

FEATURE:				PROJECT:			
REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Diversion and Care				Klamath River Northern California/Southern Oregon			
WOID: AF484		ESTIMATE LEVEL: Feasibility		REGION: MP		UNIT PRICE LEVEL: July-2010	
FILE:				C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care			

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
	1	Furnish, Install, and Remove Barge-Mounted Crane in Reservoir for Dam Removal. Barge taken from Iron Gate Reservoir. Barge is used to modify diversion tunnel intake structure. Barge is also used to remove spillway gates, piers, bridge and concrete in spillway crest. Barge is located on reservoir for approximately 5 months.	86-68130	1	ls		\$350,000.00
	2	Remove Sediment from Diversion Tunnel Intake to provide access. Requires removing sediment 115 feet deep using clamshell or suction dredge.	86-68130	30	cy	\$2,000.00	\$60,000.00
	3	Furnish, Install, and Remove Large Crane on Right Abutment. Crane used to deliver equipment and materials and to remove waste materials as required. Crane in place for 4 months.	86-68130	1	ls	Included in the mobilization item	
	4	Remove Water from behind Tailrace Cofferdam. Unwatering of tailrace for removal of the powerhouse in the dry. Assume 3 inch portable trash pump operating for 1 day.	86-68130	200,000	gals	\$0.01	\$2,000.00
	5	Riprap Protection on Cofferdam. Riprap protects cofferdam from diversion tunnel releases.	86-68130	260	cy	\$150.00	\$39,000.00
	6	Provide Dewatering behind Tailrace Cofferdam for removal of Powerhouse in the dry. Assume 3 inch portable trash pump operating for approximately 3 months.	86-68130	1	ls		\$35,000.00
SUBTOTAL THIS SHEET							\$486,000.00

QUANTITIES		PRICES	
BY Rick Benik	CHECKED Jonathan East	BY Craig A. Grush, P.E.	CHECKED Camm 4/14/11
DATE PREPARED 10/26/10	PEER REVIEW / DATE Tom Hepler P.E. 10/26/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE NEW 4/14/11

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		CIVIL					
	7	Remove Current Diversion Tunnel Plug <i>Plug located in the middle of the tunnel</i> <i>Reinforced concrete</i> <i>Tunnel work</i>	86-68130	195	yd3	\$1,500.00	\$292,500.00
	8	Construct Embankment Cofferdam in Tailrace to remove Powerhouse in dry. <i>Assumes 10 ft wide crest with 2:1 side slopes, approximately 250 ft long and up to 12 ft high.</i> <i>Embankment material taken from Iron Gate Dam Removal, approximately 10 mile haul distance.</i>	86-68130	1,700	yd3	\$85.00	\$144,500.00
SUBTOTAL THIS SHEET							\$437,000.00

QUANTITIES		PRICES	
BY Jonathan East	CHECKED Sheena Barnes	BY <i>g</i> Craig A. Grush, P.E.	CHECKED <i>cm</i> 4/14/11
DATE PREPARED 10/26/10	PEER REVIEW / DATE Rick Benik P.E. 10/26/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>DCD</i> 4/14/11

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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
		Concrete and Structural Steel Items:					
	10	Remove Concrete Dam down to Elev. 2476 <i>Elev. 2476 represents original streambed channel at downstream face of dam. Concrete in foundation to remain. Spillway crest at Elev. 2593.5. Includes concrete in dam, spillway crest, piers (390 cy), bridge deck (72 cy) and left abutment. Concrete is reinforced. Requires notching of concrete dam under head below approximately Elev. 2536 for an average water year. Approx. 17,000 cy of concrete in dam above El. 2536. Assume ten notches, 12 ft deep, alternating sides with five on each side for removal of final 60 feet of dam. Each notch overlaps the previous alternating notch in 6 foot lifts. Each notch is approximately 20 ft wide with an average 6 ft thickness to be removed by blasting below reservoir surface.</i>	86-68130	36,000	yd3	\$300.00	\$10,800,000.00
	11	Remove Concrete Intake Structure on Right Abutment <i>Includes concrete in gate houses and headworks for units 1 and 2.</i>	86-68130	21,000	yd3	\$350.00	\$7,350,000.00
	12	Remove Structural Steel from Spillway <i>Includes rails, misc. steel Does not include spillway gates Assume contains paint with heavy metals. By barge and crane</i>	86-68130	55,000	lbs	\$1.00	\$55,000.00
	13	Install Diversion Tunnel Plugs <i>Plug upstream (6 cy) and downstream ends Assume 2' thick each</i>	86-68130	30	yd3	\$1,200.00	\$36,000.00
	14	Remove Diversion Tunnel Control Structure <i>Concrete Includes guide boxes Assume reinforced</i>	86-68130	350	yd3	\$215.00	\$75,250.00
SUBTOTAL THIS SHEET							\$18,316,250.00

