COAL COMBUSTION RESIDUAL RULE
GROUNDWATER MONITORING SYSTEM CERTIFICATION

MARTIN LAKE STEAM ELECTRIC STATION
PERMANENT DISPOSAL POND 5
RUSK COUNTY, TEXAS

OCTOBER 16, 2017

Prepared For:

Luminant Generation Company, LLC
6555 Sierra Drive
Irving, TX 75039

Prepared By:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
Texas Engineering Firm No. 4760

October 16, 2017

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Pastor, Behling & Wheeler, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the groundwater monitoring system installed at the referenced facility has been designed and constructed to meet the requirements of Section 257.91 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
PASTOR, BEHLING & WHEELER, LLC

STATE OF TEXAS
PATRICK J. BEHLING
79872
LICENSED
PROFESSIONAL ENGINEER

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial use by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. Three CCR Units have been identified within the MLSES operations, the Ash Pond Area (the West Ash Pond (WAP) East Ash Pond (EAP), and the New Scrubber Pond), Permanent Disposal Pond 5 (PDP 5), and A1 Area Landfill. This report discusses PDP 5 (the Site). PDP 5 meets the definition of a CCR surface impoundment and is subject to groundwater monitoring system requirements of the CCR Rule.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule was October 19, 2015.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. Pastor, Behling & Wheeler, LLC (PBW) was retained by Luminant to evaluate and certify that the groundwater monitoring system at the Site in accordance with Section 257.91 of the CCR Rule.

1.1 Description of PDP 5

PDP 5 was constructed in 2010 and is located approximately 3,000 feet west of the MLSES power units (Figure 2). It is used for emergency storm water storage and for storage of material from the ash ponds and New Scrubber Pond during cleaning cycles (BM, 2015).

Based on drawings provided by Luminant and included in the BM report, PDP 5 is lined with compacted soil measuring 3 feet thick on its sides and 2 feet thick on its bottom (BM, 2015). PDP 5 is built on top of three closed and capped landfills (PDP 1, PDP 2, and PDP 3). PDP 4, which is located adjacent to PDP 5 to the south, is also a closed and capped landfill. PDP 1 through PDP 4 are not considered regulated units under the CCR Rule.

1.2 CCR Unit Groundwater Monitoring System Requirements

Section 257.91 of the CCR Rule indicates that existing CCR landfills and surface impoundments be provided with a groundwater monitoring system that consists of sufficient wells, installed at appropriate location and depths, to yield groundwater samples from the uppermost aquifer that meet the following criteria:

- Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit; and
- Accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary to ensure detection of groundwater contamination in the uppermost aquifer. All potential contaminant pathways must be monitored.

The specific configuration of the groundwater monitoring system must be determined based on site-specific technical information that must include aquifer thickness, groundwater flow rate, groundwater flow direction (including seasonal and temporal fluctuation in groundwater flow), saturated and unsaturated geologic units and fill materials that overly the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the upmost aquifer, including, but not limited to, thickness, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.

At a minimum, the monitoring system must consist of at least one upgradient and three downgradient monitoring wells, and any additional monitoring wells necessary to accurately represent the quality of the background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit. Multi-unit groundwater monitoring systems are allowed but must be equally as capable of detecting monitored constituents at the waste boundary of a CCR unit as individual groundwater monitoring wells.

Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space above the sampling depth must be sealed to prevent contamination of samples and the groundwater. There must be documentation in the operating record of the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices. The qualified engineer must have access to and must review this documentation as part of the groundwater monitoring system certification.

2.0 GROUNDWATER MONITORING SYSTEM EVALUATION

2.1 PDP 5 Groundwater Monitoring System

The CCR groundwater monitoring well system at PDP 5 consists of nine monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, PDP-26) that are each screened in the uppermost aquifer at the Site. The locations of the CCR monitoring wells are shown on Figure 2. Well construction information and survey data for the CCR wells are summarized in Table 1, CCR monitoring well logs are presented in Appendix A, and photographs of the CCR wells are presented in Appendix B.

2.2 Local Geology and Hydrogeology

PDP 5 is located in the outcrop area of the Eocene-aged Wilcox Group (Barnes, 1965). PBW reviewed current and historical soil boring logs, monitoring well completion documentation, and historical reports to describe the geologic and hydrogeologic conditions at PDP 5. Geologic cross sections were constructed using these data. Cross section locations are presented on Figure 3 and the cross sections are presented on Figures 4, 5, and 6.

The geologic units encountered during the completion of monitoring wells/soil borings in the PDP 5 Area include: (1) an upper sand unit observed on hilltops and other topographically high areas, (2) an intermediate continuous clay unit that contains discontinuous, interbedded sand layers, and (3) a lower unit of silt and sand that contains discontinuous packages of relatively thick, interbedded clay. Based on information provided by Luminant, PDP 5 is completed entirely within the upper hilltop sand unit. The uppermost aquifer at the Site occurs in the lower unit of silt and sand that contains discontinuous packages of relatively thick, interbedded clay.

2.3 Groundwater Potentiometric Surface Elevations

Eight background groundwater monitoring events were performed using the PDP 5 CCR monitoring well system from October 2015 to December 2016. Static water levels measured during the background monitoring period indicated water elevations ranging from 352.38 feet above mean sea level (amsl) to 381.40 feet amsl, and depths to water ranging from 5.14 feet bgs to 37.46 feet bgs (Table 2). Groundwater potentiometric surface maps based on data collected during the background monitoring period are presented in Appendix C.

Groundwater is mounded at PDP 5, with an inferred groundwater flow direction radially outward from the unit. Based on the inferred direction of groundwater flow, there are no upgradient areas in the immediate vicinity of PDP 5. All of the CCR monitoring wells, which are positioned radially around PDP 5, are downgradient wells.

2.4 Uppermost Aquifer Hydraulic Conductivity Testing

PBW performed slug tests at monitoring wells PDP-22, PDP-25, and PDP-26 on October 7, 2015 to evaluate groundwater linear flow velocities at the uppermost aquifer at the Site. Slug test data and time-head change plots used to calculate hydraulic conductivities and transmissivities of the uppermost aquifer are provided in Appendix D. A summary of these hydraulic properties is presented in Table 3. The average hydraulic conductivities for the wells ranged from 2.48×10^{-5} cm/sec (well PDP-22) to 1.37×10^{-4} cm/sec (well PDP-25), with a geometric mean for the test wells of 4.40×10^{-5} cm/sec.

2.5 Conclusions

The CCR groundwater monitoring well system at PDP 5 complies with Section 257.91 of the CCR Rule. This conclusion is supported by the following as described in detail in previous sections of this report:

- Nine monitoring wells are included in the CCR groundwater monitoring system. Based on the inferred direction of groundwater flow there are no upgradient areas in the immediate vicinity of PDP 5, and all of the CCR monitoring wells, which are positioned radially around PDP 5, are downgradient wells.

- Each monitoring well is screened in the uppermost aquifer at the Site. Samples collected from the downgradient wells will ensure detection of groundwater contamination in the uppermost aquifer from the CCR unit.

- The monitoring wells are constructed with appropriate well casing to maintain the integrity of the monitoring well borehole and with slotted well screens to enable collection of groundwater samples. In addition, the annular space above the well screen is appropriately sealed to prevent contamination of groundwater samples from surface sources.

- Appropriate documentation exists concerning the design, installation, and development of the monitoring wells.

3.0 REFERENCES

Barnes, Virgil E., 1965. Geologic Atlas of Texas, Tyler Sheet. Texas Bureau of Economic Geology.

Burns & McDonnell Engineering Company, Inc (BM), 2015. CCR Study for Martin Lake Steam Electric Station – Final Draft. June 2015.

Tables

TABLE 1
WELL CONSTRUCTION SUMMARY
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	Date Installed	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Total Design Depth (ft bgs)	Casing Diameter (in)
MW-17A	10/01/08	228279	2902653	384.57	387.75	27	47	20	47	2
MW-18A	10/2/08	228860	2902563	410.89	414.44	47	67	20	67	2
MW-19	9/30/08	229492	2902142	367.98	371.33	10	25	15	25	2
MW-20A	9/30/08	228847	2901077	395.74	398.98	10	40	30	41	2
PDP-22	9/9/15	229672	2901564	383.90	386.75	35	60	25	60	2
PDP-23	9/10/15	229231	2902465	391.06	394.43	35	45	10	45	2
PDP-24	9/11/15	228132	2902782	387.06	389.73	30	40	10	40	2
PDP-25	9/11/15	227735	2901945	385.13	387.97	50	60	10	60	2
PDP-26	9/9/15	227663	2900878	394.29	397.68	39	49	10	49	2

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface.

TABLE 2
GROUNDWATER ELEVATION SUMMARY
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft bgs)	Water Elevation (ft amsl)
MW-17A	387.75	10/19/15	18.69	369.06
		12/14/15	17.14	370.61
		02/24/16	16.80	370.95
		04/05/16	16.46	371.29
		06/06/16	15.62	372.13
		08/09/16	16.14	371.61
		10/17/16	16.39	371.36
		12/11/16	18.17	369.58
MW-18A	414.44	10/20/15	37.41	377.03
		12/14/15	35.92	378.52
		02/24/16	34.84	379.60
		04/05/16	33.88	380.56
		06/06/16	33.96	380.48
		08/09/16	33.04	381.40
		10/17/16	35.31	379.13
		12/11/16	37.46	376.98
MW-19	371.33	10/20/15	12.60	358.73
		12/14/15	5.14	366.19
		02/24/16	5.56	365.77
		04/05/16	5.99	365.34
		06/06/16	5.31	366.02
		08/09/16	9.59	361.74
		10/17/16	6.81	364.52
		12/11/16	9.06	362.27
MW-20A	398.98	10/20/15	25.17	373.81
		12/14/15	23.64	375.34
		02/24/16	23.44	375.54
		04/05/16	23.23	375.75
		06/06/16	22.39	376.59
		08/09/16	23.92	375.06
		10/17/16	24.47	374.51
		12/11/16	25.96	373.02
PDP-22	386.75	10/20/15	34.17	352.58
		12/14/15	33.48	353.27
		02/24/16	33.09	353.66
		04/05/16	32.66	354.09
		06/06/16	33.49	353.26
		08/09/16	32.21	354.54
		10/17/16	32.59	354.16
		12/11/16	34.37	352.38
PDP-23	394.43	10/20/15	23.61	370.82
		12/14/15	22.34	372.09
		02/24/16	19.94	374.49
		04/05/16	19.29	375.14
		06/06/16	18.11	376.32
		08/09/16	21.41	373.02
		10/17/16	22.51	371.92
		12/11/16	23.04	371.39

TABLE 2
GROUNDWATER ELEVATION SUMMARY
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft bgs)	Water Elevation (ft amsl)
PDP-24	389.73	10/20/15	25.62	364.11
		12/14/15	24.94	364.79
		02/24/16	24.76	364.97
		04/05/16	24.51	365.22
		06/06/16	23.87	365.86
		08/09/16	22.61	367.12
		10/17/16	22.08	367.65
		12/11/16	24.19	365.54
PDP-25	387.97	10/20/15	13.49	374.48
		12/14/15	12.76	375.21
		02/24/16	26.84	361.13
		04/05/16	26.96	361.01
		06/06/16	26.17	361.80
		08/09/16	26.06	361.91
		10/17/16	27.83	360.14
		12/11/16	29.71	358.26
PDP-26	397.68	10/20/15	31.24	366.44
		12/14/15	30.67	367.01
		02/24/16	30.11	367.57
		04/05/16	29.89	367.79
		06/06/16	29.06	368.62
		08/09/16	29.54	368.14
		10/17/16	30.57	367.11
		12/11/16	32.81	364.87
PDP-27	377.58	10/20/15	18.28	359.30
		12/14/15	7.61	369.97
		02/24/16	11.95	365.63
		04/05/16	10.27	367.31
		06/06/16	7.44	370.14
		08/09/16	17.46	360.12
		10/17/16	19.06	358.52
		12/11/16	19.78	357.80
PDP-28	368.62	10/20/15	13.68	354.94
		12/14/15	13.68	354.94
		02/24/16	10.75	357.87
		04/05/16	9.61	359.01
		06/06/16	11.74	356.88
		08/09/16	10.91	357.71
		10/17/16	12.19	356.43
		12/11/16	13.09	355.53
PDP-29	383.05	10/20/15	14.12	368.93
		12/14/15	14.06	368.99
		02/24/16	12.45	370.60
		04/05/16	10.86	372.19
		06/06/16	12.62	370.43
		08/09/16	11.24	371.81
		10/17/16	13.09	369.96
		12/11/16	14.23	368.82

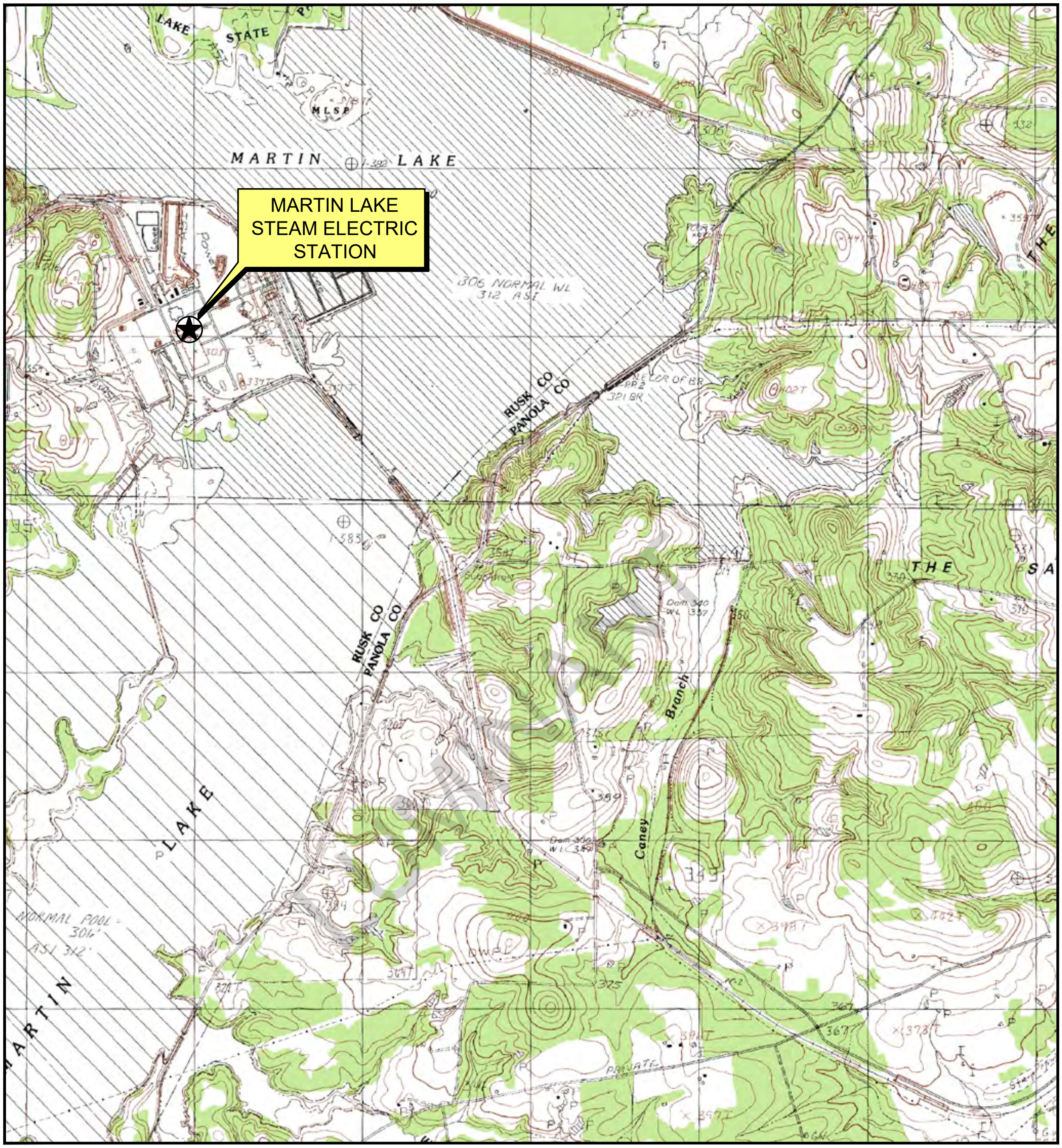
Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface

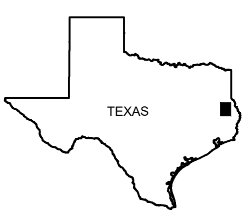
TABLE 3
SUMMARY OF AQUIFER TEST RESULTS
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	Test Type	Aquifer Type	Analysis Method	Saturated Thickness (feet)	Results	
					T (cm^2/sec)	K (cm/sec)
PDP 5						
PDP-22	Slug-In	Unconfined	Bouwer-Rice	22.84	3.04E-02	4.36E-05
PDP-22	Slug-Out	Unconfined	Bouwer-Rice	22.84	4.16E-03	5.98E-06
				Mean	**1.73E-02**	**2.48E-05**
PDP-25	Slug-In	Confined	Bouwer-Rice	24	1.09E-01	1.49E-04
PDP-25	Slug-Out	Confined	Bouwer-Rice	24	9.05E-02	1.24E-04
				Mean	**9.99E-02**	**1.37E-04**
PDP-26	Slug-In	Confined	Bouwer-Rice	8	8.31E-03	3.41E-05
PDP-26	Slug-Out	Confined	Bouwer-Rice	8	3.95E-03	1.62E-05
				Mean	**6.13E-03**	**2.51E-05**
				Geometric Mean for All PDP 5 Tests	**2.19E-02**	**4.40E-05**

Notes:
1. Abbreviations: T - transmissivity; K - hydraulic conductivity.

Figures





QUADRANGLE LOCATION

N

Scale in Feet

0 1500 3000

SOURCE:
Base map from www.tnris.gov, Tatum, TX 7.5 min. USGS quadrangle dated 1983.

MARTIN LAKE STEAM ELECTRIC STATION

TATUM, TEXAS

Figure 1

PDP 5 AREA SITE LOCATION MAP

PROJECT: 5123B	BY: AJD	REVISIONS
DATE: JUNE, 2015	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

CCR Monitoring Well

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

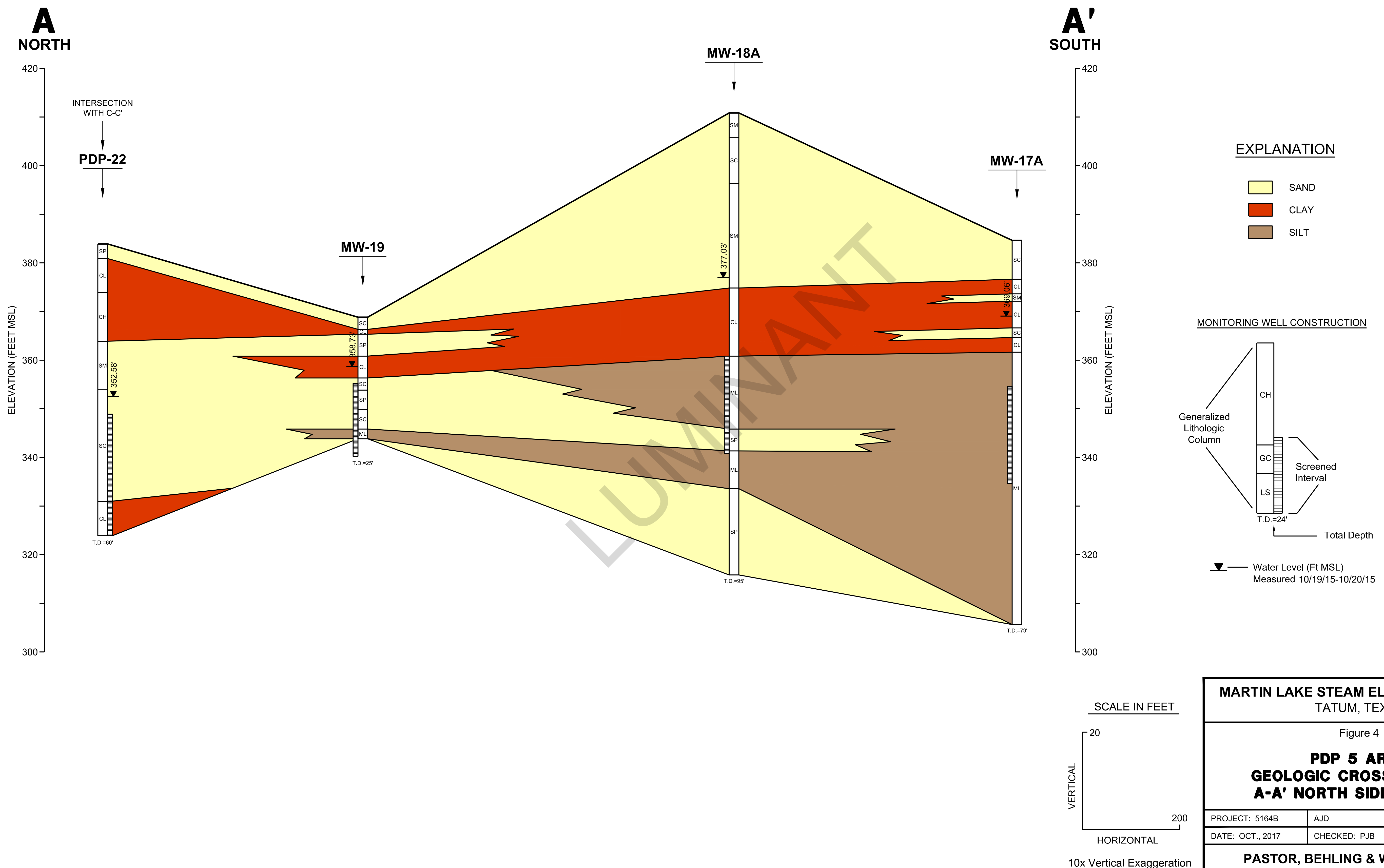
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

PDP 5 AREA
DETAILED SITE PLAN

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



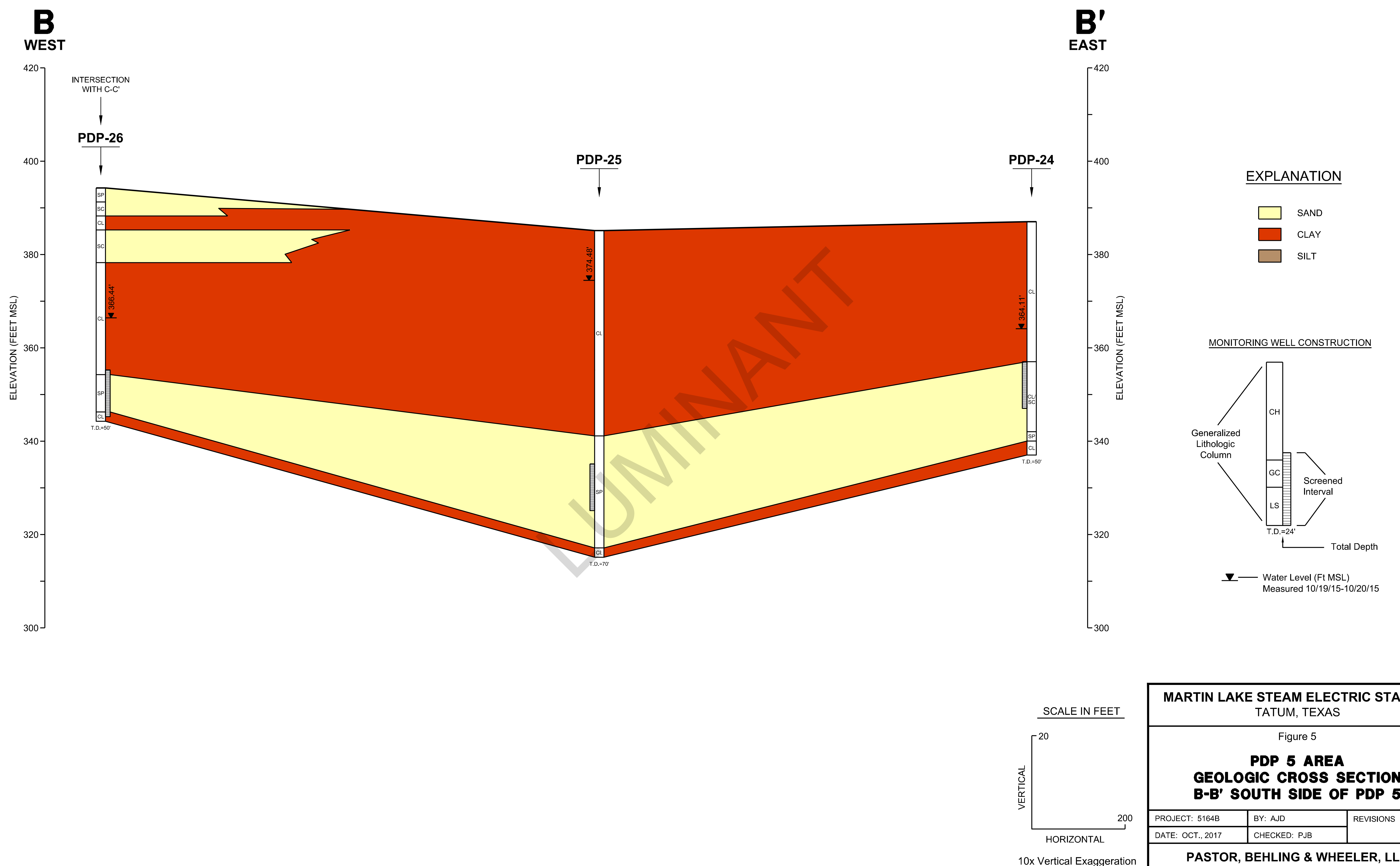
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

PDP 5 AREA
GEOLOGIC CROSS SECTION
A-A' NORTH SIDE OF PDP5

PROJECT: 5164B	AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



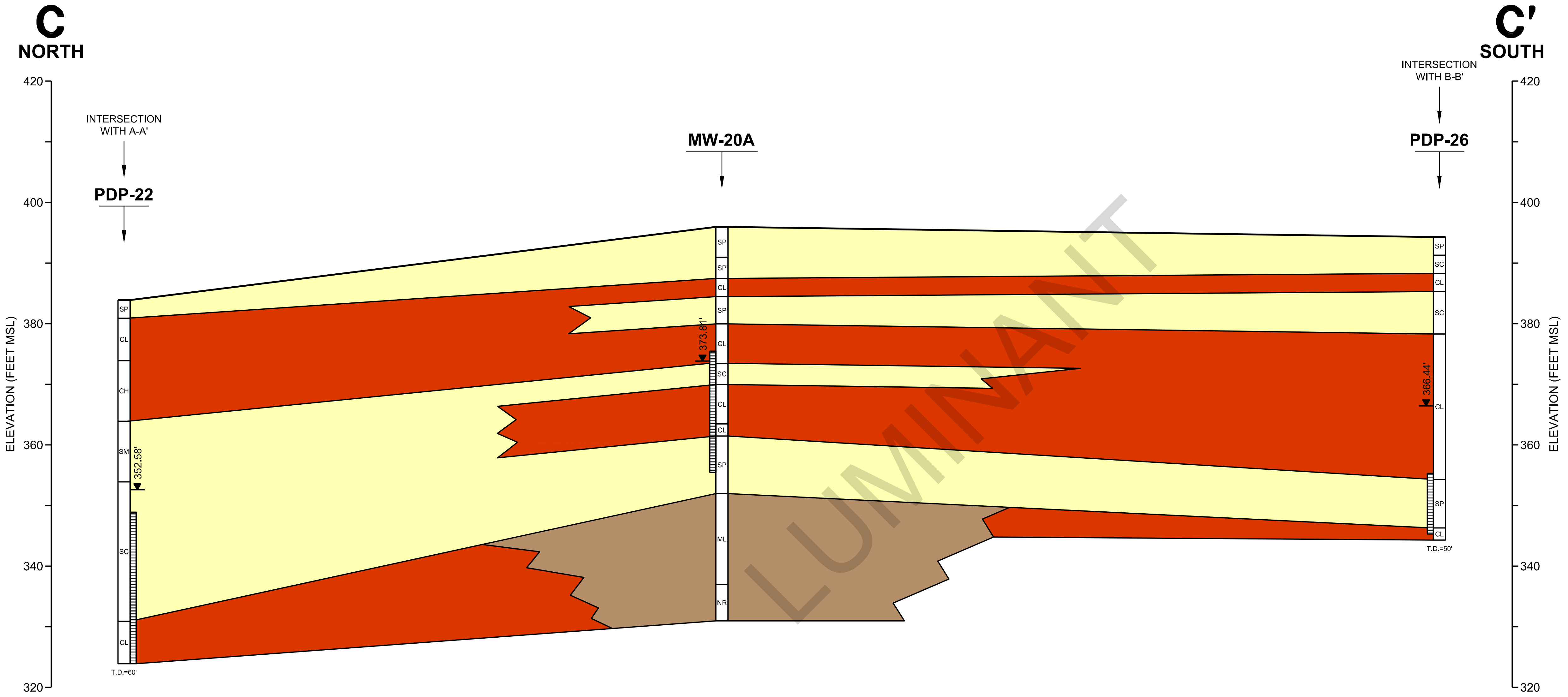
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

