

Paint Brush Hill Metropolitan District

9985 Towner Ave., Peyton CO 80831

Telephone (719) 495-8188

Autumn Hills Water Resources Report

November 18, 2022



Table of Contents

Introduction	1
Calculation of Autumn Hills Anticipated Water Demand	1
Available Water Supplies	2
Water Commitments	6
Wastewater Treatment	6
Water Quality	6
Major Water System Capital Improvements	

Introduction

Paint Brush Hills Metropolitan District (PBHMD) (the District) is a Title 32 CRS Special District which provides water, wastewater, and Parks and Recreation services to an 1,120 acre area of unincorporated El Paso county northeast of the City of Colorado Springs, part of the unincorporated community of Peyton. Currently, PBHMD is serving 1238 residential and commercial taps, which equates to 1271 Single Family Equivalents (SFEs).

PBHMD water is sourced entirely from Denver Basin groundwater and a small portion of contracted water delivered from Meridian Service Metropolitan District (MSMD).

Most of the water is pumped by 12 wells from all four of the Denver Basin confined aquifer- the Dawson, Denver, Arapahoe and Laramie Fox Hills aquifers. The remainder of the water comes from treated alluvial water that is pumped directly into the PBHMD water system from the MSMD system.

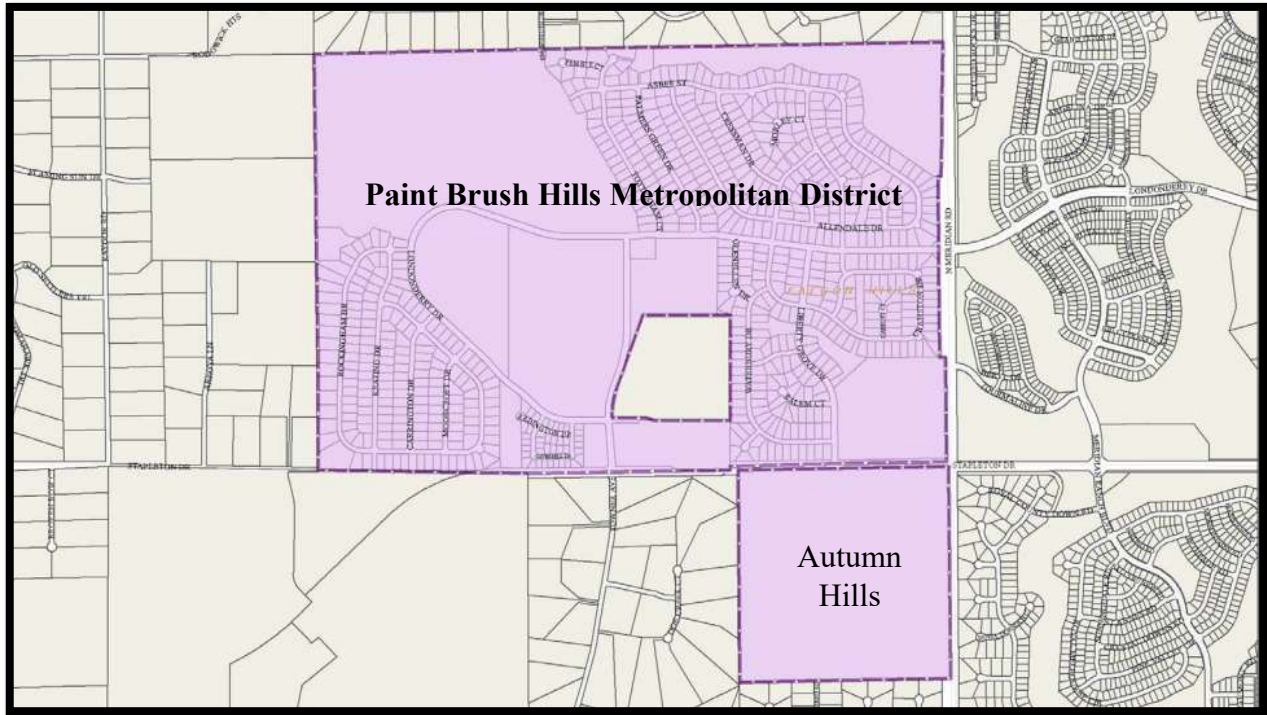
Autumn Hills is a 160-acre portion of PBHMD that is south of and directly adjacent to Stapleton Dr. and west of and directly adjacent to Meridian Rd. It had been owned by the Colorado State land Board, and has until recently, remained undeveloped. It is now in the process of being developed and incorporated into the PBHMD water system. This report will identify the water needs for this development and the water resources available to serve it.

Calculation of Autumn Hills Anticipated Water Demand

The proposed development will subdivide the existing 160 parcel into 470 new residential parcels along with the requisite open space and public tracts.

These new 470 dwelling units are expected to utilize water at the same rate as the rest of the District, as developed for the District, and shown in the District's Water Master Plan for Paint Brush Hills Metropolitan District Update March 2010 (Master Plan), attached hereto for reference in the appendix of this report. Each residential unit, called a Single Family Equivalent (SFE), requires 0.36 acre-feet per year(ac-ft/yr) of water rights. The anticipated water demand for the 470 new SFEs then, will be 169.2 ac-ft/yr.

FIGURE 1-LOCATION MAP



Available Water Supplies

PBHMD has its current physical water supply, shown in Table 1, and additional water supplies that are currently under determination, or in need of an augmentation plan, shown in Table 2. The current physical water supply consists of twelve existing wells with a total adjudicated volume **1,305.5** ac-ft/yr (100 year water) in three of the Denver Basin aquifers, the Denver, the Arapahoe and the Laramie Fox Hills and 85 ac-ft/yr of renewable alluvial water that can service the district's current buildout of platted lots of 1494 SFEs. The adjudicated volumes are all in terms of 100-year life of the aquifer. The District is currently serving 1271 SFEs of those platted lots. The buildout of 1494 SFEs will utilize **1,242.8** ac-ft/yr of the District's water portfolio, leaving **62.7** ac-ft/yr available for development. It is important to note that since Filing 10, the adjudicated amounts of water have been reduced to a 300-year availability due to El Paso County regulations. This regulation has been in effect since 1986, but this regulation also allowed that lots that had been preliminary platted before that implementation date, would be allowed to develop with the "100-year rule". Unless otherwise indicated by a "300-year" suffix, all "ac-ft/yr" designations refer to "100-year" water. For all lots platted after 1986, the 100-year adjudication is then divided by three as the available water for development. Table 3 illustrates the District's Water Portfolio as carried by CDWR, which illustrates the CDWR method of creating a water bank of adjudicated water, the 100–300-year calculation, the water required by each subdivision filing and accumulated takedown of the aquifer bank by the individual filings.

Table 1-Current Physical Water Supply

Land Formation of Aquifer	Finding, Dermination, or Decree	Tributary Status	Total Volume (acre-feet)	Annual Allocation (acre-feet per year)	Well Permits
Larimie-Fox Hills	47813-F	NT	38,800	388.0	LFH-1 (47813-F)
					LFH-2 (50877-F)
					LFH-3 (55192-F)
					LFH-4 (63429-F)
					LFH-5 (64084-F)
Arapahoe	17048-F	NT	13,070	129.7	A-1 (17048-F)
	30593-F	NT	11,300	113.0	A-2 (30593-F)
	46553-F	NT	18,200	182.0	A-3 (46553-F)
					A-4 (55193-F)
					A-5 (60862-F)
					A-6 (64086-F)
Denver	17048-F	NT	11,130	110.3	17048-F
	214-BD	NNT	29,750	297.5	85079-F
	MSMD			85.0	Alluvial Water
Current Total Legal Supply				1,305.5	

The District has additional water supplies available for new developments that are; 1) 62.7 ac-ft/yr left over from the need generated by the 1494 currently platted lots; 2) 237.1 ac-ft/yr in the Dawson aquifer that has a determination number(719-BD) awaiting a replacement plan; 3)13.2 ac-ft/yr in the Dawson aquifer from rights under the Falcon Reserve property awaiting a determination number from CDWR; 4) 245.6 ac-ft/yr in the Denver aquifer from under the Paint Brush Hills Filings 1,2 and 3, awaiting determination from CDWR; and 5) 124.4 ac-ft/yr of previously unadjudicated Dawson water that is currently under determination by the Colorado Division of Water Resources(CDWR) , all for a total of 683 ac-ft/yr of 100 year water available for additional development beyond the 1494 currently platted lots. These are shown in the following Table 2. With the 300-year rule, this 683 ac-ft/yr right translates to only a third of that, 227.7 ac-ft/yr, being available for development.

Table 2- Additional Water Rights

Source	Well Permit or Determination Number	Aquifer	100 Year Appropriation	300 Year Appropriation	Developable Units to be Served at 0.36 Acre-Feet per Year per SFE
Leftover Water from Filing 14 Development	Various	Various	62.7	20.9	58
Existing Determination	719-BD	Dawson	237.1	79.0	220
Falcon Reserve	TBD	Dawson	13.2	4.4	12
PBH Filings 1,2, and 3	TBD	Denver	245.6	81.9	227
Remaining Water Under District	TBD	Dawson	124.4	41.5	115
Totals			683.0	227.7	632

The following table 3 illustrates the District’s complete water portfolio, set up in the same fashion as the CDWR carries the District’s water portfolio. In this manner, the Table 3 takes District’s portfolio of water rights and sets it up as a total available water bank from which water requirements for each development are subtracted. This follows with how the CDWR calculates its water rights adjudications and available water for each subdivision, when queried by El Paso County Planning as to whether there is enough water in the District’s portfolio to serve a new development.

When CDWR issues a water right for a Denver Basin well, it calculates the total amount of water volume in the aquifer sands and adjudicates that 1% of that water may be extracted every year for 100 years. This is the basis of the “100-year water”. Even though El Paso County has required that Denver Basin groundwater supplies must be good for 300 years, the State still makes the adjudications on a 100-year basis, but when reporting to the county what the District’s portfolio availability is for a certain development in El Paso County.

Table 3-Total Water Rights Portfolio

PAINT BRUSH HILLS-WATER RIGHTS PORTFOLIO											
Development	Well Decree Number	SFE	Accumulated	Ac-Ft/Yr per SFE	Required Water Rights	Required Water Rights	Accum Water	Available Water Rights	Accum Req'd	Total Water	Remaining
			SFEs		Feet/Year 100yr	Feet/Year 300yr	Rights req'd. 0 + 300 year Equ	Feet/Year 100yr Equiv.	Volume(100 yr) (Acre-Feet)	Allocation Bank Ac-ft	Available Water in Bank Ac-ft.
	214-BD						298	297.5		29,750	
	30593-F							113.0		11,300	
	46553-F							182.0		18,200	
	47813-F							388.0		38,800	
	17048-F							240.0		24,000	
	Meridian Ranch-Surface Rights						85	85.0		25,500	
Total water Rights/Flow Available								1305.5		147,550	147,550
Existing and Committed Developments											
Filing 4		164	164	0.56	92			92		9184	138366
Filing 5		31	195	0.56	17			109		10920	136630
Filing 6		48	243	0.56	27			136		13608	133942
Filing 7		57	300	0.56	32			168		16800	130750
Filing 8		109	409	0.56	61			229		22904	124646
Filing 9		88	497	0.56	49			278		27832	119718
Greenbelt					14			292		29232	118318
Falcon M. School		16	513		22			314		31432	116118
Filing 10		90	603	0.40	36	108		422		42,232	105,318
Filing 11		81	684	0.40	32	97		520		51,952	95,598
Filing 12		51	735	0.40	20	61		581		58,072	89,478
Church		0.5	736	0.40	0	1		581		58,132	89,418
Scenic View		90	826	0.40	36	108		689		68,932	76,618
Filing 13A		17	843	0.40	7	20		710		70,972	76,578
			843	0.36	0	0		710		70,972	76,578
			843	0.36	0	0		710		70,972	76,578
			843	0.36	0	0		710		70,972	76,578
School(16)		16	859	0.36	6	17		727		72700	74850
Filing 13B		5	864	0.36	2	5		732		73,240	74,310
		5	869	0.36	2	5		738		73,780	73,770
		5	874	0.36	2	5		743		74,320	73,230
		6	880	0.36	2	6		750		74,968	72,582
Filing 13C		33	913	0.36	12	36		785		78,532	69018
		33	946	0.36	12	36		821		82,096	65454
		33	979	0.36	12	36		857		85,660	61890
		36	1015	0.36	13	39		895		89,548	58002
Filing 13D		24	1039	0.36	9	26		921		92,140	55410
		24	1063	0.36	9	26		947		94,732	52818
		24	1087	0.36	9	26		973		97,324	50226
		25	1112	0.36	9	27		1000		100,024	47526
Filing 13E		39	1151	0.36	14	42		1042		104,236	43314
		39	1190	0.36	14	42		1084		108,448	39102
		39	1229	0.36	14	42		1127		112,660	34890
		41	1270	0.36	15	44		1171		117,088	30462
Filing 14		78	1348	0.36	28	84		1255		125,512	22,038
		46	1394	0.36	17	50		1305		130,480	17,070
		46	1440	0.36	17	50		1354		135,448	12,102
		54	1494	0.36	19	58		1413		141,280	6,270
Remaining in Bank											6,270
Additions to Bank											
	719-BD							237.1			
	Falcon Reserve							13.2			
	PBH123-Denver							245.6			
	Remaining Dawson Under District							124.4			
Total New Rights								620.3			
Total Addition to Bank										209,580	
New Development Water Supply Needs											
Falcon Reserve		160	1654	0.36	58	173		1586		158,560	51,020
Autumn Hills		470	2124	0.36	169	508		2093		209,320	260
			2124	0.36	0	0		2093		209,320	260
Remaining in Bank											260

By the end of 2022, PBHMD will have at total of **1,925.8** ac-ft/yr of water supplies sourced from alluvial and deep bedrock aquifers, sufficient to serve a total of 2,124s. Of that, 507.6 ac-ft/yr 100-year water, or 169.2 ac-ft/yr of 300-year water is slated for serving the 470 SFE's of the Autumn Hills development.

Water Commitments

PBHMD's current water commitments are shown on Table 3, filing by filing. As can be seen, all development up until Filing 10 was allowed to utilize the 100-year rule. After that, all water commitments to developments were made using the 300-year rule. It should be noted that the amount of water committed to an SFE has been reduced over the years due to successful water conservation programs from 0.56 ac-ft/yr per SFE with Filing 4 to 0.36 ac-ft/yr beginning with Filing 13A. This represents a 40% reduction in water usage.

Wastewater Treatment

PBHMD collects all wastewater from the customers in the district with its sewer collection system, which it operates and maintains. All wastewater flows are collected and transported to the Woodmen Hills Metropolitan District(WHMD) for treatment at the WHMD Wastewater Treatment Facility. In terms of water source, PBHMD does not receive any augmentation credit for any of the wastewater that is collected and treated by WHMD, nor is it expected to in the future.

Water Quality

It is well known that the drinking water quality of water from the Denver Basin aquifers is excellent, essentially never requiring Primary MCL treatment and only sometimes needing Secondary MCL treatment, primarily for iron and manganese. All the wells in PBHMD easily fall into the former category, not requiring any treatment except disinfection. Disinfection for all the wells in the district is by liquid chlorine solution, sodium hypochlorite. While chlorination is currently being accomplished at each individual well, a new chlorination facility is just being finalized at the district's Administration/Storage Tank site to centralize the disinfection treatment for the majority of the District's wells.

Granular Activated Carbon(GAC) filters have been provided at the central disinfection facility to provide taste and odor removal from the water that may emanate from the wells from time to time. Taste and Odor is not regulated. It is totally expected that the water quality from the new wells that the District will drill to serve Autumn Hills will be similar in every respect to the water quality in the rest of the District.

Major Water System Capital Improvements

PBHMD operates and maintains a complex system of 12 wells, potable water storage tanks, centralized water treatment and centralized pumping facilities, sufficient to service its current commitments to the current buildout of 1494 SFEs. Except for 41,340 gallons of potable water storage out of 1.5 million, the current buildout has all that it needs for major infrastructure.

For Autumn Hills, the developer will construct all the water distribution lines and transfer ownership to the District. To service Autumn Hills, the District will need to construct the following Major Capital Improvements:

- The determined Dawson well, 719-BD, once an approved replacement plan is approved and a permit is obtained. The location for this well is yet to be determined but will likely be on or near the Autumn Hills property. It will also need to include a dedicated raw water line to pump the raw(untreated) water to a new central treatment and booster pumping facility.
- A yet-to-be determined Dawson well, once a replacement plan is approved, and a permit assigned, located on or near the Autumn Hills property. It will also need to include a dedicated raw water line to pump the raw water to a new central treatment and booster pumping facility.
- A yet-to-be determined Denver well, probably located on the main district property, the Paint Brush Hills Filings 1, 2, & 3 from under which the rights are being determined. It will also need to include a dedicated raw water line to pump the raw water to a new central treatment and booster pumping facility.
- A centralized treatment (chlorination, chlorine detention and GAC) and booster pumping facility located on near the Autumn Hills property to collect, treat, and distribute treated water.
- Potable water storage in the amount of 286,700 gallons to cover one day of storage to cover Maximum Day Flow of 610 gallons per day per SFE (from the Water Master Plan for Paint Brush Hills Metropolitan District). This storage will need to be constructed at the District's Administration/Water Storage Tank site. No additional fire storage is necessary, as the main District storage facility maintains 630,000 gallons of fire storage for the entire district, more than enough for the residences in Autumn Hills. As the distribution system for Autumn Hills will be directly connected and integrated into the District's distribution system, water required to fight fires in Autumn Hills will come from the District's storage facility, as will any other required peak flows in Autumn Hills.

Appendix-PBHMD Master Water Plan

**WATER MASTER PLAN
FOR
PAINT BRUSH HILLS METROPOLITAN DISTRICT
UPDATE**

JANUARY 2021

RGA JOB No.: 1070.0004



TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	4
1.1	DEMANDS.....	4
1.2	WATER TREATMENT & PRODUCTION.....	4
1.3	WATER RIGHTS.....	5
1.4	STORAGE	5
2	BACKGROUND & OVERVIEW.....	6
2.1	PROJECT SCOPE.....	6
2.2	PAINT BRUSH HILL METROPOLITAN DISTRICT WATER SUPPLY SYSTEM OVERVIEW.....	6
3	PROJECT AREA.....	7
3.1	LOCATION AND SERVICE AREA.....	7
3.2	WATER RESOURCES.....	8
3.3	PRECIPITATION AND TEMPERATURE.....	8
4	WATER USAGE	10
4.1	CURRENT WATER DEMAND	10
4.2	FUTURE WATER DEMAND.....	12
5	WATER SYSTEM EVALUATION.....	14
5.1	EVALUATION CRITERIA	14
5.2	EXISTING WATER FACILITIES	14
6	RECOMMENDATIONS & COST ESTIMATES.....	22
6.1	SYSTEM IMPROVEMENTS	22

LIST OF FIGURES

Figure 1: General Vicinity Map.....	7
Figure 2: District Boundary Map.....	8
Figure 3: Climate Summary.....	9
Figure 4: Map of Developments in the Paint Brush Hills Metropolitan District	13
Figure 5: Piping inside Pump House 6	14
Figure 6: PBHMD 1 MG Water Storage Tank (left) and 0.5 MG Water Storage Tank (Right).....	18
Figure 7: PBHMD Booster Pumps.....	19

LIST OF TABLES

Table 1: Annual Climate Data (1948-2010)	8
Table 2: Monthly Residential Water Usage.....	10
Table 3: Monthly School Water Usage	10
Table 4: Monthly Irrigation Water Usage	10
Table 5: Monthly Commercial Water Usage.....	11
Table 6: Total Water Usage/Production.....	11
Table 7: Total Water Demands.....	13
Table 8: Summary of Water Rights	15
Table 9: Current Physical Water Supply Inventory.....	16
Table 10: Contingent Water Supply Inventory.....	16
Table 11: Well Permits, Permitted Pumping Rates, and 2013 Instantaneous Flow-Rates	17
Table 12: Required Storage to Meet MDD Plus Fire flow	19
Table 13: Pump Station Pump Data.....	20
Table 14: Well #12 Cost Estimate	22
Table 15: Well #13 Determination #719-BD Cost Estimate	23
Table 16: Raw Water Lines for Wells 1, 2, and 5 Cost Estimate.....	23
Table 17: Centralized Treatment Cost Estimate.....	24
Table 18: 200,000 Gallon Water Storage Tank Cost Estimate.....	25
Table 19: Booster Pump House Cost Estimate	26
Table 20: Pressure Zone Adjustments Cost Estimate.....	27

Appendix A: Well Permit Information

Appendix B: JDS-Hydro Report

Appendix C: Distribution System Map

DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

A-#	Arapahoe-Well #
ac-ft/yr	Acre-Feet per Year
ADD	Average Day Demand
Avg.	Average
CDPHE	Colorado Department of Public Health and Environment
cfs	Cubic Feet per Second
CY	Cubic Yards
EA	Each
ECHO	Enforcement and Compliance History Online
EPA	Environmental Protection Agency
ft	Feet
GAC	Granular Activated Carbon
gal	Gallons
gpd	Gallons per Day
gpm	Gallons per Minute
hp	Horsepower
HVAC	Heating, Ventilating and Air Conditioning
in.	Inch
LF	Linear Feet
LFH-#	Laramie Fox Hills-Well #
LS	Lump Sum
MDD	Maximum Day Demand
mg/L	Milligrams per Liter
MG	Million Gallons
MGD	Million Gallons per Day
MSMD	Meridian Service Metropolitan District
N/A	Not Available or Applicable
NT	Non-Tributary
NNT	Not Non-Tributary
PBHMD	Paint Brush Hills Metropolitan District
PHF	Peak Hour Flow
PF	Peaking Factor
Precip.	Precipitation
PRV	Pressure Reducing Valve
Qty	Quantity
RGA	RG and Associates, LLC
RPM	Revolutions per Minute
SEO	State Engineer's Office
SFE	Single Family Equivalent
SF	Square Feet
Temp.	Temperature
YR	Year

1 EXECUTIVE SUMMARY

The purpose of the Paint Brush Hills Metropolitan District (PBHMD) Water Master Plan is to provide an overview of the district's water infrastructure, evaluate the district's water infrastructure based on current usage and future expansion, and to provide recommendations for future improvements and expansion to the district's water infrastructure.

This Master plan includes:

- Current and projected single family home development
- Current and future water demands
- Evaluation of Current Water System
- Water system improvements and expansions recommendations

This document was developed for the use of the district in its planning process and evaluates both current and projected future conditions. It is intended to be a working document that is used as a guideline for planning decisions and represents a best approximation of future conditions.

1.1 DEMANDS

To determine current water usage and estimate future demands, RG and Associates, LLC (RGA) obtained billing records for all taps served by PBHMD from January 2017 through December 2019 in addition to the 2013 Water Supply Report for PBHMD by JDS-Hydro dated November 2013. RGA then calculated current Average Day Demand (ADD) and a current Maximum Day Demand (MDD) from actual water demands between 2017-2019. To be conservative, though, and to plan for the future, the same 0.36 ac-ft/yr/SFE that has been used in the past for average annual water demand will be used. These are as follows:

Number of SFEs at the end of 2019: 1,041

Observed average day demand through 2019: 0.21 MGD

Observed maximum day demand: 0.361 MGD

Observed maximum month demand: 11.17 MG

Future number of SFE (full buildout): 1,494

Future average day demand: 0.480 MGD(based on 0.36 ac-ft/yr/SFE)

Future maximum day demand: 0.911 MGD

1.2 WATER TREATMENT & PRODUCTION

Raw water for the system is pumped from eleven wells from the Arapahoe and the Laramie-Fox Hills aquifers. The Arapahoe and Laramie-Fox Hills aquifers are part of the Denver Basin aquifer, which is a non-renewable water source. In addition to these aquifer sources, the district also utilizes contractual water from Meridian Service Metropolitan District (MSMD) through a metered interconnect with MSMD.

Groundwater pumped from the Arapahoe and the Laramie-Fox Hills aquifers is disinfected at the wells using chlorination. Some of the wells do not have adequate contact time for disinfection. Also, some of the wells do not have sufficient land around them to allow for the installation of chlorine contact chambers to ensure that full disinfection is achieved before the water enters the distribution system.

1.3 WATER RIGHTS

Through the analysis performed in this master plan, and utilizing information from the JDS-Hydro Report, it was determined that the district's existing water rights are sufficient to provide water to meet the district's current and future demands at buildout.

1.4 STORAGE

The district should provide enough storage to satisfy the MDD plus the required fire flow. In this analysis, required fire flow is 3,500 gallons per minute for three hours and the MDD per Single Family Equivalent (SFE) is 610 gallons per day (gpd). There are currently two existing tanks in the PBHMD's water supply system: a 1 million gallons (MG) tank and 0.5 MG tank.

2 BACKGROUND & OVERVIEW

2.1 PROJECT SCOPE

The purpose of this Water Master Plan is to provide an overview of the district's water infrastructure, evaluate the district's water infrastructure based on current usage and future expansion, and to provide recommendations for future improvements and expansions to the district's water infrastructure. Specifically, this Water Master Plan evaluates the district's wells, treatment systems, booster pumps, and water storage based on current and projected water demands.

