Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

February 4, 2016

Ms. Bonnie Burton
Camden County Public Water
Supply District No. 5
P.O. Box 556
Camdenton, MO 65020

RE: Camden Co. PWSD No. 5, MO3031383, Review No. 5054670-16

Dear Ms. Burton:

An Engineering Report for Public Water Supply District No. 5, Camden County, Missouri has been reviewed. The report was examined as to sanitary features which may affect the operation of the system, including size, capacities of units, and factors which may affect efficiency and ease of operation. Approval of the engineering report as regards to these points is hereby given. This approval is valid for two years.

It is suggested that you proceed to make arrangements for financing the proposed projects and instruct your engineer to prepare the necessary detailed plans and specifications for the proposed improvements.

If you anticipate using state and/or federal funds to finance your water system improvements please submit an application to the Missouri Water and Wastewater Review Committee. The application and instructions can be found at the following web address:

http://dnr.mo.gov/env/wpp/srf/additional-resources.htm

Regulations require written approval of detailed plans and specifications before awarding the contract or initiating construction. Upon receipt of the detailed plans and specifications, we will proceed with our review and advise you by written report of our approval. An updated engineering report must be submitted with the detailed plans and specifications if there is a change in the scope of the project or if the original report is more than two years old.

Company Exhibit No. 9
Date 9-18-19 Reporter BJS
File No. WA-2019-0185

Should you require any further assistance please contact Ms. Kimberly Potter at (573)751-5924 or Ms. Deborah Arant at (573) 526-4661. You may also reach us by mail at Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO. Thank you for your continued support in our journey and pursuit to enhance Missouri's natural resources.
Sincerely,

WATER PROTECTION PROGRAM

Maher Jaafari, P. E.
Drinking Water Permits and Engineering Section Chief

MJ:mtk

c: Darren Krehbiel Consultants, LLC
Southwest Regional Office

File: CI

MISSOURI DEPARTMENT OF NATURAL RESOURCES

ENGINEERING EVALUATION FOR APPROVAL OF ENGINEERING REPORT FOR WATER SYSTEM IMPROVEMENTS

Public Water Supply District No. 5
Camden County, Missouri
February 4, 2016

Review Number: 5054670-16

INTRODUCTION

An engineering report for water system improvements to Public Water Supply District No. 5, Camden County, Missouri was submitted for review and approval by Darren Krehbiel Consultants, LLC, Camdenton, Missouri. The report is partially funded under the 2015 Engineering Report Services Grant Program.

BRIEF DESCRIPTION

An engineering report for water system improvements for Public Water Supply District No. 5, Camden County, Missouri has been reviewed. The report was examined as to sanitary features which may affect the operation of the project, including size, capacities of units and factors which may affect efficiency and ease of operations. It was also examined for conformance with requirements set forth under the engineering services program.

The engineering report has the following major elements:

- Computer hydraulic system model
- Evaluation of the existing supply, storage and distribution system along with recommended improvements and cost estimates for the recommended improvements
- Evaluation of interconnecting the Cedar Heights and Clearwater Condominiums systems

The report evaluates problems in supply, storage and distribution and offers the following recommendations:

- Construction of a new state approved well, including a new well house, security fencing, and chlorination system, at the Cedar Heights complex to replace the existing non-state approved well that is being used with a compliance agreement.
- Construction of a new well and water storage tank at the intersection of Clearwater Drive and Ozark Isle Drive. This well along with new 6-inch waterlines will be installed to interconnect the two systems and be the primary source of supply. The existing wells will be used as a backup supply.
- Make provision for emergency electrical power.
- Inspection and maintenance of the existing water storage tanks.

STAFF RECOMMENDATION

On the basis of the review conducted in accordance with Missouri Drinking Water Regulation 10 CSR 60-10.010(1), I recommend this Engineering Report be granted approval.

Megan Torrence

Megan Torrence
Drinking Water Permits and Engineering Section

TABLE OF CONTENTS

Engineering Report

ENGINEERING REPORT

FOR

PUBLIC WATER SUPPLY DISTRICT NO. 5

CAMDEN COUNTY, MISSOURI

Introduction:

Purpose

The purpose of this report is to provide an engineering analysis of the Public Water Supply District No. 5 (District) water system for necessary improvements or modifications to the system to achieve and maintain technical, managerial, and financial capability with respect to the National Primary Drinking Water Regulations.

Description of System

Public Water Supply District No. 5, Camden County, Missouri, is an area southwest of Camdenton, Missouri, lying north of US Highway 54 and on the southwesterly side of the Lake of the Ozarks (See Exhibit A).

The District (MO-3302557) was incorporated under a Camden County Circuit Court Order on June 16, 2010, pursuant to Chapter 247 RSMo.

The District encompasses an "L" shaped area which includes two condominium projects, Clearwater Condominiums on the North (MO-4202639) and Cedar Heights on the Southeast (MO-3301383). The Clearwater water distribution system has been extended to serve the Mission Hills subdivision (Exhibit B).

Lying outside the District, between the two condominium systems, is Old Kinderhook Resort and Development (MO-3031198). Each of the three systems is independent of the other.

Since Old Kinderhook is outside of, and not a part of, the District, this report will focus on the systems within the District. The report will investigate the potential role of a possible inter-relationship between the District systems and Old Kinderhook. Following is a brief summary of the major components of each system.

Clearwater Condominiums

1. Source –deep well.
2. Treatment – liquid hypochlorite solution.
3. Distribution – 6-inch PVC pipes.
4. Finished Water Storage – a combination of ground storage reservoirs, pressure pumps and pressure tanks.

Cedar Heights Condominiums

1. Source – deep well.
2. Treatment – liquid hypochlorite solution.
3. Distribution – 6-inch PVC pipes.
4. Finished Water Storage – a single standpipe.

Each of the above systems will be discussed in greater detail later in this report.

Old Kinderhook Resort and Subdivision

Old Kinderhook has their own independent State Approved water system. The system consists of two deep wells, an elevated water storage tank and a distribution system consisting primarily of 6-inch PVC mains.

Discussions prior to the formation of the Camden Co. PWSD #5 included contact with personnel from Old Kinderhook and they opted not to be included in the District.

Review Groundwater Rule:

The Ground Water Rule specifies eight elements integral to the effective operation of a public water system. The eight elements are: 1) Source (protection, physical components, and condition); 2) Treatment; 3) Distribution System; 4) Finished Water Storage; 5) Pumps, Pump Facilities, and Controls; 6) Monitoring, Reporting, and Data Verification; 7) Water System Management and Operations; and 8) Operator Compliance with State Requirements. The District was evaluated in regard to these eight elements and the following discusses the findings of this evaluation:

Source

Clearwater

The system serves approximately 250 people in the condominiums through 208 connections. The system operates year-round.

Well No. 1 was drilled in 2002 to a depth of 565 feet with 6-inch casing to a depth of 337 feet. The submersible pump is 10 HP, set at 331 feet, and is rated at 80 gallons per minute.

A construction permit was issued by the Department on November 20, 2007, for the construction of a second well to serve the condominium complex (Review No. 54277-07). This well has not been constructed.

Cedar Heights

The system serves approximately 485 people through 194 connections. The system operates year-round.

Well No. 2 was drilled in 2003 to a depth of 445 feet, and then partially plugged to an effective depth of 420 feet with six inch casing to a depth of 280 feet. The 10 HP submersible pump is set at 336 feet and is rated at 60 gallons per minute.

The well pumps to a 8 foot by 80 foot standpipe by a dedicated line. The standpipe is located approximate 750 feet from the well at a higher elevation.

This well is not State Approved and is being operated under a Compliance Agreement with DNR.

Treatment:

Both systems are disinfected with a liquid hypochlorite solution. The system at Clearwater appears to be adequate. The system at Cedar Heights has been written up by DNR in their Report of Inspection dated February 22, 2013.

> *16. The chlorine feed and storage system installed on Well #2[1] does not meet construction recommendations. Specifically, the system is not designed to allow operators to track and record daily chlorine levels and the chlorine solution tank is not sealed and equipped with a vent to the exterior.*

The chlorination system is proposed to be upgraded when a new replacement well is drilled.

Analyze Treatment and Chlorine Contact Time

Neither system has a history of unsafe samples. The required testing is done by the contract operator.

The Department, during the Inspection of Cedar Heights Condominiums on February 22, 2013, stated that "The results of the inspection concluded the water system does achieve 4 – log inactivation of viruses."

Distribution:

Modeling

This engineering report has been facilitated by the preparation of a hydraulic model of each of the systems, Cedar Heights and Clearwater.

1. Well No. 1 was abandoned and Well No. 2 is not State Approved. (See Source paragraph)

The modeling was done utilizing EPANET software, which is a non-proprietary program easily downloaded from the Environmental Protection Agency (EPA) website.

This model was used to evaluate each of the two existing systems, make projections for upgrades and future expansions, and analyze the interconnection of the two systems.

Meters and Water Loss

There are no meters on the user end of the system. All users are domestic customers with the exception of water used for irrigation and filling the swimming pools. Irrigation and pool filling locations are not metered.

All metering is accomplished at the wells on the supply side of the system.

The Cedar Heights' system was cited in a Report of Inspection by DNR, dated February 22, 2015, stating, *"Each service connection is not individually metered."*

Many condominiums in the Lake of the Ozarks area do not have individual meters for each unit. The most appropriate time to provide individual meters for condominiums would have been at the project outset.

Each unit in each complex pays a set fee to the Home Owners Association for maintenance of all amenities. The Home Owners Association then pays the District for water and sewer services.

There is a limited length of distribution line since each system primarily serves condominium buildings. This limited length of distribution line limits the potential for pipe damage and water loss. The operator takes daily well meter readings and has been able to detect spikes in usage which are the result of a breach in the system.

Seasonal Variation in Usage

Reference is made in this report to the seasonal variation in usage. The District lies within the recreational area of the Lake of the Ozarks and adjoins the Lake. Typically, high usage months are June, July, August and September (See Exhibit C).

Because the area is a mix of primary and secondary residential units, both population and usage fluctuates on a seasonal basis. These fluctuations vary from what could be considered a typical community pattern (See Exhibit D).

The design average day demand, defined by DNR as dividing total water production by the number of days in the year, has not been used in the calculations in this report. The calculated DNR design average day demand is only referenced to point out what impact this factor would have on the analysis. Due to of the seasonal variation in flows described in the previous paragraph, calculations for this study are based on an average day demand using the highest usage month.

