

Phase 2 Lifecycle Costs

DRAFT

Analysis Period (years) 20
 Discount Rate (%) 3.00
 Inflation Rate (%) 3.00

FWD/GCSD Lifecycle Analysis of O&M Cost for Alternative 1a

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars													O&M Costs, Present Worth															
			Labor	Piping and Valve Maintenance and Replacement (Treatment)	Piping and Valve Maintenance and Replacement (Collection)	Power	Chemical Addition	Routine Maintenance: Blower Filter/Belt/Oil Changes, Pond Cleaning	Pump Rebuild & Major Maintenance	Cloth Disk Filters	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Equipment Replacement	Total	Labor	Piping and Valve Maintenance and Replacement (Treatment)	Piping and Valve Maintenance and Replacement (Collection)	Power	Chemical Addition	Routine Maintenance: Blower Filter/Belt/Oil Changes, Pond Cleaning	Pump Rebuild & Major Maintenance	Cloth Disk Filters	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Equipment Replacement	Total					
0	2025	1.00	1.00	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
1	2026	1.03	1.03	\$412,000	\$204,970	\$27,604	\$251,320	\$124,630	\$15,965	-	\$3,090	-	-	-	-	-	\$1,039,579	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
2	2027	1.06	1.06	\$424,360	\$211,119	\$28,432	\$258,860	\$128,369	\$16,444	-	\$3,183	-	-	-	-	-	\$1,070,766	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
3	2028	1.09	1.09	\$437,091	\$217,453	\$29,285	\$266,625	\$132,220	\$16,937	-	\$3,278	-	-	-	-	-	\$1,102,889	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
4	2029	1.13	1.13	\$450,204	\$223,976	\$30,164	\$274,624	\$136,187	\$17,445	-	\$3,377	-	-	-	-	-	\$1,135,976	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
5	2030	1.16	1.16	\$463,710	\$230,696	\$31,069	\$282,863	\$140,272	\$17,969	-	\$3,478	-	-	-	-	-	\$1,170,055	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
6	2031	1.19	1.19	\$477,621	\$237,616	\$32,001	\$291,349	\$144,480	\$18,508	-	\$3,582	-	-	-	-	-	\$1,205,157	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
7	2032	1.23	1.23	\$491,950	\$244,745	\$32,961	\$300,089	\$148,815	\$19,063	-	\$3,690	-	-	-	-	-	\$1,241,312	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
8	2033	1.27	1.27	\$506,708	\$252,087	\$33,949	\$309,092	\$153,279	\$19,635	-	\$3,800	-	-	-	-	-	\$1,278,551	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
9	2034	1.30	1.30	\$521,909	\$259,650	\$34,968	\$318,365	\$157,878	\$20,224	-	\$3,914	-	-	-	-	-	\$1,316,908	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	\$1,009,300	
10	2035	1.34	1.34	\$537,567	\$267,439	\$36,017	\$327,916	\$162,614	\$20,831	\$71,228	-	-	-	-	\$2,688	\$1,430,330	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	\$53,000	\$3,000	-	-	-	\$2,000	\$1,064,300		
11	2036	1.38	1.38	\$553,694	\$275,463	\$37,097	\$337,753	\$167,492	\$21,456	-	\$4,153	-	-	-	-	\$1,397,107	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
12	2037	1.43	1.43	\$570,304	\$283,726	\$38,210	\$347,886	\$172,517	\$22,099	-	\$4,277	-	-	-	-	\$1,439,020	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
13	2038	1.47	1.47	\$587,413	\$292,238	\$39,357	\$358,322	\$177,693	\$22,762	-	\$4,406	-	-	-	-	\$1,482,191	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
14	2039	1.51	1.51	\$605,036	\$301,005	\$40,537	\$369,072	\$183,023	\$23,445	-	\$4,538	-	-	-	-	\$1,526,657	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
15	2040	1.56	1.56	\$623,187	\$310,036	\$41,754	\$380,144	\$188,514	\$24,148	-	\$4,674	\$130,869	\$129,311	-	-	\$1,832,637	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	\$84,000	\$83,000	-	-	-	\$1,176,300	
16	2041	1.60	1.60	\$641,883	\$319,337	\$43,006	\$391,548	\$194,169	\$24,873	-	\$4,814	-	-	-	-	\$1,619,630	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
17	2042	1.65	1.65	\$661,139	\$328,917	\$44,296	\$403,295	\$199,995	\$25,619	-	\$4,959	-	-	-	-	\$1,668,219	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
18	2043	1.70	1.70	\$680,973	\$338,784	\$45,625	\$415,394	\$205,994	\$26,388	-	\$5,107	-	-	-	-	\$1,718,266	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	\$1,009,300	
19	2044	1.75	1.75	\$701,402	\$348,948	\$46,994	\$427,855	\$212,174	\$27,179	-	\$5,261	-	-	-	-	\$1,769,814	\$400,000	\$199,000	\$26,800	\$244,000	\$121,000	\$15,500	-	\$3,000	-	-	-	-	-	-	\$1,009,300
20	2045	1.81	1.81	\$722,444	\$359,416	\$48,404	\$440,691	\$218,539	\$27,995	\$95,724	\$5,418	-	-	-	\$3,612	\$1,922,244	\$840,000	\$418,000	\$560,000	\$5,120,000	\$2,540,000	\$330,000	\$110,000	\$60,000	\$80,000	\$80,000	\$4,000	\$2,000	\$21,460,000		

