

**APPENDIX 17**  
**IRRIGATION WELLS TEST REPORT**



Geology

Hydrology

Remediation

Water Supply

January 27, 2011

Mr. Kevin Franke  
The LA Group  
40 Long Alley  
Saratoga Springs, NY 12866

Re: Irrigation Wells for Belleayre Resort

Dear Kevin,

Three wells are being considered for use as irrigation wells by the proposed Belleayre Resort. These wells are known as the Janis East Well, the Z Well, and the Pool Well (Figure 1). The following discussion presents information on the well construction and testing that has been performed on each of the wells.

### **Janis East Well**

The Janis East well was drilled in November 2000, is 698 ft deep, and has 40 ft of ungrouted, 6-inch diameter casing (Appendix M of Pumping Test Report). The well is located approximately 1,900 ft east-southeast of Well Q1 between Moran Rd and Gunnison Rd (Figure 1). It has a static water level that has exhibited natural, seasonal fluctuations of up to approximately 167 ft (38 ft to 205 ft depth to water) (Appendix T of Pumping Test Report).

The well was initially drilled as a test well for potential, potable water supply development for the project and yielded 30 gpm during a blow test with the drilling rig. However, the results of an 8-hr, step rate pumping test conducted on the well on September 3, 2008 indicate it is capable of sustaining 10 gpm. An earlier attempt at testing the well (simultaneously with the Z well) on August 27, 2008 was cut short after approximately three hours due to a faulty pump in the well (the Z well test continued on successfully). The 10 gpm yield, while considered too low for potable consideration by the project, is a suitable contribution to the irrigation water demand for the project. The lower yield at the Janis East well is consistent with the larger range of fluctuation in natural water levels observed in the well (167 ft) as compared to the higher yielding wells in the area. The K wells, Q1 and R1, for example, all have exhibited natural, seasonal water level fluctuations of less than seven feet (Pumping Test Report).

The Janis East Well step rate test was conducted at a time when the static water level in the well was at approximately 199.26 ft below the top of casing (TOC), which was near its seasonal recorded low of approximately 205 ft below TOC (9/24/2008). Average test rates were 11.7

gpm, 12 gpm, and 10.6 gpm. The water level data from the step rate test are displayed in Figure 2, which is a linear plot of the depth to water data. The data was collected by an automated data logger/pressure transducer at one-minute intervals.

The initial step of approximately 11.7 gpm was conducted for 252 minutes. The pumping rate was increased for the second step to an average of 12 gpm. This second step was terminated after 92 minutes when the water level data indicated that the well likely could not sustain 12 gpm on a long term basis. The rate was scaled back to approximately 10.6 gpm for a third and final step. The water level rose for approximately 43 minutes as it adjusted to the lower rate, and then began to follow a generally decreasing trend for another 103 minutes, at which time the test was ended and recovery began. Total drawdown in the Janis East well at the end of the third step was approximately 233.5 ft and the available drawdown was 267.2 ft. The well experienced 67% recovery within 36 minutes (the transducer was removed prior to 90% recovery). An indication that the well soon would have experienced full recovery lies in the fact that the shortened August 27 Janis East step test, which had a total drawdown of 346.4 ft (112.9 ft more than the September 3 test), had 100% recovery within 73 minutes.

A semi-log plot of data was used to make a 180-day projection of the water level data from the last 70 minutes of the 10.6 gpm step (Figure 6). The projection indicates that approximately 100 feet of available drawdown would remain in the well after 180 days; by comparison, the typical irrigation season for the resort will be only about 91 days (13 weeks).

Water levels were monitored at wells Z, Dignes, and Q1 during the Janis East step rate test (Figure 1). The water level at the Dignes Well was naturally declining at the time of the step test and no impact on the Dignes well attributable to the step test was observed (Table 31 of Pumping Test Report; Figure 3). The water level fluctuation at the Z well was similar to the natural, daily fluctuation observed during the week after the Janis East well test (Table 33 of Pumping Test Report; Figure 4). The water level at well Q1 declined 0.6 ft during the test, but continued to decline after the test (Figure 5; Table 26 of Pumping Test Report). Village Well 2 was online during much of this time and may have caused, or contributed to, the observed water level decline at well Q1 during the Janis East well step test. The influence of Village Well 2 on well Q1 was observed during the 6.5-hr pumping test on Village Well 2, which was conducted on November 14, 2008 and caused a 0.85 ft drawdown in well Q1 (Table 38 of Pumping Test Report).

Water quality of the well discharge was monitored in the field and included pH, temperature, specific conductivity and total dissolved solids (TDS). Water quality was monitored during the shortened August 27, 2008 test and during the September 3, 2008 test. The water quality field monitoring results are presented in Table 1. The TDS data from the two tests are displayed graphically in Figure 7 and show that the TDS (ppm) rose during the first few hours and then stabilized between 50 ppm and 60 ppm. No specific trends were observed in the pH and temperature data. The specific conductivity data follows the same pattern as the TDS data.

A water quality sample was collected from the well near the end of the step rate testing and was submitted for laboratory analysis of pH, TDS, alkalinity, iron, manganese, calcium, sulfate, chloride, sodium, corrosivity, and nitrate. The laboratory report with the results of analyses is included as Attachment 1. The water quality results serve as a baseline data set for the Janis East well.

## **Z Well**

The Z well was drilled in May 2007, is 348 ft deep, and has 20 ft of ungrouted, 8-inch diameter casing (Appendix M of Pumping Test Report). The well is located approximately 250 ft south of Gunnison Rd and the Dignes Well (Figure 1). It has a static water level that has exhibited natural, seasonal fluctuation of up to approximately 32 feet (262 ft to 294 ft depth to water) (Appendix T of Pumping Test Report).

The well was initially drilled as a test well for potential, potable water supply development for the project and yielded 25 gpm during a blow test conducted with the drill rig. The results of an 8-hr, step rate pumping test, however, conducted on August 27, 2008, indicate it is only capable of sustaining 13 gpm. As with the Janis East well, the yield, while considered too low for potable consideration by the project, is a suitable contribution to the irrigation water demand for the project. The lower yield at the Z well, like the Janis East well, is consistent with the larger range of fluctuation in natural water levels observed in the well (32 ft) as compared to the higher yielding wells in the area, which have seasonal water level fluctuations of less than seven feet.

The Z Well step rate test was conducted in consecutive steps averaging 18.3 gpm, 14.5 gpm, and 13.6 gpm. The first step was conducted at 18.3 gpm, which is less than the well yield of 25 gpm reported on the driller's log. Subsequent steps were to be conducted at successively higher pumping rates; however, the initial step was terminated after 80 minutes when the water level data indicated that the well likely could not sustain this rate on a long term basis. The rate was scaled back to approximately 14.5 gpm for the second step, which ran for about 90 minutes until the water level data again indicated that the rate likely could not be sustained long term. The final step, conducted at an average of 13.6 gpm, continued for over five hours. The water level data from the step rate test are displayed in Figure 8, which is a linear plot of the depth to water data. The data was collected manually with an electronic water level meter. Total drawdown in the Z well at the end of the third step was approximately 165.8 ft and the available drawdown was 95.6 ft. The Z well achieved 90% recovery approximately 2 hours after pumping stopped.

A semi-log plot of the water level data from the Z well step test is presented as Figure 9. A best fit line of the water level data from the final step was extrapolated and used to project drawdown at the well as a result of pumping the well continuously for 180 days at 13.6 gpm. The projection indicates that approximately 45 ft of available drawdown would remain in the well after 180 days; by comparison, the typical irrigation season for the resort will be only about 91 days (13 weeks).

Water levels monitored at the Dignes and Q1 wells during the Z well step rate test indicate the test had little, or no, impact on these wells. The Dignes well was experiencing a natural water level decline at the time of the Z Well test (Figure 3). The amount of water level impact on the Dignes Well potentially due to the Z well step testing was approximately 1.8 ft. The water level at well Q1 declined 1.3 ft during the test (Table 26 of Pumping Test Report; Figure 5). Village Well 2 was online during much of the Z Well step test and likely contributed to some of the observed water level decline at well Q1 during the Z well step test. The Janis East well was pumped simultaneously during the first few hours of the Z well step test; hence, the impact on the Janis East well due to pumping of the Z well could not be determined. The impact on the Janis East well due to pumping at the Z well is expected to be minimal because pumping the Janis East well on September 3, 2008 had little or no impact on the Z well.

Water quality of the well discharge was monitored in the field and included pH, temperature, specific conductivity and total dissolved solids (TDS). The water quality field monitoring results are presented in Table 2. The TDS data from the test is displayed graphically in Figure 10 and show that the TDS (ppm) began to stabilize between 180 and 200 ppm. No specific trends were observed in the pH and temperature data. The specific conductivity data follows the same pattern as the TDS data.

A water quality sample was collected from the well near the end of the step rate testing and was submitted for laboratory analysis of the same list of parameters as was sampled for at the Janis East well. The laboratory report with the results of analyses is included as Attachment 2. The water quality results serve as a baseline data set for the Janis East well.

### **Wildacres Pool Well**

The Wildacres Pool Well (Pool Well), which was drilled in October 1999, is 498 ft deep with 50 feet of ungrouted, 6-inch diameter steel casing. The driller's log for the Pool Well is included as Attachment 3. Water level data collected in the fall of 2001 and the fall of 2004 indicate that the Pool Well has exhibited a water level range of approximately 28 feet (84.4 ft to 112 ft depth to water). A blow test, which was conducted with the drill rig at the end of drilling, indicated an estimated yield of approximately 25 gpm. The well is located approximately 300 ft downhill, and north, from the Marlowe mansion (Figure 1).

