

DRAFT

ESTIMATED ANNUAL WATER DEMAND AND CONSUMPTIVE USE FOR HIGHLAND MEADOWS, SUMMIT ADVENTURE PARK, ET AL				
PROJECT COMPONENT	QUANTITY	ANNUAL DEMAND IN:		AVERAGE ANNUAL CONSUMPTIVE USE, AC FT
		GALLONS	AC FT	
HIGHLAND MEADOWS P.U.D.:				
1st Filing, Residential Units	16	2,045,400	6.28	0.63
2nd Filing, Residential Units	16	2,045,400	6.28	0.63
Sub Totals	32	4,090,800	12.56	1.26
ALPENSEE FILING 3:				
Commercial Area, Sq Ft	22,000	1,607,100	4.93	0.49
SUMMIT ADVENTURE PARK P. U. D.:				
Residential Units	72	9,204,300	28.25	2.82
Outdoor Recreation (a):				
Summer, Visitors	100	228,281	0.70	0.07
Fall, Visitors	50	114,141	0.35	0.04
Winter, Visitors	125	285,352	0.88	0.09
Spring, Visitors	25	57,070	0.18	0.02
Sub Totals		684,844	2.11	0.22
Irrigation Under Ditch (b), Acres	10	9,775,500	30.00	15.00
Net (c) Lake Evaporation, Acres	5	2,919,073	8.96	8.96
OTHER MISCELLANEOUS WELL DEMANDS?:				
Related Residential Units (d)	4	511,350	1.57	0.16
Farmers Korner Office, Sq. Ft.	1,000	36,525	0.11	0.01
Other Existing Res. Units (e)	3	383,513	1.18	0.12
Horses (f)	15	27,394	0.08	0.08
Barn, Sq. Ft. (f)	2,000	7,305	0.02	0.02
		966,087	2.96	0.39
SUMMARY:				
SUB TOTALS BY CATEGORY:				
WELLS		16,553,131	50.81	5.18
LAKE EVAPORATION		2,919,073	8.96	8.96
POSSIBLE IRRIGATION		9,775,500	30.00	15.00
TOTALS FOR PROJECTS		29,247,704	89.77	29.14
HISTORIC IRRIGATION CONSUMPTIVE USE CREDITS				40.00
UNALLOCATED CONSUMPTIVE USE CREDITS				10.86

ASSUMPTIONS:

- IN-BUILDING USES FOR WELLS, EXCEPT AS N YEAR-ROUND FULL OCCUPANCY
- 3.5 PEOPLE PER UNIT
- 100 GALLONS PER PERSON PER RESIDENTIAL U
- 10% ASSUMED IN-BUILDING CONSUMPTIVE USE
- 32 INCHES OF TOTAL LAKE EVAPORATION PER
- 15 INCHES OF PRECIPITATION PER YEAR
- 70% CREDIT FOR EFFECTIVENESS OF PRECIPITAT
- 1.5 AC FT / ACRE CONSUMPTIVE USE FOR IRRIGA
- 50% FLOOD IRRIGATION EFFICIENCY
- 325,850 GALLONS PER ACRE FOOT
- 0.2 GAL/SQ FT/DAY FOR COMMERCIAL DEMAND
- 25 GALLONS PER DAY FOR PER VISITOR
- 365.25 DAYS PER YEAR
- 5 GALLONS PER HORSE PER DAY
- 0.01 GAL/SQ FT / DAY FOR BARN
- 0.1 GAL/SQ FT/DAY FOR OFFICE SPACE
- 0 ROUNDING CONSTANT FOR GALLONS
- 2 ROUNDING CONSTANT FOR ACRE FEET

- (a) EACH SEASON IS 1/4 OF A YEAR
- (b) FLOOD IRRIGATION UNDER BLUE DANUBE DITCH
- (c) TOTAL EVAPORATION LESS "EFFECTIVE" PRECIPIT
- (d) PRIVATE PARTIES RELATED TO LARRY SMITH
- (e) OTHER EXISTING BUT UNRELATED PARTIES
- (f) HORSES AND BARN ASSUMED TO BE 100% DEPLET

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FARMERS KORNER DEVELOPMENT WATER USE ASSUMPTIONS

INSIDE USES

Indoor Residential Uses:	
Highland Meadows:	3.5 persons per unit
Alpensee 3:	2 persons per unit
Henriksen:	3.5 persons
All:	100 gpcd
Indoor Commercial Uses:	0.175 gal/sq ft/day

OUTSIDE USES

Irrigated Acreage:	
Highland Meadows:	3,000 sq ft/unit start-up with 2.07 acre limit incl. common areas
Alpensee 3:	1,000 sq ft/unit permanent
Henriksen:	1.14 acres
	1.6 acres
Irrigation Requirement:	
Farmers Korner:	5 inches per year
Henriksen:	1.45 ac-ft/ac/yr
Stockwatering:	12 gal/head/day
	10 horse limit
Miscellaneous Outside Uses:	200 gals/unit/month (800 gals/yr/unit)