Daily User Patterns

For the modeling of this system, one demand pattern was developed and is considered appropriate for this report. That pattern is designated as "House". No other patterns were considered as these systems serve entirely residential populations.

The House pattern is a residential pattern, however as previously stated, because the area is tourist based with a mixture of permanent and secondary dwelling units, the pattern has been altered slightly to reflect actual usage data (See Exhibit D). The peak hourly factor was determined from previous studies in the Lake of the Ozarks area to be 1.82 times the average flow.

Demand and Production Computations

House

Residential customers have been entered in the model at each address (junction) in Mission Hills using a base demand of 0.25 gpm per home. Condominiums have been modeled based on an analysis of the District's historical production records. This analysis results in a base demand of 2.53 gpm, per condominium building, for Clearwater and a base demand of 2.375 gpm, per condominium building, for Cedar Heights. There are eight buildings in Cedar Heights and eleven buildings in Clearwater.

To account for peak days, above and beyond the hourly peaks discussed above, a separate model was run utilizing an overall peak factor of 1.373. This peak factor is applied to, and affects, the entire 168 hour model run. The overall daily peak factor was developed using the District's historical records. In all cases, the model demonstrates that the proposed improvements provide pressures greater than 30 psi with the exception of two non-service junctions which are noted under a following Section – Network Tables. Increased demand using the 1.373 peak day factor increases pump starts and run times only slightly. In a 168 hour (one week) model at a steady peaking factor of 1.373, the pump run 14 times instead of the standard 12 times with a daily peak of 1.0. Pressures remain the same.

It should be noted that both of these model runs are subject to the same hourly peaking factors previously discussed.

Minor Losses

The modeling did not factor in minor losses. On a model of this magnitude, variations in actual usage far outweigh the minimal effect of minor losses.

Network Table

A six page Network Table (See Exhibit E) represents the proposed tower model run using hourly fluctuations with the peak hourly demand of 1.82 times average flow. Further, this run represents the 1.373 overall peak factor to account for peak days. Based on the Daily House Pattern, the peak hour occurs daily 5:00 P.M. (1700 Hours).

The Network Table (Exhibit E) represents the model interconnecting the two systems.

Each of the two independent systems has been modeled separately and those models are in digital form on the disk provided with this report.

An analysis of the models of each system shows that each system is capable of operating as constructed and does so under all conditions.

The model interconnecting the two systems shows pressures at two junctions to be 23.79 psi and 24.21 psi under extreme demand conditions. No potential customers are below 20 psi.

Description of Exhibits

Exhibit F

This exhibit is a print out of the modeling network. It is printed with the aerial background in order to assist the user in locating specific areas on the model network printout. The user will have to go to the digital disk furnished with this report to access specific information.

Exhibit B

This exhibit has an aerial base and shows the following information:

1. The District boundaries along with the sub-Districts
2. The location of the Clearwater / Mission Hills area
3. The location of the Cedar Heights area
4. The location of Old Kinderhook
5. The proposed location of the interconnecting line between the two systems
6. The proposed location of the elevated storage tank
7. The proposed location of the alternate ground storage reservoir.

Looping of Mains

The Consultant reviewed the possibility of looping the existing water distribution lines within each of the project areas. Proposed system loops were hydraulically modeled and indicated there was no significant impact on service pressure or in the operation of the various wells. Usage could not be reasonably increased to create a need for looping the system given each system's overall nature and size.

Each existing system is configured in a linear fashion, such that the water flows directly from a well to a storage tank, located at a high point, and then lakeward through a distribution line to the point of service. Total line lengths throughout the system are relatively short and this "shotgun" approach to service does not lend itself to looping.

At Clearwater, distribution branches are typically less than 800 feet in length. At Cedar Heights, the distribution line serving all of the buildings is approximately 1,500 feet in length. In each case, looping the system would require installing a line overhill in very rough terrain. Construction costs, not including easements,

would be significant. Given these circumstances and the limited resulting benefit, the Consultant considers other upgrades of the system to be of a higher priority.

Finished Water Storage:

Clearwater

Evaluate Storage for Modeling

System storage is provided by five (5) ground storage tanks. Three of the tanks are approximately 3,750 gallons each (8' Diameter X 10' Tall). The other two tanks are approximately 4,500 gallons each (8' Diameter X 12' Tall). However, the useable volume of these two taller tanks is only 3,750 gallons each because the elevation difference between the tanks won't allow the taller tanks to be filled to capacity without overflowing the shorter ground storage tanks. System pressure is provided by two high service booster pumps and two hydropneumatic pressure tanks. The first pressure tank is approximately 3,000 gallons (6'x15') and the second is approximately 3,750 gallons (6'x18').

Evaluate Maintenance

Records provided by the District do not show that any maintenance of the tanks has occurred since installation.

The Consultant recommends that the interior and exterior of the tanks be inspected and that the inspection company prepare an inspection report complete with an estimated cost of proposed improvements.

The two taller ground storage tanks do not have overflow pipes. The top two feet of these tanks never fill for the reason stated previously. The three adjoining tanks are two feet lower and overflow, or shut off the pumps, at the lower level.

Cedar Heights

Evaluate Storage for Modeling

The well discharges through a dedicated four-inch PVC line to an 80 foot tall and 8 foot diameter standpipe. The overflow is 78 feet above the tank base at an elevation of 874 feet mean sea level.

Evaluate Maintenance

The standpipe was a previously owned tank that was moved to this location.

The Consultant recommends that the interior and exterior of the tanks be inspected and that the inspection company prepare an inspection report complete with an estimated cost of proposed improvements.

Pumps, Pump Facilities and Controls

Neither system is set up to supply auxiliary power, either via permanent or portable generator, to any of the pumping components.

The Consultant recommends that a connection be installed on the outside of each well house that would accommodate a portable generator.

Clearwater

The deep well submersible pump pumps through the well house to the ground storage reservoirs. The elevation of the ground storage reservoirs controls the submersible pump off/on cycle. There are two high service booster pumps drawing from the ground storage reservoir that pump to two hydro-pneumatic tanks which pressurize the system.

Cedar Heights

The well pump starts at a low pressure of 66 psi and stops at a pressure of 70 psi measured at the well head. The well head registers a pressure 38 psi higher than at the base of the standpipe. This corresponds to a low pressure of 28 psi at the pressure gauge located approximately three feet above the base of the tower when the well pump begins operation. The well system also features two small diaphragm tanks that buffer pressure fluctuations during pump startup and prevent water hammer, which can cause the pump controls to shut off the well pump.

Monitoring, Reporting and Data Verification:

The District has a contract with Lake of the Ozarks Water and Sewer (L.O.W.S.), a State certified operator and lab that services the Lake of the Ozarks area.

L.O.W.S. is responsible for monitoring, reporting, and operating the system. They also collect samples and complete the required testing and data verification (See Exhibit I).

Water System Management and Operations

The District has a contract with Property Management Professionals, LLC. Ms. Bonnie Burton, the manager of that firm, serves as District Clerk (See Exhibit H).

Ms. Burton is responsible for the management of the water and sewer systems and the management of both Condominium Associations.

Operator Compliance with State Requirements

L.O.W.S., the contract operator, has successfully operated the systems to maintain compliance with the State requirements. L.O.W.S. has three certified water operators. The Certificate Levels covered are DS-III, DS-I, C and D.

Review Administrative Orders:

There is one Compliance Agreement that affects the District (See Exhibit G).

The Compliance Agreement became effective May 2, 2013, and is basically in regard to the well at Cedar Heights Condominiums. This well is not State Approved.

Of the several alternatives listed in the Compliance Agreement regarding the well, the Consultant has determined that drilling a new State Approved well is the best alternative.

Further discussion on this issue can be found in the following Sections on Consolidation, Summary, and Conclusions.

Review Adequacy to Meet Guidelines:

Financial

The District has Revenue Bonds in the amount of $4,000,000.00 dated June, 2010.

In March, 2011, a total of $1,650,000 was spent purchasing the two water and sewer systems serving the condominium complexes. Monies were also spent on the extension of the water distribution and sewer collection system to Mission Hills Subdivision.

The District's Board, along with their legal advisor, will have to determine the District's priorities and the amount of financial support they can contribute to improvement projects.

The District, with their current rate structures for water and sewer, are making timely payments to the bonding company, D. A. Davidson.

Consolidation:

Evaluate Connection of the Two Water Systems

Based on the location and configuration of the two systems, and the model created, it is impossible to construct a line to inter-connect the two systems without an intermediate storage facility to create pressure. The hydraulic model is shown in Exhibit E.

A well and water storage facility needs to be constructed between the two systems to serve as the primary supply and storage for each of the systems.

The existing systems would serve as backup for the new system chosen.

Alternate No. 1 is a well and water storage facility constructed at the intersection of Clearwater Drive and Ozark Isle Drive.

Alternate No. 2 is a well and ground storage reservoir constructed at the intersection of Old Fifty-Four Road and Clearwater Drive.

Alternate No. 3 is a routing alternate through the Old Kinderhook system utilizing the well and water storage facility proposed in Alternate No. 1.

A cost estimate for each of the Alternates has been included as Exhibit J. Preceding the costs estimates for the specific Alternates is an estimated cost for the supply, storage and distribution items which can be applied to any of the alternates which might be chosen.

Evaluate Potential of Including Other Systems

Attempts to arrange a meeting with Old Kinderhook personnel have been unsuccessful. The lack of response may be indicative of a lack of interest.

This report contains reference to potential areas where the two entities could possibly enter into a mutual agreement that would be beneficial to both parties.

Identification of Area for Potential Expansion

Once the two systems are connected, the system has the potential for two areas of expansion.

