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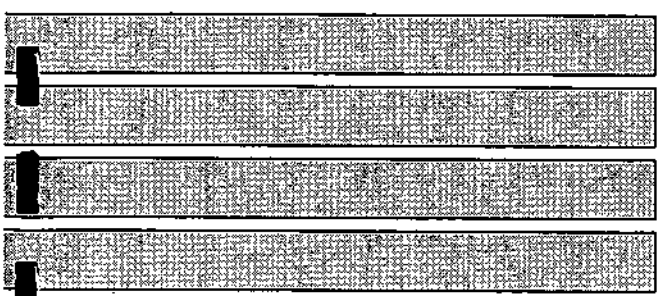
Ground-Water Investigation in the Kaskaskia River Valley, Fayette County, Illinois

by
Ellis W. Sanderson
Office of Ground-Water Resources Evaluation & Management

Prepared for the
Fayette Water Company

February 1996



Illinois State Water Survey
Hydrology Division
Champaign, Illinois

A Division of the Illinois Department of Natural Resources

GROUND-WATER INVESTIGATION IN THE KASKASKIA RIVER VALLEY, FAYETTE COUNTY, ILLINOIS

by
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INTRODUCTION

The Fayette Water Company seeks to own and operate a water utility to serve most of the residential, commercial, and industrial customers of rural eastern Fayette, southwestern Effingham, and northern Marion Counties, Illinois. There has been interest in developing a ground-water supply source since about 1992 because of increased water demands that have stressed inadequate water sources and water plants in the area. During an August 1993 meeting with the Board of Trustees, Fayette Water Company, and their consulting engineering firm (Heneghan and Associates), Water Survey staff presented an overview of ground-water resources in the area. The available information suggested the best and only possibility for the occurrence of an aquifer with potential for meeting the present and projected water demands was the sand-and-gravel deposits often found associated with the bottomlands of the present Kaskaskia River and, possibly, deeper sand-and-gravel deposits that might be associated with a preglacial buried bedrock valley. Test drilling over the years, principally by the Village of Ramsey, had shown that the water-bearing sand-and-gravel deposits associated with the present bottomlands varied significantly in thickness and in texture, making high-capacity well field siting difficult. No test drilling had occurred to determine whether deeper sand-and-gravel deposits might be present in the buried bedrock valley.

In early 1994, the Water Company contracted with Speth Plumbing, Inc., for test drilling to determine aquifer thickness and texture at reasonably convenient locations in the proposed service area. Test drilling was conducted at three areas of interest to the Water Company: 1) N½, NW¼, Section 14, T.8 N, R.2 E; 2) SE¼, SE¼, Section 31, T.8 N., R.2 E; and 3) SE corner, NW¼, Section 28, T.8 N., R.2 E., Fayette County (see figure 1). The two test borings in the SE¼, SE¼, NE¼, Section 31, T.8 N., R.2 E., along the Kaskaskia River north of Vandalia showed both a shallow sand-and-gravel aquifer and deeper sand-and-gravel deposits, and offered the most promise for developing the desired water supply source. These test borings provided the impetus for further test drilling and aquifer testing to adequately assess the water-yielding potential of these aquifers.

This investigation, conducted jointly for the Fayette Water Company by the Water Survey, Heneghan and Associates Consulting Engineers, and by Speth Plumbing, Inc., focused on the objective to evaluate the ground-water resources available from a reasonable number (1-4) of wells tapping one or both of the sand-and-gravel aquifers revealed at the test site by the preliminary borings.

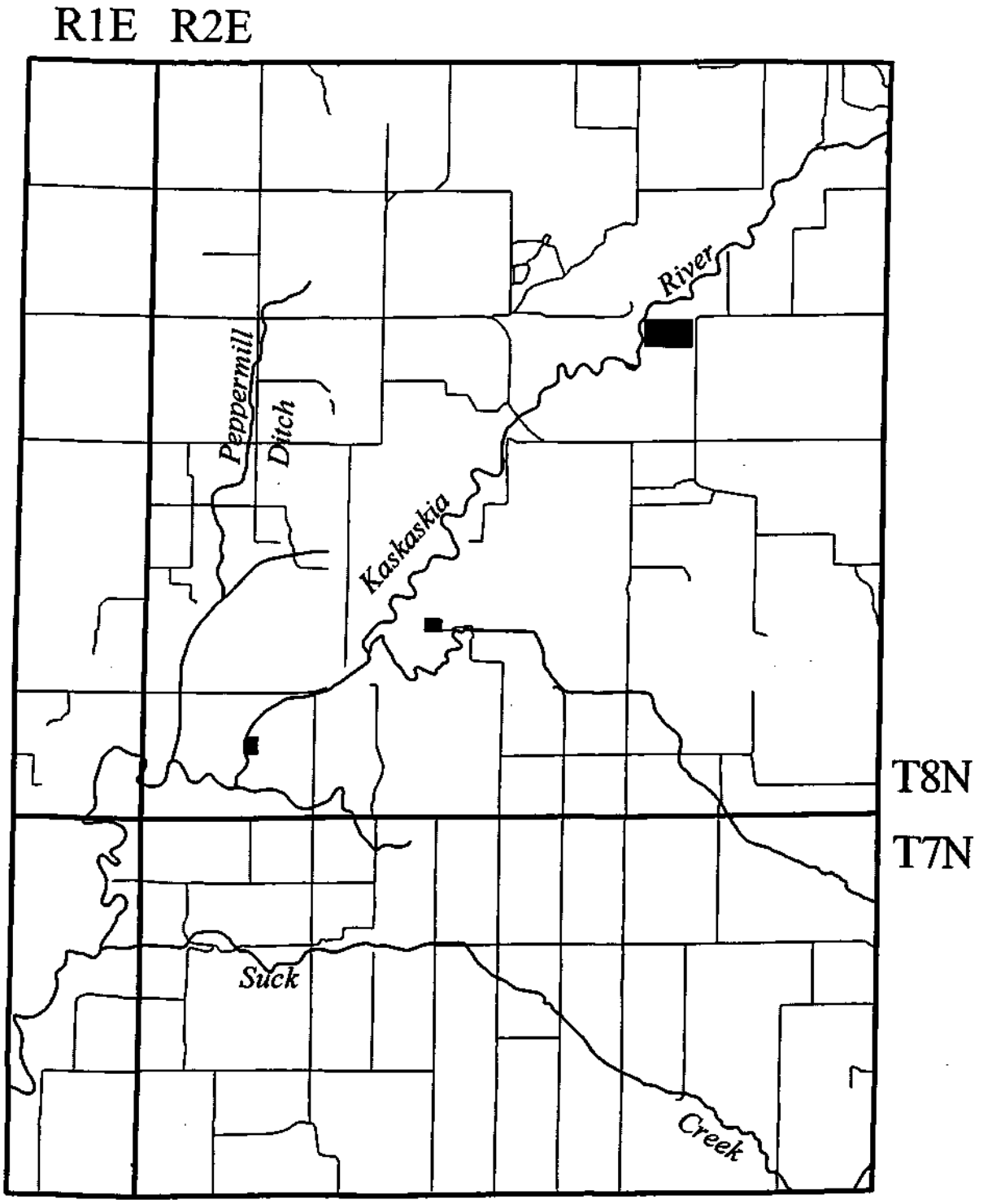

Figure 1. Locations of 1994 test holes

ACKNOWLEDGMENTS

Special thanks go to Robert D. Olson, Associate Hydrologist, and Mark A. Anliker, Assistant Hydrologist, for their assistance with the field work during the step tests and the aquifer tests. Adrian P. Visocky, P.E., Senior Hydrologist and Director, Office of Ground-Water Resources Evaluation and Management, reviewed the analyses of the aquifer test data and the report manuscript. Water samples collected by Water Survey staff during the tests were analyzed by the Survey's Analytical and Water Treatment Services laboratory under the supervision of Loretta Skowron. Sean Sinclair, Geographic Information System Specialist, prepared the maps included in figures 1,2, and 7.

We also thank Mr. Ray Kopsky, Jr., and Mr. David Busse, U.S. Army Corps of Engineers, St. Louis, for their responsiveness to our requests for information regarding the operation of the Shelbyville dam and reservoir preceding each of the aquifer tests and especially for their delay in increasing the release rate from the reservoir in early December 1994, to allow us to take advantage of conditions favorable for conducting the four-day aquifer test. They also provided historical and real-time river stage data that facilitated the analysis of the test data.

We appreciate the opportunity to work with Mr. Walter (Wally) Cox, Office Manager, Heneghan and Associates, and Mr. Jim Speth, Speth Plumbing, Inc. Their competence and experience allowed the planned tests to proceed in an efficient manner. Finally, the professional approach of Mr. Jim Heckert, President, Fayette Water Company, and the Trustees of the Fayette Water Company expedited the accomplishment of this project.

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INVESTIGATIVE METHODS AND PROCEDURES

Testing Program

Objective

The principal objective of the investigation was to estimate the potential for ground-water resource development in the vicinity of the initial test borings. A development potential of about 1 to 1½ million gallons per day (mgd) was desired. The target area for this investigation was in the S½, SW¼, NW¼, Section 32, T.8 N., R.2 E., Fayette County, adjacent to the location of the initial test borings. Ultimately, three pumping test wells and eight observation wells were drilled at this site to conduct aquifer tests to evaluate the yield of two sand-and-gravel aquifers and to design a well field (see figure 2).

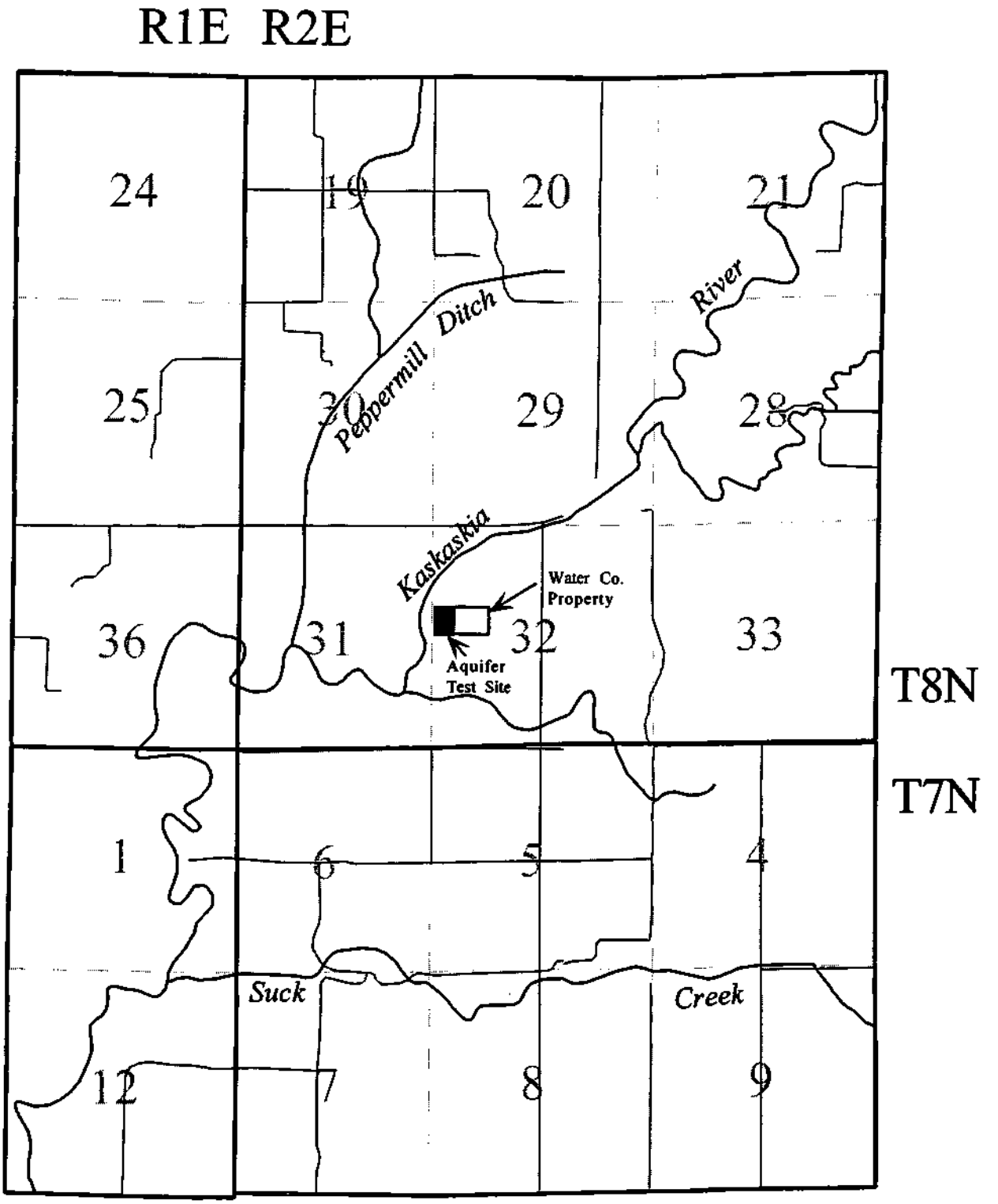


Figure 2. Aquifer test site in Section 32, T.8 N., R.2 E., Fayette County

Description of Site

The site is within a 20-acre parcel of land located near the Kaskaskia River about 10 miles north of Brownstown. The test drilling along the west end of the site showed two sand-and-gravel aquifers. The shallow sand and gravel was generally about 30 to 35 feet thick and separated from lower sand and gravel about 24 to 34 feet thick by a layer of glacial till about 14 to 20 feet thick.

Design of Tests

The available information suggested that the lower sand-and-gravel aquifer, probably associated with the preglacial buried bedrock valley, was the key element in the plan to develop a water supply of up to 1½ mgd. In 1961, the shallow sand-and-gravel deposits associated with the Kaskaskia River bottomlands had been explored just north of Vandalia, Illinois. The tests and • evaluation for that site suggested that a yield of about ½ mgd was possible from a reasonable number of wells finished in the shallow sand-and-gravel deposits. The test drilling in the Kaskaskia River bottomlands conducted by the Village of Ramsey also indicated that the thickness and areal extent of the shallow sand-and-gravel aquifer was variable and probably could not be expected to yield as much as the desired 1 to 1½ mgd. Thus, the testing program for the Fayette Water Company site first focused on evaluating the yield of the lower sand-and-gravel aquifer.

Testing of the shallow sand-and-gravel aquifer present at the site would be undertaken if test results from the lower sand-and-gravel aquifer suggested that the yield of the aquifer was significantly less than expected. The testing program for the shallow aquifer, if needed, was planned to be similar to that for the lower aquifer.

To achieve the objective of evaluating the potential yield of the lower sand-and-gravel aquifer to a well field, the study focused on conducting aquifer tests on a test well. The duration of the first test was planned for 24 hours and, if results were promising, then a second aquifer test for 3-7 days was planned. The aquifer tests would consist of pumping the test well at a constant, uninterrupted rate for the test period while observing ground-water levels in the pumping test well and in one to three observation wells.

Prior to the aquifer tests, a step test was planned for the test well to help determine an appropriate pumping rate for the 24-hour aquifer test and to estimate the hydraulic efficiency of the test well. For this investigation the primary purpose of the step test was to observe the response of water levels in the pumped well and in the aquifer (observation wells) to pumping. The aquifer response would help determine a pumping rate that could be sustained for the desired 24-hour and 3-7 day constant-rate aquifer tests, but at the same time stress the aquifer system sufficiently to provide meaningful data for analysis.

A second purpose of the step test was to determine the well-loss coefficient of the test well to enable calculation of the portion of observed drawdown attributable to well inefficiencies. Well loss, described in more detail below, is an additional component of observed drawdown in

pumping wells that can significantly reduce sustainable yields. The step test would consist of pumping the test well at increasing increments of the full rate for about 30 minutes at each rate. During the test, ground-water levels would be observed in the test well and, as convenient, in the observation wells.

Evaluation Methodology for Step Tests

Well Loss

When a well is pumped, water is removed from the aquifer surrounding the well, and the water levels are lowered. Drawdown is the distance that the water level is lowered within the well or in the surrounding aquifer. Under ideal conditions, drawdown is a function of pumping rate, time, distance from the pumped well, and the aquifer's hydraulic properties. Specific capacity, pumping rate per foot of water-level drawdown in the pumped well following an established pumping period, is often used to describe well performance. However, because other nonideal geohydrologic and hydraulic factors can affect the observed drawdown (particularly within the pumped well), the specific capacity may not provide the full well-performance picture, especially when pumping rates change. Aquifer boundaries, spatial variation in aquifer thickness or hydraulic properties, interference from nearby wells, partial-penetration conditions, aquifer dewatering, and well losses all can affect observed drawdowns. Well losses, usually associated only with the pumped well, are a reflection of the hydraulic efficiency of the well components (well screen and gravel pack) and are the only nonideal condition addressed here.

The observed drawdown in a fully penetrating pumped well is usually greater than that in the aquifer formation outside the borehole because of the well losses caused by the water moving from the aquifer into the well. The amount of well loss depends on the materials used and the quality of well construction. A limited amount of well loss is natural because of the physical blocking of the aquifer interstices caused by the well screen and the disturbance of aquifer material around the borehole during construction. However, an improperly designed well and/or ineffective well construction and development techniques can result in unacceptable well losses. In addition, well losses often reflect a deterioration in the condition of an existing well, especially if they are observed to increase with time.

Well losses are related to pumping rate and ideally are not a function of time. These losses are associated with changes in flow velocity in the immediate vicinity of the well, resistance to flow through the well screen, and changes in flow path and velocity inside the well. In some cases, well loss occurs entirely under conditions of laminar flow; however, velocities may become sufficiently large that a change from laminar to turbulent flow occurs. Under these conditions, the well-loss component of drawdown can rapidly become excessive, increasing in a nonlinear manner with increases in pumping rate.

Thus, under near-ideal conditions, the observed drawdown (s_o) in a pumping well is made up of two components: formation loss (s_a) resulting from laminar (and sometimes turbulent) flow head loss within the aquifer and well loss (s_w) resulting from the turbulent (and sometimes laminar) flow of water into and inside the well, as shown in equation 1.

$$s_o = s_a + s_w \quad (1)$$

Jacob (1947) devised a technique for separating the well losses from the formation losses, assuming that all formation losses are laminar and all well losses are turbulent. These components of theoretical drawdown, s, in the pumped well are then expressed as being proportional to pumping rate, Q, in the following manner:

$$s = BQ + CQ^2 \quad (2)$$

where B is the formation-loss coefficient at the well-aquifer interface per unit discharge, and C is the well-loss coefficient. For convenience, s is expressed in feet and Q in cubic feet per second (ft^3/sec). Thus, the well-loss coefficient C has the units sec^2/ft^5. Rorabaugh (1953) suggested that the well-loss component be expressed as CQ", where n is a constant greater than 1. He thus expressed the drawdown as:

$$s = BQ + CQ^n \quad (3)$$

To evaluate the well-loss component of the total drawdown, one must know the well-loss coefficient (if using equation 2) or both the coefficient and the exponent (if using equation 3). This analysis requires a controlled pumping test, called a step drawdown test, in which total drawdown is systematically measured while pumping rates are varied in a stepwise manner.

Methodology for Determining Well Loss

If Jacob's equation is used to express drawdown, then the coefficients B and C must be determined. A graphical procedure can be employed after first modifying equation 2 as:

$$s/Q = B + CQ \quad (4)$$

After this modification, a plot of s_o/Q versus Q can be prepared on arithmetic graph paper from data collected during a step drawdown test, and substituting the observed drawdown, s_o, for s. The slope of a line fitted to these data is equal to C, while the y-intercept is equal to B, as shown in figure 3. If the data do not fall within a straight line, but instead curve concavely upward, then another method of analysis described by Rorabaugh usually is suggested. The curvature of the plotted data indicates that the second order relationship between Q and s_o is invalid.

Occasionally the data plot may yield a line with zero slope or a negative slope, or be too random to provide a reasonable fit to one line. In these instances, the coefficients are immeasurable. Possible causes include: 1) turbulent well loss is negligible over the pumping rates tested; 2) inadequate data collection or test methods were employed during the test; 3) the hydraulic condition of the well is unstable, such as happens during well development; and 4) the contribution of water from the entire length of well screen over the range of test pumping rates is unequal, as might occur due to vertical heterogeneity of the aquifer materials.

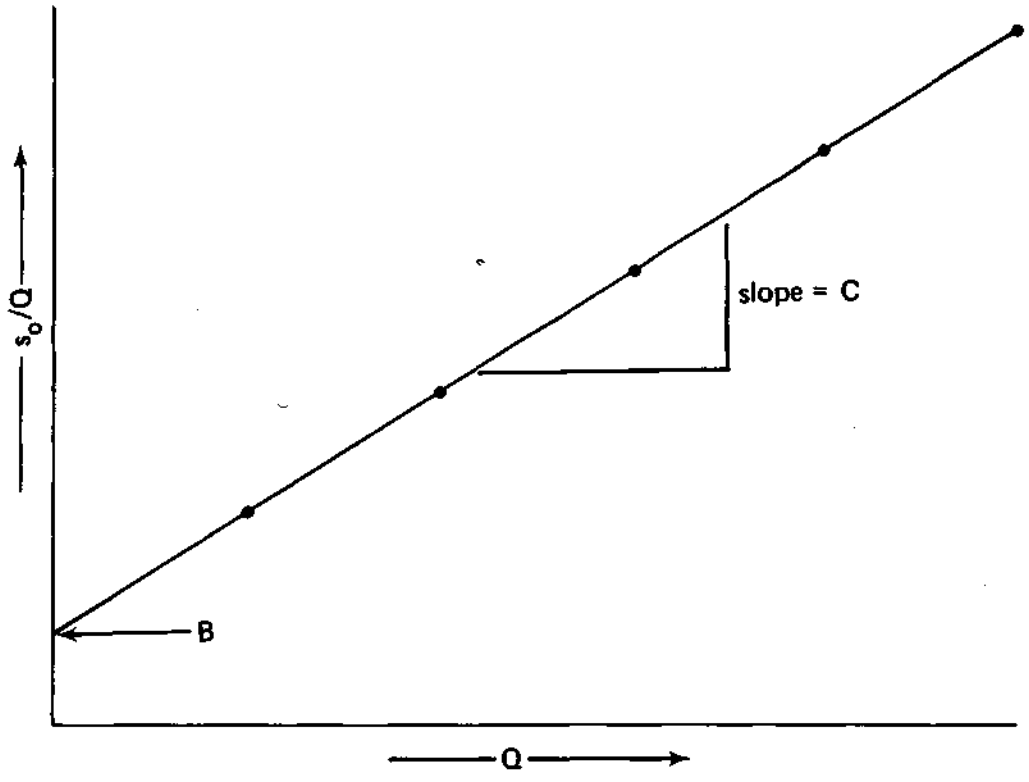


Figure 3. Graphical solution of Jacob's equation for well-loss coefficient, C

Step-Test Procedure

The primary objective of a step drawdown test (or step test) is to determine the well-loss coefficient (and exponent, if Rorabaugh's method is used). With this information, the turbulent well-loss portion of drawdown for any pumping rate of interest can be estimated. During the test, the well is pumped successively at a number of pumping rates. Equally spaced pumping rates are selected to facilitate the data analysis. Each pumping period at a given rate is called a step, and all steps are of equal duration. Generally, the pumping rates increase from step to step, but the test also can be conducted by decreasing the pumping rates.

During each step, pumpage is held constant. If data are collected manually, water-level measurements are made every minute for the first six minutes, every two minutes for the next ten minutes, and then every four to five minutes thereafter until the end of each step. For the step tests in this study, an Omnidata logger was used to collect the data. Water-level readings were taken every minute for the duration of each step. At the end of each 30-minute step interval, the pumping rate was immediately changed until eventually the well had been tested under a wide range of pumping rates within the capacity of the pump.

Schematically, the relationship between time and water level resembles that shown for a five-step test in figure 4. Drawdowns for each step (shown as As,) are measured as the distance between the extrapolated water levels from the previous step and the final water level of the current step. For step 1, the nonpumping water-level trend prior to the start of the test is extrapolated, and As, is measured from this datum. All data extrapolations should be performed on semilog graph paper for the most accurate results. For the purpose of plotting s_o/Q versus Q, values of observed drawdown s_o are equal to the sum of Δs_i, for a given step. Thus, for step 3, $s_o = \Delta s_1 + \Delta s_2 + \Delta s_3$.

Evaluation Methodology for Aquifer Tests

Analysis

The capacity of a formation to transmit ground water is expressed by the transmissivity, which is the rate of flow of water, in gallons per day (gpd), through a one-foot-wide vertical strip of the aquifer extending the full saturated thickness under a hydraulic gradient of 100 percent (one foot per foot) at the prevailing water temperature. Transmissivity is the product of the saturated thickness of the aquifer and the **hydraulic conductivity,** which is the rate of flow of water, in gpd, through a cross-sectional area of one square foot of the aquifer under a hydraulic gradient of 100 percent at the prevailing water temperature. The storage properties of an aquifer are expressed by the **storage coefficient,** the volume of water released from storage per unit surface area of the aquifer per unit change in the water level. This parameter is dimensionless.

The hydraulic properties of an aquifer may be determined by means of an aquifer test, where the effect of pumping a well at a known constant rate is measured in the pumped well and at observation wells that penetrate the aquifer at various distances from the pumped well. Graphs of drawdown (the lowering of water levels in the wells) versus time after pumping starts and/or

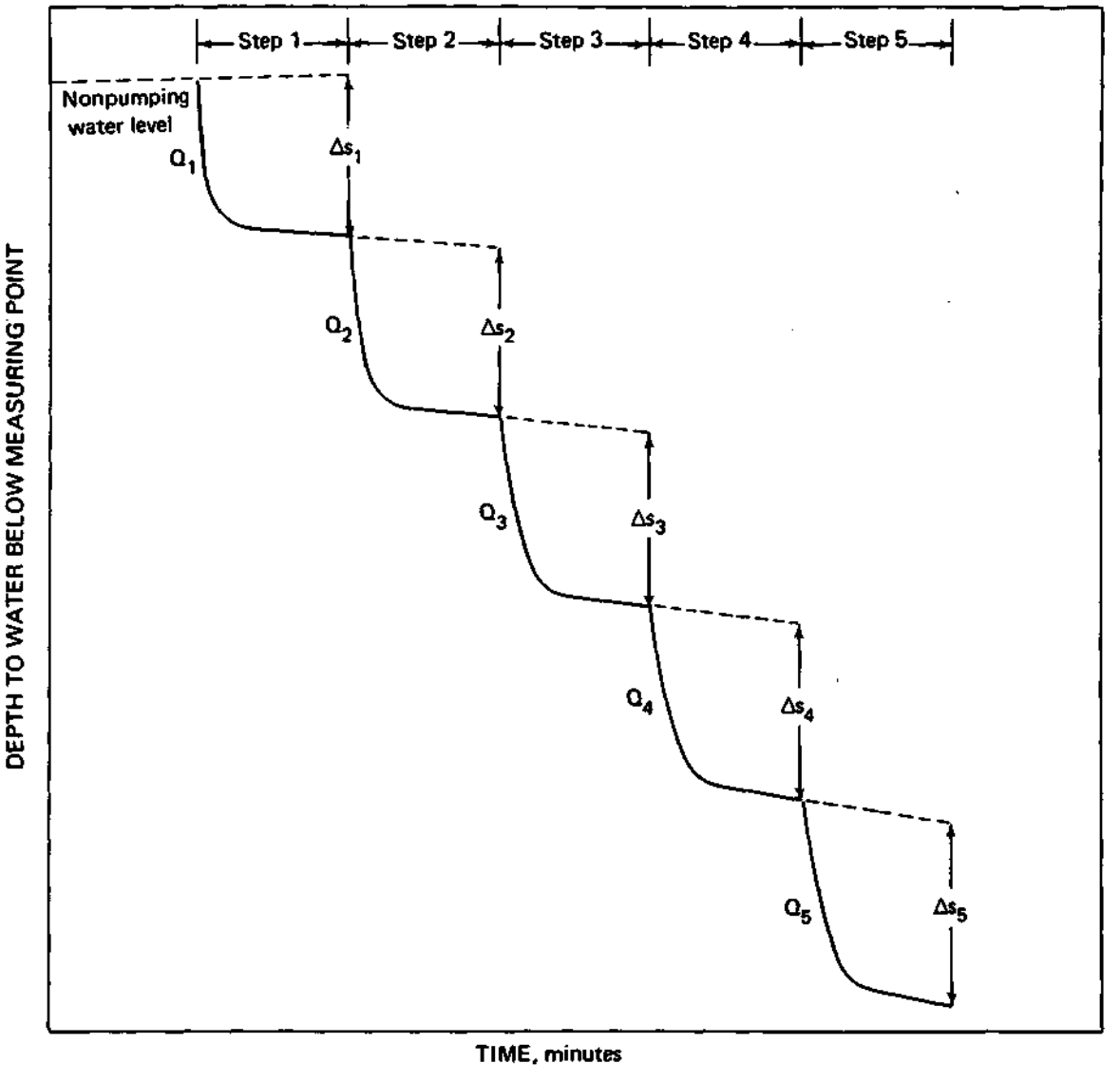


Figure 4. Relationship between time and water-level during a five-step drawdown test

drawdown versus distance from the pumped well are used to solve equations that express the relation between the transmissivity, storage coefficient, pumping rate, and drawdown. Where appropriate, drawdown data must be adjusted to account for conditions that affect the observed rate of drawdown, such as variations in pumping rate, barometric pressure fluctuations, pumping in nearby wells, aquifer boundaries, significant dewatering (see later discussion of water-table conditions), or a partially penetrating pumped well. The two most common methods of analysis for field data under artesian conditions—the type-curve method and the Jacob straight-line method—are described below.

Type-Curve Method

Theis (1935) introduced an analogy between the nonsteady flow of ground water and heat conduction. The nonequilibrium formula—popularly known as the Theis equation—describes radial flow toward a well pumping from an artesian aquifer as:

$$s = \frac{Q}{4\pi T} W(u) \tag{5}$$

or in commonly used units,

$$s = \frac{114.6Q}{T} W(u) \tag{6}$$

where:

$$W(u) = \int_u^\infty \frac{e^{-u}}{u} du = -0.5772 + \ln u + u - \frac{u^2}{2 \cdot 2!} + \frac{u^3}{3 \cdot 3!} - \frac{u^4}{4 \cdot 4!} + \cdots \tag{7}$$

and

$$u = \frac{2693 r^2 S}{Tt} \tag{8}$$

where:

s = drawdown at distance r from the pumped well, in feet
Q = well discharge, in gpm
T = transmissivity, in gpd/foot (ft)
r = distance from pumped well to observation point, in feet
S = storage coefficient, decimal fraction
t = time since pumping began, in minutes

W(u), referred to as the **well function for nonleaky artesian aquifers,** has been extensively tabulated.

Theis devised a graphical procedure using superposition to solve for the aquifer properties, T and S, using equations 6 and 8, but inverting equation 8:

$$s = \frac{114.6Q}{T}W(u) \tag{9}$$

and

$$\frac{1}{u} = \frac{Tt}{2693r^2S} \tag{10}$$

Expanding the logarithm of both sides of these equations yields:

$$\log s = \log \left[\frac{114.6Q}{T}\right] + \log W(u) \tag{11}$$

and

$$\log \frac{1}{u} = \log \left[\frac{T}{2693r^2S}\right] + \log t \tag{12}$$

In equation 11 the term log [114.6Q/T] is a constant for a given pumping rate (hence, the need for a constant pumping rate during tests), so log s is directly related to log W(u). Also, in equation 12 the term log [T/2693r^{2}S] is a constant for a given distance r (a selected observation well), so log 1/u is directly related to log t. Thus,

$$\log s \propto \log W(u)$$

and

$$\log t \propto \log 1/u$$

From these relationships, one can construct a plot of the well function W(u) versus 1/u on log-log graph paper (figure 5). Such a plot of a mathematical function is called a **type curve.** Likewise, one can plot on identical log-log paper a plot of drawdown s versus time t from the data collected at each observation well.

The type curve is then superimposed over the field-data plot, keeping the corresponding ordinate and abscissa axes parallel, until a best fit is obtained. A convenient match point is chosen on the two graphs (usually one that includes the convenient type-curve match point of W(u) = 1 and 1/u = 10). The corresponding coordinates of W(u), 1/u, s, and t are then substituted into equations 6 and 8 to solve for T and S.

In the same manner, one could make a type curve of W(u) versus u, noting the relationship between s versus W(u) and between u and r^2. For an aquifer test in which

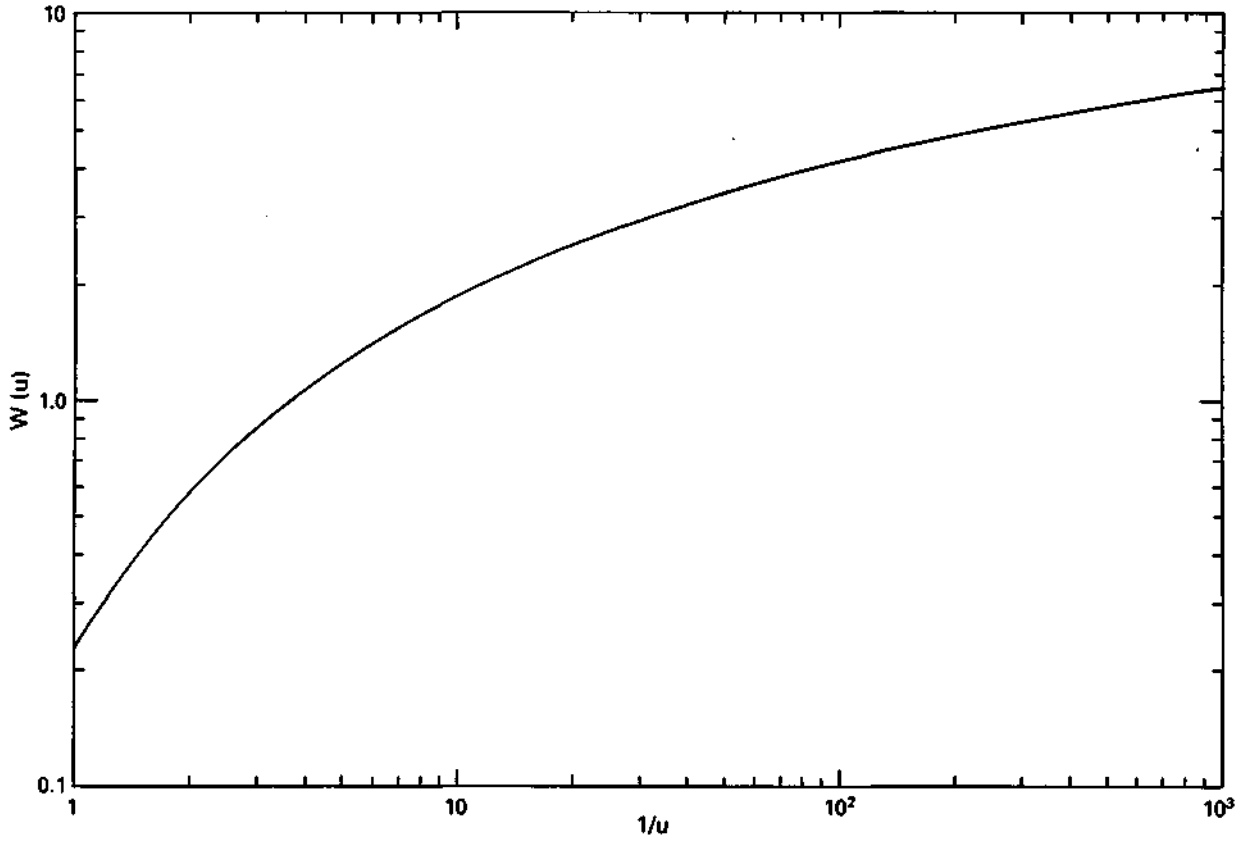


Figure 5. Nonleaky artesian type curve

several observation wells were used, one could fit the new type curve to a field-data plot of s versus r^2 for a given time, and follow the same procedure of fitting the type curve to the field-data plot and selecting a match point.

Jacob Straight-Line Method

A popular graphical method derived from the Theis method by Cooper and Jacob (1946) is referred to as the **modified nonleaky artesian formula,** or simply the **Jacob straight-line method.** The method is based on the fact that when values of u are small (less than, say, 0.01), the sum of the series terms in equation 7 beyond In u becomes insignificant. An examination of the terms in equation 8 shows that u becomes small when r becomes small (close-in observation wells) or t becomes large (long pumping periods).

When $u \leq 0.01$, field-data plots of drawdown versus log time on semilog paper will yield a straight line. The straight-line portion of the s versus t plot is extrapolated to its intersection with the zero-drawdown axis. The slope of the straight line (drawdown per log cycle) is used to solve for the transmissivity, and the zero-drawdown intercept is used to solve for the storage coefficient. Expressions for these computations derived by Cooper and Jacob (1946) are:

$$T = \frac{264Q}{\Delta s} \tag{13}$$

and

$$S = \frac{Tt_0}{4790r^2} \tag{14}$$

where:

T = transmissivity, in gpd/ft
Q = well discharge, in gpm
ΔS = drawdown difference per log cycle, in feet
S = storage coefficient
t_0 = intersection of straight-line slope with zero-drawdown axis, in minutes
r = distance from pumped well to observation point, in feet

The method can be extended also to plots of drawdown versus distance for given time values. Field-data plots of drawdown versus log distance on semilog paper will yield a straight line in the region where $u \leq 0.01$. The straight-line portion of the graph is extrapolated to its intersection with the zero-drawdown axis. The slope of the straight line is used to solve for T, and the zero-drawdown intercept is used to solve for S, using the following expressions:

$$T = \frac{528Q}{\Delta s} \tag{15}$$

and

$$S = \frac{Tt}{4790 r_0^2} \qquad (16)$$

where:

r_0 = intersection of straight-line slope with zero-drawdown axis, in feet and all other terms are as defined above.

The Jacob straight-line method is popular because of its simplicity; however, its use is restricted to field data that satisfy the "u-criterion" of $u \leq 0.01$. Deviation from a straight line becomes appreciable when u exceeds about 0.02 (Walton, 1962). The method should be used to supplement, rather than supercede, the type-curve method.

Water-Table Conditions

The methods described in the previous section pertain to artesian aquifer conditions; however, the formulas can also be applied to the results of aquifer tests made under water-table (unconfined) conditions. These formulas were developed in part based on the assumptions that the coefficient of storage is constant and that water is released from storage instantaneously with a decline in water levels. Under water-table conditions, water is derived largely from storage by the gravity drainage of the interstices in the portion of the aquifer dewatered by the pumping. The gravity drainage of water through stratified sediments is not immediate, and the nonsteady flow of water towards a well in an unconfined aquifer is characterized by slow drainage in interstices.

Gravity drainage of interstices decreases the saturated thickness and, therefore, the transmissivity of the aquifer. Under water-table conditions, it is necessary to compensate for observed values of drawdown by the decrease in saturated thickness before the data can be used to determine the hydraulic properties of the aquifer. The following equation derived by Jacob (1944) is used to adjust drawdown data for decreases in transmissivity:

$$s' = s - (s^2/2m) \qquad (17)$$

where:

s' = drawdown that would occur in an equivalent artesian aquifer
s = observed drawdown under water-table conditions
m = initial saturated thickness of aquifer

The effects of gravity drainage also present challenging problems for the analysis of data because of the fact that the field data deviate from the ideal upon which the Theis and Jacob methods are based. Several methods of data analysis have been presented by researchers,

including Boulton (1963) and Neuman (1975). Neuman's method is designed for assessing anisotropic conditions. Prickett (1965) presented an application of the Boulton method that is useful for conditions under which anisotropy is not considered to be significant or critical to an assessment of the aquifer.

WELL AND AQUIFER TEST RESULTS

Test Well 1-94: Shallow and Lower Sand-and-Gravel Aquifers

The first pumping test well, Test Well (TW) 1-94, was drilled to a depth of 84 feet. The bore hole for TW 1-94 was constructed 20 inches in diameter with 12-inch PVC casing and well screen. A 20-foot-long 60-slot (0.060-inch) well screen was placed between depths of 64 and 84 feet and a 10-foot-long 60-slot (0.060-inch) screen was placed between depths of 34 and 44 feet. Northern No. 3 gravel pack was placed in the annulus between the depths of 20 and 84 feet. Two observation wells, OW 1 and 2, were drilled 150.3 feet and 514.5 feet north, respectively, of TW 1-94. OW 1 and 2 were completed with 2-inch PVC casing and screen. Each observation well was equipped with 20 feet of 20-slot (0.020-inch) well screen at the bottom of the hole and 10 feet of 20-slot (0.020-inch) well screen placed at a depth of 30 to 40 feet (see appendix A for construction details and appendix B for sieve data for the aquifer samples).

Conducting a 24-hour test on TW 1-94 was regarded as problematical by Water Survey staff with respect to the collection of data that would be usable for analysis. The well screens installed in both the shallow and lower sand-and-gravel aquifers meant that water would be pumped from both aquifers, but the rate of pumping from each aquifer would not be known. Likewise, the response of water levels in the observation wells would be compromised because they were open to both aquifers. Unless the intervening clay-glacial till bed was very local in nature, thus allowing the two aquifers to respond as one, the collected water-level data would be for some "composite" aquifer that could not be related to the hydrogeologic setting. However, it was agreed that a step test and a 24-hour test would be conducted to confirm whether the existing aquifer test facilities would provide useful information in either determining the aquifer hydraulic properties or in guiding future testing efforts.

Aquifer Tests

As described earlier, the investigation plan included one 24-hour aquifer test and a subsequent long-term (3- to 7-day) aquifer test. For TW 1-94 the 24-hour test was conducted with two observation wells, and data were collected for a preliminary analysis of the hydraulic properties of the sand-and-gravel aquifer. This test was used to determine whether TW 1-94, as screened in both aquifers, could be used to evaluate the yield of the site.

Test Protocol

Speth Plumbing, Inc., furnished and installed pumping equipment in the test well and discharge piping. The Water Survey furnished and installed water-level-measuring and data-

logging equipment in the test well and in the observation wells and discharge-rate-measuring equipment.

The step test was conducted on July 12, 1994, and the 24-hour aquifer test was conducted on July 13-14, 1994. Pumped ground water was conducted from the well head through 6-inch and 8-inch plastic pipe to a natural drainage way to the Kaskaskia River. A valve at the well head was used to control the pumping rates, and an 8-inch orifice tube was used to measure discharge rates. Ground-water-level measuring equipment included Omnidata logging equipment and pressure transmitters in each well, supplemented with electric dropline measurements.

Step Test

The step test began at a rate of about 750 gpm, increasing to 800 gpm for the second step. A rate of 850 gpm could not be achieved for the third step so the pumping rate was reduced to about 645 gpm and further reduced to 645, 615, 560, 500, and 450 gpm for succeeding steps. The ideal objective of equal step increments could not be achieved in the field, likely due to air in the discharge at the higher pumping rates. Observed ground-water-level data for the step test with TW 1-94 are included in appendix C.

Step-Test Results

The data collected during the step test conducted on July 12, 1994, were analyzed using the Jacob step-test methodology described earlier. The results of the analysis indicate that TW 1-94 had a relatively high well-loss coefficient of approximately 7 sec^2/ft^5. Since drawdown due to well loss is proportional to the square of the pumping rate, with relatively high pumping rates (450 to 800 gpm), about 45 to 60 percent of the observed drawdown in the well was due to well loss.

However, using assumed reasonable values for the aquifer hydraulic properties at the site to calculate theoretical drawdowns suggested that drawdown due to well loss might be closer to 25 to 35 percent of observed drawdowns. Thus, the step-test results were inconclusive.

24-hour Aquifer Test

The response of the "composite" aquifer during the step test suggested it was possible that a pumping rate of about 500 to 600 gpm could be maintained as a constant rate during the 24-hour aquifer test, which was conducted on July 13-14, 1994. Pumping at TW 1-94 commenced at 11:41 a.m. on July 13 and ended at 10:40 a.m. on July 14, for a pumping period of 1,399 minutes. An average discharge rate of 577 gpm was maintained throughout the test. At the completion of pumping, water-level recovery was measured for 100 minutes. Water-level measurements were made throughout the test in the pumping well and in OW 1 and OW 2 located 150.3 feet and 514.5 feet, respectively, north of TW 1-94. Observed ground-water level data for the 24-hour aquifer test with TW 1-94 are included in appendix D, and the chemical analysis of the water sample collected during the test is in appendix E.

24-hour Aquifer Test Results

The collected water-level data were used to try to determine the water-yielding properties and probable areal extent of the "composite" sand-and-gravel aquifer. The response of OW 1 did not suggest the presence of either a recharge (river) boundary or a barrier (valley wall or edge of aquifer) boundary until late in the test. After about 1000 minutes of pumping (16.7 hours), there was a suggestion of the presence of a barrier boundary.

The response of OW 2 offered the possibility of different interpretations. While data from early in the test (before 200 minutes) suggested a barrier boundary, this was clearly not reflected in the response of OW 1. The response of water levels in OW 2 after about 1,000 minutes of pumping also suggested the possibility of a barrier boundary similar to that suggested by the response of water levels in OW 1.

The response of water levels in TW 1-94 was subject to several interpretations that could not be resolved. The presence of air in the discharge could have caused the water-level response to be atypical.

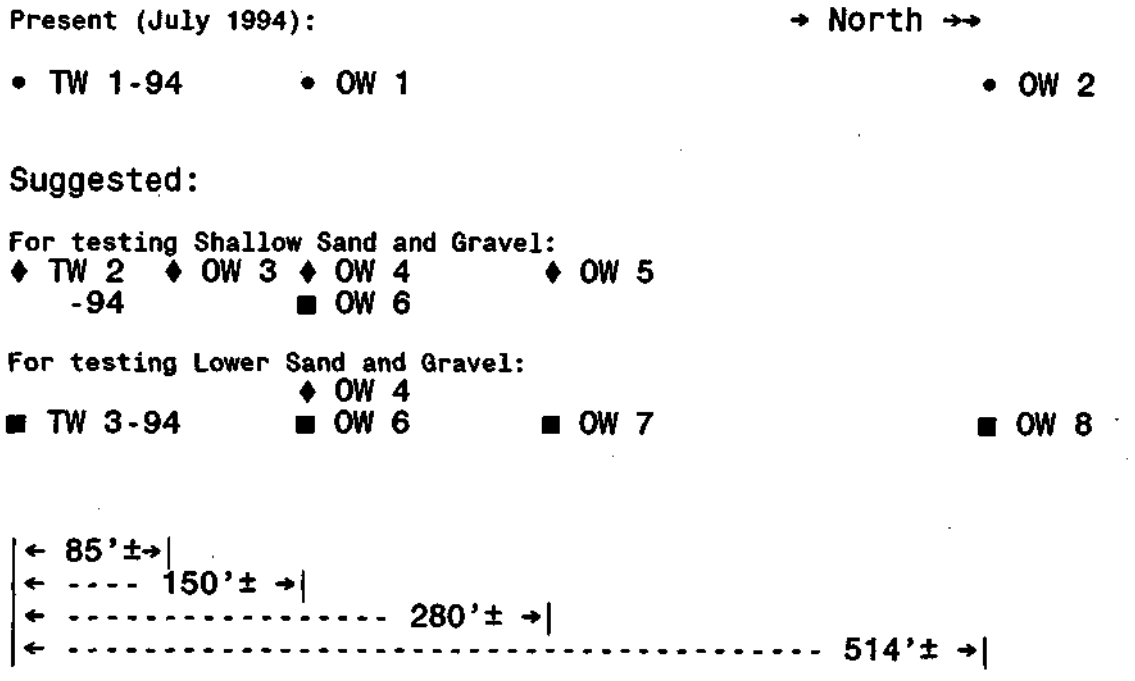
In spite of these observations, the observed data collected at OW 1 and OW 2 during the 24-hour test indicated that aquifer properties were suggestive of permeable sands and gravel under artesian conditions (transmissivity of about 58,000 to 97,000 gpd/ft and a storage coefficient of about 7.5×10^{-4} to 1×10^{-3}). Analysis of data from the pumped well was inconclusive. The probable areal extent of the sand-and-gravel aquifers could not be estimated from the results of the aquifer test with TW 1-94.

Conclusion

The results of the testing with TW 1-94 indicated that the ground-water resources at the test site could not be adequately evaluated unless further aquifer testing was conducted. First, it was believed that the lower sand-and-gravel aquifer still was a "key" if the desired yield of up to 1½ mgd was to be developed. Whether the lower sand and gravel was of sufficient thickness and areal extent to support a significant portion of the desired yield could not be determined on the basis of testing results with TW 1-94.

Recommendations based on the testing results were prepared and presented to the Board of Trustees, their consultant, and representatives of the principal funding agency at a meeting in St. Elmo on August 17, 1994 (see appendix F). The Water Company and their consultant followed the recommendation to construct a test well and observation wells finished only in the lower sand-and-gravel aquifer. Depending on the results of this testing, it might also be necessary to conduct aquifer tests using wells finished only in the shallow sand and gravel. A scheme for the testing program was developed providing well designations for the test wells and observation wells as shown in figure 6.

