GIBBS & OLSON
CIVIL ENGINEERS • LAND SURVEYORS

March 14, 2024

Deborah Johnson
Cecilia Welch, EIT
Office of Drinking Water
Washington State Department of Health
PO Box 47823
Olympia, WA 98504

RE: Forks Municipal Water Department, ID #26000E, Clallam County, Water System Plan Update, ODW Project #22-0904 – Response to DOH Comments

Dear Deborah and Cecilia,

Attached is the final City of Forks Municipal Water Department Water System Plan (WSP). We have addressed the comments received from Department of Health and the WSP has been revised accordingly. Responses to Department of Health comments are included below in ***bold italicized text*** in the order received in the comment letter.

CHAPTER 1 – WATER SYSTEM DESCRIPTION

1. p. 1-16, GMA Related Plans, Policies, and Development Regulations and p. 1-17, Analysis of Compatibility with Existing Plans. Consider integrating these two sections into one. The local government consistency evaluation focuses on consistency with comprehensive plans and their growth expectations. The explanation of the forthcoming work in the second section should be updated and completed forms included in Appendix E to replace the current blank one. Please fill out the second column. The city and county planners, as applicable, should fill out the third column and sign the form. (The second page of the form entitled "Consistency Review Guidance" is just for your information and need not be included in your plan.)

   The Analysis of Compatibility with Existing Plans section is integrated into the GMA Related Plans, Policies, and Development Regulations section and the section header has been deleted. Signed Local Government Consistency Forms are included in App E.

2. p. 1-20, Direct Connection and Satellite/Remote Systems. Please add these details for the Quillayute Airport system: Group B, ID#02289. We note that Rod Fleck has been working on future planning for the airport, which recommends "an updated evaluation of existing utility systems (water and sewer)" and details potential future water system improvements (draft dated March 22, 2023). Please consider whether you would like to

expand on the discussion here to better integrate these two plans, particularly if it appears this might result in upgrading this to a Group A system.

The Direct Connection and Satellite/Remote Systems section has been revised to include details on the Quillayute Airport water system (UIL). The City does not anticipate upgrading UIL to a Group A water system and does not wish to integrate the UIL Airport Master Plan with this WSP.

CHAPTER 5 – WELLHEAD PROTECTION & APPENDIX G WELLHEAD PROTECTION PLAN

3. Please review WAC 246-290-135 for minimum required content. The following items appear to be missing:
    - A ten-year time of travel boundary for all wellhead protection areas.
      A 10-year time of travel boundary has been developed for all wellhead protection areas, see Figure 5-1.
    - Emergency responder and regulatory agency/local jurisdiction notification.
      Notifications are included in Appendix E.
    - Contingency plan—this relates to the water shortage response plan p. 356 but is not the same thing. The water shortage response plan lists procedures to correct or respond to emergency situations, but it does not identify where and how the City will get water in the meantime. This is the purpose of a contingency plan, specific to contamination events.
      The Water Shortage Response Plan (Appendix I) is updated to include an Alternative Water Sources section. Chapter 5 is updated to reference the Water Shortage Response Plan.
    - Property owner notification documentation—a blank to-be-sent letter is insufficient, plus it refers only to businesses. It is included in Appendix E, Correspondence, and should instead be incorporated into the wellhead protection program.
      A copy of the Wellhead Protection Area Letter, a list of business owners, property owners, and emergency responders the letter has been sent to, and signatures from business owners, property owners, and emergency responders stating the letter has been received is referenced in Chapter 5 – Wellhead Protection Program and included in Appendix E.

4. The June 2005 Golder report Multi-Purpose Storage Assessment Water Resources Inventory Area 20 is not a wellhead protection program. It mentions several aspects of a wellhead protection program, but the referenced appendices do not appear to be included. Has the potential contaminant inventory been updated since the 2005 Golder report? Unlike most other aspects of a water system plan, it must be updated, and notification re-sent every two years.

The Wellhead Protection Program uses and builds on the 2005 Golder Multi-Purpose Storage Assessment Water Resources Inventory Area 20. Chapter 5 of this WSP updates the potential contaminant inventory list for the City of Forks Wellhead Protection Areas. Notifications have been resent, see the response to Comment 3.

CHAPTER 6 – OPERATION AND MAINTENANCE PROGRAM

5. Table 6-2, City of Forks Water System Personnel Certifications, p. 6-2. Please update staff information if turnover has occurred since this was drafted.

Staff and certifications have been updated.

CHAPTER 8 – IMPROVEMENT PROGRAM

6. Since Well 6 improvements were discontinued in 2022, please confirm that this project is intended to continue in the future with a full disinfection design and include this project in the Capital Improvement Program.

See Chapter 1 and attached Drought Relief Well 6 Construction and Testing Report. Well 6 was completed in September 2020 as a drought relief well and uses chlorination for disinfection.

7. Per EPA's Lead and Copper Rule Revisions (LCRR) that went into effect in December 2021, all Group A community water systems are required to submit a lead service line inventory (LSLI) by October 2024. Please include a plan to develop and submit a LSLI in your capital improvement and financial programs.

The City's plan to develop the LSLI by October 2024 is included in Chapter 8: Non-Capital Improvements. The City plans to fund work to develop the LSLI using the Operations & Maintenance Budget.

APPENDIX E – CORRESPONDENCE

8. See comment above about the local government consistency statement.

See the response to Comment 1 above.

9. WAC 246-290-100(4)(k) requires documentation of SEPA compliance. This work is incomplete. An unsigned SEPA checklist is included, and Ecology's SEPA Register shows no threshold determination for this non-project action. ODW performs SEPA review only for privately owned systems that lack SEPA authority. Your SEPA responsible official, Rod Fleck, should issue the determination (FMC 14.10.020). Please replace the checklist with a signed version and include the threshold determination in the revised submittal.

Appendix E contains a signed SEPA Determination of Non-Significance letter.

10. See comment above about the various letters associated with wellhead protection.

See the response to Comment 3 above.

APPENDIX G – WELLHEAD PROTECTION PLAN

11. See above comments under Chapter 5.

See the response to Comments 3 and 4 above.

MISCELLANEOUS

12. Preface. The WSP is stamped but also must be signed before we can approve.

The Final WSP is stamped and signed.

13. The table of contents is split between each individual chapter. Please move each of these individual tables of contents to a generalized table of contents at the beginning of the document.

Individual Table of Contents have been replaced with one Table of Contents at the beginning of the document.

DEPARTMENT OF ECOLOGY

The water rights for the City of Forks are accurately represented in this Plan. Water rights are more than adequate for meeting the projected demand for the next 20 years. Additional efforts are needed to further reduce distribution system leakage. Otherwise, Ecology has no concerns about this water system and has determined that this Plan is not inconsistent with the adopted Watershed Plan for WRIA 20.

Department of Ecology's comments have been noted. The City's goals and continued efforts to reduce distribution system leakage are noted in the Water Loss Control Action Plan in Ch 4.

Please let us know if you have any questions or need any additional clarification.

Sincerely,

Michael E. Marshall, PE

Michael E Marshall

Gibbs & Olson File No.: 0788-0181

CITY OF FORKS

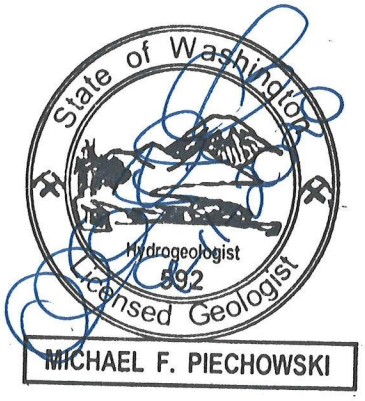
DROUGHT RELIEF WELL 6
CONSTRUCTION AND TESTING REPORT

SEPTEMBER 2020

by

Matthew G. Lutz, GIT
Staff Geologist

Michael F. Piechowski, LHG
Principal Hydrogeologist



City of Forks
Drought Relief Well 6
Construction and Testing Report
September 2020

FIGURES

APPENDICES

City of Forks
Drought Relief Well 6
Construction and Testing Report
September 2020

Introduction

Robinson Noble, Inc. was asked to provide hydrogeologic services for the construction and testing of a drought relief well (Well 6) for the City of Forks (Owner). Well 6 is located off the western end of Division Avenue on City-owned property in Forks(Figure 1), specifically on parcel number 132809210030 within the NE ¼, NW ¼ of Section 9, Township 28 North, Range 13 West in Clallam County, Washington.

Well 6 was drilled as a replacement well for the Owner's original drought relief well, the Campbell Pit Well, which failed to meet the requirements of the Washington State Departments of Ecology and Health. The replacement well was constructed and tested under Washington State Department of Ecology water right certificate number G2-24829. The well was constructed by a Washington licensed driller and in a manner that meets or exceeds the requirements in Chapter 173-160 WAC.

