2025 MONITORING WELL MAINTENANCE PERFORMANCE REEVALUATION PLAN

FOR

AMES-STORY ENVIRONMENTAL LANDFILL
AMES, IOWA
85-SDP-13-91C

by:
HLW Engineering Group
204 West Broad Street
P.O. Box 314
Story City, Iowa 50248
(515) 733-4144

April, 2025

HLW Engineering Group
Engineering *Management*

6004-25A.321

2025
MONITORING WELL MAINTENANCE
PERFORMANCE REEVALUATION

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P

by:
HLW Engineering Group
204 West Broad Street
P.O. Box 314
Story City, Iowa 50248

Prepared by:_____
Todd Whipple, CPG

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INTRODUCTION

The purpose of this study is to ensure that all monitoring wells included in the approved Hydrologic Monitoring System Plan (HMSP) remain reliable monitoring points. A Monitoring Well Maintenance Performance Reevaluation (MWMPRP) is required to be performed every five (5) years as part of the HMSP per IAC 567-114.21.

A total of thirteen (13) monitoring wells are included in the approved HMSP for the site (see Figure 1). Routine sampling has occurred at eight (8) of the site monitoring wells since 1991. Routine sampling was initiated at the remaining five (5) monitoring wells in 1996.

The thirteen (13) monitoring wells are designated MW-6, MW-7, MW-8, MW-25, MW-28, MW-29, MW-33, MW-34, MW-35, MW-36, MW-37, MW-39, and MW-40.

Assessment of the well function and/or well deterioration is made through direct observation and measurement and through indirect testing methods. Assessment of the site hydrologic conditions is also made to determine whether changes in the static water level and/or groundwater flow path has occurred.

ASSESSMENT OF MONITORING WELL CONDITION

Physical Condition - Observation of the physical condition of each well is made during each routine sampling episode. Observation indicates that all protective casings and locks are in place and operable. All well casings are capped. The PVC well casings appear to be in satisfactory condition and allow adequate access to the groundwater for water depth measurements and water sampling activities.

Well Depth and Sedimentation - Annual well depth measurements are made. Table 1 summarizes the original well depth as recorded on the Monitoring Well Construction Documentation Forms as well as the 1998, 2003, 2010, 2015, 2020, and 2025 well depth information. The difference in the original recorded bottom elevation and the March, 2025 bottom elevation is estimated to represent sedimentation in the well.

As summarized in Table 1, sedimentation appears to be minimal in all wells (<1.5 feet).

The greatest thickness of sedimentation is recorded at MW-34 (1.20 ft) and MW-8 (1.25 feet).

The interpretation is made that the sediment recorded in MW-34 and MW-8 is not problematic at this time and does not appear to impact well production and/or sampling. The sediment thickness will continue to be reevaluated on an annual basis as required by IAC 114.21.

Monitoring Well Maintenance Performance Reevaluation

In-situ Hydraulic Conductivity Testing - Monitoring wells were installed at this site during five (5) distinct episodes in 1988 (MW-6, MW-7, MW-8, MW-28, and MW-29), 1990 (MW-25 and MW-33), in 1991 (MW-34), in 1995 (MW-39 and MW-40), and in 1996 (MW-35, MW-36, and MW-37). In-situ hydraulic conductivity testing was performed at each monitoring well immediately following installation (various years), as part of the Hydrogeologic Investigation Report (HIR) in April, 1996, and as part of the MWMPRP Reports in 1998, 2003, 2010, 2015, and 2020. In-situ hydraulic conductivity testing at each of the thirteen (13) site monitoring wells was again performed in March, 2025.

The hydraulic conductivities are summarized in Table 2. The reported hydraulic conductivities for each well exhibit calculated values that fall within the same order of magnitude over the past decade. It is our interpretation that the noted variability in conductivity values is not excessive and falls within the anticipated range of deviation.

The 2025 hydraulic conductivity calculations are included in Appendix A for reference.

ASSESSMENT OF SITE HYDROLOGIC CONDITIONS

Flow Paths - Figure 2 and Figure 3 illustrate the interpreted groundwater surfaces. Review of Figure 2 and Figure 3 indicates that the monitoring wells are positioned such that the flow paths are adequately intersected, and a release will be detected by the monitoring system.

Water Level Condition and Well Location - A summary of historic water elevation data is included in Appendix B. Water elevation data for March 2025 is also included in Table 3.

Column 8 in Table 3 is calculation of the distance in feet that the water surface exists above the top of the well screen in each well. A positive value indicates that the water table surface is above the screened interval, while a negative value indicates that the water surface falls below the top of the screen (within the screened interval).

In the shallow Water Table system (Figure 2) in March 2025, MW-35 and MW-39 have screened intervals that intersect the water table. Exposure of the well screen to the atmosphere does not appear to be detrimental to the integrity of the well screen. Furthermore, excessive encrustation is not anticipated on the PVC screen.

The static water levels in the remaining wells fall above the screened interval of each well. It appears that all wells function adequately to monitor groundwater. Draw-down in each water table monitoring well during pumping indicates that the water table surface descends into the screened interval in six (6) of the thirteen (13) wells. The purged water table level information is included in Table 3 (Column 11).

MW-25, MW-33, and MW-35 exhibit relatively high hydraulic conductivities and appreciable draw down is not achieved during purging. It is, however, anticipated that the samples collected reflect water quality at the water table surface.

Note that the water surface in the Upper Aquifer sand layer (at MW-33, MW-36, MW-7, MW-8, and MW-29) rises a considerable distance (16.06 ft to 32.95 ft) above the top of the screen in all Upper Aquifer monitoring wells. The Upper Aquifer sand layer (Figure 3) appears to be a confined system with high potentiometric head. It follows that the screened interval of the Upper Aquifer wells cannot (and should not) be designed in such a way that the screened interval intersects the water surface.

Replacement of those wells where the water table is above the screened interval is not recommended.

CONCLUSIONS & RECOMMENDATIONS

Assessment of the monitoring well condition indicates that all wells are in satisfactory condition.

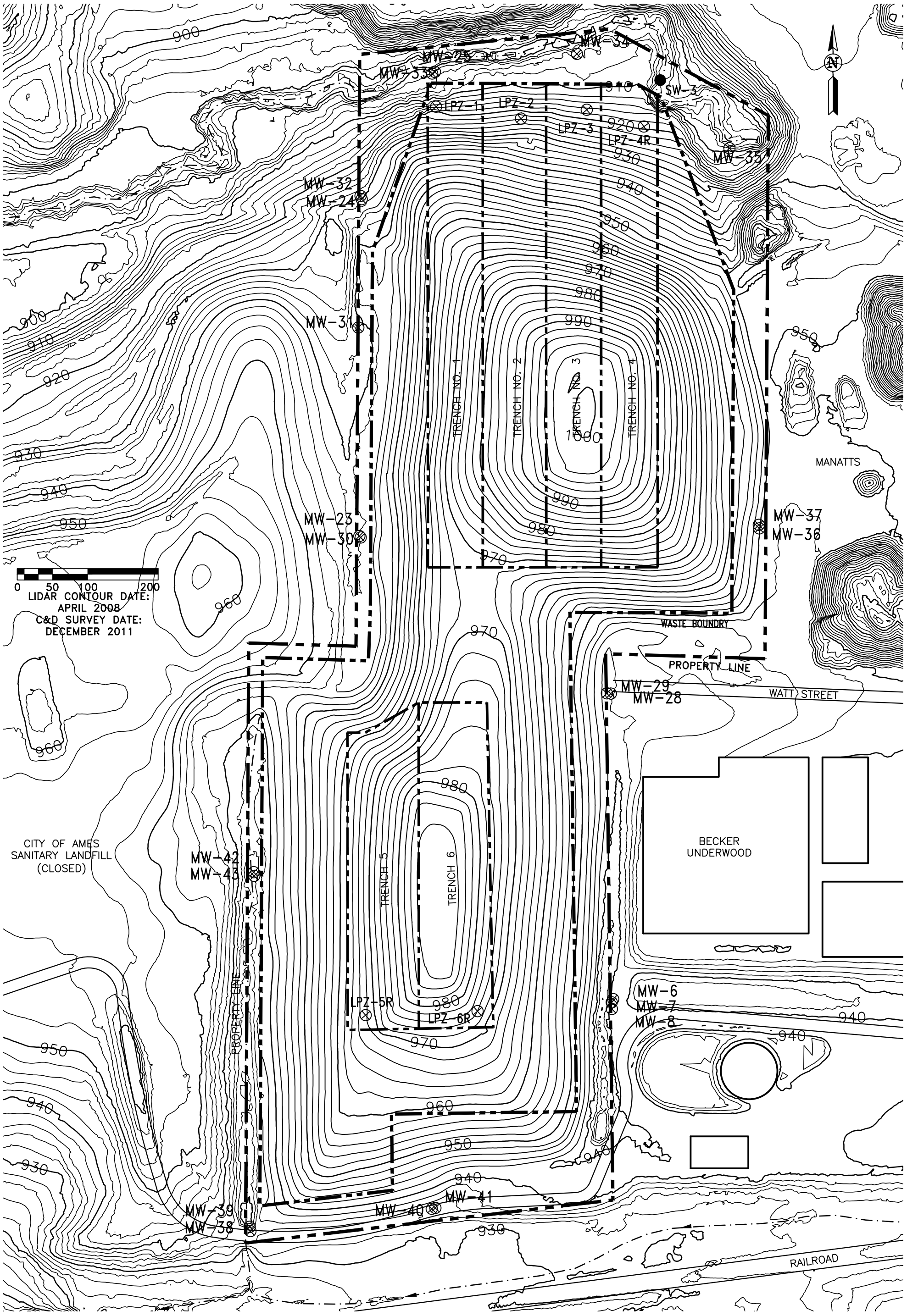
The monitoring wells appear to be relatively free of excessive sedimentation. We recommend that the sedimentation thickness at MW-34 and MW-8 continue to be monitored during routine sampling events.

Excessive monitoring well deterioration is not apparent based on the comparison of historic in-situ hydraulic conductivity testing and the hydraulic conductivity testing performed in March, 2025.

Review of the water surface contour maps (Figure 2 and Figure 3) indicates flow paths are unchanged and that the existing monitoring wells are adequately located to intercept groundwater prior to exiting the site.

Water levels in most of the water table monitoring wells are typically above the screened interval. The potentiometric water surface in the Upper Aquifer rises a considerable distance above the screened interval in the Upper Aquifer Monitoring wells. The high potentiometric head is not considered adverse to the hydrologic monitoring system. Specific actions to change or amend the current HMSP are not recommended.

FIGURES



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SITE PLAN

AMES–STORY ENVIRONMENTAL LANDFILL
AMES, IOWA

FIGURE: 1

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6004	DATE 10–9–24

WATER ELEVATION SEPTEMBER 3, 2024	
WELL	ELEV.
MW-6	934.27
MW-23	928.72
MW-24	<916.79
MW-25	896.46
MW-28	938.94
MW-31	919.51
MW-34	899.19
MW-35	902.68
MW-37	941.68
MW-39	916.42
MW-40	921.62
MW-43	922.78

NOTE:
MW-24 REPRESENTS THE BOTTOM OF A DRY WELL.

0 50 100 200

LIDAR CONTOUR DATE:
APRIL 2008
C&D SURVEY DATE:
DECEMBER 2011

MW-25
MW-34
SW-3
MW-35
MW-24
MW-31
MW-23
MW-37
MW-28
MW-43
MW-6
MW-39
MW-40

902.60
902.17
903.07
903.97
904.64
906.59
919.68
919.35
920.25
921.84
923.34
901.40
902.40
895.77
896.77
897.77

WASTE BOUNDRY
PROPERTY LINE
WATT STREET
RAILROAD
MANATTS
BECKER UNDERWOOD
CITY OF AMES SANITARY LANDFILL (CLOSED)
GROUNDWATER UNDERDRAIN TYP 9 PLACES

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WATER TABLE CONTOUR MAP

AMES-STORY ENVIRONMENTAL LANDFILL
AMES, IOWA

FIGURE: 2

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6004	DATE 10-9-24

WATER ELEVATION SEPTEMBER 3, 2024	
WELL	ELEV.
MW-7	922.41
MW-8	908.61
MW-29	934.26
MW-30	908.83
MW-32	903.96
MW-33	896.23
MW-36	933.14
MW-38	911.25
MW-41	915.75
MW-42	921.04

0 50 100 200

LIDAR CONTOUR DATE:
APRIL 2008
C&D SURVEY DATE:
DECEMBER 2011

CITY OF AMES
SANITARY LANDFILL
(CLOSED)

MW-33
MW-32
SW-3
MW-30
MW-36
MW-29
MW-42
MW-7
MW-8
MW-41
MW-38

WASTE BOUNDRY
PROPERTY LINE
WATT STREET
RAILROAD
MANATTS
BECKER
UNDERWOOD

GROUNDWATER UNDERDRAIN
TYP 9 PLACES

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POTENTIOMETRIC SURFACE OF DEEP AQUIFER

AMES-STORY ENVIRONMENTAL LANDFILL
AMES, IOWA

FIGURE: 3

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6004	DATE 10-9-24

TABLES

TABLE 1
Well Depth vs. Sedimentation

Well Number	Top of Casing Elevation	Original Bottom Depth (ft)	Original Bottom Elevation	1998 Bottom Depth (ft)	2003 Bottom Depth (ft)	2010 Bottom Depth (ft)	2015 Bottom Depth (ft)	2020 Bottom Depth (ft)	2025 Bottom Depth (ft)	2025 Bottom Elevation	2025 Sediment Thickness (ft)
MW-6	943.31	21.65	921.66	21.70	21.60	21.20	21.25	21.20	21.70	921.61	-0.05
MW-7	943.50	52.95	890.55	53.00	53.00	52.60	52.70	52.80	52.80	890.70	0.15
MW-8	943.09	72.25	870.84	71.00	70.80	70.40	70.50	71.00	71.00	872.09	1.25
MW-25	906.34	19.50	886.84	19.70	19.40	19.30	19.40	19.40	19.40	886.94	0.10
MW-28	946.33	23.15	923.18	22.60	22.00	22.35	22.40	22.45	22.90	923.43	0.25
MW-29	946.62	54.15	892.47	53.50	53.60	53.50	53.70	53.60	54.10	892.52	0.05
MW-33	906.32	28.20	878.12	28.40	25.50	28.10	25.25	28.50	28.50	877.82	-0.30
MW-34	909.50	17.30	892.20	16.00	15.80	15.60	15.50	15.60	16.10	893.40	1.20
MW-35	916.19	20.60	895.59	17.00	17.50	18.20	19.30	19.80	20.10	896.09	0.50
MW-36	948.97	53.50	895.47	53.50	53.20	53.25	53.20	53.20	53.60	895.37	-0.10
MW-37	949.49	30.60	918.89	37.00	30.00	29.65	29.70	29.70	29.90	919.59	0.70
MW-39	935.93	30.20	905.73	NT	29.80	29.50	30.15	29.75	29.75	906.18	0.45
MW-40	933.07	20.00	913.07	NT	19.80	19.60	19.70	19.70	19.70	913.37	0.30