Aquifer Test Site: SW¼, SW¼, NW¼, Section 32, T.8 N., R.2 E., Fayette County



Legend:

- ● Well finished in Shallow and Lower Sand and Gravel
- ♦ Well finished in Shallow Sand and Gravel
- ■ Well finished in Lower Sand and Gravel

TW Pumping Test Well
OW Water Level Observation Well

Figure 6. Well designations for the aquifer test site

Test Well 3-94: Lower Sand-and-Gravel Aquifer

Testing of the lower sand-and-gravel aquifer was undertaken next. In accordance with the well designation scheme shown earlier, the test well finished only in the lower sand-and-gravel aquifer was called TW 3-94

The pumping test well, TW 3-94, was drilled to a depth of 82 feet. The bore hole for TW 3-94 was constructed 32 inches in diameter with 12-inch steel casing and stainless steel well screen. A 20-foot-long 100-slot (0.100-inch) well screen was placed between depths of 62 and 82 feet. Northern No. 3 gravel pack was placed in the annulus between the depths of 70 and 82 feet, and Northern No. 1 gravel pack was placed between depths of 55 to 70 feet. A bentonite seal was placed between 44 to 55 feet to isolate the shallow sand-and-gravel aquifer from the lower sand-and-gravel aquifer. The remainder of the annulus above 44 feet was filled with drill cuttings. Three observation wells, OW 6, OW 7, and OW 8, were drilled 171, 278.4 and about 520 feet north of TW 3-94, respectively. In anticipation of the possible need for testing the shallow sand-and-gravel aquifer, shallow observation wells (OW 4 and OW 5) were also completed in the same bore holes with OW 6 and OW 7, respectively. A bentonite seal was used in the bore hole to separate the observation wells opposite the respective aquifers. All observation wells were cased with 2-inch PVC casing and screen. Ten-foot-, 15-foot- or 20-foot-long sections of screen were used in each observation well (see appendix A for construction details).

Aquifer Tests

As described in recommendations to the Board of Trusteees, the investigation plan included one 24-hour aquifer test and a subsequent long-term (3- to 7-day) aquifer test on the lower sand-and-gravel aquifer and, if needed, a similar testing program for the shallow sand-and-gravel aquifer. However, in an attempt to expedite the investigation, it was agreed to conduct a step test on the pumping test well(s) and only a long-term 3- to 7-day aquifer test on each aquifer. If unusual circumstances were encountered, then the 3- to 7-day aquifer test would be terminated early or as appropriate.

The aquifer test for the lower sand-and-gravel aquifer was conducted with three observation wells for a preliminary analysis of the hydraulic properties of the sand-and-gravel aquifer.

Test Protocol

Speth Plumbing, Inc., furnished and installed pumping equipment in the test well and discharge piping. The Water Survey furnished and installed water-level measuring and data-logging equipment in the test well and in the observation wells and discharge-rate-measuring equipment.

The step test was conducted on September 28, 1994, and a 24-hour aquifer test was conducted on September 29-30, 1994. The 24-hour aquifer test was originally planned as a 7-day

aquifer test but was terminated during the second day of pumping due to excessive water-level drawdowns in all wells. Pumped ground water was conducted from the well head through 6-inch and 8-inch plastic pipe to a natural drainage way to the Kaskaskia River. A valve at the well head was used to control the pumping rates, and the Water Survey 8-inch orifice tube was used to measure discharge rates. Ground-water-level-measuring equipment included Omnidata logging equipment and pressure transmitters in each well, supplemented with electric dropline measurements.

Step Test

The step test began at a rate of about 490 gpm, increasing to 550 gpm for the second step, and to about 610 gpm for the third step. Further rate increases were not possible as with the valve full open, a maximum pumping rate was about 620 gpm. A minimum of three steps is required for step test analysis so the test was concluded. Observed ground-water-level data for the step test with TW 3-94 are included in appendix G.

Step-Test Results

The data collected during the step test conducted on September 28, 1994, were analyzed using the Jacob step-test methodology described earlier. The results of the analysis indicate that TW 3-94 had a relatively high well-loss coefficient of approximately 9.4 sec^2/ft^5. Since drawdown due to well loss is proportional to the square of the pumping rate, with relatively high pumping rates (400 to 600 gpm) about 30 to 40 percent of the observed drawdown in the well was due to well loss.

24-hour Aquifer Test

As described earlier, to facilitate the testing program it was decided to attempt to conduct a 7-day aquifer test on TW 3-94 without first conducting a 24-hour test. The aquifer test was started on September 29, 1994, the day following the step test. During the first few hours of the test, Water Survey field staff suspected from the response of ground-water levels in the test well and observation wells that the 7-day pumping period could not be achieved due to excessive drawdowns. One or more nearby barrier boundaries were suspected as causing the excessive drawdowns. Water Survey staff returned to the test site the following day, September 30, 1994, to examine the test data collected overnight. This field review of the data confirmed that it would be prudent to conclude the aquifer test after little more than 24 hours of test pumping. Consequently, this project report describes this aquifer test as a 24-hour aquifer test.

The 24-hour aquifer test was conducted on September 29-30, 1994, observing ground-water levels in TW 3-94 and in OW 6, OW 7, and OW 8 finished in the lower sand-and-gravel aquifer. In addition, ground-water levels were recorded in OW 4 finished in the shallow sand-and-gravel aquifer. Pumping at TW 3-94 commenced at 9:40 a.m. on September 29 and ended at 12:50 p.m. on September 30, for a pumping period of 1,630 minutes. An average discharge rate of about 410 gpm was maintained throughout the test. At the completion of pumping, water-level recovery was measured for 104 minutes. Observed ground-water level data for the 24-hour

aquifer test with TW 3-94 are included in appendix H and the chemical analysis of the water sample collected during the test is in appendix E.

24-hour Aquifer Test Results

The graphical plots of the collected data showed multiple barrier boundaries affected the drawdown of ground-water levels severely. The time-drawdown graphs of the data were analyzed using the Type-Curve (Boulton/Prickett) and Straight-Line (Jacob) methodologies described earlier. Good agreement for the aquifer properties was found as shown in table 1. Transmissivity values ranged from about 17,400 gpd/ft at OW 8 to about 25,500 gpd/ft at the pumped well and averaged about 20,550 gpd/ft, while hydraulic conductivity values had a range from about 520 gpd/ft^2 at OW 7 to 770 gpd/ft^2 at the pumped well and averaged about 590 gpd/ft^2. Storage coefficients varied from 0.0001 at OW 8 to 0.0004 at OW 6 and averaged about 0.00022.

Table 1. Results of 24-hour test, Test Well 3-94

	Straight-Line Method			Type-Curve Method		
Well	T *(gpd/fi)*	K *(gpd/ft^2)*	S	T *(gpd/ft)*	K *(gpd/ft^2)*	S
TW 3-94	25,500	770	–	–	–	-
OW 6	20,000	525	0.0003	21,360	560	0.0004
OW 7	20,800	520	0.0002	21,360	535	0.00024
OW 8	17,460	625	0.0001	17,400	600	0.0001

Notes:
T = transmissivity
K = hydraulic conductivity
S = storage coefficient

The time-drawdown graphs for the observation wells also were used to apply the Law-of-Times formula (Ingersoll, Zobel, and Ingersoll, 1948) to determine distances to the barrier boundaries. Good agreement was found with the data for OW 6 and OW 7, but the OW 8 data provided much greater distances. The data for OW 6 and OW 7 suggested the barrier boundaries were present about 300 feet and 500 feet from the wells, which was judged to be reasonable, based on the aquifer response to pumping.

A simplistic theoretical idealized model of the aquifer conditions was hypothesized to enable an estimation of the yield of TW 3-94. The model selected was an infinite strip, about 800 feet in width, extending north and south for a distance beyond the cone of depression, i.e., beyond a distance at which additional boundaries would influence drawdowns. Image-well locations to simulate the barrier boundaries were determined by applying image-well theory (Ferris, 1959; Carslaw and Jaeger, 1959; and Knowles, 1955) to the graphical depiction of a well situated within the aquifer located at the center of the strip. Image-well distances were then calculated. Although placing the pumping well in the center of the strip was not quite as

suggested by the analysis for barrier boundary distances, it facilitated an initial analysis with the model and, as seen from the results below, was justified.

A theoretical distance-drawdown curve was constructed next, using the aquifer properties determined from the 24-hour test (T = 20,550 and S= 0.0002), a pumping rate of 200 gpm, and a pumping period of two days. Finally, the drawdown interference associated with each of the image wells located above was determined from the distance-drawdown curve and summed.

The drawdown at TW 3-94 was calculated by applying the Theis nonequilibrium formula to determine the theoretical drawdown, using the Jacob method to calculate estimated drawdown due to well loss, and adding the drawdown interference from the image wells simulating the effects of the barrier boundaries. This resultant drawdown for a pumping rate of 200 gpm for two days was then proportioned to the available drawdown in TW 3-94 to estimate that TW 3-94 could be pumped at a rate of about 160 gpm for 2-3 days before drawdowns reached critical levels. The allowable drawdown at the pumped well was determined by using the available artesian head, less a 5-foot allowance for drought conditions, and allowing up to 50 percent dewatering of the saturated thickness of about 24 feet.

Conclusion

The result of the testing of the lower sand-and-gravel aquifer suggested that TW 3-94 can only be used to supply a limited amount of water for short emergencies. The yield is not satisfactory for long-term continuous use.

The disappointing results of the testing of the lower sand-and-gravel indicated that the shallow sand-and-gravel aquifer had to be evaluated to determine if an adequate water supply source could be developed. In accordance with the well designation scheme shown earlier, a test well finished only in the shallow sand-and-gravel aquifer was constructed and designated as Test Well 2-94.

Test Well 2-94: Shallow Sand-and-Gravel Aquifer

The pumping test well, TW 2-94, was drilled to a depth of 47 feet. The bore hole was constructed 30 inches in diameter with 12-inch black steel casing and stainless steel well screen. A 15-foot-long 100-slot (0.100-inch) well screen was placed between depths of 32 and 47 feet. Northern No. 3 gravel pack was placed in the annulus between depths of 29 and 47 feet, and Northern No. 1 gravel pack was placed between depths of 20 to 29 feet. A bentonite seal was placed between depths of 5 to 20 feet, and the remainder of the annulus above 5 feet was filled with drill cuttings. Two shallow observation wells, OW 4 and OW 5, had been constructed in the same bore holes with OW 6 and OW 7, respectively. A bentonite seal was used in the bore hole to separate the observation wells opposite the respective aquifers. A third shallow observation well, OW 3, was drilled about 85 feet north of TW 2-94. All observation wells were cased with 2-inch PVC casing and screen. Ten-foot- or 15-foot-long sections of screen were used in each shallow observation well (see appendix A for construction details).

Aquifer Tests

A long-term 3- to 7- day aquifer test was conducted using TW 2-94 and three observation wells (OW 3, OW 4, and OW 5). In order to expedite the investigation, a preliminary 24-hour aquifer test was not conducted.

Test Protocol

Speth Plumbing, Inc., furnished and installed pumping equipment in the test well and discharge piping. The Water Survey furnished and installed water-level-measuring and data-logging equipment in the test well and in the observation wells and discharge-rate-measuring equipment.

The step test was conducted on December 1, 1994, and a 4-day aquifer test was conducted on December 5-9, 1994. Pumped ground water was conducted from the well head through 6-inch and 8-inch plastic pipe to a natural drainage way to the Kaskaskia River. A valve at the well head was used to control the pumping rates, and an 8-inch orifice tube was used to measure discharge rates. Ground-water-level-measuring equipment included Omnidata logging equipment and pressure transmitters in each well, supplemented with electric dropline measurements.

Step Test

The step test began at a rate of about 350 gpm and increased in approximately 50-gpm increments. Ideally, a minimum of three steps is necessary for analysis, and five steps are desirable. For this test, five 30-minute steps were conducted at rates of about 350,400,450, 500, and 550 gpm. Observed ground-water-level data for the step test with TW 2-94 are included in appendix I and the chemical analysis of the water sample collected during the step test is in appendix E.

Step-Test Results

The data collected during the step test conducted on December 1, 1994, were analyzed using the Jacob step-test methodology described earlier. The results of the analysis indicate that TW 2-94 had a relatively moderate to low well-loss coefficient of approximately 1.3 sec^2/ft^5. Since drawdown due to well loss is proportional to the square of the pumping rate, with relatively modest pumping rates (200 to 400 gpm) about 4 to 7 percent of the observed drawdown in the well was due to well loss.

4-day Aquifer Test

Similar to the case with the aquifer testing on TW 3-94, it was decided to attempt a longer term aquifer test with TW 2-94 without conducting a 24-hour aquifer test. However, because of possible changes in ground-water levels in the shallow sand-and-gravel aquifer in response to changes in Kaskaskia River stages, coordination with the Water Control Management Unit, U.S.

Army Corps of Engineers, St. Louis, revealed that an increase in release rate from the Shelbyville dam and reservoir about 20 miles upstream was being planned for almost immediate implementation. Further discussion with Corps officials resulted in a short postponement of this increase in release rate until late afternoon, December 8, 1994. This postponement permitted a "window" to conduct a 4-day aquifer test beginning on Monday, December 5, 1994, when river stages should be relatively stable, barring significant precipitation.

The 4-day aquifer test was conducted on December 5-9, 1994. In addition to observing ground-water levels in TW 2-94 and in OW 3, OW 4, and OW 5 finished in the shallow sand-and-gravel aquifer, ground-water levels were recorded in OW 6 finished in the lower sand-and-gravel aquifer, and a pressure transmitter was placed in the Kaskaskia River to record relative changes in river stage. Pumping at TW 2-94 commenced at 12:30 p.m. on December 5 and ended at 11:30 a.m. on December 9, for a pumping period of 5,700 minutes. An average discharge rate of about 385 gpm was maintained throughout the test. At the completion of pumping, water-level recovery was measured for 111 minutes. Observed ground-water-level data for the 4-day aquifer test with TW 2-94 are included in appendix J and the chemical analysis of the water sample collected during the test is in appendix E.

24-hour Aquifer Test Results

The aquifer test data show the response of ground-water levels to changes in river stage beginning about 5,000 minutes into the test. Since river stages near the testing site during the first 5,000 minutes were all within ±0.05 feet of one another (see appendix K), no adjustments to the collected data for river stage changes were made. Barometric pressure data, which can influence ground-water-level changes in many cases, were obtained for the Springfield and Vandalia weather stations. The average of the hourly data from these two stations shows a range of only about 33.8 to 34.4 feet of water or 29.77 to 30.40 inches of mercury (in Hg) during the aquifer test period (see appendix K). Available information indicated that the aquifer was under water-table (unconfined) conditions at the time of the test. Because barometric changes generally have less effect on water-table aquifers, these barometric changes were judged small enough to have little or no effect on the collected ground-water-level data. Drawdown data from the pumped well were corrected for dewatering, however, calculations indicated that the effects of dewatering at the observation wells were not significant. Time-drawdown graphs of the data were then constructed and analyzed, using the Type-Curve (Boulton/Prickett) and Straight-Line (Jacob) methodologies.

Analysis of the data collected from TW 2-94 and OW 3 and OW 4 indicated the transmissivity of the sand-and-gravel aquifer at the time of the test ranged from about 63,000 gpd/ft to 70,100 gpd/ft, as shown in table 2, and averaged about 67,100 gpd/ft (hydraulic conductivity of about 1900 gpd/ft^2). Analysis of data from OW 5 suggested a significantly higher transmissivity judged not to be representative of the site conditions. The collected data did not allow determination of the specific yield of the aquifer due to the effects of gravity drainage taking place within the sand-and-gravel aquifer throughout the test. However, under similar aquifer conditions an assumed value of 0.1 for specific yield is reasonably conservative and allows representative well yields to be estimated. None of the observation well data indicated the

presence of aquifer boundaries during the test period. Data from the pumping test well showed variations in ground-water levels near the end of the test period, which might be suggestive of a boundary, but this was not confirmed with the observation well data.

Table 2. Results of 4-day aquifer test, Test Well 2-94

Well	Straight-Line Method			Type-Curve Method		
	T (gpd/ft)	K (gpd/ft^2)	S	T (gpd/ft)	K (gpd/ft^2)	S
TW 2-94	70,100	1,940	-	-	-	-
OW 3	63,500	1,750	-	63,000	1,730	-
OW 4	70,100	1,760	-	69,000	1,730	-
OW 5	96,800	3,290	-	88,200	3,000	-

Notes:
T = transmissivity
K = hydraulic conductivity
S = specific yield

With this information, a theoretical idealized model of the aquifer conditions in the vicinity of TW 2-94 was hypothesized. The aquifer model was an infinite strip, approximately 4,800 feet wide, extending north and south beyond the cone of depression. The width of the model aquifer was derived from calculations that assumed that the effects of boundaries commenced after about 5,000 minutes of pumping. While ostensibly conservative, this assumption is reasonably consistent with the extent of the present Kaskaskia River bottomlands, and, as described later, does not significantly reduce the estimated yield of a well field in the vicinity of TW 2-94.

The occurrence and possible extent of a hydraulic connection between the Kaskaskia River and the shallow sand-and-gravel aquifer was not confirmed by the aquifer test. If a good hydraulic connection exists, it will serve to enhance the available yield from the proposed well field. It also is possible that river bottom conditions during and after low-flow drought periods may not be favorable for allowing water to move from the river into the aquifer due to deposition of fine-grained sediments on the river bottom. These periods may correspond to times when water demands for the water system are higher than average. Accordingly, neglecting a possible increase in well field yield on the basis of induced infiltration of river water is both prudent, as a ground-water resource management philosophy, and reasonable, based on the information available at this time.

The yield of a shallow sand-and-gravel aquifer also must take into account effects on ground-water levels by extended drought conditions. In this case, there are no data available to indicate how much natural decline in ground-water levels might occur during these periods. Records of Kaskaskia River stages during June and July 1988 show that river stages during drought conditions and minimum release rates from Shelbyville dam and reservoir were about 4.9 feet lower than river stages during the time of the aquifer test. To allow for similar future

drought effects, it was assumed that ground-water levels might be about 5 feet lower than at the time of the aquifer test. These lowered ground-water levels have the effect of reducing the saturated thickness of the sand-and-gravel aquifer and reducing the effective transmissivity of the aquifer. The driller's logs of the test well and the observation wells and measured depths to water showed the average thickness of the aquifer to be about 35.4 feet. When this thickness was reduced 5 feet to allow for drought conditions, a transmissivity of about 57,600 gpd/ft resulted.

Thus the model aquifer consisted of the following elements: 1) a transmissivity of about 57,600 gpd/ft, 2) a long-term specific yield of 0.1, and 3) barrier boundaries at distances of about 2,400 feet on either side of the well field for an aquifer width of 4,800 feet.

Using the hydraulic properties of the model aquifer, a theoretical distance-drawdown graph was constructed to estimate the effects of the assumed boundaries and the mutual interference effects between production wells. Allowance was made for dewatering up to 50 percent of the saturated thickness of the aquifer at the production well sites by adjusting drawdowns for the decrease in transmissivity.

Based on the assumptions and conditions described above, the idealized model aquifer, and resulting calculations of drawdown and interference effects, it appears that a well field yield of about 400 gpm (576,000 gpd) is feasible from two production wells (200 gpm each) spaced at about 250-300 feet at the west edge of the 20-acre property owned by the water company. Each production well may be equipped with about 10-12 feet of well screen and well pump intake positioned about 15 feet from the bottom of the well. To help assure a dependable source of supply, it is recommended that a well field of three production wells tapping the shallow sand and gravel, each spaced 250-300 feet apart along the west edge of the property, be planned. Using the two end wells in normal operation will minimize the operational drawdown interference between wells with the center well being a standby production well.

Conclusion

This evaluation indicated that the well field yield is less than that desired for the long-term future plans of the water company. However, the ground-water exploration and testing conducted suggests that the chances are good that a second well field can be sited at another location in the bottomlands of the Kaskaskia River. Providing the site of the water treatment plant is to be near the *NE¼, SE¼, NW¼,* Section 5, T.7 N., R.2 E., Fayette County, a review of the topographic map suggests that a convenient location to explore for a second well field may lie in the SW¼, NW¼, and the NW¼, SW¼, Section 6, T.7 N., R.2 E., and the SE¼, NE¼, and the NE¼, SE¼, Section 1, T.7 N., R.l E., Fayette County (see figure 7). This area lies about 1½ miles west of the treatment plant site and about 1½ miles southwest of the present well field site. Alternatively, the area in the vicinity of the NW corner, Section 6, T.7 N., R.2 E., and the SW corner, Section 31, T.8 N., R.2 E., about one mile southwest of the present well field site may be satisfactory. It is suggested that several test borings in these areas be considered as soon as is feasible to determine the presence and texture of the sand-and-gravel aquifer(s). Aquifer testing can be conducted as soon as funds allow. Actual development of the second well field can occur at any future time when water demands increase.

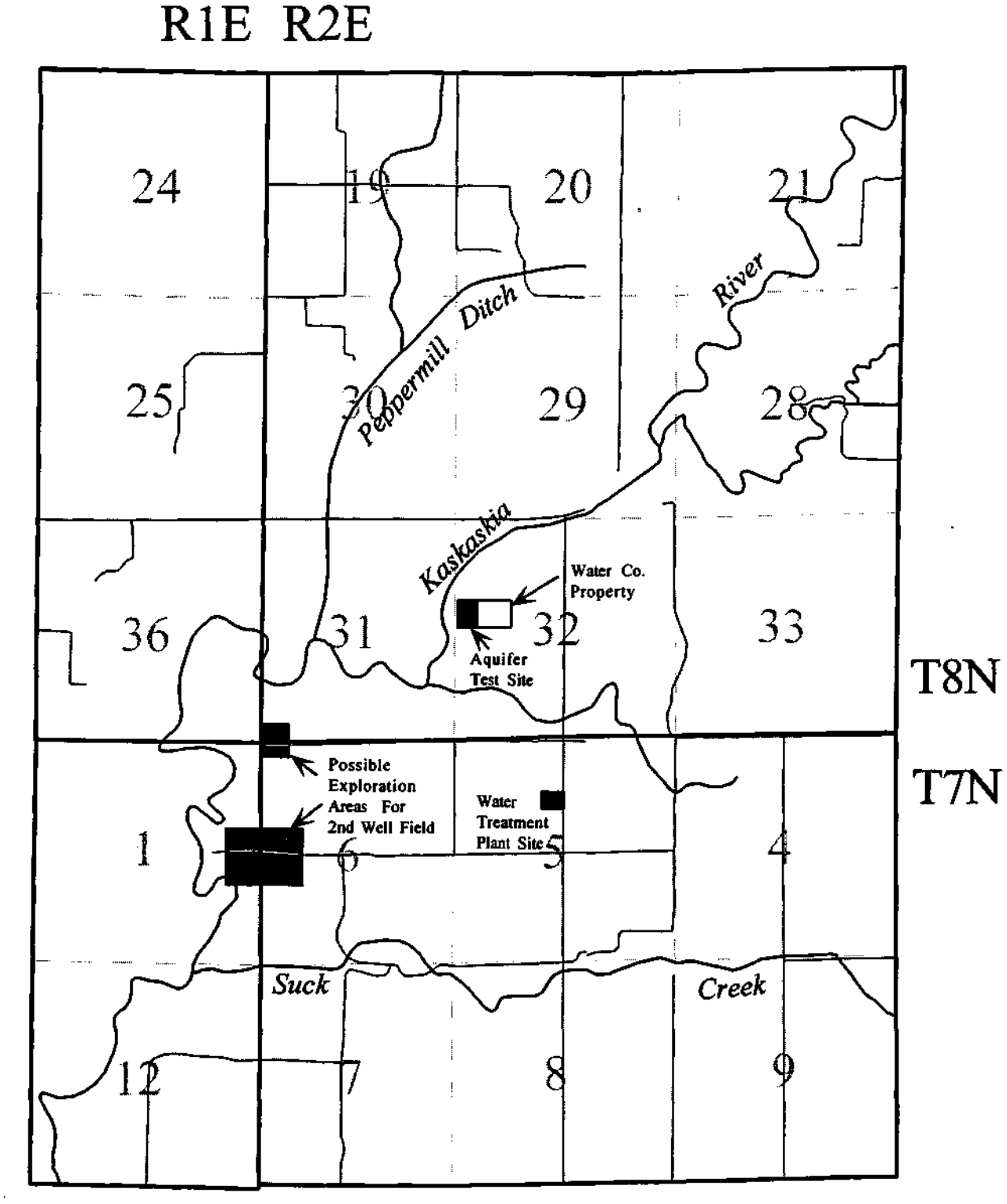


Figure 7. Possible convenient sites for exploration for a second well field

CONCLUSIONS

This ground-water investigation in the bottomlands of the Kaskaskia River valley was encouraging with the discovery of the presence of deeper sand-and-gravel deposits present in the preglacial buried bedrock valley. The limited areal extent of these deposits at the testing location was disappointing. Prior to this investigation, the limited study conducted in 1961 for Vandalia and the test drilling conducted by the village of Ramsey had not attempted to determine whether deeper sand-and-gravel deposits were present at those locations where the preglacial buried bedrock valley might be present.

The field testing conducted at the test site in Section 32, T.8 N., R.2 E., Fayette County, and subsequent analysis of data confirmed earlier thoughts regarding the yield capability of the shallow sand-and-gravel aquifer system associated with the present Kaskaskia River valley. This investigation showed that it might be possible to develop the shallow sand-and-gravel aquifer associated with the Kaskaskia River bottomlands as a source of ground water of up to 1½ mgd to meet the present and future needs of the Fayette Water Company. The interim results of this investigation, however, indicated that at least two widely spaced well fields will be needed to achieve the desired source capacity.

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Appendix A.

Test Well and Observation Well Information

AQUIFER TEST
FAYETTE WATER COMPANY TEST WELL 1-94
FAYETTE COUNTY, ILLINOIS

by
Speth Plumbing, Inc.
Illinois State Water Survey
Heneghan and Associates
Trustees, Fayette Water Company

Well Owner:	Fayette Water Company
Well Location:	Approximately 2600 feet South and 30 feet East of the NW/corner, Section 32, T.8 N., R.2 E., Fayette County, Illinois
Date Well Completed:	June, 1994
Date of Step Test:	July 12, 1994
Length of Step Test:	8 30-minute steps
Date of 24-Hr Aquifer Test:	July 13-14, 1994
No. of Observation Wells:	2
Date of 7-Day Aquifer Test:	None
No. of Observation Wells:	na
Aquifer:	Sand and Gravel

PUMPED TEST WELL DATA

Well No.:	Test Well 1-94
Depth:	84 feet
Drilling Contractor:	Speth Plumbing, Inc., Allendale, IL
Formation Samples:	
Drilling Method:	Straight rotary
Hole Record:	20-inch, 0-84 feet
Casing Record:	12-inch PVC, +1.9 -34 feet, 44-64
Screen Record:	12-inch PVC, 34-44 feet, 64-84 feet 0.060 slot
Annulus and Gravel Pack Record:	Benseal from 3 ft to 20 ft, Northern Gravel No. 3, from 20 ft to 84 feet
Ground Elevation at Well:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of well casing, 1.9 feet above lsd
Nonpumping Water Level:	10.38 feet below TOC, July 12, 1994 10.62 feet below TOC, July 13, 1994
Measuring Equipment:	Electric dropline, Omnidata loggers w/ pressure transmitters, SWS 8-inch orifice tube with plates 4 and 5.

Test Pump and Power:	Submersible turbine w/ diesel generator
Test Pump Setting:	Approximately 79 feet
Time Water Sample Collected:	2:20 pm, July 13, 1994
Temperature of Water:	56.5 °F

PUMPED TEST WELL 1-94
DRILLERS LOG

Formation	From	To
Clayey sand/clay-sand mix	0	2
Well graded sand w/ pockets of gravelly sand	2	42
Organic clays w/ trees and heave organics	42	62
Well graded sands, gravelly sands	62	86
Limestone	EOB	

AQUIFER TEST
FAYETTE WATER COMPANY TEST WELL 2-94
FAYETTE COUNTY, ILLINOIS

by
Speth Plumbing, Inc.
Illinois State Water Survey
Heneghan and Associates
Trustees, Fayette Water Company

Well Owner:	Fayette Water Company
Well Location:	Approximately 2615 feet South and 30 feet East of the NW/corner, Section 32, T.8 N., R.2 E., Fayette County, Illinois
Date Well Completed:	November 16, 1994
Date of Step Test:	December 1, 1994
Length of Step Test:	5 30-minute steps
Date of 24-Hr Aquifer Test:	None
No. of Observation Wells:	na
Date of 4-Day Aquifer Test:	December 5-9, 1994
No. of Observation Wells:	3
Aquifer:	Sand and Gravel (shallow)

PUMPED TEST WELL DATA

Well No.:	Test Well 2-94
Depth:	47 feet
Drilling Contractor:	Speth Plumbing, Inc., Allendale, IL
Formation Samples:	
Drilling Method:	Bucket
Hole Record:	30-inch, 0-47 feet
Casing Record:	12-inch black steel, +0.8-32 feet,
Screen Record:	12-inch stainless steel, 32-47 feet (15 feet long), 0.100-inch slot (100 slot)
Annulus and Gravel Pack Record:	Benseal 5-20 feet, Northern Gravel No. 1 20-29 feet, Northern Gravel No. 3 29-47 feet
Ground Elevation at Well:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of well casing, 0.8 feet above lsd
Nonpumping Water Level:	11.06 feet below TOC, 10:14 am December 1, 1994 10.72 feet below TOC, 11:48 am December 5, 1994

Measuring Equipment:	Electric dropline, Omnidata loggers w/ pressure transmitters, SWS 8-inch orifice tube with plates 3 and 4.
Test Pump and Power:	Submersible turbine w/ diesel generator
Test Pump Setting:	Approximately ??? feet
Times Water Sample Collected:	3:36 pm December 1, 1994 3:20 pm December 5, 1994 10:50 am December 9, 1994
Temperature of Water:	56.1 °F

PUMPED TEST WELL 2-94
DRILLERS LOG

Formation	From	To
Sand clay (brown)	0	10
Fine sand (brown)	10	15
Medium sand (brown)	15	25
Coarse sand & fine gravel mix (gray)	25	46
Gray clay	46	47

AQUIFER TEST
FAYETTE WATER COMPANY TEST WELL 3-94
FAYETTE COUNTY, ILLINOIS

by
Speth Plumbing, Inc.
Illinois State Water Survey
Heneghan and Associates
Trustees, Fayette Water Company

Well Owner:	Fayette Water Company
Well Location:	Approximately 2635 feet South and 30 feet East of the NW/corner, Section 32, T.8 N., R.2 E., Fayette County, Illinois
Date Well Completed:	September 21, 1994
Date of Step Test:	September 28, 1994
Length of Step Test:	3 30-minute steps
Date of 24-Hr Aquifer Test:	September 29-30, 1994
No. of Observation Wells:	4
Date of 7-Day Aquifer Test:	None
No. of Observation Wells:	na
Aquifer:	Sand and Gravel (lower)

PUMPED TEST WELL DATA

Well No.:	Test Well 3-94
Depth:	82 feet
Drilling Contractor:	Speth Plumbing, Inc., Allendale, IL
Formation Samples:	
Drilling Method:	Bucket
Hole Record:	32-inch, 0-82 feet
Casing Record:	12-inch steel, +0.8-62 feet,
Screen Record:	12-inch stainless steel, 62-82 feet (20 feet long), 0.100-inch slot (100 slot)
Annulus and Gravel Pack Record:	Drill cuttings 0-45 feet, Bentonite 44-55, Northern Gravel No. 1 55-70 feet, Northern Gravel No. 3 70-82 feet
Ground Elevation at Well:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of well casing, 1.2 feet above lsd
Nonpumping Water Level:	14.46 feet below TOC, 10:16 am September 28, 1994 15.62 feet below TOC, 8:52 am September 29, 1994

Measuring Equipment:	Electric dropline, Omnidata loggers w/ pressure transmitters, SWS 8-inch orifice tube with plate 4.
Test Pump and Power:	Submersible turbine w/ diesel engine and generator
Test Pump Setting:	Approximately ??? feet
Times Water Sample Collected:	12:17 pm September 29, 1994
Temperature of Water:	55.8 °F

PUMPED TEST WELL 3-94
DRILLERS LOG

Formation	From	To
Sandy top soil	0	5
Brown sand	5	20
Medium to coarse sand	20	25
Coarse sand & fine gravel mix	25	35
Coarse sand & fine to medium gravel mix	35	47.5
Blue gray mud	47.5	55
Medium sand	55	60
Medium to coarse sand	60	65
Medium to coarse sand & some fine gravel mix	65	70
Coarse sand & fine to medium gravel mix	70	82
Blue gray mud	82	83

OBSERVATION WELL NO. 1 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	1
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	90 feet
Hole Record:	7⅞-inch; 0-90 feet
Casing Record:	2-inch; +1.75-30 feet, 40-70 feet
Screen Record:	2-inch PVC; 0.020-inch (20 slot); 30-40 feet, 70-90 feet
Annulus and Gravel Pack Record:	Benseal 0-20 feet, Gravel pack 20-90 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter #4 (6 psi)
Ground Elevation:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of casing, 1.75 feet above lsd
Nonpumping Water Level:	11.21 feet below TOC, 11:12 am July 13, 1994
Distance and Direction from Pumped Well:	150.3 feet North of Test Well 1-94

Remarks:

DRILLERS LOG

Formation	From	To
Clayey sand/clay-sand mix	0	2
Well graded sand w/ pockets of gravelly sands	2	42
Organic clays w/ trees/dense organics	42	56
Well graded sands, gravelly sands	56	90
Limestone	90	92

OBSERVATION WELL NO. 2 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	2
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	92 feet
Hole Record:	7⅞-inch; 0-92 feet
Casing Record:	2-inch; +1.75-30 feet, 40-72 feet
Screen Record:	2-inch PVC; 0.020-inch (20 slot); 30-40 feet, 72-92 feet
Annulus and Gravel Pack Record:	Benseal 0-20 feet, Gravel pack 20-92 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter #1 (6 psi)
Ground Elevation:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of casing, 1.75 feet above lsd
Nonpumping Water Level:	11.79 feet below TOC, 11:14 am July 13, 1994
Distance and Direction from Pumped Well:	514.5 feet North of Test Well 1-94

Remarks:

DRILLERS LOG

Formation	From	To
Clayey sand-topsoil/clay-sand mixture	0	12
Well graded sand w/ pockets of gravelly sands	12	46
Organic clays w/ trees/dense organics	46	62
Well graded sands, gravelly sands	62	94
Limestone	EOB	

OBSERVATION WELL NO. 3 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	3
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	47 feet (measured 48.5 feet below lsd)
Hole Record:	6-inch; 0-47 feet
Casing Record:	2-inch PVC; +2.5-32 feet
Screen Record:	2-inch PVC; 0.020 (20 slot); 32-47 feet
Annulus and Gravel Pack Record:	Benseal 0-20 feet, Gravel pack 20-47 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter
Ground Elevation:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of casing, 2.5 feet above lsd
Nonpumping Water Level:	12.41 feet below TOC, 10:20 am December 1, 1994 12.08 feet below TOC, 11:50 am December 5, 1994
Distance and Direction from Pumped Well:	85 feet North of Test WeD 2-94

Remarks:

DRILLERS LOG

Formation	From	To
Sand clay (brown)	0	10
Fine sand (brown)	10	15
Medium sand (brown)	15	25
Coarse sand & fine gravel mix (gray)	25	46
Gray clay	46	47

OBSERVATION WELL NO. 4 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	4
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	50 feet (measured 49.4 feet below lsd)
Hole Record:	6-inch; 0-98 feet (OW 6)
Casing Record:	2-inch PVC; +1.9-40 feet
Screen Record:	2-inch PVC; 0.020-inch slot (20 slot); 40-50 feet
Annulus and Gravel Pack Record:	Bentonite 0-20 feet, Gravel pack 20-50 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter
Ground Elevation:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of casing, 1.9 feet above lsd
Nonpumping Water Level:	12.29 feet below TOC, 10:28 am December 1, 1994 11.96 feet below TOC, 11:51 am December 5, 1994
Distance and Direction from Pumped Well:	150.6 feet North of Test Well 2-94
Remarks:	Installed in same bore hole as OW 6 (lower)

DRILLERS LOG

Formation	From	To
Sandy top soil	0	5
Brown sand	5	20
Medium to coarse sand & fine gravel mix	20	25
Coarse sand to fine gravel to medium gravel mix	25	45
Coarse sand to medium gravel mix (some large gravel)	45	50
Gray weathered shale	50	55
Gray weathered shale (mud)	55	59
Coarse sand & medium gravel mix	59	75
Coarse sand & gravel mix	75	97
Soft gray mud	97	98

OBSERVATION WELL NO. 5 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	5
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	40 feet (measured 40.4 feet below lsd)
Hole Record:	6-inch; 0-99 feet (OW 7)
Casing Record:	2-inch PVC; +2.1-40 feet
Screen Record:	2-inch PVC; 0.020-inch slot (20 slot); 30-40 feet
Annulus and Gravel Pack Record:	Bentonite 0-20 feet, Gravel pack 20-40 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter
Ground Elevation:	Approximately 494 feet above msl, topographic map
Measuring Point:	Top of casing, 2.1 feet above lsd
Nonpumping Water Level:	13.00 feet below TOC, 10:37 am December 1, 1994 12.66 feet below TOC, 11:53 am December 5, 1994
Distance and Direction from Pumped Well:	258 feet North of Test Well 2-94
Remarks:	Installed in same bore hole as OW 7 (lower)

DRILLERS LOG

Formation	From	To
Sandy top soil	0	5
Brown sand	5	15
Brown sand, small gravel at 19 ft	15	20
Coarse sand and fine gravel to medium gravel mix	25	40
Blue gray mud, soft	40	55
Blue gray mud	55	60
Coarse sand & fine gravel mix	60	65
Coarse sand & fine to medium gravel mix	65	100
Blue gray weathered shale	100	102

OBSERVATION WELL NO. 6 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	6
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	98 feet (measured 95.8 feet below lsd)
Hole Record:	6-inch; 0-98 feet (OW 6)
Casing Record:	2-inch PVC; +1.9-78 feet
Screen Record:	2-inch PVC; 0.020-inch slot (20 slot); 78-98 feet
Annulus and Gravel Pack Record:	Bentonite 0-20 feet, Gravel pack 20-50 feet, Bentonite 50-59 feet, Gravel pack 59-98 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter No. 5 (15 psi)
Ground Elevation:	Approximately 495 feet above msl, topographic map
Measuring Point:	Top of casing, 1.9 feet above lsd
Nonpumping Water Level:	14.78 feet below TOC, 10:21 am September 28, 1994 16.00 feet below TOC, 8:55 am September 29, 1994
Distance and Direction from Pumped Well:	171 feet North of Test Well 3-94 (150.6 ft N of TW 2-94)
Remarks:	OW 4 (shallow) installed in same bore hole as OW 6 (lower)

DRILLERS LOG

Formation	From	To
Sandy top soil	0	5
Brown sand	5	20
Medium to coarse sand & fine gravel mix	20	25
Coarse sand to fine gravel to medium gravel mix	25	45
Coarse sand to medium gravel mix (some large gravel)	45	50
Gray weathered shale	50	55
Gray weathered shale (mud)	55	59
Coarse sand & medium gravel mix	59	75
Coarse sand & gravel mix	75	97
Soft gray mud	97	98

OBSERVATION WELL NO. 7 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	7
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	100 feet (measured 98.9 feet below lsd)
Hole Record:	6-inch; 0-100 feet
Casing Record:	2-inch PVC; +2.1-85 feet
Screen Record:	2-inch PVC; 0.020-inch slot (20 slot); 85-100 feet
Annulus and Gravel Pack Record:	Bentonite 0-20 feet, Gravel pack 20-40 feet, Bentonite 40-60 feet, Gravel pack 60-100 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter No. 16 (15 psi)
Ground Elevation:	Approximately 496 feet above msl, topographic map
Measuring Point:	Top of casing, 2.1 feet above lsd
Nonpumping Water Level:	16.07 feet below TOC, 10:27 am September 28, 1994 17.31 feet below TOC, 8:57 am September 29, 1994
Distance and Direction from Pumped Well:	278.4 feet North of Test Well 3-94 (258 ft N of TW 2-94
Remarks:	OW 5 (shallow) installed in same bore hole as OW 7 (lower)

DRILLERS LOG

Formation	From	To
Sandy top soil	0	5
Brown sand	5	15
Brown sand, small gravel at 19 ft	15	20
Coarse sand and fine gravel to medium gravel mix	25	40
Blue gray mud, soft	40	55
Blue gray mud	55	60
Coarse sand & fine gravel mix	60	65
Coarse sand & fine to medium gravel mix	65	100
Blue gray weathered shale	100	102

OBSERVATION WELL NO. 8 DATA

Site:	Kaskaskia River Valley
Observation Well No.:	8
Drilling Contractor:	Speth Plumbing, Inc.
Depth:	93 feet (measured 91.6 feet below lsd)
Hole Record:	6-inch; 0-94 feet
Casing Record:	2-inch PVC; +2.2-78 feet
Screen Record:	2-inch PVC; 0.020-inch slot (20 slot); 78-93 feet
Annulus and Gravel Pack Record:	Bentonite 0-65 feet, Gravel pack 65-93 feet
Measuring Equipment:	Solinst dropline, Omnidata logger w/ pressure transmitter No. 1 (6 psi)
Ground Elevation:	Approximately 495 feet above msl, topographic map
Measuring Point:	Top of casing, 2.2 feet above lsd
Nonpumping Water Level:	15.57 feet below TOC, 10:30 am September 28, 1994 16.84 feet below TOC, 8:58 am September 29, 1994
Distance and Direction from Pumped Well:	Approx 520 feet North of Test Well 3-94

Remarks:

DRILLERS LOG

Formation	From	To
Top soil	0	5
Sandy clay	5	10
Brown sand	10	20
Coarse sand and fine gravel to medium gravel mix	20	37
Blue gray mud, soft	37	40
Blue gray mud, at 43 to 44 had a strip of muddy sand and gravel	40	46
Coarse sand & fine to medium gravel mix	46	50
Blue gray mud, soft	50	65
Coarse sand & fine to medium gravel mix	65	93
Limestone	93	94

Appendix B.

Sieve Data for Aquifer Samples from Test Well 1-94

Appendix B. Sieve Data for Aquifer Samples from Test Well 1-94

Drilled by Speth Plumbing, Inc.
Drilled June, 1994
Samples sieved by Illinois State Geological Survey

Depth	*Sample*	*U.S. Sieves, # / opening size, in mm*									
(ft)	*Weight*	*#5*	*#10*	*#18*	*#25*	*#35*	*#45*	*#60*	*#120*	*#230*	*PAN*
	(g)	*4.00*	*2.00*	*1.00*	*0.710*	*0.500*	*0.355*	*0.250*	*0.125*	*0.063*	
		(Cumulative Percent Passing)									
October 21, 1994:											
20 – 25	128.02	97.70	96.71	92.16	90.42	85.70	67.58	39.48	6.64	2.01	0.04
25 – 35	213.64	99.96	99.01	39.72	24.01	16.43	8.89	5.54	2.09	1.04	0.08
35 – 40	186.57	100.00	98.38	75.52	50.27	26.02	12.23	7.48	2.46	0.99	0.03
40 – 45	114.62	99.45	86.61	58.17	36.29	24.15	12.09	5.54	1.84	0.96	0.22
August 24, 1994:											
60 – 70	134.47	83.55	13.12	5.92	4.69	3.87	2.96	2.31	1.65	1.11	0.15
70 – 75	97.52	93.58	56.20	25.62	22.44	18.09	9.51	3.96	2.04	1.50	0.55
75 – 80	94.59	99.59	96.46	53.41	44.13	35.67	16.80	4.82	1.36	0.79	−0.02
80 – 84	103.45	99.33	58.53	11.12	7.95	6.57	4.37	2.56	1.44	0.83	−0.19

Appendix C.

