

Jefferson County Department of Public Works
Port Hadlock UGA Sewer Facility Plan

APPENDIX D.
PLANNING LEVEL COST ESTIMATES FOR RECOMMENDED
ALTERNATIVE

September 2008

Project: Port Hadlock UGA Sewer Facility Plan
 Subject: Treatment System Analysis
 By: Tt
 Date: 11-Aug-08
 July 2008
 ENR: 8361.74

Updated Unit Costs

Item	Description	Unit cost, \$	Unit	CORE PLUS ALCOHOL				RHODY DRIVE							
				2010		2011		2012		2013		2014		2015	
				ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$
	COLLECTION - GRAVITY SYSTEM			432	0.10	502	0.12	584	0.14	679	0.16	789	0.19	918	0.22
	Capital Cost Estimate			116				204							
	<i>Structural</i>														
	8" PVC Gravity Main (8' to 10' deep)	\$80	LF	5,307	\$424,560	0	\$0	0	\$0	4119	\$329,520	0	\$0	0	\$0
	8" PVC Gravity Main (10' to 12' deep)	\$90	LF	1,030	\$92,700	0	\$0	0	\$0	1142	\$102,780	0	\$0	0	\$0
	8" PVC Gravity Main (12' to 14' deep)	\$100	LF	1,487	\$148,700	0	\$0	0	\$0	1251	\$125,100	0	\$0	0	\$0
	8" PVC Gravity Main (14' to 16' deep)	\$125	LF	1,702	\$212,750	0	\$0	0	\$0	1940	\$242,500	0	\$0	0	\$0
	8" PVC Gravity Main (16'-20' deep)	\$126	LF	2,760	\$347,760	0	\$0	0	\$0	2803	\$353,178	0	\$0	0	\$0
	8" PVC Gravity Main (20' to 25' deep)	\$180	LF	837	\$150,660	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	8" PVC Gravity Main (25' to 30' deep)	\$217	LF	391	\$84,847	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	10" PVC Gravity Main (20' to 25' deep)	\$190	LF	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (8' to 10' deep)	\$96	LF	1,040	\$99,840	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (10' to 12' deep)	\$108	LF	387	\$41,796	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (12' to 14' deep)	\$120	LF	672	\$80,640	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (14' to 16' deep)	\$150	LF	152	\$22,800	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (16'-20' deep)	\$151	LF	500	\$75,600	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (20' to 25' deep)	\$183	LF	1,648	\$301,584	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (8' to 10' deep)	\$109	LF	1,171	\$127,405	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (10' to 12' deep)	\$122	LF	451	\$55,202	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Force Main	\$32	LF	8,176	\$261,632	0	\$0	0	\$0	1827	\$58,464	0	\$0	0	\$0
	12" PVC Force Main	\$65	LF	7,323	\$475,995	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Gravity Laterals (Side Sewers)	\$2,000	EA	432	\$863,636	70	\$140,613	82	\$163,506	95	\$190,127	111	\$221,083	129	\$257,078
	4" PVC Gravity Laterals - extra for existing houses	\$1,000	EA	15	\$15,000	15	\$15,000	15	\$15,000	15	\$15,000	15	\$15,000	42	\$42,000
	1.5" HDPE Pressure Laterals - Grinder	\$2,400	EA	8	\$19,200	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Lateral Kits	\$250	EA	8	\$2,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (8' to 10' deep)	\$ 3,225	EA	12	\$38,701	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (8' to 12' deep)	\$ 3,925	EA	4	\$15,701	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (12' to 14' deep)	\$ 4,626	EA	4	\$18,502	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (14' to 16' deep)	\$ 5,326	EA	4	\$21,303	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (16' to 20' deep)	\$ 6,376	EA	2	\$12,752	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (20' to 25' deep)	\$ 7,952	EA	2	\$15,903	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (25' to 30' deep)	\$ 9,702	EA	5	\$48,512	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Dewatering	\$50,000	LS	1	\$50,000	0	\$0	0	\$0	1	\$50,000	0	\$0	0	\$0
	AC Surface Restoration	\$30	SY	6,512	\$195,350	0	\$0	0	\$0	3,752	\$112,550	0	\$0	0	\$0
	Native Surface Restoration	\$1	SY	17,300	\$17,300	2,800	\$2,800	3,300	\$3,300	3,800	\$3,800	4,400	\$4,400	5,100	\$5,100
	Abandon Septic Tank	\$750	EA	15	\$11,250	15	\$11,250	15	\$11,250	15	\$11,250	15	\$11,250	42	\$31,500
	Subtotal Structural				\$4,349,584		\$169,663		\$193,056		\$1,594,269		\$251,733		\$335,678
	Grinder Pump (Installed)	\$4,500	EA	8	\$36,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Electrical Connections - Grinder	\$500	EA	8	\$4,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Main Pump Station (2.1 mgd)	\$500,000	EA	1	\$500,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	\$375,000	EA	0	\$0	0	\$0	0	\$0	1	\$375,000	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	\$250,000	EA	2	\$500,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Equipment				\$1,040,000		\$0		\$0		\$375,000		\$0		\$0
	Installation, Miscellaneous Mechanical		of Equip	40%	\$200,000	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Electrical		of Equip	20%	\$100,000	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Instrumentation and Control		of Equip	15%	\$75,000	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Subtotal Structural, Mechanical, Elect, I&C				\$5,764,584		\$169,663		\$193,056		\$1,969,269		\$251,733		\$335,678
	Contractor O&P		of Sub Cost	15%	\$75,000	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$30,000	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Total estimated current construction cost				\$5,869,584		\$169,663		\$193,056		\$1,969,269		\$251,733		\$335,678
	Escalation to time of construction			3.50%	\$205,435	3.50%	\$5,938	3.50%	\$6,757	3.50%	\$68,924	3.50%	\$8,811	3.50%	\$11,749
	Total estimated construction cost				\$6,075,019		\$175,601		\$199,813		\$2,038,194		\$260,544		\$347,427
	Contingency			30%	\$1,822,506	30%	\$52,680	30%	\$59,944	30%	\$611,458	30%	\$78,163	30%	\$104,228
	Engineering Design			15%	\$989,184	15%	\$0	15%	\$0	15%	\$353,010	15%	\$0	15%	(\$0)
	Construction Management			10%	\$659,456	10%	\$0	10%	\$0	10%	\$235,340	10%	\$0	10%	(\$0)
	Sales Tax			8.4%	\$663,392	8.4%	\$19,176	8.4%	\$21,820	8.4%	\$222,571	8.4%	\$28,451	8.4%	\$37,939
	Total Estimated Capital Cost				\$10,210,000		\$247,000		\$282,000		\$3,461,000		\$367,000		\$490,000
	Total Estimated Onsite Capital Cost				\$1,412,000		\$247,000		\$282,000		\$321,000		\$367,000		\$490,000

