

ORIGINAL



0000125718

2802

**Lucky Hills Water Company
P.O. Box 309
Tombstone, AZ 85638
(520) 457-3350**

Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ 85007-2927

09-07-06 Arizona Corporation Commission
DOCKETED
OCT -4 2006

Attn: Docket Control

DOCKETED BY	
<i>son</i>	<i>NR</i>

Docket No. W-01961A-06-0037

RE: Submittal of information needed in response to your insufficiency letter regarding our application for extension of our Certificate of Convenience and Necessity.

Dear Sirs:

In reference to your letter regarding the additional information needed for our application of extension of CCN, we are submitting the information requested. I apologize for the delays, but I believe we now have everything in order and hopefully everything you need is included. The system design maps, which are quite large, were not sent through docket control but were sent directly to Blessing Chukwu and to your Engineer. If there are any questions, or anything further you need, please do not hesitate to call me. Thank you for your service.

Patti M. Bright
Lucky Hills Water Company

cc: David McCartney, Walnut Valley Subdivision
attachments: original System design maps to Blessing Chuckwu
copy of system design maps to Engineer office

AZ CORP COMMISSION
DOCUMENT CONTROL

2006 OCT -4 A 11: 58

RECEIVED

Lucky Hills Water Company
P.O. Box 309
Tombstone, AZ 85638
(520) 457-3350

Docket No. W-01961A-06-0037

Information Requested from your insufficiency letter

1. Please provide the requests for service from the property owners in the extension area requesting service from the Company.

Please see attachment #1 for the request for service from Walnut Valley Ranch Subdivision.

2. Please provide a map of the requested service territory with an identification of the respective property owners requesting service.

Please see attachment #2. We are requesting additional area around the subdivision and also areas to tie our existing areas together. Enclosed is a map of the area we are requesting and also 2 maps of just the planned Walnut Valley Subdivision.

3. Please provide a copy of the water use Data Sheet for the last 13 months for the Company.

Please see attachment #3 We have used the information from our existing area with 4 customers.

4. Please provide a set of design plans for the proposed water facilities. The plan should include the proposed water source, distribution facilities and show the site map of the proposed water treatment plant.

One set of plans were sent directly to Blessing Chuckwu's office and one set to your engineer.

5. Please provide an estimate of the water facilities costs necessary to serve the proposed CC&N extension area. The cost should include a description of the major components with the cost of the component. The method of financing for the major components should be described in as much detail as possible.

Please see attachment #5 costs of facilities.

6. *Provide a copy of the ADWR Designation of Assured Water Supply or Certificate of Assured Water Supply for the CCN area requested.*

See attachment #6. Final approval will be given by ADWR when we are approved for the extension area.

7. *Provide a copy of the ADEQ Approval to Construct the water facilities to serve the proposed extension area. If not issued, inform staff of the status of the application.*

Please see attachment #7.

8. *Proved the method of financing the Utility facilities that will serve the extension area.*

Please see attachment #8. Attached is a letter from the subdivision owner explaining where he has obtained financing.

9. *Provide a copy of the proposed construction schedule.*

There is no written construction schedule. The “*Application for approval to construct drinking water facilities* ADEQ stated start date: September 2006, Completion date: July 2008.” They truly plan to start within 90 days if all applications are approved.

10. *Provide a copy of your proposed curtailment tariff that will apply to the area to be served.*

Please see attachment #10. I have enclosed a copy of the sample tariff and also a set of services prices.

11. *Submit a drinking water design report which clarifies how water will be provided to the proposed CCN area. Identify existing and future sources, the capacities of existing sources, estimated capacities of future sources and any existing demand on the present water sources. Include the estimated water demand from a typical dwelling, the estimated demand from the proposed CC&N area. Identify the location of future and existing transmission mains and include timing or construction phasing of facilities. Include the following: water quality, quality problems, treatment costs, and funding of treatment costs.*

Please see attachment #11, prepared by Buck Lewis Engineering Co.

12. *Provide copy of City/Town franchise agreement. If outside city limits, provide county franchise agreement.*

Please see attachment #12. Board of Supervisors, Cochise County Resolution No. 06-45 granting franchise to Lucky Hills Water Company for the extension area plus other areas. Also included are the certified minutes of the formal board meeting of June 20, 2006 granting the franchise.

13. Provide the Company's Certificate of Good Standing.

Please see attachment #13 for our Good Standing Certificate.

14. Provide a copy of the Corporate Resolution authorizing this application, if required.

Our articles of Incorporation do not require this.

15. Provide a copy of the Company's Balance Sheet and Income Statement for year ending Dec. 31, 2005.

Please see attachment #15. Both reports are enclosed.

16. Provide the total estimated annual operating revenue from the extension area for each of the next five years.

Please see attachment #16.

COMMISSIONERS
JEFF HATCH-MILLER- Chairman
WILLIAM MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES



BRIAN C. MCNEIL
Executive Director
RECEIVED

ARIZONA CORPORATION COMMISSION

2006 FEB 21 A 9 16

February 21, 2006

AZ CORP COMMISSION
DOCUMENT CONTROL

Patti M. Bright
Lucky Hills Water Company
P.O. Box 309
Tombstone, Arizona 85638

RE: Lucky Hills Water Company – Application for Extension of its Certificate of Convenience and Necessity (CC&N) Docket No. W-01961A-06-0037
INSUFFICIENCY LETTER

Dear Ms. Bright:

In reference to the above mentioned application filed on January 23, 2006, this letter is to inform you that the application has not met the sufficiency requirements as outlined in the Arizona Administrative Code. The deficiencies are:

1. Please provide the requests for service from the property owners in the extension area requesting service from the Company.
2. Please provide a map of the requested service territory with an identification of the respective property owners requesting service.
3. Please provide a copy of the Water Use Data Sheet for the last 13 months for the Company.
4. Please provide a set of design plans for the proposed water facilities. The plan should include the proposed water source, distribution facilities and show the site map of the proposed water treatment plant. If final design plans are not available, please provide preliminary plans.
5. Please provide an estimate of the water facilities costs necessary to serve the proposed CC&N extension area. The cost should include a description of the major components with the cost of the component (i.e., wells, number and size of storage tanks, etc.). The method of financing for the major components should be described in as much detail as possible.
6. Please provide a copy of the Arizona Department of Water Resources (“ADWR”) Designation of Assured Water Supply or Certificate of Assured Water Supply for the CC&N area requested. If none of these are available, please provide a copy the ADWR’s

Lucky Hills Water Company (Docket No. W-01961A-06-0037)
Insufficiency Letter
Page 3 of 3

extension area. If the franchise agreement(s) has not been issued, please inform Staff of the status of the application for the franchise agreement.

13. Please provide the Company's Certificate of Good Standing.
14. Please provide a copy of the Corporate Resolution Authorizing this application (if required by the corporation's Articles of Incorporation).
15. Please provide a copy of the Company's Balance Sheet and Income Statement for the year ending December 31, 2005.
16. Please provide the total estimated annual operating revenue from the extension area for each of the next five years.

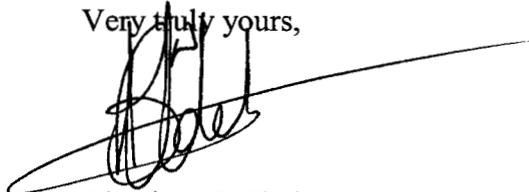
Staff would like to use this opportunity to bring the following to your attention:

- Pursuant to the Arizona Administrative Code ("A.A.C.") R-14-2-411(C), upon meeting sufficiency requirements, the Commission has 150 calendar days for its substantive review. This includes conducting a hearing and preparing Opinion and Order to present to the Commission at an Open Meeting; and
- Pursuant to A.A.C. R14-2-411(C)(3), Staff may terminate an application if the applicant does not remedy all deficiencies within 60 calendar days of the notice of deficiency.

Please file your response to this Insufficiency Letter with Docket Control.

If you have any questions concerning this matter, please do not hesitate to contact me at 602-542-0840 or Dorothy Hains at 602-542-7274.

Very truly yours,



Blessing N. Chukwu
Executive Consultant III

BNC

cc: Docket Control
Del Smith
Lyn Farmer
Brian Bozzo
Vicki Wallace

Lucky Hills Water Company (Docket No. W-01961A-06-0037)
Insufficiency Letter
Page 2 of 3

Physical Availability Determination. If a determination of Assured Water Supply has not been obtained from ADWR, please inform Utilities Division Staff ("Staff") of the status of the application for that determination.

7. Please provide a copy of the Arizona Department of Environmental Quality's Approval to Construct the water facilities to serve the proposed extension area. If the Approval to Construct has not been issued, please inform Staff of the status of the application for the Approval to Construct.
8. Please provide the method of financing the Utility facilities that will serve the extension area.
9. Please provide a copy of the proposed construction schedule.
10. Please provide a copy of your proposed curtailment tariff that will apply to the area to be served. A sample tariff has been posted on the Commission's web site (www.cc.state.az.us/utility/water/forms.htm) or is available upon request from Commission Staff.
11. Please submit a drinking water design report which clarifies how water will be provided to the proposed CC&N area.

The report should identify existing and future sources, the capacities of existing sources, the estimated capacities of future sources and any existing demand on the present water sources.

The report should include the estimated water demand from a typical dwelling unit, the estimated demand from the proposed CC&N area.

The report should identify the location of future and existing transmission mains and include the timing or construction phasing of facilities.

The design report should describe water quality and address any water quality problems with the existing and future sources of water (as an example, will extra treatment costs arise in order to meet existing or future maximum contaminant levels for arsenic nitrates or fluorides in the drinking water and if so, how does the applicant plan to fund the necessary treatment plant additions).

Please provide any other information which will allow the Commission to analyze and conclude that the company has sufficient water production capacity, or can develop enough drinking water capacity to service the existing and future demands from the proposed CC&N area.

12. Please provide a copy of the City/Town franchise agreement that includes the proposed extension area. If the proposed extension area is outside the corporate city/town limits, please provide a copy of the County franchise agreement that includes the proposed

#1

Walnut Valley Ranch



February 20, 2006

Ms. Merle Cowan and Ms. Patti Bright
Lucky Hills Water Company
PO Box 309
Tombstone, AZ 85638

Dear Merle and Patti:

This letter is to request water service from the Lucky Hills Water Company for *Walnut Valley Ranch*, a 42 lot/140 acre subdivision to be located in the picturesque foothills of the Tombstone Hills, just 3 miles (as the crow flies) northwest of historic Tombstone.

We should have final plat approval from the Cochise County Planning Department in early March 2006, and would very much appreciate water service from Lucky Hills Water Company for all 42 lots within the subdivision.

Please note that we are developing *Walnut Valley Ranch* as two separate subdivisions to take advantage of a lot density bonus with the Cochise County Planning Dept. Subdivision 1, which comprises lots 1-23 on the northwest 80 acres will be developed first, and Subdivision 2, which comprises lots 24-42 on the remaining 60 acres, will be developed shortly thereafter.

The Parcel ID No. and legal description are provided below to identify the exact location of the subject project site:

Parcel ID No. **108-17-001A**

Legal Description: **The Southwest quarter of the Northeast quarter, the South half of the Northwest quarter, and the Northeast quarter of the Southwest quarter, Section 32, Township 19 South, Range 22 East of the Gila and Salt River Base and Meridian, Cochise County Arizona; EXCEPT the North half of the Southwest quarter of the Northeast quarter.**

Thank you very much for your consideration.

Best Regards,

David B McCartney
Walnut Valley Ranch Subdivision
Owner/Developer

#2

MEMORANDUM

TO: Blessing Chukwu
Executive Consultant III
Utilities Division

FROM: Barb Wells
Information Technology Specialist
Utilities Division

THRU: Del Smith
Engineering Supervisor
Utilities Division

DATE: May 9, 2006

RE: **LUCKY HILLS WATER COMPANY (DOCKET NO. W-01961A-06-0037)**
AMENDED LEGAL DESCRIPTION

The area requested by Lucky Hills for an extension has been plotted using an amended legal description, which has been docketed. This legal description is attached and should be used in place of the original description submitted with the application

Also attached is a copy of the map for your files.

:bsw

Attachments

cc: Docket Control
Ms. Patti Bright
Ms. Deb Person (Hand Carried)
File

**Legal Description for the Planned Walnut Valley Subdivision and Immediate Area
Request to be added to current CCN of Lucky Hills Water Company, Inc.**

IN TOWNSHIP NINETEEN (19) SOUTH, RANGE TWENTY TWO (22) EAST:

The south half of the north half, the north half of the south half and the south half of the southwest quarter, in Section 27.

The south half of the northeast quarter, and the southeast quarter, in Section 28.

All of Section 32.

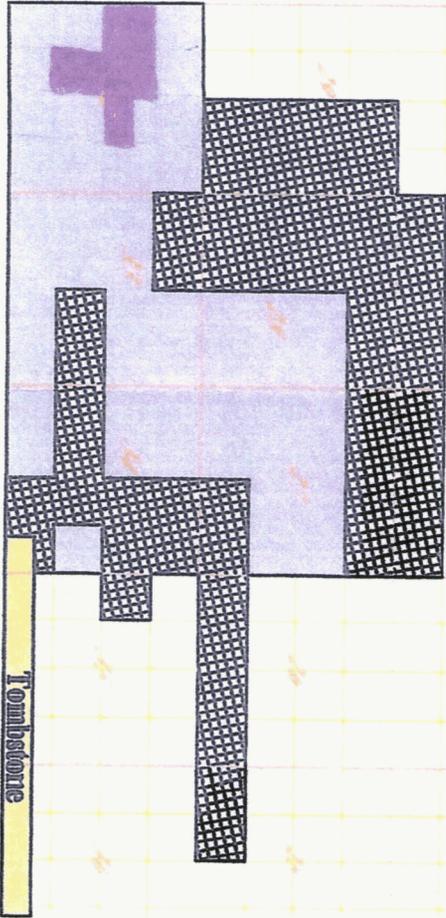
The northeast quarter, the south half of the northwest quarter, the southwest quarter and the south half of the southeast quarter, in Section 33.

The northwest quarter, the south half of the southwest quarter, the northeast quarter of the southeast quarter, in Section 34.

#2

COUNTY  Cochise

RANGE 22 East



TOWNSHIP 19 South

 W-1961 (3)
 Lucky Hills Water Company


 Lucky Hills Water Company
 Docket No. W-01961A-06-0037
 Application for Extension

 WALNUT VALLEY SUBDIVISION

#5

Itemized List

Water Distribution System

Walnut Valley Ranch Phases 1-3, Lots 1-42

Item	Description	Quantity	Unit	Unit price	Cost	
		Total				
A. Distribution System						
1	Install 2" PVC Water main (C-900, Class 200)	230	lf	\$5.00	\$1,150.00	
2	Install 4" PVC Water main (C-900, Class 200)	5186	lf	\$18.00	\$93,348.00	
3	Install 6" PVC Water main (C-900, Class 200)	1946	lf	\$24.00	\$46,704.00	
4	Install 4" DIP Water main (cl, 350)	160	lf	\$20.00	\$3,200.00	
5	Install 6" DIP Water main (cl, 350)	349	lf	\$26.00	\$9,074.00	
6	Install stand pipe assembly (6")	2	ea	\$1,000.00	\$2,000.00	
7	Install 1" double water service w/box	13	ea	\$350.00	\$4,550.00	
8	Install 3/4" single water service w/box	16	ea	\$350.00	\$5,600.00	
9	Install blow-off assembly (2")	6	ea	\$250.00	\$1,500.00	
10	Install air release valve	2	ea	\$400.00	\$800.00	
11	Install 4" gate valve, box & cover	5	ea	\$600.00	\$3,000.00	
12	Install 6" gate valve, box & cover	2	ea	\$800.00	\$1,600.00	
		Sub-Total				\$172,526.00
B. Well Sites						
1	Complete Installation				\$103,000.00	
Total =					\$275,526.00	

BUCK LEWIS ENGINEERING, INC.
 P.O. BOX 1373
 SIERRA VISTA, AZ 85636-1373

J. L. Linder, P.E.

Itemized List		Total	Total	Total	Cost
Water Distribution System					
Walnut Valley Ranch Phase 2, Lots 24-36					
Item	Description	Quantity	Unit	Unit price	Cost
1	Install 2" PVC Water main (C-900, Class 200)	0	lf	\$5.00	\$0.00
2	Install 4" PVC Water main (C-900, Class 200)	1823	lf	\$18.00	\$32,814.00
3	Install 6" PVC Water main (C-900, Class 200)	0	lf	\$24.00	\$0.00
4	Install 4" DIP Water main (cl, 350)	80	lf	\$20.00	\$1,600.00
5	Install 6" DIP Water main (cl, 350)	0	lf	\$26.00	\$0.00
6	Install stand pipe assembly (6")	0	ea	\$1,000.00	\$0.00
7	Install 1" double water service w/box	4	ea	\$350.00	\$1,400.00
8	Install 3/4" single water service w/box	6	ea	\$350.00	\$2,100.00
9	Install blow-off assembly (2")	3	ea	\$250.00	\$750.00
10	Install air release valve	0	ea	\$400.00	\$0.00
11	Install 4" gate valve, box & cover	2	ea	\$600.00	\$1,200.00
12	Install 6" gate valve, box & cover	0	ea	\$800.00	\$0.00
13	Total				\$39,864.00

BUCK LEWIS ENGINEERING, INC.
 PO Box 1373
 Sierra Vista, AZ 85636-1373
 520-459-1122

J. L. Linder, P.E.

Itemized List		Total	Total		
Water Distribution System					
Walnut Valley Ranch Phase 3, Lots 37-42					
Item	Description	Quantity	Unit	Unit price	Cost
1	Install 2" PVC Water main (C-900, Class 200)	0	lf	\$5.00	\$0.00
2	Install 4" PVC Water main (C-900, Class 200)	620	lf	\$18.00	\$11,160.00
3	Install 6" PVC Water main (C-900, Class 200)	0	lf	\$24.00	\$0.00
4	Install 4" DIP Water main (cl, 350)	0	lf	\$20.00	\$0.00
5	Install 6" DIP Water main (cl, 350)	0	lf	\$26.00	\$0.00
6	Install stand pipe assembly (6")	0	ea	\$1,000.00	\$0.00
7	Install 1" double water service w/box	3	ea	\$350.00	\$1,050.00
8	Install 3/4" single water service w/box	1	ea	\$350.00	\$350.00
9	Install blow-off assembly (2")	1	ea	\$250.00	\$250.00
10	Install air release valve	0	ea	\$400.00	\$0.00
11	Install 4" gate valve, box & cover	0	ea	\$600.00	\$0.00
12	Install 6" gate valve, box & cover	0	ea	\$800.00	\$0.00
13	Total				\$12,810.00

BUCK LEWIS ENGINEERING, INC.
 PO Box 1373
 Sierra Vista, AZ 85636-1373
 520-459-1122

A. Wickha, P.E.

Contact Information

Customer / Utility:	Walnut Valley Ranch	Date:	7/26/2006
Site or Well Identity / Location:	Southern AZ, near Tombstone	Main Contact:	Det Liebe
Local Engineer / Firm:	Buck Lewis Engineering	Phone:	520-459-1122
Operator:		Fax:	520-458-9246
Target Date for Installation:	2006	Email:	dst@blecivil.com
Other Pertinent Notes:	treatment needed for reducing arsenic < 10 ppb		gg062606

System Parameters / Site Specific Info

System Type / Application:	Municipal	(utility, school, MHP, other)	<p>Site Specific Notes: Media life predictions assume 100% Arsenic (V) System sizing based on info provided to Adedge Two of three wells need treatment maxflow on one is 25 gpm the other is 10 gpm. Used the highest reported value in calculations Water chemistry results are highest values Need pH, silica and phosphate values Assume 100% arsenic V in media life predictions Site is under development now Shipping Address:</p>
Population Served:		(estimated)	
Number of Connections:	42		
Number of Wells to be treated:	2	(# wells to be treated)	
Design Flow (GPM):	30	(Max design flow rate)	
Ave Flow (GPM):	20	(Typical demand)	
Adedge Sizing Basis (GPM):	30	(Sizing Basis - Adedge)	
Gallons per day:	15,000	(Ave throughput per day)	
Est. Usage (Gals / Year):	5,475,000	(Best estimate)	
Existing Pretreatment In Place:	None		
Existing Disinfection:	None		
Pump Operation / Pressure:	TBD		
Electrical Power Availability:	Yes		
Atm Storage Tank Present at the site:	yes, 40, 000 ground storage tank proposed		
Hydropneumatic Tank Present:	None		
Building present:	none: shaded structure recommended		
Any additives ie, phosphates, fluoride:	None at this time; system yet to be constructed		
Off Loading equipment available:			
Discharge Options:	None; proposed septic field		

Water Analysis

** denotes priority parameters

Priority Parameters		Other Parameters	
pH **	no data	Antimony	mg/L Sb
Total As **	0.018 mg/L As (assumed all As (V))	Chromium	mg/L Cr
As(V) **	assume all (V) mg/L (if known)	Lead	mg/L Pb
Sulfides **	no data mg/L	Molybdenum	mg/L Mo
Hardness **	no data mg/L @ CaCO3	Selenium	mg/L Se
Alkalinity **	no data mg/L @ CaCO3	Fluoride	1.30 mg/L F
Silica **	15.0 mg/L SiO2 estimated	Turbidity	NTU
Phosphate **	0.1 mg/L P04 estimated	Suspended Solids	mg/L
Sulfate **	no data mg/L SO4	Uranium	mg/L U
Iron **	ND mg/L Fe	TDS:	250.00 mg/L
Manganese **	ND mg/L Mn (2004)		

Adsorption

AdEdge Packaged System (APU)	APU-30-S-2-B	Contact time (EBCT):	4.1	(based on peak flow)
No of adsorbers	2 (24" x 72")	Ave flow rate:	20.0	(typical expected)
Qty of media (cu ft):	16	Ave gallons/day :	15,000	(based on utilization)
Adsorption System footprint:	72"Lx35"Wx91"H	Hydraulic Utilization %	34.7%	(actual system utilization 24-7)
Media:	Bayoxide E33 14x18	Est. working capacity:	97,000	(bed volumes to breakthrough)
Operation:	Constant - Variable	Bed volumes / day:	122	(throughput)
Backwashing:	1x / 45 days @ 28 gpm	Est. Gallons to breakthrough:	11,899,184	(arsenic breakthrough)
Backwashing rate:	10 gpm / sq ft	E33 Est. Media life (months):	26.4	(est frequency of changeout)
Est. BW water (gallons) per event:	848 for both vessels	E33 Est. Media life (Years):	2.2	(est frequency of changeout)

Est. System Costs

Adsorption system:	\$27,975	Replacement E33 media:	\$4,510	(media, excluding labor)
Freight:	Est. \$1500	Consumable estimate:	\$0	(chemical - consumable)
Building and/or infrastructure:	TBD	Est. Annual Oper. Costs	\$2,047	(media, consumables)
Estimated Installation:	by others	Operating Costs per 1000 gal:	\$0.37	(ave calculated over 5 years)
AdEdge Equipment Shop Drawings:	included	Est. disposal of spent media:	< \$300	(est. disposal of media)
Startup and Commissioning:	\$2,800	Est. Cost / HH / Month	\$4.06	(est cost per month / connection)
Total capital and startup costs excl. freight	\$30,275			

Arsenic plant only

#3

ATTACHMENT "D"

WATER USE DATA SHEET

NAME OF COMPANY _____	Lucky Hills Water Company, Inc
ADEQ Public Water System No. _____	

MONTH/YEAR (Last 13 Months)	NUMBER OF CUSTOMERS	GALLONS SOLD (Thousands)	
JAN/05	4	29,910	gallons
Feb/05	4	17,830	
MAR/05	4	47,880	
APR/05	4	17,360	
MAY/05	4	18,080	
JUN/05	4	28,690	
JULY/05	4	29,430	
AUG/05	4	23,390	
SEP/05	4	21,100	
OCT/05	4	21,780	
NOV/05	4	17,800	
DEC/05	4	13,180	
JAN./06	4	20,690	
STORAGE TANK CAPACITY (Gallons)	NUMBER OF EACH	ARIZONA DEPT. OF WATER RESOURCES WELL I.D. NUMBER	WELL PRODUCTION (Gallons per Minute)
10,000 ^{NO.} _{AS IS} ^{USABLE}	1	55-609322	? WAS TESTED AT 200 GPM IN 1965

4 EXISTING CUSTOMERS

Other Water Sources in Gallons per Minute →	<u>GPM</u> NONE
Fire Hydrants on System →	Yes <input type="radio"/> No <input checked="" type="radio"/>
Total Water Pumped Last 13 Months (Gallons in Thousands) →	307.12 307,120 gallons

#4 #11

WATER SYSTEM DESIGN REPORT

for

WALNUT VALLEY RANCH
Cochise County

Water Provider:

LUCKY HILLS WATER COMPANY
System No.: 02-022

Prepared by:

Buck Lewis Engineering, Inc.