Drilling

Holt Service, Inc (Contractor) of Edgewood, Washington was selected to complete the drilling and construction of Well 6 after a competitive bidding process. They mobilized their Speedstar 71 cable-tool drilling rig and equipment to the site on May 12. Drilling started with a 16-inch temporary casing, used for the sanitary surface seal. The 16-inch casing was advanced to 45 feet below ground surface (bgs). Once the surface seal reached the target depth, drilling continued with 12-inch steel casing, which was advanced to a depth of 152 feet bgs by the end of the day on May 20. The sanitary surface seal of hydrated bentonite grout was installed in the annular space between the 16-inch and 12-inch casings as the 16-inch casing was extracted. A geologic log of the materials penetrated is shown on Figure 2.

During drilling, representative samples of the sediments encountered were collected approximately every ten feet, more frequently within the target aquifer zone, and as the formation changed. Grain-size analyses were completed by Robinson Noble for samples collected between 100 and 140 feet below ground. The sieve analyses are included in the appendix.

The grain-size information, coupled with observations of formation and water level response during drilling made by Robinson Noble and the Contractor indicated that the well screens should be placed between 105 and 139 feet with a section of blank screen between 115 and 124 feet. A 10-foot tailpipe and 21-foot riser pipe was attached to the bottom and top of the screen assembly respectively. A gravel-packed screen design was selected to control sand entry and stabilize the aquifer formation.

Prior to installing the screen assembly, the drive shoe was cut from the 12-inch casing at 146 feet bgs. Following the installation of the screen, the 12-inch casing was pulled back to 106

feet. One foot of the screen remains covered by the casing to reduce upwards (lifting) pressure on the filter pack.

Construction and Development

The design of Well 6 includes 25 feet of 8-inch pipe size, type 304 well screen with a slot size of 0.060 inch placed from 105 to 115 feet and from 124 to 139 feet. An 8-inch tailpipe extends 10 feet past the bottom of the screen to a depth of 149 feet. An additional 21 feet of 10-inch diameter pipe was used as a riser, extending 21 feet above the top of the screen to a depth of 84 feet. With the riser and tailpipe, the entire assembly is 65 feet long, as shown on Figure 2 and Table 1. The filter pack of 6 X 9 Colorado Silica sand fills the annular space between the 12-inch well bore and the 8-inch screen, extending from below the tail pipe to the top of the 10-inch riser, securing the entire screen assembly in place and stabilizing the formation. The transmitting capacity of this well screen is approximately 922 gpm at the manufacturer's recommended entrance velocity of 0.1 feet per second.

Table 1. Screen assembly details

Item	Top (feet BGS)	Bottom (feet BGS)	Comments
Riser 10-inch	84	105	Includes 7" reducer Mild-steel pipe
8-inch pipe-size screen 0.060-inch slot	105	115	Stainless-steel well screen
8-inch pipe-size blank screen	115	124	Mild-steel pipe
8-inch pipe-size screen 0.060-inch slot	124	139	Stainless-steel well screen
Tailpipe 8-inch	139	149	Mild-steel pipe with bail bottom

Notes: All screens are 8-inch outside diameter
All screens are Type 304 stainless-steel, v-wire construction
All measurements are referenced to ground surface at the time of well construction

Prior to setting the screen in the borehole, the drive shoe was cut off the 12-inch casing at 146 feet below ground. After the screen assembly was set, the filter-pack material was placed into the annulus as the 12-inch casing was pulled back with hydraulic jacks to expose the screen to the formation. The casing was pulled back in stages in order to add pack material and surge the exposed screen to help settle the pack and eliminate any voids. The 12-inch casing was pulled back to 86 feet below ground, leaving the upper foot of screen covered, and then the pack reserve within the annular volume between the casing and riser above the screen was filled. The water column was then cleared of fine suspended material with a dart-valve bailer.

Surge-and-bail development was conducted by surging each 2-foot section of well screen for 15-minute intervals while monitoring and replenishing the pack material and bailing out accumulated fine formation material brought into the screen from the surging action as needed. Several rounds of surging and adding pack occurred through the length of the screen. Well development was considered complete on June 8 when the pack level remained stable and no further formation material was brought into the screen during development.

Testing

Following development, the Contractor installed their submersible test pump for step-rate and constant-rate testing. During testing, water levels were measured both manually and electronically with a pressure transducer and datalogger. The Owner made the existing Campbell Pit Well, which was 235 feet south of Well 6, available for manual measurements. Land surface elevations were estimated from Google Earth and are approximately 301 feet above MSL for both wells. Table 2 shows the drawdown of the monitoring well in relation to the pumped well.

Table 2. Observation well monitoring

Well	Distance Pumping Well (Feet)	Drawdown at 4,320 minutes Constant-rate test (Feet)	Elevation of Ground Surface (est. Feet)
Well 6	0	6.12	301
Campbell Pit Well	235	0.71	301

The step-rate test was conducted on June 10. The well was tested at a starting point of 95 gpm, then increased to 177 gpm, 252 gpm, and finally 349 gpm (where the pump reached its maximum flow rate). Step-test results are shown on Figures 3 and 4 and are listed in Table 3. The Campbell Pit Well is not active well and, therefore, was not pumping during the tests. However, Wells 4 and 5 which are approximately 615 and 770 feet to the north, respectively, were run as needed for the City to meet summer water demands at various times during the testing and recovery period.

Based on the step-test results, a 344-gpm rate was selected for the 72-hour test. The 72-hour test was started on June 11 at 7:00 AM and ran uninterrupted for 72-hours. There were minor variations in the pumping water level after 400 minutes that appear to be interference drawdown due to the operation of the City's nearby Wells 4 and/or 5. A full suite of water quality samples were collected near the end of the test.

Test results are shown in Table 3 and on Figures 5-8.

Table 3. Pumping test results

Date	Discharge Rate (gpm)	Elapsed Time (hrs)	Drawdown (feet)	Specific Capacity (gpm/ft)
6/10	95	0.75	1.13	84.07
	177	0.75	2.31	76.62
	252	0.75	3.52	71.59
	349	0.75	5.44	64.15
6/11-14	344	72.00	6.12	56.21

During the constant-rate test, Well 6 produced 344 gpm for 72 hours with a drawdown of 6.12 feet from the pre-test static water level of 93.04 feet bgs. The calculated 72-hour specific capacity for Well 6 is 56.21 gpm/ft. Drawdown at the conclusion of the 72-hour test at 344 gpm was 0.71 feet at the Campbell Pit Well (Table 2).

The aquifer recovered to 75% of the original static water level in two minutes and to 90% after three hours. The water level had recovered to 93% of the pre-test static on the following morning when the transducer was removed to allow the contractor to remove the test pump, but this water level was impacted by the operation of the City's other wells during the testing and recovery period. A t/t' recovery plot for Well 6 is presented in Figure 9.

Hydrogeologic Analysis

The response of the aquifer during testing can be characterized with two parameters: transmissivity and storativity. Aquifer transmissivity (T) is a measure of the amount of water that can be moved horizontally by the full saturated thickness of the aquifer under a hydraulic gradient of one, measured in gallons per day per foot of aquifer thickness. Storativity (or storage coefficient) is the volume of water released from storage per unit decline in hydraulic head in the aquifer per unit area of the aquifer. Low storage coefficients indicate a confined aquifer, while a higher storage coefficient suggests an unconfined aquifer.

Calculating transmissivity, using the Cooper-Jacob straight-line method, requires a semi-log plot with the amount of drawdown on a linear scale and time plotted on a log scale (Figure 5 and 7). Storage in the well casing changes the water level response during the earliest portion of the testing, making the first three minutes of data unusable for analysis. Therefore, the Cooper-Jacob approach can only be applied to the middle and later portion of the data set where the casing storage effects do not overprint the log-linear aquifer response. Drawdown and recovery curves were used to calculate transmissivity values, ranging from approximately 150,000 to 200,000 gallons per day per foot (gpd/ft). We determined a transmissivity of 175,000 gpd/ft to be representative of aquifer conditions near Well 6.

To calculate the storativity, we used time-drawdown plots (Figure 6 and 8) of the observation well data and the measured transmissivity of the aquifer at the observation well from a previous test. The resulted in storativity values of 0.075 from the time-drawdown plot, indicating the aquifer is weakly confined. This is consistent with our observations.

Geology

The geology of the Forks area is primarily composed of deposits from the Vashon glaciation. Gerstel and Lingley (2000)[1] mapped the area as glacial outwash; however, our observations revealed glacial till in the immediate area of the well site, which is likely the underlying layer beneath the mapped outwash. Drilling was observed to penetrate till deposits for the first 108 feet. The material transitioned from brown to gray as it deepened. Water-bearing outwash deposits, consisting of mostly gray sand and gravel with some silt, were found below 108 feet to 115 feet bgs. The outwash deposits quickly transitioned to a thick band of silt and clay deposits from 115 feet to 123 feet bgs. Beneath 123 feet until 140 feet bgs more water bearing outwash deposits, similar to those above, were found. Gray clay was penetrated at 140 feet until the deepest point of the well at 152 feet bgs.