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Item	Description	RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
	COLLECTION - GRAVITY SYSTEM	102				1443			1678	1952	2269		2639		
	Capital Cost Estimate														
	<i>Structural</i>														
	8" PVC Gravity Main (8' to 10' deep)	1,297	\$103,760	1,297	\$103,760	0	\$0	700	\$56,000	700	\$56,000	700	\$56,000	0	\$0
	8" PVC Gravity Main (10' to 12' deep)	716	\$64,395	716	\$64,395	0	\$0	197	\$17,700	197	\$17,700	197	\$17,700	0	\$0
	8" PVC Gravity Main (12' to 14' deep)	1,166	\$116,600	1,166	\$116,600	0	\$0	357	\$35,733	357	\$35,733	357	\$35,733	0	\$0
	8" PVC Gravity Main (14' to 16' deep)	528	\$66,000	528	\$66,000	0	\$0	103	\$12,875	103	\$12,875	103	\$12,875	0	\$0
	8" PVC Gravity Main (16'-20' deep)	1,252	\$157,689	1,252	\$157,689	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	8" PVC Gravity Main (20' to 25' deep)	443	\$79,650	443	\$79,650	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	8" PVC Gravity Main (25' to 30' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	10" PVC Gravity Main (20' to 25' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (8' to 10' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (10' to 12' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (12' to 14' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (14' to 16' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (16'-20' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (20' to 25' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (8' to 10' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (10' to 12' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Force Main	0	\$0	0	\$0	0	\$0	2829	\$90,528	0	\$0	0	\$0	0	\$0
	12" PVC Force Main	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Gravity Laterals (Side Sewers)	149	\$298,935	174	\$347,605	202	\$404,201	235	\$470,010	273	\$546,535	318	\$635,519	369	\$738,990
	4" PVC Gravity Laterals - extra for existing houses	42	\$42,000	41	\$41,000	41	\$41,000	42	\$42,000	26	\$26,000	40	\$40,000	40	\$40,000
	1.5" HDPE Pressure Laterals - Grinder	5	\$12,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Lateral Kits	5	\$1,250	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (8' to 10' deep)	4	\$12,900	3	\$9,675	0	\$0	3	\$9,675	2	\$6,450	2	\$6,450	0	\$0
	48" MH (8' to 12' deep)	2	\$7,851	2	\$7,851	0	\$0	1	\$3,925	1	\$3,925	0	\$0	0	\$0
	48" MH (12' to 14' deep)	3	\$13,877	3	\$13,877	0	\$0	2	\$9,251	1	\$4,626	1	\$4,626	0	\$0
	48" MH (14' to 16' deep)	2	\$10,652	1	\$5,326	0	\$0	1	\$5,326	0	\$0	0	\$0	0	\$0
	48" MH (16' to 20' deep)	4	\$25,505	3	\$19,129	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (20' to 25' deep)	2	\$15,903	1	\$7,952	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (25' to 30' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Dewatering	1	\$50,000	1	\$50,000	0	\$0	1	\$50,000	1	\$50,000	1	\$50,000	0	\$0
	AC Surface Restoration	1,800	\$54,005	1,800	\$54,005	0	\$0	452	\$13,570	452	\$13,570	452	\$13,570	0	\$0
	Native Surface Restoration	6,000	\$6,000	7,000	\$7,000	8,100	\$8,100	9,400	\$9,400	10,900	\$10,900	12,700	\$12,700	14,800	\$14,800
	Abandon Septic Tank	42	\$31,500	41	\$30,750	41	\$30,750	42	\$31,500	26	\$19,500	40	\$30,000	40	\$30,000
	Subtotal Structural		\$1,170,472		\$1,182,263		\$484,051		\$857,494		\$803,814		\$915,173		\$823,790
	Grinder Pump (Installed)	5	\$22,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Electrical Connections - Grinder	5	\$2,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Main Pump Station (2.1 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	0	\$0	0	\$0	0	\$0	1	\$250,000	0	\$0	0	\$0	0	\$0
	Subtotal Equipment		\$25,000		\$0		\$0		\$250,000		\$0		\$0		\$0
	Installation, Miscellaneous Mechanical	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Electrical	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Instrumentation and Control	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Subtotal Structural, Mechanical, Elect, I&C		\$1,195,472		\$1,182,263		\$484,051		\$1,107,494		\$803,814		\$915,173		\$823,790
	Contractor O&P	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Mobilization, demobilization, bond	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Total estimated current construction cost		\$1,195,472		\$1,182,263		\$484,051		\$1,107,494		\$803,814		\$915,173		\$823,790
	Escalation to time of construction	3.50%	\$41,842	3.50%	\$41,379	3.50%	\$16,942	3.50%	\$38,762	3.50%	\$28,134	3.50%	\$32,031	3.50%	\$28,833
	Total estimated construction cost		\$1,237,313		\$1,223,643		\$500,992		\$1,146,257		\$831,948		\$947,204		\$852,623
	Contingency	30%	\$371,194	30%	\$367,093	30%	\$150,298	30%	\$343,877	30%	\$249,584	30%	\$284,161	30%	\$255,787
	Engineering Design	15%	\$157,179	15%	\$152,561	15%	\$0	15%	\$111,929	15%	\$40,543	15%	\$39,750	15%	\$0
	Construction Management	10%	\$104,786	10%	\$101,707	10%	\$0	10%	\$74,619	10%	\$27,028	10%	\$26,500	10%	\$0
	Sales Tax	8.4%	\$135,115	8.4%	\$133,622	8.4%	\$54,708	8.4%	\$125,171	8.4%	\$90,849	8.4%	\$103,435	8.4%	\$93,106
	Total Estimated Capital Cost		\$2,006,000		\$1,979,000		\$706,000		\$1,802,000		\$1,240,000		\$1,401,000		\$1,202,000
	Total Estimated Onsite Capital Cost		\$608,000		\$622,000		\$706,000		\$806,000		\$879,000		\$1,048,000		\$1,202,000

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		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
COLLECTION - GRAVITY SYSTEM																		
Capital Cost Estimate																		
<i>Structural</i>																		
	8" PVC Gravity Main (8' to 10' deep)	0	\$0	1,432		\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526
	8" PVC Gravity Main (10' to 12' deep)	0	\$0	569		\$51,210	569	\$51,210	569	\$51,210	569	\$51,210	569	\$51,210	569	\$51,210	569	\$51,210
	8" PVC Gravity Main (12' to 14' deep)	0	\$0	642		\$64,157	642	\$64,157	642	\$64,157	642	\$64,157	642	\$64,157	642	\$64,157	642	\$64,157
	8" PVC Gravity Main (14' to 16' deep)	0	\$0	2,198		\$274,696	398	\$49,696	398	\$49,696	398	\$49,696	398	\$49,696	398	\$49,696	398	\$49,696
	8" PVC Gravity Main (16'-20' deep)	0	\$0	3,835		\$483,174	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374
	8" PVC Gravity Main (20' to 25' deep)	0	\$0	1,007		\$181,209	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780
	8" PVC Gravity Main (25' to 30' deep)	0	\$0	442		\$95,914	442	\$95,914	442	\$95,914	442	\$95,914	442	\$95,914	442	\$95,914	442	\$95,914
	10" PVC Gravity Main (20' to 25' deep)	0	\$0	800		\$152,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (8' to 10' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (10' to 12' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (12' to 14' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (14' to 16' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (16'-20' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (20' to 25' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (8' to 10' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (10' to 12' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Force Main	0	\$0	2,857		\$91,424	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Force Main	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Gravity Laterals (Side Sewers)	430	\$859,309	500		\$999,216	98	\$196,519	101	\$202,314	104	\$207,896	107	\$213,632	110	\$219,526	113	\$225,583
	4" PVC Gravity Laterals - extra for existing houses	50	\$50,000	50		\$50,000	24	\$24,000	48	\$48,000	48	\$48,000	48	\$48,000	107	\$107,000	107	\$107,000
	1.5" HDPE Pressure Laterals - Grinder	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Lateral Kits	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (8' to 10' deep)	0	\$0	0		\$0	5	\$15,051	5	\$15,051	5	\$15,051	5	\$15,051	5	\$15,051	5	\$15,051
	48" MH (8' to 12' deep)	0	\$0	0		\$0	2	\$7,851	2	\$7,851	2	\$7,851	2	\$7,851	2	\$7,851	2	\$7,851
	48" MH (12' to 14' deep)	0	\$0	0		\$0	2	\$10,022	2	\$10,022	2	\$10,022	2	\$10,022	2	\$10,022	2	\$10,022
	48" MH (14' to 16' deep)	0	\$0	0		\$0	2	\$12,427	2	\$12,427	2	\$12,427	2	\$12,427	2	\$12,427	2	\$12,427
	48" MH (16' to 20' deep)	0	\$0	21		\$133,900	5	\$28,693	5	\$28,693	5	\$28,693	5	\$28,693	5	\$28,693	5	\$28,693
	48" MH (20' to 25' deep)	0	\$0	0		\$0	4	\$27,831	4	\$27,831	4	\$27,831	4	\$27,831	4	\$27,831	4	\$27,831
	48" MH (25' to 30' deep)	0	\$0	0		\$0	1	\$9,702	1	\$9,702	1	\$9,702	1	\$9,702	1	\$9,702	1	\$9,702
	Dewatering	0	\$0	3		\$150,000	0	\$0	0	\$0	0	\$0	1	\$50,000	1	\$50,000	0	\$0
	AC Surface Restoration	0	\$0	3,641		\$109,231	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374
	Native Surface Restoration	17,200	\$17,200	20,000		\$20,000	3,900	\$3,900	4,000	\$4,000	4,200	\$4,200	4,300	\$4,300	4,400	\$4,400	4,500	\$4,500
	Abandon Septic Tank	50	\$37,500	50		\$37,500	24	\$18,000	48	\$36,000	48	\$36,000	48	\$36,000	107	\$80,250	107	\$80,250
	Subtotal Structural		\$964,009			\$3,008,158		\$1,254,027		\$1,301,922		\$1,307,704		\$1,363,540		\$1,472,784		\$1,428,941
	Grinder Pump (Installed)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Electrical Connections - Grinder	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Main Pump Station (2.1 mgd)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	0	\$0	1		\$375,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	0	\$0	1		\$250,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Equipment		\$0			\$625,000		\$0		\$0		\$0		\$0		\$0		\$0
	Installation, Miscellaneous Mechanical	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Electrical	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Instrumentation and Control	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Subtotal Structural, Mechanical, Elect, I&C		\$964,009			\$3,633,158		\$1,254,027		\$1,301,922		\$1,307,704		\$1,363,540		\$1,472,784		\$1,428,941
	Contractor O&P	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Mobilization, demobilization, bond	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Total estimated current construction cost		\$964,009			\$3,633,158		\$1,254,027		\$1,301,922		\$1,307,704		\$1,363,540		\$1,472,784		\$1,428,941
	Escalation to time of construction	3.50%	\$33,740	3.50%		\$127,161	3.50%	\$43,891	3.50%	\$45,567	3.50%	\$45,770	3.50%	\$47,724	3.50%	\$51,547	3.50%	\$50,013
	Total estimated construction cost		\$997,749			\$3,760,318		\$1,297,918		\$1,347,490		\$1,353,474		\$1,411,264		\$1,524,332		\$1,478,954
	Contingency	30%	\$299,325	30%		\$1,128,096	30%	\$389,375	30%	\$404,247	30%	\$406,042	30%	\$423,379	30%	\$457,299	30%	\$443,686
	Engineering Design	15%	(\$0)	15%		\$509,899	15%	\$204,168	15%	\$204,168	15%	\$204,168	15%	\$214,259	15%	\$214,259	15%	\$204,168
	Construction Management	10%	(\$0)	10%		\$339,933	10%	\$136,112	10%	\$136,112	10%	\$136,112	10%	\$142,839	10%	\$142,839	10%	\$136,112
	Sales Tax	8.4%	\$108,954	8.4%		\$410,627	8.4%	\$141,733	8.4%	\$147,146	8.4%	\$147,799	8.4%	\$154,110	8.4%	\$166,457	8.4%	\$161,502
	Total Estimated Capital Cost		\$1,406,000			\$6,149,000		\$2,169,000		\$2,239,000		\$2,248,000		\$2,346,000		\$2,505,000		\$2,424,000
	Total Estimated Onsite Capital Cost		\$1,406,000			\$1,614,000		\$354,000		\$423,000		\$432,000		\$440,000		\$600,000		\$609,000