Analysis Period (year): 20
 Discount Rate (%): 3.00
 Inflation Rate (%): 3.00

RRCSD Lifecycle Analysis of O&M Cost for Alternative 1a

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars										O&M Costs, Present Worth										
			Labor	Piping and Valve Maintenance and Replacement (Treatment)	Piping and Valve Maintenance and Replacement (Collection)	Power	Chemical Addition	Pump Rebuild & Major Maintenance	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Equipment Replacement	Total	Labor	Piping and Valve Maintenance and Replacement (Treatment)	Piping and Valve Maintenance and Replacement (Collection)	Power	Chemical Addition	Pump Rebuild & Major Maintenance	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Equipment Replacement	Total	
0 2025	1.00	1.00	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
1 2026	1.03	1.03	\$0	\$0	\$8,240	\$35,020	\$12,360	-	-	-	-	\$55,620	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
2 2027	1.06	1.06	\$0	\$0	\$8,487	\$36,071	\$12,731	-	-	-	-	\$57,289	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
3 2028	1.09	1.09	\$0	\$0	\$8,742	\$37,153	\$13,113	-	-	-	-	\$59,007	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
4 2029	1.13	1.13	\$0	\$0	\$9,004	\$38,267	\$13,506	-	-	-	-	\$60,777	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
5 2030	1.16	1.16	\$0	\$0	\$9,274	\$39,415	\$13,911	-	-	-	-	\$62,601	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
6 2031	1.19	1.19	\$0	\$0	\$9,552	\$40,598	\$14,329	-	-	-	-	\$64,479	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
7 2032	1.23	1.23	\$0	\$0	\$9,839	\$41,816	\$14,758	-	-	-	-	\$66,413	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
8 2033	1.27	1.27	\$0	\$0	\$10,134	\$43,070	\$15,201	-	-	-	-	\$68,406	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
9 2034	1.30	1.30	\$0	\$0	\$10,438	\$44,362	\$15,657	-	-	-	-	\$70,458	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
10 2035	1.34	1.34	\$0	\$0	\$10,751	\$45,693	\$16,127	\$0	-	-	\$0	\$72,571	\$0	\$0	\$8,000	\$34,000	\$12,000	\$0	-	-	\$0	\$54,000	
11 2036	1.38	1.38	\$0	\$0	\$11,074	\$47,064	\$16,611	-	-	-	-	\$74,749	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
12 2037	1.43	1.43	\$0	\$0	\$11,406	\$48,476	\$17,109	-	-	-	-	\$76,991	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
13 2038	1.47	1.47	\$0	\$0	\$11,748	\$49,930	\$17,622	-	-	-	-	\$79,301	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
14 2039	1.51	1.51	\$0	\$0	\$12,101	\$51,428	\$18,151	-	-	-	-	\$81,680	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
15 2040	1.56	1.56	\$0	\$0	\$12,464	\$52,971	\$18,696	-	\$0	\$0	-	\$84,130	\$0	\$0	\$8,000	\$34,000	\$12,000	-	\$0	\$0	-	\$54,000	
16 2041	1.60	1.60	\$0	\$0	\$12,838	\$54,560	\$19,256	-	-	-	-	\$86,654	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
17 2042	1.65	1.65	\$0	\$0	\$13,223	\$56,197	\$19,834	-	-	-	-	\$89,254	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
18 2043	1.70	1.70	\$0	\$0	\$13,619	\$57,883	\$20,429	-	-	-	-	\$91,931	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
19 2044	1.75	1.75	\$0	\$0	\$14,028	\$59,619	\$21,042	-	-	-	-	\$94,689	\$0	\$0	\$8,000	\$34,000	\$12,000	-	-	-	-	\$54,000	
20 2045	1.81	1.81	\$0	\$0	\$14,449	\$61,408	\$21,673	\$0	-	-	\$0	\$97,530	\$0	\$0	\$8,000	\$34,000	\$12,000	\$0	-	-	\$0	\$54,000	
													\$0	\$0	\$170,000	\$710,000	\$250,000	\$0	\$0	\$0	\$0	\$0	\$1,130,000