QUANTITIES		PRICES	
BY Jonathan East	CHECKED Sheena Barnes	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> Cmm 4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE Rick Benik P.E. 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> NCO 4/14/11

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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
		Remove and dispose of the following equipment at Dam:					
	15	Hand Rails (Assume contains paint with heavy metals) By barge and crane	86-68420	11,000	lb	\$1.00	\$11,000.00
	16	Radial Gates 13 radial gates, wall and sillplates and 3-hoists (Assume contains paint with heavy metals & petroleum products) By barge and crane	86-68420	140,500	lb	\$1.00	\$140,500.00
					Revised 8.26.10 TJT		
	17	Radial Gate stoplogs 8 stop logs and 13 sets of guides (Assume contains paint with heavy metals & petroleum products) By barge and crane	86-68420	18,000	lb	\$1.00	\$18,000.00
	18	Stoplog hoist, track and supports (Assume contains paint with heavy metals & petroleum products) By barge and crane	86-68420	26,000	lb	\$1.00	\$26,000.00
		Remove and dispose of the following equipment at the waste tunnel:					
	19	3 sections of 23' of 72"Ø steel lining (embedded) (Assume contains paint with heavy metals)	86-68420	54,000	lb	\$0.85	\$45,900.00
	20	3 - 72" butterfly valves (embedded) (Assume contains paint with heavy metals & petroleum products)	86-68420	55,000	lb	\$0.85	\$46,750.00
	21	3-72" flapper valves with remote mechanical control (embedded) (Assume contains paint with heavy metals) Removal requires a dive depth of 115 ft.	86-68420	78,000	lb	\$3.00	\$234,000.00
		SUBTOTAL THIS SHEET					\$522,150.00

QUANTITIES		PRICES	
BY K. Converse 10/28/10	CHECKED T Turnage	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED	PEER REVIEW / DATE Dan Drake 10/29/2010	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

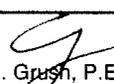
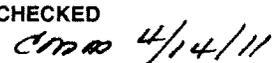
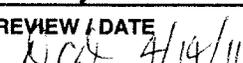
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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ELECTRICAL					
		Remove and dispose of the following equipment at Spillway:					
	22	Spillway gate motor & control panel Total weight approximately: 500 lbs.	86-68430	1	EA	\$1,000.00	\$1,000.00
	23	Distribution equipment , panelboards Total weight approximately: 500 lbs.	86-68430	1	EA	\$6,000.00	\$6,000.00
		DAM SUBTOTAL					\$18,845,400.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>Craig A. Grush</i> Craig A. Grush, P.E.	CHECKED <i>Chris</i> 4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>NEW</i> 4/14/11

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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
		Concrete and Structural Steel Items:					
	24	Remove Powerhouse Concrete down to top of rock under the PH, Elev. 2482.75 (USGS datum). Local datum is converted to USGS datum by adding 2411 feet. (Elev. 71.75 + 2411 = Elev. 2482.75.) All concrete is reinforced. Includes all exterior & interior walls, columns, & beams, and concrete in foundations for transformers	86-68130	3,100	yd3	\$350.00	\$1,085,000.00
	25	Remove Powerhouse Structural Steel Roof truss members, purlins, and crane rail Assume contains paint with heavy metals.	86-68130	110,000	lbs	\$0.85	\$93,500.00
SUBTOTAL THIS SHEET							\$1,178,500.00

QUANTITIES		PRICES	
BY Jonathan East	CHECKED Sheena Barnes	BY  Craig A. Grush, P.E.	CHECKED  4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE Rick Benik P.E. 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE  4/14/11