Test Well 1-94

Step Test: Water-Level Measurements

(July 1994)

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 1-94
Step Test: July 12, 1994

Date/ Hour	Elapsed time *(min)*	Depth to water *(ft)*	Piez head *(ft)*	Pumping rate *(gpm)*	Barometric pressure *(in Hg)*	Remarks
07/12/94						
10:32 AM	0	10.38				Measured D/W
11:01 AM	0	10.38			29.71	Water level trend
11:02 AM	0	10.38			29.71	
11:03 AM	0	10.38			29.70	
11:04 AM	0	10.38			29.70	
11:05 AM	0	10.38			29.71	
11:06 AM	0	10.38			29.71	
11:07 AM	0	10.38			29.71	
11:08 AM	0	10.38			29.71	
11:09 AM	0	10.38			29.71	
11:10 AM	0	10.38			29.71	
11:11 AM	0	10.38			29.71	
11:12 AM	0	10.38			29.71	
11:13 AM	0	10.38			29.71	
11:14 AM	0	10.38			29.71	
11:15 AM	0	10.38			29.71	
11:16 AM	0	10.38			29.71	
11:17 AM	0	10.38			29.71	
11:18 AM	0	10.38			29.71	
11:19 AM	0	10.37			29.71	
11:20 AM	0	10.37			29.71	Pump ON; Step 1
11:21 AM	1	28.94			29.71	
11:22 AM	2	30.14			29.71	
11:23 AM	3	30.59	1.92	757	29.71	
11:24 AM	4	30.90			29.71	
11:25 AM	5	31.08	1.92	757	29.71	
11:26 AM	6	31.31			29.71	
11:27 AM	7	31.45			29.71	
11:28 AM	8	31.63	1.89	754	29.71	
11:29 AM	9	31.76			29.71	
11:30 AM	10	31.83			29.70	
11:32 AM	12	32.01	1.89	754	29.70	
11:34 AM	14	32.96			29.70	
11:36 AM	16	33.04			29.70	
11:37 AM	17	32.88	2.00	770	29.70	Adjust rate
11:38 AM	18	32.99	1.92	757	29.70	
11:40 AM	20	33.03			29.70	
11:42 AM	22	33.17			29.70	
11:44 AM	24	33.23	1.91	756	29.70	
11:46 AM	26	33.32			29.70	
11:47 AM	27	33.32			29.70	
11:48 AM	28	33.41	1.89	754	29.70	
11:49 AM	29	33.47	1.89	754	29.70	
11:50 AM	30	33.51			29.70	Increase rate
11:51 AM	1	35.05			29.70	Step 2
11:52 AM	2	35.71			29.70	
11:53 AM	3	35.93			29.70	
11:54 AM	4	36.36	2.15	800	29.70	Air in discharge
11:55 AM	5	36.27			29.70	
11:56 AM	6	36.35			29.70	
11:57 AM	7	36.34			29.70	
11:58 AM	8	36.47	2.15	800	29.70	
11:59 AM	9	36.51			29.70	
12:00 PM	10	36.64			29.70	
12:02 PM	12	36.62	2.15	800	29.70	
12:04 PM	14	36.60			29.70	
12:06 PM	16	36.81			29.70	
12:08 PM	18	36.86			29.70	
12:10 PM	20	37.35	2.10	795	29.70	Adjust rate
12:12 PM	22	37.59	2.18	808	29.70	
12:14 PM	24	37.70			29.70	

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 1-94

Step Test: July 12, 1994

Date/ Hour	Elapsed time (mm)	Depth to water (ft)	Piez bead (ft)	Pumping rate (gpm)	Barometric pressure (inHg)	Remarks
12:16 PM	26	37.82	2.15	800	29.70	
12:17 PM	27	37.79			29.70	
12:18 PM	28	37.37	2.15	800	29.70	
12:19 PM	29	37.66			29.70	
12:20 PM	30	37.67	2.15	800	29.70	Increase rate
12:21 PM	1	37.68			29.70	Step 3
12:22 PM	2	37.87			29.70	Pumping much air;
12:23 PM	3	37.49			29.70	Pump cavitating;
12:24 PM	4	39.02			29.70	Reduced rate
12:25 PM	5	38.28			29.70	
12:26 PM	6	37.95			29.70	
12:27 PM	7	37.61			29.70	
12:28 PM	8	37.88	~1.6	~700	29.70	Air in discharge
12:29 PM	9	37.81			29.70	
12:30 PM	10	38.02	~1.6	~700	29.70	
12:32 PM	12	38.01			29.70	
12:34 PM	14	37.82			29.70	
12:36 PM	16	38.03			29.70	
12:38 PM	18	38.04	~1.6	~700	29.70	
12:40 PM	20	38.04			29.70	
12:42 PM	22	38.13	~1.6	~700	29.70	
12:44 PM	24	38.10	~1.5	~675	29.70	
12:46 PM	26	38.41			29.70	
12:47 PM	27	38.24			29.70	
12:48 PM	28	38.38	~1.5	~675	29.70	
12:49 PM	29	38.14			29.70	
12:50 PM	30	38.32			29.70	Reduce rate
12:51 PM	1	37.74			29.70	Step 4
12:52 PM	2	37.29			29.70	
12:53 PM	3	36.77			29.70	
12:54 PM	4	36.74	1.37	645	29.70	
12:55 PM	5	36.68			29.70	
12:56 PM	6	36.69	1.37	645	29.70	Still have spurts of
12:57 PM	7	36.68			29.70	air
12:58 PM	8	36.68	1.37	645	29.70	
12:59 PM	9	36.64			29.70	
01:00 PM	10	36.72			29.70	
01:02 PM	12	36.76			29.70	
01:04 PM	14	36.76			29.70	
01:06 PM	16	36.78	1.37	645	29.70	Piez rdg fluctuates
01:08 PM	18	36.80			29.70	about +/- 0.15
01:10 PM	20	36.90			29.70	
01:11 PM	21	36.91	1.37	645	29.70	
01:12 PM	22	37.01			29.70	
01:14 PM	24	36.98			29.70	
01:16 PM	26	36.94			29.70	
01:17 PM	27	37.06			29.70	
01:18 PM	28	37.01	1.37	645	29.69	
01:19 PM	29	37.13			29.69	
01:20 PM	30	37.20	1.37	645	29.69	Reduce rate
01:21 PM	1	35.78			29.69	Step 5
01:22 PM	2	35.79			29.69	
01:23 PM	3	34.57			29.69	
01:24 PM	4	34.55	1.19		29.69	
01:25 PM	5	34.55	1.24	615	29.69	Still have spurts of
01:26 PM	6	34.56			29.69	air; but less than before
01:27 PM	7	34.52			29.69	
01:28 PM	8	34.57	1.25	615	29.69	Piez rdg fluctuates
01:29 PM	9	34.58			29.69	about +/- 0.10
01:30 PM	10	34.56			29.69	
01:32 PM	12	34.57	1.25	615	29.69	

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 1-94

Step Test: July 12, 1994

Date/ Hour	Elapsed time *(min)*	Depth to water *(ft)*	Piez head *(ft)*	Pumping rate *(gpm)*	Barometric pressure *(in Hg)*	Remarks
01:34 PM	14	34.57			29.69	
01:36 PM	16	34.59			29.69	
01:38 PM	18	34.58	1.25	615	29.69	
01:40 PM	20	34.63			29.69	
01:42 PM	22	34.67	1.27	620	29.69	
01:44 PM	24	34.68			29.69	
01:46 PM	26	34.73	1.25	615	29.69	
01:47 PM	27	34.70			29.69	
01:48 PM	28	34.76			29.69	
01:49 PM	29	34.78	1.25	615	29.69	
01:50 PM	30	34.82			29.69	Reduce rate
01:51 PM	1	31.40			29.69	Step 6
01:52 PM	2	31.23	1.00	550	29.69	
01:53 PM	3	31.12			29.69	
01:54 PM	4	31.10			29.69	
01:55 PM	5	31.04			29.69	
01:56 PM	6	31.03			29.69	
01:57 PM	7	31.01			29.69	
01:58 PM	8	30.98	1.05	560	29.69	No air in discharge
01:59 PM	9	30.98			29.69	
02:00 PM	10	30.97	1.05	560	29.69	Piez rdg steady
02:02 PM	12	30.96			29.69	
02:04 PM	14	30.95	1.05	560	29.68	
02:06 PM	16	30.94	1.05	560	29.68	
02:08 PM	18	30.92			29.68	
02:10 PM	20	30.95			29.68	
02:12 PM	22	30.98	1.05	560	29.68	
02:14 PM	24	30.95			29.68	
02:16 PM	26	30.96	1.05	560	29.68	
02:17 PM	27	30.98			29.68	
02:18 PM	28	30.97			29.68	
02:19 PM	29	30.99			29.68	
0220 PM	30	31.01			29.68	Reduce rate
02:21 PM	1	29.03	0.81	500	29.68	Step 7
02:22 PM	2	28.95			29.68	
02:23 PM	3	28.90			29.68	
02:24 PM	4	28.86			29.68	
02:25 PM	5	28.83			29.68	
02:26 PM	6	28.82			29.68	
02:27 PM	7	28.79			29.68	
02:28 PM	8	28.79			29.68	
02:29 PM	9	28.81			29.68	
02:30 PM	10	28.78			29.68	
02:32 PM	12	28.77	0.81	500	29.68	
02:34 PM	14	28.74			29.68	
02:36 PM	16	28.74	0.81	500	29.68	
02:38 PM	18	28.74			29.67	
02:40 PM	20	28.73			29.67	
02:41 PM	21	28.73	0.81	500	29.67	
02:42 PM	22	28.73			29.67	
02:44 PM	24	28.74			29.67	
02:46 PM	26	28.71	0.81	500	29.67	
02:47 PM	27	28.73			29.67	
02:48 PM	28	28.73	0.81	500	29.67	
02:49 PM	29	28.74			29.67	
02:50 PM	30	28.72	0.81	500	29.67	Reduce rate
02:51 PM	1	27.58	0.66	450	29.67	Step 8
02:52 PM	2	27.50			29.67	
02:53 PM	3	27.47			29.67	
02:54 PM	4	27.46			29.67	
02:55 PM	5	27.42			29.67	

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

Step Test: July 12, 1994

Date/ Hour	Elapsed time *(min)*	Depth to water *(ft)*	Piez bead *(ft)*	Pumping rate *(gpm)*	Barometric pressure *(in Hg)*	Remarks
02:56 PM	6	*27.43*	0.66	450	29.67	
02:57 PM	7	27.40			29.67	
02:58 PM	8	27.40			29.67	
02:59 PM	9	27.39			29.67	
03:00 PM	10	27.36			29.66	
03:02 PM	12	27.35	0.66	450	29.66	
03:04 PM	14	27.34			29.67	
03:06 PM	16	27.34			29.66	
03:08 PM	18	27.32	0.66	450	29.66	
03:10 PM	20	27.30			29.66	
03:12 PM	22	27.32			29.66	
03:14 PM	24	27.31	0.66	450	29.66	
03:16 PM	26	27.30			29.66	
03:17 PM	27	27.30			29.66	
03:18 PM	28	27.30	0.66	450	29.66	
03:19 PM	29	27.32			29.66	
03:20 PM	30	27.29	0.66	450	29.66	End of Step Test

Appendix D.

Test Well 1-94

24-hour Aquifer Test: Water Level Measurements

(July 1994)

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (mm)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed . Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
07/13/94	0	10.62		11.16		11.85		29.65			Logging started
11:02 AM	0	10.62		11.15		11.82		29.65			Water level trend
11:03 AM	0	10.62		11.15		11.81		29.65			
11:04 AM	0	10.62		11.16		11.83		29.65			
11:05 AM	0	10.62		11.20		11.84		29.65			
11:06 AM	0	10.62		11.17		11.82		29.65			
11:07 AM	0	10.62		11.14		11.79		29.65			
11:08 AM	0	10.62		11.12		11.79		29.65			
11:09 AM	0	10.62		11.13		11.80		29.65			
11:10 AM	0	10.62		11.17		11.84		29.65			TW 1 Meas d/w
11:11 AM	0	10.62		11.20		11.86		29.65			
11:12 AM	0	10.62		11.21		11.86		29.65			OW l Meas d/w
11:13 AM	0	10.62		11.16		11.82		29.65			
11:14 AM	0	10.62		11.12		11.79		29.65			OW 2 Meas d/w
11:15 AM	0	10.62		11.10		11.79		29.65			
11:16 AM	0	10.62		11.13		11.84		29.65			
11:17 AM	0	10.61		11.11		11.84		29.65			
11:18 AM	0	10.62		11.10		11.82		29.65			
11:19 AM	0	10.61		11.13		11.83		29.65			
11:20 AM	0	10.61		11.09		11.83		29.65			
11:21 AM	0	10.61		11.06		11.85		29.65			
11:22 AM	0	10.61		11.06		11.85		29.65			
11:23 AM	0	10.61		11.11		11.86		29.64			
11:24 AM	0	10.61		11.18		11.85		29.65			
11:25 AM	0	10.61		11.14		11.80		29.64			
11:26 AM	0	10.61		11.14		11.79		29.64			
11:27 AM	0	10.61		11.16		11.84		29.64			
11:28 AM	0	10.61		11.21		11.83		29.64			
11:29 AM	0	10.61		11.22		11.81		29.64			
11:30 AM	0	10.61		11.21		11.79		29.64			
11:31 AM	0	10.61		11.17		11.79		29.64			
11:32 AM	0	10.61		11.13		11.78		29.64			
11:33 AM	0	10.61		11.09		11.77		29.64			
11:34 AM	0	10.61		11.07		11.77		29.64			
11:35 AM	0	10.61		11.09		11.77		29.64			
11:36 AM	0	10.61		11.08		11.74		29.65			
11:37 AM	0	10.60		11.03		11.75		29.65			
11:38 AM	0	10.60		10.99		11.74		29.64			
11:39 AM	0	10.60		10.96		11.75		29.65			
11:40 AM	0	10.60		10.95		11.75		29.64			
11:41 AM	0	10.61	0.00	10.96	0.00	11.76	0.00	29.64			Pump ON
11:42 AM	1	23.34	12.73	11.24	0.28	11.77	0.02	29.64	3.00	578	

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (win)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
11:43 AM	2	24.70	14.09	11.57	0.61	11.81	0.06	29.64			
11:44 AM	3	25.06	14.45	11.81	0.85	11.86	0.11	29.64	3.00	578	
11:45 AM	4	25.32	14.71	12.01	1.05	11.91	0.16	29.64			
11:46 AM	5	25.53	14.92	1222	1.26	11.97	0.22	29.64	2.98	576	
11:47 AM	6	25.74	15.13	12.41	1.45	12.07	0.32	7.00	2.98	576	
11:48 AM	7	25.89	15.28	12.55	1.59	12.16	0.41	29.64			
11:49 AM	8	26.01	15.40	12.66	1.70	12.21	0.46	29.64			
11:50 AM	9	26.14	15.53	12.75	1.79	12.25	0.50	29.64			
11:51 AM	10	26.21	15.60	12.81	1.85	12.28	0.53	29.64	2.96	574	
11:52 AM	11	26.35	15.74	12.86	1.90	12..29	0.54	29.64	2.96	574	
11:53 AM	12	26.42	15.81	12.90	1.94	12.31	0.56	29.64			
11:54 AM	13	26.49	15.88	12.93	1.97	12.34	0.59	29.64			
11:55 AM	14	26.55	15.94	12.95	1.99	12.36	0.61	29.64			
11:56 AM	15	26.61	16.00	12.90	1.94	12.32	0.57	29.64			
11:57 AM	16	26.69	16.08	12.92	1.96	12.31	0.56	29.64	2.94	573	
11:58 AM	17	26.73	16.12	12.91	1.95	12.33	0.58	29.64			
11:59 AM	18	26.81	16.20	12.90	1.94	12.39	0.64	29.64			
12:00 PM	19	26.87	16.26	12.92	1.96	12.43	0.68	29.64			
12:01 PM	20	26.92	16.31	12.96	2.00	12.48	0.73	29.64			
12:02 PM	21	26.96	16.35	13.02	2.06	12.52	0.77	29.64	2.94	573	
12:03 PM	22	27.01	16.40	13.08	2.12	12.56	0.81	29.63			
12:04 PM	23	27.04	16.43	13.17	2.21	12.60	0.85	29.63			
12:05 PM	24	27.08	16.47	13.32	2.36	12.66	0.91	29.64			
12:06 PM	25	27.12	16.51	13.41	2.45	12.75	1.00	29.64			
12:07 PM	26	27.14	16.53	13.46	2.50	12.80	1.05	29.64			
12:08 PM	27	27.20	16.59	13.49	2.53	12.80	1.05	29.63			
12:09 PM	28	27.23	16.62	13.52	2.56	12.83	1.08	29.63			
12:10 PM	29	27.25	16.64	13.52	2.56	12.84	1.09	29.63			
12:11 PM	30	27.30	16.69	13.52	2.56	12.81	1.06	29.63			
12:12 PM	31	27.34	16.73	13.51	2.55	12.81	1.06	29.63	2.92	571	Adjust rate
12:13 PM	32	27.58	16.97	13.50	2.54	12.85	1.10	29.63			
12:14 PM	33	27.54	16.93	13.52	2.56	12.88	1.13	29.63	3.05	582	
12:15 PM	34	27.73	17.12	13.56	2.60	12.87	1.12	29.63			
12:16 PM	35	27.77	17.16	13.60	2.64	12.87	1.12	29.63	3.04	582	
12:17 PM	36	27.79	17.18	13.63	2.67	12.89	1.14	29.63			
12:18 PM	37	27.84	17.23	13.62	2.66	12.92	1.17	29.63			
12:19 PM	38	27.88	17.27	13.62	2.66	12.94	1.19	29.63			
12:20 PM	39	27.92	17.31	13.63	2.67	12.95	1.20	29.63	3.04	582	
1221 PM	40	27.94	17.33	13.63	2.67	12.95	1.20	29.63			
1222 PM	41	27.95	17.34	13.64	2.68	12.98	1.23	29.63			
1223 PM	42	27.98	17.37	13.65	2.69	13.01	1.26	29.63			
1224 PM	43	28.04	17.43	13.65	2.69	13.05	1.30	29.63	3.02	580	

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
12:25 PM	44	28.05	17.44	13.66	2.70	13.07	1.32	29.63			
12:26 PM	45	28.07	17.46	13.66	2.70	13.05	1.30	29.63			
12:27 PM	46	28.10	17.49	13.67	2.71	13.01	1.26	29.63			
12:28 PM	47	28.13	17.52	13.63	2.67	13.01	1.26	29.63			
12:29 PM	48	28.15	17.54	13.57	2.61	13.00	1.25	29.63			
12:30 PM	49	28.17	17.56	13.56	2.60	13.00	1.25	29.63			
12:31 PM	50	28.21	17.60	13.57	2.61	13.02	1.27	29.63			
12:32 PM	51	28.24	17.63	13.61	2.65	13.06	1.31	29.63			
12:33 PM	52	28.23	17.62	13.64	2.68	13.08	1.33	29.63			
12:34 PM	53	28.27	17.66	13.68	2.72	13.10	1.35	29.63			
12:35 PM	54	28.27	17.66	13.71	2.75	13.14	1.39	29.63	3.02	580	
12:36 PM	55	28.31	17.70	13.73	2.77	13.16	1.41	29.63			
12:37 PM	56	28.32	17.71	13.75	2.79	13.18	1.43	29.63			
12:38 PM	57	28.35	17.74	13.78	2.82	13.20	1.45	29.63			
12:39 PM	58	28.39	17.78	13.80	2.84	13.22	1.47	29.63			
12:40 PM	59	28.41	17.80	13.82	2.86	13.24	1.49	29.63			
12:41 PM	60	28.41	17.80	13.84	2.88	13.26	1.51	29.63			
12:42 PM	61	28.43	17.82	13.86	2.90	13.27	1.52	29.63			
12:43 PM	62	28.47	17.86	13.87	2.91	13.28	1.53	29.63			
12:44 PM	63	28.49	17.88	13.89	2.93	13.29	1.54	29.62			
12:45 PM	64	28.51	17.90	13.90	2.94	13.31	1.56	29.62			
12:46 PM	65	28.54	17.93	13.92	2.96	13.34	1.59	29.62			
12:47 PM	66	28.55	17.94	13.94	2.98	13.35	1.60	29.62			
12:48 PM	67	28.55	17.94	13.95	2.99	13.36	1.61	29.62			
12:49 PM	68	28.59	17.98	13.96	3.00	13.38	1.63	29.62			
12:50 PM	69	28.60	17.99	13.97	3.01	13.38	1.63	29.62	3.02	580	
12:51 PM	70	28.63	18.02	13.98	3.02	13.39	1.64	29.62			
12:52 PM	71	28.61	18.00	13.98	3.02	13.40	1.65	29.62			
12:53 PM	72	28.67	18.06	13.99	3.03	13.42	1.67	29.62			
12:54 PM	73	28.66	18.05	14.01	3.05	13.43	1.68	29.62			
12:55 PM	74	28.69	18.08	14.02	3.06	13.42	1.67	29.62			
12:56 PM	75	28.71	18.10	14.03	3.07	13.44	1.69	29.62			
1257 PM	76	28.71	18.10	14.04	3.08	13.46	1.71	29.62			
12:58 PM	77	28.73	18.12	14.05	3.09	13.47	1.72	29.62			
12:59 PM	78	28.74	18.13	14.07	3.11	13.48	1.73	29.62			
01:00 PM	79	28.77	18.16	14.07	3.11	13.48	1.73	29.62			
01:01 PM	80	28.81	18.20	14.09	3.13	13.50	1.75	29.62			
01:02 PM	81	28.79	18.18	14.10	3.14	13.53	1.78	29.62			
01:03 PM	82	28.84	18.23	14.12	3.16	13.56	1.81	29.62			
01:04 PM	83	28.85	18.24	14.13	3.17	13.60	1.85	29.62			
01:05 PM	84	28.85	18.24	14.12	3.16	13.55	1.80	29.62			
01:06 PM	85	28.85	18.24	14.11	3.15	13.52	1.77	29.62			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
01:07 PM	86	28.88	18.27	14.12	3.16	13.56	1.81	29.62			
01:08 PM	87	28.88	18.27	14.14	3.18	13.60	1.85	29.61			
01:09 PM	88	28.90	18.29	14.15	3.19	13.61	1.86	29.61			
01:10 PM	89	28.91	18.30	14.14	3.18	13.57	1.82	29.61			
01:11 PM	90	28.93	18.32	14.11	3.15	13.54	1.79	29.61			
01:12 PM	91	28.96	18.35	14.10	3.14	13.54	1.79	29.61			
01:13 PM	92	28.96	18.35	14.12	3.16	13.56	1.81	29.61			
01:14 PM	93	28.99	18.38	14.13	3.17	13.58	1.83	29.61			
01:15 PM	94	28.98	18.37	14.15	3.19	13.60	1.85	29.61			
01:16 PM	95	29.02	18.41	14.16	3.20	13.63	1.88	29.61			
01:17 PM	96	29.01	18.40	14.16	3.20	13.63	1.88	29.61			
01:18 PM	97	29.06	18.45	14.17	3.21	13.64	1.89	29.61			
01:19 PM	98	29.03	18.42	14.18	3.22	13.64	1.89	29.61			
01:20 PM	99	29.07	18.46	14.18	3.22	13.65	1.90	29.61	3.00	578	
01:21 PM	100	29.09	18.48	14.19	3.23	13.65	1.90	29.61			
01:50 PM	129	29.43	18.82	14.35	3.39	13.86	2.11	29.61	2.99	577	
02:00 PM	139	29.54	18.93	14.43	3.47	13.94	2.19	29.60	2.98	576	Adjust rate
02:02 PM	141								3.04	582	
02:10 PM	149	29.84	19.23	14.50	3.54	14.04	2.29	29.61			
02:20 PM	159	29.94	19.33	14.49	3.53	14.05	2.30	29.60	3.02	580	Water sample collected;
02:30 PM	169	30.01	19.40	14.55	3.59	14.13	2.38	29.60			T = 56.5
02:40 PM	179	30.12	19.51	14.60	3.64	14.19	2.44	29.60	3.01	579	
02:50 PM	189	30.21	19.60	14.64	3.68	14.26	2.51	29.61			
03:00 PM	199	30.28	19.67	14.67	3.71	14.33	2.58	29.62	3.00	578	
03:10 PM	209	30.39	19.78	14.75	3.79	14.39	2.64	29.63			
03:20 PM	219	30.45	19.84	14.75	3.79	14.41	2.66	29.62			
03:30 PM	229	30.54	19.93	14.78	3.82	14.45	2.70	29.62			
03:40 PM	239	30.62	20.01	14.79	3.83	14.49	2.74	29.62	2.99	577	
03:50 PM	249	30.69	20.08	14.79	3.83	14.55	2.80	29.61			
04:00 PM	259	30.77	20.16	14.83	3.87	14.59	2.84	29.60			
04:10 PM	269	30.84	20.23	14.85	3.89	14.63	2.88	29.59			
04:20 PM	279	30.89	20.28	14.88	3.92	14.68	2.93	29.59			
04:30 PM	289	30.96	20.35	14.91	3.95	14.72	2.97	29.58			
04:40 PM	299	30.91	20.30	14.93	3.97	14.76	3.01	29.58	2.97	575	Adjust rate
04:50 PM	309	31.33	20.72	14.97	4.01	14.81	3.06	29.58			
05:00 PM	319	31.39	20.78	15.00	4.04	14.85	3.10	29.58			
05:10 PM	329	31.46	20.85	15.02	4.06	14.88	3.13	29.58			
05:20 PM	339	31.50	20.89	15.03	4.07	14.92	3.17	29.58			
05:30 PM	349	31.59	20.98	15.06	4.10	14.95	3.20	29.58			
05:40 PM	359	31.63	21.02	15.07	4.11	14.99	3.24	29.57	3.02	580	
05:50 PM	369	31.72	21.11	15.10	4.14	15.01	3.26	29.57			
06:00 PM	379	31.74	21.13	15.11	4.15	15.04	3.29	29.57			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (inHg)	Piez (ft)	Rate (gpn)	Remarks
06:10 PM	389	31.84	21.23	15.13	4.17	15.08	3.33	29.57			
06:20 PM	399	31.88	21.27	15.15	4.19	15.12	3.37	29.57			
06:30 PM	409	31.94	21.33	15.17	4.21	15.14	3.39	29.57			
06:40 PM	419	32.01	21.40	15.18	4.22	15.17	3.42	29.57	3.01	579	
06:50 PM	429	32.07	21.46	15.20	4.24	15.19	3.44	29.57			
07:00 PM	439	32.10	21.49	15.21	4.25	15.22	3.47	29.57			
07:10 PM	449	32.15	21.54	15.23	4.27	15.25	3.50	29.57			
07:20 PM	459	32.21	21.60	15.24	4.28	15.27	3.52	29.57			
07:30 PM	469	32.25	21.64	15.25	4.29	15.29	3.54	29.57			
07:40 PM	479	32.61	22.00	15.28	4.32	15.32	3.57	29.57	2.99	577	Adjust rate
07:50 PM	489	32.68	22.07	15.30	4.34	15.35	3.60	29.57			
08:00 PM	499	32.74	22.13	15.32	4.36	15.37	3.62	29.58			
08:10 PM	509	32.78	22.17	15.34	4.38	15.42	3.67	29.59			
08:20 PM	519	32.86	22.25	15.35	4.39	15.43	3.68	29.59			
08:30 PM	529	32.92	22.31	15.37	4.41	15.45	3.70	29.59			
08:40 PM	539	32.83	22.22	15.37	4.41	15.47	3.72	29.58	3.05	582	
08:50 PM	549	32.85	22.24	15.38	4.42	15.49	3.74	29.59			
09:00 PM	559	32.92	22.31	15.40	4.44	15.51	3.76	29.59			
09:10 PM	569	32.95	22.34	15.41	4.45	15.53	3.78	29.59			
09:20 PM	579	33.00	22.39	15.41	4.45	15.55	3.80	29.59			
09:30 PM	589	33.06	22.45	15.42	4.46	15.57	3.82	29.60			
09:40 PM	599	33.12	22.51	15.44	4.48	15.58	3.83	29.60	3.01	579	
09.50 PM	609	33.13	22.52	15.45	4.49	15.60	3.85	29.60			
10:00 PM	619	33.20	22.59	15.46	4.50	15.61	3.86	29.61			
10:10 PM	629	3356	22.65	15.47	4.51	15.63	3.88	29.61			
10:20 PM	639	3332	22.71	15.48	4.52	15.65	3.90	29.60			
10:30 PM	649	33.36	22.75	15.49	4.53	15.67	3.92	29.60			
10:40 PM	659	3338	22.77	15.50	4.54	15.68	3.93	29.60	2.99	577	
10:50 PM	669	33.43	22.82	15.51	4.55	15.70	3.95	29.60			
11:00 PM	679	33.49	22.88	15.52	4.56	15.71	3.96	29.60			
11:10 PM	689	33.53	22.92	15.53	4.57	15.72	3.97	29.60			
11:20 PM	699	33.56	22.95	15.54	4.58	15.73	3.98	2939			
11:30 PM	709	33.61	23.00	15.55	4.59	15.75	4.00	29.59			
11:40 PM	719	33.66	23.05	15.56	4.60	15.76	4.01	29.59	2.99	577	
11:50 PM	729	33.71	23.10	15.57	4.61	15.78	4.03	29.58			
07/14/94	-	-	-	-	-	-	-	-			
12:00 AM	739	33.77	23.16	15.57	4.61	15.79	4.04	29.58			
1210 AM	749	33.79	23.18	15.58	4.62	15.81	4.06	29.58			
12:20 AM	759	33.84	23.23	15.59	4.63	15.81	4.06	29.57			
12:30 AM	769	33.83	23.22	15.59	4.63	15.82	4.07	29.58			
12:40 AM	779	33.90	23.29	15.61	4.65	15.85	4.10	29.60	2.96	574	Adjusted rate
12:50 AM	789	34.13	23.52	15.62	4.66	15.87	4.12	29.60			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (mitt)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
01:00 AM	799	34.19	23.58	15.63	4.67	15.88	4.13	29.59			
01:10 AM	809	34.24	23.63	15.64	4.68	15.88	4.13	29.59			
01:20 AM	819	34.25	23.64	15.64	4.68	15.90	4.15	29.59			
01:30 AM	829	34.26	23.65	15.65	4.69	15.92	4.17	29.59			
01:40 AM	839	34.29	23.68	15.66	4.70	15.93	4.18	29.59	3.00	578	
01:50 AM	849	34.45	23.84	15.68	4.72	15.95	4.20	29.59			
02:00 AM	859	34.51	23.90	15.68	4.72	15.96	4.21	29.59			
02:10 AM	869	34.50	23.89	15.69	4.73	15.97	4.22	29.58			
02:20 AM	879	34.53	23.92	15.70	4.74	15.99	4.24	29.58			
02:30 AM	889	34.56	23.95	15.71	4.75	16.01	4.26	29.58			
02:40 AM	899	34.61	24.00	15.72	4.76	16.02	4.27	29.58	2.97	575	
02:50 AM	909	34.97	24.36	15.73	4.77	16.04	4.29	29.58			
03:00 AM	919	34.98	24.37	15.75	4.79	16.06	4.31	29.57			
03:10 AM	929	35.02	24.41	15.75	4.79	16.09	4.34	29.58			
03:20 AM	939	35.06	24.45	15.76	4.80	16.10	4.35	29.58			
0130 AM	949	35.08	24.47	15.78	4.82	16.12	4.37	29.58			
03:40 AM	959	35.11	24.50	15.78	4.82	16.12	4.37	29.58	3.00	578	Adjusted rate
03:50 AM	969	35.13	24.52	15.79	4.83	16.14	4.39	29.57			
04:00 AM	979	35.15	24.54	15.80	4.84	16.14	4.39	29.57			
04:10 AM	989	35.18	24.57	15.81	4.85	16.16	4.41	29.57			
04:20 AM	999	35.21	24.60	15.81	4.85	16.17	4.42	29.57			
04:30 AM	1009	35.26	24.65	15.82	4.86	16.18	4.43	29.57			
04:40 AM	1019	35.32	24.71	15.83	4.87	16.19	4.44	29.57	3.00	578	
04:50 AM	1029	35.32	24.71	15.84	4.88	16.20	4.45	29.57			
05:00 AM	1039	35.34	24.73	15.84	4.88	16.21	4.46	29.57			
05:10 AM	1049	35.36	24.75	15.85	4.89	16.22	4.47	29.57			
05:20 AM	1059	35.39	24.78	15.86	4.90	16.23	4.48	29.58			
05:30 AM	1069	35.43	24.82	15.86	4.90	16.24	4.49	29.58			
05:40 AM	1079	35.45	24.84	15.87	4.91	16.26	4.51	29.59	2.98	576	
05:50 AM	1089	35.50	24.89	15.88	4.92	16.27	4.52	29.59			
06:00 AM	1099	35.71	25.10	15.89	4.93	16.29	4.54	29.59			
06:10 AM	1109	35.73	25.12	15.91	4.95	16.32	4.57	29.59			
06:20 AM	1119	35.75	25.14	15.92	4.96	16.33	4.58	29.60			
06:30 AM	1129	35.80	25.19	15.93	4.97	16.35	4.60	29.60			
06:40 AM	1139	35.80	25.19	15.93	4.97	16.36	4.61	29.60	2.99	577	Adjusted rate
06:50 AM	1149	35.84	25.23	15.94	4.98	16.38	4.63	29.61			
07:00 AM	1159	35.86	25.25	15.95	4.99	16.39	4.64	29.61			
07:10 AM	1169	35.89	25.28	15.96	5.00	16.39	4.64	29.61			
07:20 AM	1179	35.88	25.27	15.97	5.01	16.41	4.66	29.61			
07:30 AM	1189	35.92	25.31	15.96	5.00	16.42	4.67	29.61			
07:40 AM	1199	36.04	25.43	16.00	5.04	16.44	4.69	29.61	3.01	579	
07:50 AM	1209	36.06	25.45	16.05	5.09	16.47	4.72	29.61			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	ObsWell 1 Depth to water (ft)	ObsWell 1 Observed Drawdown (ft)	ObsWell 2 Depth to water (ft)	ObsWell 2 Observed Drawdown (ft)	Barometric Pressure (inHg)	Piez (ft)	Rate (gpn)	Remarks
08:00 AM	1219	36.09	25.48	16.04	5.08	16.47	4.72	29.61			
08:10 AM	1229	36.13	25.52	16.02	5.06	16.47	4.72	29.62			
08:20 AM	1239	36.15	25.54	16.02	5.06	16.48	4.73	29.63			
08:30 AM	1249	36.17	25.56	16.04	5.08	16.50	4.75	29.63			
08:40 AM	1259	36.23	25.62	16.03	5.07	16.54	4.79	29.63	3.00	578	
08:50 AM	1269	36.21	25.60	16.04	5.08	16.57	4.82	29.63			
09:00 AM	1279	36.21	25.60	16.05	5.09	16.57	4.82	29.64			
09:10 AM	1289	36.24	25.63	16.06	5.10	16.55	4.80	29.64			
09:20 AM	1299	36.26	25.65	15.93	4.97	16.51	4.76	29.64			
09:30 AM	1309	36.29	25.68	16.06	5.10	16.59	4.84	29.65			
09:40 AM	1319	36.30	25.69	16.06	5.10	16.58	4.83	29.65	2.99	577	
09:50 AM	1329	36.32	25.71	16.04	5.08	16.58	4.83	29.65			
10:00 AM	1339	36.29	25.68	16.06	5.10	16.59	4.84	29.65			
10:10 AM	1349	36.36	25.75	16.11	5.15	16.63	4.88	29.65			
10:15 AM	1354	36.34	25.73	16.13	5.17	16.63	4.88	29.65			
10:16 AM	1355	36.34	25.73	16.13	5.17	16.62	4.87	29.65			
10:17 AM	1356	36.35	25.74	16.13	5.17	16.60	4.85	29.65			
10:18 AM	1357	36.35	25.74	16.11	5.15	16.59	4.84	29.65			
10:19 AM	1358	36.38	25.77	16.08	5.12	16.60	4.85	29.65			
10:20 AM	1359	36.37	25.76	16.05	5.09	16.58	4.83	29.65			
10:21 AM	1360	36.39	25.78	16.03	5.07	16.58	4.83	29.65			
10:22 AM	1361	36.34	25.73	16.02	5.06	16.57	4.82	29.65			
10.23 AM	1362	36.37	25.76	16.02	5.06	16.58	4.83	29.65			
10:24 AM	1363	36.41	25.80	16.02	5.06	16.57	4.82	29.65			
10.25 AM	1364	36.39	25.78	16.04	5.08	16.58	4.83	29.65			
10:26 AM	1365	36.37	25.76	16.06	5.10	16.60	4.85	29.65			
10:27 AM	1366	36.39	25.78	16.07	5.11	16.61	4.86	29.65			
1028 AM	1367	36.40	25.79	16.09	5.13	16.62	4.87	29.65			
10.29 AM	1368	36.41	25.80	16.10	5.14	16.63	4.88	29.65			
10:30 AM	1369	36.39	25.78	16.11	5.15	16.63	4.88	29.65			
10:31 AM	1370	36.39	25.78	16.12	5.16	16.63	4.88	29.66			
10:32 AM	1371	36.37	25.76	16.13	5.17	16.64	4.89	29.65			
10:33 AM	1372	36.39	25.78	16.13	5.17	16.63	4.88	29.66			
10:34 AM	1373	3638	25.77	16.13	5.17	16.63	4.88	29.66			
10:35 AM	1374	36.38	25.77	16.14	5.18	16.63	4.88	29.66			
10:36 AM	1375	36.38	25.77	16.13	5.17	16.62	4.87	29.66			
10:37 AM	1376	36.42	25.81	16.12	5.16	16.64	4.89	29.66			
10:38 AM	1377	36.40	25.79	16.11	5.15	16.63	4.88	29.65			
10:39 AM	1378	36.40	25.79	16.11	5.15	16.63	4.88	29.65			
10:40 AM	1379	36.44	25.83	16.12	5.16	16.62	4.87	29.66	2.97	575	
10:41 AM	1380	36.37	25.76	16.10	5.14	16.62	4.87	29.66			
10:42 AM	1381	36.40	25.79	16.11	5.15	16.63	4.88	29.66			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
10:43 AM	1382	36.40	25.79	16.11	5.15	16.64	4.89	29.66			
10.44 AM	1383	36.40	25.79	16.11	5.15	16.64	4.89	29.65			
10:45 AM	1384	36.40	25.79	16.11	5.15	16.65	4.90	29.66			
10.46 AM	1385	36.39	25.78	16.10	5.14	16.65	4.90	29.66			
10.47 AM	1386	36.40	25.79	16.07	5.11	16.63	4.88	29.66			
1048 AM	1387	36.37	25.76	16.04	5.08	16.61	4.86	29.66			
1049 AM	1388	36.41	25.80	15.98	5.02	16.55	4.80	29.66			
10:50 AM	1389	36.41	25.80	15.95	4.99	16.53	4.78	29.65			
10:51 AM	1390	36.44	25.83	15.98	5.02	16.58	4.83	29.65			
10.52 AM	1391	36.40	25.79	16.03	5.07	16.61	4.86	29.65			
10.53 AM	1392	36.41	25.80	16.06	5.10	16.64	4.89	29.65			
1054 AM	1393	36.44	25.83	16.09	5.13	16.64	4.89	29.65			
1055 AM	1394	36.43	25.82	16.07	5.11	16.61	4.86	29.66			
1056 AM	1395	36.44	25.83	16.05	5.09	16.59	4.84	29.66			
1057 AM	1396	36.44	25.83	16.03	5.07	16.58	4.83	29.66			
1058 AM	1397	36.45	25.84	16.03	5.07	16.59	4.84	29.66			
1059 AM	1398	36.44	25.83	16.05	5.09	16.62	4.87	29.66			
11:00 AM	1399	36.43	25.82	16.09	5.13	16.64	4.89	29.65	2.96	574	Pump OFF
11:01 AM	1	18.17		15.85		16.64		29.66			Recovery
11:02 AM	2	17.53		15.66		16.61		29.66			
11:03 AM	3	17.17		15.54		16.59		29.66			
11:04 AM	4	16.90		15.44		16.55		29.66			
11:05 AM	5	16.69		1532		16.50		29.66			
11:06 AM	6	16.52		15.24		16.44		29.66			
11:07 AM	7	16.39		15.17		16.38		29.66			
11:08 AM	8	1626		15.13		16.36		29.65			
11:09 AM	9	16.15		15.08		1632		29.66			
11:10 AM	10	16.05		14.96		1657		29.66			
11:11 AM	11	15.96		14.88		1623		29.66			
11:12 AM	12	15.87		14.65		16.05		29.66			
11:13 AM	13	15.81		14.52		15.95		29.66			
11:14 AM	14	15.75		14.65		16.03		29.66			
11:15 AM	15	15.68		14.77		16.12		29.66			
11:16 AM	16	15.62		14.81		16.13		29.66			
11:17 AM	17	15.56		14.82		16.11		29.66			
11:18 AM	18	15.51		14.80		16.06		29.66			
11:19 AM	19	15.46		14.78		15.99		29.65			
11:20 AM	20	15.41		14.74		15.90		29.65			
11:21 AM	21	15.36		14.71		15.91		29.66			
11:22 AM	22	15.31		14.67		15.90		29.66			
11:23 AM	23	29.63		14.59		15.77		29.66			
11:24 AM	24	32.32		14.59		15.80		29.66			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hoar Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (em)	Remarks
11:25 AM	25	15.13		14.60		15.86		29.66			
11:26 AM	26	15.13		14.58		15.85		29.66			
11:27 AM	27	15.09		14.57		15.83		29.65			
11:28 AM	28	15.06		14.56		15.81		29.65			
11:29 AM	29	15.03		14.51		15.77		29.65			
11:30 AM	30	14.98		14.41		15.73		29.66			
11:31 AM	31	14.%		1430		15.64		29.66			
11:32 AM	32	14.93		14.34		15.62		29.66			
11:33 AM	33	14.90		14.38		15.62		29.65			
11:34 AM	34	14.86		14.36		15.62		29.66			
11:35 AM	35	14.84		1422		15.47		29.65			
11:36 AM	36	14.81		1426		15.50		29.65			
11:37 AM	37	14.78		1429		15.50		29.65			
11:38 AM	38	14.76		14.30		15.54		29.65			
11:39 AM	39	14.73		1429		15.58		29.66			
11:40 AM	40	14.70		14.28		15.57		29.65			
11:41 AM	41	14.68		1429		15.52		29.65			
11:42 AM	42	14.66		1428		15.49		29.65			
11:43 AM	43	14.63		1428		15.49		29.65			
11:44 AM	44	14.61		1427		15.49		29.65			
11:45 AM	45	14.58		14.25		15.47		29.65			
11:46 AM	46	14.54		14.00		15.34		29.65			
11:47 AM	47	14.54		13.88		1527		29.65			
11:48 AM	48	14.50		13.89		15.33		29.65			
11:49 AM	49	14.48		13.78		15.19		29.65			
11:50 AM	50	14.46		13.74		15.14		29.65			
11:51 AM	51	14.44		13.74		15.18		29.65			
11:52 AM	52	14.44		13.81		15.32		29.65			
11:53 AM	53	14.42		14.05		15.41		29.65			
11:54 AM	54	14.40		1423		15.42		29.65			
11:55 AM	55	14.38		14.31		1539		29.65			
11:56 AM	56	14.35		14.32		15.36		29.65			
11:57 AM	57	14.33		14.30		15.32		29.65			
11:58 AM	58	14.30		14.15		1526		29.65			
11:59 AM	59	14.29		13.89		15.06		29.65			
12:00 PM	60	14.27		13.81		15.12		29.65			
12:01 PM	61	14.25		13.71		15.03		29.65			
12:02 PM	62	14.23		13.66		14.96		29.65			
1203 PM	63	14.22		13.67		14.96		29.65			
12:04 PM	64	14.22		13.77		14.99		29.65			
12:05 PM	65	14.20		13.99		15.12		29.65			
12:06 PM	66	14.18		14.10		1521		29.65			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 1-94

24 Hour Aquifer Test: July 13 - 14, 1994

Date/ Hour	Elapsed Time (min)	Test Well 1-94 Depth to water (ft)	Test Well 1-94 Observed Drawdown (ft)	Obs Well 1 Depth to water (ft)	Obs Well 1 Observed Drawdown (ft)	Obs Well 2 Depth to water (ft)	Obs Well 2 Observed Drawdown (ft)	Barometric Pressure (in Hg)	Piez (ft)	Rate (gpm)	Remarks
12:07 PM	67	14.16		14.11		15.21		29.65			
12:08 PM	68	14.15		14.03		15.16		29.65			
12:09 PM	69	14.13		14.06		15.14		29.64			
12:10 PM	70	14.11		13.98		15.12		29.64			
12:11 PM	71	14.09		13.98		15.03		29.64			
12:12 PM	72	14.08		13.96		14.99		29.64			
12:13 PM	73	14.05		13.86		15.03		29.64			
12:14 PM	74	14.04		13.71		14.91		29.64			
12:15 PM	75	14.04		13.75		14.85		29.64			
1216 PM	76	14.03		13.86		14.98		29.64			
12:17 PM	77	14.01		13.85		15.01		29.64			
12:18 PM	78	13.99		13.81		14.96		29.64			
12:19 PM	79	13.97		13.83		14.98		29.64			
12:20 PM	80	13.96		13.75		14.94		29.64			
12:21 PM	81	13.95		13.66		14.80		29.64			
12:22 PM	82	13.93		13.62		14.76		29.64			
12:23 PM	83	13.92		13.60		14.76		29.64			
12:24 PM	84	13.92		13.65		14.80		29.64			
12:25 PM	85	13.90		13.73		14.92		29.64			
1226 PM	86	13.89		13.78		14.91		29.64			
12:27 PM	87	13.88		13.79		14.85		29.64			
12:28 PM	88	13.86		13.82		14.81		29.64			
12:29 PM	89	13.85		13.84		14.81		29.64			
12:30 PM	90	13.83		13.75		14.80		29.64			
12:31 PM	91	13.81		13.66		14.74		29.64			
12:32 PM	92	13.80		13.61		14.71		29.64			
12:33 PM	93	13.80		13.61		14.72		29.64			
12:34 PM	94	13.78		13.64		14.78		29.64			
12:35 PM	95	13.77		13.61		14.73		29.64			
12:36 PM	96	13.76		13.58		14.70		29.64			
12:37 PM	97	13.75		13.59		14.70		29.64			
12:38 PM	98	13.75		13.65		14.79		29.64			
12:39 PM	99	13.74		13.71		14.84		29.64			
12:40 PM	100	13.71		13.71		14.77		29.64			End of Test

Appendix E.

Chemical Analyses of Water Samples

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

September 13, 1994

Mr. Walter F. Cox
Henegham and Assoc.
104 S. Locust
Centralia, IL, 62801

Dear Mr. Cox:

We are enclosing a copy of the partial analysis made on a sample of water collected July 13, 1994, from the 84 foot Test Well No. 1 owned by Fayette County Water Company in Fayette County.

The analysis shows this sample to be moderately mineralized and moderately hard. The iron and manganese contents of this water are at a level which can result in the staining of porcelain and laundry. A major portion of the turbidity in this sample appears to be due to the previously soluble iron which oxidized and became insoluble after the water was exposed to air.

The hardness in this sample is sufficient to cause the formation of a moderate amount of soft scale in boilers and hot water heaters and to consume a moderate amount of soap if used for washing or laundry purposes.

If we can be of further assistance, please let us hear from you.

Very truly yours,

Brian W. Kaiser

Brian W. Kaiser
Associate Chemist
217/333-9234

llj

Enclosure **as** stated

cc: Ellis Sanderson - ISWS
IEPA(2)

A Division of the
Illinois Department of Energy and Natural Resources

Illinois State Water Survey
Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: 227822

SOURCE: TEST WELL NO. 1
OWNER: FAYETTE COUNTY WATER CO.
LOCATION: SOUTHEAST OF RAMSEY
COUNTY: FAYETTE TOWNSHIP: 08N RANGE: 02E SECTION: 32.8E
DATE COLLECTED: 07/13/1994 DATE RECEIVED: 07/15/1994
WELL DEPTH (Ft.): 84.0 TEMPERATURE REPORTED (F): ND
TREATMENT: NONE
COMMENTS: SAMPLE COLLECTED AT 2:20 PM AFTER PUMPING AT A RATE OF APPROXIMATELY 575 GPM FOR 160 MINUTES.

PARAMETER:	mg/L	PARAMETER:	mg/L
Iron (Total Fe):	6.14	Fluoride (F):	< 0.1
Manganese (Mn):	0.44	Chloride (Cl):	46.2
Calcium (Ca):	63.1	Sulfate (S04):	15.6
Magnesium (Mg):	19.0	Nitrate (N03-N):	0.45
Sodium (Na):	42.4		
Aluminum (Al):	0.07		
Barium (Ba):	0.17		
Beryllium (Be):	< 0.003		
Chromium (Cr):	< 0.007		
Copper (Cu):	< 0.01		
Nickel (Ni):	< 0.031		
Zinc (Zn):	< 0.02		
Turbidity(Lab, NTU):	42.6	Alkalinity (CaC03):	268
Color (PCU):	7	Hardness (as CaC03):	235
pH (Lab):	7.4	Total Dissolved Minerals:	355
Odor:	NONE		

< - Below detection limit (i.e. <1.0 - less than 1.0 mg/L)
mg/L - milligrams per liter mg/L x 0.0584 - grains per gallon
uS/cm - microsiemens per centimeter
ND - Not determined/Information not available

IEPA Certified Environmental Laboratory, Number 100202

Analyst: Lauren F. Sievers
Assistant Chemist

A Division of the
Illinois Department of Energy and Natural Resources

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

January 4, 1995

Mr. Walter Cox
Henegham and Assoc.
104 S. Locust
Centralia, IL 62801

Dear Mr. Cox:

We arc enclosing a copy of the partial analysis made on a sample of water collected September 29, 1994, from the 81 foot Test Well No. 3-94 owned by Fayette County Water Company in Fayette County.

The analysis shows this sample to be moderately mineralized and moderately hard. The iron and manganese contents of this water are at a level which can result in the staining of porcelain and laundry. A major portion of the turbidity in this sample appears to be due to the previously soluble iron which oxidized and became insoluble after the water was exposed to air.

The hardness in this sample is sufficient to cause the formation of a moderate amount of soft scale in boilers and hot water heaters and to consume a moderate amount of soap if used for washing or laundry purposes.

In comparing this water to that collected from Test Well No. 1 analyzed by our laboratory in July 1994, this water contains a little less iron and manganese but a little more sodium and chloride. None of the parameters tested exceed Primary Drinking Water Standards for public water supplies.

If wc can be of further assistance, please let us hear from you.

Very truly yours,

Brian W. Kaiser
Associate Chemist
217/333-9234

llj

Enclosure as stated

cc: Jim **Spcth, Spcth Plumbing**
Ellis Sanderson, ISWS
IEPA (2)

A Division of the
Illinois Department of Energy and Natural Resources

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: 228126

SOURCE: TEST WELL NO. 3-94
OWNER: FAYETTE COUNTY WATER CO.
LOCATION: SOUTHEAST OF RAMSEY
COUNTY: FAYETTE TOWNSHIP: 08N RANGE: 02E SECTION: 32.8E
DATE COLLECTED: 09/29/1994 DATE RECEIVED: 11/02/1994
WELL DEPTH (Ft.): 81.0 TEMPERATURE REPORTED (F): 55.8
TREATMENT: NONE
COMMENTS: SAMPLE COLLECTED AFTER PUMPING 157 MINUTES AT A RATE OF 410 GPM.

PARAMETER:	mg/L	PARAMETER:	mg/L
Iron (Total Fe):	3.67	Fluoride (F):	0.2
Manganese (Mn):	0.09	Chloride (Cl):	94.7
Calcium (Ca):	62.1	Sulfate (S04):	< 0.9
Magnesium (Mg) :	20.3	Nitrate (N03-N):	< 0.02
Sodium (Na):	91.6		
Aluminum (Al):	0.04		
Barium (Ba):	0.27		
Beryllium (Be):	< 0.003		
Chromium (Cr):	< 0.007		
Copper (Cu):	< 0.01		
Nickel (Ni):	0.036		
Zinc (Zn):	< 0.02		
Turbidity(Lab, NTU):	2.8	Alkalinity (CaC03):	328
Color (PCU):	14	Hardness (as CaC03):	238
pH (Lab):	7.4	Total Dissolved Minerals:	480
Odor:	NONE		

< - Below detection limit (i.e. <1.0 - less than 1.0 mg/L)
mg/L - milligrams per liter mg/L x 0.0584 - grains per gallon
uS/cm – microsiemens per centimeter
ND - Not determined/Information not available

IEPA Certified Environmental Laboratory, Number 100202

Analyst: Lauren F. Sievers
Assistant Chemist

A Division of the
Illinois Department of Energy and Natural Resources

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

January 24, 1995

Mr. Walter F. Cox
Heneghan and Associates
104 S. Locust
Centralia, IL 62801

Dear Mr. Cox:

We are enclosing a copy of each of the partial analyses made on samples of untreated water collected December 1,5 and 9, 1994, from the 49 foot Test Well No. 2-94 owned by Fayette ■ County Water Company in Fayette County.

The quality of this water is similar to that from Test Well No. 1 analyzed by our laboratory in September 1994.

If we can be of further assistance, please let us hear from you.