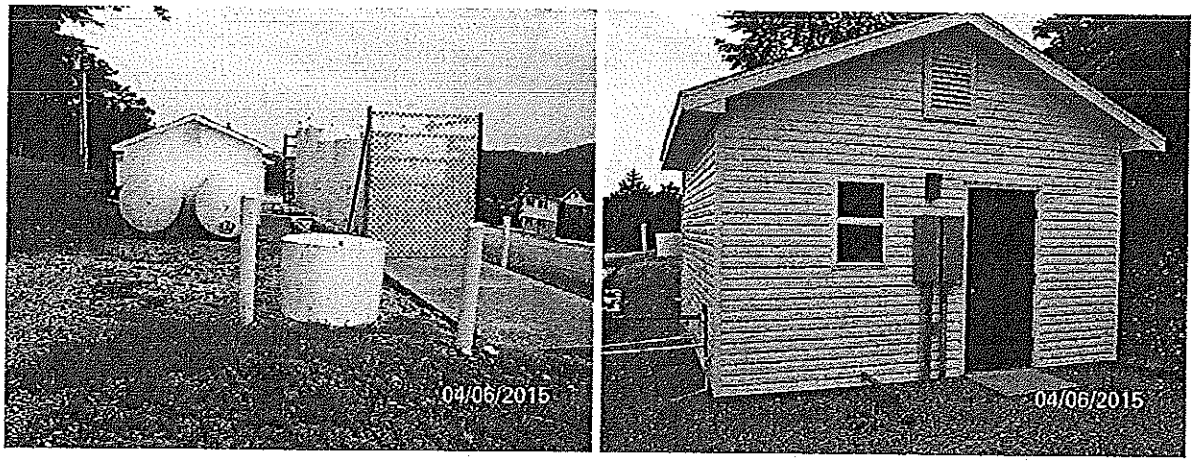
1. An extension of the Cedar Heights system to the North to serve an area of Lake Frontage.
2. An extension of the Clearwater system to the East to serve the Wa-Ha-Ma Subdivision and the Isle of the Ozarks Subdivision.

A feasibility and engineering study would have to be made at such a time that these areas would show an interest.

Included under Exhibit J is an estimate of costs for the supply, storage and distribution improvements which can be used by the District for budget purposes.

Security:

Clearwater



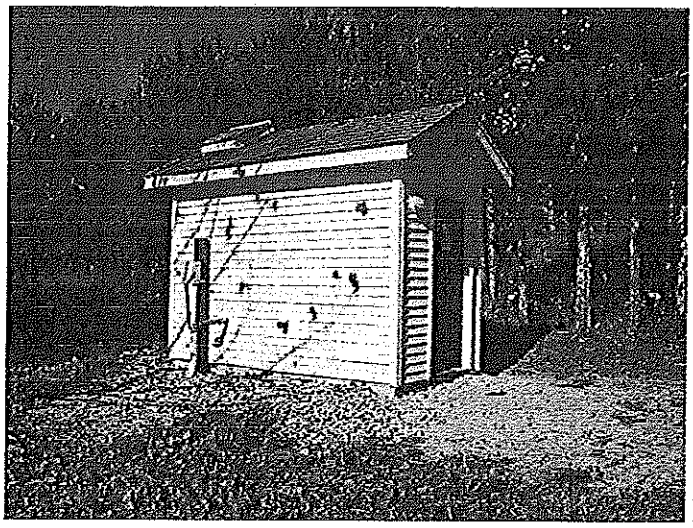
Picture 1 is the Clearwater well, pressure tanks and ground storage reservoirs looking from South to North. Picture 2 is the same area from the North side looking south.

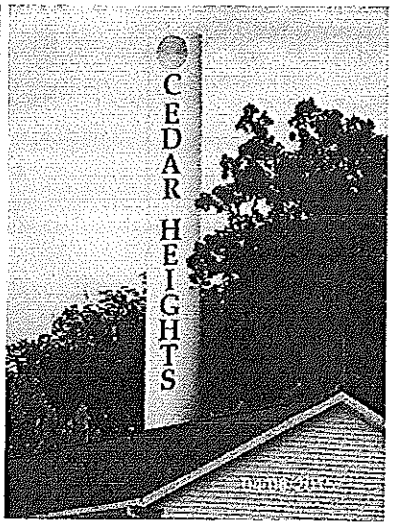
The facility was cited on January 16, 2013, by DNR in a report of inspection for *"not have[ing] security fencing around the ground storage tank and the well."*

The District has placed a secure structure over the well.

The Consultant recommends that the well, well house and ground storage tanks facility be enclosed with security fencing.

Cedar Heights





Picture one is the Cedar Heights well house. Picture two is the Cedar Heights standpipe.

The facility was cited for lack of security by the DNR in a Report of Inspection dated February 22, 2013,

> *15. The public water system does not have security fencing around the standpipe.*
>
> *Safety, security and risk-reduction measures are important, and should be implemented to reduce the water system's vulnerabilities. All water system facilities should be evaluated and re-designed to include measures to provide protection against vandalism, sabotage, terrorist acts, or access by unauthorized personnel. These protection measures should include: a) locked security doors; b) windows sized or barred to prevent access; and, c) security fencing around vulnerable areas of drinking water facilities (for example, wellheads, manholes, pump houses, treatment buildings, and storage tanks).*
>
> *Construct a chain link fence with a lockable gate around the standpipe.*

Since the above referenced report of inspection included reference to the well; this office would suggest that fencing be installed around the standpipe. The engineer considers the well a priority. Further, it is suggested that the security

issues at the proposed new well and well house at Cedar Heights be addressed at the time of construction.

Summary:

The stated purpose of this report is to provide an engineering analysis of the District's water system to achieve and maintain technical, managerial, and financial (TMF) capability.

- Certified operator

  L.O.W.S. the contract operator has three certified water operators. The certificate levels covered are: DS-III, DS-I, C and D.

- Pressure issues below 20 psi

  The District is able to maintain pressures throughout the existing system of greater than 30 psi to all customers.

- Updated distribution map

  This report provides an updated distribution map and EPANET hydraulic model of the system.

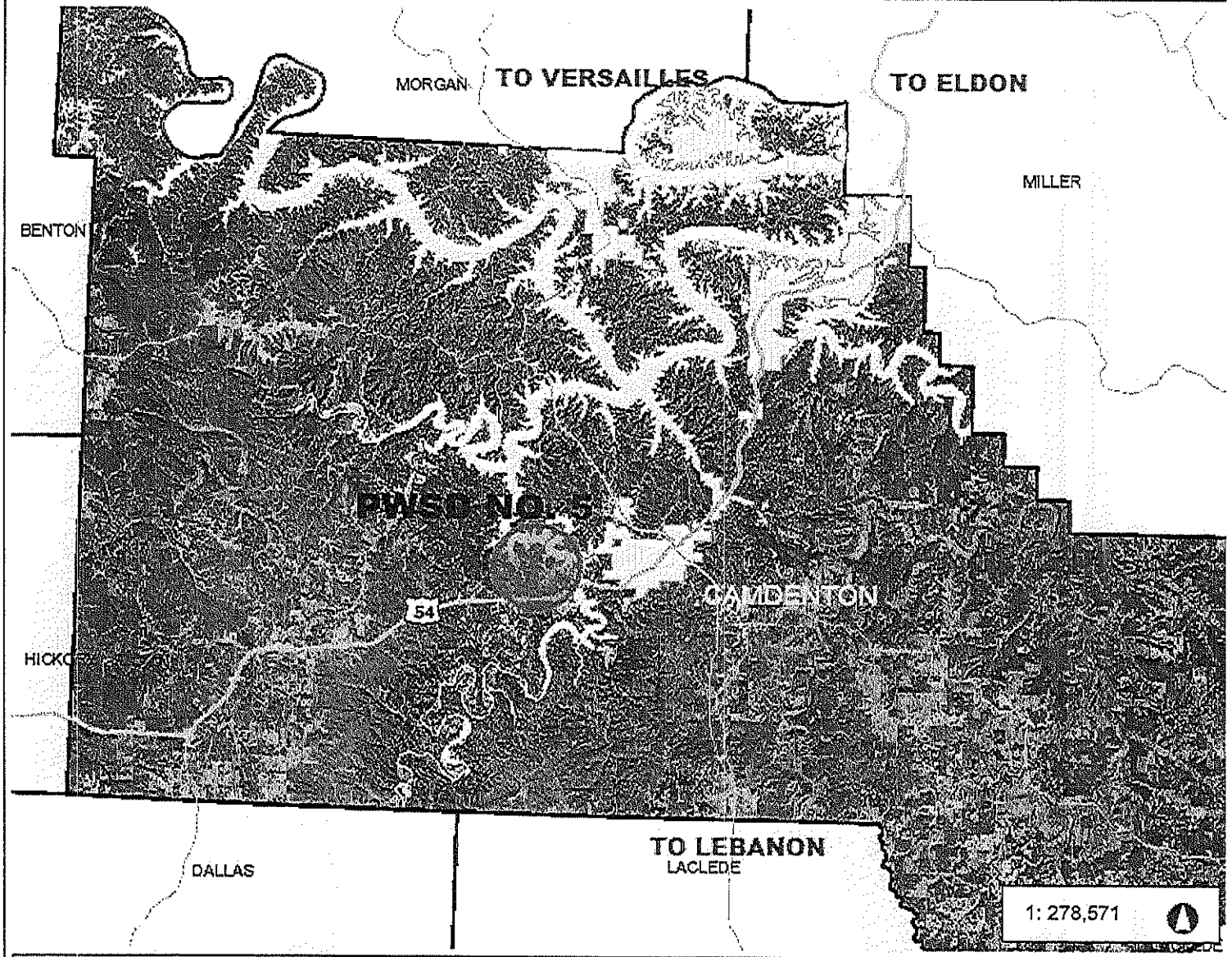
- Asset inventory

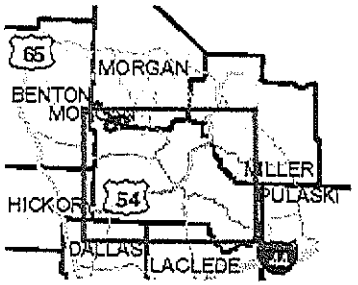
  The District does not have an asset inventory.

- Operation reserve

  The District's operation reserve is adequate.