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 Subject: Treatment System Analysis
 By: Tt
 Date: 11-Aug-08
 July 2008
 ENR: 8361.74

Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE					
			2010		2011		2012		2013		2014		2015	
Item	Description	Unit cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
COLLECTION - GRAVITY SYSTEM														
Operations and Maintenance Cost Estimate (per year)														
Item	Description	Unit cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Labor	\$40	188	\$7,520	188	\$7,520	188	\$7,520	240	\$9,600	240	\$9,600	240	\$9,600
	Septic tank pumping	\$300		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil	\$4.50		\$0		\$0		\$0		\$0		\$0		\$0
	Power	\$0.08	123390	\$9,254	125571	\$9,418	128109	\$9,608	185495	\$13,912	188926	\$14,169	192915	\$14,469
	Structural Maintenance		2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement		4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals	\$0.00		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	\$0.60	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	\$0.20	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	\$3.00		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses allowance			\$0		\$0		\$0		\$0		\$0		\$0
Total Annual Cost				\$16,774	\$16,938	\$17,128	\$23,512	\$23,769	\$24,069					
	Structural Maintenance		2%	\$86,992	2%	\$90,385	2%	\$94,246	2%	\$126,131	2%	\$131,166	2%	\$137,880
	Equipment replacement		4%	\$41,600	4%	\$41,600	4%	\$41,600	4%	\$56,600	4%	\$56,600	4%	\$56,600
Total Annual Cost with Replacement Costs				\$145,366	\$148,923	\$152,974	\$206,244	\$211,536	\$218,548					

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		RESIDENTIAL #1						RESIDENTIAL AREA #2							
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
COLLECTION - GRAVITY SYSTEM															
Operations and Maintenance Cost Estimate (per year)															
Item	Description														
	Labor	260	\$10,400	260	\$10,400	260	\$10,400	312	\$12,480	312	\$12,480	312	\$12,480	312	\$12,480
	Septic tank pumping		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	251990	\$18,899	257384	\$19,304	263656	\$19,774	325385	\$24,404	333866	\$25,040	343727	\$25,780	300759	\$22,557
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Total Annual Cost		\$29,299		\$29,704		\$30,174		\$36,884		\$37,520		\$38,260		\$35,037
	Structural Maintenance	2%	\$161,289	2%	\$184,934	2%	\$194,615	2%	\$211,765	2%	\$227,842	2%	\$246,145	2%	\$262,621
	Equipment replacement	4%	\$57,600	4%	\$57,600	4%	\$57,600	4%	\$67,600	4%	\$67,600	4%	\$67,600	4%	\$67,600
	Total Annual Cost with Replacement Costs		\$248,188		\$272,238		\$282,390		\$316,249		\$332,961		\$352,005		\$365,258

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		RESIDENTIAL AREA #3																
		2023		2024			2025		2026		2027		2028		2029		2030	
Item	Description	ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
		Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
COLLECTION - GRAVITY SYSTEM																		
Operations and Maintenance Cost Estimate (per year)																		
Item	Description																	
	Labor	312	\$12,480	416		\$16,640	416	\$16,640	416	\$16,640	416	\$16,640	416	\$16,640	416	\$16,640	416	\$16,640
	Septic tank pumping		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	368529	\$27,640	492906		\$36,968	495956	\$37,197	499095	\$37,432	502321	\$37,674	505636	\$37,923	509043	\$38,178	512543	\$38,441
	Structural Maintenance	2%	\$0	2%		\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	4%	\$0	4%		\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Total Annual Cost		\$40,120			\$53,608		\$53,837		\$54,072		\$54,314		\$54,563		\$54,818		\$55,081
	Structural Maintenance	2%	\$281,901	2%		\$342,064	2%	\$367,145	2%	\$393,183	2%	\$419,337	2%	\$446,608	2%	\$476,064	2%	\$504,643
	Equipment replacement	4%	\$67,600	4%		\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600
	Total Annual Cost with Replacement Costs		\$389,621			\$488,272		\$513,581		\$539,855		\$566,251		\$593,771		\$623,482		\$652,323

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Updated Unit Costs

Item	Description	Unit cost, \$	Unit	CORE PLUS ALCOHOL				RHODY DRIVE								
				2010		2011		2012		2013		2014		2015		
				ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	
Capital Cost Estimate																
<i>Structural</i>																
	Administration/Lab Building	\$250	SF	400	\$100,000											
	Electrical Building (generator outside)	\$200	SF	720	\$144,000											
	Mechanical Building	\$200	SF	2,320	\$464,000											
	Excavation	\$20	CY	2,828	\$56,560											
	Backfill	\$15	CY	1,173	\$17,595											
	Headworks Concrete	\$1,500	CY	37	\$55,556											
	Slab Concrete and Rebar	\$500	CY	331	\$165,519											
	Straight Wall Concrete and Rebar	\$700	CY	383	\$268,411											
	Access Bridge Concrete	\$800	CY	34	\$27,467											
	Effluent Weir Concrete	\$700	CY	14	\$9,722											
	Misc Metals (Handrailing, Covers, etc.)	\$32,298	LS	1	\$32,298											
	Site Stormwater Piping and Valving	\$15,000	AC	2	\$30,000											
	Site Process Piping and Valving	\$23,600	LS	1	\$23,600					1	\$20,000	\$20,000				
	Indoor Process Piping and Valving	\$94,400	LS	1	\$94,400					1	\$7,500	\$7,500				
	Membrane Bioreactor Piping and Valving	\$414,153	LS	1	\$414,153											
	Manholes	\$6,000	EA	7	\$42,000											
	Stormwater Detention Tank and Control Structures	\$90,000	LS	1	\$90,000											
	Paving	\$30	SY	4,840	\$145,200											
	Sitework	\$90,000	LS	1	\$90,000											
	Landscaping	\$90,000	LS	1	\$90,000											
	Electrical Conduit, Sitework	\$55,000	LS	1	\$55,000					1	\$10,000	\$10,000				
	Site Lighting	\$36,000	LS	1	\$36,000					1	\$5,000	\$5,000				
	Laboratory Equipment	\$20,000	LS	1	\$20,000											
	Furniture	\$25,000	LS	1	\$25,000											
	Land Acquisition	\$28,000	AC	6	\$168,000											
	Land Purchase: Storage/8' Dike/20days/Buidout MM Flows	\$49,000	AC	0	\$0					0	\$0	\$0				
	Land Purchase: Buffers	\$49,000	AC	0	\$0					0	\$0	\$0				
	Storage Basins - Sitework	\$8	CY	0	\$0					6551	\$52,408	\$52,408				
	Electrical Conduit, Sitework, Lighting	\$50,000	LS	0	\$0					1	\$50,000	\$50,000				
	Liner	\$1.75	SF	0	\$0					17962.56	\$31,434	\$31,434				
	Concrete Access Ramps	\$500	CY	0	\$0					10	\$5,000	\$5,000				
	Inlet / Outlet Structures	\$15,000	EA	0	\$0					2	\$30,000	\$30,000				
	Subtotal Structural				\$2,664,480		\$0		\$0		\$211,342		\$0		\$0	
	Equipment	\$1,380,511	EA	1	\$1,380,511					1	\$351,895	\$351,895				
	Biological air blowers (@ 40 hp)															
	Blower piping															
	Biological air diffuser systems															
	Anoxic Mixers (@ 2.5 hp)															
	Influent Screen - 1/8 in.															
	Transfer Pump from Membrane to Anoxic Basin															
	Washer Compactor															
	Permeate Pumps															
	Redundant Influent Screen	\$100,000	EA	1	\$100,000											
	WAS Pumps	\$7,500	EA	2	\$15,000											
	Magnetic Flow Meters	\$5,000	EA	3	\$15,000											
	Yard Pump Station Pumps	\$7,500	EA	0	\$0											
	Plant Water Pumps	\$5,000	EA	2	\$10,000											
	Strainer (Manual duplex)	\$2,000	EA	1	\$2,000											
	Overhead Crane	\$100,000	EA	1	\$100,000											
	Hydro Tank	\$4,000	EA	1	\$4,000											
	Odor Control - Carbon Adsorber, Fans, Piping	\$75,000	LS	1	\$75,000											
	Generator	\$200	kW	1,000	\$200,000											
	Generator Silencer, Louvers, Acoustics	\$5,000	LS	1	\$5,000											
	Underground Fuel Storage Tank, Pumps	\$15,000	LS	1	\$15,000											
	Automatic Transfer Switch	\$15,000	LS	1	\$15,000											
	Motor Control Centers/Variable Frequency Drives	\$100,000	LS	1	\$100,000					1	\$20,000	\$20,000				
	PLC	\$100,000	LS	1	\$100,000					1	\$10,000	\$10,000				
	Main Pump Station (2.1 mgd)	\$500,000	EA	0	\$0					0	\$0	\$0				
	Medium Pump Station	\$375,000	EA	0	\$0					0	\$0	\$0				
	Small Pump Station (0.036 mgd)	\$250,000	EA	0	\$0					0	\$0	\$0				
	Distribution Piping & Equipment	\$91	LF	0	\$0					500	\$45,500	\$45,500				
	Aspirating Aerator	\$1,000	hp	0	\$0					7.5	\$7,500	\$7,500				
	Subtotal Equipment				\$2,136,511		\$0		\$351,895		\$83,000		\$0		\$0	