Very truly yours,

Brian W. Kaiser
Associate Chemist
217/333-9234

llj

Enclosures as stated

cc: Mr. Jim Speth, Speth Plumbing, Inc.
Mr. Robert Hcckcrt, Fayette Water Co.
Ellis Sanderson, ISWS
IEPA(2)

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: 228216

SOURCE: TEST WELL NO. 2-94
OWNER: FAYETTE CO. WATER COMPANY
LOCATION: SOUTHEAST OF RAMSEY
COUNTY: FAYETTE TOWNSHIP: 08N RANGE: 02E SECTION: 32.8E
DATE COLLECTED: 12/01/1994 DATE RECEIVED: 12/12/1994
WELL DEPTH (Ft.): 49.0 TEMPERATURE REPORTED (F): 56.1
TREATMENT: NONE
COMMENTS: SAMPLE COLLECTED AFTER PUMPING FOR 126 MIN. AT 350 TO 550 GPM. TURBIDITY DUE TO OXIDIZED IRON AND SILT/CLAY.

PARAMETER:	mg/L	PARAMETER:	mg/L
Iron (Total Fe):	7.62	Fluoride (F):	< 0.1
Manganese (Mn):	0.69	Chloride (Cl):	45.0
Calcium (Ca):	68.1	Sulfate (S04):	15.8
Magnesium (Mg):	19.6	Nitrate (N03-N):	0.08
Sodium (Na):	42.8		
Aluminum (Al):	0.40		
Barium (Ba):	0.14		
Beryllium (Be):	< 0.003		
Chromium (Cr):	< 0.007		
Copper (Cu):	< 0.01		
Nickel (Ni):	< 0.031		
Zinc (Zn):	< 0.02		
Turbidity(Lab, NTU):	73	Alkalinity (CaC03):	277
Color (PCU):	6	Hardness (as CaC03):	250
pH (Lab):	7.4	Total Dissolved Minerals:	376
Odor:	H2S		

< - Below detection limit (i.e. <1.0 - less than 1.0 mg/L)
mg/L - milligrams per liter mg/L x 0.0584 - grains per gallon
uS/cm - microsiemens per centimeter
ND - Not determined/Information not available

IEPA Certified Environmental Laboratory, Number 100202

Analyst: Lauren F. Sievers
Assistant Chemist

A Division of the
Illinois Department of Energy and Natural Resources

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: 228217

SOURCE: TEST WELL NO. 2-94
OWNER: FAYETTE CO. WATER COMPANY
LOCATION: SOUTHEAST OF.RAMSEY
COUNTY: FAYETTE TOWNSHIP: 08N RANGE: 02E SECTION: 32.8E
DATE COLLECTED: 12/05/1994 DATE RECEIVED: 12/12/1994
WELL DEPTH (Ft.): 49.0 TEMPERATURE REPORTED (F): 56.1
TREATMENT: NONE
COMMENTS: SAMPLE COLLECTED AFTER PUMPING FOR 170 MIN. AT 385 GPM.
TURBIDITY DUE TO OXIDIZED IRON AND MANGANESE.

PARAMETER:	mg/L	PARAMETER:	mg/L
Iron (Total Fe):	7.53	Fluoride (F):	< 0.1
Manganese (Mn):	0.69	Chloride (Cl):	45.5
Calcium (Ca):	67.9	Sulfate (S04):	16.0
Magnesium (Mg):	19.3	Nitrate (N03-N):	0.07
Sodium (Na):	39.5		
Aluminum (Al):	0.10		
Barium (Ba):	0.14		
Beryllium (Be):	< 0.003		
Chromium (Cr):	< 0.007		
Copper (Cu):	< 0.01		
Nickel (Ni):	< 0.031		
Zinc (Zn):	< 0.02		
Turbidity(Lab, NTU):	77	Alkalinity (CaC03):	275
Color (PCU):	7	Hardness (as CaC03):	249
pH (Lab):	7.4	Total Dissolved Minerals:	379
Odor:	H2S		

< - Below detection limit (i.e. <1.0 - less than 1.0 mg/L)
mg/L - milligrams per liter mg/L x 0.0584 - grains per gallon
uS/cm - microsiemens per centimeter
ND — Not determined/Information not available

IEPA Certified Environmental Laboratory, Number 100202

Analyst: Lauren F. Sievers
Assistant Chemist

Illinois State Water Survey

Chemistry Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-9321
Telefax (217) 333-6540

WATER SAMPLE DATA
LABORATORY SAMPLE NUMBER: 228218

SOURCE: TEST WELL NO. 2-94
OWNER: FAYETTE CO. WATER COMPANY
LOCATION: SOUTHEAST OF RAMSEY
COUNTY: FAYETTE TOWNSHIP: 08N RANGE: 02E SECTION: 32.8E
DATE COLLECTED: 12/09/1994 DATE RECEIVED: 12/12/1994
WELL DEPTH (Ft.): 49.0 TEMPERATURE REPORTED (F): 56.1
TREATMENT: NONE
COMMENTS: SAMPLE COLLECTED AFTER PUMPING FOR 5660 MINUTES AT 385 GPM. TURBIDITY DUE TO OXIDIZED IRON AND MANGANESE.

PARAMETER:	mg/L	PARAMETER:	mg/L
Iron (Total Fe):	9.21	Fluoride (F):	< 0.1
Manganese (Mn):	0.82	Chloride (Cl):	30.8
Calcium (Ca):	71.4	Sulfate (S04):	23.9
Magnesium (Mg):	19.4	Nitrate (N03-N):	0.26
Sodium (Na):	18.7		
Aluminum (Al):	< 0.02		
Barium (Ba):	0.14		
Beryllium (Be):	< 0.003		
Chromium (Cr):	< 0.007		
Copper (Cu):	< 0.01		
Nickel (Ni):	< 0.031		
Zinc (Zn):	< 0.02		
Turbidity(Lab, NTU):	106	Alkalinity (CaC03):	244
Color (PCU):	5	Hardness (as CaC03):	258
pH (Lab):	7.3	Total Dissolved Minerals:	341
Odor:	NONE		

< - Below detection limit (i.e. <1.0 - less than 1.0 mg/L)
mg/L - milligrams per liter mg/L x 0.0584 - grains per gallon"
uS/cm - microsiemens per centimeter
ND - Not determined/Information not available

IEPA Certified Environmental Laboratory, Number 100202

Analyst: Lauren F. Sievers
Assistant Chemist

A Division of the
Illinois Department of Energy and Natural Resources

Appendix F.

Correspondence:

August 17, 1994, Recommendations to Fayette Water Company

August 26, 1994, Letter with Recommendations for Test Well 3-94

October 21, 1994, Letter with Recommendations for Test Well 2-94

February 8, 1995, Letter with Summary of Results of the Testing Program

Appendix F. Correspondence: August 17, 1994, recommendations to Fayette Water Company.

Fayette Water Company

Ground-Water Investigation in the Kaskaskia River Valley
August 17, 1994

Present:

The prospective well field site is located in the SW¼, SW¼, NW¼, Section 32, T.8 N., R.2 E., Fayette County. Test drilling at the site to date has disclosed the presence of two horizons of water-bearing sand and gravel. The upper sand and gravel, probably associated with the present-day Kaskaskia River Valley, is about 30 to 35 feet thick below about 2 to 11 feet of topsoil and sandy clay. The lower sand and gravel, probably associated with the buried pre-glacial Kaskaskia Valley, is about 24 to 34 feet thick. Clay and organic-laden glacial till about 14 to 20 feet thick separate the two sand and gravel aquifers.

One high-capacity Pumping Test Well (TW 1) is completed with 2 Observation Wells (OW 1 and OW 2) located approximately 150.3 ft and 514.5 ft from the test well. The construction features (casing and well screen) of TW 1 and the OW's is such that both sand and gravel aquifers are tapped by the wells, artificially establishing a hydraulic connection between the aquifers.

TW 1 is about 86 ft deep and is equipped with two lengths of well screen. A 20-ft length of well screen is set opposite the lower sand and gravel and a 10-ft length of screen is set opposite the upper sand and gravel (see attached sketch of test well). OW 1 is about 90 ft deep and OW 2 is about 92 ft deep. They are equipped with alternating 10-ft (or 5-ft?) lengths of well screen and blank casing allowing them to also have well screen opposite both the lower and upper sand and gravel deposits.

State Water Survey (SWS) staff and Speth Plumbing conducted a step test on TW 1 on Tuesday, July 12, 1994. A step test consists of pumping the well at equal, increasing (or decreasing) increments of the full pumping rate for equal periods of time. The step test is conducted to help determine the efficiency of the well and to help determine an appropriate pumping rate for the subsequent 24-hour Aquifer Test. During the step test there were spurts of air with the discharged water. At high pumping rates the air caused the well pump to cavitate precluding pumping rates for the step test greater than about 750 gallons per minute (gpm). Pumping rates during the step test were from about 700 to 450 gpm. Based on the response of the well and well pump during the step test it was decided to conduct the 24-hour Aquifer Test at a constant rate of about 550 to 600 gpm.

The 24-hour Aquifer Test was conducted by SWS staff, Speth Plumbing, and Heneghan and Associates on Wednesday-Thursday, July 13-14, 1994. TW 1 was pumped at an average rate of about 577 gpm for 1399 minutes. Water level data

were collected in TW 1 and in OW 1 and OW 2 by means of pressure transmitters and a data logger. The constant pumping rate was maintained by means of a valve and measured with the SWS orifice tube. The pumping rate was observed and recorded frequently early in the test and every hour thereafter. There was no air in the discharge during the 24-hour test until sometime between about 11 pm and 8 am (i.e., after about 700 to 1200 minutes of pumping).

Data Analysis

The collected water level data were used to try to determine the water-yielding properties and probable areal extent of the "composite" sand and gravel aquifer. The response of OW 1 does not suggest the presence of either a recharge (river) boundary or a barrier (valley wall or edge of aquifer) boundary until late in the test. After about 1000 minutes of pumping (16.7 hrs) there is a suggestion of the presence of a barrier boundary.

The response of OW 2 offers the possibility of different interpretations. While data from early in the test (before 200 minutes) suggests a barrier boundary, we are not sure if it is real. The question remains "If the boundary is real, why didn't OW 1 show a similar response?". The response of water levels in OW 2 after about 1000 minutes of pumping also suggests the possibility of a barrier boundary, similar to that suggested by the response of water levels in OW 1.

The response of water levels in Test Well 1 is subject to several interpretations that cannot be resolved at this time. We speculate that the presence of air in the discharge may be causing the water level response to be atypical.

The fact that two sand and gravel aquifers are tapped by the wells, however, leads to a dilemma in interpreting these results. As the data suggest the presence of aquifer boundaries, the question remains "With which one of the sand and gravel aquifers is the boundary to be associated?". This severely hinders the development of a conceptual model from which to evaluate whether the desired supply can be obtained. We also know only how much water was being pumped from the two aquifers combined so the hydraulic properties determined from the data are for some "composite" aquifer. It is desirable to determine the hydraulic properties for each aquifer during the testing program.

However, we do interpret the results of the testing program conducted to date as continuing to show promise for the development of the desired 1 to 1.5 mgd ground-water supply.

Recommendations

To adequately evaluate this promising well-field site, aquifer tests utilizing wells finished only in the lower sand and gravel will be required. Depending on those results, it may also be necessary to conduct aquifer tests utilizing wells finished only in the upper sand and gravel.

First, we recommend that a new pumping test well be constructed with a well screen and gravel pack placed only opposite the lower sand and gravel. Care must be taken to construct the test well in such a way as to assure that a seal is placed opposite the clay/glacial till unit that separates the upper and lower sand and gravel aquifers so that the hydraulic separation is maintained. This can be done by using a bentonite or clay slurry, or a concrete seal placed in the annulus between the bore hole and the well casing opposite the clay/glacial till to prevent vertical movement of water through the annulus. Although not as desirable as a new well, it is possible that the existing well can be modified to seal the upper well screen and aquifer from the well. This, perhaps, can be done by placing a second casing (10-in ?) inside the existing 12-in to a depth of about 50-60 ft with an appropriate packer between the two and using a bentonite or clay slurry forced through the upper well screen (at 36-46 ft) to seal the gravel pack. Three new observation wells screened only in the lower sand and gravel will be required. A fourth new observation well screened only in the upper sand and gravel aquifer also will be needed to observe possible influences between the upper and lower aquifers. The attached sketch map of the test site shows suggested locations for the new wells.

It will be necessary to conduct a step test and, perhaps, a 24-hour Aquifer Test with the new deep pumping test well (TW 2) and observation wells prior to conducting a longer 7-day Aquifer Test.

The existing pumping test well (unless modified) and the two observation wells will have to be carefully plugged prior to conducting tests with the new test facilities. They allow a hydraulic connection between the two sand and gravel aquifers at the test site which must be eliminated during the testing and evaluation of the site.

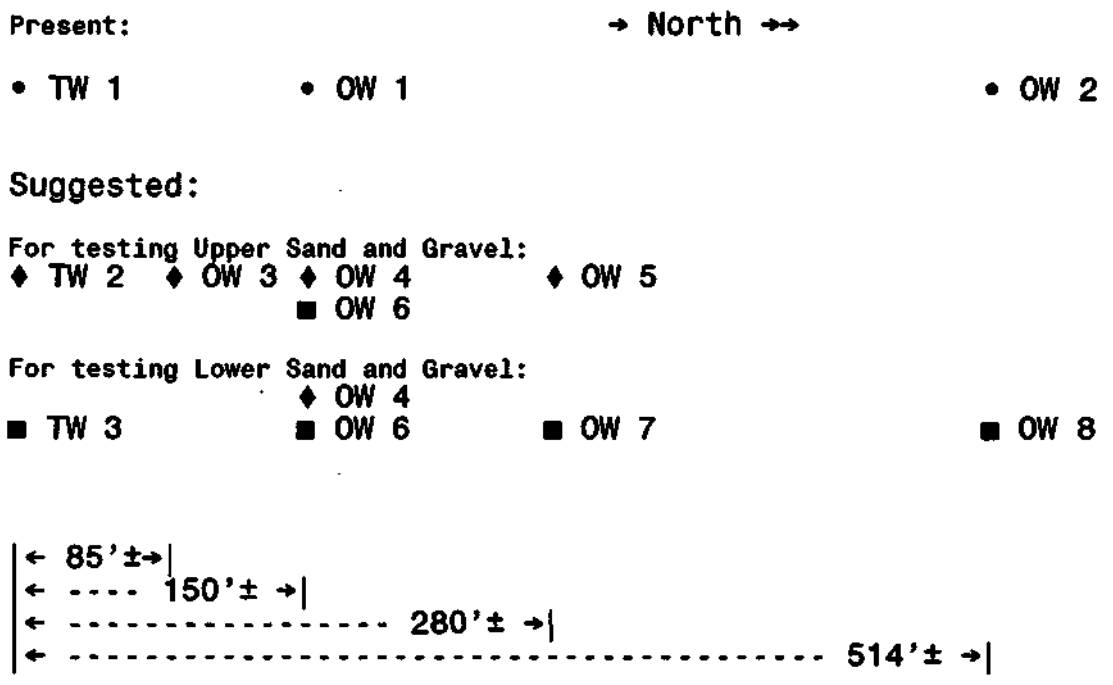
Second, if the results of the aquifer tests on the lower sand and gravel aquifer show that it is not adequate to furnish nearly all of the desired supply, then it also will be necessary to conduct an aquifer testing program on the upper sand and gravel aquifer. A third pumping test well (TW 3) constructed with a well screen and gravel pack placed only opposite the upper sand and gravel and two additional observation wells screened only in the upper sand and gravel will be required. The attached sketch map of the test site shows suggested locations for these new wells.

It will be necessary to conduct a step test and, perhaps, a 24-hour Aquifer Test with the new shallow pumping test well and observation wells prior to conducting a longer 7-day Aquifer Test.

Appendix F. (Continued)

Fayette Water Company/August 17, 1994/Page 4

Aquifer Test Site: SW¼, SW¼, NW¼, Section 32, T.8 N., R.2 E., Fayette County



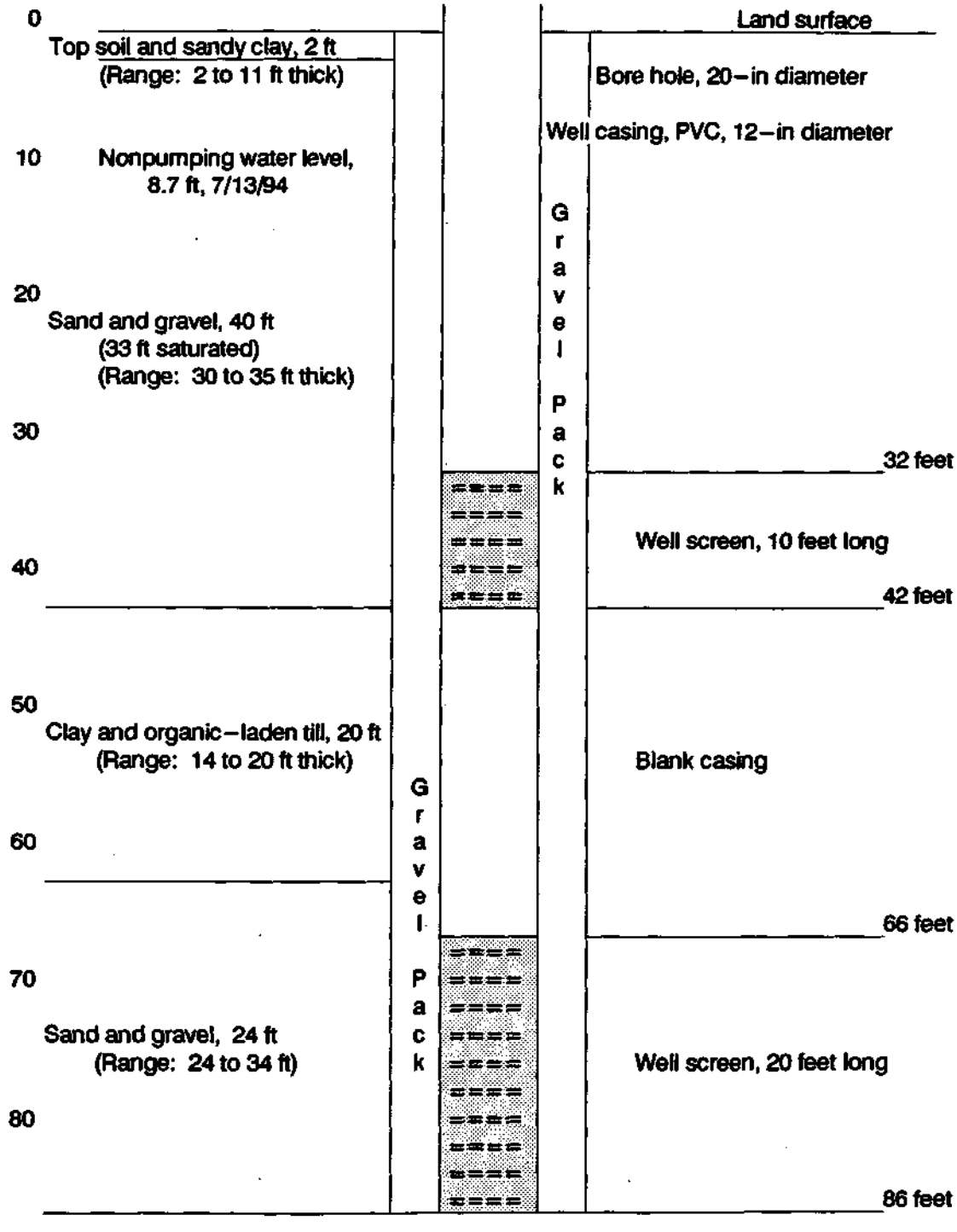
Legend:

- ● Well finished in Upper and Lower Sand and Gravel
- ♦ Well finished in Upper Sand and Gravel
- ■ Well finished in Lower Sand and Gravel

TW Pumping Test Well
OW Water Level Observation Well

Appendix F. (Continued)

Fayette Water Company
Test Well 1-94



Illinois State Water Survey

Hydrology Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-4300
Telefax (217) 333-6540

August 26, 1994

Errata:
1st and 3rd paragraph:
Should be Test Well 3-94, not
Test Well 2
1st and 4th paragraph: Should
be Test Well 1-94, not Test Well 1

Mr. Walter Cox
Heneghan and Associates, P.C.
Engineers*Surveyors
104 South Locust
Centralia, IL 62801

Dear Mr. Cox:

This letter is to confirm our telephone conversation with Mr. Jim Speth, Speth Plumbing, Inc., on August 25, 1994, regarding suggestions for the well screen and gravel pack for the proposed new Test Well 2 for the Fayette Water Company and for the construction features of the 4 new observation wells to be drilled. Test Well 2 and the observation wells are to be constructed to allow a controlled aquifer test of the lower sand and gravel found at the proposed well field site. If the results of the aquifer test are satisfactory we understand that Test Well 2 will become a production well in the new well field. Test Well 2 is to be constructed near existing Test Well 1. We have examined the sieve analysis data for the samples collected by Speth Plumbing from the lower sand and gravel aquifer during the drilling of Test Well 1. Test Well 1 is reported to be located approximately 2600 ft South and 25 ft East of the NW corner, Section 32, T.8 N., R.2 E., Fayette County.

The sieve analysis data and the desired production test rate suggest that a gravel packed well design is warranted. Based on the grain size distribution of the sand and gravel aquifer sample from depths of 75 to 80 feet, a gravel pack with a grain size of about 2.6 to 4.4 mm would be ideal for this sand and gravel aquifer. If material from Northern Gravel Company is used, our information suggests their No. 3 material is about 2.2 to 4.2 mm in size and should be satisfactory for use. This information should be verified directly from the company. A well screen with a slot size of 0.100-inch (100 slot) can be used with this gravel pack. For a production test rate of about 500 gpm, a 10-inch (or 12-inch) diameter well screen about 20 feet long set between depths of about 64 to 84 feet is suggested. The gravel pack should extend at least 2 feet above the top of the well screen or to the top of the lower sand and gravel aquifer. A selected material (perhaps a smaller size gravel pack, such as Northern No. 1 or No. 0 or other similar material) above the gravel pack can be used to fill the annular space to about 2 feet above the bottom of the clay/glacial till that is present above the lower sand and gravel. A "plug" of about 10 to 15 feet of bentonite slurry, clay/glacial till, or other similar material must be placed in the annular space opposite the clay/glacial till interval to isolate the lower and upper

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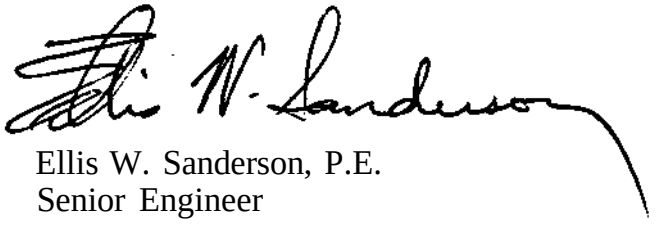
sand and gravel aquifers for the aquifer testing. Drill cuttings or other selected material may be placed in the annular space above the "plug" and opposite the upper sand and gravel aquifer. A bore hole diameter of 22 to 30 inches is suggested.

Three of the new observation wells to be constructed at the site are to be finished only in the lower sand and gravel aquifer. Well screen lengths of 10 to 15 feet should be adequate. A "plug" similar to that in Test Well 2 should be used in these observation wells to keep the two sand and gravel aquifers separated for the aquifer testing. These "deep" observation wells are to be located about 150 feet, 280 feet, and 500 feet from Test Well 2. One observation well finished in the upper sand and gravel also is to be constructed. It may be equipped with about 10 to 15 feet of well screen placed at the bottom of the upper sand and gravel aquifer. This "shallow" observation well is to be located about 150 feet from Test Well 2.

The existing Test Well 1 and two observation wells that have well screens placed opposite both the lower and upper sand and gravel aquifers are to be sealed in such a manner as to restore the natural separation between the aquifers. A bentonite/clay slurry pumped under pressure through the well screens into the gravel pack/sand fill annulus may be adequate. You and the drilling contractor may have alternate methods of sealing to offer for consideration.

Please do not hesitate to contact us if you have any questions about this matter and keep us informed as the work progresses.

Very truly yours,



Ellis W. Sanderson, P.E.
Senior Engineer
Office of Ground-Water Resources
Evaluation and Management
Phone: (217) 333-0235

cc: IEPA (2)
Speth Plumbing, Inc.
Robert Heckert, Fayette Water Co.
A. Visocky

Illinois State Water Survey

Hydrology Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
Telephone (217) 333-4300
Telefax (217) 333-6540

October 21, 1994

Mr. Jim Speth
Speth Plumbing, Inc.
301 North State Street
P.O. Box 10
Allendale, IL 62410

Errata:
1st paragraph: Should be
Fayette County, not Jasper County

Dear Mr. Speth:

We have examined the sieve analysis data for the samples collected by your company from the upper sand and gravel aquifer present at the site of Test Well 1-94 owned by the Fayette Water Company. The Test Well 1-94 is located approximately 2600 ft South and 30 ft East of the NW corner, Section 32, T.8 N., R.2 E., Jasper County. We understand that a well screen and gravel pack suggestion is desired for a proposed Test Well 2-94 to be constructed near TW 1-94 but finished only in the upper sand and gravel aquifer.

The sieve analysis data, the desired high-capacity production rate, and our well design criteria indicate that a gravel packed well design is warranted. Based on the grain size distribution of the sand and gravel aquifer sample from depths of 35 to 40 feet, a gravel pack with a grain size of about 2.1 to 3.5 mm would be ideal for this sand and gravel aquifer. If material from Northern Gravel Company is used, our information suggests their No. 3 material is about 2.2 to 4.2 mm in size and should be satisfactory for use. This information should be verified directly from the company. A well screen with a slot size of 0.100-inch (100 slot) can be used with this gravel pack. A 12-inch diameter well screen about 15 feet long set between depths of about 30 to 45 feet is suggested. A bore hole diameter of 24 to 30 inches is suggested. This well screen should be satisfactory for a production rate of up to about 500 gallons per minute (gpm). Whether the sand and gravel aquifer has suitable hydraulic properties and areal extent to sustain this pumping rate is to be evaluated.

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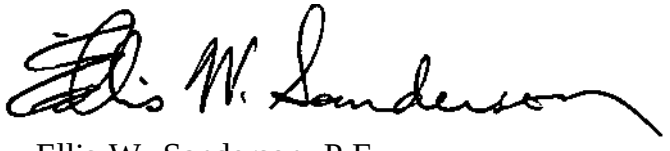
The No. 3 gravel pack should extend about 2-3 feet above the top of the well screen but probably no higher than about 27 to 28 feet below land surface. The sample representing the interval from 20 to 25 indicates this layer of sand is significantly finer-grained than the lower intervals. Care must be taken to fill this upper part of the annular space between the bore hole and the well casing with a selected material suitable to prevent vertical migration of this finer-grained material. For example, gravel pack material No. 0 or No. 1 from Northern Gravel Company should be satisfactory for this purpose.

Please do not hesitate to contact us if you have any questions about this matter.

Very truly yours,



Ellis W. Sanderson, P.E.
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Office of Ground-Water Resources
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cc: IEPA (2)
Heneghan and Associates
Mr. Robert Heckert, President, Fayette Water

Illinois State Water Survey

Hydrology Division
2204 Griffith Drive
Champaign, Illinois 61820-7495
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Telefax (217) 333-6540

February 8, 1995

Mr. Walter Cox
Office Manager
Heneghan and Associates, P.C.
Engineers - Surveyors
104 South Locust
Centralia, IL 62801

Dear Mr. Cox:

We have completed our analysis of the data collected during the aquifer test on December 5-9, 1994, on Fayette Water Company Test Well (TW) 2-94. This aquifer test was conducted with the capable assistance of you, the President and several members of the Board of Trustees of the water company, and Mr. Jim Speth, Speth Plumbing, Inc. TW 2-94 is about 47 feet deep and finished in a shallow sand and gravel aquifer associated with the bottomlands of the Kaskaskia River. It is located approximately 2615 ft South and 30 ft East of the NW corner, Section 32, T.8 N., R.2 E., Fayette County.

Analysis of the data collected from the TW 2-94 and Observation Wells (OW) 3 and 4 indicated the transmissivity of the sand and gravel aquifer at the time of the test averaged about 67,100 gpd/ft (hydraulic conductivity of about 1900 gpd/ft^2). Analysis of data from OW 5 suggested a significantly higher transmissivity which is judged not to be representative of the site conditions. The collected data did not allow determination of the specific yield of the aquifer due to the effects of gravity drainage within the sand and gravel aquifer taking place throughout the duration of the test. However, our experience under similar aquifer conditions has shown that an assumed value of 0.1 for specific yield is reasonably conservative and allows representative well yields to be estimated. None of the observation well data indicated the presence of aquifer boundaries during the test period. Data from the pumping test well showed variations in ground-water levels near the end of the test period which might be suggestive of a boundary but this was not confirmed with the observation well data.

The aquifer test was conducted during a time period when the barometric pressure was relatively stable and Kaskaskia River stages almost constant for the first 5000 minutes of the test. No adjustments to the collected data for these influences on ground-water levels was made.

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With this information, a theoretical idealized model of the aquifer conditions in the vicinity of TW 2-94 was hypothesized. The aquifer model was an infinite strip, approximately 4800 feet wide, extending north and south beyond the cone of depression. The width of the model aquifer was derived from calculations which assumed that the effects of boundaries commenced after about 5000 minutes of pumping. While ostensibly conservative, this assumption is reasonably consistent with the extent of the present Kaskaskia River bottomlands, and, as described later, does not significantly reduce the estimated yield of a well field in the vicinity of TW 2-94.

The occurrence and possible extent of a hydraulic connection between the Kaskaskia River and the shallow sand and gravel aquifer was not confirmed by the aquifer test If a good hydraulic connection exists, it will serve to enhance the available yield from the proposed well field. It also is possible that river bottom conditions during and following low-flow drought periods may not be favorable for allowing water to move from the river into the aquifer due to deposition of fine-grained sediments on the river bottom. These periods may correspond to times when water demands for the water system are higher than average. Accordingly, neglecting a possible increase in well field yield on the basis of induced infiltration of river water is both prudent, as a ground-water resource management philosophy, and reasonable, based on the information available at this time.

The yield of a shallow sand and gravel aquifer also must take into account effects on ground-water levels by extended drought conditions. In this case, there are no data available to indicate how much natural decline in ground-water levels might occur during these periods. Records of Kaskaskia River stages during June and July 1988 show that river stages during drought conditions and minimum release rates from Shelbyville dam and reservoir were about 4.9 feet lower than river stages during the time of the aquifer test To allow for similar future drought effects, we assumed that ground-water levels might be about 5 feet lower than at the time of the aquifer test. These lowered ground-water levels have the effect of reducing the saturated thickness of the sand and gravel aquifer and reducing the effective transmissivity of the aquifer. The driller's logs of the test well and the observation wells and measured depths to water showed the average thickness of the aquifer to be about 35.4 feet. If this thickness is reduced 5 feet to allow for drought conditions, then a transmissivity of about 57,600 gpd/ft results.

Thus the model aquifer consisted of the following elements: 1) A transmissivity of about 57,100 gpd/ft. 2) A long-term specific yield of 0.1. 3) Barrier boundaries at distances of about 2400 feet on either side of the well field for an aquifer width of 4800 feet.

Using the hydraulic properties of the model aquifer, a theoretical distance-drawdown graph was constructed to estimate the effects of the assumed boundaries and the

mutual drawdown interference effects between production wells. Allowance was made for dewatering up to 50 percent of the saturated thickness of the aquifer at the production well sites by adjusting drawdowns for the decrease in transmissivity.

Based on the assumptions and conditions described above, the idealized model aquifer, and resulting calculations of drawdown and interference effects, it appears that a well field yield of about 400 gpm (576,000 gpd) is feasible from two production wells (200-gpm each) spaced at about 250-300 feet at the west edge of the 20-acre property owned by the water company. Each production well may be equipped with about 10-12 feet of well screen and the well pump intake positioned about 15 feet from the bottom of the well. A standby production well also should be considered and spaced at 250-300 feet at the west edge of the property. We recommend to help assure a dependable source of supply that a well field of three production wells tapping the shallow sand and gravel, each spaced 250-300 feet apart along the west edge of the property, be planned. Using the two end wells in normal operation will minimize the operational drawdown interference between wells with the center well being the standby production well.

As we promised during our telephone conversation on January 26, 1995, we also have analyzed the data collected from the 24-hr aquifer test conducted on Test Well 3-94 to determine whether it may be satisfactory for use only on an emergency basis. TW 3-94 is located adjacent to TW 2-94 but is about 84 feet deep finished in a deeper sand and gravel aquifer present at the site. Analysis of the data collected from TW 3-94 and Observation Wells 6, 7, and 8 indicated the transmissivity of the sand and gravel aquifer at the time of the test averaged about 20,550 gpd/ft (hydraulic conductivity of about 900 gpd/ft^2) with a storage coefficient in the artesian range, averaging about 0.00022. The analysis indicates the aquifer is of very limited areal extent, perhaps less than about 800 feet wide.

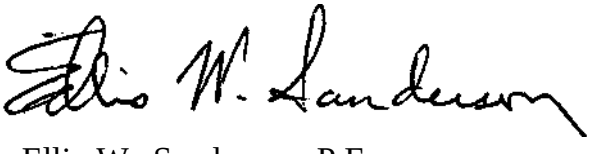
Using these hydraulic properties with a model aquifer about 800 feet wide, a theoretical distance drawdown graph was constructed to estimate the effects of the barrier boundaries. Allowance was made for dewatering up to 50 percent of the saturated thickness of the aquifer at the production well site by adjusting drawdowns for the decrease in transmissivity.

Based on the assumptions and conditions described above, the idealized model aquifer, and resulting calculations of drawdown and interference effects, it appears that Test Well 3-94 may be capable of producing about 160 gpm for about 2 to perhaps 3 days on an emergency basis with the pump intake set about 8 feet below the top of the installed well screen (about 12 feet from the bottom of the well).

We recognize that this evaluation of well field yield is less than that desired for the long-term future plans of the water company. This ground-water exploration episode and the test holes drilled by Ramsey through the years suggest that the

chances are good that a second well field can be sited at another location in the bottomlands of the Kaskaskia River. From our conversations at the well field site during the aquifer tests we understand that the water treatment plant site is to be near the NE¼, SE¼, NW¼, Section 5, T.7 N., R.2 E., Fayette County. A review of the topographic map suggests that a convenient location for exploring for a second well field may lie in the SW¼, NW¼, and the NV¼, SW¼, Section 6, T.7 N., R.2 E., and the SE¼, NE¼, and the NE¼, SE¼, Section 1, T.7 R, R.l E., Fayette County. This area lies about 1½ miles west of the treatment plant site and about 1½ miles southwest of the present well field site. Alternatively, the area in the vicinity of the NW/c, Section 6, T.7 N., R.2 E., and the SW/c, Section 31, T.8 R, R.2 E., about 1 mile southwest of the present well field site may be satisfactory. We suggest that several test borings in these areas be considered as soon as feasible to determine the presence and texture of the sand and gravel aquifer(s). Aquifer testing can be conducted as soon as funds allow. Actual development of the second well field can be programmed at any future time when water demands increase.

Very truly yours,



Ellis W. Sanderson, P.E.
Senior Engineer
Office of Ground-Water Resources
Evaluation and Management
Phone: (217) 333-0235

cc: Robert Heckert, President, Fayette Water Co
Speth Plumbing, Inc.
Adrian Visocky, ISWS
Gordon Dill, FmHA
IEPA (2)

Appendix G.

Test Well 3-94

Step Test: Water-Level Measurements

(September 1994)

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94

Step Test: September 28, 1994

Date/ Hour	Elapsed time *(tain)*	Depth to water *(ft)*	Piez head *(ft)*	Pumping rate *(gpn)*	Barometric pressure *(in Hg)*	Remarks
09/28/94						
11:41 AM		13.26			30.00	Start Omnidata
11:42 AM		13.27			29.00	Water level trend
11:44 AM		13.30			30.00	
11:48 AM		13.33			29.59	
11:50 AM		13.33			29.59	
11:52 AM		13.36			29.59	
11:54 AM		13.38			29.59	
11:56 AM		13.40			29.59	
11:58 AM		13.41			29.59	
12:00 PM		13.42			29.59	
12:02 PM		13.42			29.59	
12:04 PM		13.43			29.59	
12:06 PM		13.43			29.59	
12:08 PM		13.44			29.59	
12:10 PM		13.46			29.59	
12:12 PM		13.46			29.59	
12:14 PM		13.48			29.59	
12:16 PM		13.48			29.59	
12:18 PM		13.49			29.59	
1220 PM		13.50			29.59	
1222 PM		13.50			29.59	
1224 PM		13.51			29.59	
1226 PM		13.50			29.59	
1228 PM		13.51			29.59	
12:30 PM		13.50			29.59	
12:32 PM		13.50			29.59	
12:34 PM		13.53			29.59	
1236 PM		13.53			29.59	
12:38 PM		13.52			29.60	
12:40 PM		13.54			29.60	
12:42 PM		13.56			29.45	
12:44 PM		13.56			29.41	
12:46 PM		13.57			29.60	
12:48 PM		13.57			29.60	
12:50 PM		13.56			29.60	
12:51 PM		13.57			29.59	
12:52 PM		13.58			29.59	
12:53 PM		13.58			29.59	
12:54 PM		13.57			29.59	
12:55 PM		13.57			29.59	
12:56 PM		13.57			29.59	
1257 PM		13.56			29.59	
12:58 PM		13.56			29.33	
12:59 PM		13.57			29.29	
01:00 PM	0	13.57			29.25	Pump ON
01:01 PM	1	32.56			29.59	Step 1
01:02 PM	2	35.17	2.22	500	29.59	
01:03 PM	3	36.22			29.59	
01:04 PM	4	37.16			29.58	Rate fluctuating;
01:05 PM	5	37.92			29.58	adjusting
01:06 PM	6	38.76			29.58	
01:07 PM	7	39.16	2.20	497	29.58	
01:08 PM	8	39.58			29.58	
01:09 PM	9	39.94			29.58	
01:10 PM	10	40.28	2.15	490	29.58	
01:11 PM	11	40.57			29.58	
01:12 PM	12	40.84	2.15	490	29.57	
01:13 PM	13	41.12			29.57	Slight H2S odor
01:14 PM	14	41.36	2.13	488	29.57	Adjust rate
01:15 PM	15	41.82	2.17	493	29.57	
01:16 PM	16	42.04	2.15	490	29.57	

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94

Step Test: September 28, 1994

Date/ Hour	Elapsed time *(min)*	Depth to water *(ft)*	Piez bead *(ft)*	Pumping rate *(gpm)*	Barometric pressure *(in Hg)*	Remarks
01:17 PM	17	42.26			29.57	
01:18 PM	18	42.42	2.12	487	29.57	Adjust rate
01:19 PM	19	42.61	2.13	488	29.57	
01:20 PM	20	42.78			29.57	
01:21 PM	21	42.95			29.57	
01:22 PM	22	43.35	2.12	487	29.57	Adjust rate
01:23 PM	23	43.65	2.16	491	29.57	
01:24 PM	24	43.80	2.15	490	29.56	
01:25 PM	25	43.98			29.56	
01:26 PM	26	44.12	2.13	488	29.56	
01:27 PM	27	44.26	2.12	487	29.56	
01:28 PM	28	44.42	2.12	487	29.56	
01:29 PM	29	44.57	2.11	486	29.56	
01:30 PM	30	44.72			29.56	Increase rate
01:31 PM	1	47.47	2.70	550	29.56	Step 2
01:32 PM	2	47.86	2.69	549	29.56	
01:33 PM	3	48.06			29.56	
01:34 PM	4	48.22			29.56	
01:35 PM	5	48.43	2.66	546	29.56	
01:36 PM	6	48.64			29.56	
01:37 PM	7	48.80			29.56	
01:38 PM	8	48.95	2.64	544	29.56	Adjust rate
01:39 PM	9	49.15			29.56	
01:40 PM	10	50.16	2.84	564	29.56	
01:41 PM	11	50.42			29.55	
01:42 PM	12	50.60	2.82	562	29.55	
01:43 PM	13	50.76			29.55	
01:44 PM	14	50.91	2.80	560	29.55	
01:45 PM	15	51.06			29.55	
01:46 PM	16	51.20			29.55	
01:47 PM	17	51.33			29.55	
01:48 PM	18	51.45	2.74	554	29.55	
01:49 PM	19	51.56			29.55	
01:50 PM	20	51.68	2.73	553	29.55	
01:51 PM	21	51.79			29.55	
01:52 PM	22	51.90	2.71	552	29.55	
01:53 PM	23	52.00			29.55	
01:54 PM	24	52.10	2.70	550	29.55	
01:55 PM	25	52.21			29.55	
01:56 PM	26	52.29	2.68	548	29.55	
01:57 PM	27	52.28			29.55	
01:58 PM	28	52.28	2.68	548	29.54	
01:59 PM	29	52.28	2.67	547	29.55	
02:00 PM	30	52.28	2.66	546	29.54	Increase rate
02:01 PM	1	-	-3.3		29.55	Step 3
02:02 PM	2	-			29.55	Lowered transmitter
02:03 PM	3	-			29.55	12.0 ft
02:04 PM	4	-			29.55	
02:05 PM	5	56.17			29.54	
02:06 PM	6	56.25			29.54	
02:07 PM	7	56.33	3.20	598	29.54	
02:08 PM	8	56.39	3.21	599	29.54	
02:09 PM	9	56.47			29.55	
02:10 PM	10	56.55			29.54	
02:11 PM	11	56.64			29.55	
02:12 PM	12	56.73	3.15	596	29.55	
02:13 PM	13	56.55			29.54	
02:14 PM	14	56.94	3.14	595	29.54	
02:15 PM	15	57.02			29.54	
02:16 PM	16	57.12	3.12	593	29.54	Adjust rate
02:17 PM	17	57.41			29.54	

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94

Step Test: September 28, 1994

Date/ Hour	Elapsed time *(min)*	Depth to water *(ft)*	Piez head *(ft)*	Pumping rate *(gpm)*	Barometric pressure *(in Hg)*	Remarks
02:18 PM	18	58.62	3.45	619	29.54	
02:19 PM	19	58.75	3.44	617	29.54	
02:20 PM	20	58.90	3.39	614	29.54	
02:21 PM	21	58.99	3.37	612	29.54	
02:22 PM	22	59.10	3.36	611	29.54	
02:23 PM	23	59.23			29.54	
02:24 PM	24	59.31	3.35	610	29.54	
02:25 PM	25	59.41			29.54	
02:26 PM	26	59.51	3.36	611	29.54	
02:27 PM	27	59 38			29.54	
02:28 PM	28	59.66			29.54	
02:29 PM	29	59.73	3.28	604	29.54	
02:30 PM	30	59.81			29.54	Increase rate
02:31 PM		60.74			29.54	Step 4
02:32 PM		60.87	~3 3	620	29.54	Valve full open
02:33 PM		60.99			29.54	End of Step Test

Appendix H.