2.2 PAINT BRUSH HILLS METROPOLITAN DISTRICT WATER SUPPLY SYSTEM OVERVIEW

The PBHMD water distribution system is a constant pressure system containing two storage tanks to supply fire flow and peak flow demands. Water supply for the district is provided primarily by the Denver Basin aquifer; however, the district also utilizes purchased water from MSMD during times of peak demand. The raw water wells are located throughout the district and are equipped with sodium hypochlorite disinfection equipment at each pump house.

3 PROJECT AREA

3.1 LOCATION AND SERVICE AREA

Paint Brush Hills Metropolitan District is located north-east of Colorado Springs in unincorporated El Paso County. The district encompasses a total area of approximately 1.5 square miles and has a population of approximately 3,000 residents.

In total, PBHMD’s water distribution system consists of approximately 63,650 linear feet (LF) of 8-inch finished water pipe, 21,750 LF of 12-inch finished water pipe, 12,900 LF of raw water transmission pipe, eleven wells, and two water storage tanks. Figure 1 and Figure 2 show a general vicinity map of the area and a district boundary map, respectively.

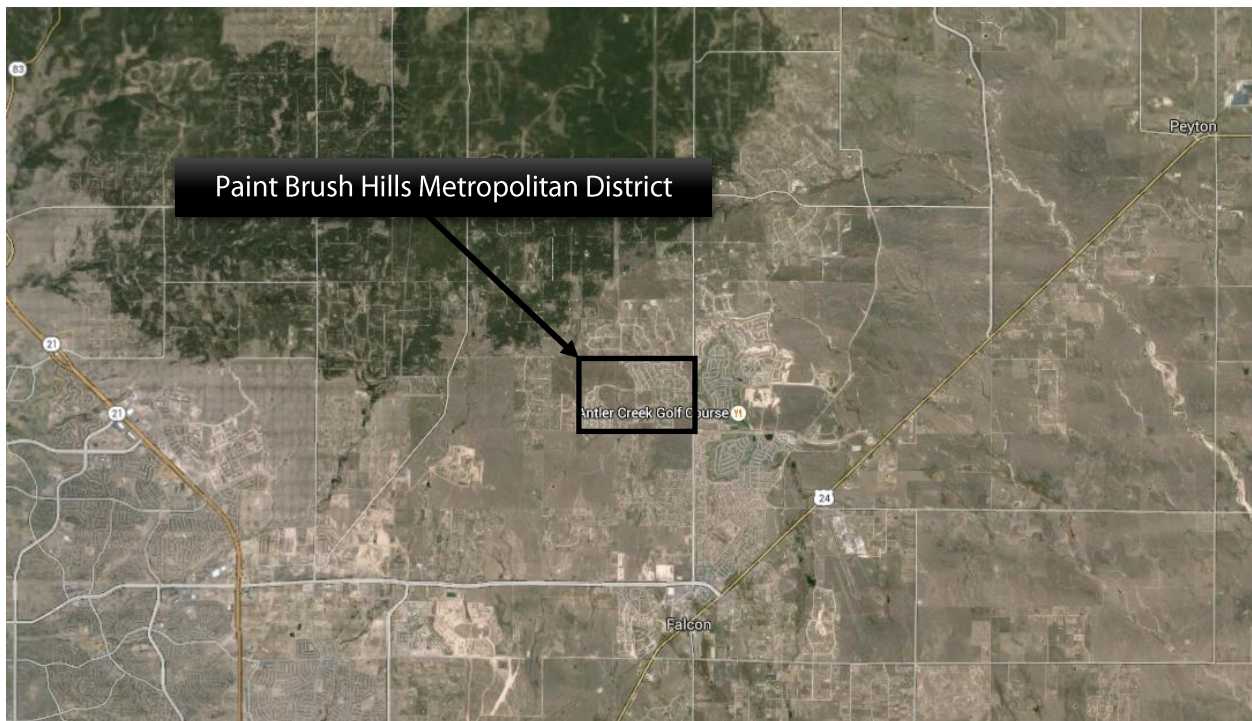


Figure 1: General Vicinity Map

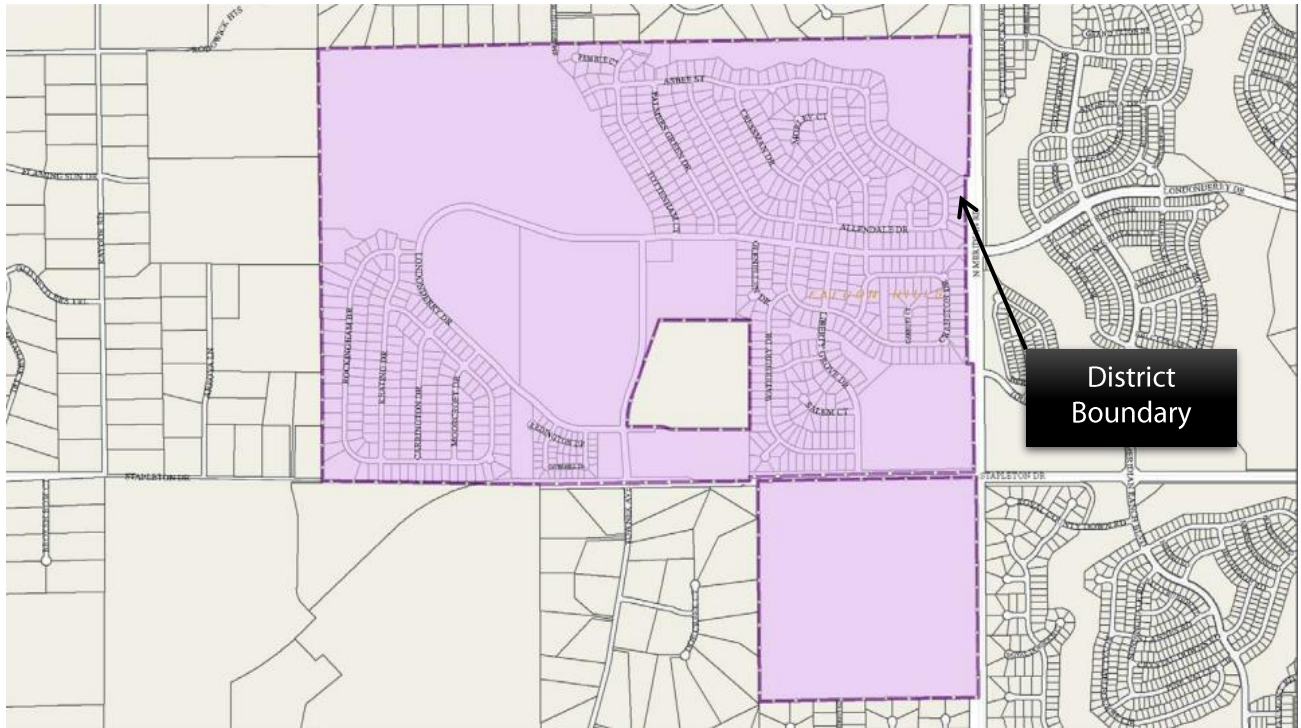


Figure 2: District Boundary Map

A detailed map showing the existing drinking water distribution system is attached as Appendix A.

3.2 WATER RESOURCES

The primary water source in the area is the Denver Basin aquifer. Specifically, PBHMD holds water rights in the Dawson, Denver, Laramie Fox-Hills, and Arapahoe aquifers. Currently the District only has wells drilled into the Arapahoe and Laramie-Fox Hills aquifers.

3.3 PRECIPITATION AND TEMPERATURE

Data pertaining to the local environment has been obtained from the Western Regional Climate Center. Station 051778 – Colorado Springs Muni AP is the closest weather station to PBHMD and information from this station is used for this report and shown in Table 1.

Table 1: Annual Climate Data (1948-2010)

Average Monthly Temperature and Precipitation												
Station 051778 - Colorado Springs Muni AP, CO												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High Temp. (°F)	42.6	45.2	51.0	59.7	69.0	79.6	85.0	82.3	74.8	63.9	51.0	43.5
Avg. Low Temp. (°F)	16.6	19.3	24.8	32.9	42.5	51.5	57.1	55.5	47.3	36.3	24.9	17.9
Average Temp. (°F)	29.5	32.3	37.7	46.2	55.7	65.3	71.0	68.8	61.0	50.1	37.9	30.7
Avg. Precip. (in.)	0.3	0.3	0.9	1.3	2.1	2.2	2.9	2.9	1.3	0.8	0.5	0.3
Avg. Snowfall (in.)	5.0	4.6	8.3	5.9	1.2	0.0	0.0	0.0	0.8	3.0	4.8	5.4

Source: Western Regional Climate Center

Winters are relatively cold with an average temperature of 31 °F, December through January, while summers are warm with an average temperature of 68 °F, June through August. These averages are based on data from the Western Regional Climate Center data and is based on data collected from 1948-2010. Average total yearly precipitation over this time period is 16 inches, and the average total yearly snowfall is 44 inches. Weather data obtained for 2018, the year with the largest maximum monthly flows, indicates that precipitation for that year was about 7% less than the average.

```

.....
...THE COLORADO SPRINGS CO CLIMATE SUMMARY FOR THE YEAR OF 2018...
CLIMATE NORMAL PERIOD 1981 TO 2010
CLIMATE RECORD PERIOD 1872 TO 2019

WEATHER      OBSERVED    NORMAL    DEPART
              VALUE     DATE(S)   VALUE     FROM
              VALUE     DATE(S)   VALUE     NORMAL
.....
TEMPERATURE (F)
RECORD
HIGH          101      06/21/2016
              06/26/2012
              06/26/2012
LOW           -27      02/01/1951
              12/09/1919

HIGHEST      100      06/28
LOWEST       -1       01/16

AVG. MAXIMUM 65.3          62.2      3.1
AVG. MINIMUM 37.1          35.8      1.3

MEAN         51.2          49.0      2.2

DAYS MAX >= 90    34
DAYS MAX <= 32    13
DAYS MIN <= 32   168
DAYS MIN <= 0     1

PRECIPITATION (INCHES)
RECORD
MAXIMUM      27.58    1999
MINIMUM      6.07     1939

TOTALS       15.41          16.54    -1.13

DAILY AVG.   0.04          0.05    -0.01
DAYS >= .01   92
DAYS >= .10  36
DAYS >= .50   8
DAYS >= 1.00  3

GREATEST
24 HR. TOTAL 1.27    08/14 TO 08/14

SNOWFALL (INCHES)
RECORDS
MAXIMUM      96.4    1957
MINIMUM      11.4    2012

24 HR TOTAL  22.0    01/15/1987 TO 01/15/1987
SNOW DEPTH   20      10/26/1997

TOTALS       28.5          37.7     -9.2
SINCE 7/1    9.4           13.5     -4.1

SNOWDEPTH AVG. 0
DAYS >= TRACE 62          29.2     32.8
DAYS >= 1.0   9           11.6     -2.6

GREATEST
SNOW DEPTH   4      04/21
24 HR TOTAL  4.2    04/20 TO 04/20

DEGREE DAYS
HEATING TOTAL 5648          6292     -644
SINCE 7/1     2456          2572     -116
COOLING TOTAL 730           455      275
SINCE 1/1     730           455      275

FREEZE DATES
RECORD
EARLIEST     09/01/1911
LATEST       06/18/1912
    
```

Figure 3: Climate Summary

4 WATER USAGE

4.1 CURRENT WATER DEMAND

The current water demand in PBHMD was determined using billing data provided to RGA by the district spanning from January 2017 through December 2019. The data was separated into four categories: residential, school, irrigation, and commercial, as shown in Table 2, Table 3, Table 4, and Table 5, respectively. Residential usage in the district accounts for the majority of the water usage across the four categories. Water usage for all categories is totaled in

Table 6.

Table 2: Monthly Residential Water Usage

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Average
2017	Water Usage (MG)	3.05	3.19	3.06	4.34	3.78	4.80	10.04	8.23	5.33	8.76	3.72	4.12	
	SFE	773	775	783	795	796	804	804	810	808	813	812	813	
	Average Usage/SFE (gal)	3,951	4,122	3,912	5,459	4,749	5,965	12,491	10,162	6,594	10,781	4,578	5,070	
2018	Water Usage (MG)	3.53	3.42	3.87	3.78	3.50	6.86	11.17	8.62	7.58	9.44	4.85	3.90	
	SFE	816	812	812	812	812	815	824	852	859	869	885	892	
	Average Usage/SFE (gal)	4,326	4,214	4,770	4,658	4,314	8,423	13,562	10,120	8,826	10,860	5,481	4,375	
2019	Water Usage (MG)	4.16	3.48	3.65	3.40	4.12	6.45	7.13	8.84	9.41	10.16	6.20	3.76	
	SFE	902	911	923	920	923	942	947	956	964	982	995	1,013	
	Average Usage/SFE (gal)	4,615	3,821	3,950	3,694	4,466	6,846	7,526	9,251	9,762	10,348	6,229	3,709	
Three Year Avg. (GAL)		4,297	4,053	4,210	4,603	4,509	7,078	11,193	9,844	8,394	10,663	5,430	4,384	6,555

Table 3: Monthly School Water Usage

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Average
2017	Water Usage (MG)	0.04	0.05	0.06	0.06	0.18	0.52	1.11	1.56	0.55	1.12	0.32	0.26	
	SFE	32	32	32	32	32	32	32	32	32	32	32	32	
	Average Usage/SFE (gal)	1,381	1,563	1,906	1,888	5,666	16,113	34,831	48,791	17,128	34,900	10,113	8,084	
2018	Water Usage (MG)	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.10	0.11	0.07	
	SFE	32	32	32	32	32	32	32	32	32	32	32	32	
	Average Usage/SFE (gal)	1,281	143	165	120	0	0	0	31	3,662	3,188	3,475	2,244	
2019	Water Usage (MG)	0.08	0.08	0.00	0.11	0.11	0.07	0.02	0.00	0.10	0.11	0.05	0.18	
	SFE	32	32	32	32	32	32	32	32	32	32	32	32	
	Average Usage/SFE (GAL)	2,476	2,479	0	3,457	3,398	2,167	470	100	3,257	3,489	1,685	5,741	
Three Year Avg. (GAL)		1,713	1,395	691	1,822	3,021	6,093	11,767	16,307	8,016	13,859	5,091	5,357	6,261

Table 4: Monthly Irrigation Water Usage

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Average
2018	Water Usage (MG)	0.000	0.000	0.000	0.000	0.000	0.000	0.170	0.242	0.184	5.193	0.680	0.014	6.48
	Water Usage (MG)	0.000	0.000	0.000	0.000	0.004	0.234	0.625	1.027	1.272	0.145	0.460	0.000	
Average (MG)		0.000	0.000	0.000	0.000	0.002	0.117	0.398	0.635	0.728	2.669	0.570	0.007	0.427

Table 5: Monthly Commercial Water Usage

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Average
2017	Water Usage (MG)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	437
	SFE	1	1	1	1	1	1	1	1	1	1	1	1	
	Average Usage/SFE (gal)	133	52	63	76	75	106	0	870	780	1,020	960	1,110	
2018	Water Usage (MG)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	1,013
	SFE	1	1	1	1	1	1	1	1	1	1	1	1	
	Average Usage/SFE (gal)	890	940	1,180	800	1,150	850	1,240	710	850	1,060	1,100	1,390	
2019	Water Usage (MG)	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.000	0.000	0.001	1,019
	SFE	1	1	1	1	1	1	1	1	1	1	1	1	
	Average Usage/SFE (gal)	1,420	780	1,030	820	1,200	1,150	2,530	760	1,330	370	0	836	
Three Year Avg. (GAL)		814	591	758	565	808	702	1,257	780	987	817	687	1,112	823

Table 6: Total Water Usage/Production

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Average
2017	Water Production	3.94	3.24	4.50	4.19	6.58	11.98	10.45	7.63	9.55	4.35	2.95	3.24	0.36
	Water Usage (MG)	3.10	3.24	3.12	4.40	3.96	5.31	11.16	9.79	5.88	9.88	4.04	4.38	
	Delta	0.84	-0.01	1.38	-0.21	2.61	6.67	-0.70	-2.16	3.68	-5.53	-1.09	-1.14	
2018	Water Production	3.44	3.37	3.97	4.50	9.74	12.97	11.79	9.92	12.17	5.77	3.80	3.75	1.18
	Water Usage (MG)	3.57	3.43	3.88	3.79	3.50	6.87	11.18	8.62	7.70	9.54	4.96	3.98	
	Delta	-0.13	-0.06	0.09	0.71	6.24	6.11	0.61	1.30	4.47	-3.77	-1.16	-0.23	
2019	Water Production	4.31	3.73	4.05	5.07	6.53	8.56	10.56	11.29	11.08	5.75	4.42	4.22	0.66
	Water Usage (MG)	4.24	3.56	3.65	3.51	4.23	6.52	7.15	8.85	9.52	10.27	6.25	3.94	
	Delta	0.07	0.17	0.41	1.56	2.30	2.04	3.41	2.44	1.56	-4.52	-1.84	0.28	
3 Year Avg. Delta (MG)		0.257	0.037	0.624	0.687	3.716	4.937	1.108	0.525	3.237	-4.606	-1.362	-0.365	0.733

The number of taps throughout the district was determined from the number of residential customers on the monthly billing information provided by the district. It is assumed that each residential customer billed equates to one SFE.

An SFE is a unit of measure which standardizes all land use categories (residential, commercial, etc.) to the level of water demand created by one single family household. Typically, all single-family taps within a district are assigned a total of one (1) SFE. As Table 2 shows, from January 2017 through December 2019, the average monthly residential water demand for this time period was 6,555 gallons. This equates to an average yearly demand of 0.24 ac-ft/yr/SFE, which corresponds to an ADD of 216 gpd/SFE. The ADD is important, as the water rights needed for the district are based on the average annual water usage. At the inception of the district, the average annual water

usage was planned to be 0.56 ac-ft/yr/SFE, but over the years of the district's existence, water usage has dropped significantly, primarily due to public conscientiousness in exercising water conservation, especially with a finite water source like the Denver Basin aquifer. The State Engineer's Office (SEO) has lowered the 0.56 value for determination of the number of SFEs that the district has sufficient rights for to 0.40 and then to 0.36, which has been used since the development of Scenic View. In a water usage analysis done in 2018, based on water usage in years before, water usage equated to 0.25 ac-ft/yr, and the district board considered lowering the value for water supply planning and adequacy purposes to be more consistent with the actual water usage figures. After much discussion, it was decided to leave the average annual water usage requirement at 0.36 ac-ft/yr. This value is used for future planning in this Water Master Plan.

While the annual average water value per SFE is important, what is more important is the average amount of source water pumped from the wells and used from the MSMD water connection. Normally, in a system like this, there will be losses in the system, so the water supply sources must be able to pump the usage plus the losses. Normally accepted losses in water systems like the district's is 10 to 15 percent. More than 15% losses usually warrant some kind of modifications to the district system, like line replacements to reduce the losses. As Table 5 shows, water production from the wells and the MSMD interconnect is greater than the water delivered to the users by an average of 12.5%, so not of concern enough to alter the planning number of 0.36 ac-ft/SFE or warrant any district system repairs.

The MDD is an important factor in the analysis of treatment and pumping facilities as the water supply facilities should be designed to supply the MDD to ensure that the district can adequately supply enough water for its customers. The MDD is the average daily water demand during the peak month of usage and can be calculated by dividing the month with the maximum demand by the number of days in that month. The maximum monthly demand of 11.17 MG occurred in July of 2018. Dividing this by 31 days equates to a MDD of 0.36 MGD or 250 gallons per minute (gpm). For the 824 SFEs that month, this equates to 432 gpd per SFE, or 0.3 gpm per SFE. The ratio of MDD to ADD (432/216) calculates to 2.0 and is consistent with accepted industry standards that say that MDD is generally 2.0-2.5 times the ADD.

4.2 FUTURE WATER DEMAND

As the district is nearly built out, future plans for development in the PBHMD service area include only Filing 13E and Filing 14 as shown in Figure 4. These two developments will add approximately 453 SFEs of water demand to the district plus additional water for any publicly owned land that would need irrigation, for an ultimate SFE of 1494. There are two large parcels of land in the district, one known as the Falcon Reserve Development, and the 160 acres south of Stapleton Dr., that are not included in this Water Master Plan, as the development plans for those parcels are unknown at the present time.



Figure 4: Map of Developments in the Paint Brush Hills Metropolitan District

The total water demands at buildout are shown in Table 7.

Table 7: Total Water Demands

Use Type	SFE	ADD/SFE	ADD	MDD/SFE	MDD (MGD)	Required Water Right (ac ft/yr)
Development thru Filing 13D	1079	216	0.233	432	0.466	388
Filing 13E	158	216	0.034	432	0.068	57
Filing 14	227	216	0.052	432	0.105	81
Commercial	1	216	0.000	432	0.0004	0.36
School	32	216	0.006	432	0.012	12
Irrigation	0		0.020		0.04	14*
Total	1494		0.346		0.691	552

* SEO allocation

The district's current MDD, ADD, and average yearly demand for the district along with the demands for future developments are shown in Table 7. The total MDD at buildout is expected to be approximately 0.691 MGD, the ADD is approximately 0.346 MGD, and the yearly water rights requirement corresponds to 552 ac-ft/yr.

5 WATER SYSTEM EVALUATION

5.1 EVALUATION CRITERIA

The water system in PBHMD will be evaluated based on the ability of the system to meet current demands along with the future demands of the proposed developments listed in Section 4.2. These evaluations will then be used to make recommendations for further expansions of the system to meet the future water demands of the district.

5.2 EXISTING WATER FACILITIES

The PBHMD water distribution system is a pump pressurized system containing two storage tanks, a 1 MG tank and a 0.5 MG tank, to meet fire flow and peak flow demands. Water supply for the district comes primarily from the Denver Basin aquifer; however, the district also utilizes contractual water from MSMD as a peaking supply.

The raw water wells are located throughout the district and treatment consists of chlorination, which is done at the well site. In total, PBHMD's water distribution system consists of approximately 63,650 LF of 8-inch finished water pipe, 21,750 LF of 12-inch finished water pipe, 12,900 LF of raw water transmission pipe, eleven wells, and two water storage tanks.



Figure 5: Piping inside Pump House 6

5.2.1 Raw Water Supply

Raw water for the system is pumped from eleven wells located throughout the district from the Arapahoe and the Laramie-Fox Hills aquifers. Some of the wells are in need of maintenance and rehabilitation. The Arapahoe and Laramie-Fox Hills aquifers are part of the Denver Basin aquifer, which is a non-renewable water source. A summary of the district's non-contingent Denver Basin water rights, that is, those rights that have permits or determination numbers with replacement plans, shows the current total annual legal supply for the District to be 1,220.50 ac-ft/yr. With the 85 ac-ft/yr of renewable water from Meridian Ranch, the total water rights available is then 1305.5 ac-ft/yr, as shown in Table 8. The calculations of current and future water demands done in Section 4.1 and Section 4.2

show that the district’s ultimate yearly demand will be approximately 552 ac-ft/yr. These demands are well below the district’s permitted annual allocation of 1,305.5 ac-ft/yr. However, due to the 300-year rule on Denver Basin water, and the SEO allocation 0.56 and 0.40 ac-ft/yr on the District’s developments prior to Scenic View, the permitted amount of 100-year equivalent water rights needed at buildout will be 1,252 ac-ft/yr, as shown on Table 8. At buildout of Filing 14, the district will have 53.98 ac-ft/yr of permitted water available, all from the MSMD connection. This will be available to serve 150 SFEs of development beyond Filing 14. Once a replacement plan is developed and approved for Determination # 719-BD, an additional 79 ac-ft/yr of 300-year water will be available to serve an additional 219 SFEs.