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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
		Remove and dispose of the following equipment at the Power House:					
	26	2 - Governor oil systems governor, sump tanks, accumulator tank, piping (Assume contains paint with heavy metals & petroleum products)	86-68420	38,000	lb	\$0.85	\$32,300.00
	27	Cooling water and bearing oil systems (Assume contains paint with heavy metals & petroleum products) (encased in concrete)	86-68420	11,000	lb	\$0.85	\$9,350.00
	28	4 - Horizontal Tandem Francis Turbines (includes runner, scroll case, draft tube and shaft) (Assume contains paint with heavy metals & petroleum products)	86-68420	452,000	lb	\$0.85	\$384,200.00
	29	2 - 40 Ton indoor cranes Includes crane and rail, not steel rail base (Assume contains paint with heavy metals & petroleum products)	86-68420	140,000	lb	\$0.85	\$119,000.00
	30	Compressed Air system (Assume contains paint with heavy metals & petroleum products)	86-68420	1,000	lb	\$0.85	\$850.00
	31	2 - CO2 systems (Assume contains paint with heavy metals & petroleum products)	86-68420	3,100	lb	\$0.85	\$2,635.00
	32	Plant Water and Fire Protection (Assume contains paint with heavy metals)	86-68420	2,600	lb	\$0.85	\$2,210.00
SUBTOTAL THIS SHEET							\$550,545.00

QUANTITIES		PRICES	
BY K. Converse	CHECKED T Turnage	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED 10/28/10	PEER REVIEW / DATE Dan Drake 10/29/2010	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
	33	Transformer Oil Fire protection (Assume contains paint with heavy metals & petroleum products)	86-68420	5,400	lb	\$0.85	\$4,590.00
	34	Unwatering Piping (Assume contains paint with heavy metals)	86-68420	27,000	lb	\$0.85	\$22,950.00
	35	Drainage Piping (Assume contains paint with heavy metals)	86-68420	5,000	lb	\$0.85	\$4,250.00
		SUBTOTAL THIS SHEET					\$31,790.00

QUANTITIES		PRICES	
BY K. Converse	CHECKED T Turnage	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED 0/28/10	PEER REVIEW / DATE Dan Drake 10/29/2010	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ELECTRICAL					
		Remove and dispose of the following equipment in the Powerplant:					
	36	Horizontal AC Generator, Indoor Open Frame Unit 1 & 2 ea: 12.5 MVA (10 MW); 0.8PF, 2,300V, 200 RPM, 3 Ph, including rotating exciter Total weight each approximately: 123,500 lbs. Stator: 32,250 lbs., Rotor: 55,000 lbs. Base: 17,000 lbs., Exciter Assembly: 7,550 lbs. Heaviest lift: 55,000 lbs.	86-68430	2	EA	\$35,000.00	\$70,000.00
	37	Excitation equipment for 12.5 MVA Generator (2 sections) Total weight approximately: 1,000 lbs.	86-68430	2	EA	\$6,000.00	\$12,000.00
	38	Surge protection equip. for 12.5 MVA Generator Total weight approximately: 800 lbs.	86-68430	2	EA	\$2,000.00	\$4,000.00
	39	Neutral grounding equip. for 12.5 MVA Generator includes transformer Total weight approximately: 500 lbs.	86-68430	2	EA	\$2,000.00	\$4,000.00
	40	Generator Switchgear, 5kV- includes unit breakers (6 Sections @ 400 lbs each section) 3 ft x 3 ft x 90 inches high Total weight approximately: 2,400 lbs.	86-68430	1	EA	\$20,000.00	\$20,000.00
	41	Station Service Switchgear, 600 volt -(5 sections) (400 lbs each section), 3 ft x 3ft x 90 inches high Total weight approximately: 2,000 lbs.	86-68430	1	EA	\$20,000.00	\$20,000.00
SUBTOTAL THIS SHEET							\$130,000.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> CMM 4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