A step rate pumping test was performed on the Wildacres Pool Well on October 29, 2001 by Titan and Crossroads personnel. Alpha provided remote guidance during the test via telephone. The rates tested were 10 gpm, 15 gpm and 20 gpm, with each step scheduled for 100 minutes. The manual water level data collected during the test is presented graphically as a linear plot in Figure 11. The Pool Well pumping test was conducted during near-drought conditions, as evidenced by the facts that the NYSDEC issued a drought watch for Delaware and Ulster County a week after the test, and the combined storage in the New York City reservoir system had already dropped into the drought watch zone (Attachment 4). Water levels were also monitored at the Marlowe mansion well, which is also known as the Wildacres #1 Well. That well is

Mr. Kevin Franke  
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located adjacent to the mansion (Figure 1) and the depth to water there was measured at the beginning, middle and end of the Pool Well pumping test.

The 20 gpm step was terminated approximately one hour into the step due to excessive drawdown. The pump was at 483 ft and the water level had dropped to 463 ft during the 20 gpm step. The 20 gpm step was ended and a yield test was then conducted to determine the pumping rate necessary to achieve a stabilized water level. After approximately 10 minutes of pumping rate adjustment, the rate was kept between 12.5 gpm and 13 gpm for approximately 90 minutes. A relatively stable water level was maintained at approximately 440 feet (below TOC) while pumping at this rate (Figure 11). The water levels rose approximately eight feet during the last half hour of the yield test, indicating that the rate of inflow to the well was slightly greater than the pumping rate. The test demonstrated that the yield of the Pool Well is approximately 13 gpm. The pump was then shut down and the water level recovery was monitored. No impact to the Wildacres #1 Well was observed during the Pool Well testing and the depth to water in Wildacres #1 remained unchanged at 166 ft below the TOC.

The water level recovery data also is consistent with the 13 gpm estimated well yield. The water level rose in the well, after pump shut off, at a rate equivalent to approximately 13 gpm through 72% recovery, which was achieved within 20 minutes. The 13 gpm yield is considered a dependable, conservative value since the test was conducted in near drought conditions.

The results of testing conducted at the three proposed irrigation wells demonstrate that the wells are capable of sustaining an average total pumping rate of approximately 37 gpm for the entirety of the typical irrigation season. The individual yields for the Janis East, Z, and Pool wells are 10.6 gpm, 13.6 gpm, and 13 gpm. The wells are capable of sustaining these rates without adversely impacting existing water supplies and streams.

Sincerely  
Alpha Geoscience



Steven M. Trader, CPG  
Geologist

SMT/dm

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## **TABLES**

**TABLE 1**  
**Water Quality Field Data**  
**Janis East Well**

**Irrigation Well Testing**  
**Belleayre Resort at Catskill Park**

<b>Location</b>	<b>Date and Time</b>	<b>Temperature (°C)</b>	<b>Specific Conductivity (µs/cm)</b>	<b>TDS (ppm)</b>	<b>pH</b>
Janis East	8/27/08 10:44 AM	8.7	62	31	7.55
	8/27/08 11:02 AM	8.6	64	32	7.27
	8/27/08 11:31 AM	8.8	84	42	7.48
	8/27/08 12:02 AM	8.8	94	47	7.53
	8/27/08 12:31 AM	8.7	102	51	7.55
	8/27/08 13:00 AM	8.8	100	50	7.69
Janis East	9/3/08 9:58 AM	8.8	73	37	7.30
	9/3/08 13:56 AM	8.9	109	54	7.24
	9/3/08 14:34 AM	8.9	111	56	7.27
	9/3/08 15:58 AM	8.9	107	53	7.22

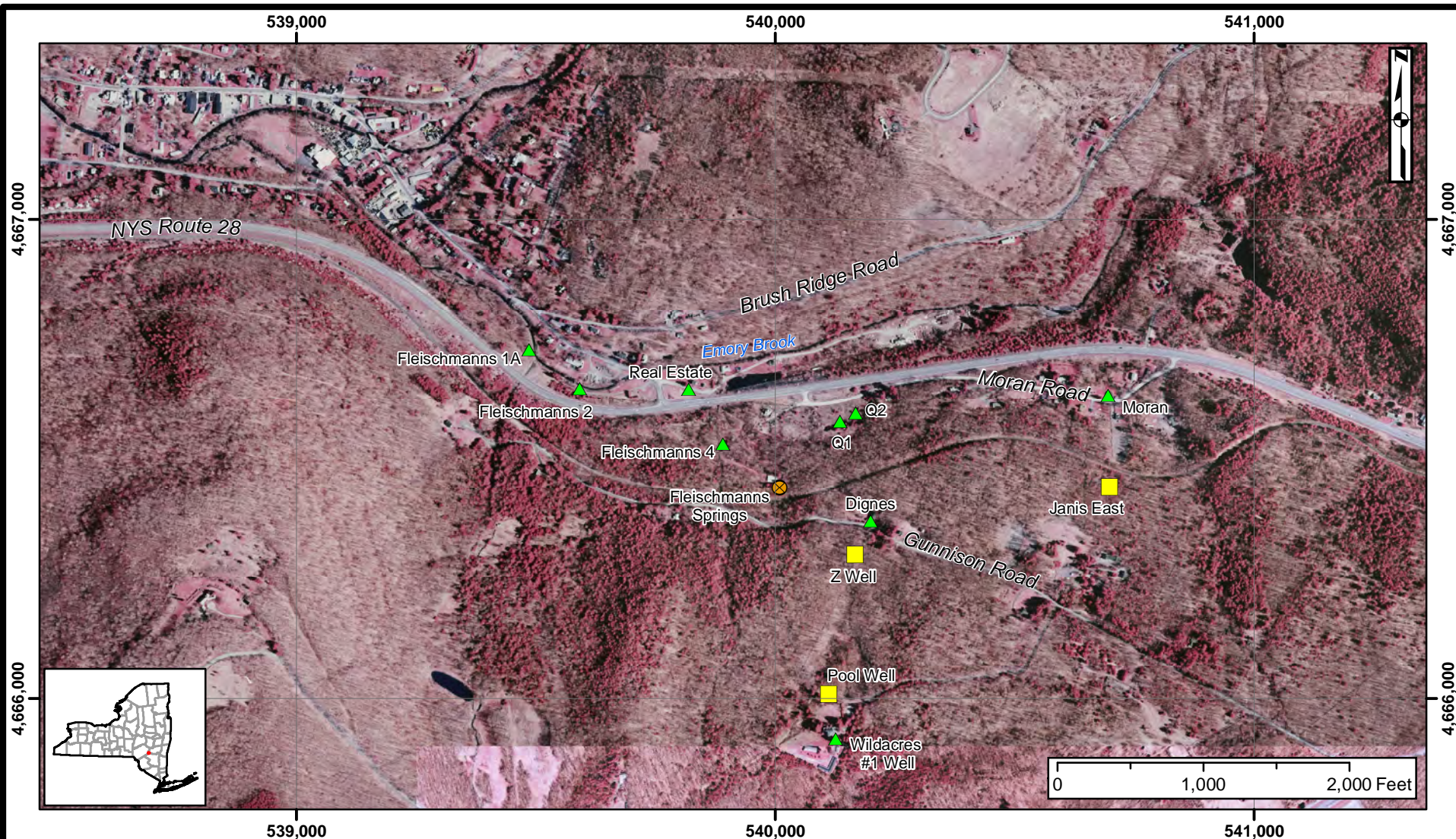


**TABLE 2**  
**Water Quality Field Data**  
**Z Well**

**Irrigation Well Testing**  
**Belleayre Resort at Catskill Park**

<b>Location</b>	<b>Date and Time</b>	<b>Temperature (°C)</b>	<b>Specific Conductivity (µs/cm)</b>	<b>TDS (ppm)</b>	<b>pH</b>
Z Well	8/27/08 12:01	8.7	161	80	8.4
	8/27/08 13:51	--	203	100	--
	8/27/08 15:15	8.6	188	93	8.56
	8/27/08 16:16	8.7	358	179	8.62
	8/27/08 17:15	8.7	380	190	8.60

## **FIGURES**



**Key**

**Monitoring Locations**

- Irrigation Well
- ▲ Non-Irrigation Well
- ⊗ Spring Location

**Notes:**

- Basemap - Delaware County 30-centimeter Resolution Color Infrared Orthoimagery (April 2001), NYS Office of Cyber Security & Critical Infrastructure Coordination.
- Grid units are UTM meters (NAD83, Zone 18N).