TABLE 2
Hydraulic Conductivity

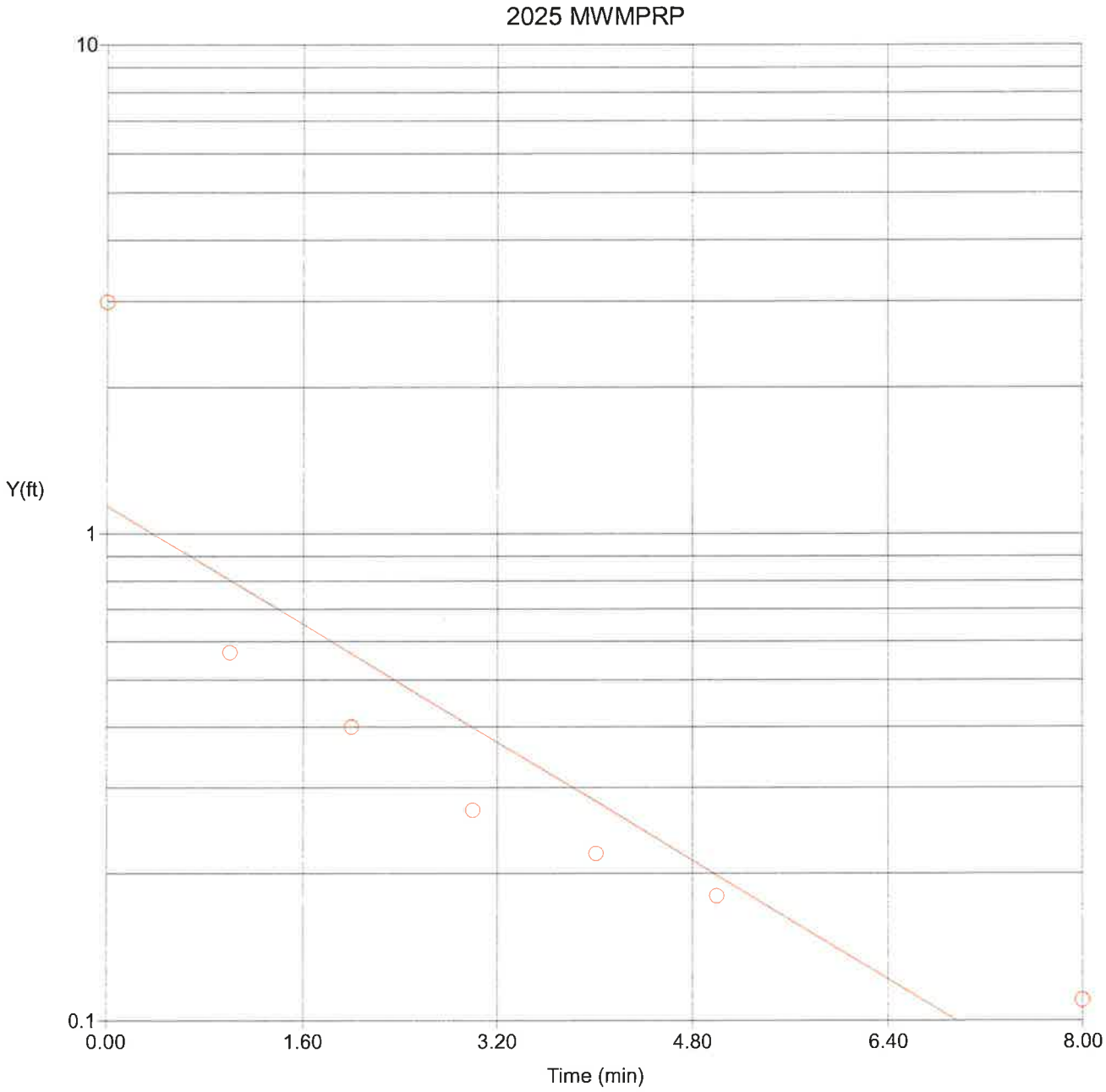
Well Number	Installation Date	In-Situ Hydraulic Conductivity Summary by Year K value = cm/sec							
		1991	1996	1998	2003	2010	2015	2020	2025
MW-6	10/1988	6.10E-04	1.02E-03	NT	1.03E-02	5.91E-04	3.32E-04	3.14E-04	5.96E-04
MW-7	10/1988	2.00E-05	7.26E-06	NT	5.36E-06	5.03E-06	4.40E-06	4.62E-06	9.31E-06
MW-8	10/1988	8.30E-04	*	NT	2.57E-04	2.23E-04	1.80E-04	1.29E-04	8.75E-04
MW-25	8/1990	*	NT	*	*	*	*	*	3.67E-03
MW-28	10/1988	9.30E-04	NT	*	5.50E-04	2.99E-03	8.70E-04	5.94E-04	5.85E-04
MW-29	10/1988	NT	NT	2.48E-05	1.45E-05	1.85E-05	1.53E-05	6.70E-06	1.45E-05
MW-33	8/1990	4.00E-04	NT	*	6.98E-03	2.21E-03	1.17E-02	3.73E-03	3.03E-03
MW-34	4/1991	DNE	NT	5.17E-04	5.20E-04	3.01E-04	8.96E-04	NT	7.49E-04
MW-35	4/1996	DNE	*	*	7.53E-03	*	8.40E-03	*	4.88E-03
MW-36	4/1996	DNE	4.19E-06	3.89E-06	3.36E-06	2.58E-06	2.44E-06	2.53E-06	3.64E-06
MW-37	4/1996	DNE	3.90E-04	2.92E-05	3.97E-05	3.26E-05	5.16E-05	3.01E-05	3.79E-05
MW-39	2/1995	DNE	6.54E-04	NT	1.85E-05	1.70E-05	1.32E-05	1.53E-05	2.15E-05
MW-40	2/1995	DNE	5.68E-04	NT	6.52E-05	4.07E-05	6.70E-05	2.45E-05	8.49E-05

TABLE 3
Well Elevation Versus Top of Screen
MARCH 2025

Well Number	Top of Casing Elevation	Top of Screen Elevation	Bottom of Screen Elevation	Screen Length (ft)	Water Depth (ft)	Top of Water Elevation	Water Level vs Top Screen (Difference - ft)	Purged Water Depth (ft)	Purged Water Elevation	Purged Level vs Top Screen (Difference - ft)
MW-6	943.31	932.16	922.16	10.00	7.40	935.91	3.75	10.39	932.92	0.76
MW-7	943.50	900.80	890.80	10.00	20.38	923.12	22.32	51.80	891.70	-9.10
MW-8	943.09	881.09	871.09	10.00	34.10	908.99	27.90	33.90	909.19	28.10
MW-25	906.34	896.84	886.84	10.00	9.43	896.91	0.07	9.43	896.91	0.07
MW-28	946.33	933.43	923.43	10.00	5.95	940.38	6.95	9.95	936.38	2.95
MW-29	946.62	902.92	892.92	10.00	10.75	935.87	32.95	51.20	895.42	-7.50
MW-33	906.32	880.66	878.16	2.50	9.60	896.72	16.06	10.95	895.37	14.71
MW-34	909.50	902.50	892.50	10.00	2.88	906.62	4.12	4.80	904.70	2.20
MW-35	916.19	906.19	896.19	10.00	12.90	903.29	-2.90	12.90	903.29	-2.90
MW-36	948.97	906.90	896.90	10.00	16.01	932.96	26.06	51.70	897.27	-9.63
MW-37	949.49	929.03	919.03	10.00	8.38	941.11	12.08	19.75	929.74	0.71
MW-39	935.93	916.16	906.16	10.00	21.89	914.04	-2.12	25.00	910.93	-5.23
MW-40	933.07	923.61	913.61	10.00	6.54	926.53	2.92	11.20	921.87	-1.74

APPENDIX A

Hydraulic Conductivity Calculations



LUST No.:	Site Name:	
Hydraulic Conductivity: 5.96e-04 cm/sec	Well: MW-6	Slug Test Date: 4/16/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 5.96e-04 cm/sec
Monitoring Well: MW-6
Test Date: 4/16/2025
Field Testing by: TDW, 3/31/2025
Test Analysis by: TDW

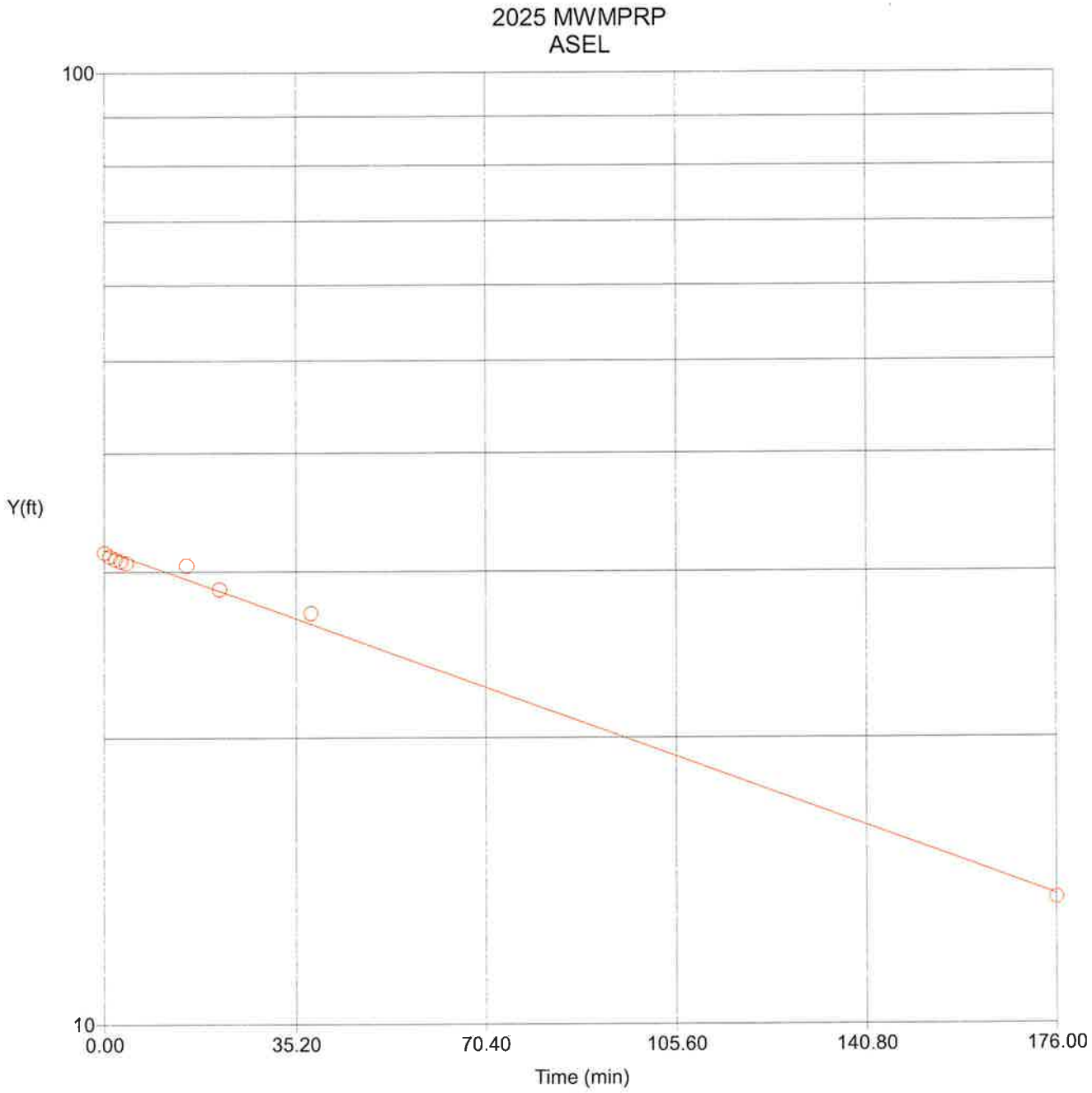
WELL GEOMETRY
H: 24.3 ft
Lw: 14.3 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.42

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -5.83e-03
Intercept: 3.55

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	2.99	Use	2.99	1.14
1	0.57	Use	0.57	0.803
2	0.4	Use	0.4	0.566
3	0.27	Use	0.27	0.399
4	0.22	Use	0.22	0.281
5	0.18	Use	0.18	0.198
8	0.11	Use	0.11	0.0695



LUST No.:	Site Name:	
Hydraulic Conductivity: 9.31e-06 cm/sec	Well MW-7	Slug Test Date: 4/16/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 9.31e-06 cm/sec
Monitoring Well: MW-7
Test Date: 4/16/2025
Field Testing by: TDW 3/7/2025
Test Analysis by: TDW