Camden County, MO





Legend

- Highway
  - Interstate Highway
  - US Highway
  - Numbered State Highway
  - Lettered State Highway
- Corporate Limit
- Lake of Ozarks
- County Boundary

1: 278,571

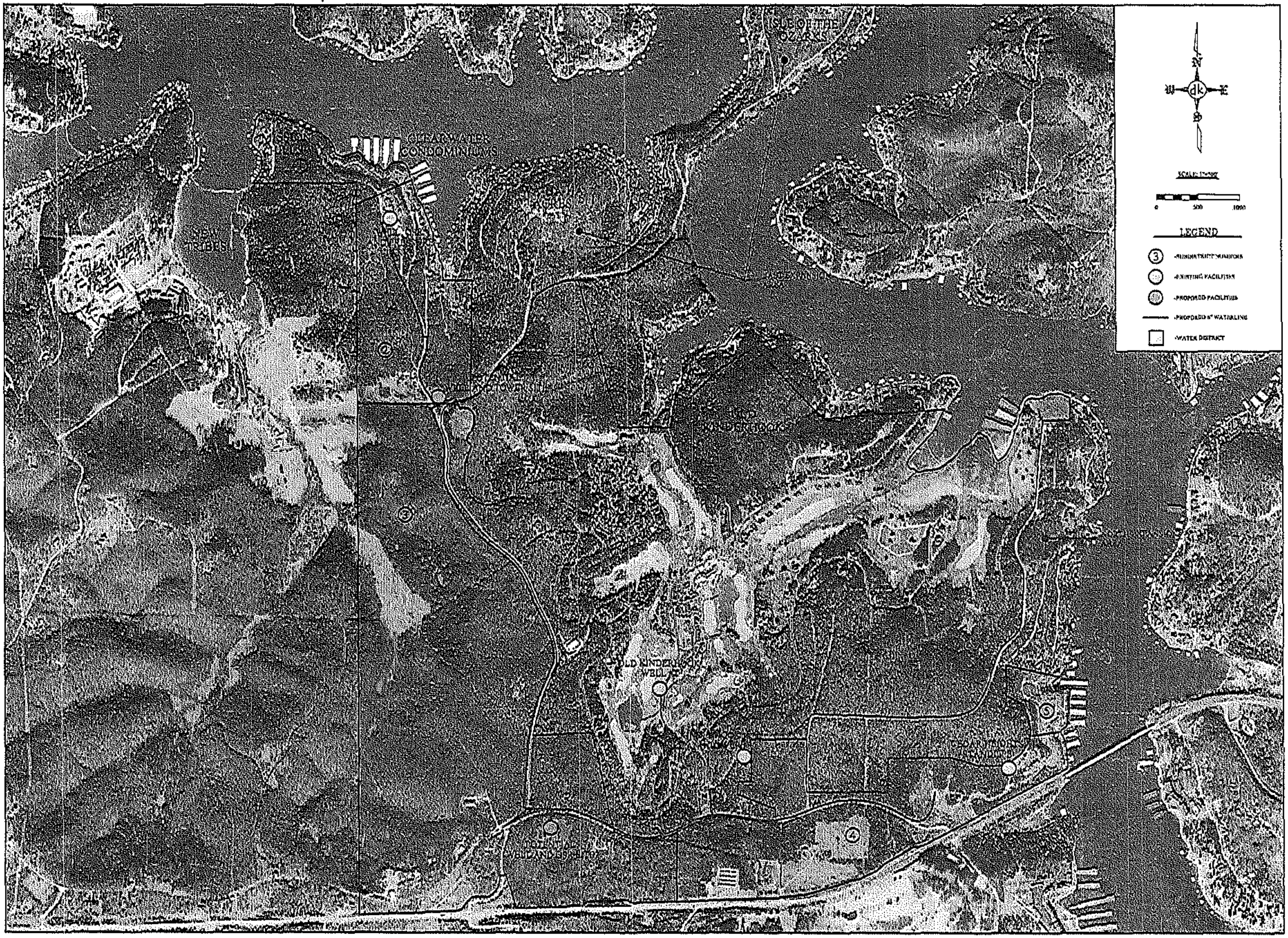
46,428.5 0 23,214.26 46,428.5 Feet

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

EXHIBIT A

PWSD 1.4.7-000072



dk
CONSULTA

CAMDEN COUNTY
PUBLIC WATER SUPPLY DISTRICT NO. 5

REVISIONS:

PROJECT NO:
DATE:
SCALE:
DRAWN BY:
SHEET TITLE:

LAYO
MA

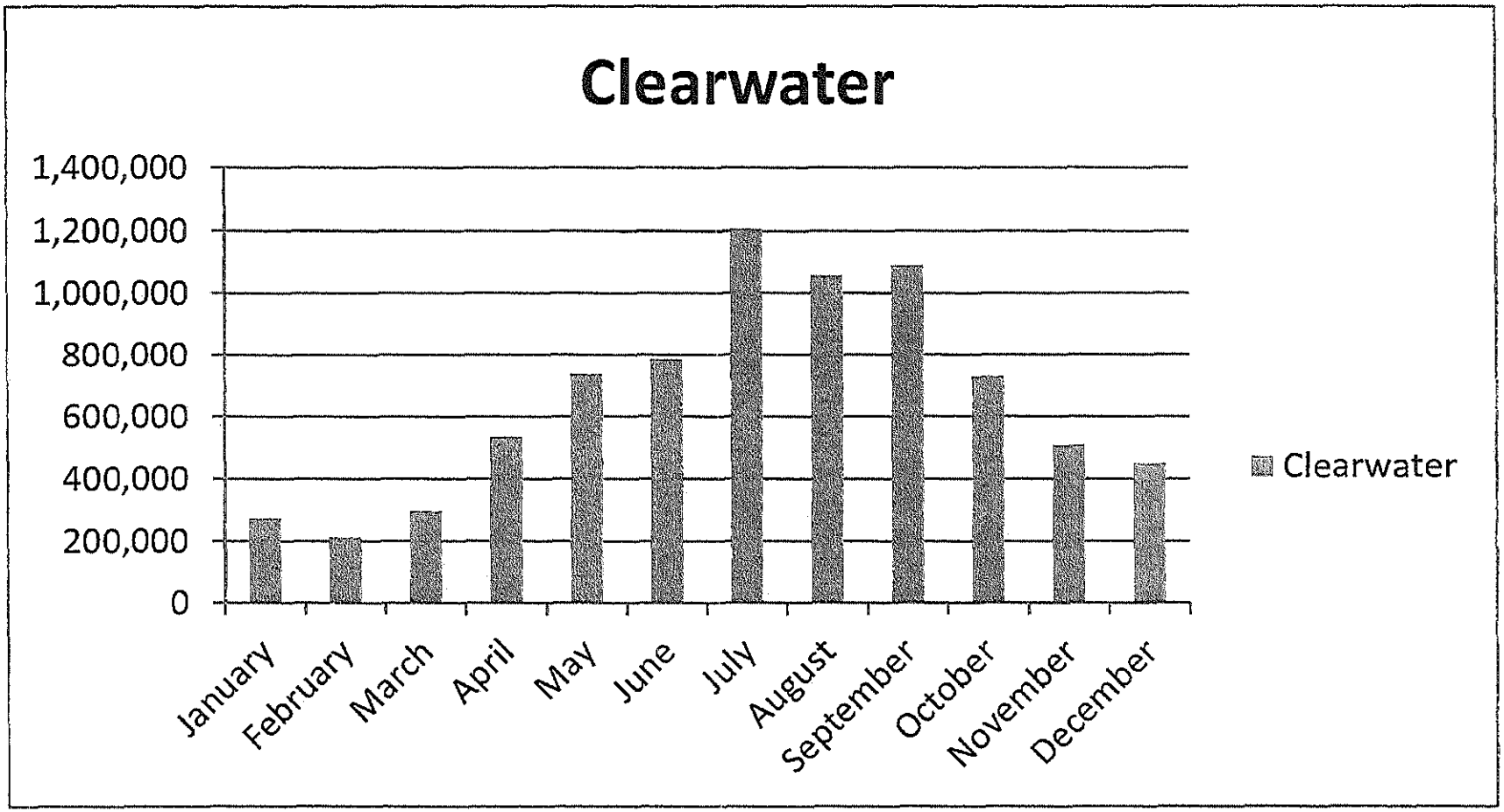
SHEET NO:
EXHIB

PWSD 1.4.7-000073

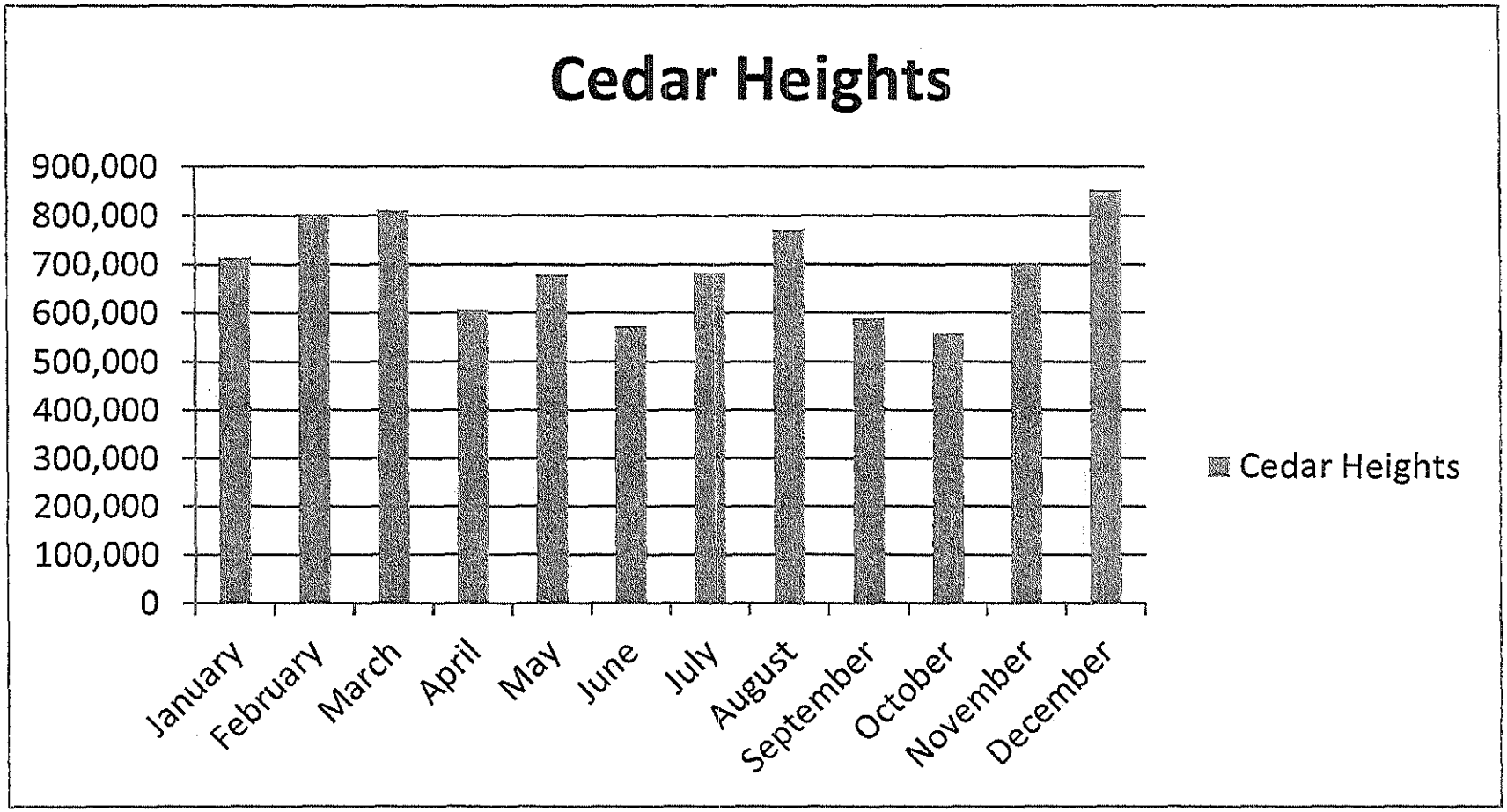
Graphs – Water Usage

EXHIBIT C

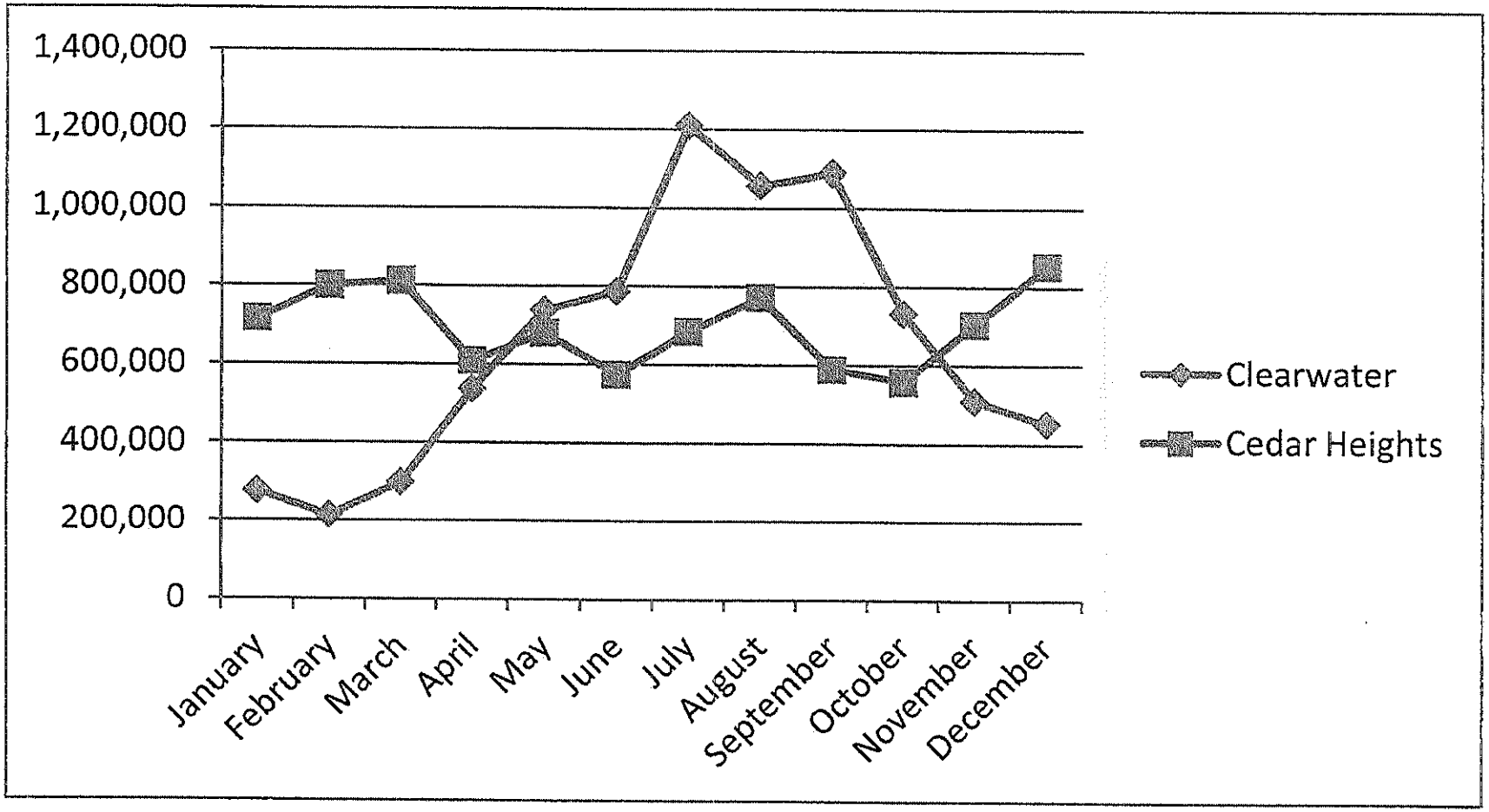
Clearwater Condominiums
2015 Water Usage



Cedar Heights Condominium
2015 Water Usage



2015
Monthly Water Usage
Condominiums

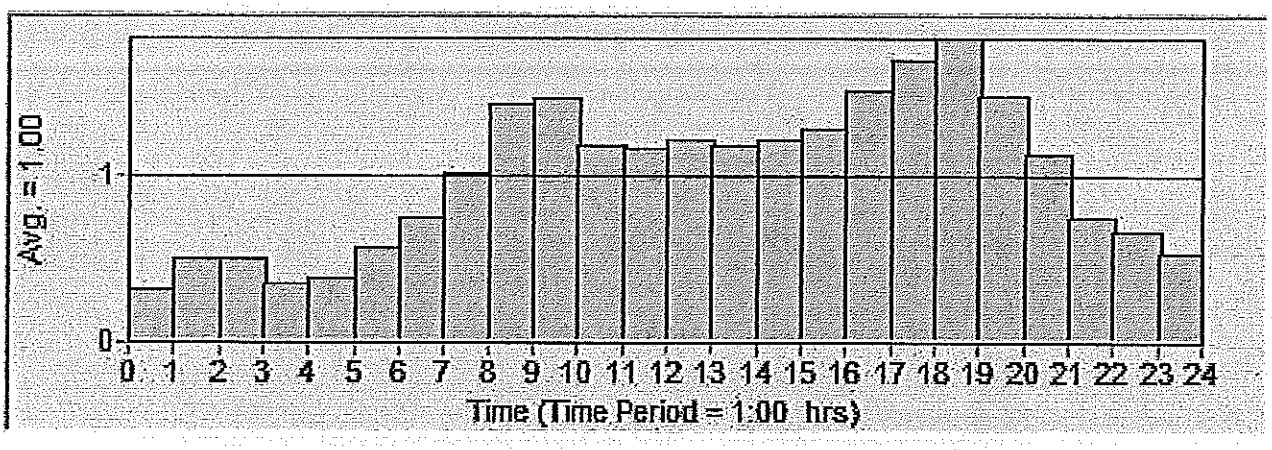


Daily Patterns Graph and Table Format

EXHIBIT D

Pattern ID	Description
HOUSE	

Time Period	1	2	3	4	5	6	7	8
Multiplier	0.2	0.5	0.5	0.35	0.38	0.57	0.75	1.0



darrenkrehbiel
CONSULTANTS LLC

Camden PWSD # 5 Hydraulic Model

Pattern HOUSE

Period	Multiplier
1	0.32
2	0.5
3	0.5
4	0.35
5	0.38
6	0.57
7	0.75
8	1.01
9	1.42
10	1.46
11	1.18
12	1.15
13	1.21
14	1.18
15	1.2
16	1.28
17	1.51
18	1.68
19	1.82
20	1.47
21	1.12
22	0.75
23	0.66
24	0.53

darrenkrehbiel
CONSULTANTS LLC

Computer Printout of Model Results

Exhibit E

Camden PWSD # 5 Hydraulic Model

Network Table - Nodes at 17:00 Hrs

Node ID	Base Demand GPM	Demand GPM	Pressure psi
Resvr 76	#N/A	0.00	0.00
Resvr 37	#N/A	0.00	0.00
Resvr 79	#N/A	0.00	0.00
Tank 82	#N/A	0.00	4.32
Junc 93	0	0.00	4.32
Junc 90	0	0.00	4.32
Junc 87	0	0.00	4.32
Junc 125	0	0.00	25.45
Junc 127	0	0.00	25.87
Junc 78	0	0.00	26.38
Tank 18	#N/A	0.00	34.16
Junc 2	0.00	0.00	37.62
Junc 3	0.00	0.00	44.97
Junc 124	0	0.00	45.78
Junc 4	0.00	0.00	48.00
Junc 123	0	0.00	48.37
Junc 126	0	0.00	48.77
Junc 5	0.00	0.00	56.65
Tank 98	#N/A	0.00	62.70
Junc 38	0.00	0.00	65.73
Junc 7	0.00	0.00	67.46
Junc 83	0	0.00	68.52
Junc 122	0	0.00	68.72
Junc 84	0	0.00	70.23
Junc 6	0.00	0.00	70.92

Camden PWSD # 5 Hydraulic Model

Node ID	Base Demand GPM	Demand GPM	Pressure psi
Junc 121	0	0.00	70.92
Junc 119	0	0.00	71.38
Tank 36	#N/A	-81.42	72.86
Junc 85	0	0.00	73.20
Junc 118	0	0.00	76.60
Junc 115	0	0.00	77.09
Junc 116	0	0.00	79.65
Junc 129	0	0.00	83.29
Junc 128	0	0.00	84.19
Junc 86	0	0.00	85.26
Junc 88	0	0.00	96.47
Junc 91	0	0.00	102.49
Junc 8	0.00	0.00	104.38
Junc 99	0	0.00	104.48
Junc 92	0	0.00	105.48
Junc 97	0	0.00	107.53
Junc 89	0	0.00	107.69
Junc 19	0	0.00	108.11
Junc 130	0	0.00	109.64
Junc 96	0	0.00	111.45
Junc 41	0.00	0.00	111.82
Junc 39	0.00	0.00	111.82
Junc 42	0.00	0.00	115.71
Junc 95	0	0.00	115.81
Junc 9	0.00	0.00	119.08
Junc 43	2.53	4.25	120.03