Table 8: Summary of Water Rights

PAINT BRUSH HILLS-WATER RIGHTS SUMMARY			Current SEO water rights, with Meridian water rights, convert water usage /SFE to 0.36 and use 100 year rule on Filing 14								
Supply	Well Decree Number	SFE	Accumulated	Ac-Ft/Yr	Required Water Rights	Required Water Rights	Accum Water Rights req'd.	Available Water Rights	Accum Req'd Volume(100 yr)	Total Water Allocation	Remaining Available Water
			SFEs	per SFE	(Acre-Feet/Year) 100yr	(Acre-Feet/Year) 300yr	100 year Equiv.	(Acre-Feet/Year) 100yr Equiv.	(Acre-Feet)	Ac-ft	Ac-ft.
	719-BD						237	0		0	
	214-BD						298	298		29,750	
	30593-F							113		11,300	
	46553-F							182		18,200	
	47813-F							388		38,800	
	17048-F							240		24,000	
										0	
	Meridian Ranch						85	85		8,500	
Total water Rights/Flow Available								1306		130,550	
Filing 4		164	164	0.56	92		92		9,184		121,366
Filing 5		31	195	0.56	17		109		10,920		119,630
Filing 6		48	243	0.56	27		136		13,608		116,942
Filing 7		57	300	0.56	32		168		16,800		113,750
Filing 8		109	409	0.56	61		229		22,904		107,646
Filing 9		88	497	0.56	49		278		27,832		102,718
Greenbelt					14		292		29,232		101,318
Falcon M. School		16	513		22		314		31,432		99,118
Filing 10		90	603	0.40	36	108	422		42,232		88,318
Filing 11		81	684	0.40	32		97		51,952		78,598
Filing 12		51	735	0.40	20		61		58,072		72,478
Church		0.5	736	0.40	0		1		58,132		72,418
Scenic View		90	826	0.40	36	108	689		68,932		61,618
Filing 13A		17	843	0.40	7		20		70,972		59,578
			843	0.36	0		0		70,972		59,578
			843	0.36	0		0		70,972		59,578
			843	0.36	0		0		70,972		59,578
School(16)		16	859	0.36	6	17	727		72,700		57,850
Filing 13B		5	864	0.36	2		5		73,240		57,310
		5	869	0.36	2		5		73,780		56,770
		5	874	0.36	2		5		74,320		56,230
		6	880	0.36	2		6		74,968		55,582
Filing 13C		33	913	0.36	12		36		78,532		52,018
		33	946	0.36	12		36		82,096		48,454
		33	979	0.36	12		36		85,660		44,890
		36	1015	0.36	13		39		89,548		41,002
Filing 13D		24	1039	0.36	9		26		92,140		38,410
		24	1063	0.36	9		26		94,732		35,818
		24	1087	0.36	9		26		97,324		33,226
		25	1112	0.36	9		27		100,024		30,526
Filing 13E		39	1151	0.36	14		42		104,236		26,314
		39	1190	0.36	14		42		108,448		22,102
		39	1229	0.36	14		42		112,660		17,890
		41	1270	0.36	15		44		117,088		13,462
Filing 14		46	1316	0.36	17		17		118,744		11,806
		66	1382	0.36	24		24		121,120		9,430
		56	1438	0.36	20		20		123,136		7,414
		56	1494	0.36	20		20		125,152		5,398

Table 9 shows the current physical water supply inventory for the district, detailing the volume of water allocated from the Laramie-Fox Hills, Arapahoe, and Denver aquifers along with the district’s contractual rights from MSMD. The district currently has an annual allocation of 1,305.5 ac-ft/yr. Additionally, PBHMD has contingent water supply sources, detailed in Table 10, which may be utilized, if needed, in the future. As shown, the district currently has sufficient water rights to meet its current obligations.

Table 9: Current Physical Water Supply Inventory

Land Formation or Aquifer	Finding, Dermination, or Decree	Tributary Status	Total Volume (ac-ft)	Annual Allocation (ac-ft/yr)	Well Permits
Larimie-Fox Hills	47813-F	NT	38,800	388.0	LFH-1 (47813-F)
					LFH-2 (50877-F)
					LFH-3 (55192-F)
					LFH-4 (63429-F)
					LFH-5 (64084-F)
Arapahoe	17048-F	NT	13,070	130.7	A-1 (17048-F)
	30593-F	NT	11,300	113.0	A-2 (30593-F)
	46553-F	NT	18,200	182.0	A-3 (46553-F)
					A-4 (55193-F)
					A-5 (60862-F)
					A-6 (64086-F)
Denver	17048-F	NT	11,130	111.3	17048-F
	214-BD	NNT	29,750	297.5	N/A
	MSMD			85.0	Alluvial Water
Current Total Legal Supply				1,307.5	

Source: JDS-Hydro 2013 Water Supply Report

Table 10: Contingent Water Supply Inventory

Land Formation or Aquifer	Finding, Determination, or Decree	Tributary Status	Total Volume (ac-ft)	Annual Allocation (100 yr supply) (ac-ft/yr)	Annual Allocation (300 yr supply) (ac-ft/yr)	Well Permits
Dawson	719-BD	NNT	23,700	237.0	79.0	N/A
	Unappropriated	NNT	2,000	20.0	-	N/A
Denver	Unappropriated	NT	2550	25.5	-	N/A
Surface Water Diversion	Finding, Determination, or Decree	Tributary Status	Comments			
Return Flows 02CW016	05CW043	2 cfs	Allocation is 25%, Unavailable for potable supply - Irrigation			

Source: JDS-Hydro 2013 Water Supply Report

The wells in the district need to be able to produce enough water to meet the MDD plus system losses, which at build out will be 541 gpm. With the current instantaneous well capacity equal to 602 gpm, the district has sufficient capacity to be able to meet the MDD at buildout, however under water rights considerations, a new well will be necessary. This will be a new well #12, which will be drilled into the Denver aquifer.

Table 11 shows the permit number and permitted pumping rate for each individual well and activity of the well along with the instantaneous flow rate from the JDS-Hydro report for each well and the contracted water from MSMD. The total instantaneous flow for all the

currently active wells combined, as reported by JDS-Hydro, is 610 gpm.

Table 11: Well Permits, Permitted Pumping Rates, and 2013 Instantaneous Flow-Rates

Land Formation or Aquifer	Well Number	Well ID	Well Permit	Permitted Pump Rate gpm	2013 Instantaneous Flow-Rate (Active Rate) gpm	Activity
Larimie-Fox Hills	4	LFH-1	47813-F	100	100	Active*
	5	LFH-2	50877-F	70	-	Inactive
	7	LFH-3	55192-F	100	51	Active
	9	LFH-4	63429-F	-	126	Active
	11	LFH-5	64084-F	-	101	Active
Arapahoe	1	A-1	17048-F	150	36	Active
	2	A-2	30593-F	70	29	Active
	3	A-3	46553-F	53	50	Active*
	6	A-4	55193-F	76	54	Active
	8	A-5	60862-F	85	56	Active
	10	A-6	64086-F	-	49	Active
Denver	12	DN-1	214-BD	100**	-	Proposed
Dawson	13	DA-1	719-BD**	-	-	Proposed
Transfer Station	N/A	N/A	N/A	N/A	90-200	Active
Total Instantaneous Flow of Active Wells (gpm)					602	
Max instantaneous flow with transfer station					802	

* These wells are in the final stages of completion and will be active by early 2021.

** Flow requested on permit

*** Well determination number

5.2.2 Treatment Systems

Currently the only treatment done on the raw water is disinfection. Sodium hypochlorite is injected at each of the well facilities in the district before the water passes directly into the distribution lines or into raw water lines used for chlorine contact before entering the water storage tanks. The chlorinated water from Pump House 1 (which houses Well 1) and Pump House 2 (which houses Wells 2 & 5) is fed directly into the distribution system after chlorination. There is no contact time provided for wells at these pump houses. Chlorinated water from Pump House 3, (which houses Wells 3 & 4), Pump House 4 (which houses Wells 6 & 7), Pump House 5 (which houses Wells 8 & 9), and Pump House 6 (which houses Wells 10 & 11) is piped to the two storage tanks before it is pumped into the distribution system. This piping and the storage tanks provide the required contact time for disinfection.

Well 6 and Well 7 have elevated levels of hydrogen sulfide, which has raised aesthetic concerns about the water quality in PBHMD. Hydrogen sulfide in water does not typically pose a health risk although it does create aesthetic problems such as bad taste and rotten egg odor at levels as low as 0.5 milligrams per liter (mg/L). Hydrogen sulfide is not regulated by the Environmental Protection Agency (EPA). RGA recommends using an activated carbon filtration system to mitigate the aesthetic concerns from the hydrogen sulfide in the water.

A pilot test was performed in May 2015 that tested the efficacy of removing hydrogen

sulfide using a granular activated carbon (GAC) filter. The two-phase pilot test was conducted at Wells 6 and Well 7. The filters were used to treat the water through adsorption, a process in which the hydrogen sulfide in the water will attach to the surface of the carbon particles in the filter. Phase 1 of the pilot test was a bench-scale test aimed at determining if the carbon removes sufficient hydrogen sulfide from the water and if different types of carbon are more effective at removing hydrogen sulfide than others. However, due to the small scale of the filters at this phase, no reduction in odor and taste from the hydrogen sulfide was detected. This was likely because the proper contact time could not be targeted at this small of a scale. Phase 2 of the pilot test employed a 10" diameter filter vessel filled with activated carbon. Initial results indicated that the activated carbon filter could remove the odor and taste due to hydrogen sulfide in the water. The test was run at 5 gpm to allow for sufficient contact time in the filter. This small-scale pilot test showed promising enough results that the ultimate plan will be to eventually treat all the water.

Additionally, RGA evaluated the option of centralizing treatment or leaving treatment decentralized in each of the pump houses. This evaluation along with a cost estimate and a recommendation is discussed in Section 6.1.2.

5.2.3 Water Storage

The PBHMD water distribution system contains two welded steel water storage tanks, a 1 MG tank and a 0.5 MG tank, which are also located on District owned land on the corner of Londonderry Drive and Towner Avenue. Both storage tanks are in relatively good condition and are not in need of any repairs. Chlorinated raw water from Pump House 3, (which houses Wells 3 & 4), Pump House 4 (which houses Wells 6 & 7), Pump House 5 (which houses Wells 8 & 9), and Pump House 6 (which houses Wells 10 & 11) is piped and stored in the tanks. The storage is used to meet fire flow demand and peak demand during summer months.



Figure 6: PBHMD 1 MG Water Storage Tank (left) and 0.5 MG Water Storage Tank (Right)

The district must have enough water storage to hold one day of the MDD for the district plus three hours of fire flow at 3,500 gpm. The required storage for the fire flow demand is a volume of 630,000 gallons. The storage required to meet the MDD of 1494 SFEs at buildout is 911,340 gallons. For the storage requirements, the MDD was computed as a peaking factor of the 0.36 ac-ft/yr average flow. As the 0.36 ac-ft/yr is the average planning

number that the district wants to use, its MDD factor was derived as a ratio of the MDD flow in the peak month in 2018 compared to the ADD flow for that year. This ratio computes to 1.9 and, when multiplied by 0.36 ac-ft/yr/SFE, yields 0.684 ac-ft/yr/SFE, or 610 gpd/SFE. That multiplied by 1494 yields 911,340 gallons.

Table 12: Required Storage to Meet MDD Plus Fire flow

	Required Storage (gallons)
Development Buildout	911,340
Fire Flow	630,000
Total	1,541,340

The total volume of storage required to meet the MDD of all developments through Filing 14 and fire flow in the district is 1,541,340 gallons. Since it can be seen that the district will be 0.041 MG short of storage, and to cover future storage needs of the district’s unplanned areas, we recommend adding an additional 0.2 MG of storage and adding mixing systems to all of the tanks. This recommendation will be further discussed in Section 6.1.3.

5.2.4 Booster Pump Station

The booster pump station is located on District owned land on the corner of Londonderry Drive and Towner Avenue adjacent to the storage tanks. The pump station is below grade and houses four pumps used to pressurize the distribution system with water from the storage tanks. A photo of the pump station is shown in Figure 7.



Figure 7: PBHMD Booster Pumps

Pump and motor information is shown in Table 13. Additionally, the booster pump station contains a sump pump to allow for the removal of any water in the dry pit to be removed.

Table 13: Pump Station Pump Data

Pump	Type	Manufacturer	Model NO.	Capacity	Motor	Motor Manufacturer
No. 1 Jockey Pump	Horizontal, Close Coupled, End Suction, Centrifugal	Goulds	SST A45#1L5AO EOO	-	10 hp 3490 RPM	Baldor
No. 2 Service Pump		-	Type 344 8F No-71-91450-2	540 gpm	30 hp 3540 RPM	WEG
No. 3 Service Pump		-	Type 344 8F No-71-91450-2	540 gpm	30 hp 3540 RPM	WEG
No. 4 High Service Pump		Cornell	5RB 60-4	2200 gpm	60 hp 1775 RPM	Marathon Electric

To evaluate the pumps and ensure that the district has enough pumping capacity, the peak hour flow (PHF) for the district is calculated. The PHF is calculated from the ADD using a peaking factor (PF), which can be calculated using the following population-based equation from the State of Colorado Design Criteria for Domestic Wastewater Treatment Works (2012):

$$PF = \frac{18 + \sqrt{P}}{4 + \sqrt{P}}$$

where P is population in thousands.

Assuming an average of 2.5 persons per single family household, the total population for the district can be estimated by multiplying the SFE of the district by 2.5. This was done for the total SFE of the district currently and the total SFE of the district once all future developments are constructed.

The peaking factor calculated to be 3.4 for ultimate development. The peak hour flow (PHF) was then calculated by multiplying the ADD for the district by the peaking factor. The PHF for the district calculates to be 817 gpm for the current and future developments respectively.

While the district has had adequate pumping capacity to meet the current demand with the existing pump station, it is not adequate to supply the 3,500 gpm fire flow needed for the schools, nor will it be sufficient to supply enough pressure and 1,500 gpm fire flow to the highest parts of the district in Filing 14, or supply normal adequate pressure in the higher areas of Tottenham St.; and, as a booster pump station has always been contemplated to boost pressure to the higher parts of the district, our recommendation is to construct a single new booster pump station near the existing one to cover the needs of the inadequate existing one for the higher parts of the district and to supply sufficient fire flow to the schools. This recommendation is discussed further in Section 6.1.4.

Given that the existing water system was not originally designed to accommodate more than 65 psi at the existing pump station, otherwise the pipes begin bursting, and that this is not enough pressure to service the upper parts of the district, the district should be divided into three pressure zones, whereby the new booster pump station will supply adequate pressure for the High Pressure Zone, and adequate flow to the Middle Pressure Zone through a Pressure Reducing Vault (PRV), then further pressure reduction through

another set of PRVs, at the boundary of the Falcon Reserve property at the southeast part of the district.

The boundary of the High-Pressure Zone is defined by the west and north boundaries of the district, the back-lot lines of the east side of Tottenham, and Beckham street and Londonderry along the south.

6 RECOMMENDATIONS & COST ESTIMATES

6.1 SYSTEM IMPROVEMENTS

6.1.1 Raw Water Supply

The analysis performed in Section 5.2.1 indicates that the district has sufficient annually allocated raw water supply to meet future demands from an instantaneous standpoint, however the district will need an additional well from a water rights perspective to meet the demands of the proposed future developments once they are constructed.

RGA recommends that the district construct a new well, Well #12 to supply the additional required flow. This well would be drilled into the Denver aquifer and is currently designated by Determination Number 214-BD in the district’s portfolio of water rights. This well should be drilled, equipped and the equipment contained in a new pump house located at the site of Pump house #6, at the far western part of the district. This new pump house should be sized sufficiently to house the disinfection and controls for Wells 10 and 11, which are located at this site, as those wells do not have a decent pump house to house their equipment. Table 14 shows the estimated cost for this new well and pump house.

The district should also drill a back-up well to ensure it has enough pumping capacity in the event that a well goes down. This backup well would logically be Determination Number 719-BD, would be drilled into the Dawson aquifer, and should yield 79 ac-ft/yr under the 300-year rule. Table 15 shows a construction cost estimate for a single well.

Table 14: Well #12 Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	Drill Well, Well Pump, Well Pump Installation	1	LS	\$975,000	\$975,000
2	Well Building, Process Piping, and Yard Piping	1	LS	\$187,200	\$187,200
3	Site Development Plan	1	LS	\$25,000	\$25,000
Subtotal					\$1,187,200
Engineering (8%)					\$91,500
Contingency (20%)					\$237,440
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$328,940
TOTAL PROJECT COST					\$1,516,140

Table 15: Well #13 Determination #719-BD Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	Drill Well, Well Pump, Well Pump Installation	1	LS	\$975,000	\$975,000
2	Well Building, Process Piping, and Yard Piping	1	LS	\$900,000	\$900,000
3	Raw Water Line	2,500	LF	\$100	\$250,000
4	Site Development Plan	1	LS	\$25,000	\$25,000
Subtotal					\$2,150,000
Augmentation Plan					\$100,000
Engineering (15%)					\$322,500
Contingency (20%)					\$430,000
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$852,500
TOTAL PROJECT COST					\$3,002,500

Table 16: Raw Water Lines for Wells 1, 2, and 5 Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	Well #2 & #5 - 6" Pipe	1,660	LF	\$100	\$166,000
2	Well #1 - 6" Pipe	4,040	LF	\$100	\$404,000
3	Joint FM 8" Pipe	1,060	LF	\$110	\$116,600
Subtotal					\$686,600
Engineering (15%)					\$102,990
Contingency (20%)					\$137,320
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$240,310
TOTAL PROJECT COST					\$926,910

6.1.2 Treatment Systems

There are two treatment parameters that need to be considered, one required by law and the other only optional. The one required by law is disinfection which is currently being accomplished by chlorination. The second is taste and odor control, which is an aesthetic issue, rather than a legal requirement and is not, as such, required. Chlorination is the only treatment currently practiced. For wells 1, 2 and 5, the water is chlorinated on-site and pumped directly into the system without any contact time. That practice should be ended as soon as possible, as not having adequate chlorine contact is not allowed by Colorado Department of Public Health and Environment (CDPHE). Putting chlorine contact at these sites is not practical or cost effective, as there is not enough room at these sites for chlorine contact tanks. To provide adequate contact time then, raw water lines should be installed to pump the water to the storage tanks, using the lines for chlorine contact, rather than pumping directly into the system. This methodology would work well with the centralization of the taste and odor treatment as well. Until centralized taste and odor treatment is accomplished, operating the wells with the de-centralized treatment concept is our recommendation. Table 16 shows the cost of installing the raw water lines on wells 1,2 and 5 to have them comply with the CDPHE requirements.

When it becomes desirable to implement taste and odor treatment, centralizing treatment at the Booster Pump House site will be the most cost effective and most easily operated way of accomplishing that. Since, when that time occurs, all of the wells will have been equipped with raw water lines to pump their water to a central location at the storage tank site, that site can be used for the centralized taste and odor treatment as well. The location for the treatment facilities will be within the Booster Pump House building. The unit process to be used for taste and odor treatment will be GAC, as discussed in previous chapters.

When GAC treatment is implemented, it will be necessary deactivate the chlorination facilities at the individual well sites, because any chlorine present in the water entering the GAC units will be removed by them. It will be necessary, then to treat the well water first with the GAC, then chlorinate the water afterward. New chlorination facilities and an underground chlorine contact tank will then have to be constructed underground, as well as a set of pumps to re-pump the treated water to the storage tanks. The costs of this centralized treatment are detailed in Table 17.

Table 17: Centralized Treatment Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	Treatment Equipment and Piping (GAC Pressure Vessels)	1	LS	\$1,462,500	\$1,462,500
2	Process Piping and Valves	1	LS	\$112,500	\$112,500
3	Chlorine Contact Basin (Concrete, Baffle Walls, Etc.)	130	CY	\$1,575	\$204,750
4	Chlorine Feed Equipment	1	LS	\$45,000	\$45,000
5	Clearwell Booster Pump Station (To Tank)	2	EA	\$146,300	\$292,600
6	Miscellaneous	1	LS	\$336,600	\$336,600
Subtotal					\$2,453,950
Engineering (10%)					\$245,395
Contingency (20%)					\$490,790
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$736,185
TOTAL PROJECT COST					\$3,190,135

6.1.3 Water Storage

The calculations performed in Section 5.2.3 indicate that the district’s storage capacity is not sufficient to meet the storage needs at buildout. Being 41,340 gallons short, the district will need to construct additional storage. RGA recommends constructing an additional 0.2 MG storage tank to meet future storage requirements and adding mixing systems to all the storage tanks.

The construction of an additional 0.2 MG storage tank would allow for the district to meet its storage requirements once all proposed developments are constructed, plus 10% for a factor of safety. It would increase its total storage capacity to 1.7 MG, providing approximately 0.16 MG more storage than the district needs to meet MDD plus fire flow for current buildout. This additional storage could be available for the yet-to-be-determined development at the Falcon Reserve.

The addition of mixing systems to all three storage tanks to prevent excessive water aging and ice formation. Without a water mixing system in a storage tank, the last water put in the tank is the first water to be taken from the tank, leaving a great volume to just remain unused. The excess water aging is conducive to microbial growth and chemical changes and can reduce water quality parameters. Additionally, in winter months ice can form on the top of the water inside the storage tank. As the water level inside the tank rises and falls with residential water use, the ice moves up and down the tank walls and can cause damage to the tank. By installing a mixing system into all of the districts tanks, excess water age and ice formation can be reduced significantly. Table 18 details a cost estimate for a 0.20 MG water storage tank.

Table 18: 200,000 Gallon Water Storage Tank Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	200,000 Gallon Water Storage Tank and Installation	1	LS	\$260,000	\$260,000
2	Foundation, Tank Mixing System Site Work	1	LS	\$30,000	\$30,000
Subtotal					\$290,000
Engineering (10%)					\$29,000
Contingency (10%)					\$29,000
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$58,000
TOTAL PROJECT COST					\$348,000

6.1.4 Booster Pump

As discussed previously, the district needs a new pump station to be able to supply required fire flows to the schools and to provide sufficient pressure to the upper areas of the district. The recommended place for the new pump station is on the storage tank site, east of the administration building. The costs of this pump station are shown in Table 19.

Table 19: Booster Pump House Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	Building	2,500	SF	\$200	\$500,000
2	Pumps - 2000 gpm	3	EA	\$100,000	\$300,000
	Pump - 300 gpm Jockey	1	EA	\$50,000	\$50,000
3	Valves and Interior Piping	1	LS	\$150,000	\$150,000
4	Yard Piping, Tank Modifications	1	LS	\$150,000	\$150,000
5	Miscellaneous	1	LS	\$45,000	\$45,000
Subtotal					\$1,195,000
Engineering (15%)					\$179,250
Contingency (20%)					\$239,000
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$418,250
TOTAL PROJECT COST					\$1,613,250

6.1.5 Pressure Zone Adjustments

As discussed earlier, to increase the pressure and supply adequate fire flow to the upper areas of the district, while at the same time providing more fire flow to the lower parts of the district will require the district to be partitioned into three pressure zones- the High Pressure Zone, the Middle Pressure Zone and the Low Pressure Zone. To provide the correct flows at the correct pressures and in separating the two upper zones, it will be necessary to add pressure reducing vaults and separate feed lines.

A PRV vault will need to be added to the upper end of Tottenham and one at the far west end of Filing 14 to connect the High and Middle Zones, and a PRV vault will be constructed just outside the Booster Pump station to reduce pressure to the Middle Zone. A new feed line to serve the High Zone will need to run from the Booster Pump Station then along Londonderry to feed High Zone pressure to Tottenham, and the connector streets of Filings 13E and 14. The costs of these enhancements are shown on Table 20.

