

# Appendix Q

## SMWF Cost Estimates

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### **ROTH EAST COST ESTIMATES**

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**NOTE: Population, waste, and cost projections are presented by calendar year in tables and graphs**

**Table T1: Deschutes County Waste Disposal Projections**

Year	Population	Avg. Annual Growth Rate, AAGR <sup>1</sup> (%)	Per Capita Generated <sup>2</sup> (pounds)	Waste Generated (tons)	Waste Recycled (tons)	Recovery Rate <sup>3</sup>	Waste Disposed (tons)
2020	198,253	2.3%	2,991	296,470	98,491	33.22%	197,979
2025	220,678	2.0%	3,050	336,534	107,691	32.00%	228,843
2030	240,446	1.7%	3,050	366,680	135,672	37.00%	231,009
2035	258,698	1.5%	3,050	394,514	165,696	42.00%	228,818
2040	275,905	1.3%	3,050	420,754	189,339	45.00%	231,415
2045	292,443	1.2%	3,050	445,976	200,689	45.00%	245,287
2050	308,894	1.1%	3,050	471,063	211,979	45.00%	259,085
2055	326,231	1.1%	3,050	497,503	223,876	45.00%	273,627
2060	344,542	1.1%	3,050	525,426	236,442	45.00%	288,984
2065	363,880	1.1%	3,050	554,917	249,713	45.00%	305,204
2070	384,303	1.1%	3,050	586,063	263,728	45.00%	322,334
2075	405,895	1.1%	3,050	618,990	278,546	45.00%	340,445
2080	428,716	1.1%	3,050	653,792	294,206	45.00%	359,586
2085	452,820	1.1%	3,050	690,551	310,748	45.00%	379,803
2090	478,279	1.1%	3,050	729,376	328,219	45.00%	401,157
2095	505,170	1.1%	3,050	770,384	346,673	45.00%	423,711
2100	533,572	1.1%	3,050	813,697	366,164	45.00%	447,533
2105	563,571	1.1%	3,050	859,446	386,751	45.00%	472,695
2110	595,257	1.1%	3,050	907,767	408,495	45.00%	499,272
2115	628,724	1.1%	3,050	958,805	431,462	45.00%	527,343
2120	664,073	1.1%	3,050	1,012,712	455,720	45.00%	556,992
2125	701,410	1.1%	3,050	1,069,650	481,343	45.00%	588,308
2130	740,845	1.1%	3,050	1,129,789	508,405	45.00%	621,384
2135	782,498	1.1%	3,050	1,193,310	536,989	45.00%	656,320
2140	826,493	1.1%	3,050	1,260,402	567,181	45.00%	693,221
2145	872,961	1.1%	3,050	1,331,266	599,070	45.00%	732,196
2150	922,042	1.1%	3,050	1,406,114	632,751	45.00%	773,363
2155	973,882	1.1%	3,050	1,485,171	668,327	45.00%	816,844
2160	1,028,637	1.1%	3,050	1,568,672	705,902	45.00%	862,770

10-Mar-26

**Sources:**

Deschutes County Solid Waste Management Plan (2019)  
 PSU 2020 Annual Population Report Tables (for 2018-2019 population)  
 Coordinated Population Forecast for Deschutes County (2022-2072) by Portland State University Population Research Center  
 2018-2021 Material Recovery and Waste Generation Rates Report  
 2022 Knott Landfill Tonnage Analysis provided by DCSW

**Assumptions:**

1. Continuation of 1.1% Average Annual Growth Rate (AAGR) from 2072
2. Per capita waste generation of 3,050 lbs/capita (2021) will remain steady through planning period
3. Recovery Rate will increase from 29% in 2022 at a rate of 1% per year, up to 45% in 2038, and then remain at 45%

Figure 1. Population Projections (2020-2160)

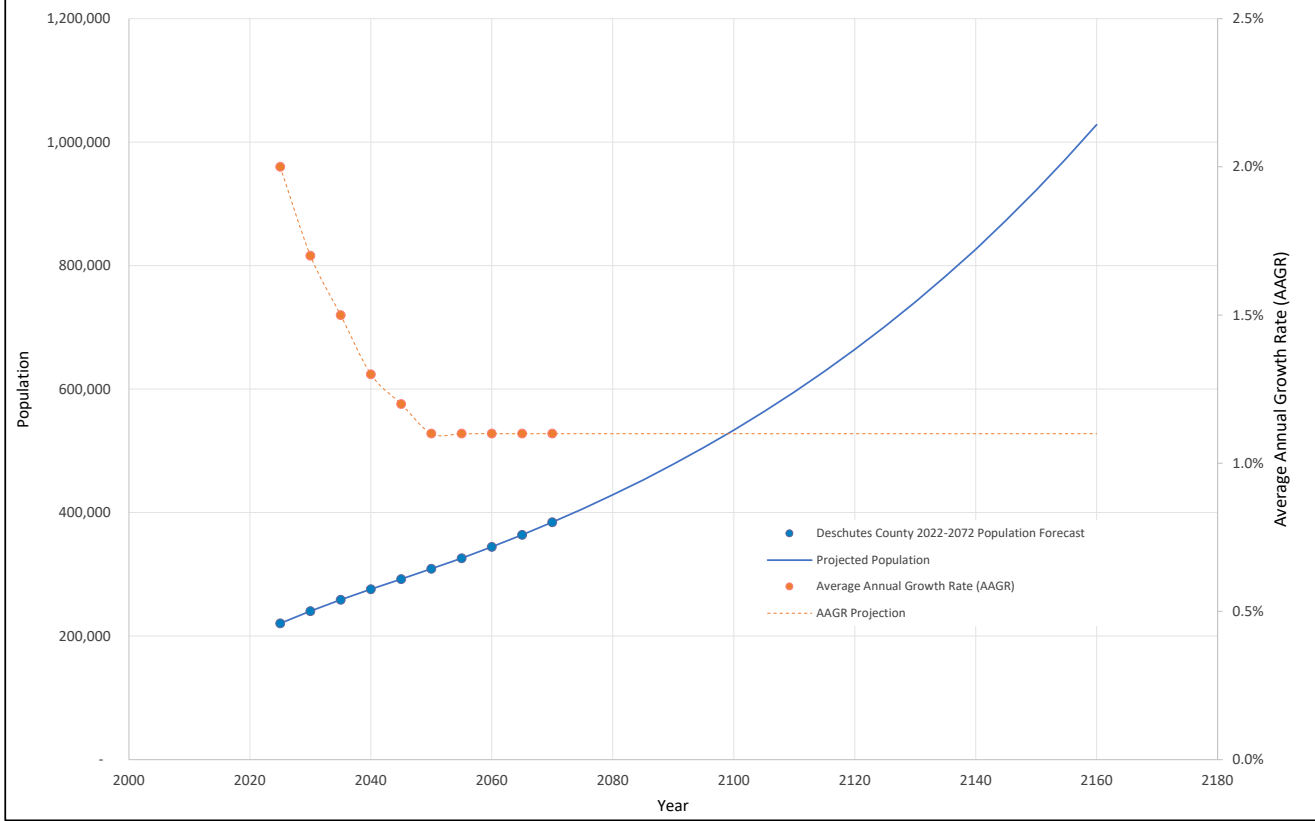


Figure 2. Deschutes County Waste Disposal Projections (2020-2160)

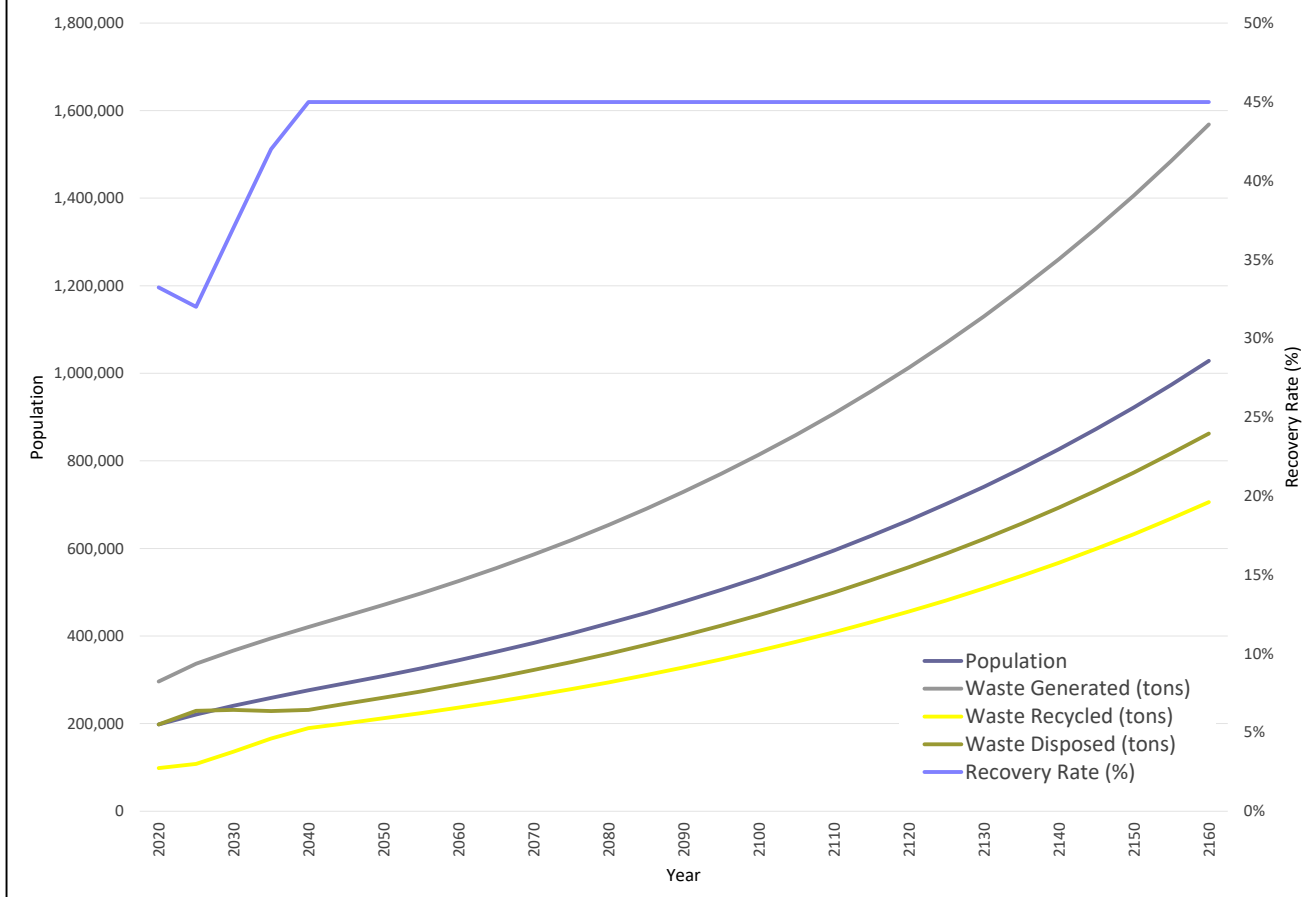
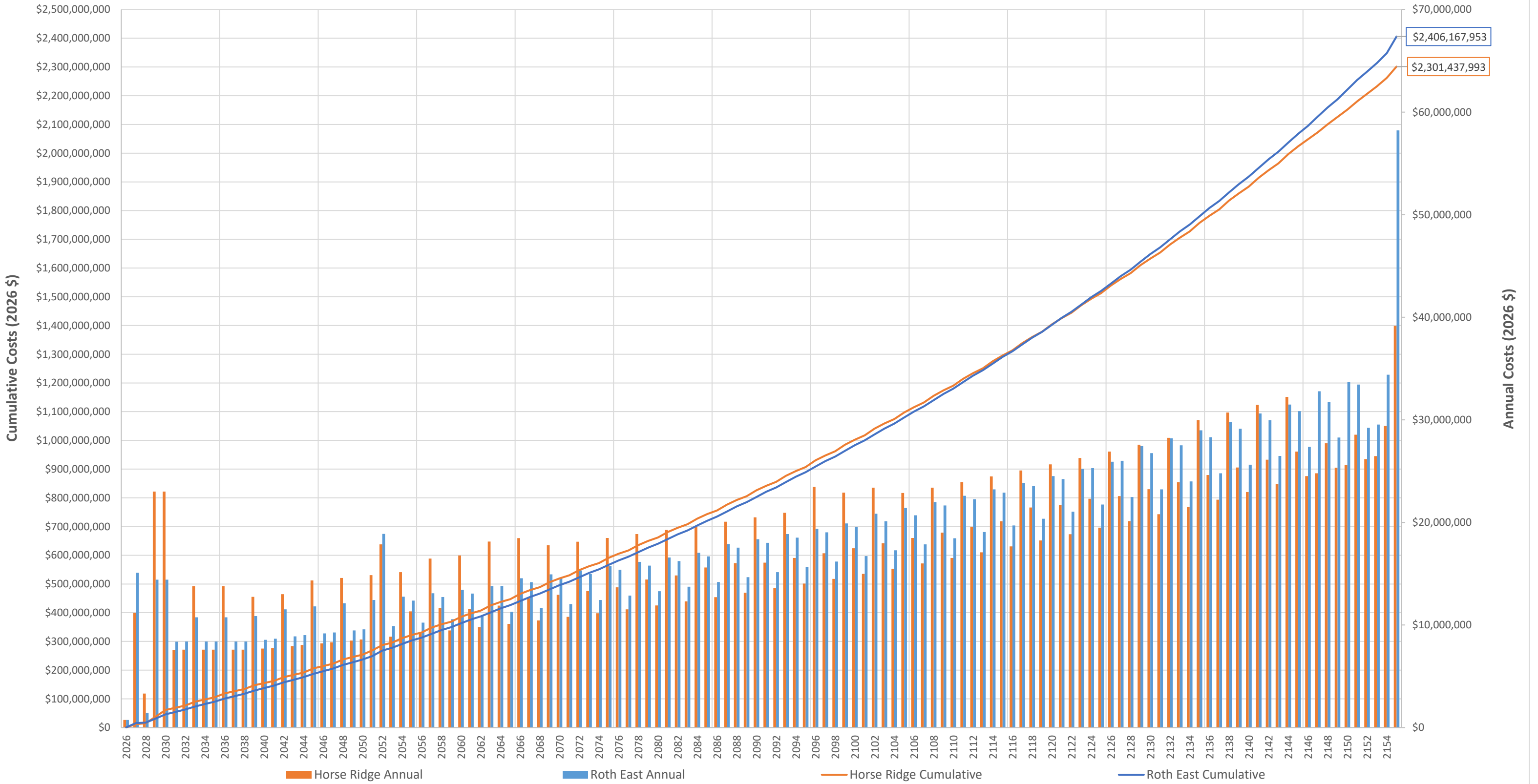