P.O. Box 1373
Sierra Vista, AZ 85636-1373
Phone: 520-459-1122
Fax: 520-458-9246

March 2006



INTRODUCTION

The Walnut Valley Ranch development consists of 42 residential lots located in Cochise County, Arizona in the south half of the south west quarter of the north east quarter, the south half of the north west quarter and the north east quarter of the south west quarter of Section 32, Township 19 South, Range 22 East, Gila and Salt River meridian.

The project is located adjacent to, and subject to inclusion in, the Lucky Hills Water Company franchise, ADEQ System No.: 02-022

See Figure 1.

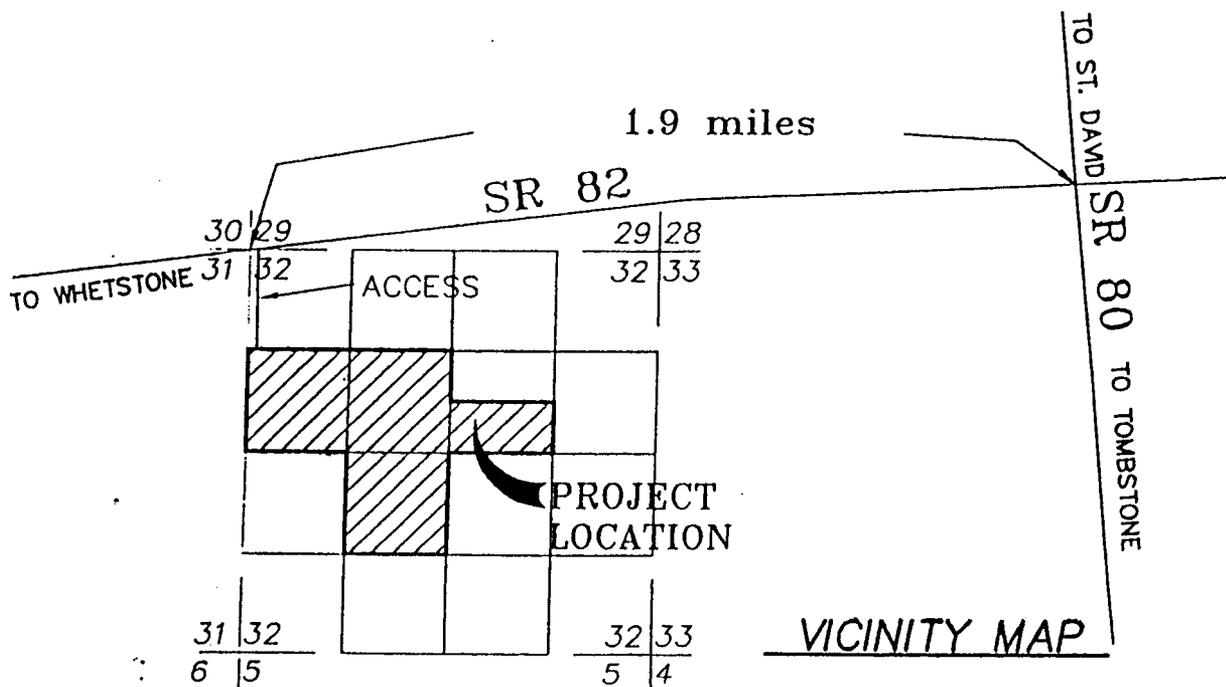


Fig. 1

SUBDIVISION WATER DEMAND

For the pressures and demands at the various junctions, the demand was determined as follows:

At an average daily demand of 350 gal./day/residence, the total daily demand calculates to $350 \times 42 = 14,700$ gal. /day.

The average demand/minute/residence = $14,700 \text{ gal. /day} : 24 \text{ hrs. /day} : 60 \text{ min. /hr.} : 42 \text{ units} = 0.24 \text{ gpm.}$

For the entire subdivision, the avg. Demand = $0.24 \text{ gpm} \times 42 = 10.0 \text{ gpm}$. By applying a multiplier of 2.5 for the peak flow, the demand there becomes $10.1 \text{ gpm} \times 2.5 = 25.3 \text{ gpm}$ for the subdivision.

FIRE FLOW DEMAND

Although there are no fire hydrants provided for the subdivision, 2 standpipes were added into the system as service points for fire trucks. A reserve capacity of 24,000 gallons is added to the storage tank to provide for this service. Water can be drawn from the standpipe at a rate of 200 gpm for 2 hrs.

A demand of 200 gpm was added supplying 24,000 gallons over the two hour period.

STORAGE/SUPPLY

A 'Hydrogeologic Evaluation and Water Supply Development' study performed by Chuck Dickens, Consulting Hydrogeologist, Tucson, Arizona, for the proposed subdivision concludes that the two wells drilled and analyzed have a long term production capacity of about 12 gpm for TW-2 and 20 – 25 gpm for TW-3. Pages 3 and 8 are attached under 'Attachments'.

The well pumps selected in this study produce 9 gpm for well TW-2 and 25 gpm for well TW-3.

The water storage system is located on Lot 3 and Lot 4.

Lot 3 consists of primary well TW-3 (R-1) and a well pump (P-1) capable of supplying 25 gpm to the storage tank (T-1) on Lot 4.

Lot 4 consists of the remainder of the system: secondary well TW-2 (R-2) and a well pump (P-2) which can supply 10 gpm to the storage tank (T-1), two constant pressure 7.5 HP booster pumps that drain water from the storage tank to supply the distribution system.

ANALYSIS

The difference in elevation between the well site and the highest service point (residence) is elev. = 4,140 @ well site and elev. 4,220 @ lots 23&4, or 80'. The minimum residual pressure to be maintained = 20 psi = 46 ft. The system consists of 6" dia. & 4" pvc and ductile iron pipes. The 6" pipe is to the stand pipe for the fire service and is of 2,400' length. At 225gpm (200 gpm fire and 25 gpm domestic demands) the friction loss = $0.31 \text{ ft.} / 100 \text{ ft} \times 2,400 \text{ ft} = 7.4 \text{ ft}$. The friction loss @ 25 gpm for 2,700 ft. of 4" pipe = $0.079 \text{ ft} / 100 \text{ ft} \text{ (at } 35 \text{ gpm)} \times 2,700 \text{ ft} = 2 \text{ ft}$. An additional 10ft. is added for fittings

(valves/junction friction losses). The total head (TDH) requirements for the system are thew

80' elev. Diff

46' residual pressure requirement

9.4' pipe friction losses

10' fittings, valves, junction losses

Total = 145.4 ft.

The booster pumps selected are "Grundfos Boosterpaq" 7.5 hp. Pumps capable of 250 gpm @ 138 of TDH. Pump data and curves are attached.

The pumps will maintain a constant pressure throughout the system and will provide flows depending on demand.

The system was initially analyzed by utilizing a 5,000 gal pressure tank and standard 7.5 hp. centrifugal booster pumps; however the tank/booster pump arrangement was replaced with the constant pressure pump solution.

ATTACHMENTS

-Excerpts from the Hydrogeologic Evaluation by Chuck Dickens.

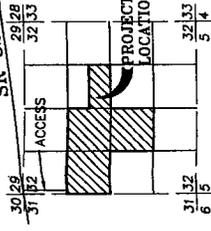
-Well pump curves for Wells TW-2 & TW-3

-'Grundfos Boosterpaq' Guide Specifications & pump curve /catalogue

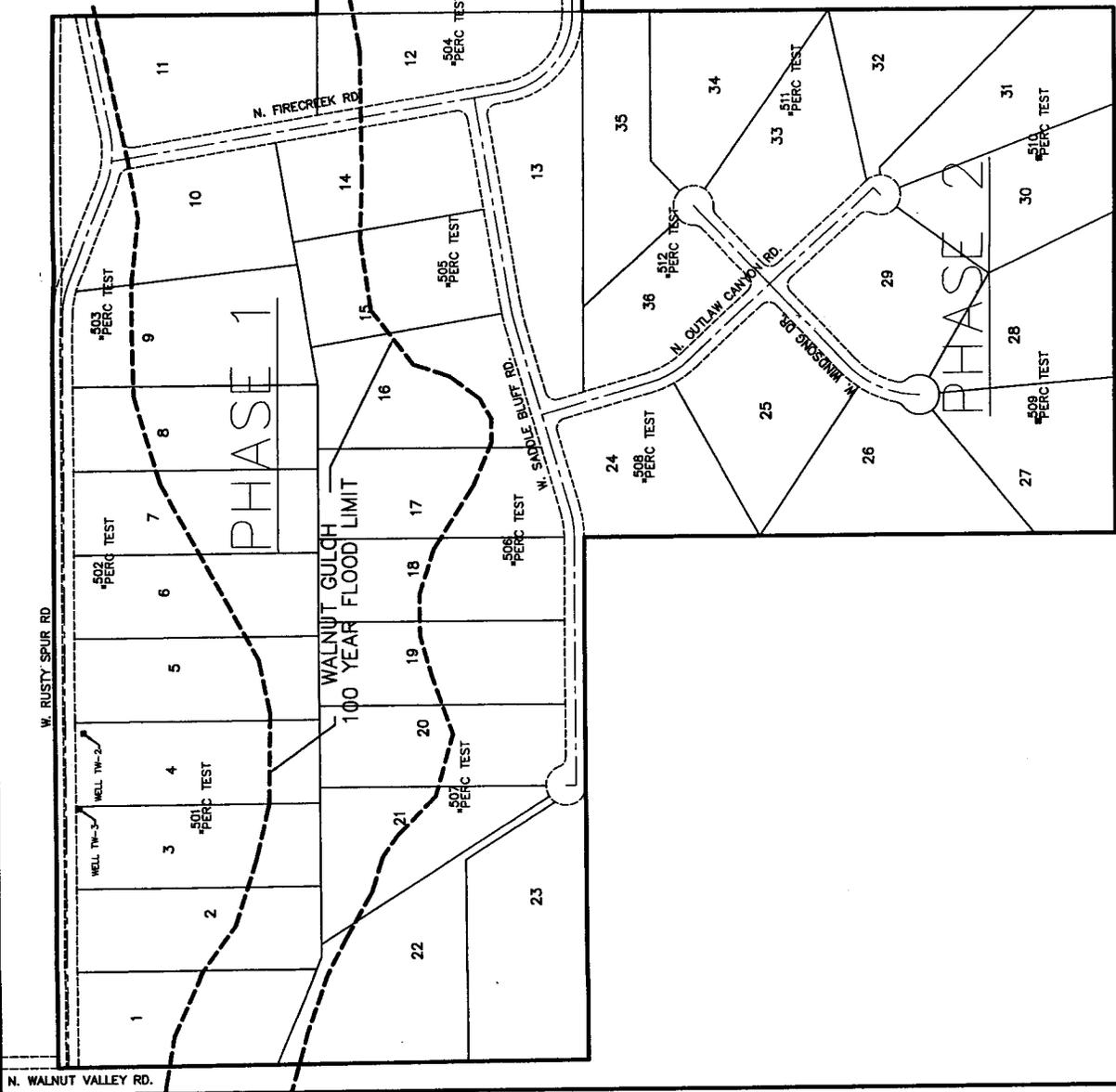
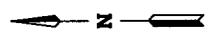
-Flow chart (friction losses) for PVC Pipe

SR 80

SR 82



INSET MAP



LEGAL DESCRIPTION
 1/2 of NE 1/4 of SW 1/4 of NW 1/4 of SW 1/4 of NW 1/4 of Sec. 42, T. 12N, R. 10E, S. 12E, CO. 10, ARK.
 1/2 of NE 1/4 of SW 1/4 of NW 1/4 of SW 1/4 of NW 1/4 of Sec. 42, T. 12N, R. 10E, S. 12E, CO. 10, ARK.
 CO. 10, ARK.

BASE OF BEARING
 BEARING IS NOT MEASURED & CONTROLLED BY THIS SURVEY.

BASE OF ELEVATION
 500 FEET MEAN SEA LEVEL.

LEGEND
 SUBDIVISION BOUNDARY
 PREPARED LOT LINES
 CENTERLINE
 CENTERLINE

OWNER-DEVELOPER
 DAVID MCCARTNEY
 2302 N. SPUR RD
 JARVIS, ARKANSAS, 72020

PREPARED BY:
 BUCK LEWIS
 ENGINEERING,
 INC.

CONTIGUOUS OWNERSHIP
PLAT OF
WALNUT VALLEY RANCH

LOTS 1 - 42
 A SUBDIVISION OF THE S 1/2 OF SW 1/4 OF NE 1/4, THE S 1/2 OF NW 1/4, & THE NE 1/4 OF SW 1/4 OF SEC. 42, T. 12N, R. 10E, S. 12E, CO. 10, ARK.

PLANNERS - ENGINEERS - CONSULTORS
 BUCK LEWIS ENGINEERING, INC.
 2302 N. SPUR RD
 JARVIS, ARKANSAS, 72020
 PHONE (501) 938-1100
 FAX (501) 938-1101
 WWW.BUCKLEWIS.COM

#6

ARIZONA DEPARTMENT OF WATER RESOURCES
Office of Assured and Adequate Water Supply
 3550 North Central Avenue, 2nd Floor, Phoenix, Arizona 85014
 Telephone (602) 771-8585 Fax (602) 771-8689



Janet Napolitano
 Governor

Herbert R. Coombes
 Director

ANALYSIS OF ADEQUATE WATER SUPPLY

May 18, 2006

File Number: 23-402021.0000
Development: Walnut Valley Ranch
Location: Township 19 South, Range 22 East, Section 32
 Cochise County, Arizona
Land Owner: David B. McCartney

The Arizona Department of Water Resources has evaluated the Analysis of Adequate Water Supply application for Walnut Valley Ranch pursuant to A.A.C. R12-15-723. The proposed development will consist of 42 single-family lots ranging from 2.5 to 4.5 acres in size. Total area of the development is 140 acres. The owner submitted a statement regarding landscape restrictions to these lots beyond the 10,000 sq ft model landscape allowance. The additional acreage of the lots will remain native desert vegetation. Water service will be provided by Lucky Hills Water Company. Conclusions of the review are indicated below based on the adequate water supply criteria referenced in A.R.S. § 45-108 and A.A.C. R12-15-701, 715, 723 *et seq.*

Physical, Continuous, and Legal Availability of Water for 100 Years
 On the basis of the Department's review, the Department has determined that 13.49 acre-feet per year of groundwater will be physically and continuously available, which is equivalent to the applicant's projected build out demands for the development, including system losses. The application included a Notice of Intent to Serve form signed by Lucky Hills Water Company. Individual Notices of Intent to Serve will be required for each application for a Water Adequacy Report. The development is located outside of the current service area and CC&N boundary of the Lucky Hills Water Company. The CC&N boundary as well as the service area will be extended to provide water service to the development. Therefore, legal availability has not been proven. Applications for Water Adequacy Reports that follow the Analysis of Adequate Supply will need to reference this letter.

Adequate Water Quality

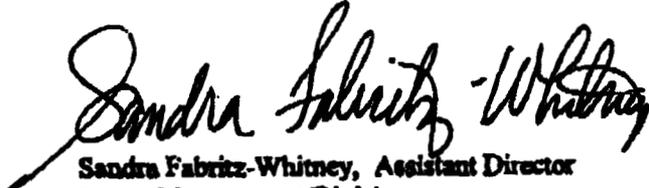
The existing system is in substantial compliance with Arizona Department of Environmental Quality drinking water quality standards. This requirement of an Analysis of Adequate Water Supply will be re-evaluated for each application for a Water Adequacy Report.

Celebrating 25 Years

The term of this Analysis of Adequate Water Supply is ten years from the date of this letter and may be renewed upon request, subject to approval by the Department. Throughout the term of this determination, the projected demand of this development will be considered when reviewing other requests for assured water supply in the area.

Prior to obtaining plat approval by the local platting authority and approval of the public report by the Department of Real Estate, a Water Adequacy Report must be obtained for each subdivision plat. The findings of this Analysis of Adequate Water Supply may be used to demonstrate that certain requirements for a Water Adequacy Report have been met. This determination may be invalidated if the development plan or other conditions change prior to filing for a Water Adequacy Report.

Questions may be directed to the Office of Assured/Adequate Water Supply at (602) 771-8585.



Sandra Fabritz-Whitney, Assistant Director
Water Management Division

cc: Lucky Hills Water Company
Norma Coupand, Office of Assured/Adequate Water Supply
Nicole Swindle, Legal Division

Arizona Department of Water Resources

OFFICE OF ASSURED AND ADEQUATE WATER SUPPLY

500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004-3921
(602) 417-2460

APPLICATION FOR AN ANALYSIS OF WATER ADEQUACY

(Refer to application guidelines for assistance in completing this form)

PART A - GENERAL INFORMATION

- 1. Name of development: WALNUT VALLEY RANCH
- 2. Location: 195 22E 32 COCHISE
Township Range Section(s) County
- 3. Owner Name: _____ Phone: _____ Address: _____
- 4. Water Provider: Lucky Hills Water Company Phone: 520-255-3097 Address: P.O. Box 309 Tombstone, Ariz 85638 (Patti Bright)
- 5. Consultant Name: Chuck M. Dickens Phone: 520-731-6111
Address: 12330 E. Snyder Rd. Tucson, AZ. 85749
- 6. Primary Contact:
Name: Chuck M. Dickens Phone: _____
Address: _____

PART B - WATER DEMAND INFORMATION

- 1. Include a map of the proposed development, and reference as an attachment: SEE ATTACHED
- 2. Number of lots: 42 Size of lots: 2 3/4 - 4 1/2 Total Acreage: 140 ACRES
Acres
- 3. Total demand projected for development: 14 acre-feet (AF) per year
Projected water demand per residential lot: 298 gallons per day
Non-Residential demands: Golf course: AF/year Parks: AF/year Lakes: AF/year
Other (specify): - AF/year
- 4. Expected year of completion (build-out): 2016 (10 years)

PART C - WATER SUPPLY INFORMATION

1. Please indicate source(s) of water to be used: Groundwater Surface Water Effluent
(If the sources includes non-groundwater supplies, please complete "Supplement C.")
2. Provide a hydrologic study, and reference the attachment: SEE ATTACHED REPORT DATED JAN. 17, 2006
3. a. Method of water distribution: central distribution system dry lot subdivision (individual wells)
- b. If water is to be obtained from a water provider, include a "Notice of Intent to Serve" agreement and reference the attachment: SEE ATTACHED; DATED JAN 18, 2006
4. If any wells proposed to serve the development are within one mile of a Water Quality Assurance Revolving Fund or Superfund site (or any monitor wells associated with the site), or if the proposed water supply fails to meet safe drinking water quality standards, provide a study identifying and describing this water and reference the attachment:

5. If a "Letter of Water Availability" has previously been issued for this provide a copy of the document and reference the attachment: _____

PART D - FEES

The application fee for an Analysis of Water Adequacy is \$ 1,000. The payment may be made by cash, check, or in some cases, by entry in an existing Department fee credit account. Checks should be made payable to the Department of Water Resources. **Failure to enclose the required fees will cause the application to be returned.**

Fee for Application for Analysis of Water Adequacy:

\$ 1000.00

I DO HEREBY certify that the information contained in this application and all information accompanying it is true and correct to the best of my knowledge and belief.

Owner Name (Please type or print)

Signature

Date

CHUCK M. DICKENS
CONSULTING HYDROGEOLOGIST



LICENSED GEOLOGIST
ARIZONA 14516
CALIFORNIA 3647

12330 E. SNYDER ROAD
TUCSON, ARIZONA 85749
PHONE / FAX: 520-749-4124
PHONE: 520-731-6111

February 6, 2006

Arizona Department of Water Resources
Attn: Mr. Alan Dulaney
Office of Assured & Adequate Water Supply
3550 North Central Avenue
Phoenix, Arizona 85012

Re: Walnut Valley Ranch Project – Tombstone

Dear Alan:

In response to the letter of incompleteness (Dated January 25th, 2006: DWR # 22-401996.0000) and following discussions with you, we are herewith re-submitting the water adequacy application for the Walnut Valley Ranch project. Originally we had submitted an application for a " Water Adequacy Report" (dated January 18th), but as a result of delays with the ACC and expansion of the water company CC&N we have decided to re-submit for an "Analysis of Water Adequacy" at this time.

Enclosed with this application are two more copies of my hydrogeology report and the ADWR analysis application and required check for \$ 1,000.

If you have any questions or if there is any misunderstanding concerning the re-application please contact me.

Respectfully submitted,

Chuck M. Dickens

CHUCK M. DICKENS
CONSULTING HYDROGEOLOGIST

LICENSED GEOLOGIST
ARIZONA 14510
CALIFORNIA 3647

12330 E. SNYDER ROAD
TUCSON, ARIZONA 85749
PHONE / FAX: 520-749-4124
PHONE: 520-731-6111



**HYDROGEOLOGIC EVALUATION
&
WATER SUPPLY DEVELOPMENT
WALNUT VALLEY RANCH PROJECT
COCHISE COUNTY, ARIZONA**

Prepared For

Mr. David McCartney
Mesa, Arizona

January 17, 2006

Summary

Pumping test data suggests that the transmissivity of the aquifer system in the immediate vicinity of project wells TW-2 and TW-3 ranges from about 4,800 to 6,500 gpd/ft. Test data also indicate that well TW-3 is more productive than well TW-2 and that the aquifer transmissivity is indicated to be slightly higher in the vicinity of well TW-3.

Test data indicate that either well TW-2 or TW-3 could produce the volume of groundwater required to meet the long term average demand of the project (8.7 gpm). Test data further indicate that well TW-3 could readily be pumped at a conservative rate of 25 gpm with a stabilized water level decline of only about 10 feet. Well TW-2 could be pumped at a rate of 15 gpm with a stabilized water level decline of only about 20 feet.

The two project supply wells would be sufficient to meet the estimated long term average (12,500 gpd), peak day demand (25,000 gpd) and the peak hour demand (2,000 gph / 33 gpm) of the project at full build out.

Aquifer Storage Coefficient

Observation well data was not available to directly calculate aquifer storage coefficient. During the test pumping of well TW-3, water levels were routinely monitored at well TW-2 to potentially develop required observation well data. However, no water level decline occurred at well TW-2 during the 22 hours of pumping well TW-3.

Assuming that groundwater occurs under unconfined conditions within the aquifer system, the storage coefficient would be expected to be on the order of 0.10 to 0.15 (USGS, 1972).

DRAWDOWN ANALYSIS (100 Years)

The Arizona Department of Water Resources requires that the depth to groundwater within the aquifer system adjacent to a pumped well (radial distance of one foot) not exceed 1,200 feet after 100 years of pumping at the projected long term average water demand of the project. There are a number of approaches that could be taken to project the theoretical drawdown ranging from basic calculations using the Theis solution to the problem of radial groundwater flow, to a calibrated groundwater flow model including recharge, distributed parameters etc. For the purposes of this project, the simplest and most conservative approach was taken, i.e. use of the Theis solution, and conservative assumptions, as described below.

The water demand of the project will eventually be satisfied using both wells TW-2 and TW-3. However, for the drawdown analysis it was assumed that all the groundwater pumping over the required 100 year analysis period would be derived solely from well TW-3. In addition, the hydraulic effect of aquifer boundaries south and east of the pumping well were included in the analysis.



Well TW-1 was drilled to a depth of 360 feet and penetrated bedrock at 340 feet. The well was cased with 6 inch PVC casing. The depth to groundwater was measured at about 302 feet below land surface. Due to the limited saturated thickness at well TW-1 and the higher production capacity of wells TW-2 and TW-3, test pumping of well TW-1 was not conducted. It will not be necessary to utilize well TW-1 as a project supply well. The production capacity of well TW-1 would be expected to be 10 gpm or less. The ADWR registration number for well TW-1 is 55-208241.

Both wells TW-2 and TW-3 were initially constructed as test wells, to be eventually converted / retrofitted as project supply wells. Test pumping of the wells (to be discussed in detail in a later section of the report) revealed that either well would be capable of meeting the long term average (8.7 gpm) and peak day (17.4 gpm) demands of the project. Well TW-2 was test pumped at a rate of 12.3 gpm with a total stabilized water level decline of about 16 feet. Well TW-3 was test pumped at a rate of about 14 gpm with a total stabilized drawdown of about 5.5 feet. Well TW-3 was constructed approximately 200 feet west of well TW-2 to satisfy water system back-up / emergency requirements for the water system and to provide additional characterization of the aquifer system.