PDP 5 AREA
GEOLOGIC CROSS SECTION
B-B' SOUTH SIDE OF PDP 5

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

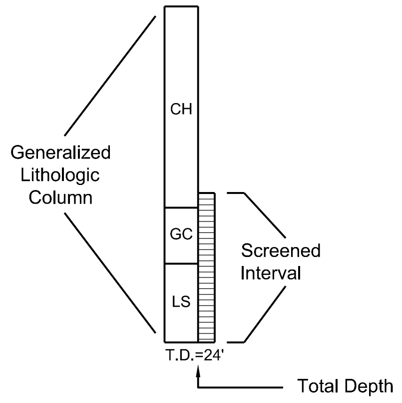
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

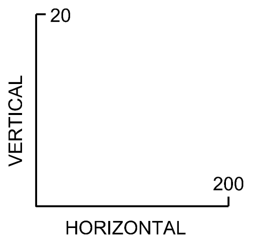
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



Water Level (Ft MSL)
Measured 10/19/15-10/20/15

SCALE IN FEET



10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

PDP 5 AREA
GEOLOGIC CROSS SECTION
C-C' WEST SIDE OF PDP 5

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

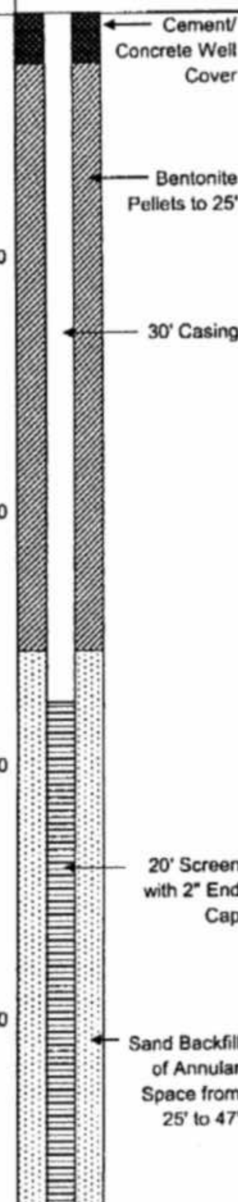
Appendix A

CCR Monitoring Well Logs

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-17A
Project Name:	Martin Lake SES	Date Drilled:	October 1, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	8/16 Grade Silica Sand
Ground Elevation:	384.63' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	387.53' msl	Depth to Water/Date:	26.62' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	360.91' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth	Well Diagram
NA	NA	NA	CT	NA				See MW-17B boring log for Lithologic Description		
					10				10.0	
					20			∇	20.0	
					30				30.0	
					40				40.0	
					50			The boring was terminated and the well was set at 47' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	50.0	

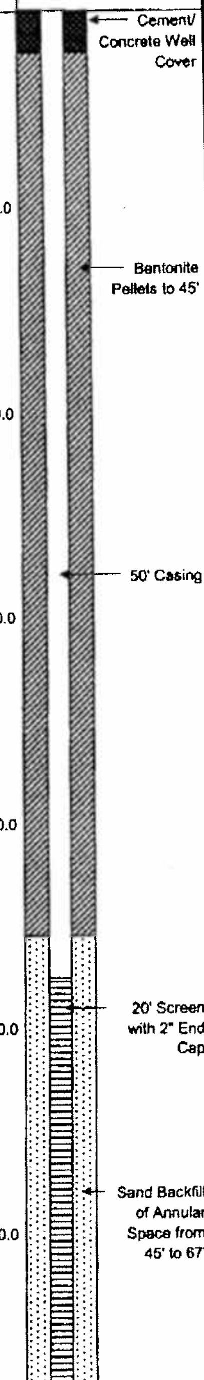
GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-18A
Project Name:	Martin Lake SES	Date Drilled:	October 2, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	8/16 Grade Silica Sand
Ground Elevation:	410.83' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	414.43' msl	Depth to Water/Date:	43.17' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	371.26' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
NA	NA	NA	CT	NA				See MW-18B boring log for Lithologic Description	
					10				10.0
					20				20.0
					30				30.0
					40			∇	40.0
					50				50.0
					60				60.0
					70			The boring was terminated and the well was set at 67' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	70.0

Well Diagram



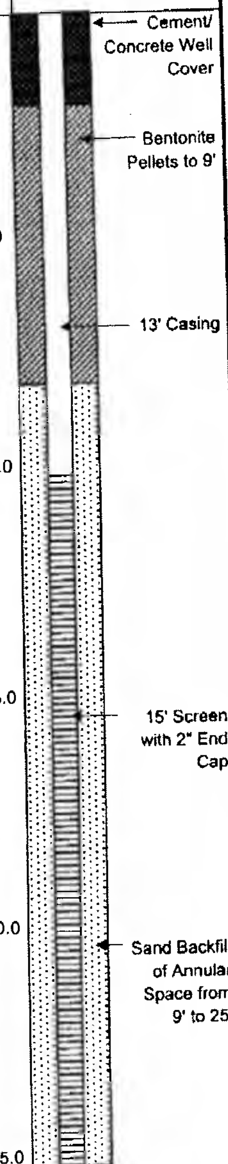
GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-19
Project Name:	Martin Lake SES	Date Drilled:	September 30, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	20/40 Grade Silica Sand
Ground Elevation:	367.84' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	371.23' msl	Depth to Water/Date:	13.89' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	357.34' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Lithologic Description	Contact Depth
NA	NA	90	CT	NA		SC	Moist, medium dense, reddish-brown, CLAYEY SAND (fine-grained SAND)	
						CL	Moist, soft, reddish-brown, SANDY CLAY	
		60			5	SP	Moist, loose, reddish-brown, fine-grained SAND -gray	5.0
					10	CL	Moist to wet, soft, brown, SANDY CLAY (fine-grained SAND) -stiff -light gray ▽	10.0
		100				CL	Moist, very stiff, light gray, SILTY CLAY	
						SC	Moist, dense, gray and reddish-brown, CLAYEY SAND (fine-grained SAND ▽	
		70			15	SP	Wet, loose, light gray and reddish-brown, fine-grained SAND -medium dense	15.0
		100			20	SC	Wet, medium dense, light gray and reddish-brown, CLAYEY SAND (fine-grained SAND) -stringer of dense -stringer of dense	20.0
						ML	Moist, very stiff, gray CLAYEY SILT with some iron staining	
					25		The boring was terminated and the well was set at 25' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	25.0

Well Diagram



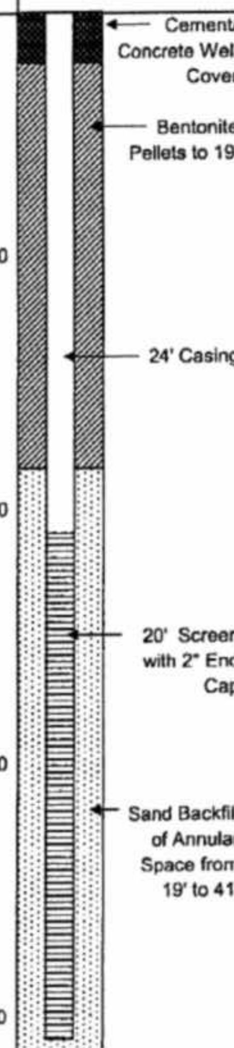
GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-20A
Project Name:	Martin Lake SES	Date Drilled:	September 30, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	20/40 Grade Silica Sand
Ground Elevation:	395.95' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	398.34' msl	Depth to Water/Date:	29.19' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	369.65' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
NA	NA	NA	CT	NA				See MW-20B boring log for Lithologic Description	
					10				10.0
					20				20.0
								∇	
					30				30.0
					40				40.0
								The boring was terminated and the well was set at 41' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	

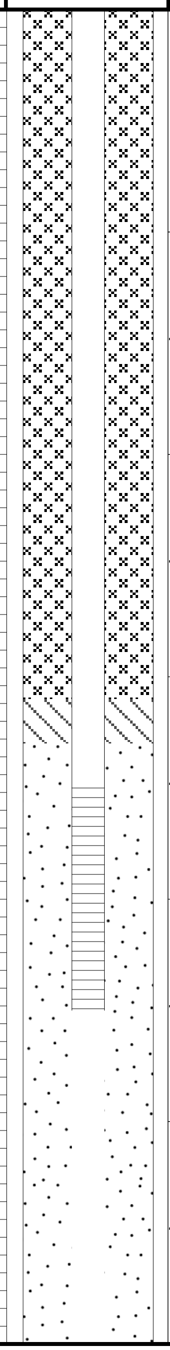
Well Diagram



Luminant

Log of Boring: PDP-22

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	9/9/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	60
	Driller's License:	5814M	TOC Elevation (ft. AMSL):	
PBW Project No. 5164B	Logged By:	Ryan Francis	Northing:	
	Sampling Method:	4"x10' Core barrel	Easting:	



Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0 - 3	8.0/10.0	SP	(0 - 3) Fine SAND, tan, dry, very soft, small iron concretions, grass roots
3 - 10		CL	(3 - 10) Sandy CLAY, red/orange mottled, dry, firm, moderate cementation, flat to subrounded, sharp contact
10 - 20	10.0/10.0	CH	(10 - 20) Silty CLAY with minor sand, dry, firm, moderate cementation, flat to subrounded, medium to high plasticity, micro laminated structure, increasing sand content with depth, transition from red/gray at 10' to tan at 20'
20 - 28	10.0/10.0	SM	(20 - 28) Sandy SILT, gray and tan, dry, firm, moderate cementation, flat to subrounded, grass lense (fill), transition to gray at 26'
28 - 30			(28 - 30) Silty SAND, iron-rich, dry, soft, weak cementation, subrounded, sharp contact
30 - 53	10.0/10.0 10.0/10.0 10.0/10.0	SC	(30 - 53) SAND, gray with small streaks and iron at 32', moist to wet, soft, moderate plasticity at 30', transition to low plasticity at 40', minor clay content
53 - 60	10.0/10.0	CL	(53 - 60) Silty CLAY, gray, dry, firm, moderate cementation, dry, flat, transition to very hard gray/dark gray clay at 56'

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-60') 20/40 sand

Luminant

Log of Boring: PDP-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/10/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0 - 30	10.0/10.0 (0-10), 10.0/10.0 (10-20), 10.0/10.0 (20-30)	CL	(0 - 30) Sandy CLAY, brown to red to tan, dry, soft to firm, weak cementation, iron rich at 5', none to moderate plasticity, black mottling and some organics present at 10', iron banding and iron nodules with increasing sand cotent at 16', microlaminated iron rich banded gray, tan, and red sandy clay (21' - 30')
30 - 39	10.0/10.0 (30-40)	CL	(30 - 39) CLAY, gray, micro laminated, minor sand content, dry, firm to hard, weak to moderate cementation, low plasticity
39 - 41		CL	(39 - 41) Sandy CLAY, light gray, dry, firm, weak cementation, medium plasticity
41 - 44	10.0/10.0 (40-50)	SC	(41 - 44) Clayey SAND, wet, soft, weak cementation, subrounded, medium to high plasticity
44 - 50		CL	(44 - 50) Sandy CLAY, dark gray, dry, hard, moderate cementation

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-45') 20/40 sand

Luminant

Log of Boring: PDP-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/11/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0–10		8.0/10.0	CL	(0 - 30) Sandy CLAY, red and tan mottling, fine sand, dry to moist, firm, weak cementation, low to medium plasticity, occasional black inclusions, minor very fine sand content in gray and orange clay and high plasticity (20'-30')
10–20		7.0/10.0		
20–30		10.0/10.0		
30–40		10.0/10.0	CL/SC	(30 - 45) Sandy CLAY/Clayey SAND, gray, moist to wet, very fine grained, firm, weak cementation, medium plasticity, softens and increasing wetness with depth (35'-39'), brown with increased iron content (39'-42'), dark gray, dry, and none to low plasticity (39'-45')
40–50		10.0/10.0	SP	(45 - 47) Clayey SAND, wet, soft, weak cementation, medium to high plasticity
			CL	(47 - 50) Sandy CLAY, dark gray, fine grained, dry, firm to hard, weak cementation

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-30) Casing, 2" Sch 40 FJT PVC
(30-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-26') Grout
(26'-28') Bentonite pellets
(28'-40') 20/40 sand

Luminant

Log of Boring: PDP-25

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	9/11/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	70
	Driller's License:	5814M	TOC Elevation (ft. AMSL):	
PBW Project No. 5164B	Logged By:	Ryan Francis	Northing:	
	Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0 - 44		10.0/10.0 (0-10), 10.0/10.0 (10-20), 10.0/10.0 (20-30), 10.0/10.0 (30-40)	CL	(0 - 44) Sandy CLAY, red to gray and tan, very fine grained, dry to moist, firm, low to medium plasticity, weak to moderate cementation, micro laminated, minor organics, variable sand content with depth, high plasticity and very low sand content (22'-23'), higher sand content and high iron content with occasional subrounded pebbles (27'-30'), red, orange, tan, and gray mottling (30'-44')
44 - 68		10.0/10.0 (40-50), 10.0/10.0 (50-60), 10.0/10.0 (60-70)	SP	(44 - 68) Clayey SAND, gray, moist, soft to firm, minor orange streaking, low plasticity, weak cementation, subrounded, minor wet and soft clay zone (62'-64')
68 - 70			CL	(68 - 70) CLAY, black, minor silt, dry, very hard, moderate cementation, smooth shiny surface when fractured

Depth scale (ft): 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-50) Casing, 2" Sch 40 FJT PVC
(50-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-46') Grout
(46'-48') Bentonite pellets
(48'-60') 20/40 sand

Luminant

Log of Boring: PDP-26

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	9/9/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	50
PBW Project No. 5164B	Driller's License:	5814M	TOC Elevation (ft. AMSL):	
	Logged By:	Ryan Francis	Northing:	
	Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0–3	10.0/10.0	SP	(0 - 3) SAND, tan, dry, very soft, weak cementation
3–6		SC	(3 - 6) Clayey SAND, dry, firm, black lignite present
6–9		CL	(6 - 9) CLAY with minor sand, red, moist, firm, medium plasticity, smear zone black lignite
9–16	10.0/10.0	SC	(9 - 16) Clayey SAND, tan, moist, soft, low plasticity, more clay content with depth
16–40	10.0/10.0 10.0/10.0	CL	(16 - 40) CLAY, tan, micro laminated orange and gray, moist, soft, medium plasticity, dry and silty clay (19'-27'), micro laminated gray and dark gray (27'-36'), increasing sand content (30'-36'), organics layer (36.5'-37'), high iron content (39'-40')
40–48	10.0/10.0	SP	(40 - 48) SAND, tan, medium, moist to wet, soft, subrounded
48–50		CL	(48 - 50) CLAY, gray, micro laminated, dry, firm, moderate cementation

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-39) Casing, 2" Sch 40 FJT PVC
(39-49) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-35') Grout
(35'-37') Bentonite pellets
(37'-49') 20/40 sand

Appendix B

Photographs of CCR Groundwater Monitoring Wells

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 1: PDP22

Photograph 2: PDP23

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 3: PDP24

Photograph 4: PDP25

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 5: PDP26

Photograph 6: MW-17A

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

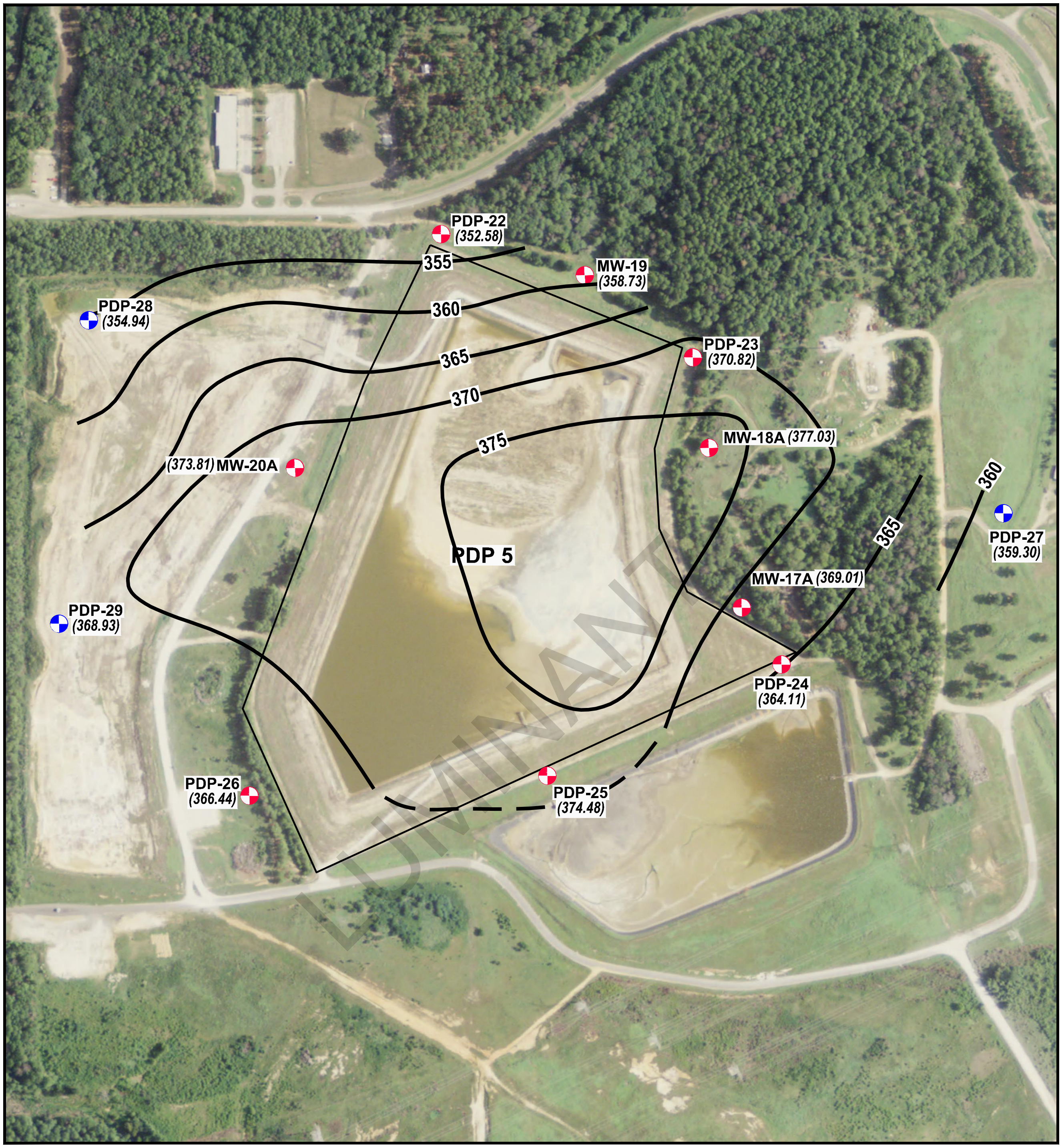
Photograph 7: MW-18A

Photograph 8: MW-19

Photograph 9: MW-20A

Appendix C

Groundwater Potentiometric Surface Maps



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

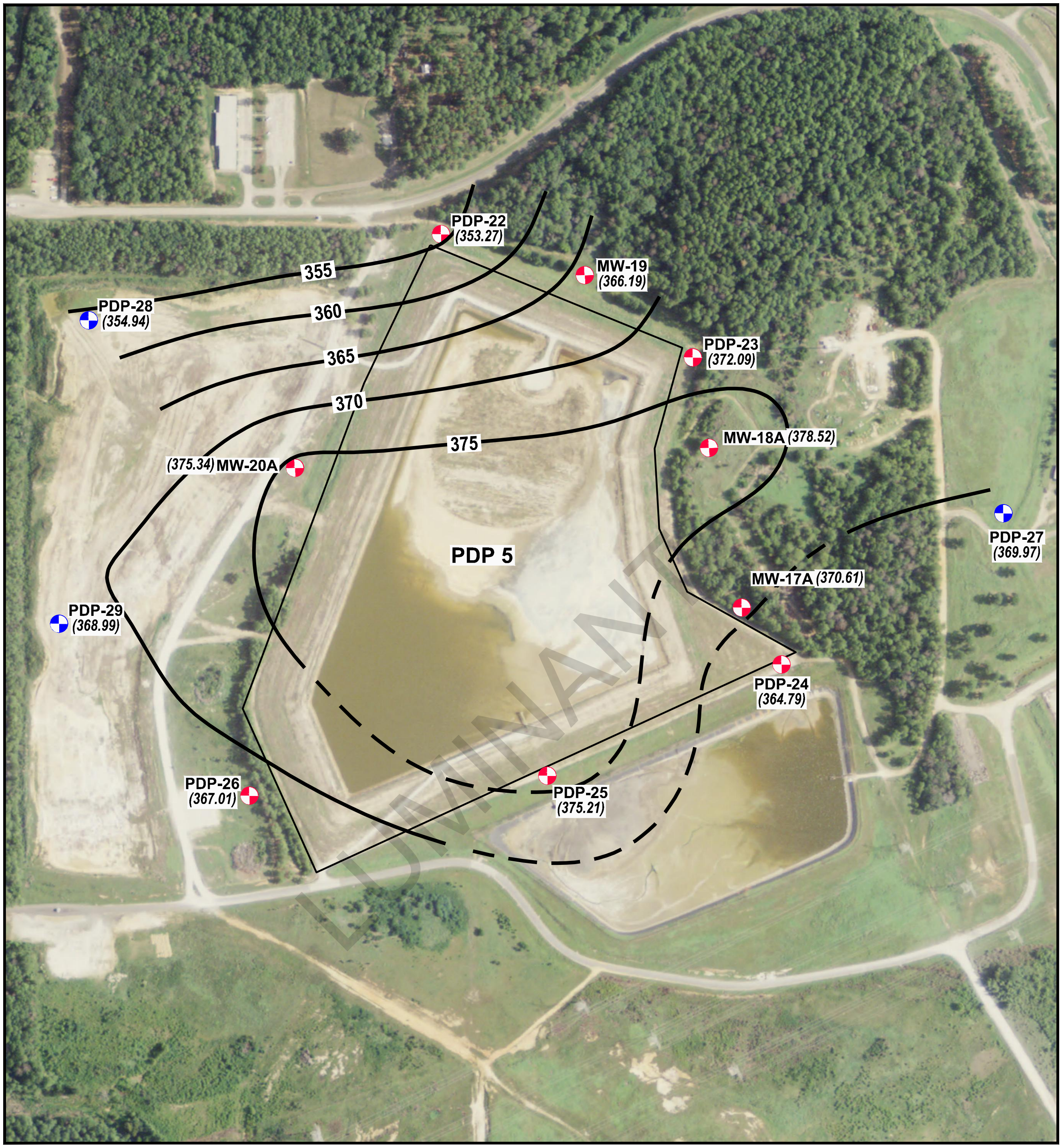
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP OCTOBER 20, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

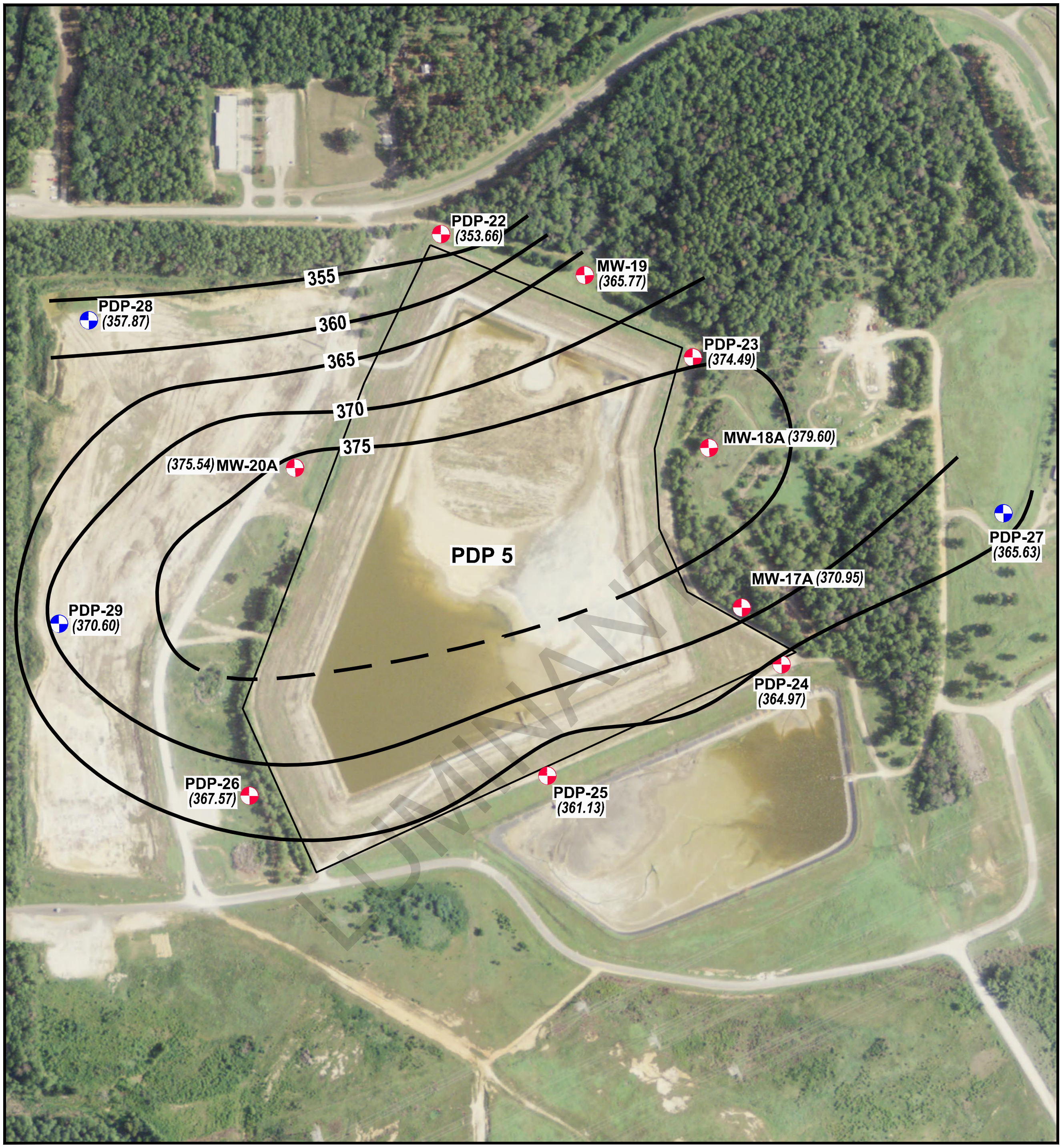
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DEC. 14, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

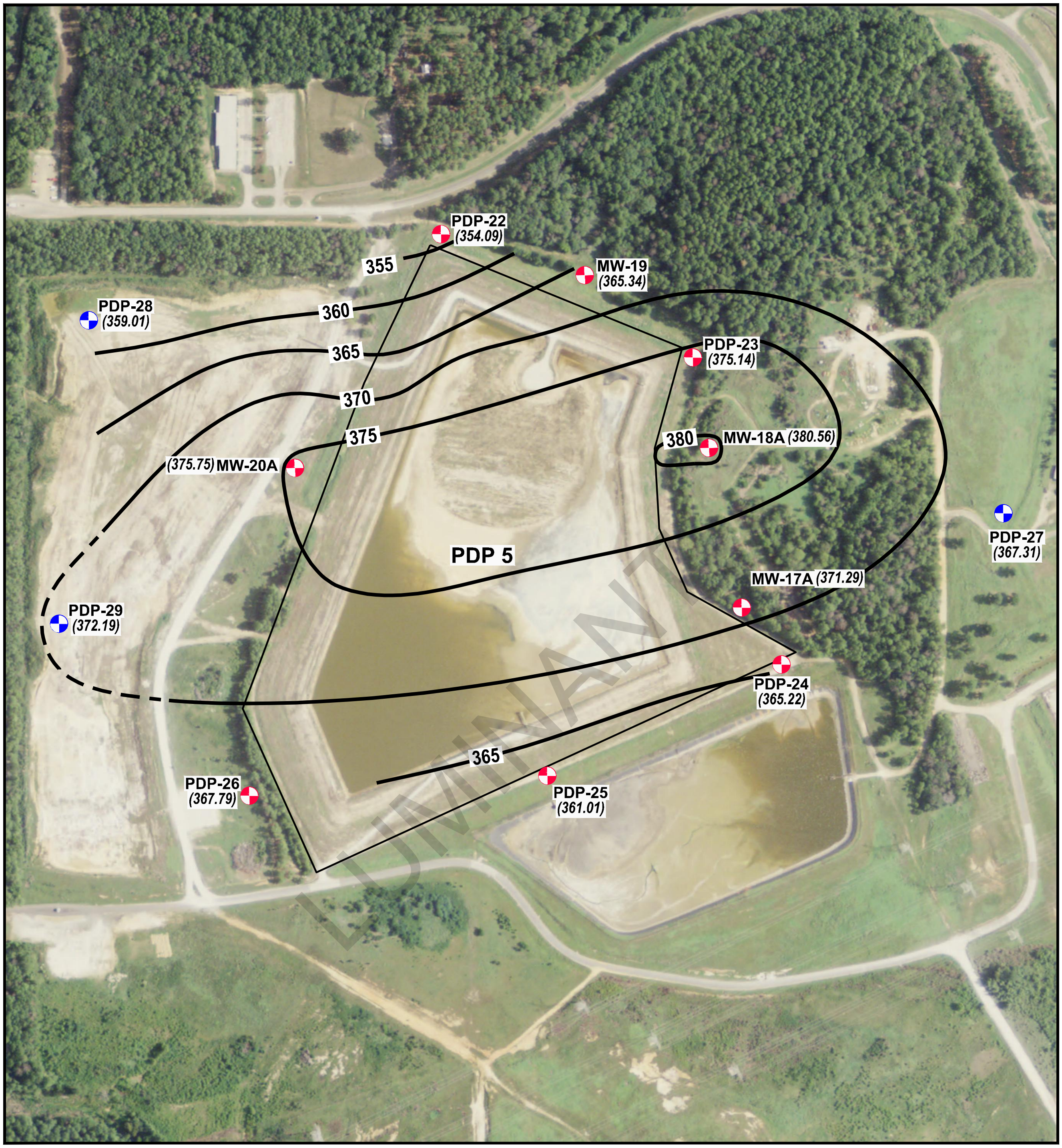
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - FEB. 24, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