Figure 3. Cost Forecast Comparison of Final SWMF Sites



**Table 2: Projected Annual Revenue for Solid Waste Disposal**

Year	Deschutes County Population	Preliminary Waste Disposal Projection (tons/yr)	Projected Annual Cost for Deschutes County Solid Waste Disposal at		
			\$90 per ton (2026 \$)	\$100 per ton (2026 \$)	\$110 per ton (2026 \$)
			2031	244,534	231,207
2032	248,691	231,344	20,821,000	23,134,000	25,448,000
2033	252,918	231,420	20,828,000	23,142,000	25,456,000
2034	256,965	231,204	20,808,000	23,120,000	25,432,000
2035	258,698	228,818	20,594,000	22,882,000	25,170,000
2036	262,578	228,246	20,542,000	22,825,000	25,107,000
2037	266,517	227,605	20,484,000	22,761,000	25,037,000
2038	270,514	226,894	20,420,000	22,689,000	24,958,000
2039	274,302	230,070	20,706,000	23,007,000	25,308,000
2040	275,905	231,415	20,827,000	23,141,000	25,456,000
2041	279,491	234,423	21,098,000	23,442,000	25,787,000
2042	283,125	237,471	21,372,000	23,747,000	26,122,000
2043	286,805	240,558	21,650,000	24,056,000	26,461,000
2044	290,534	243,685	21,932,000	24,369,000	26,805,000
2045	292,443	245,287	22,076,000	24,529,000	26,982,000
2046	295,952	248,230	22,341,000	24,823,000	27,305,000
2047	298,937	250,734	22,566,000	25,073,000	27,581,000
2048	302,225	253,492	22,814,000	25,349,000	27,884,000
2049	305,550	256,280	23,065,000	25,628,000	28,191,000
2050	308,894	259,085	23,318,000	25,908,000	28,499,000
2051	312,292	261,935	23,574,000	26,193,000	28,813,000
2052	315,727	264,816	23,833,000	26,482,000	29,130,000
2053	319,200	267,729	24,096,000	26,773,000	29,450,000
2054	322,711	270,674	24,361,000	27,067,000	29,774,000
2055	326,231	273,627	24,626,000	27,363,000	30,099,000
2056	329,820	276,636	24,897,000	27,664,000	30,430,000
2057	333,448	279,679	25,171,000	27,968,000	30,765,000
2058	337,116	282,756	25,448,000	28,276,000	31,103,000
2059	340,824	285,866	25,728,000	28,587,000	31,445,000
2060	344,542	288,984	26,009,000	28,898,000	31,788,000
2061	348,332	292,163	26,295,000	29,216,000	32,138,000
2062	352,163	295,377	26,584,000	29,538,000	32,491,000
2063	356,037	298,626	26,876,000	29,863,000	32,849,000
2064	359,954	301,911	27,172,000	30,191,000	33,210,000
2065	363,880	305,204	27,468,000	30,520,000	33,572,000
2066	367,883	308,561	27,771,000	30,856,000	33,942,000
2067	371,929	311,956	28,076,000	31,196,000	34,315,000
2068	376,020	315,387	28,385,000	31,539,000	34,693,000
2069	380,157	318,856	28,697,000	31,886,000	35,074,000
2070	384,303	322,334	29,010,000	32,233,000	35,457,000
2071	388,531	325,880	29,329,000	32,588,000	35,847,000
2072	392,790	329,453	29,651,000	32,945,000	36,240,000
2073	397,111	333,077	29,977,000	33,308,000	36,638,000
2074	401,479	336,741	30,307,000	33,674,000	37,041,000
2075	405,895	340,445	30,640,000	34,044,000	37,449,000
2076	410,360	344,190	30,977,000	34,419,000	37,861,000
2077	414,874	347,976	31,318,000	34,798,000	38,277,000
2078	419,438	351,803	31,662,000	35,180,000	38,698,000
2079	424,052	355,673	32,011,000	35,567,000	39,124,000
2080	428,716	359,586	32,363,000	35,959,000	39,554,000
2081	433,432	363,541	32,719,000	36,354,000	39,990,000
2082	438,200	367,540	33,079,000	36,754,000	40,429,000
2083	443,020	371,583	33,442,000	37,158,000	40,874,000
2084	447,893	375,670	33,810,000	37,567,000	41,324,000
2085	452,820	379,803	34,182,000	37,980,000	41,778,000
2086	457,801	383,981	34,558,000	38,398,000	42,238,000
2087	462,837	388,204	34,938,000	38,820,000	42,702,000
2088	467,928	392,475	35,323,000	39,247,000	43,172,000
2089	473,075	396,792	35,711,000	39,679,000	43,647,000
2090	478,279	401,157	36,104,000	40,116,000	44,127,000
2091	483,540	405,569	36,501,000	40,557,000	44,613,000
2092	488,859	410,031	36,903,000	41,003,000	45,103,000
2093	494,237	414,541	37,309,000	41,454,000	45,600,000
2094	499,673	419,101	37,719,000	41,910,000	46,101,000
2095	505,170	423,711	38,134,000	42,371,000	46,608,000
2096	510,726	428,372	38,553,000	42,837,000	47,121,000
2097	516,344	433,084	38,978,000	43,308,000	47,639,000
2098	522,024	437,848	39,406,000	43,785,000	48,163,000

Year	Deschutes County Population	Preliminary Waste Disposal Projection (tons/yr)	Projected Annual Cost for Deschutes County Solid Waste Disposal at		
			\$90 per ton (2026 \$)	\$100 per ton (2026 \$)	\$110 per ton (2026 \$)
			2099	527,766	442,664
2100	533,572	447,533	40,278,000	44,753,000	49,229,000
2101	539,441	452,456	40,721,000	45,246,000	49,770,000
2102	545,375	457,433	41,169,000	45,743,000	50,318,000
2103	551,374	462,465	41,622,000	46,247,000	50,871,000
2104	557,439	467,552	42,080,000	46,755,000	51,431,000
2105	563,571	472,695	42,543,000	47,270,000	51,996,000
2106	569,770	477,895	43,011,000	47,789,000	52,568,000
2107	576,038	483,152	43,484,000	48,315,000	53,147,000
2108	582,374	488,466	43,962,000	48,847,000	53,731,000
2109	588,780	493,840	44,446,000	49,384,000	54,322,000
2110	595,257	499,272	44,934,000	49,927,000	54,920,000
2111	601,805	504,764	45,429,000	50,476,000	55,524,000
2112	608,425	510,316	45,928,000	51,032,000	56,135,000
2113	615,117	515,930	46,434,000	51,593,000	56,752,000
2114	621,884	521,605	46,944,000	52,160,000	57,377,000
2115	628,724	527,343	47,461,000	52,734,000	58,008,000
2116	635,640	533,143	47,983,000	53,314,000	58,646,000
2117	642,632	539,008	48,511,000	53,901,000	59,291,000
2118	649,701	544,937	49,044,000	54,494,000	59,943,000
2119	656,848	550,931	49,584,000	55,093,000	60,602,000
2120	664,073	556,992	50,129,000	55,699,000	61,269,000
2121	671,378	563,118	50,681,000	56,312,000	61,943,000
2122	678,763	569,313	51,238,000	56,931,000	62,624,000
2123	686,230	575,575	51,802,000	57,558,000	63,313,000
2124	693,778	581,907	52,372,000	58,191,000	64,010,000
2125	701,410	588,308	52,948,000	58,831,000	64,714,000
2126	709,125	594,779	53,530,000	59,478,000	65,426,000
2127	716,926	601,321	54,119,000	60,132,000	66,145,000
2128	724,812	607,936	54,714,000	60,794,000	66,873,000
2129	732,785	614,623	55,316,000	61,462,000	67,609,000
2130	740,845	621,384	55,925,000	62,138,000	68,352,000
2131	748,995	628,219	56,540,000	62,822,000	69,104,000
2132	757,234	635,130	57,162,000	63,513,000	69,864,000
2133	765,563	642,116	57,790,000	64,212,000	70,633,000
2134	773,984	649,179	58,426,000	64,918,000	71,410,000
2135	782,498	656,320	59,069,000	65,632,000	72,195,000
2136	791,106	663,540	59,719,000	66,354,000	72,989,000
2137	799,808	670,839	60,376,000	67,084,000	73,792,000
2138	808,606	678,218	61,040,000	67,822,000	74,604,000
2139	817,501	685,679	61,711,000	68,568,000	75,425,000
2140	826,493	693,221	62,390,000	69,322,000	76,254,000
2141	835,584	700,846	63,076,000	70,085,000	77,093,000
2142	844,776	708,556	63,770,000	70,856,000	77,941,000
2143	854,068	716,350	64,471,000	71,635,000	78,798,000
2144	863,463	724,230	65,181,000	72,423,000	79,665,000
2145	872,961	732,196	65,898,000	73,220,000	80,542,000
2146	882,564	740,250	66,623,000	74,025,000	81,428,000
2147	892,272	748,393	67,355,000	74,839,000	82,323,000
2148	902,087	756,625	68,096,000	75,663,000	83,229,000
2149	912,010	764,948	68,845,000	76,495,000	84,144,000
2150	922,042	773,363	69,603,000	77,336,000	85,070,000
2151	932,185	781,870	70,368,000	78,187,000	86,006,000
2152	942,439	790,470	71,142,000	79,047,000	86,952,000
2153	952,805	799,166	71,925,000	79,917,000	87,908,000
2154	963,286	807,956	72,716,000	80,796,000	88,875,000
2155	973,882	816,844	73,516,000	81,684,000	89,853,000
<b>2030-2155 Total</b>		<b>46,088,894</b>	<b>5,043,742,000</b>	<b>5,604,155,000</b>	<b>6,164,567,000</b>