[1] Gerstel, Wendy J., and Lingley, William S., Jr., 2000, Geologic map of the Forks 1:100,000 quadrangle, Washington: Washington Division of Geology and Earth Resources, Open File Report 2000-4, scale 1:100,000

Water Chemistry

Water quality samples were collected by Robinson Noble and submitted to Water Management Laboratories in Tacoma for analysis. Samples were collected and analyzed for bacteria and radionuclides, as well as inorganic, synthetic, and volatile organic compounds. Full water quality results are included in the appendices, though at the time of the preparation of this report, radionuclide results have not been received. When the samples were collected, the water was sand free, clear, colorless, had no adverse taste

Inorganic Test Results: Analysis shows all measured parameters to be significantly below the maximum contamination level for each compound tested.

Volatile Organic Compound Test Results: Analysis shows all measured parameters to be below the detection level for each compound tested.

Synthetic Organic Compound Test Results: Analysis shows all measured parameters to be below the detection level for each compound tested.

Bacteriological Test Results: Bacteriological analysis was acceptable with less than 1 total coliform per 100 ml.

Radionuclide Test Results: Analysis has not been completed and reported at the time this report was prepared. We will forward those results when they are received.

Findings

Well 6 has a specific capacity of 56.21 gpm/ft at the test pumping rate of 344 gpm. After 72 hours of pumping, the water level was 96.36 feet bgs, which represents 6.12 feet of drawdown from static water level. The pumping water level after 100 days of pumping Well 6 at 344 gpm, estimated from the aquifer parameters determined during the 72-hour test (Figure 5), should be approximately 7 feet bgs. Aquifer transmissivity calculated from drawdown, recovery and observation well data from the 72-hour test ranges from 150,000 to 200,000 gpd/ft. The calculated storage coefficient of 0.075 indicates the well is in a weakly confined aquifer, which is consistent with our other local observations. Forks Well 6 is rated for production rates of up to 350 gpm to meet required demand. While the well is rated for 350 gpm, the long-term testing was limited to 344 gpm, which was the practical long-term limit of the installed test pump as configured for testing.

The initial chemical analysis suggests the water quality is of excellent quality. The water meets drinking water standards for all the tested water quality parameters.

Recommendations

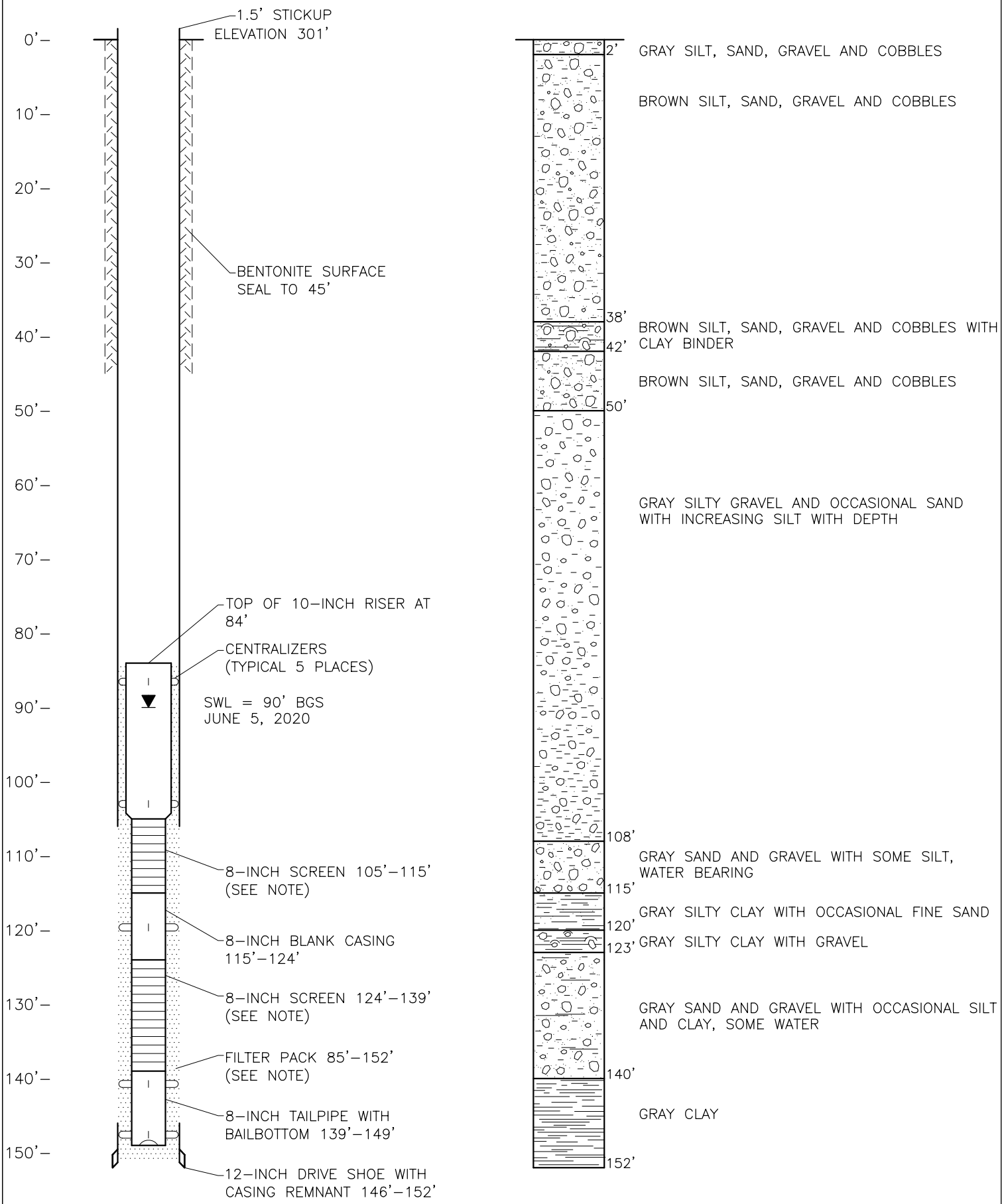
Robinson Noble recommends installation of a pump capable of up to 350 gpm positioned so that the inlet is positioned in the 8-inch diameter blank section between the well screens, 115 to 124 feet below ground. We estimate the pumping water level will be about 96 feet bgs after one day and 97 feet bgs after 100 days of continuous pumping at 350 gpm. Two one-inch diameter water level sounding tubes should be installed with the pump and should extend to the top of the pump bowls. A water level transducer should be installed in the well as soon as possible to generate a baseline hydrograph for the aquifer at this location. This well should be added to the Owner's manual or electronic water level monitoring program to record water

level changes. We recommend that static and pumping water levels be measured manually weekly and recorded along with total production and instantaneous discharge rate.

The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted hydrogeologic practices and are the result of analysis by Robinson Noble staff. This report, including any attachments to it, is for the exclusive use of the City of Forks. Unless specifically stated in the document, no warranty, expressed or implied, is made.

