2005							

FEATURE: 23-F Tunnel Lining, 4,100 feet			23-Feb-08	PROJECT: Upper San Joaquin River Basin								
	Concre	te between new	steel liner and	REGIO	N: MP		PRICE LEVEL:	Appraisal				
Calsting t	anner .		NEW	FILE: J.\US_Bureau_Reclamation\IDIO_01C\$20210B\Upper_San_Joaquin_FR-EIS- EIR_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Additional It Nov 04\([0.8140.4100 LF Tunnel Backfill Concrete.XLS]Grout								
PLANT	PAY						UNIT					
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	TUUOMA				
	+			+								
	+											
		Subtotal (from Sl	eet 1 of 1)					\$1,809,600.00				
		Mobilization	+	/- 5%	i			\$90,000.00				
		Subtotal w/ mobili	zation					\$1,899,600.00				
		Unlisted Items	+	/- 15%	1			\$300,400.00				
		CONTRACT CO	ST					\$2,200,000.00				
		Contingencies	+	/- 25%	1			\$500,000.00				
		FIELD COST						\$2,700,000.00				
			-									
BY		QUANTIT	CHECKED	BY	PRICE	CHECKE:	D					
Art Streifel  DATE PRE  11/8/2004	EPARE	)	APPROVED	DATE	D. Donal dson 2/23/2005	PEER RE	PEER REVIEW					

FEAT Uppe	r San			PROJE		Joaquin	River Basin			
		alve or ring-folk		REGION	MP	PRICE	LEVEL:	Appraisal		
		•	REVISION	FILE:	in_FR-EIS-EIR	_(Phase_2 worksheets	2)\Reclamation products\TSC s\Additional Items - Nov 04\[D-8420 K2			
PLANT	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
		Furnish and instal	the following:							
	1	Steel Pipe for Pensi Steel plate used for		D8420						
		<del>-</del>	= 36 kpsi Sa = 18 kpsi							
		(All pipe sizes are								
	a		rall, L= 149.7 ft., 7,981 lbs/ft		1,194,616	LBS				
	b		II, L= 8.9 ft., 7,774 lbs/ft		69,119	LBS				
	С	204" Dia.,2-7/16" wa	all, L= 433.6 ft., 5,917 lbs/ft		2,565,586	LBS				
	d	204" Dia., 2-3/8" wa	II, L= 32.6 ft., 5,764 lbs/ft		188,036	LBS				
	е	204" Dia., 2-5/16" w	rall, L= 32.6 ft., 5,610 lbs/ft		183,032	LBS				
	f	204" Dia., 2-1/4" wa	II, L= 32.6 ft., 5,457 lbs/ft		178,032	LBS				
	g	204" Dia., 2-3/16" w	rall, L= 32.6 ft., 5,304 lbs/ft		173,034	LBS				
	h	204" Dia., 2-1/8" wa	II, L= 32.6 ft., 5,151 lbs/ft		168,039	LBS				
	j	204" Dia., 2-1/16" w	rall, L= 32.6 ft., 4,998 lbs/ft		163,047	LBS				
	j	204" Dia., 2" wall, L	= 32.6 ft., 4,844 lbs/ft		158,059	LBS				
	k	204" Dia., 1-15/16"	wall, L= 32.6 ft., 4,692 lbs/ft		153,073	LBS				
	j	204" Dia., 1-7/8" wa	II, L= 32.6 ft., 4,539 lbs/ft		148,090	LBS				
	m	204" Dia., 1-13/16"	wall, L= 20.9 ft., 4,387 lbs/ft		91,683	LBS				
		TOTAL steel pipe w	-		5,433,446	LBS				
		Rounded steel	pipe weight		5,434,000	LBS	\$2.00	\$10,868,000.00		
			Chast Cubtotal					\$40 pep 000 0		
			Sheet Subtotal				RICES	\$10,868,000.0		
BY	Ken Sn	nith, D8420	CHECKED	ву	D. Donaldson		CHECKED			
DATE P		ED September 3		DATE PREPARED PEER REVIEW 02/23/05						