Table 20: Pressure Zone Adjustments Cost Estimate

Item	Description	Qty	Unit	Unit Price	Subtotal
1	Pressure Relief Valves (small)	2	EA	\$75,000	\$150,000
2	Pressure Relief Valves (large)	1	EA	\$125,000	\$125,000
3	12" Parallel Water Line in Londonderry Drive	2,500	LF	\$125	\$312,500
4	Miscellaneous	1	LS	\$75,000	\$75,000
Subtotal					\$662,500
Engineering (15%)					\$99,375
Contingency (20%)					\$132,500
SUBTOTAL NON-EQUIPMENT/MATERIAL COSTS					\$231,875
TOTAL PROJECT COST					\$894,375

APPENDIX A

Well Permit Information

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0468250A

General Purpose Application	12/01/2007	No
Permit to Construct a Well	12/01/2007	No
Pump Installation & Test	12/01/2007	No
Correspondence, Memos, Findings & Hearings	12/01/2007	No
Correspondence, Memos, Findings & Hearings	12/01/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DWR](#) | [Privacy Policy](#) | [Transparency & Open Records](#) | [FOIA](#)

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help Last Refresh: 2/25/2015 12:01:56 AM

Receipt: 0426555
Permit #: 50877-F -
Well Name / #:
Designated Basin: UPPER BLACK SQUIRREL CREEK
Case Number:
WDID:

Division: 2
Water District: 10
County: EL PASO
Management District: UPPER BLACK SQUIRREL

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	PAINT BRUSH HILLS METRO DIST	9830 LIBERTY GROVE DR	FALCON, CO 80831-

[-] Location Information

Approved Well Location:
Q40 Q160 Section Township Range PM Footage from Section Lines
 SW NE 25 12.0S 65.0W Sixth 1420 N 1950 E
Northing (UTM y): 4314659.9 **Easting (UTM x):** 533390.5
Location Accuracy: Spotted from section lines

Physical Address **Subdivision Name**
City/State/Zip **Filing Block Lot**

Parcel ID: **Acres in Tract:** 1440

[-] Permit Details

Date Issued: 11/05/1998 **Date Expires:** 11/05/1999
Use(s): ALL BENEFICIAL USES **Aquifer(s):** LARAMIE FOX HILLS
Special Use:

Area which may be irrigated:
Maximum annual volume of appropriation:

Statute:
Permit Requirements: **Totalizing Flow Meter** **Geophysical Log** **Abandonment Report**
 Yes No No

Cross Reference	Permit Number	Receipt	Description
Permit(s):	47813-F -	0403866	

Comments:ADDITIONAL WELL FOR 47813-F

[-] Construction/Usage Details

Well Construction Date: 06/29/1999 **Pump Installation Date:** 06/01/2000
Well Plugged: **1st Beneficial Use:** 08/01/2001

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
7180	2500	2280	2470	1447	70

Driller	Lic # Name	Address	Phone Number
	863 HENKLE, RICHARD L.	BOX 639 GARDEN CITY, KS 67846	620-277-2389

[-] Application/Permit History

Ownership Change	05/14/2013
First Beneficial Use	08/01/2001
Pump Installation Report Received	11/08/2000
Pump Installed	06/01/2000
Well Construction Report Received	07/14/1999
Well Constructed	06/29/1999
Permit Issued	11/05/1998
Application Received	02/11/1998

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Change in Owner Name/Address/Location	05/30/2013	No
Pump Installation & Test	12/09/2007	No
Well Construction & Test	12/01/2007	No

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0426555

Permit to Construct a Well	12/01/2007	No
Notice of Commencement of Use	12/01/2007	No
Original File	12/01/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DWR](#) | [Privacy Policy](#) | [Transparency Online Project \(TOP\)](#)

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help Last Refresh: 2/25/2015 12:01:56 AM

Receipt: 0403866 **Division:** 2
Permit #: 47813-F- **Water District:** 10
Well Name / #: **County:** EL PASO
Designated Basin: UPPER BLACK SQUIRREL CREEK **Management District:** UPPER BLACK SQUIRREL
Case Number:
WDID:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	PAINT BRUSH HILLS METRO DISTRICT	9830 LIBERTY GROVE DR	FALCON, CO 80831-

[-] Location Information

Approved Well Location:
Q40 Q160 Section Township Range PM Footage from Section Lines
 SW NW 25 12.0S 65.0W Sixth 2600 N 50 W
Northing (UTM y): 4314293.9 **Easting (UTM x):** 532389.2
Location Accuracy: Spotted from section lines

Physical Address **Subdivision Name**
City/State/Zip **Filing Block Lot**

Parcel ID: **Acres in Tract:** 1

[-] Permit Details

Date Issued: 01/24/1997 **Date Expires:** 01/24/1998
Use(s): COMMERCIAL **Aquifer(s):** LARAMIE FOX HILLS
Special Use:
Area which may be irrigated:
Maximum annual volume of appropriation:
Statute:
Permit Requirements: **Totalizing Flow Meter** **Geophysical Log** **Abandonment Report**
 No No No

Cross Reference Permit(s)	Permit Number	Receipt	Description
	28885-MH-	0028885	

Comments:

[-] Construction/Usage Details

Well Construction Date: 11/20/1996 **Pump Installation Date:**
Well Plugged: **1st Beneficial Use:** 05/01/1997

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
7170	2500	2265	2470	1336	100

Driller	Lic #	Name	Address	Phone Number
	403	SCHOCKE, ROGER	9875 BRIGHTON ROAD HENDERSON, CO 80640	303-288-5474

[-] Application/Permit History

Ownership Change	05/14/2013
Notice of Commencement of Beneficial Use	01/16/1998
First Beneficial Use	05/01/1997
Well Construction Report Received	02/06/1997
Permit Issued	01/24/1997
Well Constructed	11/20/1996
Application Received	07/22/1996

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Change in Owner Name/Address/Location	05/30/2013	No
Well Construction & Test	12/01/2007	No
Original File	12/01/2007	No

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0260356A

Pump Installation & Test	12/01/2007	No
Well Construction & Test	12/01/2007	No
Original File	12/01/2007	No
Field Inspection	11/28/2007	No
Correspondence, Memos, Findings & Hearings	11/28/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DWR](#) | [Privacy Policy](#) | [Transparency Online](#) | [Feedback](#)

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0542358

Permit to Construct a Well	11/28/2007	No
Correspondence, Memos, Findings & Hearings	11/28/2007	No
General Purpose Application	11/28/2007	No
Well Construction & Test	11/27/2007	No
Correspondence, Memos, Findings & Hearings	11/27/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DNR](#) | [Privacy Policy](#) | [Transparency Online Project \(TOP\)](#)

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help Last Refresh: 2/25/2015 12:01:56 AM

Receipt: 9079954 **Division:** 2
Permit #: 17048-F- **Water District:** 10
Well Name / #: **County:** EL PASO
Designated Basin: UPPER BLACK SQUIRREL CREEK **Management District:** UPPER BLACK SQUIRREL
Case Number:
WDID:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	PAINT BRUSH HILLS METROPOLITAN DIST	9830 LIBERTY GROVE DR	FALCON, CO 80831-

[-] Location Information

Approved Well Location:

Q40	Q160	Section	Township	Range	PM	Footage from Section Lines
SW	SE	25	12.0S	65.0W	Sixth	650 S 1750 E

Northing (UTM y): 4313667.5 **Easting (UTM x):** 533454.2
Location Accuracy: Spotted from section lines

Physical Address	Subdivision Name
City/State/Zip	Filing Block Lot

Parcel ID:	Acres in Tract:

[-] Permit Details

Date Issued: 03/21/1973 **Date Expires:** 03/21/1975
Use(s): OTHER **Aquifer(s):** ARAPAHOE DENVER
Special Use:
Area which may be irrigated: 9000 acres
Maximum annual volume of appropriation:
Statute:
Permit Requirements: Totalizing Flow Meter: No Geophysical Log: No Abandonment Report: No

Cross Reference	Permit Number	Receipt	Description
Permit(s):			
Comments:			

[-] Construction/Usage Details

Well Construction Date: 07/03/1974 **Pump Installation Date:**
Well Plugged: **1st Beneficial Use:** 05/25/1972

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
2770	930	2450	730	150	

[-] Application/Permit History

Ownership Change	10/18/2013
Well Construction Report Received	04/07/1975
Well Constructed	07/03/1974
Permit Issued	03/21/1973
First Beneficial Use	05/25/1972
Application Received	01/10/1972

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Correspondence, Memos, Findings & Hearings	11/26/2013	No
Change in Owner Name/Address/Location	05/30/2013	No
Maps, Deeds & Legal Descriptions	08/21/2009	No
Denver Basin Exempt Well Data Sheet	08/21/2009	No
Well Construction & Test	12/01/2007	No
Permit to Construct a Well	12/01/2007	No
Original File	12/01/2007	No
Maps, Deeds & Legal Descriptions	11/28/2007	No

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 9079954

Field Inspection	11/28/2007	No
Correspondence, Memos, Findings & Hearings	11/28/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DNR](#) | [Privacy Policy](#) | [Transparency Online Project \(TOP\)](#)

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help Last Refresh: 2/25/2015 12:01:56 AM

Receipt: 0546546 **Division:** 2
Permit #: 64084-F - **Water District:** 10
Well Name / #: **County:** EL PASO
Designated Basin: UPPER BLACK SQUIRREL CREEK **Management District:** UPPER BLACK SQUIRREL
Case Number:
WDID:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	PAINT BRUSH HILLS METROPOLITAN DISTRICT	9630 LIBERTY GROVE DR	FALCON, CO 80831-

[-] Location Information

Approved Well Location:
Q40 Q160 Section Township Range PM Footage from Section Lines
 SW NE 26 12.0S 65.0W Sixth 2420 N 2270 E
Northing (UTM y): 4314341.0 **Easting (UTM x):** 531682.1
Location Accuracy: Spotted from section lines

Physical Address **Subdivision Name**
City/State/Zip **Filing Block Lot**

Parcel ID: **Acres in Tract:** 1440

[-] Permit Details

Date Issued: 04/06/2006 **Date Expires:** 04/06/2007
Use(s): MUNICIPAL **Aquifer(s):** LARAMIE FOX HILLS
Special Use:
Area which may be irrigated: 960 ACRES
Maximum annual volume of appropriation:
Statute:
Permit Requirements: **Totalizing Flow Meter** **Geophysical Log** **Abandonment Report**
 No No No
Cross Reference **Permit Number** **Receipt** **Description**
Permit(s): 47813-F - Unknown

Comments:

[-] Construction/Usage Details

Well Construction Date: 08/15/2006 **Pump Installation Date:**
Well Plugged: **1st Beneficial Use:** 10/18/2007

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
2500		2295	2480	1653	

Driller	Lic #	Name	Address	Phone Number
	1200	TORMOEHLN, DAVID A.	4975 SW WINNEMUCCA BLVD WINNEMUCCA, NY 89445	775-623-5259

[-] Application/Permit History

Ownership Change	05/14/2013
Notice of Commencement of Beneficial Use	11/16/2007
Statement of Beneficial Use Received	11/16/2007
First Beneficial Use	10/18/2007
Well Construction Report Received	09/05/2006
Well Constructed	08/15/2006
Permit Issued	04/06/2006
Application Received	12/08/2005

[-] Imaged Documents

Document Name	Date Imaged	Annotated
<u>Change in Owner Name/Address/Location</u>	05/30/2013	No
<u>Statement of Beneficial Use</u>	03/27/2008	No
<u>Notice of Commencement of Use</u>	03/27/2008	No

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0546546

General Purpose Application	11/27/2007	No
Permit to Construct a Well	11/27/2007	No
Well Construction & Test	11/27/2007	No
Correspondence, Memos, Findings & Hearings	11/27/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DWR](#) | [Privacy Policy](#) | [Transparency Online Project \(TOP\)](#)

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help Last Refresh: 2/25/2015 12:01:56 AM

Receipt: 0542358 **Division:** 2
Permit #: 63429-F - **Water District:** 10
Well Name / #: **County:** EL PASO
Designated Basin: UPPER BLACK SQUIRREL CREEK **Management District:** UPPER BLACK SQUIRREL
Case Number:
WDID:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	PAINT BRUSH HILLS METROPOLITAN DISTRICT	9830 LIBERTY GROVE DR	FALCON, CO 80831

[-] Location Information

Approved Well Location:
Q40 Q160 Section Township Range PM Footage from Section Lines
 SW SE 26 12.0S 65.0W Sixth 320 S 1580 E
Northing (UTM y): 4313553.5 **Easting (UTM x):** 531892.5
Location Accuracy: Spotted from section lines

Physical Address **Subdivision Name**
City/State/Zip **Filing Block Lot**

Parcel ID: **Acres in Tract:** 1440

[-] Permit Details

Date Issued: 10/28/2005 **Date Expires:** 10/28/2006
Use(s): ALL BENEFICIAL USES **Aquifer(s):** LARAMIE FOX HILLS
Special Use: AUGMENTED
Area which may be irrigated: 1440 ACRES
Maximum annual volume of appropriation:
Statute:
Permit Requirements: **Totalizing Flow Meter** **Geophysical Log** **Abandonment Report**
 No No No

Cross Reference	Permit Number	Receipt	Description
Permit(s):	47813-F -	Unknown	

Comments:

[-] Construction/Usage Details

Well Construction Date: 07/10/2006 **Pump Installation Date:**
Well Plugged: **1st Beneficial Use:** 10/18/2007

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
6740	2450	2225	2420	1605	

Driller	Lic #	Name	Address	Phone Number
	1200	TORMOEHLN, DAVID A.	4975 SW WINNEMUCCA BLVD WINNEMUCCA, WY 89445	775-623-5259

[-] Application/Permit History

Ownership Change	05/14/2013
Notice of Commencement of Beneficial Use	11/16/2007
Statement of Beneficial Use Received	11/16/2007
First Beneficial Use	10/18/2007
Well Construction Report Received	07/28/2006
Well Constructed	07/10/2006
Permit Issued	10/28/2005
Application Received	08/15/2005

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Change in Owner Name/Address/Location	05/30/2013	No
Statement of Beneficial Use	03/27/2008	No
Notice of Commencement of Use	03/27/2008	No

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0542358

Permit to Construct a Well	11/28/2007	No
Correspondence, Memos, Findings & Hearings	11/28/2007	No
General Purpose Application	11/28/2007	No
Well Construction & Test	11/27/2007	No
Correspondence, Memos, Findings & Hearings	11/27/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DNR](#) | [Privacy Policy](#) | [Transparency Online Project \(TOR\)](#)

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help Last Refresh: 2/25/2015 12:01:56 AM

Receipt: 0519203 **Division:** 2
Permit #: 60862-F - **Water District:** 10
Well Name / #: **County:** EL PASO
Designated Basin: UPPER BLACK SQUIRREL CREEK **Management District:** UPPER BLACK SQUIRREL
Case Number:
WDID:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	PAINT BRUSH HILLS METRO DISTRICT	9830 LIBERTY GROVE DR	FALCON, CO 80831

[-] Location Information

Approved Well Location:
Q40 Q160 Section Township Range PM Footage from Section Lines
 SW SE 26 12.05 65.0W Sixth 300 S 1600 E
Northing (UTM y): 4313546.9 **Easting (UTM x):** 531886.3
Location Accuracy: User supplied

Physical Address **Subdivision Name**
City/State/Zip **Filing Block Lot**

Parcel ID: **Acres in Tract:** 1440

[-] Permit Details

Date Issued: 03/18/2004 **Date Expires:** 03/18/2005
Use(s): MUNICIPAL **Aquifer(s):** ARAPAHOE
Special Use:
Area which may be irrigated:
Maximum annual volume of appropriation:
Statute:
Permit Requirements: **Totalizing Flow Meter** **Geophysical Log** **Abandonment Report**
 Yes Yes No
Cross Reference Permit Number Receipt Description
Permit(s): 46553-F - 0355875B
Comments: ADDITIONAL WELL FOR 46553-F

[-] Construction/Usage Details

Well Construction Date: 06/24/2004 **Pump Installation Date:**
Well Plugged: **1st Beneficial Use:** 10/18/2007

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
1870		1420	1855	1112	85

Driller **Lic # Name** **Address** **Phone Number**
 1200 TORMOEHLER, DAVID A. 4975 SW WINNEMUCCA BLVD WINNEMUCCA, NY 89445 775-623-5259

[-] Application/Permit History

Ownership Change	05/14/2013
Notice of Commencement of Beneficial Use	11/16/2007
Statement of Beneficial Use Received	11/16/2007
First Beneficial Use	10/18/2007
Well Construction Report Received	07/07/2004
Well Constructed	06/24/2004
Permit Issued	03/18/2004
Application Received	01/12/2004

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Change in Owner Name/Address/Location	05/30/2013	No
Statement of Beneficial Use	03/27/2008	No
Notice of Commencement of Use	03/27/2008	No

2/25/2015

State of Colorado Water Resources - View Well Details: Receipt 0519203

Permit to Construct a Well	11/29/2007	No
Well Construction & Test	11/29/2007	No
Denver Basin Exempt Well Data Sheet	11/29/2007	No
General Purpose Application	11/29/2007	No
Maps, Deeds & Legal Descriptions	11/29/2007	No
Correspondence, Memos, Findings & Hearings	11/29/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DNR](#) | [Privacy Policy](#) | [Transparency](#) | [Online Records \(OLR\)](#)

Pump Installation & Test	12/01/2007	No
Well Construction & Test	12/01/2007	No
Correspondence, Memos, Findings & Hearings	12/01/2007	No
General Purpose Application	12/01/2007	No
Permit to Construct a Well	12/01/2007	No
Correspondence, Memos, Findings & Hearings	12/01/2007	No
Correspondence, Memos, Findings & Hearings	12/01/2007	No

Copyright © 2009 Colorado Division of Water Resources. All rights reserved.

[Home](#) | [Contact Us](#) | [Help](#) | [Water Links](#) | [Colorado.gov](#) | [DNR](#) | [Privacy Policy](#) | [Translate by Online Free!](#) | [TCLP](#)

APPENDIX B JDS-Hydro Report

2013 Water Supply Report

For

PAINT BRUSH HILLS METROPOLITAN DISTRICT



paint brush hills
metropolitan district

NOVEMBER 2013

JDS-HYDRO

CONSULTANTS, INC.

2013 Water Supply Report

For
Paint Brush Hills Metropolitan District

November 2013

Prepared for:

Paint Brush Hills Metropolitan District

Prepared by:

JDS-Hydro Consultants, Inc.
545 East Pikes Peak, Suite 300
Colorado Springs, CO 80903

TABLE OF CONTENTS

1.0 INTRODUCTION AND CONCLUSION

2.0 WATER DEMAND ANALYSIS

Figure 1: *Paint Brush Hills Historical User Characteristic*

Table 1: *Paint Brush Hills Metro District Water User Characteristics*

3.0 LEGAL WATER SUPPLY

3.1 *Denver Basin Sources*

3.2 *Contractual Rights*

3.3 *Decreed Surface Rights*

3.4 *Adequacy of Legal Water Supply*

Table 2: *Legal Water Supply Inventory and Commitment Summary*

4.0 PHYSICAL WATER SUPPLY

4.1 *Denver Basin Sources*

4.2 *Transfer Station*

4.3 *Adequacy of Physical Supply*

Table 3: *Physical Water Supply Inventory*

APPENDICES

- *Appendix A; Denver Basin Water Source*
 - A-1: Finding 47813-F (Laramie Fox Hills)*
 - A-2: Permit 17048-F with recent letter*
 - A-3 Finding 46553-F (Arapahoe)*
 - A-4: Determination 214-BD*
- *Appendix B; Contractual Right*
 - B-1: Contract with Meridian Service Metro District*
 - B-2: Assignment of Contractual Water Right*
- *Appendix C; Water Commitment Summary (Update 12/01/08)*

1.0 INTRODUCTION AND CONCLUSION

Introduction: The Paint Brush Hills Metropolitan District currently includes a service area of approximately 9 square miles. The District has 720 actual taps which equate to about 805 Single Family Equivalent taps. An SFE is defined as the water generally used by a single family detached residence.

PBHMD supply is primarily dependent on the Denver Basin Aquifer which is a non-renewable water source. However, a portion of the District's portfolio is based on a contractual renewable Upper Black Squirrel supply.

An interesting element of this effort is that a significant portion of this district was platted prior to the implementation of the "El Paso County 300 Year Rule" and therefore is not subject to that ruling. Consequently in order to mix 100 year rule subdivisions with 300 year subdivisions, our analysis is performed on a total volumetric basis.

Conclusion: This report is in general concurrence with previous reports relative to legal supply except for the very minor deviations and the characterization of the contractual rights.

The findings of this report conclude that PBHMD has adequate legal and physical water supply for existing customers, existing commitments and commitments under consideration which include Filing 13B and the Scenic View at Paint Brush Hills Subdivision of 91 lots.

Excess legal supply beyond that level will support roughly an additional 590 single family units and physical supply would provide for roughly an additional 307 single family units.

Additionally, PBHMD has certain "contingent supplies" which can be developed to further legal and physical supply.

} 805 +
91

2.0 WATER DEMAND ANALYSIS

District Water User Characteristics: For the purpose of projecting current and future water needs as well as planning infrastructure, we have performed a brief study of the historical patterns of water use for PBHMD.

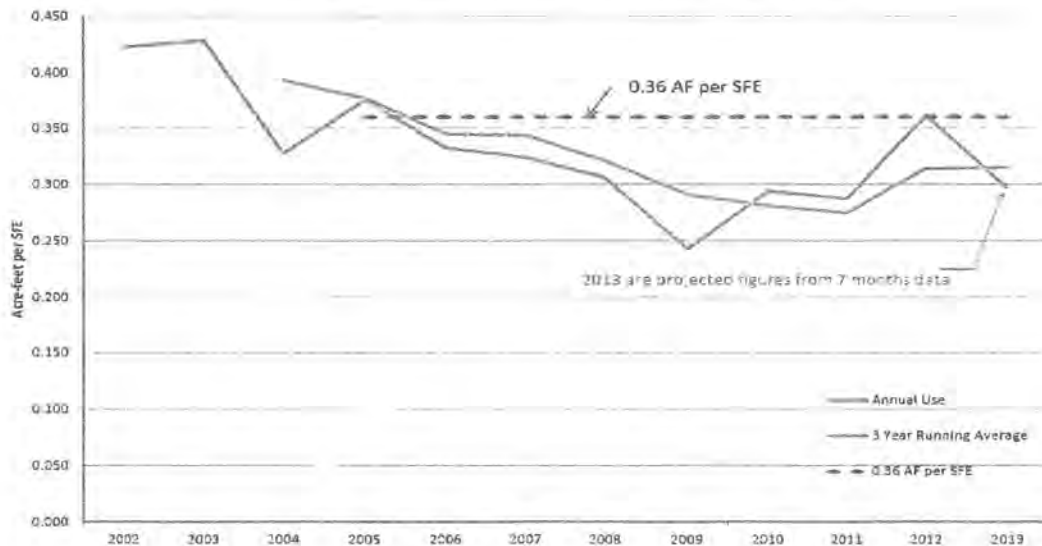
Over the recent decade, water consumption per tap or has decreased dramatically along the Front Range. This is due in part to several reasons which are likely to continue into the future:

- Price Elasticity - as entities (including PBHMD) have converted to the inverted block rate, users have responded to the increased cost of water by reducing usage
- Increased water conservation awareness
- Increased use of flow restriction devices, low flow toilets, etc.
- Dramatically decreased lot size/irrigated landscape area; This is especially true in PBHMD where earlier filing covenants required lawn maintenance of a certain minimum size to the current condition where plat restrictions that limit lawn irrigation size.

Currently, the historic figures indicate that PBHMD actually uses dramatically lower annual water user characteristics than committed in the past. Figure 1 below is a presentation of the trend for annual water user characteristics for PBHMD. A factor of 0.36 AF per SFE will be adopted for the purpose of future planning for actual physical source of supply and computation legal supply going forward. We elected to leave the old legal demand allocations for previous subdivisions in place, since formal commitments are attached to those figures.

Could be low? Doesn't include losses?

Figure 1. Paint Brush Hills Historical User Characteristic



It is expected that newer lots will continue the trend to smaller lot sizes as Filings 11 and 12 present and to smaller turf and lawn irrigation. Table 1 below is a listing of system user characteristics that will be used for making various projections including adequacy of physical supply.

Table 1
Paint Brush Hills Metro District Water User Characteristics

Land Use	Annual ¹ Demand (Acre-Feet)	Average Daily Demand (GPD)	Maximum ² Daily Demand (GPD)	Peak ² Hour Flow (GPM)
Single Family Unit (SFE)	0.360	321 GPD	642 GPD	0.66 GPM
Indoor Use	0.193			
Irrigation	0.167			
Middle School	22.0	19640 GPD	22,586 GPD	23.2 GPM
Greenbelts	14.0	12,500 GPD	28,125 GPD	58,120 GPD

Note 1. Annual Demand based on 0.36 AF/SFE per Figure 1

*Note 2. Residential Peaking Factors 2.0 MDF/ADF 1.48PHF/MDF
Middle School 1.15 MDF/ADF 1.48 PHF/MDF
Greenbelts 2.25 MDF/ADF 2.75 PHF/MDF*

3.0 *LEGAL WATER SUPPLY*

3.1 *Denver Basin Sources:*

PBHMD has adjudicated several Denver Basin rights underlying lands of the District for the purpose of beneficial uses within the District. Some of these rights have been fully developed and are available as physical supply, while some remain as contingent sources, requiring additional efforts to classify as legal source.

The rights currently include Laramie Fox-Hills, Arapahoe, and Denver sources. Additional Dawson water may be made available for legal supply upon completion of the Replacement Plan which is in process.

There are a few miscellaneous contingent rights that are likely to be implemented in the future as well. Appendices A-1, A-2, A-3, and A-4 document the current Denver Basin legal supplies.

A well named A-1 (permit 17048-F) has been withheld from calculation in previous water resource reports because of a potential issue with the Statement of Beneficial Use. A recently adopted State Statute SB 13-72 amends elements of the SBU requirement and directs the State Engineer to issue final permits on various wells within the Denver Basin. This has been something of a "clean-up" of outstanding well permits. The attached letter acknowledges the completion of well A-1 (17048-F) into both Denver and Arapahoe aquifers and acknowledges the water right as per conditional as valid. This resolves the issues related to A-1 and clears up the validity of 130.7 AF Arapahoe and 111.3 AF Denver (100 year basis).

3.2 *Contractual Rights*

PBHMD has a contract with Meridian Service Metropolitan District for the perpetual lease of up to 85 annual acre-feet of water. A copy of the contract is attached in Appendix B-1. The contractual right was originally assigned to Six Ninety Nine L. A., LLC on September 8, 2003, but was subsequently assigned over to the PBH District via instrument entitled "Lift Station and Water Assignment" dated April, 2, 2004. This document is also noted in Appendix B-2.

Our review of the documents referenced does not constitute a legal review of the contractual rights, however, in our opinion there are several significant elements;

- The right is clearly enumerated as perpetual and therefor would meet the 300 year standard
- In the recitals, it is implied that the water right is based on alluvial water from the Upper Black Squirrel Creek Designated

Groundwater Basin which is "renewable". As renewable the name plate (85 annual acre-feet) also meets the 300 year rule as renewable

- The only limiting conditions referenced are specified in paragraph 7 which reference the Supreme Court Decision in Cherokee Water District vs City of Colorado Springs
- It is known that the PBHMD service area is entirely within the Upper Black Squirrel Creek Designated Groundwater Basin

It is our opinion that the 85 acre-feet is perpetual and renewable and therefor may be considered as a renewable supply for the purpose of legal and physical supply for PBHMD.

3.3 Decreed Surface Rights

PBHMD is a party to an absolute water rights decree which allows for surface water diversions from an un-named tributary in the Upper Black Squirrel system. A copy of that decree is attached as Appendix C. While PBHMD is a party to the decree the water is currently unavailable for use in the potable system and cannot be classified as a physical supply for the purpose of providing beneficial supply at this time.