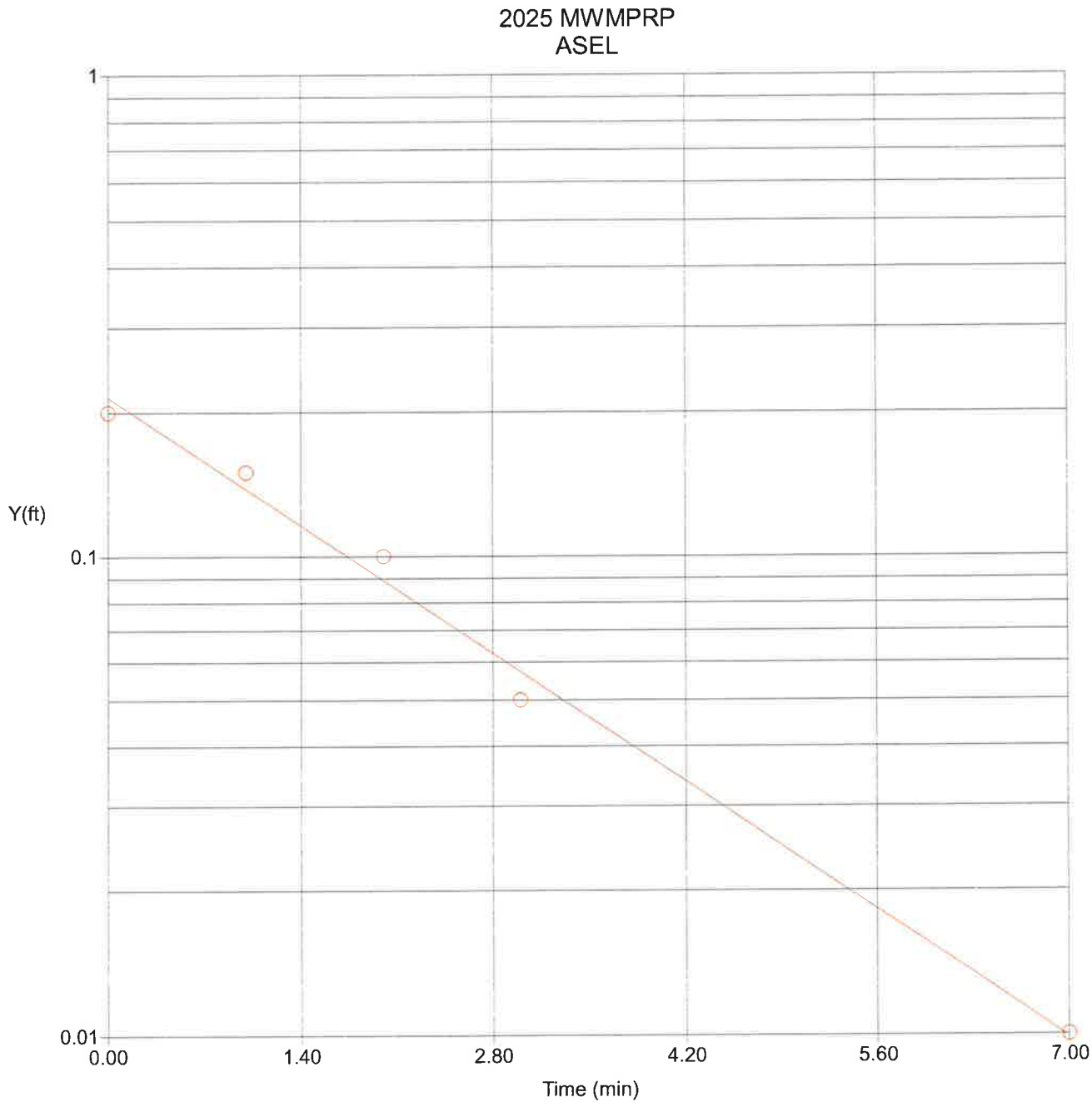
WELL GEOMETRY
H: 42.42 ft
Lw: 32.42 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.77

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -7.95e-05
Intercept: 6.87

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	31.42	Use	31.42	31.6
1	31.12	Use	31.12	31.5
2	30.92	Use	30.92	31.3
3	30.77	Use	30.77	31.2
4	30.62	Use	30.62	31.0
15	30.42	Use	30.42	29.4
21	28.72	Use	28.72	28.6
38	27.08	Use	27.08	26.4
176	13.54	Use	13.54	13.7



LUST No.:	Site Name:	
Hydraulic Conductivity: 8.75e-04 cm/sec	Well: MW-8	Slug Test Date: 4/16/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 8.75e-04 cm/sec
Monitoring Well: MW-8
Test Date: 4/16/2025
Field Testing by: TDW 3/7/2025, ASEL
Test Analysis by: TDW

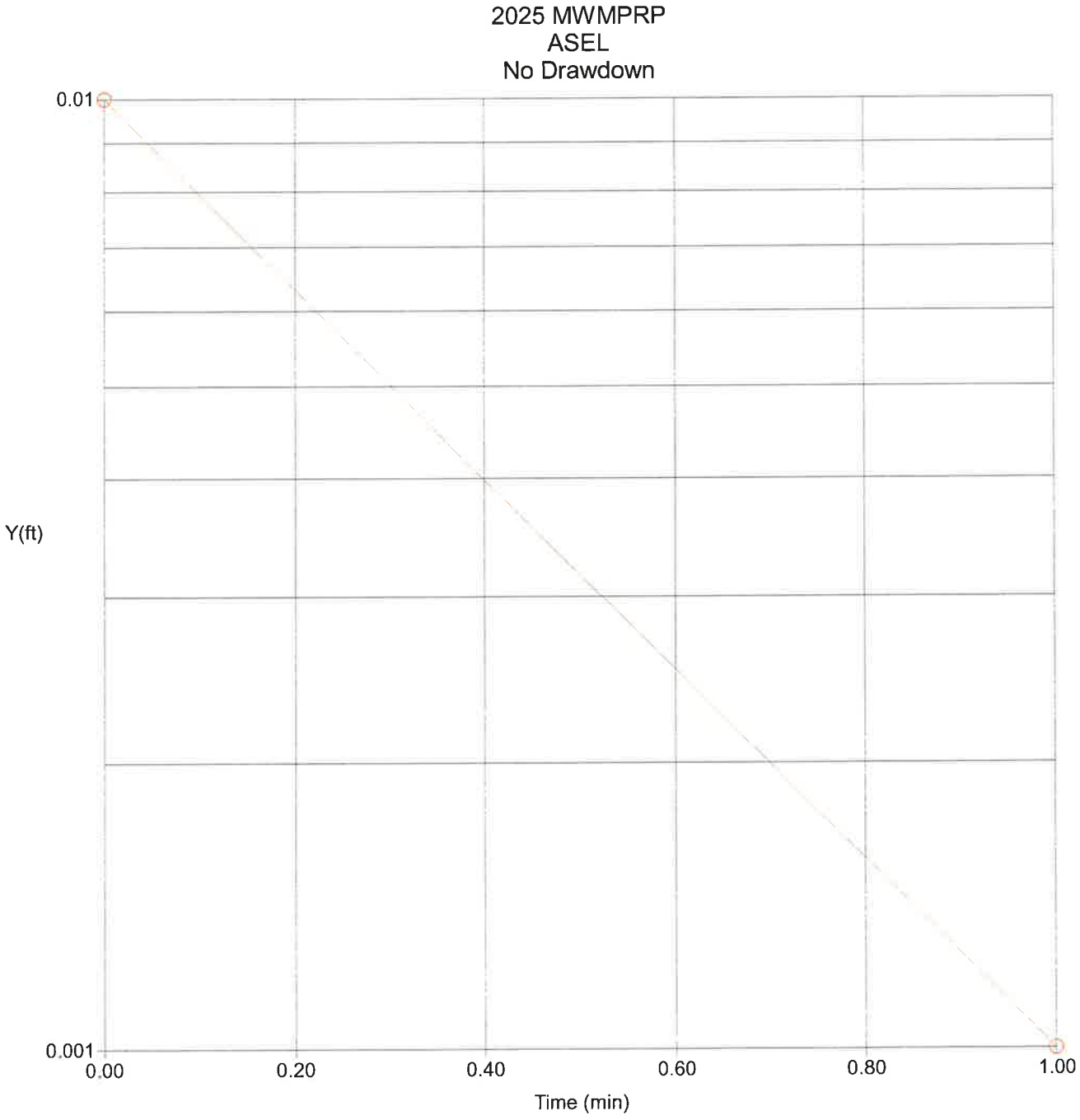
WELL GEOMETRY
H: 46.9 ft
Lw: 36.9 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.83

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -7.34e-03
Intercept: 1.88

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	0.2	Use	0.2	0.215
1	0.15	Use	0.15	0.138
2	0.1	Use	0.1	0.0891
3	0.05	Use	0.05	0.0574
7	0.01	Use	0.01	0.00986



LUST No.:	Site Name:	
Hydraulic Conductivity: 0.00367 cm/sec	Well: MW-25	Slug Test Date: 4/16/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 0.00367 cm/sec
Monitoring Well: MW-25
Test Date: 4/16/2025
Field Testing by: 3/7/2025, TDW
Test Analysis by: TDW

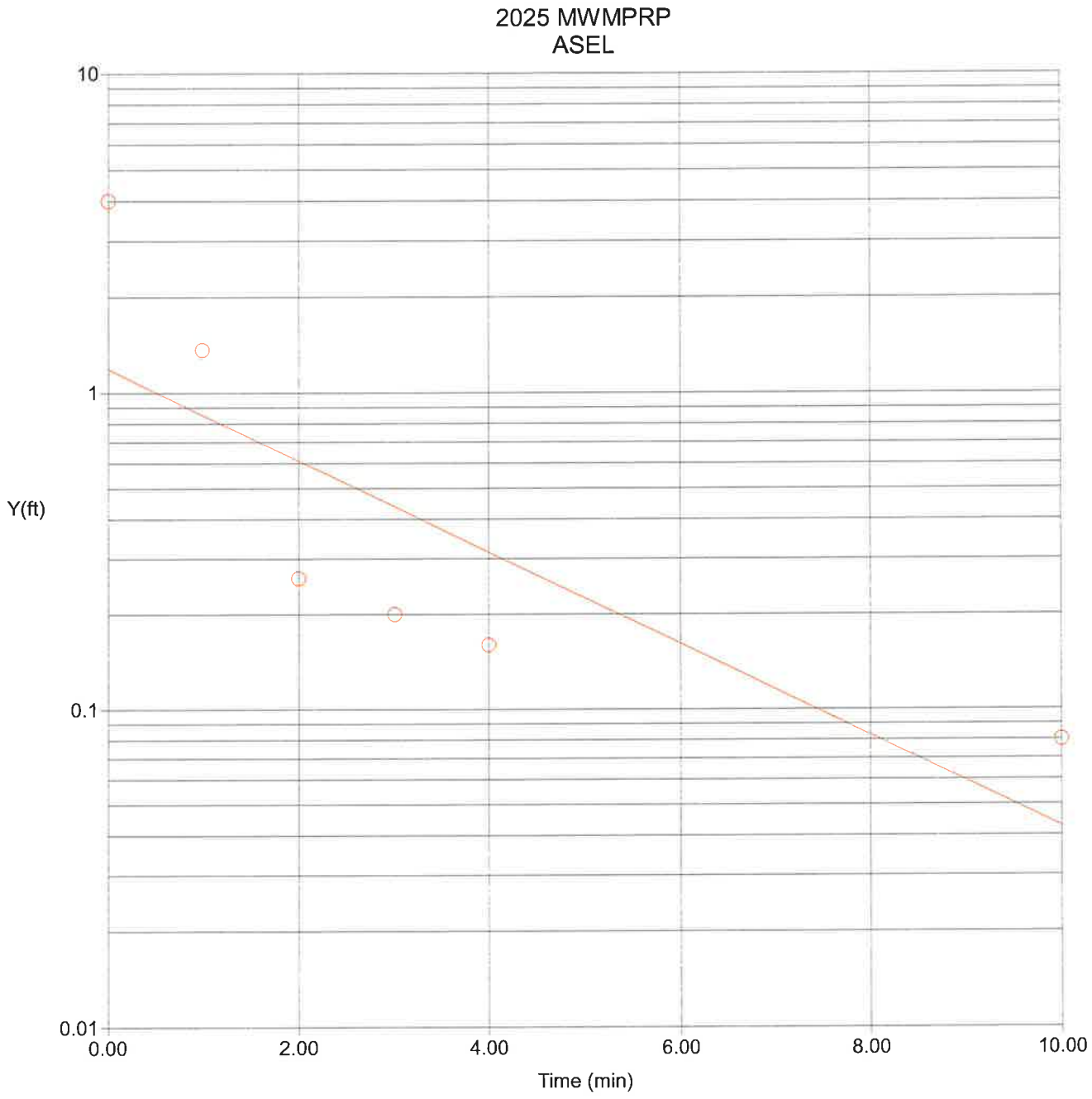
WELL GEOMETRY
H: 19.9 ft
Lw: 9.9 ft
Le: 9.9 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 29.7
A: 2.41
B: 0.349
C: 1.99
Ln(Re/rw): 2.25

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -3.84e-02
Intercept: -1.19e+00

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	0.01	Use	0.01	0.01
1	0.001	Use	0.001	1.00e-03



LUST No.:	Site Name:	
Hydraulic Conductivity: 5.85e-04 cm/sec	Well: MW-28	Slug Test Date: 4/16/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 5.85e-04 cm/sec
Monitoring Well: MW-28
Test Date: 4/16/2025
Field Testing by: 3/31/2025, TDW
Test Analysis by: TDW