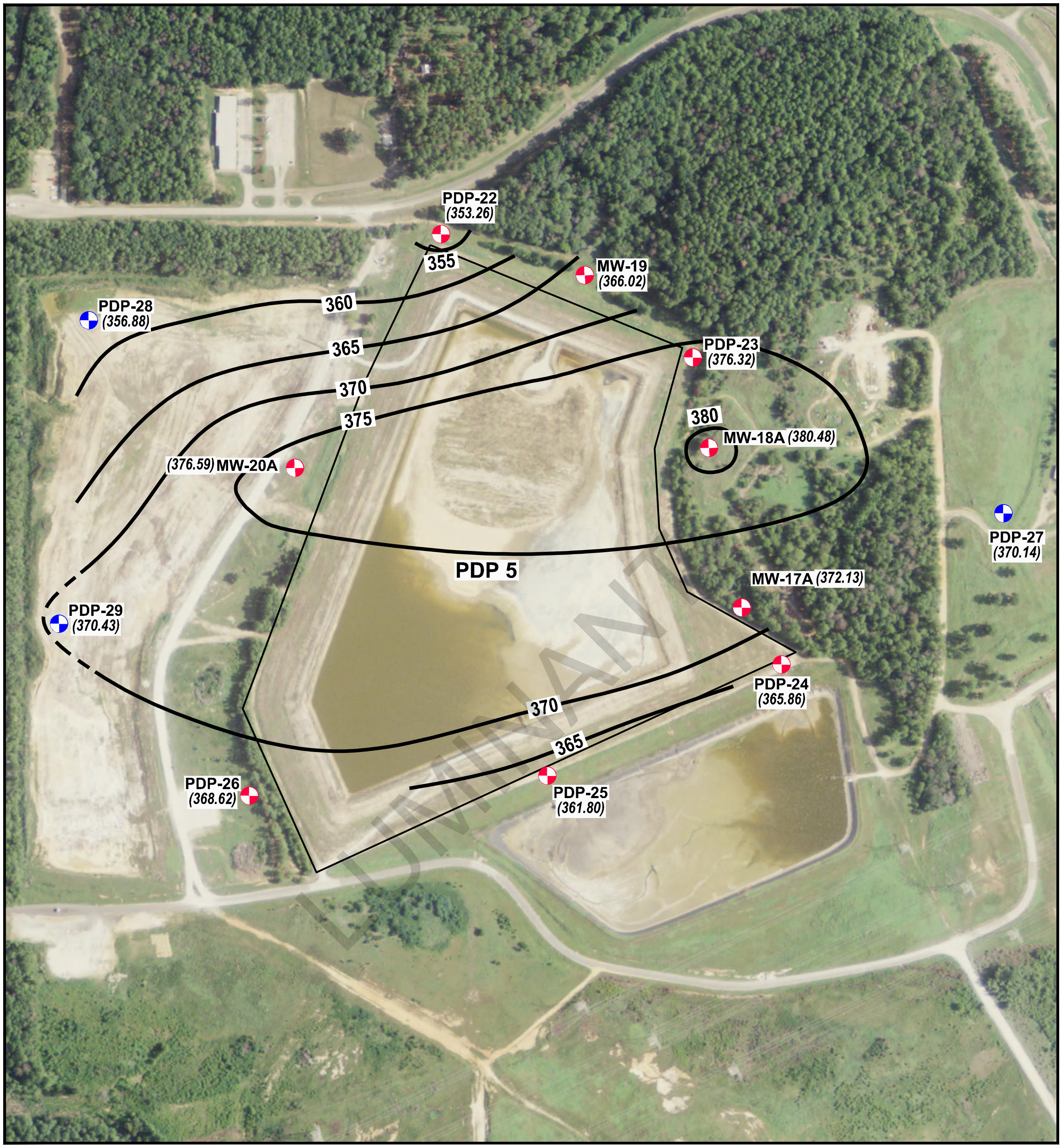
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

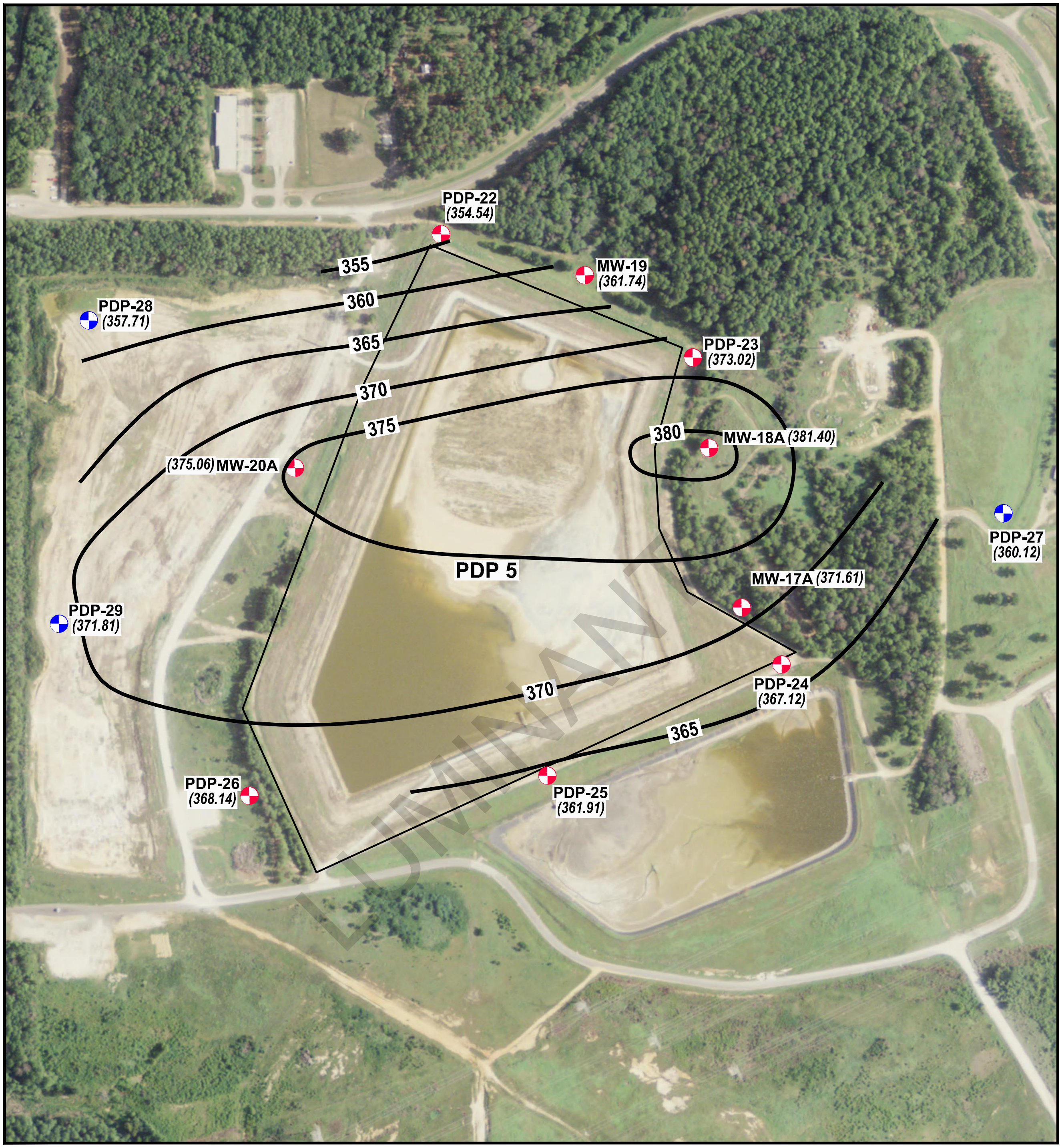
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION

TATUM, TEXAS

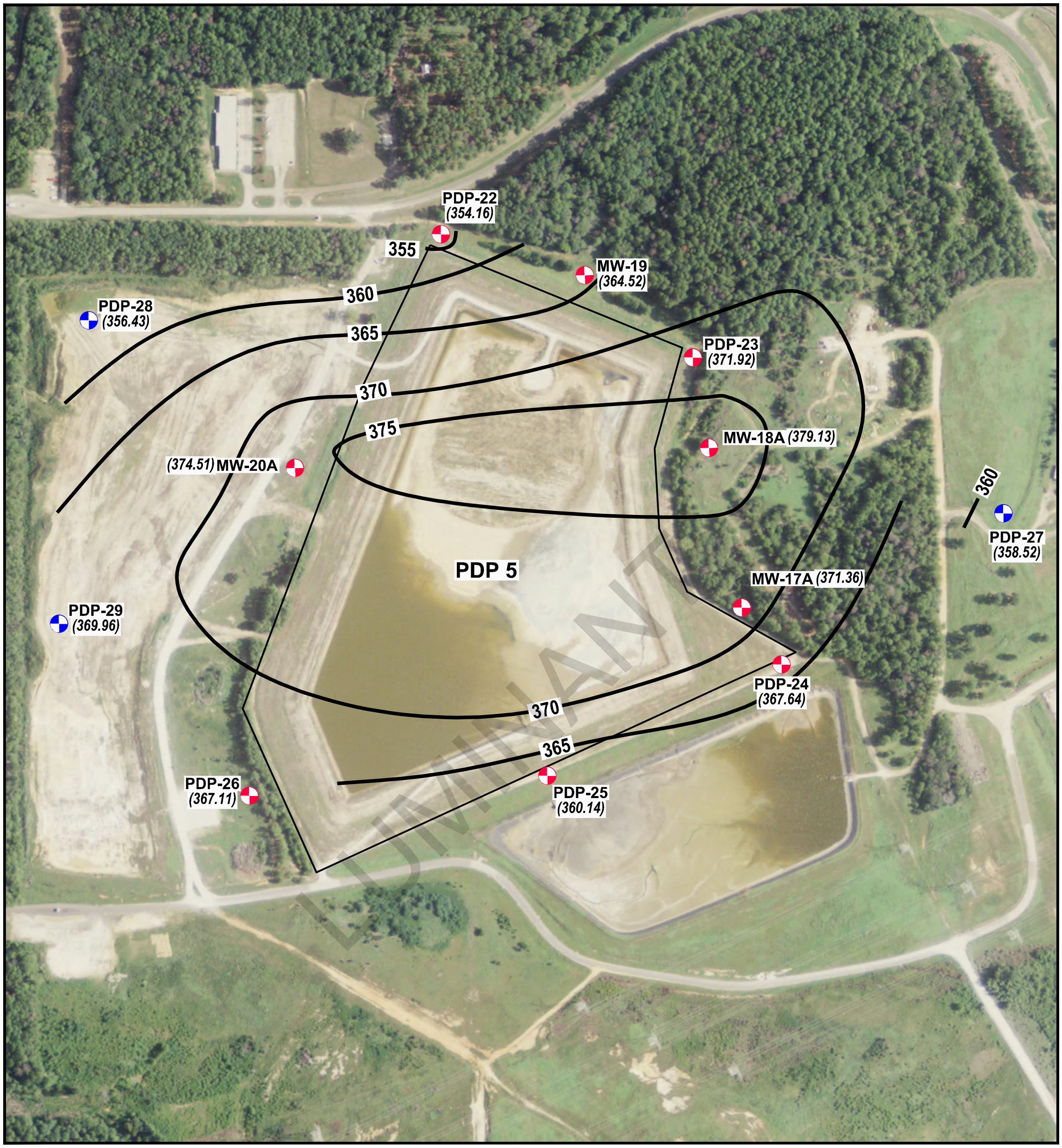
Figure 6

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - AUGUST 9, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

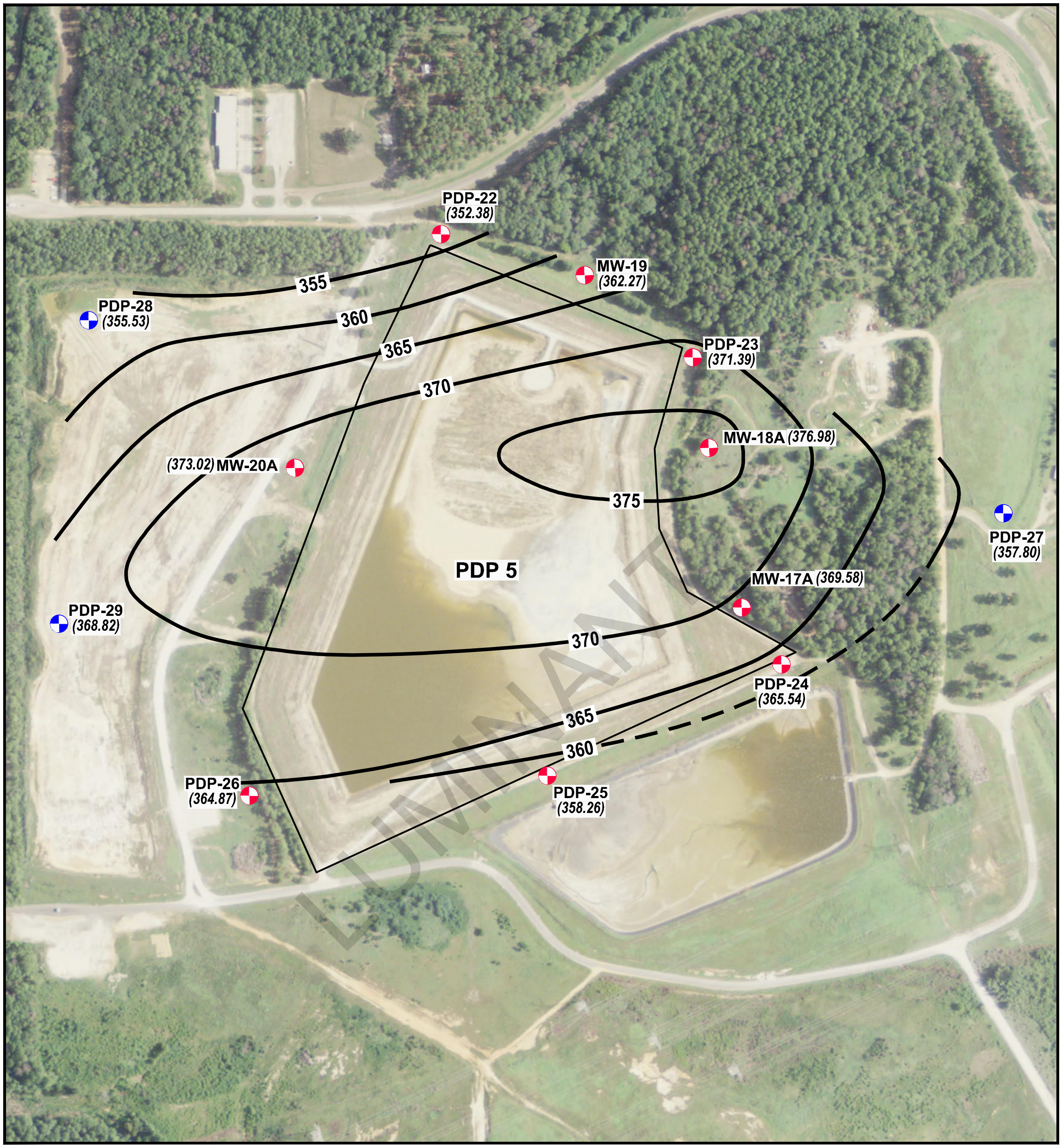
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - OCTOBER 17, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction

(374.34) Groundwater Potentiometric Surface (ft. MSL)

— 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

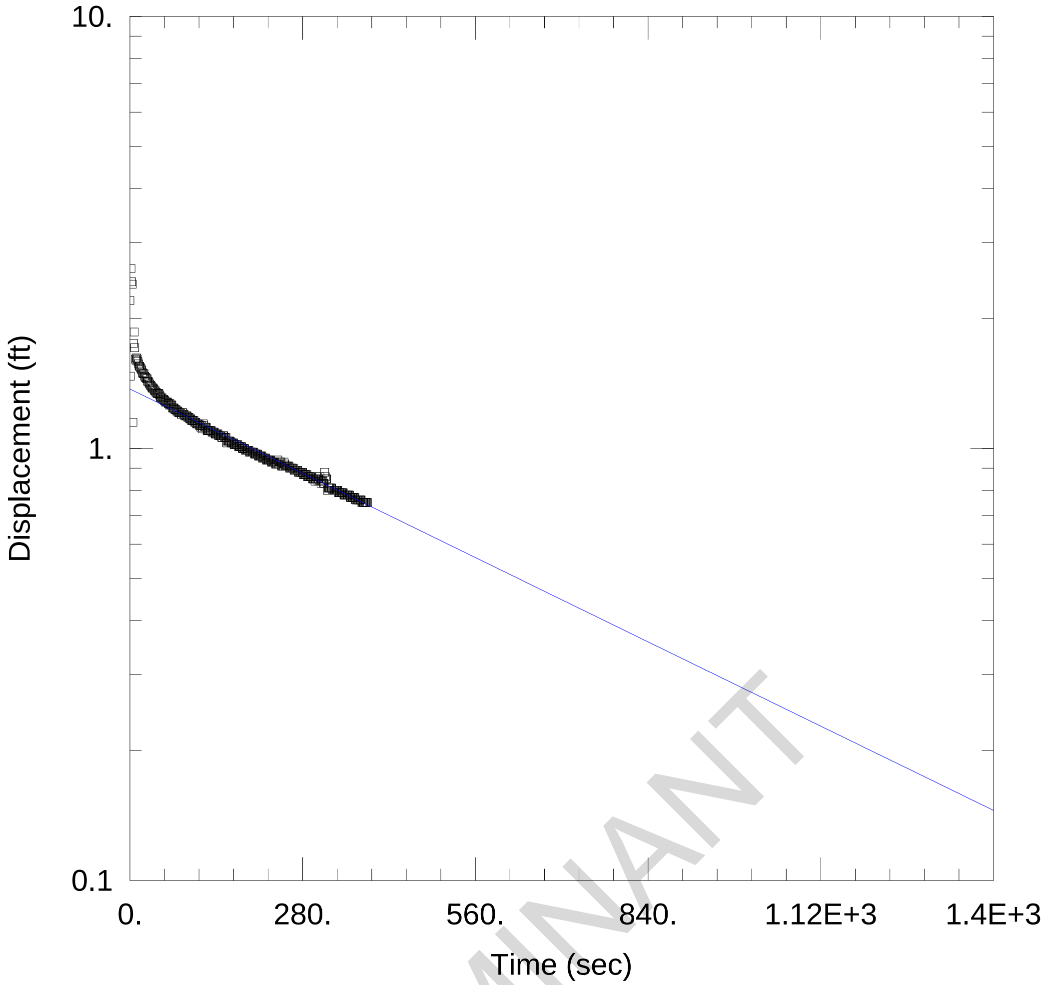
PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DECEMBER 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Appendix D

Aquifer Test Data



PDP-22 SLUG IN

Data Set: J:\...\PDP-22 Slug In.aqt
Date: 12/16/15 Time: 10:25:03

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-22
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 22.84 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-22)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 14.84 ft
Casing Radius: 0.083 ft
Static Water Column Height: 22.84 ft
Screen Length: 10. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.362E-5 cm/sec y0 = 1.373 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-22 Slug In
Date: 12/16/15
Time: 10:26:54

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-22

AQUIFER DATA

Saturated Thickness: 22.84 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-22

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 22.84 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.84 ft

No. of Observations: 385

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	1.47	194.	0.98
2.	2.61	195.	0.98
3.	2.43	196.	0.98
4.	2.4	197.	0.98
5.	1.15	198.	0.98
6.	1.75	199.	0.98
7.	1.86	200.	0.98
8.	1.71	201.	0.98
9.	1.61	202.	0.97
10.	1.6	203.	0.97
11.	1.62	204.	0.97
12.	1.61	205.	0.97
13.	1.59	206.	0.97
14.	1.57	207.	0.97
15.	1.55	208.	0.96
16.	1.55	209.	0.96
17.	1.54	210.	0.96
18.	1.53	211.	0.96
19.	1.52	212.	0.96
20.	1.5	213.	0.96
21.	1.49	214.	0.96
22.	1.49	215.	0.95
23.	1.49	216.	0.95
24.	1.47	217.	0.95
25.	1.46	218.	0.95
26.	1.46	219.	0.95
27.	1.45	220.	0.95
28.	1.45	221.	0.94
29.	1.43	222.	0.94

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.43	223.	0.94
31.	1.42	224.	0.94
32.	1.41	225.	0.94
33.	1.4	226.	0.94
34.	1.4	227.	0.94
35.	1.39	228.	0.94
36.	1.38	229.	0.93
37.	1.38	230.	0.93
38.	1.38	231.	0.93
39.	1.37	232.	0.93
40.	1.36	233.	0.93
41.	1.36	234.	0.93
42.	1.35	235.	0.93
43.	1.35	236.	0.92
44.	1.34	237.	0.92
45.	1.34	238.	0.92
46.	1.34	239.	0.92
47.	1.34	240.	0.94
48.	1.33	241.	0.92
49.	1.32	242.	0.92
50.	1.31	243.	0.93
51.	1.31	244.	0.93
52.	1.31	245.	0.93
53.	1.3	246.	0.91
54.	1.3	247.	0.91
55.	1.3	248.	0.91
56.	1.29	249.	0.91
57.	1.29	250.	0.93
58.	1.28	251.	0.92
59.	1.28	252.	0.91
60.	1.28	253.	0.91
61.	1.28	254.	0.91
62.	1.27	255.	0.91
63.	1.27	256.	0.91
64.	1.26	257.	0.91
65.	1.27	258.	0.91
66.	1.26	259.	0.9
67.	1.26	260.	0.9
68.	1.26	261.	0.9
69.	1.24	262.	0.9
70.	1.24	263.	0.9
71.	1.24	264.	0.9
72.	1.24	265.	0.9
73.	1.23	266.	0.89
74.	1.23	267.	0.89
75.	1.23	268.	0.89
76.	1.22	269.	0.89
77.	1.22	270.	0.89
78.	1.22	271.	0.89
79.	1.21	272.	0.89
80.	1.21	273.	0.88
81.	1.21	274.	0.88
82.	1.21	275.	0.88
83.	1.2	276.	0.88
84.	1.2	277.	0.88
85.	1.21	278.	0.88
86.	1.21	279.	0.88
87.	1.2	280.	0.88
88.	1.2	281.	0.87
89.	1.19	282.	0.87
90.	1.19	283.	0.87
91.	1.19	284.	0.87
92.	1.19	285.	0.87
93.	1.19	286.	0.87
94.	1.18	287.	0.87
95.	1.18	288.	0.86

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	1.18	289.	0.86
97.	1.17	290.	0.86
98.	1.17	291.	0.86
99.	1.17	292.	0.86
100.	1.16	293.	0.86
101.	1.16	294.	0.86
102.	1.16	295.	0.86
103.	1.16	296.	0.85
104.	1.16	297.	0.85
105.	1.15	298.	0.85
106.	1.15	299.	0.85
107.	1.15	300.	0.84
108.	1.14	301.	0.85
109.	1.14	302.	0.86
110.	1.14	303.	0.85
111.	1.14	304.	0.85
112.	1.14	305.	0.84
113.	1.13	306.	0.85
114.	1.13	307.	0.84
115.	1.12	308.	0.86
116.	1.13	309.	0.84
117.	1.11	310.	0.83
118.	1.12	311.	0.84
119.	1.14	312.	0.84
120.	1.13	313.	0.84
121.	1.12	314.	0.83
122.	1.12	315.	0.83
123.	1.12	316.	0.88
124.	1.12	317.	0.86
125.	1.1	318.	0.85
126.	1.1	319.	0.85
127.	1.1	320.	0.8
128.	1.1	321.	0.8
129.	1.1	322.	0.81
130.	1.1	323.	0.81
131.	1.1	324.	0.81
132.	1.1	325.	0.81
133.	1.09	326.	0.81
134.	1.09	327.	0.81
135.	1.09	328.	0.8
136.	1.09	329.	0.8
137.	1.09	330.	0.8
138.	1.08	331.	0.8
139.	1.08	332.	0.8
140.	1.08	333.	0.8
141.	1.08	334.	0.8
142.	1.08	335.	0.8
143.	1.08	336.	0.8
144.	1.07	337.	0.8
145.	1.07	338.	0.79
146.	1.07	339.	0.79
147.	1.07	340.	0.79
148.	1.07	341.	0.79
149.	1.06	342.	0.79
150.	1.06	343.	0.79
151.	1.07	344.	0.79
152.	1.07	345.	0.79
153.	1.06	346.	0.79
154.	1.06	347.	0.78
155.	1.06	348.	0.78
156.	1.06	349.	0.78
157.	1.03	350.	0.78
158.	1.04	351.	0.78
159.	1.04	352.	0.78
160.	1.04	353.	0.78
161.	1.04	354.	0.78

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	1.04	355.	0.78
163.	1.04	356.	0.78
164.	1.03	357.	0.77
165.	1.03	358.	0.77
166.	1.03	359.	0.77
167.	1.03	360.	0.77
168.	1.03	361.	0.77
169.	1.02	362.	0.77
170.	1.02	363.	0.77
171.	1.02	364.	0.77
172.	1.02	365.	0.77
173.	1.02	366.	0.76
174.	1.02	367.	0.76
175.	1.02	368.	0.76
176.	1.01	369.	0.76
177.	1.01	370.	0.76
178.	1.01	371.	0.76
179.	1.01	372.	0.76
180.	1.01	373.	0.76
181.	1.01	374.	0.76
182.	1.	375.	0.76
183.	1.	376.	0.75
184.	1.	377.	0.75
185.	1.	378.	0.75
186.	1.	379.	0.75
187.	0.99	380.	0.75
188.	0.99	381.	0.75
189.	0.99	382.	0.75
190.	0.99	383.	0.75
191.	0.99	384.	0.75
192.	0.99	385.	0.75
193.	0.99		

