

Appendix M

POPULATION, DEMAND, AND STORAGE PROJECTIONS

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**City of Gold Bar
Population, Demand, & Storage Projections**

Annual residential growth, %	2.0	
Annual commercial growth, %	2.0	
2013 ADD (gpd/ERU)	193	77 gallons per capita per day
MDD:ADD Factor	2.85	
2013 MDD (gpd/ERU)	550	
Fire flow req'd, gpm	1,500	
Fire flow duration, min	120	
Operating storage (Tanks 1 & 2)	99,781	17,818 gallons per ft 5.6 feet operating range
Well 4 capacity, gpm	200	
Well 3 capacity, gpm	175	
Nesting Allowed? (Y/N)	Y	

Projected values from 2001 Water System Plan
 Actual historical values
 Estimated value
Capacity Exceedence
 Planning Milestones

¹2010 data is from 2010 US Census, future projections assume a 2.0% population growth
²Calculated using Equation 5.1 of the DOH Water System Design Manual PHD=(ERU MDD/1440)*[(C)(ERU's)+ F]+18
³Calculated using Equation 9-3 of the DOH Water System Design Manual: SB_{TMS}=(2 days)*[(ADD)*(ERU)-1440*(Total Source - Largest Source)]
⁴Calculated using Equation 9-4 of the DOH Water System Design Manual: FSS=Required Fire Flow Rate* Fire Flow Duration
⁵Calculated using Equation 9-1 of the DOH Water System Design Manual ES=(PHD-Total Source)*150 minutes
⁶If Nesting is Allowed, Required Storage=Composite Storage+Equalizing Storage+Operating Storage