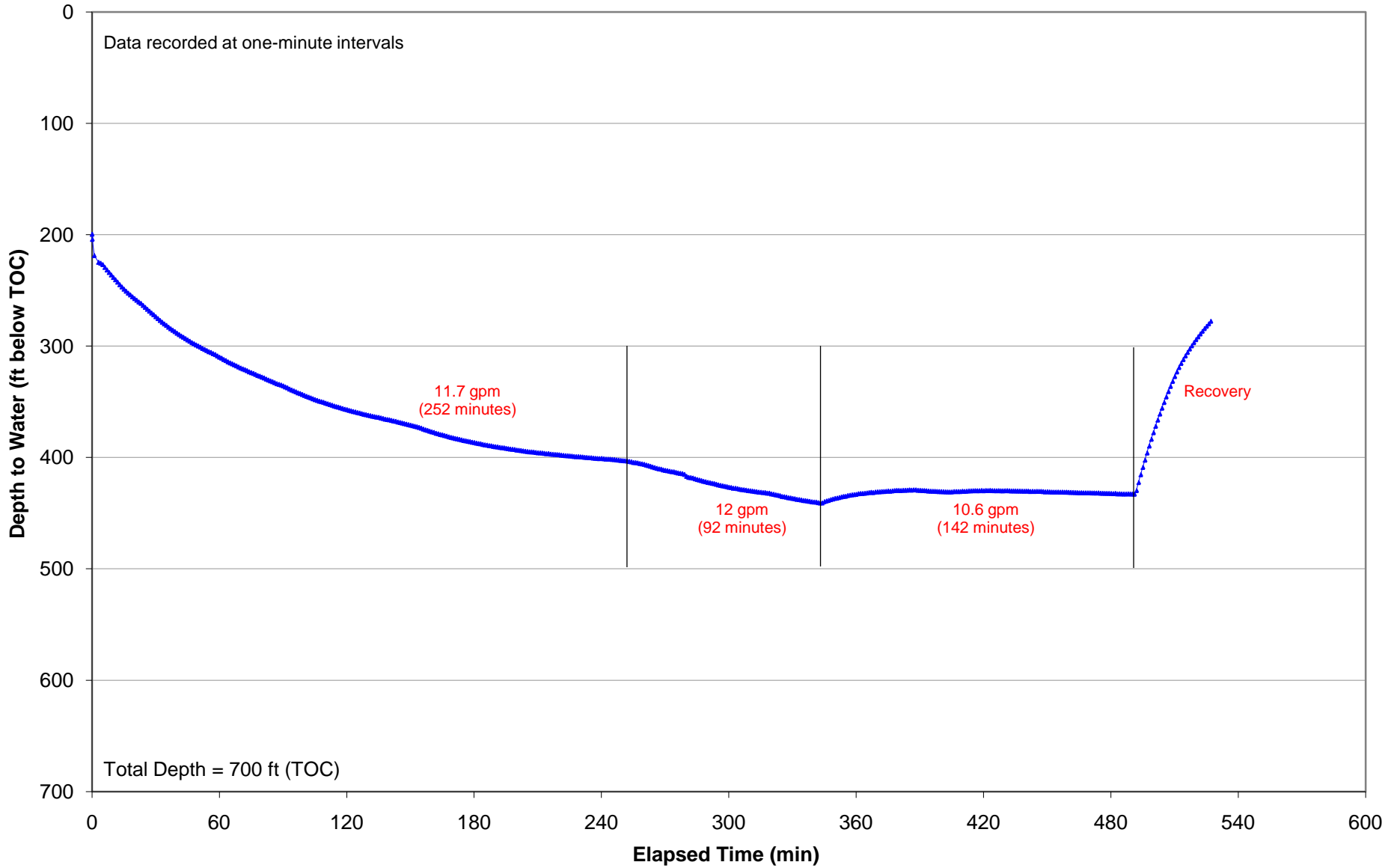
**FIGURE 1**

**IRRIGATION WELL LOCATIONS**

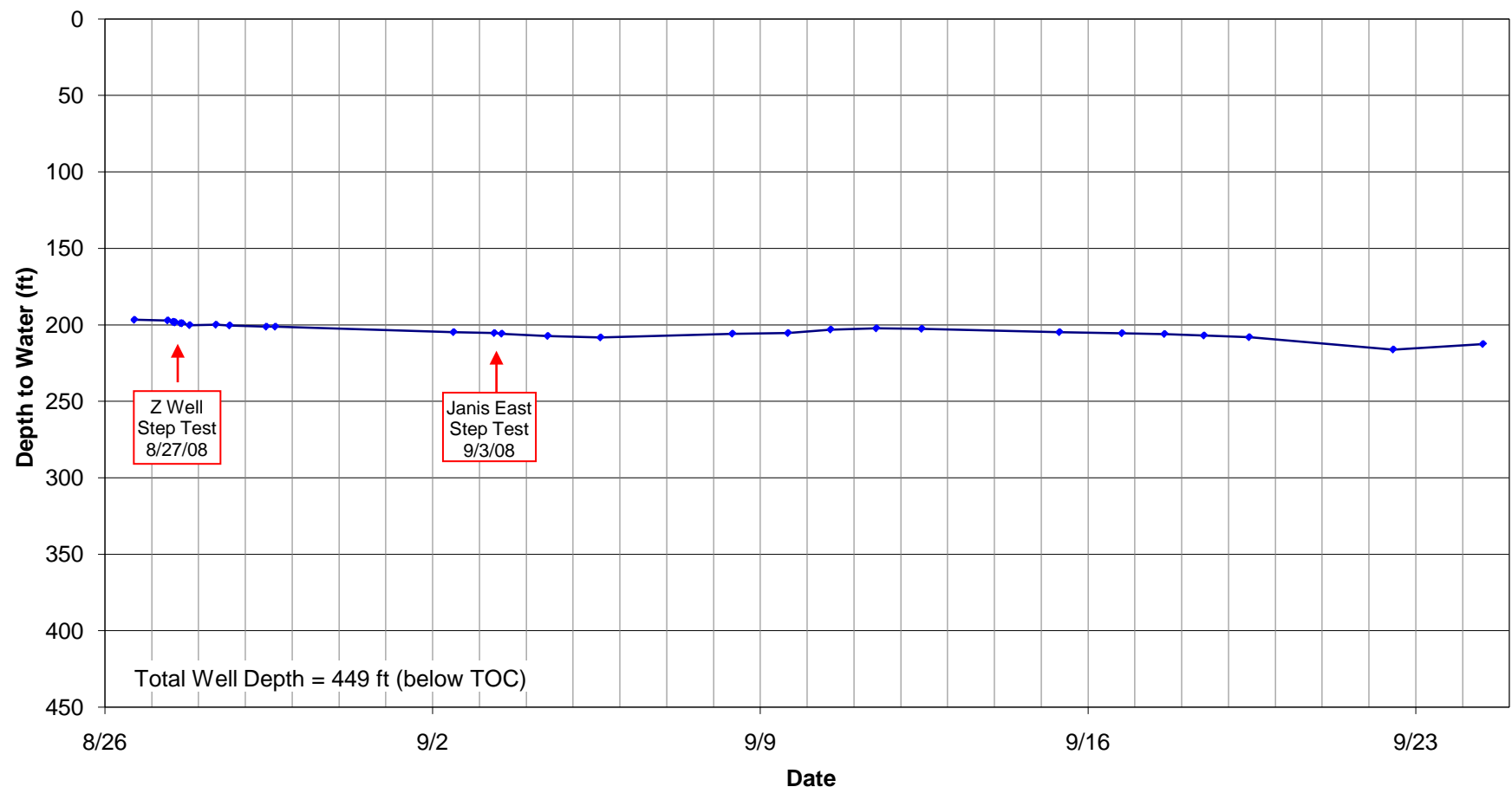
Belleayre Resort

Fleischmanns, Delaware County, New York

**FIGURE 2**  
**Janis East Well 8-hr Step Rate Test**  
**September 3, 2008**  
**Linear Data Plot**



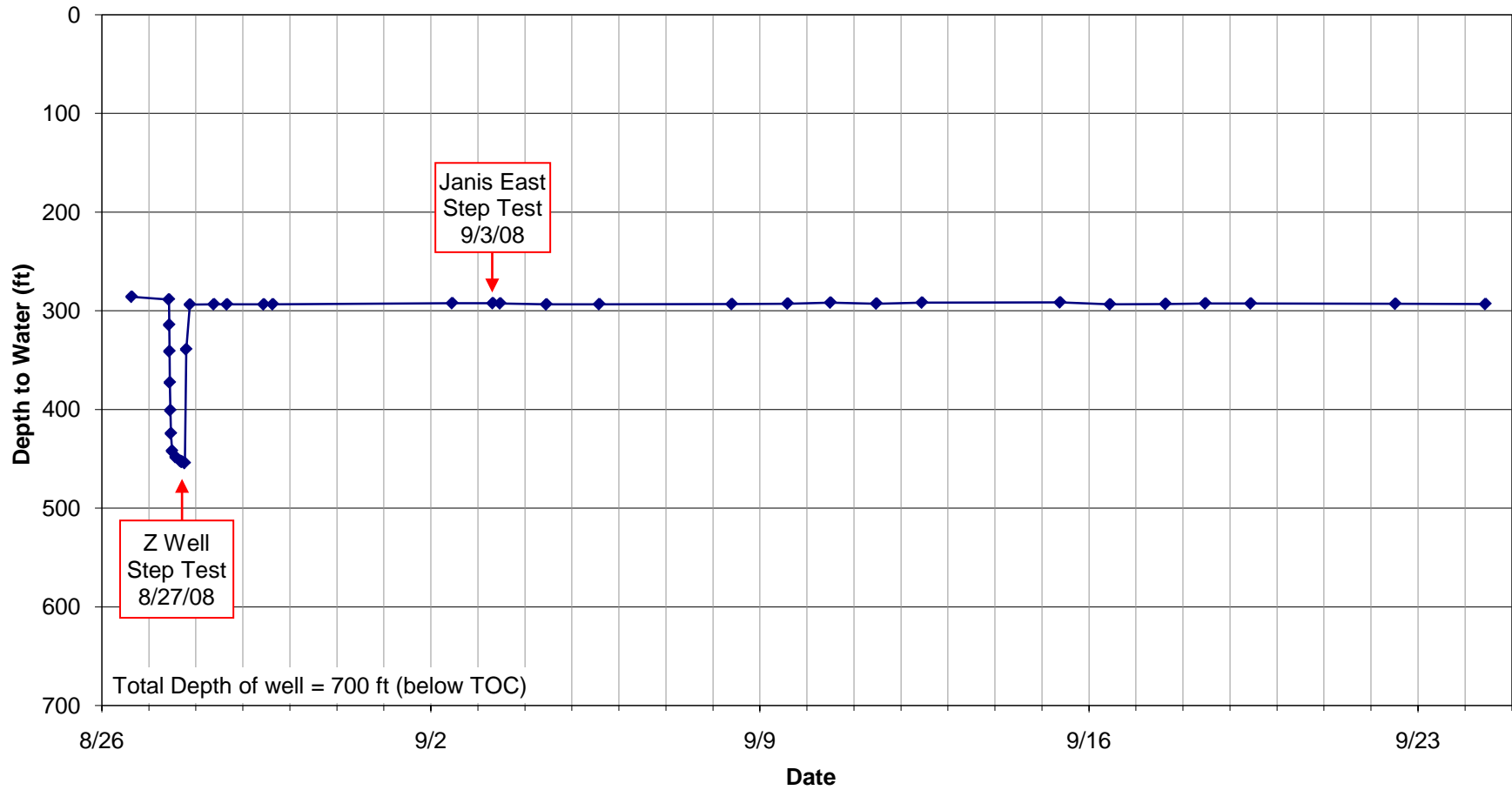
**FIGURE 3**  
**Dignes Well Water Levels**  
 Irrigation Well Testing  
 Belleayre Resort at Catskill Park