Analysis Period (years) 20
 Discount Rate (%) 3.00
 Inflation Rate (%) 3.00

Lifecycle Analysis of O&M Cost for Alternative 1c

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2024 Dollars													O&M Costs, Present Worth													
			Labor	Piping and Valve Replacement and	Power	Chemical Addition	Solids Hauling	Pump Rebuild & Major Maintenance	Membrane Cassettes	UV Equipment	20-Year Major Equipment Replacement	15-Year Instrumentation and Replacement	15-Year MBR System Replacements	20-Year MBR System Replacements	Total	Labor	Piping and Valve Replacement and	Power	Chemical Addition	Solids Hauling	Pump Rebuild & Major Maintenance	Membrane Cassettes	UV Equipment Replacement	20-Year Major Equipment Replacement	15-Year Instrumentation Replacement	15-Year MBR System Replacements	20-Year MBR System Replacements	Total	
0	2025	1.00	1.00	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
1	2026	1.03	1.03	\$-16,480	\$225,570	\$353,290	\$-13,390	\$193,640	-	\$71,070	\$37,080	-	-	-	-	\$850,780	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
2	2027	1.06	1.06	\$-16,974	\$232,317	\$363,889	\$-13,792	\$199,449	-	\$73,202	\$38,192	-	-	-	-	\$878,303	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
3	2028	1.09	1.09	\$-17,484	\$239,307	\$374,805	\$-14,205	\$205,433	-	\$75,398	\$39,338	-	-	-	-	\$902,593	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
4	2029	1.13	1.13	\$-18,008	\$246,486	\$386,050	\$-14,632	\$211,596	-	\$77,660	\$40,518	-	-	-	-	\$929,670	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
5	2030	1.16	1.16	\$-18,548	\$253,881	\$397,631	\$-15,071	\$217,944	-	\$79,990	\$41,734	-	-	-	-	\$957,560	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
6	2031	1.19	1.19	\$-19,105	\$261,497	\$409,560	\$-15,523	\$224,482	-	\$82,390	\$42,986	-	-	-	-	\$986,387	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
7	2032	1.23	1.23	\$-19,678	\$269,342	\$421,847	\$-15,988	\$231,216	-	\$84,861	\$44,275	-	-	-	-	\$1,015,876	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
8	2033	1.27	1.27	\$-20,268	\$277,423	\$434,502	\$-16,468	\$238,153	-	\$87,407	\$45,604	-	-	-	-	\$1,046,352	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
9	2034	1.30	1.30	\$-20,876	\$285,745	\$447,537	\$-16,962	\$245,297	-	\$90,029	\$46,972	-	-	-	-	\$1,077,743	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
10	2035	1.34	1.34	\$-21,503	\$294,318	\$460,963	\$-17,471	\$252,656	\$231,154	\$92,730	\$48,381	-	-	-	-	\$1,241,229	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	\$172,000	\$69,000	\$36,000	-	-	-	-	\$998,000
11	2036	1.38	1.38	\$-22,148	\$303,147	\$474,792	\$-17,995	\$260,236	-	\$95,512	\$49,832	-	-	-	-	\$1,143,377	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
12	2037	1.43	1.43	\$-22,812	\$312,242	\$489,036	\$-18,535	\$268,043	-	\$98,378	\$51,327	-	-	-	-	\$1,177,678	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
13	2038	1.47	1.47	\$-23,497	\$321,609	\$503,707	\$-19,091	\$276,084	-	\$101,329	\$52,867	-	-	-	-	\$1,213,009	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
14	2039	1.51	1.51	\$-24,201	\$331,257	\$518,818	\$-19,664	\$284,367	-	\$104,369	\$54,453	-	-	-	-	\$1,249,359	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
15	2040	1.56	1.56	\$-24,927	\$341,195	\$534,383	\$-20,254	\$292,898	-	\$107,500	\$56,087	-	\$392,608	\$598,259	-	\$2,277,748	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	\$252,000	\$384,000	-	\$1,462,000
16	2041	1.60	1.60	\$-25,675	\$351,431	\$550,414	\$-20,861	\$301,685	-	\$110,725	\$57,769	-	-	-	-	\$1,325,488	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
17	2042	1.65	1.65	\$-26,446	\$361,974	\$566,927	\$-21,487	\$310,735	-	\$114,046	\$59,503	-	-	-	-	\$1,365,252	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
18	2043	1.70	1.70	\$-27,239	\$372,833	\$583,935	\$-22,132	\$320,057	-	\$117,468	\$61,288	-	-	-	-	\$1,406,210	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
19	2044	1.75	1.75	\$-28,056	\$384,018	\$601,453	\$-22,796	\$329,659	-	\$120,992	\$63,126	-	-	-	-	\$1,448,396	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	-	\$69,000	\$36,000	-	-	-	-	\$826,000
20	2045	1.81	1.81	\$-28,898	\$395,538	\$619,496	\$-23,479	\$339,549	\$310,651	\$124,622	\$65,020	\$2,291,955	-	-	-	\$1,137,850	\$-16,000	\$219,000	\$343,000	\$-13,000	\$188,000	\$172,000	\$69,000	\$36,000	\$1,269,000	-	-	\$630,000	\$2,897,000
																-\$340,000	\$4,600,000	\$7,200,000	-\$270,000	\$3,950,000	\$340,000	\$1,450,000	\$760,000	\$1,270,000	\$250,000	\$380,000	\$630,000	\$20,220,000	