**Table H3: Projected Landfill Volume and Area Requirements**

Year	Preliminary Waste Disposal Projection (tons/yr)	Landfill Volume Required				Construction Requirements	
		Refuse Bank Yards <sup>1</sup> (cy)	Daily and Intermediate Cover <sup>2</sup> (cy)	Gross Airspace (cy)	Cumulative Airspace (cy)	Lateral Expansion (Acre)	Cell Closure (Acre)
2030	-	-	-	-	-	24.0	-
2031	231,207	280,000	49,000	329,000	329,000	-	-
2032	231,344	280,000	49,000	329,000	658,000	-	-
2033	231,420	281,000	49,000	330,000	988,000	6.0	-
2034	231,204	280,000	49,000	329,000	1,317,000	-	-
2035	228,818	277,000	48,000	325,000	1,642,000	-	-
2036	228,246	277,000	48,000	325,000	1,967,000	6.0	-
2037	227,605	276,000	48,000	324,000	2,291,000	-	-
2038	226,894	275,000	48,000	323,000	2,614,000	-	-
2039	230,070	279,000	49,000	328,000	2,942,000	5.0	-
2040	231,415	281,000	49,000	330,000	3,272,000	-	-
2041	234,423	284,000	50,000	334,000	3,606,000	-	-
2042	237,471	288,000	50,000	338,000	3,944,000	5.0	-
2043	240,558	292,000	51,000	343,000	4,287,000	-	-
2044	243,685	295,000	52,000	347,000	4,634,000	-	-
2045	245,287	297,000	52,000	349,000	4,983,000	6.0	-
2046	248,230	301,000	53,000	354,000	5,337,000	-	-
2047	250,734	304,000	53,000	357,000	5,694,000	-	-
2048	253,492	307,000	54,000	361,000	6,055,000	6.0	-
2049	256,280	311,000	54,000	365,000	6,420,000	-	-
2050	259,085	314,000	55,000	369,000	6,789,000	-	-
2051	261,935	317,000	55,000	372,000	7,161,000	6.0	-
2052	264,816	321,000	56,000	377,000	7,538,000	-	24.0
2053	267,729	325,000	57,000	382,000	7,920,000	-	-
2054	270,674	328,000	57,000	385,000	8,305,000	6.0	-
2055	273,627	332,000	58,000	390,000	8,695,000	-	6.0
2056	276,636	335,000	59,000	394,000	9,089,000	-	-
2057	279,679	339,000	59,000	398,000	9,487,000	7.0	-
2058	282,756	343,000	60,000	403,000	9,890,000	-	6.0
2059	285,866	347,000	61,000	408,000	10,298,000	-	-
2060	288,984	350,000	61,000	411,000	10,709,000	7.0	-
2061	292,163	354,000	62,000	416,000	11,125,000	-	5.0
2062	295,377	358,000	63,000	421,000	11,546,000	-	-
2063	298,626	362,000	63,000	425,000	11,971,000	8.0	-
2064	301,911	366,000	64,000	430,000	12,401,000	-	5.0
2065	305,204	370,000	65,000	435,000	12,836,000	-	-
2066	308,561	374,000	65,000	439,000	13,275,000	8.0	-
2067	311,956	378,000	66,000	444,000	13,719,000	-	6.0
2068	315,387	382,000	67,000	449,000	14,168,000	-	-
2069	318,856	386,000	68,000	454,000	14,622,000	7.0	-
2070	322,334	391,000	68,000	459,000	15,081,000	-	6.0
2071	325,880	395,000	69,000	464,000	15,545,000	-	-
2072	329,453	399,000	70,000	469,000	16,014,000	7.0	-
2073	333,077	404,000	71,000	475,000	16,489,000	-	6.0
2074	336,741	408,000	71,000	479,000	16,968,000	-	-
2075	340,445	413,000	72,000	485,000	17,453,000	7.0	-
2076	344,190	417,000	73,000	490,000	17,943,000	-	6.0
2077	347,976	422,000	74,000	496,000	18,439,000	-	-
2078	351,803	426,000	75,000	501,000	18,940,000	7.0	-
2079	355,673	431,000	75,000	506,000	19,446,000	-	7.0
2080	359,586	436,000	76,000	512,000	19,958,000	-	-
2081	363,541	441,000	77,000	518,000	20,476,000	7.0	-
2082	367,540	446,000	78,000	524,000	21,000,000	-	7.0
2083	371,583	450,000	79,000	529,000	21,529,000	-	-
2084	375,670	455,000	80,000	535,000	22,064,000	7.0	-
2085	379,803	460,000	81,000	541,000	22,605,000	-	8.0
2086	383,981	465,000	81,000	546,000	23,151,000	-	-
2087	388,204	471,000	82,000	553,000	23,704,000	7.0	-
2088	392,475	476,000	83,000	559,000	24,263,000	-	8.0
2089	396,792	481,000	84,000	565,000	24,828,000	-	-
2090	401,157	486,000	85,000	571,000	25,399,000	7.0	-
2091	405,569	492,000	86,000	578,000	25,977,000	-	7.0
2092	410,031	497,000	87,000	584,000	26,561,000	-	-
2093	414,541	502,000	88,000	590,000	27,151,000	7.0	-
2094	419,101	508,000	89,000	597,000	27,748,000	-	7.0
2095	423,711	514,000	90,000	604,000	28,352,000	-	-

**Table H3: Projected Landfill Volume and Area Requirements**

Year	Preliminary Waste Disposal Projection (tons/yr)	Landfill Volume Required				Construction Requirements	
		Refuse Bank Yards <sup>1</sup> (cy)	Daily and Intermediate Cover <sup>2</sup> (cy)	Gross Airspace (cy)	Cumulative Airspace (cy)	Lateral Expansion (Acre)	Cell Closure (Acre)
2096	428,372	519,000	91,000	610,000	28,962,000	9.0	-
2097	433,084	525,000	92,000	617,000	29,579,000	-	7.0
2098	437,848	531,000	93,000	624,000	30,203,000	-	-
2099	442,664	537,000	94,000	631,000	30,834,000	8.0	-
2100	447,533	542,000	95,000	637,000	31,471,000	-	7.0
2101	452,456	548,000	96,000	644,000	32,115,000	-	-
2102	457,433	554,000	97,000	651,000	32,766,000	8.0	-
2103	462,465	561,000	98,000	659,000	33,425,000	-	7.0
2104	467,552	567,000	99,000	666,000	34,091,000	-	-
2105	472,695	573,000	100,000	673,000	34,764,000	7.0	-
2106	477,895	579,000	101,000	680,000	35,444,000	-	7.0
2107	483,152	586,000	103,000	689,000	36,133,000	-	-
2108	488,466	592,000	104,000	696,000	36,829,000	7.0	-
2109	493,840	599,000	105,000	704,000	37,533,000	-	7.0
2110	499,272	605,000	106,000	711,000	38,244,000	-	-
2111	504,764	612,000	107,000	719,000	38,963,000	7.0	-
2112	510,316	619,000	108,000	727,000	39,690,000	-	7.0
2113	515,930	625,000	109,000	734,000	40,424,000	-	-
2114	521,605	632,000	111,000	743,000	41,167,000	7.0	-
2115	527,343	639,000	112,000	751,000	41,918,000	-	7.0
2116	533,143	646,000	113,000	759,000	42,677,000	-	-
2117	539,008	653,000	114,000	767,000	43,444,000	7.0	-
2118	544,937	661,000	116,000	777,000	44,221,000	-	9.0
2119	550,931	668,000	117,000	785,000	45,006,000	-	-
2120	556,992	675,000	118,000	793,000	45,799,000	7.0	-
2121	563,118	683,000	120,000	803,000	46,602,000	-	8.0
2122	569,313	690,000	121,000	811,000	47,413,000	-	-
2123	575,575	698,000	122,000	820,000	48,233,000	7.0	-
2124	581,907	705,000	123,000	828,000	49,061,000	-	8.0
2125	588,308	713,000	125,000	838,000	49,899,000	-	-
2126	594,779	721,000	126,000	847,000	50,746,000	7.0	-
2127	601,321	729,000	128,000	857,000	51,603,000	-	7.0
2128	607,936	737,000	129,000	866,000	52,469,000	-	-
2129	614,623	745,000	130,000	875,000	53,344,000	7.0	-
2130	621,384	753,000	132,000	885,000	54,229,000	-	7.0
2131	628,219	761,000	133,000	894,000	55,123,000	-	-
2132	635,130	770,000	135,000	905,000	56,028,000	7.0	-
2133	642,116	778,000	136,000	914,000	56,942,000	-	7.0
2134	649,179	787,000	138,000	925,000	57,867,000	-	-
2135	656,320	796,000	139,000	935,000	58,802,000	8.0	-
2136	663,540	804,000	141,000	945,000	59,747,000	-	7.0
2137	670,839	813,000	142,000	955,000	60,702,000	-	-
2138	678,218	822,000	144,000	966,000	61,668,000	8.0	-
2139	685,679	831,000	145,000	976,000	62,644,000	-	7.0
2140	693,221	840,000	147,000	987,000	63,631,000	-	-
2141	700,846	850,000	149,000	999,000	64,630,000	8.0	-
2142	708,556	859,000	150,000	1,009,000	65,639,000	-	7.0
2143	716,350	868,000	152,000	1,020,000	66,659,000	-	-
2144	724,230	878,000	154,000	1,032,000	67,691,000	8.0	-
2145	732,196	888,000	155,000	1,043,000	68,734,000	-	7.0
2146	740,250	897,000	157,000	1,054,000	69,788,000	-	-
2147	748,393	907,000	159,000	1,066,000	70,854,000	-	-
2148	756,625	917,000	160,000	1,077,000	71,931,000	-	7.0
2149	764,948	927,000	162,000	1,089,000	73,020,000	-	-
2150	773,363	937,000	164,000	1,101,000	74,121,000	-	-
2151	781,870	948,000	166,000	1,114,000	75,235,000	-	7.0
2152	790,470	958,000	168,000	1,126,000	76,361,000	-	-
2153	799,166	969,000	170,000	1,139,000	77,500,000	-	-
2154	807,956	979,000	171,000	1,150,000	78,650,000	-	7.0
2155	816,844	990,000	173,000	1,163,000	79,813,000	-	32.0
<b>Total</b>	<b>56,041,556</b>	<b>67,928,000</b>	<b>11,885,000</b>	<b>79,813,000</b>		<b>290.0</b>	<b>290.0</b>

10-Mar-26

**Assumptions:**

1. Landfill density assumed to be 

1650
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 lbs per cubic yard air space consumed
2. Cover:Refuse airspace Ratio = 

17.5%
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 on a volumetric basis.

**Table H4: Liquid Management Systems (Stormwater & Leachate)**

Item	Unit	Quantity <sup>3</sup>	Unit Cost (2026 \$)	Estimated Cost (2026 \$)
Excavation and Embankment	CY	60,000	\$ 4.00	\$ 240,000
Rock Drilling, Blasting, Crushing (2"-0) <sup>1,2</sup>	CY	15,000	\$ 12.00	\$ 180,000
6-inch Soil Cushion Layer (1/4"-0)	CY	1,500	\$ 10.00	\$ 15,000
Lower Geosynthetic Clay Liner	SF	30,000	\$ 1.00	\$ 30,000
Geomembrane for Leak Detection (60-mil HDPE)	SF	30,000	\$ 0.90	\$ 27,000
Geonet Composite	SF	30,000	\$ 0.95	\$ 28,500
Lower Geotextile Separating Layer	SF	30,000	\$ 0.85	\$ 25,500
Upper Geosynthetic Clay Liner	SF	30,000	\$ 1.00	\$ 30,000
Primary Geomembrane (60-mil HDPE)	SF	90,000	\$ 0.90	\$ 81,000
16-oz Upper Geotextile Cushion	SF	90,000	\$ 0.85	\$ 76,500
12-inch Drainage Layer	CY	3,300	\$ 10.00	\$ 33,000
Pump Station	Lump Sum	1	\$ 200,000.00	\$ 200,000
Truck Loading Station	Lump Sum	1	\$ 100,000.00	\$ 100,000
Subtotal				\$ 1,066,500
Engineering and Administration (15%)				\$ 159,975
Contingencies (20%)				\$ 213,300
<b>Estimated Cost for Leachate System and Stormwater Pond</b>				<b>\$ 1,439,775</b>

3/10/2026

**Assumptions:**

1. 25% of the excavation volume for liquid management system will require rock drilling, blasting and crushing.
2. Rock Drilling, Blasting, Crushing cost assumes no contractor mining, just processing for County uses
3. Stormwater pond is 1.38 acres and the leachate pond is 0.68 acres. Total pond area is approximately 2 acres.
4. Leachate leak detection system includes a combination geomembrane/geonet below the primary composite liner.