SOLUTION

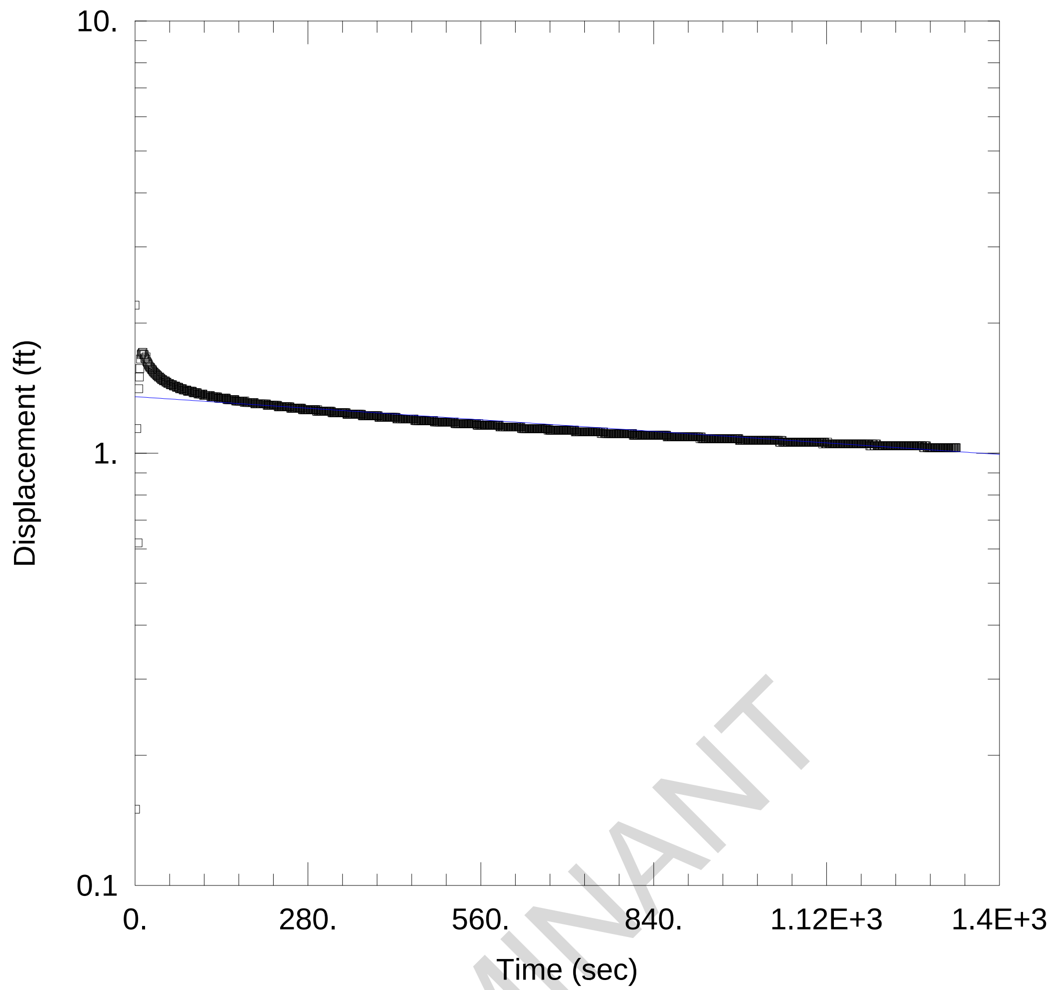
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.589

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	4.362E-5	cm/sec
y0	1.373	ft

T = K*b = 0.03037 cm²/sec



PDP-22 SLUG OUT

Data Set: J:\...\PDP-22 Slug Out.aqt
Date: 12/16/15 Time: 10:25:15

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-22
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 22.84 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-22)

Initial Displacement: 2.2 ft Static Water Column Height: 22.84 ft
Total Well Penetration Depth: 14.84 ft Screen Length: 10. ft
Casing Radius: 0.083 ft Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 5.977E-6 cm/sec y0 = 1.351 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-22 Slug Out
Date: 12/16/15
Time: 10:26:45

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-22

AQUIFER DATA

Saturated Thickness: 22.84 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-22

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 22.84 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.84 ft

No. of Observations: 1329

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	0.15	667.	1.14
2.	0.09	668.	1.14
3.	1.14	669.	1.13
5.	0.62	670.	1.14
6.	1.41	671.	1.13
7.	1.5	672.	1.13
8.	1.57	673.	1.13
9.	1.65	674.	1.13
10.	1.69	675.	1.13
11.	1.7	676.	1.13
12.	1.71	677.	1.13
13.	1.71	678.	1.13
14.	1.69	679.	1.13
15.	1.69	680.	1.13
16.	1.66	681.	1.13
17.	1.65	682.	1.13
18.	1.67	683.	1.13
19.	1.63	684.	1.13
20.	1.62	685.	1.13
21.	1.61	686.	1.13
22.	1.6	687.	1.13
23.	1.59	688.	1.13
24.	1.58	689.	1.13
25.	1.58	690.	1.13
26.	1.57	691.	1.13
27.	1.56	692.	1.13
28.	1.56	693.	1.13
29.	1.55	694.	1.13
30.	1.54	695.	1.13

Time (sec)	Displacement (ft)
31.	1.54
32.	1.53
33.	1.53
34.	1.52
35.	1.52
36.	1.51
37.	1.51
38.	1.5
39.	1.5
40.	1.5
41.	1.49
42.	1.49
43.	1.48
44.	1.48
45.	1.48
46.	1.47
47.	1.47
48.	1.47
49.	1.47
50.	1.46
51.	1.46
52.	1.46
53.	1.45
54.	1.45
55.	1.45
56.	1.45
57.	1.44
58.	1.44
59.	1.44
60.	1.44
61.	1.44
62.	1.43
63.	1.43
64.	1.43
65.	1.43
66.	1.43
67.	1.42
68.	1.42
69.	1.42
70.	1.42
71.	1.42
72.	1.41
73.	1.41
74.	1.41
75.	1.41
76.	1.41
77.	1.41
78.	1.4
79.	1.4
80.	1.4
81.	1.4
82.	1.4
83.	1.4
84.	1.4
85.	1.39
86.	1.39
87.	1.39
88.	1.39
89.	1.39
90.	1.39
91.	1.39
92.	1.39
93.	1.39
94.	1.38
95.	1.38
96.	1.38

Time (sec)	Displacement (ft)
696.	1.13
697.	1.13
698.	1.13
699.	1.13
700.	1.13
701.	1.13
702.	1.13
703.	1.13
704.	1.13
705.	1.13
706.	1.13
707.	1.13
708.	1.13
709.	1.13
710.	1.13
711.	1.13
712.	1.13
713.	1.12
714.	1.12
715.	1.12
716.	1.12
717.	1.12
718.	1.12
719.	1.12
720.	1.12
721.	1.12
722.	1.12
723.	1.12
724.	1.12
725.	1.12
726.	1.12
727.	1.12
728.	1.12
729.	1.12
730.	1.12
731.	1.12
732.	1.12
733.	1.12
734.	1.12
735.	1.12
736.	1.12
737.	1.12
738.	1.12
739.	1.12
740.	1.12
741.	1.12
742.	1.12
743.	1.12
744.	1.12
745.	1.12
746.	1.12
747.	1.12
748.	1.12
749.	1.12
750.	1.12
751.	1.12
752.	1.12
753.	1.12
754.	1.12
755.	1.11
756.	1.12
757.	1.11
758.	1.12
759.	1.12
760.	1.11
761.	1.11

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
97.	1.38	762.	1.11
98.	1.38	763.	1.11
99.	1.38	764.	1.11
100.	1.38	765.	1.11
101.	1.38	766.	1.11
102.	1.37	767.	1.11
103.	1.37	768.	1.11
104.	1.37	769.	1.11
105.	1.37	770.	1.11
106.	1.37	771.	1.11
107.	1.37	772.	1.11
108.	1.37	773.	1.11
109.	1.37	774.	1.11
110.	1.37	775.	1.11
111.	1.36	776.	1.11
112.	1.36	777.	1.11
113.	1.36	778.	1.11
114.	1.36	779.	1.11
115.	1.36	780.	1.11
116.	1.36	781.	1.11
117.	1.36	782.	1.11
118.	1.36	783.	1.11
119.	1.36	784.	1.11
120.	1.36	785.	1.11
121.	1.36	786.	1.11
122.	1.36	787.	1.11
123.	1.35	788.	1.11
124.	1.35	789.	1.11
125.	1.35	790.	1.11
126.	1.35	791.	1.11
127.	1.35	792.	1.11
128.	1.35	793.	1.11
129.	1.35	794.	1.11
130.	1.35	795.	1.11
131.	1.35	796.	1.11
132.	1.35	797.	1.11
133.	1.35	798.	1.11
134.	1.35	799.	1.11
135.	1.34	800.	1.11
136.	1.34	801.	1.11
137.	1.34	802.	1.11
138.	1.34	803.	1.11
139.	1.34	804.	1.11
140.	1.34	805.	1.11
141.	1.34	806.	1.11
142.	1.34	807.	1.1
143.	1.34	808.	1.1
144.	1.34	809.	1.1
145.	1.34	810.	1.1
146.	1.34	811.	1.1
147.	1.34	812.	1.1
148.	1.34	813.	1.1
149.	1.33	814.	1.1
150.	1.33	815.	1.1
151.	1.33	816.	1.1
152.	1.33	817.	1.1
153.	1.33	818.	1.1
154.	1.33	819.	1.1
155.	1.33	820.	1.1
156.	1.33	821.	1.1
157.	1.33	822.	1.1
158.	1.33	823.	1.1
159.	1.33	824.	1.1
160.	1.33	825.	1.1
161.	1.33	826.	1.1
162.	1.33	827.	1.1

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
163.	1.32	828.	1.1
164.	1.32	829.	1.1
165.	1.32	830.	1.1
166.	1.32	831.	1.1
167.	1.32	832.	1.1
168.	1.32	833.	1.1
169.	1.32	834.	1.1
170.	1.32	835.	1.1
171.	1.32	836.	1.1
172.	1.32	837.	1.1
173.	1.32	838.	1.1
174.	1.32	839.	1.1
175.	1.32	840.	1.1
176.	1.32	841.	1.1
177.	1.31	842.	1.1
178.	1.32	843.	1.1
179.	1.31	844.	1.1
180.	1.31	845.	1.1
181.	1.31	846.	1.1
182.	1.31	847.	1.1
183.	1.31	848.	1.1
184.	1.31	849.	1.1
185.	1.31	850.	1.1
186.	1.31	851.	1.1
187.	1.31	852.	1.1
188.	1.31	853.	1.1
189.	1.31	854.	1.1
190.	1.31	855.	1.1
191.	1.31	856.	1.1
192.	1.31	857.	1.1
193.	1.31	858.	1.1
194.	1.3	859.	1.1
195.	1.3	860.	1.1
196.	1.3	861.	1.1
197.	1.3	862.	1.09
198.	1.3	863.	1.09
199.	1.3	864.	1.09
200.	1.3	865.	1.09
201.	1.3	866.	1.09
202.	1.3	867.	1.09
203.	1.3	868.	1.09
204.	1.3	869.	1.09
205.	1.3	870.	1.09
206.	1.3	871.	1.09
207.	1.3	872.	1.09
208.	1.3	873.	1.09
209.	1.3	874.	1.09
210.	1.3	875.	1.09
211.	1.3	876.	1.09
212.	1.3	877.	1.09
213.	1.3	878.	1.09
214.	1.29	879.	1.09
215.	1.29	880.	1.09
216.	1.29	881.	1.09
217.	1.29	882.	1.09
218.	1.29	883.	1.09
219.	1.29	884.	1.09
220.	1.29	885.	1.09
221.	1.29	886.	1.09
222.	1.29	887.	1.09
223.	1.29	888.	1.09
224.	1.29	889.	1.09
225.	1.29	890.	1.09
226.	1.29	891.	1.09
227.	1.29	892.	1.09
228.	1.29	893.	1.09

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
229.	1.29	894.	1.09
230.	1.29	895.	1.09
231.	1.29	896.	1.09
232.	1.28	897.	1.09
233.	1.28	898.	1.09
234.	1.28	899.	1.09
235.	1.28	900.	1.09
236.	1.28	901.	1.09
237.	1.28	902.	1.09
238.	1.28	903.	1.09
239.	1.28	904.	1.09
240.	1.28	905.	1.09
241.	1.28	906.	1.09
242.	1.28	907.	1.09
243.	1.28	908.	1.09
244.	1.28	909.	1.09
245.	1.28	910.	1.09
246.	1.28	911.	1.09
247.	1.28	912.	1.09
248.	1.28	913.	1.09
249.	1.28	914.	1.09
250.	1.28	915.	1.08
251.	1.28	916.	1.09
252.	1.27	917.	1.09
253.	1.27	918.	1.08
254.	1.27	919.	1.08
255.	1.27	920.	1.08
256.	1.27	921.	1.08
257.	1.27	922.	1.08
258.	1.27	923.	1.08
259.	1.27	924.	1.08
260.	1.27	925.	1.08
261.	1.27	926.	1.08
262.	1.27	927.	1.08
263.	1.27	928.	1.08
264.	1.27	929.	1.08
265.	1.27	930.	1.08
266.	1.27	931.	1.08
267.	1.27	932.	1.08
268.	1.27	933.	1.08
269.	1.27	934.	1.08
270.	1.27	935.	1.08
271.	1.26	936.	1.08
272.	1.26	937.	1.08
273.	1.26	938.	1.08
274.	1.26	939.	1.08
275.	1.26	940.	1.08
276.	1.26	941.	1.08
277.	1.26	942.	1.08
278.	1.26	943.	1.08
279.	1.26	944.	1.08
280.	1.26	945.	1.08
281.	1.26	946.	1.08
282.	1.26	947.	1.08
283.	1.26	948.	1.08
284.	1.26	949.	1.08
285.	1.26	950.	1.08
286.	1.26	951.	1.08
287.	1.26	952.	1.08
288.	1.26	953.	1.08
289.	1.26	954.	1.08
290.	1.26	955.	1.08
291.	1.26	956.	1.08
292.	1.26	957.	1.08
293.	1.26	958.	1.08
294.	1.25	959.	1.08

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
295.	1.25	960.	1.08
296.	1.26	961.	1.08
297.	1.25	962.	1.08
298.	1.25	963.	1.08
299.	1.25	964.	1.08
300.	1.25	965.	1.08
301.	1.25	966.	1.08
302.	1.25	967.	1.08
303.	1.25	968.	1.08
304.	1.25	969.	1.08
305.	1.25	970.	1.08
306.	1.25	971.	1.08
307.	1.25	972.	1.08
308.	1.25	973.	1.08
309.	1.25	974.	1.08
310.	1.25	975.	1.08
311.	1.25	976.	1.08
312.	1.25	977.	1.08
313.	1.25	978.	1.08
314.	1.25	979.	1.07
315.	1.25	980.	1.07
316.	1.25	981.	1.07
317.	1.25	982.	1.07
318.	1.25	983.	1.07
319.	1.24	984.	1.07
320.	1.24	985.	1.07
321.	1.24	986.	1.07
322.	1.24	987.	1.07
323.	1.24	988.	1.07
324.	1.24	989.	1.07
325.	1.24	990.	1.07
326.	1.24	991.	1.07
327.	1.24	992.	1.07
328.	1.24	993.	1.07
329.	1.24	994.	1.07
330.	1.24	995.	1.07
331.	1.24	996.	1.07
332.	1.24	997.	1.07
333.	1.24	998.	1.07
334.	1.24	999.	1.07
335.	1.24	1000.	1.07
336.	1.24	1001.	1.07
337.	1.24	1002.	1.07
338.	1.24	1003.	1.07
339.	1.24	1004.	1.07
340.	1.24	1005.	1.07
341.	1.24	1006.	1.07
342.	1.24	1007.	1.07
343.	1.23	1008.	1.07
344.	1.23	1009.	1.07
345.	1.23	1010.	1.07
346.	1.23	1011.	1.07
347.	1.23	1012.	1.07
348.	1.23	1013.	1.07
349.	1.23	1014.	1.07
350.	1.23	1015.	1.07
351.	1.23	1016.	1.07
352.	1.23	1017.	1.07
353.	1.23	1018.	1.07
354.	1.23	1019.	1.07
355.	1.23	1020.	1.07
356.	1.23	1021.	1.07
357.	1.23	1022.	1.07
358.	1.23	1023.	1.07
359.	1.23	1024.	1.07
360.	1.23	1025.	1.07

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
361.	1.23	1026.	1.07
362.	1.23	1027.	1.07
363.	1.23	1028.	1.07
364.	1.23	1029.	1.07
365.	1.23	1030.	1.07
366.	1.23	1031.	1.07
367.	1.23	1032.	1.07
368.	1.22	1033.	1.07
369.	1.22	1034.	1.07
370.	1.22	1035.	1.07
371.	1.22	1036.	1.07
372.	1.22	1037.	1.07
373.	1.22	1038.	1.07
374.	1.22	1039.	1.07
375.	1.22	1040.	1.07
376.	1.22	1041.	1.07
377.	1.22	1042.	1.07
378.	1.22	1043.	1.07
379.	1.22	1044.	1.06
380.	1.22	1045.	1.06
381.	1.22	1046.	1.07
382.	1.22	1047.	1.07
383.	1.22	1048.	1.07
384.	1.22	1049.	1.06
385.	1.22	1050.	1.06
386.	1.22	1051.	1.06
387.	1.22	1052.	1.06
388.	1.22	1053.	1.06
389.	1.22	1054.	1.06
390.	1.22	1055.	1.06
391.	1.22	1056.	1.06
392.	1.22	1057.	1.06
393.	1.22	1058.	1.06
394.	1.22	1059.	1.06
395.	1.21	1060.	1.06
396.	1.21	1061.	1.06
397.	1.21	1062.	1.06
398.	1.21	1063.	1.06
399.	1.21	1064.	1.06
400.	1.21	1065.	1.06
401.	1.21	1066.	1.06
402.	1.21	1067.	1.06
403.	1.21	1068.	1.06
404.	1.21	1069.	1.06
405.	1.21	1070.	1.06
406.	1.21	1071.	1.06
407.	1.21	1072.	1.06
408.	1.21	1073.	1.06
409.	1.21	1074.	1.06
410.	1.21	1075.	1.06
411.	1.21	1076.	1.06
412.	1.21	1077.	1.06
413.	1.21	1078.	1.06
414.	1.21	1079.	1.06
415.	1.21	1080.	1.06
416.	1.21	1081.	1.06
417.	1.21	1082.	1.06
418.	1.21	1083.	1.06
419.	1.21	1084.	1.06
420.	1.21	1085.	1.06
421.	1.21	1086.	1.06
422.	1.21	1087.	1.06
423.	1.21	1088.	1.06
424.	1.2	1089.	1.06
425.	1.2	1090.	1.06
426.	1.2	1091.	1.06

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
427.	1.2	1092.	1.06
428.	1.2	1093.	1.06
429.	1.2	1094.	1.06
430.	1.2	1095.	1.06
431.	1.2	1096.	1.06
432.	1.2	1097.	1.06
433.	1.2	1098.	1.06
434.	1.2	1099.	1.06
435.	1.2	1100.	1.06
436.	1.2	1101.	1.06
437.	1.2	1102.	1.06
438.	1.2	1103.	1.06
439.	1.2	1104.	1.06
440.	1.2	1105.	1.06
441.	1.2	1106.	1.06
442.	1.2	1107.	1.06
443.	1.2	1108.	1.06
444.	1.2	1109.	1.06
445.	1.2	1110.	1.06
446.	1.2	1111.	1.06
447.	1.2	1112.	1.06
448.	1.2	1113.	1.06
449.	1.2	1114.	1.05
450.	1.2	1115.	1.06
451.	1.2	1116.	1.06
452.	1.2	1117.	1.06
453.	1.19	1118.	1.05
454.	1.19	1119.	1.05
455.	1.19	1120.	1.05
456.	1.19	1121.	1.05
457.	1.19	1122.	1.06
458.	1.19	1123.	1.05
459.	1.19	1124.	1.05
460.	1.19	1125.	1.05
461.	1.19	1126.	1.05
462.	1.19	1127.	1.05
463.	1.19	1128.	1.05
464.	1.19	1129.	1.05
465.	1.19	1130.	1.05
466.	1.19	1131.	1.05
467.	1.19	1132.	1.05
468.	1.19	1133.	1.05
469.	1.19	1134.	1.05
470.	1.19	1135.	1.05
471.	1.19	1136.	1.05
472.	1.19	1137.	1.05
473.	1.19	1138.	1.05
474.	1.19	1139.	1.05
475.	1.19	1140.	1.05
476.	1.19	1141.	1.05
477.	1.19	1142.	1.05
478.	1.19	1143.	1.05
479.	1.19	1144.	1.05
480.	1.19	1145.	1.05
481.	1.19	1146.	1.05
482.	1.19	1147.	1.05
483.	1.19	1148.	1.05
484.	1.19	1149.	1.05
485.	1.18	1150.	1.05
486.	1.18	1151.	1.05
487.	1.18	1152.	1.05
488.	1.18	1153.	1.05
489.	1.18	1154.	1.05
490.	1.18	1155.	1.05
491.	1.18	1156.	1.05
492.	1.18	1157.	1.05

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
493.	1.18	1158.	1.05
494.	1.18	1159.	1.05
495.	1.18	1160.	1.05
496.	1.18	1161.	1.05
497.	1.18	1162.	1.05
498.	1.18	1163.	1.05
499.	1.18	1164.	1.05
500.	1.18	1165.	1.05
501.	1.18	1166.	1.05
502.	1.18	1167.	1.05
503.	1.18	1168.	1.05
504.	1.18	1169.	1.05
505.	1.18	1170.	1.05
506.	1.18	1171.	1.05
507.	1.18	1172.	1.05
508.	1.18	1173.	1.05
509.	1.18	1174.	1.05
510.	1.18	1175.	1.05
511.	1.18	1176.	1.05
512.	1.18	1177.	1.05
513.	1.18	1178.	1.05
514.	1.18	1179.	1.05
515.	1.18	1180.	1.05
516.	1.18	1181.	1.05
517.	1.18	1182.	1.05
518.	1.17	1183.	1.05
519.	1.17	1184.	1.05
520.	1.17	1185.	1.05
521.	1.17	1186.	1.05
522.	1.17	1187.	1.05
523.	1.17	1188.	1.05
524.	1.17	1189.	1.05
525.	1.17	1190.	1.04
526.	1.17	1191.	1.05
527.	1.17	1192.	1.04
528.	1.17	1193.	1.05
529.	1.17	1194.	1.05
530.	1.17	1195.	1.05
531.	1.17	1196.	1.05
532.	1.17	1197.	1.04
533.	1.17	1198.	1.04
534.	1.17	1199.	1.05
535.	1.17	1200.	1.05
536.	1.17	1201.	1.05
537.	1.17	1202.	1.04
538.	1.17	1203.	1.04
539.	1.17	1204.	1.04
540.	1.17	1205.	1.04
541.	1.17	1206.	1.04
542.	1.17	1207.	1.04
543.	1.17	1208.	1.04
544.	1.17	1209.	1.04
545.	1.17	1210.	1.04
546.	1.17	1211.	1.04
547.	1.17	1212.	1.04
548.	1.17	1213.	1.04
549.	1.17	1214.	1.04
550.	1.17	1215.	1.04
551.	1.17	1216.	1.04
552.	1.17	1217.	1.04
553.	1.17	1218.	1.04
554.	1.16	1219.	1.04
555.	1.16	1220.	1.04
556.	1.16	1221.	1.04
557.	1.17	1222.	1.04
558.	1.16	1223.	1.04

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
559.	1.16	1224.	1.04
560.	1.16	1225.	1.04
561.	1.16	1226.	1.04
562.	1.16	1227.	1.04
563.	1.16	1228.	1.04
564.	1.16	1229.	1.04
565.	1.16	1230.	1.04
566.	1.16	1231.	1.04
567.	1.16	1232.	1.04
568.	1.16	1233.	1.04
569.	1.16	1234.	1.04
570.	1.16	1235.	1.04
571.	1.16	1236.	1.04
572.	1.16	1237.	1.04
573.	1.16	1238.	1.04
574.	1.16	1239.	1.04
575.	1.16	1240.	1.04
576.	1.16	1241.	1.04
577.	1.16	1242.	1.04
578.	1.16	1243.	1.04
579.	1.16	1244.	1.04
580.	1.16	1245.	1.04
581.	1.16	1246.	1.04
582.	1.16	1247.	1.04
583.	1.16	1248.	1.04
584.	1.16	1249.	1.04
585.	1.16	1250.	1.04
586.	1.16	1251.	1.04
587.	1.16	1252.	1.04
588.	1.16	1253.	1.04
589.	1.16	1254.	1.04
590.	1.16	1255.	1.04
591.	1.15	1256.	1.04
592.	1.15	1257.	1.04
593.	1.15	1258.	1.04
594.	1.15	1259.	1.04
595.	1.15	1260.	1.04
596.	1.15	1261.	1.04
597.	1.15	1262.	1.04
598.	1.15	1263.	1.04
599.	1.15	1264.	1.04
600.	1.15	1265.	1.04
601.	1.15	1266.	1.04
602.	1.15	1267.	1.04
603.	1.15	1268.	1.04
604.	1.15	1269.	1.04
605.	1.15	1270.	1.04
606.	1.15	1271.	1.04
607.	1.15	1272.	1.04
608.	1.15	1273.	1.04
609.	1.15	1274.	1.04
610.	1.15	1275.	1.04
611.	1.15	1276.	1.04
612.	1.15	1277.	1.03
613.	1.15	1278.	1.03
614.	1.15	1279.	1.04
615.	1.15	1280.	1.04
616.	1.15	1281.	1.04
617.	1.15	1282.	1.04
618.	1.15	1283.	1.03
619.	1.15	1284.	1.03
620.	1.15	1285.	1.03
621.	1.15	1286.	1.03
622.	1.15	1287.	1.03
623.	1.15	1288.	1.03
624.	1.15	1289.	1.03

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
625.	1.15	1290.	1.03
626.	1.14	1291.	1.03
627.	1.14	1292.	1.03
628.	1.14	1293.	1.03
629.	1.14	1294.	1.03
630.	1.14	1295.	1.03
631.	1.14	1296.	1.03
632.	1.14	1297.	1.03
633.	1.14	1298.	1.03
634.	1.14	1299.	1.03
635.	1.14	1300.	1.03
636.	1.14	1301.	1.03
637.	1.14	1302.	1.03
638.	1.14	1303.	1.03
639.	1.14	1304.	1.03
640.	1.14	1305.	1.03
641.	1.14	1306.	1.03
642.	1.14	1307.	1.03
643.	1.14	1308.	1.03
644.	1.14	1309.	1.03
645.	1.14	1310.	1.03
646.	1.14	1311.	1.03
647.	1.14	1312.	1.03
648.	1.14	1313.	1.03
649.	1.14	1314.	1.03
650.	1.14	1315.	1.03
651.	1.14	1316.	1.03
652.	1.14	1317.	1.03
653.	1.14	1318.	1.03
654.	1.14	1319.	1.03
655.	1.14	1320.	1.03
656.	1.14	1321.	1.03
657.	1.14	1322.	1.03
658.	1.14	1323.	1.03
659.	1.14	1324.	1.03
660.	1.14	1325.	1.03
661.	1.14	1326.	1.03
662.	1.14	1327.	1.03
663.	1.14	1328.	1.03
664.	1.14	1329.	1.03
665.	1.14	1330.	1.03
666.	1.14		

SOLUTION

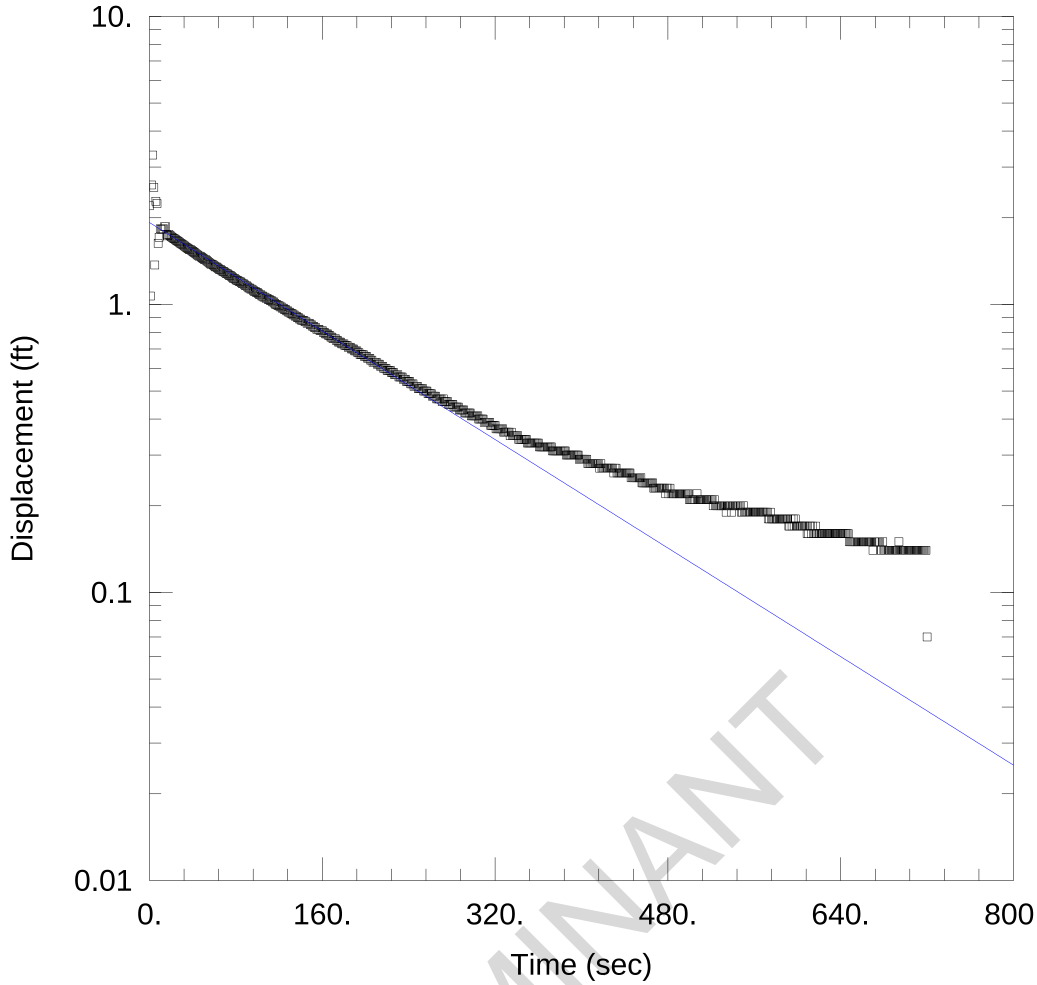
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.589

