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March 16, 1994

Mr. Joe Holonich
U.S. Nuclear Regulatory Commission
Mail Stop 5E-4
1 White Flint North
11555 Rockville Pike
Rockville, MD 20852

Dear Mr. Holonich:

Re: Correspondence to Wyoming Department of Environmental Quality - Land Quality Division ("WDEQ-LQD") regarding design of Mine Unit I monitor well network.

Enclosed please find four sets of copies of Energy Fuels' proposal to the WDEQ-LQD for the monitor well network, baseline sampling wells, and proposed multi-well pump test for Mine Unit I at the Reno Creek ISL Project. This information addresses the issues raised by WDEQ-LQD in its March 3, 1994 correspondence to Energy Fuels. In addition to the specific responses to the WDEQ-LQD, additional site information and data has also been provided to facilitate review.

Please call me if you have any questions.

Very truly yours,

Terry V. Wetz

Terry V. Wetz
Project Manager

TVW/tlk

Enclosure

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March 16, 1994

Mr. Glenn Mooney
Geologist
State of Wyoming
Department of Environmental Quality
Land Quality Division
2161 Coffeen Avenue
Sheridan, Wyoming 82801

Dear Mr. Mooney,

In response to the Wyoming Department of Environmental Quality - Land Quality Division's (WDEQ-LQD) correspondence of March 3, 1994, Energy Fuels is submitting a description of the planned monitor well network for Mine Unit I at the Reno Creek ISL Project. Enclosed are three geologic cross sections within the monitored area, a Type Log of the Reno Creek Project, plan map of the proposed monitor well network showing both well locations and the index for the geologic cross sections, and a potentiometric surface map based on regional baseline wells for the mineralized portion of the ore sandstone. A summary of the geologic setting, the monitor well completion method, the aquifer properties, the planned monitor well network, the layout for the proposed production authorization pump test are presented for WDEQ's review. Attached at the end of this document are responses to the WDEQ's March 3, 1994 comments regarding approval of the monitor well installation.

GEOLOGIC SETTING

The Wasatch Formation is the ore host at the Reno Creek site. The Wasatch Formation consists of brown to gray claystone, siltstone, carbonaceous shales interbedded with coal beds, and north-trending buff colored channel sands. Widths of the individual channels range from a few thousand feet up to several miles. The stratigraphy throughout the Mine Unit I area varies somewhat (as is typical of fluvial/lacustrine systems). The marker bed used for stratigraphic correlation at Reno Creek is the Felix Coal because it has a distinctive double-spike kick (upper and lower seams) on the gamma ray, self-potential, and resistance curves on the geophysical borehole logs. The local stratigraphy and the individual units within Mine Unit I are designated on the enclosed Type Log (Figure 9.3) of the Reno Creek area, and accompanying geologic cross-sections for the Mine Unit I monitor well network.

The top of the Ore Sand in Mine Unit I occurs at depths from approximately 200 to 280 feet (elev. 4900). The Ore Sand is a massive (150 to 200 feet thick) unit comprised of two sands (Upper and Lower Ore Sand) separated by 10 to 50 feet of siltstone and shale. The Upper Ore Sand ranges from 30 to 85 feet thick, while the Lower Ore Sand ranges from 60 to 120 feet thick. All mining presently planned within Mine Unit I will occur in the Lower Ore Sand. Due to the existance of the siltstone/shale unit between the Upper and Lower Ore Sands across Mine Unit I, monitoring for vertical excursions is planned to be in the Upper Ore Sand. The Ore Sand, which includes the Upper and Lower Ore Sands, is confined by Upper and Lower Aquitards composed of low permeability siltstone, shales, claystones and thin interbedded lignitic beds.

The Upper Aquitard facies in which the Felix Coal is a member, consists primarily of clays, shales, and silts. These low permeability sediments are present between the top of the Upper Ore Sand and the base of the lower seam of the Felix Coal; between the lower and upper seams of the Felix Coal; and between the top of the upper seam of the Felix Coal and the base of the Upper Aquifer.

The Lower Aquitard sequence consists of a massive transitional sequence of horizontal shales, clays, silts, carbonaceous laminations and thin, horizontal calcareous stringers. Core testing of the Lower Aquitard shows permeabilities decreasing to 1.5 E-7 cm/sec. A series of interbedded, discontinuous (lateral extension generally less than 400 feet), thin (less than 15 feet), lenticular sand stringers exists vertically throughout the Lower Aquitard horizon. Manifested in both drilling and borehole logging results, these sand lenses are finer grained and less permeable than the overlying Ore Sand. Because there are no distinct, continuous, correlatable sands below the Ore Sand, no underlying monitoring is planned for Reno Creek. Continuity of the Lower Aquitard is illustrated on the regional cross-sections contained in the Permit to Mine Amendment Application, Section 9.4.

The Upper Aquifer above the Upper Aquitard is a relatively well developed sand within a variable sequence of silts and shales ranging between 60 and 100 feet thick. Within Mine Unit I, the top of the Upper Aquifer is encountered at depths of 80 to 180 feet.

<u>WELL COMPLETION METHODS</u>

Three different well completion intervals will be utilized in the Mine Unit I monitor well network based on the specific geologic characteristics of Reno Creek. All wells will be piloted so that standard geophysical (gamma, SP, resistance) logs can be run to select casing points and underream intervals. All wells will have five inch (5") PVC casing cemented from the bottom of the casing string up to the surface. Open hole completions will be used throughout, as previous open hole completions have performed well in the sand units in the Reno Creek area. If warranted (based on individual hole structural integrity), screened liners will be installed to prevent collapsing of the hole. A Mechanical Integrity Test (MIT) log, which is a single point resistance survey, will be run on each completed well to ensure that a competent cement job has been achieved.

The three individual completion intervals are summarized as follows (location of the wells are shown on the accompanying map):

- MO Wells: Wells in the Upper Ore Sand above the Lower Ore Sand, designated as "MO" wells on the enclosed map, are open hole completions with casing set approximately 10 to 20 feet into the top of the Upper Ore Sand sequence. The lower 20 to 65 feet of the Upper Ore Sand is then underreamed to increase well bore diameter and to clean the well bore. These wells will be the overlying monitor wells for Mine Unit I. The spacing of the MO wells is equivalent to one (1) well per every three (3) acres of wellfield.

- MP Wells: Production zone baseline monitor wells, designated as "MP" wells, are open hole completions through the ore interval of the Lower Ore Sand. These wells are cased to the top of the ore interval and underreamed through the specific ore section. The spacing of the MP wells is equivalent to one (1) well per every three (3) acres of wellfield.

  Note: Wells MP-1 through MP-8 have already been piloted and cased to the appropriate intervals.

- M Wells: Perimeter "horizontal" monitor wells, designated as "M" wells, are underreamed, open hole completions through the entire Lower Ore Sand unit with casing set to the top of the Lower Ore Sand. The spacing framework of the M wells is outlined in the MONITOR WELL SPACING section of this document.

AQUIFER PROPERTIES

Table 10.3-1 presents the basic well information on Energy Fuels Nuclear, Inc. (EFNI) wells in and near the Reno Creek permit area. This table contains the well depth, depth to water, screened intervals, and static water level elevations. Some of these wells are completed in the Upper Aquifer and some in the Ore Sand.

Hydro-Engineering (HYDRO) has re-analyzed the previous Rocky Mountain Energy (RME) pump tests. In addition, HYDRO conducted short, single-well pump tests on 11 project wells in June and August, 1993. Straight-line analyses were utilized in evaluating these data with the application of Neuman type curves to adjust the straight-line coefficient for unconfined aquifer conditions. Both confined and unconfined conditions exist within the permit area.

Aquifer characteristics derived from the EFNI and RME pump tests are summarized in Table 10.3-3. The net aquifer thickness reported in Table 10.3-3 is the effective aquifer thickness, adjusted for clay and silt interbeds and also for the screened interval. The sand thickness from Table 10.3-1 is gross sand, which is inclusive of clay and silt interbeds and not adjusted for the screened interval. Ore Sand transmissivities ranged from 11.4 gal/day/ft (RI-7/EFNI) to 6490 gal/day/ft (RI-1/RME). The Ore Sand may occur as a coalesced, massive unit or two sands (Upper and Lower Ore Sand) separated by 10 to 50 feet of siltstone and shale. In either case, both intervals were screened. Thus, in wells RI-1 through RI-9, where an Upper and Lower Ore Sand are present, both are included in the screened interval and contribute to the observed data. The 11.4 transmissivity value for RI-7 is an outlier (the next lowest value is 753) and is not thought to be representative of the Ore Sand in this area. This well may not be properly connected with the Ore Sand. Mean Ore Sand transmissivities were calculated from the EFNI and RME data both separately and combined. These respective values are 1800, 1950, and 1920 gal/day/ft. Mean hydraulic conductivities for the Ore Sand are 1.8 ft/day or 0.52 darcy. The highest values for T and K are associated with the thicker portion of the aquifers. Storage coefficients or specific yields were calculated for tests in which observation wells were monitored (RME data). Values ranged from 1.3E-4 up to 0.11.

Additional data on regional aquifer properties is presented in Section 10.3.2, AQUIFER CHARACTERISTICS, of the Permit to Mine Amendment Application.

MONITOR WELL SPACING

Zone of Control:

The placement of monitoring wells in the Lower Ore Sand aquifer needs to be within the zone where the ground water flow is controlled by the operation of the mining unit. The bleed from the mining unit creates a zone around the mine where the head is lower than outside this zone. This reversal zone causes ground water in this area to flow to the mining unit and is called the "zone of control". The zone of control is the area of ground water reversal in the downgradient and two side gradient sides of the wellfield and also includes the upgradient side. The ground water flow direction at Mine Unit I is N67°E. Therefore, at this site, the upgradient side is to the southwest while the downgradient side is to the east and northeast. The bleed rate will only increase the gradient in the upgradient side toward the wellfield. Therefore, the flow in this side of the wellfield is controlled by the wellfield but also has the aid of the natural gradient. Beyond the zone of reversal, the ground water flow will continue downgradient. The two side gradient areas are also within the reversal zone because flow prior to the bleed flows parallel to the wellfield. The ground water flow upgradient of the wellfield is still toward the wellfield during operation, but the gradient has increased. The zone of control includes the three reversal sides and the upgradient side.

