Appendix E

COST DATA

Project:	**King County CSO**				
Subject:	**North Beach Alternative 1B**				
By :	**CEH**				
Date :	**20-Dec-10**				
Construction Cost Estimate					
Item	**Description**	**Quantity**	**Unit**	**Unit cost, $**	**Cost, $**
DIVISION 1 - GENERAL REQUIREMENTS					
	Temporary Traffic Control	1	LS	$287,946	$287,946
	Temporary Erosion & Sediment Control	1	LS	$35,993	$35,993
DIVISION 2 - SITE WORK					
	Equipment Mobilization	1	EA	$10,000	$10,000
	ACP Removal				
	Storage Pipe	795	SY	$20	$15,900
	Odor Control Building	89	SY	$20	$1,780
	Diversion Structure	11	SY	$20	$220
	Clearing & Grubbing	0	AC	$12,000	$0
	Excavation				
	Storage Tank	6,091	BCY	$15	$91,361
	Diversion Structure	405	BCY	$25	$10,125
	Haul/Disposal - Tank	5,332	LCY	$11	$58,655
	Shoring				
	Storage Pipe	23,943	SF	$42	$993,635
	Dewatering	1	LS	$890,000	$890,000
	Backfill (native)	1,825	BCY	$15	$27,374
	Intall 12-ft Diam RCP storage pipe	325	LF	$1,000	$325,000
	Install 20-inch pipe	200	LF	$700	$140,000
	Pipe Bedding	15	CY	$18	$267
	24" Compacted Gravel Fill - Storage Pipe	589	CY	$20	$11,778
	Imported Backfill/Compaction - Storage Pipe	1,825	CY	$20	$36,498
	AC Surface Restoration	805	SY	$45	$36,245
	Generator fuel tank	1	LS	$12,000	$12,000

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Construction Cost Estimate					
Item	**Description**	**Quantity**	**Unit**	**Unit cost, $**	**Cost, $**
DIVISION 3 - CONCRETE					
	Diversion Structure				
	Base Slab	8	CY	$300	$2,400
	Walls	27	CY	$500	$13,500
	Top Slab	8	CY	$800	$6,400
	Odor Control and Electrical Bldg				
	Strip Footings	22	CY	$300	$6,667
	Foundation Walls	11	CY	$400	$4,444
	Slab on Grade	89	CY	$326	$28,978
DIVISION 4 - MASONRY					
	Odor Control Bldg				
	12" CMU Walls; Full grouted, 12-ft high, slab on grade	2,400	SF	$38	$91,200
DIVISION 5 - METALS					
	Fencing - Diversion Structure	200	LF	$8	$1,600
	Hatches	8	EA	$10,000	$80,000
	Odor Control Bldg				
	Metal Decking	2,400	SF	$6	$14,400
	Roof Joists, 8-ft OC Fabricated Steel	12,000	LB	$3	$32,400
	Miscellaneous Plates/Shapes	11,000	LB	$3	$33,000
	Metal Roof	2,400	SF	$6	$15,000

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Date :	**20-Dec-10**				
Construction Cost Estimate					
Item	**Description**	**Quantity**	**Unit**	**Unit cost, $**	**Cost, $**
DIVISIONS 7 & 8 - ARCHITECTURAL					
	N/A				
DIVISION 15 - MECHANICAL					
	Storage Tank				
	Tipping Bucket	1	LS	$25,000	$25,000
	Drain Gates	1	LS	$10,000	$10,000
	Level Sensor	1	LS	$5,000	$5,000
	Pumps	3	LS	$5,000	$15,000
	Miscellaneous Mechanical	1	LS	$13,500	$13,500
	Diversion Structure				
	Slide Gate	1	EA	$10,000	$10,000
	Level Sensor	1	EA	$5,000	$5,000
	Odor Control/Electrical/Generator Bldg				
	Heating, Ventilating, Plumbing	1	EA	$65,000	$65,000
	Odor Control Equipment				
	Scrubber, Fan, Sound Enclosure	1	LS	$25,000	$25,000
DIVISION 16 - ELECTRICAL					
	Electrical				
	Electrical	1	LS	$325,000	$325,000
	Standby Generator	1	LS	$60,000	$60,000
	Telemetry	1	LS	$50,000	$50,000
	Subtotal				*$3,923,265*
	Contingency	30%			$1,176,980
	Total Estimated Construction Cost[(1)]				$5,100,000
Notes:					
(1) Total estimated construction cost does not include sales tax or escalation.					