Analysis Period (years) 20
Discount Rate (%) 3.00
Inflation Rate (%) 3.00

Lifecycle Analysis of O&M Cost for Alternative 1c

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2024 Dollars							O&M Costs, Present Worth							
			Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	15-Year Instrumentation Replacement	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	15-Year Instrumentation Replacement	Total	
0	2025	1.00	1.00	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
1	2026	1.03	1.03	-\$3,052,920	-\$742,630	-\$224,540	-\$36,050	-	-	-\$4,056,140	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
2	2027	1.06	1.06	-\$3,144,508	-\$764,909	-\$231,276	-\$37,132	-	-	-\$4,177,824	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
3	2028	1.09	1.09	-\$3,238,843	-\$787,856	-\$238,214	-\$38,245	-	-	-\$4,303,159	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
4	2029	1.13	1.13	-\$3,336,008	-\$811,492	-\$245,361	-\$39,393	-	-	-\$4,432,254	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
5	2030	1.16	1.16	-\$3,436,088	-\$835,837	-\$252,722	-\$40,575	-	-	-\$4,565,221	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
6	2031	1.19	1.19	-\$3,539,171	-\$860,912	-\$260,303	-\$41,792	-	-	-\$4,702,178	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
7	2032	1.23	1.23	-\$3,645,346	-\$886,739	-\$268,113	-\$43,046	-	-	-\$4,843,243	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
8	2033	1.27	1.27	-\$3,754,707	-\$913,341	-\$276,156	-\$44,337	-	-	-\$4,988,541	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
9	2034	1.30	1.30	-\$3,867,348	-\$940,741	-\$284,441	-\$45,667	-	-	-\$5,138,197	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
10	2035	1.34	1.34	-\$3,983,368	-\$968,964	-\$292,974	-\$47,037	\$67,196	-	-\$5,225,147	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	\$50,000	-	-\$3,888,000
11	2036	1.38	1.38	-\$4,102,869	-\$998,033	-\$301,763	-\$48,448	-	-	-\$5,451,113	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
12	2037	1.43	1.43	-\$4,225,955	-\$1,027,974	-\$310,816	-\$49,902	-	-	-\$5,614,646	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
13	2038	1.47	1.47	-\$4,352,734	-\$1,058,813	-\$320,140	-\$51,399	-	-	-\$5,783,086	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
14	2039	1.51	1.51	-\$4,483,316	-\$1,090,577	-\$329,745	-\$52,941	-	-	-\$5,956,578	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
15	2040	1.56	1.56	-\$4,617,815	-\$1,123,295	-\$339,637	-\$54,529	-	\$10,906	-\$6,124,370	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	\$7,000	-\$3,931,000
16	2041	1.60	1.60	-\$4,756,350	-\$1,156,993	-\$349,826	-\$56,165	-	-	-\$6,319,334	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
17	2042	1.65	1.65	-\$4,899,040	-\$1,191,703	-\$360,321	-\$57,850	-	-	-\$6,508,914	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
18	2043	1.70	1.70	-\$5,046,012	-\$1,227,454	-\$371,130	-\$59,585	-	-	-\$6,704,181	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
19	2044	1.75	1.75	-\$5,197,392	-\$1,264,278	-\$382,264	-\$61,373	-	-	-\$6,905,307	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	-	-	-\$3,938,000
20	2045	1.81	1.81	-\$5,353,314	-\$1,302,206	-\$393,732	-\$63,214	\$90,306	-	-\$7,022,160	-\$2,964,000	-\$721,000	-\$218,000	-\$35,000	\$50,000	-	-\$3,888,000
											-\$62,240,000	-\$15,140,000	-\$4,580,000	-\$740,000	\$100,000	\$10,000	-\$82,590,000

Analysis Period (years) 20
Discount Rate (%) 3.00
Inflation Rate (%) 3.00

FWDGCSD Lifecycle Analysis of O&M Cost for Alternative 2a

Year		Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars						O&M Costs, Present Worth					
				Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total
0	2025	1.00	1.00	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
1	2026	1.03	1.03	-\$615,940	-\$101,970	-\$176,130	-\$123,600	-	-\$1,017,640	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
2	2027	1.06	1.06	-\$634,418	-\$105,029	-\$181,414	-\$127,308	-	-\$1,048,169	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
3	2028	1.09	1.09	-\$653,451	-\$108,180	-\$186,856	-\$131,127	-	-\$1,079,614	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
4	2029	1.13	1.13	-\$673,054	-\$111,425	-\$192,462	-\$135,061	-	-\$1,112,003	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
5	2030	1.16	1.16	-\$693,246	-\$114,768	-\$198,236	-\$139,113	-	-\$1,145,363	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
6	2031	1.19	1.19	-\$714,043	-\$118,211	-\$204,183	-\$143,286	-	-\$1,179,724	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
7	2032	1.23	1.23	-\$735,465	-\$121,758	-\$210,308	-\$147,585	-	-\$1,215,115	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
8	2033	1.27	1.27	-\$757,529	-\$125,410	-\$216,618	-\$152,012	-	-\$1,251,569	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
9	2034	1.30	1.30	-\$780,254	-\$129,173	-\$223,116	-\$156,573	-	-\$1,289,116	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
10	2035	1.34	1.34	-\$803,662	-\$133,048	-\$229,810	-\$161,270	\$72,571	-\$1,255,218	-\$598,000	-\$99,000	-\$171,000	-\$120,000	\$54,000	-\$934,000
11	2036	1.38	1.38	-\$827,772	-\$137,039	-\$236,704	-\$166,108	-	-\$1,367,623	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
12	2037	1.43	1.43	-\$852,605	-\$141,150	-\$243,805	-\$171,091	-	-\$1,408,652	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
13	2038	1.47	1.47	-\$878,183	-\$145,385	-\$251,119	-\$176,224	-	-\$1,450,911	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
14	2039	1.51	1.51	-\$904,529	-\$149,746	-\$258,653	-\$181,511	-	-\$1,494,439	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
15	2040	1.56	1.56	-\$931,665	-\$154,239	-\$266,412	-\$186,956	-	-\$1,539,272	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
16	2041	1.60	1.60	-\$959,614	-\$158,866	-\$274,405	-\$192,565	-	-\$1,585,450	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
17	2042	1.65	1.65	-\$988,403	-\$163,632	-\$282,637	-\$198,342	-	-\$1,633,013	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
18	2043	1.70	1.70	-\$1,018,055	-\$168,541	-\$291,116	-\$204,292	-	-\$1,682,004	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
19	2044	1.75	1.75	-\$1,048,597	-\$173,597	-\$299,850	-\$210,421	-	-\$1,732,464	-\$598,000	-\$99,000	-\$171,000	-\$120,000	-	-\$988,000
20	2045	1.81	1.81	-\$1,080,055	-\$178,805	-\$308,845	-\$216,733	\$97,530	-\$1,686,908	-\$598,000	-\$99,000	-\$171,000	-\$120,000	\$54,000	-\$934,000
										-\$12,560,000	-\$2,080,000	-\$3,590,000	-\$2,520,000	\$110,000	-\$20,640,000