The Ore Sand aquifer is confined in Mine Unit I. The piezometric surface is 19 feet above the top of the Upper Ore Sand and 117 feet above the top of the Lower Ore Sand in this area. The Lower Ore Sand will be mined in Mine Unit I. The injection/ recovery well profile (Figure 10.5-4) demonstrates a maximum drawdown of 17 feet at the recovery well. Therefore, the aquifer will always be in confined conditions in this area.

Drawdown Estimates:

The appropriate ground water flow model for the Reno site is the Theis (1935), non-leaky confined aquifer model. The use of a partially penetrating well model is not necessary due to the length of time and relatively large distances where the drawdowns are needed.

The WELFLO program presented in Walton (1989) was used to compute drawdowns from the Theis equation. The program has the advantage that it computes drawdowns along grid lines and therefore several lines of drawdowns are developed with one execution.

Wellfield Simulation:

The total production from the recovery wells is slightly higher than the total injection rate. This difference is called the bleed rate and is planned to be between one and three percent (1-3%) of the total recovery rate for Mine Unit I. The bleed rate, not the recovery and injection rates, becomes the important rate with time. The zone of reversal was simulated with only the bleed rate for Mine Unit I. Figure 10.5-1 shows the outer limits (dashed line) of a wellfield that is being simulated by 29 bleed points that are distributed over the Mine Unit to simulate the areal distribution. Each bleed point is simulating the bleed rate of several five spot patterns. Bleed points are shown on Figure 10.5-1 as a dot. The average total bleed rate of one percent (1%) for the 29 locations is 0.69 gpm for each point for a total recovery rate for Mine Unit I of 2000 gpm. The total bleed rate of 20 gpm for this simulation is applied uniformly over the wellfield area but could be applied unevenly if the wellfield was planned to operated with a non-uniform bleed.

The drawdown calculations for the example consist of 29 pumping (bleed) sites with drawdowns simulated over a 31 by 26 grid. Table 10.5-1 presents the list of input parameters that are initially listed with the output from the WELFLO program. The output listing does not list the first three inputs: enter 1 for printer, enter 1 for non-leaky condition, and enter 1 for fully penetrating wells. Table 10.5-1 presents the remainder of the input data. Table 10.5-2 presents the listing of the simulated drawdowns from the program output for the one percent bleed rate. The wellfield bleed locations are presented in Table 10.5-1 for each of the 29 stresses. The drawdowns east of the center of the wellfield are presented in the number 16 J row from 19 through 24 I columns. Figure 10.5-1 shows the grid used to calculate the drawdown adjacent to Mine Unit I.

Average aquifer properties (transmissivity and storage coefficient) for the Reno pump tests in this area were used. Properties that are thought best representative of the area along the line of drawdowns used for the reversal determination should be used. The simulation is for an area within the permit area where aquifer transmissivities are in the intermediate range. A transmissivity of 1600 gal/day/ft and a storage coefficient of 0.00013 are thought to best represent the Ore Sand aquifer in this area. The storage coefficient was obtained from observation well RI-34 (RME test-Figure 10A-18) and is a typical value for the Powder River Basin.

Gradient Reversal:

The pre-mine hydraulic gradient in the Ore Sand aquifer is integrated with the drawdown calculation to determine the zone in which the bleed has caused the gradient to be toward the wellfield. This zone is where the gradient has been reversed on the downgradient sides of the wellfield. Monitoring in the Ore Sand aquifer is recommended within the zone of control where the bleed controls the flow in the aquifer. The zone of control includes the upgradient side of the wellfield because the ground water flow in this area moves to the wellfield.

A pre-mine gradient of 0.0045 ft/ft means that more than 0.45 feet of additional drawdown is needed in the next closest drawdown node (100 foot spacing) for reversal to exist along drawdown lines that are downgradient and parallel to the ground water flow direction. The east side of the Reno wellfield is 23 degrees off of the ground water flow direction. Therefore, the drawdown difference required for a reversal off the east side of the wellfield is at least 0.41 feet (Cos 23° x 0.45). The angle between the lines of drawdowns on the north side of the wellfield and the flow direction is 67 degrees. The drawdown change required for a reversal in this direction is, therefore, anything above 0.18 feet (0.45 x Cos 67°). A gradient reversal was also evaluated to the northeast between nodes (18,9: 19,8: 20,7: 21,6). These nodes are 141 feet apart due to being offset by 100 feet in both directions. The change in gradient over 141 feet is 0.63 feet. The gradient is 22 degrees off of this N 45° E line and therefore, a change of 0.58 feet between nodes is needed for reversal along this line.

Table 10.5-2 presents the drawdown results for the one percent bleed. Reversal is only established on the northern one of these three lines. Table 10.5-3 gives the drawdown for the two percent bleed simulation while Figure 10.5-2 presents the drawdown changes along these three lines. This shows that reversal extends out to column 24 along row 16 and beyond row 1 along column 15. It also extends to node (20,7) to the northeast which is approximately 600 feet from the wellfield.

Table 10.5-4 presents the drawdowns for the three percent bleed simulation. As expected, reversals extend further for the three percent bleed.

Recommended Spacing of Monitoring Ring:

Horizontal excursion monitoring wells are recommended to be placed within the area where the wellfield controls the ground water flow (zone of control). The spacing of the monitoring wells for Mine Unit I wellfield could be 600 feet in all directions of the wellfield and still be within the zone of control for the two percent (2%) bleed. A recommended spacing of 400 feet on all sides places the monitoring wells significantly inside the reversal zone. The spacing is close enough for early detection of excursions but well within the zone of control. A more detailed definition of aquifer properties in this area may show that a smaller bleed rate will be adequate for this Mining Unit if they are significantly different than those presently used.

The zone of reversal shows that horizontal containment is going to be much easier on the northwest side than the east, north, and northeast sides. Containment will also be even easier on the southwest side (upgradient) due to the aid of the natural gradient. Recommendations for spacing between monitoring wells are based on the areas most likely to have an excursion. Figure 10.5-3 shows the recommended spacing and the limits of the spacing on each side of the wellfield depending on the flow direction. A spacing between monitoring wells of 400 feet is recommended on the down-gradient side of the wellfield. Spacing on the side gradient sides of the wellfield, which has an angle of zero degrees, is recommended to be 600 feet. This spacing was selected as if this side gradient is slightly downgradient. Spacing between monitoring wells on the upgradient side of the wellfield is recommended to be 800 feet. This recommended spacing between monitoring wells is based on the fact that the upgradient side of the wellfield is much less likely to have an excursion as can be seen by the simulation of gradients.

Excursion Retrieval:

The two percent (2%) bleed wellfield simulated in section 10.5.1 was re-simulated at an increased bleed rate of 60 gpm (3%). The additional one percent increase in the bleed rate was simulated to occur in the five northeast nodes. Wells 22, 23, 24, 25, and 26 in Table 10.5-1 were the five bleed rates to be increased to 5.38 gpm for this simulation. Table 10.5-5 presents the drawdowns predicted from this simulation. A correction of 0.58 foot per 141 feet for the gradient is needed to obtain the change in head to the northeast. Therefore, the predicted gradients toward the wellfield after 60 days of increased rate is 0.0053 ft/ft for the three percent (3%) bleed rate. The average ground water movement rate back to the wellfield is estimated to be 0.106 ft/day. This movement rate will require a travel time of 94 days for the water to move ten feet back to the wellfield. The excursion is "controlled" at the beginning of the period because contaminated water is moving back toward the wellfield. The well on excursion status will most likely be off excursion prior to the end of the above stated period due to the hydrochemical nature of an excursion.

Additional data on regional aquifer properties is presented in Section 10.5, HYDROLOGIC MONITORING, of the Permit to Mine Amendment Application.

PUMP TEST DESIGN

Two pumping wells fully penetrating the Lower Ore Sand are proposed to be used for the multi-well pump test. The two wells (MP-9 and MP-10) are shown on the accompanying map and it is estimated that they will produce a yield of 50 gallons/minute each. Drawdowns were simulated at the end of two days of pumping at 50 gallons/minute for each pumping well at these locations for the Mine Unit I area. This simulation indicates a drawdown of at least six feet in all of the Lower Ore Sand monitoring (M) wells. Drawdowns in the Lower Ore Sand in areas where the Upper Ore Sand (MO) wells will be completed should be at least seven feet.

A three day pump test is proposed to be conducted on the Reno Creek Mine Unit I wells. Eight Upper Ore Sand (MO) wells are to be monitored over the mineralized area to determine if any connection exists between the Lower Ore Sand and Upper Ore Sand. Eight MP wells will be used adjacent the MO wells for monitoring drawdown in the Lower Ore Sand aquifer. The pumping wells, the eight MP wells, and the eight MO wells will be monitored to develop water levels for aquifer test analysis. Water levels will also be observed in the monitor ring (M) wells to define the continuity of drawdown over the area and confirm horizontal connection with the pumping interval. The M wells will be manually monitored less frequently with electric tapes. A barograph will be used to record the barometric pressures during the pump test so they can be used to correct for barometric pressure changes in the pump test analysis, if necessary.

The pump test will be analyzed using the semi-log and log-log plots of the drawdown data. The appropriate pump test theories will be used to analyze the pump test results. The Theis confined aquifer method is appropriate for this analysis.

SUMMARY

The planned monitor well network and multi-well pump tests are designed to provide Energy Fuels with the necessary information to address the requested data delineated in Section 15.11 of the Permit to Mine Amendment Application prior to submittal of request for wellfield authorization. We are eager to proceed with the monitor well network installation and multi-well pump test. We appreciate your prompt attention, and please do not hesitate to let us know how we can answer any questions or help speed the review process.