WTD Business Case Evaluation Results

North Beach CSO Life Cycle Cost

WTD Borrowing Cost as Discount Rate (1)

Scenario	Lifetime	Initial Capital Outlay	Total Project Life Costs (2)	Total Project Life Benefits	Net Project Life Costs	Average Project Annual Cost	Annual Costs over(under) Status quo
Status Quo							
"Status Quo"	0	$0	$0	$0	$0	$0	
Alternatives							
:om of Basin Storage	35	$9,850,000	$11,455,809	$0	$11,455,809	$512,065	$512,065

Budget Office Discount Rate (3)

Scenario	Lifetime	Initial Capital Outlay	Total Project Life Costs (2)	Total Project Life Benefits	Net Project Life Costs	Average Project Annual Cost	Annual Costs over(under) Status quo
Status Quo							
"Status Quo"	0	$0	$0	$0	$0	$0	
Alternatives							
:om of Basin Storage	35	$9,850,000	$10,713,783	$0	$10,713,783	$478,897	$478,897

First Year of Construction	2014	Additional inflation rate > 3%	1.00%

Notes:

(1) WTD Discount rate based on recent WTD borrowing costs net of 3% annual inflation. 2.73%

(2) Costs include risk and uncertainty, if estimated.

(3) Discount rate net of inflation, per the King County Budget Office. 7.00%

The option with the largest net equivalent annualized cost is the financially preferred option.

Alternative 1B - Pipeline Bottom of Basin Storage

Lifetime (in years)--->	35	Please provide
First year of O&M costs --->	2015	the appropriate
Electricity Supplier (SCL or PSE) --->	SCL	information in the
Indicate "Plant" or "Off-Site" --->	Off-Site	shaded areas

	All project costs through 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Current year (from Results summary sheet)																		
Total Benefits (from below)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital and O&M	$9,895,799	$46,941	$48,115	$49,323	$50,564	$51,840	$53,152	$54,500	$55,887	$57,313	$58,779	$60,287	$61,837	$63,431	$65,071	$66,757	$68,491	$70,274
Debt-related and O&M	$683,085	$487,228	$488,402	$489,609	$490,850	$492,126	$493,438	$494,787	$496,174	$497,600	$499,066	$500,573	$502,124	$503,718	$505,357	$507,043	$508,777	$510,561
Risk (from below)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Uncertainty (from below)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital outlays	$9,850,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt issuance	$197,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt service	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287
		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
					$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Energy use	$4,676	$4,723	$4,770	$4,818	$4,866	$4,915	$4,964	$5,013	$5,063	$5,114	$5,165	$5,217	$5,269	$5,322	$5,375	$5,429	$5,483	$5,538
Natural Gas	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
therms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	$4,676	$4,723	$4,770	$4,818	$4,866	$4,915	$4,964	$5,013	$5,063	$5,114	$5,165	$5,217	$5,269	$5,322	$5,375	$5,429	$5,483	$5,538
Electricity Use kwh	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000
Demand kW or kVa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Chemical spending	$5,000	$5,050	$5,101	$5,152	$5,203	$5,255	$5,308	$5,361	$5,414	$5,468	$5,523	$5,578	$5,634	$5,690	$5,747	$5,805	$5,863	$5,922
Sodium hypochlorite required in gal.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bisulfide required in gal.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other chemical costs - enter $	$5,000	$5,050	$5,101	$5,152	$5,203	$5,255	$5,308	$5,361	$5,414	$5,468	$5,523	$5,578	$5,634	$5,690	$5,747	$5,805	$5,863	$5,922
Generator Fuel	$1,200	$1,212	$1,224	$1,236	$1,249	$1,261	$1,274	$1,287	$1,299	$1,312	$1,326	$1,339	$1,352	$1,366	$1,379	$1,393	$1,407	$1,421
Pipeline Cleaning Equipment	$700	$707	$714	$721	$728	$736	$743	$750	$758	$766	$773	$781	$789	$797	$805	$813	$821	$829
Labor	$34,223	$35,249	$36,307	$37,396	$38,518	$39,673	$40,863	$42,089	$43,352	$44,653	$45,992	$47,372	$48,793	$50,257	$51,765	$53,318	$54,917	$56,565
Labor Hours	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650