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Item	Description	RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
TREATMENT - MBR															
Capital Cost Estimate															
<i>Structural</i>															
	Administration/Lab Building			2,100	\$250										
	Electrical Building (generator outside)			0	\$200										
	Mechanical Building			800	\$200										
	Excavation			2,828	\$20										
	Backfill			1,173	\$15										
	Headworks Concrete			0	\$1,500										
	Slab Concrete and Rebar			322	\$500										
	Straight Wall Concrete and Rebar			306	\$700										
	Access Bridge Concrete			34	\$800										
	Effluent Weir Concrete			6	\$700										
	Misc Metals (Handrailing, Covers, etc.)			1	\$28,184										
	Site Stormwater Piping and Valving			1	\$15,000										
	Site Process Piping and Valving			1	\$23,600										
	Indoor Process Piping and Valving			1	\$94,400										
	Membrane Bioreactor Piping and Valving			1	\$414,153										
	Manholes			0	\$6,000										
	Stormwater Detention Tank and Control Structures			0	\$60,000										
	Paving			1,000											
	Sitework			1	\$50,000										
	Landscaping			1	\$10,000										
	Electrical Conduit, Sitework			1	\$55,000										
	Site Lighting			1	\$10,000										
	Laboratory Equipment			1	\$15,000										
	Furniture			1	\$7,000										
	Land Acquisition			0	\$49,000										
	Land Purchase: Storage/8' Dike/20days/Buidout MM Flows														
	Land Purchase: Buffers														
	Storage Basins - Sitework														
	Electrical Conduit, Sitework, Lighting														
	Liner														
	Concrete Access Ramps														
	Inlet / Outlet Structures														
	Subtotal Structural		\$0		\$0		\$1,888,011		\$0		\$0		\$0		\$0
	Equipment						\$1,136,892		\$1,136,892						
	Biological air blowers (@ 40 hp)														
	Blower piping														
	Biological air diffuser systems														
	Anoxic Mixers (@ 2.5 hp)														
	Influent Screen - 1/8 in.														
	Transfer Pump from Membrane to Anoxic Basin														
	Washer Compactor														
	Permeate Pumps														
	Redundant Influent Screen														
	WAS Pumps			1	\$7,500										
	Magnetic Flow Meters			1	\$5,000										
	Yard Pump Station Pumps			0	\$7,500										
	Plant Water Pumps			0	\$5,000										
	Strainer (Manual duplex)			0	\$2,000										
	Overhead Crane			1	\$45,000										
	Hydro Tank			0	\$4,000										
	Odor Control - Carbon Adsorber, Fans, Piping			0	\$75,000										
	Generator			0	\$175										
	Generator Silencer, Louvers, Acoustics			0	\$5,000										
	Underground Fuel Storage Tank, Pumps			0	\$15,000										
	Automatic Transfer Switch			0	\$15,000										
	Motor Control Centers/Variable Frequency Drives			1	\$45,000										
	PLC			1	\$20,000										
	Main Pump Station (2.1 mgd)														
	Medium Pump Station														
	Small Pump Station (0.036 mgd)														
	Distribution Piping & Equipment														
	Aspirating Aerator														
	Subtotal Equipment		\$0		\$0		\$1,259,392		\$0		\$0		\$0		\$0

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		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
Item	Description	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	
Capital Cost Estimate		Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	<i>Structural</i>																	
	Administration/Lab Building																	
	Electrical Building (generator outside)																	
	Mechanical Building																	
	Excavation																	
	Backfill																	
	Headworks Concrete																	
	Slab Concrete and Rebar																	
	Straight Wall Concrete and Rebar																	
	Access Bridge Concrete																	
	Effluent Weir Concrete																	
	Misc Metals (Handrailing, Covers, etc.)																	
	Site Stormwater Piping and Valving																	
	Site Process Piping and Valving																	
	Indoor Process Piping and Valving																	
	Membrane Bioreactor Piping and Valving																	
	Manholes																	
	Stormwater Detention Tank and Control Structures																	
	Paving																	
	Sitework																	
	Landscaping																	
	Electrical Conduit, Sitework																	
	Site Lighting																	
	Laboratory Equipment																	
	Furniture																	
	Land Acquisition																	
	Land Purchase: Storage/8' Dike/20days/Buidout MM Flows																	
	Land Purchase: Buffers																	
	Storage Basins - Sitework																	
	Electrical Conduit, Sitework, Lighting																	
	Liner																	
	Concrete Access Ramps																	
	Inlet / Outlet Structures																	
	Subtotal Structural		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Equipment			1	\$351,895	\$351,895												
	Biological air blowers (@ 40 hp)																	
	Blower piping																	
	Biological air diffuser systems																	
	Anoxic Mixers (@ 2.5 hp)																	
	Influent Screen - 1/8 in.																	
	Transfer Pump from Membrane to Anoxic Basin																	
	Washer Compactor																	
	Permeate Pumps																	
	Redundant Influent Screen																	
	WAS Pumps																	
	Magnetic Flow Meters																	
	Yard Pump Station Pumps																	
	Plant Water Pumps																	
	Strainer (Manual duplex)																	
	Overhead Crane																	
	Hydro Tank																	
	Odor Control - Carbon Adsorber, Fans, Piping																	
	Generator																	
	Generator Silencer, Louvers, Acoustics																	
	Underground Fuel Storage Tank, Pumps																	
	Automatic Transfer Switch																	
	Motor Control Centers/Variable Frequency Drives																	
	PLC																	
	Main Pump Station (2.1 mgd)																	
	Medium Pump Station																	
	Small Pump Station (0.036 mgd)																	
	Distribution Piping & Equipment																	
	Aspirating Aerator																	
	Subtotal Equipment		\$0		\$351,895	\$351,895		\$0		\$0		\$0		\$0		\$0		\$0