Camden PWSD # 5 Hydraulic Model

Node ID	Base Demand GPM	Demand GPM	Pressure psi
Junc 94	0	0.00	121.44
Junc 10	0.00	0.00	121.67
Junc 44	0.00	0.00	121.76
Junc 11	0.00	0.00	123.41
Junc 21	2.11	3.54	123.82
Junc 20	0.00	0.00	123.83
Junc 12	0.00	0.00	124.28
Junc 15	0.00	0.00	124.73
Junc 13	0.00	0.00	126.44
Junc 45	0.00	0.00	126.51
Junc 131	0	0.00	130.37
Junc 60	0.00	0.00	130.37
Junc 46	0.00	0.00	131.69
Junc 14	0.00	0.00	133.36
Junc 61	0.25	0.42	133.39
Junc 59	0.00	0.00	133.40
Junc 17	0.00	0.00	134.23
Junc 16	0.00	0.00	134.24
Junc 40	2.53	4.25	134.31
Junc 47	0.00	0.00	135.14
Junc 62	0.25	0.42	135.56
Junc 63	0.25	0.42	136.42
Junc 58	0.00	0.00	137.29
Junc 29	0.00	0.00	138.94
Junc 30	2.11	3.54	138.94
Junc 34	2.11	3.54	140.24

Camden PWSD # 5 Hydraulic Model

Node ID	Base Demand GPM	Demand GPM	Pressure psi
Junc 31	2.11	3.54	140.24
Junc 57	0.00	0.00	140.31
Junc 33	0.00	0.00	140.67
Junc 28	0.00	0.00	140.67
Junc 32	0.00	0.00	141.10
Junc 22	2.11	3.54	141.12
Junc 64	0.25	0.42	142.04
Junc 48	0.00	0.00	142.49
Junc 132	0	0.00	142.90
Junc 35	2.11	3.54	143.27
Junc 26	0.00	0.00	145.00
Junc 27	2.11	3.54	145.86
Junc 65	0.25	0.42	146.37
Junc 25	0.00	0.00	146.73
Junc 23	0.00	0.00	147.16
Junc 66	0.25	0.42	147.23
Junc 56	0.00	0.00	147.23
Junc 77	0	0.00	147.46
Junc 69	0.25	0.42	148.10
Junc 54	2.53	4.25	148.10
Junc 52	0.00	0.00	148.10
Junc 49	0.00	0.00	148.10
Junc 73	0.25	0.42	148.53
Junc 72	0.25	0.42	148.53
Junc 55	0.00	0.00	148.53
Junc 74	0.25	0.42	148.96

Camden PWSD # 5 Hydraulic Model

Node ID	Base Demand GPM	Demand GPM	Pressure psi
Junc 106	2.53	4.25	148.97
Junc 108	0	0.00	148.97
Junc 75	0.25	0.42	149.39
Junc 68	0.25	0.42	149.39
Junc 71	0.25	0.42	149.83
Junc 53	2.53	4.25	149.83
Junc 104	0	0.00	149.83
Junc 24	2.11	3.54	150.19
Junc 117	2.53	4.25	150.27
Junc 70	0.25	0.42	150.69
Junc 67	0.25	0.42	150.69
Junc 113	2.53	4.25	151.13
Junc 109	0	0.00	151.13
Junc 120	2.53	4.25	151.56
Junc 50	0.00	0.00	152.00
Junc 103	0	0.00	152.42
Junc 51	0.00	0.00	152.43
Junc 112	2.53	4.25	152.86
Junc 110	0	0.00	152.86
Junc 114	2.53	4.25	153.29
Junc 101	0	0.00	154.15
Junc 107	0	0.00	154.15
Junc 105	0	0.00	154.15
Junc 102	2.53	4.25	156.75
Junc 1	0	0.00	243.89
Junc 80	0	0.00	259.46

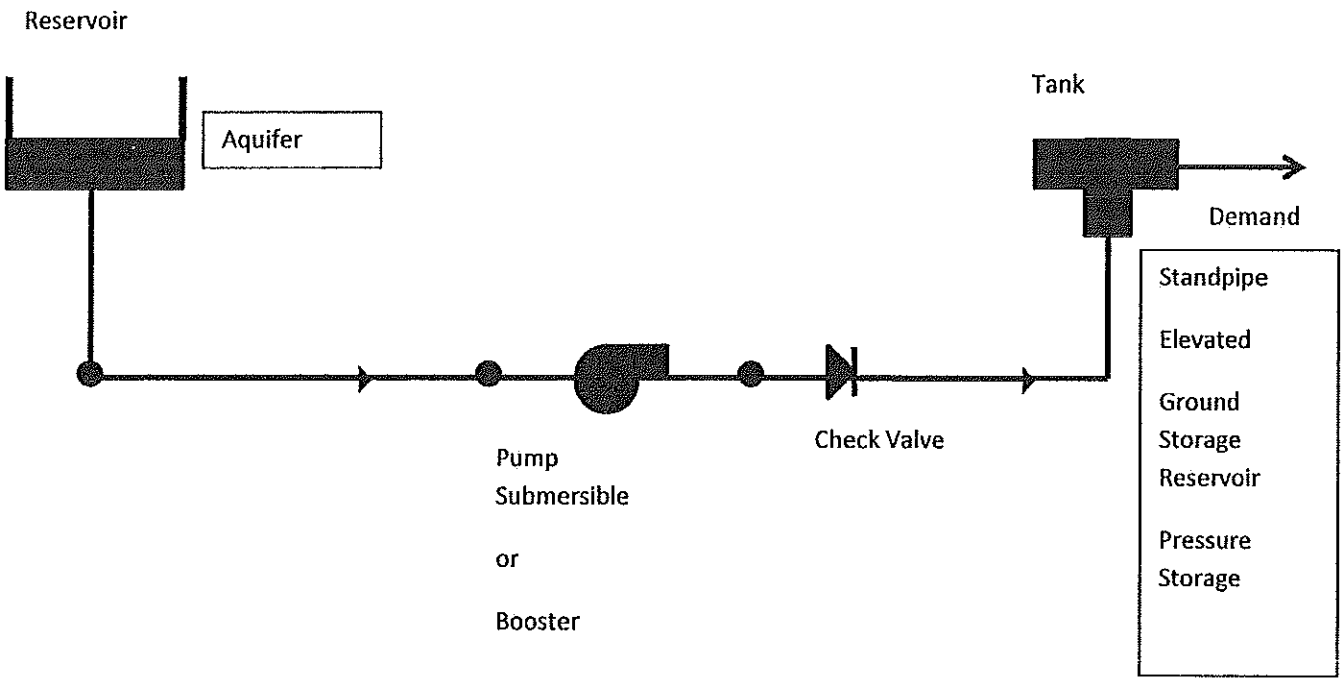
Camden PWSD # 5 Hydraulic Model

Node ID	Base Demand GPM	Demand GPM	Pressure psi
Junc 81	0	0.00	375.56

Enlargements of Model Well Layouts

Model and System Layout Follow in Envelope

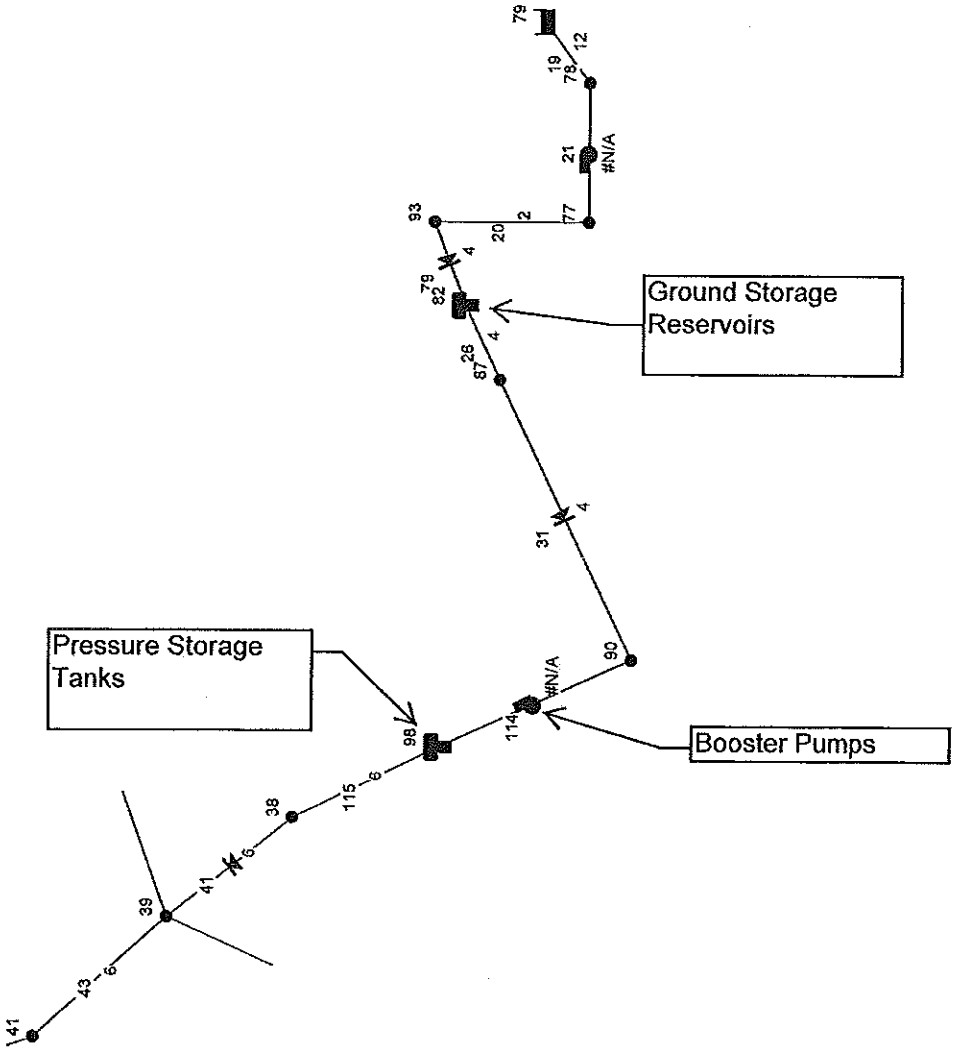
EXHIBIT F



Legend for Model Documents

darrenkrehbiel CONSULTANTS LLC

Camden PWSD # 5 Hydraulic Model



Clearwater Condominiums

Camden PWSD # 5 Hydraulic Model

Cedar Heights Condominiums

PWSD 1.4.7-000091

darrenkrehbiel CONSULTANTS LLC

Camden PWSD # 5 Hydraulic Model

Proposed New Tower
Alternate No. 1

PWSD 1.4.7-000092

darrenkrehbiel
CONSULTANTS LLC

Compliance Agreement

Exhibit G

COMPLIANCE AGREEMENT

This Compliance Agreement is made by and between the Missouri Department of Natural Resources (the Department) and the owner of *Cedar Heights Condominiums* located on Cedar Heights Drive, Camdenton, in Camden County, Missouri. The owner of *Cedar Heights Condominiums* public water system is *Camden County Public Water Supply District #5*. This Compliance Agreement becomes effective on the date it is signed by the Department