Benefits

1.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

"Additional description of benefits 1, 2, etc."

UNCERTAINTIES

1.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

"Additional description of uncertainties 1, 2, etc."

RISKS

1.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

"Additional description of risks 1, 2, etc."

Alternative 1B - Pipeline Bottom of Basin Storage

Lifetime (in years)--->
First year of O&M costs --->
Electricity Supplier (SCL or PSE) --->
Indicate "Plant" or "Off-Site" --->

Current year (from Results summary sheet)	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Total Benefits (from below)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital and O&M	$72,108	$73,994	$75,935	$77,930	$79,983	$82,094	$84,266	$86,500	$88,798	$91,162	$93,594	$96,096	$98,670	$101,318	$104,042	$106,845	$109,729
Debt-related and O&M	$512,395	$514,281	$516,221	$518,217	$520,269	$522,381	$524,552	$526,786	$529,084	$531,448	$533,880	$536,382	$538,956	$541,604	$544,329	$547,132	$550,015
Risk (from below)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Uncertainty (from below)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital outlays	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt issuance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt service	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287	$440,287
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Energy use	$5,593	$5,649	$5,706	$5,763	$5,820	$5,878	$5,937	$5,997	$6,057	$6,117	$6,178	$6,240	$6,303	$6,366	$6,429	$6,494	$6,558
Natural Gas	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
therms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	$5,593	$5,649	$5,706	$5,763	$5,820	$5,878	$5,937	$5,997	$6,057	$6,117	$6,178	$6,240	$6,303	$6,366	$6,429	$6,494	$6,558
Electricity Use kwh	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000
Demand kW or kVa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Chemical spending	$5,981	$6,041	$6,101	$6,162	$6,224	$6,286	$6,349	$6,412	$6,476	$6,541	$6,606	$6,673	$6,739	$6,807	$6,875	$6,943	$7,013
Sodium hypochlorite required in gal.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bisulfide required in gal.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other chemical costs - enter $	$5,981	$6,041	$6,101	$6,162	$6,224	$6,286	$6,349	$6,412	$6,476	$6,541	$6,606	$6,673	$6,739	$6,807	$6,875	$6,943	$7,013
Generator Fuel	$1,435	$1,450	$1,464	$1,479	$1,494	$1,509	$1,524	$1,539	$1,554	$1,570	$1,586	$1,601	$1,617	$1,634	$1,650	$1,666	$1,683
Pipeline Cleaning Equipment	$837	$846	$854	$863	$871	$880	$889	$898	$907	$916	$925	$934	$943	$953	$962	$972	$982
Labor	$58,262	$60,009	$61,810	$63,664	$65,574	$67,541	$69,567	$71,654	$73,804	$76,018	$78,299	$80,648	$83,067	$85,559	$88,126	$90,770	$93,493
Labor Hours	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650

Benefits

1.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

"Additional description of benefits 1, 2, etc."

UNCERTAINTIES

1.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

"Additional description of uncertainties 1, 2, etc."

RISKS

1.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

"Additional description of risks 1, 2, etc."