Very truly yours,

Terry V. Wetz (MBH)

Terry V. Wetz
Project Manager

TVW/tlk

Enclosures

cc: Mr. William J. Almas
Mr. Ramon Hall
Mr. Joe Holonich
Mr. Mark B. Mathisen
Mr. Wallace M. Mays
Mr. Rich A. Munson

TABLE 10.3-1. RENO CREEK BASIC WELL INFORMATION

WELL NUMBER	NORTHING	EASTING	GROUND ELEVATION (ft-msl)	DEPTH DRILLED (ft-lsd)	STICK UP ABOVE LSD (ft)	WELL DIAMETER (in)	MEASURED TOTAL DEPTH (ft-mp)	AQUIFER	TOP OF SAND ELEVATION (ft-msl)	BOTTOM OF SAND ELEVATION (ft-msl)	GROSS SAND THICKNESS (ft)	SCREENED INTERVAL (ft-lsd)	DEPTH TO WATER 6/93 (ft-mp)	STATIC WATER LEVEL ELEVATION (ft-msl)
RI-7	1088861	378118	5212.70	330.0	1.5	5	327.9	OS	4986	4874	112.0	190 - 330	249.64	4964.56
RI-12	1079463	369331	5325.20	460.0	0.5	5	--	OS	5013	4871	142.0	310 - 460	337.43	4988.27
RI-13	1088858	378035	5214.50	306.0	2.0	5	203.4 *	OS	4996	4897	99.0	206 - 306	--	--
RI-14	1084686	380986	5144.62	260.0	10.2	5	--	OS	4992	4899	93.0	152 - 245	--	--
RI-15U	1091190	377780	5268.35	245.0	0.8	5	244.4	UA	5057	5027	30.0	195 - 245	178.35	5090.80
RI-16	1091232	377802	5270.07	405.0	0.8	5	396.9	OS	4998	4876	122.0	315 - 395	--	--
RI-18	1092129	378098	5238.79	370.0	0.5	5	361.2	OS	5004	4877	127.0	280 - 363	293.14	4946.15
RI-21U	1099543	379038	5176.40	195.0	1.3	2	--	UA	5054	4981	73.0	137 - 195	105.34	5072.36
RI-22	1095715	379394	5215.72	380.0	1.5	2	400.3	OS	4981	4835	146.0	300 - 380	279.52	4937.70
RI-23U	1096338	373185	5169.74	208.0	1.7	2	--	UA	5039	4971	68.0	129 - 208	144.93	5026.51
RI-24U	1098019	376479	5125.42	146.0	0.8	5	138.4	UA	5011	4997	14.0	120 - 140	60.73	5065.49
RI-25U	1090965	366494	5073.03	116.0	1.7	2	113.1	UA	5047	4693	50.0	66 - 116	36.04	5038.69
RI-28	1094303	370512	5108.81	370.0	1.6	5	370.4	OS	4908	4743	165.0	213 - 370	141.58	4968.83
RI-30U	1094256	370476	5106.88	160.0	1.2	5	158.3	UA	5030	4948	82.0	79 - 158	80.57	5027.51
RI-32U	1092613	373191	5223.30	252.0	1.5	2	--	UA	5043	4974	69.0	182 - 250	181.45	5043.35
RI-33U	1098681	369197	5056.08	133.0	1.5	2	--	UA	5026	5113	86.5	59 - 133	40.88	5016.70
RI-34	1084273	370441	5101.20	360.0	0.8	5	347.7	OS	4910	4744	166.0	183 - 360	132.35	4969.65
RI-38U	1081926	368535	5272.81	228.0	1.4	5	--	UA	5113	5070	43.0	51 - 207	201.21	5073.00
RI-42	1091360	378900	5242.56	400.0	2.3	5	--	LOS	5142	5072	70.0	338 - 357	295.52	4949.34
RI-43	1094105	373754	5234.73	460.0	1.1	5	--	LOS	4870	4777	93.0	406 - 425	279.28	4956.55

NOTE:
* = BLOCKAGE AT THIS DEPTH
OS = ORE SAND
LOS = LOWER ORE SAND
UA = UPPER AQUIFER

ORE SAND WELLS ARE SCREENED IN BOTH UPPER AND LOWER ZONES, WHERE PRESENT.

Revised 2/94

TABLE 10.3-3. SUMMARY OF AQUIFER CHARACTERISTICS - Revised 2/94.

WELL NO.	NET AQUIFER THICKNESS (ft)	TRANSMISSIVITY LOG-LOG (gpd/ft)	SEMI-LOG (gpd/ft)	BEST VALUE	HYDRAULIC CONDUCTIVITY (ft/day)	(darcy)	S
RFNI TESTS							
RI-1	169	--	4780	4780	3.8	1.1	--
RI-2	121	--	1170	1170	1.3	0.37	--
RI-3	154	--	3720	3720	3.2	0.93	--
RI-4	124	--	1170	1170	1.3	0.37	--
RI-5	96	--	753	753	1.0	0.3	--
RI-6	67	--	812	812	1.6	0.46	--
RI-7	56	--	11.4	11.4	0.03	0.008	--
RI-9	120	--	2020	2020	2.3	0.65	--
RI-150	30	--	13.4	13.4	0.06	0.02	--
RI-15U(2)	30	--					
RI-240	13	--	1.8	1.8	0.02	0.005	--
RI-30U	80	--	1230	1230	2.1	0.67	--
RME TESTS							
OB-1 TEST	115	--	920	920	1.1	0.31	--
P-1	115	--	1030	1030	1.2	0.35	0.1
I-1	115	--	1680	1680	2.0	0.57	0.047
N-4	115	--	1680	1680	2.0	0.57	0.024
P-10 TEST	113	--	1900	1900	2.2	0.65	--
I-12	113	--	1810	1810	2.1	0.62	0.069
N-16	113	--	1770	1770	2.1	0.61	0.06
I-12 TEST	105	--	1310	1310	1.7	0.48	--
P-10	105	--	2020	2020	2.6	0.75	0.058
I-15	105	--	1810	1810	2.3	0.67	0.004
I-15 TEST	115	--	1510	1510	1.8	0.51	--
P-10	115	--	1190	1190	1.4	0.4	0.11
I-12	115	--	1840	1840	2.1	0.62	0.045
RI-5 TEST	96	--	864	864	0.79	0.23	--
RI-22	96	--	1520	1520	2.1	0.61	0.0026
RI-28 TEST	164	--	1550	1550	1.3	0.37	--
RI-34	164	--	1620	1620	1.3	0.38	1.3E-4
RI-1 (1st test)	169	--	6490	6490	5.1	1.5	--
RI-1 (2nd test)	169	--					--
RI-2 TEST	121	--	1410	1410	1.6	0.45	--
RI-3 (1st test)	154	--	3370	3370	2.9	0.86	--
RI-3 (2nd test)	154	--	3500	3500	3.0	0.88	--
RI-4 TEST	124	--	542	542	0.58	0.17	--
RI-5 TEST	96	--	1300	1300	1.8	0.52	--
RI-6 TEST	67	--	785	785	0.6	0.45	--
RI-7 TEST	56						
RI-8 TEST	--				--	--	--
RI-9 (1st test)	120	--	4910	4910	5.5	1.6	--
RI-9 (2nd test)	120	--	2920	2920	3.3	0.93	--
RI-28 TEST	164	--	1320	1320	1.1	0.31	--

TABLE 10.3-3a. COMPARISON OF ORE SAND AQUIFER CHARACTERISTICS DERIVED FROM EFNI (HYDRO) AND RME PUMP TESTS.

	TRANSMISSIVITY, GAL/DAY/FT		
WELL NO.	EFNI (HYDRO)	RME	AQUIFER TYPE
RI-1	4780	6490 (6080) 6000 (6190)	CONFINED
RI-2	1170	1410 (1170)	CONFINED
RI-3	3720	3370 (3430) 3500 (4400)	CONFINED
RI-4	1170 (880)	542 (561)	CONFINED
RI-5	753	1300 (1520)	UNCONFINED
RI-6	812	785 (826)	UNCONFINED
RI-9	2020	4910 (2920) 2560 (3010)	CONFINED

Note:

() = COMPUTED FROM RECOVERY DATA

ORE SAND = UPPER AND LOWER (SCREENED OVER BOTH INTERVALS)