*why not?
How much
supply?*

3.4 Adequacy of Legal Water Supply

Table 2 on the following page is a summary of the Legal Water Supply Inventory for Paint Brush Hills Metropolitan District. This summary presents current legal supply and also delineates certain contingent supplies that are potentially convertible to actual supply. Our findings are somewhat consistent with the findings of Curt Wells (Appendix C) with the exception of the nature of the contractual water supply and the addition of the 17048-F water which has been recently clarified per SEO letter.

Our analysis of the legal demand is slightly different as we have analyzed actual historical use to develop projected needs. We have left the legal demands in place as they were initially projected but we do note that the initial projections indicate that water demands were over-estimated which causes the projected legal supply to be rather conservative.

Filings 4 through 9 within PBHMD were approved prior to the 300 year rule being implemented. Therefore we are presenting our breakdown in a volumetric fashion to account for those differences.

It is our opinion that Paint Brush Hills Metropolitan District has adequate legal supply for its existing customers as well as 21 units in Filing 13B and the proposed Subdivision having 91 single family lot equivalents. In addition to that, we believe that the legal supply has an additional 590 potential single family equivalent capabilities.

1.

Table 2
Paint Brush Hills Metropolitan District
Legal Water Supply Inventory and Commitment Summary

Paint Brush Hills Metropolitan District
Commitment Summary

Lead Formation/Aquifer	Filing/Determination/Decree	Tributary Status	Volume	Annual Allocation	Annual Supply	Well Permits
				100 Year	300 Year	
			Acres-Foot	A-F/Year	A-F/Year	
Current Legal Sources						
Laramie Fox Hills	47813-F Appendix A-1	NT	38,800	388.00	129.33	LPH-1 (47813-F) LPH-2 (50877-F) LPH-3 (55192-F) LPH-4 (63429-F) LPH-5 (64084-F)
Arapahoe	17048-F Appendix A-2	NT	13070	130.70	43.57	A-1 (17048-F)
	16533-F Appendix A-3	NT	18200	182.00	60.67	A-3 (46554-F) A-4 (55193-F) A-5 (60862-F) A-6 (64086-F)
Denver	17048-F Appendix A-2	NT	11130	111.3	37.1	A-1 (17048-F)
	215-BD Appendix A-4	NNT 4%	29750	297.50	99.17	
85 AF Contractual Right	Contract MSMD Appendix B-1 Appendix B-2	UBSC Alluvium	25500	83.00	85.00	UBSC non-specific source Alluvium Water
Total Current Legal Supply			136,450.00	1,194.50	454.80	
Contingent Sources						
Dawson	719-BD	NNT	23700	237.00	79.00 *	Requires Completion of Replacement Plan
Dawson (30 acres)	unappropriated	NNT	2000	20.00		Requires Determination and Replace
Denver (50 acres)	unappropriated	NT	2550	25.50		Requires Determination
Arapahoe	30593-F	NT	11300	113.00	37.67	A-2 (30593-F)
Surface Water Diversion Return Flows 02CW 016	05CW013	2 cfs				Allocation is 25% Unavailable for possible supply

Subdivision/ User	Commercial		Residential			Basis of Supply (Years)	Volumetric Need (AF)
	SFE	AF	Units (SFE)	Unit User-Char (AF)	AF		
Middle School	44	72				100	4400
Greenbelts	28	14				100	2800
Filing 4			164	0.5	82.00	100	8200
Filing 5			31	0.5	15.50	100	1550
Filing 6			48	0.5	24.00	100	2400
Filing 7			57	0.5	28.50	100	2850
Filing 8			106	0.5	53.00	100	5300
Filing 9			88	0.5	44.00	100	4400
Filing 10			90	0.4	36.00	300	10800
Filing 11			81	0.4	32.40	300	9720
Filing 12			51	0.4	20.40	300	6120
Church	1.5	0.20				300	60
Filing 13A			17	0.4	6.80	300	2040
Current Commitments			865.5				60640
Filing 13B			21	0.36	7.56	300	2268
Scenic View of Paint Brush Hills			91	0.36	32.76	300	9828
			917.5				72736
Net Current Excess			590	0.36	212.40	300	83720
			Total				136456

7
0

Pre-100 Year Rule
Post-100 Year Rule

only 90 hours.
Falcon Reserve = 23 ac-ft/yr.

look @ Decree
Dawson Replacement?
Goal is to clean.

4.0 PHYSICAL WATER SUPPLY

4.1 Denver Basin Sources:

PBHMD has wells in the Arapahoe and Laramie-Fox Hills formations of the Denver Basin Aquifer. We performed a site visit to each supply, analyzed its condition, and capacity, to develop a current assessment of the PBHMD current physical supply capabilities. Table 3 presents a summary of the findings of that review.

4.2 Transfer Station:

PBHMD has a pumping transfer station which provides the physical supply of the water that is contracted for from Meridian Ranch. The contract has no limit as to instantaneous or monthly limits only the total annual limitation. The supply is only used as a peaking supply because of the costs and therefore is operated only during a few of the summer months to aid in meeting maximum daily needs.

The station is capable of instantaneous flows of 150 gallons per minute but provides a safe daily supply of 125 GPM.

4.3 Adequacy of Physical Supply

The adequacy of physical supply is analyzed on what is termed the Maximum Daily Demands of the system. Peak hour demands are met by using equalizing storage within the given supply system.

Using the demand factors presented in Table 1, the actual physical needs of the system are compared to the actual physical supply in Table 2. Currently the MDD is projected as 0.521 MGD for the existing system including existing commitments. The projected need at MDD when considering Filing 13B and a proposed 91 lot subdivision is 0.593 MGD.

At 90 % capacity the Maximum Daily Capability is 0.706 MGD leaving excess capacity for about 307 additional units above the commitments under consideration.

This would indicate that not all of the water supply has been developed.

8/1 ac-8.1?

Table 3
Paint Brush Hills Metropolitan District
Physical Water Supply Inventory Summary

Land Formation/Aquifer	Well Number	Status	Current Instantaneous Flow-rate (Gal/Minute)	Well Permit(s)
<i>Current Sources</i>				
Laramie Fox Hills	Well 4/LFH-1	Unused	0	LFH-1 (47813-F)
Laramie Fox Hills	Well 5/LFH-2	Unused	0	LFH-2 (50877-F)
Laramie Fox Hills	Well 7/LFH-3	Unused	0	LFH-3 (55192-F)
Laramie Fox Hills	Well 9/LFH-4	Good	100	LFH-4 (63429-F)
Laramie Fox Hills	Well 11/LFH-5	Good	125	LFH-5 (64084-F)
Arapahoe	Well 1/A-1	Unused	65	A-1 (17048-F)
Arapahoe	Well 2/A-2	Fair	65	A-2 (46553-F)
Arapahoe	Well 3/A-3	Unused	0	A-3 (46553-F)
Arapahoe	Well 6/A-4	Unused	0	A-4 (55193-F)
Arapahoe	Well 8/A-5	Good	75	A-5 (60862-F)
Arapahoe	Well 10/A-6	Good	55	A-6 (64086-F)
Transfer Station	N/A	Good	125	N/A
Total			610	GPM
Net at 90 % Instantaneous Max Day Capability			549	GPM
			790560	GPD

*Which ones are existing?
all-*

Physical Demand

Units	User Char GPD/Unit	Average Daily Demand GPD	Maximum Daily Demand GPD
Greenbelts		12500	28125
Middle School		19640	22586
Church	0.5	321	160.5
Residential (Existing Commitments)			
Filing 4	164	321	52644
Filing 5	31	321	9951
Filing 6	48	321	15408
Filing 7	57	321	18297
Filing 8	106	321	34026
Filing 9	88	321	28248
Filing 10	90	321	28890
Filing 11	81	321	26001
Filing 12	51	321	16371
Filing 13 A	17	321	5457
Existing Total Commitments		267594	521618
Filing 13B	21	321.00	6741.00
91 Lots <i>Scenic view</i>	91	321.00	29211.00
Proposed Commitment Physical Demand			593522 GPD
<i>Remaining Excess Supply (GPD)</i>			197038 GPD
<i>Remaining Excess Projected (SFE)</i>			307 SFE

*why
10
now*

Appendix A-1

FINDINGS OF THE COLORADO GROUND WATER COMMISSION

IN THE MATTER OF AN APPLICATION FOR A PERMIT TO CONSTRUCT A WELL AND APPROPRIATE GROUND WATER IN THE UPPER BLACK SQUIRREL CREEK DESIGNATED GROUND WATER BASIN.

APPLICANT: PAINT BRUSH HILLS METROPOLITAN DISTRICT

AQUIFER: LARAMIE-FOX HILLS

PERMIT NO.: 47813-F

In compliance with Sections 37-90-107(1) and 37-90-111(5), C.R.S., Paint Brush Hills Metropolitan District, (hereinafter "applicant") submitted an application for a permit to construct a well and appropriate ground water from the Laramie-Fox Hills Aquifer. Based on information provided by the applicant and records of the Division of Water Resources, and in accordance with the Designated Basin Rules (2 CCR 410-1), the Ground Water Commission finds as follows:

1. The application was received complete by the Ground Water Commission on September 13, 1996.
2. a. The applicant proposes to appropriate ground water from the Laramie-Fox Hills Aquifer underlying 1440 acres of land generally described as the SE1/4 of Section 23, the S1/2 of Section 24, all of Section 25 and the E1/2 of Section 26, all in Township 12 South, Range 65 West of the 6th Principal Meridian. According to a signed statement dated September 12, 1996, the applicant claims the ownership or control of the ground water in the Laramie-Fox Hills Aquifer underlying this land area, as further described in said affidavit which is attached hereto as Exhibit A. The proposed annual appropriation is 389 acre-feet.

b. The applicant proposes to construct a well in the SW1/4 of the NW1/4 of Section 25, Township 12 South, Range 65 West of the 6th Principal Meridian at a location 2600 feet from the North section line and 50 feet from the West section line of said Section 25. The well would be constructed to divert ground water from the Laramie-Fox Hill Aquifer (hereinafter "aquifer") with a maximum pumping rate of 242 g.p.m.
3. The land area overlying the ground water claimed by the applicant is located within the boundaries of the Upper Black Squirrel Creek Designated Ground Water Basin and Ground Water Management District. The Ground Water Commission has jurisdiction.
4. The applicant proposes to apply the appropriated ground water to the following beneficial uses: municipal use within the service area of the Paint Brush Hills Metropolitan District.
5. The location of the proposed well is more than 800 feet from any existing large-capacity well completed in the aquifer.
6. The applicant will own or control the land on which the well will be constructed.

7. The quantity of water in the aquifer underlying the 1440 acres of land claimed by the applicant is 38,880 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
 - a. The average specific yield of the saturated permeable material of the aquifer underlying the land under consideration that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 15 percent.
 - b. The average thickness of the saturated permeable material of the aquifer underlying the land under consideration that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 180 feet.
8. At this time, there is no substantial artificial recharge which would affect the aquifer within a 100-year period.
9. Pursuant to Section 37-90-111(5), C.R.S., the Ground Water Commission is required to allocate designated ground water in the aquifer on the basis of landownership and a 100-year aquifer life. Therefore, the maximum annual appropriation which could be allowed pursuant to the data in the paragraphs above for the 1440 acre described land area is 388 acre-feet.
10. The ability of the well, with any additional wells, to withdraw the authorized amount of water from this non-renewable aquifer may be less than the 100 years upon which the amount of water in the aquifer is allocated, due to anticipated water level declines.
11. Withdrawal of ground water from the aquifer underlying the land claimed by the applicant will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and therefore the ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules.
12. A review of the records of the Ground Water Commission has disclosed that none of the water in the aquifer underlying the land claimed by the applicant has been previously appropriated.
13. In accordance with Rules 5.3.8 and 5.3.9 of the Designated Basin Rules, additional wells may be permitted to withdraw the total allowed appropriation together with the proposed well.
14. On August 5, 1996, a letter was sent to the Upper Black Squirrel Creek Ground Water Management District requesting recommendations concerning this application. On September 9, 1996, a letter was received from the board of directors of the district stating that the application met with the board's approval.
15. The Commission Staff has evaluated the application relying on the claims to control of the water in the aquifer made by the applicant.

16. In accordance with Sections 37-90-107(2) and 37-90-112, C.R.S., the application was published in the Gazette Telegraph newspaper on October 31 and November 7, 1996.
17. No objections to the proposed appropriation were received within the time limit set by statute.
18. The Ground Water Commission finds that unreasonable impairment of existing water rights will not occur from approval of the appropriation and issuance of the well permit if the following conditions are complied with:
 - a. The well, and any additional wells approved by the Commission to withdraw this appropriation (hereinafter "additional wells"), must be constructed to withdraw water from only the Laramie-Fox Hills Aquifer. At the proposed well location, the top of the aquifer is located approximately 2235 feet below ground surface and the bottom of the aquifer is located approximately 2520 feet below ground surface. Plain, non-perforated casing must be installed and sealed to prevent diversion of ground water from other aquifers and the movement of ground water between aquifers.
 - b. Well permits for additional wells to withdraw the appropriation shall be available upon application, subject to approval by the Commission.
 - c. The entire depth of the well and any additional wells must be geophysically logged prior to installing the casing as set forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
 - d. The maximum annual amount of water to be diverted from the aquifer by the well, together with any additional wells, shall not exceed 388 acre-feet. The Commission may adjust the annual appropriation based on analysis of the geophysical logs if such analysis indicates that the initial estimate of the volume of water in storage was incorrect.
 - e. The use of ground water from the appropriation shall be limited to the following uses: municipal use within the service area of the Paint Brush Hills Metropolitan District.
 - f. No more than 98% of the ground water withdrawn annually from this well and any additional wells shall be consumed. The Commission may require the well owner to demonstrate periodically that no more than 98% of the water withdrawn from the well is being consumed.
 - g. The maximum pumping rate of the well and any additional well shall not exceed 242 g.p.m.
 - h. The well and any additional wells shall be constructed within 200 feet of the location specified on the individual permit application, but must be more than 600 feet from any existing large-capacity well completed in the aquifer. Any additional wells shall be located on the 1440 acre claimed area on land owned or controlled by the well owner.

Applicant: Paint Brush Hills Metropolitan District
Aquifer: Laramie-Fox Hills
Permit No.: 47813-F

Page 4

i. A totalizing flow meter shall be installed on the well and any additional wells and maintained by the well owner. Annual diversion records shall be collected and maintained by the well owner and submitted to the Commission upon their request.

j. The well owner shall mark the well and any additional wells in a conspicuous place with the permit number and the name of the aquifer. He shall take necessary means and precautions to preserve these markings.

Dated this 15th day of January, 19 97.

Hal D. Simpson

Hal D. Simpson
Executive Director
Colorado Ground Water Commission

By: *Craig M. Lls*
Craig M. Lls, P.E.
Supervisor, Designated Basins Branch

Prepared by: RAC

FND-108

RECEIVED

Statement of Land and Water Ownership

SEP 13 1996

WATER RESOURCES
STATE ENGINEER
COLO

State of Colorado)
) ss.
County of El Paso)

The Affiant, Jerry A. Smith, is the President of Eagle Ranch Development Corp., a Colorado Corporation; Manager of the B.L.P.S. Company, L.L.C., a Colorado Limited Liability Company; and President of Paint Brush Hills Metropolitan District, a quasi-municipal corporation and political subdivision of the State of Colorado.

After first being duly sworn upon oath, deposes and states as follows:

HISTORY

(1) On January 31, 1980, Paint Brush I, a Colorado Limited Partnership received title to the Southeast 1/4 of Section 23; the South 1/2 of Section 24; all of Section 25; and the East 1/2 of Section 26 all in Township 12 S Range 65 W, in El Paso County, State of Colorado, including all the groundwater under said land and the water rights in and to the well permits No.173048-F, 17654-F and 17658-F. (Approximately 1,440 acres.)

(2) Commencing on December 31, 1980, by various warranty deeds, Paint Brush I conveyed 2-1/2 acre parcels to Purchasers in Paint Brush Hills Filing No.1, reserving to itself all groundwater and water rights in and to the Lower Dawson Arkose, Arapahoe and Laramie-Fox Hills Aquifers. (Approximately 163 acres.)

(3) Commencing on October 29, 1982, by various warranty deeds, Paint Brush I conveyed 2-1/2 acre parcels to Purchasers in Paint Brush Hills Filing No. 2, reserving to itself all groundwater and water rights in and to the Lower Dawson Arkose, Arapahoe and Laramie-Fox Hills Aquifers. (Approximately 163 acres.)

(4) Commencing on February 23, 1984, by various warranty deeds, Paint Brush I conveyed 2-1/2 acre parcels to Purchasers in Paint Brush Hills Filing No. 3, reserving to itself all groundwater and water rights in and to the Denver, Arapahoe and Laramie-Fox Hills Aquifers. (Approximately 163 acres.)

(5) On June 26, 1986, Paint Brush I conveyed by warranty deed to P.B.H.P. Joint Venture, all of Section 25 and the East 1/2 of Section 26 in Township 12 S Range 65 W in El Paso County, State of Colorado, including all of the groundwater and water rights under said land. (This land was approximately 950 Acres or the balance of the land not platted in the Filings 1, 2 and 3 of Paint Brush Hills.)

(6) On November 10, 1987, P.B.H.P. Joint Venture conveyed to Paint Brush Hills Metropolitan District all groundwater and water rights in the Dawson, Denver, Arapahoe and Laramie Fox Hills formations under land owned by it; well permits #17654-F, #17658-F and #17048-4; and the water and water rights in the (Lower Dawson), Denver, Arapahoe and Laramie-Fox Hills formations under all lots in Paint Brush Hills Filings No. 1, 2 and 3 in El Paso County, State of Colorado. (Land = 950 acres; Water underneath = 1,440 acres.)

(7) Commencing on June 20, 1988, P.B.H.P. Joint Venture conveyed to individuals six lots in Paint Brush Hills Filing No.4, reserving to itself all of the groundwater in and to the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

(8) On June 4, 1992, P.B.H.P. Joint Venture conveyed to Paint Brush Hills Metropolitan District approximately 100 Acres in a part of Section 25, Township 12 S, Range 65 W (being directly north of Paint Brush Hills Filing No.4) and 158 lots in Paint Brush Hills Filing No. 4 (being the balance of the lots not conveyed in Deed No. 7), including all groundwater and water rights in the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

(9) On June 13, 1992, by warranty deed, P.B.H.P. Joint Venture conveyed to Eagle Ranch Development Corp., a Colorado Corporation, all of Section 25 in Township 12 S, Range 65 W, except the 100 acres deeded to Paint Brush Hills Metropolitan District (Deed No. 8) and Paint Brush Hills Filing No. 4, and the East 1/2 of Section 26, Township 12 S, Range 65 W, El Paso County, State of Colorado including all the groundwater and water rights under said land. (Approximately 750 acres.)

(10) Commencing on June 20, 1992 Paint Brush Metropolitan District started conveying lots in Paint Brush Hills Filing No. 4 to Eagle Ranch Development Corp. (and then to Lot Purchases), according to the ruling of the United States Federal District Court for Colorado, as a procedure to pay off the Bond Holders of the Paint Brush Hills Metropolitan District. In such individual deeds, Eagle Ranch Development Corp. reserved all of the groundwater and water rights in and to the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

(11) On August 25, 1995 Paint Brush Hills Metropolitan District conveyed to Eagle Ranch Development Corp., 40 Acres of the 100 Acres contained in the Deed of June 4, 1992. (Deed No. 8 herein.)

(12) Also on August 25, 1995 Eagle Ranch Development Corp. conveyed to B.L.P.S. Company, LLC (a sister company of Eagle Ranch Development Corp.) 40 acres (included in Deed No. 11 herein), which then was platted as Paint Brush Hills Filing No. 5, in El Paso County, State of Colorado.

(13) Commencing on December 29, 1995, the B.L.P.S. Company, LLC started conveying to Lot Purchasers, lots in Paint Brush Hills Filing No. 5 reserving to itself all the groundwater and water rights in and to the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

OWNERSHIP

At the present time, the ownership of rights contained in the History above is as follows:

(1) Eagle Ranch Development Corp. owns (land only) the East 1/2 of Section 26 and all of Section 25, in Township 12 S Range 65 W, El Paso County, Colorado except Paint Brush Hills Filing No.'s 4 and 5, and the 100 acres referred to herein, or a total of 750 acres.

(2) Paint Brush Hills Metropolitan District owns (land and water and water rights) 60 acres in Section 25 in Township 12 S Range 65 W, El Paso County, Colorado; and all the water and water rights in the Denver (Lower Dawson), Arapahoe and Laramie-Fox hills formations under Paint Brush Hills Filing No.'s 1, 2 and 3; the water wells under permits #17048-F, #30593-F, #17654 and #17658-F; all of the water and water rights in the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations under the East 1/2 of Section 26 and all of Section 25 (including Paint Brush Hills Filing No.'s 4 and 5), all in El Paso County, State of Colorado.

(3) The B.L.P.S. Company, L.L.C. owns (land only) the unsold lots in Paint Brush Hills Filing No. 5, (40 acres).

Affiant further deposes and says that Eagle Ranch Development Corp., the B.L.P.S. Company, L.L.C. and Paint Brush Hills Metropolitan District have not given up their right to appropriate the unappropriated non-tributary ground water from the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations underlying the SE 1/4 of Section 23, S 1/2 of Section 24, Section 25, and the E 1/2 of Section 26, in Township 12 S, R 65 West of the 6th Principal Meridian, El Paso County, State of Colorado, except as stated in the above Ownership Statement.

And Eagle Ranch Development Corp. and the B.L.P.S. Company, L.L.C., consent to, and state that Paint Brush Hills Metropolitan District owns all of the unappropriated underground non-tributary water in the Dawson, Denver, Arapahoe and Laramie-Fox hills formations under the above described land, which equates to 1,440 acres.

Further, I claim and say that I have read the statements made herein, know the contents hereof, and the same are true to my own knowledge.

Eagle Ranch Development Corp.

By


Jerry A. Smith, President

Paint Brush Hills Metropolitan District

By


Jerry A. Smith

The B.L.P.S. Company, L.L.C.

By


Jerry A. Smith, Manager

Subscribed and sworn to before me on this 12th day of September, 1996 by Jerry A. Smith, to me personally known.

Witness my hand and official seal.


Notary Public

My Commission Expires: 8-11-99

RECEIVED

JUL 23 1996

WATER RESOURCES
STATE ENGINEER
COLO.

WRJ-5-Rev. 76

COLORADO DIVISION OF WATER RESOURCES
818 Centennial Bldg., 1313 Sherman St., Denver, Colorado 80203

PERMIT APPLICATION FORM

Application must be complete where applicable. Type or print in **BLACK INK**. No overstrikes or erasures unless initialed.

- (X) A PERMIT TO USE GROUND WATER
- (X) A PERMIT TO CONSTRUCT A WELL
- FOR: (X) A PERMIT TO INSTALL A PUMP
- () REPLACEMENT FOR NO. _____
- () OTHER _____
- WATER COURT CASE NO. _____

(1) APPLICANT - mailing address

NAME Paint Brush Hills Metro District

STREET 3730 Sinton Rd, Suite 250

CITY Colorado Springs CO 80907
(State) (Zip)

TELEPHONE NO. 719-473-8600

FOR OFFICE USE ONLY: DO NOT WRITE IN THIS COLUMN

Receipt No. _____ / _____

Basin 4 Dist. 12

CONDITIONS OF APPROVAL

This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of the permit does not assure the applicant that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.

(2) LOCATION OF PROPOSED WELL

County El Paso

SW 1/4 of the NW 1/4, Section 25

Twp. 12 S, Rng. 65 W, 6th P.M.
(N.S) (E,W)

(3) WATER USE AND WELL DATA

Proposed maximum pumping rate (gpm) 242

Average annual amount of ground water to be appropriated (acre-feet): 389

Number of acres to be irrigated: N/A

Proposed total depth (feet): 2500

Aquifer ground water is to be obtained from:
Laramie Fox Hills

Owner's well designation LFH-1

GROUND WATER TO BE USED FOR:

- () HOUSEHOLD USE ONLY - no irrigation (0)
- (X) DOMESTIC (1) (X) INDUSTRIAL (5)
- () LIVESTOCK (2) (X) IRRIGATION (6)
- (X) COMMERCIAL (4) (X) MUNICIPAL (8)
- () OTHER (9) All other purposes

DETAIL THE USE ON BACK IN (11)

APPLICATION APPROVED

(4) DRILLER

Name Unknown (licensed)

Street _____

City _____
(State) (Zip)

Telephone No. _____ Lic. No. _____

PERMIT NUMBER _____

DATE ISSUED _____

EXPIRATION DATE CHECKS TR#403866 672296 60.00
DIV OF WATER RESOURCES

(STATE ENGINEER)

BY _____

I.D. B-2 COUNTY 21-10

Appendix A-2

Appendix A-2 Paint Brush Hills Well A-1 (17048-F)

This well was originally drilled to a depth of 2770 feet and tested. The LFH formation was subsequently bridge plugged at 1900 feet. The original permit was issued March 21, 1973 for 400 acre-feet and 300 gallons per minute. In 1973 the term Dawson included the Arapahoe, Denver, and Dawson formations.

Subsequent documents 46553-F (also attached) excluded certain portions of the Arapahoe reducing the Arapahoe volume to 130.7 AF (100 year basis). This left 111.3 AF (100 year basis) remaining in the Denver formation.