Well TW-3 will function as the primary project supply well, and will be equipped with a pump motor unit that will produce 20 to 25 gpm. Well TW-2 will be equipped with a pump motor unit that will produce at least 12 gpm. The combined yield of the two pump motor units will approach 35 gpm (50,000 gpd), essentially twice the peak day demand. Both pump / motor units will be single phase – 240 volt units.

Details concerning the construction and test pumping of the project test / supply wells are summarized in Table 3. Drillers logs for each well are presented in Appendix A.

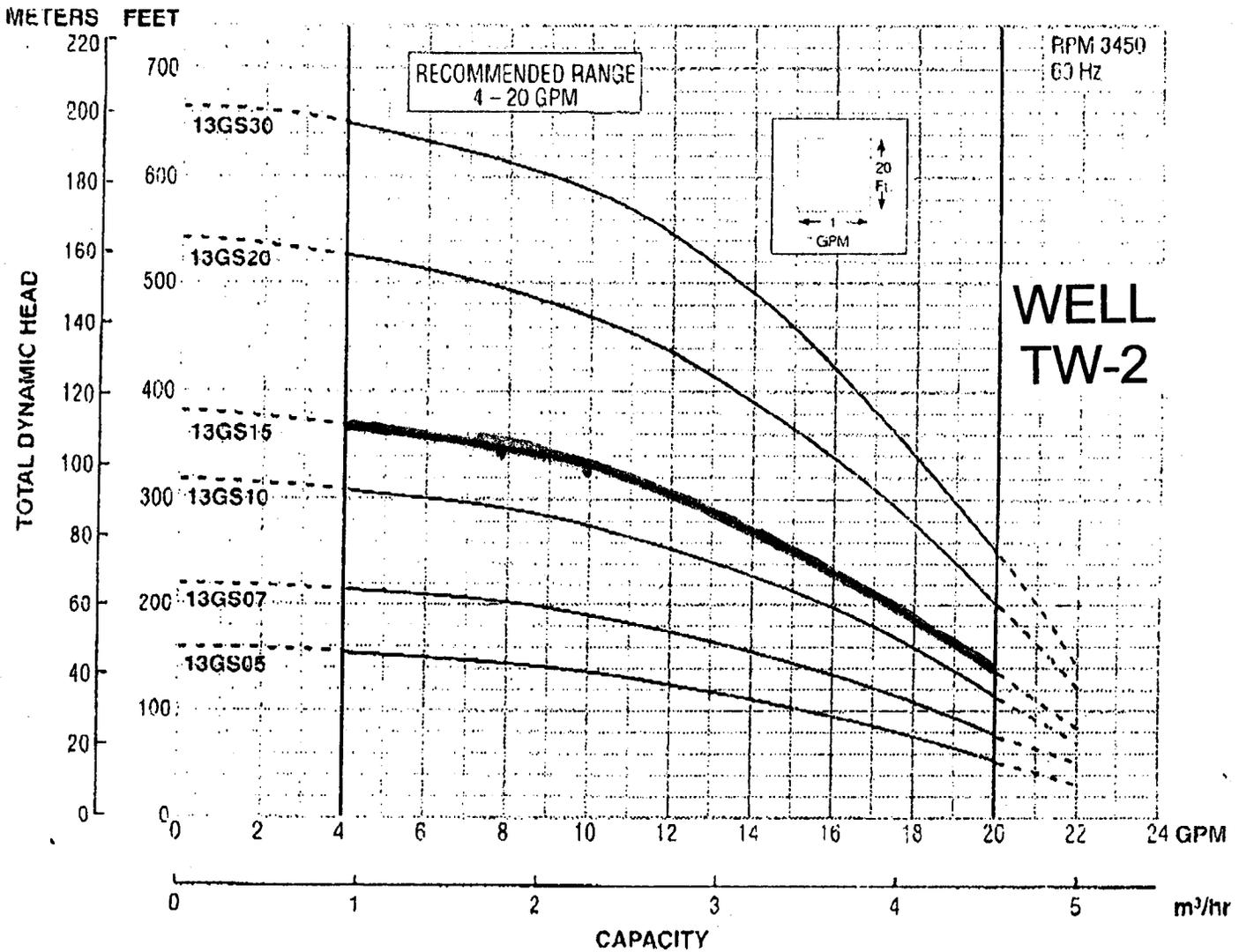
The Lucky Hills Water Company has agreed to eventually acquire, own, and operate the project supply wells and to serve the proposed subdivision. The current CC&N of the water company, in the vicinity of the project, is shown on Figure 1. The CC&N of the water company currently extends to within about ¼ mile north and ¼ mile east of the project property. The CC&N will be extended to include the project property.

The closest actual existing infrastructure of the water company is located about one mile northeast (section 28) of the project property and north of state highway 82. As such, the existing system will not be extended to the project property in the immediate future. The wells and storage facilities constructed for the Walnut Valley Ranch project will be operated as a “satellite system” within and by the Lucky Hills Water Company.

DESCRIPTION OF PROJECT SITE

The 140 acre project site is located along the northern flanks of the Tombstone Hills approximately four miles east of the San Pedro River. The Walnut Gulch drainage flows east to west through the property. The property is undeveloped with land surface elevations ranging from about 4,120 to about 4,250 feet above mean sea level (msl).



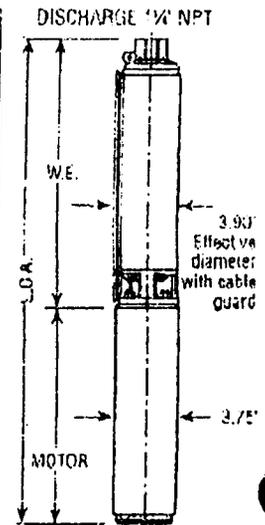


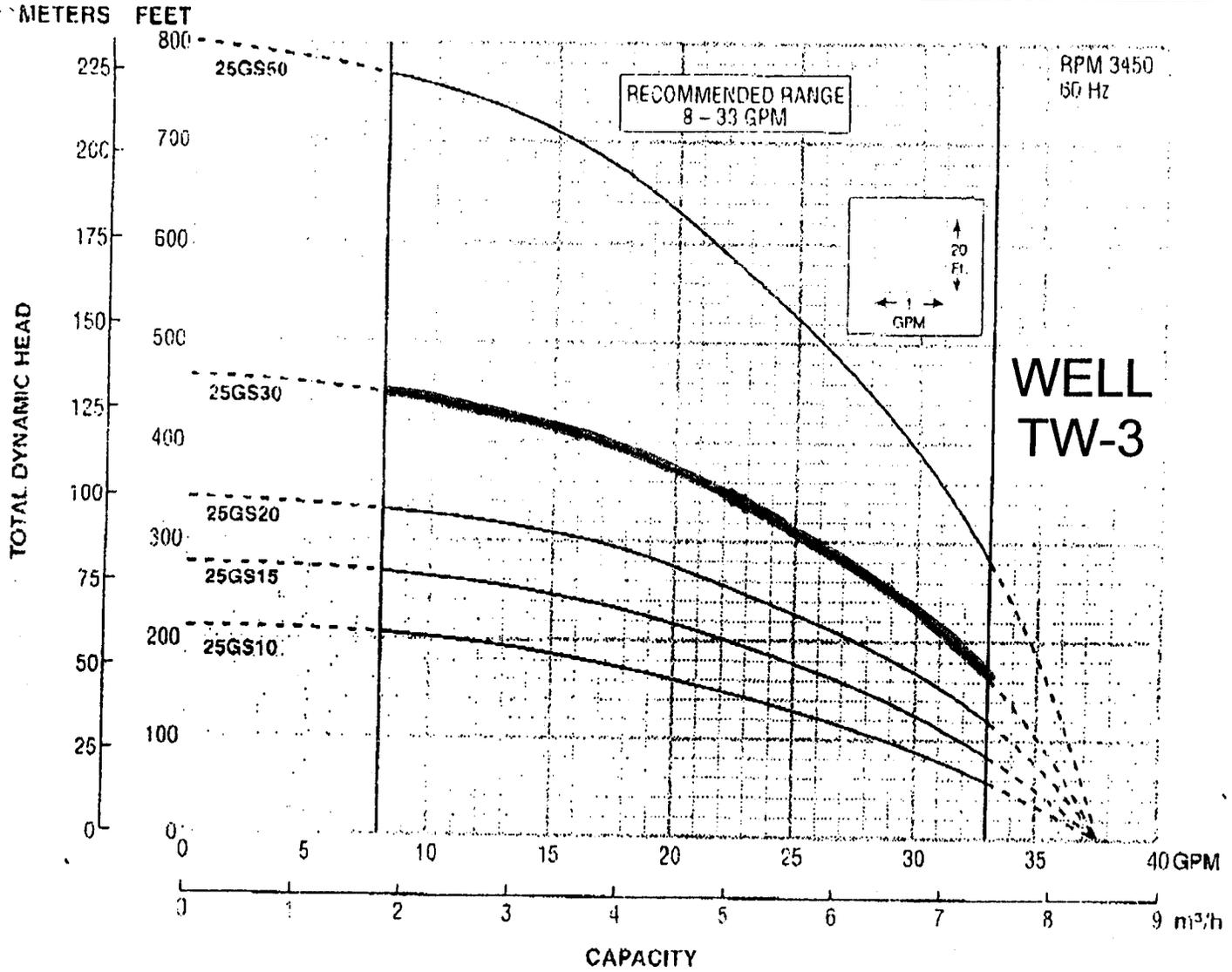
DIMENSIONS AND WEIGHTS

Model	HP	Phase	Stages	Length (inches)			Weight (lbs.)		
				W.E.⊕	Motor	L.O.A.⊕	W.E.	Motor	Total
13GS05412,22,11,21	1/4	1	5	9.6	9.5	19.1	6	18	24
13GS07412,22	1/4	1	7	11.0	10.7	21.7	6	20	26
13GS10412,22	1	1	10	13.0	11.8	24.8	7	23	30
13GS15412	1 1/2	1	12	14.4	13.6	28.0	8	28	36
13GS15422	1 1/2	1	12	14.4	15.1	29.5	8	31	39
13GS15432,34	1 1/4	3	12	14.4	11.8	26.2	8	23	31
13GS20412	2	1	17	17.9	15.1	33.0	10	30	40
13GS20432,34	2	3	17	17.9	13.6	31.5	10	28	38
13GS30412	3	1	21	20.6	23.5	44.1	12	52	64
13GS30432,34	3	3	21	20.6	20.6	41.2	12	43	55

⊕ W.E. = water end or pump without motor.

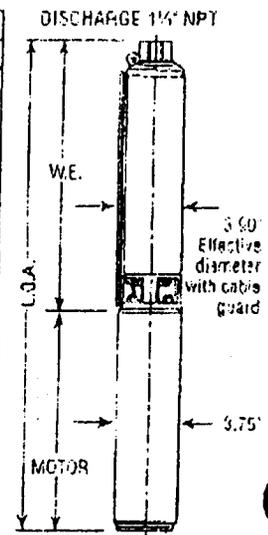
⊕ L.O.A. = length of assembly - complete pump - water end and motor.





DIMENSIONS AND WEIGHTS

Model	HP	Phase	Stages	Length (inches)			Weight (lbs.)		
				W.E. ⌀	Motor	L.O.A. ⌀	W.E.	Motor	Total
25GS10412.22	1	1	7	12.7	11.8	24.5	7	23	30
25GS15412	1½	1	9	14.6	13.6	28.2	8	28	36
25GS15422	1½	1	9	14.6	15.1	29.7	6	31	39
25GS15432.34	1½	3	9	14.6	11.8	26.4	8	23	31
25GS20412	2	1	11	16.5	15.1	31.6	9	30	39
25GS20432.34	2	3	11	16.5	13.6	30.1	9	28	37
25GS30412	3	1	15	20.2	23.5	43.7	11	52	63
25GS30432.34	3	3	15	20.2	20.6	40.8	11	43	54
25GS50412	5	1	25	30.9	29.5	60.4	17	69	86
25GS50432.34	5	3	25	30.9	23.6	54.5	17	53	70



W.E. = water end or pump without motor.
 L.O.A. = length of assembly - complete pump - water end and motor

TABLE I
FLOW CHART FOR PVC SDR-26 PIPE
(Flow Coefficient C-150)

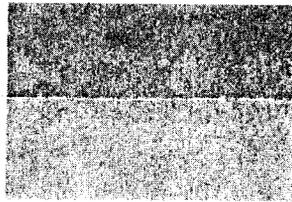


TABLE I
FLOW CHART FOR PVC SDR-26 PIPE
 (Flow Coefficient C-150)

Flow GPM	1"		1 1/8"		1 1/2"		2"		2 1/2"		3"		4"		6"		8"		
	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	
1	.293	.061																	
2	.538	.209	.382	.072															
3	.878	.425	.573	.146	.422	.070													
4	1.18	.717	.764	.242	.561	.115													
5	1.47	1.05	.953	.361	.702	.168													
6	1.77	1.48	1.15	.500	.844	.234	.512	.072											
8	2.35	2.52	1.53	.834	1.12	.390	.682	.118											
10	2.94	3.78	1.92	1.25	1.41	.584	.851	.175	.597	.074									
15	4.41	8.05	2.86	2.63	2.11	1.22	1.27	.362	.900	.152									
20	5.88	13.8	3.82	4.50	2.82	2.08	1.70	.607	1.19	.256	.808	.107							
25	7.33	21.2	4.77	6.83	3.51	3.13	2.13	.905	1.49	.378	1.01	.159							
30			5.74	9.52	4.22	4.39	2.56	1.27	1.79	.529	1.21	.220							
35			6.69	12.8	4.92	5.88	2.98	1.70	2.09	.708	1.41	.290	.821						
40			7.64	16.5	5.61	7.50	3.41	2.19	2.39	.898	1.62	.369	.940	.100					
45			8.60	20.7	6.31	9.47	3.83	2.70	2.69	1.08	1.82	.460	1.05	.123					
50					7.02	11.6	4.26	3.28	2.98	1.35	2.02	.555	1.17	.146					
60			8.43	16.5	8.43	16.5	5.11	4.64	3.58	1.91	2.42	.780	1.41	.206					
70							5.97	6.21	4.17	2.57	2.83	1.04	1.64	.275					
80							6.81	8.05	4.77	3.28	3.23	1.32	1.88	.345					
90							7.66	10.0	5.37	4.08	3.64	1.66	2.12	.430					
100									5.97	5.00	4.04	2.02	2.34	.522	1.03	.069			
125									7.47	7.67	5.06	3.10	2.93	.798	1.29	.106			
150											6.06	4.30	3.52	1.12	1.56	.148			
175											7.07	5.74	4.11	1.49	1.81	.197			
200											8.08	7.43	4.69	1.89	2.07	.250			
225											9.10	9.32	5.27	2.36	2.33	.311	1.34	.083	
250													5.86	2.80	2.59	.375	1.49	.099	
275													6.45	3.45	2.84	.449	1.64	.117	
300													7.04	4.05	3.10	.529	1.79	.138	
325													7.62	4.75	3.36	.615	1.94	.160	
350													8.20	5.46	3.62	.707	2.09	.183	
375													8.88	6.15	3.88	.799	2.24	.208	
400													9.56	6.86	4.14	.908	2.38	.233	

CODE: V = Velocity in Ft./Sec.
 H_f = Head Loss in Ft./100 ft. of pipe.

The values for Velocity and Friction Loss/100 feet used in this table are based on plastic pipe manufacturers and the Plastic Pipe Institute's suggested values and conversions for PVC Type SDR 26 pipe, PVC SDR-21 pipe, and PVC Schedule 40 pipe.

BRADLY DRILLING, INC.
562 E HWY 82
PO BOX 4707
HUACHUCA CITY, AZ 85616

520-456-2355

DWR #736 Lic. #ROC-53/A-04

April 25, 2006

Det @ Buck Lewis Engineering

Re: BoosterpaQ -Pressure Boosting System

Det,

For your applications I have three systems, all the same flow and head 250 GPM at 60 PSI. All include the standard features:

Isolation valves
Check valves
Manifolds
Dry run protection
Complete control system
Lighting protection
80db panel mounted fault indicator
Skid mounted
Panel mounted user interface
85 gallon Flexcon pressure tank

System 1: ME 2 CRE20-3, 1X230,60hz GCP, this unit is single phase 230 volt.

System 2: ME 2 CRE20-3, 3X230,60hz GCP, this unit is three phase 230 volt.

System 3: ME 2 CRE20-3, 3X460,60hz GCP, this unit is three phase 460 volt.

These systems require a 25% deposit on order and balance due upon receipt of invoice.

Shipped to job site freight prepaid.

All systems include one- day start up and operator training.

Thanks,
Brad

BoosterpaQ ME Guide Specification

Part I – GENERAL

1.1 WORK INCLUDED

- A. Variable Speed Packaged Pumping System

1.2 REFERENCE STANDARDS

The work in this section is subject to the requirements of applicable portions of the following standards:

- A. Hydraulic Institute
- B. ANSI – American National Standards Institute
- C. ASTM – American Society for Testing and Materials
- D. IEEE – Institute of Electrical and Electronics Engineers
- E. NEMA – National Electrical Manufacturers Association
- F. NEC – National Electrical Code
- G. ISO – International Standards Organization
- H. UL – Underwriters Laboratories, Inc.

Part 2 – PRODUCTS

2.1 INTEGRATED VARIABLE SPEED PACKAGED PUMPING SYSTEM

- A. Furnish and install a pre-fabricated and tested variable speed packaged pumping system to maintain constant water delivery pressure.
- B. The packaged pump system shall be a standard product of a single pump manufacturer. The entire pump system including pumps and pump logic controller, shall be designed and built by the same manufacturer.
- C. The complete packaged water booster pump system shall be certified and listed by UL (Category QCZJ – Packaged Pumping Systems) for conformance to U.S. and Canadian Standards.

2.2 PUMPS

- A. The pumps shall be of the in-line vertical multi-stage design.
- B. The head-capacity curve shall have a steady rise in head from maximum to minimum flow within the preferred operating region. The shut-off head shall be a minimum of 20% higher than the head at the best efficiency point.
- C. Small Vertical In-Line Multi-Stage Pumps (Nominal flow from 3 to 125 gallons per minute) shall have the following features:
 - 1. The pump impellers shall be secured directly to the pump shaft by means of a splined shaft arrangement.
 - 2. The suction/discharge base shall have ANSI Class 250 flange or internal pipe thread (NPT) connections as determined by the pump station manufacturer.
 - 3. Pump Construction.
 - a. Suction/discharge base, pump head, motor stool: Cast iron (Class 30)
 - b. Impellers, diffuser chambers, outer sleeve: 304 Stainless Steel

c. Shaft	316 or 431 Stainless Steel
d. Impeller wear rings:	304 Stainless Steel
e. Shaft journals and chamber bearings:	Silicon Carbide
f. O-rings:	EPDM

Shaft couplings for motor flange sizes 184TC and smaller shall be made of cast iron or sintered steel. Shaft couplings for motor flange sizes larger than 184TC shall be made of ductile iron (ASTM 60-40-18).

Optional materials for the suction/discharge base and pump head shall be cast 316 stainless steel (ASTM CF-8M) resulting in all wetted parts of stainless steel.

4. The shaft seal shall be a balanced o-ring cartridge type with the following features:

a. Collar, Drivers, Spring:	316 Stainless Steel
b. Shaft Sleeve, Gland Plate:	316 Stainless Steel
c. Stationary Ring:	Silicon Carbide
d. Rotating Ring:	Silicon Carbide
e. O-rings:	EPDM

The Silicon Carbide shall be imbedded with graphite.

5. Shaft seal replacement shall be possible without removal of any pump components other than the coupling guard, shaft coupling and motor. Pumps with motors equal to or larger than 15 hp (fifteen horsepower) shall have adequate space within the motor stool so that shaft seal replacement is possible without motor removal.

D. Large In-line Vertical Multi-Stage Pumps (Nominal flows from 130 to 500 gallons per minute) shall have the following features:

1. The pump impellers shall be secured directly to the smooth pump shaft by means of a split cone and nut design.
2. The suction/discharge base shall have ANSI Class 125 or Class 250 flange connections in a slip ring (rotating flange) design as indicated in the drawings or pump schedule.

3. Pump Construction.

a. Suction/discharge base, pump head	Ductile Iron (ASTM 65-45-12)
b. Shaft couplings, flange rings:	Ductile Iron (ASTM 65-45-12)
b. Shaft	431 Stainless Steel
c. Motor Stool	Cast Iron (ASTM Class 30)
d. Impellers, diffuser chambers, outer sleeve:	304 Stainless Steel
e. Impeller wear rings:	304 Stainless Steel
f. Intermediate Bearing Journals:	Tungsten Carbide
g. Intermediate Chamber Bearings:	Leadless Tin Bronze
h. Chamber Bushings:	Graphite Filled PTFE
i. O-rings:	EPDM

4. The shaft seal shall be a single balanced metal bellows cartridge with the following construction:

a. Bellows:	904L Stainless Steel
b. Shaft Sleeve, Gland Plate, Drive Collar:	316 Stainless Steel
c. Stationary Ring:	Carbon
d. Rotating Ring:	Tungsten Carbide
e. O-rings:	EPDM

5. Shaft seal replacement shall be possible without removal of any pump components other than the coupling guard, motor couplings, motor and seal cover. Pumps with motors equal to or larger than 15 hp (fifteen horsepower) shall have adequate space within the motor stool so that shaft seal replacement is possible without motor removal.

2.3 INTEGRATED VARIABLE FREQUENCY DRIVE MOTORS

- A. Each motor shall be of the Integrated Variable Frequency Drive design consisting of a motor and a Variable Frequency Drive (VFD) built and tested as one unit by the same manufacturer.
- B. The VFD shall be of the PWM (Pulse Width Modulation) design using current IGBT (Insulated Gate Bipolar Transistor) technology.
- C. The VFD shall convert incoming fixed frequency three-phase AC power into a variable frequency and voltage for controlling the speed of motor. The motor current shall closely approximate a sine wave. Motor voltage shall be varied with frequency to maintain desired motor magnetization current suitable for centrifugal pump control and to eliminate the need for motor de-rating.
- D. The VFD shall have a minimum of two skip frequency bands which can be field adjustable.
- E. The VFD shall have internal solid-state overload protection designed to trip within the range of 125-150% of rated current.
- F. The integrated VFD motor shall include protection against input transients, phase imbalance, loss of AC line phase, over-voltage, under-voltage, VFD over-temperature, and motor over-temperature.
- G. The integrated VFD motor shall have, as a minimum, the following input/output capabilities:
1. Speed Reference Signal: 0-10 VDC, 4-20mA
 2. Digital remote on/off
 3. Fault Signal Relay (NC or NO)
- H. The motor shall be Totally Enclosed Fan Cooled (TEFC) with a standard NEMA C-Face, Class F insulation with a Class B temperature rise.
- I. Motor drive end bearings shall be adequately sized so that the minimum L10 bearing life is 17,500 hours at the minimum allowable continuous flow rate for the pump at full rated speed.

2.4 PUMP SYSTEM CONTROLLER

- A. The pump system controller shall be a standard product developed and supported by the pump manufacturer.
- B. The controller shall be microprocessor based with EPROM programming for individual system types. The controller shall have (as a minimum) a 2 line by 24 character LCD display for field programming. Password protection of system settings shall be standard.
- C. Pump system programming (field adjustable) shall include as a minimum the following:
- | | |
|----------------------------------|--------------------------------|
| System Pressure set-point | Suction pressure shut-down |
| High system pressure shut-down | Low system pressure shut-down |
| Pressure Transducer supply/range | Individual Pump shut-off head |
| System Time (reaction) | Sequence Time (start delay) |
| Backup pump designation | Pump priority (start sequence) |
- D. The system pressure set-point shall be capable of being automatically adjusted by a built-in clock program. The clock program shall be capable of 10 different set-points per 24 hour period.