Revised 2/94

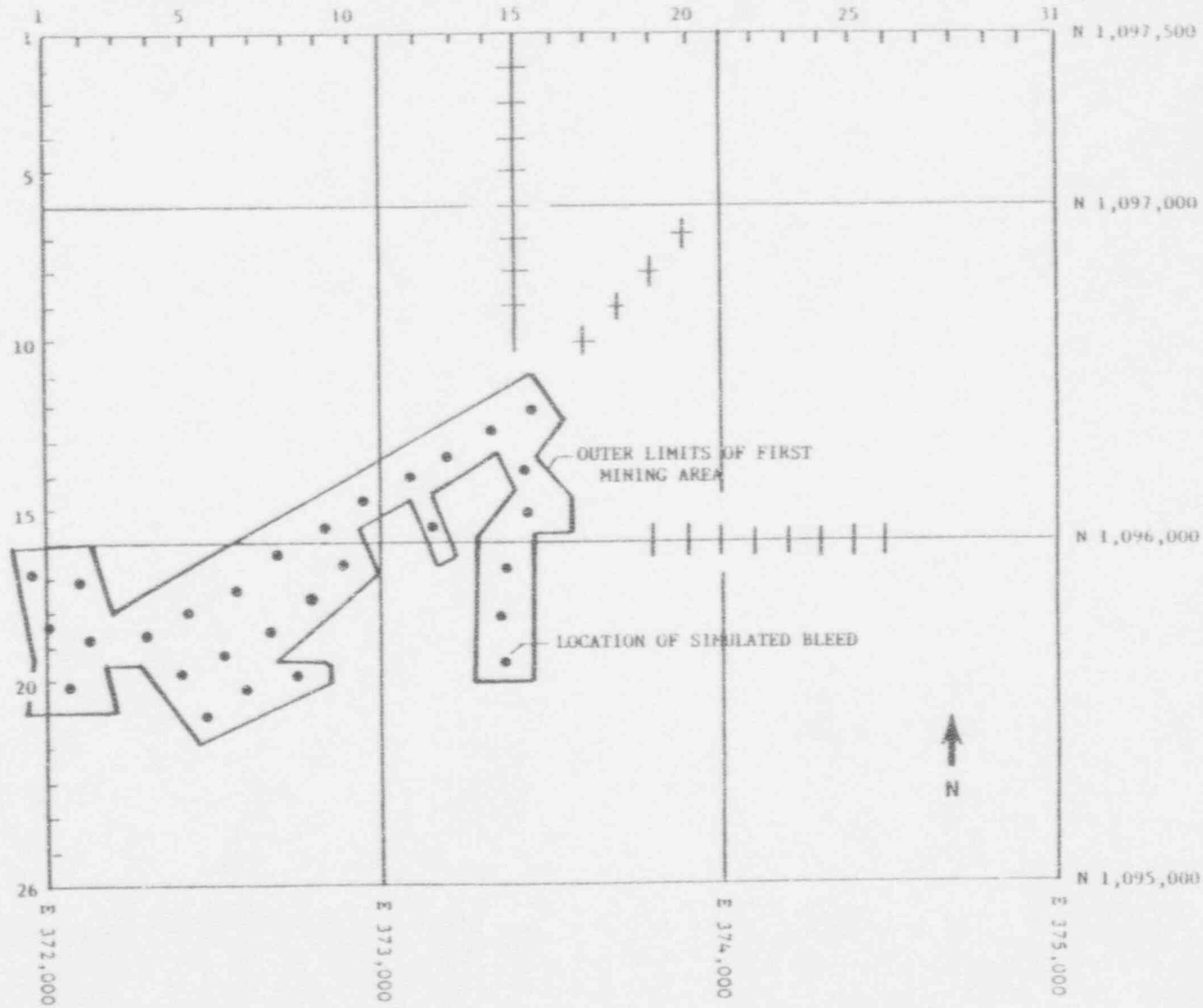

FIGURE 10.5-1. LOCATION OF WELL FIELD AND SIMULATED DRAWDOWN GRID.

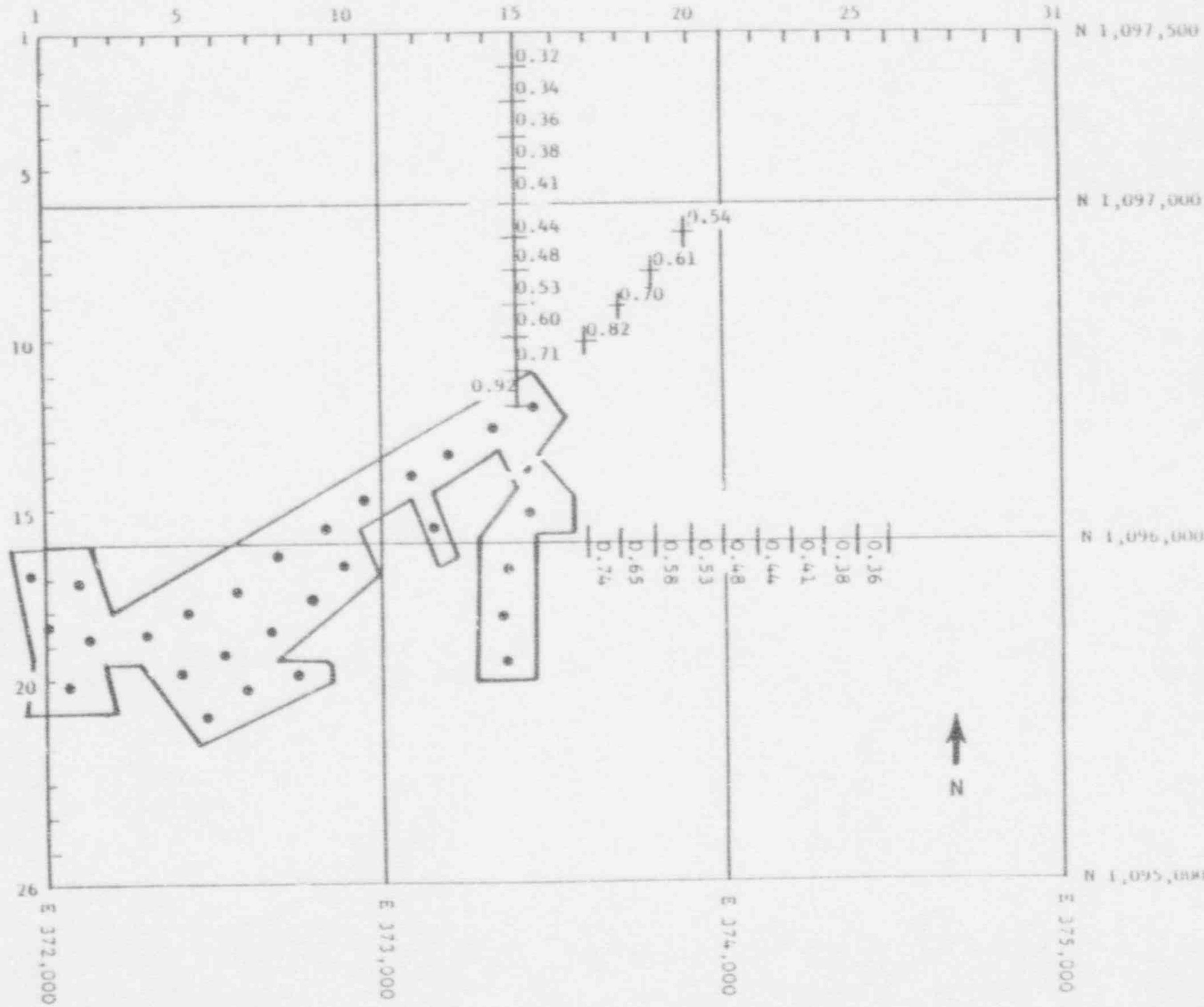

FIGURE 10.5-2. DRAWDOWN CHANGES ADJACENT TO .NING UNIT #1.

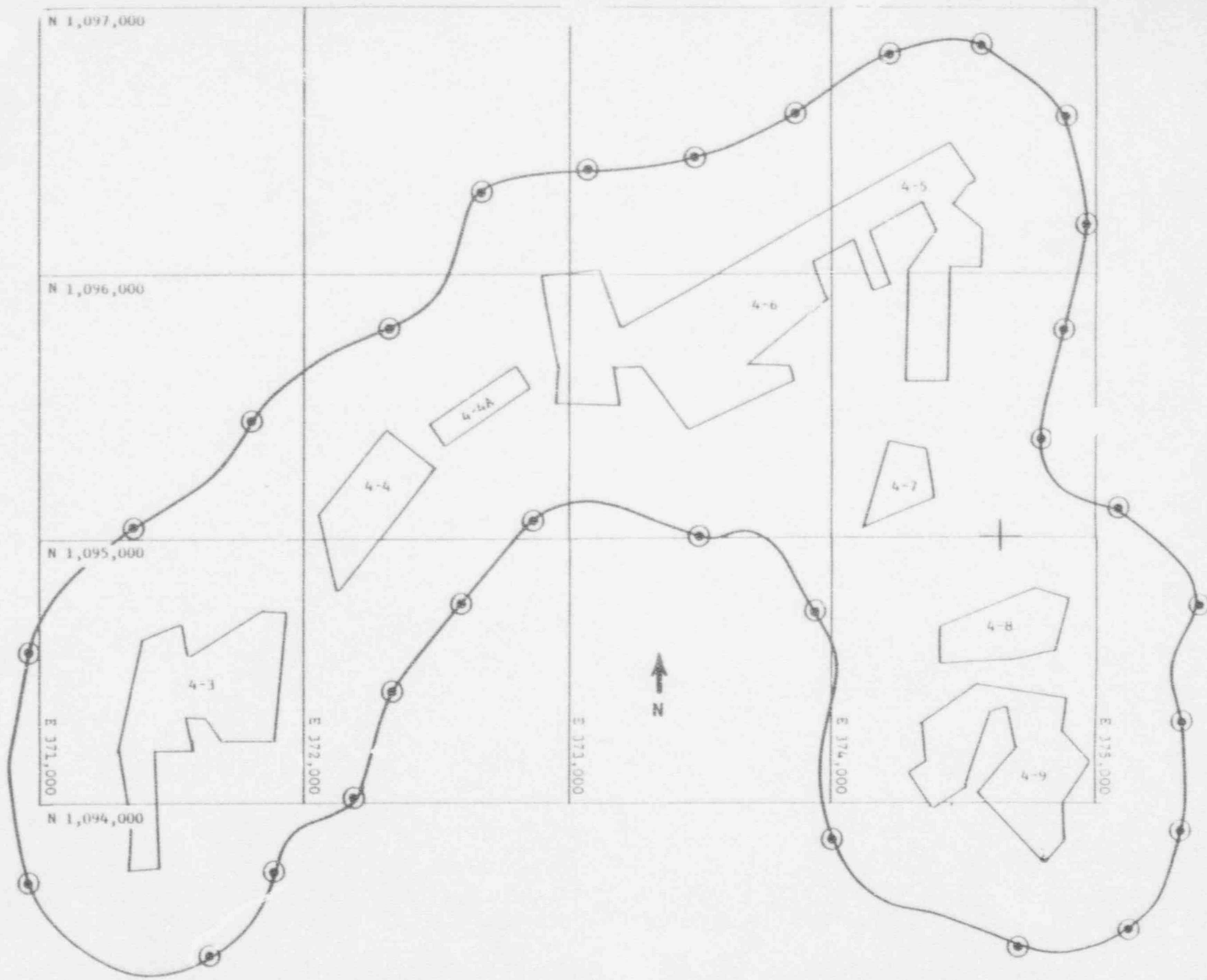

FIGURE 10.5-3. RECOMMENDED SPACING BE" "EN MONITORING WELLS FOR MINING UNIT #1.