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	5.977E-6	cm/sec
y0	1.351	ft

T = K*b = 0.004161 cm²/sec



PDP-25 SLUG IN

Data Set: J:\...\PDP-25 Slug In.aqt
Date: 12/16/15
Time: 10:25:24

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-25
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 24. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-25)

Initial Displacement: 2.2 ft
Static Water Column Height: 38.89 ft
Total Well Penetration Depth: 16. ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 0.0001494 cm/sec
y0 = 1.925 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-25 Slug In
Date: 12/16/15
Time: 10:26:36

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-25

AQUIFER DATA

Saturated Thickness: 24. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-25

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 38.89 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16. ft

No. of Observations: 720

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	1.07	361.	0.32
2.	2.6	362.	0.32
3.	3.3	363.	0.32
4.	2.55	364.	0.32
5.	1.37	365.	0.32
6.	2.28	366.	0.32
7.	2.24	367.	0.32
8.	1.63	368.	0.32
9.	1.71	369.	0.32
10.	1.83	370.	0.32
11.	1.82	371.	0.32
12.	1.83	372.	0.32
13.	1.83	373.	0.31
14.	1.86	374.	0.31
15.	1.86	375.	0.31
16.	1.75	376.	0.31
17.	1.73	377.	0.31
18.	1.75	378.	0.31
19.	1.74	379.	0.31
20.	1.72	380.	0.31
21.	1.71	381.	0.31
22.	1.7	382.	0.31
23.	1.69	383.	0.31
24.	1.68	384.	0.31
25.	1.67	385.	0.31
26.	1.66	386.	0.3
27.	1.65	387.	0.3
28.	1.64	388.	0.3
29.	1.63	389.	0.3

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.62	390.	0.3
31.	1.61	391.	0.3
32.	1.6	392.	0.3
33.	1.59	393.	0.3
34.	1.58	394.	0.3
35.	1.57	395.	0.3
36.	1.56	396.	0.3
37.	1.55	397.	0.3
38.	1.55	398.	0.29
39.	1.54	399.	0.29
40.	1.53	400.	0.29
41.	1.52	401.	0.29
42.	1.51	402.	0.29
43.	1.5	403.	0.29
44.	1.49	404.	0.29
45.	1.48	405.	0.29
46.	1.47	406.	0.28
47.	1.47	407.	0.28
48.	1.46	408.	0.28
49.	1.45	409.	0.28
50.	1.44	410.	0.28
51.	1.43	411.	0.28
52.	1.43	412.	0.28
53.	1.42	413.	0.28
54.	1.41	414.	0.28
55.	1.4	415.	0.28
56.	1.39	416.	0.28
57.	1.38	417.	0.27
58.	1.38	418.	0.28
59.	1.37	419.	0.27
60.	1.36	420.	0.27
61.	1.35	421.	0.27
62.	1.35	422.	0.27
63.	1.34	423.	0.27
64.	1.33	424.	0.27
65.	1.32	425.	0.27
66.	1.32	426.	0.27
67.	1.31	427.	0.27
68.	1.3	428.	0.27
69.	1.3	429.	0.27
70.	1.29	430.	0.26
71.	1.28	431.	0.27
72.	1.28	432.	0.27
73.	1.27	433.	0.26
74.	1.26	434.	0.26
75.	1.26	435.	0.26
76.	1.25	436.	0.26
77.	1.24	437.	0.26
78.	1.23	438.	0.26
79.	1.23	439.	0.26
80.	1.22	440.	0.26
81.	1.21	441.	0.26
82.	1.21	442.	0.26
83.	1.2	443.	0.26
84.	1.2	444.	0.26
85.	1.19	445.	0.26
86.	1.18	446.	0.25
87.	1.18	447.	0.25
88.	1.17	448.	0.25
89.	1.16	449.	0.25
90.	1.16	450.	0.25
91.	1.15	451.	0.25
92.	1.14	452.	0.25
93.	1.14	453.	0.25
94.	1.13	454.	0.25
95.	1.13	455.	0.25

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	1.12	456.	0.24
97.	1.11	457.	0.24
98.	1.11	458.	0.24
99.	1.1	459.	0.24
100.	1.1	460.	0.24
101.	1.09	461.	0.24
102.	1.08	462.	0.24
103.	1.08	463.	0.24
104.	1.07	464.	0.24
105.	1.07	465.	0.24
106.	1.06	466.	0.24
107.	1.06	467.	0.23
108.	1.05	468.	0.23
109.	1.05	469.	0.23
110.	1.04	470.	0.23
111.	1.04	471.	0.23
112.	1.03	472.	0.23
113.	1.03	473.	0.23
114.	1.02	474.	0.23
115.	1.02	475.	0.23
116.	1.01	476.	0.23
117.	1.	477.	0.23
118.	1.	478.	0.22
119.	0.99	479.	0.23
120.	0.99	480.	0.23
121.	0.98	481.	0.22
122.	0.98	482.	0.23
123.	0.97	483.	0.22
124.	0.97	484.	0.22
125.	0.96	485.	0.22
126.	0.96	486.	0.22
127.	0.95	487.	0.22
128.	0.95	488.	0.22
129.	0.94	489.	0.22
130.	0.94	490.	0.22
131.	0.93	491.	0.22
132.	0.93	492.	0.22
133.	0.92	493.	0.22
134.	0.92	494.	0.22
135.	0.91	495.	0.22
136.	0.91	496.	0.22
137.	0.9	497.	0.22
138.	0.9	498.	0.22
139.	0.89	499.	0.22
140.	0.89	500.	0.21
141.	0.88	501.	0.21
142.	0.88	502.	0.21
143.	0.88	503.	0.21
144.	0.87	504.	0.21
145.	0.87	505.	0.21
146.	0.86	506.	0.21
147.	0.86	507.	0.22
148.	0.86	508.	0.21
149.	0.85	509.	0.21
150.	0.85	510.	0.21
151.	0.84	511.	0.21
152.	0.84	512.	0.21
153.	0.83	513.	0.21
154.	0.83	514.	0.21
155.	0.82	515.	0.21
156.	0.82	516.	0.21
157.	0.82	517.	0.21
158.	0.81	518.	0.21
159.	0.81	519.	0.21
160.	0.81	520.	0.21
161.	0.8	521.	0.21

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	0.8	522.	0.2
163.	0.79	523.	0.21
164.	0.79	524.	0.2
165.	0.79	525.	0.2
166.	0.78	526.	0.2
167.	0.78	527.	0.2
168.	0.77	528.	0.2
169.	0.77	529.	0.2
170.	0.76	530.	0.2
171.	0.76	531.	0.2
172.	0.76	532.	0.2
173.	0.75	533.	0.2
174.	0.75	534.	0.19
175.	0.74	535.	0.2
176.	0.74	536.	0.2
177.	0.74	537.	0.2
178.	0.73	538.	0.2
179.	0.73	539.	0.19
180.	0.73	540.	0.2
181.	0.72	541.	0.2
182.	0.72	542.	0.2
183.	0.72	543.	0.2
184.	0.71	544.	0.2
185.	0.71	545.	0.2
186.	0.71	546.	0.2
187.	0.7	547.	0.2
188.	0.7	548.	0.19
189.	0.7	549.	0.19
190.	0.69	550.	0.2
191.	0.69	551.	0.19
192.	0.69	552.	0.19
193.	0.68	553.	0.19
194.	0.68	554.	0.19
195.	0.67	555.	0.19
196.	0.67	556.	0.19
197.	0.67	557.	0.19
198.	0.67	558.	0.19
199.	0.66	559.	0.19
200.	0.66	560.	0.19
201.	0.66	561.	0.19
202.	0.65	562.	0.19
203.	0.65	563.	0.19
204.	0.65	564.	0.19
205.	0.64	565.	0.19
206.	0.64	566.	0.19
207.	0.63	567.	0.19
208.	0.63	568.	0.19
209.	0.63	569.	0.19
210.	0.63	570.	0.19
211.	0.62	571.	0.19
212.	0.62	572.	0.19
213.	0.62	573.	0.18
214.	0.61	574.	0.18
215.	0.61	575.	0.19
216.	0.61	576.	0.18
217.	0.6	577.	0.18
218.	0.6	578.	0.18
219.	0.6	579.	0.18
220.	0.59	580.	0.18
221.	0.59	581.	0.18
222.	0.59	582.	0.18
223.	0.59	583.	0.18
224.	0.58	584.	0.18
225.	0.58	585.	0.18
226.	0.58	586.	0.18
227.	0.57	587.	0.18

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
228.	0.57	588.	0.18
229.	0.57	589.	0.18
230.	0.57	590.	0.18
231.	0.56	591.	0.18
232.	0.56	592.	0.17
233.	0.56	593.	0.17
234.	0.56	594.	0.18
235.	0.55	595.	0.17
236.	0.55	596.	0.18
237.	0.55	597.	0.17
238.	0.54	598.	0.18
239.	0.54	599.	0.17
240.	0.54	600.	0.17
241.	0.54	601.	0.17
242.	0.53	602.	0.17
243.	0.53	603.	0.17
244.	0.53	604.	0.17
245.	0.52	605.	0.17
246.	0.52	606.	0.17
247.	0.52	607.	0.17
248.	0.52	608.	0.17
249.	0.51	609.	0.16
250.	0.51	610.	0.16
251.	0.51	611.	0.17
252.	0.51	612.	0.17
253.	0.51	613.	0.16
254.	0.5	614.	0.17
255.	0.5	615.	0.16
256.	0.5	616.	0.16
257.	0.5	617.	0.17
258.	0.49	618.	0.16
259.	0.49	619.	0.16
260.	0.49	620.	0.16
261.	0.49	621.	0.16
262.	0.48	622.	0.16
263.	0.48	623.	0.16
264.	0.48	624.	0.16
265.	0.48	625.	0.16
266.	0.47	626.	0.16
267.	0.47	627.	0.16
268.	0.47	628.	0.16
269.	0.47	629.	0.16
270.	0.47	630.	0.16
271.	0.46	631.	0.16
272.	0.47	632.	0.16
273.	0.46	633.	0.16
274.	0.46	634.	0.16
275.	0.46	635.	0.16
276.	0.46	636.	0.16
277.	0.45	637.	0.16
278.	0.45	638.	0.16
279.	0.45	639.	0.16
280.	0.45	640.	0.16
281.	0.45	641.	0.16
282.	0.44	642.	0.16
283.	0.44	643.	0.16
284.	0.44	644.	0.16
285.	0.44	645.	0.16
286.	0.44	646.	0.16
287.	0.43	647.	0.16
288.	0.43	648.	0.15
289.	0.43	649.	0.15
290.	0.43	650.	0.15
291.	0.43	651.	0.15
292.	0.42	652.	0.15
293.	0.42	653.	0.15

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
294.	0.42	654.	0.15
295.	0.42	655.	0.15
296.	0.42	656.	0.15
297.	0.42	657.	0.15
298.	0.41	658.	0.15
299.	0.41	659.	0.15
300.	0.41	660.	0.15
301.	0.41	661.	0.15
302.	0.41	662.	0.15
303.	0.41	663.	0.15
304.	0.41	664.	0.15
305.	0.4	665.	0.15
306.	0.4	666.	0.15
307.	0.4	667.	0.15
308.	0.4	668.	0.15
309.	0.4	669.	0.15
310.	0.39	670.	0.14
311.	0.39	671.	0.15
312.	0.39	672.	0.15
313.	0.39	673.	0.15
314.	0.39	674.	0.15
315.	0.39	675.	0.15
316.	0.38	676.	0.15
317.	0.38	677.	0.14
318.	0.38	678.	0.14
319.	0.38	679.	0.15
320.	0.38	680.	0.14
321.	0.37	681.	0.14
322.	0.37	682.	0.14
323.	0.37	683.	0.14
324.	0.37	684.	0.14
325.	0.37	685.	0.14
326.	0.37	686.	0.14
327.	0.37	687.	0.14
328.	0.36	688.	0.14
329.	0.36	689.	0.14
330.	0.36	690.	0.14
331.	0.36	691.	0.14
332.	0.36	692.	0.14
333.	0.36	693.	0.14
334.	0.35	694.	0.15
335.	0.36	695.	0.14
336.	0.35	696.	0.14
337.	0.35	697.	0.14
338.	0.35	698.	0.14
339.	0.35	699.	0.14
340.	0.35	700.	0.14
341.	0.35	701.	0.14
342.	0.34	702.	0.14
343.	0.34	703.	0.14
344.	0.34	704.	0.14
345.	0.34	705.	0.14
346.	0.34	706.	0.14
347.	0.34	707.	0.14
348.	0.34	708.	0.14
349.	0.34	709.	0.14
350.	0.33	710.	0.14
351.	0.33	711.	0.14
352.	0.33	712.	0.14
353.	0.33	713.	0.14
354.	0.33	714.	0.14
355.	0.33	715.	0.14
356.	0.33	716.	0.14
357.	0.33	717.	0.14
358.	0.33	718.	0.14
359.	0.33	719.	0.14

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
360.	0.33	720.	0.07

SOLUTION

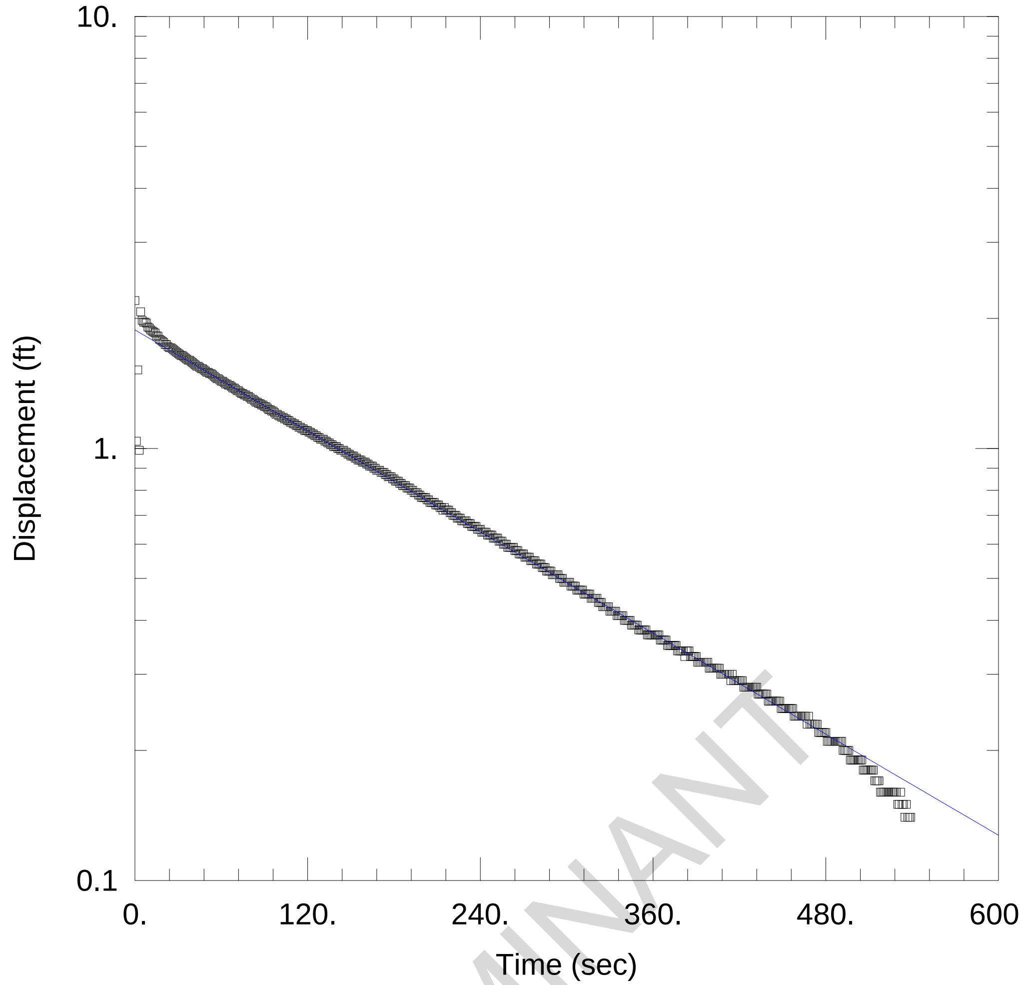
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.624

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0001494	cm/sec
y0	1.925	ft

T = K*b = 0.1093 cm²/sec



PDP-25 SLUG OUT

Data Set: J:\...\PDP-25 Slug Out.aqt
Date: 12/16/15 Time: 10:25:32

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-25
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 24. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-25)

Initial Displacement: 2.2 ft Static Water Column Height: 38.89 ft
Total Well Penetration Depth: 16. ft Screen Length: 10. ft
Casing Radius: 0.083 ft Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0001237 cm/sec y0 = 1.881 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-25 Slug Out
Date: 12/16/15
Time: 10:26:27

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-25

AQUIFER DATA

Saturated Thickness: 24. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-25

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 38.89 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16. ft

No. of Observations: 539

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	1.04	271.	0.56
2.	1.52	272.	0.56
3.	0.99	273.	0.56
4.	2.07	274.	0.56
5.	1.98	275.	0.55
6.	1.96	276.	0.55
7.	1.96	277.	0.55
8.	1.95	278.	0.55
9.	1.91	279.	0.54
10.	1.9	280.	0.54
11.	1.88	281.	0.54
12.	1.87	282.	0.54
13.	1.86	283.	0.53
14.	1.85	284.	0.53
15.	1.82	285.	0.53
16.	1.82	286.	0.52
17.	1.79	287.	0.52
18.	1.78	288.	0.52
19.	1.77	289.	0.52
20.	1.76	290.	0.51
21.	1.74	291.	0.51
22.	1.74	292.	0.51
23.	1.72	293.	0.51
24.	1.71	294.	0.51
25.	1.71	295.	0.5
26.	1.7	296.	0.5
27.	1.69	297.	0.5
28.	1.68	298.	0.49
29.	1.67	299.	0.49

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.66	300.	0.49
31.	1.65	301.	0.49
32.	1.64	302.	0.49
33.	1.64	303.	0.48
34.	1.63	304.	0.48
35.	1.62	305.	0.48
36.	1.61	306.	0.48
37.	1.6	307.	0.47
38.	1.6	308.	0.47
39.	1.59	309.	0.47
40.	1.58	310.	0.47
41.	1.57	311.	0.47
42.	1.56	312.	0.46
43.	1.55	313.	0.46
44.	1.55	314.	0.46
45.	1.54	315.	0.46
46.	1.53	316.	0.46
47.	1.53	317.	0.45
48.	1.52	318.	0.45
49.	1.51	319.	0.45
50.	1.5	320.	0.45
51.	1.5	321.	0.45
52.	1.49	322.	0.44
53.	1.49	323.	0.44
54.	1.48	324.	0.44
55.	1.47	325.	0.43
56.	1.46	326.	0.43
57.	1.45	327.	0.43
58.	1.45	328.	0.43
59.	1.44	329.	0.43
60.	1.43	330.	0.42
61.	1.43	331.	0.42
62.	1.42	332.	0.42
63.	1.41	333.	0.42
64.	1.41	334.	0.42
65.	1.4	335.	0.41
66.	1.4	336.	0.41
67.	1.39	337.	0.41
68.	1.38	338.	0.41
69.	1.38	339.	0.41
70.	1.37	340.	0.4
71.	1.36	341.	0.4
72.	1.36	342.	0.4
73.	1.35	343.	0.4
74.	1.34	344.	0.4
75.	1.34	345.	0.39
76.	1.33	346.	0.39
77.	1.33	347.	0.39
78.	1.32	348.	0.39
79.	1.32	349.	0.39
80.	1.31	350.	0.38
81.	1.3	351.	0.38
82.	1.3	352.	0.38
83.	1.29	353.	0.38
84.	1.28	354.	0.38
85.	1.28	355.	0.38
86.	1.27	356.	0.37
87.	1.27	357.	0.37
88.	1.26	358.	0.37
89.	1.26	359.	0.37
90.	1.25	360.	0.37
91.	1.25	361.	0.37
92.	1.24	362.	0.37
93.	1.23	363.	0.37
94.	1.23	364.	0.37
95.	1.22	365.	0.36

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	1.22	366.	0.36
97.	1.21	367.	0.36
98.	1.2	368.	0.36
99.	1.2	369.	0.36
100.	1.19	370.	0.35
101.	1.19	371.	0.35
102.	1.18	372.	0.35
103.	1.18	373.	0.35
104.	1.17	374.	0.35
105.	1.17	375.	0.35
106.	1.16	376.	0.35
107.	1.16	377.	0.34
108.	1.15	378.	0.34
109.	1.15	379.	0.34
110.	1.14	380.	0.34
111.	1.14	381.	0.34
112.	1.13	382.	0.33
113.	1.13	383.	0.34
114.	1.12	384.	0.34
115.	1.12	385.	0.34
116.	1.11	386.	0.33
117.	1.11	387.	0.33
118.	1.1	388.	0.33
119.	1.1	389.	0.33
120.	1.1	390.	0.33
121.	1.09	391.	0.32
122.	1.09	392.	0.32
123.	1.08	393.	0.32
124.	1.08	394.	0.32
125.	1.07	395.	0.32
126.	1.07	396.	0.32
127.	1.06	397.	0.32
128.	1.06	398.	0.32
129.	1.05	399.	0.31
130.	1.05	400.	0.31
131.	1.05	401.	0.31
132.	1.04	402.	0.31
133.	1.04	403.	0.31
134.	1.03	404.	0.31
135.	1.03	405.	0.31
136.	1.02	406.	0.31
137.	1.02	407.	0.3
138.	1.01	408.	0.3
139.	1.01	409.	0.3
140.	1.01	410.	0.3
141.	1.	411.	0.3
142.	1.	412.	0.3
143.	0.99	413.	0.3
144.	0.99	414.	0.29
145.	0.99	415.	0.3
146.	0.98	416.	0.29
147.	0.98	417.	0.29
148.	0.97	418.	0.29
149.	0.97	419.	0.29
150.	0.96	420.	0.29
151.	0.96	421.	0.29
152.	0.96	422.	0.29
153.	0.95	423.	0.28
154.	0.95	424.	0.28
155.	0.94	425.	0.28
156.	0.94	426.	0.28
157.	0.94	427.	0.28
158.	0.93	428.	0.28
159.	0.93	429.	0.28
160.	0.93	430.	0.28
161.	0.92	431.	0.28

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	0.92	432.	0.28
163.	0.91	433.	0.27
164.	0.91	434.	0.27
165.	0.91	435.	0.27
166.	0.9	436.	0.27
167.	0.9	437.	0.27
168.	0.89	438.	0.27
169.	0.89	439.	0.27
170.	0.89	440.	0.26
171.	0.88	441.	0.26
172.	0.88	442.	0.26
173.	0.88	443.	0.26
174.	0.87	444.	0.26
175.	0.87	445.	0.26
176.	0.86	446.	0.26
177.	0.86	447.	0.26
178.	0.86	448.	0.26
179.	0.85	449.	0.25
180.	0.85	450.	0.25
181.	0.84	451.	0.25
182.	0.84	452.	0.25
183.	0.84	453.	0.25
184.	0.83	454.	0.25
185.	0.83	455.	0.25
186.	0.82	456.	0.25
187.	0.82	457.	0.25
188.	0.82	458.	0.24
189.	0.81	459.	0.24
190.	0.81	460.	0.24
191.	0.81	461.	0.24
192.	0.8	462.	0.24
193.	0.8	463.	0.24
194.	0.79	464.	0.24
195.	0.79	465.	0.24
196.	0.79	466.	0.24
197.	0.78	467.	0.23
198.	0.78	468.	0.24
199.	0.77	469.	0.23
200.	0.77	470.	0.23
201.	0.77	471.	0.23
202.	0.77	472.	0.23
203.	0.76	473.	0.23
204.	0.76	474.	0.23
205.	0.75	475.	0.22
206.	0.75	476.	0.22
207.	0.75	477.	0.22
208.	0.75	478.	0.22
209.	0.74	479.	0.22
210.	0.74	480.	0.22
211.	0.74	481.	0.21
212.	0.73	482.	0.21
213.	0.73	483.	0.21
214.	0.72	484.	0.21
215.	0.73	485.	0.21
216.	0.72	486.	0.21
217.	0.72	487.	0.21
218.	0.72	488.	0.21
219.	0.71	489.	0.21
220.	0.71	490.	0.21
221.	0.7	491.	0.21
222.	0.7	492.	0.2
223.	0.7	493.	0.2
224.	0.69	494.	0.2
225.	0.69	495.	0.2
226.	0.69	496.	0.2
227.	0.68	497.	0.19

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
228.	0.68	498.	0.19
229.	0.68	499.	0.19
230.	0.68	500.	0.19
231.	0.67	501.	0.19
232.	0.67	502.	0.19
233.	0.67	503.	0.19
234.	0.66	504.	0.19
235.	0.66	505.	0.19
236.	0.66	506.	0.18
237.	0.66	507.	0.18
238.	0.65	508.	0.18
239.	0.65	509.	0.18
240.	0.65	510.	0.18
241.	0.64	511.	0.18
242.	0.64	512.	0.18
243.	0.64	513.	0.18
244.	0.64	514.	0.17
245.	0.63	515.	0.17
246.	0.63	516.	0.17
247.	0.63	517.	0.17
248.	0.63	518.	0.16
249.	0.62	519.	0.16
250.	0.62	520.	0.16
251.	0.62	521.	0.16
252.	0.62	522.	0.16
253.	0.61	523.	0.16
254.	0.61	524.	0.16
255.	0.61	525.	0.16
256.	0.6	526.	0.16
257.	0.6	527.	0.16
258.	0.6	528.	0.16
259.	0.59	529.	0.16
260.	0.59	530.	0.15
261.	0.59	531.	0.15
262.	0.59	532.	0.16
263.	0.59	533.	0.15
264.	0.58	534.	0.15
265.	0.58	535.	0.14
266.	0.58	536.	0.15
267.	0.57	537.	0.14
268.	0.57	538.	0.14
269.	0.57	539.	0.14
270.	0.57		

SOLUTION

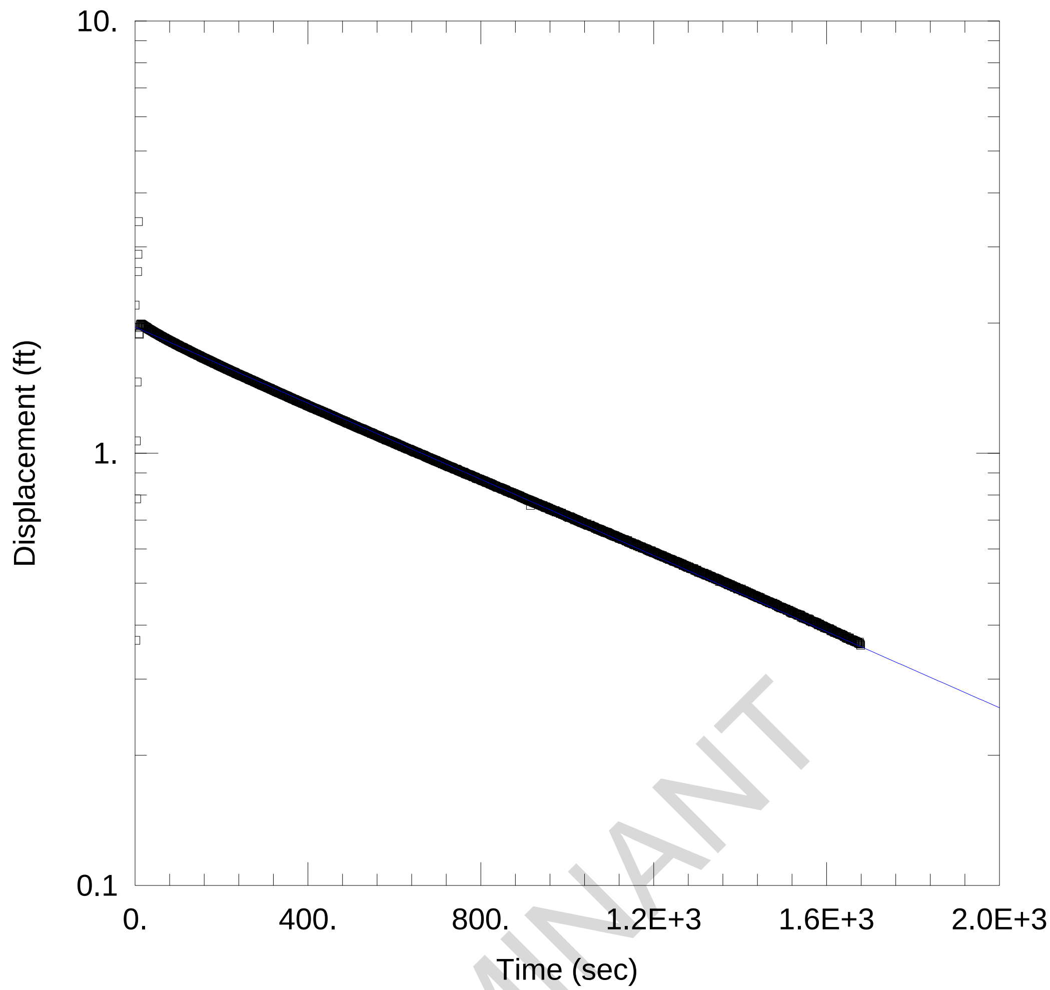
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.624