**Table H5: Estimate Of Per Acre Cost for Landfill Cell Development**

Item	Unit	Quantity	Unit Cost (2026 \$)	Estimated Cost (2026 \$)
Excavation	CY	33,120	\$ 4.00	\$ 132,480
Rock Drilling, Blasting, Crushing (2"-0) <sup>1,2</sup>	CY	33,120	\$ 12.00	\$ 397,440
Embankment	CY	6,000	\$ 2.00	\$ 12,000
6-inch Soil Cushion Layer (1/4"-0)	CY	900	\$ 10.00	\$ 9,000
Geosynthetic Clay Liner	SF	48,000	\$ 1.00	\$ 48,000
Geomembrane (60-mil HDPE)	SF	48,000	\$ 0.90	\$ 43,200
Cushioning Geotextile	SF	12,000	\$ 0.85	\$ 10,200
Geonet Composite	SF	48,000	\$ 0.95	\$ 45,600
12-inch Drainage Layer	CY	1,600	\$ 10.00	\$ 16,000
Separating Geotextile	SF	36,000	\$ 0.85	\$ 30,600
8-inch Leachate Collection Pipe	LF	300	\$ 30.00	\$ 9,000
Landfill Gas Collection System	Lump Sum	1	\$ 10,000.00	\$ 10,000
Subtotal				\$ 763,520
Engineering and Administration (15%)				\$ 114,528
Contingencies (20%)				\$ 152,704
<b>Estimated Per Acre Cost Landfill Cell Development</b>				<b>\$ 1,030,752</b>

3/10/2026

**Assumptions:**

1. Approximately 60% of the excavation volume will require rock drilling, blasting and crushing.
2. Rock Drilling, Blasting, Crushing cost assumes no contractor mining, just processing for County uses

**Table H6: Estimate Of Per Acre Cost for Landfill Closure**

Item	Unit	Quantity	Unit Cost (2026 \$)	Estimated Cost (2026 \$)
Final Contouring and Grading	CY	5,000	\$ 4.00	\$ 20,000
Landfill Gas Collection System				
Landfill Gas Well	LF	100	\$ 150.00	\$ 15,000
Piping	LF	300	\$ 30.00	\$ 9,000
16-oz Geotextile Cushion	SF	48,000	\$ 0.85	\$ 40,800
Geosynthetic Clay Liner	SF	48,000	\$ 1.00	\$ 48,000
Geomembrane (60-mil HDPE)	SF	48,000	\$ 0.90	\$ 43,200
Geonet Composite Layer	SF	48,000	\$ 0.95	\$ 45,600
24-inch Top Soil/Soil Protective Layer	CY	3,500	\$ 15.00	\$ 52,500
Seed, Fertilizer and Mulch	SF	48,000	\$ 0.05	\$ 2,400
Cover System Irrigation	LF	800	\$ 5.00	\$ 4,000
Subtotal				\$ 280,500
Engineering and Administration (15%)				\$ 42,075
Contingencies (20%)				\$ 56,100
<b>Estimated Per Acre Cost for Cover System</b>				<b>\$ 378,675</b>

3/10/2026

**Table H7: Estimated Haul Costs from Transfer Stations**

Facility	2029 Waste Distribution (%)	2029 Waste Disposal Projected <sup>1</sup> (Tons)	Haul Trips Estimated <sup>2</sup> (Trips)	Round Trip Distance (Miles)	Round Trip Time (Hrs)	Total Haul Time (Hrs)	Annual Haul Cost <sup>3</sup> (\$)	Cost per Ton (\$/ton)
Knott Transfer Station	75.91%	175509	8775	35.3	1.13	9916	\$ 1,586,600	\$9.04
Negus Transfer Station	16.84%	38935	1947	73.5	2.23	4341	\$ 694,604	\$17.84
Southwest Transfer Station	5.42%	12531	627	73.3	1.73	1084	\$ 173,434	\$13.84
Northwest Transfer Station	1.74%	4023	201	78.3	2.07	416	\$ 66,621	\$16.56
Alfalfa Transfer Station	0.09%	208	10	38.1	1.07	11	\$ 1,781	\$8.56
<b>Total</b>		<b>231,207</b>	<b>11,560</b>	<b>299</b>	<b>8</b>	<b>15,769</b>	<b>\$ 2,523,040</b>	<b>\$10.91</b>

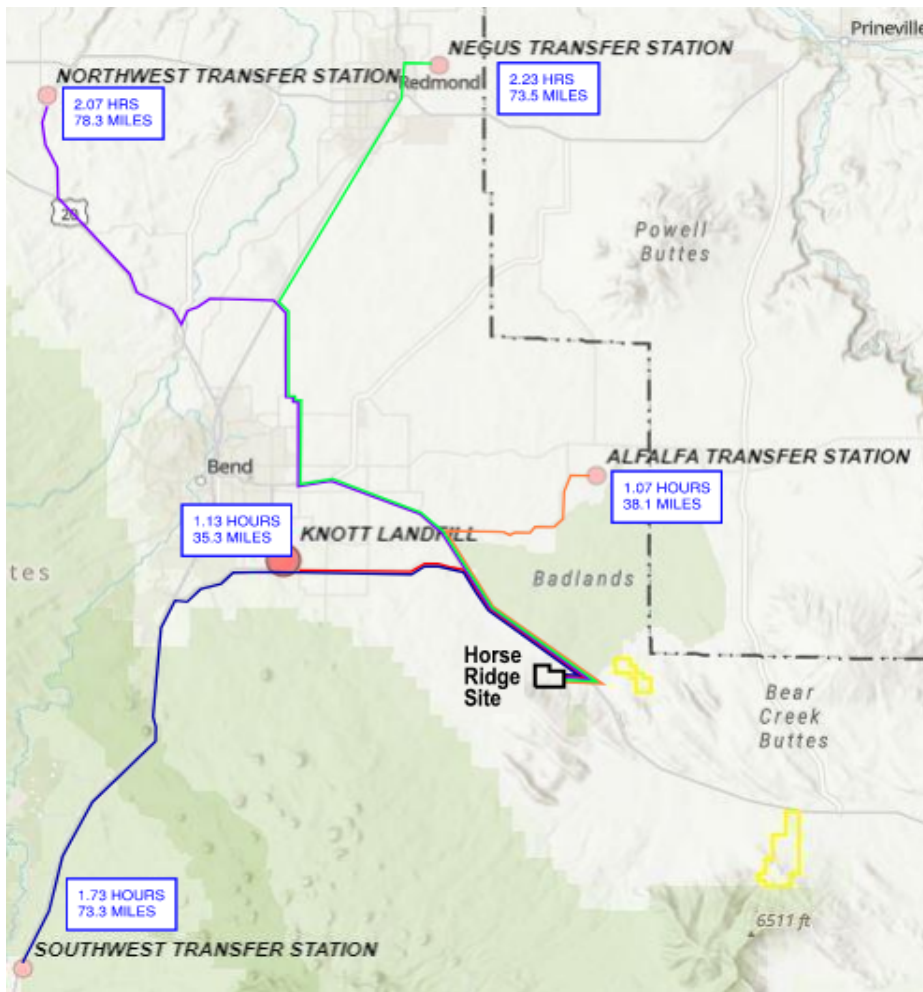
Assumptions:

- 2031 Projected Waste Disposal: 

231,207	tons
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- Assumed average payload: 

20	tons/haul trip
----	----------------
- Assumed haul cost per hour: 

\$ 160.00	per hour (incl. labor, equipment, depreciation, maintenance costs)
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- Round Trip estimation includes driveway (2 min & 1.1 mile, twice) and on-site time & distance (20 min & 3.25 miles)



**Table H8: Estimate Of Annual Operating Costs**

Item	Unit	Quantity	Unit Cost	Estimated Cost (2026 \$)
<b>Administrative Labor Costs</b>				
Operations Manager	Person	0.50	\$ 188,821	\$ 94,411
Compliance & Infrastructure Manager	Person	0.25	\$ 200,693	\$ 50,173
Management Analyst	Person	0.10	\$ 164,073	\$ 16,407
Engineering Asst III	Person	0.80	\$ 120,986	\$ 96,789
Director of Solid Waste	Person	0.13	\$ 241,545	\$ 30,193
Equipment Operator	Person	7	\$ 110,000	\$ 770,000
Landfill Attendant	Person	2	\$ 80,000	\$ 160,000
Office Assistant	Person	1	\$ 70,000	\$ 70,000
<b>Administrative Labor Subtotal</b>				<b>\$ 1,287,973</b>
<b>Equipment Owning and Operating Costs</b>				
Large Dozer (Cat D8N)	Hour	500	\$ 65.00	\$ 32,500
Compactor (Cat 826C)	Hour	2,900	\$ 65.00	\$ 188,500
Scraper (Cat 623E)	Hour	1,000	\$ 75.00	\$ 75,000
Front End Loader (Cat 966F)	Hour	2,800	\$ 50.00	\$ 140,000
Water Truck	Hour	520	\$ 50.00	\$ 26,000
Small Dozer (Cat D6D)	Hour	1,040	\$ 50.00	\$ 52,000
Utility Trucks	Mile	40,000	\$ 0.60	\$ 24,000
Yard Jockey	Hour	520	\$ 50.00	\$ 26,000
Landfill Infrastructure Repair and Maintenance	LS	1	\$ 50,000	\$ 50,000
Equipment Repair and Maintenance	LS	1	\$ 250,000	\$ 250,000
<b>Equipment O &amp; O Subtotal</b>				<b>\$ 864,000</b>
<b>Environmental Monitoring Costs</b>				
Groundwater Sampling and Analysis	Sample	16	\$ 2,000	\$ 32,000
Leachate Sampling and Analysis	Sample	12	\$ 2,000	\$ 24,000
Landfill Gas Sampling	Event	4	\$ 2,000	\$ 8,000
Stormwater Sampling and Analysis	Sample	4	\$ 2,000	\$ 8,000
Annual Reports	Each	1	\$ 30,000	\$ 30,000
Fees & Permits	LS	1	\$ 500,000	\$ 500,000
Miscellaneous Environmental Cost	LS	1	\$ 250,000	\$ 250,000
Natural Resource Mitigation O&M [1]	LS	1	\$ -	\$ 0
<b>Environmental Monitoring Subtotal</b>				<b>\$ 852,000</b>
<b>Haul Costs from:</b>				
Knott Transfer Station	Hour	9,916	\$ 160.00	\$ 1,586,600
Negus Transfer Station	Hour	4,341	\$ 160.00	\$ 694,604
Southwest Transfer Station	Hour	1,084	\$ 160.00	\$ 173,434
Northwest Transfer Station	Hour	416	\$ 160.00	\$ 66,621
Alfalfa Transfer Station	Hour	11	\$ 160.00	\$ 1,781
<b>Haul Cost Subtotal</b>				<b>\$ 2,523,040</b>
<b>Miscellaneous</b>				
Roadway Maintenance	LS			\$ 50,000
Site and Building Maintenance	LS			\$ 240,000
Office Supplies	LS			\$ 23,000
Insurance	LS			\$ 100,000
Engineering and Legal Services	LS			\$ 75,000
Gas/ Diesel / Oil	LS			\$ 280,000
Water (trucking cost from Knott) [2,3,4]	Trips	466	\$192.03	\$89,484
Utilities (power, internet, septic tank/drainfield)	LS			\$ 50,000
Code Abatement/ Enforcement	LS			\$ 200,000
Other	LS			\$ 200,000
<b>Miscellaneous Subtotal</b>				<b>\$ 1,307,484</b>
Annual Transfer To Equipment Fund (491614)				\$ 750,000
<b>Total Annual Operating Costs</b>				<b>\$ 7,584,497</b>
(used in Table H11 forecast)				
Annual Transfer To Cell Closure Fund (491611)				\$ 878,552
Annual Transfer To Post-Closure Fund (491612)				\$ 72,547
Annual Transfer To Cell Expansion Fund (491613)				\$ 2,193,424
<b>Total Annual Operating Costs Including Transfers</b>				<b>\$ 10,729,020</b>
(for DCSW budgeting)				

3/10/2026

**Assumptions:**

1. Natural Resource Mitigation O&M Annual cost is based on Natural Resource report estimates, see Appendix N.
2. Potable water demand at the landfill can be reduced by 25% below existing Knott water usage by suppressing dust with leachate (lined areas) and stormwater (unlined areas) to the extent feasible. □
3. Onsite water demands can be met by exempt well water production (5,000 gpd) during the winter months of Nov-Feb.
4. The timing of securing water rights is unknown, so use of 8,000 gallon water trucks from Knott is assumed (1.13 hr round trip @ 160/hr, \$15 Avion water cost assumed) in the interim to supplement the exempt well production and meet landfill water demands during the months of Mar-Oct.