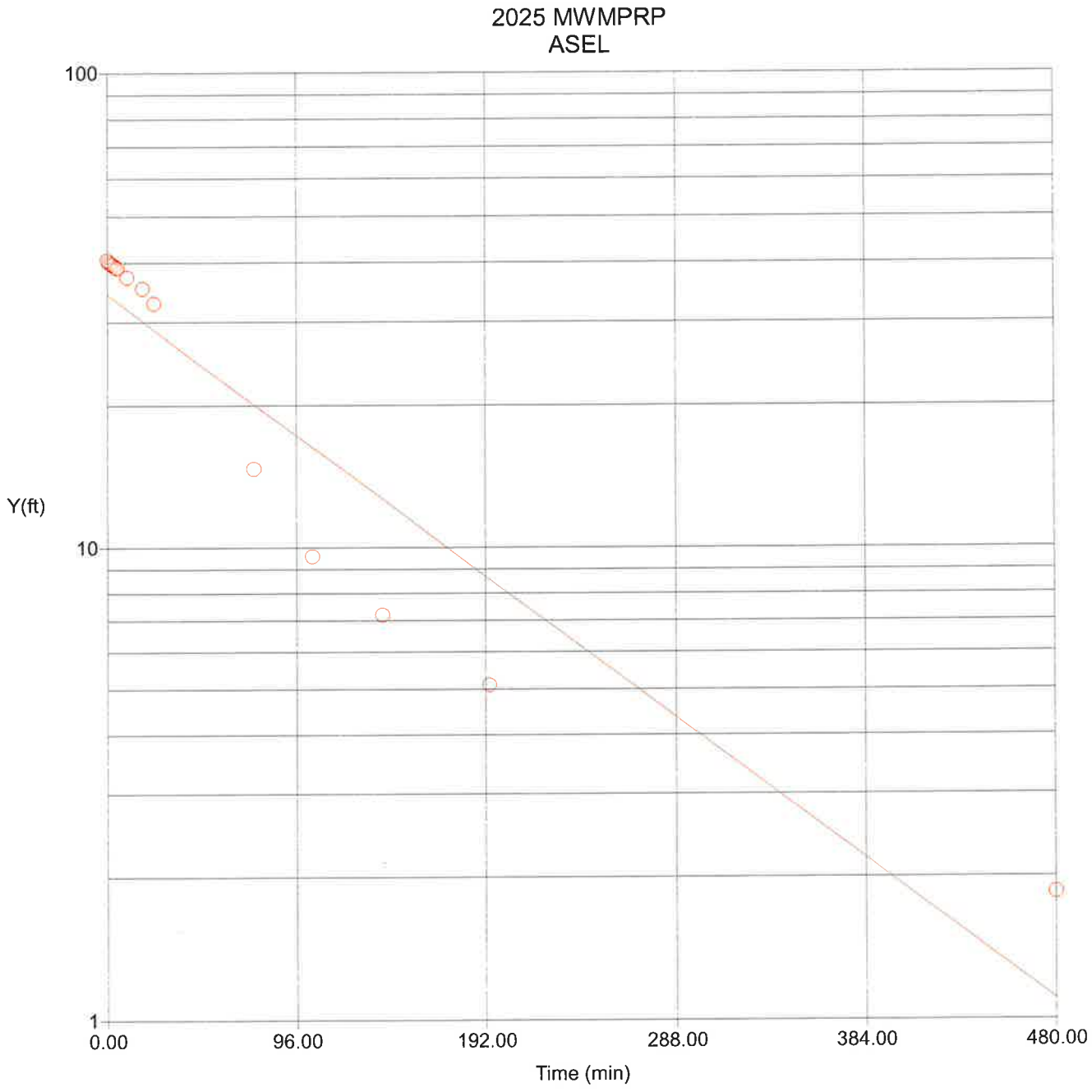
WELL GEOMETRY
H: 26.95 ft
Lw: 16.95 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.5

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -5.54e-03
Intercept: 3.59

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	4.0	Use	4	1.19
1	1.36	Use	1.36	0.852
2	0.26	Use	0.26	0.611
3	0.2	Use	0.2	0.438
4	0.16	Use	0.16	0.314
10	0.08	Use	0.08	0.0427



LUST No.:	Site Name:	
Hydraulic Conductivity: 1.45e-05 cm/sec	Well: MW-29	Slug Test Date: 4/16/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 1.45e-05 cm/sec
Monitoring Well: MW-29
Test Date: 4/16/2025
Field Testing by: TDW, 3/31/2025
Test Analysis by: TDW

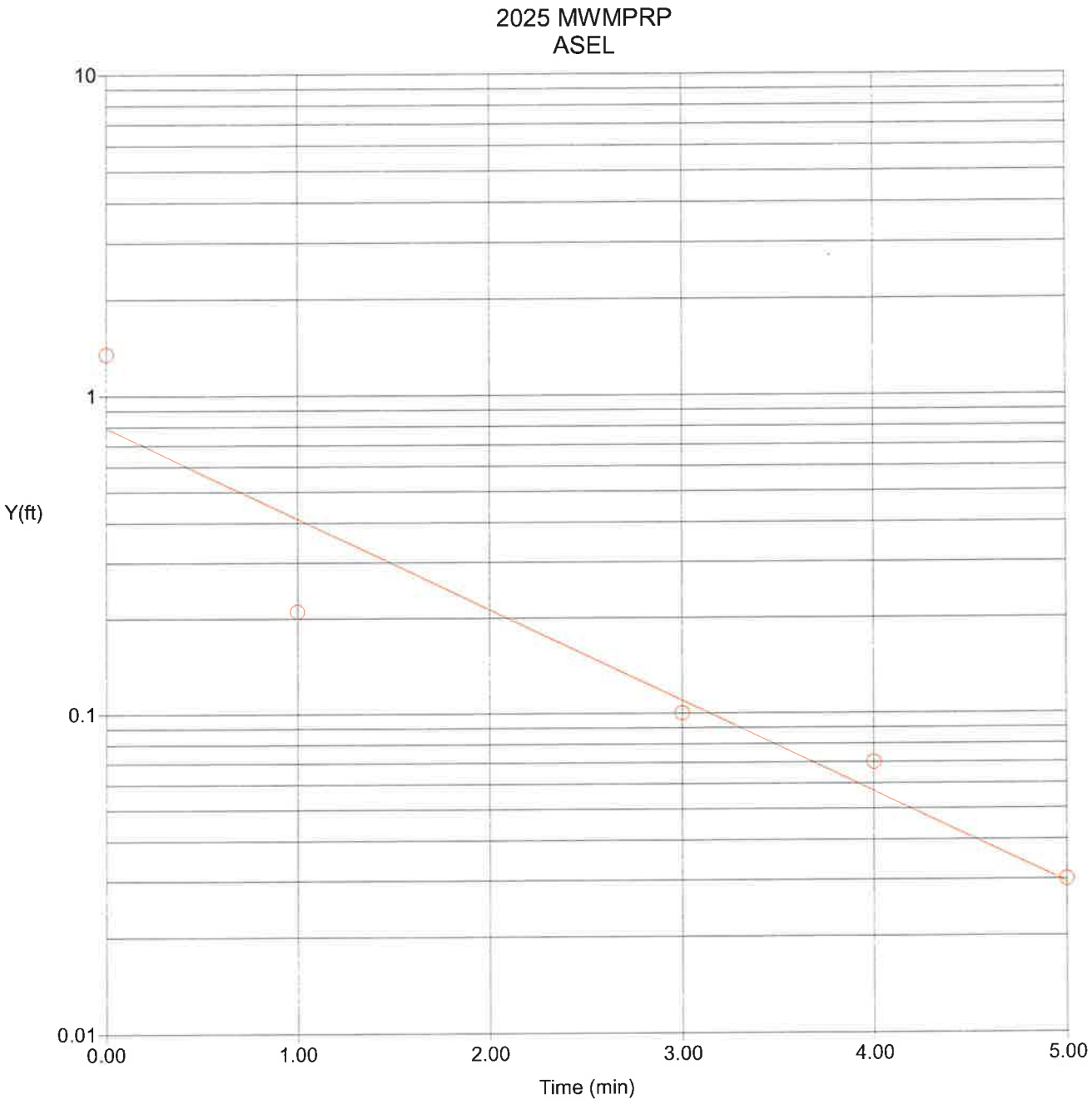
WELL GEOMETRY
H: 52.85 ft
Lw: 42.85 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.88

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -1.19e-04
Intercept: 6.95

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	40.45	Use	40.45	34.3
1	40.05	Use	40.05	34.1
2	39.8	Use	39.8	33.8
3	39.56	Use	39.56	33.6
4	39.23	Use	39.23	33.4
5	39.01	Use	39.01	33.1
10	37.27	Use	37.27	32.0
18	35.3	Use	35.3	30.2
24	32.8	Use	32.8	28.9
75	14.66	Use	14.66	20.1
104	9.57	Use	9.57	16.3
139	7.2	Use	7.2	12.7
194	5.11	Use	5.11	8.56
480	1.85	Use	1.85	1.1



LUST No.:	Site Name:		
Hydraulic Conductivity: 0.00303 cm/sec	Well: MW-33	Slug Test Date: 4/16/2025	
	CGWP:		

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 0.00303 cm/sec
Monitoring Well: MW-33
Test Date: 4/16/2025
Field Testing by: TDW, 3/7/2025
Test Analysis by: TDW

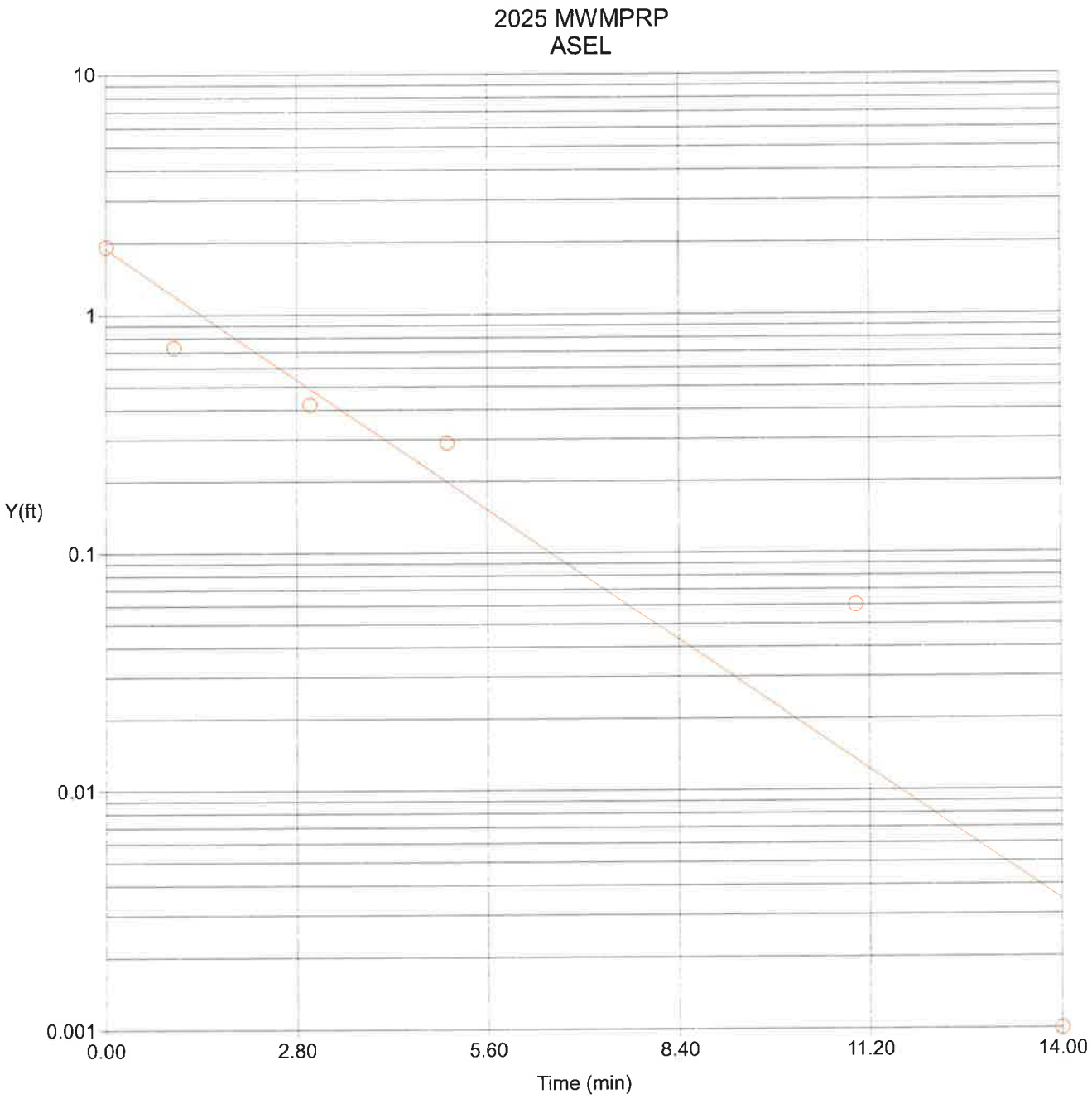
WELL GEOMETRY
H: 28.9 ft
Lw: 18.9 ft
Le: 2.5 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 7.51
A: 1.8
B: 0.223
C: 0.884
Ln(Re/rw): 1.63

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -1.10e-02
Intercept: 3.19

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	1.35	Use	1.35	0.794
1	0.21	Use	0.21	0.41
3	0.10	Use	0.1	0.11
4	0.07	Use	0.07	0.0568
5	0.03	Use	0.03	0.0293



LUST No.:	Site Name:	
Hydraulic Conductivity: 7.49e-04 cm/sec	Well: MW-34	Slug Test Date: 4/17/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 7.49e-04 cm/sec
Monitoring Well: MW-34
Test Date: 4/17/2025
Field Testing by: TDW, 3/7/2025
Test Analysis by: TDW

