

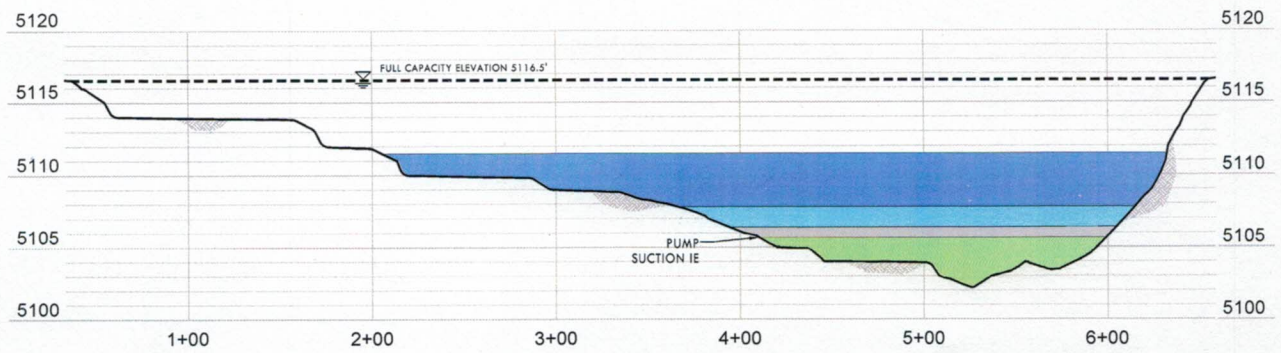
**Appendix E**  
Pond Analysis Worksheets and Pond Figures

Grizzly Ranch WRF Recycle Water Winter Impoundment Storage Capacity												
Irrigation Pond Volume November through March - 100-Year Adjusted Precipitation												
Time Period		Precip (in)	Evap (in)	Inflow (gallons)				Outflow (gallons)		Dead Storage	Total Pond Inflow (gallons)	Cumulative Pond Inflow (gallons)
Month	Days			Effluent	Precip	Runoff	Backwash	Effluent	Evap.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
Nov	30	4.59	0.00	74,300	152,048	70,133	7,800	0	0	69,900	374,181	374,181
Dec	31	6.75	0.00	62,200	223,600	80,150	7,800	0	0	69,900	443,650	817,831
Jan	31	7.48	0.00	59,200	247,782	0	7,800	0	0	69,900	384,682	1,202,513
Feb	28	6.32	0.00	38,800	209,356	21,759	7,800	0	0	69,900	347,615	1,550,128
Mar	31	5.81	0.00	62,000	192,462	80,129	7,800	0	0	69,900	412,291	1,962,418
Totals		30.95	0.00	296,500	1,025,247	252,171	39,000	0	0	69,900	1,962,418	

Emergency Pond Volume November through March - Average Annual Precipitation												
Time Period		Precip (in)	Evap (in)	Inflow (gallons)				Outflow (gallons)		Dead Storage	Total Pond Inflow (gallons)	Cumulative Pond Inflow (gallons)
Month	Days			Effluent	Precip	Runoff	Backwash	Effluent	Evap.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
Nov	30	2.70	0.00	74,300	89,440	27,976	7,800	0	0	69,900	269,416	269,416
Dec	31	3.97	0.00	62,200	131,510	42,414	7,800	0	0	69,900	313,824	583,240
Jan	31	4.40	0.00	59,200	145,754	0	7,800	0	0	69,900	282,654	865,894
Feb	28	3.72	0.00	38,800	123,228	12,779	7,800	0	0	69,900	252,507	1,118,401
Mar	31	3.42	0.00	62,000	113,291	47,318	7,800	0	0	69,900	300,309	1,418,710
Totals		18.21	0.00	296,500	603,223	130,487	39,000	0	0	69,900	1,418,699	

- (2) Precipitation data from Table 4.1 of the 2003 Title 22 Report.
- (3) Evaporation data from Western Regional Climate Center, Boca Station.
- (4) See Table 2 page 6 of the ROWD for projected wastewater flows.
- (5) Equals precipitation from (2) x 1.22 acre pond surface area converted to gallons.
- (6) See runoff worksheet.
- (7) Average water treatment backwash.
- (8) & (9) Assumes zero irrigation and evaporation between November 1 and March 31.
- (10) Volume of water in the pond, which is below pump suction.
- (11) Total volume of inflow (effluent + direct precipitation + stormwater runoff) into the pond including dead storage.