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Updated Unit Costs

TREATMENT - MBR				CORE PLUS ALCOHOL				RHODY DRIVE					
				2010		2011		2012		2013		2014	
Item	Description	Unit cost, \$	Unit	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
	Installation, Miscellaneous Mechanical		of Equip	40%	\$854,604		\$0		\$140,758		\$33,200		\$0
	Electrical		of Equip	20%	\$427,302		\$0		\$70,379		\$16,600		\$0
	Instrumentation and Control		of Equip	15%	\$320,477		\$0		\$52,784		\$12,450		\$0
	<i>Subtotal Structural, Mechanical, Elect, I&C</i>				<i>\$6,403,375</i>		<i>\$0</i>		<i>\$615,816</i>		<i>\$356,592</i>		<i>\$0</i>
	Contractor O&P		of Sub Cost	15%	\$960,506		\$0		\$92,372		\$53,489		\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$384,202		\$0		\$36,949		\$21,396		\$0
	<i>Total estimated current construction cost</i>				<i>\$7,748,083</i>		<i>\$0</i>		<i>\$745,138</i>		<i>\$431,477</i>		<i>\$0</i>
	Escalation to time of construction			3.50%	\$271,183		\$0		\$26,080		\$15,102		\$0
	<i>Total estimated construction cost</i>				<i>\$8,019,266</i>		<i>\$0</i>		<i>\$771,217</i>		<i>\$446,579</i>		<i>\$0</i>
	Contingency			30%	\$2,405,780		\$0		\$231,365		\$133,974		\$0
	Engineering Design			15%	\$1,563,757		\$0		\$87,083		\$87,083		\$0
	Construction Management			10%	\$1,042,505		\$0		\$100,258		\$58,055		\$0
	Sales Tax			8.4%	\$875,704		\$0		\$84,217		\$48,766		\$0
	<i>Total Estimated Capital Cost</i>				<i>\$13,907,000</i>		<i>\$0</i>		<i>\$1,337,000</i>		<i>\$774,000</i>		<i>\$0</i>
Operations and Maintenance Cost Estimate (per year)													
Item	Description	Unit Cost	Unit	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	\$40	HR	2,080	\$83,200	2,080	\$83,200	2,080	\$83,200	2,080	\$83,200	2,080	\$83,200
	Membrane Replacement	\$75	panel	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Diesel oil	\$4.50	GAL	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	\$0.075	kWh	173,736	\$13,030	186,686	\$14,001	201,745	\$15,131	219,256	\$16,444	239,617	\$17,971
	Other utilities (water, garbage, etc.)	\$1,000	month	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000
	Chemicals - membrane cleaning	\$3,380	LS	2	\$6,760	2	\$6,760	2	\$6,760	2	\$6,760	2	\$6,760
	Hypochlorite	\$1.50	LB	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Laboratory Testing at Port Townsend	\$25.00	Test	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400
	Polymer	\$3.00	LB	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc expenses		allowance	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Total Annual Cost</i>				<i>\$125,390</i>		<i>\$126,361</i>		<i>\$127,491</i>		<i>\$128,804</i>		<i>\$130,331</i>
	Structural Replacement			2%	\$53,290	2%	\$53,290	2%	\$53,290	2%	\$53,290	2%	\$53,290
	Capital Replacement			4%	\$85,460	4%	\$85,460	4%	\$85,460	4%	\$85,460	4%	\$85,460
	<i>Total Annual Cost with Replacement Costs</i>				<i>\$264,140</i>		<i>\$265,112</i>		<i>\$266,241</i>		<i>\$267,554</i>		<i>\$270,857</i>
	"overhead" horsepower =		9										
	"overhead" power with expansion =		16										

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TREATMENT - MBR		RESIDENTIAL #1						RESIDENTIAL AREA #2							
		2016		2017		2018		2019		2020		2021		2022	
Item	Description	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
	Installation, Miscellaneous Mechanical		\$0		\$0		\$503,757		\$0		\$0		\$0		\$0
	Electrical		\$0		\$0		\$251,878		\$0		\$0		\$0		\$0
	Instrumentation and Control		\$0		\$0		\$188,909		\$0		\$0		\$0		\$0
	<i>Subtotal Structural, Mechanical, Elect, I&C</i>		\$0		\$0		\$4,091,946		\$0		\$0		\$0		\$0
	Contractor O&P		\$0		\$0		\$613,792		\$0		\$0		\$0		\$0
	Mobilization, demobilization, bond		\$0		\$0		\$245,517		\$0		\$0		\$0		\$0
	<i>Total estimated current construction cost</i>		\$0		\$0		\$4,951,255		\$0		\$0		\$0		\$0
	Escalation to time of construction		\$0		\$0		\$173,294		\$0		\$0		\$0		\$0
	<i>Total estimated construction cost</i>		\$0		\$0		\$5,124,549		\$0		\$0		\$0		\$0
	Contingency		\$0		\$0		\$1,537,365		\$0		\$0		\$0		\$0
	Engineering Design		\$0		\$0		\$999,287		\$0		\$0		\$0		\$0
	Construction Management		\$0		\$0		\$666,191		\$0		\$0		\$0		\$0
	Sales Tax		\$0		\$0		\$559,601		\$0		\$0		\$0		\$0
	<i>Total Estimated Capital Cost</i>		\$0		\$0		\$8,887,000		\$0		\$0		\$0		\$0
Operations and Maintenance Cost Estimate (per year)															
Item	Description														
	Labor	2,080	\$83,200	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840
	Membrane Replacement	400	\$30,000	400	\$30,000	800	\$60,000	800	\$60,000	800	\$60,000	400	\$30,000	400	\$30,000
	Diesel oil	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	290,825	\$21,812	323,555	\$24,267	406,508	\$30,488	404,069	\$30,305	454,404	\$34,080	512,935	\$38,470	580,995	\$43,575
	Other utilities (water, garbage, etc.)	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000
	Chemicals - membrane cleaning	2	\$6,760	3	\$10,140	3	\$10,140	3	\$10,140	3	\$10,140	3	\$10,140	3	\$10,140
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Laboratory Testing at Port Townsend	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400
	Polymer	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Total Annual Cost</i>		\$164,172		\$238,647		\$274,868		\$274,685		\$278,460		\$252,850		\$257,955
	Structural Replacement	2%	\$53,290	2%	\$53,290	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050
	Capital Replacement	4%	\$85,460	4%	\$85,460	4%	\$135,836	4%	\$135,836	4%	\$135,836	4%	\$135,836	4%	\$135,836
	<i>Total Annual Cost with Replacement Costs</i>		\$302,922		\$377,397		\$501,754		\$501,571		\$505,346		\$479,736		\$484,841

"overhead" horsepower =
 "overhead" power with expansion =

Project: Port Hadlock UGA Sewer Facility Plan
 Subject: Treatment System Analysis
 By: Tt
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TREATMENT - MBR		RESIDENTIAL AREA #3															
		2023		2024		2025		2026		2027		2028		2029		2030	
Item	Description	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Unit Cost, \$ Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$		
	Installation, Miscellaneous Mechanical		\$0		\$140,758		\$0		\$0		\$0		\$0		\$0		
	Electrical		\$0		\$70,379		\$0		\$0		\$0		\$0		\$0		
	Instrumentation and Control		\$0		\$52,784		\$0		\$0		\$0		\$0		\$0		
	<i>Subtotal Structural, Mechanical, Elect, I&C</i>		\$0		\$615,816		\$0		\$0		\$0		\$0		\$0		
	Contractor O&P		\$0		\$92,372		\$0		\$0		\$0		\$0		\$0		
	Mobilization, demobilization, bond		\$0		\$36,949		\$0		\$0		\$0		\$0		\$0		
	<i>Total estimated current construction cost</i>		\$0		\$745,138		\$0		\$0		\$0		\$0		\$0		
	Escalation to time of construction		\$0		\$26,080		\$0		\$0		\$0		\$0		\$0		
	<i>Total estimated construction cost</i>		\$0		\$771,217		\$0		\$0		\$0		\$0		\$0		
	Contingency		\$0		\$231,365		\$0		\$0		\$0		\$0		\$0		
	Engineering Design		\$0		\$150,387		\$0		\$0		\$0		\$0		\$0		
	Construction Management		\$0		\$100,258		\$0		\$0		\$0		\$0		\$0		
	Sales Tax		\$0		\$84,217		\$0		\$0		\$0		\$0		\$0		
	<i>Total Estimated Capital Cost</i>		\$0		\$1,337,000		\$0		\$0		\$0		\$0		\$0		
Operations and Maintenance Cost Estimate (per year)																	
Item	Description																
	Labor	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	4,004	\$160,160
	Membrane Replacement	0	\$0	400	\$30,000	400	\$30,000	800	\$60,000	800	\$60,000	800	\$60,000	400	\$30,000	800	\$60,000
	Diesel oil	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	660,137	\$49,510	797,890	\$59,842	815,989	\$61,199	834,622	\$62,597	853,769	\$64,033	873,444	\$65,508	893,662	\$67,025	914,438	\$68,583
	Other utilities (water, garbage, etc.)	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000
	Chemicals - membrane cleaning	3	\$10,140	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Laboratory Testing at Port Townsend	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400
	Polymer	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Total Annual Cost</i>		\$233,890		\$277,602		\$278,959		\$310,357		\$311,793		\$313,268		\$284,785		\$324,663
	Structural Replacement	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050
	Capital Replacement	4%	\$135,836	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912
	<i>Total Annual Cost with Replacement Costs</i>		\$460,776		\$518,563		\$519,921		\$551,318		\$552,754		\$554,230		\$525,746		\$565,625