**Table H9: Estimate Of Annual Operating Costs after Closure**

Item	Unit	Quantity	Unit Cost	Estimated Cost
Compliance & Infrastructure Manager	Person	0.40	\$ 200,693	\$ 80,277
				(2063 \$)
Environmental Monitoring				
Groundwater Sampling and Analysis	Sample	16	\$ 2,000	\$ 32,000
Leachate Sampling and Analysis	Sample	12	\$ 2,000	\$ 24,000
Landfill Gas Sampling	Event	4	\$ 2,000	\$ 8,000
Stormwater Sampling and Analysis	Sample	4	\$ 2,000	\$ 8,000
Annual Reports	Each	1	\$ 30,000	\$ 30,000
Environmental Monitoring Subtotal				\$ 102,000
Maintenance				
Roadway	LS			\$ 5,000
Final Cover System	LS			\$ 25,000
Leachate Management System	LS			\$ 20,000
Landfill Gas Management System	LS			\$ 15,000
Surface Water Management System	LS			\$ 10,000
Maintenance Subtotal				\$ 75,000
Miscellaneous				
Financial Assurance Provision	LS			\$ 25,000
Utilities	LS			\$ 10,000
Other	LS			\$ 10,000
Miscellaneous Subtotal				\$ 45,000
<b>Annual Operating Costs after Closure</b>				<b>\$ 302,277</b>

**Table H10: Cost Estimate for Initial Development of Landfill**

Description	Year	Unit	Quantity	Unit Cost	Estimated Cost (2026 \$)
<b>Pre-Development</b>					
Site Characterization Study	2026	LS			\$ 750,000
Land Acquisition	2027	AC	383	\$ 22,000	\$ 8,429,740
Permitting	2027-2028	LS			\$ 1,500,000
<b>Pre-Development Subtotal</b>					<b>\$ 10,679,740</b>
<b>Capital Expenditures</b>					
Support Facilities					
Offsite Road Improvements	2030	LS			\$ 7,055,168
Onsite Road Improvements	2030	LS			\$ 1,000,000
Landfill Office	2030	SF	2,000	\$ 500	\$ 1,000,000
Maintenance Shop	2030	SF	4,000	\$ 400	\$ 1,600,000
70-foot Truck Scales	2030	Each	2	\$ 200,000	\$ 400,000
Utilities					
Electrical Extension & Service	2030	LS			\$ 2,000,000
Onsite Electrical Distribution	2030	LS			\$ 100,000
Internet / Comms / Controls Systems	2030	LS			\$ 50,000
Water Supply, Storage, Distribution	2030	LS			\$ 1,550,000
Onsite Wastewater System	2030	LS			\$ 50,000
Initial Cell/Lagoon Construction					
Excavation	2030	CY	1,500,000	\$ 4	\$ 6,000,000
2-inch Minus Aggregate	2030	CY	600,000	\$ 12	\$ 7,200,000
Embankment	2030	CY	200,000	\$ 2	\$ 400,000
Liner/ Leachate Collection System	2030	Acre	24	\$ 221,600	\$ 5,318,400
Leachate & Stormwater Systems	2030	Each	1	\$ 1,066,500	\$ 1,066,500
Environmental Monitoring					
3-1100 Foot Groundwater Wells	2028	LF	3,300	\$ 200	\$ 660,000
Landfill Gas Probes	2028	LF	180	\$ 150	\$ 27,000
Natural Resource Mitigation Costs:					
Initial Mitigation Cost	2027	LS		\$ 2,000,000	\$ 2,000,000
<b>Capital Subtotal</b>					<b>\$ 37,477,068</b>
Engineering and Administration (15%)	2029-30				\$ 5,622,000
Contingencies (20%)	2030				\$ 7,495,000
<b>Total Initial Capital Cost</b>					<b>\$ 50,594,068</b>
<b>Initial Development Cost Schedule</b>					
2026					\$ 750,000
2027					\$ 11,179,740
2028					\$ 1,437,000
2029					\$ 2,811,000
2030					\$ 45,096,068
<b>Total</b>					<b>\$ 61,273,808</b>

3/10/2026

**Assumptions:**

1. Assuming direct construction cost for frontage road reconstruction and east Hwy 20 improvement per Appendix F.

**Table H11: Total Estimated Costs for Operation of MSW Landfill at Horse Ridge Site**

Year	Capital Costs			Annual Operating Costs (2026 \$)	Total Estimated Costs (2026 \$)
	Initial Development (2026 \$)	Lateral Expansion (2026 \$)	Closure (2026 \$)		
2026	750,000	-	-	-	750,000
2027	11,179,740	-	-	-	11,179,740
2028	3,311,000	-	-	-	3,311,000
2029	23,016,534	-	-	-	23,016,534
2030	23,016,534	-	-	-	23,016,534
2031	-	-	-	7,584,497	7,584,497
2032	-	-	-	7,590,998	7,590,998
2033	-	6,185,000	-	7,595,528	13,780,528
2034	-	-	-	7,598,019	7,598,019
2035	-	-	-	7,598,019	7,598,019
2036	-	6,185,000	-	7,598,019	13,783,019
2037	-	-	-	7,598,019	7,598,019
2038	-	-	-	7,598,019	7,598,019
2039	-	5,154,000	-	7,598,019	12,752,019
2040	-	-	-	7,704,391	7,704,391
2041	-	-	-	7,749,414	7,749,414
2042	-	5,154,000	-	7,850,156	13,004,156
2043	-	-	-	7,952,208	7,952,208
2044	-	-	-	8,055,587	8,055,587
2045	-	6,185,000	-	8,160,309	14,345,309
2046	-	-	-	8,213,938	8,213,938
2047	-	-	-	8,312,505	8,312,505
2048	-	6,185,000	-	8,396,337	14,581,337
2049	-	-	-	8,488,697	8,488,697
2050	-	-	-	8,582,072	8,582,072
2051	-	6,185,000	-	8,676,000	14,861,000
2052	-	-	9,088,000	8,771,436	17,859,436
2053	-	-	-	8,867,922	8,867,922
2054	-	6,185,000	-	8,965,469	15,150,469
2055	-	-	2,272,000	9,064,089	11,336,089
2056	-	-	-	9,162,958	9,162,958
2057	-	7,215,000	-	9,263,750	16,478,750
2058	-	-	2,272,000	9,365,652	11,637,652
2059	-	-	-	9,468,674	9,468,674
2060	-	7,215,000	-	9,572,829	16,787,829
2061	-	-	1,893,000	9,677,247	11,570,247
2062	-	-	-	9,783,697	9,783,697
2063	-	8,246,000	-	9,891,318	18,137,318
2064	-	-	1,893,000	10,000,122	11,893,122
2065	-	-	-	10,110,124	10,110,124
2066	-	8,246,000	-	10,220,402	18,466,402
2067	-	-	2,272,000	10,332,827	12,604,827
2068	-	-	-	10,446,488	10,446,488
2069	-	7,215,000	-	10,561,399	17,776,399
2070	-	-	2,272,000	10,677,575	12,949,575
2071	-	-	-	10,794,043	10,794,043
2072	-	7,215,000	-	10,912,777	18,127,777
2073	-	-	2,272,000	11,032,415	13,304,415
2074	-	-	-	11,153,772	11,153,772
2075	-	7,215,000	-	11,276,463	18,491,463
2076	-	-	2,272,000	11,400,504	13,672,504
2077	-	-	-	11,525,910	11,525,910
2078	-	7,215,000	-	11,652,695	18,867,695
2079	-	-	2,651,000	11,780,875	14,431,875
2080	-	-	-	11,910,464	11,910,464
2081	-	7,215,000	-	12,041,479	19,256,479
2082	-	-	2,651,000	12,173,936	14,824,936
2083	-	-	-	12,307,849	12,307,849
2084	-	7,215,000	-	12,443,235	19,658,235
2085	-	-	3,029,000	12,580,111	15,609,111
2086	-	-	-	12,718,492	12,718,492
2087	-	7,215,000	-	12,858,395	20,073,395
2088	-	-	3,029,000	12,999,838	16,028,838
2089	-	-	-	13,142,836	13,142,836
2090	-	7,215,000	-	13,287,407	20,502,407
2091	-	-	2,651,000	13,433,569	16,084,569
2092	-	-	-	13,581,338	13,581,338
2093	-	7,215,000	-	13,730,733	20,945,733
2094	-	-	2,651,000	13,881,771	16,532,771
2095	-	-	-	14,034,470	14,034,470
2096	-	9,277,000	-	14,188,849	23,465,849
2097	-	-	2,651,000	14,344,927	16,995,927
2098	-	-	-	14,502,721	14,502,721
2099	-	8,246,000	-	14,662,251	22,908,251
2100	-	-	2,651,000	14,823,536	17,474,536

Year	Capital Costs			Annual Operating Costs (2026 \$)	Total Estimated Costs (2026 \$)
	Initial Development (2026 \$)	Lateral Expansion (2026 \$)	Closure (2026 \$)		
2101	-	-	-	14,986,594	14,986,594
2102	-	8,246,000	-	15,151,447	23,397,447
2103	-	-	2,651,000	15,318,113	17,969,113
2104	-	-	-	15,486,612	15,486,612
2105	-	7,215,000	-	15,656,965	22,871,965
2106	-	-	2,651,000	15,829,191	18,480,191
2107	-	-	-	16,003,313	16,003,313
2108	-	7,215,000	-	16,179,349	23,394,349
2109	-	-	2,651,000	16,357,322	19,008,322
2110	-	-	-	16,537,252	16,537,252
2111	-	7,215,000	-	16,719,162	23,934,162
2112	-	-	2,651,000	16,903,073	19,554,073
2113	-	-	-	17,089,007	17,089,007
2114	-	7,215,000	-	17,276,986	24,491,986
2115	-	-	2,651,000	17,467,033	20,118,033
2116	-	-	-	17,659,170	17,659,170
2117	-	7,215,000	-	17,853,421	25,068,421
2118	-	-	3,408,000	18,049,809	21,457,809
2119	-	-	-	18,248,356	18,248,356
2120	-	7,215,000	-	18,449,088	25,664,088
2121	-	-	3,029,000	18,652,028	21,681,028
2122	-	-	-	18,857,201	18,857,201
2123	-	7,215,000	-	19,064,630	26,279,630
2124	-	-	3,029,000	19,274,341	22,303,341
2125	-	-	-	19,486,358	19,486,358
2126	-	7,215,000	-	19,700,708	26,915,708
2127	-	-	2,651,000	19,917,416	22,568,416
2128	-	-	-	20,136,508	20,136,508
2129	-	7,215,000	-	20,358,009	27,573,009
2130	-	-	2,651,000	20,581,947	23,232,947
2131	-	-	-	20,808,349	20,808,349
2132	-	7,215,000	-	21,037,241	28,252,241
2133	-	-	2,651,000	21,268,650	23,919,650
2134	-	-	-	21,502,606	21,502,606
2135	-	8,246,000	-	21,739,134	29,985,134
2136	-	-	2,651,000	21,978,265	24,629,265
2137	-	-	-	22,220,026	22,220,026
2138	-	8,246,000	-	22,464,446	30,710,446
2139	-	-	2,651,000	22,711,555	25,362,555
2140	-	-	-	22,961,382	22,961,382
2141	-	8,246,000	-	23,213,957	31,459,957
2142	-	-	2,651,000	23,469,311	26,120,311
2143	-	-	-	23,727,473	23,727,473
2144	-	8,246,000	-	23,988,475	32,234,475
2145	-	-	2,651,000	24,252,348	26,903,348
2146	-	-	-	24,519,124	24,519,124
2147	-	-	-	24,788,835	24,788,835
2148	-	-	2,651,000	25,061,512	27,712,512
2149	-	-	-	25,337,188	25,337,188
2150	-	-	-	25,615,898	25,615,898
2151	-	-	2,651,000	25,897,672	28,548,672
2152	-	-	-	26,182,547	26,182,547
2153	-	-	-	26,470,555	26,470,555
2154	-	-	2,651,000	26,761,731	29,412,731
2155	-	-	12,118,000	27,056,110	39,174,110
<b>Subtotals</b>	<b>61,273,808</b>	<b>274,178,000</b>	<b>109,819,000</b>	<b>1,856,167,185</b>	<b>2,301,437,993</b>
Post-Closure Operations (2156-2185) =				9,068,316	9,068,316
<b>Totals</b>				<b>1,865,235,501</b>	<b>2,310,506,309</b>
<b>31,722,000</b>				<b>Avg. Cost per Ton</b>	<b>\$41.23</b>
Initial Capital Costs and 2031-2060 Costs Financed with 30-yr Bond @ 4.75%				<b>30-yr Cost per Ton</b>	<b>\$58.60</b>

**Assumptions:**

- Lateral cell expansion assumed every 3 years, see Table 3.
- Average Cost Per ton divides total 125-yr lifespan costs by projected MSW disposal tonnage of roughly 56 Million Tons.