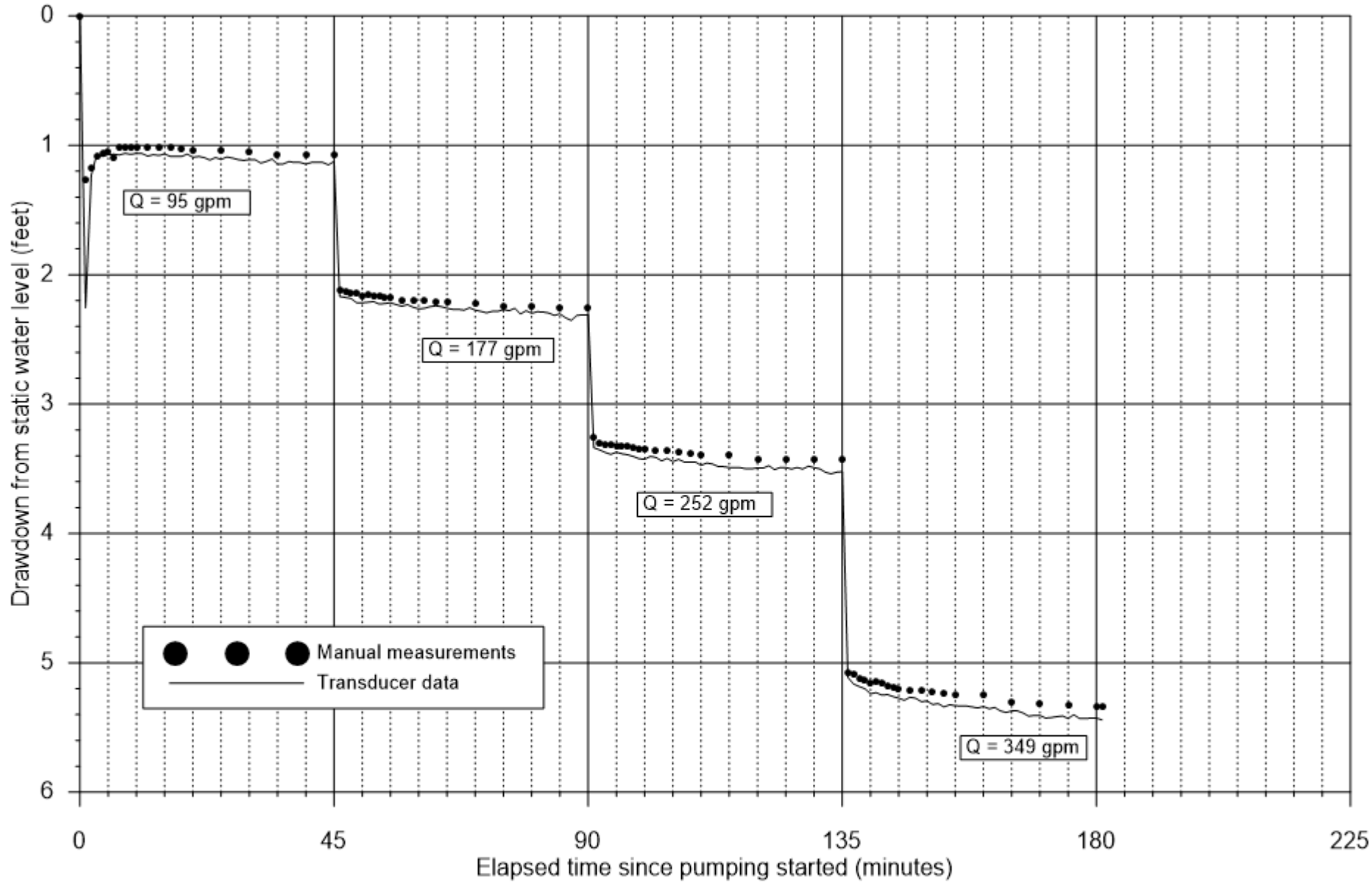
FIGURES

ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MFP September 2020 1308-005A	Clallam County T 28 N/R 13 W - 09 Scale 1" = 200'	Figure 1 **Well Location Map** City of Forks: Well 6



ROBINSON NOBLE	PM: MFP September 2020 1308-005A	Clallam County T 28 N/R 13 W - 09 Unique ID: BJE-749	NOTE: WELL SCREENS ARE 60–SLOT (0.060–INCH OPENING), TYPE 304, STAINLESS STEEL. FILTER PACK IS 6x9 SILICA SAND

Figure 2
Construction Detail and Geologic Log
City of Forks: Well 6

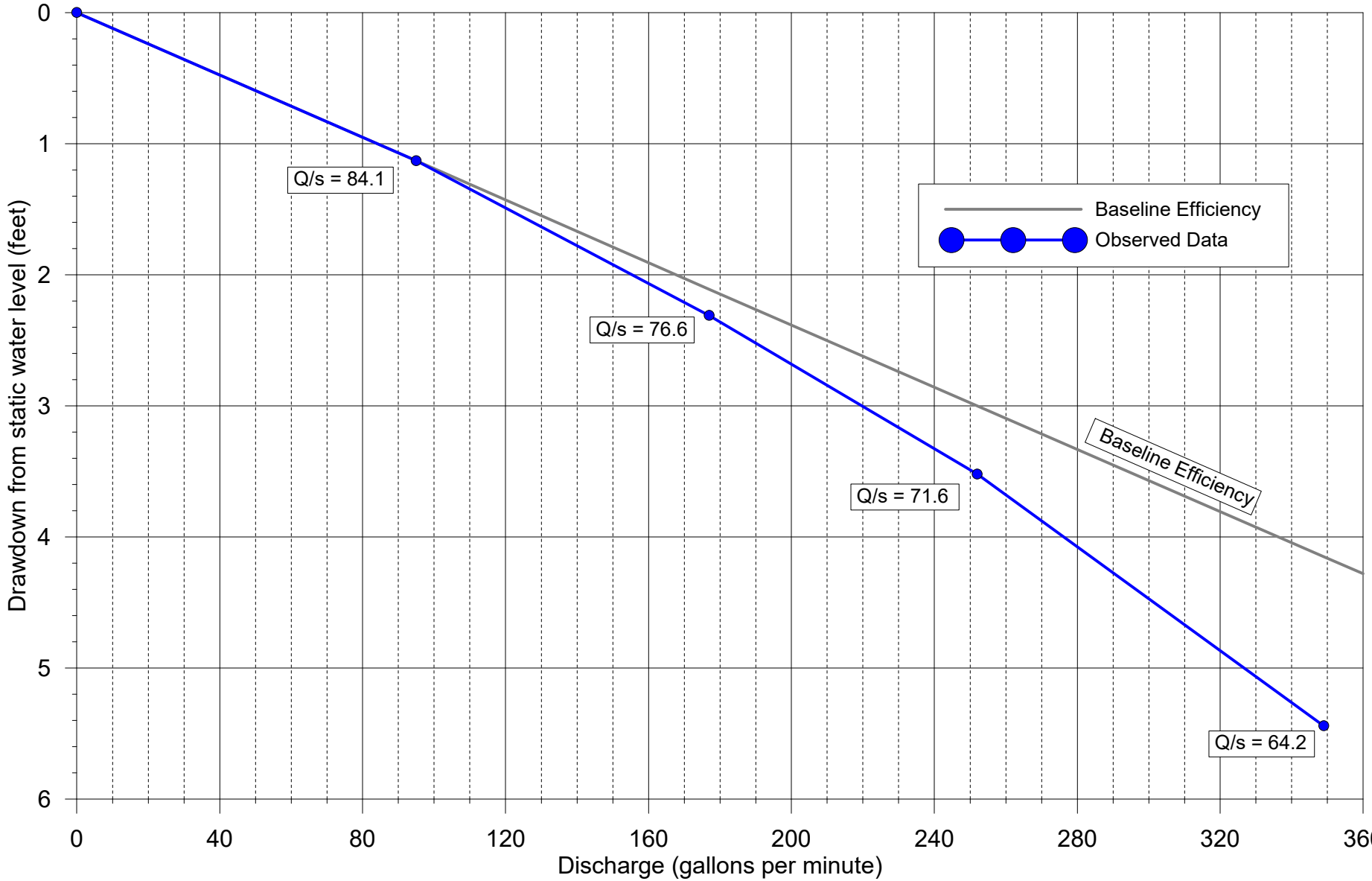


ROBINSON NOBLE

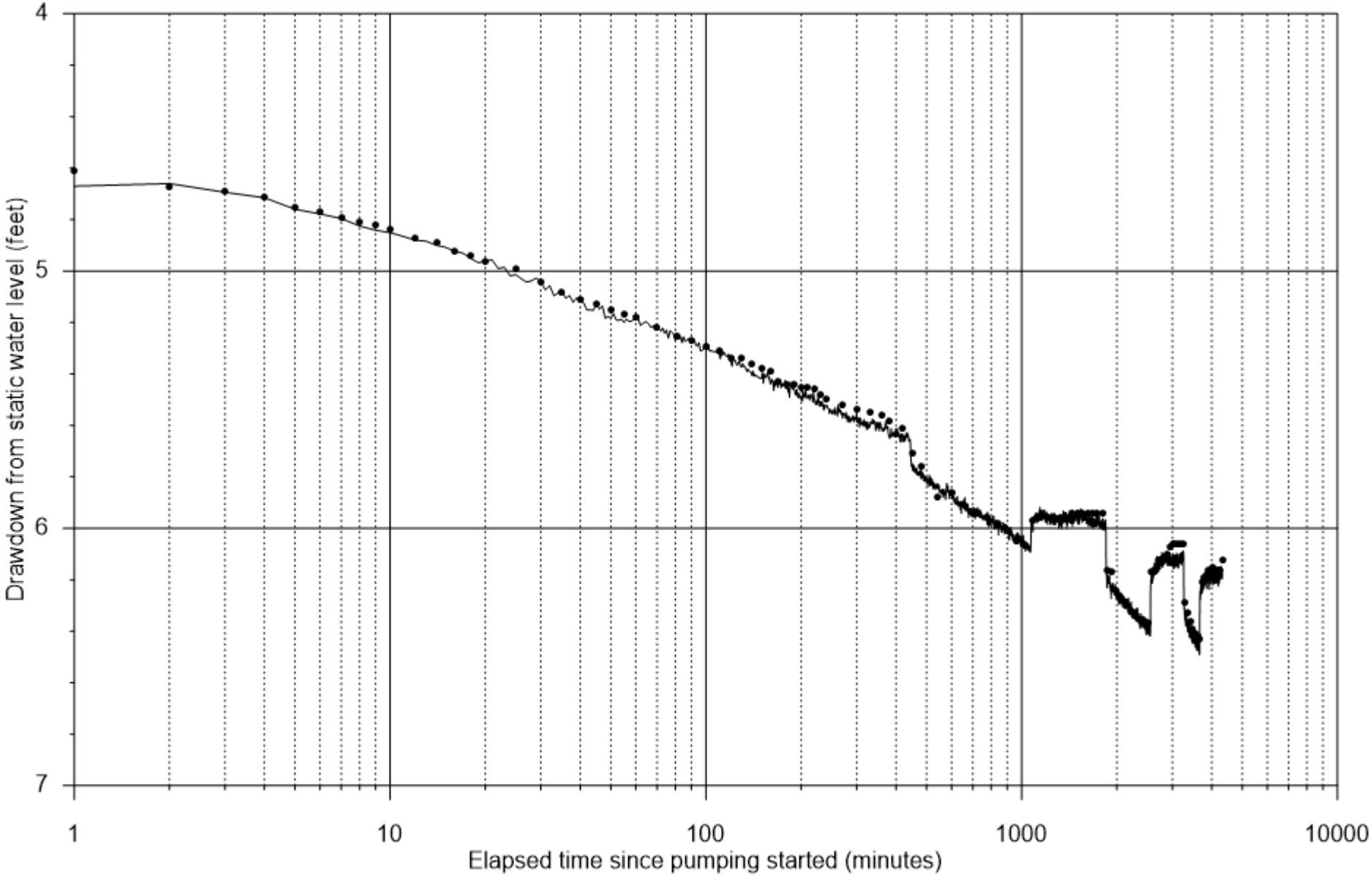
Date: September 2020
Job#: 1308-005A
PM: MFP