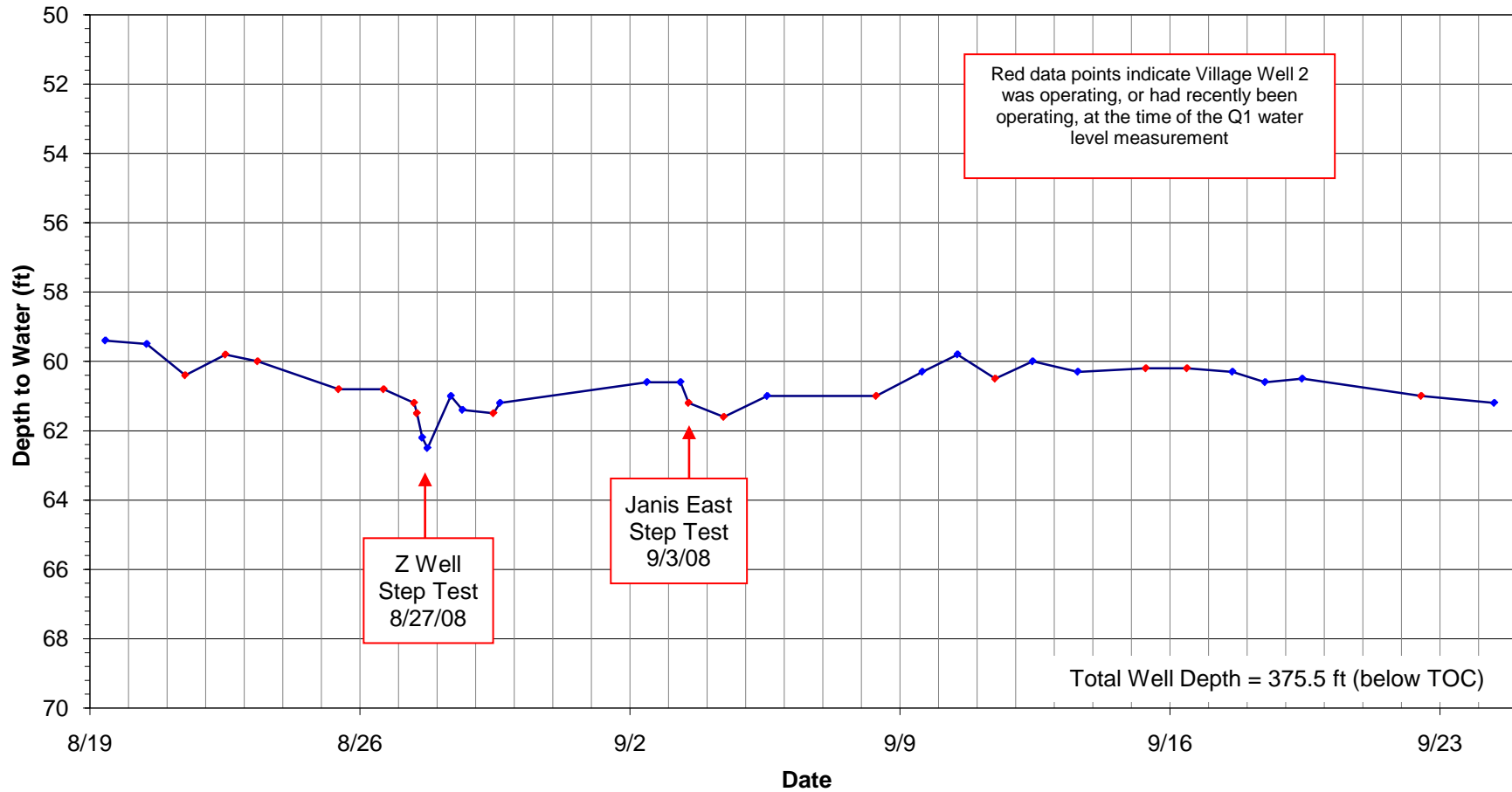
# FIGURE 4 Z Well Water Levels

Irrigation Well Testing  
Belleayre Resort at Catskill Park

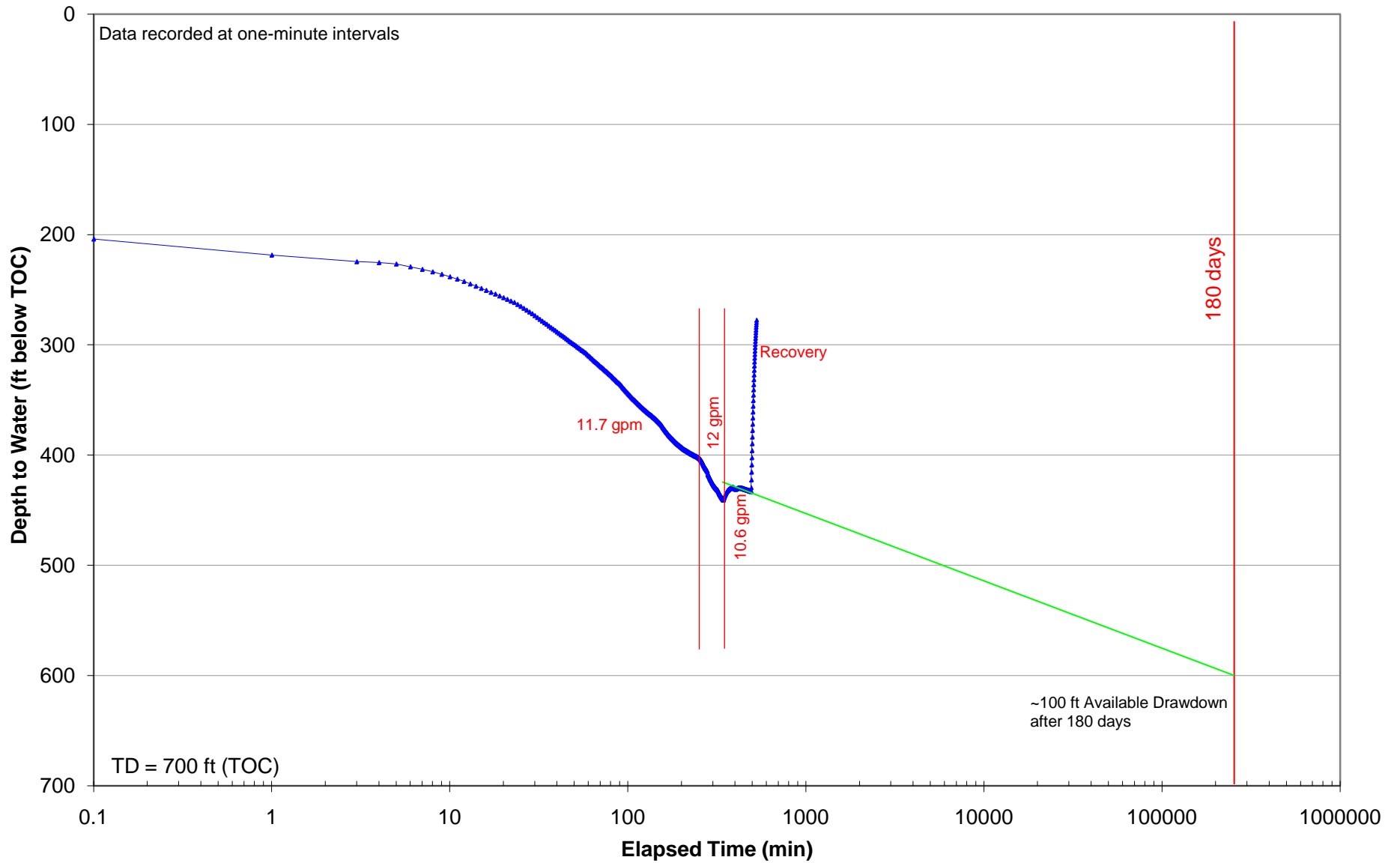


# FIGURE 5 Q1 Well Water Levels

Irrigation Well Testing  
Belleayre Resort at Catskill Park

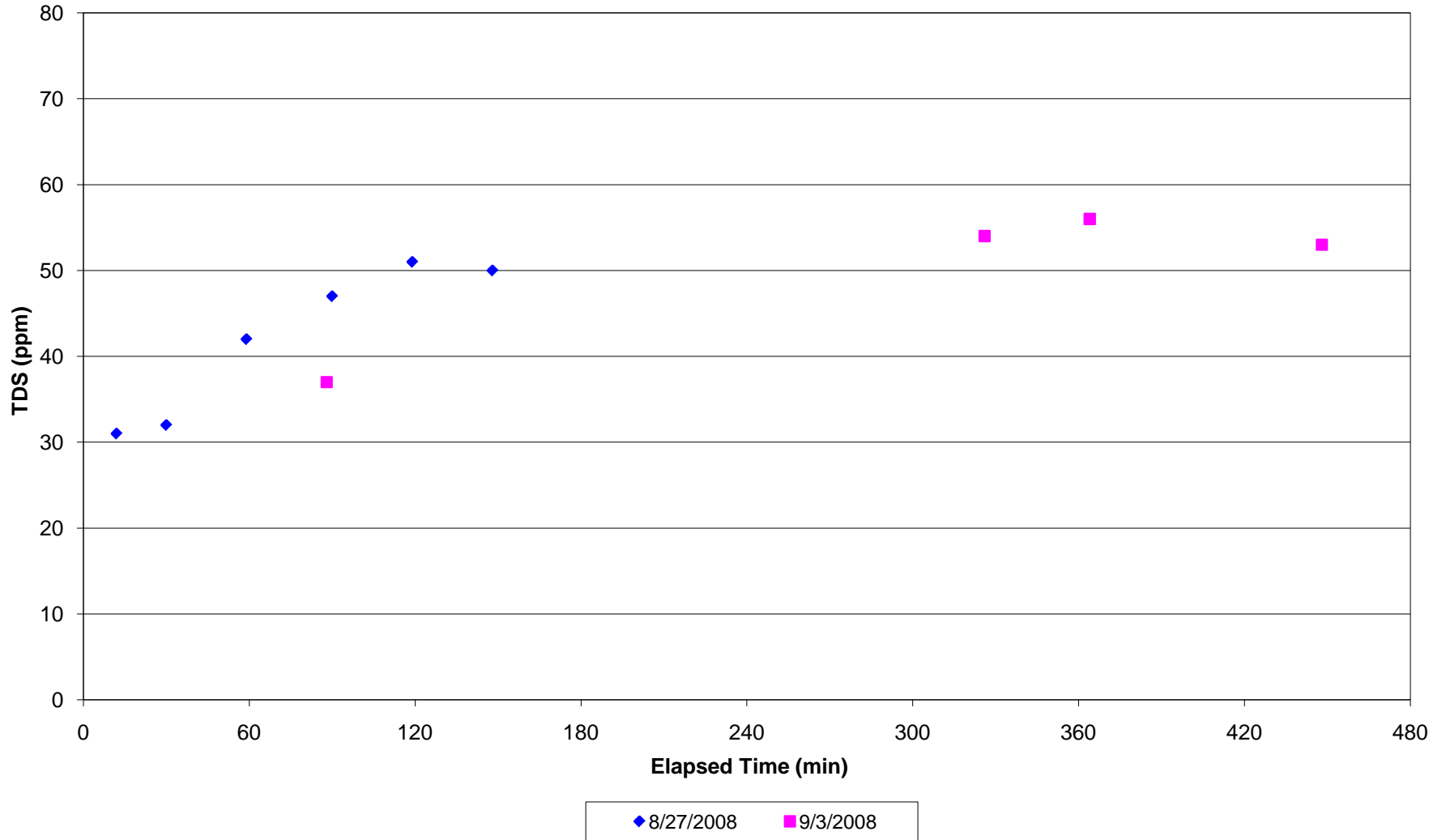


**FIGURE 6**  
**Janis East Well 8-hr Step Rate Test**  
**September 3, 2008**  
**Semi-log Plot and 180-day Projection**