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0001237	cm/sec
y0	1.881	ft

T = K*b = 0.09046 cm²/sec



PDP-26 SLUG IN

Data Set: J:\...\PDP-26 Slug In.aqt
Date: 12/16/15 Time: 10:25:41

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-26
Test Date: 10/6/15

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-26)

Initial Displacement: 2.2 ft Static Water Column Height: 20.02 ft
Total Well Penetration Depth: 8. ft Screen Length: 8. ft
Casing Radius: 0.083 ft Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.407E-5 cm/sec y0 = 1.958 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-26 Slug In
Date: 12/16/15
Time: 10:26:18

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/6/15
Test Well: PDP-26

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-26

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 20.02 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 8. ft
Total Well Penetration Depth: 8. ft

No. of Observations: 1678

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.	0.3688	841.	0.8334
3.	1.067	842.	0.833
4.	0.7836	843.	0.8319
5.	1.461	844.	0.8315
6.	2.631	845.	0.8311
7.	2.886	846.	0.8291
8.	3.433	847.	0.8298
9.	1.891	848.	0.8273
10.	1.884	849.	0.8279
11.	1.953	850.	0.8254
12.	1.979	851.	0.8269
13.	1.986	852.	0.8246
14.	1.991	853.	0.8249
15.	1.988	854.	0.8235
16.	1.984	855.	0.8228
17.	1.982	856.	0.8227
18.	1.979	857.	0.8203
19.	1.976	858.	0.8212
20.	1.973	859.	0.8192
21.	1.97	860.	0.8176
22.	1.968	861.	0.8161
23.	1.963	862.	0.8159
24.	1.96	863.	0.8155
25.	1.958	864.	0.8148
26.	1.957	865.	0.8137
27.	1.953	866.	0.8132
28.	1.95	867.	0.8137
29.	1.947	868.	0.812
30.	1.941	869.	0.8111

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
31.	1.939	870.	0.8099
32.	1.936	871.	0.8091
33.	1.934	872.	0.8103
34.	1.931	873.	0.807
35.	1.93	874.	0.8071
36.	1.926	875.	0.8072
37.	1.923	876.	0.8068
38.	1.92	877.	0.8063
39.	1.919	878.	0.8043
40.	1.915	879.	0.8035
41.	1.913	880.	0.8028
42.	1.912	881.	0.802
43.	1.908	882.	0.8017
44.	1.905	883.	0.8008
45.	1.902	884.	0.8004
46.	1.9	885.	0.7994
47.	1.897	886.	0.7985
48.	1.895	887.	0.7965
49.	1.892	888.	0.7966
50.	1.889	889.	0.7968
51.	1.888	890.	0.796
52.	1.885	891.	0.7954
53.	1.883	892.	0.7934
54.	1.881	893.	0.7912
55.	1.878	894.	0.7915
56.	1.875	895.	0.7915
57.	1.874	896.	0.79
58.	1.869	897.	0.7885
59.	1.868	898.	0.7886
60.	1.865	899.	0.7879
61.	1.863	900.	0.7865
62.	1.861	901.	0.7857
63.	1.859	902.	0.7846
64.	1.857	903.	0.7838
65.	1.853	904.	0.7839
66.	1.849	905.	0.7832
67.	1.849	906.	0.7826
68.	1.847	907.	0.7802
69.	1.845	908.	0.7813
70.	1.842	909.	0.7796
71.	1.838	910.	0.7796
72.	1.836	911.	0.7769
73.	1.835	912.	0.7783
74.	1.834	913.	0.7781
75.	1.831	914.	0.7762
76.	1.827	915.	0.7569
77.	1.825	916.	0.7759
78.	1.825	917.	0.7727
79.	1.822	918.	0.774
80.	1.818	919.	0.7726
81.	1.816	920.	0.7731
82.	1.816	921.	0.7702
83.	1.813	922.	0.7703
84.	1.811	923.	0.7707
85.	1.808	924.	0.7683
86.	1.807	925.	0.7686
87.	1.804	926.	0.7669
88.	1.8	927.	0.766
89.	1.799	928.	0.7655
90.	1.8	929.	0.7649
91.	1.795	930.	0.7656
92.	1.792	931.	0.7637
93.	1.792	932.	0.7639
94.	1.788	933.	0.763
95.	1.785	934.	0.7615
96.	1.785	935.	0.7603

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
97.	1.782	936.	0.7602
98.	1.78	937.	0.7583
99.	1.777	938.	0.7594
100.	1.777	939.	0.7584
101.	1.774	940.	0.7569
102.	1.771	941.	0.7561
103.	1.769	942.	0.7551
104.	1.768	943.	0.7539
105.	1.764	944.	0.7567
106.	1.763	945.	0.7537
107.	1.761	946.	0.7534
108.	1.758	947.	0.7518
109.	1.76	948.	0.7511
110.	1.754	949.	0.7485
111.	1.754	950.	0.7511
112.	1.754	951.	0.751
113.	1.751	952.	0.7475
114.	1.748	953.	0.7488
115.	1.745	954.	0.7487
116.	1.742	955.	0.7461
117.	1.743	956.	0.7464
118.	1.74	957.	0.7454
119.	1.736	958.	0.7457
120.	1.737	959.	0.7418
121.	1.734	960.	0.7426
122.	1.733	961.	0.7404
123.	1.73	962.	0.7424
124.	1.728	963.	0.7399
125.	1.726	964.	0.739
126.	1.724	965.	0.7395
127.	1.722	966.	0.7383
128.	1.719	967.	0.7368
129.	1.718	968.	0.7367
130.	1.716	969.	0.7368
131.	1.714	970.	0.7343
132.	1.711	971.	0.7368
133.	1.709	972.	0.7358
134.	1.707	973.	0.7353
135.	1.706	974.	0.7311
136.	1.704	975.	0.7324
137.	1.701	976.	0.7319
138.	1.698	977.	0.7316
139.	1.698	978.	0.7311
140.	1.696	979.	0.7291
141.	1.694	980.	0.7298
142.	1.692	981.	0.7298
143.	1.691	982.	0.7282
144.	1.689	983.	0.7269
145.	1.686	984.	0.7247
146.	1.684	985.	0.7255
147.	1.683	986.	0.726
148.	1.682	987.	0.7263
149.	1.679	988.	0.7234
150.	1.679	989.	0.7219
151.	1.676	990.	0.7218
152.	1.673	991.	0.7208
153.	1.67	992.	0.7204
154.	1.668	993.	0.7204
155.	1.667	994.	0.7191
156.	1.666	995.	0.7182
157.	1.663	996.	0.7171
158.	1.661	997.	0.7184
159.	1.659	998.	0.7169
160.	1.658	999.	0.7157
161.	1.657	1000.	0.7131
162.	1.655	1001.	0.7141

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
163.	1.653	1002.	0.7131
164.	1.651	1003.	0.7125
165.	1.65	1004.	0.7096
166.	1.646	1005.	0.7109
167.	1.646	1006.	0.713
168.	1.644	1007.	0.71
169.	1.64	1008.	0.71
170.	1.639	1009.	0.7106
171.	1.641	1010.	0.7075
172.	1.638	1011.	0.7074
173.	1.633	1012.	0.7068
174.	1.632	1013.	0.707
175.	1.632	1014.	0.7056
176.	1.629	1015.	0.7044
177.	1.626	1016.	0.7038
178.	1.626	1017.	0.7011
179.	1.623	1018.	0.7037
180.	1.622	1019.	0.702
181.	1.619	1020.	0.7001
182.	1.619	1021.	0.7014
183.	1.617	1022.	0.7
184.	1.613	1023.	0.6994
185.	1.614	1024.	0.6981
186.	1.611	1025.	0.6966
187.	1.611	1026.	0.6984
188.	1.609	1027.	0.6956
189.	1.607	1028.	0.6956
190.	1.604	1029.	0.6945
191.	1.603	1030.	0.6932
192.	1.6	1031.	0.6936
193.	1.598	1032.	0.6926
194.	1.599	1033.	0.6903
195.	1.596	1034.	0.6909
196.	1.594	1035.	0.6924
197.	1.591	1036.	0.6898
198.	1.59	1037.	0.6897
199.	1.588	1038.	0.6888
200.	1.588	1039.	0.6876
201.	1.585	1040.	0.6866
202.	1.583	1041.	0.6861
203.	1.582	1042.	0.6861
204.	1.58	1043.	0.6853
205.	1.578	1044.	0.6853
206.	1.578	1045.	0.6834
207.	1.575	1046.	0.686
208.	1.573	1047.	0.6818
209.	1.571	1048.	0.6818
210.	1.57	1049.	0.6807
211.	1.569	1050.	0.6808
212.	1.565	1051.	0.6796
213.	1.564	1052.	0.6814
214.	1.561	1053.	0.6815
215.	1.562	1054.	0.6791
216.	1.56	1055.	0.6784
217.	1.559	1056.	0.677
218.	1.556	1057.	0.6777
219.	1.555	1058.	0.676
220.	1.554	1059.	0.6751
221.	1.551	1060.	0.6757
222.	1.549	1061.	0.6748
223.	1.547	1062.	0.6745
224.	1.546	1063.	0.6735
225.	1.545	1064.	0.6724
226.	1.543	1065.	0.6706
227.	1.542	1066.	0.6701
228.	1.54	1067.	0.6702

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
229.	1.54	1068.	0.6696
230.	1.537	1069.	0.6689
231.	1.536	1070.	0.6662
232.	1.535	1071.	0.6686
233.	1.53	1072.	0.667
234.	1.53	1073.	0.666
235.	1.528	1074.	0.6665
236.	1.526	1075.	0.6641
237.	1.525	1076.	0.6659
238.	1.525	1077.	0.6635
239.	1.523	1078.	0.6622
240.	1.52	1079.	0.6638
241.	1.517	1080.	0.662
242.	1.518	1081.	0.6603
243.	1.516	1082.	0.6601
244.	1.514	1083.	0.659
245.	1.512	1084.	0.6603
246.	1.51	1085.	0.6582
247.	1.509	1086.	0.6581
248.	1.509	1087.	0.6559
249.	1.507	1088.	0.6577
250.	1.505	1089.	0.6556
251.	1.506	1090.	0.6557
252.	1.502	1091.	0.6563
253.	1.501	1092.	0.6535
254.	1.499	1093.	0.6536
255.	1.497	1094.	0.6552
256.	1.496	1095.	0.6535
257.	1.493	1096.	0.6518
258.	1.492	1097.	0.6513
259.	1.491	1098.	0.6515
260.	1.49	1099.	0.6498
261.	1.488	1100.	0.6493
262.	1.487	1101.	0.6479
263.	1.484	1102.	0.6474
264.	1.482	1103.	0.6471
265.	1.48	1104.	0.6461
266.	1.481	1105.	0.6469
267.	1.478	1106.	0.6443
268.	1.478	1107.	0.6457
269.	1.475	1108.	0.6435
270.	1.474	1109.	0.6427
271.	1.473	1110.	0.6447
272.	1.47	1111.	0.6419
273.	1.469	1112.	0.6419
274.	1.468	1113.	0.6404
275.	1.468	1114.	0.641
276.	1.464	1115.	0.6397
277.	1.464	1116.	0.6398
278.	1.462	1117.	0.6394
279.	1.46	1118.	0.6387
280.	1.459	1119.	0.6375
281.	1.458	1120.	0.6358
282.	1.456	1121.	0.6361
283.	1.454	1122.	0.6351
284.	1.452	1123.	0.6357
285.	1.452	1124.	0.6346
286.	1.451	1125.	0.6337
287.	1.446	1126.	0.6326
288.	1.446	1127.	0.6322
289.	1.445	1128.	0.6314
290.	1.443	1129.	0.6319
291.	1.442	1130.	0.6306
292.	1.439	1131.	0.6312
293.	1.438	1132.	0.6307
294.	1.437	1133.	0.63

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
295.	1.436	1134.	0.6293
296.	1.435	1135.	0.6287
297.	1.433	1136.	0.6277
298.	1.432	1137.	0.6257
299.	1.43	1138.	0.6271
300.	1.428	1139.	0.6264
301.	1.427	1140.	0.6274
302.	1.426	1141.	0.6239
303.	1.424	1142.	0.6225
304.	1.423	1143.	0.622
305.	1.422	1144.	0.6217
306.	1.419	1145.	0.6223
307.	1.417	1146.	0.6209
308.	1.417	1147.	0.6198
309.	1.415	1148.	0.6189
310.	1.414	1149.	0.6205
311.	1.413	1150.	0.6186
312.	1.411	1151.	0.6179
313.	1.412	1152.	0.6172
314.	1.408	1153.	0.6167
315.	1.406	1154.	0.615
316.	1.405	1155.	0.6153
317.	1.403	1156.	0.6167
318.	1.402	1157.	0.6132
319.	1.401	1158.	0.6136
320.	1.399	1159.	0.6145
321.	1.398	1160.	0.6133
322.	1.397	1161.	0.6126
323.	1.395	1162.	0.6101
324.	1.393	1163.	0.6109
325.	1.393	1164.	0.61
326.	1.389	1165.	0.6098
327.	1.389	1166.	0.6095
328.	1.387	1167.	0.6076
329.	1.386	1168.	0.6069
330.	1.385	1169.	0.6075
331.	1.382	1170.	0.6074
332.	1.382	1171.	0.6063
333.	1.38	1172.	0.6068
334.	1.379	1173.	0.6037
335.	1.378	1174.	0.6034
336.	1.377	1175.	0.6037
337.	1.375	1176.	0.6037
338.	1.373	1177.	0.6022
339.	1.373	1178.	0.6016
340.	1.371	1179.	0.6016
341.	1.369	1180.	0.6019
342.	1.368	1181.	0.6008
343.	1.365	1182.	0.6001
344.	1.365	1183.	0.6005
345.	1.363	1184.	0.5999
346.	1.363	1185.	0.5971
347.	1.36	1186.	0.5968
348.	1.36	1187.	0.5979
349.	1.359	1188.	0.5958
350.	1.356	1189.	0.5945
351.	1.355	1190.	0.5951
352.	1.355	1191.	0.5938
353.	1.353	1192.	0.594
354.	1.351	1193.	0.5917
355.	1.35	1194.	0.5947
356.	1.349	1195.	0.5938
357.	1.345	1196.	0.5915
358.	1.345	1197.	0.5907
359.	1.344	1198.	0.5907
360.	1.342	1199.	0.5884

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
361.	1.341	1200.	0.5902
362.	1.341	1201.	0.5884
363.	1.337	1202.	0.5883
364.	1.337	1203.	0.5885
365.	1.335	1204.	0.5875
366.	1.334	1205.	0.5865
367.	1.333	1206.	0.5862
368.	1.331	1207.	0.5855
369.	1.33	1208.	0.5846
370.	1.33	1209.	0.584
371.	1.327	1210.	0.5832
372.	1.326	1211.	0.583
373.	1.323	1212.	0.5816
374.	1.323	1213.	0.5808
375.	1.323	1214.	0.5816
376.	1.32	1215.	0.5814
377.	1.319	1216.	0.5807
378.	1.319	1217.	0.5787
379.	1.316	1218.	0.5793
380.	1.315	1219.	0.5783
381.	1.314	1220.	0.5796
382.	1.313	1221.	0.5772
383.	1.31	1222.	0.5766
384.	1.31	1223.	0.576
385.	1.309	1224.	0.5749
386.	1.308	1225.	0.5756
387.	1.305	1226.	0.5746
388.	1.304	1227.	0.5744
389.	1.305	1228.	0.5738
390.	1.302	1229.	0.5733
391.	1.301	1230.	0.5728
392.	1.299	1231.	0.572
393.	1.3	1232.	0.5704
394.	1.298	1233.	0.5702
395.	1.297	1234.	0.5705
396.	1.295	1235.	0.5693
397.	1.293	1236.	0.5682
398.	1.29	1237.	0.5673
399.	1.289	1238.	0.5686
400.	1.288	1239.	0.5674
401.	1.288	1240.	0.5681
402.	1.285	1241.	0.567
403.	1.285	1242.	0.5653
404.	1.283	1243.	0.566
405.	1.282	1244.	0.565
406.	1.281	1245.	0.5636
407.	1.279	1246.	0.563
408.	1.278	1247.	0.5619
409.	1.276	1248.	0.562
410.	1.276	1249.	0.562
411.	1.274	1250.	0.5623
412.	1.272	1251.	0.5606
413.	1.27	1252.	0.5612
414.	1.271	1253.	0.5597
415.	1.269	1254.	0.5595
416.	1.27	1255.	0.5592
417.	1.267	1256.	0.559
418.	1.265	1257.	0.5576
419.	1.265	1258.	0.5561
420.	1.264	1259.	0.5575
421.	1.26	1260.	0.5559
422.	1.261	1261.	0.5565
423.	1.26	1262.	0.555
424.	1.258	1263.	0.5541
425.	1.256	1264.	0.5538
426.	1.257	1265.	0.5544

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
427.	1.256	1266.	0.5538
428.	1.254	1267.	0.5525
429.	1.251	1268.	0.5496
430.	1.251	1269.	0.551
431.	1.25	1270.	0.5505
432.	1.247	1271.	0.5506
433.	1.248	1272.	0.5495
434.	1.245	1273.	0.5485
435.	1.245	1274.	0.5484
436.	1.244	1275.	0.5471
437.	1.243	1276.	0.5486
438.	1.24	1277.	0.5455
439.	1.239	1278.	0.5454
440.	1.239	1279.	0.5443
441.	1.237	1280.	0.544
442.	1.237	1281.	0.5461
443.	1.236	1282.	0.5443
444.	1.235	1283.	0.544
445.	1.232	1284.	0.5433
446.	1.232	1285.	0.5411
447.	1.231	1286.	0.5409
448.	1.229	1287.	0.541
449.	1.228	1288.	0.5401
450.	1.225	1289.	0.5416
451.	1.226	1290.	0.5402
452.	1.224	1291.	0.5397
453.	1.224	1292.	0.5392
454.	1.221	1293.	0.5403
455.	1.22	1294.	0.5386
456.	1.219	1295.	0.536
457.	1.218	1296.	0.5365
458.	1.217	1297.	0.5368
459.	1.215	1298.	0.5345
460.	1.214	1299.	0.5348
461.	1.213	1300.	0.5362
462.	1.211	1301.	0.5334
463.	1.21	1302.	0.5329
464.	1.207	1303.	0.5321
465.	1.208	1304.	0.5299
466.	1.207	1305.	0.5318
467.	1.204	1306.	0.5309
468.	1.203	1307.	0.5298
469.	1.202	1308.	0.5296
470.	1.202	1309.	0.5303
471.	1.2	1310.	0.5278
472.	1.198	1311.	0.5284
473.	1.197	1312.	0.5284
474.	1.196	1313.	0.5277
475.	1.194	1314.	0.5267
476.	1.194	1315.	0.5276
477.	1.195	1316.	0.525
478.	1.191	1317.	0.5273
479.	1.191	1318.	0.5258
480.	1.19	1319.	0.524
481.	1.188	1320.	0.5226
482.	1.188	1321.	0.5246
483.	1.186	1322.	0.5221
484.	1.185	1323.	0.5219
485.	1.183	1324.	0.5242
486.	1.181	1325.	0.5212
487.	1.181	1326.	0.5209
488.	1.182	1327.	0.5214
489.	1.177	1328.	0.5199
490.	1.176	1329.	0.5191
491.	1.176	1330.	0.5178
492.	1.174	1331.	0.5196

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
493.	1.175	1332.	0.5181
494.	1.172	1333.	0.5174
495.	1.171	1334.	0.5177
496.	1.171	1335.	0.5162
497.	1.169	1336.	0.5159
498.	1.167	1337.	0.5145
499.	1.167	1338.	0.5145
500.	1.165	1339.	0.5139
501.	1.166	1340.	0.5147
502.	1.162	1341.	0.5133
503.	1.163	1342.	0.5138
504.	1.16	1343.	0.5114
505.	1.16	1344.	0.5126
506.	1.159	1345.	0.5114
507.	1.157	1346.	0.5106
508.	1.156	1347.	0.5121
509.	1.155	1348.	0.509
510.	1.155	1349.	0.5099
511.	1.152	1350.	0.5094
512.	1.152	1351.	0.5092
513.	1.15	1352.	0.5049
514.	1.15	1353.	0.508
515.	1.146	1354.	0.5073
516.	1.147	1355.	0.5049
517.	1.145	1356.	0.5046
518.	1.145	1357.	0.5056
519.	1.143	1358.	0.5043
520.	1.143	1359.	0.5042
521.	1.14	1360.	0.5041
522.	1.141	1361.	0.503
523.	1.139	1362.	0.5027
524.	1.136	1363.	0.503
525.	1.139	1364.	0.5024
526.	1.138	1365.	0.5014
527.	1.134	1366.	0.5003
528.	1.133	1367.	0.5009
529.	1.134	1368.	0.4999
530.	1.132	1369.	0.5
531.	1.13	1370.	0.4983
532.	1.13	1371.	0.4991
533.	1.127	1372.	0.4964
534.	1.127	1373.	0.4979
535.	1.126	1374.	0.496
536.	1.124	1375.	0.4964
537.	1.124	1376.	0.4969
538.	1.123	1377.	0.4951
539.	1.12	1378.	0.4965
540.	1.12	1379.	0.4942
541.	1.119	1380.	0.4923
542.	1.118	1381.	0.4935
543.	1.116	1382.	0.4939
544.	1.116	1383.	0.4922
545.	1.116	1384.	0.492
546.	1.115	1385.	0.4911
547.	1.11	1386.	0.4912
548.	1.112	1387.	0.4889
549.	1.11	1388.	0.4895
550.	1.111	1389.	0.4894
551.	1.108	1390.	0.4896
552.	1.108	1391.	0.4892
553.	1.105	1392.	0.4878
554.	1.105	1393.	0.4869
555.	1.104	1394.	0.486
556.	1.102	1395.	0.4846
557.	1.102	1396.	0.4858
558.	1.1	1397.	0.4866

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
559.	1.1	1398.	0.4852
560.	1.098	1399.	0.4848
561.	1.097	1400.	0.484
562.	1.097	1401.	0.4835
563.	1.095	1402.	0.4831
564.	1.093	1403.	0.485
565.	1.093	1404.	0.4821
566.	1.091	1405.	0.4823
567.	1.093	1406.	0.4799
568.	1.089	1407.	0.4794
569.	1.087	1408.	0.4805
570.	1.086	1409.	0.4807
571.	1.087	1410.	0.4798
572.	1.086	1411.	0.4795
573.	1.082	1412.	0.4778
574.	1.082	1413.	0.4774
575.	1.083	1414.	0.4768
576.	1.081	1415.	0.4781
577.	1.081	1416.	0.4764
578.	1.079	1417.	0.4755
579.	1.077	1418.	0.4748
580.	1.075	1419.	0.4753
581.	1.075	1420.	0.4751
582.	1.072	1421.	0.4741
583.	1.073	1422.	0.4738
584.	1.072	1423.	0.473
585.	1.072	1424.	0.4726
586.	1.07	1425.	0.4723
587.	1.07	1426.	0.4722
588.	1.068	1427.	0.471
589.	1.068	1428.	0.4702
590.	1.066	1429.	0.4697
591.	1.065	1430.	0.4696
592.	1.064	1431.	0.4688
593.	1.064	1432.	0.4692
594.	1.062	1433.	0.4671
595.	1.061	1434.	0.4675
596.	1.06	1435.	0.4679
597.	1.06	1436.	0.4658
598.	1.059	1437.	0.4673
599.	1.057	1438.	0.4651
600.	1.055	1439.	0.4658
601.	1.055	1440.	0.4645
602.	1.056	1441.	0.463
603.	1.05	1442.	0.4637
604.	1.052	1443.	0.4646
605.	1.051	1444.	0.4625
606.	1.051	1445.	0.4624
607.	1.048	1446.	0.4619
608.	1.047	1447.	0.463
609.	1.045	1448.	0.4608
610.	1.046	1449.	0.4601
611.	1.043	1450.	0.4594
612.	1.042	1451.	0.46
613.	1.043	1452.	0.459
614.	1.041	1453.	0.4581
615.	1.04	1454.	0.4588
616.	1.039	1455.	0.4579
617.	1.037	1456.	0.4572
618.	1.037	1457.	0.4572
619.	1.034	1458.	0.4567
620.	1.033	1459.	0.4559
621.	1.034	1460.	0.4562
622.	1.033	1461.	0.4548
623.	1.031	1462.	0.4535
624.	1.031	1463.	0.4535

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
625.	1.028	1464.	0.4539
626.	1.028	1465.	0.4539
627.	1.028	1466.	0.4532
628.	1.026	1467.	0.4512
629.	1.025	1468.	0.4528
630.	1.024	1469.	0.4502
631.	1.022	1470.	0.4513
632.	1.022	1471.	0.4508
633.	1.022	1472.	0.4501
634.	1.02	1473.	0.4499
635.	1.021	1474.	0.4486
636.	1.019	1475.	0.4481
637.	1.018	1476.	0.4498
638.	1.017	1477.	0.4479
639.	1.016	1478.	0.4479
640.	1.014	1479.	0.4474
641.	1.014	1480.	0.4476
642.	1.012	1481.	0.4474
643.	1.011	1482.	0.4466
644.	1.009	1483.	0.4457
645.	1.01	1484.	0.4443
646.	1.007	1485.	0.4438
647.	1.005	1486.	0.4445
648.	1.007	1487.	0.444
649.	1.004	1488.	0.4422
650.	1.004	1489.	0.4413
651.	1.005	1490.	0.4413
652.	1.004	1491.	0.4405
653.	1.002	1492.	0.4411
654.	1.	1493.	0.4392
655.	1.001	1494.	0.4386
656.	0.9979	1495.	0.44
657.	0.9979	1496.	0.4391
658.	0.9956	1497.	0.4397
659.	0.9952	1498.	0.4387
660.	0.9949	1499.	0.4375
661.	0.9944	1500.	0.4371
662.	0.992	1501.	0.4374
663.	0.9924	1502.	0.4362
664.	0.9919	1503.	0.436
665.	0.9904	1504.	0.436
666.	0.9897	1505.	0.4355
667.	0.989	1506.	0.4358
668.	0.9884	1507.	0.4354
669.	0.9875	1508.	0.4336
670.	0.9849	1509.	0.433
671.	0.984	1510.	0.4326
672.	0.9835	1511.	0.4331
673.	0.9821	1512.	0.433
674.	0.9812	1513.	0.4328
675.	0.9804	1514.	0.4324
676.	0.9783	1515.	0.4302
677.	0.9766	1516.	0.4297
678.	0.977	1517.	0.4282
679.	0.9757	1518.	0.4309
680.	0.9756	1519.	0.4271
681.	0.9737	1520.	0.4283
682.	0.9737	1521.	0.4285
683.	0.9709	1522.	0.4255
684.	0.9721	1523.	0.4279
685.	0.9705	1524.	0.427
686.	0.9702	1525.	0.4257
687.	0.9684	1526.	0.4257
688.	0.9685	1527.	0.4255
689.	0.9655	1528.	0.4254
690.	0.9666	1529.	0.4245

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
691.	0.9645	1530.	0.4238
692.	0.964	1531.	0.4245
693.	0.9623	1532.	0.4243
694.	0.96	1533.	0.4221
695.	0.9627	1534.	0.4228
696.	0.9588	1535.	0.4215
697.	0.9609	1536.	0.4227
698.	0.9577	1537.	0.4212
699.	0.9566	1538.	0.4212
700.	0.9571	1539.	0.4224
701.	0.9554	1540.	0.4209
702.	0.9538	1541.	0.4176
703.	0.9544	1542.	0.4198
704.	0.952	1543.	0.4175
705.	0.9528	1544.	0.4172
706.	0.95	1545.	0.4181
707.	0.9504	1546.	0.4153
708.	0.9489	1547.	0.4167
709.	0.9491	1548.	0.4174
710.	0.9449	1549.	0.4148
711.	0.9464	1550.	0.416
712.	0.9441	1551.	0.4145
713.	0.9445	1552.	0.4138
714.	0.9431	1553.	0.4132
715.	0.9429	1554.	0.4137
716.	0.9408	1555.	0.4131
717.	0.939	1556.	0.4123
718.	0.9399	1557.	0.4117
719.	0.9381	1558.	0.4137
720.	0.9368	1559.	0.4122
721.	0.9377	1560.	0.4106
722.	0.9343	1561.	0.4123
723.	0.9354	1562.	0.4091
724.	0.9325	1563.	0.4096
725.	0.9335	1564.	0.4081
726.	0.9308	1565.	0.4088
727.	0.9293	1566.	0.4086
728.	0.9305	1567.	0.4064
729.	0.9305	1568.	0.4078
730.	0.9288	1569.	0.4072
731.	0.9271	1570.	0.4076
732.	0.9279	1571.	0.4066
733.	0.9257	1572.	0.4068
734.	0.9248	1573.	0.4059
735.	0.9254	1574.	0.406
736.	0.9234	1575.	0.4054
737.	0.9224	1576.	0.4045
738.	0.921	1577.	0.4042
739.	0.9198	1578.	0.405
740.	0.9185	1579.	0.4028
741.	0.9187	1580.	0.4029
742.	0.9169	1581.	0.4005
743.	0.9188	1582.	0.4012
744.	0.9175	1583.	0.4009
745.	0.9159	1584.	0.4025
746.	0.9153	1585.	0.4003
747.	0.9151	1586.	0.4
748.	0.9115	1587.	0.3995
749.	0.911	1588.	0.3978
750.	0.9099	1589.	0.3983
751.	0.9094	1590.	0.398
752.	0.9082	1591.	0.3986
753.	0.9084	1592.	0.3974
754.	0.907	1593.	0.3973
755.	0.9062	1594.	0.3974
756.	0.9048	1595.	0.3945