**Table R3: Projected Landfill Volume and Area Requirements**

Year	Preliminary Waste Disposal Projection (tons/yr)	Landfill Volume Required				Construction Requirements	
		Refuse Bank Yards <sup>1</sup> (cy)	Daily and Intermediate Cover <sup>2</sup> (cy)	Gross Airspace (cy)	Cumulative Airspace (cy)	Lateral Expansion	Cell Closure
						(Acre)	(Acre)
2030	-	-	-	-	-	24.0	-
2031	231,207	280,000	49,000	329,000	329,000	-	-
2032	231,344	280,000	49,000	329,000	658,000	-	-
2033	231,420	281,000	49,000	330,000	988,000	6.0	-
2034	231,204	280,000	49,000	329,000	1,317,000	-	-
2035	228,818	277,000	48,000	325,000	1,642,000	-	-
2036	228,246	277,000	48,000	325,000	1,967,000	6.0	-
2037	227,605	276,000	48,000	324,000	2,291,000	-	-
2038	226,894	275,000	48,000	323,000	2,614,000	-	-
2039	230,070	279,000	49,000	328,000	2,942,000	6.0	-
2040	231,415	281,000	49,000	330,000	3,272,000	-	-
2041	234,423	284,000	50,000	334,000	3,606,000	-	-
2042	237,471	288,000	50,000	338,000	3,944,000	7.0	-
2043	240,558	292,000	51,000	343,000	4,287,000	-	-
2044	243,685	295,000	52,000	347,000	4,634,000	-	-
2045	245,287	297,000	52,000	349,000	4,983,000	7.0	-
2046	248,230	301,000	53,000	354,000	5,337,000	-	-
2047	250,734	304,000	53,000	357,000	5,694,000	-	-
2048	253,492	307,000	54,000	361,000	6,055,000	7.0	-
2049	256,280	311,000	54,000	365,000	6,420,000	-	-
2050	259,085	314,000	55,000	369,000	6,789,000	-	-
2051	261,935	317,000	55,000	372,000	7,161,000	7.0	-
2052	264,816	321,000	56,000	377,000	7,538,000	-	24.0
2053	267,729	325,000	57,000	382,000	7,920,000	-	-
2054	270,674	328,000	57,000	385,000	8,305,000	7.0	-
2055	273,627	332,000	58,000	390,000	8,695,000	-	6.0
2056	276,636	335,000	59,000	394,000	9,089,000	-	-
2057	279,679	339,000	59,000	398,000	9,487,000	7.0	-
2058	282,756	343,000	60,000	403,000	9,890,000	-	6.0
2059	285,866	347,000	61,000	408,000	10,298,000	-	-
2060	288,984	350,000	61,000	411,000	10,709,000	7.0	-
2061	292,163	354,000	62,000	416,000	11,125,000	-	6.0
2062	295,377	358,000	63,000	421,000	11,546,000	-	-
2063	298,626	362,000	63,000	425,000	11,971,000	7.0	-
2064	301,911	366,000	64,000	430,000	12,401,000	-	7.0
2065	305,204	370,000	65,000	435,000	12,836,000	-	-
2066	308,561	374,000	65,000	439,000	13,275,000	8.0	-
2067	311,956	378,000	66,000	444,000	13,719,000	-	7.0
2068	315,387	382,000	67,000	449,000	14,168,000	-	-
2069	318,856	386,000	68,000	454,000	14,622,000	8.0	-
2070	322,334	391,000	68,000	459,000	15,081,000	-	7.0
2071	325,880	395,000	69,000	464,000	15,545,000	-	-
2072	329,453	399,000	70,000	469,000	16,014,000	8.0	-
2073	333,077	404,000	71,000	475,000	16,489,000	-	7.0
2074	336,741	408,000	71,000	479,000	16,968,000	-	-
2075	340,445	413,000	72,000	485,000	17,453,000	8.0	-
2076	344,190	417,000	73,000	490,000	17,943,000	-	7.0
2077	347,976	422,000	74,000	496,000	18,439,000	-	-
2078	351,803	426,000	75,000	501,000	18,940,000	8.0	-
2079	355,673	431,000	75,000	506,000	19,446,000	-	7.0
2080	359,586	436,000	76,000	512,000	19,958,000	-	-
2081	363,541	441,000	77,000	518,000	20,476,000	8.0	-
2082	367,540	446,000	78,000	524,000	21,000,000	-	7.0
2083	371,583	450,000	79,000	529,000	21,529,000	-	-
2084	375,670	455,000	80,000	535,000	22,064,000	8.0	-
2085	379,803	460,000	81,000	541,000	22,605,000	-	7.0
2086	383,981	465,000	81,000	546,000	23,151,000	-	-
2087	388,204	471,000	82,000	553,000	23,704,000	9.0	-
2088	392,475	476,000	83,000	559,000	24,263,000	-	8.0
2089	396,792	481,000	84,000	565,000	24,828,000	-	-
2090	401,157	486,000	85,000	571,000	25,399,000	9.0	-
2091	405,569	492,000	86,000	578,000	25,977,000	-	8.0
2092	410,031	497,000	87,000	584,000	26,561,000	-	-
2093	414,541	502,000	88,000	590,000	27,151,000	9.0	-
2094	419,101	508,000	89,000	597,000	27,748,000	-	8.0
2095	423,711	514,000	90,000	604,000	28,352,000	-	-

Year	Preliminary Waste Disposal Projection (tons/yr)	Landfill Volume Required				Construction Requirements	
		Refuse Bank Yards <sup>1</sup> (cy)	Daily and Intermediate Cover <sup>2</sup> (cy)	Gross Airspace (cy)	Cumulative Airspace (cy)	Lateral Expansion	Cell Closure
						(Acre)	(Acre)
2096	428,372	519,000	91,000	610,000	28,962,000	9.0	-
2097	433,084	525,000	92,000	617,000	29,579,000	-	8.0
2098	437,848	531,000	93,000	624,000	30,203,000	-	-
2099	442,664	537,000	94,000	631,000	30,834,000	9.0	-
2100	447,533	542,000	95,000	637,000	31,471,000	-	8.0
2101	452,456	548,000	96,000	644,000	32,115,000	-	-
2102	457,433	554,000	97,000	651,000	32,766,000	10.0	-
2103	462,465	561,000	98,000	659,000	33,425,000	-	8.0
2104	467,552	567,000	99,000	666,000	34,091,000	-	-
2105	472,695	573,000	100,000	673,000	34,764,000	10.0	-
2106	477,895	579,000	101,000	680,000	35,444,000	-	8.0
2107	483,152	586,000	103,000	689,000	36,133,000	-	-
2108	488,466	592,000	104,000	696,000	36,829,000	10.0	-
2109	493,840	599,000	105,000	704,000	37,533,000	-	9.0
2110	499,272	605,000	106,000	711,000	38,244,000	-	-
2111	504,764	612,000	107,000	719,000	38,963,000	10.0	-
2112	510,316	619,000	108,000	727,000	39,690,000	-	9.0
2113	515,930	625,000	109,000	734,000	40,424,000	-	-
2114	521,605	632,000	111,000	743,000	41,167,000	10.0	-
2115	527,343	639,000	112,000	751,000	41,918,000	-	9.0
2116	533,143	646,000	113,000	759,000	42,677,000	-	-
2117	539,008	653,000	114,000	767,000	43,444,000	10.0	-
2118	544,937	661,000	116,000	777,000	44,221,000	-	9.0
2119	550,931	668,000	117,000	785,000	45,006,000	-	-
2120	556,992	675,000	118,000	793,000	45,799,000	10.0	-
2121	563,118	683,000	120,000	803,000	46,602,000	-	9.0
2122	569,313	690,000	121,000	811,000	47,413,000	-	-
2123	575,575	698,000	122,000	820,000	48,233,000	10.0	-
2124	581,907	705,000	123,000	828,000	49,061,000	-	10.0
2125	588,308	713,000	125,000	838,000	49,899,000	-	-
2126	594,779	721,000	126,000	847,000	50,746,000	10.0	-
2127	601,321	729,000	128,000	857,000	51,603,000	-	10.0
2128	607,936	737,000	129,000	866,000	52,469,000	-	-
2129	614,623	745,000	130,000	875,000	53,344,000	12.0	-
2130	621,384	753,000	132,000	885,000	54,229,000	-	10.0
2131	628,219	761,000	133,000	894,000	55,123,000	-	-
2132	635,130	770,000	135,000	905,000	56,028,000	12.0	-
2133	642,116	778,000	136,000	914,000	56,942,000	-	10.0
2134	649,179	787,000	138,000	925,000	57,867,000	-	-
2135	656,320	796,000	139,000	935,000	58,802,000	12.0	-
2136	663,540	804,000	141,000	945,000	59,747,000	-	10.0
2137	670,839	813,000	142,000	955,000	60,702,000	-	-
2138	678,218	822,000	144,000	966,000	61,668,000	12.0	-
2139	685,679	831,000	145,000	976,000	62,644,000	-	10.0
2140	693,221	840,000	147,000	987,000	63,631,000	-	-
2141	700,846	850,000	149,000	999,000	64,630,000	12.0	-
2142	708,556	859,000	150,000	1,009,000	65,639,000	-	10.0
2143	716,350	868,000	152,000	1,020,000	66,659,000	-	-
2144	724,230	878,000	154,000	1,032,000	67,691,000	12.0	-
2145	732,196	888,000	155,000	1,043,000	68,734,000	-	10.0
2146	740,250	897,000	157,000	1,054,000	69,788,000	-	-
2147	748,393	907,000	159,000	1,066,000	70,854,000	13.0	-
2148	756,625	917,000	160,000	1,077,000	71,931,000	-	10.0
2149	764,948	927,000	162,000	1,089,000	73,020,000	-	-
2150	773,363	937,000	164,000	1,101,000	74,121,000	13.0	-
2151	781,870	948,000	166,000	1,114,000	75,235,000	-	12.0
2152	790,470	958,000	168,000	1,126,000	76,361,000	-	-
2153	799,166	969,000	170,000	1,139,000	77,500,000	-	-
2154	807,956	979,000	171,000	1,150,000	78,650,000	-	12.0
2155	816,844	990,000	173,000	1,163,000	79,813,000	-	74.0
<b>Total</b>	<b>56,041,556</b>	<b>67,928,000</b>	<b>11,885,000</b>	<b>79,813,000</b>		<b>387.0</b>	<b>387.0</b>

10-Mar-26

**Assumptions:**

1. Landfill density assumed to be 

1650
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 lbs of solid waste per cubic yard consumed.
2. Cover:Refuse Ratio equals 

17.5%
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 on a volumetric basis.

**Table R4: Liquid Management Systems (Stormwater & Leachate)**

Item	Unit	Quantity <sup>2</sup>	Unit Cost (2026 \$)	Estimated Cost (2026 \$)
Excavation and Embankment	CY	60,000	\$ 4.00	\$ 240,000
6-inch Soil Cushion Layer (1/4"-0)	CY	1,500	\$ 10.00	\$ 15,000
Lower Geosynthetic Clay Liner	SF	30,000	\$ 1.00	\$ 30,000
Geomembrane for Leak Detection (60-mil HDPE)	SF	30,000	\$ 0.90	\$ 27,000
Geonet Composite	SF	30,000	\$ 0.95	\$ 28,500
Lower Geotextile Separating Layer	SF	30,000	\$ 0.85	\$ 25,500
Upper Geosynthetic Clay Liner	SF	30,000	\$ 1.00	\$ 30,000
Primary Geomembrane (60-mil HDPE)	SF	90,000	\$ 0.90	\$ 81,000
16-oz Upper Geotextile Cushion	SF	90,000	\$ 0.85	\$ 76,500
12-inch Drainage Layer	CY	3,300	\$ 10.00	\$ 33,000
Pump Station	Lump Sum	1	\$ 200,000.00	\$ 200,000
Truck Loading Station	Lump Sum	1	\$ 100,000.00	\$ 100,000
Subtotal				\$ 886,500
Engineering and Administration (15%)				\$ 132,975
Contingencies (20%)				\$ 177,300
<b>Estimated Cost for Leachate System and Stormwater Pond</b>				<b>\$ 1,196,775</b>

3/10/2026

**Assumptions:**

1. Stormwater pond is 1.38 acres and the leachate pond is 0.68 acres. Total pond area is approximately 2 acres.
2. Leachate leak detection system includes a combination geomembrane/geonet below the primary composite liner.