The rights remained somewhat in limbo due to a potential deficiency in the filing of Statement of Beneficial Use (SBU) until a letter was issued October 18, 2013 by the State Engineers Office. The letter attached, is a response to Senate Bill 13 -072 which amended certain rules regarding the issuance of permits in the Denver Basin. In the letter the SEO acknowledges the completion of the well into both the Denver and Arapahoe formations and specifies that the terms of the conditional document apply as final.

Supporting this documentation are supporting documents of SB 13-072 and an email from legal describing the documentation.



DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

John W. Hickenlooper
Governor

Mike King
Executive Director

Dick Wolfe, P.E.
Director/State Engineer

October 18, 2013

Paint Brush Hills Metropolitan District
9830 Liberty Grove Drive
Falcon, CO 80831

RE: Well Permit no. 17048-F

Dear Well Owner:

You may have previously received correspondence from our office informing you that we were reviewing permit files in preparation for the issuance of final permits in the Designated Ground Water Basins in Colorado, and asking for information, such as a statement of beneficial use, to assist with such review. Thank you for any responses and information you may have provided.

The Colorado Legislature recently passed Senate Bill 13-072 that changed the laws regarding the need to issue final permits for Denver Basin bedrock aquifer wells. Pursuant to C.R.S. § 37-90-108(3)(a)(II) a final permit is not required to be issued for a well described in a conditional permit to withdraw designated ground water from a Denver Basin bedrock aquifer. For such a well, the statute states a conditional permit, subject to the conditions of issuance of such a permit, shall be considered a final determination of a well's water right if the well is in compliance with all other applicable requirements of Article 90 of Title 37.

The above referenced well permit was issued for construction of a well into the Denver and Arapahoe aquifers and is subject to the above referenced statutes. Be advised that we will not be issuing a final permit to the above referenced conditional permit, and that the conditional permit determines the well's water right.

If you have any questions feel free to contact me.

Sincerely,

Keith Vander Horst, P.E.

Designated Basins Team Leader

cc: Upper Black Squirrel Creek GWMD

Colorado Revised Statutes

- Colorado Revised Statutes
- TITLE 37 WATER AND IRRIGATION
- WATER RIGHTS AND IRRIGATION
- Underground Water
- ARTICLE 90 Underground Water

37-90-108. Final permit - evidence of well construction and beneficial use - Limitations.

****Update Notice: This section has been amended by
CHAPTER 30, COLO. SESS. LAWS OF 2013.
CHAPTER 35, COLO. SESS. LAWS OF 2013.**

(1) (a) After having received a conditional permit to appropriate designated ground water, the applicant, within one year from the date of the issuance of said permit, shall construct the well or other works necessary to apply the water to a beneficial use.

(b) The applicant, upon completion of the well, shall furnish information to the commission, in the form prescribed by the commission, as to the depth of the well, the water-bearing formations intercepted by the well, and the maximum sustained pumping rate in gallons per minute.

(c) If the well described in the conditional permit is not constructed within one year from the date of the issuance of the conditional permit as provided in this subsection (1), the conditional permit shall expire and be of no force or effect; except that, upon a showing of good cause, the commission may grant one extension of time only for a period not to exceed one year. If the well has been constructed timely but the completion information required by this subsection (1) has not been furnished to the commission, the procedures specified in subsection (6) of this section shall apply.

(2) (a) If the well or wells described in a conditional permit have been constructed in compliance with subsection (1) of this section, the applicant, within three years after the date of the issuance of said permit, shall furnish by sworn affidavit, in the form prescribed by the commission, evidence that water from such well or wells has been put to beneficial use; except that the requirements of this paragraph (a) shall not apply to a well described in a conditional permit issued on or after July 1, 1991, to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(b) Such affidavit shall be prima facie evidence of the matters contained therein but shall be subject to objection by others, including ground water management districts, claiming to be injured thereby and to such verification and inquiry as the commission shall consider appropriate in each particular case.

(c) If such required affidavit is not furnished to the commission within the time and as provided in this subsection (2), the conditional permit shall expire and be of no force or effect except as provided in subsection (4) of this section.

(d) If the well described in a conditional permit issued on or after July 1, 1991, to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers has been constructed in compliance with subsection (1) of this section, the applicant shall file a notice with the commission of commencement of beneficial use on a form prescribed by the commission within thirty days after the first beneficial use of any water withdrawn from such well.

(3) (a) (I) To the extent that the commission finds that water has been put to a beneficial use and that the other terms of the conditional permit have been complied with and after publication of the information required in the final permit, as provided in section 37-90-112, the commission shall order the state-engineer to issue a final permit to use designated

ground water, containing such limitations and conditions as the commission deems necessary to prevent waste and to protect the rights of other appropriators. In determining the extent of beneficial use for the purpose of issuing final permits, the commission may use the same criteria for determining the amount of water used on each acre that has been irrigated that is used in evaluating the amount of water available for appropriation under section 37-90-107. The provisions of this subparagraph (I) shall not apply to a well described in a conditional permit issued on or after July 1, 1991, to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(II) A final permit is not required to be issued for a well described in a conditional permit issued on or after July 1, 1991, to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers. For such a well, a conditional permit, subject to the conditions of issuance of such a permit, shall be considered a final determination of a well's water right if the well is in compliance with all other applicable requirements of this article.

(b) In determining the extent of beneficial use prior to the issuance of a final permit, the commission may either increase or decrease the quantity of water and the amount of irrigated acreage, if any, according to the evidence presented to the commission, but no increase shall be permitted which will increase the quantity of water beyond that authorized by the original decree, conditional permit, registration statement, or other well permit issued prior to basin designation or which otherwise will unreasonably affect the rights of other appropriators.

(c) Any owner of an existing valid conditional permit issued before July 1, 1978, may file with the commission an amended statement of beneficial use, in the form prescribed by the commission, on or before December 31, 1979, and not thereafter, if any such change occurred and was approved on or before August 5, 1977.

(4) The procedural requirement that a statement of beneficial use shall be filed shall apply to all permits wherein the water was put to beneficial use since May 17, 1965. If information pertaining to completion of the well as required in subsection (1) of this section has been received but evidence that water has been placed to beneficial use has not been received as of three years after the date of issuance of the conditional permit, the commission shall so notify the applicant by certified mail. The notice shall give the applicant the opportunity to submit proof that the water was put to beneficial use prior to three years after the date of issuance of the conditional permit. The proof must be received by the commission within twenty days after receipt of the notice by the applicant, and, if the conditional permit was issued on or after July 14, 1975, the proof must be accompanied by a filing fee of thirty dollars. If the commission finds the proof to be satisfactory, the conditional permit shall remain in force and effect. The commission shall consider any records of the commission and any evidence provided to the commission and all other matters set forth in this section in determining whether the conditional permit should remain in force and effect.

(5) All final permits shall set forth the following information as a minimum:

- (a) The priority date;
 - (b) The name of the claimant;
 - (c) The quarter-quarter in which the well is located;
 - (d) The maximum annual volume of the appropriation in acre-feet per year;
 - (e) The maximum pumping rate in gallons per minute; and
 - (f) The maximum number of acres which have been irrigated, if used for irrigation.
- (6) The procedural requirement that the well completion information

Paul Anderson (pandlic@comcast.net)

John

INBOX CONTACTS CALENDAR ... SEARCH ...

- Inbox (78)
- Drafts (12)
- Sent
- Spam (1)
- Trash (19)
- PO BOXES
- 4 Way
- Brush (1)
- CDOC
- CSU Proposal
- DWG
- Groundwater (2)
- Hart Water (1)
- Meridian (2)
- Notes
- PBHM Issues (1)
- Personal
- Wilderfield (3)
- Woodland Park (5)
- Woodmen Hills (4)
- MESSAGING
- Me Offline
- Sign in to Messenger to see who's online
- APPLICATIONS
- Photos
- Attachments

Re: CDPHE Final Permit non-issuance for Wells 1 (from pandlic@comcast.net to you - 6 min)

1 of 25

3 Attachments 349 KB Save all to

PDF	11KB	PDF	20KB	PDF	111KB
27-23 188 Final Permit		13-72 1st		17-SD-100- Form Per	
639		536		536	

John, after reviewing the statute cited in Keith's letter I think there is no need for a new SBU to be submitted for permit # 17048-F. The statute is attached, but I've pasted the pertinent section here.

(3)(a) If the well or wells described in a conditional permit have been constructed in compliance with subsection (1) of this section, the applicant, within three years after the date of the issuance of said permit, shall furnish by sworn affidavit, in the form prescribed by the commission, evidence that water from such well or wells has been put to beneficial use, except that this paragraph (a) does not apply to a well described in a conditional permit to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie Fox Hills aquifers. (emphasis added)

I think the bolded language above seems pretty definitive in eliminating any requirement for a SBU, especially since this particular section was amended by SB 13-72 (copy attached); see the first "editor's note" after the statute "source" section. I checked a prior version of this statute subsection, under that version the SBU would not have been required for wells permitted after 1991 - I've attached a copy of the prior version of the statute here.

So, presuming compliance with all other sections of the statute the conditional permit is the final permit per Keith's letter and the filing of a SBU is no longer required

Please do not hesitate to contact me with any other questions. Thanks again

Paul C. Anderson, LLC
 P.O. Box 50631
 Colorado Springs, CO 80949-0631
 (719) 510-9420
pandlic@comcast.net

Please consider the environment before printing this e-mail

CONFIDENTIALITY NOTICE - This email transmission, and any documents, files or previous email messages attached to it, may contain information that is legally privileged or otherwise confidential to include customer and business information. If you are not the intended recipient, or an authorized person for the intended recipient, you are hereby notified that any disclosure, copying or distribution of this information, or any action taken in reliance on the information contained within this email, is strictly prohibited. If you have received this email message in error, please notify the sender and then delete the message (and any attachments) from your computer and/or network. Thank you.

From: "John McGinn" <jmcginn@jds hydro.com>
 To: pandlic@comcast.net
 Cc: "Tammy Bailey" <tbailey@jds hydro.com>, "Steve Knepper PBHMD" <steve@pbhmd.com>, "Leon Gomes (lgomes@sdmsi.com)" <lgomes@sdmsi.com>, "Teigan Gulliver" <tgulliver@jds hydro.com>
 Sent: Thursday, October 24, 2013 11:20:57 AM
 Subject: Re: CDPHE Final Permit non-issuance for Wells 1(A-1), 2(A-2) and DA-2

Yes if it prelude to a pass, I would hate to draw attention to our "Statement of Financial Loss" issue. Let's talk after you've had a chance to mull it over.

John P. McGinn
 JDS-Hydro Consultants, Inc
 545 East Pikes Peak Ave. Suite 300
 Colorado Springs, CO 80903
 phone 719 327-0072
 fax 719 471-3401

From: "pandlic@comcast.net" <pandlic@comcast.net>
 To: John McGinn <jmcginn@jds hydro.com>
 Cc: Tammy Bailey <tbailey@jds hydro.com>, Steve Knepper PBHMD <steve@pbhmd.com>, Leon Gomes (lgomes@sdmsi.com) <lgomes@sdmsi.com>, Teigan Gulliver <tgulliver@jds hydro.com>, Paul Anderson <pandlic@comcast.net>
 Sent: Thursday, October 24, 2013 11:18 AM
 Subject: Re: CDPHE Final Permit non-issuance for Wells 1(A-1), 2(A-2) and DA-2

John, I've responded within the text of your message below. Thanks

Paul C. Anderson, LLC
 P.O. Box 50631
 Colorado Springs, CO 80949-0631
 (719) 510-9420
pandlic@comcast.net

Please consider the environment before printing this e-mail

CONFIDENTIALITY NOTICE - This email transmission, and any documents, files or previous email messages attached to it, may contain information that is legally privileged or otherwise confidential to include customer and business information. If you are not the intended recipient, or an authorized person for the intended recipient, you are hereby notified that any disclosure, copying or distribution of this information, or any action taken in reliance on the information contained within this email, is strictly prohibited. If you have received this email message in error, please notify the sender and then delete the message (and any attachments) from your computer and/or network. Thank you.

required by subsection (1) of this section be furnished to the commission shall apply to all permits issued after May 17, 1965. If the well has been constructed within twenty-four months after the date of issuance of the permit where the permit was issued before June 7, 1979, or within twelve months after the date of issuance of the permit where the permit was issued on or after June 7, 1979, or by the expiration date of the permit, including any extension, but the completion information has not been furnished to the commission within six months after said allowable time for the well completion, the commission shall so notify the applicant by certified mail. The notice shall give the applicant the opportunity to submit proof that the well was completed within the time specified above or by the expiration date of the permit and to submit the information required by subsection (1) of this section and a showing that, due to excusable neglect, inadvertence, or mistake, the applicant failed to submit the evidence and information on time. The proof and information must be received by the commission within twenty days after receipt of the notice by the applicant and must be accompanied by a filing fee of thirty dollars. If the commission finds the proof to be satisfactory, the permit shall remain in force and effect. The commission shall consider any records of the commission and any evidence provided to the commission and all other matters set forth in this section in determining whether the permit should remain in force and effect.

(7) Notwithstanding the amount specified for any fee in this section, the commission by rule or as otherwise provided by law may reduce the amount of one or more of the fees if necessary pursuant to section 24-75-402(3), C.R.S., to reduce the uncommitted reserves of the fund to which all or any portion of one or more of the fees is credited. After the uncommitted reserves of the fund are sufficiently reduced, the commission by rule or as otherwise provided by law may increase the amount of one or more of the fees as provided in section 24-75-402(4), C.R.S.

Source: L. 65: R&RE, p. 1251, § 1. C.R.S. 1963: § 148-18-7. L. 71: p. 1314, § 6. L. 75: (3) amended and (4) added, p. 1394, § 1, effective July 14. L. 79: (1) to (3) R&RE, p. 1371, § 2, effective June 7. L. 85: (1) (c), (3) (a), (3) (b), and (4) amended and (5) and (6) added, p. 1172, § 2, effective May 31. L. 86: (6) amended, p. 1221, § 34, effective May 30. L. 92: (4), (5) (c), and (6) amended, p. 2298, § 3, effective March 19. L. 94: (1) (c) and (2) (a) amended and (2) (d) added, p. 1746, § 1, effective July 1. L. 98: (7) added, p. 1344, § 72, effective June 1; (2) (a), (2) (d), (3) (a), (4), and (6) amended, p. 1218, § 7, effective August 5.

ANNOTATION

Law reviews. For article, "Oil Shale and Water Quality: The Colorado Prospectus Under Federal, State, and International Law", see 58 Den. L.J. 715 (1981).

Annotator's note. The following annotations include cases decided under former provision similar to this section.

The general assembly intended that the extent of beneficial use would limit the ground water appropriator by providing for the issuance of final permits based upon proof of beneficial use. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Regardless of the quantity specified in a decree, the amount of water actually applied to beneficial use defines the full extent of the water right. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

The general assembly intended that the commission engage in a confirmatory investigation and that the issuance of final permits be a meaningful action. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Where the commission fails to undertake an independent investigation to determine if the amount of water claimed is put to beneficial use prior to issuing a final permit, the commission procedure is not in compliance

with statutory scheme. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Commission must implement legislative scheme. The commission cannot rely upon conditional permits as though they are enforceable "existing claims" without implementing the legislative scheme which includes the issuance of final permits. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

The final permit is essential to the legislative scheme for the administration of ground water rights. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Vested right in water not acquired after conditional permit expires. This article does not contemplate that appropriators may acquire a vested right in water put to beneficial use after their conditional permits have expired. *Berens v. Ground Water Comm'n*, 200 Colo. 170, 614 P.2d 352 (1980).

Conditional permits do not permit their holders to sleep on water rights and later expand their use to the full extent of their permits. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978); *Peterson v. Ground Water Comm'n*, 195 Colo. 508, 579 P.2d 629 (1978).

Conditional permit to last one year. Conditional permits expire and are of no effect one year after their issuance unless the statutory requirements necessary for the issuance of a final permit have been satisfied, or the commission has extended a conditional permit for a time certain for good cause shown, or the appropriator has submitted well completion data, but has failed to submit proof of beneficial use, where upon the appropriator is entitled to notice and 20 days to provide the missing information. *Peterson v. Ground Water Comm'n*, 195 Colo. 508, 579 P.2d 629 (1978).

Subsection (3) reflects a legislative determination that most designated ground water appropriations can be completed within one year, but also permits the commission to grant extensions upon good cause shown to avoid unjust results. *Kuiper v. Warren*, 195 Colo. 541, 580 P.2d 32, cert. denied, 439 U.S. 984, 99 S.Ct. 575, 58 L.Ed.2d 56 (1978).

Extension procedure and due diligence doctrine protect conditional ground water appropriators. The statutory extension procedure of this section and the doctrine of due diligence afford ground water appropriators, who are reasonably proceeding to complete appropriations under conditional rights, protection against loss of their rights. *Kuiper v. Warren*, 195 Colo. 541, 580 P.2d 32, cert. denied, 439 U.S. 984, 99 S.Ct. 575, 58 L.Ed.2d 56 (1978).

Beneficial uses. Land reclamation and dust control are proper beneficial uses for appropriations of tributary and nontributary water. *State Dept. of Natural Res. v. Southwestern Colo. Water Conservation Dist.*, 671 P.2d 1294 (Colo. 1983), cert. denied, 466 U.S. 944, 104 S.Ct. 1929, 80 L.Ed.2d 474 (1984).

Intent to put water to beneficial use must not be speculative. Anti-speculative doctrine of *Colo. River Water Conservation Dist. v. Vidler Tunnel Water Co.* (197 Colo. 413, 594 P.2d 566 (1979)) requiring more than mere future plans to beneficially use water, applies to appropriations of groundwater in designated ground water basins. *Jaeger v. Colo. Ground Water Comm'n*, 746 P.2d 515 (Colo. 1987).

When extent of beneficial use is fixed. Normally, the extent of beneficial use and the measure of the water right is fixed at the time a final decree is entered. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

The procedure set out in this section places the burden on the appropriator to prove that he has made a valid appropriation consistent with Colorado law. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Applied in Danielson v. Kerbs AG., Inc., 646 P.2d 363 (Colo. 1982).

Copyright © 2013 CCH Incorporated or its affiliates

NOTE: The governor signed this measure on 3/15/2013.

An Act

SENATE BILL 13-072

BY SENATOR(S) Hodge, Baumgardner, Brophy, Giron, Roberts, Schwartz, Carroll;
also REPRESENTATIVE(S) Sonnenberg, Fischer, Coram, Ginal, Humphrey, Lebsack, McLachlan, Pettersen, Vigil, Young.

CONCERNING THE DELETION OF THE REQUIREMENT FOR A FINAL PERMIT FOR ALL WELLS WITHDRAWING DESIGNATED GROUND WATER FROM THE DENVER BASIN AQUIFERS.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. In Colorado Revised Statutes, 37-90-108, amend (2) (a), (2) (d), and (3) (a) as follows:

37-90-108. Final permit - evidence of well construction and beneficial use - limitations. (2) (a) If the well or wells described in a conditional permit have been constructed in compliance with subsection (1) of this section, the applicant, within three years after the date of the issuance of said permit, shall furnish by sworn affidavit, in the form prescribed by the commission, evidence that water from such well or wells has been put to beneficial use; except that ~~the requirements of this paragraph (a) shall~~ DOES not apply to a well described in a conditional permit ~~issued on or after July 1, 1991,~~ to withdraw designated ground water from the Dawson,

Capital letters indicate new material added to existing statutes; dashes through words indicate deletions from existing statutes and such material not part of act.

Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(d) If the well described in a conditional permit issued ~~on or after July 1, 1991,~~ to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers has been constructed in compliance with subsection (1) of this section, the applicant shall file a notice with the commission of commencement of beneficial use on a form prescribed by the commission within thirty days after the first beneficial use of any water withdrawn from ~~such~~ THE well.

(3) (a) (I) To the extent that the commission finds that water has been put to a beneficial use and that the other terms of the conditional permit have been complied with and after publication of the information required in the final permit, as provided in section 37-90-112, the commission shall order the state engineer to issue a final permit to use designated ground water, containing such limitations and conditions as the commission deems necessary to prevent waste and to protect the rights of other appropriators. In determining the extent of beneficial use for the purpose of issuing final permits, the commission may use the same criteria for determining the amount of water used on each acre that has been irrigated that is used in evaluating the amount of water available for appropriation under section 37-90-107. ~~The provisions of This subparagraph (I) shall~~ DOES not apply to a well described in a conditional permit issued ~~on or after July 1, 1991,~~ to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(II) A final permit is not required to be issued for a well described in a conditional permit ~~issued on or after July 1, 1991,~~ to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers. For such a well, a conditional permit, subject to the conditions of issuance of such a permit, shall be considered a final determination of a well's water right if the well is in compliance with all other applicable requirements of this article.

SECTION 2. Act subject to petition - effective date - applicability. (1) This act takes effect at 12:01 a.m. on the day following the expiration of the ninety-day period after final adjournment of the general assembly (August 7, 2013, if adjournment sine die is on May 8, 2013); except that, if a referendum petition is filed pursuant to section 1 (3) of article V of the state constitution against this act or an item, section, or

part of this act within such period, then the act, item, section, or part will not take effect unless approved by the people at the general election to be held in November 2014 and, in such case, will take effect on the date of the official declaration of the vote thereon by the governor.

(2) This act applies to permits issued for designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers before, on, or after the applicable effective date of this act.

John P. Morse
PRESIDENT OF
THE SENATE

Mark Ferrandino
SPEAKER OF THE HOUSE
OF REPRESENTATIVES

Cindi L. Markwell
SECRETARY OF
THE SENATE

Marilyn Eddins
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES

APPROVED _____

John W. Hickenlooper
GOVERNOR OF THE STATE OF COLORADO

Colorado Revised Statutes

- Colorado Revised Statutes
- TITLE 37 WATER AND IRRIGATION
- WATER RIGHTS AND IRRIGATION
- Underground Water
- ARTICLE 90 Underground Water

37-90-108. Final permit - evidence of well construction and beneficial use - limitations.

(1) (a) After having received a conditional permit to appropriate designated ground water, the applicant, within one year from the date of the issuance of said permit, shall construct the well or other works necessary to apply the water to a beneficial use.

(b) The applicant, upon completion of the well, shall furnish information to the commission, in the form prescribed by the commission, as to the depth of the well, the water-bearing formations intercepted by the well, and the maximum sustained pumping rate in gallons per minute.

(c) If the well described in the conditional permit is not constructed within one year from the date of the issuance of the conditional permit as provided in this subsection (1), the conditional permit shall expire and be of no force or effect; except that, upon a showing of good cause, the commission may grant one extension of time only for a period not to exceed one year. If the well has been constructed timely but the completion information required by this subsection (1) has not been furnished to the commission, the procedures specified in subsection (6) of this section shall apply.

(2) (a) If the well or wells described in a conditional permit have been constructed in compliance with subsection (1) of this section, the applicant, within three years after the date of the issuance of said permit, shall furnish by sworn affidavit, in the form prescribed by the commission, evidence that water from such well or wells has been put to beneficial use; except that this paragraph (a) does not apply to a well described in a conditional permit to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(b) Such affidavit shall be prima facie evidence of the matters contained therein but shall be subject to objection by others, including ground water management districts, claiming to be injured thereby and to such verification and inquiry as the commission shall consider appropriate in each particular case.

(c) If such required affidavit is not furnished to the commission within the time and as provided in this subsection (2), the conditional permit shall expire and be of no force or effect except as provided in subsection (4) of this section.

(d) If the well described in a conditional permit issued to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers has been constructed in compliance with subsection (1) of this section, the applicant shall file a notice with the commission of commencement of beneficial use on a form prescribed by the commission within thirty days after the first beneficial use of any water withdrawn from the well.

(3) (a) (I) To the extent that the commission finds that water has been put to a beneficial use and that the other terms of the conditional permit have been complied with and after publication of the information required in the final permit, as provided in section 37-90-112, the commission shall order the state engineer to issue a final permit to use designated ground water, containing such limitations and conditions as the commission deems necessary to prevent waste and to protect the rights of other appropriators. In determining the extent of beneficial use for the purpose of issuing final permits, the commission may use the same criteria

*170 ac-ft
40
200 ac-ft*

for determining the amount of water used on each acre that has been irrigated that is used in evaluating the amount of water available for appropriation under section ~~37-90-107~~. This subparagraph (I) does not apply to a well described in a conditional permit issued to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(II) A final permit is not required to be issued for a well described in a conditional permit to withdraw designated ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers. For such a well, a conditional permit, subject to the conditions of issuance of such a permit, shall be considered a final determination of a well's water right if the well is in compliance with all other applicable requirements of this article.

(b) In determining the extent of beneficial use prior to the issuance of a final permit, the commission may either increase or decrease the quantity of water and the amount of irrigated acreage, if any, according to the evidence presented to the commission, but no increase shall be permitted which will increase the quantity of water beyond that authorized by the original decree, conditional permit, registration statement, or other well permit issued prior to basin designation or which otherwise will unreasonably affect the rights of other appropriators.