"overhead" horsepower =
 "overhead" power with expansion =

Project: Port Hadlock UGA Sewer Facility Plan
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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE						
			2010		2011		2012		2013		2014		2015		
			ERUs Flow (mgd)	432	ERUs Flow (mgd)	502	ERUs Flow (mgd)	584	ERUs Flow (mgd)	679	ERUs Flow (mgd)	789	ERUs Flow (mgd)	918	
Item	Description	Unit cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
Liquid Sodium Hypochlorite Disinfection															
Capital Cost Estimate															
Item	Description	Unit cost, \$	Unit	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Building enclosure for equipment	\$150	SF	280	\$42,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Excavation	\$20	CY	397	\$7,940	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Backfill	\$15	CY	218	\$3,270	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Slab Concrete and Rebar	\$500	CY	73	\$36,333	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	\$700	CY	67	\$47,144	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Metals (Handrailing, Covers, etc.)	\$500	LS	1	\$500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Concrete (NaOCl secondary containment)	\$600	CY	5	\$3,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	\$25,000	LS	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sitework	\$15,000	LS	1	\$15,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework	\$5,000	LS	1	\$5,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Lighting	\$20,000	LS	1	\$20,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Contact Tank Baffles	\$10,000	LS	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Structural				\$215,187		\$0		\$0		\$0		\$0		\$0
	Storage Tank (3-55 gal drums)	\$200	ea	6	\$1,200	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Pumps w/ installation (hypo)	\$2,500	ea	2	\$5,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Tank Mixers	\$1,000	ea	1	\$1,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Feed Pacing Controller	\$2,500	ea	1	\$2,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Chemical Flow Meter	\$2,000	ea	1	\$2,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Equipment				\$11,700		\$0		\$0		\$0		\$0		\$0
	Installation, Miscellaneous Mechanical		of Equip	40%	\$4,680	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical		of Equip	20%	\$2,340	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0
	Instrumentation and Control		of Equip	15%	\$1,755	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Subtotal Structural, Mechanical, Elect, I&C				\$235,662		\$0		\$0		\$0		\$0		\$0
	Contractor O&P		of Sub Cost	15%	\$35,349	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$14,140	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	Total estimated current construction cost				\$285,151		\$0		\$0		\$0		\$0		\$0
	Escalation to time of construction			3.50%	\$9,980	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	Total estimated construction cost				\$295,131		\$0		\$0		\$0		\$0		\$0
	Contingency			30%	\$88,539	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design			15%	\$57,551	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management			10%	\$38,367	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax			8.4%	\$32,228	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	Total Estimated Capital Cost				\$512,000		\$0		\$0		\$0		\$0		\$0
Operations and Maintenance Cost Estimate (per year)															
Item	Description	Unit Cost	Unit	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	\$40	hr	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080
	Septic tank pumping	\$300	ea		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil	\$4.50	gal		\$0		\$0		\$0		\$0		\$0		\$0
	Power	\$0.08	kWh	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245
	Structural Maintenance			2%	\$4,454	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement			4%	\$484	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals	\$0.00			\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	\$1.50	lb	156	\$235	182	\$273	212	\$317	246	\$369	286	\$429	333	\$499
	Sodium Bisulfite	\$0.20	gal	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	\$3.00	lb		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		allowance		\$0		\$0		\$0		\$0		\$0		\$0
	Total Annual Cost				\$7,498		\$2,598		\$2,642		\$2,694		\$2,754		\$2,824
	Structural Maintenance			2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304
	Equipment replacement			4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468
	Total Annual Cost with Replacement Costs				\$12,270		\$7,370		\$7,414		\$7,466		\$7,526		\$7,596

Project: Port Hadlock UGA Sewer Facility Plan
 Subject: Treatment System Analysis
 By : Tt
 Date : 11-Aug-08
 July 2008
 ENR: 8361.74

		RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
Liquid Sodium Hypochlorite Disinfection															
Capital Cost Estimate															
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Building enclosure for equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Excavation	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Backfill	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Slab Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Metals (Handrailing, Covers, etc.)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Concrete (NaOCl secondary containment)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Lighting	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Contact Tank Baffles	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Structural		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Storage Tank (3-55 gal drums)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Pumps w/ installation (hypo)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Tank Mixers	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Feed Pacing Controller	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Chemical Flow Meter	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Equipment		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Subtotal Structural, Mechanical, Elect, I&C		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	Total estimated current construction cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	Total estimated construction cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Contingency	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	Total Estimated Capital Cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0
Operations and Maintenance Cost Estimate (per year)															
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080
	Septic tank pumping		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	387	\$580	450	\$675	523	\$784	608	\$912	707	\$1,061	822	\$1,233	956	\$1,434
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Total Annual Cost		\$2,905		\$3,000		\$3,109		\$3,237		\$3,386		\$3,558		\$3,759
	Structural Maintenance	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304
	Equipment replacement	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468
	Total Annual Cost with Replacement Costs		\$7,677		\$7,771		\$7,881		\$8,009		\$8,157		\$8,330		\$8,531

Project: Port Hadlock UGA Sewer Facility Plan
 Subject: Treatment System Analysis
 By: Tt
 Date: 11-Aug-08
 July 2008
 ENR: 8361.74

		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
Liquid Sodium Hypochlorite Disinfection																		
Capital Cost Estimate																		
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
	Building enclosure for equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Excavation	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Backfill	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Slab Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Straight Wall Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Misc Metals (Handrailing, Covers, etc.)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Misc Concrete (NaOCl secondary containment)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Electrical Conduit, Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Lighting	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Contact Tank Baffles	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Subtotal Structural		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Storage Tank (3-55 gal drums)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Pumps w/ installation (hypo)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Tank Mixers	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Feed Pacing Controller	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Chemical Flow Meter	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Subtotal Equipment		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	
	Electrical	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Subtotal Structural, Mechanical, Elect, I&C		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	
	Total estimated current construction cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	
	Total estimated construction cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contingency	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	
	Engineering Design	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Construction Management	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	
	Total Estimated Capital Cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
Operations and Maintenance Cost Estimate (per year)																		
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	
	Labor	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	
	Septic tank pumping		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Power	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	
	Chemicals		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Hypochlorite	1112	\$1,668	1293	\$1,939	1328	\$1,993	1365	\$2,048	1403	\$2,104	1441	\$2,162	1481	\$2,222	1522	\$2,283	
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Polymer		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Total Annual Cost		\$3,993		\$4,264		\$4,318		\$4,373		\$4,429		\$4,487		\$4,547		\$4,608	
	Structural Maintenance	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	
	Equipment replacement	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	
	Total Annual Cost with Replacement Costs		\$8,764		\$9,036		\$9,089		\$9,144		\$9,201		\$9,259		\$9,318		\$9,380	