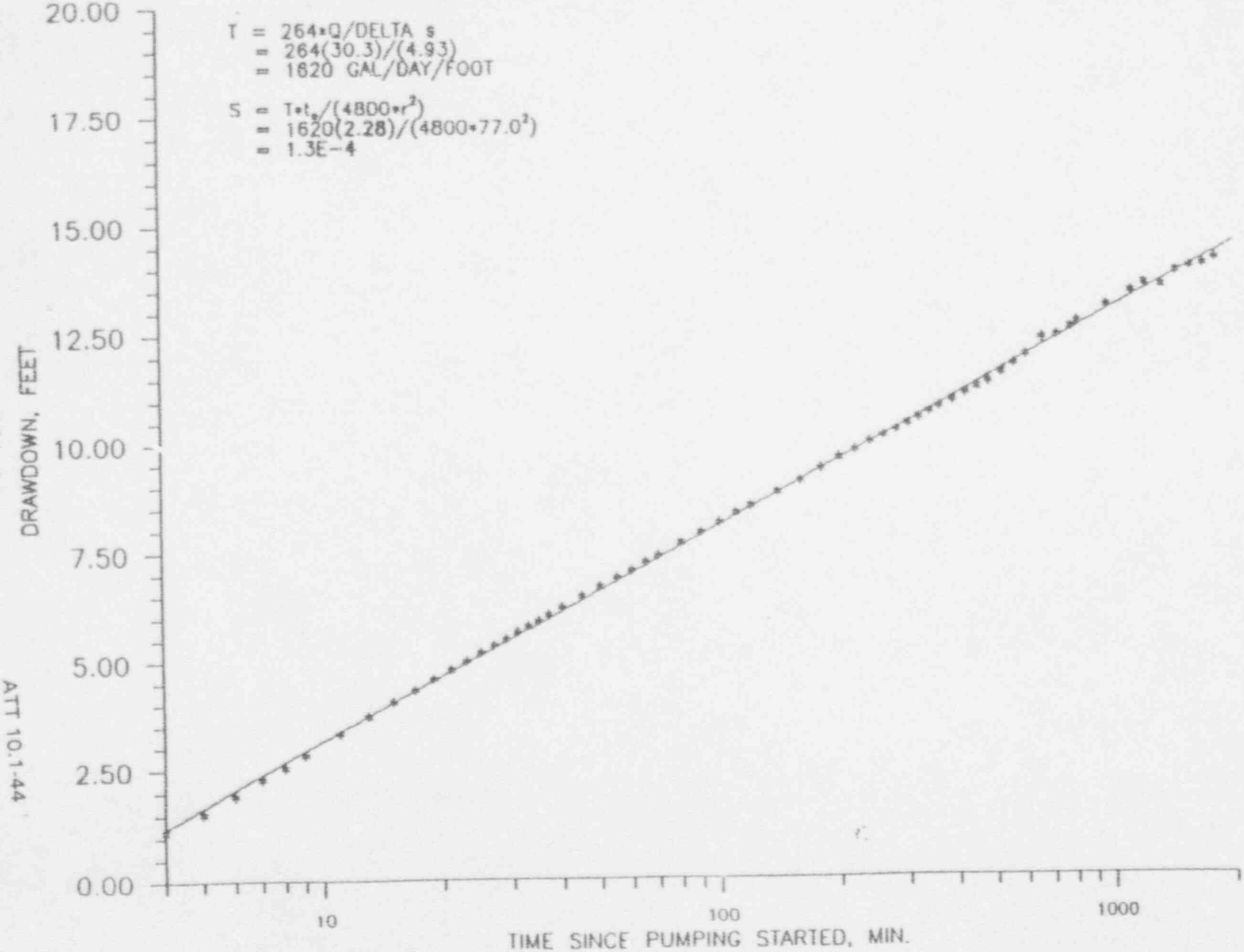

FIGURE 10A-18. DRAWDOWN IN OBSERVATION WELL RI-34.

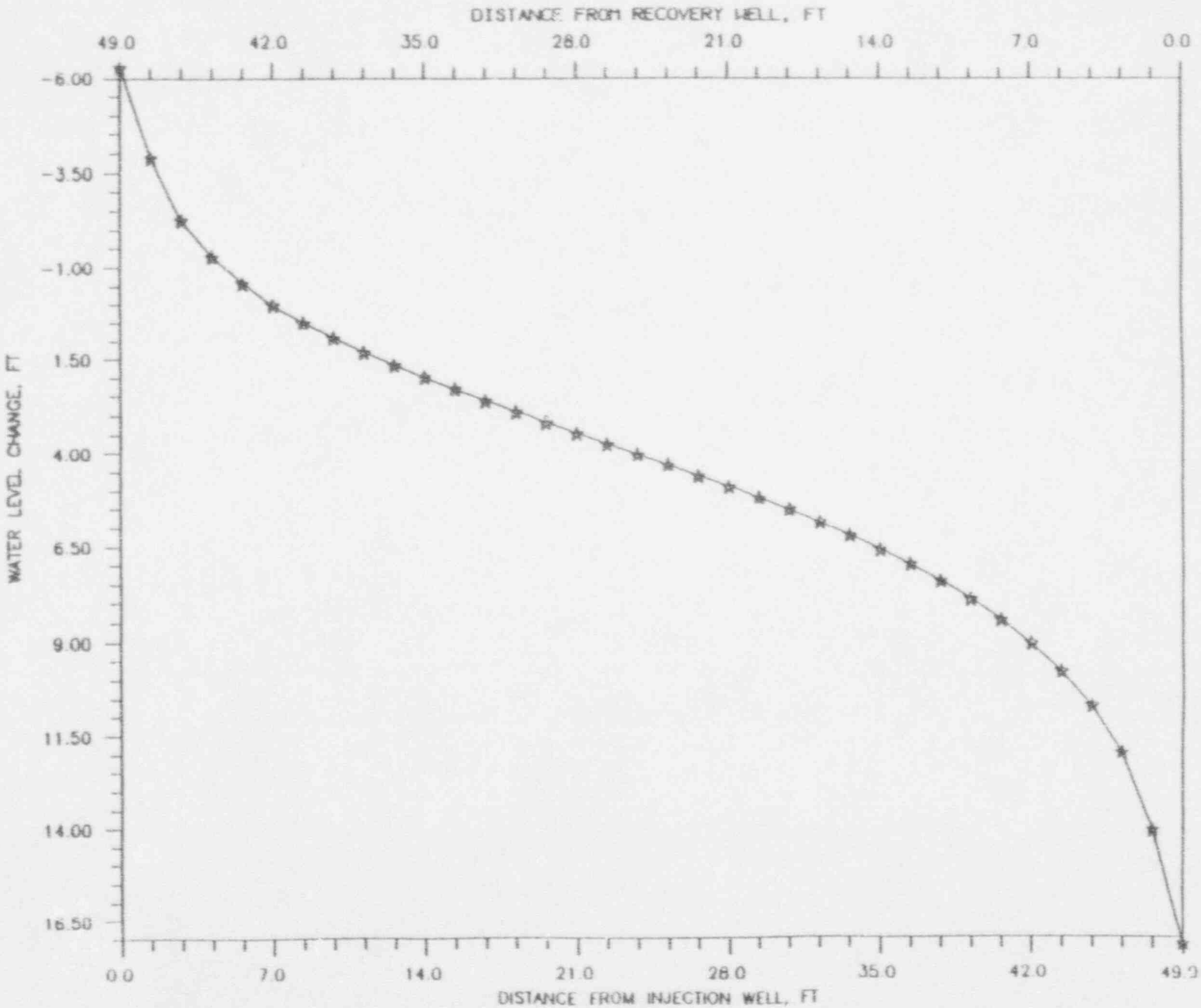

FIGURE 10.5-4. WATER LEVEL CHANGE ALONG A LINE BETWEEN INJECTION AND RECOVERY WELL

TABLE 10.5-1. INPUT PARAMETERS FOR THE RENO MINING UNIT #1 SIMULATION.

RENO CREEK MINE UNIT ONE SIMS. T=1600 AND S=0.00013 365 days QBLEED=20GPM

GENERAL DATA BASE:

Number of simulation periods for which drawdown
or recovery is to be calculated 1
Simulation period number: 1
Duration of simulation period in days: 365.000
Number of grid columns: 31
Number of grid rows: 25
Grid spacing in ft: 100.00
X-coordinate of upper-left grid node in ft: 0.00
Y-coordinate of upper-left grid node in ft: 0.00
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 1
X-coordinate of well in ft: -50.00
Y-coordinate of well in ft: 1580.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 2
X-coordinate of well in ft: 0.00
Y-coordinate of well in ft: 1740.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 3
X-coordinate of well in ft: 50.00
Y-coordinate of well in ft: 1810.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 4
X-coordinate of well in ft: 90.00
Y-coordinate of well in ft: 1610.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000

TABLE 10.5-1. INPUT PARAMETERS FOR THE RENO MINING UNIT #1 SIMULATION (continued).

Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 5
X-coordinate of well in ft: 110.00
Y-coordinate of well in ft: 1780.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 6
X-coordinate of well in ft: 280.00
Y-coordinate of well in ft: 1760.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 7
X-coordinate of well in ft: 400.00
Y-coordinate of well in ft: 1700.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 8
X-coordinate of well in ft: 380.00
Y-coordinate of well in ft: 1880.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 9
X-coordinate of well in ft: 460.00
Y-coordinate of well in ft: 2000.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1

TABLE 10.5-1. INPUT PARAMETERS FOR THE RENO MINING UNIT #1 SIMULATION (continued)

Number of production, injection, and image wells
active during simulation period: 29
Well number: 10
X-coordinate of well in ft: 550.00
Y-coordinate of well in ft: 1640.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 11
X-coordinate of well in ft: 520.00
Y-coordinate of well in ft: 1820.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 12
X-coordinate of well in ft: 580.00
Y-coordinate of well in ft: 1910.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 13
X-coordinate of well in ft: 650.00
Y-coordinate of well in ft: 1740.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 14
X-coordinate of well in ft: 680.00
Y-coordinate of well in ft: 1700.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29

TABLE 10.5-1. INPUT PARAMETERS FOR THE RENO MINING UNIT #1 SIMULATION (continued).