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
757.	0.9037	1596.	0.3957
758.	0.904	1597.	0.3946
759.	0.9023	1598.	0.3954
760.	0.9038	1599.	0.3947
761.	0.9009	1600.	0.3936
762.	0.9012	1601.	0.3931
763.	0.899	1602.	0.3931
764.	0.8964	1603.	0.3924
765.	0.8977	1604.	0.3927
766.	0.896	1605.	0.3927
767.	0.895	1606.	0.3927
768.	0.8939	1607.	0.3923
769.	0.893	1608.	0.3918
770.	0.8931	1609.	0.3907
771.	0.8923	1610.	0.3881
772.	0.8912	1611.	0.389
773.	0.8914	1612.	0.3881
774.	0.8887	1613.	0.39
775.	0.89	1614.	0.3875
776.	0.8893	1615.	0.3878
777.	0.8877	1616.	0.3865
778.	0.8866	1617.	0.3865
779.	0.8858	1618.	0.3848
780.	0.8848	1619.	0.3862
781.	0.8836	1620.	0.3847
782.	0.8825	1621.	0.3857
783.	0.8811	1622.	0.3848
784.	0.8816	1623.	0.385
785.	0.8813	1624.	0.3833
786.	0.8803	1625.	0.3841
787.	0.8794	1626.	0.3826
788.	0.879	1627.	0.3827
789.	0.8758	1628.	0.3826
790.	0.8745	1629.	0.3819
791.	0.8732	1630.	0.3811
792.	0.8739	1631.	0.3806
793.	0.8744	1632.	0.3805
794.	0.8712	1633.	0.3814
795.	0.8714	1634.	0.3804
796.	0.8711	1635.	0.3796
797.	0.8711	1636.	0.3792
798.	0.8701	1637.	0.3796
799.	0.8689	1638.	0.3791
800.	0.8667	1639.	0.3781
801.	0.8659	1640.	0.3776
802.	0.8669	1641.	0.3765
803.	0.8648	1642.	0.3761
804.	0.8632	1643.	0.3763
805.	0.8635	1644.	0.3765
806.	0.8627	1645.	0.3743
807.	0.8629	1646.	0.3737
808.	0.8624	1647.	0.3762
809.	0.8598	1648.	0.3736
810.	0.8597	1649.	0.3722
811.	0.859	1650.	0.3727
812.	0.8584	1651.	0.3733
813.	0.8551	1652.	0.3737
814.	0.855	1653.	0.3735
815.	0.8559	1654.	0.3714
816.	0.8543	1655.	0.3701
817.	0.8541	1656.	0.3704
818.	0.8534	1657.	0.3703
819.	0.8523	1658.	0.369
820.	0.8516	1659.	0.3702
821.	0.8503	1660.	0.3694
822.	0.8479	1661.	0.3691

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
823.	0.85	1662.	0.369
824.	0.8486	1663.	0.3688
825.	0.8461	1664.	0.3672
826.	0.8457	1665.	0.3669
827.	0.8465	1666.	0.3669
828.	0.8434	1667.	0.3675
829.	0.8429	1668.	0.3661
830.	0.8418	1669.	0.3654
831.	0.8415	1670.	0.3661
832.	0.841	1671.	0.3654
833.	0.8399	1672.	0.3651
834.	0.8386	1673.	0.3642
835.	0.8392	1674.	0.3634
836.	0.8371	1675.	0.3629
837.	0.8358	1676.	0.3653
838.	0.8345	1677.	0.3627
839.	0.8337	1678.	0.3618
840.	0.8343	1679.	0.3592

SOLUTION

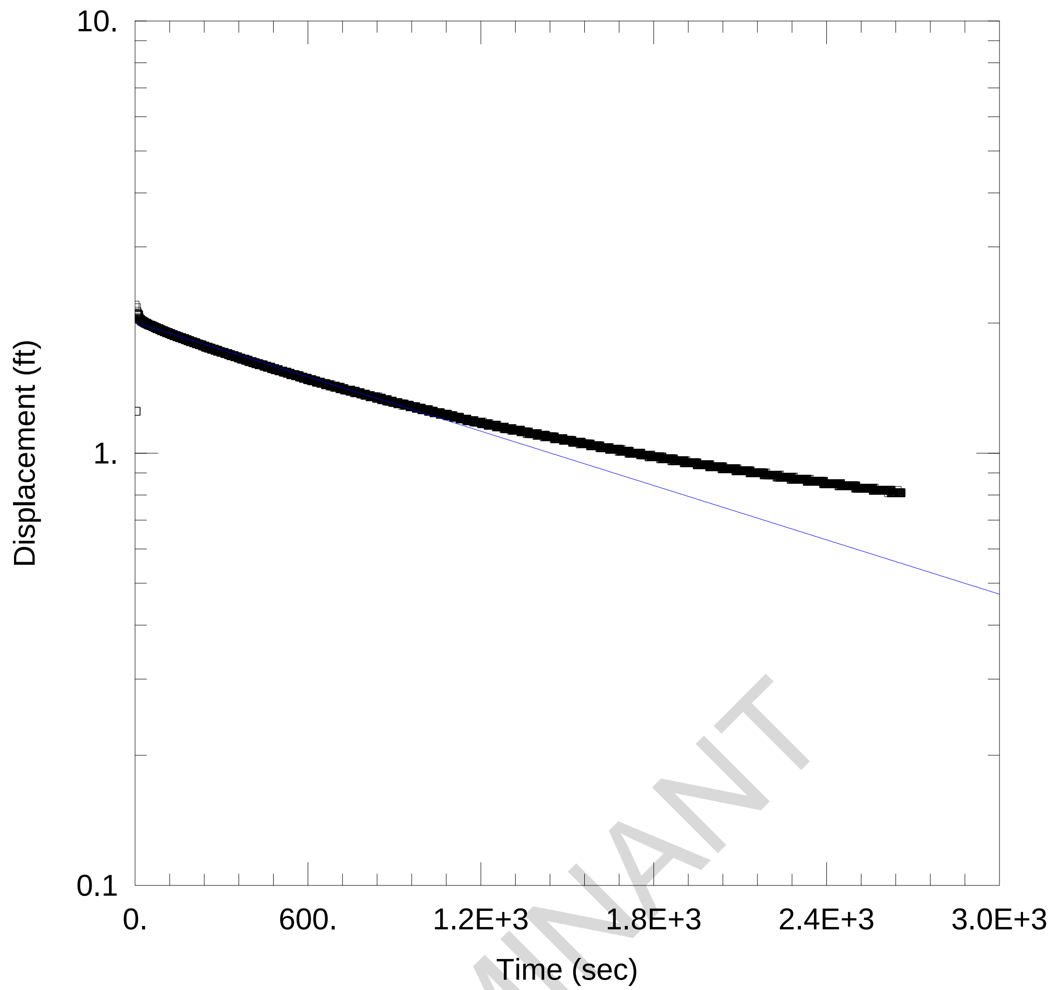
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.56

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.407E-5	cm/sec
y0	1.958	ft

T = K*b = 0.008307 cm²/sec



PDP-26 SLUG OUT

Data Set: J:\...\PDP-26 Slug Out.aqt
Date: 12/16/15
Time: 10:25:50

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-26
Test Date: 10/6/15

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-26)

Initial Displacement: 2.2 ft
Static Water Column Height: 20.02 ft
Total Well Penetration Depth: 8. ft
Screen Length: 8. ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.621E-5 cm/sec
y0 = 2.006 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-26 Slug Out
Date: 12/16/15
Time: 10:26:04

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/6/15
Test Well: PDP-26

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-26

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 20.02 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 8. ft
Total Well Penetration Depth: 8. ft

No. of Observations: 2657

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.	1.25	1332.	1.13
4.	1.25	1333.	1.13
5.	2.17	1334.	1.13
6.	2.13	1335.	1.13
7.	2.09	1336.	1.13
8.	2.1	1337.	1.13
9.	2.11	1338.	1.13
10.	2.09	1339.	1.12
11.	2.09	1340.	1.12
12.	2.08	1341.	1.12
13.	2.09	1342.	1.12
14.	2.06	1343.	1.12
15.	2.05	1344.	1.12
16.	2.04	1345.	1.12
17.	2.04	1346.	1.12
18.	2.04	1347.	1.12
19.	2.04	1348.	1.12
20.	2.03	1349.	1.12
21.	2.03	1350.	1.12
22.	2.03	1351.	1.12
23.	2.02	1352.	1.12
24.	2.02	1353.	1.12
25.	2.02	1354.	1.12
26.	2.02	1355.	1.12
27.	2.02	1356.	1.12
28.	2.02	1357.	1.12
29.	2.01	1358.	1.12
30.	2.01	1359.	1.12
31.	2.01	1360.	1.12

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
32.	2.01	1361.	1.11
33.	2.01	1362.	1.12
34.	2.	1363.	1.12
35.	2.	1364.	1.11
36.	2.	1365.	1.12
37.	2.	1366.	1.12
38.	2.	1367.	1.11
39.	2.	1368.	1.11
40.	2.	1369.	1.11
41.	1.99	1370.	1.11
42.	1.99	1371.	1.11
43.	1.99	1372.	1.11
44.	1.99	1373.	1.11
45.	1.99	1374.	1.11
46.	1.99	1375.	1.11
47.	1.98	1376.	1.11
48.	1.98	1377.	1.11
49.	1.98	1378.	1.11
50.	1.98	1379.	1.11
51.	1.98	1380.	1.11
52.	1.98	1381.	1.11
53.	1.98	1382.	1.11
54.	1.98	1383.	1.11
55.	1.97	1384.	1.11
56.	1.97	1385.	1.11
57.	1.97	1386.	1.11
58.	1.97	1387.	1.11
59.	1.97	1388.	1.11
60.	1.97	1389.	1.11
61.	1.97	1390.	1.11
62.	1.96	1391.	1.11
63.	1.96	1392.	1.11
64.	1.96	1393.	1.11
65.	1.96	1394.	1.11
66.	1.96	1395.	1.1
67.	1.96	1396.	1.1
68.	1.96	1397.	1.11
69.	1.95	1398.	1.1
70.	1.95	1399.	1.1
71.	1.95	1400.	1.1
72.	1.95	1401.	1.1
73.	1.95	1402.	1.1
74.	1.95	1403.	1.1
75.	1.95	1404.	1.1
76.	1.94	1405.	1.1
77.	1.94	1406.	1.1
78.	1.94	1407.	1.1
79.	1.94	1408.	1.1
80.	1.94	1409.	1.1
81.	1.94	1410.	1.1
82.	1.94	1411.	1.1
83.	1.94	1412.	1.1
84.	1.94	1413.	1.1
85.	1.93	1414.	1.1
86.	1.93	1415.	1.1
87.	1.93	1416.	1.1
88.	1.93	1417.	1.1
89.	1.93	1418.	1.1
90.	1.93	1419.	1.1
91.	1.93	1420.	1.09
92.	1.92	1421.	1.1
93.	1.92	1422.	1.1
94.	1.92	1423.	1.1
95.	1.92	1424.	1.09
96.	1.92	1425.	1.1
97.	1.92	1426.	1.09

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
98.	1.92	1427.	1.09
99.	1.92	1428.	1.09
100.	1.92	1429.	1.09
101.	1.91	1430.	1.09
102.	1.91	1431.	1.09
103.	1.91	1432.	1.09
104.	1.91	1433.	1.09
105.	1.91	1434.	1.09
106.	1.91	1435.	1.09
107.	1.91	1436.	1.09
108.	1.91	1437.	1.09
109.	1.9	1438.	1.09
110.	1.9	1439.	1.09
111.	1.9	1440.	1.09
112.	1.9	1441.	1.09
113.	1.9	1442.	1.09
114.	1.9	1443.	1.09
115.	1.9	1444.	1.09
116.	1.9	1445.	1.09
117.	1.9	1446.	1.09
118.	1.89	1447.	1.09
119.	1.89	1448.	1.09
120.	1.89	1449.	1.09
121.	1.89	1450.	1.09
122.	1.89	1451.	1.09
123.	1.89	1452.	1.09
124.	1.89	1453.	1.09
125.	1.89	1454.	1.09
126.	1.88	1455.	1.08
127.	1.88	1456.	1.09
128.	1.88	1457.	1.08
129.	1.88	1458.	1.08
130.	1.88	1459.	1.08
131.	1.88	1460.	1.08
132.	1.88	1461.	1.08
133.	1.88	1462.	1.08
134.	1.88	1463.	1.08
135.	1.87	1464.	1.08
136.	1.87	1465.	1.08
137.	1.87	1466.	1.08
138.	1.87	1467.	1.08
139.	1.87	1468.	1.08
140.	1.87	1469.	1.08
141.	1.87	1470.	1.08
142.	1.87	1471.	1.08
143.	1.87	1472.	1.08
144.	1.87	1473.	1.08
145.	1.86	1474.	1.08
146.	1.86	1475.	1.08
147.	1.86	1476.	1.08
148.	1.86	1477.	1.08
149.	1.86	1478.	1.08
150.	1.86	1479.	1.08
151.	1.86	1480.	1.08
152.	1.86	1481.	1.08
153.	1.86	1482.	1.08
154.	1.85	1483.	1.08
155.	1.85	1484.	1.08
156.	1.85	1485.	1.08
157.	1.85	1486.	1.08
158.	1.85	1487.	1.07
159.	1.85	1488.	1.07
160.	1.85	1489.	1.07
161.	1.85	1490.	1.07
162.	1.85	1491.	1.07
163.	1.85	1492.	1.07

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
164.	1.84	1493.	1.07
165.	1.84	1494.	1.07
166.	1.84	1495.	1.07
167.	1.84	1496.	1.07
168.	1.84	1497.	1.07
169.	1.84	1498.	1.07
170.	1.84	1499.	1.07
171.	1.84	1500.	1.07
172.	1.84	1501.	1.07
173.	1.84	1502.	1.07
174.	1.83	1503.	1.07
175.	1.83	1504.	1.07
176.	1.83	1505.	1.07
177.	1.83	1506.	1.07
178.	1.83	1507.	1.07
179.	1.83	1508.	1.07
180.	1.83	1509.	1.07
181.	1.83	1510.	1.07
182.	1.83	1511.	1.07
183.	1.82	1512.	1.07
184.	1.82	1513.	1.07
185.	1.82	1514.	1.07
186.	1.82	1515.	1.07
187.	1.82	1516.	1.07
188.	1.82	1517.	1.07
189.	1.82	1518.	1.06
190.	1.82	1519.	1.06
191.	1.82	1520.	1.06
192.	1.81	1521.	1.06
193.	1.81	1522.	1.06
194.	1.81	1523.	1.06
195.	1.81	1524.	1.06
196.	1.81	1525.	1.06
197.	1.81	1526.	1.06
198.	1.81	1527.	1.06
199.	1.81	1528.	1.06
200.	1.81	1529.	1.06
201.	1.81	1530.	1.06
202.	1.81	1531.	1.06
203.	1.8	1532.	1.06
204.	1.8	1533.	1.06
205.	1.8	1534.	1.06
206.	1.8	1535.	1.06
207.	1.8	1536.	1.06
208.	1.8	1537.	1.06
209.	1.8	1538.	1.06
210.	1.8	1539.	1.06
211.	1.8	1540.	1.06
212.	1.8	1541.	1.06
213.	1.79	1542.	1.06
214.	1.79	1543.	1.06
215.	1.79	1544.	1.06
216.	1.79	1545.	1.05
217.	1.79	1546.	1.05
218.	1.79	1547.	1.06
219.	1.79	1548.	1.06
220.	1.79	1549.	1.06
221.	1.79	1550.	1.05
222.	1.79	1551.	1.05
223.	1.78	1552.	1.05
224.	1.78	1553.	1.05
225.	1.78	1554.	1.05
226.	1.78	1555.	1.05
227.	1.78	1556.	1.05
228.	1.78	1557.	1.05
229.	1.78	1558.	1.05

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
230.	1.78	1559.	1.05
231.	1.78	1560.	1.05
232.	1.78	1561.	1.05
233.	1.78	1562.	1.05
234.	1.77	1563.	1.05
235.	1.77	1564.	1.05
236.	1.77	1565.	1.05
237.	1.77	1566.	1.05
238.	1.77	1567.	1.05
239.	1.77	1568.	1.05
240.	1.77	1569.	1.05
241.	1.77	1570.	1.05
242.	1.77	1571.	1.05
243.	1.77	1572.	1.05
244.	1.76	1573.	1.05
245.	1.76	1574.	1.05
246.	1.76	1575.	1.05
247.	1.76	1576.	1.05
248.	1.76	1577.	1.05
249.	1.76	1578.	1.05
250.	1.76	1579.	1.05
251.	1.76	1580.	1.05
252.	1.76	1581.	1.04
253.	1.75	1582.	1.04
254.	1.75	1583.	1.04
255.	1.76	1584.	1.04
256.	1.75	1585.	1.04
257.	1.75	1586.	1.04
258.	1.75	1587.	1.04
259.	1.75	1588.	1.04
260.	1.75	1589.	1.04
261.	1.75	1590.	1.04
262.	1.75	1591.	1.04
263.	1.75	1592.	1.04
264.	1.75	1593.	1.04
265.	1.74	1594.	1.04
266.	1.74	1595.	1.04
267.	1.74	1596.	1.04
268.	1.74	1597.	1.04
269.	1.74	1598.	1.04
270.	1.74	1599.	1.04
271.	1.74	1600.	1.04
272.	1.74	1601.	1.04
273.	1.74	1602.	1.04
274.	1.74	1603.	1.04
275.	1.74	1604.	1.04
276.	1.74	1605.	1.04
277.	1.73	1606.	1.04
278.	1.73	1607.	1.04
279.	1.73	1608.	1.04
280.	1.73	1609.	1.04
281.	1.73	1610.	1.04
282.	1.73	1611.	1.04
283.	1.73	1612.	1.04
284.	1.73	1613.	1.03
285.	1.73	1614.	1.04
286.	1.72	1615.	1.03
287.	1.73	1616.	1.03
288.	1.73	1617.	1.03
289.	1.72	1618.	1.03
290.	1.72	1619.	1.03
291.	1.72	1620.	1.03
292.	1.72	1621.	1.03
293.	1.72	1622.	1.03
294.	1.72	1623.	1.03
295.	1.72	1624.	1.03

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
296.	1.72	1625.	1.03
297.	1.72	1626.	1.03
298.	1.71	1627.	1.03
299.	1.71	1628.	1.03
300.	1.71	1629.	1.03
301.	1.71	1630.	1.03
302.	1.71	1631.	1.03
303.	1.71	1632.	1.03
304.	1.71	1633.	1.03
305.	1.71	1634.	1.03
306.	1.71	1635.	1.03
307.	1.71	1636.	1.03
308.	1.71	1637.	1.03
309.	1.71	1638.	1.03
310.	1.71	1639.	1.03
311.	1.7	1640.	1.03
312.	1.7	1641.	1.03
313.	1.7	1642.	1.03
314.	1.7	1643.	1.03
315.	1.7	1644.	1.03
316.	1.7	1645.	1.03
317.	1.7	1646.	1.03
318.	1.7	1647.	1.02
319.	1.7	1648.	1.02
320.	1.7	1649.	1.02
321.	1.7	1650.	1.02
322.	1.7	1651.	1.02
323.	1.7	1652.	1.02
324.	1.69	1653.	1.02
325.	1.69	1654.	1.02
326.	1.69	1655.	1.02
327.	1.69	1656.	1.02
328.	1.69	1657.	1.02
329.	1.69	1658.	1.02
330.	1.69	1659.	1.02
331.	1.69	1660.	1.02
332.	1.69	1661.	1.02
333.	1.68	1662.	1.02
334.	1.68	1663.	1.02
335.	1.68	1664.	1.02
336.	1.68	1665.	1.02
337.	1.68	1666.	1.02
338.	1.68	1667.	1.02
339.	1.68	1668.	1.02
340.	1.68	1669.	1.02
341.	1.68	1670.	1.02
342.	1.68	1671.	1.02
343.	1.68	1672.	1.02
344.	1.68	1673.	1.02
345.	1.68	1674.	1.02
346.	1.67	1675.	1.02
347.	1.67	1676.	1.02
348.	1.67	1677.	1.02
349.	1.67	1678.	1.02
350.	1.67	1679.	1.02
351.	1.67	1680.	1.01
352.	1.67	1681.	1.02
353.	1.67	1682.	1.02
354.	1.67	1683.	1.02
355.	1.67	1684.	1.01
356.	1.67	1685.	1.01
357.	1.67	1686.	1.01
358.	1.66	1687.	1.02
359.	1.66	1688.	1.01
360.	1.66	1689.	1.01
361.	1.66	1690.	1.01

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
362.	1.66	1691.	1.01
363.	1.66	1692.	1.01
364.	1.66	1693.	1.01
365.	1.66	1694.	1.01
366.	1.66	1695.	1.01
367.	1.66	1696.	1.01
368.	1.66	1697.	1.01
369.	1.65	1698.	1.01
370.	1.65	1699.	1.01
371.	1.65	1700.	1.01
372.	1.65	1701.	1.01
373.	1.65	1702.	1.01
374.	1.65	1703.	1.01
375.	1.65	1704.	1.01
376.	1.65	1705.	1.01
377.	1.65	1706.	1.01
378.	1.65	1707.	1.01
379.	1.65	1708.	1.01
380.	1.65	1709.	1.01
381.	1.65	1710.	1.01
382.	1.65	1711.	1.01
383.	1.64	1712.	1.01
384.	1.64	1713.	1.01
385.	1.64	1714.	1.
386.	1.64	1715.	1.01
387.	1.64	1716.	1.01
388.	1.64	1717.	1.
389.	1.64	1718.	1.
390.	1.64	1719.	1.
391.	1.64	1720.	1.
392.	1.64	1721.	1.
393.	1.64	1722.	1.
394.	1.63	1723.	1.
395.	1.63	1724.	1.
396.	1.63	1725.	1.
397.	1.63	1726.	1.
398.	1.63	1727.	1.
399.	1.63	1728.	1.
400.	1.63	1729.	1.
401.	1.63	1730.	1.
402.	1.63	1731.	1.
403.	1.63	1732.	1.
404.	1.63	1733.	1.
405.	1.63	1734.	1.
406.	1.63	1735.	1.
407.	1.63	1736.	1.
408.	1.62	1737.	1.
409.	1.62	1738.	1.
410.	1.62	1739.	1.
411.	1.62	1740.	1.
412.	1.62	1741.	1.
413.	1.62	1742.	1.
414.	1.62	1743.	1.
415.	1.62	1744.	1.
416.	1.62	1745.	1.
417.	1.62	1746.	1.
418.	1.62	1747.	1.
419.	1.61	1748.	1.
420.	1.61	1749.	1.
421.	1.61	1750.	1.
422.	1.61	1751.	1.
423.	1.61	1752.	1.
424.	1.61	1753.	1.
425.	1.61	1754.	0.99
426.	1.61	1755.	1.
427.	1.61	1756.	1.

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
428.	1.61	1757.	0.99
429.	1.61	1758.	0.99
430.	1.6	1759.	0.99
431.	1.61	1760.	0.99
432.	1.6	1761.	0.99
433.	1.6	1762.	0.99
434.	1.6	1763.	0.99
435.	1.6	1764.	0.99
436.	1.6	1765.	0.99
437.	1.6	1766.	0.99
438.	1.6	1767.	0.99
439.	1.6	1768.	0.99
440.	1.6	1769.	0.99
441.	1.6	1770.	0.99
442.	1.6	1771.	0.99
443.	1.6	1772.	0.99
444.	1.6	1773.	0.99
445.	1.6	1774.	0.99
446.	1.6	1775.	0.99
447.	1.59	1776.	0.99
448.	1.59	1777.	0.99
449.	1.59	1778.	0.99
450.	1.59	1779.	0.99
451.	1.59	1780.	0.99
452.	1.59	1781.	0.99
453.	1.59	1782.	0.99
454.	1.59	1783.	0.99
455.	1.59	1784.	0.98
456.	1.59	1785.	0.99
457.	1.59	1786.	0.98
458.	1.59	1787.	0.99
459.	1.58	1788.	0.99
460.	1.58	1789.	0.98
461.	1.58	1790.	0.99
462.	1.58	1791.	0.98
463.	1.58	1792.	0.98
464.	1.58	1793.	0.98
465.	1.58	1794.	0.98
466.	1.58	1795.	0.98
467.	1.58	1796.	0.98
468.	1.58	1797.	0.98
469.	1.58	1798.	0.98
470.	1.58	1799.	0.98
471.	1.58	1800.	0.98
472.	1.58	1801.	0.98
473.	1.57	1802.	0.98
474.	1.57	1803.	0.98
475.	1.57	1804.	0.98
476.	1.57	1805.	0.98
477.	1.57	1806.	0.98
478.	1.57	1807.	0.98
479.	1.57	1808.	0.98
480.	1.57	1809.	0.98
481.	1.57	1810.	0.98
482.	1.57	1811.	0.98
483.	1.57	1812.	0.98
484.	1.57	1813.	0.98
485.	1.57	1814.	0.98
486.	1.56	1815.	0.98
487.	1.56	1816.	0.98
488.	1.56	1817.	0.98
489.	1.56	1818.	0.98
490.	1.56	1819.	0.98
491.	1.56	1820.	0.98
492.	1.56	1821.	0.98
493.	1.56	1822.	0.98

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
494.	1.56	1823.	0.98
495.	1.56	1824.	0.97
496.	1.56	1825.	0.98
497.	1.56	1826.	0.98
498.	1.56	1827.	0.97
499.	1.55	1828.	0.98
500.	1.55	1829.	0.98
501.	1.55	1830.	0.97
502.	1.55	1831.	0.97
503.	1.55	1832.	0.97
504.	1.55	1833.	0.97
505.	1.55	1834.	0.97
506.	1.55	1835.	0.97
507.	1.55	1836.	0.97
508.	1.55	1837.	0.97
509.	1.55	1838.	0.97
510.	1.55	1839.	0.97
511.	1.55	1840.	0.97
512.	1.55	1841.	0.97
513.	1.55	1842.	0.97
514.	1.54	1843.	0.97
515.	1.54	1844.	0.97
516.	1.54	1845.	0.97
517.	1.54	1846.	0.97
518.	1.54	1847.	0.97
519.	1.54	1848.	0.97
520.	1.54	1849.	0.97
521.	1.54	1850.	0.97
522.	1.54	1851.	0.97
523.	1.54	1852.	0.97
524.	1.54	1853.	0.97
525.	1.54	1854.	0.97
526.	1.54	1855.	0.97
527.	1.54	1856.	0.97
528.	1.53	1857.	0.97
529.	1.53	1858.	0.97
530.	1.53	1859.	0.97
531.	1.53	1860.	0.97
532.	1.53	1861.	0.97
533.	1.53	1862.	0.97
534.	1.53	1863.	0.96
535.	1.53	1864.	0.97
536.	1.53	1865.	0.96
537.	1.53	1866.	0.97
538.	1.53	1867.	0.97
539.	1.53	1868.	0.96
540.	1.52	1869.	0.97
541.	1.52	1870.	0.96
542.	1.52	1871.	0.96
543.	1.52	1872.	0.96
544.	1.52	1873.	0.96
545.	1.52	1874.	0.96
546.	1.52	1875.	0.96
547.	1.52	1876.	0.96
548.	1.52	1877.	0.96
549.	1.52	1878.	0.96
550.	1.52	1879.	0.96
551.	1.52	1880.	0.96
552.	1.52	1881.	0.96
553.	1.52	1882.	0.96
554.	1.52	1883.	0.96
555.	1.52	1884.	0.96
556.	1.52	1885.	0.96
557.	1.51	1886.	0.96
558.	1.51	1887.	0.96
559.	1.51	1888.	0.96