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		ELECTRICAL					
		Remove and dispose of the following equipment in the Powerplant:					
	42	Unit and plant control switchboard 5 cubicles (200 lbs each), 2ft x 2ft x 90 in. high Total weight approximately: 1,000 lbs.	86-68430	1	EA	\$15,000.00	\$15,000.00
	43	Battery system - assume 60 batteries, charger, racks and supports. Total weight approximately: 2,500 lbs.	86-68430	1	EA	\$10,000.00	\$10,000.00
	44	Raceways, Conduit and Cable (approx. 3000 lin. Ft. power & control cable, 1000 lin. Ft. conduit, 200 lin. Ft. cabletray) Total weight approximately: 8,000 lbs.	86-68430	1	EA	\$15,000.00	\$15,000.00
	45	Misc. power & control boards 10 boards (50 lbs each) 3ft x 2 ft x 9 in Total weight approximately: 500 lbs.	86-68430	1	EA	\$5,000.00	\$5,000.00
	46	Step-up Transformers, indoor, oil-filled, 1-phase, 5,000 kVA, 2,300/72,000 volt Total weight approximately each: 31,500 lbs.	86-68430	3	EA	\$50,000.00	\$150,000.00
	47	Step-up Transformers, indoor, oil-filled, 1-phase, 4,165 kVA, 2,300/72,000 volt Total weight approximately each: 31,500 lbs.	86-68430	3	EA	\$50,000.00	\$150,000.00
	48	Seven 40-Ton Travelling Crane motors - hoist (2-30Hp*), hoist trolley (7.5Hp*), gantry (4-15Hp*) (Hp* Approx.) Total weight approximately: 600 lbs.	86-68430	1	EA	\$2,500.00	\$2,500.00
		SUBTOTAL THIS SHEET					\$347,500.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>CAG</i> Craig A. Grush, P.E.	CHECKED <i>amm</i> 4/14/11
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		ELECTRICAL					
		Remove and dispose of the following equipment in the Powerplant:					
	49	40-Ton Travelling Crane control equipment (5 cubicles), Total weight approximately: 500 lbs.	86-68430	1	EA	\$10,000.00	\$10,000.00
	50	40-Ton Travelling Crane Festoon Cable (approx. 200 lin. Ft. cable) Total weight approximately: 800 lbs.	86-68430	1	EA	\$1,500.00	\$1,500.00
	51	Four 15-Ton Overhead Crane motors - hoist (10Hp*), hoist trolley (5Hp*), gantry (2-5Hp*) (Hp* Approx.) Total weight approximately: 350 lbs.	86-68430	1	EA	\$1,000.00	\$1,000.00
	52	15-Ton Overhead Crane control equipment (1 cubicle), Total weight approximately: 100 lbs.	86-68430	1	EA	\$300.00	\$300.00
	53	15-Ton Overhead Crane Festoon Cable (approx. 100 lin. Ft. cable) Total weight approximately: 250 lbs.	86-68430	1	EA	\$500.00	\$500.00
		SUBTOTAL THIS SHEET					\$13,300.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

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		ELECTRICAL					
		Remove and dispose of the following equipment in the Switchyard:					
		All equipment is on wood-pole structures					
	54	69-kV circuit breakers, oil-filled, PCB	86-68430	2	EA	\$3,000.00	\$6,000.00
	55	69-kV disconnect switches, group-operated	86-68430	2	EA	\$1,500.00	\$3,000.00
	56	60-foot wood poles	86-68430	12	EA	\$1,000.00	\$12,000.00
	57	30-foot wood crossarms	86-68430	24	EA	\$500.00	\$12,000.00
	58	69-kV insulator strings	86-68430	12	EA	\$400.00	\$4,800.00
		Remove and dispose of the following wood-pole transmission lines:					
	59	Transmission Line No. 3 From Copco No. 1 switchyard to Fall Creek 266.8 ACSR, 69-kV	86-68430	1.66	mile	\$30,000.00	\$49,800.00
	60	Transmission Line No. 15 From Copco No. 1 switchyard to Copco No. 2 266.8 ACSR, 69-kV	86-68430	1.23	mile	\$30,000.00	\$36,900.00
	61	Transmission Line No. 26-1 From Copco No. 1 powerhouse to Copco No. 1 switchyard 2/0 copper, 69-kV	86-68430	0.07	mile	\$30,000.00	\$2,100.00
	62	Transmission Line No. 26-2 From Copco No. 1 powerhouse to Copco No. 1 switchyard 2/0 copper, 69-kV	86-68430	0.07	mile	\$30,000.00	\$2,100.00
POWERHOUSE, SWITCHYARD, & TRANS LINE SUBTOTAL							\$2,380,335.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Grush P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Penstock	PROJECT: Klamath River Northern California/Southern Oregon <hr/> WOID: AF484 ESTIMATE LEVEL: Feasibility <hr/> REGION: MP UNIT PRICE LEVEL: July-2010 <hr/> FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care
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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
		Concrete and Structural Steel Items:					
	63	Remove gate house #1 from top of dam	86-68130	570	ft2	\$60.00	\$34,200.00
	64	Remove gate house #2 from top of dam	86-68130	690	ft2	\$60.00	\$41,400.00
	65	Remove Concrete Items associated with 10-foot diameter Penstocks, concrete is reinforced	86-68130	1,050	yd3	\$215.00	\$225,750.00
	66	Plug 14-foot diameter penstock with concrete Plug upstream and downstream ends <i>Assume 2' thick each</i>	86-68130	23	yd3	\$1,200.00	\$27,600.00
		SUBTOTAL THIS SHEET					\$328,950.00