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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE						
			2010		2011		2012		2013		2014		2015		
Item	Description	Unit cost, \$	Unit	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$
SLUDGE HANDLING															
Capital Cost Estimate															
Item	Description	Unit cost, \$	Unit	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Mechanical Building	\$200	SF	0	\$0	0	\$0	0	\$0	150	\$30,000	0	\$0	0	\$0
	Filter & Chemical Building	\$200	SF	0	\$0	0	\$0	0	\$0	650	\$130,000	0	\$0	0	\$0
	Slab Concrete and Rebar	\$500	CY	0	\$0	0	\$0	0	\$0	24	\$11,963	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	\$700	CY	0	\$0	0	\$0	0	\$0	48	\$33,496	0	\$0	0	\$0
	excavation	\$20	CY	0	\$0	0	\$0	0	\$0	676	\$13,520	0	\$0	0	\$0
	disposal	\$0	CY	0	\$0	0	\$0	0	\$0	340	\$0	0	\$0	0	\$0
	backfill	\$15	CY	0	\$0	0	\$0	0	\$0	601	\$9,020	0	\$0	0	\$0
	Site Process Piping and Valving	\$13,926	LS	0	\$0	0	\$0	0	\$0	1	\$13,926	0	\$0	0	\$0
	Site Process Piping and Valving	\$3,000	LS	1	\$3,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Indoor Process Piping and Valving	\$23,210	LS	0	\$0	0	\$0	0	\$0	1	\$23,210	0	\$0	0	\$0
	Sitework	\$60,000	LS	0	\$0	0	\$0	0	\$0	1	\$60,000	0	\$0	0	\$0
	Subtotal Structural				\$3,000		\$0		\$0		\$325,135		\$0		\$0
	Blower	\$20,000	EA	0	\$0	0	\$0	0	\$0	1	\$10,000	0	\$0	0	\$0
	Diffuser with piping	\$20,000	EA	0	\$0	0	\$0	0	\$0	1	\$10,000	0	\$0	0	\$0
	Decant pump	\$10,000	EA	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Screw Press Thickener	\$54,630	EA	0	\$0	0	\$0	0	\$0	1	\$54,630	0	\$0	0	\$0
	Odor Control Scrubber	\$60,700	EA	0	\$0	0	\$0	0	\$0	1	\$60,700	0	\$0	0	\$0
	Sludge Pump	\$9,105	EA	0	\$0	0	\$0	0	\$0	2	\$18,210	0	\$0	0	\$0
	Polymer Feed System	\$12,140	EA	0	\$0	0	\$0	0	\$0	1	\$12,140	0	\$0	0	\$0
	Steel 10k gallon sludge holding tank	\$20,000	EA	1	\$20,000	0	\$0	0	\$0	1	\$20,000	0	\$0	0	\$0
	Subtotal Equipment				\$20,000		\$0		\$0		\$185,680		\$0		\$0
	Installation, Miscellaneous Mechanical		of Equip	40%	\$8,000	40%	\$0	40%	\$0	40%	\$74,272	40%	\$0	40%	\$0
	Electrical		of Equip	25%	\$5,000	25%	\$0	25%	\$0	25%	\$46,420	25%	\$0	25%	\$0
	Instrumentation and Control		of Equip	15%	\$3,000	15%	\$0	15%	\$0	15%	\$27,852	15%	\$0	15%	\$0
	Subtotal Structural, Mechanical, Elect, I&C				\$39,000		\$0		\$0		\$659,359		\$0		\$0
	Contractor O&P		of Sub Cost	15%	\$5,850	15%	\$0	15%	\$0	15%	\$98,904	15%	\$0	15%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$2,340	6%	\$0	6%	\$0	6%	\$39,562	6%	\$0	6%	\$0
	Total estimated current construction cost				\$47,190		\$0		\$0		\$797,825		\$0		\$0
	Escalation to time of construction			3.50%	\$1,652		\$0		\$0		\$27,924		\$0		\$0
	Total estimated construction cost				\$48,842		\$0		\$0		\$825,749		\$0		\$0
	Contingency			30%	\$14,652		\$0		\$0		\$247,725		\$0		\$0
	Engineering Design			15%	\$9,524		\$0		\$0		\$161,021		\$0		\$0
	Construction Management			10%	\$6,349		\$0		\$0		\$107,347		\$0		\$0
	Sales Tax			8.4%	\$5,334		\$0		\$0		\$90,172		\$0		\$0
	Total Estimated Capital Cost				\$84,701		\$0		\$0		\$1,432,013		\$0		\$0
Operations and Maintenance Cost Estimate (per year)															
Item	Description	Unit Cost	Unit	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost
	Labor	\$40	HR	52	\$2,080	52	\$2,080	52	\$2,080	82	\$3,270	95	\$3,806	111	\$4,424
	Diesel oil	\$4.50	GAL	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	\$0.075	kWh	0	\$0	0	\$0	0	\$0	2,453	\$184	2,854	\$214	3,318	\$249
	Structural Maintenance			0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Equipment replacement			0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Hypochlorite	\$0.60	LB	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	\$0.20	GAL	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	\$3.00	LB	0	\$0	0	\$0	0	\$0	409	\$1,227	476	\$1,428	553	\$1,660
	Misc expenses		allowance	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sludge hauling and disposal	\$0.30	GAL	416,100	\$124,830	483,990	\$145,197	562,465	\$168,740	245,280	\$73,584	285,430	\$85,629	331,785	\$99,536
	Total Annual Cost				\$126,910		\$147,277		\$170,820		\$78,266		\$91,077		\$105,868
	Structural Maintenance			2%	\$60	2%	\$60	2%	\$60	2%	\$6,563	2%	\$6,563	2%	\$6,563
	Equipment replacement			4%	\$800	4%	\$800	4%	\$800	4%	\$8,227	4%	\$8,227	4%	\$8,227
	Total Annual Cost with Replacement Costs				\$127,770		\$148,137		\$171,680		\$93,056		\$105,867		\$120,658

Project: Port Hadlock UGA Sewer Facility Plan
 Subject: Treatment System Analysis
 By: Tt
 Date: 11-Aug-08
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		RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
SLUDGE HANDLING															
Capital Cost Estimate															
Item	Description	Quantity		Quantity		Quantity		Quantity		Quantity		Quantity		Quantity	
			Cost, \$		Cost, \$		Cost, \$		Cost, \$		Cost, \$		Cost, \$		Cost, \$
	Mechanical Building	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Filter & Chemical Building	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Slab Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	excavation	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	disposal	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	backfill	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Indoor Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Structural		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Blower	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Diffuser with piping	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Decant pump	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Screw Press Thickener	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Odor Control Scrubber	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sludge Pump	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer Feed System	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Steel 10k gallon sludge holding tank	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Subtotal Equipment		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Subtotal Structural, Mechanical, Elect, I&C		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	Total estimated current construction cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Escalation to time of construction		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Total estimated construction cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Contingency		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Engineering Design		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Construction Management		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Sales Tax		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Total Estimated Capital Cost		\$0		\$0		\$0		\$0		\$0		\$0		\$0
Operations and Maintenance Cost Estimate (per year)															
Item	Description	Gallons per day	1,057	Gallons per day	1,229	Gallons per day	1,429	Gallons per day	1,661	Gallons per day	1,932	Gallons per day	2,246	Gallons per day	2,612
		Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	129	\$5,144	150	\$5,981	174	\$6,954	202	\$8,084	235	\$9,402	273	\$10,931	318	\$12,712
	Diesel oil	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	3,858	\$289	4,486	\$336	5,216	\$391	6,063	\$455	7,052	\$529	8,198	\$615	9,534	\$715
	Structural Maintenance	0	\$0	0	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	0	\$0	0	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	644	\$1,931	748	\$2,245	870	\$2,610	1,011	\$3,034	1,176	\$3,529	1,367	\$4,102	1,590	\$4,771
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sludge hauling and disposal	385,805	\$115,742	448,585	\$134,576	521,585	\$156,476	606,265	\$181,880	705,180	\$211,554	819,790	\$245,937	953,380	\$286,014
	Total Annual Cost		\$123,105		\$143,138		\$166,431		\$193,451		\$225,014		\$261,585		\$304,211
	Structural Maintenance	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563
	Equipment replacement	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227
	Total Annual Cost with Replacement Costs		\$137,895		\$157,928		\$181,221		\$208,241		\$239,804		\$276,375		\$319,001

Project: Port Hadlock UGA Sewer Facility Plan
 Subject: Treatment System Analysis
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 July 2008
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		RESIDENTIAL AREA #3																	
		2023		2024		2025		2026		2027		2028		2029		2030			
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201		
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00		
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
SLUDGE HANDLING																			
Capital Cost Estimate																			
Item	Description																		
	Mechanical Building	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Filter & Chemical Building	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Slab Concrete and Rebar	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Straight Wall Concrete and Rebar	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	excavation	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	disposal	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	backfill	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Indoor Process Piping and Valving	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Sitework	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Subtotal Structural		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Blower	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Diffuser with piping	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Decant pump	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Screw Press Thickener	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Odor Control Scrubber	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Sludge Pump	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Polymer Feed System	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Steel 10k gallon sludge holding tank	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Subtotal Equipment		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Installation, Miscellaneous Mechanical	40%	\$0	40%		\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	
	Electrical	25%	\$0	25%		\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	
	Instrumentation and Control	15%	\$0	15%		\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Subtotal Structural, Mechanical, Elect, I&C		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contractor O&P	15%	\$0	15%		\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Mobilization, demobilization, bond	6%	\$0	6%		\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	
	Total estimated current construction cost		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Escalation to time of construction		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Total estimated construction cost		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contingency		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Engineering Design		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Construction Management		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Sales Tax		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Total Estimated Capital Cost		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
Operations and Maintenance Cost Estimate (per year)																			
Item	Description	Gallons per day	3,037	Gallons per day	3,532	Annual Cost		Gallons per year	3,629	Gallons per year	3,730	Gallons per year	3,833	Gallons per year	3,939	Gallons per year	4,047	Gallons per day	4,159
	Labor	Quantity	370	Quantity	430	Annual Cost	\$17,189	Quantity	442	Quantity	454	Quantity	466	Quantity	479	Quantity	492	Quantity	506
	Diesel oil	Annual Cost	\$14,780	Annual Cost	\$17,189	Annual Cost	\$17,663	Annual Cost	\$18,151	Annual Cost	\$18,653	Annual Cost	\$19,168	Annual Cost	\$19,697	Annual Cost	\$20,241	Annual Cost	\$20,241
	Power	Quantity	11,085	Quantity	12,892	Annual Cost	\$967	Quantity	13,248	Quantity	13,613	Quantity	13,989	Quantity	14,376	Quantity	14,773	Quantity	15,181
	Structural Maintenance	Annual Cost	\$831	Annual Cost	\$967	Annual Cost	\$994	Annual Cost	\$1,021	Annual Cost	\$1,049	Annual Cost	\$1,078	Annual Cost	\$1,108	Annual Cost	\$1,139	Annual Cost	\$1,139
	Equipment replacement	Quantity	2%	Quantity	2%	Annual Cost	\$0	Quantity	2%	Quantity	2%	Quantity	2%	Quantity	2%	Quantity	2%	Quantity	2%
	Hypochlorite	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0
	Sodium Bisulfite	Quantity	0	Quantity	0	Annual Cost	\$0	Quantity	0	Quantity	0	Quantity	0	Quantity	0	Quantity	0	Quantity	0
	Polymer	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0	Annual Cost	\$0
	Misc expenses	Quantity	1,849	Quantity	2,150	Annual Cost	\$6,451	Quantity	2,210	Quantity	2,271	Quantity	2,333	Quantity	2,398	Quantity	2,464	Quantity	2,532
	Sludge hauling and disposal	Annual Cost	\$5,547	Annual Cost	\$6,451	Annual Cost	\$6,629	Annual Cost	\$6,812	Annual Cost	\$7,000	Annual Cost	\$7,194	Annual Cost	\$7,392	Annual Cost	\$7,597	Annual Cost	\$7,597
	Total Annual Cost	Quantity	1,108,505	Quantity	1,289,152	Annual Cost	\$332,552	Quantity	1,324,759	Quantity	1,361,349	Quantity	1,398,950	Quantity	1,437,589	Quantity	1,477,295	Quantity	1,518,098
	Total Annual Cost with Replacement Costs	Annual Cost	\$332,552	Annual Cost	\$386,746	Annual Cost	\$397,428	Annual Cost	\$408,405	Annual Cost	\$419,685	Annual Cost	\$431,277	Annual Cost	\$443,188	Annual Cost	\$455,429	Annual Cost	\$455,429
	Structural Maintenance	Annual Cost	\$353,710	Annual Cost	\$411,352	Annual Cost	\$422,714	Annual Cost	\$434,389	Annual Cost	\$446,387	Annual Cost	\$458,716	Annual Cost	\$471,386	Annual Cost	\$484,406	Annual Cost	\$484,406
	Equipment replacement	Quantity	2%	Quantity	2%	Annual Cost	\$6,563	Quantity	2%	Quantity	2%	Quantity	2%	Quantity	2%	Quantity	2%	Quantity	2%
	Total Annual Cost with Replacement Costs	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227	Annual Cost	\$8,227
	Total Annual Cost with Replacement Costs	Annual Cost	\$368,500	Annual Cost	\$426,142	Annual Cost	\$437,504	Annual Cost	\$449,179	Annual Cost	\$461,177	Annual Cost	\$473,506	Annual Cost	\$486,176	Annual Cost	\$499,196	Annual Cost	\$499,196

