



KLOHN CRIPPEN

February 22, 2005

Project No.: P01576A01 01
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Land and Water British Columbia Inc.
P.O. Box 9340 Stn. Prov. Gov.
Victoria, B.C.
V8W 9M1

Via email: Jim.Mattison@gems7.gov.bc.ca
Original to follow

Attention: Mr. J. S. Mattison, P.Eng.
Executive Director

**Re: Water Release Facility At Kenney Dam
Updated Cost Estimate**

Dear Mr. Mattison:

In accordance with our Proposal dated January 31, 2005, and our subsequent Contract CC30205005 with the Ministry of Small Business and Economic Development, we are pleased to present the attached updated cost estimate for the Water Release Facility At Kenney Dam described in our report KC-155 prepared for the Nechako Environmental Enhancement Fund Management Committee in May 2001.

1. BASIS OF ESTIMATE

The updated estimate is based on the same conceptual design, preliminary quantity take-off, construction sequence and preliminary construction schedule as presented in our report KC-155, and on construction methods and equipment generally associated with the type of work involved. As mentioned in our report, potential contractors would base their tenders on the equipment and personnel available to them at the time of tender, and on their own construction methods, provided that they met all the requirements of the contract.

The 2001 estimate was prepared using G2 Estimator, a data base estimating system containing cost data on labour, equipment and materials. Updating of the estimate consisted primarily of updating the cost data to reflect cost increases since 2001, and compiling a new estimate.

Labour

The labour costs are based on unionized labour rates and conditions (Columbia Hydro Constructors and Allied Hydro Council collective agreement). The average hourly rates used include, where applicable, all fringe benefits, trade costs, overtime pay and shift differentials.

The costs for camp, travel and small tools are included in the indirect costs.

Equipment

The equipment rates include depreciation, insurance, spare parts and fuel/oil/grease. The equipment operators are included as labour and the mechanics are included in the indirect costs.

The equipment depreciation rates are those calculated from average current capital costs and normal average industry running costs.

Materials

All permanent materials and job supplies are based on current average budget prices. The recent sharp increase in steel prices is the most significant cost increase since the 2001 estimate.

2. WORK BREAKDOWN STRUCTURE

The cost estimate utilizes a work breakdown structure (WBS) as follows:-

Direct Costs

These are costs of the hands-on labour, equipment and materials required to perform the work.

Fixed Indirect Cost - Mobilize

This cost includes the mobilization of the equipment to the job site and the set up of the site infrastructure. The site infrastructure costs include temporary roads, offices, camp, lay down areas, and process and batch plant set up.

Variable Indirect Costs

These are the costs of all on-going non-direct work items and are normally spread back into the direct unit cost items. The costs include, but are not limited to, monthly maintenance and operating expenses, contractors on-site management staff, first aid, travel expenses, warehouse operation, small tools and supplies, mechanics, camp running cost, transportation and miscellaneous equipment, other miscellaneous items, performance bonds and insurances, head office administration and contractor's profit.

Fixed Indirect Cost Demobilize

This cost includes the demobilization of the equipment from the job site, and the clearing and restoration of the site.

Taxes

The provincial sales tax (PST) of 7% is included in the estimated costs, where applicable, and applies to equipment and materials costs. The goods and services tax (GST) is not included but, if applicable to the project proponent, should be applied at 7% to all costs.

Contingency

In view of the conceptual nature of the layout and structures, and the fact that the structures would occupy some areas outside those previously investigated for the facility designed for the Kemano Completion Project, substantial contingencies have been added to the estimated costs, particularly for the marine works, for changes due to final design and for the conditions encountered.

Engineering/Project Management

A percentage allowance has been included for investigations, final design, engineering assistance to the owner during the tendering process, construction and environmental monitoring, and the production of a construction report and record drawings.

Owner's Costs

The estimate does not include Owner's costs and financing costs, including interest during construction. The estimate also does not include any costs associated with federal and provincial environmental review and permitting, including associated environmental studies.

Escalation

The estimate has been prepared using costs at the February 2005 level. An amount would need to be added for escalation, depending upon the anticipated date of construction.

3. UPDATED ESTIMATED CONSTRUCTION COST

The total estimated construction cost, including engineering, is \$96 million. The cost estimate is summarized in Table 1, and the details of the updated cost estimate are presented in Attachment 1.

4. DISCLAIMER

This updated cost estimate was prepared by Klohn Crippen solely for the use of the contracting party. All other parties are third parties.