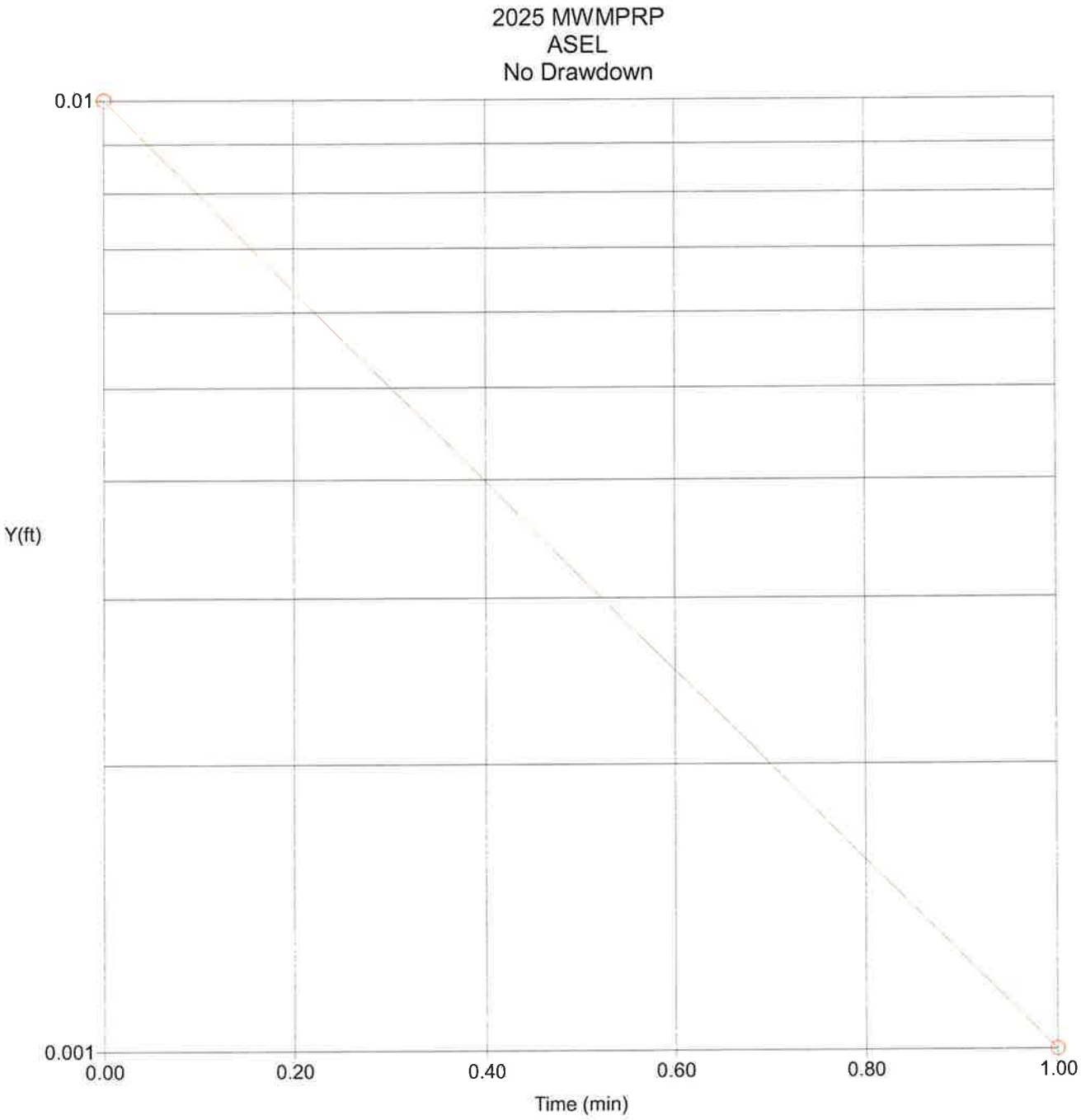
WELL GEOMETRY
H: 22.72 ft
Lw: 12.72 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.37

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -7.50e-03
Intercept: 4.05

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	1.92	Use	1.92	1.88
1	0.73	Use	0.73	1.2
3	0.42	Use	0.42	0.489
5	0.29	Use	0.29	0.199
11	0.06	Use	0.06	0.0134
14	0.001	Use	0.001	0.00347



LUST No.:	Site Name:		
Hydraulic Conductivity: 0.00488 cm/sec	Well: MW-35	Slug Test Date: 4/16/2025	
	CGWP:		

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 0.00488 cm/sec
Monitoring Well: MW-35
Test Date: 4/16/2025
Field Testing by: TDW, 3/7/2025
Test Analysis by: TDW

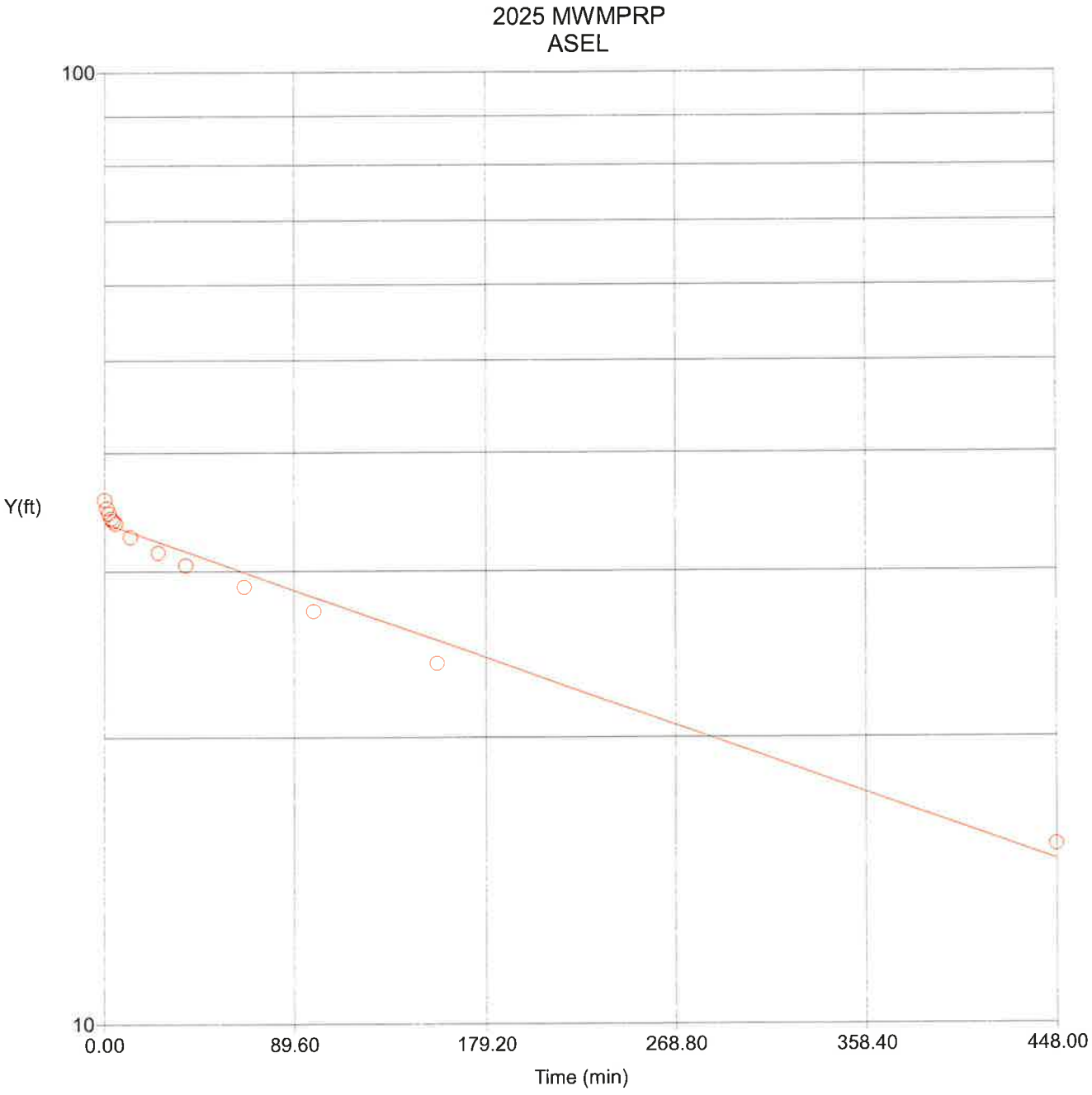
WELL GEOMETRY
H: 16.05 ft
Lw: 6.05 ft
Le: 6.05 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 18.2
A: 2.09
B: 0.289
C: 1.41
Ln(Re/rw): 1.82

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -3.84e-02
Intercept: -1.19e+00

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	0.01	Use	0.01	0.01
1	0.001	Use	0.001	1.00e-03



LUST No.:	Site Name:	
Hydraulic Conductivity: 3.64e-06 cm/sec	Well: MW-36	Slug Test Date: 4/17/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 3.64e-06 cm/sec
Monitoring Well: MW-36
Test Date: 4/17/2025
Field Testing by: TDW, 3/31/2025
Test Analysis by: TDW

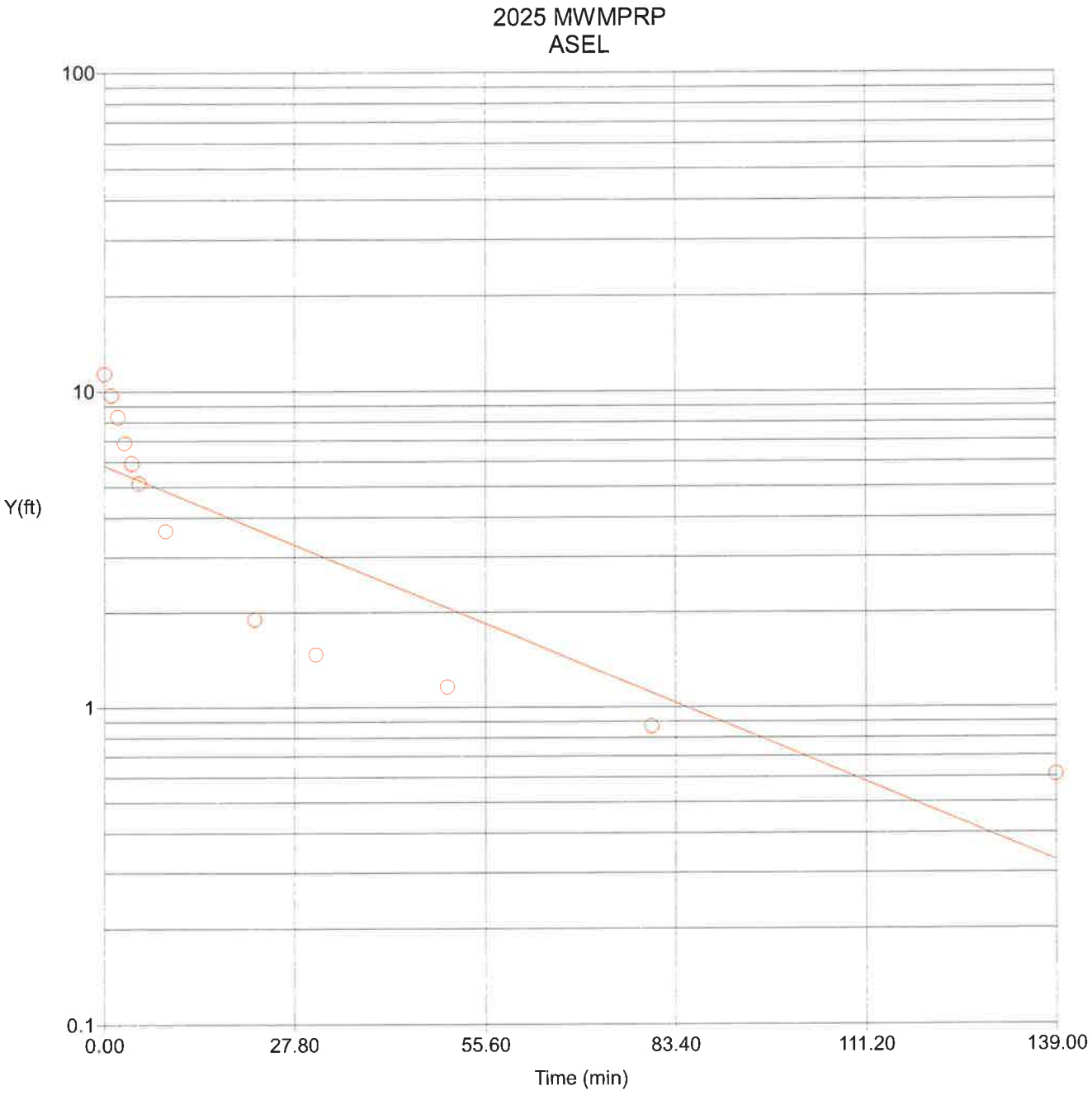
WELL GEOMETRY
H: 47.19 ft
Lw: 37.19 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.83

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -3.05e-05
Intercept: 6.94

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	35.69	Use	35.69	33.7
1	34.99	Use	34.99	33.7
2	34.53	Use	34.53	33.6
3	34.11	Use	34.11	33.5
4	33.90	Use	33.9	33.5
5	33.69	Use	33.69	33.4
12	32.61	Use	32.61	33.0
25	31.39	Use	31.39	32.2
38	30.44	Use	30.44	31.5
66	28.85	Use	28.85	29.9
99	27.19	Use	27.19	28.1
156	23.96	Use	23.96	25.3
448	15.4	Use	15.4	14.9



LUST No.:	Site Name:	
Hydraulic Conductivity: 3.79e-05 cm/sec	Well: MW-37	Slug Test Date: 4/17/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 3.79e-05 cm/sec
Monitoring Well: MW-37
Test Date: 4/17/2025
Field Testing by: TDW, 3/31/2025
Test Analysis by: TDW