- E. The system pressure set-point shall also be capable of being automatically adjusted by a system pressure compensating function. As flow increases the discharge pressure shall increase linearly as flow approaches design capacity. System compensation percentage shall be field adjustable.
- F. The controller shall be capable of receiving a remote analog set-point (4-20mA or 0-10 VDC) as well as a remote on/off (digital) signal.
- G. The controller shall display the following as status readings in addition to all system programming parameters:

System Pressure set-point	Actual system pressure
Suction Pressure (if analog is used)	Pump system capacity (%)
Individual pump status (on/off/fault)	Individual pump speed (%)
Individual pump running total running hours	

- H. The pump system controller shall store the 10 most recent alarms in memory. The time, date and duration of each alarm shall be recorded. A potential-free relay shall be provided for alarm notification to the building management system. The controller shall display the following alarm conditions:

High System Pressure	Low system pressure
Low suction pressure	Individual pump failure
VFD trip/failure	Loss of sensor signal (4-20 mA)
Loss of remote set-point signal (4-20mA)	System power loss

- I. The pump system controller shall be mounted in a NEMA 4 enclosure (NEMA 3R if cooling fan is required). The entire control panel shall be UL 508 listed as an assembly. The control panel shall include a main disconnect, circuit breakers for each pump and the control circuit and control relays for alarm functions. Control panel options shall include, but not be limited to:

Pump Run Lights	Pump Alarm Lights
System Fault Light	Audible Alarm (80 db[A])
Surge Arrestor	Control Panel Internal Illumination
Emergency/Normal Operation Switches	Service Disconnect Switches

2.5 SEQUENCE OF OPERATION

The system controller shall operate equal capacity variable speed pumps to maintain a constant discharge pressure (system set-point). The system controller shall receive an analog signal [4-20mA] from the factory installed pressure transducer on the discharge manifold, indicating the actual system pressure. As flow demand increases the pump speed shall be increased to maintain the system set-point pressure. When the operating pump(s) cannot maintain the system set-point as flow increases (pressure starts to drop), an additional pump will be started and will increase speed until the system set-point is achieved. All pumps in operation will be running at the same speed to maintain the system set-point. As flow demand decreases the pump speed shall be reduced while system set-point pressure is maintained. When all pumps in operation are running at low speed the system controller shall switch off pumps when fewer pumps are able to maintain system demand.

The system controller shall be capable of switching pumps on and off to satisfy system demand without the use of flow switches or motor current monitors.

If a no flow shut-down is required (periods of zero demand) a bladder type diaphragm tank shall be installed. The tank shall be piped to the discharge manifold or system piping downstream of the pump system. When zero flow is detected by the system controller, the remaining pump(s) shall be switched off. When the system pressure falls to 5% below the system set-point (flow begins after shut-down), a pump shall be switched on, increasing speed to maintain the system set-point pressure.

All pumps in the system shall alternate automatically based on demand, time and fault. If flow demand is continuous (no flow shut-down does not occur), the system controller shall have the capability to alternate the pumps every 24 hours or once per week. The time of the pump change-over shall be field adjustable.

2.6 SYSTEM CONSTRUCTION

- A. The suction and discharge manifolds shall be constructed of 316 stainless steel. Manifold connection sizes shall be as follows:

3 inch and smaller:	Male NPT threaded
4 inch through 8 inch:	ANSI Class 150 rotating flanges
10 inch and larger:	ANSI Class 150 flanges

- B. Pump Isolation valves shall be provided on the suction and discharge of each pump. Isolation valve sizes 2 inch and smaller shall be nickel plated brass full port ball valves. Isolation valve sizes 3 inch and larger shall be a full lug style butterfly valve. The valve disk shall be of stainless steel. The valve seat material shall be EPDM and the body shall be cast iron, coated internally and externally with fusion-bonded epoxy.
- C. A spring-loaded non-slam type check valve shall be installed on the discharge of each pump. The valve shall be a wafer style type fitted between two flanges. The head loss through the valve shall not exceed 5 psi at the pump design capacity. Check valves 1-1/2" and smaller shall have a POM composite body and poppet, a stainless steel spring with EPDM or NBR seats. Check valves 2" and larger shall have a body material of stainless steel or epoxy coated iron (fusion bonded) with an EPDM or NBR resilient seat. Spring material shall be stainless steel. Disk shall be of stainless steel or leadless bronze.
- D. For systems that require a diaphragm tank, a diaphragm tank connection of no smaller than 3/4" shall be provided on the discharge manifold.
- E. A pressure transducer shall be factory installed on the discharge manifold (or field installed as specified on plans). Systems with positive inlet gauge pressure shall have a factory installed pressure transducer on the suction manifold for water shortage protection. Pressure transducers shall be made of 316 stainless steel. Transducer accuracy shall be +/- 1.0% full scale with hysteresis and repeatability of no greater than 0.1% full scale. The output signal shall be 4-20 mA with a supply voltage range of 9-32 VDC.
- F. A bourdon tube pressure gauge, 2.5 inch diameter, shall be placed on the suction and discharge manifolds. The gauge shall be liquid filled and have copper alloy internal parts in a stainless steel case. Gauge accuracy shall be 2/1/2 %. The gauge shall be capable of a pressure of 30% above its maximum span without requiring recalibration.
- G. Systems with a flooded suction inlet or suction lift configuration shall have a factory installed water shortage protection device on the suction manifold.
- H. The base frame shall be constructed of corrosion resistant 304 stainless steel. Rubber vibration dampers shall be fitted between each pumps and baseframe to minimize vibration.
- I. Depending on the system size and configuration, the control panel shall be mounted in one of the following ways:
- On a 304 stainless steel fabricated control cabinet stand attached to the system skid.
 - On a 304 stainless steel fabricated skid, separate from the main system skid
 - On its own base (floor mounted with plinth)

2.8 TESTING

- A. The entire pump station shall be factory performance tested as a complete unit prior to shipment. Job-site programming shall be entered into the controller prior to shipment (details of installation requirements shall be communicated to the pump system manufacturer). A verified performance test report shall be made available from the system manufacturer.
- B. The system shall undergo a hydrostatic test of 250 psig for a minimum of 15 minutes prior to shipment.

2.8 WARRANTY

- A. The warranty period shall be a non-prorated period of 24 months from date of installation, not to exceed 30 months from date of manufacture.



Company name: Grand Canyon Pump
 Created by: Russ Hunter
 Phone: 1.520.292.8011
 Fax: 1.520.292.8012
 Date: 4/21/2006

Description
 Product name: CR 20-03
 Product Number: 96523831
 EAN number: 5700396912110

Technical:
 Speed for pump data: 3467 rpm
 Rated flow: 111.4 US GPM
 Rated head: 159 ft
 Impellers: 03
 Type of shaft seal: HQQE
 Stages: 03
 Pump version: A
 Model: A
 Cooling: ODP

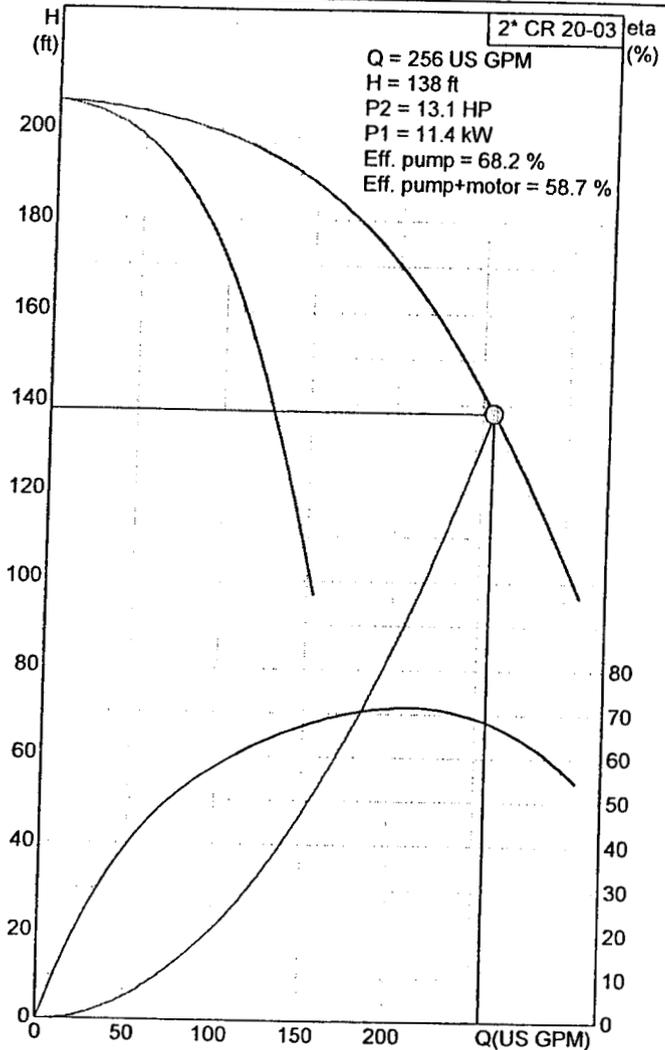
Materials:
 Material, pump housing: Cast iron
 EN-JL1030 DIN W.-Nr.
 A48-30 B ASTM
 Material, impeller: Stainless steel
 1.4301 DIN W.-Nr.
 304 AISI
 Material code: A
 Code for rubber: E

Installation:
 Maximum ambient temperature: 104 °F
 Max pressure at stated temp: 145 / 250 psi°F
 145 / -4 psi°F
 Standard, pipe connection: Oval
 Connect code: B
 Size, pipe connection: 2" NPT
 Flange size for motor: 215TC

Liquid:
 Liquid temperature range: -4 .. 248 °F

Electrical data:
 Motor type: 3723M
 Number of poles: 2
 P2: 7.5 HP
 Power (P2) required by pump: 7.5 HP
 Mains frequency: 60 Hz
 Rated voltage: 3 x 208-230 / 460 V
 Service factor: 1,15
 Rated current: 19-18 / 9 A
 Rated speed: 3450 rpm
 Enclosure class (IEC 34-5): IP23
 Insulation class (IEC 85): F
 Motor protection: NONE
 Motor Number: 84Z00015

Others:
 Shipping volume: 4.94 ft³



CHUCK M. DICKENS
CONSULTING HYDROGEOLOGIST

LICENSED GEOLOGIST
ARIZONA 14510
CALIFORNIA 3647



12330 E. SNYDER ROAD
TUCSON, ARIZONA 85749
PHONE / FAX: 520-749-4124
PHONE: 520-731-6111

**HYDROGEOLOGIC EVALUATION
&
WATER SUPPLY DEVELOPMENT
WALNUT VALLEY RANCH PROJECT
COCHISE COUNTY, ARIZONA**

Prepared For

Mr. David McCartney
Mesa, Arizona

January 17, 2006

Summary

Pumping test data suggests that the transmissivity of the aquifer system in the immediate vicinity of project wells TW-2 and TW-3 ranges from about 4,800 to 6,500 gpd/ft. Test data also indicate that well TW-3 is more productive than well TW-2 and that the aquifer transmissivity is indicated to be slightly higher in the vicinity of well TW-3.

Test data indicate that either well TW-2 or TW-3 could produce the volume of groundwater required to meet the long term average demand of the project (8.7 gpm). Test data further indicate that well TW-3 could readily be pumped at a conservative rate of 25 gpm with a stabilized water level decline of only about 10 feet. Well TW-2 could be pumped at a rate of 15 gpm with a stabilized water level decline of only about 20 feet.

The two project supply wells would be sufficient to meet the estimated long term average (12,500 gpd), peak day demand (25,000 gpd) and the peak hour demand (2,000 gph / 33 gpm) of the project at full build out.

Aquifer Storage Coefficient

Observation well data was not available to directly calculate aquifer storage coefficient. During the test pumping of well TW-3, water levels were routinely monitored at well TW-2 to potentially develop required observation well data. However, no water level decline occurred at well TW-2 during the 22 hours of pumping well TW-3.

Assuming that groundwater occurs under unconfined conditions within the aquifer system, the storage coefficient would be expected to be on the order of 0.10 to 0.15 (USGS, 1972).

DRAWDOWN ANALYSIS (100 Years)

The Arizona Department of Water Resources requires that the depth to groundwater within the aquifer system adjacent to a pumped well (radial distance of one foot) not exceed 1,200 feet after 100 years of pumping at the projected long term average water demand of the project. There are a number of approaches that could be taken to project the theoretical drawdown ranging from basic calculations using the Theis solution to the problem of radial groundwater flow, to a calibrated groundwater flow model including recharge, distributed parameters etc. For the purposes of this project, the simplest and most conservative approach was taken, i.e. use of the Theis solution, and conservative assumptions, as described below.

The water demand of the project will eventually be satisfied using both wells TW-2 and TW-3. However, for the drawdown analysis it was assumed that all the groundwater pumping over the required 100 year analysis period would be derived solely from well TW-3. In addition, the hydraulic effect of aquifer boundaries south and east of the pumping well were included in the analysis.



Well TW-1 was drilled to a depth of 360 feet and penetrated bedrock at 340 feet. The well was cased with 6 inch PVC casing. The depth to groundwater was measured at about 302 feet below land surface. Due to the limited saturated thickness at well TW-1 and the higher production capacity of wells TW-2 and TW-3, test pumping of well TW-1 was not conducted. It will not be necessary to utilize well TW-1 as a project supply well. The production capacity of well TW-1 would be expected to be 10 gpm or less. The ADWR registration number for well TW-1 is 55-208241.

Both wells TW-2 and TW-3 were initially constructed as test wells, to be eventually converted / retrofitted as project supply wells. Test pumping of the wells (to be discussed in detail in a later section of the report) revealed that either well would be capable of meeting the long term average (8.7 gpm) and peak day (17.4 gpm) demands of the project. Well TW-2 was test pumped at a rate of 12.3 gpm with a total stabilized water level decline of about 16 feet. Well TW-3 was test pumped at a rate of about 14 gpm with a total stabilized drawdown of about 5.5 feet. Well TW-3 was constructed approximately 200 feet west of well TW-2 to satisfy water system back-up / emergency requirements for the water system and to provide additional characterization of the aquifer system.

Well TW-3 will function as the primary project supply well, and will be equipped with a pump motor unit that will produce 20 to 25 gpm. Well TW-2 will be equipped with a pump motor unit that will produce at least 12 gpm. The combined yield of the two pump motor units will approach 35 gpm (50,000 gpd), essentially twice the peak day demand. Both pump / motor units will be single phase – 240 volt units.

Details concerning the construction and test pumping of the project test / supply wells are summarized in Table 3. Drillers logs for each well are presented in Appendix A.

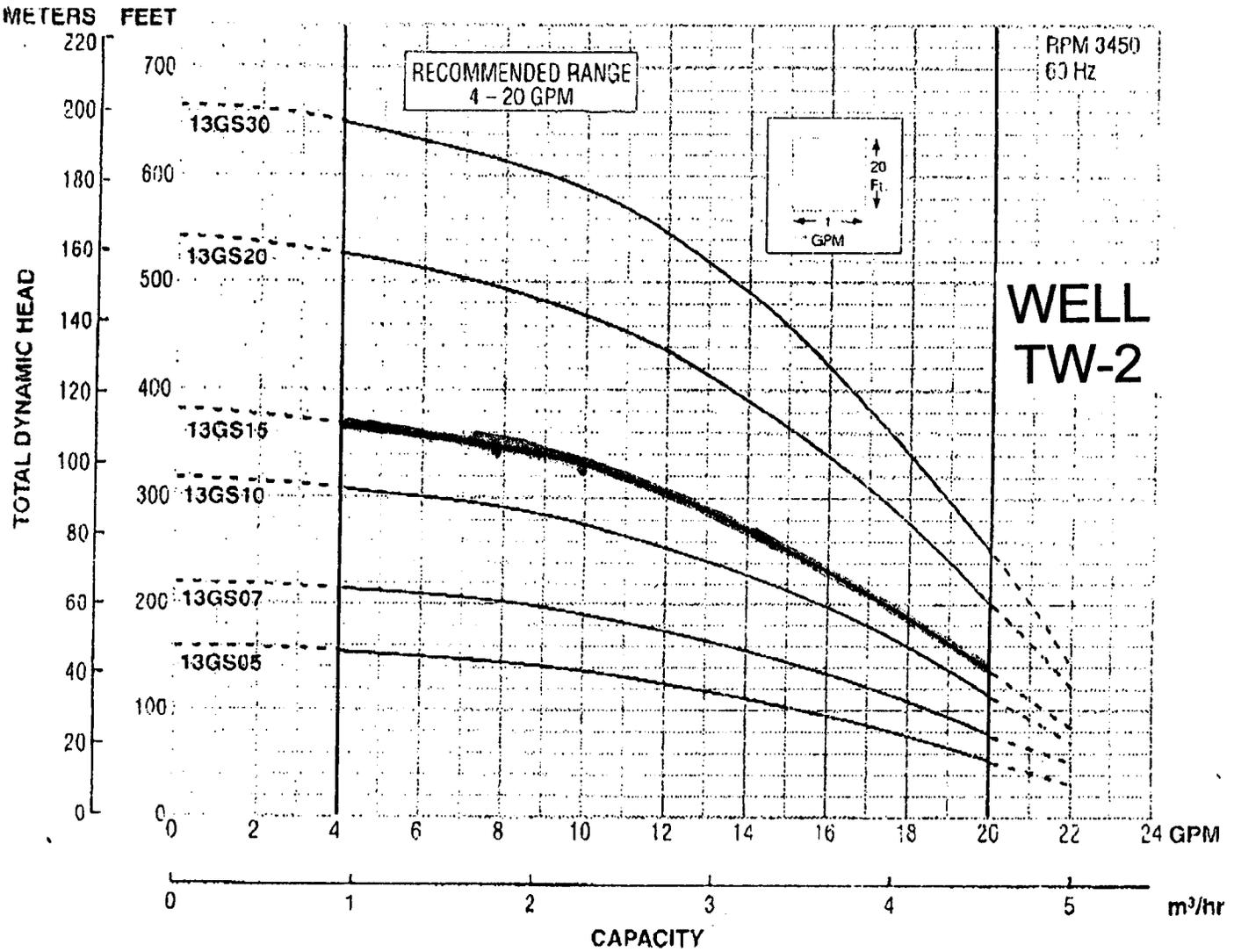
The Lucky Hills Water Company has agreed to eventually acquire, own, and operate the project supply wells and to serve the proposed subdivision. The current CC&N of the water company, in the vicinity of the project, is shown on Figure 1. The CC&N of the water company currently extends to within about ¼ mile north and ¼ mile east of the project property. The CC&N will be extended to include the project property.

The closest actual existing infrastructure of the water company is located about one mile northeast (section 28) of the project property and north of state highway 82. As such, the existing system will not be extended to the project property in the immediate future. The wells and storage facilities constructed for the Walnut Valley Ranch project will be operated as a "satellite system" within and by the ~~Lucky Hills Water Company~~.
Lucky Hills Water Co.

DESCRIPTION OF PROJECT SITE

The 140 acre project site is located along the northern flanks of the Tombstone Hills approximately four miles east of the San Pedro River. The Walnut Gulch drainage flows east to west through the property. The property is undeveloped with land surface elevations ranging from about 4,120 to about 4,250 feet above mean sea level (msl).



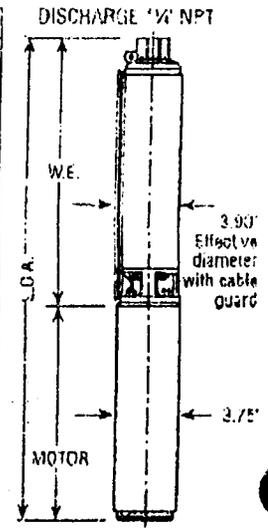


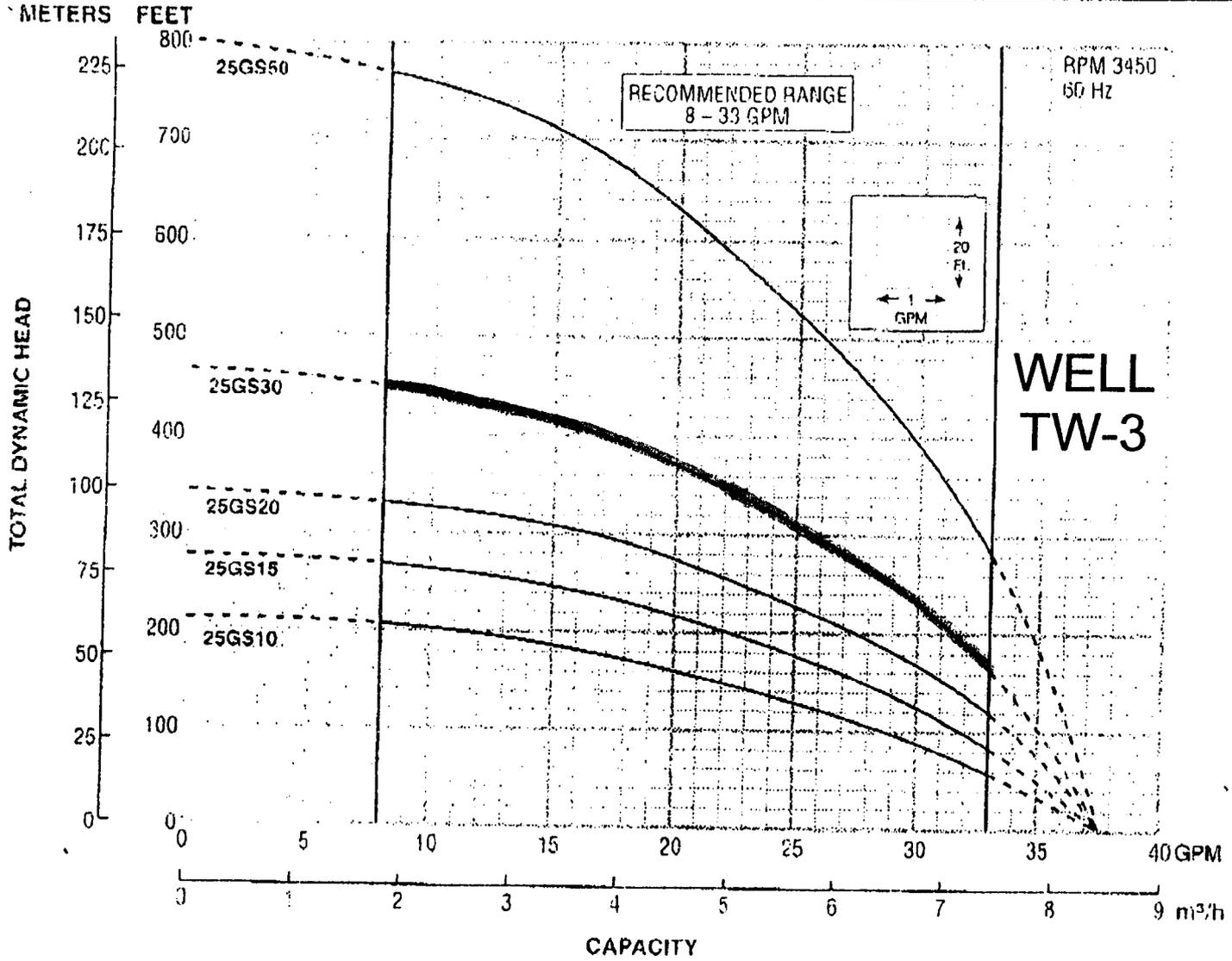
DIMENSIONS AND WEIGHTS

Model	HP	Phase	Stages	Length (inches)			Weight (lbs.)		
				W.E.⊕	Motor	L.O.A.⊕	W.E.	Motor	Total
13GS05412,22,11,21	1/4	1	5	9.6	9.5	19.1	6	18	24
13GS07412,22	1/4	1	7	11.0	10.7	21.7	6	20	26
13GS10412,22	1	1	10	13.0	11.8	24.8	7	23	30
13GS15412	1 1/4	1	12	14.4	13.6	28.0	8	28	36
13GS15422	1 1/4	1	12	14.4	15.1	29.5	8	31	39
13GS15432,34	1 1/4	3	12	14.4	11.8	26.2	8	23	31
13GS20412	2	1	17	17.9	15.1	33.0	10	30	40
13GS20432,34	2	3	17	17.9	13.6	31.5	10	28	38
13GS30412	3	1	21	20.6	23.5	44.1	12	52	64
13GS30432,34	3	3	21	20.6	20.6	41.2	12	43	55

⊕ W.E. = water end or pump without motor.

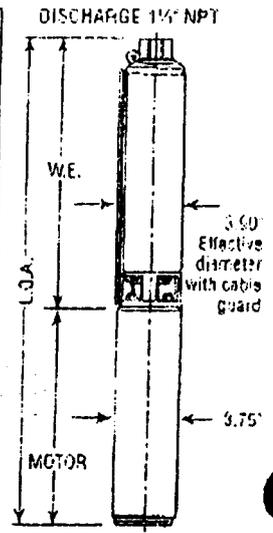
⊕ L.O.A. = length of assembly - complete pump - water end and motor.