The Department is a duly authorized state agency created under Chapter 640, RSMo, to administer the programs assigned to it related to environmental control and the conservation and management of natural resources; and

The Department administers the provisions of the Missouri Safe Drinking Water Law, §§ 640.100 through 640.140 of the Revised Statutes of Missouri (as amended); and

The Department is responsible for compliance with the Missouri Safe Drinking Water Law, §§ 640.100 through 640.140, RSMo, and the rules and regulations promulgated thereunder; and

Cedar Heights Condominiums holds public water system identification number MO*3031383* for a public water system dispensing drinking water to the public; and,

Cedar Heights Condominiums operates as a public water system that serves piped water for human consumption with at least fifteen (15) service connections or regularly serves twenty-five (25) or more people for sixty (60) or more days per year and, therefore, meets the definition of a public water system as set forth in 10 CSR 60-2.015; and,

The Department has determined that** Cedar Heights Condominiums **is dispensing water to the public utilizing a well that does not meet acceptable construction standards for a public water system and that was constructed after the "grandfathering" date for a public water

system well (Oct. 1, 1979 for community public water systems or July 27, 1987 for non-community public water systems); and,

The construction of water wells not meeting the standards creates an increased risk of exposure to microbiological and/or chemical contaminants to those served by wells that meet construction standards. Substandard wells also create an increased risk of contamination of ground water resources which can adversely affect neighboring private and public wells. Furthermore, wells constructed without proper casing, wells constructed to an inappropriate depth, and wells lacking adequate backflow protection give an unfair economic advantage compared to the cost of wells meeting public water system construction standards; and,

The Department and *Cedar Heights Condominiums* have discussed terms upon which to amicably resolve any and all claims that may be made against *Cedar Heights Condominiums* for the alleged violations set forth herein without *Cedar Heights Condominiums* admitting the validity or accuracy of any such claims.

In consideration of the mutual promises contained herein and other good and valuable consideration, the parties agree as follows:

1. The provisions of this Compliance Agreement shall apply to and be binding upon the parties to this Compliance Agreement, their heirs, assignees, successors, agents, subsidiaries, affiliates, and lessees, including the officers, agents, servants, corporations and any persons acting under, through, or for the parties agreeing hereto.
2. Nothing in this agreement shall alter or otherwise affect the obligation of *Cedar Heights Condominiums* to comply with all applicable federal, state, and local environmental laws and regulations and applicable permits.

3. The Department and *Cedar Heights Condominiums* agree that the Department will allow the continued use of the existing well currently serving *Cedar Heights Condominiums* provided that the well produces water meeting drinking water standards specified in Section 6 of this Agreement. If the well fails to produce water meeting those standards, *Cedar Heights Condominiums* shall implement a resolution as indicated in Section 7 of this Agreement.

4. To ensure that the water being produced by this well meets required standards, *Cedar Heights Condominiums* agrees to allow the Department to perform increased monitoring within ***ninety (90) days*** from the effective date of this Agreement, as described below:

   a. In addition to monthly routine microbiological monitoring required by regulation, *Cedar Heights Condominiums* agrees to allow the Department to collect ***five (5) microbiological samples within ninety (90) days*** taken directly from the well through a dedicated sample tap located prior to any treatment or storage/pressure tank. *Cedar Heights Condominiums* shall apply no disinfectant into the well or the water line prior to the dedicated sample tap;

   b. *Cedar Heights Condominiums* agrees to allow the Department to collect ***one (1) nitrate/nitrite sample within ninety (90) days*** directly from the well through a dedicated sample tap located prior to any treatment or storage/pressure tank. Should any sample result exceed the Maximum Contaminant Level (MCL), *Cedar Heights Condominiums* agrees to collect a confirmation sample. The results of the initial and confirmation samples shall be averaged to determine compliance with Section 6 of this Agreement;

c. In addition to monthly routine microbiological monitoring required by regulation and the additional monitoring performed by the Department, *Cedar Heights Condominiums* agrees to collect ***one (1) monthly microbiological sample*** taken directly from the well through a dedicated sample tap located prior to any treatment or storage/pressure tank. *Cedar Heights Condominiums* shall apply no disinfectant into the well or the water line prior to the dedicated sample tap. The additional monthly bacteriological source water assessment samples shall be collected for a period of 12 months per the provisions of 10 CSR 60-4.025(3) (B) and sampling shall commence in the first month following execution of this *Compliance Agreement*;

d. *Cedar Heights Condominiums* applies a chemical disinfectant, specifically liquid chlorine, and detention is supplied by the existing standpipe. At the lowest normal operating level, the standpipe provides approximately 24,326 gallons. The system can provide 99.99% virus inactivation (4-log) if the system maintains a minimum residual chlorine concentration of 0.2 milligrams per liter (mg/l) as free chlorine. Regardless of minimum 4-log requirements, any system providing chlorine disinfection must maintain a minimum free chlorine concentration of 0.5 mg/l (free) at the entrance to distribution and a total residual chlorine concentration of 0.2 mg/l (total) at all points in the distribution. *Cedar Heights Condominiums* agrees to maintain the chlorine disinfectant under the provisions of 10 CSR 60-4.055;

e. *Cedar Heights Condominiums* agrees to follow the monitoring provisions of 10 CSR 60-4.025(4) (B)3.(A)(II), which requires the system to monitor the residual chlorine daily, at a location approved by the Department and record the residual disinfectant concentration. The daily results will be submitted to the Department monthly, no later than the 10th day of the month following the end of the calendar month samples were collected. For purposes of this agreement, the approved disinfectant residual monitoring location is the exterior faucet located at the base of the standpipe. These monitoring provisions shall be maintained through the successful completion of this agreement. Notwithstanding the referenced monitoring provisions, the drinking water system will be considered a "Triggered Monitoring" system under the Groundwater Rule.

5. Samples collected under terms of this Agreement shall be submitted to a laboratory certified by the Department, or as otherwise directed by the Department, to conduct the appropriate drinking water analyses.

6. Should contamination or violations as specified in (a) through (e) below be detected, *Cedar Heights Condominiums* shall immediately notify the Department and discuss appropriate resolution and shall continue increased monitoring as directed by the Department until the resolution is in place. Barring compelling factors that warrant other actions determined by the Department, resolution shall consist of *Cedar Heights Condominiums* constructing a new well to meet construction standards appropriate to a public water system well, installing a new Department-approved treatment facility to replace the existing unapproved treatment facility, or connecting to a Department-approved, permitted public water system.

a. One (1) *E. coli* positive source water sample requires five (5) additional source water samples. If one of the five (5) additional source water samples is *E. coli* positive resulting in a total of two (2) *E. coli* positive source water samples;

b. Four (4) or more total coliform MCL violations;

c. Six (6) or more microbiological monitoring violations;

d. Failure to maintain 4-log virus inactivation;

e. Failure to submit monthly chlorine monitoring records;

7. Barring compelling factors warranting other actions as determined by the Department, resolutions may consist of any one or a combination of the following corrective actions as directed by the Department:

a. Correct Significant Deficiencies as identified by the Department that may relate to or cause the unsatisfactory samples;

b. Remove identified sources of contamination;

c. Plug the noncompliant well in accordance with state standards (10 CSR 23-3.110) and obtain a construction permit from the Department and connect to a Department approved public water system;

d. Plug the noncompliant well in accordance with state standards (10 CSR 23-3.110) and obtain a construction permit from the Department and construct a new well to meet construction standards appropriate to a public water system well; or

e. Obtain a construction permit and install a Department-approved treatment facility to replace the existing unapproved treatment system. If the Department directs implementation of this resolution, *Cedar Heights Condominiums* agrees to properly operate and maintain the Department-approved treatment facility, and

perform daily monitoring and record keeping in until otherwise directed by the Department. *Cedar Heights Condominiums* further agrees that the Department may evaluate the treatment facility at any time and subsequently direct other corrective actions.

8. This Agreement does not in any way relieve *Cedar Heights Condominiums* of its regulatory obligation to conduct routine monitoring as specified in 10 CSR 60.4 or to comply with other provisions of the Missouri Safe Drinking Water Law and Regulations.

9. Should it become necessary to implement a resolution as described in Section 7, *Cedar Heights Condominiums* may continue to use the existing well until the resolution is in place, under the following conditions:

   a. *Cedar Heights Condominiums* shall use Department-approved public notification methods, as specified in 10 CSR 60-8, to notify all customers of contaminants detected in the water, including special instructions and precautions as directed by the Department.

   b. *Cedar Heights Condominiums* may, as an alternative, provide bottled water to consumers on a temporary basis but shall obtain prior Department approval and shall provide public notification as required in 10 CSR 60-8 or as directed by the Department.

10. Should it be necessary to construct a new well, the parties agree that:

   a. *Cedar Heights Condominiums* shall promptly contract with an engineer registered in the State of Missouri to submit to the Department for review and approval an engineering report, plans and specifications, construction permit application, and a schedule for installing the new well;

b. Prior to submittal of plans and specifications, *Cedar Heights Condominiums* shall arrange with the Department for a site inspection to ensure that the proposed location of the new well is in conformance with appropriate construction standards relative to separation distance from any potential contamination source or any other well that may be on the property or on any adjoining property and that the proposed well is the type appropriate for this public water system;

   i. No construction shall take place until the Department has issued a construction permit;

c. Upon completion of the construction, the engineer shall certify in writing that the construction has been completed in conformance with the requirements of the construction permit.

11. Upon construction of a new well, *Cedar Heights Condominiums* shall properly abandon and plug the existing well in accordance with 10 CSR 23-3.110.

12. Under no condition shall pellet chlorinators be used or approved as acceptable means of disinfecting a public water system.

13. Upon compliance with the terms and conditions of this Agreement, the Department agrees not to bring or cause to be brought any civil action against *Cedar Heights Condominiums* for the allegations set out herein.

14. It is further understood and agreed that if, at any time after the increased initial monitoring, *Cedar Heights Condominiums* violates MCLs or monitoring requirements, the Department will reevaluate the continued use of the well using criteria established in Section 6 of this Agreement and may require *Cedar Heights Condominiums* to implement an appropriate resolution as described in Section 7 of this Agreement.