EVAPORATION RATES (NET)

Month	Rate (af/ac)
Jan	0
Feb	0
Mar	0.04
Apr	0.11
May	0.2
Jun	0.3

Month	Rate (af/ac)
Jul	0.25
Aug	0.18
Sep	0.18
Oct	0.11
Nov	0.01
Dec	0
Total	1.38

Table 1 - Revised
Farmer's Korner

Summary of Demands and Consumptive Use - Phase II without Henriksen Property
(values in acre-feet)

Start-Up Irrigation Scenario

Month	Highland Meadows			Alpensee 3			Total Demand	Total CU	Phase II Totals Demand	Phase II Totals CU
	Irrigation Demand	CU	Misc. Out. Uses	Commercial Demand	Residential Demand	Irrigation Demand				
Jan	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Feb	0	0	0	0.376	0.019	0.137	0	0.513	0.513	0.026
Mar	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Apr	0	0	0	0.403	0.020	0.147	0	0.550	0.550	0.028
May	0.22	0.22	0.02	0.416	0.021	0.152	0.120	0.688	0.924	0.384
Jun	0.22	0.22	0.02	0.403	0.020	0.147	0.120	0.670	0.905	0.383
Jul	0.22	0.22	0.02	0.416	0.021	0.152	0.120	0.688	0.924	0.384
Aug	0.22	0.22	0.02	0.416	0.021	0.152	0.120	0.688	0.924	0.384
Sep	0	0	0	0.403	0.020	0.147	0	0.550	0.550	0.028
Oct	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Nov	0	0	0	0.403	0.020	0.147	0	0.550	0.550	0.028
Dec	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Total	0.86	0.86	0.08	4.901	0.245	1.792	0.480	7.173	8.114	1.756

Permanent Irrigation Scenario

Month	Highland Meadows			Alpensee 3			Total Demand	Total CU	Phase II Totals Demand	Phase II Totals CU
	Irrigation Demand	CU	Misc. Out. Uses	Commercial Demand	Residential Demand	Irrigation Demand				
Jan	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Feb	0	0	0	0.376	0.019	0.137	0	0.513	0.513	0.026
Mar	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Apr	0	0	0	0.403	0.020	0.147	0	0.550	0.550	0.028
May	0.07	0.07	0.02	0.416	0.021	0.152	0.120	0.688	0.780	0.240
Jun	0.07	0.07	0.02	0.403	0.020	0.147	0.120	0.670	0.762	0.239
Jul	0.07	0.07	0.02	0.416	0.021	0.152	0.120	0.688	0.780	0.240
Aug	0.07	0.07	0.02	0.416	0.021	0.152	0.120	0.688	0.780	0.240
Sep	0	0	0	0.403	0.020	0.147	0	0.550	0.550	0.028
Oct	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Nov	0	0	0	0.403	0.020	0.147	0	0.550	0.550	0.028
Dec	0	0	0	0.416	0.021	0.152	0	0.568	0.568	0.028
Total	0.29	0.29	0.08	4.901	0.245	1.792	0.480	7.173	7.540	1.182

Notes: Water rights and an augmentation plan for in-house uses at Highland Meadows were decreed in Case No. 93CW241(A). Irrigation demand is based on a total application of five inches over a four-month growing season from May through August and 100 percent consumption. Miscellaneous outside uses assumes 200 gallons per unit per month. Each of the 30 units in the Highland Meadows Development has approximately 3,000 ft² of start-up irrigation planned and 1,000 ft² of permanent irrigation planned. Inside commercial demands are based on 0.175 gal/day/ft² and 25,000 ft² of commercial space in the Alpensee III Development. Demands for residential units in the Alpensee 3 development are based on two people using 100 gallons per day per person, year-round. The Alpensee III Development has 1.14 acres of irrigated landscape associated with it. Inside uses at Alpensee III are five percent consumptive based on a central wastewater treatment system.

Farmer's Korner
Summary of Average Pumping Requirements @ Buildout
 (All Values In Acre-Feet)

Temporary Irrigation Period				
	Farmers Korner Wells			Henriksen
Month	Phase I	Phase II	Total	Water Requirement
Jan	1.045	0.57	1.613	0.045
Feb	1.045	0.51	1.558	0.040
Mar	1.045	0.57	1.613	0.045
Apr	1.045	0.55	1.595	0.043
May	1.045	0.92	1.965	0.772
Jun	1.045	0.91	1.955	0.770
Jul	1.045	0.92	1.965	0.772
Aug	1.045	0.92	1.965	0.772
Sep	1.045	0.55	1.595	0.043
Oct	1.045	0.57	1.613	0.045
Nov	1.045	0.55	1.595	0.043
Dec	1.045	0.57	1.613	0.045
Totals:				
May-Aug	4.18	3.67	7.85	3.09
Sep-Apr	8.36	4.44	12.79	0.35
Annual	12.55	8.11	20.66	3.43