QUANTITIES		PRICES	
BY Jonathan East	CHECKED Sheena Barnes	BY Craig A. Grush, P.E.	CHECKED 4/14/11
DATE PREPARED 10/26/10	PEER REVIEW / DATE Rick Benik P.E. 10/26/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE 4/14/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Penstock	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF484 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
		Remove and dispose of the following equipment at the Intake:					
	67	8 screens (Assume contains paint with heavy metals)	86-68420	18,000	lb	\$0.85	\$15,300.00
	68	8 Water Gates (Assume contains paint with heavy metals)	86-68420	18,000	lb	\$0.85	\$15,300.00
	69	3 - 30"Ø x 25' stand pipes (Assume contains paint with heavy metals)	86-68420	6,000	lb	\$0.85	\$5,100.00
	70	14' Ø penstock pipe (includes encased and open air intake up to underground portion-Revised 9/14/2010) (Assume contains paint with heavy metals)	86-68420	256,000	lb	\$0.85	\$217,600.00
	71	10' Ø penstock pipe (includes intake and main conduit) (Assume contains paint with heavy metals)	86-68420	270,000	lb	\$0.85	\$229,500.00
		PENSTOCK SUBTOTAL					\$811,750.00

QUANTITIES		PRICES	
BY K. Converse	CHECKED T Turnage	BY <i>[Signature]</i> Craig A. Gresh, P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED 2/28/10	PEER REVIEW / DATE Dan Drake 10/29/2010	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

FEATURE:				PROJECT:			
REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Reservoir Vegetative Restoration				Klamath River Northern California/Southern Oregon			
WOID: AF484		ESTIMATE LEVEL: Feasibility		REGION: MP		UNIT PRICE LEVEL: July-2010	
FILE:				C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care			

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		WATER AND ENVIRONMENTAL					
	73	SPRING GROUND SEEDING: 420 acres	86-68220	420	Acres	\$3,500.00	\$1,470,000.00
		Idaho fescue (Festuca idahoensis)	1680	lbs	PLS		
		Blue wildrye (Elymus glaucus)	1680	lbs	PLS		
		Small fescue (Vulpia microstachys)	1680	lbs	PLS		
		Bluebunch wheatgrass (Pseudoroegneria spicata)	2520	lbs	PLS		
		Sandberg bluegrass (Poa secunda)	210	lbs	PLS		
		Spike bentgrass (Agrostis exarata)	105	lbs	PLS		
		Western needlegrass (Achnatherum occidentale)	1680	lbs	PLS		
		California brome (Bromus carinatus)	3360	lbs	PLS		
		Squirreltail (Elymus elymoides)	1680	lbs	PLS		
		Wood mulch	840000	lbs			
		Tackifier	50400	lbs			
	74	SPRING BARGE SEEDING: 82 acres	86-68220	82	Acres	\$6,500.00	\$533,000.00
		Idaho fescue (Festuca idahoensis)	328	lbs	PLS		
		Blue wildrye (Elymus glaucus)	328	lbs	PLS		
		Small fescue (Vulpia microstachys)	328	lbs	PLS		
		Bluebunch wheatgrass (Pseudoroegneria spicata)	492	lbs	PLS		
		Sandberg bluegrass (Poa secunda)	41	lbs	PLS		
		Spike bentgrass (Agrostis exarata)	21	lbs	PLS		
		Western needlegrass (Achnatherum occidentale)	328	lbs	PLS		
		California brome (Bromus carinatus)	656	lbs	PLS		
		Squirreltail (Elymus elymoides)	328	lbs	PLS		
		Wood mulch	164000	lbs			
		Tackifier	9840	lbs			
SUBTOTAL THIS SHEET							\$2,003,000.00