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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE						
			2010		2011		2012		2013		2014		2015		
Item	Description	Unit cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
EFFLUENT REUSE															
Capital Cost Estimate															
Item	Description	Unit cost, \$	Unit	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Site Process Piping and Valving to Disposal Field	\$65	LF	500	\$32,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Land Purchase: Disposal/Buidout MM Flows	\$28,000	AC	9.0	\$252,000	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0
	Rapid Infiltration Basins - Sitework	\$8	CY	18,392	\$147,136	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Storage Basins - Sitework	\$8	CY	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	\$25,000	LS	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework, Lighting	\$10,000	LS	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Monitoring Wells	\$10,000	EA	3	\$30,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Structural</i>				<i>\$496,636</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Main Pump Station (2.1 mgd)	\$500,000	EA	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	\$375,000	EA	1	\$375,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	\$250,000	EA	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Distribution Piping & Equipment	\$10,000	EA	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Equipment</i>				<i>\$385,000</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Installation, Miscellaneous Mechanical		of Equip	40%	\$154,000	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical		of Equip	25%	\$96,250	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0
	Instrumentation and Control		of Equip	15%	\$57,750	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<i>Subtotal Structural, Mechanical, Elect, I&C</i>				<i>\$1,189,636</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contractor O&P		of Sub Cost	15%	\$178,445	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$71,378	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<i>Total estimated current construction cost</i>				<i>\$1,439,460</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Escalation to time of construction			3.50%	\$50,381	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	<i>Total estimated construction cost</i>				<i>\$1,489,841</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contingency			30%	\$446,952	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design			15%	\$290,519	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management			10%	\$193,679	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax			8.4%	\$162,691	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	<i>Total Estimated Capital Cost</i>				<i>\$2,583,682</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
Operations and Maintenance Cost Estimate (per year)															
Item	Description	Unit Cost	Unit	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	\$40	hr	104	\$4,160	104	\$4,160	104	\$4,160	104	\$4,160	104	\$4,160	104	\$4,160
	Power	\$0.08	kWh	10162	\$762	12344	\$926	14882	\$1,116	17832	\$1,337	21262	\$1,595	25252	\$1,894
	Misc expenses	\$0	allowance		\$0		\$0		\$0		\$0		\$0		\$0
	<i>Total Annual Cost</i>				<i>\$4,922</i>		<i>\$5,086</i>		<i>\$5,276</i>		<i>\$5,497</i>		<i>\$5,755</i>		<i>\$6,054</i>
	Structural Maintenance			2%	\$4,893	2%	\$4,893	2%	\$4,893	2%	\$4,893	2%	\$4,893	2%	\$4,893
	Equipment replacement			4%	\$15,400	4%	\$15,400	4%	\$15,400	4%	\$15,400	4%	\$15,400	4%	\$15,400
	<i>Total Annual Cost with Replacement Costs</i>				<i>\$25,215</i>		<i>\$25,379</i>		<i>\$25,569</i>		<i>\$25,790</i>		<i>\$26,047</i>		<i>\$26,347</i>

Project: Port Hadlock UGA Sewer Facility Plan
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		RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
EFFLUENT REUSE															
Capital Cost Estimate															
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Site Process Piping and Valving to Disposal Field	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Land Purchase: Disposal/Buidout MM Flows	0.0	\$0	0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0
	Rapid Infiltration Basins - Sitework	0	\$0	0	\$0	18,392	\$147,136	0	\$0	0	\$0	0	\$0	0	\$0
	Storage Basins - Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework, Lighting	0	\$0	0	\$0	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0
	Monitoring Wells	0	\$0	0	\$0	3	\$30,000	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Structural</i>		<i>\$0</i>		<i>\$0</i>		<i>\$212,136</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Main Pump Station (2.1 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	0	\$0	0	\$0	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Distribution Piping & Equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Equipment</i>		<i>\$0</i>		<i>\$0</i>		<i>\$25,000</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$10,000	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical	25%	\$0	25%	\$0	25%	\$6,250	25%	\$0	25%	\$0	25%	\$0	25%	\$0
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$3,750	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<i>Subtotal Structural, Mechanical, Elect, I&C</i>		<i>\$0</i>		<i>\$0</i>		<i>\$257,136</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contractor O&P	15%	\$0	15%	\$0	15%	\$38,570	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$15,428	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<i>Total estimated current construction cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$311,135</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$10,890	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	<i>Total estimated construction cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$322,024</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contingency	30%	\$0	30%	\$0	30%	\$96,607	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design	15%	\$0	15%	\$0	15%	\$62,795	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management	10%	\$0	10%	\$0	10%	\$41,863	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$35,165	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	<i>Total Estimated Capital Cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$558,454</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
Operations and Maintenance Cost Estimate (per year)															
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	104	\$4,160	104	\$4,160	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320
	Power	29890	\$2,242	35284	\$2,646	41556	\$3,117	48850	\$3,664	57331	\$4,300	67192	\$5,039	78659	\$5,899
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<i>Total Annual Cost</i>		<i>\$6,402</i>		<i>\$6,806</i>		<i>\$11,437</i>		<i>\$11,984</i>		<i>\$12,620</i>		<i>\$13,359</i>		<i>\$14,219</i>
	Structural Maintenance	2%	\$4,893	2%	\$4,893	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135
	Equipment replacement	4%	\$15,400	4%	\$15,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400
	<i>Total Annual Cost with Replacement Costs</i>		<i>\$26,694</i>		<i>\$27,099</i>		<i>\$36,972</i>		<i>\$37,519</i>		<i>\$38,155</i>		<i>\$38,895</i>		<i>\$39,755</i>

Project: Port Hadlock UGA Sewer Facility Plan
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		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
EFFLUENT REUSE																		
Capital Cost Estimate																		
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
	Site Process Piping and Valving to Disposal Field	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Land Purchase: Disposal/Buidout MM Flows	0.0	\$0	0	\$0	0.0	\$0	0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	
	Rapid Infiltration Basins - Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Storage Basins - Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Electrical Conduit, Sitework, Lighting	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Monitoring Wells	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<i>Subtotal Structural</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Main Pump Station (2.1 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Medium Pump Station	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Small Pump Station (0.036 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Distribution Piping & Equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<i>Subtotal Equipment</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	
	Electrical	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	<i>Subtotal Structural, Mechanical, Elect, I&C</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	
	<i>Total estimated current construction cost</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	
	<i>Total estimated construction cost</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contingency	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	
	Engineering Design	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Construction Management	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	
	<i>Total Estimated Capital Cost</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
Operations and Maintenance Cost Estimate (per year)																		
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	
	Labor	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	
	Power	91994	\$6,900	107499	\$8,062	110548	\$8,291	113688	\$8,527	116914	\$8,769	120229	\$9,017	123635	\$9,273	127136	\$9,535	
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	<i>Total Annual Cost</i>		\$15,220		\$16,382		\$16,611		\$16,847		\$17,089		\$17,337		\$17,593		\$17,855	
	Structural Maintenance	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	
	Equipment replacement	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	
	<i>Total Annual Cost with Replacement Costs</i>		\$40,755		\$41,918		\$42,147		\$42,382		\$42,624		\$42,873		\$43,128		\$43,391	