Well number= 15
X-coordinate of well in ft= 730.00
Y-coordinate of well in ft= 1880.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 16
X-coordinate of well in ft= 760.00
Y-coordinate of well in ft= 1660.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 17
X-coordinate of well in ft= 810.00
Y-coordinate of well in ft= 1460.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 18
X-coordinate of well in ft= 870.00
Y-coordinate of well in ft= 1570.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 19
X-coordinate of well in ft= 940.00
Y-coordinate of well in ft= 1370.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 20
X-coordinate of well in ft= 1070.00

TABLE 10.5-1. INPUT PARAMETERS FOR THE RENO MINING UNIT #1 SIMULATION (continued).

Y-coordinate of well in ft: 1300.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 21
X-coordinate of well in ft: 1140.00
Y-coordinate of well in ft: 1450.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 22
X-coordinate of well in ft: 1180.00
Y-coordinate of well in ft: 1250.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 23
X-coordinate of well in ft: 1320.00
Y-coordinate of well in ft: 1160.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 24
X-coordinate of well in ft: 1430.00
Y-coordinate of well in ft: 1110.00
Well discharge in gpm: 0.69
Duration of pump operation during simulation period
in days: 365.000
Well radius in ft: 0.50
Simulation period number: 1
Number of production, injection, and image wells
active during simulation period: 29
Well number: 25
X-coordinate of well in ft: 1410.00
Y-coordinate of well in ft: 1280.00
Well discharge in gpm: 0.69

TABLE 10.5-1. INPUT PARAMETERS FOR THE RENO MINING UNIT #1 SIMULATION (continued).

Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period: 29
Well number= 26
X-coordinate of well in ft= 1420.00
Y-coordinate of well in ft= 1420.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 27
X-coordinate of well in ft= 1360.00
Y-coordinate of well in ft= 1560.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 28
X-coordinate of well in ft= 1350.00
Y-coordinate of well in ft= 1710.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Simulation period number= 1
Number of production, injection, and image wells
active during simulation period= 29
Well number= 29
X-coordinate of well in ft= 1350.00
Y-coordinate of well in ft= 1850.00
Well discharge in gpm= 0.69
Duration of pump operation during simulation period
in days= 365.000
Well radius in ft= 0.50
Number of observation wells for which time-
drawdown tables are desired 0
Aquifer transmissivity in gpd/ft= 1600.00
Aquifer storativity as a decimal= 0.000130

TABLE 10.5-2. DRAWDOWN RESULTS FOR 1% BLEED RATE.

RENO CREEK MINE UNIT ONE SIMS. T=1600 AND S=0.00013 365 days QBLEED=18GPM

GENERAL DATA BASE:

Simulation period number= 1
Aquifer transmissivity in gpd/ft= 1600.00
Aquifer storativity as a decimal= 0.000130

NODAL COMPUTATION RESULTS:

SIMULATION PERIOD DURATION IN DAYS: 365.000

VALUES OF DRAWDOWN OR RECOVERY (FT) AT NODES:

J-ROW	I-COLUMN 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	8.50	8.64	8.70	8.74	8.78	8.82	8.84	8.86	8.87	8.87	8.86	8.84	8.82	8.78	8.74	8.68	8.62	8.56
2	8.72	8.79	8.85	8.90	8.94	8.98	9.01	9.03	9.04	9.04	9.03	9.02	8.99	8.95	8.90	8.84	8.77	8.70
3	8.87	8.94	9.00	9.06	9.11	9.15	9.19	9.21	9.22	9.23	9.22	9.20	9.16	9.12	9.07	9.00	8.93	8.85
4	9.02	9.09	9.17	9.23	9.29	9.33	9.37	9.40	9.41	9.42	9.41	9.39	9.35	9.31	9.25	9.17	9.09	9.00
5	9.17	9.26	9.34	9.41	9.47	9.52	9.57	9.60	9.62	9.62	9.62	9.59	9.56	9.50	9.44	9.36	9.26	9.16
6	9.33	9.43	9.51	9.59	9.66	9.73	9.77	9.81	9.84	9.84	9.84	9.82	9.77	9.72	9.64	9.55	9.44	9.33
7	9.50	9.60	9.70	9.79	9.87	9.94	9.99	10.04	10.07	10.08	10.08	10.05	10.01	9.95	9.86	9.76	9.64	9.50
8	9.67	9.79	9.90	9.99	10.08	10.16	10.23	10.28	10.31	10.33	10.33	10.31	10.27	10.20	10.10	9.98	9.84	9.69
9	9.85	9.98	10.10	10.21	10.31	10.40	10.47	10.53	10.58	10.61	10.61	10.60	10.55	10.48	10.37	10.22	10.05	9.87
10	10.04	10.18	10.31	10.43	10.55	10.65	10.73	10.80	10.86	10.90	10.92	10.91	10.87	10.79	10.66	10.49	10.20	10.07
11	10.23	10.39	10.54	10.67	10.79	10.91	11.01	11.09	11.16	11.21	11.24	11.25	11.22	11.15	11.02	10.79	10.52	10.25
12	10.44	10.61	10.77	10.92	11.06	11.18	11.29	11.39	11.48	11.55	11.60	11.62	11.61	11.38	11.40	11.11	10.74	10.42
13	10.65	10.84	11.02	11.18	11.33	11.47	11.59	11.71	11.82	11.91	11.98	12.03	12.02	11.93	11.70	11.31	10.91	10.56
14	10.88	11.09	11.28	11.45	11.61	11.76	11.90	12.04	12.17	12.29	12.36	12.42	12.26	12.05	11.93	11.46	11.03	10.66
15	11.13	11.36	11.55	11.73	11.91	12.07	12.22	12.37	12.54	12.61	12.56	12.50	12.33	12.12	11.98	11.53	11.09	10.71
16	11.42	11.66	11.84	12.02	12.21	12.39	12.54	12.67	12.82	12.74	12.58	12.40	12.32	12.14	11.92	11.50	11.09	10.72
17	11.72	12.10	12.12	12.31	12.52	12.74	12.09	12.94	12.93	12.79	12.52	12.35	12.20	12.00	11.85	11.43	11.04	10.69
18	11.86	12.14	12.31	12.55	13.22	12.94	13.11	13.22	12.90	12.61	12.38	12.19	12.06	11.90	11.73	11.32	10.75	10.62
19	11.81	12.23	12.30	12.50	12.70	13.01	13.03	12.95	12.68	12.41	12.18	12.00	11.86	11.77	11.54	11.16	10.83	10.52
20	11.47	11.80	12.04	12.32	12.65	12.75	12.85	12.69	12.42	12.15	11.94	11.76	11.62	11.51	11.29	10.97	10.67	10.40
21	11.17	11.45	11.70	11.95	12.22	12.38	12.31	12.20	12.03	11.84	11.66	11.50	11.35	11.19	10.99	10.75	10.50	10.26
22	10.90	11.14	11.36	11.57	11.75	11.85	11.84	11.77	11.65	11.52	11.37	11.22	11.07	10.91	10.73	10.53	10.32	10.11
23	10.64	10.85	11.04	11.20	11.33	11.41	11.42	11.30	11.30	11.20	11.00	10.95	10.81	10.66	10.50	10.32	10.14	9.95
24	10.40	10.50	10.73	10.87	10.97	11.03	11.05	11.03	10.90	10.90	10.00	10.69	10.56	10.43	10.20	10.12	9.96	9.79
25	10.17	10.32	10.45	10.57	10.65	10.70	10.72	10.71	10.67	10.61	10.53	10.43	10.32	10.20	10.07	9.93	9.79	9.63
26	9.95	10.00	10.19	10.29	10.36	10.41	10.43	10.42	10.39	10.34	10.20	10.19	10.10	9.99	9.87	9.75	9.62	9.48