QUANTITIES		PRICES	
BY O'Meara, Scott A	CHECKED Greimann, Blair P	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 4/14/11
DATE PREPARED 04/12/11	PEER REVIEW / DATE 04/12/11	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Reservoir Vegetative Restoration	PROJECT: Klamath River Northern California/Southern Oregon <hr/> WOID: AF484 ESTIMATE LEVEL: Feasibility <hr/> REGION: MP UNIT PRICE LEVEL: July-2010 <hr/> FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care
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PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		WATER AND ENVIRONMENTAL					
	75	SPRING AERIAL SEEDING: 300 acres	86-68220	300	Acres	\$7,500.00	\$2,250,000.00
		Idaho fescue (Festuca idahoensis)	1200	lbs	PLS		
		Blue wildrye (Elymus glaucus)	1200	lbs	PLS		
		Small fescue (Vulpia microstachys)	1200	lbs	PLS		
		Bluebunch wheatgrass (Pseudoroegneria spicata)	1800	lbs	PLS		
		Sandberg bluegrass (Poa secunda)	150	lbs	PLS		
		Spike bentgrass (Agrostis exarata)	75	lbs	PLS		
		Western needlegrass (Achnatherum occidentale)	1200	lbs	PLS		
		California brome (Bromus carinatus)	2400	lbs	PLS		
		Squirreltail (Elymus elymoides)	1200	lbs	PLS		
		Wood mulch	600000	lbs			
		Tackifier	36000	lbs			
	76	FALL GROUND SEEDING: 401 acres	86-68220	401	Acres	\$3,500.00	\$1,403,500.00
		Idaho fescue (Festuca idahoensis)	1604	lbs	PLS		
		Blue wildrye (Elymus glaucus)	1604	lbs	PLS		
		Small fescue (Vulpia microstachys)	1604	lbs	PLS		
		Bluebunch wheatgrass (Pseudoroegneria spicata)	2406	lbs	PLS		
		Sandberg bluegrass (Poa secunda)	201	lbs	PLS		
		Spike bentgrass (Agrostis exarata)	100	lbs	PLS		
		Western needlegrass (Achnatherum occidentale)	1604	lbs	PLS		
		California brome (Bromus carinatus)	3208	lbs	PLS		
		Squirreltail (Elymus elymoides)	1604	lbs	PLS		
		Wood mulch	123385	lbs			
		Tackifier	7403	lbs			
SUBTOTAL THIS SHEET							\$3,653,500.00

QUANTITIES		PRICES	
BY O'Meara, Scott A	CHECKED Greimann, Blair P	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 04/14/11
DATE PREPARED 04/12/11	PEER REVIEW / DATE 04/12/11	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 04/14/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Reservoir Vegetative Restoration	PROJECT: Klamath River Northern California/Southern Oregon	
	WOID: AF484	ESTIMATE LEVEL: Feasibility
	REGION: MP	UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care	

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		WATER AND ENVIRONMENTAL					
	77	RIPARIAN POLE PLANTING: 170 acres	86-68220	170	Acres	\$8,500.00	\$1,445,000.00
		Narrowleaf willow (<i>Salix exigua</i>)	71400	cutting			
		Arroyo willow (<i>Salix lasiolepis</i>)	11900	cutting			
		Shining willow (<i>Salix lucida</i>)	11900	cutting			
		Three-leaf sumac (<i>Rhus trilobata</i>)	11900	cutting			
		Western serviceberry (<i>Amelanchier alnifolia</i>)	5950	cutting			
		Chokecherry (<i>Prunus virginiana</i>)	5950	transplant			
		Herbivore screen	119000	each			
		Chemical herbivore deterrent	2380	gal			
		Polymer	375	lbs			
	78	WEED MANAGEMENT: 401 acres	86-68220	401	Acres	\$1,500.00	\$601,500.00
		Herbicide, post-emergent	802	lbs AI			
		MAINTENANCE TREATMENTS ON 10% OF THE RESTORATION AREAS PER YEAR OVER 4 YEARS, POST-RESTORATION					
	79	FALL GROUND SEEDING: 321 acres	86-68220	321	Acres	\$3,500.00	\$1,123,500.00
		Idaho fescue (<i>Festuca idahoensis</i>)	1283	lbs PLS			
		Blue wildrye (<i>Elymus glaucus</i>)	1283	lbs PLS			
		Small fescue (<i>Vulpia microstachys</i>)	1283	lbs PLS			
		Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>)	1925	lbs PLS			
		Sandberg bluegrass (<i>Poa secunda</i>)	160	lbs PLS			
		Spike bentgrass (<i>Agrostis exarata</i>)	80	lbs PLS			
		Western needlegrass (<i>Achnatherum occidentale</i>)	1283	lbs PLS			
		California brome (<i>Bromus carinatus</i>)	2566	lbs PLS			
		Squirreltail (<i>Elymus elymoides</i>)	1283	lbs PLS			
		Wood mulch	641600	lbs			
		Tackifier	38496	lbs			
	80	WEED MANAGEMENT: 321 acres	86-68220	321	Acres	\$1,500.00	\$481,500.00
		Herbicide, post-emergent	30	lbs AI			
		RESERVOIR VEGETATIVE RESTORATION SUBTOTAL					
							\$9,658,000.00