Neither the contracting party nor Klohn Crippen, guarantees or warrants to any third party, either expressly or by implication:

- (a) the accuracy, completeness or usefulness of,
- (b) the intellectual or other property rights of any person or party in, or
- (c) the merchantability, safety or fitness for purpose of,

any information, product or process disclosed, described or recommended in this document.

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Yours truly,
KLOHN CRIPPEN CONSULTANTS LTD.



Chris J. Wilson, P.Eng.
Project Manager

CJW/md

cc: Jennifer Meadows, Min. of Small Business and Economic Development

Attachments:

Table1
 Summary of Estimated Project Cost

ITEM	DESCRIPTION	ESTIMATED COST (\$1,000)
01	Deep-Water Intakes and Pipelines	12,350
02	Deep-Water Conduits	1,403
03	Surface-Water Intake Channel	3,529
04	Regulating Structure	7,674
05	Spillway and Flip Bucket	8,602
06	Low-Level Outlet	10,149
07	General Site Works	2,787
08	Skeleton Bay Future Hydro	865
09	Fixed Indirect Costs (Mobilize)	1,512
10	Variable Indirect Costs	29,688
11	Fixed Indirect Costs (Demobilize)	19,000
12	Marine Mobilize and Demobilize	629
13	Contingency for Design/Conditions Variations	1,707
14	Sub-Total Estimated Construction Costs	99,895
15	Investigations and Preliminary Engineering	1,400
16	Detailed Engineering (4%)	4,000
17	Construction Services (3.75%)	3,750
18	Total Estimated Project Cost	109,045

Note:

The above estimated costs are in February 2005 dollars and include PST, but do not include Owner's costs, including financing and any costs associated with federal and provincial environmental review and permitting, including associated environmental studies, and also do not include escalation and GST (if GST applicable to Proponent).

ATTACHMENT 1

**WATER RELEASE FACILITY AT KENNEY DAM
COST SUMMARY**

KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 06 - COST SUMMARY

Standard Cost Summary

WorkCode.01.00.01	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
01	DEEP WATER INTAKES & PIPELINES			5,190.0	266,094	29,386	549,548	58,381	11,446,950						12,350,358
02	DEEP WATER CONDUITS			14,726.2	573,299	38,602	710,749	80,274							1,402,924
03	SURFACE WATER INTAKE CHANNEL			21,238.3	796,275	638,202	729,414	1,364,721							3,528,612
04	REGULATING STRUCTURE			36,575.4	1,421,910	105,501	1,714,618	156,616	4,275,170						7,673,814
05	SPILLWAY & FLIP BUCKET			71,303.8	2,741,007	667,175	4,079,318	1,084,599	29,614						8,601,713
06	LOW LEVEL OUTLET			46,215.5	1,831,164	173,980	4,153,206	458,473	3,532,495						10,149,318
07	GENERAL			425.3	16,091	18,123		20,376	2,732,746						2,787,336
08	SKELETON BAY FUTURE HYDRO			7,295.0	281,762	79,551	362,680	136,355	4,385						864,733
11	FIXED INDIRECT COSTS(MOBILIZE)			11,106.0	430,253	76,979		543,394	461,295						1,511,921
12	VARIABLE INDIRECT COSTS			27,003.0	7,367,943	1,132,774		14,229,000	6,958,598						29,688,315
13	CONTINGENCY							19,000,000							19,000,000
14	FIXED INDIRECT COSTS(DEMOBILIZE)			4,200.0	162,873	20,785		40,512	404,345						628,515
15	MARINE MOBILIZE/DEMOBILIZE			3,600.0	142,042	1,187,002		292,437	85,425						1,706,906
Grand Total				248,878.5	16,030,713	4,168,058	12,299,533	37,465,137	29,931,022						99,894,464



KENNEY DAM 4 (WRF1)