DIMENSIONS AND WEIGHTS

Model	HP	Phase	Stages	Length (inches)			Weight (lbs.)		
				W.E. ⌀	Motor	L.O.A. ⌀	W.E.	Motor	Total
25GS10412.22	1	1	7	12.7	11.8	24.5	7	23	30
25GS15412	1½	1	9	14.6	13.6	28.2	8	28	36
25GS15422	1½	1	9	14.6	15.1	29.7	8	31	39
25GS15432.34	1½	3	9	14.6	11.8	26.4	8	23	31
25GS20412	2	1	11	16.5	15.1	31.6	9	30	39
25GS20432.34	2	3	11	16.5	13.8	30.1	9	28	37
25GS30412	3	1	15	20.2	23.5	43.7	11	52	63
25GS30432.34	3	3	15	20.2	20.6	40.8	11	43	54
25GS50412	5	1	25	30.9	29.5	60.4	17	69	86
25GS50432.34	5	3	25	30.9	23.6	54.5	17	53	70



⌀ W.E. = water end or pump without motor.
 ⌀ L.O.A. = length of assembly - complete pump - water end and motor

TABLE I
FLOW CHART FOR PVC SDR-26 PIPE
(Flow Coefficient C-150)

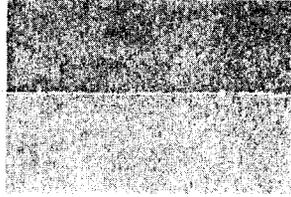


TABLE I
FLOW CHART FOR PVC SDR-26 PIPE
 (Flow Coefficient C-150)

Flow GPM	1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"		8"	
	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f
1	.293	.061																
2	.538	.209	.382	.072														
3	.878	.425	.573	.146	.422	.070												
4	1.18	.717	.764	.242	.561	.115												
5	1.47	1.05	.953	.361	.702	.168												
6	1.77	1.48	1.15	.500	.844	.234	.512	.072										
8	2.35	2.52	1.53	.834	1.12	.390	.682	.118										
10	2.94	3.78	1.92	1.25	1.41	.584	.851	.175	.597	.074								
15	4.41	8.05	2.86	2.63	2.11	1.22	1.27	.362	.900	.152								
20	5.88	13.8	3.82	4.50	2.82	2.08	1.70	.607	1.19	.256	.808	.107						
25	7.33	21.2	4.77	6.83	3.51	3.13	2.13	.905	1.49	.378	1.01	.159						
30			5.74	9.52	4.22	4.39	2.56	1.27	1.79	.529	1.21	.220						
35			6.69	12.8	4.92	5.88	2.98	1.70	2.09	.708	1.41	.290	.821	.079				
40			7.64	16.5	5.61	7.50	3.41	2.19	2.39	.898	1.62	.369	.940	.100				
45			8.60	20.7	6.31	9.47	3.83	2.70	2.69	1.08	1.82	.460	1.05	.123				
50					7.02	11.6	4.26	3.28	2.98	1.35	2.02	.555	1.17	.146				
60					8.43	16.5	5.11	4.64	3.58	1.91	2.42	.780	1.41	.206				
70							5.97	6.21	4.17	2.57	2.83	1.04	1.64	.275				
80							6.81	8.05	4.77	3.28	3.23	1.32	1.88	.345				
90							7.66	10.0	5.37	4.08	3.64	1.66	2.12	.430				
100									5.97	5.00	4.04	2.02	2.34	.522	1.03	.069		
125									7.47	7.67	5.06	3.10	2.93	.798	1.29	.106		
150											6.06	4.30	3.52	1.12	1.56	.148		
175											7.07	5.74	4.11	1.49	1.81	.197		
200											8.08	7.43	4.69	1.89	2.07	.250		
225											9.10	9.32	5.27	2.36	2.33	.311	1.34	.083
250													5.86	2.80	2.59	.375	1.49	.099
275													6.45	3.45	2.84	.449	1.64	.117
300													7.04	4.05	3.10	.529	1.79	.138
325													7.62	4.75	3.36	.615	1.94	.160
350													8.20	5.46	3.62	.707	2.09	.183
375													8.88	6.19	3.88	.799	2.24	.208
400													9.56	6.96	4.14	.908	2.38	.233

CODE: V = Velocity in Ft./Sec.
 H_f = Head Loss in Ft./100 ft. of pipe.

The values for Velocity and Friction Loss/100 feet used in this table are based on plastic pipe manufacturers and the Plastic Pipe Institute's suggested values and conversions for PVC Type SDR 26 pipe; PVC SDR-21 pipe, and PVC Schedule 40 pipe.

BRADLY DRILLING, INC.
562 E HWY 82
PO BOX 4707
HUACHUCA CITY, AZ 85616

520-456-2355

DWR #736 Lic. #ROC-53/A-04

April 25, 2006

Det @ Buck Lewis Engineering

Re: BoosterpaQ –Pressure Boosting System

Det,

For your applications I have three systems, all the same flow and head 250 GPM at 60 PSI. All include the standard features:

Isolation valves
Check valves
Manifolds
Dry run protection
Complete control system
Lighting protection
80db panel mounted fault indicator
Skid mounted
Panel mounted user interface
85 gallon Flexcon pressure tank

System 1: ME 2 CRE20-3, 1X230,60hz GCP, this unit is single phase 230 volt.

System 2: ME 2 CRE20-3, 3X230,60hz GCP, this unit is three phase 230 volt.

System 3: ME 2 CRE20-3, 3X460,60hz GCP, this unit is three phase 460 volt.

These systems require a 25% deposit on order and balance due upon receipt of invoice.

Shipped to job site freight prepaid.

All systems include one- day start up and operator training.

Thanks,
Brad

BoosterpaQ ME Guide Specification

Part I – GENERAL

1.1 WORK INCLUDED

- A. Variable Speed Packaged Pumping System

1.2 REFERENCE STANDARDS

The work in this section is subject to the requirements of applicable portions of the following standards:

- A. Hydraulic Institute
- B. ANSI – American National Standards Institute
- C. ASTM – American Society for Testing and Materials
- D. IEEE – Institute of Electrical and Electronics Engineers
- E. NEMA – National Electrical Manufacturers Association
- F. NEC – National Electrical Code
- G. ISO – International Standards Organization
- H. UL – Underwriters Laboratories, Inc.

Part 2 – PRODUCTS

2.1 INTEGRATED VARIABLE SPEED PACKAGED PUMPING SYSTEM

- A. Furnish and install a pre-fabricated and tested variable speed packaged pumping system to maintain constant water delivery pressure.
- B. The packaged pump system shall be a standard product of a single pump manufacturer. The entire pump system including pumps and pump logic controller, shall be designed and built by the same manufacturer.
- C. The complete packaged water booster pump system shall be certified and listed by UL (Category QCZJ – Packaged Pumping Systems) for conformance to U.S. and Canadian Standards.

2.2 PUMPS

- A. The pumps shall be of the in-line vertical multi-stage design.
- B. The head-capacity curve shall have a steady rise in head from maximum to minimum flow within the preferred operating region. The shut-off head shall be a minimum of 20% higher than the head at the best efficiency point.
- C. Small Vertical In-Line Multi-Stage Pumps (Nominal flow from 3 to 125 gallons per minute) shall have the following features:
 - 1. The pump impellers shall be secured directly to the pump shaft by means of a splined shaft arrangement.
 - 2. The suction/discharge base shall have ANSI Class 250 flange or internal pipe thread (NPT) connections as determined by the pump station manufacturer.
 - 3. Pump Construction.
 - a. Suction/discharge base, pump head, motor stool: Cast iron (Class 30)
 - b. Impellers, diffuser chambers, outer sleeve: 304 Stainless Steel

- | | |
|---|----------------------------|
| c. Shaft | 316 or 431 Stainless Steel |
| d. Impeller wear rings: | 304 Stainless Steel |
| e. Shaft journals and chamber bearings: | Silicon Carbide |
| f. O-rings: | EPDM |

Shaft couplings for motor flange sizes 184TC and smaller shall be made of cast iron or sintered steel. Shaft couplings for motor flange sizes larger than 184TC shall be made of ductile iron (ASTM 60-40-18).

Optional materials for the suction/discharge base and pump head shall be cast 316 stainless steel (ASTM CF-8M) resulting in all wetted parts of stainless steel.

4. The shaft seal shall be a balanced o-ring cartridge type with the following features:

- | | |
|-------------------------------|---------------------|
| a. Collar, Drivers, Spring: | 316 Stainless Steel |
| b. Shaft Sleeve, Gland Plate: | 316 Stainless Steel |
| c. Stationary Ring: | Silicon Carbide |
| d. Rotating Ring: | Silicon Carbide |
| e. O-rings: | EPDM |

The Silicon Carbide shall be imbedded with graphite.

5. Shaft seal replacement shall be possible without removal of any pump components other than the coupling guard, shaft coupling and motor. Pumps with motors equal to or larger than 15 hp (fifteen horsepower) shall have adequate space within the motor stool so that shaft seal replacement is possible without motor removal.

- D. Large In-line Vertical Multi-Stage Pumps (Nominal flows from 130 to 500 gallons per minute) shall have the following features:

1. The pump impellers shall be secured directly to the smooth pump shaft by means of a split cone and nut design.
2. The suction/discharge base shall have ANSI Class 125 or Class 250 flange connections in a slip ring (rotating flange) design as indicated in the drawings or pump schedule.
3. Pump Construction.

- | | |
|--|------------------------------|
| a. Suction/discharge base, pump head | Ductile Iron (ASTM 65-45-12) |
| b. Shaft couplings, flange rings: | Ductile Iron (ASTM 65-45-12) |
| b. Shaft | 431 Stainless Steel |
| c. Motor Stool | Cast Iron (ASTM Class 30) |
| d. Impellers, diffuser chambers, outer sleeve: | 304 Stainless Steel |
| e. Impeller wear rings: | 304 Stainless Steel |
| f. Intermediate Bearing Journals: | Tungsten Carbide |
| g. Intermediate Chamber Bearings: | Leadless Tin Bronze |
| h. Chamber Bushings: | Graphite Filled PTFE |
| i. O-rings: | EPDM |

4. The shaft seal shall be a single balanced metal bellows cartridge with the following construction:

- | | |
|---|----------------------|
| a. Bellows: | 904L Stainless Steel |
| b. Shaft Sleeve, Gland Plate, Drive Collar: | 316 Stainless Steel |
| c. Stationary Ring: | Carbon |
| d. Rotating Ring: | Tungsten Carbide |
| e. O-rings: | EPDM |

5. Shaft seal replacement shall be possible without removal of any pump components other than the coupling guard, motor couplings, motor and seal cover. Pumps with motors equal to or larger than 15 hp (fifteen horsepower) shall have adequate space within the motor stool so that shaft seal replacement is possible without motor removal.

2.3 INTEGRATED VARIABLE FREQUENCY DRIVE MOTORS

- A. Each motor shall be of the Integrated Variable Frequency Drive design consisting of a motor and a Variable Frequency Drive (VFD) built and tested as one unit by the same manufacturer.
- B. The VFD shall be of the PWM (Pulse Width Modulation) design using current IGBT (Insulated Gate Bipolar Transistor) technology.
- C. The VFD shall convert incoming fixed frequency three-phase AC power into a variable frequency and voltage for controlling the speed of motor. The motor current shall closely approximate a sine wave. Motor voltage shall be varied with frequency to maintain desired motor magnetization current suitable for centrifugal pump control and to eliminate the need for motor de-rating.
- D. The VFD shall have a minimum of two skip frequency bands which can be field adjustable.
- E. The VFD shall have internal solid-state overload protection designed to trip within the range of 125-150% of rated current.
- F. The integrated VFD motor shall include protection against input transients, phase imbalance, loss of AC line phase, over-voltage, under-voltage, VFD over-temperature, and motor over-temperature.
- G. The integrated VFD motor shall have, as a minimum, the following input/output capabilities:
 1. Speed Reference Signal: 0-10 VDC, 4-20mA
 2. Digital remote on/off
 3. Fault Signal Relay (NC or NO)
- H. The motor shall be Totally Enclosed Fan Cooled (TEFC) with a standard NEMA C-Face, Class F insulation with a Class B temperature rise.
- I. Motor drive end bearings shall be adequately sized so that the minimum L10 bearing life is 17,500 hours at the minimum allowable continuous flow rate for the pump at full rated speed.

2.4 PUMP SYSTEM CONTROLLER

- A. The pump system controller shall be a standard product developed and supported by the pump manufacturer.
- B. The controller shall be microprocessor based with EPROM programming for individual system types. The controller shall have (as a minimum) a 2 line by 24 character LCD display for field programming. Password protection of system settings shall be standard.
- C. Pump system programming (field adjustable) shall include as a minimum the following:

System Pressure set-point	Suction pressure shut-down
High system pressure shut-down	Low system pressure shut-down
Pressure Transducer supply/range	Individual Pump shut-off head
System Time (reaction)	Sequence Time (start delay)
Backup pump designation	Pump priority (start sequence)
- D. The system pressure set-point shall be capable of being automatically adjusted by a built-in clock program. The clock program shall be capable of 10 different set-points per 24 hour period.

- E. The system pressure set-point shall also be capable of being automatically adjusted by a system pressure compensating function. As flow increases the discharge pressure shall increase linearly as flow approaches design capacity. System compensation percentage shall be field adjustable.
- F. The controller shall be capable of receiving a remote analog set-point (4-20mA or 0-10 VDC) as well as a remote on/off (digital) signal.
- G. The controller shall display the following as status readings in addition to all system programming parameters:

System Pressure set-point	Actual system pressure
Suction Pressure (if analog is used)	Pump system capacity (%)
Individual pump status (on/off/fault)	Individual pump speed (%)
Individual pump running total running hours	

- H. The pump system controller shall store the 10 most recent alarms in memory. The time, date and duration of each alarm shall be recorded. A potential-free relay shall be provided for alarm notification to the building management system. The controller shall display the following alarm conditions:

High System Pressure	Low system pressure
Low suction pressure	Individual pump failure
VFD trip/failure	Loss of sensor signal (4-20 mA)
Loss of remote set-point signal (4-20mA)	System power loss

- I. The pump system controller shall be mounted in a NEMA 4 enclosure (NEMA 3R if cooling fan is required). The entire control panel shall be UL 508 listed as an assembly. The control panel shall include a main disconnect, circuit breakers for each pump and the control circuit and control relays for alarm functions. Control panel options shall include, but not be limited to:

Pump Run Lights	Pump Alarm Lights
System Fault Light	Audible Alarm (80 db[A])
Surge Arrestor	Control Panel Internal Illumination
Emergency/Normal Operation Switches	Service Disconnect Switches

2.5 SEQUENCE OF OPERATION

The system controller shall operate equal capacity variable speed pumps to maintain a constant discharge pressure (system set-point). The system controller shall receive an analog signal [4-20mA] from the factory installed pressure transducer on the discharge manifold, indicating the actual system pressure. As flow demand increases the pump speed shall be increased to maintain the system set-point pressure. When the operating pump(s) cannot maintain the system set-point as flow increases (pressure starts to drop), an additional pump will be started and will increase speed until the system set-point is achieved. All pumps in operation will be running at the same speed to maintain the system set-point. As flow demand decreases the pump speed shall be reduced while system set-point pressure is maintained. When all pumps in operation are running at low speed the system controller shall switch off pumps when fewer pumps are able to maintain system demand.

The system controller shall be capable of switching pumps on and off to satisfy system demand without the use of flow switches or motor current monitors.

If a no flow shut-down is required (periods of zero demand) a bladder type diaphragm tank shall be installed. The tank shall be piped to the discharge manifold or system piping downstream of the pump system. When zero flow is detected by the system controller, the remaining pump(s) shall be switched off. When the system pressure falls to 5% below the system set-point (flow begins after shut-down), a pump shall be switched on, increasing speed to maintain the system set-point pressure.

All pumps in the system shall alternate automatically based on demand, time and fault. If flow demand is continuous (no flow shut-down does not occur), the system controller shall have the capability to alternate the pumps every 24 hours or once per week. The time of the pump change-over shall be field adjustable.

2.6 SYSTEM CONSTRUCTION

- A. The suction and discharge manifolds shall be constructed of 316 stainless steel. Manifold connection sizes shall be as follows:
- | | |
|------------------------|---------------------------------|
| 3 inch and smaller: | Male NPT threaded |
| 4 inch through 8 inch: | ANSI Class 150 rotating flanges |
| 10 inch and larger: | ANSI Class 150 flanges |
- B. Pump Isolation valves shall be provided on the suction and discharge of each pump. Isolation valve sizes 2 inch and smaller shall be nickel plated brass full port ball valves. Isolation valve sizes 3 inch and larger shall be a full lug style butterfly valve. The valve disk shall be of stainless steel. The valve seat material shall be EPDM and the body shall be cast iron, coated internally and externally with fusion-bonded epoxy.
- C. A spring-loaded non-slam type check valve shall be installed on the discharge of each pump. The valve shall be a wafer style type fitted between two flanges. The head loss through the valve shall not exceed 5 psi at the pump design capacity. Check valves 1-1/2" and smaller shall have a POM composite body and poppet, a stainless steel spring with EPDM or NBR seats. Check valves 2" and larger shall have a body material of stainless steel or epoxy coated iron (fusion bonded) with an EPDM or NBR resilient seat. Spring material shall be stainless steel. Disk shall be of stainless steel or leadless bronze.
- D. For systems that require a diaphragm tank, a diaphragm tank connection of no smaller than 3/4" shall be provided on the discharge manifold.
- E. A pressure transducer shall be factory installed on the discharge manifold (or field installed as specified on plans). Systems with positive inlet gauge pressure shall have a factory installed pressure transducer on the suction manifold for water shortage protection. Pressure transducers shall be made of 316 stainless steel. Transducer accuracy shall be +/- 1.0% full scale with hysteresis and repeatability of no greater than 0.1% full scale. The output signal shall be 4-20 mA with a supply voltage range of 9-32 VDC.
- F. A bourdon tube pressure gauge, 2.5 inch diameter, shall be placed on the suction and discharge manifolds. The gauge shall be liquid filled and have copper alloy internal parts in a stainless steel case. Gauge accuracy shall be 2/1/2 %. The gauge shall be capable of a pressure of 30% above its maximum span without requiring recalibration.
- G. Systems with a flooded suction inlet or suction lift configuration shall have a factory installed water shortage protection device on the suction manifold.
- H. The base frame shall be constructed of corrosion resistant 304 stainless steel. Rubber vibration dampers shall be fitted between each pumps and baseframe to minimize vibration.
- I. Depending on the system size and configuration, the control panel shall be mounted in one of the following ways:
- On a 304 stainless steel fabricated control cabinet stand attached to the system skid.
 - On a 304 stainless steel fabricated skid, separate from the main system skid
 - On its own base (floor mounted with plinth)

2.8 TESTING

- A. The entire pump station shall be factory performance tested as a complete unit prior to shipment. Job-site programming shall be entered into the controller prior to shipment (details of installation requirements shall be communicated to the pump system manufacturer). A verified performance test report shall be made available from the system manufacturer.
- B. The system shall undergo a hydrostatic test of 250 psig for a minimum of 15 minutes prior to shipment.

2.8 WARRANTY

- A. The warranty period shall be a non-prorated period of 24 months from date of installation, not to exceed 30 months from date of manufacture.



Company name: Grand Canyon Pump
Created by: Russ Hunter
Phone: 1.520.292.8011
Fax: 1.520.292.8012
Date: 4/21/2006

Description
Product name: CR 20-03
Product Number: 96523831
EAN number: 5700396912110

Technical:
Speed for pump data: 3467 rpm
Rated flow: 111.4 US GPM
Rated head: 159 ft
Impellers: 03
Type of shaft seal: HQQE
Stages: 03
Pump version: A
Model: A
Cooling: ODP

Materials:
Material, pump housing: Cast iron
 EN-JL1030 DIN W.-Nr.
 A48-30 B ASTM
Material, impeller: Stainless steel
 1.4301 DIN W.-Nr.
 304 AISI

Material code: A
Code for rubber: E

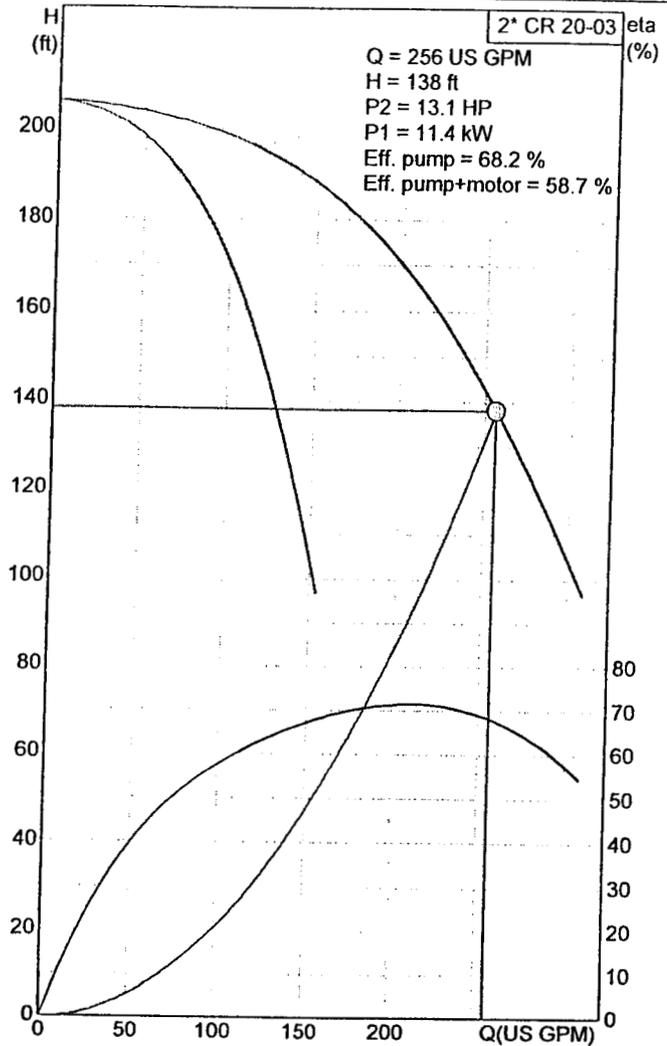
Installation:
Maximum ambient temperature: 104 °F
Max pressure at stated temp: 145 / 250 psi/°F
 145 / -4 psi/°F

Standard, pipe connection: Oval
Connect code: B
Size, pipe connection: 2" NPT
Flange size for motor: 215TC

Liquid:
Liquid temperature range: -4 .. 248 °F

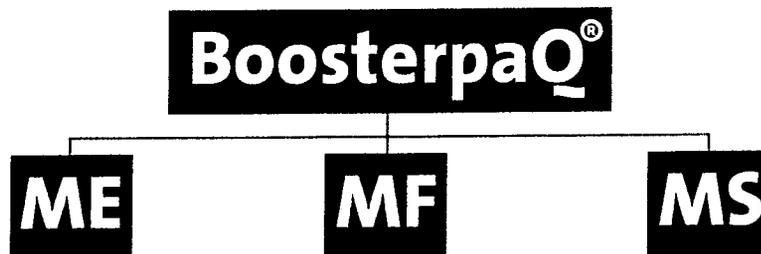
Electrical data:
Motor type: 3723M
Number of poles: 2
P2: 7.5 HP
Power (P2) required by pump: 7.5 HP
Mains frequency: 60 Hz
Rated voltage: 3 x 208-230 / 460 V
Service factor: 1,15
Rated current: 19-18 / 9 A
Rated speed: 3450 rpm
Enclosure class (IEC 34-5): IP23
Insulation class (IEC 85): F
Motor protection: NONE
Motor Number: 84Z00015

Others:
Shipping volume: 4.94 ft³



Configured to fit any application

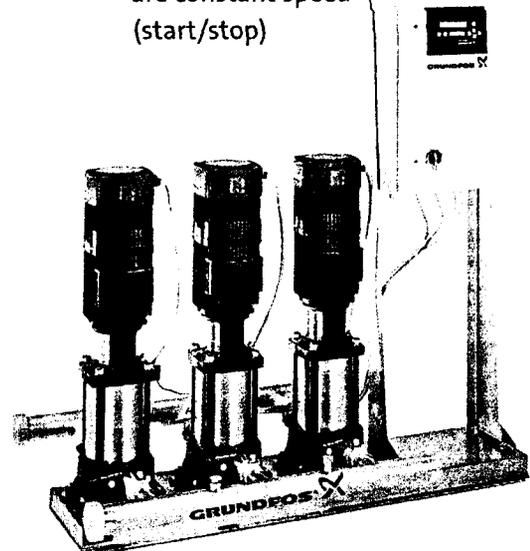
ME, MES, MF, MS



Description	BoosterpaQ®
RANGE	
Total capacity gpm	Up to 3,800 gpm/864 m ³ /hr
Pressure range	232 psi [16 bar] standard (reduced by pressure transducer, gauge, and tank limits)
Pump horsepower range	1 hp – 50 hp
Number of pumps	2 – 4 (up to 6 pumps upon request)
CONTROL	
On/off program	MS range
Variable speed	ME, MES, MF range
1/2 size pump(s)	Upon request
Advanced regulation	Whole range
MATERIAL	
Pumps	Standard CR program (optional CRN 316 SS)
Manifold	Stainless steel – AISI 316
Base and panel stand	Stainless steel – AISI 304