QUANTITIES		PRICES	
BY O'Meara, Scott A	CHECKED Greimann, Blair P	BY Craig A. Grush, P.E.	CHECKED [Signature] 4/14/11
DATE PREPARED 04/12/11	PEER REVIEW / DATE 04/12/11	DATE PREPARED 04/14/11	PEER REVIEW / DATE [Signature] 4/14/11

FEATURE:				PROJECT:			
REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Road Improvements				Klamath River Northern California/Southern Oregon			
WOID: AF484		ESTIMATE LEVEL: Feasibility		REGION: MP		UNIT PRICE LEVEL: July-2010	
FILE:				C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care			

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		GEOTECHNICAL					
		These quantities represent the work required to prepare a disposal site and improve the haul road to the disposal site for Copco 1 and Copco 2. In addition it provides the length of county road required to be repaired after construction.					
		General Sitework Copco 1 And Copco 2					
	81	Clear and Grub Disposal Area Estimated haul distance 1 mile. Disposed concrete estimated to be 10' deep and traffic compacted (50% bulking factor). For Copco 1 and Copco 2	86-68313	7	acre	\$6,000.00	\$42,000.00
	82	Soil Cover for Disposal Area	86-68313	23,000	yd3	\$50.00	\$1,150,000.00
		Access/Haul Road Improvements maximum 12% grades 4 reaches required improvement					
	83	Soil Excavation	86-68313	4,500	yd3	\$13.00	\$58,500.00
	84	Rock Excavation	86-68313	4,500	yd3	\$40.00	\$180,000.00
	85	Soil Backfill	86-68313	16,000	yd3	\$50.00	\$800,000.00
	86	4" Gravel Surfacing 50% contingency for excavation 100% contingency for backfill	86-68313	320	ton	\$100.00	\$32,000.00
		County Road Improvements					
	87	Asphalt Overlay Repair - Juniper Road	86-68313	3	mi	\$40,000.00	\$120,000.00
	88	Asphalt Overlay Repair - Copco Road Assume the 2 lane county road from I-5 to the Copco Dams will be overlayed after construction with chip seal.	86-68313	19	mi	\$40,000.00	\$760,000.00
		ROAD IMPROVEMENTS SUBTOTAL					\$3,142,500.00

QUANTITIES		PRICES	
BY Randy Kuzniakowski	CHECKED Tuti Tierney	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> Carm 4/14/11
DATE PREPARED 11/01/10	PEER REVIEW / DATE Daniel W. Osmun 11/1/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE <i>[Signature]</i> 4/14/11

FEATURE:				PROJECT:			
REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable Recreational Facilities to be Removed				Klamath River Northern California/Southern Oregon			
WOID: AF484		ESTIMATE LEVEL: Feasibility		REGION: MP		UNIT PRICE LEVEL: July-2010	
FILE:				C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Diversion & Care			