Analysis Period (years) 20
Discount Rate (%) 3.00
Inflation Rate (%) 3.00

RRCSD Lifecycle Analysis of O&M Cost for Alternative 2a

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars							O&M Costs, Present Worth					
			Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total	
0	2025	1.00	1.00	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
1	2026	1.03	1.03	-\$3,052,920	-\$679,800	-\$326,510	-\$36,050	-	-\$4,095,280	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
2	2027	1.06	1.06	-\$3,144,508	-\$700,194	-\$336,305	-\$37,132	-	-\$4,218,138	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
3	2028	1.09	1.09	-\$3,238,843	-\$721,200	-\$346,394	-\$38,245	-	-\$4,344,683	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
4	2029	1.13	1.13	-\$3,336,008	-\$742,836	-\$356,786	-\$39,393	-	-\$4,475,023	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
5	2030	1.16	1.16	-\$3,436,088	-\$765,121	-\$367,490	-\$40,575	-	-\$4,609,274	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
6	2031	1.19	1.19	-\$3,539,171	-\$788,075	-\$378,515	-\$41,792	-	-\$4,747,552	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
7	2032	1.23	1.23	-\$3,645,346	-\$811,717	-\$389,870	-\$43,046	-	-\$4,889,978	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
8	2033	1.27	1.27	-\$3,754,707	-\$836,068	-\$401,566	-\$44,337	-	-\$5,036,678	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
9	2034	1.30	1.30	-\$3,867,348	-\$861,150	-\$413,613	-\$45,667	-	-\$5,187,778	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
10	2035	1.34	1.34	-\$3,983,368	-\$886,985	-\$426,021	-\$47,037	\$67,196	-\$5,276,216	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	\$50,000	-\$3,926,000
11	2036	1.38	1.38	-\$4,102,869	-\$913,594	-\$438,802	-\$48,448	-	-\$5,503,714	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
12	2037	1.43	1.43	-\$4,225,955	-\$941,002	-\$451,966	-\$49,902	-	-\$5,668,825	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
13	2038	1.47	1.47	-\$4,352,734	-\$969,232	-\$465,525	-\$51,399	-	-\$5,838,890	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
14	2039	1.51	1.51	-\$4,483,316	-\$998,309	-\$479,491	-\$52,941	-	-\$6,014,057	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
15	2040	1.56	1.56	-\$4,617,815	-\$1,028,258	-\$493,876	-\$54,529	-	-\$6,194,478	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
16	2041	1.60	1.60	-\$4,756,350	-\$1,059,106	-\$508,692	-\$56,165	-	-\$6,380,313	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
17	2042	1.65	1.65	-\$4,899,040	-\$1,090,879	-\$523,953	-\$57,850	-	-\$6,571,722	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
18	2043	1.70	1.70	-\$5,046,012	-\$1,123,606	-\$539,671	-\$59,585	-	-\$6,768,874	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
19	2044	1.75	1.75	-\$5,197,392	-\$1,157,314	-\$555,861	-\$61,373	-	-\$6,971,940	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	-	-\$3,976,000
20	2045	1.81	1.81	-\$5,353,314	-\$1,192,033	-\$572,537	-\$63,214	\$90,306	-\$7,090,793	-\$2,964,000	-\$660,000	-\$317,000	-\$35,000	\$50,000	-\$3,926,000
										-\$62,240,000	-\$13,860,000	-\$6,660,000	-\$740,000	\$100,000	-\$83,400,000