Test Well 3-94

24-hour Aquifer Test: Water-Level Measurements

(September 1994)

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94
24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	ObsWelI4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
09/28/94														
04:00 PM														Pump OFF after Step Test
04:40 PM		25.40		13.38	25.10		25.87		25.91					
05:00 PM		23.93		13.35	23.68		24.49		24.57		29.53			
06:00 PM		21.27		13.29	21.04		21.90		21.90		29.50			
07:00 PM		19.71		13.24	19.45		20.32		20.26		29.42			
08:00 PM		18.63		13.21	18.35		19.24		19.14		29.35			
09:00 PM		17.83		13.19	17.54		18.43		18.29		29.29			
10:00 PM		17.22		13.17	16.91		17.81		17.64		29.24			
11:00 PM		16.72		13.15	16.41		17.31		17.11		29.20			
12:00 AM		16.32		13.14	16.00		16.89		16.66		29.16			
01:00 AM		15.98		13.14	15.66		16.56		16.30		29.13			
02:00 AM		15.70		13.13	15.36		16.26		15.97		29.10			
03:00 AM		15.45		13.13	15.10		16.01		15.70		29.07			
04:00 AM		15.24		13.12	14.89		15.79		15.46		29.05			
05:00 AM		15.05		13.12	14.70		15.59		15.25		29.04			
06:00 AM		14.87		13.12	14.52		15.41		15.05		29.04			
07:00 AM		14.73		13.12	14.37		15.26		14.88		29.04			
07:20 AM		14.68		13.12	14.32		15.22		14.83		29.05			
07:40 AM		14.63		13.12	14.27		15.23		14.79		29.07			
08:00 AM		14.57		13.12	14.22		15.28		14.72		29.12			
08:20 AM		14.52		13.12	14.18		15.25		14.67		29.22			
08:40 AM		14.47		13.12	14.14		15.25		14.68		29.31			
08:52 AM		14.42												TW 3-94 Meas d/w
08:54 AM				13.12										OW 4 Meas d/w
08:56 AM					14.10									OW 6 Meas d/w
08:57 AM							15.21							OW 7 Meas d/w
08:58 AM									14.64					OW 8 Meas d/w
09:00 AM		14.42		13.12	14.10		15.21		14.64					
09:20 AM		14.37		13.12	14.06		15.21		14.61		29.28			
09:28 AM		14.35		13.12	14.04		15.21		14.60		29.15			
09:29 AM		14.35		13.12	14.04		15.22		14.60		28.38			
09:30 AM		14.34		13.12	14.03		15.22		14.59		28.36			
09:31 AM		14.34		13.12	14.03		15.23		14.59		29.11			
09:32 AM		14.34		13.12	14.03		15.23		14.59		29.12			
09:33 AM		14.34		13.12	14.03		15.23		14.59		29.12			
09:34 AM		14.33		13.12	14.02		15.23		14.58		29.13			
09:35 AM		14.33		13.12	14.03		15.23		14.58		28.37			
09:36 AM		14.33		13.12	14.02		15.24		14.57		29.11			
09:37 AM		14.33		13.12	14.02		15.24		14.57		29.12			
09:38 AM		14.32		13.12	14.01		15.25		14.56		29.13			
09:39 AM		14.33		13.12	14.01		15.26		14.57		29.13			
09:40 AM	0	14.33	0.00	13.12	14.01	0.00	15.26	0.00	14.57	0.00	28.36			Pump ON
09:41 AM	1	33.20	18.87	13.12	14.51	0.50	15.43	0.17	14.58	0.01	29.23	2.00		Adjust rate
09:42 AM	2	32.87	18.54	13.11	15.27	1.26	15.87	0.61	14.68	0.11	29.26	1.58		Adjust rate
09:43 AM	3	33.70	19.37	13.11	15.80	1.79	16.27	1.01	14.85	0.28	29.29	1.50	410	Cloudy water
09:44 AM	4	34.06	19.73	13.12	16.26	2.25	16.62	1.36	15.04	0.47	29.31	1.50	410	
09:45 AM	5	34.55	20.22	13.13	16.66	2.65	16.95	1.69	15.23	0.66	29.33	1.49	408	
09:46 AM	6	34.96	20.63	13.14	17.02	3.01	17.26	2.00	15.42	0.85	29.35	1.48	407	
09:47 AM	7	35.30	20.97	13.15	17.35	3.34	17.55	2.29	15.60	1.03	29.38	1.47	406	Adjust rate
09:48 AM	8	35.85	21.52	13.16	17.65	3.64	17.80	2.54	15.78	1.21	29.39	1.50	410	
09:49 AM	9	36.15	21.82	13.16	17.93	3.92	18.04	2.78	15.95	1.38	29.41	1.49	408	
09:50 AM	10	36.43	22.10	13.17	18.20	4.19	18.28	3.02	16.13	1.56	29.43	1.48	407	Adjust rate

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94
24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (mitt)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	ObsWelU Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
09:51 AM	11	36.86	22.53	13.18	18.45	4.44	18.51	3.25	16.28	1.71	29.48	1.51	412	
09:52 AM	12	37.08	22.75	13.18	18.69	4.68	18.73	3.47	16.45	1.88	29.50	1.50	410	Water less cloudy
09:53 AM	13	37.31	22.98	13.19	18.93	4.92	18.94	3.68	16.60	2.03	28.73	1.50	410	
09:54 AM	14	37.51	23.18	13.19	19.14	5.13	19.15	3.89	16.76	2.19	28.70	1.48	407	Adjust rate
09:55 AM	15	37.83	23.50	13.20	19.34	5.33	19.36	4.10	16.92	2.35	29.47	1.50	410	
09:56 AM	16	37.97	23.64	13.20	19.54	5.53	19.56	4.30	17.08	2.51	29.48	1.49	408	Adjust rate
09:57 AM	17	38.33	24.00	13.21	19.73	5.72	19.74	4.48	17.23	2.66	29.51	1.52	414	
09:58 AM	18	38.56	24.23	13.21	19.92	5.91	19.92	4.66	17.37	2.80	29.52	1.51	412	
09:59 AM	19	38.70	24.37	13.22	20.11	6.10	20.09	4.83	17.50	2.93	29.54			
10:00 AM	20	38.87	24.54	13.22	20.28	6.27	20.25	4.99	17.64	3.07	29.54	1.50	410	
10:01AM	21	39.03	24.70	13.23	20.44	6.43	20.41	5.15	17.78	3.21	29.56			
10:02 AM	22	39.19	24.86	13.23	20.61	6.60	20.54	5.28	17.90	3.33	29.57	1.49	408	
10:03 AM	23	39.32	24.99	13.23	20.76	6.75	20.68	5.42	18.04	3.47	29.59			
10:04 AM	24	39.46	25.13	13.24	20.92	6.91	20.83	5.57	18.18	3.61	29.59	1.49	408	
10:05 AM	25	39.58	25.25	13.24	21.06	7.05	20.98	5.72	18.30	3.73	29.64			
10:06 AM	26	39.72	25.39	13.24	21.21	7.20	21.14	5.88	18.42	3.85	29.66	1.48	407	Adjust rate
10:07 AM	27	40.00	25.67	13.25	21.35	7.34	21.29	6.03	18.55	3.98	29.68			
10:08 AM	28	40.14	25.81	13.25	21.49	7.48	21.43	6.17	18.66	4.09	29.70	1.50	410	
10:09 AM	29	40.25	25.92	13.25	21.63	7.62	21.58	6.32	18.78	4.21	29.71			
10:10 AM	30	40.37	26.04	13.26	21.76	7.75	21.72	6.46	18.90	4.33	29.72	1.49	408	
10:11 AM	31	40.50	26.17	13.26	21.89	7.88	21.86	6.60	19.02	4.45	29.73			
10:12 AM	32	40.58	26.25	13.26	22.02	8.01	21.99	6.73	19.14	4.57	29.73	1.48	407	Adjust rate
10:13 AM	33	40.82	26.49	13.27	22.14	8.13	22.08	6.82	19.26	4.69	29.73			
10:14 AM	34	40.92	26.59	13.27	22.26	8.25	22.18	6.92	19.37	4.80	29.73	1.49	408	
10:15 AM	35	41.04	26.71	13.27	22.39	8.38	22.30	7.04	19.48	4.91	29.73			
10:16 AM	36	41.14	26.81	13.27	22.51	8.50	22.42	7.16	19.59	5.02	29.03	1.48	407	
10:17 AM	37	41.24	26.91	13.28	22.62	8.61	22.55	7.29	19.71	5.14	29.01			
10:18 AM	38	41.35	27.02	13.28	22.74	8.73	22.68	7.42	19.83	5.26	29.73	1.48	407	
10:19 AM	39	41.44	27.11	13.28	22.85	8.84	22.80	7.54	19.93	5.36	29.73			
10:20 AM	40	41.53	27.20	13.28	22.96	8.95	22.92	7.66	20.03	5.46	29.73	1.47	407	Adjust rate
10:21AM	41	41.82	27.49	13.29	23.07	9.06	23.03	7.77	20.14	5.57	29.73			Water less cloudy
10:22 AM	42	41.93	27.60	13.29	23.18	9.17	23.13	7.87	20.24	5.67	29.73	1.51	412	
10:23 AM	43	42.05	27.72	13.29	23.29	9.28	23.24	7.98	20.34	5.77	29.73			
10:24 AM	44	42.14	27.81	13.29	23.40	9.39	23.35	8.09	20.45	5.88	29.73	1.50	410	
10:25 AM	45	42.25	27.92	13.30	23.50	9.49	23.45	8.19	20.54	5.97	29.73			
10:26 AM	46	42.31	27.98	13.30	23.61	9.60	23.55	8.29	20.63	6.06	29.73	1.49	408	
10:27 AM	47	42.41	28.08	13.30	23.71	9.70	23.66	8.40	20.73	6.16	29.74			
10:28 AM	48	42.47	28.14	13.30	23.81	9.80	23.75	8.49	20.82	6.25	29.74	1.48	407	Adjust rate
10:29 AM	49	42.76	28.43	13.31	23.91	9.90	23.86	8.60	20.91	6.34	29.74			
10:30AM	50	42.85	28.52	13.31	24.01	10.00	23.98	8.72	21.00	6.43	29.74	1.52	414	
10:31 AM	51	42.95	28.62	13.31	24.11	10.10	24.09	8.83	21.12	6.55	29.74			
10:32 AM	52	43.03	28.70	13.31	24.21	10.20	24.20	8.94	21.22	6.65	29.74			
10:33 AM	53	43.12	28.79	13.31	24.31	10.30	24.31	9.05	21.30	6.73	29.74			
10:34 AM	54	43.18	28.85	13.32	24.41	10.40	24.41	9.15	21.40	6.83	29.74			
10:35 AM	55	43.28	28.95	13.32	24.49	10.48	24.50	9.24	21.49	6.92	29.74	1.50	410	
10:36 AM	56	43.36	29.03	13.32	24.59	10.58	24.60	9.34	21.58	7.01	29.74			
10:37 AM	57	43.42	29.09	13.32	24.67	10.66	24.67	9.41	21.67	7.10	29.74			
10:38 AM	58	43.51	29.18	13.33	24.76	10.75	24.76	9.50	21.74	7.17	29.74			
10:39 AM	59	43.57	29.24	13.33	24.85	10.84	24.85	9.59	21.84	7.27	29.25			
10:40 AM	60	43.67	29.34	13.33	24.94	10.93	24.93	9.67	21.93	7.36	29.18	1.49	408	
10:41 AM	61	43.73	29.40	13.33	25.02	11.01	25.01	9.75	22.02	7.45	29.74			
10:42 AM	62	43.79	29.46	13.33	25.11	11.10	25.10	9.84	22.09	7.52	29.74			
10:43 AM	63	43.88	29.55	13.34	25.19	11.18	25.17	9.91	22.19	7.62	29.19			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 3-94

24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
10:44 AM	64	43.93	29.60	13.34	25.27	11.26	25.25	9.99	22.27	7.70	29.18	1.48	407	Adjust rate
10:45 AM	65	44.20	29.87	13.34	25.36	11.35	25.35	10.09	22.35	7.78	29.18	1.52	414	
10:46 AM	66	44.33	30.00	13.34	25.44	11.43	25.45	10.19	22.43	7.86	29.74			
10:47 AM	67	44.41	30.08	13.34	25.53	11.52	25.53	10.27	22.51	7.94	29.74			
10:48 AM	68	44.46	30.13	13.35	25.61	11.60	25.63	10.37	22.58	8.01	29.74			
10:49 AM	69	44.53	30.20	13.35	25.70	11.69	25.73	10.47	22.67	8.10	29.74			
10:50 AM	70	44.60	30.27	13.35	25.78	11.77	25.81	10.55	22.76	8.19	29.74			
10:51AM	71	44.68	30.35	13.35	25.86	11.85	25.89	10.63	22.84	8.27	29.74			
10:52 AM	72	44.72	30.39	13.35	25.94	11.93	25.97	10.71	22.93	8.36	29.74	1.50	410	
10:53 AM	73	44.80	30.47	13.36	26.01	12.00	26.05	10.79	23.01	8.44	29.74			
10:54 AM	74	44.87	30.54	13.36	26.09	12.08	26.13	10.87	23.09	8.52	29.74			
10:55 AM	75	44.92	30.59	13.36	26.17	12.16	26.21	10.95	23.15	8.58	29.74	1.50	410	
10:56 AM	76	45.01	30.68	13.36	26.24	12.23	26.27	11.01	23.23	8.66	29.74			
10:57 AM	77	45.05	30.72	13.36	26.31	12.30	26.36	11.10	23.30	8.73	29.74			
10:58 AM	78	45.11	30.78	13.36	26.38	12.37	26.45	11.19	23.37	8.80	29.74			
10:59 AM	79	45.16	30.83	13.37	26.46	12.45	26.53	11.27	23.45	8.88	29.74			
11:00 AM	80	45.22	30.89	13.37	26.53	12.52	26.61	11.35	23.54	8.97	29.74	1.48	407	Adjust rate
11:01 AM	81	45.43	31.10	13.37	26.60	12.59	26.68	11.42	23.63	9.06	29.74	1.51	412	
11:02 AM	82	45.51	31.18	13.37	26.68	12.67	26.74	11.48	23.71	9.14	29.74			
11:03 AM	83	45.58	31.25	13.37	26.75	12.74	26.81	11.55	23.76	9.19	29.74			
11:04 AM	84	45.61	31.28	13.37	26.82	12.81	26.89	11.63	23.83	9.26	29.74			
11:05 AM	85	45.71	31.38	13.38	26.89	12.88	26.97	11.71	23.90	9.33	29.74			
11:06 AM	86	45.75	31.42	13.38	26.96	12.95	27.04	11.78	23.97	9.40	29.74			
11:07 AM	87	45.78	31.45	13.38	27.03	13.02	27.10	11.84	24.04	9.47	29.74			
11:08 AM	88	45.87	31.54	13.38	27.10	13.09	27.17	11.91	24.12	9.55	29.74			
11:09 AM	89	45.92	31.59	13.38	27.17	13.16	27.24	11.98	24.20	9.63	29.74			
11:10 AM	90	45.97	31.64	13.39	27.23	13.22	27.30	12.04	24.27	9.70	29.74	1.49	408	
11:11 AM	91	46.03	31.70	13.39	27.30	13.29	27.37	12.11	24.35	9.78	29.74			
11:12 AM	92	46.08	31.75	13.39	27.36	13.35	27.46	12.20	24.42	9.85	29.74			
11:13 AM	93	46.13	31.80	13.39	27.43	13.42	27.53	12.27	24.47	9.90	29.74			
11:14 AM	94	46.19	31.86	13.39	27.49	13.48	27.59	12.33	24.53	9.96	29.74			
11:15 AM	95	46.24	31.91	13.39	27.56	13.55	27.66	12.40	24.59	10.02	29.74			
11:16 AM	96	46.29	31.96	13.39	27.62	13.61	27.71	12.45	24.65	10.08	29.74			
11:17 AM	97	46.33	32.00	13.40	27.68	13.67	27.78	12.52	24.72	10.15	29.74			
11:18 AM	98	46.38	32.05	13.40	27.74	13.73	27.84	12.58	24.79	10.22	29.74			
11:19 AM	99	46.45	32.12	13.40	27.81	13.80	27.88	12.62	24.85	10.28	29.74	1.48	407	Adjust rate
11:20 AM	100	46.72	32.39	13.40	27.86	13.85	27.95	12.69	24.93	10.36	29.74	1.52	414	
11:21 AM	101	46.82	32.49	13.40	27.93	13.92	28.02	12.76	25.00	10.43	29.74			
11:22 AM	102	46.88	32.55	13.40	28.00	13.99	28.12	12.86	25.06	10.49	29.74			
11:23 AM	103	46.94	32.61	13.40	28.07	14.06	28.19	12.93	25.13	10.56	29.50			
11:24 AM	104	46.99	32.66	13.41	28.14	14.13	28.27	13.01	25.20	10.63	29.74			
11:25 AM	105	47.03	32.70	13.41	28.20	14.19	28.35	13.09	25.28	10.71	29.74			
11:26 AM	106	47.08	32.75	13.41	28.26	14.25	28.39	13.13	25.32	10.75	29.74			
11:27 AM	107	47.14	32.81	13.41	28.32	14.31	28.45	13.19	25.38	10.81	29.74			
11:28 AM	108	47.18	32.85	13.41	28.38	14.37	28.51	13.25	25.44	10.87	29.74			
11:29 AM	109	47.23	32.90	13.41	28.44	14.43	28.58	13.32	25.50	10.93	29.74			
11:30 AM	110	47.27	32.94	13.41	28.50	14.49	28.65	13.39	25.56	10.99	29.74	1.49	408	
11:31 AM	111	47.33	33.00	13.42	28.56	14.55	28.71	13.45	25.64	11.07	29.74			
11:32 AM	112	47.39	33.06	13.42	28.62	14.61	28.78	13.52	25.71	11.14	29.74			
11:33 AM	113	47.43	33.10	13.42	28.67	14.66	28.85	13.59	25.76	11.19	29.74			
11:34 AM	114	47.46	33.13	13.42	28.73	14.72	28.91	13.65	25.83	11.26	29.74			
11:35 AM	115	47.51	33.18	13.42	28.79	14.78	28.97	13.71	25.88	11.31	29.74			
11:36 AM	116	47.58	33.25	13.42	28.84	14.83	29.02	13.76	25.93	11.36	29.74			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 3-94

24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
11:37 AM	117	47.61	33.28	13.42	28.90	14.89	29.08	13.82	26.01	11.44	29.73			
11:38 AM	118	47.68	33.35	13.42	28.95	14.94	29.16	13.90	26.07	11.50	29.73			
11:39 AM	119	47.71	33.38	13.43	29.01	15.00	29.22	13.96	26.12	11.55	29.73	1.48	407	Adjust rate
11:40 AM	120	47.82	33.49	13.43	29.06	15.05	29.27	14.01	26.17	11.60	29.74	1.52	414	
11:41 AM	121	48.05	33.72	13.43	29.12	15.11	29.31	14.05	26.22	11.65	29.73			
11:42 AM	122	48.13	33.80	13.43	29.18	15.17	29.36	14.10	26.28	11.71	29.73			
11:43 AM	123	48.19	33.86	13.43	29.24	15.23	29.42	14.16	26.35	11.78	29.58			
11:44 AM	124	48.23	33.90	13.43	29.30	15.29	29.47	14.21	26.43	11.86	29.73			
11:45 AM	125	48.28	33.95	13.43	29.36	15.35	29.53	14.27	26.49	11.92	29.74			
11:46 AM	126	48.32	33.99	13.43	29.42	15.41	29.60	14.34	26.54	11.97	29.73			
11:47 AM	127	48.37	34.04	13.44	29.47	15.46	29.66	14.40	26.59	12.02	29.73			
11:48 AM	128	48.43	34.10	13.44	29.53	15.52	29.72	14.46	26.64	12.07	29.73			
11:49 AM	129	48.46	34.13	13.44	29.58	15.57	29.76	14.50	26.71	12.14	29.73			
11:50 AM	130	48.51	34.18	13.44	29.64	15.63	29.82	14.56	26.78	12.21	29.73	1.50	410	Water still
11:51 AM	131	48.56	34.23	13.44	29.69	15.68	29.85	14.59	26.81	12.24	29.73			somewhat cloudy
11:52 AM	132	48.60	34.27	13.44	29.74	15.73	29.91	14.65	26.88	12.31	29.73			
11:53 AM	133	48.67	34.34	13.44	29.80	15.79	29.99	14.73	26.95	12.38	29.73			
11:54 AM	134	48.68	34.35	13.45	29.84	15.83	30.06	14.80	27.00	12.43	29.73			
11:55 AM	135	48.73	34.40	13.45	29.90	15.89	30.12	14.86	27.05	12.48	29.73			
11:56 AM	136	48.80	34.47	13.45	29.95	15.94	30.18	14.92	27.11	12.54	29.73			
11:57 AM	137	48.83	34.50	13.45	30.00	15.99	30.22	14.96	27.17	12.60	29.73			
11:58 AM	138	48.85	34.52	13.45	30.05	16.04	30.24	14.98	27.23	12.66	29.73			
11:59 AM	139	48.89	34.56	13.45	30.09	16.08	30.27	15.01	27.28	12.71	29.73			
12:00 PM	140	48.95	34.62	13.45	30.14	16.13	30.30	15.04	27.32	12.75	29.73			
12:01 PM	141	49.11	34.78	13.46	30.19	16.18	30.33	15.07	27.37	12.80	29.73	1.48	407	Adjust rate
12:02 PM	142	49.17	34.84	13.46	30.25	16.24	30.39	15.13	27.41	12.84	29.73	1.50	410	
12:03 PM	143	49.22	34.89	13.46	30.30	16.29	30.45	15.19	27.45	12.88	29.73			
12:04 PM	144	49.26	34.93	13.46	30.35	16.34	30.49	15.23	27.52	12.95	29.71			
12:05 PM	145	49.32	34.99	13.46	30.40	16.39	30.54	15.28	27.57	13.00	29.65			
12:17 PM	157													Water sample collected; T = 55.8F
12:20 PM	160	49.88	35.55	13.48	31.09	17.08	31.30	16.04	28.32	13.75	29.73	1.48	407	Adjust rate
12:21 PM	161											1.51	412	
12:30 PM	170	50.48	36.15	13.49	31.56	17.55	31.75	16.49	28.80	14.23	29.72			
12:40 PM	180	51.03	36.70	13.50	31.97	17.96	32.15	16.89	29.28	14.71	29.72	1.47	406	Adjust rate
12:41 PM	181											1.51	412	
12:43 PM	183													
12:50 PM	190	51.45	37.12	13.51	32.41	18.40	32.57	17.31	21.32	6.75				
01:00 PM	200	51.85	37.52	13.52	32.79	18.78	32.81	17.55	21.78	7.21	29.71	1.49	408	Adjust rate
01:01 PM	201											1.50	410	
01:10 PM	210	52.19	37.86	13.53	33.16	19.15	33.06	17.80	22.19	7.62	29.70			
01:20 PM	220	52.48	38.15	13.54	33.49	19.48	33.37	18.11	22.58	8.01	29.70			
01:30 PM	230	52.77	38.44	13.55	33.80	19.79	33.63	18.37	22.91	8.34	29.69			
01:40 PM	240	53.04	38.71	13.56	34.08	20.07	33.96	18.70	23.23	8.66	29.68	1.45	402	Adjust rate
01:42 PM	242											1.52	414	
01:50 PM	250	53.71	39.38	13.57	34.44	20.43	34.26	19.00	23.57	9.00	29.68			
02:00 PM	260	53.94	39.61	13.57	34.73	20.72	34.52	19.26	23.87	9.30	29.67			
02:10 PM	270	54.14	39.81	13.58	34.99	20.98	34.75	19.49	24.18	9.61	29.67			
02:20 PM	280	54.32	39.99	13.59	35.24	21.23	35.01	19.75	24.44	9.87	29.67	1.47	406	Adjust rate
02:21 PM	281											1.51	412	
02:30 PM	290	54.68	40.35	13.60	35.51	21.50	35.33	20.07	24.71	10.14	29.66			
02:40 PM	300	54.86	40.53	13.60	35.74	21.73	35.65	20.39	24.99	10.42	29.66			
02:50 PM	310	55.04	40.71	13.61	35.96	21.95	35.74	20.48	25.23	10.66	29.66			

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94
24 Hour Aquifer Test: September 29 - 30, 1994

Date' Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
03:00 PM	320	55.25	40.92	13.62	36.17	22.16	35.88	20.62	25.47	10.90	29.66	1.48	407	Adjust rate
03:02 PM	322											1.51	412	
03:10 PM	330	55.61	41.28	13.62	36.41	22.40	36.13	20.87	25.72	11.15	29.65			
03:20 PM	340	55.77	41.44	13.63	36.62	22.61	36.31	21.05	25.95	11.38	29.65			
03:30 PM	350	55.92	41.59	13.63	36.81	22.80	36.53	21.27	26.17	11.60	29.64			
03:40 PM	360	56.12	41.79	13.64	36.99	22.98	36.70	21.44	26.37	11.80	29.64	1.49	408	Adjust rate
03:41 PM	361											1.52	414	
03:50 PM	370	56.38	42.05	13.64	37.20	23.19	36.90	21.64	26.59	12.02	29.64			
04:00 PM	380	56.50	42.17	13.65	37.38	23.37	37.08	21.82	26.78	12.21	29.64			
04:03 PM	383													
04:10 PM	390	56.63	42.30	13.66	37.54	23.53	37.28	22.02	26.97	12.40	29.64			
04:20 PM	400	56.75	42.42	13.66	37.70	23.69	37.45	22.19	27.15	12.58	29.64	1.49	408	Adjust rate
04:22 PM	402											1.51	412	
04:30 PM	410	57.05	42.72	13.67	37.88	23.87	37.61	22.35	27.34	12.77	29.63			
04:40 PM	420	57.16	42.83	13.67	38.04	24.03	37.75	22.49	27.52	12.95	29.63			
04:50 PM	430	57.26	42.93	13.68	38.18	24.17	37.90	22.64	27.68	13.11	29.63			
05:00 PM	440	57.33	43.00	13.68	38.31	24.30	38.05	22.79	27.84	13.27	29.63	1.48	407	Adjust rate
05:02 PM	442											1.50	410	
05:10 PM	450	57.61	43.28	13.68	38.48	24.47	38.20	22.94	28.00	13.43	29.63			
05:20 PM	460	57.71	43.38	13.69	38.61	24.60	38.33	23.07	28.16	13.59	29.63			
05:30 PM	470	57.79	43.46	13.69	38.74	24.73	38.46	23.20	28.30	13.73	29.62			
05:40 PM	480	57.88	43.55	13.70	38.86	24.85	38.57	23.31	28.44	13.87	29.63	1.48	407	Adjust rate
05:42 PM	482											1.50	410	
05:50 PM	490	58.15	43.82	13.70	39.01	25.00	38.71	23.45	28.59	14.02	29.63			
06:00 PM	500	58.26	43.93	13.70	39.13	25.12	38.82	23.56	28.73	14.16	29.63			
06:10 PM	510	58.33	44.00	13.71	39.24	25.23	38.93	23.67	28.86	14.29	29.62			
06:20 PM	520	58.40	44.07	13.71	39.35	25.34	39.03	23.77	28.98	14.41	29.63	1.49	408	Adjust rate
06:22 PM	522											1.51	412	
06:30 PM	530	58.67	44.34	13.71	39.48	25.47	39.14	23.88	29.11	14.54	29.62			
06:40 PM	540	58.74	44.41	13.72	39.60	25.59	39.24	23.98	29.24	14.67	29.62			
06:50 PM	550	58.79	44.46	13.72	39.70	25.69	39.34	24.08	29.35	14.78	29.62			
07.00 PM	560	58.84	44.51	13.72	39.79	25.78	39.42	24.16	29.46	14.89	29.62	1.49	408	Adjust rate
07:02 PM	562											1.51	412	
07:10 PM	570	59.06	44.73	13.73	39.91	25.90	39.53	24.27	29.58	15.01	29.62			
07:20 PM	580	59.16	44.83	13.73	40.01	26.00	39.63	24.37	29.69	15.12	29.62			
07:30 PM	590	59.20	44.87	13.73	40.11	26.10	39.71	24.45	29.80	15.23	29.62			
07:40 PM	600	59.25	44.92	13.74	40.19	26.18	39.79	24.53	29.90	15.33	29.62	1.49	408	Adjust rate
07:42 PM	602											1.51	412	
07:50 PM	610	59.49	45.16	13.74	40.30	26.29	39.89	24.63	30.01	15.44	29.62			
08:00 PM	620	59.55	45.22	13.74	40.39	26.38	39.98	24.72	30.12	15.55	29.63			
08:10 PM	630	59.61	45.28	13.75	40.48	26.47	40.06	24.80	30.21	15.64	29.62			
08:20 PM	640	59.66	45.33	13.75	40.56	26.55	40.14	24.88	30.31	15.74	29.63	1.50	410	
08:30 PM	650	59.69	45.36	13.75	40.63	26.62	40.21	24.95	30.40	15.83	29.62			
08:40 PM	660	59.76	45.43	13.76	40.70	26.69	40.28	25.02	30.48	15.91	29.63			
08:50 PM	670	59.82	45.49	13.76	40.77	26.76	40.35	25.09	30.56	15.99	29.63			
09:00 PM	680	59.86	45.53	13.76	40.84	26.83	40.42	25.16	30.64	16.07	29.62	1.49	408	Adjust rate
09:02 PM	682											1.51	412	
09:10 PM	690	60.06	45.73	13.76	40.93	26.92	40.52	25.26	30.73	16.16	29.62			
09:20 PM	700	60.13	45.80	13.76	41.01	27.00	40.60	25.34	30.81	16.24	29.62			
09:30 PM	710	60.14	45.81	13.77	41.07	27.06	40.66	25.40	30.90	16.33	29.62			
09:40 PM	720	60.18	45.85	13.77	41.14	27.13	40.73	25.47	30.97	16.40	29.62	1.49	408	Adjust rate
09:42 PM	722											1.52	414	
09:50 PM	730	60.50	46.17	13.77	41.25	27.24	40.82	25.56	31.06	16.49	29.63			

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 3-94
24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
10:00 PM	740	60.55	46.22	13.78	41.32	27.31	40.89	25.63	31.14	16.57	29.62			
10:10 PM	750	60.59	46.26	13.78	41.39	27.38	40.96	25.70	31.22	16.65	29.62			
10:20 PM	760	60.63	46.30	13.78	41.45	27.44	41.03	25.77	31.30	16.73	29.62	1.49	408	Adjust rate
10:22 PM	762											1.51	412	
10:30 PM	770	60.87	46.54	13.78	41.55	27.54	41.13	25.87	31.38	16.81	29.62			
10:40 PM	780	60.93	46.60	13.78	41.62	27.61	41.20	25.94	31.46	16.89	29.62			
10:50PM	790	60.98	46.65	13.79	41.69	27.68	41.26	26.00	31.54	16.97	29.62			
11:00 PM	800	61.04	46.71	13.79	41.75	27.74	41.32	26.06	31.61	17.04	29.62	1.51	412	
11:10 PM	810	61.08	46.75	13.79	41.81	27.80	41.40	26.14	31.68	17.11	29.62			
11:20 PM	820	61.11	46.78	13.79	41.86	27.85	41.45	26.19	31.71	17.14	29.62			
11:30 PM	830	61.15	46.82	13.79	41.91	27.90	41.50	26.24	31.71	17.14	29.62			
11:40 PM	840	61.20	46.87	13.79	41.97	27.96	41.54	26.28	31.71	17.14	29.62	1.51	412	
11:50 PM	850	61.24	46.91	13.79	41.93	27.92	41.60	26.34	31.71	17.14	29.62			
09/30/94	—													
12:00 AM	860	61.26	46.93	13.80	41.93	27.92	41.63	26.37	31.71	17.14	29.62			
12:10 AM	870	61.28	46.95	13.80	41.93	27.92	41.67	26.41	31.71	17.14	29.62			
12:20 AM	880	61.33	47.00	13.80	41.94	27.93	41.72	26.46	31.71	17.14	29.62	1.51	412	
12:30 AM	890	61.37	47.04	13.80	41.93	27.92	41.72	26.46	31.71	17.14	29.62			
12:40 AM	900	61.38	47.05	13.80	41.93	27.92	41.73	26.47	31.71	17.14	29.62			
1250 AM	910	61.43	47.10	13.80	41.93	27.92	41.74	26.48	31.71	17.14	29.63			
01:00 AM	920	61.47	47.14	13.81	41.93	27.92	41.73	26.47	31.71	17.14	29.63	1.49	408	Adjust rate
01:02 AM	922											1.51	412	
01:10 AM	930	61.71	47.38	13.81	41.93	27.92	41.71	26.45	31.71	17.14	29.62			
01:20 AM	940	61.71	47.38	13.81	41.94	27.93	41.70	26.44	31.71	17.14	29.62			
01:30 AM	950	61.75	47.42	13.81	41.94	27.93	41.71	26.45	31.71	17.14	29.63			
01:40 AM	960	61.79	47.46	13.81	41.94	27.93	41.69	26.43	31.71	17.14	29.63	1.50	410	
01:50 AM	970	61.81	47.48	13.81	41.94	27.93	41.70	26.44	31.71	17.14	29.62			
02:00 AM	980	61.85	47.52	13.81	41.93	27.92	41.69	26.43	31.71	17.14	29.62			
02:10 AM	990	61.84	47.51	13.82	41.93	27.92	41.69	26.43	31.71	17.14	29.62			
02:20 AM	1000	61.83	47.50	13.82	41.94	27.93	41.69	26.43	31.71	17.14	29.62	1.49	408	Adjust rate
02:22 AM	1002											1.51	412	
02:30 AM	1010	62.03	47.70	13.82	41.93	27.92	41.69	26.43	31.71	17.14	29.62			
02:40 AM	1020	62.06	47.73	13.82	41.93	27.92	41.69	26.43	31.71	17.14	29.62			
02:50 AM	1030	62.09	47.76	13.82	41.93	27.92	41.71	26.45	31.71	17.14	29.61			
03:00 AM	1040	62.10	47.77	13.82	41.93	27.92	41.73	26.47	31.71	17.14	29.61	1.49	408	Adjust rate
03:02 AM	1042											1.51	412	
03:10 AM	1050	62.20	47.87	13.82	41.93	27.92	41.71	26.45	31.72	17.15	29.61			
03:20 AM	1060	62.25	47.92	13.82	41.93	27.92	41.71	26.45	31.71	17.14	29.60			
03:30 AM	1070	62.27	47.94	13.82	41.93	27.92	41.73	26.47	31.71	17.14	29.60			
03:40 AM	1080	62.28	47.95	13.83	41.93	27.92	41.73	26.47	31.71	17.14	29.60	1.49	408	Adjust rate
03:42 AM	1082											1.51	412	
03:50 AM	1090	62.43	48.10	13.83	41.93	27.92	41.73	26.47	31.71	17.14	29.60			
04:00 AM	1100	62.44	48.11	13.83	41.93	27.92	41.71	26.45	31.71	17.14	29.59			
04:10 AM	1110	62.47	48.14	13.83	41.93	27.92	41.71	26.45	31.71	17.14	29.59			
04:20 AM	1120	62.49	48.16	13.83	41.93	27.92	41.72	26.46	31.71	17.14	29.60	1.50	410	
04:30 AM	1130	62.52	48.19	13.84	41.93	27.92	41.71	26.45	31.71	17.14	29.60			
04:40 AM	1140	62.54	48.21	13.84	41.93	27.92	41.71	26.45	31.72	17.15	29.60			
04:50 AM	1150	62.57	48.24	13.84	41.93	27.92	41.69	26.43	31.72	17.15	29.60			
05:00 AM	1160	62.59	48.26	13.84	41.93	27.92	41.69	26.43	31.71	17.14	29.60	1.49	408	Adjust rate
05:02 AM	1162											1.51	412	
05:10 AM	1170	62.74	48.41	13.84	41.93	27.92	41.70	26.44	31.71	17.14	29.60			
05:20 AM	1180	62.75	48.42	13.84	41.93	27.92	41.70	26.44	31.71	17.14	29.60			
05:30 AM	1190	62.77	48.44	13.84	41.93	27.92	41.70	26.44	31.72	17.15	29.60			

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 3-94

24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (inHg)	Piez head (ft)	Pumping rate (gpm)	Remarks
05:40 AM	1200	62.80	48.47	13.85	41.93	27.92	41.70	26.44	31.71	17.14	29.61	1.49	408	Adjust rate
05:42 AM	1202											1.52	414	
05:50 AM	1210	63.02	48.69	13.85	41.93	27.92	41.69	26.43	31.71	17.14	29.61			
06:00 AM	1220	63.07	48.74	13.85	41.93	27.92	41.68	26.42	31.71	17.14	29.61			
06:10 AM	1230	63.12	48.79	13.85	41.93	27.92	41.67	26.41	31.72	17.15	29.61			
06:20 AM	1240	63.11	48.78	13.85	41.93	27.92	41.67	26.41	31.71	17.14	29.61	1.51	412	
06:30 AM	1250	63.14	48.81	13.85	41.93	27.92	41.67	26.41	31.71	17.14	29.61			
06:40 AM	1260	63.15	48.82	13.85	41.93	27.92	41.69	26.43	31.72	17.15	29.61			
06:50 AM	1270	63.17	48.84	13.85	41.93	27.92	41.69	26.43	31.71	17.14	29.62			
07:00 AM	1280	63.18	48.85	13.86	41.93	27.92	41.70	26.44	31.72	17.15	29.62	1.50	410	
07:10 AM	1290	63.19	48.86	13.86	41.93	27.92	41.70	26.44	31.72	17.15	29.62			
07:20 AM	1300	63.19	48.86	13.86	41.93	27.92	41.72	26.46	31.72	17.15	29.62			
07:30 AM	1310	63.24	48.91	13.86	41.93	27.92	41.74	26.48	31.72	17.15	29.62			
07:40 AM	1320	63.25	48.92	13.86	41.93	27.92	41.77	26.51	31.72	17.15	29.63	1.49	408	Adjust rate
07:42 AM	1322											1.50	410	
07:50 AM	1330	63.33	49.00	13.86	41.93	27.92	41.82	26.56	31.72	17.15	29.63			
08:00 AM	1340	63.35	49.02	13.86	41.93	27.92	41.90	26.64	31.72	17.15	29.64			
08:10 AM	1350	63.36	49.03	13.86	41.93	27.92	41.95	26.69	31.73	17.16	29.64			
08:20 AM	1360	63.37	49.04	13.86	41.93	27.92	42.01	26.75	31.74	17.17	29.64	1.48	407	Adjust rate
08:22 AM	1362											1.50	410	
08:30 AM	1370	63.42	49.09	13.87	41.93	27.92	42.08	26.82	31.75	17.18	29.65			
08:40 AM	1380	63.44	49.11	13.87	41.93	27.92	42.14	26.88	31.75	17.18	29.65			
08:50 AM	1390	63.44	49.11	13.87	41.93	27.92	42.18	26.92	31.75	17.18	29.65			
09: 00 AM	1400	63.44	49.11	13.87	41.93	27.92	42.21	26.95	31.75	17.18	29.66	1.49	408	
09:10 AM	1410	63.46	49.13	13.87	41.93	27.92	42.23	26.97	31.74	17.17	29.66			
09:20 AM	1420	63.47	49.14	13.87	41.93	27.92	42.27	27.01	31.74	17.17	29.66			
09:30 AM	1430	63.48	49.15	13.87	41.93	27.92	42.34	27.08	31.74	17.17	29.66			
09:40 AM	1440	63.56	49.23	13.87	41.93	27.92	42.37	27.11	31.74	17.17	29.66	1.48	407	Adjust rate
09:45 AM	1445											1.51	412	
09:50 AM	1450	63.74	49.41	13.87	41.93	27.92	42.38	27.12	31.74	17.17	29.66			
10:00 AM	1460	63.73	49.40	13.87	41.93	27.92	42.46	27.20	31.75	17.18	29.67			
10:10 AM	1470	63.74	49.41	13.87	41.93	27.92	42.46	27.20	31.75	17.18	29.66			
10:20 AM	1480	63.74	49.41	13.87	41.92	27.91	42.53	27.27	31.75	17.18	29.66	1.50	410	
10:30 AM	1490	63.78	49.45	13.87	41.92	27.91	42.56	27.30	31.75	17.18	29.66			
10:40 AM	1500	63.78	49.45	13.88	41.93	27.92	42.53	27.27	31.73	17.16	29.66			
10:50 AM	1510	63.78	49.45	13.88	41.92	27.91	42.66	27.40	31.74	17.17	29.66			
11:00 AM	1520	63.80	49.47	13.88	41.92	27.91	42.64	27.38	31.74	17.17	29.65	1.49	408	
11:10 AM	1530	63.81	49.48	13.88	41.93	27.92	42.65	27.39	31.75	17.18	29.66			
11:20 AM	1540	63.80	49.47	13.88	41.92	27.91	42.69	27.43	31.75	17.18	29.65			
11:30 AM	1550	63.83	49.50	13.88	41.92	27.91	42.74	27.48	31.73	17.16	29.65			
11:40 AM	1560	63.84	49.51	13.88	41.92	27.91	42.73	27.47	31.74	17.17	29.65	1.49	408	
11:50 AM	1570	63.86	49.53	13.88	41.92	27.91	42.79	27.53	31.75	17.18	29.65			
12:00 PM	1580	63.85	49.52	13.88	41.92	27.91	42.83	27.57	31.75	17.18	29.64			
12:22 PM	1602											1.48	407	
12:34 PM	1614	63.87	49.54	13.86	41.04	27.03	39.78	24.52	29.21	14.64				
12:35 PM	1615	63.88	49.55	13.87	41.04	27.03	39.76	24.50	29.19	14.62				
12:36 PM	1616	63.85	49.52	13.87	40.98	26.97	39.75	24.49	29.19	14.62				
12:37 PM	1617	63.86	49.53	13.86	41.04	27.03	39.76	24.50	29.20	14.63				
12:38 PM	1618	63.88	49.55	13.87	41.04	27.03	39.77	24.51	29.20	14.63				
12:39 PM	1619	63.86	49.53	13.86	41.04	27.03	39.74	24.48	29.20	14.63				
12:40 PM	1620	63.89	49.56	13.87	41.05	27.04	39.72	24.46	29.20	14.63				
12:41 PM	1621	63.87	49.54	13.87	41.05	27.04	39.72	24.46	29.21	14.64				
12:42 PM	1622	63.89	49.56	13.87	41.05	27.04	39.73	24.47	29.21	14.64				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 3-94

24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
12:43 PM	1623	63.87	49.54	13.87	41.05	27.04	39.72	24.46	29.22	14.65				
12:44 PM	1624	63.87	49.54	13.87	41.05	27.04	39.73	24.47	29.22	14.65				
12:45 PM	1625	63.88	49.55	13.87	41.05	27.04	39.73	24.47	29.20	14.63				
12:46 PM	1626	63.88	49.55	13.87	41.05	27.04	39.74	24.48	29.21	14.64				
12:47 PM	1627	63.92	49.59	13.87	41.05	27.04	39.74	24.48	29.21	14.64				
12:48 PM	1628	63.90	49.57	13.87	41.05	27.04	39.73	24.47	29.20	14.63				
12:49 PM	1629	63.90	49.57	13.87	41.06	27.05	39.71	24.45	29.21	14.64				
12:50 PM	1630	63.88	49.55	13.87	41.06	27.05	39.69	24.43	29.21	14.64		1.48	407	Pump OFF
12:51 PM	1	46.01		13.87	40.68		39.57		29.21					Recovery
12:52 PM	2	44.49		13.88	39.97		39.15		29.12					
12:53 PM	3	43.38		13.87	39.39		38.74		28.94					
12:54 PM	4	42.56		13.87	38.89		38.37		28.75					
12:55 PM	5	41.92		13.86	38.46		38.02		28.56					
12:56 PM	6	41.38		13.85	38.07		37.68		28.36					
12:57 PM	7	40.91		13.84	37.72		37.37		28.16					
12:58 PM	8	40.50		13.84	37.40		37.07		27.98					
12:59 PM	9	40.14		13.83	37.10		36.77		27.80					
01:00 PM	10	39.80		13.82	36.82		36.49		27.62					
01:01 PM	11	39.49		13.82	36.56		36.25		27.45					
01:02 PM	12	39.20		13.81	36.31		36.02		27.28					
01:03 PM	13	38.93		13.81	36.08		35.78		27.11					
01:04 PM	14	38.68		13.80	35.86		35.56		26.94					
01:05 PM	15	38.44		13.80	35.65		35.35		26.78					
01:06 PM	16	38.22		13.79	35.45		35.16		26.62					
01:07 PM	17	38.00		13.79	35.25		34.97		26.47					
01:08 PM	18	37.79		13.78	35.06		34.80		26.32					
01:09 PM	19	37.60		13.78	34.88		34.62		26.18					
01:10 PM	20	37.41		13.77	34.71		34.45		26.04					
01:11 PM	21	37.22		13.77	34.54		34.28		25.90					
01:12 PM	22	37.05		13.77	34.38		34.13		25.76					
01:13 PM	23	36.88		13.76	34.22		33.98		25.64					
01:14 PM	24	36.72		13.76	34.06		33.84		25.50					
01:15 PM	25	36.56		13.76	33.91		33.71		25.37					
01:16 PM	26	36.41		13.75	33.77		33.57		25.23					
01:17 PM	27	36.25		13.75	33.63		33.42		25.11					
01:18 PM	28	36.11		13.75	33.49		33.27		24.99					
01:19 PM	29	35.97		13.74	33.35		33.15		24.86					
01:20 PM	30	35.83		13.74	33.22		33.03		24.74					
01:21 PM	31	35.70		13.74	33.09		32.91		24.63					
01:22 PM	32	35.56		13.73	32.97		32.78		24.51					
01:23 PM	33	35.43		13.73	32.84		32.65		24.40					
01:24 PM	34	35.31		13.73	32.72		32.53		24.29					
01:25 PM	35	35.19		13.73	32.60		32.40		24.18					
01:26 PM	36	35.07		13.72	32.48		32.29		24.06					
01:27 PM	37	34.95		13.72	32.37		32.17		23.96					
01:28 PM	38	34.84		13.72	32.26		32.06		23.84					
01:29 PM	39	34.73		13.72	32.15		31.94		23.74					
01:30 PM	40	34.61		13.71	32.04		31.83		23.65					
01:31 PM	41	34.50		13.71	31.93		31.72		23.54					
01:32 PM	42	34.39		13.71	31.83		31.61		23.45					
01:33 PM	43	34.29		13.71	31.73		31.50		23.35					
01:34 PM	44	34.19		13.71	31.62		31.40		23.26					

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 3-94

24 Hoar Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time (min)	Test Well 3-94 Depth to water (ft)	Test Well 3-94 Observed Drwdwn (ft)	Obs Well 4 Depth to water (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	Observation Well 7 Depth to water (ft)	Observation Well 7 Observed Drwdwn (ft)	Observation Well 8 Depth to water (ft)	Observation Well 8 Observed Drwdwn (ft)	Barometric pressure (in Hg)	Piez head (ft)	Pumping rate (gpm)	Remarks
01:35 PM	45	34.09		13.70	31.52		31.31		23.15					
01:36 PM	46	33.98		13.70	31.42		31.21		23.05					
01:37 PM	47	33.88		13.70	31.32		31.11		22.96					
01:38 PM	48	33.79		13.70	31.23		31.02		22.87					
01:39 PM	49	33.69		13.69	31.14		30.94		22.78					
01:40 PM	50	33.60		13.69	31.04		30.85		22.68					
01:41 PM	51	33.51		13.69	30.95		30.76		22.59					
01:42 PM	52	33.41		13.69	30.86		30.67		22.49					
01:43 PM	53	33.32		13.69	30.77		30.58		22.42					
01:44 PM	54	33.23		13.68	30.68		30.51		22.33					
01:45 PM	55	33.15		13.68	30.60		30.43		22.24					
01:46 PM	56	33.06		13.68	30.51		30.34		22.15					
01:47 PM	57	32.98		13.68	30.43		30.25		22.08					
01:48 PM	58	32.89		13.68	30.34		30.17		22.00					
01:49 PM	59	32.81		13.68	30.26		30.08		21.91					
01:50 PM	60	32.72		13.67	30.18		29.99		21.82					
01:51 PM	61	32.64		13.67	30.09		29.90		21.72					
01:52 PM	62	32.56		13.67	30.02		29.81		21.64					
01:53 PM	63	32.48		13.67	29.94		29.72		21.58					
01:54 PM	64	32.41		13.67	29.86		29.64		21.50					
01:55 PM	65	32.32		13.67	29.78		29.55		21.43					
01:56 PM	66	32.25		13.66	29.70		29.48		21.35					
01:57 PM	67	32.18		13.66	29.63		29.40		21.26					
01:58 PM	68	32.10		13.66	29.55		29.33		21.18					
01:59 PM	69	32.02		13.66	29.48		29.24		21.11					
02:00 PM	70	31.95		13.66	29.40		29.17		21.03					
02:01 PM	71	31.88		13.65	29.33		29.10		20.95					
02:02 PM	72	31.80		13.65	29.26		29.01		20.88					
02:03 PM	73	31.73		13.65	29.19		28.93		20.81					
02:04 PM	74	31.66		13.65	29.12		28.86		20.74					
02:05 PM	75	31.59		13.65	29.05		28.79		20.67					
02:06 PM	76	31.53		13.65	28.98		28.71		20.59					
02:07 PM	77	31.46		13.64	28.91		28.65		20.52					
02:08 PM	78	31.39		13.64	28.84		28.58		20.44					
02:09 PM	79	31.33		13.64	28.78		28.51		20.37					
02:10 PM	80	31.26		13.64	28.71		28.45		20.30					
02:11 PM	81	31.19		13.64	28.64		28.37		20.23					
02:12 PM	82	31.13		13.64	28.58		28.31		20.16					
02:13 PM	83	31.06		13.64	28.52		28.25		20.10					
02:14 PM	84	31.00		13.63	28.45		28.19		20.04					
02:15 PM	85	30.94		13.63	28.39		28.13		19.98					
02:16 PM	86	30.87		13.63	28.32		28.07		19.91					
02:17 PM	87	30.81		13.63	28.26		28.01		19.85					
02:18 PM	88	30.75		13.63	28.20		27.95		19.78					
02:19 PM	89	30.69		13.63	28.14		27.89		19.72					
02:20 PM	90	30.63		13.63	28.07		27.82		19.65					
02:21 PM	91	30.57		13.62	28.01		27.76		19.60					
0222 PM	92	30.51		13.62	27.95		27.70		19.53					
02:23 PM	93	30.45		13.62	27.89		27.65		19.47					
02:24 PM	94	30.39		13.62	27.84		27.60		19.39					
02:25 PM	95	30.33		13.62	27.78		27.56		19.34					
02:26 PM	96	30.28		13.62	27.72		27.51		19.28					
02:27 PM	97	30.22		13.62	27.66		27.47		19.22					

Ground—Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 3-94

24 Hour Aquifer Test: September 29 - 30, 1994

Date/ Hour	Elapsed Time *(min)*	Test Well 3-94 Depth to water *(ft)*	Test Well 3-94 Observed Drwdwn *(ft)*	Obs Well 4 Depth to water *(ft)*	Observation Well 6 Depth to water *(ft)*	Observation Well 6 Observed Drwdwn *(ft)*	Observation Well 7 Depth to water *(ft)*	Observation Well 7 Observed Drwdwn *(ft)*	Observation Well 8 Depth to water *(ft)*	Observation Well 8 Observed Drwdwn *(ft)*	Barometric pressure *(inHg)*	Piez head *(ft)*	Pumping rate *(gpm)*	Remarks
02:28 PM	98	30.16		13.62	27.61		27.41		19.15					
02:29 PM	99	30.10		13.61	27.55		27.36		19.09					
02:30 PM	100	30.04		13.61	27.49		27.30		19.03					
02:31 PM	101	30.00		13.61	27.44		27.24		18.97					
02:32 PM	102	29.94		13.61	27.38		27.18		18.92					
02:33 PM	103	29.89		13.61	27.33		27.13		18.86					
02:34 PM	104	29.83		13.61	27.27		27.08		18.80					End of Test

Appendix I.