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Mallard Cove					
	89	Concrete total	BLM	106	CY	\$300.00	\$31,800.00
		Boat ramp: 100'x25'x1' (93 CY)					
		Dock abutment: 6'x8'x3' (6 CY)					
		8 Concrete wheel stops (0.5 CY)					
		4 Campfire ring foundations (1 CY)					
		6 Concrete sign bases (3 CY)					
		3 Concrete fire rings (2 CY)					
	90	25'x5' Dock made of composite decking and poly floats	BLM	1	EA	\$2,500.00	\$2,500.00
	91	20'x5' Gangway w/ aluminum frame and railings	BLM	1	EA	\$2,000.00	\$2,000.00
	92	Signs to be removed and hauled away	BLM	6	EA	\$300.00	\$1,800.00
	93	Wood plank tables to be removed and hauled away	BLM	8	EA	\$100.00	\$800.00
	94	Parking area to be regraded, ripped, seeded and planted this area is made of fill about 6 ft deep	BLM	2.5	ACRE	\$25,000.00	\$62,500.00
		Copco Cove					
	95	Concrete total	BLM	84	CY	\$300.00	\$25,200.00
		Boat ramp: 80'x25'x1' (74 CY)					
		Dock abutment: 14'x5'x3' (8 CY)					
		6 Concrete sign bases (2 CY)					
	96	Dock abutment railing made of 2.5" dia. steel pipe	BLM	25	LF	\$40.00	\$1,000.00
	97	Signs to be removed and hauled away	BLM	6	EA	\$300.00	\$1,800.00
	98	Wood plank tables to be removed and hauled away	BLM	2	EA	\$100.00	\$200.00
	99	Regrade, rip, seed and plant disturbed areas	BLM	2.3	ACRE	\$25,000.00	\$57,500.00
RECREATIONAL FACILITIES REMOVAL SUBTOTAL							\$187,100.00

QUANTITIES		PRICES	
BY Renee Snyder (BLM)	CHECKED Sheena Barnes	BY Craig A. Grush, P.E.	CHECKED CMM 4/14/11
DATE PREPARED 10/26/10	PEER REVIEW / DATE Rick Benik P.E. 10/26/10	DATE PREPARED 04/14/11	PEER REVIEW / DATE DCD 4/14/11

FEATURE:				PROJECT:			
REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable SUMMARY				Klamath River Northern California/Southern Oregon			
WOID:		AF484		ESTIMATE LEVEL:		Feasibility	
REGION:		MP		UNIT PRICE LEVEL:		July-2010	
FILE:				C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 1\Klamath Dams Removal - COPCO 1 - Full Removal Option - REV#1 - MP Feas Est - 4-2011.xlsx\Summary			

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Sediment Removal (assumes by natural erosion)		1,453,800	CY	\$0.00	\$0.00
		Diversion and Care					\$1,530,500.00
		Dam Removal					\$18,845,400.00
		Powerhouse/Switchyard/Transmission Line Removal					\$2,380,335.00
		Penstock Removal					\$811,750.00
		Reservoir Vegetative Restoration					\$9,658,000.00
		Road Improvements					\$3,142,500.00
		Recreational Facilities to be Removed					\$187,100.00
		Subtotal					\$36,555,585.00
		Mobilization	5%	+/-			\$1,850,000.00
		Subtotal 1 with Mobilization					\$38,405,585.00
		Escalation to Notice to Proceed (NTP), from July 2010 to July 2020 (assumes 3%/yr compounding over 10 years)					\$13,208,310.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					\$51,613,895.00
		Design Contingencies	10%	+/-			\$5,386,105.00
		Allowance for Procurement Strategies (APS)	0%	+/-			
		Type of solicitation assumed is: Competitive RFP					
		CONTRACT COST					\$57,000,000.00
		Construction Contingencies	20%	+/-			\$11,000,000.00
		FIELD COST					\$68,000,000.00
		Non-Contract Costs: (Environmental & Cultural Resources Mitigation ~ 35%, Design Data Collection ~ 1%, Engineering Design ~ 4%, Permitting ~ 3%, Procurement ~ 1%, Construction Management ~ 10%, and Closeout ~ 1%)	55%	+/-			\$37,000,000.00
		CONSTRUCTION COST					\$105,000,000.00

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
Refer to Previous Sheets	Refer to Previous Sheets	Craig A. Brush, P.E.	<i>[Signature]</i> 09-18-11
DATE PREPARED	PEER REVIEW / DATE	DATE PREPARED	PEER REVIEW / DATE
	Refer to Previous Sheets	04/18/11	<i>[Signature]</i> 4/20/11