**Table R5: Estimate Of Per Acre Cost for Landfill Cell Development**

Item	Unit	Quantity	Unit Cost (2026 \$)	Estimated Cost (2026 \$)
Rough Excavation <sup>1</sup>	CY	-	\$ 4.00	\$ 0
Finish Excavation <sup>2</sup>	CY	15,000	\$ 4.00	\$ 60,000
Embankment	CY	5,000	\$ 2.00	\$ 10,000
6-inch Soil Cushion Layer (1/4"-0)	CY	900	\$ 10.00	\$ 9,000
Geosynthetic Clay Liner	SF	48,000	\$ 1.00	\$ 48,000
Geomembrane (60-mil HDPE)	SF	48,000	\$ 0.90	\$ 43,200
Cushioning Geotextile	SF	12,000	\$ 0.85	\$ 10,200
Geonet Composite	SF	48,000	\$ 0.95	\$ 45,600
12-inch Drainage Layer	CY	1,600	\$ 10.00	\$ 16,000
Separating Geotextile	SF	36,000	\$ 0.85	\$ 30,600
8-inch Leachate Collection Pipe	LF	300	\$ 30.00	\$ 9,000
Landfill Gas Collection System	Lump Sum	1	\$ 10,000.00	\$ 10,000
Subtotal				\$ 291,600
Engineering and Administration (15%)				\$ 43,740
Contingencies (20%)				\$ 58,320
<b>Estimated Per Acre Cost Landfill Cell Development</b>				<b>\$ 393,660</b>

3/10/2026

Assumption:

1. Two thirds of cell excavation would occur as a part of daily cover borrow operations by DCSW staff.
2. One-third of total excavation if fine grading to cell subgrade design elevations.

**Table R6: Estimate Of Per Acre Cost for Landfill Closure**

Item	Unit	Quantity	Unit Cost R6	Estimated Cost (2026 \$)
Final Contouring and Grading	CY	5,000	\$ 4.00	\$ 20,000
Landfill Gas Collection System				
Landfill Gas Well	LF	100	\$ 150.00	\$ 15,000
Piping	LF	300	\$ 30.00	\$ 9,000
16-oz Geotextile Cushion	SF	48,000	\$ 0.85	\$ 40,800
Geosynthetic Clay Liner	SF	48,000	\$ 1.00	\$ 48,000
Geomembrane (60-mil HDPE)	SF	48,000	\$ 0.90	\$ 43,200
Geonet Composite Layer	SF	48,000	\$ 0.95	\$ 45,600
24-inch Top Soil/Soil Protective Layer	CY	3,500	\$ 15.00	\$ 52,500
Seed, Fertilizer and Mulch	SF	48,000	\$ 0.05	\$ 2,400
Cover System Irrigation	LF	800	\$ 5.00	\$ 4,000
Subtotal				\$ 280,500
Engineering and Administration (15%)				\$ 42,075
Contingencies (20%)				\$ 56,100
<b>Estimated Per Acre Cost for Cover System</b>				<b>\$ 378,675</b>

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**Table R7: Estimated Haul Costs from Transfer Stations**

Facility	2029 Waste Distribution (%)	2029 Waste Disposal Projected <sup>1</sup> (Tons)	Haul Trips Estimated <sup>2</sup> (Trips)	Round Trip Distance (Miles)	Round Trip Time (Hrs)	Total Haul Time (Hrs)	Annual Haul Cost <sup>3</sup> (\$)	Cost per Ton (\$/ton)
Knott Transfer Station	75.91%	175509	8775	52.9	1.53	13426	\$ 2,148,229	\$12.24
Negus Transfer Station	16.84%	38935	1947	91.1	2.63	5120	\$ 819,196	\$21.04
Southwest Transfer Station	5.42%	12531	627	90.9	2.13	1335	\$ 213,535	\$17.04
Northwest Transfer Station	1.74%	4023	201	95.9	2.47	497	\$ 79,494	\$19.76
Alfalfa Transfer Station	0.09%	208	10	55.7	1.47	15	\$ 2,447	\$11.76
<b>Total</b>		<b>231,207</b>	<b>11,560</b>	<b>387</b>	<b>10</b>	<b>20,393</b>	<b>\$ 3,262,901</b>	<b>\$14.11</b>

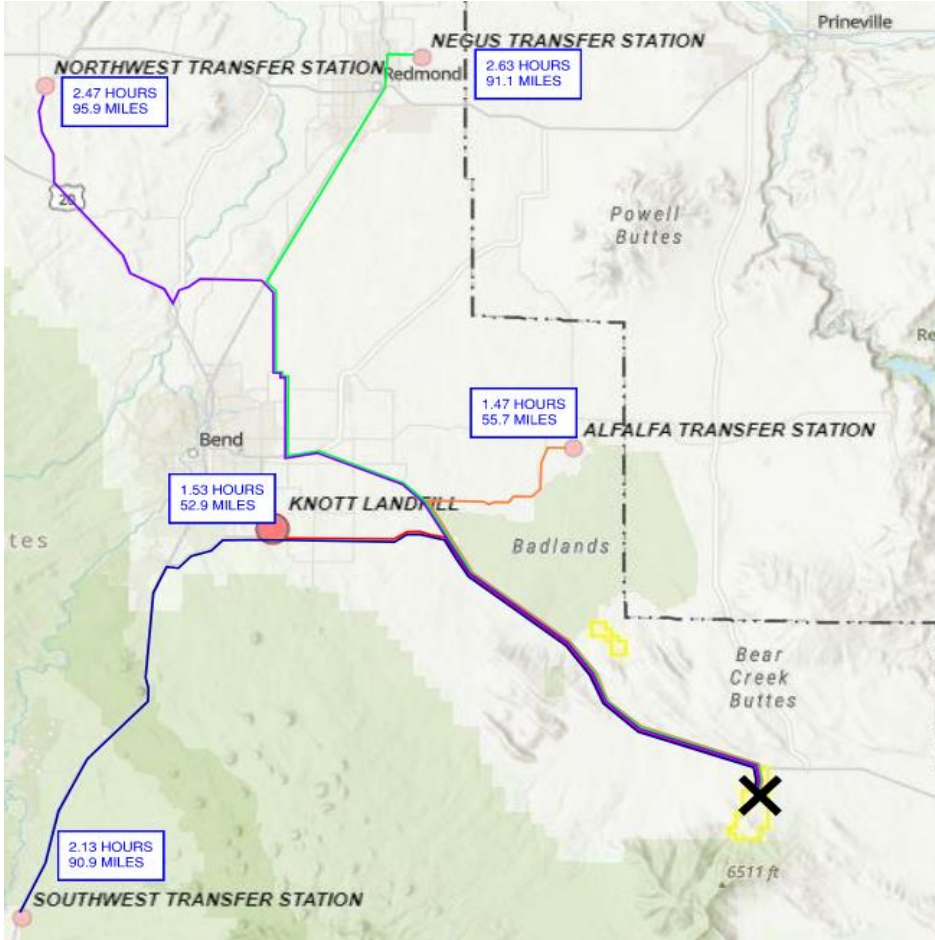
Assumptions:

- 2031 Projected Waste Disposal: 

231,207	tons
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- Assumed average payload: 

20	tons/haul trip
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- Assumed cost per hour: 

\$ 160.00	per hour (incl. labor, equipment, depreciation, maintenance costs)
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- Round Trip estimation includes driveway (5 min & 2.9 mile, twice) and on-site time & distance (20 min & 5 miles)



**Table R8: Estimate Of Annual Operating Costs**

Item	Unit	Quantity	Unit Cost	Estimated Cost (2023 \$)
<b>Administrative Labor Costs</b>				
Operations Manager	Person	0.50	\$ 188,821	\$ 94,411
Compliance & Infrastructure Manager	Person	0.25	\$ 200,693	\$ 50,173
Management Analyst	Person	0.10	\$ 164,073	\$ 16,407
Engineering Asst III	Person	0.80	\$ 120,986	\$ 96,789
Director of Solid Waste	Person	0.13	\$ 241,545	\$ 30,193
Equipment Operator	Person	7	\$ 110,000	\$ 770,000
Landfill Attendant	Person	2	\$ 80,000	\$ 160,000
Office Assistant	Person	1	\$ 70,000	\$ 70,000
<b>Administrative Labor Subtotal</b>				<b>\$ 1,287,973</b>
<b>Equipment Owning and Operating Costs</b>				
Large Dozer (Cat D8)	Hour	500	\$ 65.00	\$ 32,500
Compactor (Cat 836C)	Hour	2,900	\$ 65.00	\$ 188,500
Scraper (Cat 623)	Hour	1,000	\$ 75.00	\$ 75,000
Front End Loader (Cat 966F)	Hour	2,800	\$ 50.00	\$ 140,000
Water Truck	Hour	520	\$ 50.00	\$ 26,000
Small Dozer (Cat D6D)	Hour	1,040	\$ 50.00	\$ 52,000
Utility Trucks	Mile	40,000	\$ 0.60	\$ 24,000
Yard Jockey	Hour	520	\$ 50.00	\$ 26,000
Landfill Infrastructure Repair and Maintenance	LS	1	\$ 50,000	\$ 50,000
Equipment Repair and Maintenance	LS	1	\$ 250,000	\$ 250,000
<b>Equipment O &amp; O Subtotal</b>				<b>\$ 864,000</b>
<b>Environmental Monitoring Costs</b>				
Groundwater Sampling and Analysis	Sample	16	\$ 2,000	\$ 32,000
Leachate Sampling and Analysis	Sample	12	\$ 2,000	\$ 24,000
Landfill Gas Sampling	Event	4	\$ 2,000	\$ 8,000
Stormwater Sampling and Analysis	Sample	4	\$ 2,000	\$ 8,000
Annual Reports	Each	1	\$ 30,000	\$ 30,000
Fees & Permits	LS	1	\$ 500,000	\$ 500,000
Miscellaneous Environmental Cost	LS	1	\$ 250,000	\$ 250,000
Natural Resource Mitigation O&M <sup>1</sup>	LS	1	\$ 22,656	\$ 22,656
<b>Environmental Monitoring Subtotal</b>				<b>\$ 874,656</b>
<b>Haul Costs</b>				
Knott Transfer Station	Hour	13,426	\$ 160	\$ 2,148,229
Negus Transfer Station	Hour	5,120	\$ 160	\$ 819,196
Southwest Transfer Station	Hour	1,335	\$ 160	\$ 213,535
Northwest Transfer Station	Hour	497	\$ 160	\$ 79,494
Alfalfa Transfer Station	Hour	15	\$ 160	\$ 2,447
<b>Haul Cost Subtotal</b>				<b>\$ 3,262,901</b>
<b>Miscellaneous</b>				
Roadway Maintenance	LS			\$ 50,000
Site and Building Maintenance	LS			\$ 240,000
Office Supplies	LS			\$ 23,000
Insurance	LS			\$ 100,000
Engineering and Legal Services	LS			\$ 75,000
Gas/ Diesel / Oil	LS			\$ 280,000
Water (trucking cost from Knott) <sup>4,10,11</sup>	Trips	466	\$ 260.00	\$ 121,160
Utilities (power, internet, septic tank/drainfield)	LS			\$ 50,000
Code Abatement/ Enforcement	LS			\$ 200,000
Other	LS			\$ 200,000
<b>Miscellaneous Subtotal</b>				<b>\$ 1,339,160</b>
Annual Transfer To Equipment Fund (491614)				\$ 750,000
<b>Total Annual Operating Costs</b>				<b>\$ 8,378,690</b>
				(used in Table R11 forecast)
Annual Transfer To Cell Closure Fund (491611)				\$ 1,172,384
Annual Transfer To Post-Closure Fund (491612)				\$ 72,547
Annual Transfer To Cell Expansion Fund (491613)				\$ 1,143,240
<b>Total Annual Operating Costs Including Transfers</b>				<b>\$ 10,766,861</b>
				(for DCSW budgeting)

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**Assumptions:**

- Natural Resource Mitigation O&M Annual cost is based on \$1,132,848 over by 50 years, per Appendix N.
- Potable water demand at the landfill can be reduced by 25% below existing Knott water usage by suppressing dust with leachate (lined areas) and stormwater (unlined areas) to the extent feasible. □
- Onsite water demands can be met by exempt well water production (5,000 gpd) during the winter months of Nov-Feb. (1.53 hr round trip @ 160/hr, \$15 Avion water cost assumed) to supplement the exempt well production and meet landfill water demands during the months of Mar-Oct.