Test Well 2-94

Step Test: Water-Level Measurements

(December 1994)

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

Step Test - December 1, 1994

Date/ Hour	Elapsed Time *(min)*	Depth to water *(ft)*	Piez head *(ft)*	Pumping Rate *(gpm)*	Remarks
12/01/94		10.26			Measured D/W
10:51 AM		10.26			Omnidata logging started
10:55 AM		10.29			Water level trend
11:00 AM		10.28			
11:05 AM		10.32			
11:10 AM		10.31			
11:15 AM		10.29			
11:20 AM		10.31			
11:25 AM		10.34			
11:30 AM		10.34			
11:35 AM		10.33			
11:40 AM		10.28			
11:45 AM		10.32			
11:49 AM		10.27			
11:55 AM		10.30			
12:00 PM		10.25			
12:05 PM		10.29			
12:10 PM		10.26			
12:15 PM		10.25			
12:20 PM		10.27			
12:25 PM		10.25			
12:30 PM		10.28			
12:35 PM		10.24			
12:40 PM		10.25			
12:45 PM		10.24			
12:50 PM		10.27			
12:55 PM		10.24			
01:00 PM		10.24			
01:05 PM		10.26			
01:10 PM		10.24			
01:15 PM		10.22			
01:20 PM		10.21			
01:21 PM		10.20			
01:22 PM		10.20			
01:23 PM		10.20			
01:24 PM		10.20			
01:25 PM		10.20			
01:26 PM		10.20			
01:27 PM		10.21			
01:28 PM		10.20			
01:29 PM		10.20			
01:30 PM	0	10.20			Pump ON
01:31 PM	1	17.63			Step 1
01:32 PM	2	20.36	1.00		Water dirty
01:33 PM	3	20.99	1.08		
01:34 PM	4	21.21	1.07		Water cloudy
01:35 PM	5	21.40	1.07		
01:36 PM	6	21.55	1.06		
01:37 PM	7	21.67	1.06		
01:38 PM	8	21.75	1.06		
01:39 PM	9	21.84	1.06		
01:40 PM	10	21.90	1.06		
01:41 PM	11	21.95			
01:42 PM	12	21.98			
01:43 PM	13	22.02	1.05		
01:44 PM	14	22.07	1.05		Adjust rate
01:45 PM	15	22.34	1.09	350	
01:46 PM	16	22.34	1.09	350	Water somewhat
01:47 PM	17	22.39			cloudy

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

Step Test - December 1, 1994

Date/ Hour	Elapsed Time *(min)*	Depth to water *(ft)*	Piez head *(ft)*	Pumping Rate *(gpm)*	Remarks
01:48 PM	18	22.41	1.09	350	
01:49 PM	19	22.43			
01:50 PM	20	22.47			
01:51 PM	21	22.49			
01:52 PM	22	22.51	1.08		
01:53 PM	23	22.52			
01:54 PM	24	22.54			
01:55 PM	25	22.57			
01:56 PM	26	22.58			
01:57 PM	27	22.59	1.08		
01:58 PM	28	22.62			
01:59 PM	29	22.64	1.07		
02:00 PM	30	22.43	1.00		Increase rate
02:01 PM	1	24.09			Step 2
02:02 PM	2	24.40	1.42	400	
02:03 PM	3	24.43			
02:04 PM	4	24.49	1.42	400	
02:05 PM	5	24.51	1.42	400	
02:06 PM	6	24.54	1.42	400	
02:07 PM	7	24.57			
02:08 PM	8	24.59			
02.09 PM	9	24.63			
02:10 PM	10	24.61			
02:11 PM	11	24.65			
02:12 PM	12	24.62	1.41	400	
02:13 PM	13	24.65			
02:14 PM	14	24.66			
02:15 PM	15	24.67	1.41	400	
02:16 PM	16	24.68			
02:17 PM	17	24.68			
02:18 PM	18	24.69	1.41	400	
02:19 PM	19	24.70			
02:20 PM	20	24.73			
02:21 PM	21	24.73			
02:22 PM	22	24.74			
02:23 PM	23	24.74			
02:24 PM	24	24.76			
02:25 PM	25	24.78	1.41	400	Water clear
02:26 PM	26	24.77			
02:27 PM	27	24.77			
02:28 PM	28	24.80			
02:29 PM	29	24.79	1.40	398	
02:30 PM	30	24.81			Increase rate
02:31 PM	1	26.31	131	450	Step 3
02:32 PM	2	26.47	131	450	
02:33 PM	3	26.49	1.80	448	
02:34 PM	4	26.52			
02:35 PM	5	26.55			
02:36 PM	6	26.60			
02:37 PM	7	26.61	130	448	
02:38 PM	8	26.63			
02:39 PM	9	26.66	1.79	447	Adjust rate
02:40 PM	10	26.80	132	450	
02:41 PM	11	26.82			
02:42 PM	12	26.83			
02:43 PM	13	26.85			
02:44 PM	14	26.86	132	450	
02:45 PM	15	26.86			

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

Step Test - December 1, 1994

Date/ Hour	Elapsed Time (win)	Depth to water (ft)	Piez head (ft)	Pumping Rate (gpn)	Remarks
02:46 PM	16	26.88			
02:47 PM	17	26.87			
02:48 PM	18	26.90			
02:49 PM	19	26.91			
02:50 PM	20	26.93	1.82	450	
02:51 PM	21	26.93			
02:52 PM	22	26.94			
02:53 PM	23	26.93			
02:54 PM	24	26.94			
02:55 PM	25	26.95	1.81	450	
02:56 PM	26	26.95			
02:57 PM	27	26.97			
02:58 PM	28	26.96	1.81	450	
02:59 PM	29	26.96	1.81	450	
03:00 PM	30	26.98			Increase rate
03:01 PM	1	28.41	221	500	Step 4
03:02 PM	2	28.48	220	498	Adjust rate
03:03 PM	3	28.62	222	500	
03:04 PM	4	28.63	221	500	
03:05 PM	5	28.70			
03:06 PM	6	28.66			
03:07 PM	7	28.67			
03:08 PM	8	28.69	220	498	
03:09 PM	9	28.71			
03:10 PM	10	28.70			
03:11 PM	11	28.71			
03:12 PM	12	28.72			
03:13 PM	13	28.72			
03:14 PM	14	28.75	2.19	497	Adjust rate
03:15 PM	15	28.93			
03:16 PM	16	28.96	224	502	
03:17 PM	17	28.97			
03:18 PM	18	29.00			
03:19 PM	19	29.01			
03:20 PM	20	29.01	223	501	
03:21 PM	21	29.03			
03:22 PM	22	29.03			
03:23 PM	23	29.03			
03:24 PM	24	29.02			
03:25 PM	25	29.04	223	501	
03:26 PM	26	29.04			
03:27 PM	27	29.03			
03:28 PM	28	29.05			
03:29 PM	29	29.06	222	500	
03:30 PM	30	29.07	223	501	Increase rate
03:31 PM	1	3053	2.68		Step 5
03:32 PM	2	30.60	2.68		
03:33 PM	3	30.64	2.66		
03:34 PM	4	30.66			
03:35 PM	5	30.74	2.69	550	
03:36 PM	6	30.75	2.68		Water sample collected
03:37 PM	7	30.75	2.68		T = 56.1 F
03:38 PM	8	30.76			
03:39 PM	9	30.78			
03:40 PM	10	30.76			
03:41 PM	11	30.77			
03:42 PM	12	30.78	2.66		Adjust rate
03:43 PM	13	30.79	2.72		

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

Step Test - December 1, 1994

Date/ Hour	Elapsed Time *(min)*	Depth to water *(ft)*	Piez bead *(ft)*	Pumping Rate *(gpm)*	Remarks
03:44 PM	14	30.95	2.71	550	
03:45 PM	15	30.94			
03:46 PM	16	30.94	2.70	550	
03:47 PM	17	30.97			
03:48 PM	18	30.97	2.70	550	
03:49 PM	19	30.99			
03:50 PM	20	30.99	2.70	550	
03:51 PM	21	31.00	2.69	550	
03:52 PM	22	31.00			
03:53 PM	23	31.01			
03:54 PM	24	31.01			
03:55 PM	25	31.02			
03:56 PM	26	31.04			
03:57 PM	27	31.05	2.69	550	
03:58 PM	28	31.05			
03:59 PM	29	31.05	2.69	550	
04:00 PM	30	31.06			End of Step Test
04:01 PM		14.39			Pump OFF
04:02 PM		13.54			
04:03 PM		13.12			
04:04 PM		12.79			

Appendix J.

Test Well 2-94

4-day Aquifer Test: Water-Level Measurements

(December 1994)

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (mitt)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
12/01/94																
04:40 PM		11.54		10.79		11.19		11.54		10.51		2.22				Recovery from
05:00 PM		11.30		10.61		11.03		11.41		10.48		2.24	30.14			Step Test
06:00 PM		10.97		10.38		10.82		11.25		10.42		2.28	30.13			
07:00 PM		10.81		10.26		10.71		11.16		10.37		2.30	30.13			
08:00 PM		10.69		10.19		10.64		11.10		10.34		2.34	30.13			
09:00 PM		10.58		10.13		10.59		11.05		10.32		2.37	30.13			
10:00 PM		10.52		10.09		10.55		11.02		10.30		2.40	30.12			
11:00 PM		10.43		10.05		10.51		10.96		10.28		2.45	30.14			
12/02/94																
12:00 AM		10.37		10.02		10.48		10.96		10.26		2.45	30.14			
01:00 AM		10.31		9.99		10.45		10.92		10.25		2.47	30.14			
02:00 AM		10.21		9.98		10.43		10.89		10.24		2.50	30.14			
03:00 AM		10.19		9.95		10.41		10.88		10.23		2.51	30.13			
04:00 AM		10.13		9.94		10.40		10.86		10.22		2.53	30.13			
05:00 AM		10.04		9.92		10.38		10.84		10.21		2.54	30.12			
06:00 AM		10.08		9.91		10.37		10.83		10.20		2.54	30.12			
07:00 AM		10.04		9.89		10.35		10.82		10.19		2.56	30.12			
08:00 AM		10.28		9.87		10.34		10.81		10.20		2.54	30.12			
09:00 AM		10.49		9.84		10.32		10.80		10.19		2.56	30.13			
10:00 AM		10.63		9.82		10.30		10.81		10.19		2.56	30.13			
11:00 AM		10.74		9.79		10.27		10.78		10.18		2.57	30.11			
12:00 PM		10.75		9.76		10.25		10.77		10.17		2.59	30.08			
01:00 PM		10.62		9.75		10.24		10.75		10.16		2.62	30.05			
02:00 PM		10.53		9.75		10.23		10.73		10.16		2.66	30.03			
03:00 PM		10.47		9.74		10.22		10.73		10.16		2.64	30.01			
04:00 PM		10.46		9.73		10.22		10.72		10.16		2.64				
05:00 PM		10.36		9.74		10.22		10.72		10.15		2.63	30.01			
06:00 PM		10.33		9.74		10.22		10.72		10.14		2.63	30.01			
07:00 PM		10.33		9.73		10.21		10.71		10.13		2.62	30.01			
08:00 PM		10.29		9.72		10.20		10.70		10.12		2.62	30.00			
09:00 PM		10.27		9.72		10.20		10.69		10.12		2.62	29.99			
10:00 PM		10.22		9.72		10.20		10.69		10.12		2.63	30.00			
11:00 PM		10.24		9.72		10.19		10.68		10.11		2.62	30.00			
12/03/94																
12:00 AM		10.24		9.72		10.20		10.69		10.10		2.62	30.00			
01:00 AM		10.21		9.72		10.19		10.68		10.10		2.63	30.01			
02:00 AM		10.19		9.71		10.19		10.68		10.10		2.63	30.01			
03:00 AM		10.17		9.71		10.19		10.68		10.09		2.63	30.01			
04:00 AM		10.15		9.70		10.18		10.66		10.09		2.62	30.01			
05:00 AM		10.15		9.70		10.18		10.66		10.08		2.62	30.02			
06:00 AM		10.13		9.71		10.18		10.68		10.08		2.62	30.03			
07:00 AM		10.14		9.71		10.18		10.67		10.08		2.62	30.05			
08:00 AM		10.06		9.70		10.18		10.66		10.07		2.62	30.05			
09.00 AM		10.11		9.70		10.17		10.66		10.08		2.63	30.07			
10:00 AM		10.10		9.70		10.17		10.66		10.08		2.61	30.07			
11:00 AM		10.12		9.68		10.16		10.65		10.08		2.63	30.05			
12:00 PM		10.35		9.65		10.14		10.61		10.07		2.66	30.04			
01:00 PM		10.29		9.66		10.14		10.63		10.07		2.63	30.04			
02:00 PM		10.28		9.66		10.14		10.65		10.06		2.64	30.03			
03:00 PM		10.23		9.66		10.14		10.65		10.06		2.64	30.04			
04:00 PM		10.19		9.66		10.14		10.64		10.06		2.64	30.06			
05:00 PM		10.14		9.66		10.14		10.64		10.05		2.64	30.06			

Ground—Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4—Day Aquifer Test: December 5 — 9, 1994

Date/ Hour	Elapsed Time (tain)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure (in Hg)	+	Piez (ft)	Rate (gpm)	Remarks
06:00 PM		10.09		9.66		10.14		10.64		10.05		2.63	30.07				
07:00 PM		10.10		9.67		10.15		10.65		10.05		2.63	30.09				
08:00 PM		10.07		9.66		10.14		10.64		10.06		2.63	30.09				
09:00 PM		10.06		9.66		10.14		10.64		10.06		2.65	30.10				
10:00 PM		10.03		9.66		10.14		10.64		10.06		2.63	30.11				
11:00 PM		10.02		9.66		10.14		10.63		10.06		2.64	30.11				
12/04/94																	
12:00 AM		10.01		9.65		10.13		10.63		10.06		2.65	30.11				
01:00 AM		9.98		9.65		10.13		10.63		10.06		2.64	30.11				
02:00 AM		9.97		9.65		10.13		10.62		10.05		2.64	30.11				
03:00 AM		9.95		9.64		10.12		10.62		10.05		2.65	30.11				
04:00 AM		9.95		9.64		10.12		10.61		10.04		2.64	30.11				
05:00 AM		9.93		9.65		10.12		10.62		10.04		2.64	30.10				
06:00 AM		9.93		9.64		10.12		10.62		10.03		2.63	30.11				
07:00 AM		9.92		9.64		10.12		10.61		10.03		2.64	30.11				
08:00 AM		9.96		9.64		10.11		10.61		10.03		2.63	30.11				
09:00 AM		10.00		9.63		10.11		10.61		10.03		2.63	30.12				
10:00 AM		10.02		9.63		10.11		10.61		10.03		2.64	30.12				
11:00 AM		10.14		9.61		10.09		10.60		10.02		2.62	30.11				
12:00 PM		10.19		9.59		10.07		10.58		10.02		2.66	30.08				
01:00 PM		10.23		9.58		10.07		10.57		10.01		2.70	30.04				
02:00 PM		10.21		9.58		10.07		10.57		10.01		2.68	30.02				
03:00 PM		10.23		9.58		10.07		10.57		10.00		2.71	30.00				
04:00 PM		10.16		9.58		10.07		10.58		10.00		2.67	30.00				
05:00 PM		10.12		9.59		10.07		10.58		9.99		2.65	30.00				
06:00 PM		10.09		9.59		10.07		10.58		9.99		2.66	30.01				
07:00 PM		10.08		9.59		10.07		10.58		9.99		2.66	30.01				
08:00 PM		10.04		9.59		10.07		10.57		9.99		2.66	30.00				
09:00 PM		10.03		9.59		10.07		10.57		9.99		2.66	29.99				
10:00 PM		10.03		9.58		10.06		10.56		9.99		2.67	29.98				
11:00 PM		10.01		9.59		10.07		10.57		9.99		2.65	30.00				
12/05/94																	
12:00 AM		9.99		9.59		10.07		10.57		9.99		2.65	29.99				
01:00 AM		9.98		9.59		10.07		10.56		9.99		2.66	29.97				
02:00 AM		9.97		9.59		10.07		10.57		9.98		2.65	29.98				
03:00 AM		9.97		9.59		10.07		10.57		9.98		2.65	29.97				
04:00 AM		9.96		9.60		10.08		10.57		9.98		2.65	29.99				
05:00 AM		9.94		9.60		10.08		10.57		9.98		2.65	29.98				
06:00 AM		9.93		9.59		10.07		10.57		9.97		2.65	29.99				
07:00 AM		9.92		9.59		10.07		10.57		9.97		2.64	30.01				
08:00 AM		9.92		9.60		10.08		10.58		9.97		2.65	30.03				
09:00 AM		9.93		9.60		10.08		10.58		9.97		2.64	30.05				
10.00 AM		9.94		9.59		10.07		10.57		9.97		2.64	30.06				
11:00 AM		9.98		9.58		10.07		10.57		9.97		2.65	30.08				
11:20 AM		9.97		9.58		10.06		10.57		9.97		2.64					
11:38 AM		9.93		9.58		10.07		10.57		9.97		2.66					
11:39 AM		9.94		9.58		10.07		10.57		9.97		2.65					
11:40 AM		9.94		9.58		10.07		10.57		9.97		2.65					
11:41 AM		9.94		9.58		10.07		10.57		9.97		2.65					
11:42 AM		9.94		9.58		10.07		10.57		9.97		2.65					
11:43 AM		9.94		9.58		10.07		10.57		9.97		2.65					
11:44 AM		9.93		9.58		10.07		10.56		9.97		2.66					
11:45 AM		9.93		9.58		10.06		10.56		9.97		2.66					

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
11:46 AM		9.93		9.58		10.06		10.56		9.97		2.66				
11:47 AM		9.93		9.58		10.07		10.56		9.97		2.67				
11:48 AM		9.92		9.58		10.07		10.56		9.97		2.67				TW 2-94 Meas d/w
11:49 AM		9.92		9.58		10.07		10.56		9.97		2.66				
11:50 AM		9.92		9.58		10.07		10.57		9.97		2.66				OW 3 Meas d/w
11:51 AM		9.92		9.58		10.06		10.56		9.97		2.66				OW 4 Meas d/w
11:52 AM		9.92		9.58		10.06		10.56		9.97		2.66				OW 6 Meas d/w
11:53 AM		9.92		9.58		10.06		10.56		9.97		2.66				OW 5 Meas d/w
11:54 AM		9.91		9.58		10.07		10.56		9.97		2.66				
11:55 AM		9.91		9.58		10.06		10.56		9.97		2.66				
11:56 AM		9.91		9.58		10.06		10.56		9.97		2.66				
11:57 AM		9.91		9.58		10.06		10.56		9.97		2.66				
11:58 AM		9.91		9.58		10.06		10.56		9.97		2.65				
11:59 AM		9.91		9.59		10.06		10.56		9.97		2.66				
12:00 PM		9.90		9.58		10.06		10.56		9.97		2.67	30.10			
12:01 PM		9.90		9.59		10.07		10.56		9.97		2.67				
12:02 PM		9.90		9.59		10.07		10.56		9.97		2.67				
12:03 PM		9.89		9.59		10.07		10.56		9.97		2.67				
12:04 PM		9.89		9.59		10.07		10.56		9.97		2.68				
12:05 PM		9.88		9.59		10.07		10.56		9.97		2.68				
12:06 PM		9.88		9.59		10.07		10.56		9.97		2.67				
12:07 PM		9.88		9.59		10.07		10.56		9.97		2.67				
1208 PM		9.87		9.59		10.07		10.56		9.97		2.67				
12:09 PM		9.87		9.59		10.07		10.57		9.97		2.66				
12:10 PM		9.87		9.59		10.07		10.57		9.97		2.66				
12:11 PM		9.87		9.59		10.07		10.56		9.97		2.66				
12:12 PM		9.87		9.59		10.07		10.56		9.97		2.66				
12:13 PM		9.86		9.59		10.07		10.56		9.97		2.66				
12:14 PM		9.86		9.59		10.07		10.56		9.97		2.66				
12:15 PM		9.86		9.59		10.07		10.56		9.97		2.65				
12:16 PM		9.86		9.59		10.07		10.57		9.97		2.66				
12:17 PM		9.86		9.59		10.07		10.57		9.97		2.65				
12:18 PM		9.86		9.59		10.07		10.57		9.97		2.65				
12:19 PM		9.86		9.59		10.07		10.57		9.97		2.65				
12:20 PM		9.86		9.59		10.07		10.57		9.97		2.65				
12:21 PM		9.86		9.59		10.07		10.57		9.97		2.65				
12:22 PM		9.86		9.59		10.07		10.57		9.97		2.65				
12:23 PM		9.87		9.59		10.07		10.57		9.97		2.65				
12:24 PM		9.87		9.59		10.07		10.58		9.97		2.64				
1225 PM		9.87		9.59		10.07		10.58		9.97		2.64				
1226 PM		9.87		9.59		10.07		10.58		9.97		2.64				
1227 PM		9.88		9.59		10.07		10.58		9.97		2.64				
1228 PM		9.88		9.59		10.07		10.58		9.97		2.64				
1229 PM		9.88		9.59		10.07		10.58		9.97		2.63				
1230 PM	0	9.89	0.00	9.59	0.00	10.07	0.00	10.58	0.00	9.97	0.00	2.64				Pump ON
1231 PM	1	20.87	10.98	10.27	0.68	10.33	0.26	10.62	0.04	9.96	-0.01	2.64		3.65	385	Water dirty
1232 PM	2	21.54	11.65	10.73	1.14	10.65	0.58	10.74	0.16	9.97	0.00	2.65		3.67	386	
1233 PM	3	21.90	12.01	11.01	1.42	10.88	0.81	10.85	0.27	9.97	0.00	2.65		3.68	386	H2S Odor
1234 PM	4	22.15	12.26	1122	1.63	11.05	0.98	10.94	0.36	9.98	0.01	2.65		3.63	384	Adjust rate
1235 PM	5	22.36	12.47	11.38	1.79	11.19	1.12	11.03	0.45	9.99	0.02	2.65		3.80	392	Adjusting
1236 PM	6	22.50	12.61	11.51	1.92	11.31	1.24	11.10	0.52	9.99	0.02	2.66		3.62	384	Adjusting
1237 PM	7	22.76	12.87	11.62	2.03	11.40	1.33	11.16	0.58	10.00	0.03	2.66		3.68	386	Water clear
1238 PM	8	22.86	12.97	11.72	2.13	11.49	1.42	11.21	0.63	10.01	0.04	2.65		3.67	386	

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company. Test Well 2-94
4-Day Aquifer Test: December 5 - 9 , 1994

Date Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
12:39 PM	9	22.97	13.08	11.80	2.21	11.56	1.49	11.26	0.68	10.01	0.04	2.66				
12:40 PM	10	23.05	13.16	11.87	2.28	11.63	1.56	11.31	0.73	10.02	0.05	2.65		3.66	385	
12:41 PM	11	23.11	13.22	11.93	2.34	11.68	1.61	11.35	0.77	10.03	0.06	2.65				
12:42 PM	12	23.17	13.28	11.99	2.40	11.73	1.66	11.39	0.81	10.03	0.06	2.65		3.65	385	
12:43 PM	13	23.24	13.35	12.04	2.45	11.78	1.71	11.42	0.84	10.04	0.07	2.65				
12:44 PM	14	23.29	13.40	12.08	2.49	11.82	1.75	11.45	0.87	10.04	0.07	2.65		3.65	385	
12:45 PM	15	23.34	13.45	12.12	2.53	11.86	1.79	11.48	0.90	10.05	0.08	2.65				
12:46 PM	16	23.36	13.47	12.16	2.57	11.89	1.82	11.50	0.92	10.05	0.08	2.64		3.64	385	
12:47 PM	17	23.42	13.53	12.20	2.61	11.93	1.86	11.53	0.95	10.06	0.09	2.65				
12:48 PM	18	23.46	13.57	12.23	2.64	11.95	1.88	11.56	0.98	10.06	0.09	2.64		3.63	384	Adjust rate
12:49 PM	19	23.57	13.68	12.26	2.67	11.98	1.91	11.58	1.00	10.06	0.09	2.64		3.68	386	
12:50 PM	20	23.61	13.72	12.29	2.70	12.01	1.94	11.60	1.02	10.07	0.10	2.64		3.68	386	
12:51 PM	21	23.64	13.75	12.32	2.73	12.04	1.97	11.63	1.05	10.07	0.10	2.63				
12:52 PM	22	23.68	13.79	12.35	2.76	12.06	1.99	11.65	1.07	10.08	0.11	2.63		3.67	386	
12:53 PM	23	23.71	13.82	12.37	2.78	12.09	2.02	11.67	1.09	10.08	0.11	2.63				
12:54 PM	24	23.75	13.86	12.40	2.81	12.11	2.04	11.69	1.11	10.08	0.11	2.63				
12:55 PM	25	23.76	13.87	12.42	2.83	12.13	2.06	11.71	1.13	10.09	0.12	2.63				
12:56 PM	26	23.78	13.89	12.44	2.85	12.15	2.08	11.72	1.14	10.09	0.12	2.63		3.65	385	H2S Odor
12-57 PM	27	23.80	13.91	12.46	2.87	12.17	2.10	11.73	1.15	10.09	0.12	2.63				
12:58 PM	28	23.81	13.92	12.47	2.88	12.18	2.11	11.74	1.16	10.10	0.13	2.63		3.65	385	
1259 PM	29	23.83	13.94	12.49	2.90	12.20	2.13	11.76	1.18	10.10	0.13	2.64				
01:00 PM	30	23.86	13.97	12.51	2.92	12.22	2.15	11.77	1.19	10.10	0.13	2.63	30.11			
01:01 PM	31	23.88	13.99	12.53	2.94	12.23	2.16	11.79	1.21	10.11	0.14	2.62				
01:02 PM	32	23.91	14.02	12.54	2.95	12.25	2.18	11.80	1.22	10.11	0.14	2.62				
01:03 PM	33	23.92	14.03	12.56	2.97	12.26	2.19	11.81	1.23	10.11	0.14	2.62				
01:04 PM	34	23.94	14.05	12.57	2.98	12.27	2.20	11.82	124	10.12	0.15	2.63		3.64	385	
01:05 PM	35	23.96	14.07	12.58	2.99	12.28	2.21	11.83	125	10.12	0.15	2.64				
01:06 PM	36	23.97	14.08	12.59	3.00	12.30	2.23	11.83	1.25	10.12	0.15	2.65				
01:07 PM	37	23.99	14.10	12.61	3.02	12.31	2.24	11.84	1.26	10.13	0.16	2.66				
01:08 PM	38	23.99	14.10	12.62	3.03	12.32	2.25	11.84	1.26	10.13	0.16	2.66		3.64	385	
01:09 PM	39	24.01	14.12	12.63	3.04	12.33	226	11.85	1.27	10.13	0.16	2.66				
01:10 PM	40	24.01	14.12	12.64	3.05	12.34	2.27	11.86	1.28	10.13	0.16	2.66		3.64	385	
01:11 PM	41	24.02	14.13	12.65	3.06	12.35	2.28	11.87	1.29	10.14	0.17	2.65				
01:12 PM	42	24.03	14.14	12.66	3.07	12.36	2.29	11.88	1.30	10.14	0.17	2.66				
01:13 PM	43	24.05	14.16	12.67	3.08	12.37	2.30	11.88	1.30	10.14	0.17	2.65				
01:14 PM	44	24.05	14.16	12.68	3.09	12.38	2.31	11.89	1.31	10.14	0.17	2.66		3.63	384	Adjust rate
01:15 PM	45	24.11	14.22	12.69	3.10	12.39	2.32	11.90	1.32	10.15	0.18	2.66		3.68	386	
01:16 PM	46	24.12	14.23	12.70	3.11	12.40	2.33	11.91	1.33	10.15	0.18	2.66		3.68	386	
01:17 PM	47	24.14	14.25	12.71	3.12	12.41	2.34	11.91	1.33	10.15	0.18	2.65				
01:18 PM	48	24.17	14.28	12.73	3.14	12.42	2.35	11.93	1.35	10.15	0.18	2.65				
01:19 PM	49	24.16	14.27	12.74	3.15	12.43	2.36	11.94	1.36	10.16	0.19	2.64				
01:20 PM	50	24.17	14.28	12.75	3.16	12.44	2.37	11.95	1.37	10.16	0.19	2.64				
01:21 PM	51	24.19	14.30	12.75	3.16	12.45	2.38	11.96	1.38	10.16	0.19	2.64				
01:22 PM	52	24.19	14.30	12.76	3.17	12.46	2.39	11.97	1.39	10.16	0.19	2.65		3.67	386	
01:23 PM	53	24.20	14.31	12.77	3.18	12.46	2.39	11.97	1.39	10.17	0.20	2.65				
01:24 PM	54	24.20	14.31	12.78	3.19	12.47	2.40	11.97	1.39	10.17	0.20	2.66				
01:25 PM	55	24.22	14.33	12.79	320	12.48	2.41	11.98	1.40	10.17	0.20	2.66				
01:26 PM	56	24.23	14.34	12.80	3.21	12.49	2.42	11.98	1.40	10.17	0.20	2.66				
01:27 PM	57	24.22	14.33	12.80	3.21	12.49	2.42	11.99	1.41	10.18	021	2.66				
01:28 PM	58	24.24	14.35	12.81	3.22	12.50	2.43	11.99	1.41	10.18	021	2.67		3.66	385	
01:29 PM	59	24.22	14.33	12.82	3.23	12.51	2.44	12.00	1.42	10.18	0.21	2.67				
01:30 PM	60	24.24	14.35	12.82	3.23	12.51	2.44	12.01	1.43	10.18	0.21	2.66				
01:31 PM	61	24.24	14.35	12.83	324	12.52	2.45	12.01	1.43	10.18	021	2.66				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
01:32 PM	62	24.25	14.36	12.84	3.25	12.53	2.46	12.02	1.44	10.19	0.22	2.67		3.66	385	
01:33 PM	63	24.24	14.35	12.84	3.25	12.53	2.46	12.03	1.45	10.19	0.22	2.66				
01:34 PM	64	24.27	14.38	12.85	3.26	12.54	2.47	12.03	1.45	10.19	0.22	2.66				
01:35 PM	65	24.25	14.36	12.86	3.27	12.55	2.48	12.04	1.46	10.19	0.22	2.66				
01:36 PM	66	24.26	14.37	12.86	3.27	12.55	2.48	12.05	1.47	1020	0.23	2.65		3.66	385	
01:37 PM	67	24.28	14.39	12.87	3.28	12.56	2.49	12.06	1.48	10.20	0.23	2.65				
01:38 PM	68	24.28	14.39	12.88	3.29	12.56	2.49	12.07	1.49	10.20	0.23	2.64				
01:39 PM	69	24.28	14.39	12.88	3.29	12.57	2.50	12.07	1.49	10.20	0.23	2.64		3.65	385	
01:40 PM	70	24.30	14.41	12.89	3.30	12.57	2.50	12.08	1.50	10.20	0.23	2.64				
01:41 PM	71	24.31	14.42	12.89	3.30	12.58	2.51	12.08	1.50	10.21	0.24	2.63				
01:42 PM	72	24.30	14.41	12.89	3.30	12.58	2.51	12.08	1.50	10.21	0.24	2.64				
01:43 PM	73	24.32	14.43	12.90	3.31	12.59	2.52	12.09	1.51	10.21	0.24	2.64		3.65	385	
01:44 PM	74	24.31	14.42	12.90	3.31	12.59	2.52	12.09	1.51	10.21	0.24	2.64				
01:45 PM	75	24.33	14.44	12.91	3.32	12.60	2.53	12.09	1.51	1021	0.24	2.64				
01:46 PM	76	24.33	14.44	12.91	3.32	12.60	2.53	12.09	1.51	1022	0.25	2.65				
01:47 PM	77	24.33	14.44	12.92	3.33	12.60	2.53	12.09	1.51	10.22	0.25	2.65				
01:48 PM	78	24.33	14.44	12.92	3.33	12.61	2.54	12.10	1.52	10.22	0.25	2.65				
01:49 PM	79	24.34	14.45	12.93	3.34	12.61	2.54	12.10	1.52	1022	0.25	2.65				
01:50 PM	80	24.33	14.44	12.93	3.34	12.62	2.55	12.10	1.52	10.22	0.25	2.65		3.64	385	
01:51 PM	81	24.32	14.43	12.94	3.35	12.62	2.55	12.10	1.52	10.22	0.25	2.65				
01:52 PM	82	24.33	14.44	12.94	3.35	12.63	2.56	12.11	1.53	1023	0.26	2.66				
01:53 PM	83	24.34	14.45	12.94	3.35	12.63	2.56	12.11	1.53	1023	0.26	2.66				
01:54 PM	84	24.33	14.44	12.95	3.36	12.64	2.57	12.12	1.54	10.23	0.26	2.66				
01:55 PM	85	24.34	14.45	12.95	3.36	12.64	2.57	12.12	1.54	10.23	0.26	2.65				
01:56 PM	86	24.35	14.46	12.96	3.37	12.64	2.57	12.12	1.54	10.23	0.26	2.65				
01:57 PM	87	24.35	14.46	12.96	3.37	12.65	2.58	12.13	1.55	10.24	0.27	2.66				
01:58 PM	88	24.35	14.46	12.96	3.37	12.65	2.58	12.14	1.56	10.24	0.27	2.67		3.64	385	
01:59 PM	89	24.37	14.48	12.97	3.38	12.66	2.59	12.14	1.56	10.24	0.27	2.67				
02:00 PM	90	24.36	14.47	12.97	3.38	12.66	2.59	12.14	1.56	10.24	0.27	2.67	30.11			
02:01 PM	91	24.36	14.47	12.98	3.39	12.66	2.59	12.14	1.56	10.24	0.27	2.66				
02:02 PM	92	24.34	14.45	12.98	3.39	12.67	2.60	12.15	1.57	10.24	0.27	2.67				
02:03 PM	93	24.36	14.47	12.99	3.40	12.67	2.60	12.15	1.57	10.24	027	2.67		3.64	385	
02:04 PM	94	24.37	14.48	12.99	3.40	12.68	2.61	12.16	1.58	10.25	0.28	2.66				
02:05 PM	95	24.36	14.47	12.99	3.40	12.68	2.61	12.16	1.58	1025	028	2.65				
02:06 PM	96	24.39	14.50	13.00	3.41	12.68	2.61	12.17	1.59	10.25	0.28	2.64				
02:07 PM	97	24.39	14.50	13.00	3.41	12.69	2.62	12.17	1.59	1025	0.28	2.64				
0208 PM	98	24.40	14.51	13.00	3.41	12.69	2.62	12.17	1.59	10.25	0.28	2.64				
02:09 PM	99	24.40	14.51	13.01	3.42	12.69	2.62	12.17	1.59	10.26	0.29	2.64				
02:10 PM	100	24.39	14.50	13.01	3.42	12.69	2.62	12.17	1.59	10.26	0.29	2.65				
02:11PM	101	24.39	14.50	13.01	3.42	12.70	2.63	12.17	1.59	10.26	029	2.65		3.64	385	
02:12 PM	102	24.40	14.51	13.02	3.43	12.70	2.63	12.18	1.60	10.26	029	2.65				
02:13 PM	103	24.40	14.51	13.02	3.43	12.70	2.63	12.18	1.60	10.26	0.29	2.65				
02:14 PM	104	24.40	14.51	13.02	3.43	12.71	2.64	12.19	1.61	1026	029	2.65				
02:15 PM	105	24.42	14.53	13.03	3.44	12.71	2.64	12.19	1.61	10.26	0.29	2.64				
02:16 PM	106	24.40	14.51	13.03	3.44	12.71	2.64	12.19	1.61	1027	0.30	2.64				
02:17 PM	107	24.41	14.52	13.03	3.44	12.72	2.65	12.20	1.62	1027	0.30	2.64				
02:18 PM	108	24.40	14.51	13.04	3.45	12.72	2.65	12.20	1.62	1027	0.30	2.64				
02:19 PM	109	24.41	14.52	13.04	3.45	12.72	2.65	12.20	1.62	10.27	0.30	2.65				
02:20 PM	110	24.43	14.54	13.04	3.45	12.73	2.66	12.21	1.63	1027	0.30	2.65		3.64	385	
02:21 PM	111	24.43	14.54	13.05	3.46	12.73	2.66	12.21	1.63	1027	0.30	2.64				
02:22 PM	112	24.42	14.53	13.05	3.46	12.73	2.66	12.21	1.63	10.28	0.31	2.64				
02:23 PM	113	24.43	14.54	13.05	3.46	12.74	2.67	12.21	1.63	1028	0.31	2.65				
02-24 PM	114	24.43	14.54	13.06	3.47	12.74	2.67	12.21	1.63	1028	0.31	2.64				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (inHg)	Piez (ft)	Rate (gpm)	Remarks
02:25 PM	115	24.43	14.54	13.06	3.47	12.74	2.67	12.21	1.63	10.28	0.31	2.65				
02:26 PM	116	24.27	14.38	13.06	3.47	12.74	2.67	1221	1.63	10.28	0.31	2.65				TW 2-94 Meas d/w
02:27 PM	117	24.42	14.53	13.08	3.49	12.75	2.68	12.22	1.64	10.28	0.31	2.65				OW 3 Meas d/w
02:28 PM	118	24.43	14.54	13.06	3.47	12.76	2.69	12.22	1.64	10.28	0.31	2.65				OW 4 Meas d/w
02:29 PM	119	24.44	14.55	13.07	3.48	12.75	2.68	12.22	1.64	10.28	0.31	2.65				OW 6 Meas d/w
02:30 PM	120	24.44	14.55	13.07	3.48	12.76	2.69	12.23	1.65	10.28	0.31	2.65				
02:31PM	121	24.44	14.55	13.07	3.48	12.76	2.69	12.23	1.65	10.28	0.31	2.65				
02:32 PM	122	24.45	14.56	13.07	3.48	12.76	2.69	12.21	1.63	1029	0.32	2.64				OW 5 Meas d/w
02:33 PM	123	24.45	14.56	13.07	3.48	12.76	2.69	12.24	1.66	10.29	0.32	2.64				
02:34 PM	124	24.45	14.56	13.08	3.49	12.77	2.70	12.24	1.66	10.29	0.32	2.63				
02:35 PM	125	24.46	14.57	13.08	3.49	12.77	2.70	12.25	1.67	10.29	0.32	2.64		3.63	384	Adjust rate
02:36 PM	126	24.47	14.58	13.08	3.49	12.77	2.70	1225	1.67	10.29	0.32	2.63				
02:38 PM	128	—	—	—	—	—	—	—	—	—	—	—		3.68	386	
02:45 PM	135	—	—	—	—	—	—	—	—	—	—	—		3.67	386	
02:50 PM	140	—	—	—	—	—	—	—	—	—	—	—		3.67	386	
03:00 PM	150	24.60	14.71	13.17	3.58	12.85	2.78	12.31	1.73	10.33	0.36	2.65	30.13	3.68	386	
03:10 PM	160	24.61	14.72	13.19	3.60	12.87	2.80	12.33	1.75	10.34	0.37	2.64				
03:20 PM	170	24.64	14.75	13.22	3.63	12.90	2.83	12.36	1.78	10.35	0.38	2.64				Water sample collected
03:30 PM	180	24.65	14.76	13.24	3.65	12.92	2.85	12.38	1.80	10.37	0.40	2.64		3.67	386	T = 56.1 F
03:40 PM	190	24.63	14.74	13.26	3.67	12.94	2.87	12.40	1.82	10.38	0.41	2.64				
03:50 PM	200	24.62	14.73	13.28	3.69	12.95	2.88	12.41	1.83	10.39	0.42	2.63				
04:00 PM	210	24.62	14.73	13.29	3.70	12.97	2.90	12.42	1.84	10.40	0.43	2.64	30.17			
04:10 PM	220	24.66	14.77	13.31	3.72	12.99	2.92	12.44	1.86	10.41	0.44	2.64		3.65	385	*
04:20 PM	230	24.67	14.78	13.32	3.73	13.00	2.93	12.45	1.87	10.42	0.45	2.63				
04:30 PM	240	24.68	14.79	13.34	3.75	13.01	2.94	12.47	1.89	10.43	0.46	2.64				
04:40 PM	250	24.70	14.81	13.36	3.77	13.03	2.96	12.49	1.91	10.44	0.47	2.64		3.62	384	* Adjusted rate
04:50 PM	260	24.63	14.74	13.38	3.79	13.05	2.98	12.50	1.92	10.45	0.48	2.63		3.66	385	
05:00 PM	270	24.76	14.87	13.39	3.80	13.06	2.99	12.51	1.93	10.46	0.49	2.63	30.16			
05:10 PM	280	24.76	14.87	13.40	3.81	13.07	3.00	12.52	1.94	10.47	0.50	2.64		3.65	385	•
05:20 PM	290	24.79	14.90	13.41	3.82	13.08	3.01	12.53	1.95	10.47	0.50	2.63				
05:30 PM	300	24.82	14.93	13.42	3.83	13.09	3.02	12.54	1.96	10.48	0.51	2.63				
05:40 PM	310	24.81	14.92	13.44	3.85	13.11	3.04	12.56	1.98	10.49	0.52	2.63		3.64	385	*
05:50 PM	320	24.82	14.93	13.46	3.87	13.13	3.06	12.58	2.00	10.50	0.53	2.64				
06:00 PM	330	24.82	14.93	13.47	3.88	13.14	3.07	12.58	2.00	10.51	0.54	2.64	30.18			
06:10 PM	340	24.83	14.94	13.48	3.89	13.15	3.08	12.59	2.01	10.52	0.55	2.63		3.64	385	•
06:20 PM	350	24.84	14.95	13.49	3.90	13.16	3.09	12.61	2.03	10.52	0.55	2.63				
06:30 PM	360	24.84	14.95	13.50	3.91	13.17	3.10	12.61	2.03	10.53	0.56	2.63				
06:40 PM	370	24.86	14.97	13.51	3.92	13.18	3.11	12.63	2.05	10.54	0.57	2.63		3.62	384	* Adjusted rate
06:50 PM	380	24.93	15.04	13.53	3.94	1320	3.13	12.64	2.06	10.55	0.58	2.62		3.67	386	
07:00 PM	390	24.94	15.05	13.54	3.95	1321	3.14	12.65	2.07	10.55	0.58	2.63	30.20			
07:10 PM	400	24.95	15.06	13.55	3.96	13.22	3.15	12.66	2.08	10.56	0.59	2.62		3.66	385	•
07:20 PM	410	24.97	15.08	13.56	3.97	13.23	3.16	12.67	2.09	10.57	0.60	2.63				
07:30 PM	420	24.95	15.06	13.58	3.99	13.24	3.17	12.68	2.10	10.58	0.61	2.63				
07:40 PM	430	24.97	15.08	13.58	3.99	13.25	3.18	12.69	2.11	10.58	0.61	2.63		3.65	385	•
07:50 PM	440	24.97	15.08	13.59	4.00	13.26	3.19	12.70	2.12	10.59	0.62	2.63				
08:00 PM	450	24.97	15.08	13.60	4.01	1326	3.19	12.71	2.13	10.60	0.63	2.62	30.21			
08:10 PM	460	24.97	15.08	13.61	4.02	1327	3.20	12.71	2.13	10.60	0.63	2.62		3.61	383	* Adjusted rate
08:20 PM	470	25.03	15.14	13.62	4.03	1328	3.21	12.72	2.14	10.61	0.64	2.62		3.65	385	
08:30 PM	480	25.05	15.16	13.63	4.04	13.29	3.22	12.73	2.15	10.62	0.65	2.63				
08:40 PM	490	25.06	15.17	13.64	4.05	13.30	3.23	12.74	2.16	10.62	0.65	2.62		3.65	385	•
08:50 PM	500	25.07	15.18	13.65	4.06	13.31	3.24	12.74	2.16	10.63	0.66	2.62				
09:00 PM	510	25.10	1521	13.65	4.06	13.32	3.25	12.75	2.17	10.63	0.66	2.62	30.22			
09:10 PM	520	25.10	15.21	13.66	4.07	13.32	3.25	12.76	2.18	10.64	0.67	2.63		3.64	385	•