BoosterpaQ systems come in three main types

- ME(S) type** some or all of the pumps are fitted with MLE motors with integrated variable frequency drives
- MF type** control panel features a variable frequency drive for controlling some of the pumps in the system
- MS type** all of the pumps in the system are constant speed (start/stop)

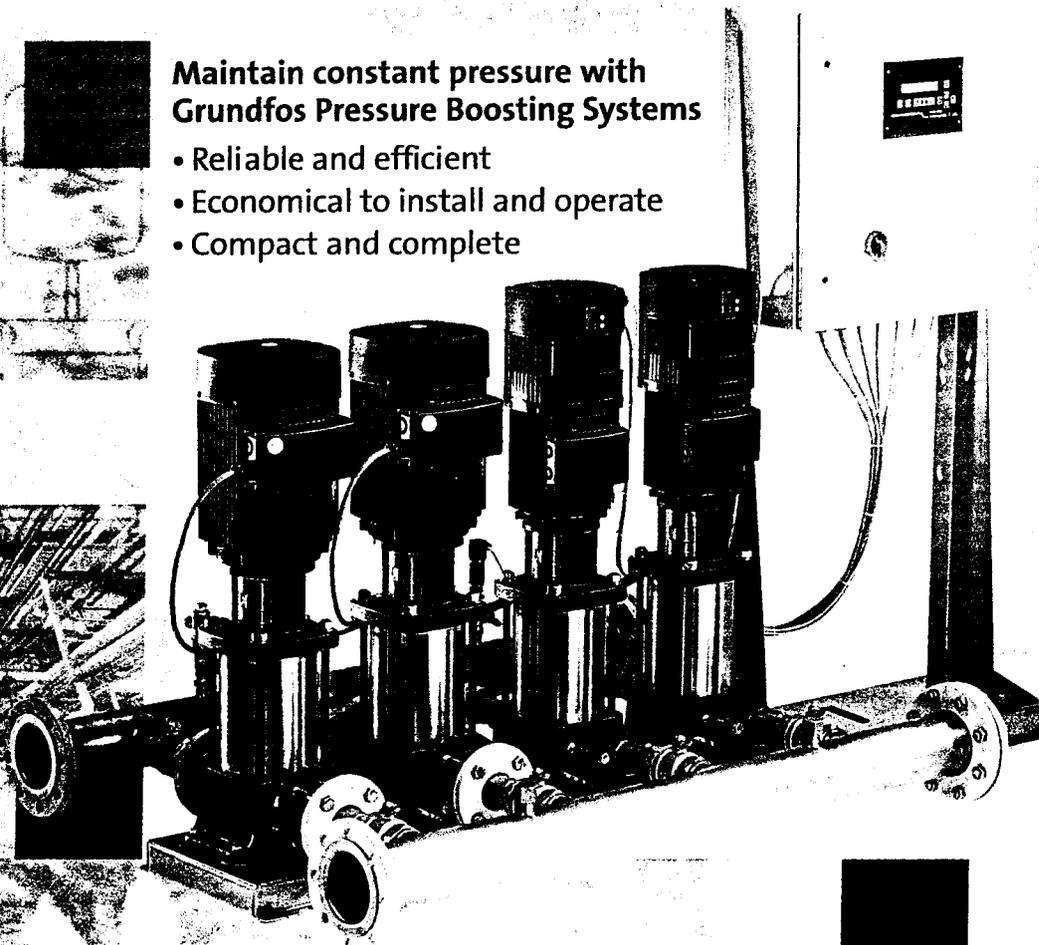


BoosterpaQ®

Pressure Boosting Systems

Maintain constant pressure with Grundfos Pressure Boosting Systems

- Reliable and efficient
- Economical to install and operate
- Compact and complete



Water Supply • Buildings • Industry • Irrigation

Water supply boosting for performance and comfort

Recommended system types: ME, MES, MF

Grundfos BoosterpaQ systems provide excellent performance for municipal, as well as pressure boosting for multi-story buildings such as hotels, schools, etc. BoosterpaQ systems are economical to operate, reliable, flexible, and guarantee comfort and performance.

Operating economy

Over time, constantly changing water consumption patterns make heavy demands on the adaptability of the pump system. BoosterpaQ cascade control ensures that only the necessary number of pumps are in operation. Features:

- friction loss compensation
- alternative setpoints for night reduction
- variable speed models

Reliability

In the event a pump stops, the Control 2000 automatically starts another parallel connected pump. Optional standby pumps ensure full capacity at all times. The Grundfos Control 2000 constantly monitors the system and will, if necessary, stop the system and trigger an alarm. Communication enables the transfer of all parameters to a central control

station. Variable-speed regulated systems minimize the risk of water hammer and subsequent pipe damage.

Operator selectable

BoosterpaQ systems can be set to operate at constant or proportional pressure. Proportional pressure regulation (falling discharge pressure at decreasing flow) guarantees optimum comfort and reduces potential water losses.

Reduction of tank size in variable speed regulated systems reduces space and cost.

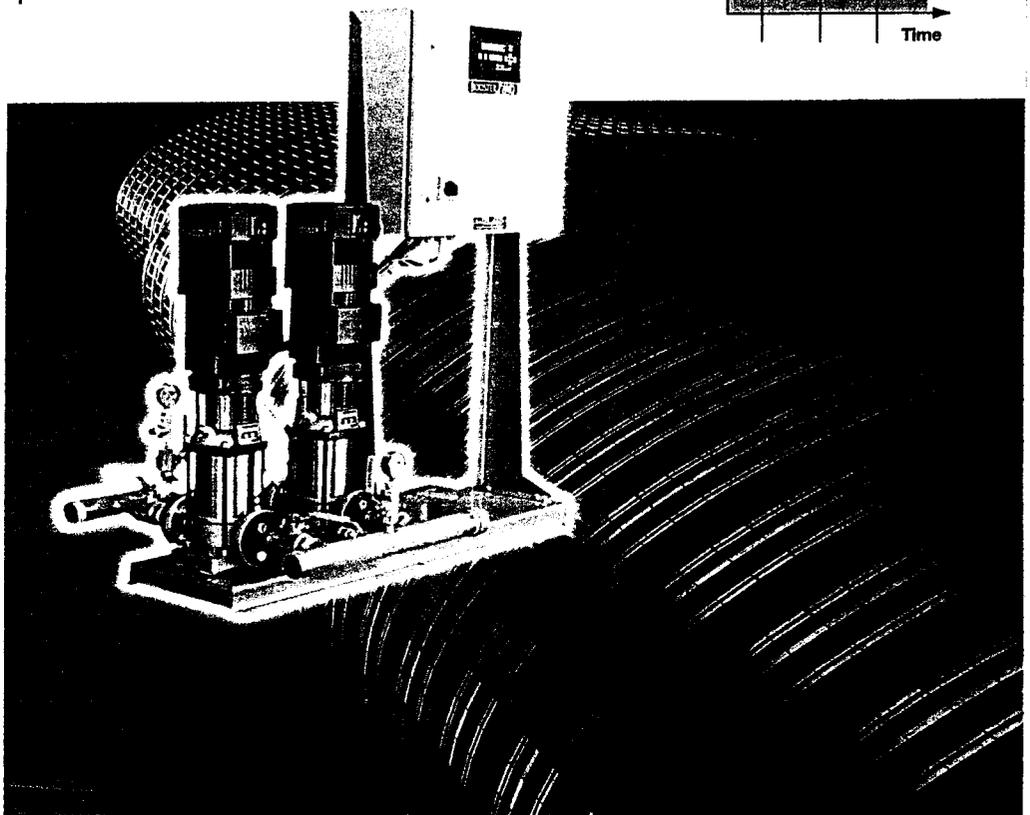
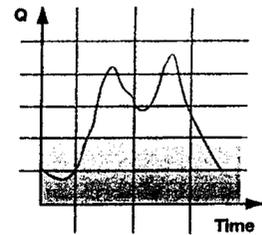
Comfort

BoosterpaQ output is continually adjusted by the Grundfos Control 2000 to maintain constant pressure. CR model pumps ensure quiet operation. Variable speed systems reduce operation noise during low usage, especially important for dwellings during sleep hours.

Consumption pattern for a typical water supply:

FLOW: Large variation between maximum and minimum consumption

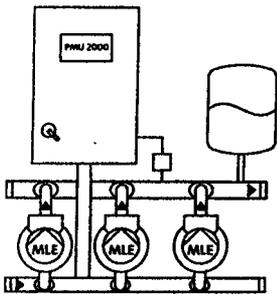
PRESSURE REQUIREMENTS: Constant pressure



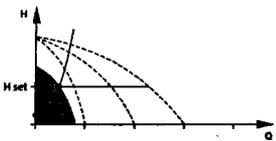
Hydraulic Functions

VARIABLE SPEED

Grundfos BoosterpaQ® ME



One pump in operation.

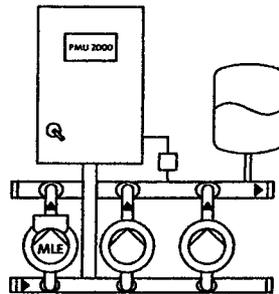


Three pumps in operation.

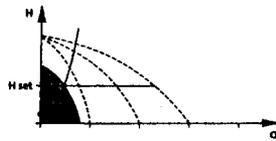


- Maintain a constant pressure through continuously variable adjustment of the speed of the operating pumps.
- The system performance is adjusted to the demand through cutting in/out of pumps and parallel speed control of the pumps in operation.
- Pump changeover is automatic and depends on load, time and fault.

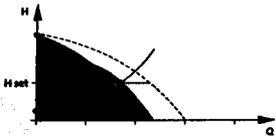
Grundfos BoosterpaQ® MES



One pump with MLE motor in operation.

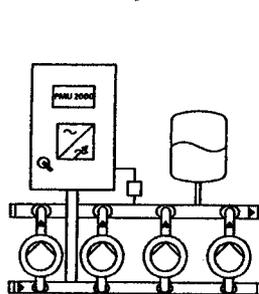


One pump with MLE motor and two mains-operated pumps in operation.

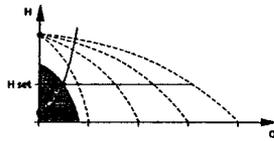


- Maintain a constant pressure through continuously variable adjustment of the speed of one pump. The other pumps are cut in/out on mains-operation according to demand, providing performance corresponding to the consumption.
- The pump with the MLE motor will always start first.
- Pump changeover is automatic and depends on load, time and fault.

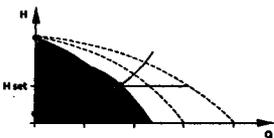
Grundfos BoosterpaQ® MF



One pump in operation via variable frequency drive.



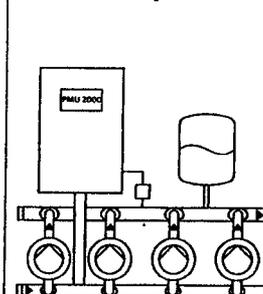
One pump in operation via variable frequency drive and two pumps mains-operated.



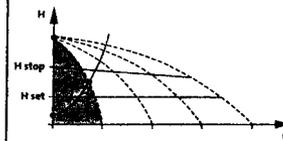
- Maintain a constant pressure through continuously variable adjustment of the speed of one pump. The other pumps are cut in/out on mains-operation, as required.
- The frequency-controlled pump is always started first.
- Pump changeover is automatic and depends on load, time and fault.
- All pumps are controlled by the variable frequency drive alternately.

START/STOP

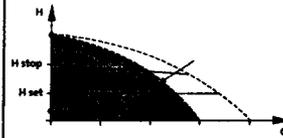
Grundfos BoosterpaQ® MS



One pump in operation.



Three pumps in operation.



- Maintains an almost constant pressure by cutting the pumps in or out as required.
- Pump changeover is automatic and depends on load, time and fault.

Product Range

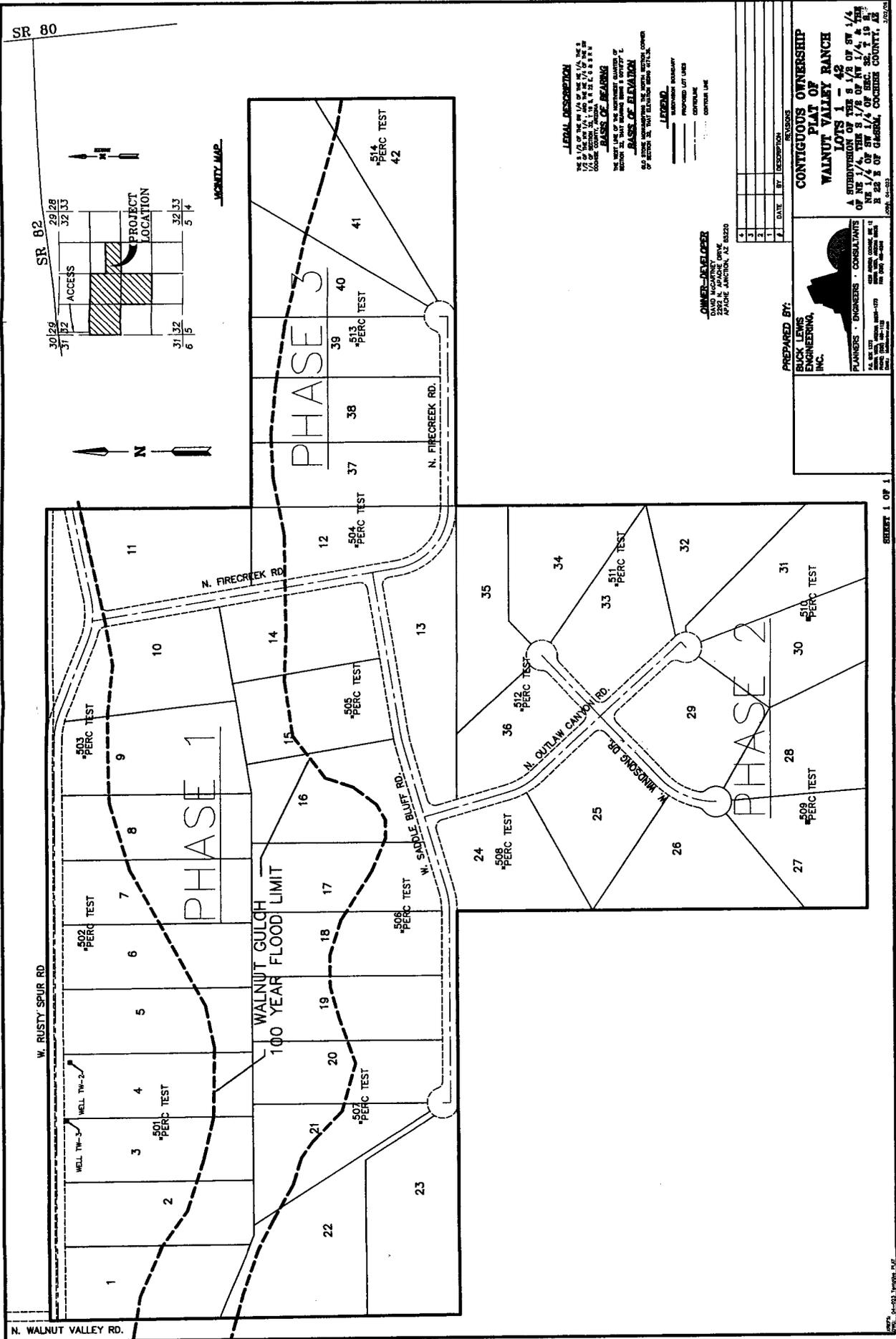
SYSTEM	ME	MES	MF	MS
Standard Configuration				
Range				
Number of pumps	2-4	2-4	2-6	2-6
Mechanical				
In-line pipe routing	•	•	•	•
AISI 316 stainless steel manifold	•	•	•	•
AISI 304 stainless steel base frame	•	•	•	•
232 psi [16 bar] standard maximum output, 362 psi [25 bar] optional (reduced by pressure transducer, gauge, and tank limits)	•	•	•	•
Control				
NEMA 3R (single door)	•	•	•	•
NEMA 4	•	•		•
NEMA 12 (double door)	•	•	•	•
PFU 2000 (simple operation)	•	•	•	•
PMU 2000 (Advanced Control)	•	•	•	•
Pump alternation	•	•	•	•
Constant pressure	•	•	•	(•)
Friction loss compensation	•	•	•	
Dry running protection	•	•	•	•
External variable frequency drive			•	
Integrated variable frequency drive (MLE motor)	•	•		
Application (recommended models)				
Water Supply	•	•	•	•
Industry	•	•	•	
Irrigation	•	•	•	•
Approvals*				
	cUL	cUL	cUL	cUL

* All control panels are UL listed to US and Canadian safety standards and all motors are UL/cUL recognized. Boosterpaqs are certified and listed by UL for conformance to US and Canadian safety standards

Options and Accessories

(available with all models—call for options not listed)

- Diaphragm tank
- ASME (code) tank
- Audible and visible alarms
- Pump elapsed time meters
- Higher temperatures
- Panel enclosure variants
- Volt and ammeters
- Verified factory performance test
- Emergency/normal switches, manual operated constant speed pumps
- Pump lock-out switches
- Lightning protection
- Pump run indicator lights
- Pump fault indicator lights
- Control panel internal illumination light



LEGAL DESCRIPTION
 THE S 1/2 OF THE SW 1/4 OF THE SW 1/4 OF THE S 1/2 OF SECTION 31, T. 1 N., R. 2 E., S. 10 E., COCKERELL COUNTY, MISSISSIPPI.
CLASS OF BEARING
 THE WEST LINE OF THE SURVEYED QUANTITY OF SECTION 31, T. 1 N., R. 2 E., S. 10 E., COCKERELL COUNTY, MISSISSIPPI.
CLASS OF ELEVATION
 OF SECTION 31, T. 1 N., R. 2 E., S. 10 E., COCKERELL COUNTY, MISSISSIPPI.

LEGEND
 --- PROPOSED ROADWAY
 --- PROPOSED LOT LINES
 --- CONTIGUOUS LOT LINES
 --- CONTIGUOUS LINE

OWNER-DEVELOPER
 DAVID MCARDINE
 1000 W. WALNUT VALLEY RD.
 PRITCHETT, MISSISSIPPI 39350

PREPARED BY:
 BUCK LEWIS
 ENGINEERING
 INC.

PLANNERS - ENGINEERS - CONSULTANTS
 BUCK LEWIS ENGINEERING, INC.
 1000 W. WALNUT VALLEY RD.
 PRITCHETT, MISSISSIPPI 39350
 PHONE: (601) 875-1177
 FAX: (601) 875-1178
 WWW: WWW.BUCKLEWIS.COM

CONTIGUOUS OWNERSHIP
PLAT OF
WALNUT VALLEY RANCH
LOTS 1 - 42
 A SUBDIVISION OF THE S 1/2 OF SW 1/4 OF SECTION 31, T. 1 N., R. 2 E., S. 10 E., COCKERELL COUNTY, MISSISSIPPI.

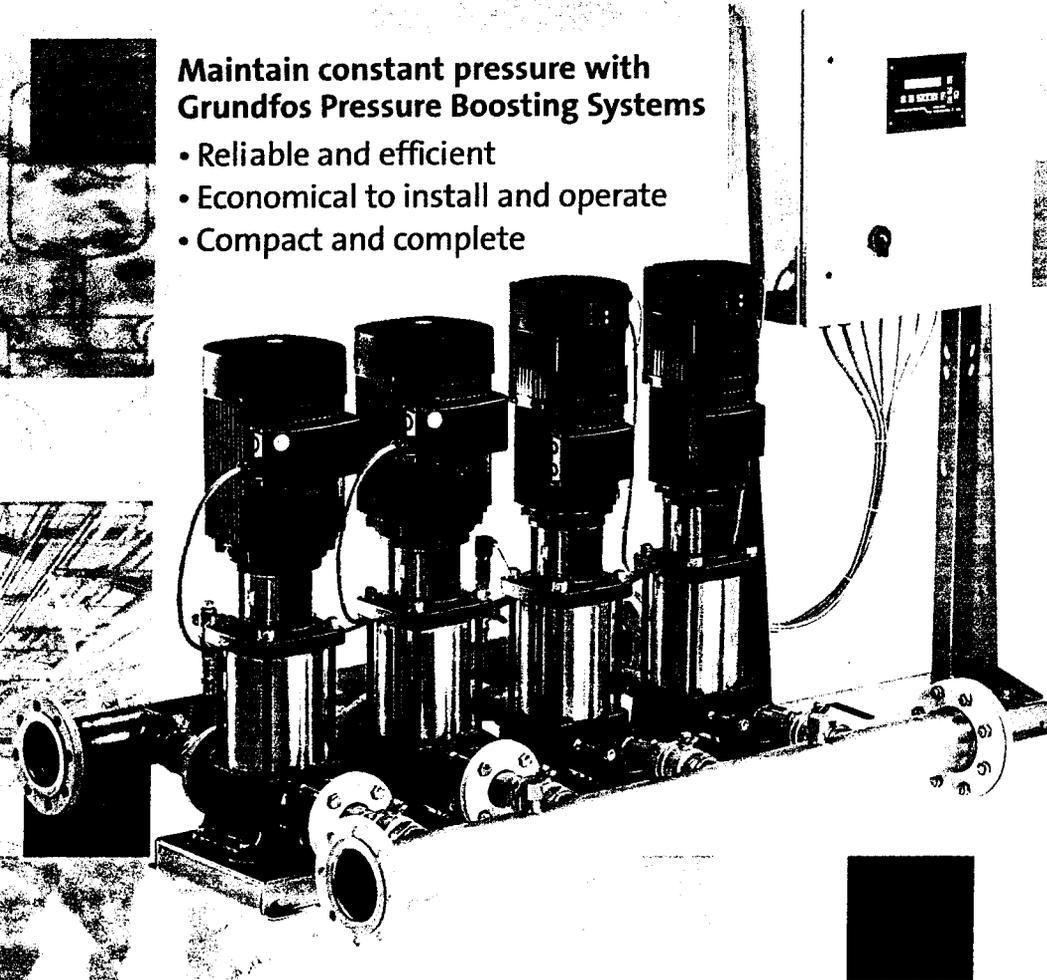
NO.	DATE	DESCRIPTION	REVISIONS
1			
2			
3			
4			

BoosterpaQ®

Pressure Boosting Systems

Maintain constant pressure with Grundfos Pressure Boosting Systems

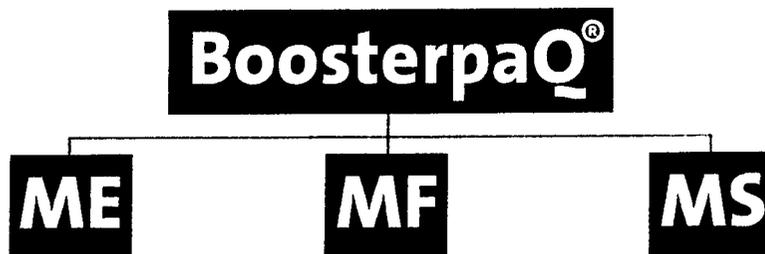
- Reliable and efficient
- Economical to install and operate
- Compact and complete



Water Supply • Buildings • Industry • Irrigation

Configured to fit any application

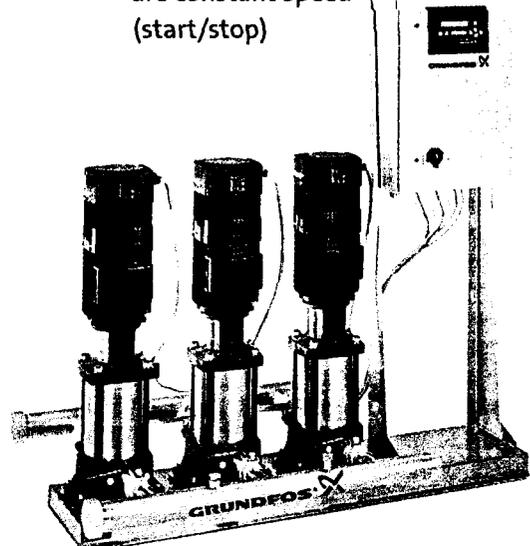
ME, MES, MF, MS



Description	BoosterpaQ®
RANGE	
Total capacity gpm	Up to 3,800 gpm/864 m ³ /hr
Pressure range	232 psi [16 bar] standard (reduced by pressure transducer, gauge, and tank limits)
Pump horsepower range	1 hp – 50 hp
Number of pumps	2 – 4 (up to 6 pumps upon request)
CONTROL	
On/off program	MS range
Variable speed	ME, MES, MF range
1/2 size pump(s)	Upon request
Advanced regulation	Whole range
MATERIAL	
Pumps	Standard CR program (optional CRN 316 SS)
Manifold	Stainless steel – AISI 316
Base and panel stand	Stainless steel – AISI 304

BoosterpaQ systems come in three main types

- ME(S) type** some or all of the pumps are fitted with MLE motors with integrated variable frequency drives
- MF type** control panel features a variable frequency drive for controlling some of the pumps in the system
- MS type** all of the pumps in the system are constant speed (start/stop)



Water supply boosting for performance and comfort

Recommended system types: ME, MES, MF

Grundfos BoosterpaQ systems provide excellent performance for municipal, as well as pressure boosting for multi-story buildings such as hotels, schools, etc. BoosterpaQ systems are economical to operate, reliable, flexible, and guarantee comfort and performance.