Analysis Period (years) 20
Discount Rate (%) 3.00
Inflation Rate (%) 3.00

FWDGCSO Lifecycle Analysis of O&M Cost for Alternative 2b

Year		Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars						O&M Costs, Present Worth					
				Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total
0	2025	1.00	1.00	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
1	2026	1.03	1.03	-\$615,940	-\$113,300	-\$169,950	-\$123,600	-	-\$1,022,790	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
2	2027	1.06	1.06	-\$634,418	-\$116,699	-\$175,049	-\$127,308	-	-\$1,053,474	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
3	2028	1.09	1.09	-\$653,451	-\$120,200	-\$180,300	-\$131,127	-	-\$1,085,078	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
4	2029	1.13	1.13	-\$673,054	-\$123,806	-\$185,709	-\$135,061	-	-\$1,117,630	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
5	2030	1.16	1.16	-\$693,246	-\$127,520	-\$191,280	-\$139,113	-	-\$1,151,159	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
6	2031	1.19	1.19	-\$714,043	-\$131,346	-\$197,019	-\$143,286	-	-\$1,185,694	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
7	2032	1.23	1.23	-\$735,465	-\$135,286	-\$202,929	-\$147,585	-	-\$1,221,265	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
8	2033	1.27	1.27	-\$757,529	-\$139,345	-\$209,017	-\$152,012	-	-\$1,257,903	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
9	2034	1.30	1.30	-\$780,254	-\$143,525	-\$215,288	-\$156,573	-	-\$1,295,640	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
10	2035	1.34	1.34	-\$803,662	-\$147,831	-\$221,746	-\$161,270	\$114,233	-\$1,220,276	-\$598,000	-\$110,000	-\$165,000	-\$120,000	\$85,000	-\$908,000
11	2036	1.38	1.38	-\$827,772	-\$152,266	-\$228,399	-\$166,108	-	-\$1,374,544	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
12	2037	1.43	1.43	-\$852,605	-\$156,834	-\$235,251	-\$171,091	-	-\$1,415,781	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
13	2038	1.47	1.47	-\$878,183	-\$161,539	-\$242,308	-\$176,224	-	-\$1,458,254	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
14	2039	1.51	1.51	-\$904,529	-\$166,385	-\$249,577	-\$181,511	-	-\$1,502,002	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
15	2040	1.56	1.56	-\$931,665	-\$171,376	-\$257,065	-\$186,956	-	-\$1,547,062	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
16	2041	1.60	1.60	-\$959,614	-\$176,518	-\$264,777	-\$192,565	-	-\$1,593,473	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
17	2042	1.65	1.65	-\$988,403	-\$181,813	-\$272,720	-\$198,342	-	-\$1,641,278	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
18	2043	1.70	1.70	-\$1,018,055	-\$187,268	-\$280,901	-\$204,292	-	-\$1,690,516	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
19	2044	1.75	1.75	-\$1,048,597	-\$192,886	-\$289,328	-\$210,421	-	-\$1,741,232	-\$598,000	-\$110,000	-\$165,000	-\$120,000	-	-\$993,000
20	2045	1.81	1.81	-\$1,080,055	-\$198,672	-\$298,008	-\$216,733	\$153,519	-\$1,639,949	-\$598,000	-\$110,000	-\$165,000	-\$120,000	\$85,000	-\$908,000
										-\$12,560,000	-\$2,310,000	-\$3,470,000	-\$2,520,000	\$170,000	-\$20,690,000

Analysis Period (years) 20
 Discount Rate (%) 3.00
 Inflation Rate (%) 3.00

RRCSD Lifecycle Analysis of O&M Cost for Alternative 2b

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars						O&M Costs, Present Worth						
			Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Pump Rebuild & Major Maintenance	Total	
0	2025	1.00	1.00	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
1	2026	1.03	1.03	-\$3,052,920	-\$665,380	-\$153,470	-\$36,050	-	-\$3,907,820	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
2	2027	1.06	1.06	-\$3,144,508	-\$685,341	-\$158,074	-\$37,132	-	-\$4,025,055	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
3	2028	1.09	1.09	-\$3,238,843	-\$705,902	-\$162,816	-\$38,245	-	-\$4,145,806	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
4	2029	1.13	1.13	-\$3,336,008	-\$727,079	-\$167,701	-\$39,393	-	-\$4,270,180	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
5	2030	1.16	1.16	-\$3,436,088	-\$748,891	-\$172,732	-\$40,575	-	-\$4,398,286	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
6	2031	1.19	1.19	-\$3,539,171	-\$771,358	-\$177,914	-\$41,792	-	-\$4,530,234	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
7	2032	1.23	1.23	-\$3,645,346	-\$794,499	-\$183,251	-\$43,046	-	-\$4,666,141	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
8	2033	1.27	1.27	-\$3,754,707	-\$818,333	-\$188,749	-\$44,337	-	-\$4,806,126	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
9	2034	1.30	1.30	-\$3,867,348	-\$842,883	-\$194,411	-\$45,667	-	-\$4,950,309	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
10	2035	1.34	1.34	-\$3,983,368	-\$868,170	-\$200,244	-\$47,037	\$67,196	-\$5,031,623	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	\$50,000	-\$3,744,000
11	2036	1.38	1.38	-\$4,102,869	-\$894,215	-\$206,251	-\$48,448	-	-\$5,251,783	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
12	2037	1.43	1.43	-\$4,225,955	-\$921,042	-\$212,438	-\$49,902	-	-\$5,409,337	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
13	2038	1.47	1.47	-\$4,352,734	-\$948,673	-\$218,812	-\$51,399	-	-\$5,571,617	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
14	2039	1.51	1.51	-\$4,483,316	-\$977,133	-\$225,376	-\$52,941	-	-\$5,738,765	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
15	2040	1.56	1.56	-\$4,617,815	-\$1,006,447	-\$232,137	-\$54,529	-	-\$5,910,928	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
16	2041	1.60	1.60	-\$4,756,350	-\$1,036,640	-\$239,101	-\$56,165	-	-\$6,088,256	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
17	2042	1.65	1.65	-\$4,899,040	-\$1,067,740	-\$246,274	-\$57,850	-	-\$6,270,904	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
18	2043	1.70	1.70	-\$5,046,012	-\$1,099,772	-\$253,663	-\$59,585	-	-\$6,459,031	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
19	2044	1.75	1.75	-\$5,197,392	-\$1,132,765	-\$261,272	-\$61,373	-	-\$6,652,802	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	-	-\$3,794,000
20	2045	1.81	1.81	-\$5,353,314	-\$1,166,748	-\$269,111	-\$63,214	\$90,306	-\$6,762,080	-\$2,964,000	-\$646,000	-\$149,000	-\$35,000	\$50,000	-\$3,744,000
										-\$62,240,000	-\$13,570,000	-\$3,130,000	-\$740,000	\$100,000	-\$79,580,000