Test conducted: June 10, 2020
SWL: 92.88' (6/10/20 at 12:12)
95, 177, 252, and 349 GPM
Measuring Point (MP) is 2.80'
above land surface

Figure 3
Step-Rate Plot
City of Forks Well 6



ROBINSON NOBLE	Date: September 2020 Job#: 1308-005A PM: MFP	Test conducted: June 10, 2020 SWL: 92.88' (6/10/20 at 12:12) 95, 177, 252, and 349 GPM Measuring Point (MP) is 2.80' above land surface	**Figure 4** Specific Capacity Step-Rate Test Plot City of Forks Well 6

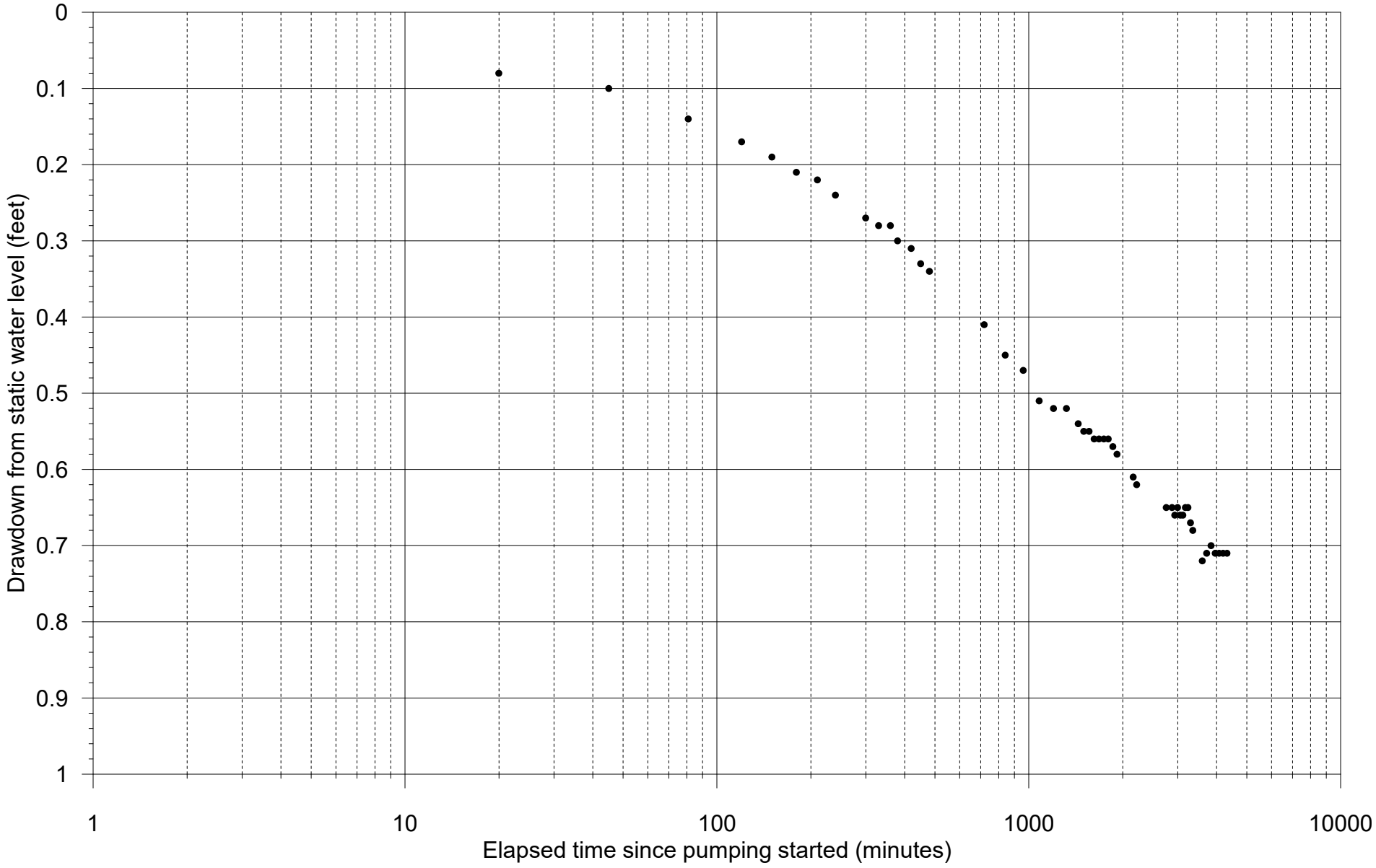


ROBINSON NOBLE

Date: September 2020
Job#: 1308-005A
PM: MFP

Test conducted: June 11-14, 2020
SWL: 93.04' (6/10/20 at 7:00)
344 GPM
Measuring Point (MP) is 2.80'
above land surface

Figure 5
Drawdown Plot - Pumped Well
City of Forks Well 6

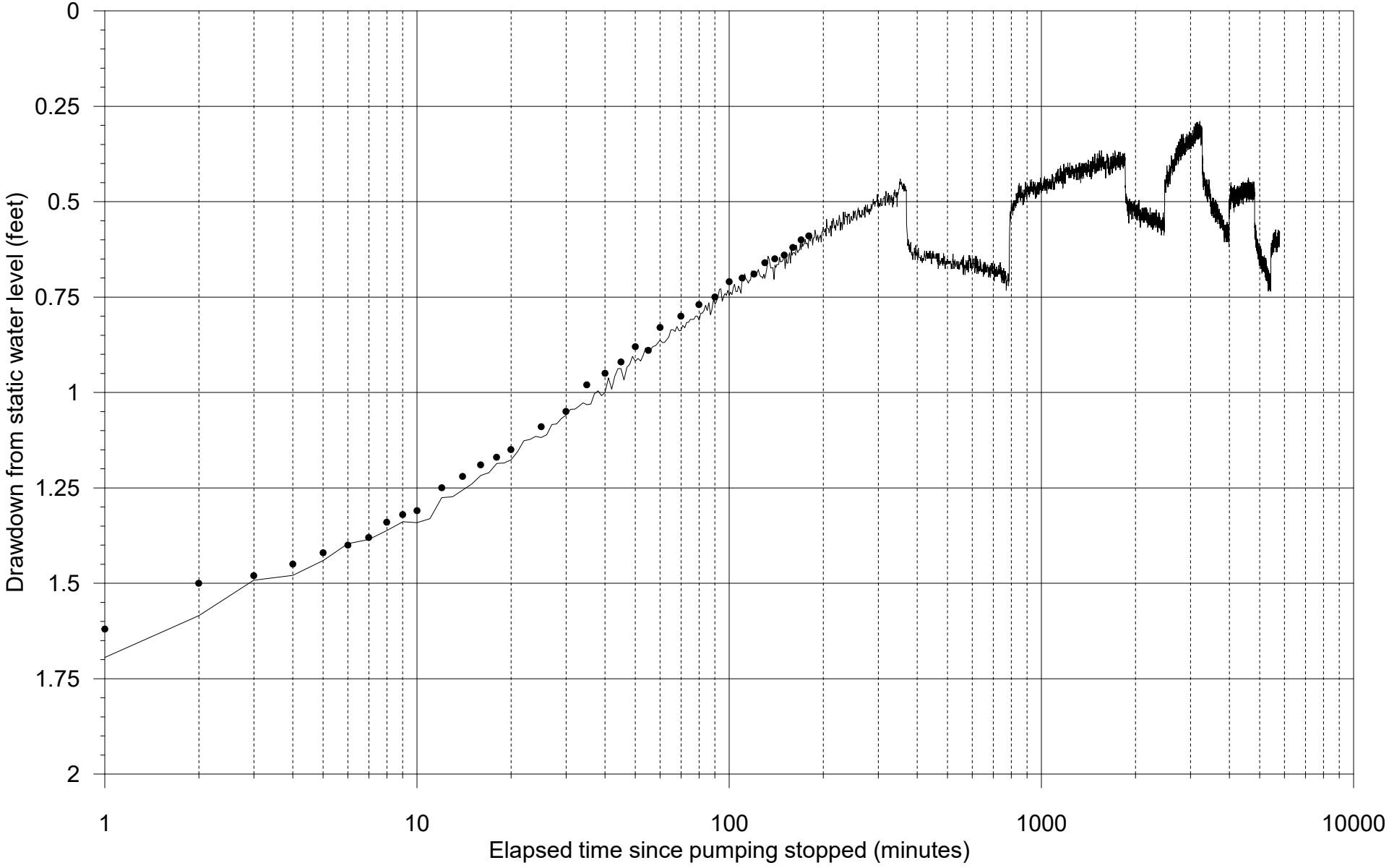


ROBINSON NOBLE

Date: September 2020
Job#: 1308-005A
PM: MFP

Test conducted: June 11-14, 2020
SWL: 92.04' (6/10/20 at 7:00)
Measuring Point (MP) is 2.55'
above land surface. 344 GPM