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
09:20 PM	530	25.11	15.22	13.67	4.08	13.34	*3.27*	12.77	2.19	10.65	0.68	2.62				
09:30 PM	540	25.14	15.25	13.68	4.09	13.34	*3.27*	12.78	2.20	10.65	0.68	2.62				
09:40 PM	550	25.15	15.26	13.69	4.10	13.35	3.28	12.79	2.21	10.66	0.69	2.62		3.64	385	•
09:50 PM	560	25.16	15.27	13.70	4.11	13.36	3.29	12.80	2.22	10.67	0.70	2.62				
10:00 PM	570	25.16	15.27	13.71	4.12	13.37	3.30	12.80	2.22	10.67	0.70	2.62	30.21			
10:10 PM	580	25.17	15.28	13.72	4.13	13.38	3.31	12.81	2.23	10.68	0.71	2.62		3.63	384	•
10:20 PM	590	25.20	15.31	13.72	4.13	13.38	3.31	12.82	224	10.68	0.71	2.62				
10:30 PM	600	25.20	15.31	13.73	4.14	13.39	3.32	12.82	2.24	10.69	0.72	2.62				
10:40 PM	610	25.22	15.33	13.74	4.15	13.40	3.33	12.84	2.26	10.70	0.73	2.62		3.62	384	• Adjusted rate
10:50 PM	620	25.24	15.35	13.74	4.15	13.41	3.34	12.84	2.26	10.70	0.73	2.62		3.66	385	
11:00 PM	630	25.24	15.35	13.75	4.16	13.41	3.34	12.84	2.26	10.70	0.73	2.62	30.22			
11:10 PM	640	25.25	15.36	13.76	4.17	13.42	3.35	12.85	227	10.71	0.74	2.62		3.65	385	•
11:20 PM	650	25.27	15.38	13.77	4.18	13.43	3.36	12.86	2.28	10.72	0.75	2.62				
11:30 PM	660	25.27	15.38	13.77	4.18	13.43	3.36	12.87	2.29	10.72	0.75	2.62				
11:40 PM	670	25.30	15.41	13.78	4.19	13.44	3.37	12.87	2.29	10.73	0.76	2.62		3.64	385	•
11:50 PM	680	25.30	15.41	13.79	4.20	13.45	3.38	12.88	2.30	10.73	0.76	2.61				
12/06/94	—	—	—	—	—	—	—	—	—	—	—	—				
12:00 AM	690	25.32	15.43	13.79	4.20	13.45	3.38	12.88	2.30	10.73	0.76	2.61	30.19			
12:10 AM	700	25.34	15.45	13.79	4.20	13.45	3.38	12.88	2.30	10.74	0.77	2.62		3.64	385	•
12:20 AM	710	25.36	15.47	13.80	4.21	13.46	3.39	12.89	2.31	10.74	0.77	2.61				
12:30 AM	720	25.38	15.49	13.81	4.22	13.47	3.40	12.90	2.32	10.75	0.78	2.61				
12:40 AM	730	25.38	15.49	13.81	4.22	13.47	3.40	12.90	2.32	10.75	0.78	2.61		3.62	384	• Adjusted rate
12:50 AM	740	25.43	15.54	13.82	*423*	13.48	3.41	12.91	2.33	10.76	0.79	2.62		3.65	385	
01:00 AM	750	25.42	15.53	13.82	*423*	13.48	3.41	12.91	2.33	10.76	0.79	2.61	30.18			
01:10 AM	760	25.45	15.56	13.83	4.24	13.49	3.42	12.92	2.34	10.76	0.79	2.61				
01:20 AM	770	25.46	15.57	13.84	4.25	13.50	3.43	12.93	2.35	10.77	0.80	2.62		3.63	384	Adjusted rate
01:30 AM	780	25.54	15.65	13.86	4.27	13.52	3.45	12.95	2.37	10.77	0.80	2.61		3.67	386	•
01:40 AM	790	25.54	15.65	13.86	4.27	13.52	3.45	12.95	2.37	10.78	0.81	2.62				
01:50 AM	800	25.54	15.65	13.88	4.29	13.53	3.46	12.96	2.38	10.78	0.81	2.61		3.65	385	♦
02:00 AM	810	25.56	15.67	13.88	4.29	13.54	3.47	12.96	2.38	10.79	0.82	2.62	30.20			
02:10 AM	820	25.56	15.67	13.89	4.30	13.55	3.48	12.97	2.39	10.79	0.82	2.62				
02:20 AM	830	25.56	15.67	13.90	4.31	13.55	3.48	12.98	2.40	10.79	0.82	2.62		3.64	385	•
02:30 AM	840	25.55	15.66	13.91	4.32	13.57	3.50	12.99	2.41	10.80	0.83	2.62				
02:40 AM	850	25.54	15.65	13.91	4.32	13.57	3.50	13.00	2.42	10.80	0.83	2.61				
02:50 AM	860	25.55	15.66	13.91	4.32	13.57	3.50	13.00	2.42	10.81	0.84	2.61		3.64	385	•
03:00 AM	870	25.56	15.67	13.91	4.32	13.57	3.50	13.00	2.42	10.81	0.84	2.61	30.21			
03:10 AM	880	25.58	15.69	13.92	4.33	13.57	3.50	13.00	2.42	10.81	0.84	2.61				
03:20 AM	890	25.60	15.71	13.92	4.33	13.58	3.51	13.01	2.43	10.81	0.84	2.61		3.64	385	•
03:30 AM	900	25.59	15.70	13.93	4.34	13.59	3.52	13.02	2.44	10.82	0.85	2.60				
03:40 AM	910	25.61	15.72	13.94	4.35	13.60	3.53	13.03	2.45	10.82	0.85	2.61				
03:50 AM	920	25.61	15.72	13.94	4.35	13.60	3.53	13.02	2.44	10.82	0.85	2.61		3.64	385	•
04:00 AM	930	25.62	15.73	13.95	4.36	13.61	3.54	13.04	2.46	10.83	0.86	2.62	3021			
04:10 AM	940	25.61	15.72	13.96	4.37	13.61	3.54	13.04	2.46	10.83	0.86	2.60				
04:20 AM	950	25.62	15.73	13.96	4.37	13.62	3.55	13.05	2.47	10.84	0.87	2.61		3.64	385	•
04:30 AM	960	25.62	15.73	13.97	4.38	13.62	3.55	13.05	2.47	10.84	0.87	2.61				
04:40 AM	970	25.57	15.68	13.96	4.37	13.62	3.55	13.05	2.47	10.84	0.87	2.61				
04:50 AM	980	25.57	15.68	13.96	4.37	13.62	3.55	13.06	2.48	10.84	0.87	2.61		3.62	384	• Adjusted rate
05:00 AM	990	25.73	15.84	13.98	4.39	13.64	3.57	13.06	2.48	10.85	0.88	2.61	30.20	3.68	386	
05:10 AM	1000	25.71	15.82	13.99	4.40	13.64	3.57	13.07	2.49	10.85	0.88	2.60				
05:20 AM	1010	25.72	15.83	14.00	4.41	13.65	3.58	13.08	2.50	10.85	0.88	2.61				
05:30 AM	1020	25.70	15.81	14.00	4.41	13.66	3.59	13.08	2.50	10.86	0.89	2.61		3.66	385	
05:40 AM	1030	25.65	15.76	14.00	4.41	13.66	3.59	13.09	2.51	10.86	0.89	2.61				
05:50 AM	1040	25.66	15.77	14.00	4.41	13.66	3.59	13.09	2.51	10.86	0.89	2.60				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date' Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
06:00 AM	1050	25.67	15.78	14.00	4.41	13.66	3.59	13.09	2.51	10.86	0.89	2.60	30.21	3.64	385	
06:10 AM	1060	25.67	15.78	14.01	4.42	13.67	3.60	13.10	2.52	10.87	0.90	2.60				
06:20 AM	1070	25.67	15.78	14.01	4.42	13.67	3.60	13.10	2.52	10.87	0.90	2.60				
06:30 AM	1080	25.70	15.81	14.01	4.42	13.67	3.60	13.10	2.52	10.87	0.90	2.60		3.63	384	Adjusted rate
06:40 AM	1090	25.78	15.89	14.03	4.44	13.69	3.62	13.11	2.53	10.87	0.90	2.60		3.66	385	*
06:50 AM	1100	25.75	15.86	14.04	4.45	13.69	3.62	13.12	2.54	10.88	0.91	2.60				
07:00 AM	1110	25.81	15.92	14.04	4.45	13.70	3.63	13.13	2.55	10.88	0.91	2.60	30.19	3.66	385	*
07:10 AM	1120	25.82	15.93	14.05	4.46	13.70	3.63	13.13	2.55	10.88	0.91	2.60				
07:20 AM	1130	25.82	15.93	14.05	4.46	13.71	3.64	13.13	2.55	10.88	0.91	2.60				
07:30 AM	1140	25.85	15.96	14.06	4.47	13.71	3.64	13.14	2.56	10.89	0.92	2.60		3.67	386	*
07:40 AM	1150	25.78	15.89	14.06	4.47	13.72	3.65	13.14	2.56	10.89	0.92	2.61				
07:50 AM	1160	25.80	15.91	14.06	4.47	13.72	3.65	13.15	2.57	10.89	0.92	2.60				
08:00 AM	1170	25.79	15.90	14.07	4.48	13.73	3.66	13.16	2.58	10.89	0.92	2.61	30.19	3.65	385	
08:10 AM	1180	25.80	15.91	14.08	4.49	13.73	3.66	13.16	2.58	10.90	0.93	2.60				
08:20 AM	1190	25.81	15.92	14.07	4.48	13.73	3.66	13.16	2.58	10.90	0.93	2.59				
08:30 AM	1200	25.82	15.93	14.08	4.49	13.73	3.66	13.16	2.58	10.90	0.93	2.60		3.65	385	
08:40 AM	1210	25.83	15.94	14.08	4.49	13.74	3.67	13.17	2.59	10.91	0.94	2.60				
08:50 AM	1220	25.86	15.97	14.09	4.50	13.74	3.67	13.17	2.59	10.91	0.94	2.59				
09:00 AM	1230	25.86	15.97	14.09	4.50	13.75	3.68	13.18	2.60	10.91	0.94	2.60	30.19	3.65	385	
09:10 AM	1240	25.86	15.97	14.09	4.50	13.75	3.68	13.18	2.60	10.91	0.94	2.59				
09:20 AM	1250	25.86	15.97	14.10	4.51	13.76	3.69	13.19	2.61	10.92	0.95	2.60				
09:30 AM	1260	25.87	15.98	14.10	4.51	13.76	3.69	13.20	2.62	10.92	0.95	2.59		3.64	385	
09:40 AM	1270	25.89	16.00	14.11	4.52	13.77	3.70	13.20	2.62	10.92	0.95	2.61				
09:50 AM	1280	25.88	15.99	14.11	4.52	13.77	3.70	13.21	2.63	10.92	0.95	2.59				
10:00 AM	1290	25.71	15.82	14.11	4.52	13.77	3.70	13.20	2.62	10.93	0.96	2.59	30.19	3.64	385	Adjusted rate
10:10 AM	1300	26.03	16.14	14.12	4.53	13.78	3.71	13.20	2.62	10.93	0.96	2.59				
10:20 AM	1310	26.03	16.14	14.12	4.53	13.78	3.71	13.21	2.63	10.93	0.96	2.59				
10:30 AM	1320	26.02	16.13	14.13	4.54	13.79	3.72	13.21	2.63	10.93	0.96	2.61		3.65	385	
10:40 AM	1330	26.05	16.16	14.13	4.54	13.79	3.72	13.22	2.64	10.93	0.%	2.60				
10:50 AM	1340	26.03	16.14	14.14	4.55	13.79	3.72	13.22	2.64	10.94	0.97	2.60				
11:00 AM	1350	26.06	16.17	14.14	4.55	13.80	3.73	13.23	2.65	10.94	0.97	2.60	30.18	3.65	385	
11:10 AM	1360	26.07	16.18	14.14	4.55	13.80	3.73	13.23	2.65	10.94	0.97	2.60				
11:20 AM	1370	26.09	16.20	14.15	4.56	13.80	3.73	13.24	2.66	10.94	0.97	2.58				
11:30 AM	1380	26.09	16.20	14.15	4.56	13.81	3.74	13.24	2.66	10.94	0.97	2.60		3.63	384	Adjusted rate
11:40 AM	1390	26.13	16.24	14.15	4.56	13.81	3.74	13.24	2.66	10.95	0.98	2.58				
11:50 AM	1400	26.14	16.25	14.15	4.56	13.81	3.74	13.24	2.66	10.95	0.98	2.59				
12:00 PM	1410	26.15	16.26	14.15	4.56	13.81	3.74	13.25	2.67	10.95	0.98	2.59	30.13	3.65	385	
12:10 PM	1420	26.16	16.27	14.16	4.57	13.82	3.75	13.25	2.67	10.95	0.98	2.59				
12:20 PM	1430	26.17	16.28	14.16	4.57	13.82	3.75	13.25	2.67	10.95	0.98	2.60				
12:30 PM	1440	26.17	16.28	14.16	4.57	13.82	3.75	13.25	2.67	10.95	0.98	2.60		3.64	385	
12:50 PM	1460	26.20	16.31	14.17	4.58	13.83	3.76	13.26	2.68	10.96	0.99	2.59				
01:00 PM	1470	26.20	16.31	14.09	4.50	13.81	3.74	13.19	2.61	10.95	0.98	2.59	30.11	3.62	384	Adjusted rate;
01:10 PM	1480	26.28	16.39	14.18	4.59	13.84	3.77	13.27	2.69	10.96	0.99	2.60				Meas d/w in all wells
01:20 PM	1490	26.27	16.38	14.18	4.59	13.84	3.77	13.27	2.69	10.96	0.99	2.60				
01:30 PM	1500	26.29	16.40	14.19	4.60	13.85	3.78	13.28	2.70	10.96	0.99	2.60		3.66	385	
01:40 PM	1510	26.27	16.38	14.19	4.60	13.85	3.78	13.28	2.70	10.97	1.00	2.59				
01:50 PM	1520	26.30	16.41	14.19	4.60	13.85	3.78	13.29	2.71	10.97	1.00	2.59				
02:00 PM	1530	26.31	16.42	14.19	4.60	13.85	3.78	13.29	2.71	10.97	1.00	2.59	30.08	3.66	385	
02:10 PM	1540	26.34	16.45	14.20	4.61	13.86	3.79	13.29	2.71	10.97	1.00	2.60				
02:20 PM	1550	26.33	16.44	14.20	4.61	13.86	3.79	13.30	2.72	10.97	1.00	2.60				
02:30 PM	1560	26.33	16.44	14.21	4.62	13.86	3.79	13.30	2.72	10.97	1.00	2.60		3.65	385	
02:40 PM	1570	26.33	16.44	14.21	4.62	13.86	3.79	13.30	2.72	10.97	1.00	2.60				
02:50 PM	1580	26.36	16.47	14.21	4.62	13.87	3.80	13.31	2.73	10.98	1.01	2.59				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (inHg)	Piez (ft)	Rate (gpm)	Remarks
03:00 PM	1590	26.37	16.48	14.21	4.62	13.87	3.80	13.31	2.73	10.98	1.01	2.59	30.05	3.63	384	Adjusted rate
03:10 PM	1600	26.38	16.49	14.22	4.63	13.88	3.81	13.32	2.74	10.98	1.01	2.60				
03:20 PM	1610	26.38	16.49	14.23	4.64	13.89	3.82	13.32	2.74	10.98	1.01	2.60				
03:30 PM	1620	26.38	16.49	14.23	4.64	13.89	3.82	13.33	2.75	10.98	1.01	2.59		3.66	385	
03:40 PM	1630	26.37	16.48	14.23	4.64	13.89	3.82	13.33	2.75	10.99	1.02	2.59				
03:50 PM	1640	26.40	16.51	14.23	4.64	13.89	3.82	13.33	2.75	10.99	1.02	2.59				
04:00 PM	1650	26.40	16.51	14.23	4.64	13.89	3.82	13.33	2.75	10.99	1.02	2.59	30.03	3.66	385	
04:10 PM	1660	26.44	16.55	1453	4.64	13.89	3.82	13.33	2.75	10.99	1.02	2.59				
04:20 PM	1670	26.44	16.55	14.24	4.65	13.90	3.83	13.34	2.76	10.99	1.02	2.59				
04:30 PM	1680	26.42	16.53	14.24	4.65	13.90	3.83	13.34	2.76	10.99	1.02	2.59		3.65	385	
04:40 PM	1690	26.43	16.54	14.24	4.65	13.90	3.83	13.34	2.76	10.99	1.02	2.60				
04:50 PM	1700	26.42	16.53	14.25	4.66	13.90	3.83	13.35	2.77	10.99	1.02	2.60				
05:00 PM	1710	26.53	16.64	14.25	4.66	13.91	3.84	13.35	2.77	10.99	1.02	2.59	30.00	3.63	384	Adjusted rate
05:10 PM	1720	26.48	16.59	1455	4.66	13.91	3.84	13.35	2.77	10.99	1.02	2.59				
05:20 PM	1730	26.43	16.54	14.25	4.66	13.91	3.84	13.36	2.78	10.99	1.02	2.59				
05:30 PM	1740	26.48	16.59	14.25	4.66	13.91	3.84	13.36	2.78	11.00	1.03	2.59		3.64	384	Adjusted rate
05:40 PM	1750	26.51	16.62	14.26	4.67	13.91	3.84	13.36	2.78	11.00	1.03	2.59				
05:50 PM	1760	26.51	16.62	14.26	4.67	13.92	3.85	13.36	2.78	11.00	1.03	2.60				
06:00 PM	1770	26.56	16.67	14.27	4.68	13.93	3.86	13.37	2.79	11.00	1.03	2.59	29.98	3.65	385	
06:10 PM	1780	26.54	16.65	1457	4.68	13.93	3.86	13.37	2.79	11.00	1.03	2.59				
06:20 PM	1790	26.57	16.68	14.27	4.68	13.93	3.86	13.37	2.79	11.00	1.03	2.59				
06:30 PM	1800	26.57	16.68	14.27	4.68	13.93	3.86	13.38	2.80	11.00	1.03	2.58		3.65	385	
06:40 PM	1810	26.59	16.70	1458	4.69	13.93	3.86	13.38	2.80	11.00	1.03	2.60				
06:50 PM	1820	26.58	16.69	14.28	4.69	13.94	3.87	13.39	2.81	11.00	1.03	2.59				
07:00 PM	1830	26.62	16.73	14.27	4.68	13.93	3.86	13.38	2.80	11.00	1.03	2.59	29.94	3.65	385	
07:10 PM	1840	26.63	16.74	14.27	4.68	13.93	3.86	13.38	2.80	11.00	1.03	2.59				
07:20 PM	1850	26.66	16.77	14.28	4.69	13.93	3.86	13.39	2.81	11.00	1.03	2.58				
07:30 PM	1860	26.69	16.80	14.27	4.68	13.93	3.86	13.39	2.81	11.00	1.03	2.58		3.65	385	
07:40 PM	1870	26.72	16.83	14.28	4.69	13.94	3.87	13.39	2.81	11.00	1.03	2.58				
07:50 PM	1880	26.75	16.86	14.28	4.69	13.94	3.87	13.39	2.81	11.01	1.04	2.59				
08:00 PM	1890	26.77	16.88	14.28	4.69	13.94	3.87	13.40	2.82	11.01	1.04	2.59	29.85	3.65	385	
08:10 PM	1900	26.79	16.90	14.29	4.70	13.95	3.88	13.40	2.82	11.01	1.04	2.59				
08:20 PM	1910	26.80	16.91	1459	4.70	13.95	3.88	13.40	2.82	11.01	1.04	2.59				
08:30 PM	1920	26.83	16.94	14.29	4.70	13.95	3.88	13.41	2.83	11.01	1.04	2.58		3.65	385	
08:40 PM	1930	26.87	16.98	14.28	4.69	13.94	3.87	13.40	2.82	11.01	1.04	2.57				
08:50 PM	1940	26.90	17.01	14.28	4.69	13.94	3.87	13.40	2.82	11.01	1.04	2.58				
09:00 PM	1950	26.94	17.05	1458	4.69	13.95	3.88	13.42	2.84	11.01	1.04	2.57	29.77	3.64	385	
09:10 PM	1960	26.97	17.08	14.28	4.69	13.95	3.88	13.41	2.83	11.01	1.04	2.59				
09:20 PM	1970	26.99	17.10	14.29	4.70	13.95	3.88	13.42	2.84	11.01	1.04	2.59				
09:30 PM	1980	27.01	17.12	14.29	4.70	13.95	3.88	13.41	2.83	11.01	1.04	2.59		3.64	385	
09:40 PM	1990	27.02	17.13	14.30	4.71	13.96	3.89	13.42	2.84	11.01	1.04	2.59				
09:50 PM	2000	27.04	17.15	14.30	4.71	13.95	3.88	13.42	2.84	11.01	1.04	2.59				
10:00 PM	2010	27.05	17.16	14.29	4.70	13.96	3.89	13.42	2.84	11.02	1.05	2.59	29.80	3.64	385	
10:10 PM	2020	27.05	17.16	14.30	4.71	13.97	3.90	13.43	2.85	11.02	1.05	2.59				
10:20 PM	2030	27.04	17.15	14.31	4.72	13.97	3.90	13.43	2.85	11.02	1.05	2.60				
10:30 PM	2040	27.01	17.12	14.32	4.73	13.98	3.91	13.44	2.86	11.02	1.05	2.63		3.63	384	Adjusted rate
10:40 PM	2050	27.29	17.40	14.37	4.78	14.02	3.95	13.47	2.89	11.02	1.05	2.60				Hard rain
10:50 PM	2060	27.02	17.13	14.33	4.74	14.00	3.93	13.46	2.88	11.02	1.05	2.60				
11:00 PM	2070	27.01	17.12	14.33	4.74	13.99	3.92	13.46	2.88	11.02	1.05	2.62	29.79	3.65	385	
11:10 PM	2080	27.01	17.12	14.33	4.74	14.00	3.93	13.46	2.88	11.03	1.06	2.61				
11:20 PM	2090	27.00	17.11	14.34	4.75	14.00	3.93	13.46	2.88	11.03	1.06	2.61				
11:30 PM	2100	27.03	17.14	14.33	4.74	14.00	3.93	13.46	2.88	11.03	1.06	2.61		3.65	385	
11:40 PM	2110	27.03	17.14	14.34	4.75	14.00	3.93	13.47	2.89	11.03	1.06	2.61				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
11:50 PM	2120	27.02	17.13	14.34	4.75	14.01	3.94	13.47	2.89	11.03	1.06	2.60				
12/07/94	—	—	—	—	—	—	—	—	—	—	—	—				
12:00 AM	2130	27.07	17.18	14.34	4.75	14.01	3.94	13.47	2.89	11.03	1.06	2.60	29.78	3.65	385	
12:10 AM	2140	27.07	17.18	14.35	4.76	14.02	3.95	13.48	2.90	11.03	1.06	2.61				
12:20 AM	2150	27.09	17.20	14.35	4.76	14.01	3.94	13.47	2.89	11.03	1.06	2.62				
12:30 AM	2160	27.09	17.20	14.36	4.77	14.02	3.95	13.48	2.90	11.03	1.06	2.61		3.65	385	
12:40 AM	2170	27.09	17.20	14.36	4.77	14.02	3.95	13.49	2.91	11.03	1.06	2.60				
12:50 AM	2180	27.08	17.19	14.36	4.77	14.02	3.95	13.49	2.91	11.03	1.06	2.62				
01:00 AM	2190	27.08	17.19	14.37	4.78	14.03	3.96	13.49	2.91	11.04	1.07	2.62	29.78	3.65	385	
01:10 AM	2200	27.10	17.21	14.37	4.78	14.03	3.%	13.49	2.91	11.04	1.07	2.61				
01:20 AM	2210	27.01	17.12	14.36	4.77	14.03	3.96	13.49	2.91	11.04	1.07	2.61				
01:30 AM	2220	27.01	17.12	14.36	4.77	14.03	3.96	13.49	2.91	11.04	1.07	2.62		3.62	384	Adjusted rate
01:40 AM	2230	27.09	17.20	14.37	4.78	14.03	3.96	13.50	2.92	11.04	1.07	2.61		3.66	385	
01:50 AM	2240	27.09	17.20	14.37	4.78	14.04	3.97	13.50	2.92	11.05	1.08	2.62				
02:00 AM	2250	27.08	17.19	14.37	4.78	14.04	3.97	13.51	2.93	11.05	1.08	2.62	29.81			
02:10 AM	2260	27.08	17.19	14.38	4.79	14.04	3.97	13.51	2.93	11.05	1.08	2.62		3.66	385	
02:20 AM	2270	27.13	17.24	14.38	4.79	14.05	3.98	13.51	2.93	11.05	1.08	2.61				
02:30 AM	2280	27.21	17.32	14.39	4.80	14.05	3.98	13.51	2.93	11.05	1.08	2.62				
02:40 AM	2290	27.22	17.33	14.40	4.81	14.06	3.99	13.52	2.94	11.05	1.08	2.62		3.66	385	
02:50 AM	2300	27.16	17.27	14.39	4.80	14.06	3.99	13.52	2.94	11.05	1.08	2.61				
03:00 AM	2310	27.15	17.26	14.39	4.80	14.06	3.99	13.52	2.94	11.05	1.08	2.62	29.81			
03:10 AM	2320	27.06	17.17	14.39	4.80	14.06	3.99	13.53	2.95	11.05	1.08	2.62		3.66	385	
03:20 AM	2330	27.12	17.23	14.40	4.81	14.06	3.99	13.53	2.95	11.05	1.08	2.62				
03:30 AM	2340	27.12	17.23	14.40	4.81	14.06	3.99	13.53	2.95	11.06	1.09	2.62				
03:40 AM	2350	27.11	17.22	14.40	4.81	14.07	4.00	13.54	2.96	11.06	1.09	2.63		3.65	385	
03:50 AM	2360	27.11	17.22	14.41	4.82	14.07	4.00	13.54	2.96	11.06	1.09	2.63				
04:00 AM	2370	27.10	17.21	14.41	4.82	14.07	4.00	13.54	2.96	11.06	1.09	2.62	29.85			
04:10 AM	2380	27.09	17.20	14.41	4.82	14.07	4.00	13.54	2.96	11.06	1.09	2.63		3.65	385	
04:20 AM	2390	27.08	17.19	14.41	4.82	14.08	4.01	13.54	2.96	11.06	1.09	2.63				
04:30 AM	2400	27.13	17.24	14.43	4.84	14.09	4.02	13.56	2.98	11.06	1.09	2.63				
04:40 AM	2410	27.10	17.21	14.43	4.84	14.09	4.02	13.56	2.98	11.07	1.10	2.64		3.68	386	
04:50 AM	2420	27.08	17.19	14.44	4.85	14.10	4.03	13.56	2.98	11.07	1.10	2.64				
05:00 AM	2430	27.06	17.17	14.45	4.86	14.11	4.04	13.57	2.99	11.07	1.10	2.64	29.91			
05:10 AM	2440	27.02	17.13	14.44	4.85	14.11	4.04	13.56	2.98	11.07	1.10	2.64		3.68	386	
05:20 AM	2450	27.00	17.11	14.45	4.86	14.11	4.04	13.57	2.99	11.07	1.10	2.63				
05:30 AM	2460	26.99	17.10	14.46	4.87	14.11	4.04	13.57	2.99	11.07	1.10	2.63				
05:40 AM	2470	26.97	17.08	14.46	4.87	14.12	4.05	13.58	3.00	11.08	1.11	2.63		3.68	386	
05:50 AM	2480	26.93	17.04	14.46	4.87	14.12	4.05	13.58	3.00	11.07	1.10	2.64				
06:00 AM	2490	26.86	16.97	14.46	4.87	14.12	4.05	13.58	3.00	11.08	1.11	2.65	29.97			
06:10 AM	2500	26.86	16.97	14.47	4.88	14.13	4.06	13.59	3.01	11.08	1.11	2.63		3.68	386	Adjusted rate
06:20 AM	2510	26.82	16.93	14.47	4.88	14.13	4.06	13.59	3.01	11.08	1.11	2.63		3.66	385	
06:30 AM	2520	26.73	16.84	14.47	4.88	14.13	4.06	13.59	3.01	11.08	1.11	2.63				
06:40 AM	2530	26.69	16.80	14.47	4.88	14.13	4.06	13.59	3.01	11.09	1.12	2.64				
06:50 AM	2540	26.65	16.76	14.48	4.89	14.14	4.07	13.60	3.02	11.09	1.12	2.62		3.62	384	Adjusted rate
07:00 AM	2550	26.77	16.88	14.49	4.90	14.14	4.07	13.60	3.02	11.09	1.12	2.63	30.03	3.68	386	
07:10 AM	2560	26.75	16.86	14.50	4.91	14.15	4.08	13.61	3.03	11.09	1.12	2.62				
07:20 AM	2570	26.74	16.85	14.50	4.91	14.15	4.08	13.61	3.03	11.10	1.13	2.62				
07:30 AM	2580	26.72	16.83	14.50	4.91	14.16	4.09	13.61	3.03	11.10	1.13	2.62		3.67	386	
07:40 AM	2590	26.73	16.84	14.50	4.91	14.16	4.09	13.61	3.03	11.10	1.13	2.61				
07:50 AM	2600	26.73	16.84	14.51	4.92	14.16	4.09	13.62	3.04	11.10	1.13	2.62				
08:00 AM	2610	26.70	16.81	14.51	4.92	14.16	4.09	13.62	3.04	11.10	1.13	2.62	30.08	3.67	386	
08:10 AM	2620	26.77	16.88	14.52	4.93	14.17	4.10	13.63	3.05	11.11	1.14	2.61				
08:20 AM	2630	26.75	16.86	14.52	4.93	14.18	4.11	13.63	3.05	11.11	1.14	2.60				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
08:30 AM	2640	26.76	16.87	14.53	4.94	14.18	4.11	13.63	3.05	11.11	1.14	2.62		3.69	387	Adjusted rate
08:40 AM	2650	26.60	16.71	14.52	4.93	14.17	4.10	13.64	3.06	11.11	1.14	2.61		3.65	385	
08:50 AM	2660	26.68	16.79	14.52	4.93	14.18	4.11	13.63	3.05	11.12	1.15	2.62				
09:00 AM	2670	26.64	16.75	14.53	4.94	14.18	4.11	13.63	3.05	11.12	1.15	2.63	30.15	3.66	385	
09:10 AM	2680	26.62	16.73	14.53	4.94	14.19	4.12	13.65	3.07	11.12	1.15	2.61				
09:20 AM	2690	26.62	16.73	14.54	4.95	14.19	4.12	13.65	3.07	11.12	1.15	2.61				
09:30 AM	2700	26.58	16.69	14.53	4.94	14.19	4.12	13.64	3.06	11.12	1.15	2.62		3.66	385	
09:40 AM	2710	26.59	16.70	14.54	4.95	14.19	4.12	13.64	3.06	11.13	1.16	2.63				
09:50 AM	2720	26.58	16.69	14.54	4.95	14.19	4.12	13.65	3.07	11.13	1.16	2.62				
10:00 AM	2730	26.58	16.69	14.54	4.95	14.20	4.13	13.65	3.07	11.13	1.16	2.62	30.19	3.66	385	
10:10 AM	2740	26.59	16.70	14.54	4.95	14.20	4.13	13.65	3.07	11.13	1.16	2.61				
10:20 AM	2750	26.60	16.71	14.54	4.95	14.20	4.13	13.66	3.08	11.14	1.17	2.61				
10:30 AM	2760	26.59	16.70	14.55	4.96	14.20	4.13	13.66	3.08	11.14	1.17	2.63		3.66	385	
10:40 AM	2770	26.59	16.70	14.55	4.96	14.20	4.13	13.66	3.08	11.14	1.17	2.62				
10:50 AM	2780	26.55	16.66	14.55	4.%	14.20	4.13	13.65	3.07	11.14	1.17	2.63				
11:00 AM	2790	26.55	16.66	14.55	4.96	14.21	4.14	13.67	3.09	11.15	1.18	2.61	30.24	3.66	385	
11:10 AM	2800	26.59	16.70	14.55	4.96	14.21	4.14	13.67	3.09	11.15	1.18	2.62				
11:20 AM	2810	26.60	16.71	14.55	4.96	14.21	4.14	13.66	3.08	11.15	1.18	2.62				
11:30 AM	2820	26.57	16.68	14.55	4.96	14.21	4.14	13.67	3.09	11.15	1.18	2.63		3.66	385	
11:40 AM	2830	26.59	16.70	14.55	4.96	14.21	4.14	13.68	3.10	11.15	1.18	2.61				
11:50 AM	2840	26.61	16.72	14.56	4.97	1421	4.14	13.69	3.11	11.15	1.18	2.59				
12:00 PM	2850	26.62	16.73	14.55	4.96	14.21	4.14	13.67	3.09	11.15	1.18	2.63	3025	3.66	385	
1210 PM	2860	26.65	16.76	14.56	4.97	14.22	4.15	13.72	3.14	11.16	1.19	2.57				
12:20 PM	2870	26.59	16.70	14.56	4.97	14.22	4.15	13.67	3.09	11.16	1.19	2.64				
12:30 PM	2880	26.69	16.80	14.57	4.98	14.23	4.16	13.68	3.10	11.16	1.19	2.63		3.66	385	
12:40 PM	2890	26.66	16.77	14.57	4.98	1423	4.16	13.68	3.10	11.16	1.19	2.64				
12:50 PM	2900	26.65	16.76	14.58	4.99	14.23	4.16	13.68	3.10	11.17	120	2.63				
01:00 PM	2910	26.66	16.77	14.58	4.99	14.23	4.16	13.69	3.11	11.17	1.20	2.61	30.26	3.67	386	
01:10 PM	2920	26.59	16.70	14.57	4.98	14.23	4.16	13.69	3.11	11.17	1.20	2.63				
01:20 PM	2930	26.53	16.64	14.56	4.97	1422	4.15	13.69	3.11	11.17	1.20	2.62				
01:30 PM	2940	26.50	16.61	14.56	4.97	1422	4.15	13.69	3.11	11.17	1.20	2.62		3.62	384	Adjusted rate
01:40 PM	2950	26.59	16.70	14.57	4.98	14.23	4.16	13.68	3.10	11.17	1.20	2.63		3.65	385	
01:50 PM	2960	26.57	16.68	14.57	4.98	14.23	4.16	13.69	3.11	11.17	1.20	2.63				
02:00 PM	2970	26.55	16.66	14.58	4.99	1424	4.17	13.70	3.12	11.18	1.21	2.62	3027	3.65	385	
02:10 PM	2980	26.55	16.66	14.58	4.99	1424	4.17	13.70	3.12	11.18	121	2.64				
02:20 PM	2990	26.53	16.64	14.58	4.99	14.24	4.17	13.70	3.12	11.18	1.21	2.64				
02:30 PM	3000	26.54	16.65	14.58	4.99	14.24	4.17	13.70	3.12	11.18	1.21	2.64		3.65	385	
02:40 PM	3010	26.52	16.63	14.59	5.00	1424	4.17	13.71	3.13	11.18	1.21	2.63				
02:50 PM	3020	26.51	16.62	14.59	5.00	14.25	4.18	13.71	3.13	11.18	1.21	2.63				
03:00 PM	3030	26.53	16.64	14.59	5.00	14.24	4.17	13.71	3.13	11.19	1.22	2.63	30.27	3.65	385	
03:10 PM	3040	26.52	16.63	14.59	5.00	14.25	4.18	13.71	3.13	11.19	122	2.63				
03:20 PM	3050	26.47	16.58	14.58	4.99	1425	4.18	13.71	3.13	11.19	1.22	2.63				
03:30 PM	3060	26.47	16.58	14.59	5.00	14.25	4.18	13.71	3.13	11.19	1.22	2.63		3.65	385	
03:40 PM	3070	26.54	16.65	14.60	5.01	14.25	4.18	13.72	3.14	11.19	1.22	2.64		3.65	385	•
03:50 PM	3080	26.48	16.59	14.60	5.01	14.25	4.18	13.72	3.14	11.19	1.22	2.63				
04:00 PM	3090	26.46	16.57	14.59	5.00	1425	4.18	13.72	3.14	11.19	122	2.63	30.31			
04:10 PM	3100	26.47	16.58	14.60	5.01	14.25	4.18	13.72	3.14	11.20	1.23	2.63				
04:20 PM	3110	26.45	16.56	14.60	5.01	1426	4.19	13.73	3.15	11.20	123	2.63				
04:30 PM	3120	26.44	16.55	14.60	5.01	14.26	4.19	13.73	3.15	11.20	1.23	2.63		3.63	384	• Adjusted rate
04:40 PM	3130	26.48	16.59	14.61	5.02	14.27	420	13.73	3.15	11.20	1.23	2.63				
04:50 PM	3140	26.48	16.59	14.62	5.03	14.27	4.20	13.74	3.16	11.21	1.24	2.63				
05:00 PM	3150	26.54	16.65	14.62	5.03	14.27	420	13.74	3.16	11.21	1.24	2.63	30.34	3.65	385	
05:10 PM	3160	26.45	16.56	14.61	5.02	14.27	4.20	13.74	3.16	1121	1.24	2.63				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
05:20 PM	3170	26.43	16.54	14.62	5.03	14.28	4.21	13.74	3.16	11.21	1.24	2.63				
05:30 PM	3180	26.42	16.53	14.62	5.03	14.28	4.21	13.74	3.16	11.21	1.24	2.63		3.65	385	
05:40 PM	3190	26.42	16.53	14.62	5.03	14.28	4.21	13.74	3.16	11.21	1.24	2.63				
05:50 PM	3200	26.43	16.54	14.62	5.03	14.28	4.21	13.75	3.17	11.21	1.24	2.63				
06:00 PM	3210	26.43	16.54	14.62	5.03	14.28	4.21	13.75	3.17	11.22	1.25	2.62	30.37	3.65	385	
06:10 PM	3220	26.43	16.54	14.62	5.03	14.28	4.21	13.75	3.17	11.22	155	2.63				
06:20 PM	3230	26.40	16.51	14.63	5.04	14.28	4.21	13.75	3.17	1152	1.25	2.63				
06:30 PM	3240	26.45	16.56	14.63	5.04	14.29	4.22	13.75	3.17	11.22	1.25	2.63		3.66	385	
06:40 PM	3250	26.41	16.52	14.63	5.04	14.29	4.22	13.75	3.17	11.22	1.25	2.63				
06:50 PM	3260	26.39	16.50	14.63	5.04	14.29	4.22	13.75	3.17	11.22	1.25	2.62				
07:00 PM	3270	26.41	16.52	14.62	5.03	14.28	4.21	13.75	3.17	11.22	1.25	2.62	30.38	3.65	385	
07:10 PM	3280	26.41	16.52	14.63	5.04	14.29	4.22	13.75	3.17	11.22	1.25	2.63				
07:20 PM	3290	26.42	16.53	14.63	5.04	14.29	4.22	13.75	3.17	11.22	1.25	2.63				
07:30 PM	3300	26.42	16.53	14.63	5.04	14.29	4.22	13.75	3.17	11.22	1.25	2.63		3.64	385	
07:40 PM	3310	26.40	16.51	14.63	5.04	14.29	4.22	13.76	3.18	11.22	1.25	2.62				
07:50 PM	3320	26.40	16.51	14.63	5.04	14.29	4.22	13.76	3.18	11.22	1.25	2.63				
08:00 PM	3330	26.39	16.50	14.63	5.04	14.29	4.22	13.76	3.18	11.22	1.25	2.63	30.38	3.64	385	
08:10 PM	3340	26.40	16.51	14.64	5.05	14.29	4.22	13.76	3.18	11.23	1.26	2.63				
08:20 PM	3350	26.40	16.51	14.63	5.04	14.29	4.22	13.76	3.18	11.23	1.26	2.63				
08:30 PM	3360	26.40	16.51	14.64	5.05	14.30	4.23	13.76	3.18	11.23	1.26	2.63		3.65	385	
08:40 PM	3370	26.40	16.51	14.64	5.05	14.30	4.23	13.77	3.19	1153	1.26	2.63				
08:50 PM	3380	26.41	16.52	14.64	5.05	14.30	4.23	13.77	3.19	11.23	1.26	2.62				
09:00 PM	3390	26.41	16.52	14.64	5.05	14.30	4.23	13.77	3.19	11.23	1.26	2.62	30.37	3.64	385	
09:10 PM	3400	26.41	16.52	14.64	5.05	14.30	4.23	13.77	3.19	11.23	1.26	2.62				
09:20 PM	3410	26.40	16.51	14.64	5.05	14.30	4.23	13.77	3.19	11.23	156	2.62				
09:30 PM	3420	26.40	16.51	14.64	5.05	14.30	4.23	13.77	3.19	11.23	1.26	2.62		3.65	385	
09:40 PM	3430	26.40	16.51	14.64	5.05	14.30	4.23	13.77	3.19	11.23	1.26	2.62				
09:50 PM	3440	26.40	16.51	14.64	5.05	14.30	4.23	13.77	3.19	11.23	1.26	2.63				
10:00 PM	3450	26.38	16.49	14.64	5.05	14.30	4.23	13.77	3.19	11.24	157	2.62	30.38	3.65	385	
10:10 PM	3460	26.38	16.49	14.65	5.06	14.31	4.24	13.78	3.20	11.24	1.27	2.62				
10:20 PM	3470	26.39	16.50	14.65	5.06	14.31	4.24	13.78	350	11.24	1.27	2.62				
10:30 PM	3480	26.38	16.49	14.65	5.06	14.31	4.24	13.77	3.19	1154	157	2.65		3.65	385	
10:40 PM	3490	26.36	16.47	14.65	5.06	14.31	4.24	13.78	3.20	11.24	157	2.64				
10:50 PM	3500	26.35	16.46	14.65	5.06	14.31	4.24	13.77	3.19	11.24	1.27	2.63				
11:00 PM	3510	26.34	16.45	14.65	5.06	14.31	4.24	13.78	3.20	11.24	1.27	2.63	30.37	3.64	385	Adjusted rate
11:10 PM	3520	26.35	16.46	14.66	5.07	14.31	4.24	13.78	3.20	11.24	1.27	2.61				
11:20 PM	3530	26.35	16.46	14.65	5.06	14.31	4.24	13.78	3.20	1154	1.27	2.62				
11:30 PM	3540	26.35	16.46	14.66	5.07	14.32	4.25	13.79	3.21	1154	1.27	2.62		3.65	385	
11:40 PM	3550	26.34	16.45	14.65	5.06	14.32	4.25	13.78	3.20	11.24	1.27	2.62				
11:50 PM	3560	26.34	16.45	14.66	5.07	14.32	4.25	13.78	350	1154	1.27	2.62				
12/08/94																
1200 AM	3570	26.36	16.47	14.66	5.07	14.32	4.25	13.80	3.22	11.24	1.27	2.60	30.36	3.63	384	Adjusted rate
12:10 AM	3580	26.37	16.48	14.66	5.07	14.32	4.25	13.80	3.22	11.24	1.27	2.60				
12:20 AM	3590	26.36	16.47	14.66	5.07	14.32	4.25	13.78	3.20	11.24	1.27	2.62				
12:30 AM	3600	26.37	16.48	14.67	5.08	14.33	4.26	13.80	3.22	11.25	1.28	2.61		3.64	385	
1240 AM	3610	26.37	16.48	14.67	5.08	14.33	4.26	13.80	3.22	11.25	158	2.61				
1250 AM	3620	26.36	16.47	14.67	5.08	14.33	4.26	13.80	352	11.25	158	2.63				
01:00 AM	3630	26.38	16.49	14.67	5.08	14.33	4.26	13.81	3.23	1155	1.28	2.60	30.37	3.64	385	
01:10 AM	3640	26.38	16.49	14.67	5.08	14.33	4.26	13.80	3.22	1155	1.28	2.61				
01:20 AM	3650	26.39	16.50	14.67	5.08	14.33	4.26	13.81	3.23	11.25	1.28	2.61				
01:30 AM	3660	26.40	16.51	14.67	5.08	14.33	4.26	13.80	3.22	1155	1.28	2.61		3.64	385	
01:40 AM	3670	26.38	16.49	14.67	5.08	14.33	4.26	13.80	3.22	11.25	1.28	2.62				
01:50 AM	3680	26.39	16.50	14.68	5.09	14.34	457	13.81	3.23	11.25	1.28	2.62				

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date' Hour	Elapsed Time (mitt)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
02:00 AM	3690	26.38	16.49	14.68	5.09	14.34	4.27	13.81	3.23	11.26	1.29	2.62	30.39	3.64	385	
02:10AM	3700	26.38	16.49	14.68	5.09	14.34	4.27	13.81	3.23	11.26	1.29	2.61				
02:20 AM	3710	26.36	16.47	14.68	5.09	14.34	4.27	13.81	3.23	1126	1.29	2.61				
02:30 AM	3720	26.37	16.48	14.68	5.09	14.34	4.27	13.81	3.23	11.26	1.29	2.61		3.64	385	
02:40 AM	3730	26.38	16.49	14.68	5.09	14.34	4.27	13.81	3.23	11.26	1.29	2.61				
02:50 AM	3740	26.38	16.49	14.68	5.09	14.34	4.27	13.82	3.24	11.26	1.29	2.61				
03:00 AM	3750	26.38	16.49	14.68	5.09	14.34	4.27	13.81	3.23	11.26	1.29	2.62	30.40	3.64	385	
03:10 AM	3760	26.39	16.50	14.68	5.09	14.34	4.27	13.81	3.23	11.26	1.29	2.61				
03:20 AM	3770	26.39	16.50	14.68	5.09	14.35	4.28	13.82	3.24	11.26	1.29	2.62				
03:30 AM	3780	26.41	16.52	14.69	5.10	14.35	4.28	13.82	3.24	11.26	1.29	2.61		3.64	385	
03:40 AM	3790	26.39	16.50	14.69	5.10	14.35	4.28	13.82	3.24	11.26	1.29	2.61				
03:50 AM	3800	26.39	16.50	14.69	5.10	14.35	4.28	13.82	3.24	11.26	1.29	2.61				
04:00 AM	3810	26.41	16.52	14.69	5.10	14.35	4.28	13.82	3.24	1126	1.29	2.61	30.38	3.64	385	
04:10 AM	3820	26.40	16.51	14.69	5.10	14.35	4.28	13.82	3.24	11.26	1.29	2.61				
04:20 AM	3830	26.42	16.53	14.69	5.10	14.35	4.28	13.82	3.24	11.26	1.29	2.61				
04:30 AM	3840	26.45	16.56	14.69	5.10	14.35	4.28	13.83	3.25	1127	1.30	2.61		3.62	384	Adjusted rate
04:40 AM	3850	26.46	16.57	14.69	5.10	14.36	4.29	13.83	3.25	11.27	1.30	2.61		3.64	385	
04:50 AM	3860	26.45	16.56	14.70	5.11	14.36	4.29	13.83	3.25	1127	1.30	2.62				
05:00 AM	3870	26.45	16.56	14.70	5.11	14.36	4.29	13.83	3.25	11.27	1.30	2.61	30.37	3.64	385	
05:10 AM	3880	26.44	16.55	14.70	5.11	14.36	4.29	13.83	3.25	1127	1.30	2.61				
05:20 AM	3890	26.43	16.54	14.70	5.11	14.36	4.29	13.83	3.25	1127	1.30	2.61				
05:30 AM	3900	26.44	16.55	14.70	5.11	14.36	4.29	13.83	3.25	11.27	1.30	2.61		3.64	385	
05:40 AM	3910	26.46	16.57	14.70	5.11	14.36	4.29	13.84	3.26	1127	1.30	2.61				
05:50 AM	3920	26.48	16.59	14.70	5.11	14.36	4.29	13.84	3.26	11.27	1.30	2.61				
06:00 AM	3930	26.49	16.60	14.70	5.11	14.36	4.29	13.83	3.25	1127	1.30	2.61	30.36	3.64	385	
06:10 AM	3940	26.49	16.60	14.70	5.11	14.36	4.29	13.83	3.25	11.27	1.30	2.61				
06:20 AM	3950	26.50	16.61	14.70	5.11	14.36	4.29	13.84	3.26	11.27	1.30	2.61				
06:30 AM	3960	26.51	16.62	14.70	5.11	14.36	4.29	13.84	3.26	1127	1.30	2.61		3.64	385	
06:40 AM	3970	26.51	16.62	14.70	5.11	14.36	4.29	13.84	3.26	1127	1.30	2.61				
06:50 AM	3980	26.51	16.62	14.70	5.11	14.36	4.29	13.84	3.26	11.27	1.30	2.61				
07:00 AM	3990	26.52	16.63	14.71	5.12	14.37	4.30	13.84	3.26	1127	1.30	2.61	30.34	3.64	385	
07:10 AM	4000	26.51	16.62	14.70	5.11	14.37	4.30	13.84	326	1127	1.30	2.61				
07:20 AM	4010	26.53	16.64	14.71	5.12	14.37	4.30	13.85	3.27	11.27	1.30	2.61				
07:30 AM	4020	26.52	16.63	14.71	5.12	14.37	4.30	13.85	3.27	11.27	1.30	2.61		3.64	385	
07:40 AM	4030	26.52	16.63	14.71	5.12	14.37	4.30	13.85	327	1127	1.30	2.61				
07:50 AM	4040	26.55	16.66	14.71	5.12	14.37	4.30	13.85	3.27	11.27	1.30	2.61				
08:00 AM	4050	26.57	16.68	14.71	5.12	14.37	4.30	13.85	3.27	1127	1.30	2.60	30.34	3.64	385	
08:10 AM	4060	26.57	16.68	14.71	5.12	14.37	4.30	13.85	3.27	11.27	1.30	2.61				
08:20 AM	4070	26.58	16.69	14.71	5.12	14.37	4.30	13.85	3.27	1127	1.30	2.61				
08:30 AM	4080	26.60	16.71	14.71	5.12	14.38	4.31	13.85	3.27	11.27	1.30	2.61		3.64	385	
08:40 AM	4090	26.61	16.72	14.72	5.13	14.38	4.31	13.86	3.28	11.27	1.30	2.61				
08:50 AM	4100	26.59	16.70	14.72	5.13	14.38	4.31	13.86	3.28	11.27	1.30	2.61				
09:00 AM	4110	26.61	16.72	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61	30.34	3.64	385	
09:10 AM	4120	26.59	16.70	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.62				
09:20 AM	4130	26.58	16.69	14.72	5.13	14.39	4.32	13.86	3.28	11.27	1.30	2.61				
09:30 AM	4140	26.60	16.71	14.72	5.13	14.39	4.32	13.86	3.28	11.27	1.30	2.61		3.65	385	
09:40 AM	4150	26.60	16.71	14.72	5.13	14.38	4.31	13.86	3.28	11.27	1.30	2.61				
09:50 AM	4160	26.60	16.71	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61				
10:00 AM	4170	26.61	16.72	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61	30.34	3.65	385	
10:10 AM	4180	26.61	16.72	14.72	5.13	14.38	4.31	13.87	329	1127	1.30	2.59				
10:20 AM	4190	26.60	16.71	14.73	5.14	14.39	4.32	13.87	3.29	11.27	1.30	2.62				
10:30 AM	4200	26.61	16.72	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61		3.65	385	
10:40 AM	4210	26.60	16.71	14.73	5.14	14.39	4.32	13.87	3.29	11.28	1.31	2.61				

Ground -Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
10:50 AM	4220	26.63	16.74	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.60				
11:00 AM	4230	26.62	16.73	14.73	5.14	14.39	4.32	13.88	3.30	11.28	1.31	2.62	30.33	3.64	385	
11:10 AM	4240	26.64	16.75	14.72	5.13	14.39	4.32	13.87	3.29	1127	1.30	2.60				
11:20 AM	4250	26.63	16.74	14.72	5.13	14.38	4.31	13.87	3.29	11.27	1.30	2.60				
11:30 AM	4260	26.66	16.77	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61		3.64	385	
11:40 AM	4270	26.67	16.78	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61				
11:50 AM	4280	26.66	16.77	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61				
12:00 PM	4290	26.69	16.80	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.60	30.27	3.64	385	
12:10 PM	4300	26.63	16.74	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.62				
12:20 PM	4310	26.62	16.73	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61		3.66	385	
12:30 PM	4320	26.70	16.81	14.73	5.14	14.39	4.32	13.87	3.29	11.27	1.30	2.61		3.65	385	
12:40 PM	4330	26.70	16.81	14.73	5.14	14.39	4.32	13.88	3.30	11.27	1.30	2.62				
12:50 PM	4340	26.73	16.84	14.73	5.14	14.40	4.33	13.87	3.29	11.28	1.31	2.62				
01:00 PM	4350	26.73	16.84	14.73	5.14	14.40	4.33	13.88	3.30	11.27	1.30	2.60	30.25	3.64	385	
01:10 PM	4360	26.74	16.85	14.72	5.13	14.39	4.32	13.87	3.29	11.27	1.30	2.61				
01:20 PM	4370	26.75	16.86	14.72	5.13	14.39	4.32	13.88	3.30	11.27	1.30	2.60				
01:30 PM	4380	26.80	16.91	14.73	5.14	14.39	4.32	13.88	3.30	11.27	1.30	2.60		3.63	384	Adjusted rate
01:40 PM	4390	26.81	16.92	14.73	5.14	14.40	4.33	13.88	3.30	11.27	1.30	2.62		3.65	385	
01:50 PM	4400	26.82	16.93	14.74	5.15	14.40	4.33	13.88	3.30	11.27	1.30	2.62				
02:00 PM	4410	26.83	16.94	14.73	5.14	14.40	4.33	13.88	3.30	11.27	1.30	2.61	30.21	3.65	385	
02:10 PM	4420	26.87	16.98	14.73	5.14	14.40	4.33	13.89	3.31	11.27	1.30	2.60		3.63	384	* Adjusted rate
02:20 PM	4430	26.84	16.95	14.73	5.14	14.40	4.33	13.88	3.30	11.27	1.30	2.62		3.65	385	*
02:30 PM	4440	26.88	16.99	14.73	5.14	14.40	4.33	13.89	3.31	11.27	1.30	2.61		3.65	385	
02:40 PM	4450	26.89	17.00	14.73	5.14	14.40	4.33	13.89	3.31	11.27	1.30	2.60				
02:50 PM	4460	26.89	17.00	14.74	5.15	14.41	4.34	13.88	3.30	11.27	1.30	2.63				
03:00 PM	4470	26.88	16.99	14.74	5.15	14.41	4.34	13.89	3.31	11.27	1.30	2.62	30.19	3.65	385	
03:10 PM	4480	26.89	17.00	14.74	5.15	14.41	4.34	13.89	3.31	11.27	1.30	2.61				
03:20 PM	4490	26.90	17.01	14.74	5.15	14.41	4.34	13.89	3.31	11.27	1.30	2.61				
03:30 PM	4500	26.88	16.99	14.74	5.15	14.41	4.34	13.89	3.31	11.27	1.30	2.62		3.65	385	
03:40 PM	4510	26.90	17.01	14.74	5.15	14.41	4.34	13.89	3.31	11.28	1.31	2.61				
03:50 PM	4520	26.88	16.99	14.74	5.15	14.41	4.34	13.89	3.31	11.28	1.31	2.62				
04:00 PM	4530	26.87	16.98	14.74	5.15	14.41	4.34	13.90	3.32	11.28	1.31	2.62	30.19	3.65	385	
04:10 PM	4540	26.87	16.98	14.74	5.15	14.41	4.34	13.90	3.32	11.28	1.31	2.61				
04:20 PM	4550	26.89	17.00	14.74	5.15	14.41	4.34	13.90	3.32	11.27	1.30	2.61				
04:30 PM	4560	26.88	16.99	14.75	5.16	14.41	4.34	13.90	3.32	11.27	1.30	2.61		3.64	385	
04:40 PM	4570	26.88	16.99	14.75	5.16	14.42	4.35	13.90	3.32	11.27	1.30	2.61				
04:50 PM	4580	26.89	17.00	14.75	5.16	14.41	4.34	13.90	3.32	11.27	1.30	2.61				
05:00 PM	4590	26.90	17.01	14.75	5.16	14.42	4.35	13.90	3.32	1128	1.31	2.61	30.19	3.64	385	
05:10 PM	4600	26.92	17.03	14.75	5.16	14.42	4.35	13.90	3.32	11.27	1.30	2.60				
05:20 PM	4610	26.92	17.03	14.75	5.16	14.42	4.35	13.90	3.32	1127	1.30	2.60				
05:30 PM	4620	26.91	17.02	14.75	5.16	14.42	4.35	13.91	3.33	11.27	1.30	2.60		3.64	385	Adjusted rate
05:40 PM	4630	26.92	17.03	14.75	5.16	14.42	4.35	13.90	3.32	11.27	1.30	2.61				
05:50 PM	4640	26.93	17.04	14.75	5.16	14.42	4.35	13.91	3.33	11.28	1.31	2.61				
06:00 PM	4650	26.92	17.03	14.75	5.16	14.42	4.35	13.91	3.33	11.27	1.30	2.61	30.19	3.65	385	
06:10 PM	4660	26.93	17.04	14.75	5.16	14.42	4.35	13.91	3.33	11.28	1.31	2.61				
06:20 PM	4670	26.92	17.03	14.76	5.17	14.42	4.35	13.91	3.33	11.28	1.31	2.61				
06:30 PM	4680	26.91	17.02	14.75	5.16	14.43	4.36	13.91	3.33	11.28	1.31	2.61		3.65	385	
06:40 PM	4690	26.91	17.02	14.75	5.16	14.42	4.35	13.91	3.33	11.28	1.31	2.60				
06:50 PM	4700	26.92	17.03	14.76	5.17	14.42	4.35	13.91	3.33	11.28	1.31	2.61				
07:00 PM	4710	26.92	17.03	14.76	5.17	14.43	4.36	13.91	3.33	11.28	1.31	2.61	30.18	3.63	384	Adjusted rate
07:10 PM	4720	26.91	17.02	14.75	5.16	14.42	4.35	13.91	3.33	11.27	1.30	2.62				
07:20 PM	4730	26.91	17.02	14.76	5.17	14.43	4.36	13.91	3.33	11.27	1.30	2.61				
07:30 PM	4740	26.90	17.01	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60		3.65	385	