J-ROW	I-COLUMN 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	8.48	8.41	8.33	8.24	8.16	8.07	7.98	7.89	7.80	7.72	7.63	7.54	7.45					
2	8.62	8.53	8.45	8.36	8.26	8.17	8.07	7.98	7.88	7.79	7.70	7.61	7.52					
3	8.76	8.67	8.57	8.47	8.37	8.27	8.17	8.06	7.96	7.87	7.77	7.67	7.58					
4	8.90	8.80	8.69	8.59	8.48	8.37	8.26	8.15	8.04	7.94	7.84	7.74	7.64					
5	9.05	8.94	8.82	8.70	8.58	8.47	8.35	8.23	8.12	8.01	7.90	7.80	7.69					
6	9.21	9.08	8.95	8.82	8.69	8.56	8.44	8.32	8.20	8.08	7.97	7.86	7.75					
7	9.37	9.22	9.08	8.94	8.80	8.66	8.52	8.39	8.27	8.14	8.03	7.91	7.80					
8	9.53	9.37	9.21	9.05	8.90	8.75	8.61	8.47	8.34	8.21	8.08	7.96	7.85					
9	9.69	9.51	9.33	9.16	8.99	8.84	8.68	8.54	8.40	8.26	8.14	8.01	7.89					
10	9.85	9.65	9.45	9.26	9.09	8.92	8.76	8.60	8.46	8.32	8.18	8.05	7.93					
11	10.01	9.78	9.56	9.36	9.17	8.99	8.82	8.66	8.51	8.36	8.22	8.09	7.97					
12	10.14	9.89	9.66	9.44	9.24	9.05	8.87	8.71	8.55	8.40	8.26	8.12	8.00					
13	10.26	9.98	9.74	9.51	9.30	9.10	8.92	8.75	8.59	8.43	8.29	8.15	8.02					
14	10.34	10.05	9.79	9.56	9.34	9.14	8.95	8.78	8.61	8.46	8.31	8.17	8.04					
15	10.39	10.09	9.83	9.59	9.37	9.16	8.97	8.80	8.63	8.47	8.33	8.18	8.05					
16	10.40	10.10	9.84	9.60	9.38	9.17	8.98	8.81	8.64	8.48	8.33	8.19	8.06					
17	10.37	10.09	9.83	9.59	9.37	9.17	8.98	8.80	8.64	8.48	8.33	8.19	8.06					
18	10.32	10.05	9.80	9.57	9.35	9.15	8.97	8.79	8.63	8.47	8.32	8.18	8.05					
19	10.24	9.98	9.74	9.52	9.32	9.12	8.94	8.77	8.61	8.45	8.31	8.17	8.04					
20	10.14	9.90	9.68	9.46	9.27	9.08	8.90	8.74	8.58	8.43	8.29	8.15	8.02					
21	10.02	9.80	9.59	9.39	9.21	9.03	8.86	8.70	8.54	8.40	8.26	8.12	8.00					
22	9.90	9.69	9.50	9.31	9.13	8.96	8.80	8.65	8.50	8.36	8.22	8.09	7.97					
23	9.76	9.58	9.40	9.22	9.06	8.90	8.74	8.59	8.45	8.31	8.18	8.06	7.93					
24	9.62	9.45	9.29	9.13	8.97	8.82	8.67	8.53	8.39	8.26	8.14	8.01	7.90					
25	9.48	9.33	9.18	9.03	8.88	8.74	8.60	8.46	8.33	8.21	8.09	7.97	7.85					
26	9.34	9.20	9.06	8.92	8.79	8.65	8.52	8.37	8.27	8.15	8.03	7.92	7.81					

TABLE 10.3-3. DRAWDOWN RESULTS FOR 1% BLEED RATE.

RENO CREEK MINE UNIT ONE SIMS, T=1600 AND S=0.00013 365 days QBLEED=40GPM

GENERAL DATA BASE:

Simulation period number= 1
Aquifer transmissivity in gpd/ft= 1600.00
Aquifer storativity as a decimal= 0.000130

NODAL COMPUTATION RESULTS:

SIMULATION PERIOD DURATION IN DAYS: 365.000

VALUES OF DRAWDOWN OR RECOVERY (FT) AT NODES:

J-ROW	I-COLUMN 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	17.17	17.28	17.39	17.49	17.57	17.64	17.69	17.72	17.74	17.74	17.73	17.67	17.64	17.56	17.47	17.37	17.25	17.11
2	17.44	17.57	17.69	17.80	17.89	17.96	18.02	18.06	18.08	18.09	18.07	18.03	17.97	17.89	17.79	17.68	17.54	17.40
3	17.73	17.88	18.00	18.12	18.22	18.31	18.37	18.42	18.45	18.45	18.43	18.39	18.33	18.24	18.13	18.00	17.85	17.69
4	18.03	18.19	18.33	18.46	18.57	18.67	18.74	18.80	18.83	18.84	18.82	18.78	18.71	18.61	18.49	18.35	18.18	18.00
5	18.34	18.51	18.67	18.82	18.94	19.05	19.13	19.20	19.24	19.25	19.23	19.19	19.11	19.01	18.87	18.71	18.53	18.32
6	18.67	18.85	19.03	19.19	19.33	19.45	19.55	19.62	19.67	19.69	19.68	19.63	19.55	19.43	19.28	19.10	18.89	18.66
7	19.00	19.21	19.40	19.58	19.74	19.87	19.99	20.08	20.13	20.16	20.15	20.11	20.02	19.89	19.72	19.51	19.27	19.01
8	19.35	19.58	19.79	19.99	20.17	20.32	20.45	20.56	20.63	20.67	20.67	20.63	20.54	20.40	20.20	19.96	19.68	19.37
9	19.70	19.96	20.20	20.42	20.62	20.79	20.94	21.07	21.16	21.21	21.23	21.19	21.10	20.95	20.73	20.44	20.11	19.75
10	20.08	20.36	20.62	20.87	21.09	21.29	21.46	21.61	21.72	21.80	21.83	21.81	21.73	21.58	21.33	20.98	20.57	20.13
11	20.47	20.78	21.07	21.34	21.59	21.81	22.01	22.18	22.32	22.43	22.49	22.49	22.44	22.30	22.04	21.58	21.03	20.51
12	20.87	21.22	21.54	21.84	22.11	22.36	22.59	22.79	22.96	23.10	23.20	23.24	23.21	23.16	22.96	22.22	21.48	20.85
13	21.30	21.68	22.03	22.36	22.66	22.93	23.19	23.42	23.63	23.82	23.96	24.06	24.03	23.85	23.39	22.62	21.82	21.13
14	21.75	22.18	22.55	22.90	23.22	23.53	23.81	24.08	24.33	24.57	24.73	24.84	24.51	24.10	23.87	22.91	22.06	21.32
15	22.26	22.71	23.11	23.47	23.81	24.14	24.44	24.74	25.07	25.22	25.13	24.99	24.66	24.24	23.97	23.06	22.18	21.43
16	22.85	23.32	23.69	24.05	24.42	24.78	25.08	25.34	25.65	25.40	25.16	24.96	24.64	24.28	23.84	23.01	22.18	21.44
17	23.44	24.20	24.24	24.61	25.05	25.40	25.78	25.89	25.86	25.58	25.04	24.69	24.40	24.17	23.70	22.85	22.08	21.38
18	23.71	24.27	24.62	25.11	26.45	25.89	26.22	26.44	25.81	25.22	24.76	24.39	24.11	23.95	23.47	22.63	21.98	21.24
19	23.61	24.46	24.61	25.16	25.55	26.02	26.05	25.90	25.37	24.81	24.36	24.00	23.73	23.54	23.08	22.33	21.65	21.04
20	22.95	23.59	24.07	24.63	25.30	25.49	25.69	25.38	24.83	24.30	23.88	23.53	23.24	23.01	22.58	21.94	21.35	20.88
21	22.34	22.90	23.40	23.91	24.45	24.77	24.63	24.40	24.06	23.68	23.73	23.00	22.69	22.30	21.90	21.50	21.00	20.51
22	21.80	22.28	22.72	23.14	23.58	23.70	23.60	23.54	23.31	23.03	22.74	22.45	22.15	21.83	21.47	21.06	20.64	20.21
23	21.29	21.70	22.07	22.40	22.67	22.82	22.84	22.76	22.60	22.40	22.16	21.90	21.63	21.33	21.00	20.65	20.27	19.90
24	20.80	21.15	21.47	21.74	21.94	22.07	22.10	22.06	21.95	21.79	21.60	21.37	21.13	20.86	20.56	20.25	19.92	19.58
25	20.34	20.64	20.91	21.13	21.30	21.41	21.45	21.43	21.35	21.22	21.06	20.87	20.65	20.41	20.15	19.87	19.57	19.27
26	19.90	20.16	20.39	20.58	20.72	20.82	20.86	20.85	20.79	20.69	20.55	20.39	20.19	19.98	19.75	19.50	19.23	18.96

J-ROW	I-COLUMN 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	16.97	16.81	16.65	16.49	16.31	16.14	15.96	15.78	15.61	15.43	15.25	15.08	14.91					
2	17.24	17.07	16.89	16.71	16.52	16.34	16.15	15.96	15.77	15.58	15.40	15.21	15.03					
3	17.52	17.33	17.14	16.94	16.74	16.53	16.33	16.13	15.93	15.73	15.54	15.34	15.16					
4	17.80	17.60	17.39	17.17	16.95	16.73	16.52	16.30	16.09	15.88	15.67	15.47	15.27					
5	18.10	17.88	17.64	17.40	17.17	16.93	16.70	16.47	16.24	16.02	15.80	15.59	15.39					
6	18.41	18.16	17.90	17.64	17.38	17.13	16.88	16.63	16.39	16.16	15.93	15.71	15.50					
7	18.73	18.44	18.16	17.87	17.59	17.32	17.05	16.79	16.53	16.29	16.05	15.82	15.60					
8	19.05	18.73	18.41	18.10	17.80	17.50	17.21	16.94	16.67	16.41	16.17	15.93	15.70					
9	19.38	19.02	18.66	18.32	17.99	17.67	17.37	17.08	16.80	16.53	16.27	16.02	15.78					
10	19.71	19.29	18.90	18.53	18.17	17.83	17.51	17.20	16.91	16.63	16.36	16.11	15.86					
11	20.01	19.55	19.12	18.72	18.34	17.98	17.64	17.32	17.01	16.72	16.45	16.18	15.93					
12	20.29	19.78	19.31	18.88	18.48	18.10	17.75	17.42	17.10	16.80	16.52	16.25	15.99					
13	20.52	19.97	19.47	19.01	18.59	18.20	17.84	17.50	17.17	16.87	16.58	16.30	16.04					
14	20.68	20.10	19.59	19.11	18.68	18.28	17.91	17.56	17.23	16.92	16.62	16.34	16.08					
15	20.77	20.19	19.66	19.18	18.74	18.33	17.95	17.59	17.26	16.95	16.65	16.37	16.10					
16	20.79	20.21	19.68	19.20	18.76	18.35	17.97	17.61	17.28	16.96	16.67	16.38	16.11					
17	20.75	20.18	19.66	19.18	18.75	18.34	17.96	17.61	17.28	16.96	16.66	16.38	16.11					
18	20.64	20.10	19.59	19.13	18.70	18.31	17.93	17.58	17.25	16.94	16.65	16.37	16.10					
19	20.48	19.97	19.49	19.05	18.63	18.24	17.88	17.54	17.21	16.91	16.62	16.34	16.08					
20	20.28	19.80	19.35	18.93	18.53	18.16	17.81	17.47	17.16	16.86	16.57	16.30	16.04					
21	20.05	19.61	19.19	18.79	18.41	18.05	17.71	17.39	17.09	16.79	16.52	16.25	15.99					
22	19.79	19.39	19.00	18.63	18.27	17.93	17.61	17.30	17.00	16.72	16.45	16.19	15.94					
23	19.52	19.15	18.79	18.45	18.11	17.79	17.48	17.18	16.90	16.63	16.36	16.11	15.87					
24	19.24	18.91	18.58	18.25	17.94	17.64	17.35	17.06	16.79	16.53	16.27	16.03	15.79					
25	18.96	18.66	18.35	18.05	17.76	17.48	17.20	16.93	16.67	16.42	16.17	15.94	15.71					
26	18.68	18.40	18.12	17.85	17.57	17.31	17.04	16.79	16.54	16.30	16.07	15.84	15.62					

TABLE 10.3-4. DRAWDOWN RESULTS FOR 1% BLEED RATE.