Figure 6
Drawdown Plot - Observation Well
City of Forks Well 6

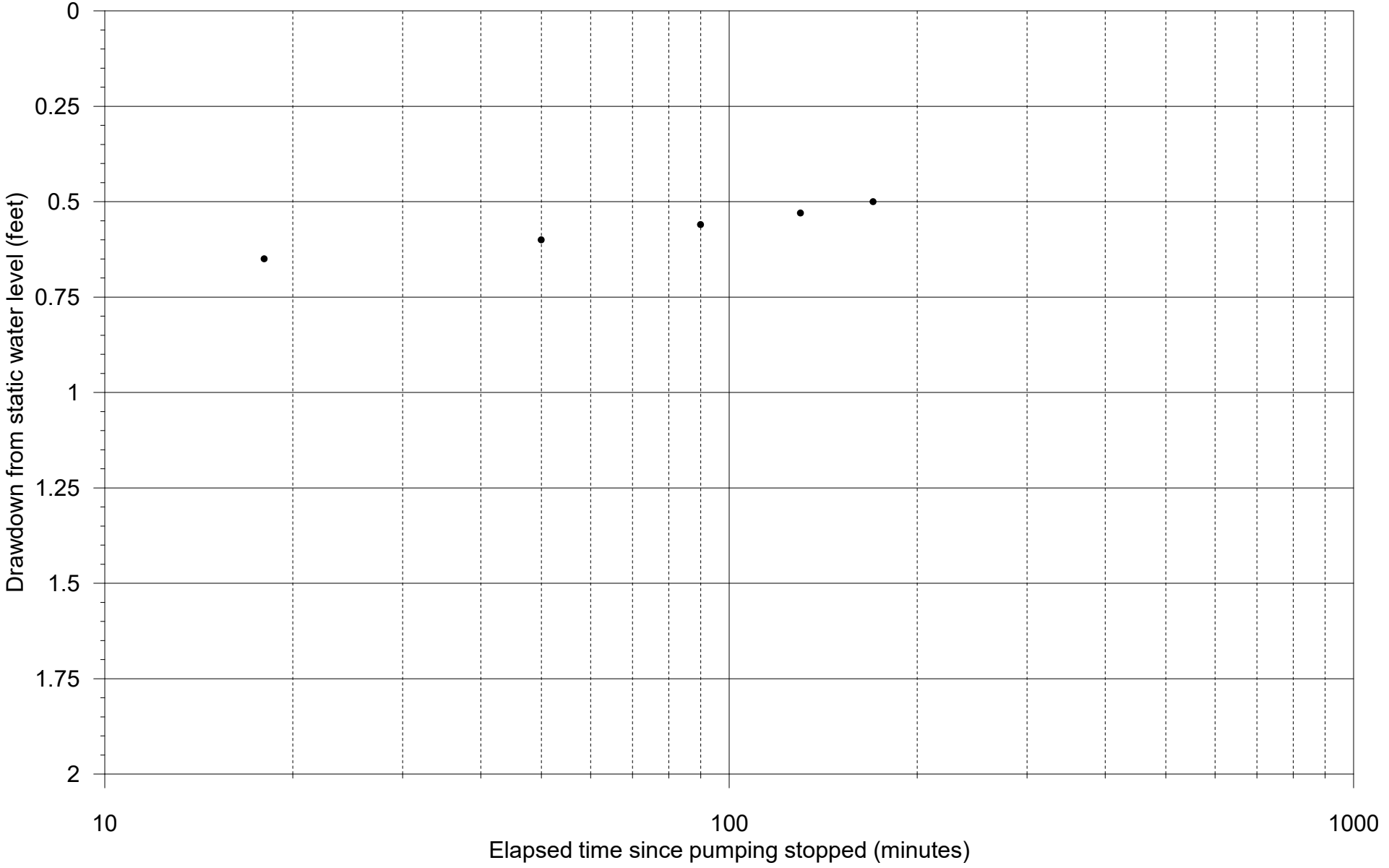


ROBINSON NOBLE

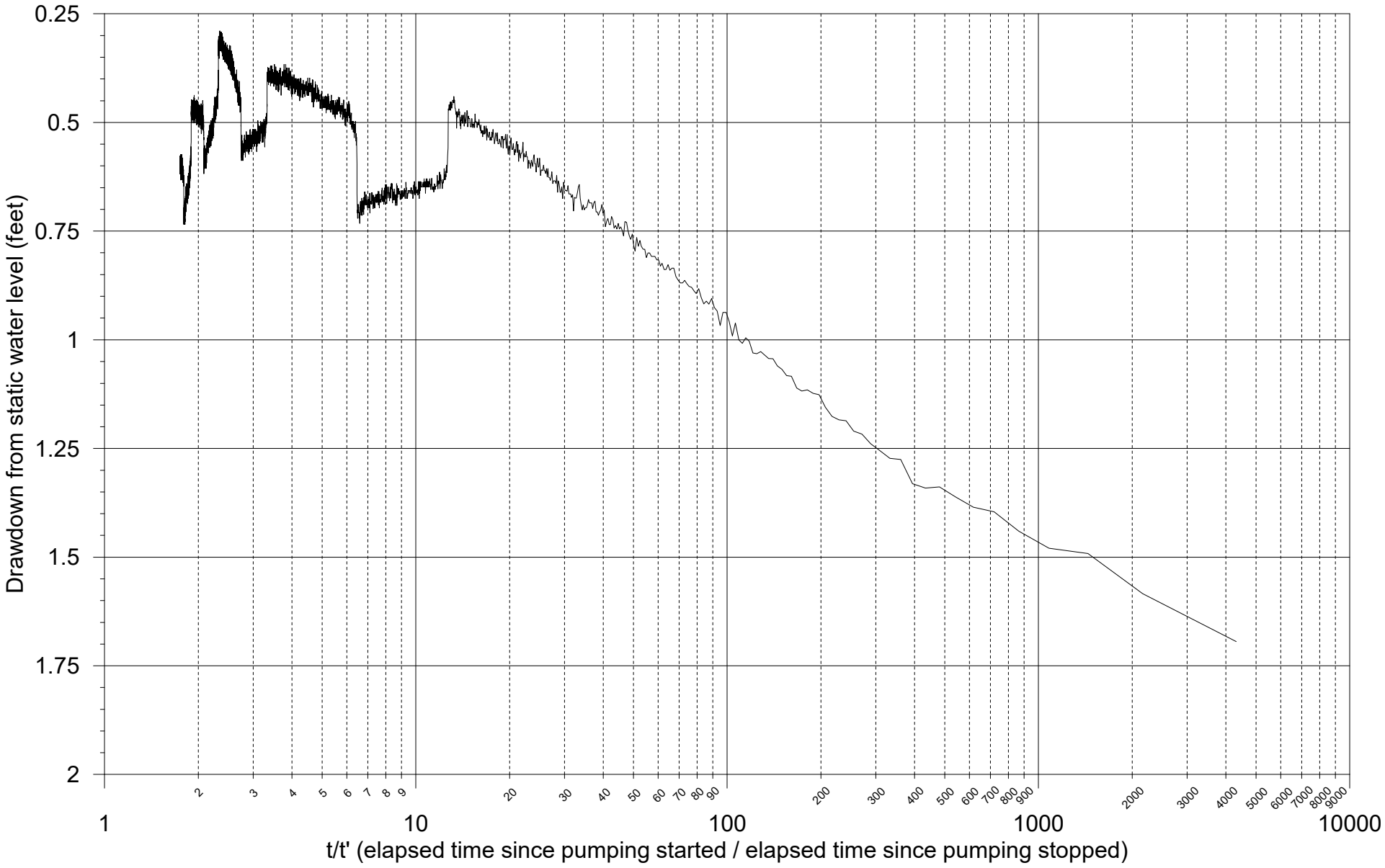
Date: September 2020
Job#: 1308-005A
PM: MFP

Test conducted: June 14, 2020
SWL: 93.04' (6/10/20 at 7:00)
Measuring Point (MP) is 2.80' above land surface. 344 GPM

Figure 7
Recovery Plot - Pumped Well
City of Forks Well 6



ROBINSON NOBLE	Date: September 2020 Job#: 1308-005A PM: MFP	Test conducted: June 14, 2020 SWL: 92.04' (6/10/20 at 7:00) Measuring Point (MP) is 2.55' above land surface. 344 GPM	**Figure 8** Recovery Plot - Observation Well City of Forks Well 6