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
07:40 PM	4750	26.91	17.02	14.76	5.17	14.43	4.36	13.91	3.33	11.27	1.30	2.60				
07:50 PM	4760	26.91	17.02	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.61				
08:00 PM	4770	26.91	17.02	14.75	5.16	14.43	4.36	13.92	3.34	11.27	1.30	2.61	30.17	3.64	385	
08:10PM	4780	26.91	17.02	14.76	5.17	14.43	4.36	13.91	3.33	11.27	1.30	2.61				
08:20 PM	4790	26.90	17.01	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.61				
08:30 PM	4800	26.91	17.02	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60		3.65	385	
08:40 PM	4810	26.87	16.98	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
08:50 PM	4820	26.89	17.00	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
09:00 PM	4830	26.89	17.00	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60	30.16	3.65	385	
09:10 PM	4840	26.91	17.02	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
09:20 PM	4850	26.87	16.98	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.61				
09:30 PM	4860	26.91	17.02	14.75	5.16	14.43	4.36	13.92	3.34	11.27	1.30	2.60		3.64	385	
09:40 PM	4870	26.92	17.03	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
09:50 PM	4880	26.92	17.03	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
10:00 PM	4890	26.93	17.04	14.75	5.16	14.43	4.36	13.92	3.34	11.27	1.30	2.60	30.14	3.64	385	
10:10 PM	4900	26.93	17.04	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
10:20 PM	4910	26.94	17.05	14.76	5.17	14.43	4.36	13.92	3.34	11.27	1.30	2.60				
10:30 PM	4920	26.96	17.07	14.76	5.17	14.43	4.36	13.92	3.34	11.26	1.29	2.60		3.63	384	Adjusted rate
10:40 PM	4930	26.97	17.08	14.76	5.17	14.43	4.36	13.92	3.34	11.26	1.29	2.60				
10:50 PM	4940	26.97	17.08	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.61				
11:00 PM	4950	26.98	17.09	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.60	30.12	3.64	385	
11:10 PM	4960	26.98	17.09	14.76	5.17	14.43	4.36	13.93	3.35	11.26	*129*	2.60				
11:20 PM	4970	26.99	17.10	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.61				
11:30 PM	4980	26.99	17.10	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.60		3.64	385	
11:40 PM	4990	27.02	17.13	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.60				
11:50 PM	5000	27.06	17.17	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.61		3.65	385	*
12/09/94	—	—	—	—	—	—	—	—	—	—	—	—	—			
12:00 AM	5010	27.04	17.15	14.76	5.17	14.43	4.36	13.93	3.35	11.26	1.29	2.60				
12:10 AM	5020	27.07	17.18	14.76	5.17	14.44	4.37	13.93	3.35	11.25	*128*	2.61				
12:20 AM	5030	27.08	17.19	14.76	5.17	14.44	4.37	13.93	3.35	11.25	1.28	2.61				
12:30 AM	5040	27.18	17.29	14.77	5.18	14.44	4.37	13.93	3.35	11.25	1.28	2.60		3.63	384	Adjusted rate
12:40 AM	5050	27.21	17.32	14.78	5.19	14.45	4.38	13.94	3.36	11.25	1.28	2.61				
12:50 AM	5060	27.20	17.31	14.78	5.19	14.45	4.38	13.94	3.36	11.25	1.28	2.60				
01:00 AM	5070	27.21	17.32	14.79	5.20	14.45	4.38	13.94	3.36	11.25	1.28	2.61		3.66	385	
01:10 AM	5080	27.22	17.33	14.79	5.20	14.46	4.39	13.94	3.36	11.25	1.28	2.61				
01:20 AM	5090	27.23	17.34	14.79	5.20	14.46	4.39	13.94	3.36	11.25	1.28	2.61				
01:30 AM	5100	27.23	17.34	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61		3.66	385	
01:40 AM	5110	27.22	17.33	14.79	5.20	14.45	4.38	13.94	3.36	11.25	1.28	2.60				
01:50 AM	5120	27.21	17.32	14.79	5.20	14.46	4.39	13.94	3.36	11.25	1.28	2.61				
02:00 AM	5130	27.25	17.36	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61		3.66	385	
02:10 AM	5140	27.23	17.34	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.60				
02:20 AM	5150	27.23	17.34	14.79	5.20	14.46	4.39	13.95	3.37	11.25	*128*	2.61				
02:30 AM	5160	27.24	17.35	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61		3.66	385	
02:40 AM	5170	27.23	17.34	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61				
02:50 AM	5180	27.24	17.35	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61				
03:00 AM	5190	27.24	17.35	14.80	5.21	14.46	4.39	13.95	3.37	11.25	1.28	2.61		3.65	385	
03:10 AM	5200	27.23	17.34	14.80	5.21	14.46	4.39	13.96	3.38	11.25	1.28	2.61				
03:20 AM	5210	27.24	17.35	14.80	5.21	14.46	4.39	13.96	3.38	*1125*	1.28	2.61				
03:30 AM	5220	27.25	17.36	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61		3.66	385	
03:40 AM	5230	27.26	17.37	14.79	5.20	14.46	4.39	13.95	3.37	11.25	1.28	2.61				
03:50 AM	5240	27.25	17.36	14.80	5.21	14.46	4.39	13.95	3.37	11.25	1.28	2.62				
04:00 AM	5250	27.25	17.36	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.62		3.65	385	
04:10 AM	5260	2726	17.37	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.62				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
04:20 AM	5270	27.26	17.37	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.62				
04:30 AM	5280	27.25	17.36	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.62		3.65	385	
04:40 AM	5290	27.27	17.38	14.80	5.21	14.47	4.40	13.%	3.38	11.25	1.28	2.62				
04:50 AM	5300	27.27	17.38	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.63				
05:00 AM	5310	27.25	17.36	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.62		3.66	385	
05:10 AM	5320	27.26	17.37	14.81	5.22	14.47	4.40	13.96	3.38	11.25	1.28	2.63				
05:20 AM	5330	27.23	17.34	14.81	5.22	14.47	4.40	13.97	3.39	11.25	1.28	2.63				
05:30 AM	5340	27.24	17.35	14.81	5.22	14.47	4.40	13.97	3.39	11.25	1.28	2.63		3.65	385	
05:40 AM	5350	27.25	17.36	14.80	5.21	14.47	4.40	13.96	3.38	11.25	1.28	2.64				
05:50 AM	5360	27.23	17.34	14.81	5.22	14.48	4.41	13.97	3.39	11.25	1.28	2.64				
06:00 AM	5370	27.24	17.35	14.81	5.22	14.48	4.41	13.97	3.39	1125	1.28	2.63		3.64	385	
06:10 AM	5380	27.22	17.33	14.81	5.22	14.48	4.41	13.97	3.39	1125	1.28	2.64				
06:20 AM	5390	27.23	17.34	14.80	5.21	14.47	4.40	13.97	3.39	11.25	1.28	2.64				
06:30 AM	5400	27.23	17.34	14.81	5.22	14.48	4.41	13.97	3.39	11.25	1.28	2.64		3.65	385	
06:40 AM	5410	27.22	17.33	14.81	5.22	14.48	4.41	13.97	3.39	11.25	1.28	2.64				
06:50 AM	5420	27.22	17.33	14.81	5.22	14.48	4.41	13.97	3.39	11.25	1.28	2.65				
07:00 AM	5430	27.23	17.34	14.81	5.22	14.48	4.41	13.97	3.39	11.25	1.28	2.65		3.64	385	
07:10 AM	5440	27.22	17.33	14.81	5.22	14.48	4.41	13.97	3.39	11.25	1.28	2.65				
07:20 AM	5450	27.22	17.33	14.81	5.22	14.48	4.41	13.98	3.40	11.25	1.28	2.66				
07:30 AM	5460	27.20	17.31	14.82	5.23	14.49	4.42	13.98	3.40	11.25	1.28	2.67		3.64	385	
07:40 AM	5470	27.19	17.30	14.81	5.22	14.48	4.41	13.98	3.40	11.26	1.29	2.66				
07:50 AM	5480	27.19	17.30	14.82	5.23	14.49	4.42	13.98	3.40	11.26	1.29	2.67				
08:00 AM	5490	27.21	17.32	14.83	5.24	14.50	4.43	13.99	3.41	11.26	1.29	2.68		3.67	386	
08:10 AM	5500	27.19	17.30	14.82	5.23	14.49	4.42	13.98	3.40	11.26	1.29	2.68				
08:20 AM	5510	27.19	17.30	14.82	5.23	14.49	4.42	13.98	3.40	11.26	1.29	2.69				
08:30 AM	5520	27.21	17.32	14.81	5.22	14.49	4.42	13.98	3.40	1126	1.29	2.68		3.65	385	
08:40 AM	5530	27.13	17.24	14.81	5.22	14.48	4.41	13.98	3.40	11.26	1.29	2.70				
08:50 AM	5540	27.14	17.25	14.81	5.22	14.49	4.42	13.99	3.41	11.26	1.29	2.70				
09:00 AM	5550	27.10	17.21	14.82	5.23	14.49	4.42	13.99	3.41	11.26	1.29	2.71		3.65	385	*
09:10 AM	5560	27.09	17.20	14.82	5.23	14.49	4.42	13.98	3.40	11.26	1.29	2.72				
09:20 AM	5570	27.08	17.19	14.81	522	14.48	4.41	13.98	3.40	11.26	1.29	2.72				
09:30 AM	5580	27.08	17.19	14.81	5.22	14.48	4.41	13.98	3.40	11.26	1.29	2.73				
09:40 AM	5590	27.08	17.19	14.81	5.22	14.48	4.41	13.98	3.40	11.26	1.29	2.73		3.65	385	
09:50 AM	5600	27.08	17.19	14.81	5.22	14.48	4.41	13.98	3.40	1126	1.29	2.74				
10:00 AM	5610	27.05	17.16	14.81	5.22	14.48	4.41	13.98	3.40	11.26	1.29	2.76				
10:10 AM	5620	27.06	17.17	14.81	5.22	14.49	4.42	13.99	3.41	1126	1.29	2.76		3.65	385	
10:20 AM	5630	27.05	17.16	14.82	5.23	14.49	4.42	13.99	3.41	1126	1.29	2.76				
10:30 AM	5640	27.01	17.12	14.81	5.22	14.48	4.41	13.98	3.40	11.26	129	2.78				
10:40 AM	5650	27.01	17.12	14.81	5.22	14.48	4.41	13.98	3.40	11.26	1.29	2.79				
10:50 AM	5660	26.98	17.09	14.80	5.21	14.48	4.41	13.98	3.40	11.26	1.29	2.79		3.64	385	Water sample collected
11:00 AM	5670	26.90	17.01	14.79	5.20	14.47	4.40	13.98	3.40	11.26	1.29	2.81				T = 56.1 F
11:11 AM	5681	27.31	17.42	14.77	5.18	14.46	4.39	13.97	3.39	1126	1.29	2.81				TW 2-94 Meas d/w
11:12 AM	5682	26.90	17.01	14.73	5.14	14.46	4.39	13.97	3.39	11.26	1.29	2.81				OW 3 Meas d/w
11:13 AM	5683	26.89	17.00	14.78	5.19	14.46	4.39	13.97	3.39	1126	1.29	2.82				
11:14AM	5684	26.90	17.01	14.78	5.19	14.46	4.39	13.97	3.39	11.26	1.29	2.82				
11:15 AM	5685	26.90	17.01	14.78	5.19	14.47	4.40	13.97	3.39	1126	1.29	2.82				OW 4 Meas d/w
11:16 AM	5686	26.90	17.01	14.78	5.19	14.46	4.39	13.98	3.40	1127	1.30	2.81				OW 6 Meas d/w
11:17 AM	5687	26.90	17.01	14.77	5.18	14.46	4.39	13.93	3.35	1125	1.28	2.81				OW 5 Meas d/w
11:18 AM	5688	26.90	17.01	14.78	5.19	14.46	4.39	13.97	3.39	1125	1.28	2.81				
11:19 AM	5689	26.90	17.01	14.77	5.18	14.46	4.39	13.98	3.40	1125	1.28	2.80				
11:20 AM	5690	26.92	17.03	14.77	5.18	14.46	4.39	13.98	3.40	11.25	1.28	2.80				
11:21 AM	5691	26.92	17.03	14.77	5.18	14.46	4.39	13.98	3.40	1125	1.28	2.80				
11:22 AM	5692	26.90	17.01	14.77	5.18	14.45	4.38	13.98	3.40	1125	1.28	2.80				

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure (in Hg)	+	Piez (ft)	Rate (gpm)	Remarks
11:23 AM	5693	26.91	17.02	14.77	5.18	14.46	4.39	13.97	3.39	11.25	1.28	2.81					
11:24 AM	5694	26.91	17.02	14.77	5.18	14.45	4.38	13.97	3.39	11.25	1.28	2.81					
11:25 AM	5695	26.91	17.02	14.77	5.18	14.45	4.38	13.97	3.39	11.25	1.28	2.81					
11:26 AM	5696	26.90	17.01	14.77	5.18	14.45	4.38	13.97	3.39	11.25	1.28	2.82					
11:27 AM	5697	26.90	17.01	14.77	5.18	14.45	4.38	13.97	3.39	11.25	1.28	2.83					
11:28 AM	5698	26.91	17.02	14.77	5.18	14.45	4.38	13.97	3.39	11.25	1.28	2.83			3.64	385	
11:29 AM	5699	26.91	17.02	14.77	5.18	14.45	4.38	13.96	3.38	11.25	1.28	2.83					
11:30 AM	5700	26.90	17.01	14.77	5.18	14.45	4.38	13.%	3.38	11.25	1.28	2.83					Pump OFF
11:31 AM	1	14.30		14.18		14.23		13.92		11.26		2.83					Recovery
11:32 AM	2	13.70		13.76		13.94		13.82		11.26		2.83					
11:33 AM	3	13.39		13.51		13.74		13.73		11.25		2.83					
11:34 AM	4	13.19		13.34		13.60		13.65		11.25		2.82					
11:35 AM	5	13.03		13.22		13.49		13.59		11.24		2.83					
11:36 AM	6	12.92		13.12		13.40		13.53		11.24		2.84					
11:37 AM	7	12.83		13.05		13.34		13.49		11.23		2.84					
11:38 AM	8	12.76		12.99		13.28		13.45		11.23		2.84					
11:39 AM	9	12.70		12.94		13.24		13.42		11.22		2.85					
11:40 AM	10	12.64		12.90		13.20		13.39		11.22		2.85					
11:41 AM	11	12.60		12.86		13.16		13.37		11.22		2.85					
11:42 AM	12	12.56		12.83		13.13		13.35		11.21		2.84					
11:43 AM	13	12.53		12.80		13.11		13.33		11.21		2.84					
11:44 AM	14	12.49		12.77		13.08		13.31		11.21		2.84					
11:45 AM	15	12.46		12.75		13.06		13.29		11.20		2.84					
11:46 AM	16	12.44		12.72		13.04		13.28		11.20		2.84					
11:47 AM	17	12.42		12.70		13.02		13.27		11.20		2.84					
11:48 AM	18	12.40		12.68		13.00		13.26		11.19		2.84					
11:49 AM	19	12.39		12.67		12.99		13.25		11.19		2.83					
11:50 AM	20	12.37		12.65		12.97		13.24		11.19		2.83					
11:51 AM	21	12.35		12.63		12.96		13.23		11.19		2.84					
11:52 AM	22	12.33		12.62		12.94		13.21		11.18		2.85					
11:53 AM	23	12.31		12.60		12.93		13.20		11.18		2.87					
11:54 AM	24	12.29		12.59		12.92		13.18		11.18		2.87					
11:55 AM	25	12.27		12.57		12.90		13.17		11.18		2.88					
11:56 AM	26	12.25		12.56		12.89		13.15		11.17		2.87					
11:57 AM	27	12.22		12.55		12.88		13.14		11.17		2.89					
11:58 AM	28	12.19		12.53		12.87		13.13		11.17		2.89					
11:59 AM	29	12.17		12.52		12.86		13.12		11.17		2.89					
12:00 PM	30	12.16		12.51		12.85		13.12		11.17		2.89					
12:01 PM	31	12.14		12.50		12.84		13.12		11.16		2.88					
12:02 PM	32	12.12		12.49		12.83		13.11		11.16		2.88					
12:03 PM	33	12.11		12.48		12.82		13.10		11.16		2.87					
12:04 PM	34	12.10		12.46		12.81		13.09		11.16		2.87					
1205 PM	35	12.08		12.45		12.80		13.09		11.16		2.87					
12:06 PM	36	12.07		12.44		12.79		13.09		11.15		2.88					
12:07 PM	37	12.05		12.43		12.78		13.08		11.15		2.87					
12:08 PM	38	12.03		12.42		12.77		13.07		11.15		2.87					
12:09 PM	39	12.02		12.41		12.76		13.06		11.15		2.88					
12:10 PM	40	12.00		12.40		12.76		13.06		11.15		2.89					
12:11 PM	41	11.98		12.39		12.75		13.05		11.15		2.90					
12:12 PM	42	11.97		12.38		12.74		13.04		11.14		2.90					
12:13 PM	43	11.96		12.37		12.73		13.04		11.14		2.90					
12:14 PM	44	11.95		12.37		12.72		13.04		11.14		2.89					

Ground-Water Investigation in the Kaskaskia River Valley

Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: Decembers - 9, 1994

Date/ Hour	Elapsed Time (mitt)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure (in Hg)	+	Piez (ft)	Rate (gpm)	Remarks
12:15 PM	45	11.94		12.36		12.72		13.03		11.14		2.89					
12:16 PM	46	11.93		12.35		12.71		13.03		11.14		2.89					
12:17 PM	47	11.92		12.34		12.70		13.03		11.14		2.89					
12:18 PM	48	11.91		12.33		12.69		13.02		11.13		2.89					
12:19 PM	49	11.89		12.32		12.69		13.01		11.13		2.89					
12:20 PM	50	11.88		12.31		12.68		13.01		11.13		2.89					
12:21 PM	51	11.87		12.30		12.67		13.00		11.13		2.89					
12:22 PM	52	11.86		12.30		12.66		13.00		11.13		2.90					
12:23 PM	53	11.85		12.29		12.66		12.99		11.13		2.90					
12:24 PM	54	11.84		1258		12.65		12.98		11.12		2.91					
12:25 PM	55	11.83		12.27		12.64		12.97		11.12		2.90					
12:26 PM	56	11.81		12.27		12.64		12.97		11.12		2.91					
12:27 PM	57	11.80		12.26		12.63		12.96		11.12		2.91					
12:28 PM	58	11.79		12.25		12.63		12.96		11.12		2.91					
12:29 PM	59	11.78		12.25		12.62		12.95		11.12		2.91					
12:30 PM	60	11.77		12.24		12.61		12.95		11.12		2.90					
12:31 PM	61	11.75		12.23		12.61		12.95		11.12		2.90					
12:32 PM	62	11.75		12.23		12.60		12.95		11.11		2.89					
12:33 PM	63	11.74		12.22		12.59		12.95		11.11		2.89					
12:34 PM	64	11.74		12.21		12.59		12.94		11.11		2.90					
12:35 PM	65	11.73		12.20		12.58		12.94		11.11		2.90					
12:36 PM	66	11.72		12.20		12.58		12.93		11.11		2.90					
12:37 PM	67	11.71		12.19		12.57		12.93		11.11		2.92					
12:38 PM	68	11.70		12.19		12.57		12.92		11.11		2.92					
12:39 PM	69	11.69		12.18		12.56		12.92		11.10		2.92					
12:40 PM	70	11.68		12.17		12.55		12.91		11.10		2.92					
12:41 PM	71	11.68		12.17		12.55		12.91		11.10		2.92					
12:42 PM	72	11.68		12.16		12.55		12.92		11.10		2.90					
12:43 PM	73	11.68		12.15		12.54		12.92		11.10		2.90					
12:44 PM	74	11.68		12.15		12.53		12.91		11.10		2.91					
1245 PM	75	11.67		12.14		12.53		12.90		11.10		2.91					
1246 PM	76	11.66		12.13		12.52		12.89		11.09		2.92					
1247 PM	77	11.65		12.12		12.51		12.88		11.09		2.92					
1248 PM	78	11.63		12.12		12.51		12.87		11.09		2.93					
1249 PM	79	11.63		12.11		12.50		12.87		11.09		2.93					
1250 PM	80	11.62		12.11		12.50		12.87		11.09		2.93					
1251 PM	81	11.62		12.10		12.49		12.87		11.09		2.92					
1252 PM	82	11.61		12.10		12.49		12.87		11.09		2.92					
1253 PM	83	11.61		12.09		12.48		12.86		11.09		2.92					
1254 PM	84	11.60		12.08		12.48		12.86		11.08		2.92					
1255 PM	85	11.60		12.08		12.47		12.85		11.08		2.93					
1256 PM	86	11.59		12.07		12.47		12.85		11.08		2.93					
1257 PM	87	11.58		12.06		12.46		12.84		11.08		2.93					
1258 PM	88	11.58		12.06		12.46		12.84		11.08		2.93					
1259 PM	89	11.57		12.04		12.45		12.84		11.08		2.92					
01:00 PM	90	11.56		12.05		12.45		12.84		11.08		2.93					
01:01 PM	91	11.56		12.04		12.44		12.83		11.07		2.93					
01:02 PM	92	11.56		12.03		12.44		12.83		11.07		2.93					
01:03 PM	93	11.55		12.03		12.43		12.82		11.07		2.94					
01:04 PM	94	11.55		12.02		12.43		12.82		11.07		2.94					
01:05 PM	95	11.55		12.02		12.42		12.82		11.07		2.94					
01:06 PM	96	11.53		12.01		12.42		12.81		11.07		2.95					
01:07 PM	97	11.53		12.01		12.41		12.81		11.07		2.95					

Ground-Water Investigation in the Kaskaskia River Valley
Fayette Water Company: Test Well 2-94

4-Day Aquifer Test: December 5 - 9 , 1994

Date/ Hour	Elapsed Time (min)	Test Well 2-94 Depth to water (ft)	Test Well 2-94 Observed Drwdwn (ft)	Observation Well 3 Depth to water (ft)	Observation Well 3 Observed Drwdwn (ft)	Observation Well 4 Depth to water (ft)	Observation Well 4 Observed Drwdwn (ft)	Observation Well 5 Depth to water (ft)	Observation Well 5 Observed Drwdwn (ft)	Observation Well 6 Depth to water (ft)	Observation Well 6 Observed Drwdwn (ft)	River Head# (ft)	Approx Barometric Pressure+ (in Hg)	Piez (ft)	Rate (gpm)	Remarks
01:08 PM	98	11.52		12.00		12.41		12.81		11.07		2.95				
01:09 PM	99	11.52		12.00		12.40		12.80		11.06		2.95				
01:10 PM	100	11.50		12.00		12.40		12.79		11.06		2.96				
01:11 PM	101	11.50		11.99		12.40		12.79		11.06		2.96				
01:12 PM	102	11.49		11.98		12.39		12.79		11.06		2.97				
01:13 PM	103	11.49		11.98		12.39		12.78		11.06						
01:14 PM	104	11.48		11.98		12.38		12.78		11.06						
01:15 PM	105	11.48		11.97		12.38		12.78		11.06						
01:16 PM	106	11.47		11.97		12.37		12.77		11.06						
01:17 PM	107	11.47		11.96		12.37		12.77		11.06						
01:18 PM	108	11.47		11.96		12.37		12.77		11.06						
01:19 PM	109	11.47		11.95		12.36		12.77		11.06						
01:20 PM	110	11.46		11.95		12.36		12.77		11.05						
01:21 PM	111	11.46		11.94		12.35		12.76		11.05						End of Test

+Average of barometric pressures at Springfield and Vandalia
River head data from transmitter placed in river to record stage changes; actual elevation not determined
* Piezometer reading within 5 minutes of indicated clock time

Appendix K.

Kaskaskia River Stage Data, July 12-14 and December 1-9, 1994

Barometric Pressure Data, Springfield and Vandalia, December 1-9, 1994

Ground-Water Investigation in the Kaskaskia River Valley
River Stage and Barometric Pressure Data

Test Well 1-94 Aquifer Testing - July, 1994

Date/ Hour	Obs River Head (ft)	Obs Head + 480.27 (ft)	Average Cowden + Vandalia (ft)	Cowden Stage (ft)	Vandalia Stage (ft)	Average Barometric Pressure (ft Wtr)	St Louis Barometric Pressure (in Hg)	Sprgfld Barometric Pressure (in Hg)
07/12/94					459.27			
01:00 AM					459.27			
02:00 AM					459.27			
03:00 AM					459.27			
04:00 AM			482.26	505.24	459.27			
05:00 AM			482.26	505.24	459.27			
06:00 AM			482.26	505.24	459.28			
07:00 AM			482.26	505.24	459.28			
08:00 AM			482.26	505.24	459.28			
09:00 AM			482.27	505.24	459.29			
10:00 AM			482.27	505.24	459.29			
11:00 AM			482.23	505.16	459.29			
12:00 PM			482.23	505.16	459.29			
01:00 PM			482.22	505.15	459.29			
02:00 PM			482.22	505.15	459.29			
03:00 PM			482.21	505.13	459.29			
04:00 PM			482.20	505.12	459.29			
05:00 PM			482.20	505.11	459.28			
06:00 PM			482.19	505.11	459.26			
07:00 PM			482.19	505.11	459.27			
08:00 PM			482.15	505.04	459.26			
09:00 PM			482.15	505.04	459.25			
10:00 PM			482.15	505.04	459.25			
11:00 PM			482.15	505.04	459.25			
07/13/94				-	-			
12:00 AM					459.25			
01:00 AM					459.25			
02:00 AM					459.25			
03:00 AM					459.25			
04:00 AM			482.14	505.04	459.24			
05:00 AM			482.14	505.04	459.24			
06:00 AM			482.14	505.04	459.24			
07:00 AM			482.14	505.04	459.23			
08:00 AM			482.14	505.04	459.23			
09:00 AM			482.14	505.04	459.24			
10:00 AM			482.15	505.04	459.25			
11:00 AM			482.15	505.04	459.25			
12:00 PM			482.14	505.04	459.25			
01:00 PM			482.14	505.04	459.24			
02:00 PM			482.16	505.04	459.28			
03:00 PM			482.16	505.04	459.27			
04:00 PM			482.16	505.04	459.27			
05:00 PM			482.15	505.02	459.27			
06:00 PM			482.14	505.02	459.27			
07:00 PM			482.14	505.02	459.25			
08:00 PM			482.14	505.02	459.25			
09:00 PM			482.14	505.02	459.25			
10:00 PM			482.14	505.02	459.25			
11:00 PM			482.14	505.02	459.25			
07/14/94				-	-			
12:00 AM			482.14	505.02	459.26			
01:00 AM			482.14	505.02	459.26			
02:00 AM					459.28			
03:00 AM					459.30			
04:00 AM			482.17	505.02	459.33			
05:00 AM			482.19	505.02	459.35			
06:00 AM			482.20	505.02	459.38			
07:00 AM			482.21	505.02	459.40			
08:00 AM			482.23	505.02	459.43			
09:00 AM			482.25	505.02	459.49			
10:00 AM			482.26	505.02	459.50			
11:00 AM			482.33	505.14	459.52			
12:00 PM			482.34	505.15	459.53			
01:00 PM			482.35	505.16	459.54			
02:00 PM			482.34	505.14	459.54			
03:00 PM			482.35	505.15	459.54			

Ground-Water Investigation in the Kaskaskia River Valley
River Stage and Barometric Pressure Data

Test Well 1-94 Aquifer Testing - July, 1994

Date/ Hour	Obs River Head (ft)	Obs Head + 48027 (ft)	Average Cowden + Vandalia (ft)	Cowden Stage (ft)	Vandalia Stage (ft)	Average Barometric Pressure (ft Wtr)	St Louis Barometric Pressure (in Hg)	Sprgfld Barometric Pressure (in Hg)
04:00 PM			482.34	505.14	459.54			
05:00 PM			482.33	505.13	459.53			
06:00 PM			482.32	505.11	459.53			
07:00 PM			482.29	505.07	459.51			
08:00 PM			482.29	505.07	459.50			
09:00 PM			482.26	505.03	459.49			
10:00 PM			482.25	505.03	459.48			
11:00 PM			482.25	505.03	459.47			
12:00 AM				505.03				

Test Well 2-94 Aquifer Testing - December, 1994

12/01/94								
05:00 PM	224	482.51	482.68	505.89	459.48	34.14	30.13	30.11
06:00 PM	228	482.55	482.68	505.90	459.46	34.13	30.15	30.10
07:00 PM	230	482.57	482.68	505.90	459.46	34.13	30.15	30.10
08:00 PM	234	482.61	482.69	505.91	459.46	34.13	30.15	30.10
09:00 PM	237	482.64	482.69	505.91	459.46	34.13	30.15	30.10
10:00 PM	2.40	482.67	482.69	505.91	459.48	34.13	30.14	30.10
11:00 PM	2.45	482.72	482.70	505.91	459.48	34.14	30.15	30.12
12/02/94								
12:00 AM	2.45	482.72	482.70	505.91	459.49	34.14	30.15	30.12
01:00 AM	2.47	482.74	482.71	505.91	45951	34.14	30.14	30.13
02:00 AM	250	482.77	482.72	505.91	45953	34.14	30.14	30.13
03:00 AM	2.51	482.78	482.73	505.91	45955	34.14	30.14	30.12
04:00 AM	2.53	482.80	482.75	505.91	45958	34.13	30.15	30.10
05:00 AM	254	482.81	482.76	505.91	459.60	34.12	30.13	30.10
06:00 AM	254	482.81	482.77	505.91	459.63	34.12	30.13	30.10
07:00 AM	*256*	482.83	482.78	505.91	459.65	34.12	30.13	30.10
08:00 AM	*254*	482.81	482.79	505.91	459.67	34.12	30.13	30.10
09:00 AM	2.56	482.83	482.81	505.91	459.71	34.13	30.14	30.11
10:00 AM	2.56	482.83	482.83	505.92	459.73	34.13	30.14	30.11
11:00 AM	2.57	482.84	482.84	505.92	459.76	34.11	30.12	30.09
12:00 PM	2.59	482.86	482.85	505.92	459.79	34.08	30.09	30.07
01:00 PM	2.62	482.89	482.86	505.93	459.80	34.04	30.06	30.03
02:00 PM	2.66	482.93	482.88	505.95	459.81	34.02	30.03	30.02
03:00 PM	2.64	482.91	482.88	505.93	459.84	34.00	30.01	30.01
04:00 PM	2.64	482.91	482.89	505.94	459.84	34.00	30.01	-0.99
05:00 PM	2.63	482.90	482.89	505.93	459.86	34.00	30.02	30.00
06:00 PM	2.63	482.90	482.89	505.92	459.87	34.00	30.01	30.00
07:00 PM	2.62	482.89	482.90	505.93	459.88	34.00	30.01	30.00
08:00 PM	2.62	482.89	482.90	505.92	459.88	33.98	30.01	29.98
09:00 PM	2.62	482.89	482.91	505.93	459.89	33.98	30.00	29.98
10:00 PM	2.63	482.90	482.91	505.92	459.90	33.98	29.99	30.00
11:00 PM	2.62	482.89	482.91	505.92	459.90	33.99	30.00	30.00
12/03/94								
12:00 AM	2.62	482.89	482.91	505.92	459.91	33.99	30.00	30.00
01:00 AM	2.63	482.90	482.92	505.92	459.91	34.00	30.01	30.00
02:00 AM	2.63	482.90	482.92	505.92	459.91	34.00	30.01	30.00
03:00 AM	2.63	482.90	482.92	505.92	459.91	34.00	30.02	30.00
04:00 AM	2.62	482.89	482.92	505.92	459.91	34.00	30.02	30.00
05:00 AM	2.62	482.89	482.92	505.92	459.91	34.01	30.02	30.01
06:00 AM	2.62	482.89	482.92	505.92	459.91	34.02	30.04	30.01
07:00 AM	2.62	482.89	482.92	505.92	459.91	34.04	30.05	30.04
08:00 AM	2.62	482.89	482.91	505.91	459.92	34.04	30.05	30.04
09:00 AM	2.63	482.90	482.92	505.92	459.92	34.06	30.07	30.06
10:00 AM	2.61	482.88	482.92	505.92	459.92	34.07	30.08	30.06
11:00 AM	2.63	482.90	482.92	505.92	459.92	34.05	30.06	30.04
12:00 PM	2.66	482.93	482.92	505.92	459.92	34.03	30.04	30.03
01:00 PM	2.63	482.90	482.92	505.92	459.92	34.03	30.04	30.03
02:00 PM	2.64	482.91	482.92	505.92	459.92	34.02	30.03	30.03
03:00 PM	2.64	482.91	482.92	505.92	459.92	34.03	30.04	30.03
04:00 PM	2.64	482.91	482.92	505.92	459.92	34.05	30.05	30.06
05:00 PM	2.64	482.91	482.92	505.92	459.92	34.06	30.05	30.07
06:00 PM	2.63	482.90	482.92	505.92	459.92	34.07	30.07	30.07
07:00 PM	2.63	482.90	482.92	505.92	459.92	34.09	30.08	30.09
08:00 PM	2.63	482.90	482.92	505.92	459.92	34.09	30.09	30.09

Ground-Water Investigation in the Kaskaskia River Valley
River Stage and Barometric Pressure Data

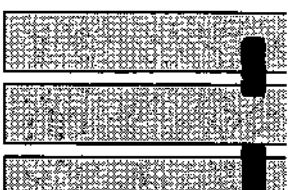
Test Well 1-94 Aquifer Testing - July, 1994

Date/ Hour	Obs River Head (ft)	Obs Head + 480.27 (ft)	Average Cowden + Vandalia (ft)	Cowden Stage (ft)	Vandalia Stage (ft)	Average Barometric Pressure (ft Wtr)	St Louis Barometric Pressure (in Hg)	Sprgfld Barometric Pressure (in Hg)
09:00 PM	2.65	482.92	482.92	505.91	459.92	34.10	30.09	30.10
10:00 PM	2.63	482.90	482.92	505.91	459.92	34.11	30.10	30.11
11:00 PM	2.64	482.91	482.92	505.91	459.92	34.11	30.11	30.11
12/04/94								
12:00 AM	2.65	482.92	482.91	505.91	459.92	34.11	30.10	30.12
01:00 AM	2.64	482.91	482.91	505.91	459.91	34.11	30.10	30.12
02:00 AM	2.64	482.91	482.91	505.91	459.90	34.11	30.09	30.12
03:00 AM	2.65	482.92	482.91	505.91	459.90	34.11	30.10	30.12
04:00 AM	2.64	482.91	482.91	505.91	459.90	34.11	30.10	30.12
05:00 AM	2.64	482.91	482.90	505.90	459.90	34.10	30.09	30.11
06:00 AM	2.63	482.90	482.90	505.90	459.90	34.11	30.10	30.11
07:00 AM	2.64	482.91	482.90	505.90	459.90	34.11	30.10	30.11
08:00 AM	2.63	482.90	482.90	505.90	459.90	34.11	30.10	30.12
09:00 AM	2.63	482.90	482.90	505.90	459.90	34.13	30.11	30.13
10:00 AM	2.64	482.91	482.90	505.90	459.90	34.13	30.12	30.12
11:00 AM	2.62	482.89	482.90	505.90	459.90	34.11	30.10	30.11
12:00 PM	2.66	482.93	482.91	505.91	459.90	34.08	30.07	30.09
01:00 PM	2.70	482.97	482.91	505.91	459.90	34.04	30.03	30.05
02:00 PM	2.68	482.95	482.91	505.91	459.90	34.01	30.01	30.03
03:00 PM	2.71	482.98	482.91	505.91	459.90	33.99	29.99	30.01
04:00 PM	2.67	482.94	482.91	505.91	459.90	33.98	29.98	30.01
05:00 PM	2.65	482.92	482.91	505.91	459.90	33.99	29.99	30.01
06:00 PM	2.66	482.93	482.90	505.90	459.90	34.00	29.99	30.02
07:00 PM	2.66	482.93	482.90	505.89	459.90	34.00	30.01	30.01
08:00 PM	2.66	482.93	482.90	505.89	459.90	33.99	29.99	30.01
09:00 PM	2.66	482.93	482.89	505.89	459.89	33.98	29.98	30.00
10:00 PM	2.67	482.94	482.89	505.88	459.89	33.96	29.98	29.97
11:00 PM	2.65	482.92	482.89	505.88	459.89	33.99	30.00	30.00
12/05/94								
12:00 AM	2.65	482.65	482.89	505.88	459.89	33.98	29.99	29.99
01:00 AM	2.66	482.66	482.89	505.88	459.89	33.96	29.97	29.97
02:00 AM	2.65	482.65	482.89	505.88	459.89	33.96	29.99	29.96
03:00 AM	2.65	482.65	482.88	505.88	459.89	33.95	29.98	29.95
04:00 AM	2.65	482.65	482.88	505.88	459.88	33.97	29.99	29.98
05:00 AM	2.65	482.65	482.88	505.88	459.88	33.97	29.99	29.97
06:00 AM	2.65	482.65	482.88	505.88	459.88	33.98	30.00	29.98
07:00 AM	2.64	482.64	482.88	505.88	459.88	34.00	30.02	30.00
08:00 AM	2.65	482.65	482.88	505.88	459.88	34.02	30.04	30.01
09:00 AM	2.64	482.64	482.88	505.88	459.88	34.04	30.06	30.03
10:00 AM	2.64	482.64	482.88	505.88	459.88	34.05	30.07	30.04
11:00 AM	2.65	482.65	482.89	505.89	459.88	34.08	30.09	30.07
12:00 PM	2.67	482.67	482.88	505.88	459.88	34.10	30.11	30.09
01:00 PM	2.63	482.63	482.89	505.89	459.88	34.11	30.12	30.10
02:00 PM	2.67	482.67	482.88	505.88	459.88	34.11	30.12	30.09
03:00 PM	2.65	482.65	482.88	505.88	459.87	34.13	30.14	30.11
04:00 PM	2.64	482.64	482.88	505.88	459.87	34.18	30.17	30.16
05:00 PM	2.63	482.63	482.88	505.88	459.87	34.17	30.17	30.15
06:00 PM	2.64	482.64	482.87	505.87	459.87	34.19	30.19	30.17
07:00 PM	2.63	482.63	482.87	505.88	459.86	34.21	30.20	30.19
08:00 PM	2.62	482.62	482.87	505.88	459.86	34.23	30.22	30.20
09:00 PM	2.62	482.62	482.87	505.88	459.86	34.24	30.23	30.21
10:00 PM	2.62	482.62	482.87	505.87	459.86	34.23	30.22	30.20
11:00 PM	2.62	482.62	482.87	505.87	459.86	34.23	30.21	30.22
12/06/94								
12:00 AM	2.61	482.61	482.87	505.87	459.86	34.21	30.19	30.19
01:00 AM	2.61	482.61	482.87	505.87	459.86	34.19	30.19	30.17
02:00 AM	2.62	482.62	482.86	505.87	459.85	34.21	30.21	30.18
03:00 AM	2.61	482.61	482.86	505.87	459.85	34.22	30.19	30.22
04:00 AM	2.62	482.62	482.86	505.86	459.85	34.22	30.21	30.20
05:00 AM	2.61	482.61	482.86	505.87	459.85	34.22	30.19	30.21
06:00 AM	2.60	482.60	482.86	505.86	459.85	34.22	30.19	30.22
07:00 AM	2.60	482.60	482.85	505.86	459.85	34.21	30.19	30.19
08:00 AM	2.61	482.61	482.85	505.86	459.84	34.21	30.18	30.20
09:00 AM	2.60	482.60	482.85	505.85	459.84	34.21	30.19	30.19
10:00 AM	2.59	482.59	482.85	505.86	459.84	34.21	30.19	30.19
11:00 AM	2.60	482.60	482.85	505.86	459.84	34.19	30.17	30.18
12:00 PM	2.59	482.59	482.85	505.86	459.84	34.13	30.10	30.15
01:00 PM	2.59	482.59	482.85	505.86	459.84	34.11	30.10	30.12
02:00 PM	2.59	482.59	482.85	505.86	459.84	34.07	30.06	30.09
03:00 PM	2.59	482.59	482.85	505.86	459.84	34.04	30.03	30.06

Ground-Water Investigation in the Kaskaskia River Valley
River Stage and Barometric Pressure Data

Test Well 1-94 Aquifer Testing - July, 1994

Date/ Hour	Obs River Head (ft)	Obs Head + 48027 (ft)	Average Cowden + Vandalia (ft)	Cowden Stage (ft)	Vandalia Stage (ft)	Average Barometric Pressure (ft Wtr)	St Louis Barometric Pressure (in Hg)	Sprgfld Barometric Pressure (in Hg)
04:00 PM	2.59	482.59	482.85	505.86	459.84	34.02	30.01	30.05
05:00 PM	2.59	482.59	482.85	505.86	459.84	33.98	29.98	30.01
06:00 PM	2.59	482.59	482.85	505.86	459.84	33.97	29.96	30.00
07:00 PM	2.59	482.59	482.85	50536	459.84	33.92	29.93	29.95
08:00 PM	2.59	482.59	482.85	505.86	459.85	33.82	29.81	29.89
09:00 PM	2.57	482.57	482.86	505.86	459.85	33.72	29.75	29.78
10:00 PM	2.59	482.59	482.86	505.86	459.86	33.76	29.79	29.80
11:00 PM	2.62	482.62	482.87	505.87	459.87	33.75	29.79	29.79
12/07/94								
12:00 AM	2.60	482.60	482.88	505.88	459.87	33.74	29.79	29.77
01:00 AM	2.62	482.62	482.88	505.88	459.88	33.74	29.78	29.77
02:00 AM	2.62	482.62	482.89	505.89	459.88	33.77	29.82	29.79
03:00 AM	2.62	482.62	482.89	505.89	459.88	33.77	29.84	29.77
04:00 AM	2.62	482.62	482.88	505.89	459.88	33.81	29.89	29.80
05:00 AM	2.64	482.64	482.88	505.89	459.88	33.88	29.95	29.86
06:00 AM	2.65	482.65	482.88	505.89	459.88	33.95	30.02	29.91
07:00 AM	2.63	482.63	482.88	505.89	459.87	34.02	30.07	29.98
08:00 AM	2.62	482.62	482.88	505.89	459.86	34.07	30.12	30.03
09:00 AM	2.63	482.63	482.87	505.88	459.86	34.15	30.17	30.12
10:00 AM	2.62	482.62	482.87	505.88	459.86	34.21	30.21	30.17
11:00 AM	2.61	482.61	482.88	505.89	459.86	34.26	30.25	30.22
12:00 PM	2.63	482.63	482.89	505.89	459.88	34.27	30.26	30.23
01:00 PM	2.61	482.61	482.89	505.89	459.88	34.28	30.26	30.26
02:00 PM	2.62	482.62	482.89	505.89	459.88	34.29	30.27	30.26
03:00 PM	2.63	482.63	482.88	505.88	459.89	34.29	30.28	30.25
04:00 PM	2.63	482.63	482.89	505.88	459.89	34.34	30.31	30.31
05:00 PM	2.63	482.63	482.89	505.88	459.90	34.38	30.34	30.34
06:00 PM	2.62	482.62	482.89	505.88	459.89	34.41	30.37	30.37
07:00 PM	2.62	482.62	482.88	505.88	459.88	34.41	30.36	30.39
08:00 PM	2.63	482.63	482.88	505.88	459.88	34.42	30.37	30.39
09:00 PM	2.62	482.62	482.88	505.88	459.88	34.41	30.35	30.39
10:00 PM	2.62	482.62	482.88	505.88	459.88	34.41	30.36	30.39
11:00 PM	2.63	482.63	482.88	505.88	459.88	34.40	30.35	30.38
12/08/94								
12:00 AM	2.60	482.60	482.88	505.88	459.88	34.40	30.35	30.37
01:00 AM	2.60	482.60	482.88	505.88	459.88	34.40	30.36	30.37
02:00 AM	2.62	482.62	482.88	505.88	459.88	34.43	30.37	30.40
03:00 AM	2.62	482.62	482.88	505.88	459.88	34.44	30.38	30.41
04:00 AM	2.61	482.61	482.88	505.88	459.88	34.42	30.37	30.39
05:00 AM	2.61	482.61	482.88	505.88	459.88	34.41	30.36	30.38
06:00 AM	2.61	482.61	482.88	505.88	459.88	34.39	30.33	30.38
07:00 AM	2.61	482.61	482.88	505.88	459.88	34.38	30.32	30.36
08:00 AM	2.60	482.60	482.89	505.89	459.88	34.38	30.33	30.35
09:00 AM	2.61	482.61	482.89	505.89	459.88	34.38	30.33	30.35
10:00 AM	2.61	482.61	482.89	505.89	459.88	34.38	30.33	30.35
11:00 AM	2.62	482.62	482.88	505.88	459.88	34.36	30.30	30.35
12:00 PM	2.60	482.60	482.88	505.87	459.88	34.29	30.23	30.30
01:00 PM	2.60	482.60	482.88	505.87	459.88	34.27	30.23	30.26
02:00 PM	2.61	482.61	482.88	505.87	459.88	34.23	30.19	30.23
03:00 PM	2.62	482.62	482.88	505.87	459.88	34.21	30.17	30.21
04:00 PM	2.62	482.62	482.88	505.87	459.88	34.21	30.18	30.20
05:00 PM	2.61	482.61	482.87	505.86	459.88	34.21	30.17	30.21
06:00 PM	2.61	482.61	482.87	505.86	459.88	34.21	30.17	30.21
07:00 PM	2.61	482.61	482.87	505.86	459.88	34.19	30.17	30.18
08:00 PM	2.61	482.61	482.88	505.87	459.88	34.18	30.16	30.18
09:00 PM	2.60	482.60	482.87	505.86	459.88	34.17	30.14	30.17
10:00 PM	2.60	482.60	482.88	505.87	459.88	34.14	30.12	30.15
11:00 PM	2.60	482.60	482.89	505.88	459.89	34.12	30.11	30.12
12/09/94								
12:00 AM	2.60	482.60	482.90	505.91	459.89			
01:00 AM	2.61	482.61	482.94	505.97	459.90			
02:00 AM	2.61	482.61	482.98	506.05	459.90			
03:00 AM	2.61	482.61	483.03	506.14	459.91			
04:00 AM	2.62	482.62	483.09	506.26	459.91			
05:00 AM	2.62	482.62	483.15	506.37	459.92			
06:00 AM	2.63	482.63	483.19	506.46	459.92			
07:00 AM	2.65	482.65	483.24	506.56	459.92			
08:00 AM	2.68	482.68	483.29	506.65	459.92			
09:00 AM	2.71	482.71	483.33	506.73	459.93			
10:00 AM	2.76	482.76	483.36	506.80	459.93			
11:00 AM	2.81	482.81	483.40	506.86	459.93			
12:00 PM	2.89	482.89	483.42	506.90	459.93			
01:00 PM	2.93	482.93	483.44	506.95	459.93			



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