RENO CREEK MINE UNIT ONE SIMS. T=1600 AND S=0.00013 365 days QBLEED=60GPM

GENERAL DATA BASE:

Simulation period number= 1
Aquifer transmissivity in gpd/ft= 1600.00
Aquifer storativity as a decimal= 0.000130

NODAL COMPUTATION RESULTS:

SIMULATION PERIOD DURATION IN DAYS: 365.000

VALUES OF DRAWDOWN OR RECOVERY (FT) AT NODES:

J-ROW \ I-COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	25.75	25.93	26.09	26.23	26.35	26.45	26.53	26.59	26.61	26.62	26.59	26.53	26.45	26.34	26.21	26.05	25.87	25.67
2	26.17	26.36	26.54	[illegible]	26.83	26.94	27.03	27.09	27.13	27.13	27.10	27.05	26.96	26.84	26.69	26.51	26.32	26.09
3	26.60	26.81	27.01	27.10	27.33	27.46	27.56	27.63	27.67	27.68	27.65	27.59	27.49	27.36	27.20	27.00	26.78	26.54
4	27.05	27.20	27.50	27.69	27.86	28.00	28.11	28.20	28.24	28.26	28.23	28.17	28.06	27.92	27.74	27.52	27.27	27.00
5	27.51	27.77	28.01	28.22	28.41	28.57	28.70	28.80	28.86	28.87	28.85	28.78	28.67	28.51	28.31	28.07	27.79	27.48
6	28.00	[illegible]	28.54	28.78	28.99	29.18	29.32	29.44	29.51	29.53	29.52	29.45	29.32	29.15	28.92	28.65	28.33	27.99
7	28.50	28.81	29.10	29.37	29.61	29.81	29.98	30.11	30.20	30.24	30.23	30.16	30.03	29.84	29.58	29.27	28.91	28.51
8	29.02	29.36	29.69	29.98	30.25	30.48	30.68	30.83	30.94	31.00	31.00	30.94	30.80	30.59	30.30	29.94	29.52	29.06
9	29.54	[illegible]	30.39	30.63	30.93	31.19	31.42	31.60	31.74	31.82	31.84	31.79	31.66	31.43	31.10	30.67	30.16	29.62
10	[illegible]	30.54	30.94	31.30	31.64	31.94	32.20	32.41	32.58	32.70	32.75	32.72	32.60	32.37	31.99	31.47	30.85	30.20
11	[illegible]	31.17	31.61	32.01	32.38	32.72	33.02	33.28	33.49	33.64	33.73	33.74	33.66	33.45	33.05	32.37	31.55	30.76
12	31.31	31.83	32.31	32.76	33.17	33.54	33.88	34.18	34.44	34.65	34.80	34.86	34.82	34.73	34.43	33.32	32.21	31.27
13	31.95	32.52	33.05	33.54	33.98	34.40	34.78	35.13	35.45	35.72	35.94	36.00	36.05	35.78	35.09	33.94	32.73	31.69
14	32.63	33.26	33.83	34.35	34.84	35.29	35.71	36.12	36.50	36.86	37.09	37.26	36.77	36.14	35.00	34.37	33.09	31.98
15	33.38	34.07	34.66	35.20	35.72	36.21	36.66	37.11	37.61	37.84	37.69	37.49	36.98	36.35	35.95	34.58	33.27	32.14
16	34.27	34.98	35.53	36.07	36.63	37.17	37.62	38.01	38.47	38.22	37.74	37.45	36.96	36.42	35.75	34.51	33.27	32.17
17	35.15	36.29	36.36	36.92	37.57	38.22	38.66	38.83	38.79	38.37	37.56	37.04	36.61	36.25	35.55	34.20	33.12	32.07
18	35.57	36.41	36.93	37.66	39.67	38.83	39.33	39.66	38.71	37.04	37.13	36.58	36.17	35.93	35.20	33.95	32.85	31.86
19	35.42	36.69	36.91	37.74	38.33	39.03	39.00	38.85	38.05	37.22	36.54	36.00	35.59	35.32	34.62	33.49	32.40	31.57
20	34.47	35.39	36.11	36.95	37.95	38.24	38.54	38.06	37.25	36.44	35.82	35.29	34.86	34.52	33.87	32.90	32.02	31.19
21	33.51	34.35	35.10	35.86	36.67	37.15	36.94	36.60	36.09	35.52	34.99	34.50	34.04	33.56	32.96	32.24	31.50	30.77
22	32.69	33.42	34.09	34.71	35.26	35.55	35.52	35.30	34.96	34.55	34.11	33.67	33.22	32.74	32.20	31.59	30.95	30.32
23	31.93	32.55	33.11	33.61	34.00	34.22	34.26	34.14	33.91	33.60	33.24	32.85	32.44	31.99	31.50	30.97	30.41	29.85
24	31.20	31.73	32.20	32.60	32.91	33.10	33.15	33.09	32.93	32.69	32.39	32.06	31.69	31.28	30.84	30.37	29.88	29.37
25	30.51	30.96	31.36	31.70	31.95	32.11	32.17	32.14	32.02	31.83	31.59	31.30	30.97	30.61	30.22	29.80	29.36	28.90
26	29.85	30.24	30.58	30.87	31.09	31.23	31.29	31.27	31.10	31.03	30.83	30.50	30.29	29.97	29.62	29.24	28.85	28.44

J-ROW \ I-COLUMN	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	25.45	25.22	24.98	24.73	24.47	24.21	23.94	23.68	23.41	23.15	22.88	22.62	22.36					
2	25.86	25.60	25.34	25.07	24.79	24.50	24.22	23.94	23.65	23.37	23.10	22.82	22.55					
3	26.27	26.00	25.71	25.41	25.11	24.80	24.50	24.19	23.89	23.60	23.30	23.02	22.73					
4	26.71	26.40	26.08	25.76	25.43	25.10	24.77	24.45	24.13	23.82	23.51	23.21	22.91					
5	27.16	26.81	26.46	26.11	25.75	25.40	25.05	24.70	24.36	24.03	23.71	23.39	23.08					
6	27.62	27.24	26.85	26.46	26.07	25.69	25.31	24.95	24.59	24.24	23.90	23.57	23.25					
7	28.10	27.67	27.24	26.81	26.39	25.97	25.57	25.18	24.80	24.43	24.08	23.73	23.40					
8	28.58	28.10	27.62	27.15	26.69	26.25	25.82	25.41	25.01	24.62	24.25	23.89	23.54					
9	29.07	28.53	28.00	27.48	26.98	26.51	26.05	25.61	25.20	24.79	24.41	24.03	23.67					
10	29.56	28.94	28.35	27.79	27.26	26.75	26.27	25.81	25.37	24.95	24.55	24.16	23.79					
11	30.02	29.33	28.68	28.07	27.50	26.97	26.46	25.98	25.52	25.09	24.67	24.28	23.90					
12	30.43	29.67	28.97	28.32	27.72	27.15	26.62	26.12	25.65	25.20	24.78	24.37	23.99					
13	30.77	29.95	29.21	28.52	27.89	27.31	26.76	26.24	25.76	25.30	24.87	24.45	24.06					
14	31.02	30.16	29.38	28.67	28.02	27.42	26.86	26.33	25.84	25.37	24.93	24.51	24.11					
15	31.16	30.28	29.49	28.77	28.10	27.49	26.92	26.39	25.89	25.42	24.98	24.55	24.15					
16	31.19	30.31	29.52	28.80	28.14	27.52	26.95	26.42	25.92	25.44	25.00	24.57	24.17					
17	31.12	30.27	29.49	28.78	28.12	27.51	26.94	26.41	25.91	25.44	25.00	24.57	24.17					
18	30.96	30.14	29.39	28.70	28.06	27.46	26.90	26.38	25.88	25.41	24.97	24.55	24.15					
19	30.73	29.95	29.23	28.57	27.95	27.37	26.82	26.31	25.82	25.36	24.93	24.51	24.11					
20	30.42	29.70	29.03	28.39	27.80	27.24	26.71	26.21	25.74	25.29	24.86	24.45	24.06					
21	30.07	29.41	28.78	28.18	27.62	27.08	26.57	26.09	25.63	25.19	24.77	24.37	23.99					
22	29.69	29.08	28.50	27.94	27.40	26.89	26.41	25.94	25.50	25.07	24.67	24.28	23.90					
23	29.28	28.73	28.19	27.67	27.17	26.69	26.22	25.78	25.35	24.94	24.55	24.17	23.80					
24	28.87	28.36	27.87	27.38	26.91	26.46	26.02	25.59	25.18	24.79	24.41	24.04	23.69					
25	28.44	27.98	27.53	27.08	26.64	26.21	25.80	25.39	25.00	24.63	24.26	23.91	23.56					
26	28.02	27.60	27.18	26.77	26.36	25.96	25.57	[illegible]	24.81	24.45	24.10	23.76	23.43					

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