Year	City Population ¹	Water System Population	Service Area Build Out	Residential ERU's	Non-residential ERU's	Total ERU's	Annual Production		Demands						Water Right Instantaneous	Source Capacity	Required Storage							
							Volume ¹ Mgal	Water Rights Mgal	ADD ¹ gal/d	ADD gpm	MDD ¹ gal/d	MDD gpm	PHD gal/d	PHD ² gpm			Standby ³ gal	Fire ⁴ gal	Composite gal	Equalizing ⁵ gal	Operating gal	Required Storage ⁶ gal	Tanks 1&2 Storage gal	Available Storage gal
2009	2,394	2,394	4,000	737	43	780	85.9	109.5	235,331	163	554,410	385	835,759	580	560	375	156,000	180,000	180,000	30,808	99,781	310,589	374,200	668,032
2010	2,075	1,965	4,000	623	187	810	81.8	109.5	224,120	156	575,000	399	862,149	599	560	375	162,000	180,000	180,000	33,557	99,781	313,338	374,200	668,032
2011	2,117	2,004	4,000	623	187	810	68.5	109.5	187,166	130	519,000	360	862,149	599	560	375	162,000	180,000	180,000	33,557	99,781	313,338	374,200	668,032
2012	2,159	2,044	4,000	648	187	835	59.3	109.5	162,122	113	522,590	363	884,140	614	560	375	167,000	180,000	180,000	35,848	99,781	315,629	374,200	668,032
2013	2,202	2,085	4,000	645	186	831	58.5	109.5	160,307	111	456,875	317	880,622	612	560	375	166,200	180,000	180,000	35,481	99,781	315,262	374,200	668,032
2014	2,246	2,127	4,000	658	190	848	59.7	109.5	163,513	114	466,012	324	895,242	622	560	375	169,524	180,000	180,000	37,004	99,781	316,785	374,200	668,032
2015	2,291	2,170	4,000	671	194	865	60.9	109.5	166,783	116	475,332	330	910,154	632	560	375	172,914	180,000	180,000	38,558	99,781	318,339	374,200	668,032
2016	2,337	2,213	4,000	684	197	882	62.1	109.5	170,119	118	484,839	337	925,365	643	560	375	176,373	180,000	180,000	40,142	99,781	319,923	374,200	668,032
2017	2,384	2,257	4,000	698	201	900	63.3	109.5	173,521	121	494,536	343	940,880	653	560	375	179,900	180,000	180,000	41,758	99,781	321,539	374,200	668,032
2018	2,431	2,302	4,000	712	205	917	64.6	109.5	176,992	123	504,426	350	956,705	664	560	375	183,498	180,000	183,498	43,407	99,781	326,686	374,200	668,032
2019	2,480	2,348	4,000	726	209	936	65.9	109.5	180,532	125	514,515	357	972,846	676	560	375	187,168	180,000	187,168	45,088	99,781	332,037	374,200	668,032
2020	2,529	2,395	4,000	741	214	955	67.2	109.5	184,142	128	524,805	364	989,311	687	560	375	190,912	180,000	190,912	46,803	99,781	337,496	374,200	668,032
2021	2,580	2,443	4,000	756	218	974	68.6	109.5	187,825	130	535,301	372	1,006,105	699	560	375	194,730	180,000	194,730	48,553	99,781	343,063	374,200	668,032
2022	2,632	2,492	4,000	771	222	993	69.9	109.5	191,582	133	546,007	379	1,023,234	711	560	375	198,624	180,000	198,624	50,337	99,781	348,742	374,200	668,032
2023	2,684	2,542	4,000	786	227	1,013	71.3	109.5	195,413	136	556,927	387	1,040,706	723	560	375	202,597	180,000	202,597	52,157	99,781	354,535	374,200	668,032
2024	2,738	2,593	4,000	802	231	1,033	72.8	109.5	199,321	138	568,066	394	1,058,528	735	560	375	206,649	180,000	206,649	54,013	99,781	360,443	374,200	668,032
2025	2,793	2,645	4,000	818	236	1,054	74.2	109.5	203,308	141	579,427	402	1,076,706	748	560	375	210,782	180,000	210,782	55,907	99,781	366,469	374,200	668,032
2026	2,849	2,698	4,000	834	241	1,075	75.7	109.5	207,374	144	591,016	410	1,095,248	761	560	375	214,997	180,000	214,997	57,838	99,781	372,617	374,200	668,032
2027	2,906	2,751	4,000	851	245	1,096	77.2	109.5	211,521	147	602,836	419	1,114,160	774	560	375	219,297	180,000	219,297	59,808	99,781	378,887	374,200	668,032
2028	2,964	2,807	4,000	868	250	1,118	78.7	109.5	215,752	150	614,893	427	1,133,451	787	560	375	223,683	180,000	223,683	61,818	99,781	385,282	374,200	668,032
2029	3,023	2,863	4,000	885	255	1,141	80.3	109.5	220,067	153	627,191	436	1,153,128	801	560	375	228,157	180,000	228,157	63,867	99,781	391,805	374,200	668,032
2030	3,083	2,920	4,000	897	260	1,157	81.5	109.5	223,218	155	636,172	442	1,167,498	811	560	375	231,424	180,000	231,424	65,364	99,781	396,569	374,200	668,032
2031	3,145	2,978	4,000	908	266	1,174	82.6	109.5	226,433	157	645,333	448	1,182,155	821	560	375	234,757	180,000	234,757	66,891	99,781	401,429	374,200	668,032
2032	3,208	3,038	4,000	920	271	1,191	83.8	109.5	229,711	160	654,677	455	1,197,105	831	560	375	238,156	180,000	238,156	68,448	99,781	406,385	374,200	668,032
2033	3,272	3,099	4,000	932	276	1,208	85.1	109.5	233,055	162	664,208	461	1,212,355	842	560	375	241,623	180,000	241,623	70,037	99,781	411,441	374,200	668,032
2034	3,338	3,161	4,000	944	282	1,226	86.3	109.5	236,466	164	673,929	468	1,227,909	853	560	375	245,159	180,000	245,159	71,657	99,781	416,597	374,200	668,032
2035	3,404	3,224	4,001	956	288	1,244	87.6	109.5	239,946	167	683,845	475	1,243,775	864	560	375	248,766	180,000	248,766	73,310	99,781	421,857	374,200	668,032
2036	3,472	3,288	4,002	969	293	1,262	88.9	109.5	243,495	169	693,959	482	1,259,958	875	560	375	252,446	180,000	252,446	74,996	99,781	427,222	374,200	668,032
2037	3,542	3,354	4,003	982	299	1,281	90.2	109.5	247,114	172	704,276	489	1,276,464	886	560	375	256,199	180,000	256,199	76,715	99,781	432,695	374,200	668,032
2038	3,613	3,421	4,004	995	305	1,300	91.5	109.5	250,807	174	714,799	496	1,293,301	898	560	375	260,027	180,000	260,027	78,469	99,781	438,276	374,200	668,032
2039	3,685	3,490	4,005	1,008	311	1,320	92.9	109.5	254,573	177	725,532	504	1,310,474	910	560	375	263,931	180,000	263,931	80,258	99,781	443,970	374,200	668,032
2040	3,759	3,559	4,006	1,022	317	1,340	94.3	109.5	258,414	179	736,480	511	1,327,991	922	560	375	267,914	180,000	267,914	82,082	99,781	449,777	374,200	668,032
2041	3,834	3,631	4,007	1,036	324	1,360	95.8	109.5	262,332	182	747,647	519	1,345,858	935	560	375	271,976	180,000	271,976	83,944	99,781	455,701	374,200	668,032
2042	3,910	3,703	4,008	1,050	330	1,381	97.2	109.5	266,329	185	759,038	527	1,364,083	947	560	375	276,120	180,000	276,120	85,842	99,781	461,742	374,200	668,032
2043	3,989	3,777	4,009	1,065	337	1,402	98.7	109.5	270,406	188	770,656	535	1,382,672	960	560	375	280,346	180,000	280,346	87,778	99,781	467,905	374,200	668,032
2044	4,068	3,853	4,010	1,080	344	1,423	100.2	109.5	274,564	191	782,506	543	1,401,632	973	560	375	284,657	180,000	284,657	89,753	99,781	474,191	374,200	668,032
2045	4,150	3,930	4,011	1,095	351	1,445	101.8	109.5	278,805	194	794,594	552	1,420,972	987	560	375	289,054	180,000	289,054	91,768	99,781	480,603	374,200	668,032
2046	4,233	4,008	4,012	1,110	358	1,468	103.3	109.5	283,131	197	806,923	560	1,440,699	1,000	560	375	293,539	180,000	293,539	93,823	99,781	487,143	374,200	668,032
2047	4,317	4,089	4,013	1,126	365	1,491	105.0	109.5	287,543	200	819,499	569	1,460,820	1,014	560	375	298,114	180,000	298,114	95,919	99,781	493,814	374,200	668,032
2048	4,404	4,170	4,014	1,142	372	1,514	106.6	109.5	292,044	203	832,326	578	1,481,344	1,029	560	375	302,780	180,000	302,780	98,057	99,781	500,618	374,200	668,032
2049	4,492	4,254	4,015	1,158	379	1,538	108.3	109.5	296,635	206	845,410	587	1,502,278	1,043	560	375	307,540	180,000	307,540	100,237	99,781	507,558	374,200	668,032
2050	4,582	4,339	4,016	1,175	387	1,562	110	109.5	301,318	209	858,756	596	1,523,631	1,058	560	375	312,395	180,000	312,395	102,462	99,781	514,637	374,200	668,032
2055	5,059	4,790	4,021	1,264	427	1,691	119.1	109.5	326,174	227	929,595													