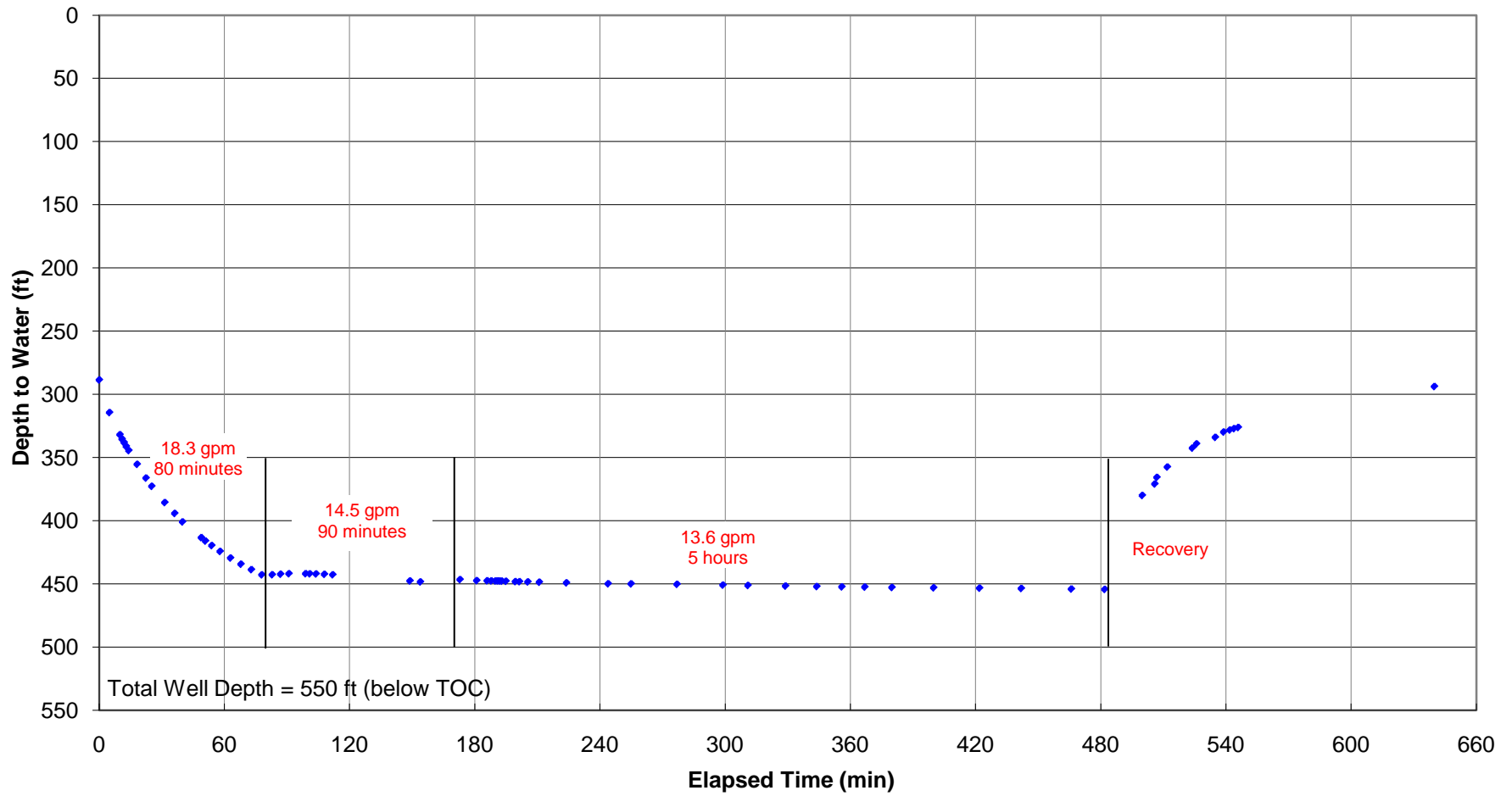




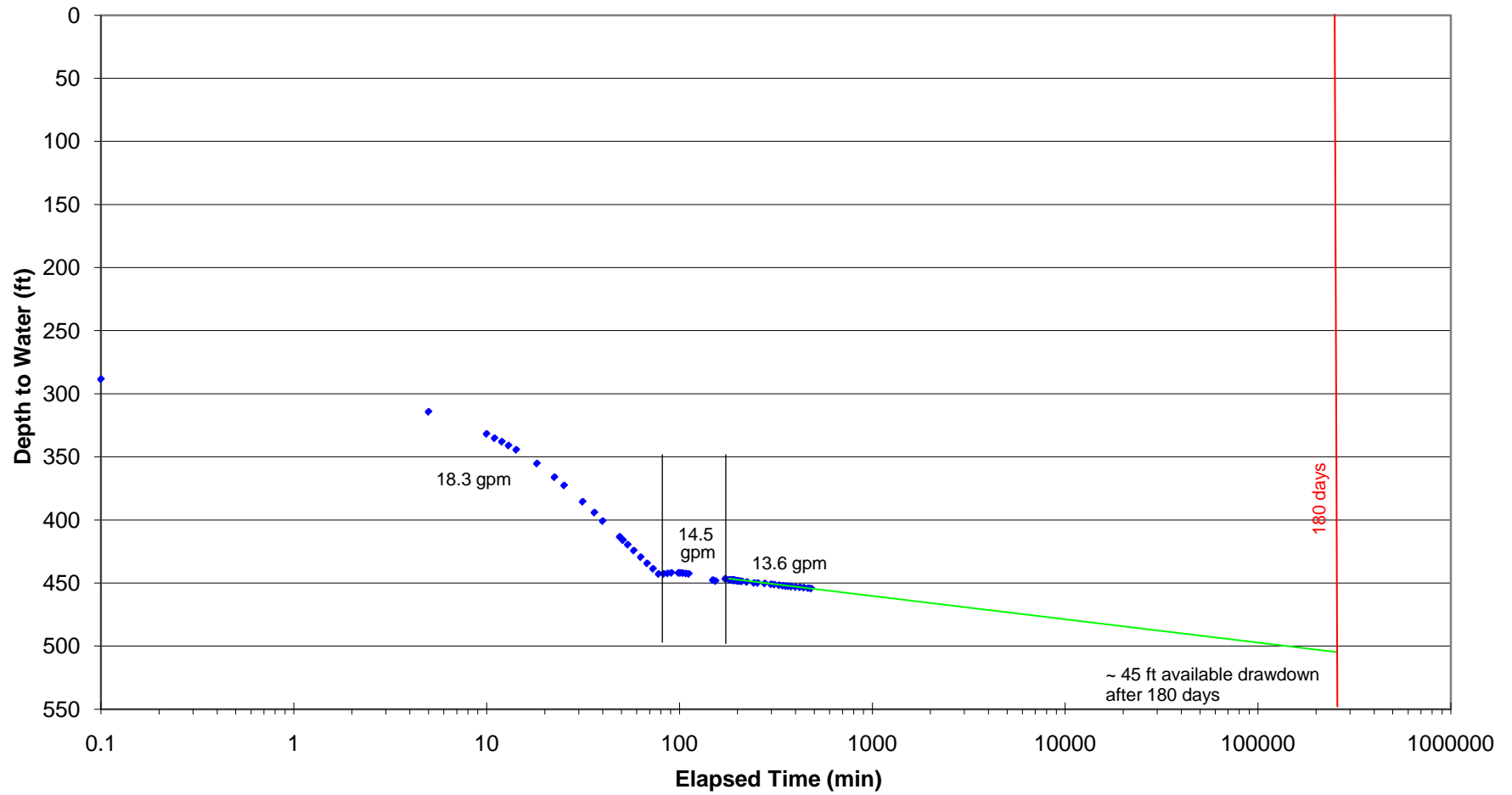
**FIGURE 7**  
**TDS Field Data**  
**Janis East Well 8-hr Step Rate Test**



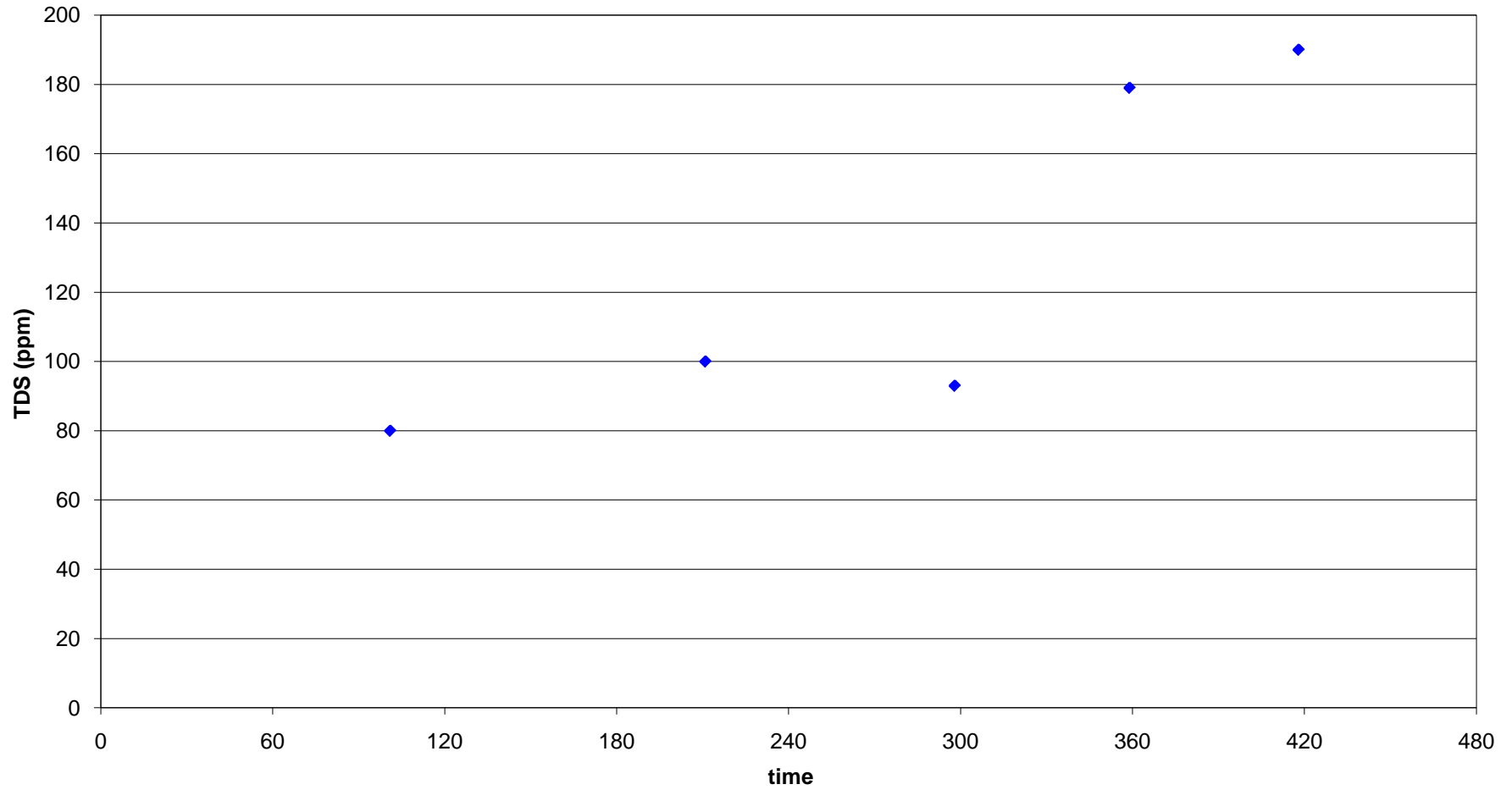