Analysis Period (years) 20
 Discount Rate (%) 3.00
 Inflation Rate (%) 3.00

FWD/GCSD Lifecycle Analysis of O&M Cost for Alternative 3b

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars											O&M Costs, Present Worth											
			Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Blower Filter/Belt/Oil Changes	Pump Rebuild & Major Maintenance	Cloth Disk Filters	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Equipment Replacement	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Blower Filter/Belt/Oil Changes	Pump Rebuild & Major Maintenance	Cloth Disk Filters	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Cloth Disk Filtration System Replacements	Total	
0	2025	1.00	1.00	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
1	2026	1.03	1.03	\$412,000	\$95,790	\$77,456	\$53,457	\$9,682	-	\$2,781	-	-	-	\$651,166	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
2	2027	1.06	1.06	\$424,360	\$98,664	\$79,780	\$55,061	\$9,972	-	\$2,864	-	-	-	\$670,701	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
3	2028	1.09	1.09	\$437,091	\$101,624	\$82,173	\$56,713	\$10,272	-	\$2,950	-	-	-	\$690,822	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
4	2029	1.13	1.13	\$450,204	\$104,672	\$84,638	\$58,414	\$10,580	-	\$3,039	-	-	-	\$711,547	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
5	2030	1.16	1.16	\$463,710	\$107,812	\$87,177	\$60,166	\$10,897	-	\$3,130	-	-	-	\$732,893	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
6	2031	1.19	1.19	\$477,621	\$111,047	\$89,793	\$61,971	\$11,224	-	\$3,224	-	-	-	\$754,880	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
7	2032	1.23	1.23	\$491,950	\$114,378	\$92,487	\$63,830	\$11,561	-	\$3,321	-	-	-	\$777,526	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
8	2033	1.27	1.27	\$506,708	\$117,810	\$95,261	\$65,745	\$11,908	-	\$3,420	-	-	-	\$800,852	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
9	2034	1.30	1.30	\$521,909	\$121,344	\$98,119	\$67,718	\$12,265	-	\$3,523	-	-	-	\$824,878	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
10	2035	1.34	1.34	\$537,567	\$124,984	\$101,063	\$69,749	\$12,633	\$47,037	\$3,629	-	-	\$2,822	\$899,483	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	\$35,000	\$2,700	-	-	\$2,100	\$669,300
11	2036	1.38	1.38	\$553,694	\$128,734	\$104,094	\$71,842	\$13,012	-	\$3,737	-	-	-	\$875,113	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
12	2037	1.43	1.43	\$570,304	\$132,596	\$107,217	\$73,997	\$13,402	-	\$3,850	-	-	-	\$901,366	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
13	2038	1.47	1.47	\$587,413	\$136,574	\$110,434	\$76,217	\$13,804	-	\$3,965	-	-	-	\$928,407	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
14	2039	1.51	1.51	\$605,036	\$140,671	\$113,747	\$78,503	\$14,218	-	\$4,084	-	-	-	\$956,259	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
15	2040	1.56	1.56	\$623,187	\$144,891	\$117,159	\$80,859	\$14,645	-	\$4,207	\$67,304	\$124,637	-	\$1,176,889	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	\$43,200	\$80,000	-	\$755,400
16	2041	1.60	1.60	\$641,883	\$149,238	\$120,674	\$83,284	\$15,084	-	\$4,333	-	-	-	\$1,014,495	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
17	2042	1.65	1.65	\$661,139	\$153,715	\$124,294	\$85,783	\$15,537	-	\$4,463	-	-	-	\$1,044,930	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
18	2043	1.70	1.70	\$680,973	\$158,326	\$128,023	\$88,356	\$16,003	-	\$4,597	-	-	-	\$1,076,278	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
19	2044	1.75	1.75	\$701,402	\$163,076	\$131,864	\$91,007	\$16,483	-	\$4,734	-	-	-	\$1,108,567	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	-	\$2,700	-	-	-	\$632,200
20	2045	1.81	1.81	\$722,444	\$167,968	\$135,820	\$93,737	\$16,977	\$63,214	\$4,877	-	-	\$3,793	\$1,208,830	\$400,000	\$93,000	\$75,200	\$51,900	\$9,400	\$35,000	\$2,700	-	-	\$2,100	\$669,300
														\$8,400,000	\$1,950,000	\$1,580,000	\$1,090,000	\$200,000	\$70,000	\$60,000	\$40,000	\$80,000	\$4,000	\$13,470,000	