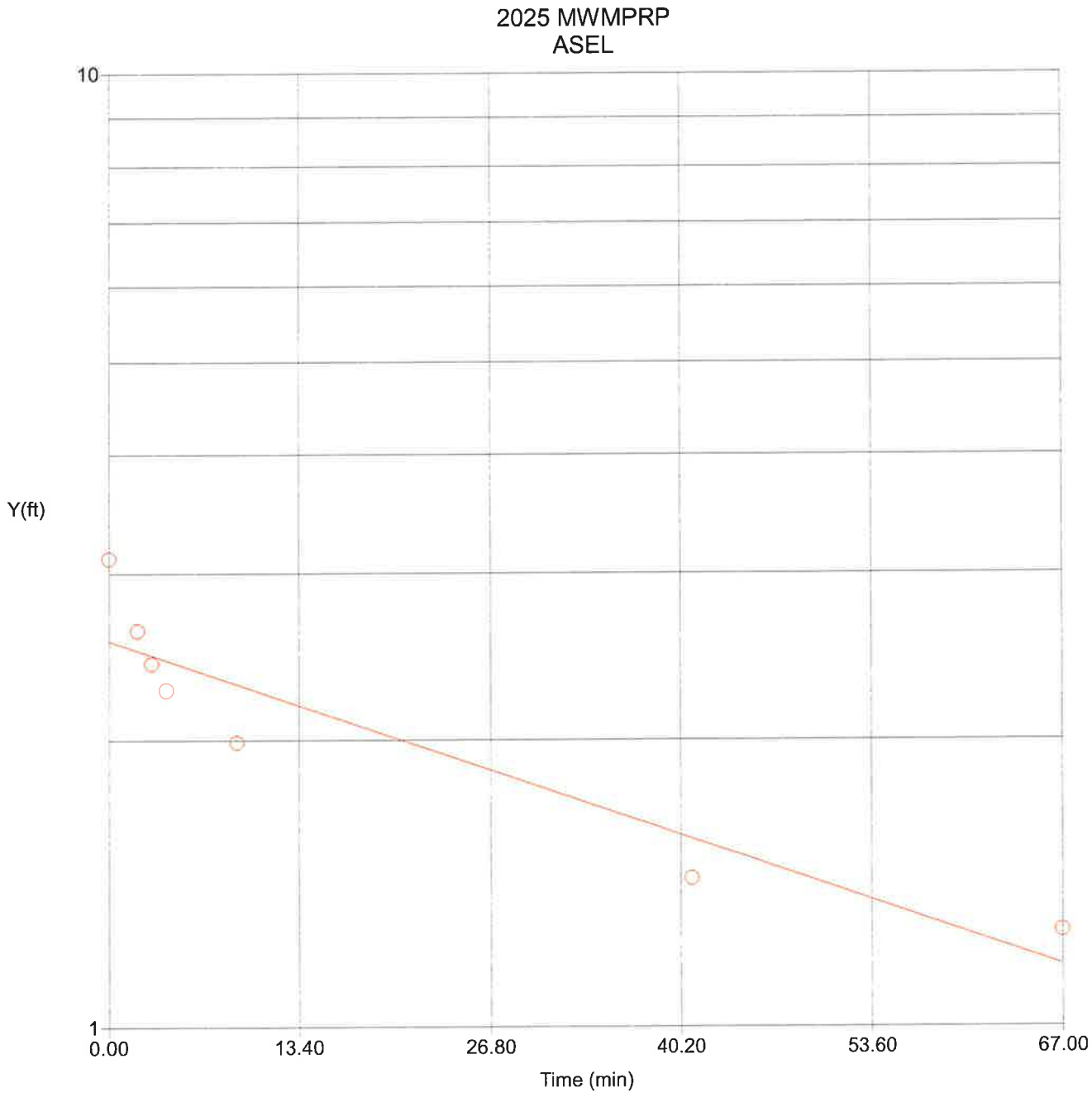
WELL GEOMETRY
H: 31.32 ft
Lw: 21.32 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.6

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -3.45e-04
Intercept: 5.18

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	11.37	Use	11.37	5.83
1	9.74	Use	9.74	5.71
2	8.3	Use	8.3	5.6
3	6.87	Use	6.87	5.48
4	5.93	Use	5.93	5.37
5	5.14	Use	5.14	5.26
9	3.62	Use	3.62	4.84
22	1.90	Use	1.9	3.7
31	1.47	Use	1.47	3.07
50	1.16	Use	1.16	2.07
80	0.87	Use	0.87	1.11
139	0.61	Use	0.61	0.328



LUST No.:	Site Name:	
Hydraulic Conductivity: 2.15e-05 cm/sec	Well: MW-39	Slug Test Date: 4/17/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 2.15e-05 cm/sec
Monitoring Well: MW-39
Test Date: 4/17/2025
Field Testing by: TDW, 3/7/2025
Test Analysis by: TDW

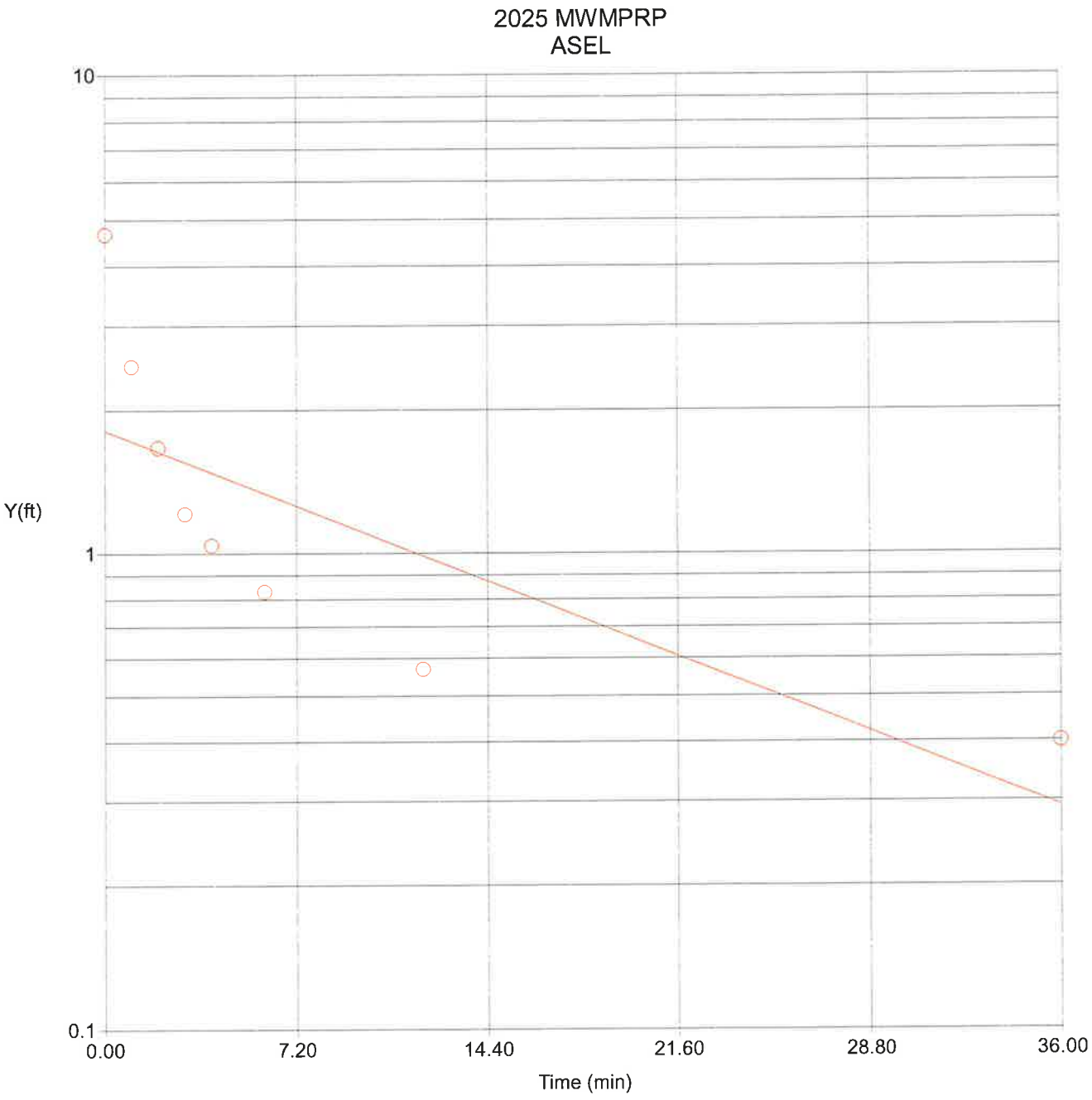
WELL GEOMETRY
H: 17.86 ft
Lw: 7.86 ft
Le: 7.86 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 23.6
A: 2.24
B: 0.318
C: 1.68
Ln(Re/rw): 2.05

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -1.95e-04
Intercept: 4.35

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	3.11	Use	3.11	2.55
2	2.61	Use	2.61	2.49
3	2.41	Use	2.41	2.46
4	2.26	Use	2.26	2.43
9	1.99	Use	1.99	2.29
41	1.43	Use	1.43	1.57
67	1.26	Use	1.26	1.16



LUST No.:	Site Name:	
Hydraulic Conductivity: 8.49e-05 cm/sec	Well: MW-40	Slug Test Date: 4/17/2025
	CGWP:	

BOUWER-RICE SLUG TEST ANALYSIS

SITE

CLIENT
Ames-Story Environmental Landfill
Job/Account: 6004-25A.321

CONSULTANT

SLUG TEST
Hydraulic Conductivity: 8.49e-05 cm/sec
Monitoring Well: MW-40
Test Date: 4/17/2025
Field Testing by: 3/7/2025, TDW
Test Analysis by: TDW

WELL GEOMETRY
H: 23.16 ft
Lw: 13.16 ft
Le: 10.0 ft
dw: 0.666 ft, rw: 0.333 ft
dc: 0.166 ft, rc: 0.083 ft
Drained Filter Pack Porosity (%): 20
Effective Radius (re): 0.166 ft
Slug Volume(L):

BOUWER-RICE COEFFICIENTS
Le/rw: 30.0
A: 2.42
B: 0.35
C: 2.0
Ln(Re/rw): 2.38

LEAST SQUARES BEST FIT
Ln(Y)-cm versus Time-sec
Slope: -8.44e-04
Intercept: 4.01

Slug Test Type: Rising head
Recovery Data Type: Y: Change in Head
Static Water Level: Not Applicable

Time (min)	Recovery:Y(ft)	Fit Criteria	Y(ft)	Fit Y(ft)
0	4.66	Use	4.66	1.81
1	2.46	Use	2.46	1.72
2	1.67	Use	1.67	1.64
3	1.21	Use	1.21	1.56
4	1.04	Use	1.04	1.48
6	0.83	Use	0.83	1.34
12	0.57	Use	0.57	0.987
36	0.40	Use	0.4	0.293

APPENDIX B

Historic Water Table Elevations

Table 4A SUPPLEMENT
Monitoring Well Maintenance and Performance Summary - ROUTINE WATER LEVELS
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