**FIGURE 8**  
**Z Well 8-hr Step Rate Test**  
**August 27, 2008**  
**Linear Data Plot**



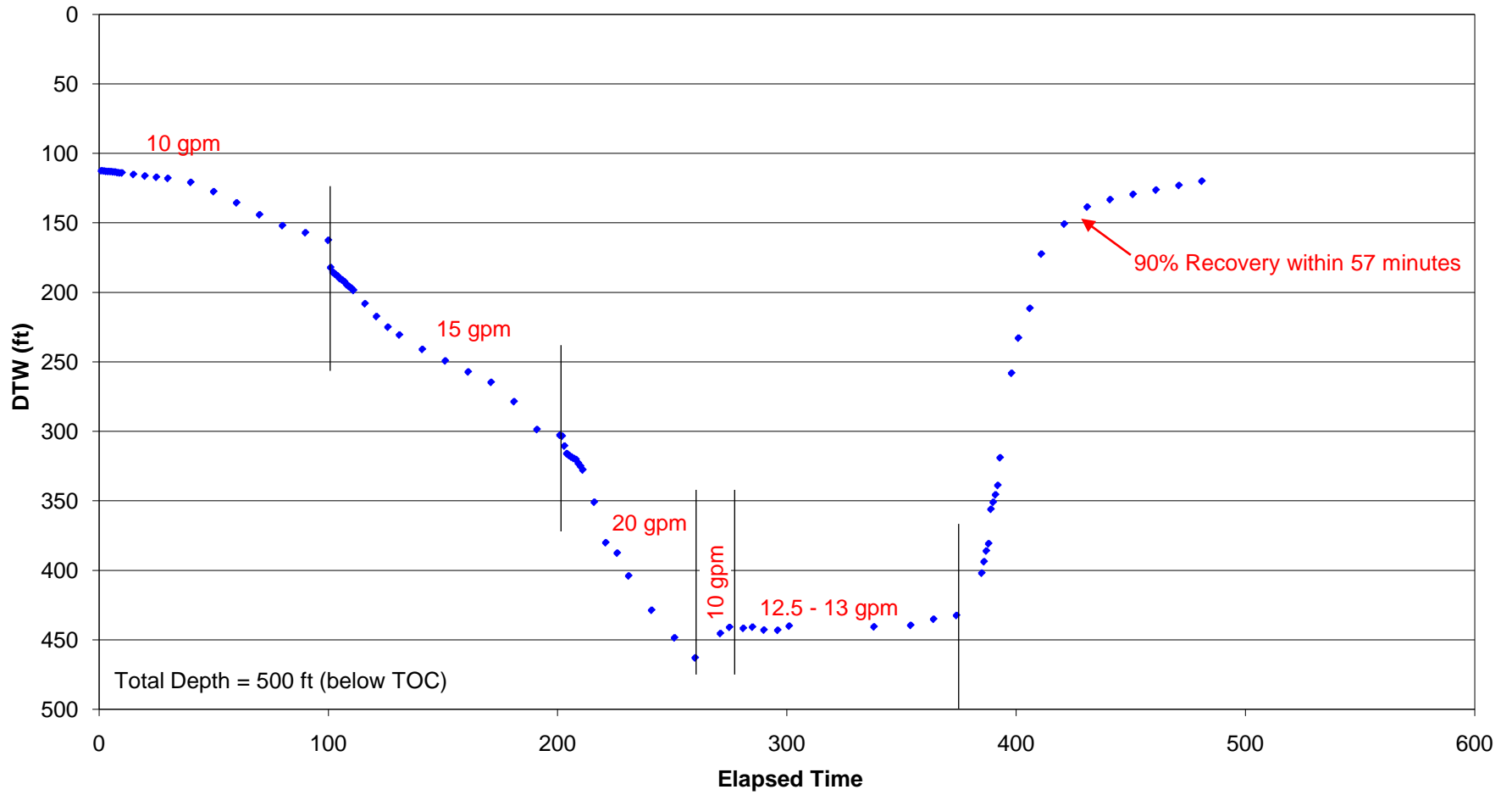
**FIGURE 9**  
**Z Well Pumping Test**  
**August 27, 2008**  
**Semi-log Plot and 180-Day Projection**