	URE		PROJE						
		ı Joaquin River Basin e Replacement with		Upper San	Joaquin	River Basin			
		valve or ring-follower gate	REGION	MP	PRICE	LEVEL:	Appraisal		
piic	iloui	varie of fing follower gate	FILE:				210B\Upper_San_Joaq		
		REVISION	I CILE.	in_FR-EIS-EIR	_(Phase_2	)\Reclamation pro	ducts\TSC		
-	5	KEVICION		products\Cost \	vorksheets	Additional Items	- Nov 04\[D-8420 K2		
PLANT	E	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
A S P	PA	DEDGRI HON	CODE	GO/WIII	ONI	OMITICOL	AMICONI		
		Furnish and install the following:							
	2	Ring-Follower Gate	D8420						
	_								
	а	144" Dia. ring-follower gate							
	_	Gate leaf slides on wheels on each side.							
		includes hydraulic operating system.							
	_	400,000 lbs.		400,000	LBS	\$10.00	\$4,000,000.0		
	-	New auto-branch avville a mondard							
		New gate chamber will be needed.							
	-	Sheet Subtotal					\$4,000,000.0		
	-	Sileet Subtotal					\$4,000,000.0		
		Subtotal (from Sheet 1 of 2)					\$10,868,000.0		
		Subtotal (from Sheet 2 of 2)					\$4,000,000.0		
		Total of Subtotals					\$14,868,000.0		
	-								
	-	Mobilization	+/- 5%				\$740,000.0		
		Subtotal w/ mobilization					\$15 609 000 0		
	-	Subtotal W/ IIIobilization					\$15,608,000.0		
		Unlisted Items	+/- 15%				\$2,392,000.0		
		CHILDRA TOTAL	17-1070				\$2,002,000.0		
		CONTRACT COST					\$18,000,000.0		
		Contingencies	+/- 25%				\$4,000,000.0		
		FIELD COST					\$22,000,000.0		
		QUANTITIES		PRICES					
Y	Ken Sr	mith, D8420 CHECKED	вч	E1 E1 E1		CHECKED			
			_	D. Donaldson					
ATE P	REPAR	and the second s	DATE PREPARED PEER REVIEW						
	2004	September 3		02/23/05					

# **ESTIMATE WORKSHEET**

SHEET\_1\_ OF \_\_1 \_

BUREAU OF RE	ECLAMATION	N	ESTIMATE WOR	RKSHEET SHEET_1_ OF _1_									
FEATUR	RE:			PROJECT:									
		aquin River Basin plant Decommiss	sioning		Upper San Jo	aquin Riv	ver Basin						
Appraisa	al Leve	el Quantity Estima	ites	REGION	<b>I</b> MP	PRICE	LEVEL:	Appraisal					
l		•		FILE:		eclamation	\IDIQ_01CS20210B	\Upper_San_Joaquin_F					
Demolitio	n			1			amation products\TS 04\[Wishon and Big (						
μË	Σ						1						
PLANT	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT					
		Wishon Powerplan	t	-									
	1	Hazardous material	removal	D-8160	1	LS	\$300,000.00	\$300,000.00					
	<u> </u>	Hazardous mate		D-0100	'	1 23	ψ300,000.00	ψ300,000.00					
	<b>†</b>	Drain and dispo		1									
	1	·	ry of refrigerants.										
		Removal of CO <sub>2</sub>		1									
		Removal and di	sposal of storage batteries.										
			pose of asbestos-containing										
		materials.	,										
		Remove and dis	pose of mercury-containing										
		equipment.											
		Remove window	glass and other saftey hazards.										
	2	Transformer and cire	cuit breaker disposal.	D-8440									
	-	Transformers (7	,	-	700,000	lbs.	\$0.50	\$350,000.00					
	L	Station service t	· /	-	200,000	lbs.	\$0.50	\$100,000.00					
		Oil-filled circuit b	oreaker (3).		39,000	lbs.	\$0.50	\$19,500.00					
	<u> </u>			D 0400	107.000	<del> </del>	00.50	<b>\$00.500.00</b>					
	3		al of mechanical equipment.	D-8420	197,000	lbs.	\$0.50	\$98,500.00					
		Impulse turbines	5 (4)										
	4	Weight of Heaviest I	Part (Rotor) (2 ea.)	D-8430	88,000	lbs.	\$0.50	\$44,000.00					
			enerator Assembly) (2 ea.)		196,000	lbs.	\$0.50	\$98,000.00					
	5	Removal of switchya	ard.		900	ft.^2	\$50.00	\$45,000.00					
		Subtotal						\$1,055,000.00					
		Mobilization	+.	/- 5%				\$53,000.00					
		Subtotal w/Mobilizati	on					\$1,108,000.00					
		Unlisted Items	+	/- 15%				\$142,000.00					
		CONTRACT COST			-			\$1,250,000.00					
-		Contingencies	+,	/- 25%				\$350,000.00					
		FIELD COST						\$1,600,000.00					
-		l OII	ANTITIES	1	<u> </u>	P	RICES	l					
ву	Carlton I	D. Smith (D-8160)	CHECKED	BY	D. Donaldson		CHECKED						
		Turnage (D-8420)											
DATE PREF	PARED 8/3/04		PEER REVIEW	DATE PRE	<b>EPARED</b> 05/31/05		PEER REVIEW						
-				-			-						