Analysis Period (years) 20
 Discount Rate (%) 3.00
 Inflation Rate (%) 3.00

RRCSO Lifecycle Analysis of O&M Cost for Alternative 3b

Year	Present Worth Factor	Inflation Factor	O&M Costs, 2025 Dollars											O&M Costs, Present Worth												
			Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Blower Filter/Belt/Oil Changes	Pump Rebuild & Major Maintenance	Cloth Disk Filters	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Equipment Replacement	Total	Labor	Piping and Valve Maintenance and Replacement	Power	Chemical Addition	Blower Filter/Belt/Oil Changes	Pump Rebuild & Major Maintenance	Cloth Disk Filters	15-Year Major Equipment Replacement	15-Year Instrumentation Replacement	10-Year Cloth Disk Replacements	Total		
0	2025	1.00	1.00	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
1	2026	1.03	1.03	-\$3,052,748	-\$686,486	-\$295,610	-\$36,050	\$0	-	\$0	-	-	-	-\$4,070,893	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
2	2027	1.06	1.06	-\$3,144,330	-\$707,080	-\$304,478	-\$37,132	\$0	-	\$0	-	-	-	-\$4,193,020	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
3	2028	1.09	1.09	-\$3,238,660	-\$728,293	-\$313,613	-\$38,245	\$0	-	\$0	-	-	-	-\$4,318,811	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
4	2029	1.13	1.13	-\$3,335,820	-\$750,141	-\$323,021	-\$39,393	\$0	-	\$0	-	-	-	-\$4,448,375	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
5	2030	1.16	1.16	-\$3,435,894	-\$772,646	-\$332,712	-\$40,575	\$0	-	\$0	-	-	-	-\$4,581,826	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
6	2031	1.19	1.19	-\$3,538,971	-\$795,825	-\$342,693	-\$41,792	\$0	-	\$0	-	-	-	-\$4,719,281	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
7	2032	1.23	1.23	-\$3,645,140	-\$819,700	-\$352,974	-\$43,046	\$0	-	\$0	-	-	-	-\$4,860,860	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
8	2033	1.27	1.27	-\$3,754,495	-\$844,291	-\$363,563	-\$44,337	\$0	-	\$0	-	-	-	-\$5,006,685	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
9	2034	1.30	1.30	-\$3,867,129	-\$869,619	-\$374,470	-\$45,667	\$0	-	\$0	-	-	-	-\$5,156,886	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
10	2035	1.34	1.34	-\$3,983,143	-\$895,708	-\$385,704	-\$47,037	\$0	\$28,222	\$0	-	-	\$0	-\$5,283,370	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	\$21,000	\$0	-	-	\$0	-\$3,931,324	
11	2036	1.38	1.38	-\$4,102,638	-\$922,579	-\$397,275	-\$48,448	\$0	-	\$0	-	-	-	-\$5,470,940	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
12	2037	1.43	1.43	-\$4,225,717	-\$950,257	-\$409,193	-\$49,902	\$0	-	\$0	-	-	-	-\$5,635,068	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
13	2038	1.47	1.47	-\$4,352,488	-\$978,764	-\$421,469	-\$51,399	\$0	-	\$0	-	-	-	-\$5,804,120	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
14	2039	1.51	1.51	-\$4,483,063	-\$1,008,127	-\$434,113	-\$52,941	\$0	-	\$0	-	-	-	-\$5,978,244	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
15	2040	1.56	1.56	-\$4,617,555	-\$1,038,371	-\$447,137	-\$54,529	\$0	-	\$0	\$0	\$0	-	-\$6,157,591	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	\$0	\$0	-	-\$3,952,324	
16	2041	1.60	1.60	-\$4,756,081	-\$1,069,522	-\$460,551	-\$56,165	\$0	-	\$0	-	-	-	-\$6,342,319	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
17	2042	1.65	1.65	-\$4,898,764	-\$1,101,608	-\$474,367	-\$57,850	\$0	-	\$0	-	-	-	-\$6,532,589	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
18	2043	1.70	1.70	-\$5,045,727	-\$1,134,656	-\$488,598	-\$59,585	\$0	-	\$0	-	-	-	-\$6,728,566	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
19	2044	1.75	1.75	-\$5,197,099	-\$1,168,696	-\$503,256	-\$61,373	\$0	-	\$0	-	-	-	-\$6,930,423	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	-	\$0	-	-	-	-\$3,952,324	
20	2045	1.81	1.81	-\$5,353,012	-\$1,203,757	-\$518,354	-\$63,214	\$0	\$37,928	\$0	-	-	\$0	-\$7,100,408	-\$2,963,833	-\$666,491	-\$287,000	-\$35,000	\$0	\$21,000	\$0	-	-	\$0	-\$3,931,324	
															-\$62,240,000	-\$14,000,000	-\$6,030,000	-\$740,000	\$0	\$40,000	\$0	\$0	\$0	\$0	\$0	-\$82,970,000