	MW 22	MW 23	MW 24	MW 25	MW 26	MW 27	MW 28	MW 29	MW 30	MW 31	MW 32	MW 33	MW 34	MW 35	MW 36	MW 37	MW38	MW 39	MW 40	MW 41	MW 42	MW 43	MW 6	MW 7	MW 8
GND.ELEV, FT.	950.59	945.98	939.44	906.34	950.51	950.51	946.02	945.61	945.54	941.43	939.86	906.32	909.50	916.19	948.97	949.49	936.59	935.93	933.07	933.46	940.64	940.83	942.88	943.21	942.76
Date																									
4/22/91	945.74	937.19	926.29	898.63	942.06	922.90	NT	NT	911.79	921.48	908.97	898.46	899.86	Installed 2/96	Installed 2/96	Installed 2/96									
5/21/91	945.69	937.11	926.23	898.55	942.04	922.84	NT	NT	911.71	921.39	908.91	898.42	899.82	Installed 2/96	Installed 2/96	Installed 2/96									
6/25/91	945.29	935.49	923.24	898.24	940.34	922.79	NT	NT	911.54	921.02	908.64	898.09	899.56	Installed 2/96	Installed 2/96	Installed 2/96									
7/05/91	943.99	932.56	919.36	897.92	937.48	922.32	NT	NT	911.39	920.40	908.40	897.80	899.42	Installed 2/96	Installed 2/96	Installed 2/96									
8/31/91	943.57	932.42	918.64	897.71	937.36	922.16	NT	NT	911.24	919.71	908.27	897.60	899.20	Installed 2/96	Installed 2/96	Installed 2/96									
9/10/91	942.68	929.97	916.88	897.54	934.59	920.91	NT	NT	910.04	919.33	907.65	897.37	898.98	Installed 2/96	Installed 2/96	Installed 2/96									
10/14/91	941.37	925.81	916.88	896.97	930.24	919.15	NT	NT	908.69	918.13	906.67	896.82	898.77	Installed 2/96	Installed 2/96	Installed 2/96									
11/29/91	943.09	926.35	916.88	897.39	934.18	919.51	NT	NT	909.01	917.70	906.60	897.27	900.13	Installed 2/96	Installed 2/96	Installed 2/96									
12/31/91	942.76	927.64	916.88	897.03	935.01	919.78	NT	NT	909.29	917.17	906.56	896.90	900.86	Installed 2/96	Installed 2/96	Installed 2/96									
1/21/92	942.76	928.65	916.88	897.28	935.92	920.00	NT	NT	909.55	917.27	906.74	897.12	901.12	Installed 2/96	Installed 2/96	Installed 2/96									
2/17/92	941.97	929.13	916.88	897.29	935.72	920.07	NT	NT	909.69	917.11	906.76	897.16	901.00	Installed 2/96	Installed 2/96	Installed 2/96									
3/19/92	943.59	931.71	924.15	897.82	938.73	921.02	NT	NT	910.30	917.45	907.81	897.69	901.90	Installed 2/96	Installed 2/96	Installed 2/96									
4/22/92	943.89	932.55	926.15	898.47	939.22	921.60	NT	NT	910.65	919.94	908.46	898.35	903.04	Installed 2/96	Installed 2/96	Installed 2/96									
5/30/92	942.17	932.85	922.98	897.80	938.00	921.75	NT	NT	910.83	918.61	908.67	897.67	901.84	Installed 2/96	Installed 2/96	Installed 2/96									
6/30/92	941.55	930.26	919.03	897.63	937.00	921.19	NT	NT	910.08	918.59	908.11	897.50	900.85	Installed 2/96	Installed 2/96	Installed 2/96									
7/28/92	943.99	929.93	917.76	898.33	939.36	920.81	NT	NT	910.03	918.67	907.61	898.12	901.79	Installed 2/96	Installed 2/96	Installed 2/96									
8/22/92	943.21	930.42	919.53	897.84	938.92	920.65	NT	NT	910.24	918.34	907.63	897.71	901.25	Installed 2/96	Installed 2/96	Installed 2/96									
9/30/92	941.15	928.20	919.44	897.61	937.26	919.53	NT	NT	909.39	917.89	907.03	897.50	900.31	Installed 2/96	Installed 2/96	Installed 2/96									
10/29/92	940.26	927.12	916.88	897.54	936.15	919.48	NT	NT	908.88	917.65	906.74	897.42	899.50	Installed 2/96	Installed 2/96	Installed 2/96									
11/25/92	940.94	928.01	916.88	897.67	937.25	919.67	NT	NT	909.19	917.47	906.63	897.52	901.23	Installed 2/96	Installed 2/96	Installed 2/96									
12/10/92	941.21	928.23	916.88	897.41	936.84	919.77	NT	NT	909.31	917.60	906.74	897.33	900.94	Installed 2/96	Installed 2/96	Installed 2/96									
1/30/93	941.33	928.29	916.88	897.39	936.76	919.88	NT	NT	909.37	917.64	906.85	897.31	900.89	Installed 2/96	Installed 2/96	Installed 2/96									
2/22/93	939.55	929.28	916.88	897.22	935.16	919.23	NT	NT	909.64	917.46	906.70	897.06	901.13	Installed 2/96	Installed 2/96	Installed 2/96									
3/4/93	939.45	929.24	916.88	897.58	934.93	919.15	939.32	934.81	909.50	917.47	906.66	897.42	901.96	Installed 2/96	Installed 2/96	Installed 2/96									
4/27/93	941.79	936.40	927.66	897.84	939.11	920.27	940.68	937.01	911.30	921.03	908.66	897.68	902.76	Installed 2/96	Installed 2/96	Installed 2/96									
5/27/93	942.32	935.88	928.16	898.20	938.67	920.71	941.12	936.61	911.64	924.19	909.76	898.06	903.30	Installed 2/96	Installed 2/96	Installed 2/96									
6/30/93	942.37	935.34	927.10	898.40	938.11	920.94	941.12	936.51	911.84	924.63	909.96	898.28	902.90	Installed 2/96	Installed 2/96	Installed 2/96									
7/27/93	942.65	936.74	928.60	897.80	938.25	921.13	940.98	937.41	912.34	925.57	911.08	897.72	903.00	Installed 2/96	Installed 2/96	Installed 2/96									
9/3/93	942.57	936.50	928.04	897.66	937.71	920.91	941.22	937.71	912.44	927.59	910.06	897.52	902.66	Installed 2/96	Installed 2/96	Installed 2/96									
9/21/93	941.84	934.38	925.01	897.32	936.79	920.67	940.82	937.41	912.40	923.05	909.56	897.40	901.78	Installed 2/96	Installed 2/96	Installed 2/96									
10/25/93	941.45	934.13	924.40	897.29	936.16	920.21	940.07	936.26	912.24	923.88	909.36	897.16	901.45	Installed 2/96	Installed 2/96	Installed 2/96									
11/22/93	940.39	933.26	923.10	897.08	935.15	919.61	938.82	935.05	911.40	921.63	908.86	896.96	901.38	Installed 2/96	Installed 2/96	Installed 2/96									
12/14/93	939.69	932.68	921.90	897.00	934.55	919.47	938.54	934.45	911.12	921.09	908.62	896.84	901.28	Installed 2/96	Installed 2/96	Installed 2/96									
1/31/94	938.63	931.80	920.26	896.79	933.53	918.51	937.12	933.07	910.32	919.87	907.86	896.72	900.97	Installed 2/96	Installed 2/96	Installed 2/96									
2/28/94	938.16	933.61	922.39	896.91	NT	918.21	937.68	933.56	910.27	923.10	907.90	896.79	901.66	Installed 2/96	Installed 2/96	Installed 2/96									
3/16/94	938.79	934.94	923.90	897.04	932.73	918.39	938.46	934.13	910.94	926.53	908.50	896.92	902.05	Installed 2/96	Installed 2/96	Installed 2/96									
4/30/94	938.79	933.28	922.40	897.04	932.59	916.56	938.37	933.73	910.34	923.26	908.80	896.90	901.02	Installed 2/96	Installed 2/96	Installed 2/96									
5/17/94	939.09	933.74	922.68	896.98	931.65	915.45	938.52	933.75	910.54	924.47	908.54	896.82	NT	Installed 2/96	Installed 2/96	Installed 2/96									
7/31/94	NT	931.38	918.76	897.23	931.62	916.31	939.13	933.41	909.82	919.63	907.45	897.11	901.98	Installed 2/96	Installed 2/96	Installed 2/96									
8/23/94	938.79	932.73	918.24	897.10	931.87	916.53	938.16	934.01	909.94	919.23	907.24	896.92	901.90	Installed 2/96	Installed 2/96	Installed 2/96									
9/16/94	938.85	933.12	918.94	897.14	931.95	916.56	938.50	934.13	910.04	919.03	907.12	896.98	901.90	Installed 2/96	Installed 2/96	Installed 2/96									
10/21/94	938.79	932.48	917.78	896.84	931.81	916.51	938.78	934.31	908.98	918.81	906.90	896.68	901.90	Installed 2/96	Installed 2/96	Installed 2/96									
11/21/94	937.84	931.40	917.44	896.46	931.01	915.99	938.62	933.41	909.86	918.55	906.86	896.34	901.70	Installed 2/96	Installed 2/96	Installed 2/96									
12/22/94	937.69	933.43	Dry	896.64	930.81	916.01	938.52	933.11	909.74	918.13	906.51	896.48	901.90	Installed 2/96	Installed 2/96	Installed 2/96									
1/10/95	938.01	933.54	917.44	896.79	931.21	916.11	937.74	933.41	910.14	918.57	906.76	896.57	901.84	Installed 2/96	Installed 2/96	Installed 2/96									
2/6/95	936.71	932.68	917.44	896.85	930.11	915.71	937.56	932.88	910.12	918.43	906.58	896.72	901.70	Installed 2/96	Installed 2/96	Installed 2/96									
3/9/95	935.79	932.90	Dry	896.74	929.21	915.33	936.92	932.44	909.89	918.33	906.56	896.60	901.70	Installed 2/96	Installed 2/96	Installed 2/96									
4/14/95	936.79	939.40	925.24	897.34	930.56	915.86	939.72	934.71	910.99	925.73	906.88	897.17	902.60	Installed 2/96	Installed 2/96	Installed 2/96									
5/2/95	937.39	939.58	927.34	897.31	932.01	916.11	939.81	935.26	911.79	926.53	907.86	897.13	902.90	Installed 2/96	Installed 2/96	Installed 2/96									
6/2/95	937.64	934.38	925.44	897.14	932.51	916.23	938.42	933.86	910.95	923.18	908.66	897.02	902.20	Installed 2/96	Installed 2/96	Installed 2/96									
8/23/95	937.39	930.38	919.14	897.14	930.74	915.91	938.17	933.66	909.94	919.83	907.21	896.97	901.70	Installed 2/96	Installed 2/96	Installed 2/96									
9/12/95	936.72	929.36	918.54	896.67	929.67	915.51	937.11	932.76	909.39	919.53	906.94	896.78	901.64	Installed 2/96	Installed 2/96	Installed 2/96									
10/31/95	935.74	928.18	Dry	896.84	927.01	914.71	937.12	932.21	908.79	918.43	906.26	896.72	901.45	Installed 2/96	Installed 2/96	Installed 2/96									
11/20/95	935.57	928.01	Dry	896.68	927.11	914.53	936.87	932.51	908.79	918.23	906.26	896.52	901.75	Installed 2/96	Installed 2/96	Installed 2/96									
12/7/95	935.24	927.88	Dry	896.64	927.11	913.91	936.85	932.26	908.62	917.98	906.01	896.45	901.80	Installed 2/96	Installed 2/96	Installed 2/96									
1/3/96	934.19	927.78	Dry	896.56	NT	914.11	936.17	931.71	908.59	918.03	906.16	896.42	901.60	Installed 2/96	Installed 2/96	Installed 2/96									
2/24/96	Plugged	930.68	Dry	896.94	Plugged	Plugged	938.02	932.61	909.24	917.98	906.06	896.77	901.90	Installed 2/96	Installed 2/96	Installed 2/96									
3/22/96	Plugged	930.63	Dry	896.89	Plugged	Plugged	936.72	932.01	909.17	918.25	905.91	896.72	901.80	903.29	930.77	938.09									
4/1/96	Plugged	NT	Dry	NT	Plugged	Plugged	NT	NT	NT	NT	NT	NT	NT	903.64	930.47	938.14									
6/20/96	Plugged	937.78	Dry	897.64	Plugged	Plugged	940.37	934.81	910.34	927.03	907.63	897.47	902.25	903.99	932.01	940.94									
9/12/96	Plugged	931.96	Dry	897.29	Plugged	Plugged	938.62	933.71	909.76	919.48	906.76	897.17	901.78	903.24	932.37	941.59									
10/24/1996	Plugged	930.58	Dry	897.29	Plugged	Plugged	938.22	933.41	909.76	920.03	906.46	897.12	901.70	903.34	932.49	941.19									
11/18/1996	Plugged	938.23	Dry	897.69	Plugged	Plugged	939.27	933.91	909.68	928.03	906.76	897.52	902.00	903.91	932.37	941.14									
12/11/1996	Plugged	936.03	Dry	897.39	Plugged	Plugged	938.94	934.21	911.04	926.83	907.81	897.22	901.80	903.64	932.42	941.14									