(c) Any owner of an existing valid conditional permit issued before July 1, 1978, may file with the commission an amended statement of beneficial use, in the form prescribed by the commission, on or before December 31, 1979, and not thereafter, if any such change occurred and was approved on or before August 5, 1977.

(4) The procedural requirement that a statement of beneficial use shall be filed shall apply to all permits wherein the water was put to beneficial use since May 17, 1965. If information pertaining to completion of the well as required in subsection (1) of this section has been received but evidence that water has been placed to beneficial use has not been received as of three years after the date of issuance of the conditional permit, the commission shall so notify the applicant by certified mail. The notice shall give the applicant the opportunity to submit proof that the water was put to beneficial use prior to three years after the date of issuance of the conditional permit. The proof must be received by the commission within twenty days after receipt of the notice by the applicant, and, if the conditional permit was issued on or after July 14, 1975, the proof must be accompanied by a filing fee of thirty dollars. If the commission finds the proof to be satisfactory, the conditional permit shall remain in force and effect. The commission shall consider any records of the commission and any evidence provided to the commission and all other matters set forth in this section in determining whether the conditional permit should remain in force and effect.

(5) (a) All final permits must set forth the following information as a minimum:

(I) The priority date;

(II) The name of the claimant;

(III) The quarter-quarter in which the well is located;

(IV) The maximum annual volume of the appropriation in acre-feet per year;

(V) The maximum pumping rate in gallons per minute; and

(VI) The maximum number of acres that have been irrigated, if used for irrigation.

(b) Notwithstanding any rule of law to the contrary other than a change of use case under section ~~37-90-111~~(1)(g), once the state engineer issues a final permit for the withdrawal of designated groundwater pursuant to this section, a reduction in the amount of water used pursuant to the

permit due to the conservation of water is not grounds to reduce:

(I) The maximum annual volume of the appropriation in acre-feet per year;

(II) The maximum pumping rate in gallons per minute; or

(III) The maximum number of acres that have been irrigated, if used for irrigation.

(6) The procedural requirement that the well completion information required by subsection (1) of this section be furnished to the commission shall apply to all permits issued after May 17, 1965. If the well has been constructed within twenty-four months after the date of issuance of the permit where the permit was issued before June 7, 1979, or within twelve months after the date of issuance of the permit where the permit was issued on or after June 7, 1979, or by the expiration date of the permit, including any extension, but the completion information has not been furnished to the commission within six months after said allowable time for the well completion, the commission shall so notify the applicant by certified mail. The notice shall give the applicant the opportunity to submit proof that the well was completed within the time specified above or by the expiration date of the permit and to submit the information required by subsection (1) of this section and a showing that, due to excusable neglect, inadvertence, or mistake, the applicant failed to submit the evidence and information on time. The proof and information must be received by the commission within twenty days after receipt of the notice by the applicant and must be accompanied by a filing fee of thirty dollars. If the commission finds the proof to be satisfactory, the permit shall remain in force and effect. The commission shall consider any records of the commission and any evidence provided to the commission and all other matters set forth in this section in determining whether the permit should remain in force and effect.

(7) Notwithstanding the amount specified for any fee in this section, the commission by rule or as otherwise provided by law may reduce the amount of one or more of the fees if necessary pursuant to section 24-75-402(3), C.R.S., to reduce the uncommitted reserves of the fund to which all or any portion of one or more of the fees is credited. After the uncommitted reserves of the fund are sufficiently reduced, the commission by rule or as otherwise provided by law may increase the amount of one or more of the fees as provided in section 24-75-402(4), C.R.S.

Source: L. 65: R&RE, p. 1251, § 1. C.R.S. 1963: § 148-18-7. L. 71: p. 1314, § 6. L. 75: (3) amended and (4) added, p. 1394, § 1, effective July 14. L. 79: (1) to (3) R&RE, p. 1371, § 2, effective June 7. L. 85: (1) (c), (3) (a), (3) (b), and (4) amended and (5) and (6) added, p. 1172, § 2, effective May 31. L. 86: (6) amended, p. 1221, § 34, effective May 30. L. 92: (4), (5) (c), and (6) amended, p. 2298, § 3, effective March 19. L. 94: (1) (c) and (2) (a) amended and (2) (d) added, p. 1746, § 1, effective July 1. L. 98: (7) added, p. 1344, § 72, effective June 1; (2) (a), (2) (d), (3) (a), (4), and (6) amended, p. 1218, § 7, effective August 5. L. 2013: (2) (a), (2) (d), and (3) (a) amended, (SB 13-072), ch. 30, p. 73, § 1, effective August 7; (5) amended, (SB 13-075), ch. 35, p. 101, § 1, effective August 7.

Editor's note: (1) Section 2 of chapter 30, Session Laws of Colorado 2013, provides that the act amending subsections (2) (a), (2) (d), and (3) (a) applies to permits issued for designated groundwater from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers before, on, or after August 7, 2013.

(2) Section 2 of chapter 35, Session Laws of Colorado 2013, provides that the act amending subsection (5) applies to determinations of water volume, water rate, and acreage occurring on or after August 7, 2013.

ANNOTATION

Law reviews. For article, "Oil Shale and Water Quality: The Colorado Prospectus Under Federal, State, and International Law", see 58 Den. L.J. 715 (1981).

Annotator's note. The following annotations include cases decided under former provision similar to this section.

The general assembly intended that the extent of beneficial use would limit the ground water appropriator by providing for the issuance of final permits based upon proof of beneficial use. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Regardless of the quantity specified in a decree, the amount of water actually applied to beneficial use defines the full extent of the water right. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

The general assembly intended that the commission engage in a confirmatory investigation and that the issuance of final permits be a meaningful action. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Where the commission fails to undertake an independent investigation to determine if the amount of water claimed is put to beneficial use prior to issuing a final permit, the commission procedure is not in compliance with statutory scheme. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Commission must implement legislative scheme. The commission cannot rely upon conditional permits as though they are enforceable "existing claims" without implementing the legislative scheme which includes the issuance of final permits. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

The final permit is essential to the legislative scheme for the administration of ground water rights. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978).

Vested right in water not acquired after conditional permit expires. This article does not contemplate that appropriators may acquire a vested right in water put to beneficial use after their conditional permits have expired. *Berens v. Ground Water Comm'n*, 200 Colo. 170, 514 P.2d 352 (1980).

Conditional permits do not permit their holders to sleep on water rights and later expand their use to the full extent of their permits. *Thompson v. Colo. Ground Water Comm'n*, 194 Colo. 489, 575 P.2d 372 (1978); *Peterson v. Ground Water Comm'n*, 195 Colo. 508, 579 P.2d 629 (1978).

Conditional permit to last one year. Conditional permits expire and are of no effect one year after their issuance unless the statutory requirements necessary for the issuance of a final permit have been satisfied, or the commission has extended a conditional permit for a time certain for good cause shown, or the appropriator has submitted well completion data, but has failed to submit proof of beneficial use, where upon the appropriator is entitled to notice and 20 days to provide the missing information. *Peterson v. Ground Water Comm'n*, 195 Colo. 508, 579 P.2d 629 (1978).

Subsection (3) reflects a legislative determination that most designated ground water appropriations can be completed within one year, but also permits the commission to grant extensions upon good cause shown to avoid unjust results. *Kuiper v. Warren*, 195 Colo. 541, 580 P.2d 32, cert. denied, 439 U.S. 984, 99 S.Ct. 575, 58 L.Ed.2d 56 (1978).

Extension procedure and due diligence doctrines protect conditional ground water appropriators. The statutory extension procedure of this section and the doctrine of due diligence afford ground water appropriators, who are reasonably proceeding to complete appropriations under conditional rights, protection against loss of their rights. *Kuiper v. Warren*, 195 Colo. 541, 580 P.2d 32, cert. denied, 439 U.S. 984, 99 S.Ct. 575, 58 L.Ed.2d 56 (1978).

Beneficial uses. Land reclamation and dust control are proper

beneficial uses for appropriations of tributary and nontributary water. State Dept. of Natural Res. v. Southwestern Colo. Water Conservation Dist., 671 P.2d 1193 (Colo. 1983), cert. denied, 466 U.S. 944, 104 S.Ct. 1929, 80 L.Ed.2d 474 (1984).

Intent to put water to beneficial use must not be speculative. Anti-speculative doctrine of Colo. River Water Conservation Dist. v. Vidler Tunnel Water Co. (197 Colo. 413, 594 P.2d 566 (1979)) requiring more than mere future plans to beneficially use water, applies to appropriations of groundwater in designated ground water basins. Jaeger v. Colo. Ground Water Comm'n, 746 P.2d 515 (Colo. 1987).

When extent of beneficial use is fixed. Normally, the extent of beneficial use and the measure of the water right is fixed at the time a final decree is entered. Thompson v. Colo. Ground Water Comm'n, 194 Colo. 489, 575 P.2d 372 (1978).

The procedure set out in this section places the burden on the appropriator to prove that he has made a valid appropriation consistent with Colorado law. Thompson v. Colo. Ground Water Comm'n, 194 Colo. 489, 575 P.2d 372 (1978).

Applied in Danielson v. Kerbs AG., Inc., 546 P.2d 363 (Colo. 1982).

Appendix A-3

FINDINGS OF THE COLORADO GROUND WATER COMMISSION

IN THE MATTER OF AN APPLICATION FOR A PERMIT TO CONSTRUCT A WELL AND APPROPRIATE GROUND WATER IN THE UPPER BLACK SQUIRREL CREEK DESIGNATED GROUND WATER BASIN.

APPLICANT: PAINT BRUSH HILLS METROPOLITAN DISTRICT

AQUIFER: ARAPAHOE

PERMIT NO.: 46553-F

In compliance with Sections 37-90-107(1) and 37-90-111(5), C.R.S., Paint Brush Hills Metropolitan District, (hereinafter "applicant") submitted an application for a permit to construct a well and appropriate ground water from the Arapahoe Aquifer. Based on information provided by the applicant and records of the Division of Water Resources, and in accordance with the Designated Basin Rules (2 CCR 410-1), the Ground Water Commission finds as follows:

1. The application was received complete by the Ground Water Commission on March 12, 1996.
2. a. The applicant proposes to appropriate ground water from the Arapahoe Aquifer underlying 1440 acres of land generally described as the SE1/4 of Section 23, the S1/2 of Section 24, all of Section 25 and the E1/2 of Section 26, all in Township 12 South, Range 65 West of the 6th Principal Meridian. According to a signed statement dated February 28, 1996, the applicant claims the ownership or control of the ground water in the Arapahoe Aquifer underlying this land area, as further described in said affidavit which is attached hereto as Exhibit A. The proposed annual appropriation is 302 acre-feet.

b. The applicant proposes to construct a well in the SE1/4 of the NE1/4 of Section 26, Township 12 South, Range 65 West of the 6th Principal Meridian at a location 2800 feet from the North section line and 100 feet from the East section line of said Section 26. The well would be constructed to divert ground water from the Arapahoe Aquifer (hereinafter "aquifer") with a maximum pumping rate of 200 g.p.m.
3. The land area overlying the ground water claimed by the applicant is located within the boundaries of the Upper Black Squirrel Creek Designated Ground Water Basin and Ground Water Management District. The Ground Water Commission has jurisdiction.
4. The applicant proposes to apply the appropriated ground water to the following beneficial uses: municipal use within the service area of the Paint Brush Hills Metropolitan District.
5. The location of the proposed well is more than 600 feet from any existing large-capacity well completed in the aquifer.
6. The applicant will own or control the land on which the well will be constructed.

7. The quantity of water in the aquifer underlying the 1440 acres of land claimed by the applicant is 35,740 acre-feet. This determination was based on the following as specified in the Designated Basin Rules:
 - a. The average specific yield of the saturated permeable material of the aquifer underlying the land under consideration that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 17 percent.
 - b. The average thickness of the saturated permeable material of the aquifer underlying the land under consideration that could yield a sufficient quantity of water that may be extracted and applied to beneficial use is 146 feet, based on the geophysical log for the well with permit number 30593-F.
8. At this time, there is no substantial artificial recharge which would affect the aquifer within a 100-year period.
9. Pursuant to Section 37-90-111(5), C.R.S., the Ground Water Commission is required to allocate designated ground water in the aquifer on the basis of landownership and a 100-year aquifer life. Therefore, the maximum annual appropriation which could be allowed pursuant to the data in the paragraphs above for the 1440 acres described land area is 367 acre-feet.
10. The ability of the well, with any additional wells, to withdraw the authorized amount of water from this non-renewable aquifer may be less than the 100 years upon which the amount of water in the aquifer is allocated, due to anticipated water level declines.
11. Withdrawal of ground water from the aquifer underlying the land claimed by the applicant will not, within one hundred years, deplete the flow of a natural stream or its alluvial aquifer at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal and therefore the ground water is nontributary ground water as defined in Rule 4.2.19 of the Designated Basin Rules.
12. A review of the records of the Ground Water Commission has disclosed that the issuance of the requested permit would result in unreasonable impairment of existing water rights unless terms and conditions are included to prevent such injurious effect. The well permit numbers, rate of diversion, and other relevant data concerning such rights are set forth in the attached Exhibit B. To prevent material injury to such existing water rights, the quantity of water claimed by the applicant underlying the land area described in Exhibit A, which is considered unappropriated, has been reduced to a maximum annual amount of 182 acre-feet. This reduction is partially based on a calculation of the area necessary to provide a quantity of water underlying such lands as would be sufficient for the persons entitled to divert water under existing claimed rights to divert the maximum (average) annual amount of water from the aquifer for the minimum useful life of the aquifer (100 years). The effect of this calculation is to effectively reduce the land available for calculating the quantity of water underlying the land owned and claimed by the applicant to be served to 1192 acres. Additional reduction is based on the claimed prior appropriation of 113 acre-feet per year of the available ground water in the aquifer underlying the 1440 acre tract.

357
(1192 / 1440)



295
- 113

182

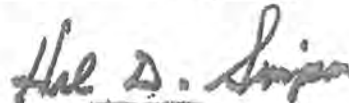
13. In accordance with Rules 5.3.8 and 5.3.9 of the Designated Basin Rules, additional wells may be permitted to withdraw the total allowed appropriation together with the proposed well.
14. On July 23, 1993, a letter was sent to the Upper Black Squirrel Creek Ground Water Management District requesting recommendations concerning this application. A letter from the district dated August 11, 1993, requested more complete information and more time to review the application. A letter from the district dated November 17, 1993, indicated that processing of the application should not proceed until questions regarding the ownership of lands claimed by the applicants were resolved. The application as originally submitted to the Commission claimed the control of ground water in the Arapahoe Aquifer partially based on the consent of landowners and also on the control of ground water in the aquifer underlying described land areas which had been separated from landownership. The resubmitted application, received complete by the Commission on March 12, 1995, clarified the basis of the claim for the proposed appropriation.
15. The Commission Staff has evaluated the application relying on the claims to control of the water in the aquifer made by the applicant.
16. In accordance with Sections 37-90-107(2) and 37-90-112, C.R.S., the application was published in the Gazette Telegraph newspaper on March 21 and 28, 1996.
17. No objections to the proposed appropriation were received within the time limit set by statute.
18. The Ground Water Commission finds that unreasonable impairment of existing water rights will not occur from approval of the appropriation and issuance of the well permit if the following conditions are complied with:
 - a. The well, and any additional wells approved by the Commission to withdraw this appropriation (hereinafter "additional wells"), must be constructed to withdraw water from only the Arapahoe Aquifer. At the proposed well location, the top of the aquifer is located approximately 1435 feet below ground surface and the bottom of the aquifer is located approximately 1915 feet below ground surface. Plain, non-perforated casing must be installed and sealed to prevent diversion of ground water from other aquifers and the movement of ground water between aquifers.
 - b. Well permits for additional wells to withdraw the appropriation shall be available upon application, subject to approval by the Commission.
 - c. The entire depth of the well and any additional wells must be geophysically logged prior to installing the casing as set forth in Rule 9 of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7.
 - d. The maximum annual amount of water to be diverted from the aquifer by the well, together with any additional wells, shall not exceed 182 acre-feet. The Commission may adjust the annual appropriation based on analysis of the geophysical logs if such analysis indicates that the initial estimate of the volume of water in storage was incorrect.

Applicant: Paint Brush Hills Metropolitan District
Aquifer: Arapahoe
Permit No.: 46553-F

Page 4

- e. The use of ground water from the appropriation shall be limited to the following uses: municipal use within the service area of the Paint Brush Hills Metropolitan District.
- f. No more than 98% of the ground water withdrawn annually from this well and any additional wells shall be consumed. The Commission may require the well owner to demonstrate periodically that no more than 98% of the water withdrawn from the well is being consumed.
- g. The maximum pumping rate of the well and any additional well shall not exceed 200 g.p.m.
- h. The well and any additional wells shall be constructed within 200 feet of the location specified on the individual permit application, but must be more than 600 feet from any existing large-capacity well completed in the aquifer. Any additional wells shall be located on the 1440 acre claimed area on land owned or controlled by the well owner.
- i. A totalizing flow meter shall be installed on the well and any additional wells and maintained by the well owner. Annual diversion records shall be collected and maintained by the well owner and submitted to the Commission upon their request.
- j. The well owner shall mark the well and any additional wells in a conspicuous place with the permit number and the name of the aquifer. He shall take necessary means and precautions to preserve these markings.

Dated this 14th day of May, 1996.



Hal D. Simpson
Executive Director
Colorado Ground Water Commission

By: 
Craig M. Lis, P.E.
Supervisor, Designated Basins Branch

Prepared by: RAC

RWD-022

RECEIVED

MAR 13 '88

WATER RESOURCES
STATE ENGINEER
COLORADO

Statement of Land and Water Ownership

State of Colorado)
) ss.
County of El Paso)

The Affiant, Jerry A. Smith, is the President of Eagle Ranch Development Corp., a Colorado Corporation; Manager of the B.L.P.S. Company, L.L.C., a Colorado Limited Liability Company; and President of Paint Brush Hills Metropolitan District, a quasi-municipal corporation and political subdivision of the State of Colorado.

After first being duly sworn upon oath, deposes and states as follows:

HISTORY

(1) On January 31, 1980, Paint Brush I, a Colorado Limited Partnership received title to the Southeast 1/4 of Section 23; the South 1/2 of Section 24; all of Section 25; and the East 1/2 of Section 26 all in Township 12 S Range 65 W, in El Paso County, State of Colorado, including all the groundwater under said land and the water rights in and to the well permits No.17348-F, 17654-F and 17658-F. (Approximately 1,440 acres.)

(2) Commencing on December 31, 1980, by various warranty deeds, Paint Brush I conveyed 2-1/2 acre parcels to Purchasers in Paint Brush Hills Filing No.1, reserving to itself all groundwater and water rights in and to the Lower Dawson Arkose, Arapahoe and Laramie-Fox Hills Aquifers. (Approximately 163 acres.)

(3) Commencing on October 29, 1982, by various warranty deeds, Paint Brush I conveyed 2-1/2 acre parcels to Purchasers in Paint Brush Hills Filing No. 2, reserving to itself all groundwater and water rights in and to the Lower Dawson Arkose, Arapahoe and Laramie-Fox Hills Aquifers. (Approximately 163 acres.)

(4) Commencing on February 23, 1984, by various warranty deeds, Paint Brush I conveyed 2-1/2 acre parcels to Purchasers in Paint Brush Hills Filing No. 3, reserving to itself all groundwater and water rights in and to the Denver, Arapahoe and Laramie-Fox Hills Aquifers. (Approximately 163 acres.)

(5) On June 26, 1986, Paint Brush I conveyed by warranty deed to P.B.H.P. Joint Venture, all of Section 25 and the East 1/2 of Section 26 in Township 12 S Range 65 W in El Paso County, State of Colorado, including all of the groundwater and water rights under said land. Also conveyed was all of the groundwater and water rights reserved by Paint Brush I in deeds in Paint Brush Hills Filings 1, 2, and 3. (This land was approximately 950 Acres or the balance of the land not platted in the Filings 1, 2 and 3 of Paint Brush Hills.)

(6) On November 10, 1987, P.B.H.P. Joint Venture conveyed to Paint Brush Hills Metropolitan District all groundwater and water rights in the Dawson, Denver, Arapahoe and Laramie Fox Hills formations under land owned by it; well permits #17654-F, #17658-F and #17048-F; and the water and water rights in the (Lower Dawson), Denver, Arapahoe and Laramie-Fox Hills formations under all lots in Paint Brush Hills Filings No. 1, 2 and 3 in El Paso County, State of Colorado. (Land = 950 acres; Water underneath = 1,440 acres.) This deed also included and conveyed to the District 190.2 acre feet of water from the Arapahoe Aquifer which covered the water in Permit No. 30593-F.

(7) Commencing on June 20, 1988, P.B.H.P. Joint Venture conveyed to individuals six lots in Paint Brush Hills Filing No.4, reserving to itself all of the groundwater in and to the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

(8) On June 4, 1992, P.B.H.P. Joint Venture conveyed to Paint Brush Hills Metropolitan District approximately 100 Acres in a part of Section 25, Township 12 S, Range 65 W (being directly north of Paint Brush Hills Filing No.4) and 158 lots in Paint Brush Hills Filing No. 4 (being the balance of the lots not conveyed in Deed No. 7), including all groundwater and water rights in the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

(9) On June 13, 1992, by warranty deed, P.B.H.P. Joint Venture conveyed to Eagle Ranch Development Corp., a Colorado Corporation, all of Section 25 in Township 12 S, Range 65 W, except the 100 acres deeded to Paint Brush Hills Metropolitan District (Deed No. 8) and Paint Brush Hills Filing No. 4, and the East 1/2 of Section 26, Township 12 S, Range 65 W, El Paso County, State of Colorado including all the groundwater and water rights under said land. (Approximately 750 acres.)

(10) Commencing on June 20, 1992 Paint Brush Metropolitan District started conveying lots in Paint Brush Hills Filing No. 4 to Eagle Ranch Development Corp. (and then to Lot Purchases), according to the ruling of the United States Federal District Court for Colorado, as a procedure to pay off the Bond Holders of the Paint Brush Hills Metropolitan District. In such individual deeds, Eagle Ranch Development Corp. reserved all of the groundwater and water rights in and to the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

(11) On August 25, 1995 Paint Brush Hills Metropolitan District conveyed to Eagle Ranch Development Corp., 40 Acres of the 100 Acres contained in the Deed of June 4, 1992. (Deed No. 8 herein.)

(12) Also on August 25, 1995 Eagle Ranch Development Corp. conveyed to B.L.P.S. Company, LLC (a sister company of Eagle Ranch Development Corp.) 40 acres (included in Deed No. 11 herein), which then was platted as Paint Brush Hills Filing No. 5, in El Paso County, State of Colorado.

(13) Commencing on December 29, 1995, the B.L.P.S. Company, LLC started conveying to Lot Purchasers, lots in Paint Brush Hills Filing No. 5 reserving to itself all the groundwater and water rights in and to the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations.

OWNERSHIP

At the present time, the ownership of rights contained in the History above is as follows:

(1) Eagle Ranch Development Corp. owns (land only) the East 1/2 of Section 26 and all of Section 25, in Township 12 S Range 65 W, El Paso County, Colorado except Paint Brush Hills Filing No.'s 4 and 5, and the 100 acres referred to herein, or a total of 750 acres.

(2) Paint Brush Hills Metropolitan District owns (land and water and water rights) 60 acres in Section 25 in Township 12 S Range 65 W, El Paso County, Colorado; and all the water and water rights in the Denver (Lower Dawson), Arapahoe and Laramie-Fox hills formations under Paint Brush Hills Filing No.'s 1, 2 and 3; the water wells under permits #17048-F, #30593-F, #17654-F and 17658-F; all of the water and water rights in the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations under the East 1/2 of Section 26 and all of Section 25 (including Paint Brush Hills Filing No.'s 4 and 5), all in El Paso County, State of Colorado.

(3) The B.L.P.S. Company, L.L.C. owns (land only) the unsold lots in Paint Brush Hills Filing No. 5, (40 acres).

Affiant further deposes and says that Eagle Ranch Development Corp., the B.L.P.S. Company, L.L.C. and Paint Brush Hills Metropolitan District have not given up their right to appropriate the unappropriated non-tributary ground water from the Dawson, Denver, Arapahoe and Laramie-Fox Hills formations underlying the SE 1/4 of Section 23, S 1/2 of Section 24, Section 25, and the E 1/2 of Section 26, in Township 12 S, R 65 West of the 6th Principal Meridian, El Paso County, State of Colorado, except as stated in the above

EXHIBIT B

APPLICANT: Paint Brush Hills Metropolitan District

AQUIFER: Arapahoe

WELL #1

PERMIT NUMBER	1/4	1/4	SEC	TWP	RNG	AF	ST	SY	RADIUS	AREA
17048-F	SW	SE	25	12S	65W	130.7	215	17	2235	248

AF = THE AMOUNT OF ANNUAL APPROPRIATION OF THE WELL, FROM THE ARAPAHOE AQUIFER, IN ACRE-FEET *

ST = THICKNESS OF THE SATURATED AQUIFER MATERIAL AT THE WELL LOCATION IN FEET, SB-6 DATA

SY = SPECIFIC YIELD OF THE SATURATED AQUIFER MATERIAL AT THE WELL LOCATION AS A PERCENT

RADIUS = IS THE RADIUS OF THE CYLINDER OF APPROPRIATION IN FEET

AREA = THE AREA OF THE APPLICANTS' LAND THAT IS OVERLAPPED BY THE CYLINDER OF APPROPRIATION IN ACRES.