**Table R9: Estimate Of Annual Operating Costs after Closure**

Item	Unit	Quantity	Unit Cost	Estimated Cost
Environmental Compliance Technician	Person	0.40	\$ 200,693	(2026 \$) \$ 80,277
Environmental Monitoring				
Groundwater Sampling and Analysis	Sample	16	\$ 2,000	\$ 32,000
Leachate Sampling and Analysis	Sample	12	\$ 2,000	\$ 24,000
Landfill Gas Sampling	Event	4	\$ 2,000	\$ 8,000
Stormwater Sampling and Analysis	Sample	4	\$ 2,000	\$ 8,000
Annual Reports	Each	1	\$ 30,000	\$ 30,000
Environmental Monitoring Subtotal				\$ 102,000
Maintenance				
Roadway	LS			\$ 5,000
Final Cover System	LS			\$ 25,000
Leachate Management System	LS			\$ 20,000
Landfill Gas Management System	LS			\$ 15,000
Surface Water Management System	LS			\$ 10,000
Maintenance Subtotal				\$ 75,000
Miscellaneous				
Financial Assurance Provision	LS			\$ 25,000
Utilities	LS			\$ 10,000
Other	LS			\$ 10,000
Miscellaneous Subtotal				\$ 45,000
<b>Annual Operating Costs after Closure</b>				<b>\$ 302,277</b>

**Table R10: Cost Estimate for Initial Development of Landfill**

Description	Year	Unit	Quantity	Unit Cost	Estimated Cost (2026 \$)
<b>Pre-Development</b>					
Site Characterization Study	2026	LS			\$ 750,000
Land Acquisition	2027	LS			\$ 5,500,000
Permitting	2027-28	LS			\$ 1,500,000
<b>Pre-Development Subtotal</b>					<b>\$ 7,750,000</b>
<b>Capital Expenditures</b>					
Support Facilities					
Roads (paved driveway construction)	2029-2030	LF	6,336	\$ 190	\$ 1,203,840
Landfill Office	2029-2030	SF	2,000	\$ 500	\$ 1,000,000
Maintenance Shop	2029-2030	SF	4,000	\$ 400	\$ 1,600,000
70-foot Truck Scales	2029-2030	Each	2	\$ 200,000	\$ 400,000
Utilities					
Electrical Extension & Service		LS			\$ 1,000,000
Onsite Electrical Distribution	2029-2030	LS			\$ 100,000
Internet / Comms / Controls Systems	2029-2030	LS			\$ 50,000
Water Supply, Storage, Distribution	2029-2030	LS			\$ 1,090,000
Onsite Wastewater System	2029-2030	LS			\$ 50,000
Initial Cell/Lagoon Construction					
Excavation		CY	1,200,000	\$ 4	\$ 4,800,000
Embankment	2029-2030	CY	700,000	\$ 2	\$ 1,400,000
Liner/Leachate Collection System	2029-2030	Acre	24	\$ 221,600	\$ 5,318,400
Leachate & Stormwater Systems	2029-2030	Each	1	\$ 886,500	\$ 886,500
Environmental Monitoring					
3-1100 Foot Groundwater Wells	2028	LF	3,300	\$ 200	\$ 660,000
Landfill Gas Probes	2028	LF	180	\$ 150	\$ 27,000
Natural Resource Mitigation Costs:					
Initial Mitigation Cost	2027	LS		\$ 8,836,357.00	\$ 8,836,357
<b>Capital Subtotal</b>					<b>\$ 28,422,097</b>
Engineering and Administration (15%)	2029-2030				\$ 4,263,000
Contingencies (20%)	2029-2030				\$ 5,684,000
<b>Total Initial Capital Cost</b>					<b>\$ 38,369,097</b>
<b>Initial Development Cost Schedule</b>					
2026					\$ 750,000
2027					\$ 15,086,357
2028					\$ 1,437,000
2029					\$ 14,422,870
2030					\$ 14,422,870
<b>Total</b>					<b>\$ 46,119,097</b>

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**Assumptions:**

1. Acquisition price assumed for all Roth Holdings offered, including Roth East and Roth West taxlot.
2. Estimated road cost assumes 1.2 mile driveway option #3, see Transportation memo.
3. Estimated electrical costs include 3-phase power line extension, transformer, meter, and onsite distribution.
4. Estimated water costs include water right mitigation credits, new well, 0.2 MG water storage tank, and piping.

**Table R11: Total Estimated Costs for Operation of MSW Landfill at Roth East Site**

Year	Capital Costs			Annual Operating Costs (2026 \$)	Total Estimated Costs (2026 \$)
	Initial Development (2026 \$)	Lateral Expansion (2026 \$)	Closure (2026 \$)		
2026	750,000	-	-	-	750,000
2027	15,086,357	-	-	-	15,086,357
2028	1,437,000	-	-	-	1,437,000
2029	14,422,870	-	-	-	14,422,870
2030	14,422,870	-	-	-	14,422,870
2031	-	-	-	8,378,690	8,378,690
2032	-	-	-	8,383,690	8,383,690
2033	-	2,362,000	-	10,748,439	10,748,439
2034	-	-	-	8,386,439	8,386,439
2035	-	-	-	8,386,439	8,386,439
2036	-	2,362,000	-	8,386,439	10,748,439
2037	-	-	-	8,386,439	8,386,439
2038	-	-	-	8,386,439	8,386,439
2039	-	2,362,000	-	8,503,849	10,865,849
2040	-	-	-	8,553,543	8,553,543
2041	-	-	-	8,664,740	8,664,740
2042	-	2,756,000	-	8,777,381	11,533,381
2043	-	-	-	8,891,487	8,891,487
2044	-	-	-	9,007,076	9,007,076
2045	-	2,756,000	-	9,066,270	11,822,270
2046	-	-	-	9,175,065	9,175,065
2047	-	-	-	9,267,596	9,267,596
2048	-	2,756,000	-	9,369,539	12,125,539
2049	-	-	-	9,472,604	9,472,604
2050	-	-	-	9,576,279	9,576,279
2051	-	2,756,000	-	9,681,618	12,437,618
2052	-	-	9,088,000	9,788,115	18,876,115
2053	-	-	-	9,895,785	9,895,785
2054	-	2,756,000	-	10,004,638	12,760,638
2055	-	-	2,272,000	10,113,766	12,385,766
2056	-	-	-	10,225,018	10,225,018
2057	-	2,756,000	-	10,337,493	13,093,493
2058	-	-	2,272,000	10,451,205	12,723,205
2059	-	-	-	10,566,169	10,566,169
2060	-	2,756,000	-	10,681,422	13,437,422
2061	-	-	2,272,000	10,798,917	13,070,917
2062	-	-	-	10,917,706	10,917,706
2063	-	2,756,000	-	11,037,800	13,793,800
2064	-	-	2,651,000	11,159,216	13,810,216
2065	-	-	-	11,280,938	11,280,938
2066	-	3,149,000	-	11,405,028	14,554,028
2067	-	-	2,651,000	11,530,484	14,181,484
2068	-	-	-	11,657,319	11,657,319
2069	-	3,149,000	-	11,785,550	14,934,550
2070	-	-	2,651,000	11,914,103	14,565,103
2071	-	-	-	12,045,159	12,045,159
2072	-	3,149,000	-	12,177,211	15,326,211
2073	-	-	2,651,000	12,311,160	14,962,160
2074	-	-	-	12,446,583	12,446,583
2075	-	3,149,000	-	12,583,495	15,732,495
2076	-	-	2,651,000	12,721,914	15,372,914
2077	-	-	-	12,861,855	12,861,855
2078	-	3,149,000	-	13,003,335	16,152,335
2079	-	-	2,651,000	13,146,372	15,797,372
2080	-	-	-	13,290,982	13,290,982
2081	-	3,149,000	-	13,437,183	16,586,183
2082	-	-	2,651,000	13,584,992	16,235,992
2083	-	-	-	13,734,427	13,734,427
2084	-	3,149,000	-	13,885,505	17,034,505
2085	-	-	2,651,000	14,038,246	16,689,246
2086	-	-	-	14,192,667	14,192,667
2087	-	3,543,000	-	14,348,786	17,891,786
2088	-	-	3,029,000	14,506,623	17,535,623
2089	-	-	-	14,666,195	14,666,195
2090	-	3,543,000	-	14,827,524	18,370,524
2091	-	-	3,029,000	14,990,626	18,019,626
2092	-	-	-	15,155,523	15,155,523
2093	-	3,543,000	-	15,322,234	18,865,234
2094	-	-	3,029,000	15,490,779	18,519,779

Year	Capital Costs			Annual Operating Costs (2026 \$)	Total Estimated Costs (2026 \$)
	Initial Development (2026 \$)	Lateral Expansion (2026 \$)	Closure (2026 \$)		
2095	-	-	-	15,661,177	15,661,177
2096	-	3,543,000	-	15,833,450	19,376,450
2097	-	-	3,029,000	16,007,618	19,036,618
2098	-	-	-	16,183,702	16,183,702
2099	-	3,543,000	-	16,361,723	19,904,723
2100	-	-	3,029,000	16,541,702	19,570,702
2101	-	-	-	16,723,660	16,723,660
2102	-	3,937,000	-	16,907,621	20,844,621
2103	-	-	3,029,000	17,093,604	20,122,604
2104	-	-	-	17,281,634	17,281,634
2105	-	3,937,000	-	17,471,732	21,408,732
2106	-	-	3,029,000	17,663,921	20,692,921
2107	-	-	-	17,858,224	17,858,224
2108	-	3,937,000	-	18,054,665	21,991,665
2109	-	-	3,408,000	18,253,266	21,661,266
2110	-	-	-	18,454,052	18,454,052
2111	-	3,937,000	-	18,657,046	22,594,046
2112	-	-	3,408,000	18,862,274	22,270,274
2113	-	-	-	19,069,759	19,069,759
2114	-	3,937,000	-	19,279,526	23,216,526
2115	-	-	3,408,000	19,491,601	22,899,601
2116	-	-	-	19,706,009	19,706,009
2117	-	3,937,000	-	19,922,775	23,859,775
2118	-	-	3,408,000	20,141,925	23,549,925
2119	-	-	-	20,363,486	20,363,486
2120	-	3,937,000	-	20,587,485	24,524,485
2121	-	-	3,408,000	20,813,947	24,221,947
2122	-	-	-	21,042,901	21,042,901
2123	-	3,937,000	-	21,274,372	25,211,372
2124	-	-	3,787,000	21,508,393	25,295,391
2125	-	-	-	21,744,983	21,744,983
2126	-	3,937,000	-	21,984,178	25,921,178
2127	-	-	3,787,000	22,226,004	26,013,004
2128	-	-	-	22,470,490	22,470,490
2129	-	4,724,000	-	22,717,665	27,441,665
2130	-	-	3,787,000	22,967,559	26,754,559
2131	-	-	-	23,220,203	23,220,203
2132	-	4,724,000	-	23,475,625	28,199,625
2133	-	-	3,787,000	23,733,857	27,520,857
2134	-	-	-	23,994,929	23,994,929
2135	-	4,724,000	-	24,258,873	28,982,873
2136	-	-	3,787,000	24,525,721	28,312,721
2137	-	-	-	24,795,504	24,795,504
2138	-	4,724,000	-	25,068,254	29,792,254
2139	-	-	3,787,000	25,344,005	29,131,005
2140	-	-	-	25,622,789	25,622,789
2141	-	4,724,000	-	25,904,640	30,628,640
2142	-	-	3,787,000	26,189,591	29,976,591
2143	-	-	-	26,477,676	26,477,676
2144	-	4,724,000	-	26,768,931	31,492,931
2145	-	-	3,787,000	27,063,389	30,850,389
2146	-	-	-	27,361,086	27,361,086
2147	-	5,118,000	-	27,662,058	32,780,058
2148	-	-	3,787,000	27,966,341	31,753,341
2149	-	-	-	28,273,971	28,273,971
2150	-	5,118,000	-	28,584,984	33,702,984
2151	-	-	4,544,000	28,899,419	33,443,419
2152	-	-	-	29,217,313	29,217,313
2153	-	-	-	29,538,703	29,538,703
2154	-	-	4,544,000	29,863,629	34,407,629
2155	-	-	28,022,000	30,192,129	58,214,129
Subtotals	46,119,097	142,905,000	146,548,000	2,070,595,856	2,406,167,953
Post-Closure Operations (2156-2185) =				9,068,316	9,068,316
<b>Totals</b>				2,079,664,172	2,415,236,269
				<b>Avg. Cost per Ton</b>	<b>\$43.10</b>
Initial Capital Costs and 2031-2060 Costs Financed with 30-yr Bond @ 4.75%				<b>30-yr Cost per Ton</b>	<b>\$53.80</b>

**Assumptions:**

- Lateral cell expansion assumed every 3 years, see Table 3.
- Average Cost Per ton divides total 125-yr lifespan costs by projected MSW disposal tonnage of roughly 56 Million Tons.