## GOLF COURSE IRRIGATION POND NOVEMBER THROUGH MARCH VOLUMES AVERAGE YEAR PRECIPITATION

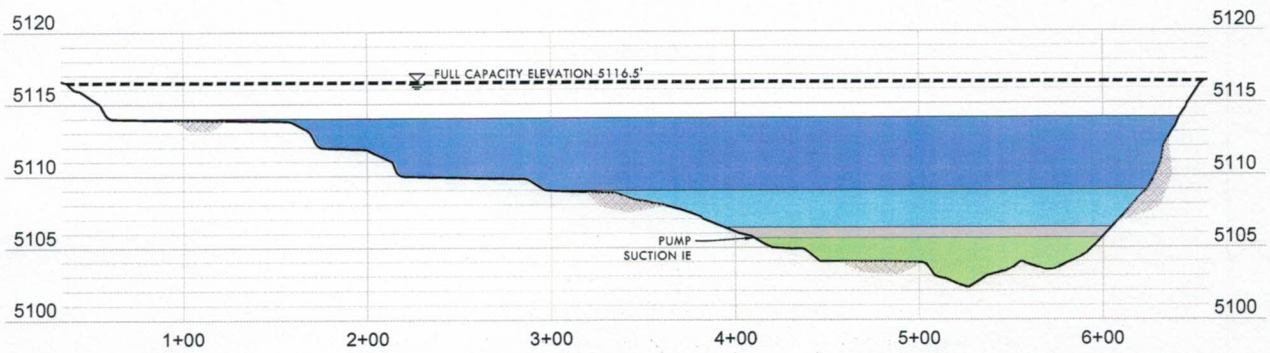


**LEGEND**

	603,200 GALLONS DIRECT PRECIPITATION
	130,500 GALLONS INDIRECT STORMWATER RUNOFF
	69,900 GALLONS UNAVAILABLE BELOW PUMP SUCTION
	39,000 GALLONS GALLONS FILTER BACKWASH
	1,415,400 GALLONS AVAILABLE FOR EFFLUENT STORAGE



## GOLF COURSE IRRIGATION POND NOVEMBER THROUGH MARCH VOLUMES 100-YEAR PRECIPITATION



LEGEND	
	1,025,300 GALLONS DIRECT PRECIPITATION
	252,200 GALLONS INDIRECT STORMWATER RUNOFF
	69,900 GALLONS UNAVAILABLE BELOW PUMP SUCTION
	39,000 GALLONS GALLONS FILTER BACKWASH
	871,600 GALLONS AVAILABLE FOR EFFLUENT STORAGE

**FIGURE F2**  
GRIZZLY RANCH CSD  
REPORT OF WASTE DISCHARGE  
JANUARY 2019



Indirect Stormwater Runoff Volume - 100-Year Adjusted Precipitation																				
Time Period		Precip (in)	Snow %	Adj Precip (in)	Storm 1			Storm 2			Storm 3			Storm 4			Storm 5			Monthly Total Runoff
Month	Days				i	Q	V (Gal)	i	Q	V (Gal)	i	Q	V (Gal)	i	Q	V (Gal)	i	Q	V (Gal)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(6)	(7)	(8)	(6)	(7)	(8)	(6)	(7)	(8)	(6)	(7)	(8)	(9)
Nov	30	4.59	70	1.38	0.14	0.11	4,835	0.25	0.20	8,635	0.30	0.76	32,832	0.69	0.55	23,831				70,133
Dec	31	6.75	75	1.69	0.15	0.12	5,181	0.30	0.24	10,362	0.32	0.76	32,832	0.48	0.38	16,578	0.44	0.35	15,197	80,150
Jan	31	7.48	100																	
Feb	28	6.32	90	0.63	0.12	0.10	4,145	0.14	0.11	4,835	0.16	0.13	5,526	0.21	0.17	7,253				21,759
Mar	31	5.81	60	2.32	0.58	0.46	20,032	0.58	0.46	20,032	0.58	0.46	20,032	0.58	0.46	20,032				80,129
Totals		30.95					34,193			43,864			91,222			67,695			15,197	252,171
Total Runoff (Gallons)		252,171																		

Indirect Stormwater Runoff Volume - Average Annual Precipitation																				
Time Period		Precip (in)	Snow %	Adj Precip (in)	Storm 1			Storm 2			Storm 3			Storm 4			Storm 5			Monthly Total Runoff
Month	Days				i	Q	V (Gal)	i	Q	V (Gal)	i	Q	V (Gal)	i	Q	V (Gal)	i	Q	V (Gal)	
Nov	30	2.70	70	0.81	0.05	0.04	1,727	0.30	0.24	10,362	0.46	0.37	15,888							27,976
Dec	31	3.97	75	0.99	0.39	0.31	13,470	0.50	0.47	20,304	0.10	0.20	8,640							42,414
Jan	31	4.40	100	0.00																0
Feb	28	3.72	90	0.37	0.17	0.14	5,872	0.10	0.08	3,454	0.10	0.08	3,454							12,779
Mar	31	3.42	60	1.37	0.17	0.14	5,872	0.50	0.40	17,269	0.40	0.32	13,815	0.30	0.24	10,362				47,318
Totals		18.21					26,940			51,389			41,797			10,362				130,487
Total Runoff (Gallons)		130,487																		

Runoff Basin Area = 7.37 acres (See Figure F3)  
 Pond WSA = 1.22 acres  
 Effective Runoff Area (A) = 6.15 acres  
 Runoff (Q) = C/A cfs  
 C = 0.13 runoff coefficient  
 Storm Duration = 12 hours

- (3) Precipitation data from Table 4.1 of the 2003 Title 22 Report.
- (4) Estimated percentage of precipitation that falls as snow, which dissipates via evapotranspiration.
- (5) Adjusted amount of precipitation that contributes to direct stormwater runoff.
- (6) Precipitation intensity for any given storm; number of storms per month approximated.
- (7) Stormwater runoff in CFS determined using the Rational Method.
- (8) Stormwater runoff in gallons that discharges into the irrigation pond.



# GOLF COURSE IRRIGATION POND



# STORMWATER RUNOFF BASIN