Permanent Conditions				
	Phase II			Henriksen
Month	Phase I	Phase II	Total	Water Requirement
Jan	1.045	0.57	1.615	0.045
Feb	1.045	0.51	1.555	0.040
Mar	1.045	0.57	1.615	0.045
Apr	1.045	0.55	1.595	0.043
May	1.045	0.78	1.825	0.772
Jun	1.045	0.76	1.805	0.770
Jul	1.045	0.78	1.825	0.772
Aug	1.045	0.78	1.825	0.772
Sep	1.045	0.55	1.595	0.043
Oct	1.045	0.57	1.615	0.045
Nov	1.045	0.55	1.595	0.043
Dec	1.045	0.57	1.615	0.045
Totals:				
May-Aug	4.18	3.10	7.28	3.09
Sep-Apr	8.36	4.44	12.80	0.35
Annual	12.55	7.54	20.09	3.43

Table 2 - Revised
Farmer's Korner

Final Demand Tables -Phase II Including Henriksen Property
(values in acre-feet)

Start-Up Irrigation Scenario

Month	Henriksen Property						Farmer's Korner Phase II			Total (Including Henriksen)		
	Inside		Irrigation		Stock		Demand	Depletions	Total	Demand	Depletions	Total
	Demand	CU	Demand	CU	Demand	CU						
Jan	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Feb	0.030	0.003	0	0	0.010	0.010	0.040	0.013	0.513	0.026	0.554	0.039
Mar	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Apr	0.032	0.003	0	0	0.011	0.011	0.043	0.014	0.550	0.028	0.593	0.042
May	0.033	0.003	0.727	0.582	0.011	0.011	0.772	0.596	0.924	0.384	1.695	0.980
Jun	0.032	0.003	0.727	0.582	0.011	0.011	0.770	0.596	0.905	0.383	1.676	0.979
Jul	0.033	0.003	0.727	0.582	0.011	0.011	0.772	0.596	0.924	0.384	1.695	0.980
Aug	0.033	0.003	0.727	0.582	0.011	0.011	0.772	0.596	0.924	0.384	1.695	0.980
Sep	0.032	0.003	0	0	0.011	0.011	0.043	0.014	0.550	0.028	0.593	0.042
Oct	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Nov	0.032	0.003	0	0	0.011	0.011	0.043	0.014	0.550	0.028	0.593	0.042
Dec	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Total	0.392	0.039	2.908	2.326	0.134	0.134	3.434	2.500	8.114	1.756	11.548	4.256

Permanent Irrigation Scenario

Month	Henriksen Property						Farmer's Korner Phase II			Total (Including Henriksen)		
	Inside		Irrigation		Stock		Demand	Depletions	Total	Demand	Depletions	Total
	Demand	CU	Demand	CU	Demand	CU						
Jan	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Feb	0.030	0.003	0	0	0.010	0.010	0.040	0.013	0.513	0.026	0.554	0.039
Mar	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Apr	0.032	0.003	0	0	0.011	0.011	0.043	0.014	0.550	0.028	0.593	0.042
May	0.033	0.003	0.727	0.582	0.011	0.011	0.772	0.596	0.780	0.240	1.552	0.837
Jun	0.032	0.003	0.727	0.582	0.011	0.011	0.770	0.596	0.762	0.239	1.532	0.835
Jul	0.033	0.003	0.727	0.582	0.011	0.011	0.772	0.596	0.780	0.240	1.552	0.837
Aug	0.033	0.003	0.727	0.582	0.011	0.011	0.772	0.596	0.780	0.240	1.552	0.837
Sep	0.032	0.003	0	0	0.011	0.011	0.043	0.014	0.550	0.028	0.593	0.042
Oct	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Nov	0.032	0.003	0	0	0.011	0.011	0.043	0.014	0.550	0.028	0.593	0.042
Dec	0.033	0.003	0	0	0.011	0.011	0.045	0.015	0.568	0.028	0.613	0.043
Total	0.392	0.039	2.908	2.326	0.134	0.134	3.434	2.500	7.540	1.182	10.974	3.682

Notes:

- In-house demands for Bud's property are based on 3.5 people using 100 gal/day/person.
- In-house consumptive use is ten percent based on an individual non-evaporative septic disposal system.
- Irrigation demands are based on 1.6 acres (70,000 sq. ft.) of irrigation, a consumptive use of 1.45 ac-ft/acre spread over a four-month irrigation season, and an irrigation efficiency of 80 percent.
- Stock watering demands are based on ten horses using 12 gallons per day per head (100% consumptive).
- Farmer's Korner demand and depletions are based on totals calculated in Table 2.