# **ESTIMATE WORKSHEET**

SHEET\_\_1\_\_ OF \_\_1\_

FEATUR	) F.			IDDA :-	OT-			3HEE11_ OF1_	
FEATUR				PROJE					
		aquin River Basin			Upper San Jo	aquin Riv	er Basin		
_		4 Powerplant De	<u> </u>			I			
Appraisa	al Leve	el Quantity Estima	ates	REGION		PRICE		Appraisal	
<u> </u>				FILE:	R-EIS-EIR_(Phas	e_2)\Recla	mation products\TS		
Demolition				<u> </u>			4\[Wishon and Big (		
F 2	TEM								
PLANT	РАҮ ІТЕМ		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
		Big Creek No. 4 Po	werplant						
	1	Hazardous material	removal.	D-8160	1	LS	\$300,000.00	\$300,000.00	
		Hazardous mate	erial inventory.						
		Drain and dispo	se of oils.						
			ry of refrigerants.						
		Removal of CO	cylinders.						
		Removal and di	sposal of storage batteries.						
		Remove and dis	spose of asbestos-containing						
		materials.							
		Remove and dis	spose of mercury-containing						
		equipment.							
		Remove windov	y glass and other safety hazards.						
	2		cuit breaker disposal.	D-8440					
			0/133 MVA, 240-11.5kV						
		transformer (1 e	*		200,000	lbs.	\$0.50	\$100,000.00	
	-		3/36.7 MVA, 230-11.5kV						
		transformer (3 e	*		450,000	lbs.	\$0.50	\$225,000.00	
			transformers (3 ea.)		180,000	lbs.	\$0.50	\$90,000.00	
			50 kVA, 11.5 kV-240/120 volt			l			
		Oil-filled circuit l	oreaker, 15-kV (3 ea.)		30,000	lbs.	\$0.50	\$15,000.00	
-	_			D 0400					
	3		al of mechanical equipment.	D-8420	000 000	11	#0.50	#004 F00 00	
		Francis turbines	` '		663,000	lbs.	\$0.50	\$331,500.00	
		Governors (2 ea	1.)		59,000	lbs.	\$0.50	\$29,500.00	
	_	\\\\ai=\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Don't (Dates and Chaff) (2 and )	D 0420	500,000	llea	¢ο το	\$250,000,00	
	4	-	Part (Rotor and Shaft) (2 ea.)	D-8430	500,000	lbs.	\$0.50	\$250,000.00	
		i otal Net Weight (E.	xciter, Air Housing, Cooler, etc.) (2 ea.)		1,000,000	lbs.	\$0.50	\$500,000.00	
		Switchward romoval	including Bus Structure		5,000	ft.^2	\$50.00	\$250,000.00	
-	3	Subtotal	including bus Structure		5,000	11.72	\$50.00	\$2,091,000.00	
		Subtotal						\$2,091,000.00	
		Mobilization	±/-	5%				\$105,000.00	
		WODIIIZUIOIT	.,	0 70				ψ100,000.00	
		Subtotal w/Mobilizat	ion					\$2,196,000.00	
								<del>*</del>	
		Unlisted Items	+/-	15%				\$304,000.00	
								, , , , , , , , , , , , , , , , , , , ,	
		CONTRACT COST						\$2,500,000.00	
								. ,,	
		Contingencies	+/-	25%				\$700,000.00	
		-							
		FIELD COST						\$3,200,000.00	
		QU	ANTITIES	PRICES					
вү	Carlton I	D. Smith (D-8160)	CHECKED	вү	D. Donaldson		CHECKED		
		Turnage (D-8420)							
DATE PREF			PEER REVIEW	DATE PREPARED PEER REVIEW					
	8/3/04				05/31/05				
			-	-					