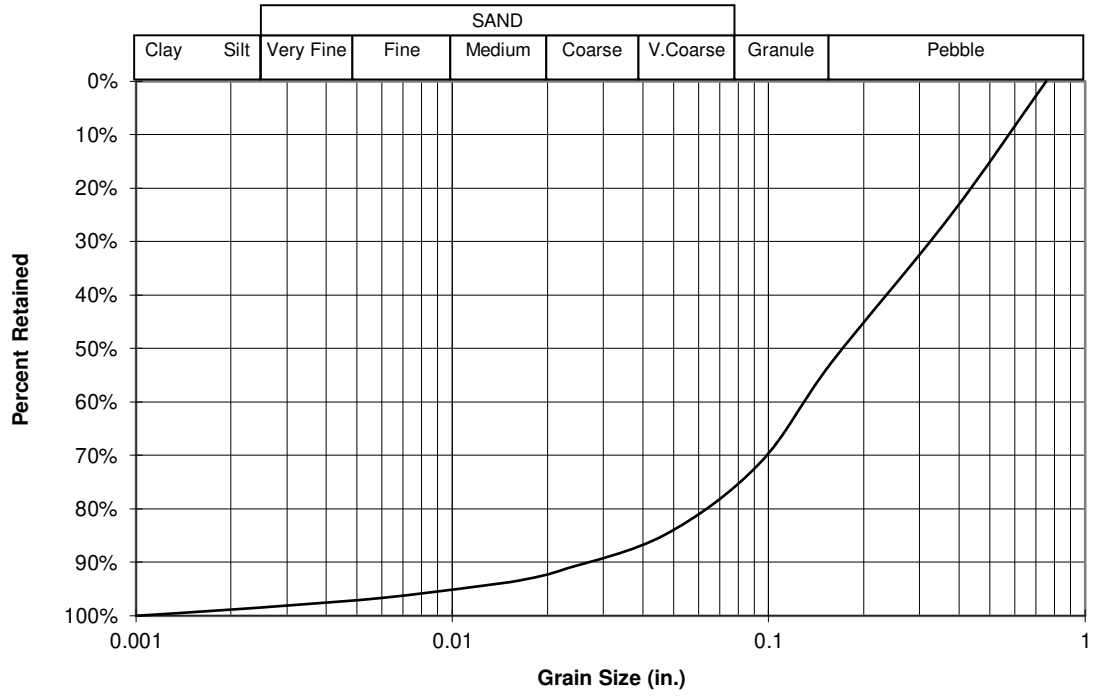
ROBINSON NOBLE	Date: September 2020 Job#: 1308-005A PM: MFP	Test conducted: June 14, 2020 SWL: 93.04' (6/10/20 at 7:00) Measuring Point (MP) is 2.80' above land surface. 344 GPM	**Figure 9** t/t' Recovery Plot - Pumped Well City of Forks Well 6

APPENDIX A

Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**100**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	139.6	25%		0	0	0.17812	0.25707
	0.157	293.4	53%		0	0.098349	0	0
	0.093	398.7	72%		0	0	0	0
	0.047	472.1	85%		0.027315	0	0	0
	0.023	507.7	91%		0	0	0	0
	0.017	518.9	93%		0	0	0	0
	0.012	526	94%		0	0	0	0
	0.006	538	97%		0	0	0	0
	0.003	546	98%		0	0	0	0
	0.001	557	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			100	0.027	0.098	0.178	0.257	

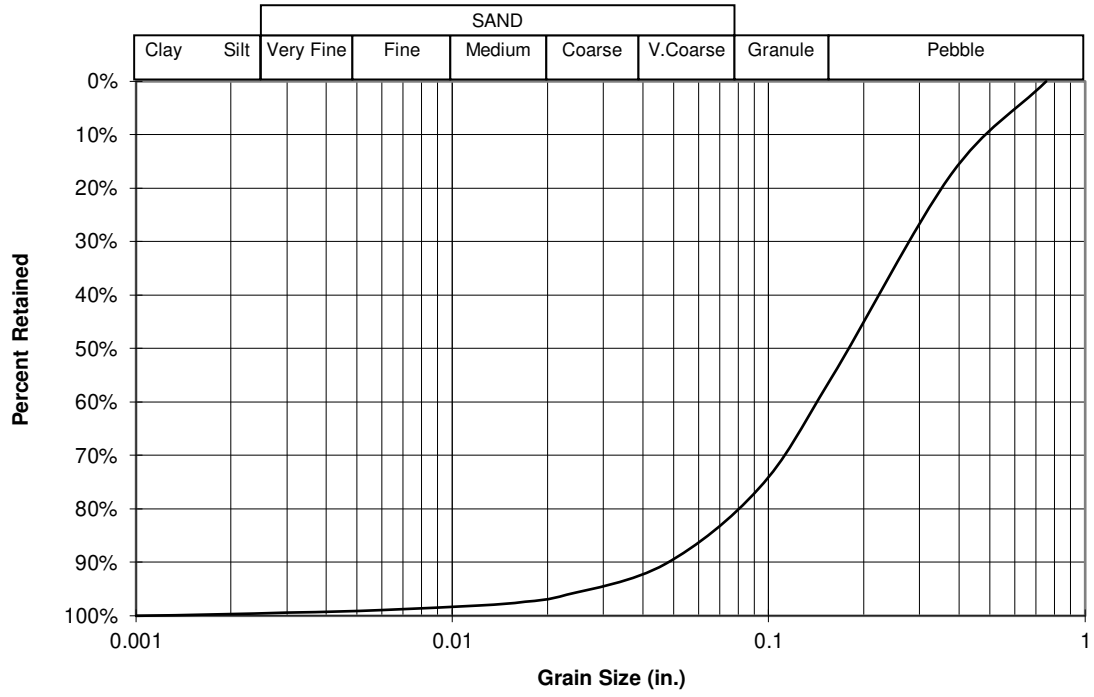
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**108**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	82.5	18%		0	0	0.188865	0.246198
	0.157	261.4	56%		0	0.112074	0	0
	0.093	358.2	76%		0.047797	0	0	0
	0.047	424.6	90%		0	0	0	0
	0.023	452	96%		0	0	0	0
	0.017	458.1	97%		0	0	0	0
	0.012	461.3	98%		0	0	0	0
	0.006	465.5	99%		0	0	0	0
	0.003	467.8	99%		0	0	0	0
	0.001	470.5	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			108	0.048	0.112	0.189	0.246	

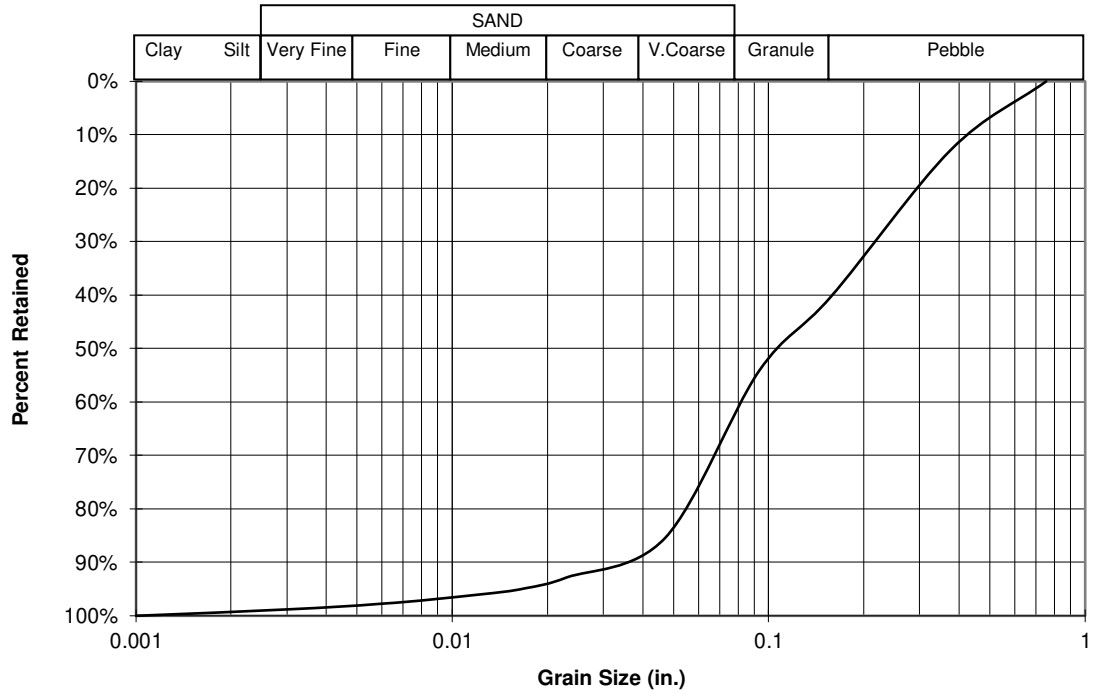
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**111**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	57.2	13%		0	0	0	0.158933
	0.157	179	40%		0	0	0.112272	0
	0.093	241.1	54%		0	0.069648	0	0
	0.047	379.5	85%		0.031949	0	0	0
	0.023	412.7	93%		0	0	0	0
	0.017	422	95%		0	0	0	0
	0.012	427.3	96%		0	0	0	0
	0.006	434.8	98%		0	0	0	0
	0.003	439.3	99%		0	0	0	0
	0.001	444.8	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			111	0.032	0.070	0.112	0.159	