Operating economy

Over time, constantly changing water consumption patterns make heavy demands on the adaptability of the pump system. BoosterpaQ cascade control ensures that only the necessary number of pumps are in operation. Features:

- friction loss compensation
- alternative setpoints for night reduction
- variable speed models

Reliability

In the event a pump stops, the Control 2000 automatically starts another parallel connected pump. Optional standby pumps ensure full capacity at all times. The Grundfos Control 2000 constantly monitors the system and will, if necessary, stop the system and trigger an alarm. Communication enables the transfer of all parameters to a central control

station. Variable-speed regulated systems minimize the risk of water hammer and subsequent pipe damage.

Operator selectable

BoosterpaQ systems can be set to operate at constant or proportional pressure. Proportional pressure regulation (falling discharge pressure at decreasing flow) guarantees optimum comfort and reduces potential water losses.

Reduction of tank size in variable speed regulated systems reduces space and cost.

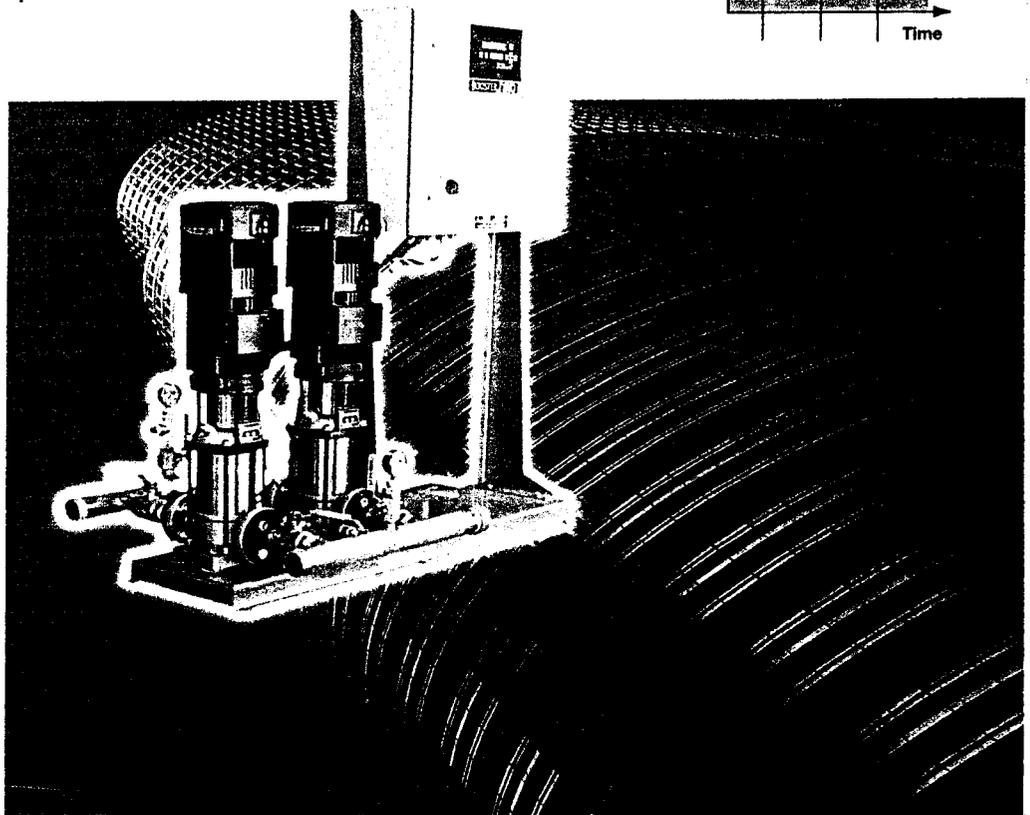
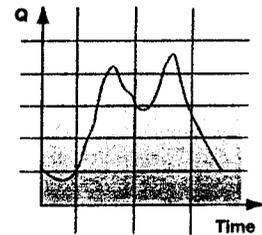
Comfort

BoosterpaQ output is continually adjusted by the Grundfos Control 2000 to maintain constant pressure. CR model pumps ensure quiet operation. Variable speed systems reduce operation noise during low usage, especially important for dwellings during sleep hours.

Consumption pattern for a typical water supply:

FLOW: Large variation between maximum and minimum consumption

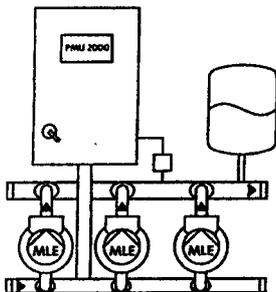
PRESSURE REQUIREMENTS: Constant pressure



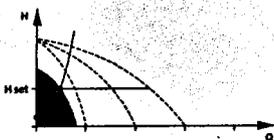
Hydraulic Functions

VARIABLE SPEED

Grundfos BoosterpaQ® ME



One pump in operation.

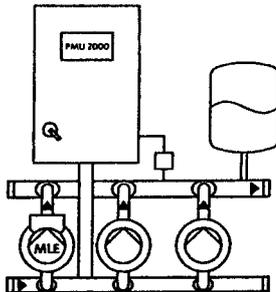


Three pumps in operation.

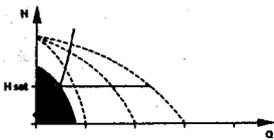


- Maintain a constant pressure through continuously variable adjustment of the speed of the operating pumps.
- The system performance is adjusted to the demand through cutting in/out of pumps and parallel speed control of the pumps in operation.
- Pump changeover is automatic and depends on load, time and fault.

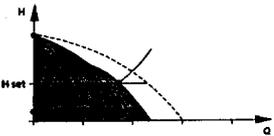
Grundfos BoosterpaQ® MES



One pump with MLE motor in operation.

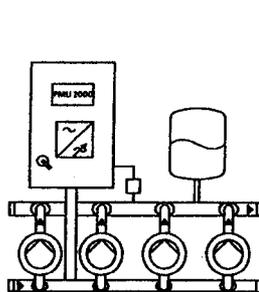


One pump with MLE motor and two mains-operated pumps in operation.

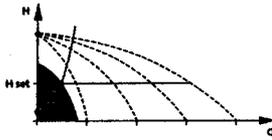


- Maintain a constant pressure through continuously variable adjustment of the speed of one pump. The other pumps are cut in/out on mains-operation according to demand, providing performance corresponding to the consumption.
- The pump with the MLE motor will always start first.
- Pump changeover is automatic and depends on load, time and fault.

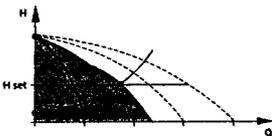
Grundfos BoosterpaQ® MF



One pump in operation via variable frequency drive.



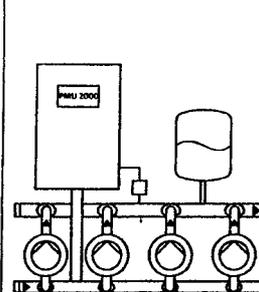
One pump in operation via variable frequency drive and two pumps mains-operated.



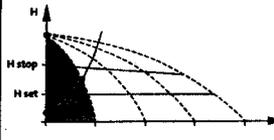
- Maintain a constant pressure through continuously variable adjustment of the speed of one pump. The other pumps are cut in/out on mains-operation, as required.
- The frequency-controlled pump is always started first.
- Pump changeover is automatic and depends on load, time and fault.
- All pumps are controlled by the variable frequency drive alternately.

START/STOP

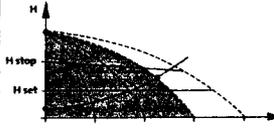
Grundfos BoosterpaQ® MS



One pump in operation.



Three pumps in operation.



- Maintains an almost constant pressure by cutting the pumps in or out as required.
- Pump changeover is automatic and depends on load, time and fault.

Product Range

SYSTEM	ME	MES	MF	MS
Standard Configuration				
Range				
Number of pumps	2-4	2-4	2-6	2-6
Mechanical				
In-line pipe routing	•	•	•	•
AISI 316 stainless steel manifold	•	•	•	•
AISI 304 stainless steel base frame	•	•	•	•
232 psi [16 bar] standard maximum output, 362 psi [25 bar] optional (reduced by pressure transducer, gauge, and tank limits)	•	•	•	•
Control				
NEMA 3R (single door)	•	•	•	•
NEMA 4	•	•	•	•
NEMA 12 (double door)	•	•	•	•
PFU 2000 (simple operation)	•	•	•	•
PMU 2000 (Advanced Control)	•	•	•	•
Pump alternation	•	•	•	•
Constant pressure	•	•	•	(•)
Friction loss compensation	•	•	•	•
Dry running protection	•	•	•	•
External variable frequency drive			•	
Integrated variable frequency drive (MLE motor)	•	•		
Application (recommended models)				
Water Supply	•	•	•	•
Industry	•	•	•	•
Irrigation	•	•	•	•
Approvals*				
	cUL	cUL	cUL	cUL

* All control panels are UL listed to US and Canadian safety standards and all motors are UL/cUL recognized. BoosterpaQs are certified and listed by UL for conformance to US and Canadian safety standards.

Options and Accessories

(available with all models—call for options not listed)

- Diaphragm tank
- ASME (code) tank
- Audible and visible alarms
- Pump elapsed time meters
- Higher temperatures
- Panel enclosure variants
- Volt and ammeters
- Verified factory performance test
- Emergency/normal switches, manual operated constant speed pumps
- Pump lock-out switches
- Lightning protection
- Pump run indicator lights
- Pump fault indicator lights
- Control panel internal illumination light

#7

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER QUALITY DIVISION

APPLICATION for APPROVAL TO CONSTRUCT DRINKING WATER FACILITIES

(PLEASE SUBMIT TO THE ADEQ ENGINEERING REVIEW DESK AT 1110 W. WASHINGTON ST., PHOENIX, AZ 85007)

A. PROJECT NAME: Walnut Valley Ranch Subdivision

B. PROJECT TYPE (Please check all applicable components for the OVERALL PROJECT):

X New Drinking Water Well or Source
Water Treatment Plant
Water Line and Appurtances
Other:

C. SYSTEM NAME/PUBLIC WATER SYSTEM NUMBER/OPERATIONAL STATUS:

SYSTEM NAME: Lucky Hills Water Co. SYSTEM NUMBER 02022
X New System Extension to Existing System

D. PROJECT LOCATION (Please provide approximate center. Information is required to accept application):

LATITUDE 31 0 44 ' 20 0 " N LONGITUDE 110 0 07 ' 30 0 " W
TOWNSHIP 19S RANGE 22E SECTION 32 QUARTER SECTION (CIRCLE) NE SE SW NW
COUNTY Cochise The S 1/2 of the W1/4 of the NE1/4, the S 1/2 of the NW 1/4, the NE 1/4 of the SW 1/4

E. PROJECT DESCRIPTION: 42 Lots Subdivision with 3.0 AC lot size to be constructed in 3 phases

F. PROJECT ENGINEER (PLEASE PRINT):

G. PROJECT OWNER (PLEASE PRINT):

Table with 3 columns: NAME, ADDRESS, PHONE NO./FAX NO., SIGNATURE/DATE. Rows include Buck Lewis Engineering, Inc and David McCartney.

H. PLAN DOCUMENTS SUBMITTED (PLEASE SEE ADEQ FORM #22, SUBMITTAL GUIDE FOR VARIOUS PROJECT TYPES)
NOTE: INCOMPLETE SUBMITTALS WILL NOT BE LOGGED IN.

J. OWNER/AGENT AGREEMENT AND SCHEDULE: AGREEMENT-The undersigned as Project Owner or as acting Agent for the Project Owner hereby a) grants ADEQ permission to enter the site for inspections; b) authorizes the Project Engineer to prepare and submit plan documents to the ADEQ ENGINEERING REVIEW DESK; and c) agrees to construct the sanitary facilities according to the ADEQ Certificate of Approval and the approved plan documents.

CONSTRUCTION SCHEDULE-Estimated start date: Sept 2006 Estimated completion date: July 2008
Dettef AF Liebe, P.E. Engineer Dettef A. Liebe 05/17/06

ADEQ COMPLIANCE EVALUATION: ADEQ FILE NO: IN-COMPLIANCE: LTF NUMBER: NON-COMPLIANCE: COMMENTS: SITE INSPECTION REQUIRED? NO YES

#8

Walnut Valley Ranch



September 15, 2006

Arizona Corporation Commission
1200 West Washington St
Phoenix, AZ 85007-2927

Dear Commission Members:

This letter is to inform you that the "Walnut Valley Ranch" subdivision in Tombstone, Arizona, is being financing in it's entirety, including the complete water distribution system with arsenic treatment, through CSI Mortgage in Scottsdale, AZ.

If you would like to confirm this, you are welcome to do so by contacting the following:

Mr. Jim Beck
CSI Mortgage
9746 N. 90th Place, Suite 105
Scottsdale, AZ 85258

Office: 480-860-4028
Fax: 480-451-4516
Email: jamesbeck@csimortgageaz.com

If you need any additional information, please contact me at your convenience.

Best Regards,

David B McCartney
Owner/Developer
Walnut Valley Ranch Subdivision

#10

Company Name: <u>Lucky Hills Water Co.</u>	Test Year Ended: <u>2005</u>
--	------------------------------

CURRENT AND PROPOSED RATES AND CHARGES

CUSTOMER CLASS: Residential Commercial Industrial
 Irrigation All Other, specify _____

CURRENT RATES

PROPOSED RATES

MINIMUM OR SERVICE CHARGES	\$ GALLONS	\$ GALLONS
320. ⁰⁰ 5/8" x 3/4" Meter	25. ⁰⁰ for 1000	30. ⁰⁰ for 1000
360. ⁰⁰ 3/4" Meter	30. ⁰⁰ for 1000	35. ⁰⁰ for 1000
420. ⁰⁰ 1" Meter	40. ⁰⁰ for 1000	45. ⁰⁰ for 1000
635. ⁰⁰ 1-1/2" Meter	75. ⁰⁰ for 1000	85. ⁰⁰ for 1000
1090. ⁰⁰ 2" Meter	120. ⁰⁰ for 1000	130. ⁰⁰ for 1000
N/A 3" Meter	for	for
N/A 4" Meter	for	for
N/A 6" Meter	for	for

GALLONS IN EXCESS OF MINIMUM
Commodity Charge in Excess of Minimum (Charge Per 1,000 Gallons)
First Tier <u>1.95</u>
Second Tier
Third Tier
FLAT RATE

Current Rates

Proposed Rates

Rate	Gallons	Rate	Gallons
\$ <u>25.⁰⁰</u>	Up to <u>1000</u>	\$ <u>30.⁰⁰</u>	Up to <u>1000</u>
\$	_____ to _____	\$	_____ to _____
\$	Over _____	\$	Over _____
\$	Per Month	\$	Per Month

Note: If rates and charges vary across customer classes, duplicate the form and complete one for each rate class. (e.g., residential, commercial) unless "All" is checked.

LUCKY HILLS WATER COMPANY
P.O. BOX 309 - 206 S. COWAN RANCH RD.
TOMBSTONE, AZ 85638
(520) 457-3350

Proposed
Service Charges

Establishment fee (R-14-2-403.D.1)	\$35.00	Re-establishment fee(months off x min) within 12 months per month (R14-2-403.D.1)	Meter test 25.00 (R14-2-408.F.1)
Establishment after hours (R14-2-403.D.2)	\$50.00	NSF returned check fee (R14-2-409.F.1)	\$30.00 Deposit Interest 1.5% (R14-2-403.B.3)
Reconnection (delinquent) (R14-2-403.D.1)	\$ 45.00	Re-read Meter (R14-2-408.C.2)	\$20.00 Renter Deposit \$53.00 (R14-2-403.B.1)
Late Fee (R14-2-409.D.1)	\$ 6%		

#11 & #44

WATER SYSTEM DESIGN REPORT

for

WALNUT VALLEY RANCH
Cochise County

Water Provider:

LUCKY HILLS WATER COMPANY
System No.: 02-022

Prepared by:

Buck Lewis Engineering, Inc.

P.O. Box 1373
Sierra Vista, AZ 85636-1373
Phone: 520-459-1122
Fax: 520-458-9246

March 2006



INTRODUCTION

The Walnut Valley Ranch development consists of 42 residential lots located in Cochise County, Arizona in the south half of the south west quarter of the north east quarter, the south half of the north west quarter and the north east quarter of the south west quarter of Section 32, Township 19 South, Range 22 East, Gila and Salt River meridian.

The project is located adjacent to, and subject to inclusion in, the Lucky Hills Water Company franchise, ADEQ System No.: 02-022

See Figure 1.

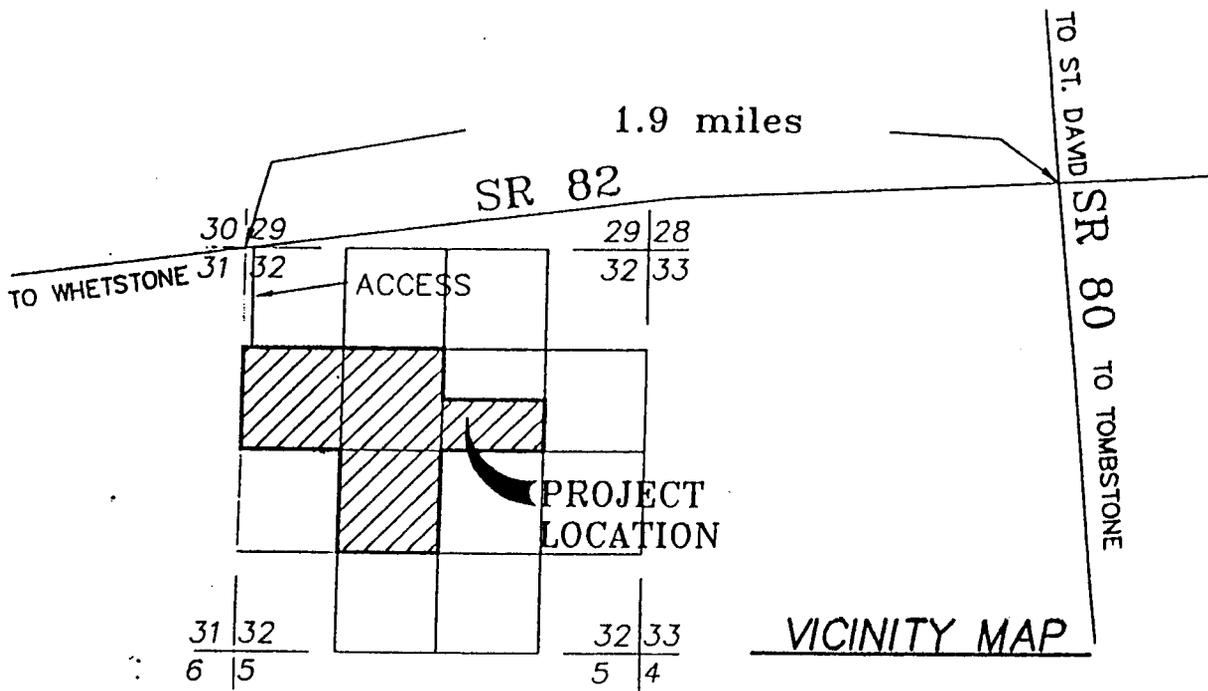


Fig. 1

SUBDIVISION WATER DEMAND

For the pressures and demands at the various junctions, the demand was determined as follows:

At an average daily demand of 350 gal./day/residence, the total daily demand calculates to $350 \times 42 = 14,700$ gal. /day.

The average demand/minute/residence = $14,700 \text{ gal. /day} : 24 \text{ hrs. /day} : 60 \text{ min. /hr.} : 42 \text{ units} = 0.24 \text{ gpm.}$

For the entire subdivision, the avg. Demand = $0.24 \text{ gpm} \times 42 = 10.0 \text{ gpm}$. By applying a multiplier of 2.5 for the peak flow, the demand there becomes $10.1 \text{ gpm} \times 2.5 = 25.3 \text{ gpm}$ for the subdivision.

FIRE FLOW DEMAND

Although there are no fire hydrants provided for the subdivision, 2 standpipes were added into the system as service points for fire trucks. A reserve capacity of 24,000 gallons is added to the storage tank to provide for this service. Water can be drawn from the standpipe at a rate of 200 gpm for 2 hrs.

A demand of 200 gpm was added supplying 24,000 gallons over the two hour period.

STORAGE/SUPPLY

A 'Hydrogeologic Evaluation and Water Supply Development' study performed by Chuck Dickens, Consulting Hydrogeologist, Tucson, Arizona, for the proposed subdivision concludes that the two wells drilled and analyzed have a long term production capacity of about 12 gpm for TW-2 and 20 – 25 gpm for TW-3. Pages 3 and 8 are attached under 'Attachments'.

The well pumps selected in this study produce 9 gpm for well TW-2 and 25 gpm for well TW-3.

The water storage system is located on Lot 3 and Lot 4.

Lot 3 consists of primary well TW-3 (R-1) and a well pump (P-1) capable of supplying 25 gpm to the storage tank (T-1) on Lot 4.

Lot 4 consists of the remainder of the system: secondary well TW-2 (R-2) and a well pump (P-2) which can supply 10 gpm to the storage tank (T-1), two constant pressure 7.5 HP booster pumps that drain water from the storage tank to supply the distribution system.

ANALYSIS

The difference in elevation between the well site and the highest service point (residence) is elev. = 4,140 @ well site and elev. 4,220 @ lots 23&4, or 80'. The minimum residual pressure to be maintained = 20 psi = 46 ft. The system consists of 6" dia. & 4" pvc and ductile iron pipes. The 6" pipe is to the stand pipe for the fire service and is of 2,400' length. At 225gpm (200 gpm fire and 25 gpm domestic demands) the friction loss = $0.31 \text{ ft.} / 100 \text{ ft} \times 2,400 \text{ ft} = 7.4 \text{ ft}$. The friction loss @ 25 gpm for 2,700 ft. of 4" pipe = $0.079 \text{ ft} / 100 \text{ ft} \text{ (at 35 gpm)} \times 2,700 \text{ ft} = 2 \text{ ft}$. An additional 10ft. is added for fittings

(valves/junction friction losses). The total head (TDH) requirements for the system are thew

- 80' elev. Diff
- 46' residual pressure requirement
- 9.4' pipe friction losses
- 10' fittings, valves, junction losses

Total = 145.4 ft.

The booster pumps selected are "Grundfos Boosterpaq" 7.5 hp. Pumps capable of 250 gpm @ 138 of TDH. Pump data and curves are attached.

The pumps will maintain a constant pressure throughout the system and will provide flows depending on demand.

The system was initially analyzed by utilizing a 5,000 gal pressure tank and standard 7.5 hp. centrifugal booster pumps; however the tank/booster pump arrangement was replaced with the constant pressure pump solution.

ATTACHMENTS

- Excerpts from the Hydrogeologic Evaluation by Chuck Dickens.
- Well pump curves for Wells TW-2 & TW-3
- 'Grundfos Boosterpaq' Guide Specifications & pump curve /catalogue
- Flow chart (friction losses) for PVC Pipe

#12

CERTIFICATE OF CLERK

I, Katie A. Howard, Clerk of the Board of Supervisors of Cochise County, Arizona, do hereby certify that the foregoing excerpt from the minutes of the meeting of the Board of Supervisors of Cochise County, Arizona, held on June 20, 2006, constitutes a true and correct copy of the said minutes insofar as they relate to the Application of Lucky Hills Water Company, for a water franchise in the County and to the granting of said water franchise pursuant to the resolution hereinabove set out, all as appears in the official records of the Board of Supervisors.

IN WITNESS WHEREOF, I have set my hand and official seal of the Board of Supervisors of Cochise County, Arizona, this 19 day of July, 2006.