# AUXILIARY MECHANICAL SYSTEMS FOR NEW KERCKHOFF #2 POWERHOUSE

# (NEAR EXISTING KERCKHOFF NO. 2 POWERHOUSE LOCATION)

- 1. 150-Ton Overhead Crane (Unit Bay Crane)
  - a. Span = Approx. 63 ft.
  - b. 250 ft. long
  - Heaviest load expected to be lifted is the rotor and shaft, approximately 250,000 lbs

# 2. 75-Ton Overhead Crane

- a. Span = Approx. 63 ft.
- b. 100 ft. long
- c. Heaviest load expected to be lifted are the disassembled components of the rotor/shaft assembly, approximately 125,000 lbs

### 3. Electric Traction Elevator

- a. Passenger elevator
- b. Capacity = 3,500 lbs., typical size for passenger elevator
- c. Travel = 100 ft., approximated from drawing
- d. Landings = 5 (assumes elevator stops at each floor shown on drawing)
- e. Speed = 200 ft/min., typical speed for elevator
- 4. Bulkhead Gates, lifting beam, and guides
  - a. Design head = 89 ft. [603.0 (Max TWS, 1000 yr. flood) 514.0 (Invert)]
  - b. Approx gate dimensions 10 ft wide x 7 ft high
  - c. Two gates required, to isolate 1 turbine draft tube.
  - d. Four sets of embedded guides, one for each turbine unit.
  - e. One lifting beam provided.
  - f. Material used is structural steel A36, except sealing surfaces of guides are stainless steel, and embedded anchor bolts are steel.

### 5. Powerplant Auxiliary Mechanical Systems

- a. Includes the necessary auxiliary mechanical systems for operation of the turbine/generating equipment and for plant maintenance activities.
- b. Systems provided include the following:
  - i. Unit Cooling Water System This system supplies cooling water for the main turbine/generating units and associated equipment.
  - ii. Lubricating Oil System This system stores and filters lubricating oil for use by the turbine/generator bearings.
  - iii. Compressed Air System This system provides compressed air for service hose outlets located throughout the plant for maintenance and repair, for operation of the plant sewage ejectors and for operation of any air operated control valves.

- iv. Service Water System This system provides service water to hose outlets located throughout the plant for maintenance and repair. Irrigation water for the landscape features on the exterior of the plant is also provided from the service water system.
- v. Fire Suppression System This system provides a water-based fire suppression system within the plant and a CO<sub>2</sub> fire extinguishing system for the main unit generators.
- vi. Domestic Water and Sanitary Waste System This system within the interior of the plant provides domestic water to the restrooms and collects sewage to be discharged from the plant.
- vii. Gravity Drainage System This system conveys wastewater collected by plant floor drains through an embedded piping system to the plant drainage sump.
- viii. Plant Unwatering System This system is provided to empty the plant sump of water from the gravity drainage system and water drained from the main unit penstock and draft tubes.
- c. All of these systems will be provided in accordance with the applicable industry codes and standards.

#### 6. HVAC

a. Not included explicitly as a separate item in estimate, will be included in the percentage for unlisted items.

# AUXILIARY MECHANICAL SYSTEMS FOR NEW REDINGER POWERPLANT (BIG CREEK NO. 4 POWERHOUSE RELOCATION)

- 1. 60-Ton Overhead Crane
  - a. Span = Approx. 53 ft.
  - b. 110 ft. long
  - c. Heaviest load expected to be lifted is the rotor and shaft, approximately 105,000 lbs.