WATER RELEASE FACILITY AT KENNEY DAM

01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
WorkCode.01.00.01 01 DEEP WATER INTAKES & PIPELINES															
01.01.001	Supply Pipelines and Fittings	1,000.00	TNE						11,390,000						11,390,000
01.01.003	Prepare and launch pipes	1.00	LS	400.0	14,779	6,647		5,123							26,548
01.01.004	Lower Support Prepare Bed	1.00	LS	140.0	8,206	477		1,623							10,306
01.01.005	Fabricate Lower Base Support Frames	1.00	EA				427,125								427,125
01.01.006	Install Lower Support Frame Base	1.00	EA	650.0	32,002	7,109	86,250	19,912							145,273
01.01.007	Install Anchors in base	1.00	LS	450.0	16,566	7,962	13,398	14,629							52,554
01.01.008	Install Lower Support Trunnion Frame	1.00	EA	130.0	6,400	1,422		1,249							9,071
01.01.009	Middle Support Prepare Bed	1.00	LS	70.0	4,103	239		812							5,153
01.01.010	Middle Support Frame Base	1.00	EA	260.0	12,801	2,844	12,075	5,345							33,065
01.01.011	Upper Dry Support Base	1.00	LS	210.0	8,034	442	10,700	1,297							20,473
01.01.012	Install Pipes	1.00	LS	2,880.0	163,202	2,245		8,393							173,839
01.01.013	Underwater Surveys	1.00	LS						56,950						56,950
01 DEEP WATER INTAKES & PIPELINES				5,190.0	266,094	29,386	549,548	58,381	11,446,950						12,350,358
WorkCode.01.00.01 02 DEEP WATER CONDUITS															
02.02.001	Fabricate Formwork	470.00	M2	1,689.1	65,362	2,335		42,647							110,344
02.02.002	Erect & Strip Formwork	2,800.00	M2	8,750.0	341,238	22,162	274	21,248							384,922
02.02.003	Reinforcement	157,000.00	KG	2,895.8	111,647	6,627	238,640	5,466							362,381
02.02.004	Concrete Placing	2,100.00	M3	1,016.4	37,967	7,477	431,970	5,217							482,631
02.02.005	Concrete Sundries not Measured	1.00	LS	375.0	17,085		39,865	5,695							62,645
02 DEEP WATER CONDUITS				14,726.2	573,299	38,602	710,749	80,274							1,402,924
WorkCode.01.00.01 03 SURFACE WATER INTAKE CHANNEL															
03.01.001	Medium Clear & Grub	1.30	HA	91.0	3,418	1,302		1,291							6,011
03.01.002	Overburden Excavation	19,300.00	M3	1,061.5	40,151	47,984		57,309							145,443
03.01.003	Drill & Blast Rock Stage 1 to El 859.5	106,300.00	M3	2,429.7	90,945	33,041		227,743							351,729
03.01.004	Excavate Rock Stage 1 to El	106,300.00	M3	3,697.4	140,718	208,935		261,129							610,782
03.01.005	Drill & Blast Rock Stage 2 to grade	67,000.00	M3	2,436.4	91,194	33,132		199,072							323,397



KENNEY DAM 4 (WRF1)

WATER RELEASE FACILITY AT KENNEY DAM

01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
03.01.006	Excavate Rock Stage 2 to grade	67,000.00	M3	3,075.9	117,041	177,959		226,455							521,455
03.01.007	Rock Bolts 25mm dia.* 4m lg. to El.859.5	635.00	EA	899.6	33,066	6,356	43,523	16,043							98,988
03.01.008	50mm dia.*6m lg. Relief Drains to El 859.5	147.00	EA	238.9	8,808	2,207	8,114	5,571							24,701
03.01.009	F.R.Shotcrete 50mm Thick to El.859.5	1,265.00	M2	205.6	7,590	1,009	59,572	1,417							69,588
03.01.010	F.R.Shotcrete 100mm Thick to El 859.5	926.00	M2	300.9	11,113	1,478	80,986	2,074							95,650
03.01.011	W.W.Fabric to El 859.5	926.00	M2	208.4	7,648	592	4,388	1,569							14,198
03.01.012	Rock Bolts 25mm dia.* 4m lg. to Grade	799.00	EA	1,131.9	41,605	7,998	54,763	20,187							124,553
03.01.013	50mm dia.*6m lg. Relief Drains to Grade	96.00	EA	156.0	5,752	1,441	5,299	3,638							16,131
03.01.014	F.R.Shotcrete 50mm Thick to Grade	2,414.00	M2	392.3	14,485	1,926	113,681	2,703							132,796
03.01.015	F.R.Shotcrete 100mm Thick to Grade	1,064.00	M2	345.8	12,769	1,698	93,055	2,383							109,905
03.01.016	W.W.Fabric to Grade	1,064.00	M2	239.4	8,788	680	5,042	1,803							16,313
03.01.017	Rock Anch. 32mm dia.* 4m lg. Grade	338.00	EA	718.3	26,400	5,075	242,393	14,956							288,825
03.01.018	Rock Bolts 25mm dia.* 4m lg. to Plug	154.00	EA	218.2	8,019	1,542	10,555	3,891							24,007
03.01.019	50mm dia.*6m lg. Relief Drains to Plug	16.00	EA	26.0	959	240	883	606							2,689
03.01.020	F.R.Shotcrete 50mm Thick to Plug	152.00	M2	24.7	912	121	7,158	170							8,362
03.01.021	Plug Rock Drill & Blast (WET)	22,900.00	M3	1,145.0	42,827	20,207		224,993							288,027
03.01.022	Plug Rock & Overburden Excavation (WET)	24,700.00	M3	2,195.6	82,068	83,277		89,717							255,062
03 SURFACE WATER INTAKE CHANNEL				21,238.3	796,275	638,202	729,414	1,364,721							3,528,612