**FIGURE 10**  
**TDS Field Data**  
**Z Well 8-hr Step Rate Test**  
**August 27, 2008**



**FIGURE 11**  
**Wildacres Pool Well Step Rate Test**  
**October 29, 2001**  
**Linear Data Plot**



**ATTACHMENT 1**

**Laboratory Report  
Janis East Well**



Environmental Laboratories, Inc.  
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040  
 Tel. (860) 645-1102 Fax (860) 645-0823



# Analysis Report

September 10, 2008

FOR: Attn: Mr. Steve Trader  
 Alpha GeoScience  
 679 Plank Road  
 Clifton Park, NY 12065

## Sample Information

Matrix: GROUND WATER  
 Location Code: ALPHAGEO  
 Rush Request:  
 P.O.#: 00163

## Custody Information

Collected by:  
 Received by: LB  
 Analyzed by: see "By" below

## Date

09/03/08  
 09/05/08

## Time

16:40  
 9:55

## Laboratory Data

SDG I.D.: GAQ74569  
 Phoenix I.D.: AQ74569

Client ID: CROSSROADS JANIS EAST

Parameter	Result	RL	Units	Date	Time	By	Reference
Calcium	17.6	0.010	mg/L	09/06/08		A/E	6010/200.7
Iron	0.126	0.002	mg/L	09/06/08		A/E	6010/200.7
Manganese	0.082	0.001	mg/L	09/06/08		A/E	6010/200.7
Sodium	5.2	0.1	mg/L	09/06/08		A/E	6010/200.7
Alkalinity (CaCO3)	52.6	20	mg/L	09/06/08		JC	SM 2320B
Chloride	5.2	3.0	mg/L	09/05/08		B/G	300.0
Corrosivity	Negative	NONE	None	09/05/08		CD	SM 2330
Nitrate as Nitrogen	0.31	0.05	mg/L	09/05/08	23:40	B/G	300.0/9056
pH	7.38	0.10	pH	09/06/08		JC	4500-H B/9045
Sulfate	12	3.0	mg/L	09/05/08	23:40	B/G	300.0
Tot. Diss. Solids	88	10	mg/L	09/08/08		MR/VR	SM2540C
Total Metals Digestion	Completed			09/05/08		AG	

## Comments:

Corrosivity is based solely on the pH analysis performed above.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

ND=Not detected BDL=Below Detection Level RL=Reporting Level

Phyllis Shiller, Laboratory Director  
 September 10, 2008



Environmental Laboratories, Inc.  
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040  
 Tel. (860) 645-1102 Fax (860) 645-0823



# QA/QC Report

September 10, 2008

## QA/QC Data

SDG I.D.: GAQ74569

Parameter	Blank	Dup RPD	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD
QA/QC Batch 109340, QC Sample No: AQ74560 (AQ74569)								
<u>ICP Metals - Aqueous</u>								
Calcium	BDL	1.50	97.6	97.7	0.1	25.0	71.0	95.8
Iron	BDL	NC	97.2	96.2	1.0	96.5	96.4	0.1
Manganese	BDL	0	99.6	100	0.4	101	99.4	1.6
Sodium	BDL	0.30	105	106	0.9	NC	NC	NC

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria

Phyllis Shiller, Laboratory Director  
 September 10, 2008





Environmental Laboratories, Inc.  
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040  
 Tel. (860) 645-1102 Fax (860) 645-0823



# QA/QC Report

September 10, 2008

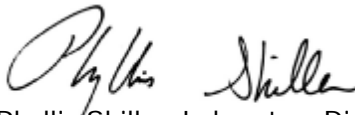
## QA/QC Data

SDG I.D.: GAQ74569

Parameter	Blank	Dup RPD	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD
QA/QC Batch 109389, QC Sample No: AQ74398 (AQ74569)								
Tot. Diss. Solids	BDL	1.69	95.4					
QA/QC Batch 109430, QC Sample No: AQ74757 (AQ74569)								
Bromide	BDL	NC	99.3			94.4		
QA/QC Batch 109431, QC Sample No: AQ74757 (AQ74569)								
Chloride	BDL	NC	102			92.6		
QA/QC Batch 109433, QC Sample No: AQ74757 (AQ74569)								
Nitrate as Nitrogen	BDL	NC	93.4			90.8		
QA/QC Batch 109432, QC Sample No: AQ74757 (AQ74569)								
Nitrite as Nitrogen	BDL	NC	95.0			97.5		
QA/QC Batch 109434, QC Sample No: AQ74757 (AQ74569)								
Sulfate	BDL	NC	96.6			96.7		
QA/QC Batch 109418, QC Sample No: AQ74912 (AQ74569)								
Alkalinity-CaCO3	BDL	5.20	102					

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria

  
 Phyllis Shiller, Laboratory Director  
 September 10, 2008



**Environmental Laboratories, Inc.**  
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040  
Tel. (860) 645-1102 Fax (860) 645-0823



# NY Temperature Narration

September 10, 2008

SDG I.D.: GAQ74569

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The samples in this delivery group were received at 6C.  
(Note acceptance criteria is above freezing up to 6C)



587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040  
 Email: service@phoenixlabs.com Fax (860) 545-0823  
 Client Services (800) 645-8726

CHAIN OF CUSTODY RECORD

Data Delivery:  Fax # \_\_\_\_\_  
 Email: Service@phoenixlabs.com

Customer: Alpha Geoservice Project: CRS-0015 Project P.O.: 00163  
 Address: 679 Plank Rd Report to: Steve Tucker Phone # 578 378 6945  
Clifton Park NY 12065 Invoice to: Steve Tucker Fax # 578 378 6946

Client Sample - Information - Identification  
 Sample's Signature: Stanley Jones Date: 9/3/08  
 Analysis Request: Chloride Nitrate Sulfate Alkalinity pH TDS - Corrosivity Ca, Na, Fe, Mn

Matrix Code: GW-drinking water WW-recess/water S-soil/solid O-other  
GW-groundwater SL-sludge A-air

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Analysis Request
<u>745069</u>	<u>Janis East</u>	<u>GW</u>	<u>9/3/08</u>	<u>16:40</u>	<u>X X X X</u>
	<u>Small East</u>	<u>GW</u>	<u>9/3/08</u>	<u>16:40</u>	<u>X</u>

Retain/Requested by: Stanley Jones Accepted by: [Signature] Date: 9/5 Time: 9:55  
Gregory [Signature]

Comments, Special Requirements or Regulations:

State where samples were collected: NY

Turnaround:  1 Day  2 Days  3 Days  Standard  Other

Method:  RCP Cert  GW Protect  QA Mobility  GB Mobility  SW Protect  Res. Vol.  Ind. Vol.  Res. Criteria  Other

MA:  MCP Cert  GW-1  GW-2  GW-3  S-1  S-2  S-3  Other

Other:  ASP-A  NJ Reduced Deliv.  NJ Hazsite EDD  Phoenix Std Report  Other

**ATTACHMENT 2**

**Laboratory Report  
Z Well**



Environmental Laboratories, Inc.  
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040  
 Tel. (860) 645-1102 Fax (860) 645-0823



# Analysis Report

September 05, 2008

FOR: Attn: Mr. Steve Trader  
 Alpha GeoScience  
 679 Plank Road  
 Clifton Park, NY 12065

## Sample Information

Matrix: GROUND WATER  
 Location Code: ALPHAGEO  
 Rush Request:  
 P.O.#: 00163

## Custody Information

Collected by:  
 Received by: SW  
 Analyzed by: see "By" below

Date      Time  
 08/27/08      17:18  
 08/29/08      10:10

## Laboratory Data

SDG I.D.: GAQ72307  
 Phoenix I.D.: AQ72307

Client ID: CROSSROADS Z-WELL

Parameter	Result	RL	Units	Date	Time	By	Reference
Calcium	14.6	0.010	mg/L	09/02/08		EK	6010/200.7
Iron	0.281	0.002	mg/L	09/02/08		EK	6010/200.7
Manganese	0.013	0.001	mg/L	09/02/08		EK	6010/200.7
Sodium	26.3	0.1	mg/L	09/04/08		EK	6010/200.7
Alkalinity (CaCO3)	92.0	20	mg/L	08/29/08		JC	SM 2320B
Chloride	12	3.0	mg/L	08/30/08		B/G	300.0
Corrosivity	Negative	NONE	None	08/29/08		CD	SM 2330
Nitrate as Nitrogen	0.16	0.05	mg/L	08/30/08	1:06	B/G	300.0/9056
pH	7.57	0.10	pH	08/29/08		CD	4500-H B/9045
Sulfate	16	3.0	mg/L	08/30/08	1:06	B/G	300.0
Tot. Diss. Solids	140	10	mg/L	08/29/08		VR	SM2540C
Total Metals Digestion	Completed			08/29/08		AG	

## Comments:

Corrosivity is based solely on the pH analysis performed above.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

ND=Not detected BDL=Below Detection Level RL=Reporting Level

Phyllis Shiller, Laboratory Director  
 September 05, 2008



Environmental Laboratories, Inc.  
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040  
 Tel. (860) 645-1102 Fax (860) 645-0823