15. The terms stated in this Agreement constitute the entire and exclusive Agreement of the parties. There are no other obligations of the parties, be they express or implied, oral or written, except those that are expressly set forth in this Agreement. The terms of this Agreement supersede all previous letters, memoranda of understanding, notes, conversations, and agreements, whether expressed or implied. This Agreement may not be modified verbally.

16. *Cedar Heights Condominiums* agrees to comply with all applicable Missouri Safe Drinking Water Regulations in the future.

17. Upon sale or transfer of ownership, the current owner(s) of *Cedar Heights Condominiums* shall provide a copy of this Agreement to prospective new owner(s) or buyers prior to the transfer of ownership of the property.

18. The parties acknowledge by signing this Agreement that they have read and understand the terms of this Agreement, and that they have the legal authority to bind the entity or agency on whose behalf they sign.

19. As the last party to sign this Agreement, the Department will send *Cedar Heights Condominiums* a copy of the fully-signed Agreement.

SIGNATURES

FOR THE MISSOURI DEPARMENT OF NATURAL RESOURCES

By: _____

Title: _____

Date: _____

FOR (CEDAR HEIGHTS CONDOMINIUMS)

By: _____

Title: _____

Date: _____

Following your signature, return this page to:

Mr. Michael J. Grose
Missouri Department of Natural Resources
2040 W. Woodland
Springfield, MO 65807-5912

029.pdwp.CamdenCoPWSD5.mo3031383.CedarHeightsNCWA.2013.04.11.fy13.NCWA.x.mjg.doc

PROPERTY MANAGEMENT PROFESSIONALS, LLC

Kevin Brown | Bonnie Burton | Scott Frisella

As the Developers and General Contractor for several communities at the Lake we understand the inner workings of your property like no other group can. You can trust PMP for expertise in all areas of property management from site infrastructure and building maintenance to personal service and interaction with Homeowners.

With over 10 years of "***Hands On - On Site***" experience we deliver with Professionalism.

Homeowner Association and Commercial Property Management

P.O Box 189 Osage Beach, Mo 65065 | Office 573.302.1300 Fax 573.302.1301
Info@pmplakeozarks.com | www.pmplakeozarks.com

EXHIBIT H

McDuffey Lab

State approved drinking water laboratory certified by the Missouri Department of Natural Resources.

Bacteriological testing of drinking water

- Get a test kit from us and collect your own water sample and bring it to us for testing. Or we will collect the water sample for an additional charge.
- Public Water System (PWS) testing, reporting and record keeping.
- All tests performed in accordance with EPA standard methods.
- 24 hour and 18 hour tests available.

Wastewater Testing

Wastewater testing for required reporting to the Missouri Department of Natural Resources. Report made out for you, ready to sign and mail to the DNR. Records kept on site of all testing done, for your convenience.

Sieve Analysis

Sandfilter gravel sieve analysis

EXHIBIT I
PWSD 1.4.7-000105

Lake of the Ozarks Water & Sewer
840 Thunder Mountain Road
Camdenton, MO 65020

"THERE'S CLEAN WATER IN YOUR FUTURE"

Lake of the Ozarks Water & Sewer

L.O.W.S.
LAKE OF THE OZARKS WATER & SEWER

"THERE'S CLEAN WATER IN YOUR FUTURE"

LAKE ROAD 5-88
840 THUNDER MOUNTAIN ROAD
CAMDENTON, MO 65020

(573) 346-2092

FAX (573) 346-4676

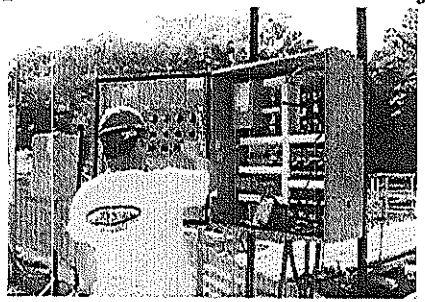
Wastewater Management

State Certified Wastewater Operators

Providing services to:

- Subdivisions
- Condominiums
- Restaurants
- Small communities
- Apartment complexes
- Cities and municipalities

Operation and Maintenance of

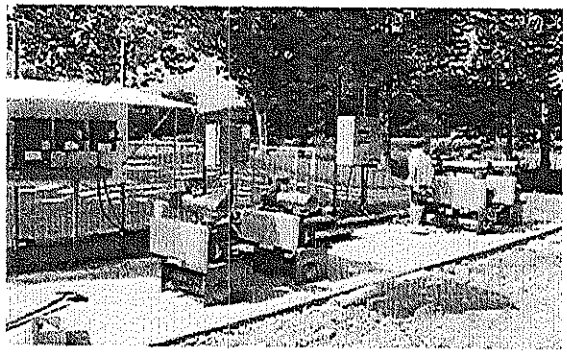


commercial treatment plants and sandfilters

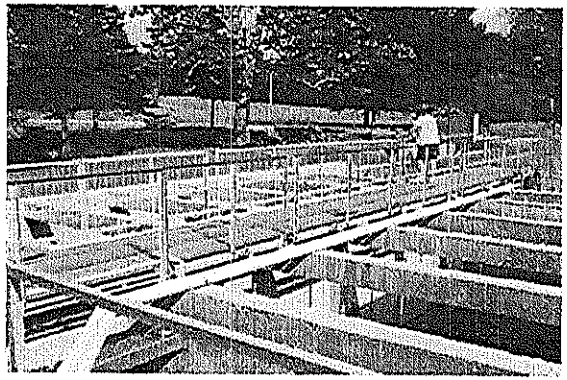
* We manage your plant and provide routine maintenance to keep it performing as designed
* We collect and test the wastewater discharge for reporting to the Missouri Department of Natural Resources.
* We provide NPDES reports and record keeping for the wastewater treatment facility.

PWSD 1 4.7-000106

Construction of new treatment plants



Complete treatment plant repairs
Reliable Service and Repair Work
for Your Peace of Mind



DNR Required
Treatment Plant Renovation
and Expansion

Drinking Water Management

State Certified Drinking Water Operators

L.O.W.S. Personnel have over 60 years of combined experience to serve your Water and Wastewater treatment facility requirements

Providing Services to:

- Homeowners
- Condominiums
- Restaurants
- Apartment complexes
- Subdivisions
- Communities
- Cities

Questions about your drinking water or wastewater facilities?
Call us. We can help!
573 346-2092

Estimated Construction Costs

Alternate No. 1

Alternate No. 2

Alternate No. 3

Exhibit J

Estimated Construction Costs:

These costs are very preliminary in nature and are intended to assist the District in making a decision on the approach to take on future decisions:

Supply	Unit	Unit Price
Well	Ea.	$ 80,000.00
Pump	Ea.	$ 40,000.00
Well House	Ea.	$ 45,000.00
Storage	**Unit**	**Unit Price**
300,000 Gallon Elevated Storage Tank	L.S.	$550,000.00
Foundation	L.S.	$ 50,000.00
300,000 Gallon Ground Storage Reservoir	L.S.	$350,000.00
Foundation	L.S.	$ 50,000.00
Distribution System	**Unit**	**Unit Price**
6" PVC Piping	L.F.	$ 40.00

Cost Estimates for the Connection of the Two Water Systems:

These costs are very preliminary in nature and are intended to assist the District in making a decision on the approach to take on future decision.

Alternate No. 1:

Well and Tower at Clearwater Drive and Ozark Isle Drive.

Source	Unit	Units	Unit Price	Total
Well	L.S.	1	$80,000.00	$ 80,000.00
Pump	Ea.	1	$40,000.00	$ 40,000.00
Well House	Ea.	1	$45,000.00	$ 45,000.00
Storage	**Unit**	**Units**	**Unit Price**	**Total**
300,000 Gallon Elevated Tank	L.S.	1	$550,000.00	$550,000.00
Foundation	L.S.	1	$ 50,000.00	$ 50,000.00
Distribution System	**Unit**	**Units**	**Unit Price**	**Total**
6" PVC Piping	L.F.	15,300	$40.00	$612,000.00
	Total Construction Costs			$1,377,000.00
Land				$ 10,000.00
Contingencies (10%)				$137,700.00
Legal and Administration (5%)				$ 68,850.00
Engineering and Inspection (15%)				$206,550.00
	Total Project Costs			$1,800,400.00

Cost Estimates for the Connection of the Two Water Systems:

These costs are very preliminary in nature and are intended to assist the District in making a decision on the approach to take on future decision.

Alternate No. 2:

Well and Ground Storage at Old Fifty-Four Road and Clearwater Drive.

Source	Unit	Units	Unit Price	Total
Well	L.S.	1	$100,000.00	$100,000.00
Pump	Ea.	1	$ 60,000.00	$ 60,000.00
Well House	Ea.	1	$ 45,000.00	$ 45,000.00
Storage	**Unit**	**Units**	**Unit Price**	**Total**
300,000 Gallon Ground Storage Reservoir	L.S.	1	$350,000.00	$350,000.00
Foundation	L.S.	1	$ 50,000.00	$ 50,000.00
Distribution System	**Unit**	**Units**	**Unit Price**	**Total**
Cedar Heights 6" PVC Piping	L.F.	3,500	$40.00	$140,000.00
Clearwater 6"PVC Piping	L.F.	11,800	$40.00	$472,000.00
	Total Construction Costs			$1,217,000.00
Land				$ 10,000.00
Contingencies (10%)				$121,700.00
Legal and Administration (5%)				$ 60,850.00
Engineering and Inspection (15%)				$182,550.00
	Total Project Costs			$1,582,100.00

Cost Estimates for the Connection of the Two Water Systems:

These costs are very preliminary in nature and are intended to assist the District in making a decision on the approach to take on future decision.

Alternate No. 3:

Connect through Old Kinderhook.

Source Unit	Units	Unit	Price	Total
Well	L.S.	1	$80,000.00	$ 80,000.00
Pump	Ea.	1	$40,000.00	$ 40,000.00
Well House	Ea.	1	$45,000.00	$ 45,000.00
Storage	**Unit**	**Units**	**Unit Price**	**Total**
300,000 Gallon Elevated Tank	L.S.	1	$550,000.00	$550,000.00
Foundation	L.S.	1	$ 50,000.00	$ 50,000.00
Distribution System	**Unit**	**Units**	**Unit Price**	**Total**
6" PVC Piping	L.F.	8200	$40.00	$328,000.00
	Total Construction Costs			$1,093,000.00
Land				$ 10,000.00
Contingencies (10%)				$109,300.00
Legal and Administration (5%)				$ 54,650.00
Engineering and Inspection (15%)				$163,950.00
	Total Project Costs			$1,430,900.00