Katie A. Howard

CLERK, BOARD OF SUPERVISORS

COCHISE COUNTY, ARIZONA

**PROCEEDINGS OF THE COCHISE COUNTY BOARD OF SUPERVISORS
FORMAL BOARD MEETING HELD ON
TUESDAY, JUNE 20, 2006**

A regular board meeting of the Cochise County Board of Supervisors was held on Tuesday, June 20, 2006 at 9:00 a.m. in the Board of Supervisors' Hearing Room, 1415 Melody Lane, Building G, Bisbee, Arizona. In attendance were Patrick Call, Chairman; Paul Newman, Vice-Chairman; Jody Klein, County Administrator; Jim Vlahovick, Deputy County Administrator; Charles Irwin, Deputy County Attorney and Katie Howard, Clerk of the Board. Supervisor Richard Searle was absent due to a meeting conflict.

ANY ITEM ON THIS AGENDA IS OPEN FOR DISCUSSION AND POSSIBLE ACTION

PLEDGE OF ALLEGIANCE

THE ORDER OR DELETION OF ANY ITEM ON THIS AGENDA IS SUBJECT TO MODIFICATION AT THE MEETING

ROLL CALL – Chairman Call and Vice-Chairman Newman were present; Supervisor Searle was absent (attending the University of Arizona Water Resources 2006 Annual Conference).

CALL TO THE PUBLIC (MATTERS RELATED TO COUNTY GOVERNMENT - LIMIT OF 3 MINUTES PER PERSON OR AT THE DIRECTION OF THE CHAIRMAN) – Chairman Call opened the Call to the Public. Ms. Helene Jackson spoke to the Board requesting rotation of the Chairmanship on the Board. Mr. Mike Jackson addressed the Board objecting to a 2003 Board action reducing tax values in Bella Vista Ranches, saying that Chairman Call should not have voted on the matter due to an alleged conflict of interest. Mr. Joseph Alberti turned in signatures of approximately 250+ people and spoke on their behalf requesting that the County consider Gleeson Road repair; other supporters were in the audience but indicated that Mr. Alberti spoke for them. There being no other members of the public wishing to address the Board under Call to the Public, Chairman Call closed the Call to the Public.

REPORT BY MR. JODY KLEIN, COUNTY ADMINISTRATOR ON RECENT AND PENDING COUNTY MATTERS—Mr. Klein reported that he and Jim Vlahovich would be attending a meeting on Wednesday in Douglas with Mike Ortega regarding potential improvements and that there was also an Arizona County Insurance Pool meeting scheduled later in the week. He reminded the Board that there would be a meeting of the four south-central Arizona counties in Amado on Friday and that all three supervisors would be attending. Finally, he announced that there would be a Work Session the following Monday regarding the Highways & Floodplain Work Plan for Fiscal Year 2006-2007.

CONSENT

BOARD OF SUPERVISORS

ITEM 1

ACCEPT THE RESIGNATION OF SUNSITES-PEARCE FIRE DISTRICT SECRETARY/TREASURER, BRANDA LEON, AND PAPOINT JAMES H. PATERSON TO FULFILL THE POSITION UNTIL THE END OF THE ELECTION TERM, DECEMBER 1, 2008, EFFECTIVE IMMEDIATELY.

ITEM 2

APPROVE AMENDMENT TO THE IGA BETWEEN THE CITY OF WILLCOX AND COCHISE COUNTY FOR THE CONTINUING OPERATION OF AN ANIMAL SHELTER IN THE WILLCOX AREA, EFFECTIVE JULY 1, 2006 THROUGH JUNE 30, 2008

ITEM 3

APPROVE THE MINUTES OF THE REGULAR BOARD OF SUPERVISORS' MEETINGS OF JUNE 6, 2006 AND THE MINUTES OF THE SPECIAL BOARD MEETINGS FOR JUNE 1, 2006, JUNE 5, 2006 AND JUNE 6, 2006.

SUMMARY OF CURRENT EVENTS BY BOARD MEMBERS:-

ITEM 12

REPORT BY SUPERVISOR PATRICK CALL, DISTRICT NO. 1— Chairman Call had no report.

PAUL NEWMAN, DISTRICT NO. 2 — Vice-Chairman Newman reported that it has been clarified that the debate about the rotation of the Chairmanship for the Board would occur on June 27, 2006 and that a Work Session would soon be scheduled at which the Gleeson Road problem would be discussed.

RICHARD SEARLE, DISTRICT NO. 3 – Supervisor Searle was absent.

There being no further business before the Board, Chairman Call adjourned the meeting at 9:34 a.m.

APPROVED:


Patrick Call, Chairman

ATTEST:


Katie A. Howard, Clerk of the Board

(SUPPORTING DOCUMENTATION IS AVAILABLE AT THE BOARD OF SUPERVISORS' OFFICE)

AT (520) 432-9720, FAX (520) 432-9716, TDD (520) 432-8360, 1415 MELODY LANE, BUILDING E, BISBEE, ARIZONA 85603.

ELECTIONS

ITEM 4

ADOPT RESOLUTION NO. 06-46 NAMING THE POLLING LOCATIONS FOR THE VOTING PRECINCTS OF COCHISE COUNTY, TO BE USED FOR THE PRIMARY ELECTION AND GENERAL ELECTION TO BE HELD IN THE FALL OF 2006.

ITEM 5

APPROVE THE CONTRACT WITH ELECTION SYSTEMS & SOFTWARE, INC. (ES&S) FOR VOTER TABULATION SYSTEM AND SERVICES AGREEMENT FOR HANDICAPPED-ACCESSIBLE VOTING HARDWARE, SOFTWARE AND SUPPORT SERVICES IN THE AMOUNT OF \$520,786.10, PAID BY THE STATE OF ARIZONA.

FINANCE

ITEM 6

DEMANDS AND OPERATING TRANSFERS

Warrant No. 16039 through 16393 were issued in the amount of \$2,119,094.89. No voided warrants.

Pursuant to A.R.S. §11-217(C), the published minutes shall include all demands and warrants approved by the Board in excess of one thousand dollars except that multiple demands and warrants from a single supplier or individual under one thousand dollars whose cumulative total exceeds one thousand dollars in a single reporting period shall also be published.

Issued warrants are listed as an attachment at the end of the minutes.

Vice-Chairman Newman made a motion to approve Items 1-2 and 4-6 on the Consent Agenda. Chairman Call seconded the motion and it carried 2-0-1 (Supervisor Searle absent). Item 3 was tabled until the next meeting.

PUBLIC HEARINGS

BOARD OF SUPERVISORS

ITEM 7

ADOPT RESOLUTION 06-45, GRANTING A WATER FRANCHISE TO LUCKY HILLS WATER COMPANY.

Vice-Chairman Newman made a motion to adopt Resolution 06-45, granting a water franchise to Lucky Hills Water Company. Chairman Call seconded the motion.

Mr. Jody Klein indicated to the Board that this was a standard water franchise agreement to enable laying line and gaining needed rights-of-way in the Tombstone area and that staff sees no objections at this point. Chairman Call opened the Public Hearing. No one responded and Chairman Call closed the Public Hearing.

Chairman Call then called for a vote and the motion The motion carried 2-0-1 (Supervisor Searle absent).

ACTION

BOARD OF SUPERVISORS

ITEM 8

SET THE SALARIES FOR CONSTABLES OF JUSTICE PRECINCTS 1, 2, 3, 4 AND 6, PURSUANT TO ARS §11-424.01, IN THE AMOUNT OF \$_____ PER MONTH, EFFECTIVE JANUARY 1, 2007.

Mr. Jody Klein explained that the service of process is more cost effective to accomplish through the Sheriff's Office than through independent constables, except in Justice Precinct 5 where there is a higher volume. He advised that, historically the Board has set a token amount of \$1.00 per month for the constables' salaries for these precincts and that this action is to approve the \$1.00 rate per month for the next four years.

Vice-Chairman Newman made a motion to set the salaries for Constables of Justice Precincts 1, 2, 3, 4, and 6, pursuant to ARS §11-424.01, in the amount of \$1.00 per month, effective January 1, 2007. Chairman Call seconded the motion and it carried 2-0-1 (Supervisor Searle absent).

S.V. CONSTABLE

ITEM 9

APPROVE THE SALARY OF THE SIERRA VISTA CONSTABLE FOR JUSTICE PRECINCT 5 IN THE AMOUNT OF \$ _____ PER YEAR, FOR THE FOUR-YEAR TERM COMMENCING JANUARY 1, 2007, PURSUANT TO ARS §11-424.01.:

Mr. Klein informed the Board that they are required to set salaries for constables for the four-year term prior to the election so that candidates who are running for the office know what the salary is. The statute sets a range of allowable salaries for a precinct of this size population and the Board is free to set a fixed or graduated salary for the next four years. He advised the Board that the range for this size precinct is between \$48,294 and \$55,654. He added that since the salary is set prior to the term of office the Board would not normally take into account the experience and qualifications of the incumbent in the position. However, he pointed out that Mr. Rick Tutor, the current Constable for JP5, has been in the position for four years and at this point faced no opposition in the upcoming election. Each quartile within the range represents another \$1,840. The recommendation is to increase the salary to midpoint, to \$51,974 and the Board can choose to increase the salary incrementally or set a fixed salary for the four-year period. Chairman Call asked for clarification of the amounts at each quartile within the range and Mr. Klein responded that the first quartile would be \$50,134, the mid-point would be \$51,974 and 75% of the range would be \$53,814.

Vice-Chairman Newman made a motion to approve the salary of the Sierra Vista Constable for Justice Precinct 5 in the amount of \$51,974 per year, for the four-year term commencing January 1, 2007, pursuant to A.R.S. §11-424.01. Chairman Call seconded the motion and it carried 2-0-1 (Supervisor Searle absent).

WORK SESSIONS (FUTURE)

ITEM 10

APPROVE A WORK SESSION REQUEST TO DISCUSS APPROACHES TO FUNDING ROAD IMPROVEMENT PROJECTS AND TO OBTAIN AGREED-UPON DIRECTION AND PLAN FOR ACHIEVING ROAD IMPROVEMENT PROJECTS FOR CERTAIN ROADS WITHIN THE COUNTY-- WITH A FOCUS ON GLEESON ROAD.

Vice-Chairman Newman made a motion to approve the work session; Chairman Call seconded the motion and it carried 2-0-1 (Supervisor Searle absent).

STATE AND FEDERAL LEGISLATION

ITEM 11

STATE AND FEDERAL LEGISLATION: DISCUSSION, STRATEGY AND/OR GUIDANCE/DIRECTION ON CURRENT OR PENDING STATE OR FEDERAL LEGISLATIVE PROPOSALS/BILLS AND COCHISE COUNTY'S POSITION THEREON, TO INCLUDE:

LEGISLATION -- BUDGET IMPACT ON COUNTIES
6/16/06 CSA LEGISLATIVE UPDATE

Mr. Klein reported that the session is winding down but several of the money bills are still being considered, one of which is the Arizona Long-Term Care System (ALTCS) relief bill. He stated that it looks like there is a fair chance that the six counties that are currently paying the highest rates may get some relief for nine months of the upcoming fiscal year. He indicated that right now, Cochise County is at the circuit breaker and faces \$6.5 million in budget costs for fiscal year 2006-2007 to pay for long-term care services. He said that if this relief goes through, it has the potential to add \$300-400,000 to the budget, which if it goes through for nine months of the year, would be 75% of that amount. He said that it also looks like the state is taking the Return-to-Competency (RTC) costs back. Those two bills could have a significant beneficial impact to the county's budget.

Cochise County Demands
June 20, 2006

Nichols, Sharon 6/09/2006 Total \$6,171.95;
 Az State Retirement Syst-Plan 6/09/2006 #15704 \$166,794.81;
 Az State Savings&Credit Union 6/09/2006 #15711 \$2,838.00;
 Cochise Cnty Payroll W/H Tax 6/09/2006 #15713 \$33,372.98;
 Correction Officers 6/09/2006 #15705 \$9,009.08;
 Bank One 6/09/2006 Total \$907,559.73;
 Bank One 6/09/2006 #15715 \$324,698.38;
 Huachuca Federal Credit Union 6/09/2006 #15719 \$9,944.36;
 NACO West 6/09/2006 #15720 \$33,234.62;
 Public Safety Retirement Syst 6/09/2006 #15721 \$10,485.38;
 Public Safety Retirement Syst 6/09/2006 #15725 \$34,679.14;
 Southeastern Az Fed Cr Union 6/09/2006 #15727 \$5,469.18;
 Tombstone Federal Credit Union 6/09/2006 #15730 \$1,245.00;
 Support Payment Clearinghouse 6/09/2006 Total \$5,914.44;
 National Bank 6/09/2006 Total \$3,164.79;
 Wa State Support Registry 6/09/2006 Total \$1,066.66;
 Az State Retirement Syst-Plan 6/09/2006 Total \$166,722.95;
 B & D Lumber & Hardware 6/13/2006 Total \$1,152.05;
 Az Public Service Co 6/13/2006 Total \$38,477.14;
 Az State Land Department 6/13/2006 Total \$1,376.49;
 B & S Supply Co Inc 6/13/2006 #15878 \$2,533.86;
 Baker & Taylor 6/13/2006 #15882 \$1,268.21;
 Banner Printing Center 6/13/2006 #15884 \$5,025.11;
 Bisbee, City of 6/13/2006 Total \$5,656.05;
 Cochise Private Industry Counc 6/13/2006 Total \$88,349.85;
 Copygraphix Inc 6/13/2006 Total \$40,701.55;
 Delta Dental Plan of Arizona 6/13/2006 #15916 \$26,379.48;
 E J Office Furniture Inc 6/13/2006 Total \$4,623.86;
 Granite Construction Company 6/13/2006 Total \$2,200.57;
 Hatfield Funeral Home Inc 6/13/2006 #15948 \$1,150.00;
 Pro Office Equipment, Inc. 6/13/2006 Total \$2,084.51;
 Moore Medical Corporation 6/13/2006 Total \$1,390.47;
 Morgan, J Michael, PhD PC 6/13/2006 #15993 \$1,505.00;
 Sigler and Reeves 6/13/2006 Total \$6,649.07;
 Union Distributing Co /Tucson 6/13/2006 Total \$34,518.73;
 West Group 6/13/2006 Total \$1,068.43;
 MeadWestvaco 6/13/2006 #16026 \$1,237.88;
 Sulphur Springs Valley Electri 6/13/2006 Total \$3,747.73;
 Bisbee Police Dept 6/13/2006 Total \$7,617.01;
 DiRoberto, Joseph 6/13/2006 Total \$17,724.02;
 Air BP Aviation Services 6/13/2006 Total \$13,047.74;
 Intelliquest Investigations 6/13/2006 Total \$2,155.65;
 Fry Fire District 6/13/2006 Total \$2,713.16;
 Elkins, Martha R 6/13/2006 Total \$1,132.33;
 United Pathology Inc 6/13/2006 Total \$15,872.99;
 Animal Health Care Center 6/13/2006 Total \$2,163.00;
 Tombstone Pharmacy 6/13/2006 Total \$1,410.39;
 U S Postal Service 6/13/2006 Total \$10,743.77;

Buchella, Jeffrey G 6/13/2006 #15976 \$1,096.60;
Northern Arizona University 6/13/2006 #16001 \$3,750.00;
Lin-Cum Inc 6/13/2006 Total \$2,108.81;
Voyager Fleet System, Inc. 6/13/2006 Total \$7,488.89;
Taylor, Vidola B 6/13/2006 Total \$1,045.33;
Bishop, Alice M 6/13/2006 Total \$1,014.86;
Giacoletti, Robyn 6/13/2006 Total \$1,187.49;
Bank of America 6/13/2006 Total \$100,293.45;
ARAMARK Services, Inc. 6/13/2006 Total \$24,912.46;
Specialty Loaders 6/13/2006 Total \$4,007.44;
LexisNexis 6/13/2006 #15902 \$1,463.00;
McGuire, Matthew 6/13/2006 Total \$3,117.85;
Alternative Counseling Svc Inc 6/13/2006 #15919 \$6,654.00;
White Mtn Tourism Solutions 6/13/2006 Total \$3,090.65;
Pitney Bowes Mailing Systems 6/13/2006 Total \$1,194.75;
Alltel 6/13/2006 Total \$4,158.68;
Hurll, Bill 6/13/2006 Total \$1,537.00;
Ames Diversified Services 6/13/2006 Total \$1,431.13;
Diamond JK Nursery 6/13/2006 Total \$4,154.44;
Flexolite 6/13/2006 Total \$13,212.98;
Bandak, Dwight 6/13/2006 Total \$1,013.00;
Lighting Resources, LLC 6/13/2006 Total \$4,512.80;
Az Family Care Associates/AFCA 6/15/2006 Total \$7,903.04;
Benson Hospital Corporation 6/15/2006 Total \$2,676.32;
Copper Queen Hospital 6/15/2006 Total \$4,364.31;
Heart Felt Help 6/15/2006 #16136 \$63,843.59;
Sierra Vista Medical Investors 6/15/2006 #16099 \$179,686.12;
Northern Cochise Comm Hosp Inc 6/15/2006 Total \$61,594.80;
Ev Lutheran Good Samaritan Soc 6/15/2006 #16057 \$124,242.95;
Casa De Maria/St Elizabeth 6/15/2006 #16137 \$13,935.48;
Sierra Vista Regional Hlth Ctr 6/15/2006 #16151 \$2,363.12;
Kindred Nursing Ctrs West, LLC 6/15/2006 Total \$196,789.04;
Santa Rosa Care Center LLC 6/15/2006 Total \$84,413.68;
Family Health Center of S.V. 6/15/2006 Total \$2,454.58;
Southern Az Anesthesia Svc PC 6/15/2006 Total \$1,020.27;
Carondelet Health Care Corp 6/15/2006 Total \$2,751.13;
Tucson Medical Center 6/15/2006 Total \$13,121.10;
Blake Foundation (The) 6/15/2006 Total \$10,282.37;
Rural Metro Corporation 6/15/2006 Total \$1,332.41;
Rocky Mountain Hldgs LLC 6/15/2006 Total \$5,100.97;
Mt Graham Community Hospital 6/15/2006 Total \$8,563.62;
Southwest Ambulance/86-0758145 6/15/2006 #16144 \$1,479.53;
Apria Healthcare Inc 6/15/2006 Total \$9,528.60;
AccentCare 6/15/2006 #16130 \$2,576.60;
Circle B Adult Care Homes, LLC 6/15/2006 Total \$9,239.25;
Johnston, Derrick, DDS 6/15/2006 #16091 \$2,150.00;
Intermountain Centers 6/15/2006 #16133 \$11,732.35;
Willow Adult Care Home 6/15/2006 Total \$2,123.70;
Hartley, Barbara MD PC 6/15/2006 Total \$1,418.37;
American Geriatric Ent. Inc. 6/15/2006 Total \$6,874.71;
GAMBRO Healthcare-Sierra Vista 6/15/2006 #16055 \$2,423.30;

Sabino Canyon Rehab & Care Ctr 6/15/2006 Total \$23,475.84;
Az Oncology Associates 6/15/2006 #16070 \$1,025.44;
Douglas ARC Inc. 6/15/2006 #16111 \$2,857.36;
Community Healthcare of Dougla 6/15/2006 Total \$1,508.41;
Mulberry House 6/15/2006 #16080 \$1,269.54;
Catalina Village Assist.Lvng 6/15/2006 Total \$9,475.05;
Casa De Esperanza 6/15/2006 Total \$4,477.66;
Az World Express 6/15/2006 Total \$9,606.94;
MDMED Inc. 6/15/2006 Total \$1,843.77;
Southwest Neuropsychology Assc 6/15/2006 Total \$1,574.85;
Sierra Vista Emerg Physicians 6/15/2006 Total \$1,377.46;
Carefree Senior Living of CA 6/15/2006 #16067 \$15,821.61;
Cypress Inn Asst. Living Ctr 6/15/2006 #16154 \$16,302.22;
Waverly Park HCC 6/15/2006 #16068 \$14,846.92;
CDE Transport & Services Inc. 6/15/2006 #16051 \$2,005.39;
Rosemary House 6/15/2006 Total \$3,060.44;
Enrichment Services, Inc 6/15/2006 Total \$3,831.85;
Air Evac Services, Inc 6/15/2006 Total \$1,213.95;

#13

STATE OF ARIZONA



Office of the CORPORATION COMMISSION

CERTIFICATE OF GOOD STANDING

To all to whom these presents shall come, greeting:

I, Brian C. McNeil, Executive Director of the Arizona Corporation Commission, do hereby certify that

*****LUCKY HILLS WATER COMPANY*****

a domestic corporation organized under the laws of the State of Arizona, did incorporate on December 21, 1964.

I further certify that according to the records of the Arizona Corporation Commission, as of the date set forth hereunder, the said corporation is not administratively dissolved for failure to comply with the provisions of the Arizona Business Corporation Act; and that its most recent Annual Report, subject to the provisions of A.R.S. sections 10-122, 10-123, 10-125 & 10-1622, has been delivered to the Arizona Corporation Commission for filing; and that the said corporation has not filed Articles of Dissolution as of the date of this certificate.

This certificate relates only to the legal existence of the above named entity as of the date issued. This certificate is not to be construed as an endorsement, recommendation, or notice of approval of the entity's condition or business activities and practices.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Arizona Corporation Commission. Done at Phoenix, the Capital, this 23rd Day of February, 2006, A. D.



Kenneth J. McNeil
EXECUTIVE SECRETARY

BY: *Yvonne Contreras*

#15

Date : 09/08/2006
Time : 8:55 AM

Lucky Hills Water Company, Inc.

P.O. Box 309
Tombstone, AZ 85638

INCOME STATEMENT

From 01/01/05 to 12/31/05

Account	Account Name	This Period		Year to Date	
		General Acct	Detail Acct	General Acct	Detail Acct
4111	Metered Water Sales		117.52		1623.40
	Total Revenue		117.52		1623.40
5115	Purchased Power (Elec)		32.19		317.64
51171	Water Tests, Lab.		25.00		355.00
5121	Reprs,Maint/Plant		0.00		88.80
51235	Office/Bk.Svc.Chgs.		11.00		144.00
51252	Outs.Serv./Accounting		0.00		175.00
51255	Outs.Serv./Opem&Maint		0.00		85.00
51258	Report Filing Fees		0.00		54.00
51321	Property Taxes		0.00		79.24
51322	Taxes Other than Property		0.00		50.00
5133	Depreciation		211.00		211.00
	Total Expenses		279.19		1559.68
	NET INCOME		-161.67		63.72

Date : 09/08/2006
Time : 8:54 AM

Page no.

Lucky Hills Water Company, Inc.

P.O. Box 309
Tombstone, AZ 85638

BALANCE SHEET

As of 12/31/05

<u>Account</u>	<u>Account Name</u>	<u>General Acct</u>	<u>Detail Acct</u>
11011	BoA Checking		739.41
1102	Accts Rec. (Cust.)		402.68
120141	Structs.& Impvmts 1/1/00		456.00
120151	Wells&Spgs		16259.00
120161	Elect.Pump.Equip.		9245.00
120163	Pump, Foster Pump 9/04		1991.36
120181	Distb.Reserv.Storage		4100.00
120183	Pressure Tank, 9/04		466.84
120191	Transm&Dist		22076.00
120211	Meters (all costs)		339.00
120261	Tools		765.00
1203	Acc.Depr.& Amort/Plant		-51697.00
	Total Assets		<u>5143.29</u>

Date : 09/08/2006
Time : 8:54 AM

Page no. .

Lucky Hills Water Company, Inc.

P.O. Box 309
Tombstone, AZ 85638

BALANCE SHEET

As of 12/31/05

<u>Account</u>	<u>Account Name</u>	<u>General Acct</u>	<u>Detail Acct</u>
22014	Ref.Renters Dep.		35.00
22015	Rent Dep-Ruyle, D.		65.00
22021	A/P Frontier		660.00
22022	A/P Robt & Merl Cowan		1450.00
22031	A/P Sales Tax		18.78
	Total Liabilities		2228.78
3111	Capital Stock 1/1/90		33500.00
3112	Pd in Capital/prior		54484.00
3212	Ret Earnings/1-1-2000		-84099.79
3213	Ret Earnings		-491.35
33	Current Earnings		-542.07
	Current Year Earnings		63.72
	Total Equity		2914.51
	Total Liabilities plus Equity		5143.29

#16

5 Year Estimated Revenue

Assuming half of the 42 lots sell in the first five years: Using the proposed enclosed tariff of \$30.00 for the first 1000 gallons and \$1.95 per 1000 in excess of min. and \$35 establish fee and comparing usage to our current four customers and assuming.

	<u>customers</u>	revenue without taxes per year
<u>Year 1</u>	4	\$303.00
<u>Year 2</u>	8	\$466.00
<u>Year 3</u>	12	\$629.00
<u>Year 4</u>	16	\$792.00
<u>Year 5</u>	21	\$995.75
<u>Year 6-10</u>	42	\$2,446.50