# QA/QC Report

September 05, 2008

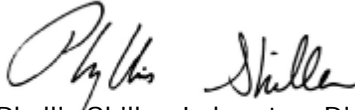
## QA/QC Data

SDG I.D.: GAQ72307

Parameter	Blank	Dup RPD	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD
QA/QC Batch 108899, QC Sample No: AQ72068 (AQ72307)								
<u>ICP Metals - Aqueous</u>								
Calcium	BDL	NC	101	100	1.0	101	101	0.0
Iron	BDL	13.0	101	99.9	1.1	102	101	1.0
Manganese	BDL	NC	99.6	99.1	0.5	100	99.8	0.2
Sodium	BDL	NC	96.5	91.9	4.9	100	97.4	2.6

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria

  
 Phyllis Shiller, Laboratory Director  
 September 05, 2008



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# QA/QC Report

September 05, 2008

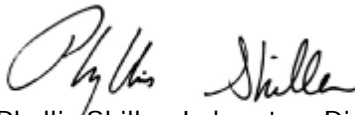
## QA/QC Data

SDG I.D.: GAQ72307

Parameter	Blank	Dup RPD	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD
QA/QC Batch 108872, QC Sample No: AQ71636 (AQ72307)								
Tot. Diss. Solids	BDL	2.24	95.4					
QA/QC Batch 108971, QC Sample No: AQ72298 (AQ72307)								
Bromide	BDL	NC	106					
QA/QC Batch 108972, QC Sample No: AQ72298 (AQ72307)								
Chloride	BDL	2.60	94.1			107		
QA/QC Batch 108974, QC Sample No: AQ72298 (AQ72307)								
Nitrate as Nitrogen	BDL	NC	107					
QA/QC Batch 108973, QC Sample No: AQ72298 (AQ72307)								
Nitrite as Nitrogen	BDL	NC	98.1					
QA/QC Batch 108975, QC Sample No: AQ72298 (AQ72307)								
Sulfate	BDL		99.3					
QA/QC Batch 109019, QC Sample No: AQ72788 (AQ72307)								
Alkalinity-CaCO3	BDL	NC	101					

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria

  
 Phyllis Shiller, Laboratory Director  
 September 05, 2008

Data Delivery:  Fax # \_\_\_\_\_  
 Email: Shirley@phoenixlabs.com

Customer: Alpha Bioscience Project P.O.: 00163  
 Address: 679 Main Rd Report to: Steve Pader Phone #: 578 348 6995  
Clyburn Park, NY 12065 Invoice to: Steve Pader Fax #: 578 348 6766

Client Sample - Information - Identification  
 Sample # 72307 Date 8/21/08  
 Signature Steve M Jordan

Matrix Code: NW-drinking water W=wastewater S=soil/solid Q=other  
GW-groundwater SL=sludge A=air

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Analysis Request
72307	Zarell 2 - well	GW	8/21/08	17:18	CHLORINE, NITRATE, NITRITE, ALKALINITY, SULFIDE, COLIFORMS, TSS, CADMUM, LEAD, PBT, PCBs, PCP, CHLOROBENZENE, BENZENE, TOXIC METALS 2 2 2

Refrigerated by: Steve M Jordan Janan Bly 8/21/08 12:40  
Janan Bly 8/21/08 10:10  
 Comments, Special Requirements or Regulations:  
PH recd past hold

Turnaround:  RCP Cert.  MCP Cert.  
 1 Day  GW-1  
 2 Days  GW-2  
 3 Days  GW-3  
 Standard  S-1  
 Other  S-2  
 Res. Vol.  MWRA eSMART  
 Res. Criteria  Other

MA:  GIS/Key  GIS/Key  
 EDUS  EDUS  
 Other  Other  
 Data Package:  ASP-A  NJ Reduced Deter.  
 NJ HazSite EDD  Phoenix Stu Report  
 Other  Other

\* SURCHARGE APPLIES  
 State where samples were collected: \_\_\_\_\_



**ATTACHMENT 3**

**Driller's Log  
Wildacres Pool Well**



ARKVILLE N. Y. 12406 PHONE 914-586-4000

WELL LOG

*Wildacres  
Pool Well*

CROSSROAD VENTURES  
ANDREW LANE RD  
BOX 267  
MT TREMPER, NY 12457

BELLEAYRE PROJECT  
#1 WILD ACRES

10/21/99

0- 41 HARDPAN  
41- 48 BEDROCK  
48- 62 BLUESTONE  
62-131 GREEN SANDSTONE  
131-182 GREY SHALE  
182-207 RED SHALE  
207-498 BLUESTONE

TOTAL DRILLING; 498 FT  
TOTAL CASING; 50 FT  
DRIVE SHOE  
YIELD; 25-30 GPM

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**ATTACHMENT 4**

**2001 Drought Documentation**

**Source: Hydrologic Conditions in the Delaware River Basin  
Annual Report 2001, Delaware River Basin Commission**

## CHRONOLOGY OF DROUGHT IN THE DELAWARE RIVER BASIN

- August 8, 2001 Lancaster, Lebanon, and Schuylkill counties are included in a drought watch issued by the Pennsylvania Department of Environmental Protection (PADEP).
- August 24, 2001 New York State Department of Environmental Conservation (NYSDEC) issues a drought watch that includes Broome and Chenango counties in the Delaware River Basin (DRB).
- PADEP moves Berks and Chester counties from normal to drought watch status.
- October 24, 2001 Storage in the New York City (NYC) Delaware reservoir system drops into the drought watch zone. Storage is 109.820 billion gallons (bg) and is below the drought watch line of 110 bg for this date. Drought watch operations will be in effect if storage remains below the drought watch line for five consecutive days.
- October 29, 2001 Delaware River Basin Commission's (DRBC) drought watch operations are now in effect. The flow objectives at Montague and Trenton, New Jersey are reduced to 1,655 cubic feet per second (cfs) and 2,700 cfs, respectively, and NYC diversions drop from 800 million gallons per day (mgd) to 680 mgd. Conservation releases from the NYC Delaware reservoirs are decreased to 85% of augmented experimental levels.
- October 30, 2001 New Jersey Department of Environmental Protection (NJDEP) issues a drought watch for the entire state of New Jersey.
- November 4, 2001 Storage in the NYC Delaware reservoir system drops into the drought warning zone and DRBC's drought warning operations are automatically in effect (no five day waiting period). The flow objective at Montague decreases to 1,550 cfs and the flow objective at Trenton remains at 2,700 cfs. NYC and New Jersey diversions are reduced to 560 mgd and 70 mgd, respectively.
- November 5, 2001 NYSDEC moves six DRB counties from normal to drought watch status (Delaware, Greene, Orange, Schoharie, Sullivan, and Ulster).
- November 6, 2001 PADEP moves Chester, Lancaster, and Lebanon counties to drought warning status and places 10 other DRB counties under drought watch. A total of 12 DRB counties are now under drought watch (Berks, Bucks, Carbon, Delaware, Lehigh, Monroe, Montgomery, Northampton, Philadelphia, Pike, Schuylkill, and Wayne).
- November 21, 2001 NJDEP issues a drought warning for three of the six state drought management areas (Northwest, Southwest and Coastal South). The drought warning affects 13 of New Jersey's DRB counties.

- November 26, 2001 Storage in Cannonsville Reservoir falls to a record low storage of 3.25 bg, which is only 3.4% of usable capacity.
- Storage in the NYC Delaware reservoir system drops into the drought zone. Storage is 69.267 bg and is below the drought line of 70 bg for this date. Drought operations will be in effect if storage remains below the drought line for five consecutive days.
- December 1, 2001 DRBC's drought operations are now in effect. The flow objectives at Montague and Trenton drop to 1,350 cfs and 2,500 cfs, respectively. NYC and New Jersey diversions are decreased to 520 mgd and 65 mgd, respectively.
- December 5, 2001 PADEP moves 12 DRB counties from drought watch to drought warning (Berks, Bucks, Carbon, Delaware, Lehigh, Monroe, Montgomery, Northampton, Philadelphia, Pike, Schuylkill, and Wayne). A total of 15 DRB counties are now under drought warning in Pennsylvania. PADEP also moves Lackawanna and Luzerne counties from normal to drought watch status.
- December 6, 2001 NYSDEC moves six DRB counties from drought watch to drought warning status (Delaware, Greene, Orange, Schoharie, Sullivan, and Ulster).
- December 15, 2001 Storage in the NYC Delaware reservoir system drops to a record low of 63.348 bg or just 23.4% of capacity. This is more than 113 bg below normal storage levels for the date.
- December 18, 2001 During the last commission meeting of 2001, DRBC approves *Drought Emergency Resolution 2001-32* and declares a basinwide drought emergency. Under the emergency order, DRBC can call for releases from federal, state, and privately owned reservoirs to bolster flows in the Delaware River and its tributaries.
- December 19, 2001 DRBC *Resolution 2001-33* is enacted. The goal is emergency protection of the tailwaters fishery.
- December 26, 2001 The seven-day average, 250 parts per million chloride concentration location (known as the "salt front") retreats to Delaware River mile 82 due to recent rains. Since the salt front is downstream of river mile 82.9, the Montague flow objective is further reduced to 1,100 cfs (as per the DRBC Drought Operating Plan [Resolution 83-13]). The Trenton flow objective remains at 2,500 cfs.
- December 27, 2001 New York City Department of Environmental Protection (NYCDEP) issues a drought watch based on a less than a 50% chance that either the Delaware or Catskill reservoir systems will be full by June 1.

**FIGURE 3: NEW YORK CITY DELAWARE RIVER BASIN STORAGE 2001**