WorkCode.01.00.01 04 REGULATING STRUCTURE

04.01.001	Rockfill	1,700.00	M3	51.0	2,025	1,305		1,324							4,654
04.01.002	Curtain Grouting Drilling	1,500.00	M	450.0	17,760	7,356		7,491							32,607
04.01.003	Curtain Grouting - Grouting	225,000.00	KG	900.0	32,837	3,582	55,502	9,142							101,062
04.02.001	Fabricate Formwork	888.00	M2	3,191.3	123,492	4,412		42,210							170,115
04.02.002	Erect & Strip Formwork	7,100.00	M2	22,187.5	865,283	56,197	1,804	58,044							981,328
04.02.003	Reinforcement	352,000.00	KG	6,492.4	250,317	14,859	535,040	12,255							812,472



KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
04.02.004	Concrete Placing	5,650.00	M3	2,418.2	90,331	17,789	1,027,735	12,481							1,148,336
04.02.005	Concrete Sundries not Measured	1.00	LS	885.0	39,865		94,537	13,668							148,070
04.02.006	Misc.Metal Regulating Structure	33,500.00	KG						402,000						402,000
04.03.001	Deep Water Regulating Gates incl.Embeds	42.00	TNE						717,570						717,570
04.03.002	Surface Water Regulating Gates incl.Embeds	56.00	TNE						956,760						956,760
04.03.003	Deep Water Bulkheads incl.Embeds	22.00	TNE						325,754						325,754
04.03.004	Surface Water Bulkheads incl.Embeds	26.50	TNE						392,386						392,386
04.03.006	Supply & Install Rotork Hoists	4.00	EA						1,139,000						1,139,000
04.03.007	Supply & Install Gantry Crane	1.00	EA						341,700						341,700

04 REGULATING STRUCTURE

36,575.4 1,421,910 105,501 1,714,618 156,616 4,275,170 7,673,814

WorkCode.01.00.01 05 SPILLWAY & FLIP BUCKET

05.01.001	Medium Clear & Grub	4.40	HA	308.0	11,570	4,407		4,368							20,345
05.01.002	Overburden Excavation	59,700.00	M3	2,288.5	86,645	104,607		118,089							309,341
05.01.003	Drill & Blast Rock	76,800.00	M3	3,072.0	114,985	41,775		204,169							360,929
05.01.004	Excavate Rock to Grade	76,800.00	M3	3,072.0	116,916	173,595		216,961							507,472
05.01.005	Rock Bolts 25mm dia.* 4m lg. to Grade	1,022.00	EA	1,447.8	53,217	10,230	70,048	25,821							159,316
05.01.006	50mm dia.*6m lg. Relief Drains to Grade	158.00	EA	256.8	9,468	2,372	8,722	5,988							26,549
05.01.007	F.R.Shotcrete 50mm Thick to Grade	5,221.00	M2	848.4	31,327	4,166	245,870	5,847							287,211
05.01.008	F.R.Shotcrete 100mm Thick to Grade	1,421.00	M2	461.8	17,053	2,268	124,277	3,183							146,780
05.01.009	W.W.Fabric to Grade	1,421.00	M2	319.7	11,736	908	6,734	2,408							21,787
05.01.010	Rock Anch. 32mm dia.* 4m lg. Grade	820.00	EA	1,742.5	64,048	12,312	588,055	36,285							700,700
05.01.020	Hydroseeding	13,000.00	M2						29,614						29,614
05.01.021	Medium Clear & Grub Plunge Pool	0.40	HA	28.0	1,052	401		397							1,850
05.01.022	Overburden Excavation Plunge Pool	7,000.00	M3	268.3	10,159	12,265		13,846							36,271
05.01.023	Drill & Blast Rock Plunge Pool	28,000.00	M3	560.0	21,052	6,692		57,945							85,690
05.01.024	Excavate Rock to Grade Plunge Pool	28,000.00	M3	980.0	37,315	54,685		67,215							159,216
05.01.025	Place Rockfill to Left Bank Protection	12,500.00	M3	375.0	14,123	14,309		13,058							41,490



KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
05.02.001	Fabricate Formwork	1,031.00	M2	3,705.2	143,379	5,123		49,008							197,509
05.02.002	Erect & Strip Formwork	8,235.00	M2	25,734.4	1,003,607	65,180	2,093	67,322							1,138,202
05.02.003	Reinforcement	652,000.00	KG	12,025.8	463,656	27,523	991,040	22,700							1,504,919
05.02.004	Erect & Strip Chute & Apron Screeds	1.00	LS	1,800.0	69,631			11,390							81,021
05.02.005	Concrete Placing	8,725.00	M3	3,873.9	144,707	28,498	1,646,408	19,960							1,839,573
05.02.006	36mm*5m long Rock Anchors	530.00	EA	4,240.0	158,201	57,407	164,260	79,843							459,712
05.02.007	36mm*7m long Rock Anchors	235.00	EA	2,685.7	100,208	38,451	101,965	40,571							281,195
05.02.008	Concrete Sundries not Measured	1.00	LS	1,210.0	56,950		129,846	18,224							205,020
05 SPILLWAY & FLIP BUCKET				71,303.8	2,741,007	667,175	4,079,318	1,084,599	29,614						8,601,713
WorkCode.01.00.01 06 LOW LEVEL OUTLET															
06.01.001	Tunnel Excavation	62.00	M	1,653.3	79,672	26,591		125,168							231,430
06.01.002	Pilot Shaft Excavation	79.00	M	1,717.4	82,731	24,051		40,310							147,092
06.01.003	Shaft Slash Excavation	79.00	M	1,580.0	75,710	18,439		32,882							127,031
06.01.004	Muck from Portal Area to Dumpsite	2,170.00	M3	97.7	3,705	4,026		5,002							12,733
06.01.005	Rock Support	1.00	LS				20,557								20,557
06.01.006	Drill & Blast Rock at Intake	3,960.00	M3	352.0	13,175	4,787		26,254							44,216
06.01.007	Excavate Rock Intake	3,960.00	M3	137.7	5,242	7,783		9,728							22,754
06.01.008	F.R.Shotcrete 50mm Thick to Intake	580.00	M2	94.3	3,480	463	27,314	650							31,906
06.01.009	F.R.Shotcrete 100mm Thick to Intake	580.00	M2	188.5	6,960	926	50,725	1,299							59,910
06.01.010	W.W.Fabric to Intake	580.00	M2	130.5	4,790	371	2,749	983							8,893
06.01.011	Rock Anch. 32mm dia.* 4m lg. to Intake	290.00	EA	616.3	22,651	4,354	207,971	12,832							247,809
06.01.021	Exist.Tunnel Rock Anchors	175.00	EA	262.5	9,757	3,028	9,499	3,530							25,815
06.01.022	Exist.Tunnel Fibre Reinf.Shotcrete	70.00	M3	140.0	5,234	1,217	61,220	716							68,388
06.01.023	Exist.Tunnel Relief Drains	15.00	EA	5.0	192	197		293							681
06.02.001	Fabricate Formwork Intake	323.00	M2	1,160.8	44,919	1,605		18,640							65,163
06.02.002	Erect & Strip Formwork Intake	2,580.00	M2	8,062.5	314,427	20,421	1,059	23,733							359,640
06.02.003	Reinforcement Intake	142,000.00	KG	2,619.1	100,980	5,994	215,840	4,944							327,758
06.02.004	Concrete Placing Intake	1,990.00	M3	907.4	33,897	6,676	385,662	4,670							430,904
06.02.005	Concrete Sundries not Measured	1.00	LS	340.0	15,946		35,309	5,695							56,950



KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
Intake															
06.02.006	Fabricate Formwork	185.00	M2	1,772.9	68,661	2,913		13,301							84,875
06.02.007	E & S Formwork	1,265.00	M2	6,957.5	269,137			12,089							281,227
06.02.008	Reinforcement	5,000.00	KG	200.0	7,729		7,600								15,329
06.02.009	Steel Liner	52.00	TNE	554.7	21,306	2,132	296,140	14,828							334,406
06.02.010	Concrete Liner	875.00	M3	875.0	32,453	1,825	147,000	8,430							189,708
06.02.011	Contact Grouting	1.00	LS	200.0	7,436	1,552	2,875	6,819							18,683
06.02.012	Consolidation Grouting	1.00	LS	400.0	14,873	3,048	5,750	2,302							25,972
06.02.013	Concrete Sundries Low Level Outlet	1.00	LS	296.0	13,668		30,753	4,556							48,977
06.02.021	Steel Pipe in Exist.Tunnel	280.00	TNE	4,977.8	191,206	19,130	1,913,520	38,615							2,162,471
06.02.022	Fabricate Formwork Exist.Tunnel	335.00	M2	1,203.9	46,588	1,665		17,284							65,536
06.02.023	Erect & Strip Formwork Exist.Tunnel	1,340.00	M2	4,187.5	163,056	5,327		8,357							176,739
06.02.024	Reinforcement Exist.Tunnel	119,000.00	KG	2,194.9	84,505	2,523	180,880	2,876							270,784
06.02.025	Concrete Placing Exist.Tunnel	2,820.00	M3	2,030.4	75,687	2,938	517,752	4,853							601,230
06.02.026	Concrete Sundries not Measured Exist Tunnel	1.00	LS	300.0	11,390		33,031	6,834							51,255
06.02.027	Misc. Metal LLO	5,000.00	KG						34,170						34,170
06.03.001	Surface Water Gate incl.Embeds	20.10	TNE						343,409						343,409
06.03.002	Surface Water Bulkhead incl.Embeds	7.30	TNE						108,091						108,091
06.03.003	Deep Water Gate incl.Embeds	20.10	TNE						343,409						343,409
06.03.004	Deep Water Bulkhead incl.Embeds	7.30	TNE						108,091						108,091
06.03.005	Skimming Bulkhead incl.Embeds	22.20	TNE						328,715						328,715
06.03.006	LLO Heating & Ventilation	1.00	LS						148,070						148,070
06.03.007	LLO Hollow Cone Valves	2.00	EA						797,300						797,300
06.03.008	LLO Butterfly Valves	2.00	EA						387,260						387,260
06.03.009	LLO Dresser Couplings	2.00	EA						22,780						22,780
06.03.010	LLO Trashrack	10.00	TNE						113,900						113,900
06.03.011	LLO Rotork Hoists	2.00	EA						569,500						569,500
06.03.012	LLO Winch Hoists	2.00	EA						227,800						227,800

06 LOW LEVEL OUTLET

	46,215.5	1,831,164	173,980	4,153,206	458,473	3,532,495	10,149,318
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KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
WorkCode.01.00.01 07 GENERAL															
07.01.001	Medium Clear & Grub	0.60	HA	42.0	1,578	601		596							2,774
07.01.002	Overburden Excavation	10,000.00	M3	383.3	14,513	17,522		19,780							51,816
07.01.003	Fencing & Gates	1.00	LS						83,432						83,432
07.01.004	Operators House Incl.Furnishings	1.00	LS						484,075						484,075
07.01.005	Roads & Yards	1.00	LS						56,950						56,950
07.01.006	Septic Disposal System	1.00	LS						48,977						48,977
07.03.001	Plumbing	1.00	LS						11,390						11,390
07.03.002	Domestic Water System	1.00	LS						12,529						12,529
07.03.003	Station Drainage	1.00	LS						12,529						12,529
07.03.004	Heating & Ventilation	1.00	LS						21,641						21,641
07.04.001	Coating, Cable & Trays	1.00	LS						28,475						28,475
07.04.002	Diesel Generating System	1.00	LS						121,873						121,873
07.04.003	Power Distribution System	1.00	LS						460,156						460,156
07.04.004	Data Collection System	1.00	LS						48,977						48,977
07.04.005	Telephone System	1.00	LS						433,959						433,959
07.04.006	Instrumentation	1.00	LS						440,793						440,793
07.04.007	Lighting & 120v Power Distribution	1.00	LS						235,773						235,773
07.04.008	Grounding System	1.00	LS						164,016						164,016
07.04.009	Fire Alarm System	1.00	LS						43,282						43,282
07.04.010	Security Alarm System	1.00	LS						23,919						23,919
07 GENERAL				425.3	16,091	18,123		20,376	2,732,746						2,787,336
WorkCode.01.00.01 08 SKELETON BAY FUTURE HYDRO															
08.01.001	Medium Clear & Grub	0.20	HA	14.0	526	200		199							925
08.01.002	Overburden Excavation	18,000.00	M3	690.0	26,124	31,540		35,605							93,269
08.01.003	Drill & Blast Rock	3,400.00	M3	272.0	10,181	3,699		13,778							27,658
08.01.004	Excavate Rock to Grade	3,400.00	M3	272.0	10,352	13,281		16,324							39,956
08.01.005	Rock Bolts 25mm dia.* 4m lg. to Grade	60.00	EA	85.0	3,124	601	4,112	1,516							9,353
08.01.006	Rock Anch. 32mm dia.* 4m lg. Grade	55.00	EA	116.9	4,296	826	5,794	2,063							12,978



KENNEY DAM 4 (WRF1)