	MW 22	MW 23	MW 24	MW 25	MW 26	MW 27	MW 28	MW 29	MW 30	MW 31	MW 32	MW 33	MW 34	MW 35	MW 36	MW 37	MW38	MW 39	MW 40	MW 41	MW 42	MW 43	MW 6	MW 7	MW 8
GND.ELEV, FT.	950.59	945.98	939.44	906.34	950.51	950.51	946.02	945.61	945.54	941.43	939.86	906.32	909.50	916.19	948.97	949.49	936.59	935.93	933.07	933.46	940.64	940.83	942.88	943.21	942.76
DATE																									
01/29/1997	Plugged	933.88	Dry	897.24	Plugged	Plugged	937.42	932.96	910.64	924.93	907.41	897.07	901.55	903.09	932.39	940.79									
02/25/1997	Plugged	936.23	Dry	897.39	Plugged	Plugged	937.57	932.86	910.54	923.08	907.26	897.22	901.88	903.67	931.62	940.14									
03/17/1997	Plugged	937.98	Dry	896.54	Plugged	Plugged			910.97	929.58	907.26	897.32	902.40	903.99	931.77	940.59									
04/29/1997	Plugged	934.78	Dry	897.54	Plugged	Plugged	938.62	933.91	912.04	928.13	908.56	897.37	902.10	903.79	932.47	941.49									
05/22/1997	Plugged	934.53	Dry	897.49	Plugged	Plugged	938.42	933.71	910.84	927.98	908.66	897.32	902.00	903.84	932.57	941.39									
06/18/1997	Plugged	933.08	Dry	897.29	Plugged	Plugged	938.37	933.61	910.39	924.13	908.26	897.12	901.80	903.59	932.55	941.59									
07/18/1997	Plugged	931.53	Dry	897.29	Plugged	Plugged	938.32	933.41	909.84	921.23	907.56	897.12	901.60	903.49	932.47	941.74									
08/29/1997	Plugged	929.43	Dry	897.10	Plugged	Plugged	937.82	933.01	909.19	919.63	906.86	896.92	901.50	903.04	932.42	941.64									
09/01/1997	Plugged	929.38	Dry	897.04	Plugged	Plugged	937.72	932.91	909.14	919.53	906.76	896.82	901.40	902.99	932.37	941.64									
10/27/1997	Plugged	928.28	Dry	897.14	Plugged	Plugged	938.12	933.11	908.74	918.53	906.06	896.97	901.50	903.99	932.22	940.99									
11/20/1997	Plugged	928.08	Dry	897.04	Plugged	Plugged	937.67	932.96	908.64	918.53	906.16	896.87	901.55	902.74	932.42	940.99									
12/08/1997	Plugged	928.68	Dry	897.04	Plugged	Plugged	937.87	933.06	908.74	918.43	906.06	896.92	901.90	902.79	932.42	940.99									
01/13/1998	Plugged	930.48	Dry	896.99	Plugged	Plugged	937.72	932.89	908.84	918.43	905.76	896.82	901.95	902.69	932.27	940.69									
02/18/1998	Plugged	934.13	Dry	897.44	Plugged	Plugged	938.82	933.11	909.44	919.57	906.16	897.32	902.50	904.19	932.07	940.49									
03/05/1998	Plugged	934.78	Dry	897.34	Plugged	Plugged	938.87	933.71	910.09	923.43	906.06	897.12	902.50	903.36	932.32	941.01									
04/24/1998	Plugged	937.03	925.94	897.74	Plugged	Plugged	939.52	934.71	911.24	927.83	907.86	897.62	902.50	903.74	933.09	942.69									
05/18/1998	Plugged	934.08	924.29	897.49	Plugged	Plugged	938.62	934.01	910.52	925.73	907.86	897.32	902.00	903.21	932.92	941.99									
06/09/1998	Plugged	934.38	922.34	897.89	Plugged	Plugged	938.82	934.11	910.14	930.93	907.66	897.72	901.90	904.29	933.12	942.19									
07/23/1998	Plugged	934.08	924.64	897.79	Plugged	Plugged	938.82	934.11	910.99	925.23	908.71	897.62	901.80	903.29	934.17	942.99									
08/09/1998	Plugged	932.78	922.24	897.69	Plugged	Plugged	938.62	934.11	910.54	922.53	908.26	897.52	901.75	903.19	933.77	942.59									
09/23/1998	Plugged		Dry		Plugged	Plugged	938.02	933.51	NT	NT	NT	NT	NT	NT	NT	NT									
10/23/1998	Plugged	928.98	917.14	897.34	Plugged	Plugged	938.02	933.61	909.14	919.03	906.46	897.22	901.50	902.59	932.52	941.29									
12/26/1998	Plugged	928.80	Dry	897.09	Plugged	Plugged	937.42	933.11	907.84	919.43	907.36	896.92	901.40	902.59	932.47	940.79									
01/08/1999	Plugged	928.58	Dry	896.94	Plugged	Plugged	937.02	932.63	907.84	919.03	906.96	896.77	901.30	902.39	932.52	940.39									
03/21/1999	Plugged	931.03	Dry	897.24	Plugged	Plugged	938.82	933.61	908.29	922.43	906.31	897.10	902.20	902.74	932.57	940.74									
09/19/1999	Plugged	930.53	Dry	897.19	Plugged	Plugged	939.02	933.71	909.14	919.13	906.46	897.02	901.20	902.69	933.17	942.09									
03/10/2000	Plugged	927.63	Dry	896.82	Plugged	Plugged	936.97	931.66	907.09	917.33	905.46	896.67	902.10	902.89	932.02	939.79									
06/20/2000	Plugged	NT	NT	NT	Plugged	Plugged	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	907.59	915.23	922.27	915.86	918.84	921.43	931.78	917.81	905.06
09/25/2000	Plugged	923.68	916.94	896.47	Plugged	Plugged	938.02	931.61	905.84	916.68	904.06	896.62	901.00	901.79	931.97	940.41	913.64	916.28	919.47	914.56	918.32	919.98	931.73	917.76	905.31
12/26/2000	Plugged	NT	NT	NT	Plugged	Plugged	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	910.24	914.51	920.29	914.96	918.94	920.73	931.33	917.61	905.11
03/05/2001	Plugged	933.79	922.31	896.84	Plugged	Plugged	938.77	932.06	907.17	919.00	904.18	897.12	903.30	903.69	931.72	940.89	915.49	918.53	924.77	916.51	921.15	924.28	932.08	917.01	905.21
09/02/2001	Plugged	930.78	Dry	897.09	Plugged	Plugged	940.02	932.81	908.14	918.63	905.16	896.92	901.45	903.19	933.22	941.69	915.79	917.53	921.52	915.66	920.04	922.68	933.08	919.27	906.71
03/15/2002	Plugged	927.15	Dry	896.59	Plugged	Plugged	937.67	931.62	907.17	917.49	904.88	896.72	902.81	902.78	931.65	939.75	915.23	916.17	925.07	916.72	922.89	920.44	932.73	919.12	906.32
09/19/2002	Plugged	929.10	Dry	896.67	Plugged	Plugged	939.76	932.56	907.86	918.22	904.51	896.51	901.69	902.68	933.04	941.43	922.74	924.85	923.32	916.05	920.29	922.51	934.38	920.29	907.38
03/12/2003	Plugged	924.90	Dry	896.57	Plugged	Plugged	936.29	930.82	906.34	916.92	904.68	896.41	901.37	902.91	930.79	938.89	918.24	919.46	922.37	914.98	919.14	921.59	932.46	919.09	906.23
05/16/2003	Plugged	939.18	Dry	897.44	Plugged	Plugged	939.12	932.61	908.04	927.18	904.66	897.22	903.60	903.39	931.47	940.09	920.59	921.63	926.67	917.36	922.04	925.18	934.43	919.81	906.66
09/25/2003	Plugged	927.87	Dry	896.45	Plugged	Plugged	938.62	932.39	907.48	918.18	904.31	896.28	901.86	902.79	932.61	940.89	916.70	917.61	922.18	915.77	919.05	921.15	933.60	920.05	906.91
03/08/2004	Plugged	938.89	928.29	897.26	Plugged	Plugged	939.03	932.08	908.11	929.89	905.97	897.11	903.92	903.53	931.74	941.49	919.35	920.84	927.31	917.33	922.84	926.45	934.61	920.16	906.80
09/23/2004	Plugged	928.28	Dry	896.74	Plugged	Plugged	938.27	932.41	908.04	919.03	905.86	896.72	901.70	903.19	932.47	941.09	917.91	919.48	923.42	916.21	919.84	922.03	934.28	920.51	907.56
03/17/2005	Plugged	930.63	Dry	896.36	Plugged	Plugged	938.29	932.36	908.09	921.42	905.05	896.16	902.80	903.21	931.62	940.68	918.88	920.36	926.60	916.98	921.63	924.51	933.82	920.11	906.96
09/22/2005	Plugged	927.51	Dry	896.77	Plugged	Plugged	938.73	933.47	907.67	919.25	905.23	896.52	901.78	903.10	932.62	941.16	916.87	918.15	923.87	916.42	920.24	922.58	934.50	920.66	907.43
03/20/2006	Plugged	924.11	Dry	896.42	Plugged	Plugged	939.42	933.31	906.51	917.37	904.56	896.25	902.68	903.13	931.57	939.74	914.54	915.76	925.01	916.15	919.32	921.71	934.50	920.02	906.98
09/21/2006	Plugged	928.25	Dry	896.69	Plugged	Plugged	939.76	934.74	907.40	920.38	903.91	896.52	904.00	903.35	933.72	943.02	916.82	919.12	926.89	917.14	921.49	924.83	935.00	920.70	905.19
03/14/2007	Plugged	940.56	923.56	897.69	Plugged	Plugged	939.96	934.60	910.28	936.19	904.64	897.50	905.30	903.56	933.16	942.25	918.99	921.32	928.42	917.22	924.00	928.47	935.40	921.00	907.93
09/28/2007	Plugged	930.16	Dry	896.97	Plugged	Plugged	939.84	934.91	908.95	919.99	905.89	896.81	901.78	903.36	933.77	942.37	915.79	917.99	923.94	916.39	920.35	924.83	935.48	921.68	908.63
03/03/2008	Plugged	937.08	Dry	897.16	Plugged	Plugged	939.40	933.91	909.43	933.84	905.49	896.97	905.38	903.44	932.72	941.28	915.34	919.00	926.77	916.46	921.45	924.22	934.98	921.41	907.86
09/05/2008	Plugged	930.78	917.72	897.32	Plugged	Plugged	939.72	934.71	909.64	920.38	907.06	897.10	903.70	903.19	933.52	941.99	917.89	919.43	924.17	916.46	921.14	923.48	935.33	922.16	909.24
03/13/2008	Plugged	939.58	925.44	897.64	Plugged	Plugged	944.32	934.81	910.09	922.73	908.06	897.62	904.55	903.09	933.27	941.79	917.89	920.48	928.62	917.36	923.04	926.63	935.98	921.81	908.74
09/24/2009	Plugged	928.18	917.04	896.69	Plugged	Plugged	938.82	933.81	908.64	919.83	906.61	896.52	901.30	902.74	932.97	941.19	915.09	917.53	922.31	915.36	920.79	923.13	934.93	921.41	908.46
03/16/2010	Plugged	940.99	931.17	897.94	Plugged	Plugged	941.08	935.62	914.44	935.97	913.51	897.72	906.60	903.19	NT	NT	921.29	924.48	929.18	918.15	926.86	930.73	936.23	922.61	908.96
09/10/2010	Plugged	934.38	923.39	897.44	Plugged	Plugged	940.62	935.21	911.04	926.03	908.96	897.22	903.50	903.09	934.02	942.44	918.54	921.13	926.97	918.26	922.64	925.13	938.73	923.41	910.16
03/01/2011	Plugged	938.18	924.19	894.74	Plugged	Plugged	938.77	934.01	911.04	931.13	906.21	894.57	902.85	902.79	930.97	941.04	916.99	920.08	928.47	917.86	920.64	923.33	935.28	922.46	908.96
09/22/2011	Plugged	928.88	917.34	896.74	Plugged	Plugged	938.62	933.96	908.84	920.33	906.61	896.57	901.40	902.74	932.67	940.99	913.49	916.93	924.77	916.26	921.34	923.83	934.83	922.01	908.56
03/02/2012	Plugged	930.68	Dry	896.84	Plugged	Plugged	938.72	933.36	908.69	930.93	905.56	896.62	903.60	902.79	932.17	939.86	912.99	916.23	928.17	917.46	921.84	924.93	934.98	921.76	908.16
09/05/2012	Plugged	928.58	Dry	896.54	Plugged	Plugged	938.27	930.91	908.14	919.68	905.36	896.37	901.30	902.69	932.32	940.49	910.19	913.43	923.77	916.06	921.44	924.08	934.28	921.21	907.86
03/04/2013	Plugged	928.73	Dry	896.94	Plugged	Plugged	937.72	932.81	907.84	917.53	904.46	896.72	902.00	902.79	931.67	939.59	909.79	913.83	926.77	916.86	921.54	924.23	934.48	921.51	907.61
09/13/2013	Plugged	928.18	Dry	896.64	Plugged	Plugged	937.62	933.01	908.54	919.93	905.41	896.47	901.10	902.84	932.47	940.59	910.49	914.53	919.77	913.96	921.39	923.63	933.08	920.91	907.76
03/06/2014	Plugged	927.13	Dry	897.44	Plugged	Plugged	936.22	931.41	907.43	917.88	904.71	897.27	901.45	903.29	931.67	939.19	908.49	912.58	922.37	914.36	921.49	924.40	932.58	920.41	907.06
09/09/2014	Plugged	929.48	Dry	897.19	Plugged	Plugged	939.92	934.11	910.34	926.18	906.11	896.97	902.70	903.24	933.02	943.34	914.24	920.23	929.37	919.16	925.94	932.63	935.70	922.71	908.76
03/09/2015	Plugged	935.72	924.34	896.64	Plugged	Plugged	938.87	933.81	910.14	933.21	908.31	896.47	902.30	902.79	932.67	941.29	913.64	919.23	926.32	916.86	924.69	927.93	934.73	922.16	908.76
09/09/2015	Plugged	937.48	928.50	897.46	Plugged	Plugged	939.78	935.15	911.74	935.73	923.26	897.31	903.69	903.19	934.56	943.73	918.13	923.90	929.10	919.71	928.74	932.62	935.60	923.30	910.01
03/11/2016	Plugged	935.76	927.15	897.19	Plugged	Plugged	939.32	934.81	911.81	934.33	915.61	897.00	902.80	903.04	933.77	942.24	917.99	923.48	928.99	919.16	927.56	930.83	935.83	923.51	910.26
10/27/2016	Plugged	933.63	921.91	896.93	Plugged	Plugged	938.97	934.51	910.78	928.43	907.91	896.72	902.06	903.96	933.71	941.79	915.89	920.63	927.97	918.71	925.59	927.88	935.41	923.06	909.76
03/27/2017	Plugged	NR	NR	NR	Plugged	Plugged	939.52	934.56	NR	NR	NR	NR	NR	903.91	932.97	941.14	916.19	921.98	929.37	919.21	926.83	931.51	935.60	NR	909.78
09/07/2017	Plugged	928.40	916.94	896.54	Plugged	Plugged	938.07	933.73	909.04	920.96	906.48	896.32	900.75	903.50	932.72	941.06	912.05	916.18	924.72	917.43	921.68	923.84	934.27	922.26	909.26
03/01/2018	Plugged	NR	NR	896.93	Plugged	Plugged	938.67	933.78	NR	NR	NR	896.77	903.55	903.59	932.84	941.08	912.36	917.13	927.81	918.00	926.44	NR	935.30	922.83	908.96
09/19/2018	Plugged	935.35	925.05	897.18	Plugged	Plugged	940.10	935.11	911.72	932.48	910.36	896.99	902.69	903.64	934.54	943.27	917.65	923.01	929.63	919.61	927.19	929.61	936.32	923.91	910.38
03/27/2019	Plugged	939.52	928.79	897.23	Plugged	Plugged	940.59	936.36	912.40	936.07	912.88	897.01	903.35	903.30	933.76	942.99	917.00	923.91	929.56	919.09	928.85	932.70	937.61	924.04	910.51
09/05/2019	Plugged	930.09	918.51	896.67	Plugged	Plugged	938.30	933.80	909.99	922.32	907.37	896.44	900.72	902.96	933.27	941.57	913.78	919.23	922.24	916.34	923.18	925.19	934.16	922.56	909.93
03/04/2020	Plugged	935.37	918.09	896.83	Plugged	Plugged	939.77	934.83	911.35	934.03	906.98	896.65	NR	902.94	933.51	941.51	915.49	921.50	928.09	918.50	927.64	930.69	935.67	923.30	909.96
08/31/2020	Plugged	928.60	917.34	896.53	Plugged	Plugged	937.79	933.04	909.25	921.29	906.69	896.32	900.00	902.87	932.42	940.65	911.69	916.87	920.59	915.31	922.03	924.03	934.13	922.26	909.34
03/05/2021	Plugged	925.40	Dry	896.65	Plugged	Plugged	939.47	933.68	907.52	918.30	905.20	896.48	902.17	903.47	931.48	939.27	908.68	913.65	923.41	915.41	920.15	922.39	935.29	922.62	910.93
09/13/2021	Plugged	924.43	Dry	896.46	Plugged	Plugged	937.17	932.55	907.03	919.05	904.27	896.26	898.79	901.44	931.54	939.59	908.01	912.72	920.68	914.96	919.98	921.88	933.53	921.34	909.47
03/02/2022	Plugged	926.37	Dry	896.59	Plugged	Plugged	938.47	933.45	907.71	919.43	904.20	896.39	901.96	902.60	931.86	939.79	909.00	914.14	923.63	915.58	921.61	923.96	934.60	922.30	911.84
09/12/2022	Plugged	928.83	Dry	896.69	Plugged	Plugged	938.46	933.74	909.03	920.48	905.07	896.49	899.10	902.68	932.80	941.28	910.86	916.03	921.22	915.48	921.76	923.60	934.33	921.98	910.58
03/24/2023	Plugged	939.52	Dry	896.89	Plugged	Plugged	940.38	935.40	910.12	936.48	904.50	896.71	903.26	902.81	933.51	942.29	913.29	920.45	928.58	918.36	926.21	929.65	935.83	922.87	909.16
09/13/2023	Plugged	927.58	Dry	896.49	Plugged	Plugged	938.26	933.66	908.39	919.48	904.34	896.26	898.90	902.68	932.75	941.09	910.44	915.63	920.49	915.11	921.08	922.88	933.89	921.99	908.12
03/05/2024	Plugged	924.17	Dry	896.59	Plugged	Plugged	938.06	933.48	907.21	917.60	903.81	896.41	900.52	902.64	932.16	939.95	909.28	914.65	922.72	915.90	919.98	921.84	934.10	922.00	908.15
09/03/2024	Plugged	928.72	Dry	896.46	Plugged	Plugged	938.94	934.26	908.83	919.51	903.96	896.23	899.19	902.68	933.14	941.68	911.25	916.42	921.62	915.75	921.04	922.78	934.27	922.41	908.61