#### 2. Electric Traction Elevator

- a. Passenger elevator
- b. Capacity = 3,500 lbs., typical size for passenger elevator
- c. Travel = 66 ft., approximated from drawing
- d. Landings = 5 (assumes elevator stops at each floor shown on drawing)
- e. Speed = 200 ft/min., typical speed for elevator
- 3. Bulkhead Gates, lifting beam, and guides
  - a. Design head = 68.4 ft. [1250.0 (Max TWS) 1181.60 (Invert)]
  - b. Approx gate dimensions 11 ft wide x 7.5 ft high
  - c. Two gates required, to isolate 1 turbine draft tube.
  - d. Two sets of embedded guides, one for each turbine draft tube.
  - e. One lifting beam provided.
  - f. Material used is structural steel A36, except sealing surfaces of guides are stainless steel, and embedded anchor bolts are steel.

### 4. Powerplant Auxiliary Mechanical Systems

- a. Includes the necessary auxiliary mechanical systems for operation of the turbine/generating equipment and for plant maintenance activities.
- b. Systems provided include the following:
  - i. Unit Cooling Water System This system supplies cooling water for the main turbine/generating units and associated equipment.
  - ii. Lubricating Oil System This system stores and filters lubricating oil for use by the turbine/generator bearings.
  - iii. Compressed Air System This system provides compressed air for service hose outlets located throughout the plant for maintenance and repair, for operation of the plant sewage ejectors and for operation of any air operated control valves.
  - iv. Service Water System This system provides service water to hose outlets located throughout the plant for maintenance and repair. Irrigation water for the landscape features on the exterior of the plant is also provided from the service water system.
  - v. Fire Suppression System This system provides a water-based fire suppression system within the plant and a CO<sub>2</sub> fire extinguishing system for the main unit generators.
  - vi. Domestic Water and Sanitary Waste System This system within the interior of the plant provides domestic water to the restrooms and collects sewage to be discharged from the plant.

- vii. Gravity Drainage System This system conveys wastewater collected by plant floor drains through an embedded piping system to the plant drainage sump.
- viii. Plant Unwatering System This system is provided to empty the plant sump of water from the gravity drainage system and water drained from the main unit penstock and draft tubes.
- c. All of these systems will be provided in accordance with the applicable industry codes and standards.

### 5. HVAC

a. Not included explicitly as a separate item in estimate, will be included in the percentage for unlisted items.

# for Private Reservoir Area Lands

Friant Raise																					Volcobi		
	25 ft		140 ft	RM274 Options					RM279 Options					RM286 Options				Fine Gold Options				Yokohi Option	
Gross Pool Elevation (ft) ->	603	638	718	800	865	960	985	1100	900	985	1100	1115	1200	1300	1200	1275	1300	1400	900	1020	1100	1110	790
New storage (TAF) ->	130	340	920	460	725	1170	1310	2110	450	725	1260	1350	1910	2740	460	725	830	1360	120	400	740	800	450
Component																							
Estimated inundated acreage	704	1,421	3,156	2,233	3,127	4,590	5,017	7,172	2,318	3,476	5,307	5,540	7,042	8,982	3,155	4,282	4,692	6,262	1,373	3,438	5,298	5,407	4,292
Estimated private inundated acreage				95	365	815	935	1,588	231	710	1,350	1,390	2,110	2,542	1,221	1,505	1,645	2,233	1,373	3,438	5,298	5,407	4,292
Estimated public inundated acreage				2,138	2,762	3,775	4,082	5,584	2,087	2,766	3,957	4,150	4,932	6,440	1,934	2,777	3,047	4,029	0	0	0	0	0
Number of roofed structures	58	109	165																		10		12
Unit price, private acreage (\$/ac)				\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$1,200
Estimated cost - private acreage only (\$Millions)				\$0	\$1	\$3	\$3	\$6	\$1	\$2	\$5	\$5	\$7	\$9	\$4	\$5	\$6	\$8	\$5	\$12	\$19	\$19	\$
Approximate value of improvements (\$ Millions)				\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	<b>\$</b> 1	\$1	\$2	\$3	\$3	\$,
Lands and																							
Improvements Cost	\$27	\$42	\$65	\$1	\$2	\$4	\$4	\$7	\$2	\$3	\$6	\$6	\$8	\$10	\$5	\$6	\$7	\$9	\$6	\$14	\$22	\$22	\$9
(\$ Millions, rounded)																							

Note: Friant Raise acquisition costs for 25, 60, and 140 ft raises from appraiser's report Estimated inundated acreage from storage elevation workbook data Privately held inundated acreage from J. Darke, Feb. 2005.

Publicly held inundated acreage estimated as difference between inundated acreage and