WATER RELEASE FACILITY AT KENNEY DAM

01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
08.01.007	F.R.Shotcrete 50mm Thick to Grade	200.00	M2	32.5	1,200	160	9,419	224							11,002
08.01.009	W.W.Fabric to Grade	200.00	M2	45.0	1,652	128	948	339							3,066
08.01.011	Stub Tunnel Excavation	7.00	M	164.7	7,937	2,649		12,988							23,574
08.01.012	Stub Tunnel Rock Support	1.00	LS				1,953								1,953
08.01.013	Muck from Portal Area to Dumpsite	76.00	M3	3.4	130	141		175							446
08.01.021	Consolidation Grouting Drilling	280.00	M	120.0	4,736	1,962		1,855							8,553
08.01.022	Consolidation Grouting - Grouting	42,000.00	KG	240.0	8,756	955	9,418	4,095							23,225
08.02.001	Fabricate Formwork	138.00	M2	495.9	19,191	686		6,560							26,437
08.02.002	Erect & Strip Formwork	825.00	M2	2,578.1	100,543	6,530	210	6,745							114,028
08.02.003	Reinforcement	57,000.00	KG	1,051.3	40,534	2,406	86,640	1,985							131,565
08.02.004	Concrete Placing	750.00	M3	321.0	11,991	2,361	144,075	1,657							160,084
08.02.005	Concrete Sundries not Measured	1.00	LS					20,502							20,502
08.02.006	36mm*15m long Rock Anchors	4.00	EA	128.0	4,776	7,256	4,427	1,827							18,286
08.02.010	Steel Liner/Blind Flange	9.00	TNE	313.0	12,025	1,203	71,757	4,043							89,028
08.02.011	Concrete Liner	14.00	M3	22.4	857	29	2,352	1,274							4,512
08.02.021	Supply and Install Stoplog Guides	3.60	TNE	240.0	9,414	2,533	20,700	2,089							34,736
08.02.022	Fabricate Formwork Guides	4.00	M2	5.1	201	4		172							377
08.02.023	Erect & Strip Formwork Guides	10.00	M2	31.0	1,213	63		63							1,339
08.02.025	Concrete Placing	5.00	M3	53.5	2,003	339	876	280							3,497
08.02.026	S & I Handrails	550.00	KG						4,385						4,385

08 SKELETON BAY FUTURE HYDRO				7,295.0	281,762	79,551	362,680	136,355	4,385						864,733
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WorkCode.01.00.01 11 FIXED INDIRECT COSTS(MOBILIZE)

11.11.001	Freight equipment to site.	1.00	LS						318,920						318,920
11.11.002	Assemble equipment at site	1.00	LS	1,600.0	61,673	7,558		6,448							75,679
11.11.003	Medium Clear & Grub Temp.Facilities	2.40	HA	168.0	6,311	2,404		2,383							11,097
11.11.004	Level & Compact Temp.Facility Area	2.40	HA	288.0	10,882	9,169		110,353							130,404
11.11.005	Install Temp.Utilities & Services	1.00	LS	2,800.0	104,855	9,396		178,948							293,199
11.11.006	Erect Offices & Workshops	1.00	LS	2,800.0	109,654	15,116		24,286							149,056
11.11.007	Office Furnishings	1.00	LS					79,730							79,730



KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
11.11.008	Install Camp	1.00	LS						142,375						142,375
11.11.009	Erect Process Plant	1.00	LS	750.0	28,930	1,890		18,697							49,516
11.11.010	Erect Batch Plant	1.00	LS	1,500.0	57,860	3,779		20,309							81,948
11.11.011	Temporary Access Roads	1.00	LS	1,200.0	45,533	27,668		99,962							173,163
11.11.012	Fuel Storage Facility	1.00	LS	0.0	4,556			2,278							6,834
11 FIXED INDIRECT COSTS(MOBILIZE)				11,106.0	430,253	76,979		543,394	461,295						1,511,921
WorkCode.01.00.01 12 VARIABLE INDIRECT COSTS															
12.12.001	Maintain General Facilities	30.00	MON		17,085	10,251		6,834							34,170
12.12.002	Operating Expense	30.00	MON			102,854		53,803	280,194						436,852
12.12.003	On site staff Management	1.00	LS	4,944.0	5,377,902										5,377,902
12.12.004	Engineering Equip.& Supplies	1.00	LS					113,900							113,900
12.12.005	First Aid & Safety	1.00	LS			6,917		77,625							84,542
12.12.006	Site Photos	1.00	LS						6,834						6,834
12.12.007	Business Travel	30.00	MON						34,170						34,170
12.12.008	Warehouse Operation	1.00	LS	4,944.0	191,680	15,629		575,519	113,900						896,728
12.12.009	Equipment Shop	1.00	LS	10,000.0	378,522	71,400		136,900	300,000						886,822
12.12.010	Explosive Magazines	1.00	LS					5,695							5,695
12.12.011	Blasting Consultant	3.00	MON						22,351						22,351
12.12.012	Winter Work Costs	1.00	LS	1,400.0	53,257	39,179		166,746							259,182
12.12.013	Camp running cost	1.00	LS						2,451,128						2,451,128
12.12.014	Lube & Fuel	1.00	LS	2,000.0	73,664	19,900		53,510							147,074
12.12.015	Proj.Transport & Misc.Equipment	1.00	LS	3,715.0	136,832	297,144		338,467							772,443
12.12.016	Travel Expenses	1.00	LS						1,570,681						1,570,681
12.12.017	Misc.Overtime	1.00	LS		1,139,000										1,139,000
12.12.018	Equipment Balance	1.00	LS			569,500									569,500
12.12.019	H.O.Administration Fee	1.00	LS					1,700,000							1,700,000
12.12.020	Bonds	1.00	LS						935,000						935,000
12.12.021	Insurances	1.00	LS						1,176,000						1,176,000
12.12.022	Construction Water Treatment	1.00	LS						68,340						68,340



KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
13.13.001	Contractors Profit	1.00	LS					11,000,000							11,000,000
12 VARIABLE INDIRECT COSTS				27,003.0	7,367,943	1,132,774		14,229,000	6,958,598						29,688,315
WorkCode.01.00.01 13 CONTINGENCY															
13.13.002	Civil Contingency	1.00	LS					12,000,000							12,000,000
13.13.003	Marine Contingency	1.00	LS					7,000,000							7,000,000
13 CONTINGENCY				2.00	LS			19,000,000							19,000,000
WorkCode.01.00.01 14 FIXED INDIRECT COSTS(DEMOBILIZE)															
14.11.001	Dismantle Offices & Workshops	1.00	LS	1,400.0	54,827	7,558		6,448							68,833
14.11.002	Dismantle & Remove Camp	1.00	LS						74,035						74,035
14.11.003	Dismantle Process Plant	1.00	LS	400.0	15,458	1,890		1,612							18,959
14.11.004	Dismantle Batch Plant	1.00	LS	800.0	30,915	3,779		3,224							37,918
14.11.005	Demob & Tidy Site	1.00	LS					22,780	11,390						34,170
14.11.006	Dismantle & Assemble equipment at site	1.00	LS	1,600.0	61,673	7,558		6,448							75,679
14.11.007	Freight equipment from site.	1.00	LS						318,920						318,920
14 FIXED INDIRECT COSTS(DEMOBILIZE)				7.00	LS	4,200.0	162,873	20,785	40,512	404,345					628,515
WorkCode.01.00.01 15 MARINE MOBILIZE/DEMOBILIZE															
15.11.100	Excavate & Grade Area Launching Site	1.00	LS	480.0	18,333	20,104		22,874							61,311
15.11.101	Place & Compact Granular Base	1.00	LS	360.0	13,689	12,701		82,879							109,269
15.11.102	Lay Launching Rails	1.00	LS	440.0	17,544	5,066		54,025							76,635
15.11.103	Install winches and anchor pads	1.00	LS	400.0	18,224	11,390		15,946							45,560
15.11.104	Supply of Marine Equipment	1.00	LS			1,127,610		108,357							1,235,967
15.11.105	Supply and Erect Covered Welding Workshop	1.00	LS						85,425						85,425
15.11.106	Erection of Flexifloats for crane platform	1.00	LS	320.0	12,360	2,533		2,089							16,982
15.11.107	Modify Flexifloats for Winch platforms	1.00	LS	1,040.0	40,307	5,066		4,178							49,551



KENNEY DAM 4 (WRF1) WATER RELEASE FACILITY AT KENNEY DAM 01 - COST SUMMARY

Standard Cost Summary

WorkSheet Number	Description	Quantity	Unit	Manhours	Labor	Equipment	Materials	Supplies	Subcontracts	(Not Used)	(Not Used)	(Not Used)	(Not Used)	(Not Used)	Total Cost
15.11.108	Modify Flexifloats for Plug Drill Platform	1.00	LS	240.0	9,226										9,226
15.11.109	Modify Flexifloats for crane platform	1.00	LS	320.0	12,360	2,533		2,089							16,982
15 MARINE MOBILIZE/DEMOBILIZE		10.00	LS	3,600.0	142,042	1,187,002		292,437	85,425						1,706,906
Grand Total				248,878.5	16,030,713	4,168,058	12,299,533	37,465,137	29,931,022						99,894,464