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
560.	1.51	1889.	0.96
561.	1.51	1890.	0.96
562.	1.51	1891.	0.96
563.	1.51	1892.	0.96
564.	1.51	1893.	0.96
565.	1.51	1894.	0.96
566.	1.51	1895.	0.96
567.	1.51	1896.	0.96
568.	1.51	1897.	0.96
569.	1.51	1898.	0.96
570.	1.51	1899.	0.96
571.	1.5	1900.	0.96
572.	1.5	1901.	0.96
573.	1.5	1902.	0.96
574.	1.5	1903.	0.96
575.	1.5	1904.	0.96
576.	1.5	1905.	0.96
577.	1.5	1906.	0.95
578.	1.5	1907.	0.96
579.	1.5	1908.	0.95
580.	1.5	1909.	0.95
581.	1.5	1910.	0.95
582.	1.5	1911.	0.95
583.	1.5	1912.	0.96
584.	1.49	1913.	0.95
585.	1.49	1914.	0.95
586.	1.49	1915.	0.95
587.	1.49	1916.	0.95
588.	1.49	1917.	0.95
589.	1.49	1918.	0.95
590.	1.49	1919.	0.95
591.	1.49	1920.	0.95
592.	1.49	1921.	0.95
593.	1.49	1922.	0.95
594.	1.49	1923.	0.95
595.	1.49	1924.	0.95
596.	1.49	1925.	0.95
597.	1.49	1926.	0.95
598.	1.48	1927.	0.95
599.	1.49	1928.	0.95
600.	1.48	1929.	0.95
601.	1.48	1930.	0.95
602.	1.48	1931.	0.95
603.	1.48	1932.	0.95
604.	1.48	1933.	0.95
605.	1.48	1934.	0.95
606.	1.48	1935.	0.95
607.	1.48	1936.	0.95
608.	1.48	1937.	0.95
609.	1.48	1938.	0.95
610.	1.48	1939.	0.95
611.	1.48	1940.	0.95
612.	1.47	1941.	0.95
613.	1.48	1942.	0.95
614.	1.48	1943.	0.95
615.	1.47	1944.	0.95
616.	1.47	1945.	0.95
617.	1.47	1946.	0.95
618.	1.47	1947.	0.95
619.	1.47	1948.	0.95
620.	1.47	1949.	0.95
621.	1.47	1950.	0.95
622.	1.47	1951.	0.94
623.	1.47	1952.	0.94
624.	1.47	1953.	0.94
625.	1.47	1954.	0.94

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
626.	1.47	1955.	0.94
627.	1.47	1956.	0.94
628.	1.47	1957.	0.94
629.	1.46	1958.	0.94
630.	1.46	1959.	0.94
631.	1.46	1960.	0.94
632.	1.46	1961.	0.94
633.	1.46	1962.	0.94
634.	1.46	1963.	0.94
635.	1.46	1964.	0.94
636.	1.46	1965.	0.94
637.	1.46	1966.	0.94
638.	1.46	1967.	0.94
639.	1.46	1968.	0.94
640.	1.46	1969.	0.94
641.	1.46	1970.	0.94
642.	1.46	1971.	0.94
643.	1.46	1972.	0.94
644.	1.46	1973.	0.94
645.	1.45	1974.	0.94
646.	1.45	1975.	0.94
647.	1.45	1976.	0.94
648.	1.45	1977.	0.94
649.	1.45	1978.	0.94
650.	1.45	1979.	0.94
651.	1.45	1980.	0.94
652.	1.45	1981.	0.94
653.	1.45	1982.	0.94
654.	1.45	1983.	0.94
655.	1.45	1984.	0.94
656.	1.45	1985.	0.94
657.	1.45	1986.	0.94
658.	1.45	1987.	0.94
659.	1.45	1988.	0.94
660.	1.45	1989.	0.94
661.	1.44	1990.	0.94
662.	1.44	1991.	0.94
663.	1.45	1992.	0.94
664.	1.44	1993.	0.94
665.	1.44	1994.	0.93
666.	1.44	1995.	0.94
667.	1.44	1996.	0.93
668.	1.44	1997.	0.93
669.	1.44	1998.	0.93
670.	1.44	1999.	0.93
671.	1.44	2000.	0.93
672.	1.44	2001.	0.93
673.	1.44	2002.	0.93
674.	1.44	2003.	0.93
675.	1.44	2004.	0.93
676.	1.44	2005.	0.93
677.	1.43	2006.	0.93
678.	1.43	2007.	0.93
679.	1.43	2008.	0.93
680.	1.44	2009.	0.93
681.	1.43	2010.	0.93
682.	1.43	2011.	0.93
683.	1.43	2012.	0.93
684.	1.43	2013.	0.93
685.	1.43	2014.	0.93
686.	1.43	2015.	0.93
687.	1.43	2016.	0.93
688.	1.43	2017.	0.93
689.	1.43	2018.	0.93
690.	1.43	2019.	0.93
691.	1.43	2020.	0.93

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
692.	1.42	2021.	0.93
693.	1.43	2022.	0.93
694.	1.43	2023.	0.93
695.	1.43	2024.	0.93
696.	1.42	2025.	0.93
697.	1.42	2026.	0.93
698.	1.42	2027.	0.93
699.	1.42	2028.	0.93
700.	1.42	2029.	0.93
701.	1.42	2030.	0.93
702.	1.42	2031.	0.93
703.	1.42	2032.	0.93
704.	1.42	2033.	0.93
705.	1.42	2034.	0.93
706.	1.42	2035.	0.93
707.	1.42	2036.	0.93
708.	1.42	2037.	0.92
709.	1.42	2038.	0.93
710.	1.42	2039.	0.92
711.	1.41	2040.	0.93
712.	1.41	2041.	0.92
713.	1.42	2042.	0.92
714.	1.41	2043.	0.92
715.	1.41	2044.	0.92
716.	1.41	2045.	0.92
717.	1.41	2046.	0.92
718.	1.41	2047.	0.92
719.	1.41	2048.	0.92
720.	1.41	2049.	0.92
721.	1.41	2050.	0.92
722.	1.41	2051.	0.92
723.	1.41	2052.	0.92
724.	1.41	2053.	0.92
725.	1.41	2054.	0.92
726.	1.41	2055.	0.92
727.	1.4	2056.	0.92
728.	1.4	2057.	0.92
729.	1.4	2058.	0.92
730.	1.4	2059.	0.92
731.	1.4	2060.	0.92
732.	1.4	2061.	0.92
733.	1.4	2062.	0.92
734.	1.4	2063.	0.92
735.	1.4	2064.	0.92
736.	1.4	2065.	0.92
737.	1.4	2066.	0.92
738.	1.4	2067.	0.92
739.	1.4	2068.	0.92
740.	1.4	2069.	0.92
741.	1.4	2070.	0.92
742.	1.4	2071.	0.92
743.	1.4	2072.	0.92
744.	1.4	2073.	0.92
745.	1.4	2074.	0.92
746.	1.39	2075.	0.92
747.	1.39	2076.	0.92
748.	1.4	2077.	0.92
749.	1.4	2078.	0.92
750.	1.39	2079.	0.92
751.	1.39	2080.	0.92
752.	1.39	2081.	0.92
753.	1.39	2082.	0.92
754.	1.39	2083.	0.92
755.	1.39	2084.	0.92
756.	1.39	2085.	0.91
757.	1.39	2086.	0.92

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
758.	1.39	2087.	0.91
759.	1.39	2088.	0.91
760.	1.39	2089.	0.92
761.	1.38	2090.	0.91
762.	1.39	2091.	0.91
763.	1.39	2092.	0.91
764.	1.38	2093.	0.91
765.	1.39	2094.	0.91
766.	1.38	2095.	0.91
767.	1.38	2096.	0.91
768.	1.38	2097.	0.91
769.	1.38	2098.	0.91
770.	1.38	2099.	0.91
771.	1.38	2100.	0.91
772.	1.38	2101.	0.91
773.	1.38	2102.	0.91
774.	1.38	2103.	0.91
775.	1.38	2104.	0.91
776.	1.38	2105.	0.91
777.	1.38	2106.	0.91
778.	1.38	2107.	0.91
779.	1.38	2108.	0.91
780.	1.38	2109.	0.91
781.	1.38	2110.	0.91
782.	1.38	2111.	0.91
783.	1.37	2112.	0.91
784.	1.37	2113.	0.91
785.	1.37	2114.	0.91
786.	1.37	2115.	0.91
787.	1.37	2116.	0.91
788.	1.37	2117.	0.91
789.	1.37	2118.	0.91
790.	1.37	2119.	0.91
791.	1.37	2120.	0.91
792.	1.37	2121.	0.91
793.	1.37	2122.	0.91
794.	1.37	2123.	0.91
795.	1.37	2124.	0.91
796.	1.37	2125.	0.91
797.	1.37	2126.	0.91
798.	1.36	2127.	0.91
799.	1.37	2128.	0.91
800.	1.37	2129.	0.91
801.	1.36	2130.	0.91
802.	1.36	2131.	0.91
803.	1.36	2132.	0.91
804.	1.36	2133.	0.91
805.	1.36	2134.	0.9
806.	1.36	2135.	0.91
807.	1.36	2136.	0.9
808.	1.36	2137.	0.9
809.	1.36	2138.	0.9
810.	1.36	2139.	0.9
811.	1.36	2140.	0.9
812.	1.36	2141.	0.9
813.	1.36	2142.	0.9
814.	1.36	2143.	0.9
815.	1.35	2144.	0.9
816.	1.35	2145.	0.9
817.	1.36	2146.	0.9
818.	1.35	2147.	0.9
819.	1.35	2148.	0.9
820.	1.35	2149.	0.9
821.	1.35	2150.	0.9
822.	1.35	2151.	0.9
823.	1.35	2152.	0.9

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
824.	1.35	2153.	0.9
825.	1.35	2154.	0.9
826.	1.35	2155.	0.9
827.	1.35	2156.	0.9
828.	1.35	2157.	0.9
829.	1.35	2158.	0.9
830.	1.35	2159.	0.9
831.	1.35	2160.	0.9
832.	1.35	2161.	0.9
833.	1.35	2162.	0.9
834.	1.35	2163.	0.9
835.	1.35	2164.	0.9
836.	1.35	2165.	0.9
837.	1.35	2166.	0.9
838.	1.34	2167.	0.9
839.	1.34	2168.	0.9
840.	1.34	2169.	0.9
841.	1.34	2170.	0.9
842.	1.34	2171.	0.9
843.	1.35	2172.	0.9
844.	1.34	2173.	0.9
845.	1.34	2174.	0.9
846.	1.34	2175.	0.9
847.	1.34	2176.	0.9
848.	1.34	2177.	0.9
849.	1.34	2178.	0.9
850.	1.34	2179.	0.9
851.	1.34	2180.	0.9
852.	1.34	2181.	0.9
853.	1.34	2182.	0.9
854.	1.34	2183.	0.89
855.	1.33	2184.	0.9
856.	1.34	2185.	0.89
857.	1.33	2186.	0.89
858.	1.33	2187.	0.89
859.	1.33	2188.	0.89
860.	1.33	2189.	0.9
861.	1.33	2190.	0.89
862.	1.33	2191.	0.89
863.	1.33	2192.	0.89
864.	1.33	2193.	0.89
865.	1.33	2194.	0.89
866.	1.33	2195.	0.89
867.	1.33	2196.	0.89
868.	1.33	2197.	0.89
869.	1.33	2198.	0.89
870.	1.33	2199.	0.89
871.	1.33	2200.	0.89
872.	1.33	2201.	0.89
873.	1.32	2202.	0.89
874.	1.33	2203.	0.89
875.	1.32	2204.	0.89
876.	1.33	2205.	0.89
877.	1.32	2206.	0.89
878.	1.32	2207.	0.89
879.	1.32	2208.	0.89
880.	1.32	2209.	0.89
881.	1.32	2210.	0.89
882.	1.32	2211.	0.89
883.	1.32	2212.	0.89
884.	1.32	2213.	0.89
885.	1.32	2214.	0.89
886.	1.32	2215.	0.89
887.	1.32	2216.	0.89
888.	1.32	2217.	0.89
889.	1.32	2218.	0.89

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
890.	1.32	2219.	0.89
891.	1.32	2220.	0.89
892.	1.32	2221.	0.89
893.	1.32	2222.	0.89
894.	1.31	2223.	0.89
895.	1.31	2224.	0.89
896.	1.31	2225.	0.89
897.	1.31	2226.	0.89
898.	1.31	2227.	0.89
899.	1.31	2228.	0.88
900.	1.31	2229.	0.89
901.	1.31	2230.	0.89
902.	1.31	2231.	0.88
903.	1.31	2232.	0.89
904.	1.31	2233.	0.88
905.	1.31	2234.	0.88
906.	1.31	2235.	0.88
907.	1.31	2236.	0.88
908.	1.31	2237.	0.89
909.	1.31	2238.	0.88
910.	1.31	2239.	0.88
911.	1.31	2240.	0.88
912.	1.3	2241.	0.88
913.	1.31	2242.	0.88
914.	1.3	2243.	0.88
915.	1.3	2244.	0.88
916.	1.3	2245.	0.88
917.	1.3	2246.	0.88
918.	1.3	2247.	0.88
919.	1.3	2248.	0.88
920.	1.3	2249.	0.88
921.	1.3	2250.	0.88
922.	1.3	2251.	0.88
923.	1.3	2252.	0.88
924.	1.3	2253.	0.88
925.	1.3	2254.	0.88
926.	1.3	2255.	0.88
927.	1.3	2256.	0.88
928.	1.3	2257.	0.88
929.	1.3	2258.	0.88
930.	1.29	2259.	0.88
931.	1.3	2260.	0.88
932.	1.3	2261.	0.88
933.	1.3	2262.	0.88
934.	1.3	2263.	0.88
935.	1.29	2264.	0.88
936.	1.29	2265.	0.88
937.	1.29	2266.	0.88
938.	1.29	2267.	0.88
939.	1.29	2268.	0.88
940.	1.29	2269.	0.88
941.	1.29	2270.	0.88
942.	1.29	2271.	0.88
943.	1.29	2272.	0.88
944.	1.29	2273.	0.88
945.	1.29	2274.	0.88
946.	1.29	2275.	0.88
947.	1.29	2276.	0.88
948.	1.29	2277.	0.87
949.	1.29	2278.	0.88
950.	1.29	2279.	0.87
951.	1.29	2280.	0.88
952.	1.29	2281.	0.88
953.	1.29	2282.	0.87
954.	1.28	2283.	0.87
955.	1.28	2284.	0.87

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
956.	1.28	2285.	0.88
957.	1.28	2286.	0.87
958.	1.28	2287.	0.87
959.	1.28	2288.	0.87
960.	1.28	2289.	0.87
961.	1.28	2290.	0.87
962.	1.28	2291.	0.87
963.	1.28	2292.	0.87
964.	1.28	2293.	0.87
965.	1.28	2294.	0.87
966.	1.28	2295.	0.87
967.	1.28	2296.	0.87
968.	1.28	2297.	0.87
969.	1.28	2298.	0.87
970.	1.28	2299.	0.87
971.	1.28	2300.	0.87
972.	1.28	2301.	0.87
973.	1.28	2302.	0.87
974.	1.28	2303.	0.87
975.	1.28	2304.	0.87
976.	1.27	2305.	0.87
977.	1.27	2306.	0.87
978.	1.27	2307.	0.87
979.	1.27	2308.	0.87
980.	1.27	2309.	0.87
981.	1.27	2310.	0.87
982.	1.27	2311.	0.87
983.	1.27	2312.	0.87
984.	1.27	2313.	0.87
985.	1.27	2314.	0.87
986.	1.27	2315.	0.87
987.	1.27	2316.	0.87
988.	1.27	2317.	0.87
989.	1.27	2318.	0.87
990.	1.27	2319.	0.87
991.	1.27	2320.	0.87
992.	1.27	2321.	0.87
993.	1.27	2322.	0.87
994.	1.27	2323.	0.87
995.	1.26	2324.	0.87
996.	1.26	2325.	0.87
997.	1.26	2326.	0.87
998.	1.26	2327.	0.87
999.	1.26	2328.	0.87
1000.	1.26	2329.	0.87
1001.	1.26	2330.	0.87
1002.	1.26	2331.	0.87
1003.	1.26	2332.	0.87
1004.	1.26	2333.	0.86
1005.	1.26	2334.	0.86
1006.	1.26	2335.	0.86
1007.	1.26	2336.	0.87
1008.	1.26	2337.	0.86
1009.	1.26	2338.	0.86
1010.	1.26	2339.	0.86
1011.	1.26	2340.	0.87
1012.	1.26	2341.	0.86
1013.	1.26	2342.	0.86
1014.	1.26	2343.	0.86
1015.	1.26	2344.	0.86
1016.	1.26	2345.	0.86
1017.	1.26	2346.	0.86
1018.	1.25	2347.	0.86
1019.	1.25	2348.	0.86
1020.	1.26	2349.	0.86
1021.	1.25	2350.	0.86

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1022.	1.25	2351.	0.86
1023.	1.25	2352.	0.86
1024.	1.25	2353.	0.86
1025.	1.25	2354.	0.86
1026.	1.25	2355.	0.86
1027.	1.25	2356.	0.86
1028.	1.25	2357.	0.86
1029.	1.25	2358.	0.86
1030.	1.25	2359.	0.86
1031.	1.25	2360.	0.86
1032.	1.25	2361.	0.86
1033.	1.25	2362.	0.86
1034.	1.25	2363.	0.86
1035.	1.25	2364.	0.86
1036.	1.25	2365.	0.86
1037.	1.24	2366.	0.86
1038.	1.24	2367.	0.86
1039.	1.24	2368.	0.86
1040.	1.24	2369.	0.86
1041.	1.24	2370.	0.86
1042.	1.24	2371.	0.86
1043.	1.24	2372.	0.86
1044.	1.24	2373.	0.86
1045.	1.24	2374.	0.86
1046.	1.24	2375.	0.86
1047.	1.24	2376.	0.86
1048.	1.24	2377.	0.86
1049.	1.24	2378.	0.86
1050.	1.24	2379.	0.86
1051.	1.24	2380.	0.86
1052.	1.24	2381.	0.86
1053.	1.24	2382.	0.86
1054.	1.24	2383.	0.86
1055.	1.24	2384.	0.86
1056.	1.24	2385.	0.86
1057.	1.24	2386.	0.86
1058.	1.24	2387.	0.86
1059.	1.23	2388.	0.86
1060.	1.24	2389.	0.85
1061.	1.23	2390.	0.86
1062.	1.23	2391.	0.85
1063.	1.23	2392.	0.85
1064.	1.23	2393.	0.85
1065.	1.23	2394.	0.85
1066.	1.23	2395.	0.85
1067.	1.23	2396.	0.85
1068.	1.23	2397.	0.85
1069.	1.23	2398.	0.85
1070.	1.23	2399.	0.85
1071.	1.23	2400.	0.85
1072.	1.23	2401.	0.85
1073.	1.23	2402.	0.85
1074.	1.23	2403.	0.85
1075.	1.23	2404.	0.85
1076.	1.23	2405.	0.85
1077.	1.23	2406.	0.85
1078.	1.23	2407.	0.85
1079.	1.23	2408.	0.85
1080.	1.23	2409.	0.85
1081.	1.23	2410.	0.85
1082.	1.23	2411.	0.85
1083.	1.22	2412.	0.85
1084.	1.23	2413.	0.85
1085.	1.23	2414.	0.85
1086.	1.22	2415.	0.85
1087.	1.22	2416.	0.85

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1088.	1.22	2417.	0.85
1089.	1.22	2418.	0.85
1090.	1.22	2419.	0.85
1091.	1.22	2420.	0.85
1092.	1.22	2421.	0.85
1093.	1.22	2422.	0.85
1094.	1.22	2423.	0.85
1095.	1.22	2424.	0.85
1096.	1.22	2425.	0.85
1097.	1.22	2426.	0.85
1098.	1.22	2427.	0.85
1099.	1.22	2428.	0.85
1100.	1.22	2429.	0.85
1101.	1.22	2430.	0.85
1102.	1.22	2431.	0.85
1103.	1.22	2432.	0.85
1104.	1.22	2433.	0.85
1105.	1.21	2434.	0.85
1106.	1.21	2435.	0.85
1107.	1.21	2436.	0.85
1108.	1.21	2437.	0.85
1109.	1.21	2438.	0.85
1110.	1.21	2439.	0.85
1111.	1.21	2440.	0.85
1112.	1.21	2441.	0.85
1113.	1.21	2442.	0.85
1114.	1.21	2443.	0.84
1115.	1.21	2444.	0.85
1116.	1.21	2445.	0.84
1117.	1.21	2446.	0.85
1118.	1.21	2447.	0.84
1119.	1.21	2448.	0.85
1120.	1.21	2449.	0.85
1121.	1.21	2450.	0.84
1122.	1.21	2451.	0.84
1123.	1.21	2452.	0.84
1124.	1.21	2453.	0.84
1125.	1.21	2454.	0.84
1126.	1.21	2455.	0.84
1127.	1.21	2456.	0.84
1128.	1.2	2457.	0.84
1129.	1.2	2458.	0.84
1130.	1.2	2459.	0.84
1131.	1.2	2460.	0.84
1132.	1.2	2461.	0.84
1133.	1.2	2462.	0.84
1134.	1.2	2463.	0.84
1135.	1.2	2464.	0.84
1136.	1.2	2465.	0.84
1137.	1.2	2466.	0.84
1138.	1.2	2467.	0.84
1139.	1.2	2468.	0.84
1140.	1.2	2469.	0.84
1141.	1.2	2470.	0.84
1142.	1.2	2471.	0.84
1143.	1.2	2472.	0.84
1144.	1.2	2473.	0.84
1145.	1.2	2474.	0.84
1146.	1.2	2475.	0.84
1147.	1.2	2476.	0.84
1148.	1.2	2477.	0.84
1149.	1.2	2478.	0.84
1150.	1.2	2479.	0.84
1151.	1.19	2480.	0.84
1152.	1.2	2481.	0.84
1153.	1.19	2482.	0.84

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1154.	1.19	2483.	0.84
1155.	1.19	2484.	0.84
1156.	1.19	2485.	0.84
1157.	1.19	2486.	0.84
1158.	1.19	2487.	0.84
1159.	1.19	2488.	0.84
1160.	1.19	2489.	0.84
1161.	1.19	2490.	0.84
1162.	1.19	2491.	0.84
1163.	1.19	2492.	0.84
1164.	1.19	2493.	0.84
1165.	1.19	2494.	0.84
1166.	1.19	2495.	0.84
1167.	1.19	2496.	0.84
1168.	1.19	2497.	0.84
1169.	1.19	2498.	0.84
1170.	1.19	2499.	0.84
1171.	1.19	2500.	0.83
1172.	1.19	2501.	0.84
1173.	1.19	2502.	0.84
1174.	1.19	2503.	0.83
1175.	1.18	2504.	0.83
1176.	1.19	2505.	0.83
1177.	1.19	2506.	0.83
1178.	1.18	2507.	0.83
1179.	1.18	2508.	0.83
1180.	1.18	2509.	0.83
1181.	1.18	2510.	0.83
1182.	1.18	2511.	0.83
1183.	1.18	2512.	0.83
1184.	1.18	2513.	0.83
1185.	1.18	2514.	0.83
1186.	1.18	2515.	0.83
1187.	1.18	2516.	0.83
1188.	1.18	2517.	0.83
1189.	1.18	2518.	0.83
1190.	1.18	2519.	0.83
1191.	1.18	2520.	0.83
1192.	1.18	2521.	0.83
1193.	1.18	2522.	0.83
1194.	1.18	2523.	0.83
1195.	1.18	2524.	0.83
1196.	1.18	2525.	0.83
1197.	1.18	2526.	0.83
1198.	1.18	2527.	0.83
1199.	1.18	2528.	0.83
1200.	1.18	2529.	0.83
1201.	1.18	2530.	0.83
1202.	1.17	2531.	0.83
1203.	1.17	2532.	0.83
1204.	1.17	2533.	0.83
1205.	1.18	2534.	0.83
1206.	1.17	2535.	0.83
1207.	1.17	2536.	0.83
1208.	1.17	2537.	0.83
1209.	1.17	2538.	0.83
1210.	1.17	2539.	0.83
1211.	1.17	2540.	0.83
1212.	1.17	2541.	0.83
1213.	1.17	2542.	0.83
1214.	1.17	2543.	0.83
1215.	1.17	2544.	0.83
1216.	1.17	2545.	0.83
1217.	1.17	2546.	0.83
1218.	1.17	2547.	0.83
1219.	1.17	2548.	0.83

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1220.	1.17	2549.	0.83
1221.	1.17	2550.	0.83
1222.	1.17	2551.	0.83
1223.	1.17	2552.	0.83
1224.	1.17	2553.	0.83
1225.	1.16	2554.	0.83
1226.	1.16	2555.	0.83
1227.	1.16	2556.	0.83
1228.	1.17	2557.	0.83
1229.	1.16	2558.	0.83
1230.	1.16	2559.	0.83
1231.	1.16	2560.	0.83
1232.	1.16	2561.	0.83
1233.	1.16	2562.	0.82
1234.	1.16	2563.	0.82
1235.	1.16	2564.	0.82
1236.	1.16	2565.	0.83
1237.	1.16	2566.	0.82
1238.	1.16	2567.	0.82
1239.	1.16	2568.	0.82
1240.	1.16	2569.	0.82
1241.	1.16	2570.	0.82
1242.	1.16	2571.	0.82
1243.	1.16	2572.	0.82
1244.	1.16	2573.	0.82
1245.	1.16	2574.	0.82
1246.	1.16	2575.	0.82
1247.	1.16	2576.	0.82
1248.	1.16	2577.	0.82
1249.	1.16	2578.	0.82
1250.	1.16	2579.	0.82
1251.	1.16	2580.	0.82
1252.	1.16	2581.	0.82
1253.	1.16	2582.	0.82
1254.	1.15	2583.	0.82
1255.	1.15	2584.	0.82
1256.	1.16	2585.	0.82
1257.	1.15	2586.	0.82
1258.	1.15	2587.	0.82
1259.	1.15	2588.	0.82
1260.	1.15	2589.	0.82
1261.	1.15	2590.	0.82
1262.	1.15	2591.	0.82
1263.	1.15	2592.	0.82
1264.	1.15	2593.	0.82
1265.	1.15	2594.	0.82
1266.	1.15	2595.	0.82
1267.	1.15	2596.	0.82
1268.	1.15	2597.	0.82
1269.	1.15	2598.	0.82
1270.	1.15	2599.	0.82
1271.	1.15	2600.	0.82
1272.	1.15	2601.	0.82
1273.	1.15	2602.	0.82
1274.	1.15	2603.	0.82
1275.	1.15	2604.	0.82
1276.	1.15	2605.	0.82
1277.	1.15	2606.	0.82
1278.	1.15	2607.	0.82
1279.	1.15	2608.	0.82
1280.	1.15	2609.	0.82
1281.	1.14	2610.	0.82
1282.	1.15	2611.	0.82
1283.	1.14	2612.	0.82
1284.	1.14	2613.	0.82
1285.	1.14	2614.	0.82

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1286.	1.14	2615.	0.82
1287.	1.14	2616.	0.81
1288.	1.14	2617.	0.82
1289.	1.14	2618.	0.82
1290.	1.14	2619.	0.82
1291.	1.14	2620.	0.82
1292.	1.14	2621.	0.82
1293.	1.14	2622.	0.82
1294.	1.14	2623.	0.82
1295.	1.14	2624.	0.81
1296.	1.14	2625.	0.82
1297.	1.14	2626.	0.81
1298.	1.14	2627.	0.81
1299.	1.14	2628.	0.81
1300.	1.14	2629.	0.81
1301.	1.14	2630.	0.81
1302.	1.14	2631.	0.81
1303.	1.14	2632.	0.81
1304.	1.14	2633.	0.81
1305.	1.14	2634.	0.81
1306.	1.14	2635.	0.81
1307.	1.13	2636.	0.81
1308.	1.14	2637.	0.81
1309.	1.14	2638.	0.81
1310.	1.13	2639.	0.81
1311.	1.13	2640.	0.81
1312.	1.13	2641.	0.81
1313.	1.13	2642.	0.81
1314.	1.13	2643.	0.81
1315.	1.13	2644.	0.81
1316.	1.13	2645.	0.82
1317.	1.13	2646.	0.81
1318.	1.13	2647.	0.81
1319.	1.13	2648.	0.81
1320.	1.13	2649.	0.81
1321.	1.13	2650.	0.81
1322.	1.13	2651.	0.81
1323.	1.13	2652.	0.81
1324.	1.13	2653.	0.81
1325.	1.13	2654.	0.81
1326.	1.13	2655.	0.81
1327.	1.13	2656.	0.81
1328.	1.13	2657.	0.81
1329.	1.13	2658.	0.81
1330.	1.13	2659.	0.81
1331.	1.13		

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.56

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.621E-5	cm/sec
y0	2.006	ft

T = K*b = 0.003953 cm²/sec