* The well with Permit No. 17048-F is completed 46 percent in the Denver Aquifer and 54 percent in the Arapahoe Aquifer. Based on a claimed annual appropriation of 242 acre-feet, the annual amount of appropriation for the Arapahoe Aquifer was calculated to be 130.7 acre-feet. The cylinder is centered at the permit location for the well: a point 800 feet from the south section line and 1900 feet from the east section line of Section 25. The permit was issued on March 21, 1973, and is subject to Rule 5.3.3 of the Designated Basin Rules. The cylinder protects the claimed appropriation for this well. The amount of appropriation is based on the well owner's statements and is subject to verification by the Ground Water Commission and publication before issuance of a final permit.

WELL #2

PERMIT NUMBER	1/4	1/4	SEC	TWP	RNG	AF
30593-F	SW	NE	25	12S	65W	113

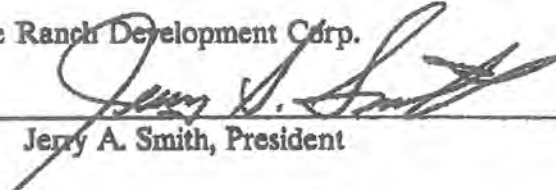
The well with Permit No. 30593-F has previously appropriated 113 acre-feet per year of the available ground water in the Arapahoe Aquifer underlying the 1440 acre land area described in Exhibit A. The amount of appropriation is based on the well owner's statements and is subject to verification by the Ground Water Commission and publication before issuance of a final permit.

And Eagle Ranch Development Corp. and the B.L.P.S. Company, L.L.C., consent to, and state that Paint Brush Hills Metropolitan District owns all of the unappropriated underground non-tributary water in the Dawson, Denver, Arapahoe and Laramie-Fox hills formations under the above described land, which equates to 1,440 acres.

Further, I claim and say that I have read the statements made herein, know the contents hereof, and the same are true to my own knowledge.

Eagle Ranch Development Corp.

By


Jerry A. Smith, President

Paint Brush Hills Metropolitan District

By


Jerry A. Smith


The B.L.P.S. Company, L.L.C.

By


Jerry A. Smith, Manager

Subscribed and sworn to before me on this 28th day of February, 1996 by Jerry A. Smith, to me personally known.

Witness my hand and official seal.


Notary Public



My Commission Expires: December 26, 1996

Appendix B-1

WATER SERVICE CONTRACT

This Contract is made and entered into effective the ^{8TH} day of September, 2003, by and between Meridian Service Metropolitan District (the "District") and Six Ninety Nine L.A., LLC, a Colorado limited liability company ("Purchaser").

RECITALS

- A. District is a quasi-municipal corporation and political subdivision of the state of Colorado with its principal office in El Paso County, Colorado.
- B. Purchaser is the owner of certain real property known as Falcon Hills which is serviced by the Paint Brush Hills Metropolitan District ("PBHMD").
- C. Portions of Purchaser's property are subject to the El Paso County 300 year water policy.
- D. The District receives some of its water from Cherokee Metropolitan District ("Cherokee") which takes water from the alluvium of the Upper Black Squirrel Creek Designated Ground Water Basin which water is considered to be "renewable water" pursuant to the El Paso County 300 year water policy and thus is exempt from the policy. Cherokee obtains its water from a series of municipal wells located in the boundaries of the Black Squirrel.
- E. Purchaser desires to purchase water from the District and the District desires to sell the same all on the terms and conditions as contained herein.

NOW, THEREFORE, based on the mutual promises and considerations contained herein, the parties agree as follows:

1. **CONTRACT FOR DELIVERY OF WATER.** The District hereby sells to Purchaser the right to receive up to 85 Acre Feet ("AF") of water delivered on an annual basis.
2. **PURCHASE PRICE.** Purchaser shall pay to the District the sum of \$5,000 per AF which price shall increase annually commencing on January 1, 2004 in relationship to the increase, if any, in the Denver-Boulder CPI, and, if not available, the nearest equivalent CPI. The price shall be paid at the time Purchaser requests delivery. Following purchase, Purchaser shall pay the District the actual costs of pumping the water conveyed pursuant to this agreement, which costs shall include electricity and reasonable wear and tear on equipment.
3. **DELIVERY.** Delivery shall be made available at a point on the District's municipal system mutually agreeable to the District and Purchaser. All costs of connection, including pumps, pipes, one-way check valves, and related equipment shall be done at the sole cost and expense of the Purchaser and shall be designed and constructed pursuant to the standards set by the District.
4. **PUMPING COSTS.** In addition to the Purchase Price, the Purchaser shall pay all reasonable and necessary pumping costs on a monthly basis in an amount to be mutually agreed

to by the parties at the time of delivery and taking into account the District's historic pumping costs.

5. LEASE. At any time that Purchaser takes delivery of all or part of the 85 AF of water, at the option of Purchaser, Purchaser may either (1) purchase said water as set forth in Section 2, or (2) lease the same. If leased, the lease price shall be at the same rate as the sale of bulk water by the District to the golf course located in and adjacent to the District's boundaries. On December 31, 2006, should the Purchaser have been leasing all or a portion of the water prior to that date, at the option of the District, the District can require Purchaser to purchase the amount of water which is being leased and the purchase price shall be as set forth in Section 2 above. Unless otherwise agreed by the parties hereto, should the District not exercise this purchase requirement, Purchaser may continue to lease up to 85 acre feet of water perpetually, subject to the terms and conditions of this Agreement.

6. TERM. This Agreement shall terminate at such time as Purchaser determines that it no longer needs this commitment for water.

7. PERPETUAL AGREEMENT. Insofar as this Contract affects water and water rights, it is the intention of the parties hereto that this Contract and obligation to deliver water be perpetual in nature according to the Colorado Supreme Court's decision in Cherokee Water District v. City of Colorado Springs.

8. MISCELLANEOUS.

a. This Contract shall be interpreted by and governed by the laws of the State of Colorado.

b. In the eventuality of any dispute over this Contract, the same shall be settled by binding and mandatory arbitration before one, mutually-agreed-to arbitrator in El Paso County, Colorado. The arbitrator shall make all decisions with regard to procedure and discovery and shall have the authority to issue injunctive relief. Should the parties be unable to agree on the arbitrator, the same shall be appointed by a District Court Judge, El Paso County, Colorado.

c. In the eventuality of any dispute over this Contract, the prevailing party shall be entitled to an award of all attorney fees and costs.

Entered the year and day first above written.

MERIDIAN SERVICE METROPOLITAN DISTRICT

BY: Jim H. Haines, VICE PRESIDENT

SIX NINETY NINE L.A., LLC

BY: Shelli Fong

Appendix B-2

LIFT STATION AND WATER AGREEMENT

1. Parties. Paint Brush Hills Metropolitan District (the "District") is a quasi-municipal corporation and political subdivision of the state of Colorado which provides the water, sewer, and related services to the Falcon Hills development, and Six Ninety Nine Properties, LLC (the "Developer") is in the business of developing lots for sale to builders in Falcon Hills. As of December ____, 2003, the District and Developer agree as follows:

2. Lift Station. The District recently completed the construction of a lift station and related force main (collectively referred to below as the "lift station"). However, as the area served by the lift station builds out, it might be necessary to add additional storage to the lift station. Developer had previously promised to pay a portion of the cost of the lift station although the amount and timing of its payments had not been finalized. Developer hereby agrees to pay the District \$100,000 on or before February 1, 2004, an additional \$100,000 on or before February 1, 2005, and an additional \$200,000 on or before December 31, 2006, for a total payment of \$400,000, for the lift station.

3. Water Service Contract. Six Ninety Nine LA, LLC has assigned Developer its rights under the Water Service Contract dated September 8, 2003 between Six Ninety Nine LA, LLC and Meridian Service Metropolitan District, as a result of which Developer has the right to acquire and use up to 85 acre feet of water per year from Meridian Service Metropolitan District. A copy of the Water Service Contract is attached hereto as Exhibit A. Developer hereby assigns its rights under the Water Service Contract to the District in return for the payment of \$180,000 by the District to Developer on or before December 31, 2006; provided, however, that unless Developer gives its prior written consent to the contrary, the above-referenced 85 acre feet of water shall only be used to service customers within the present physical boundaries of the District and for plat approval purposes only for plats submitted by Developer or a related company.

4. Assignability. The water rights which Developer agrees to assign to the District pursuant to Section 3, above, may not be reassigned by the District except to a similar quasi-municipal corporation providing water and sewer services to Falcon Hills. In all other respects, this Agreement shall inure to the benefit of and be binding upon the successors and assigns of the parties.

5. Modification; Entire agreement. This Agreement may not be modified without the agreement of both parties and constitutes the entire agreement between the parties relating to payments for the lift station and the Water Service Contract. Any prior agreements pertaining thereto, whether oral or written, have been merged and integrated into this Agreement, but any and all other agreements between or relating to the District and Developer are hereby ratified and confirmed.

District:
Paint Brush Hills Metropolitan District
9548 Waterbury Dr.
Peyton, CO 80831

by Ellen Robley 4/2/04
Ellen Robley, District Administrator

Developer:
Six Ninety Nine Properties, LLC
545 E. Pikes Peak, Ste. 207
Colorado Springs, CO 80903

by Harold Fong 4/2/04
Harold Fong, Manager

Appendix C



Wm. CURTIS WELLS & CO. / consulting geologists
4361 east sandia street / ahwalukee, az 85044
telephone (480) 339-9475 / curt@curtwells.com

February 26, 2013

Ms. Ellen Robley
Paint Brush Hills Metropolitan District
9830 Liberty Grove Drive
Falcon, CO 80831

All via E-mail

Re: Continued Ground Water Consultation, Paint Brush Hills Metropolitan District, Water Supply,
Proposed Filing 13a, El Paso County, Colorado.
Job No. 6770

Dear Ellen:

I understand the District Board of Directors are soon to consider water service to the proposed 17-lot, Filing 13a. I am advised that the 17 proposed homes may be a part of a larger 550± homesite development, but for the purpose of this letter report, I am just considering the proposed filing. The objective of this report is to update the County on the District's water supply obligations and water rights portfolio. The water use estimates described herein match a 2003 agreement with the Colorado Division of Water Resources concerning which of the District's filing would be allocated water use at rates of 0.4 and 0.5 acre feet per year per residential unit. Currently, District's Filings 4 through 12 contain 719 dwellings and the water demands of these homeowners are listed on the attached Table I.

The general framework of Table I is essentially the same as the last water supply report that I prepared in 2004. The table has been updated to include additional wells tapping the Arapahoe and Laramie Fox Hills formations. Also water supply record keeping has vastly improved such that District records now illustrate the middle school (formerly Falcon High School) requires significantly more water than was previously estimated. For completeness, the water use table now lists park and greenbelt irrigation water supplied by the District.

Table I lists the District's water rights and the amount of ground water that currently can be used without further review by the Colorado Ground Water Commission. As shown on the table with or without the legally available Denver aquifer ground water, the District has water rights to service the proposed Filing 13a. Beyond this commitment and without the Denver aquifer there should be an excess

24,000 acre feet. This amount of water, if appropriated over 300 years at a rate of 0.4 acre feet per year per home, equals 200 future SFE's.

At build out of the proposed Filing 13a, the District's water supply planning number would be about 330 acre feet per year. This includes 736 homeowners using water at a rate of 0.4¹ acre feet per year plus 22 acre feet for the middle school, 14 acre feet for park irrigation and 0.2 acre feet to the church. Based on the current water supply records the District proves 15 percent of its supply in the warmest month of the year. This means 360 gallons per minute would have to be generated during this summer month to supply the existing filings along with Filing 13a. During August of 2012, the District provided 300± gallons per minute while operating only 7 of the 11 District wells, along with water delivered through the District's connection with Meridian Service Metropolitan District and this information is shown on the attached Table 2. By equipping some combination of Wells A-3, A-4, LFH-1 and LFH-2 the District should easily be able to supply water to the proposed filing.

I trust this information satisfies your immediate needs. If you have questions, please call.

Very truly yours,

Wm. Curtis Wells & Co.

Wm. Curtis Wells

Wm. Curtis Wells CPG
Consulting Ground Water Geologist

¹ Current water supply rate

Table I
 Paint Brush Hills Metropolitan District
 Water Supply Summary
 As of February 2013

Aquifer or Water Source	Determination or Permit No.	Ground Water or Water Availability			Wells Currently Appropriating Supply			
		Ground Water Appropriation	Ground Water Storage	Ground Water Currently Available For Appropriation				
		(af/yr)	(af)	(af)				
Dawson	719-BD	237(1)	23700	0				
Dawson, 50-Ac. (2)	unappropriated	20	2000	0				
Denver	214-BD	298	29800	29800				
Denver, 50-Ac. (2)	unappropriated	25.5	2550	0				
Arapahoe	46553-F	182	18200	18200	A-2(30593-F)	A-3(46553-F)	A-4(55193-F)	A-5(60862-F)
Arapahoe	unappropriated	90.6(3)	9060	0	A-6(64086-F)			
Laramie Foot Hills	47813-F	388	38800	38800	LPH-1(47813-F)	LPH-2(50877-F)	LPH-3(53192-F)	LPH-4(63429-F)
Guthrie Alluvial via Meridian M&D	Finding(4)	65	25300(5)	25500	612-RFP-R	27354-FY-R		
Total		1327	149610	112300				

Water Demand At Build-out	Use/House (af/yr/unit)	Houses/SFEs	Years	Amount (af)
Middle School	23		100	2300
District Greenbelt/Park Irr.	14		100	1400
Filing 4	0.5	164	100	8200
Filing 5	0.5	31	100	1550
Filing 6	0.5	48	100	2400
Filing 7	0.5	57	100	2850
Filing 8	0.5	109	100	5450
Filing 9	0.5	88	100	4400
Filing 10	0.4	90	300	10800
Filing 11	0.4	81	300	9720
Filing 12	0.4	51	300	6120
Filing 13	0.4	17	300	2040
Church	0.2		300	60
Total		736		57190
Excess Ground Water Supply				
With Denver Aquifer				55110
Without Denver Aquifer				25310

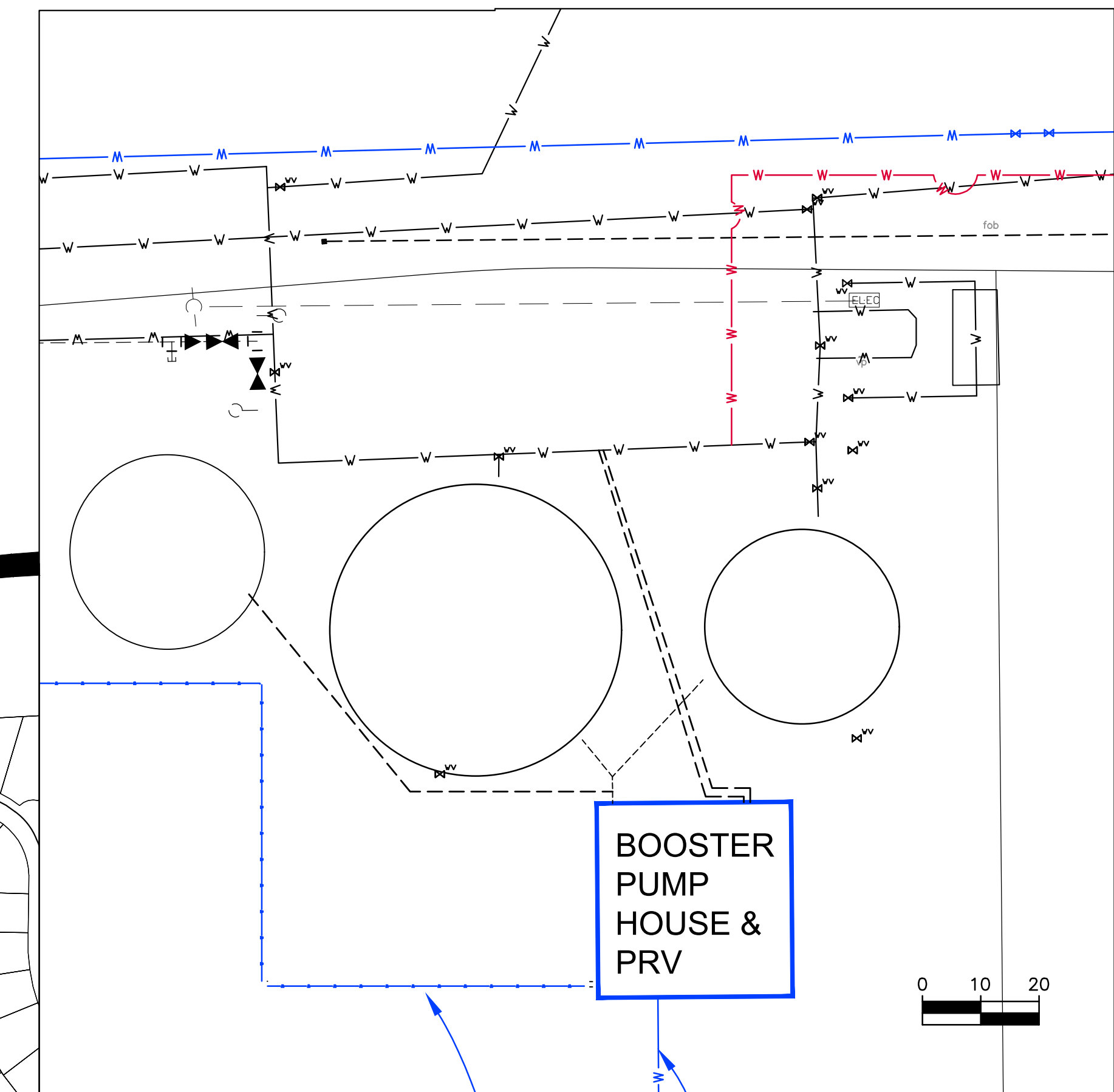
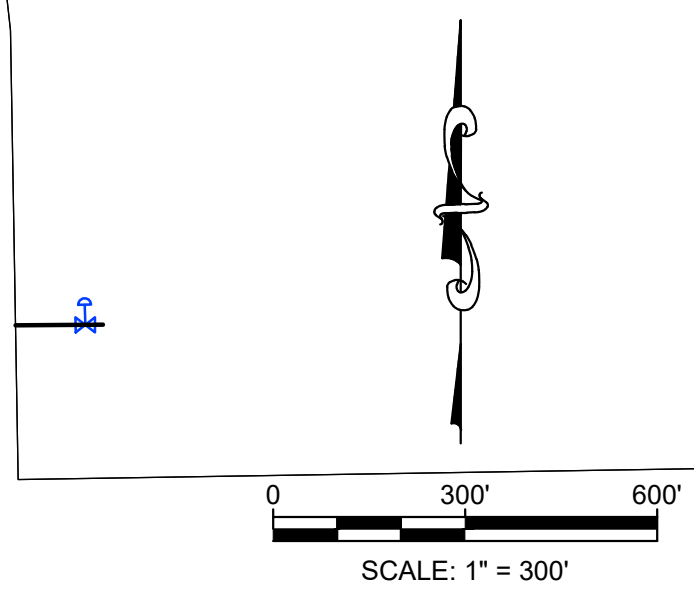
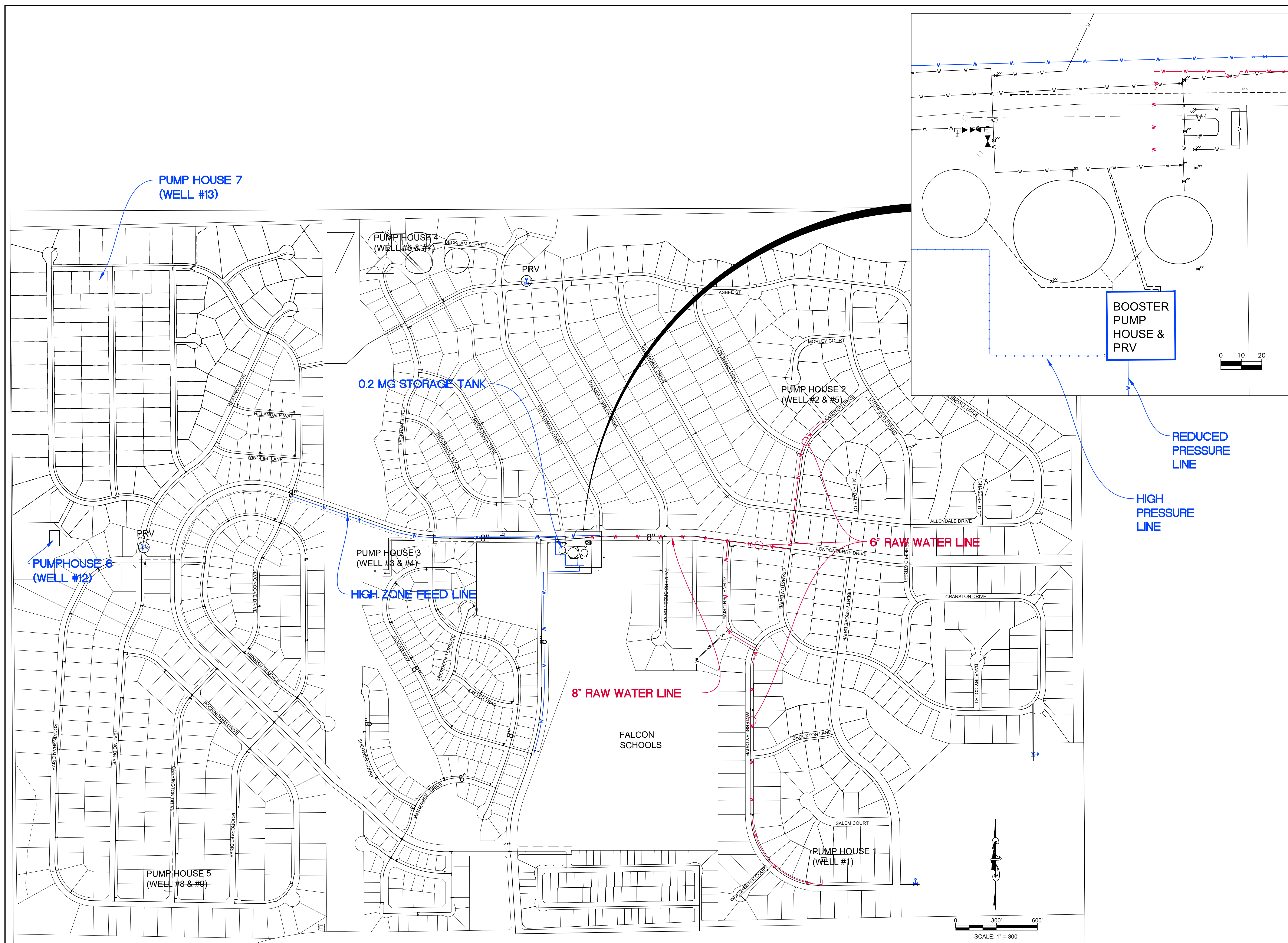
Notes:

- (1) - Cannot be used until Dawson Aquifer Replacement Plan approved
- (2) - Area represents parks and greenbelts in District.
- (3) - Will be available once Well A-1 permit is canceled and Well A-1 is re-permitted and re-drilled as an Arapahoe structure
- (4) - Finding of the Commission date May 5, 1983; inter-governmental agreement between Paint Brush and Meridian Ranch Metro. Districts
- (5) - Delivery pipeline interconnect; value represents 85 af/yr times 300 years

APPENDIX C

Distribution System Map

S:\1070 - Paint Brush Hills Metropolitan District\1070\0004 - Master Plan 2020 Update\05-overall\Tract A plan.dwg, 10/21/2020 3:28:16 PM, DWG To PDF, p.3



<p>48 hours before you dig, CALL UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) 811</p> <p>Gas, Electric, Telephone, CATV, and Power Lines Estimated Utility Locations</p> <p>SCALE - VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET SCALE ACCORDINGLY</p>			
NO.	REVISIONS	DATE	BY
1	ADDED FIRE HYDRANT, REDUCED GRAVEL & FENCING & REVISED GRADING	06/17/16	DRB
<p>FBHMD ADMINISTRATION BUILDING PROJECT</p> <p>description</p> <p>PBH WATER PLAN</p> <p>prepared for</p> <p>PAINT BRUSH HILLS METROPOLITAN DISTRICT</p> <p>EL PASO COUNTY, COLORADO</p>		<p>DRAWN BY:</p> <p>DESIGNED BY:</p>	
<p>JOB NUMBER:</p> <p>1070000006</p> <p>DATE:</p> <p>AUGUST 2008</p> <p>SCALE:</p> <p>1" = 300'</p> <p>DRAWING NAME:</p> <p>WATER PLAN</p>		<p>SHEET NO.:</p> <p>1 of 14</p>	
<p>RG AND ASSOCIATES, LLC 4885 Ward Road, Suite 100 • Wheat Ridge, CO • 80033 Gypsum • Loveland • Monte Vista • Wheat Ridge 303-293-8107 • 303-293-8106 (fax) • www.rgengineers.com</p>			