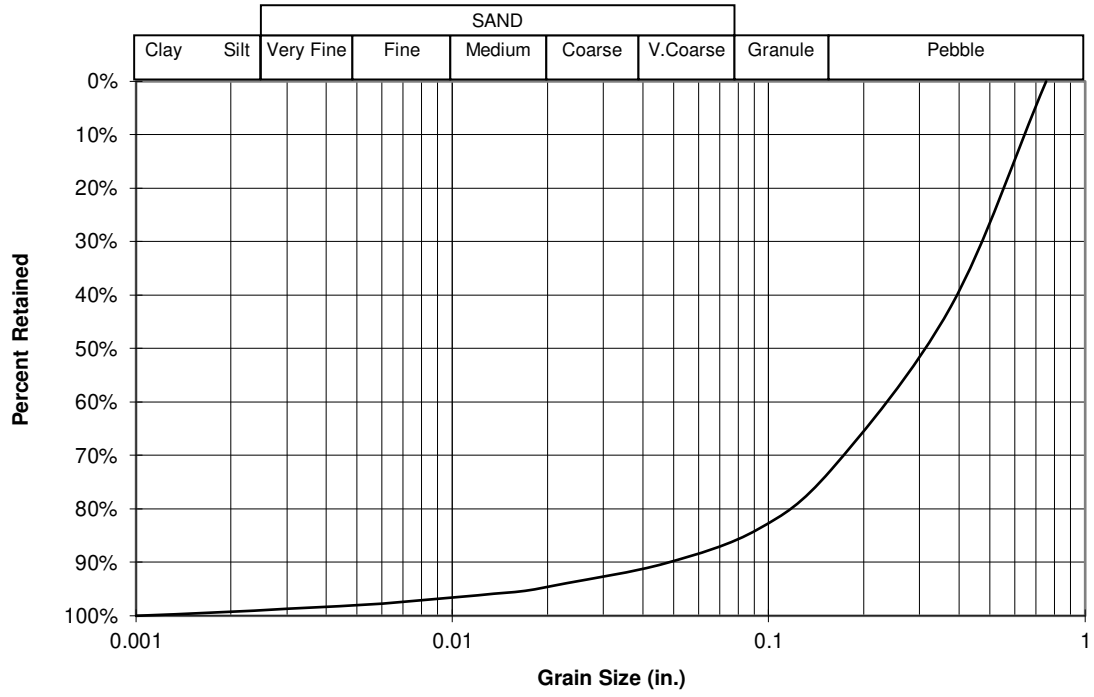
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**114**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0.394391
	0.375	228.2	42%		0	0.175916	0.319045	0
	0.157	393	73%		0	0	0	0
	0.093	452.8	84%		0.048311	0	0	0
	0.047	487.9	90%		0	0	0	0
	0.023	507.9	94%		0	0	0	0
	0.017	515.4	95%		0	0	0	0
	0.012	519.9	96%		0	0	0	0
	0.006	528.4	98%		0	0	0	0
	0.003	533.9	99%		0	0	0	0
	0.001	541	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			114	0.048	0.176	0.319	0.394	

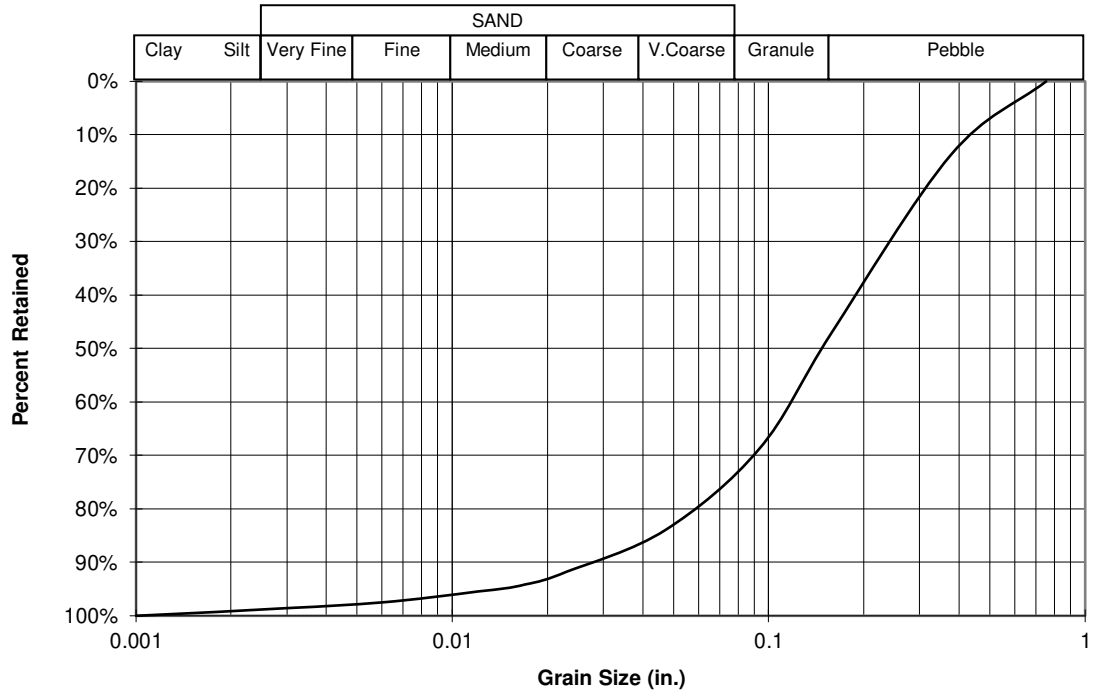
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**123**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	65	14%		0	0	0	0.203697
	0.157	222.7	47%		0	0	0.148594	0
	0.093	325.1	69%		0	0.089445	0	0
	0.047	396.4	84%		0.028403	0	0	0
	0.023	433.4	92%		0	0	0	0
	0.017	444.7	94%		0	0	0	0
	0.012	450.9	95%		0	0	0	0
	0.006	460.3	97%		0	0	0	0
	0.003	465.5	99%		0	0	0	0
	0.001	472.3	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			123	0.028	0.089	0.149	0.204	

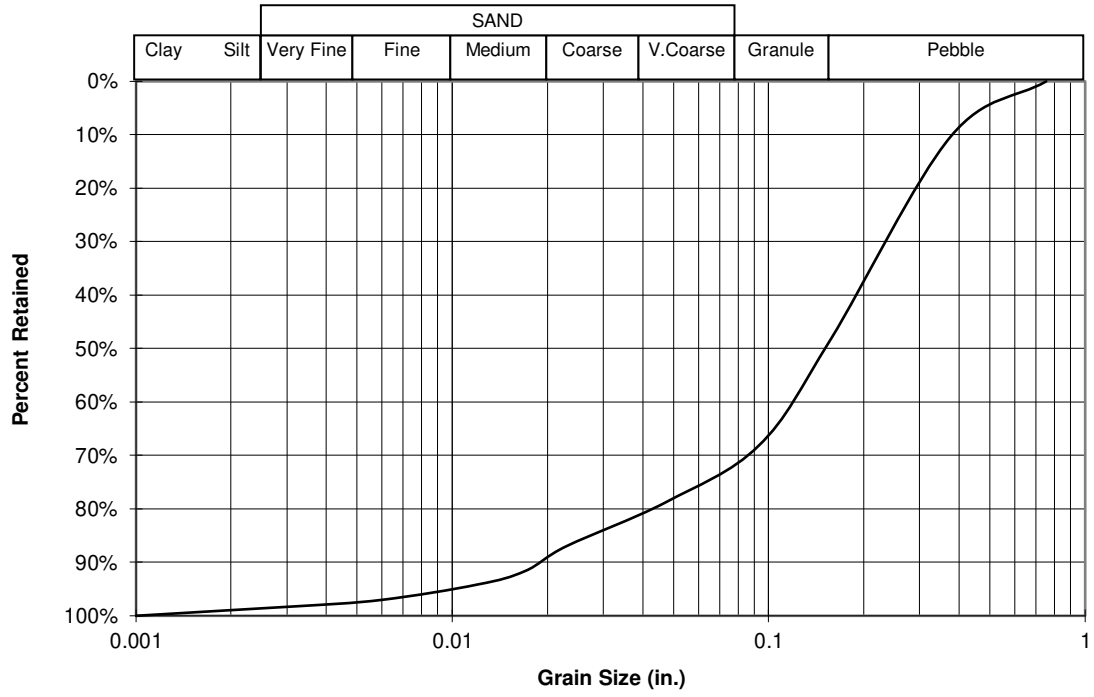
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**126**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	64.4	10%		0	0	0	0.203708
	0.157	300.1	48%		0	0	0.150912	0
	0.093	425.2	68%		0	0.084915	0	0
	0.047	491.2	79%		0	0	0	0
	0.023	542	87%		0.01904	0	0	0
	0.017	571.7	92%		0	0	0	0
	0.012	587.5	94%		0	0	0	0
	0.006	605.1	97%		0	0	0	0
	0.003	613.2	98%		0	0	0	0
	0.001	624	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			126	0.019	0.085	0.151	0.204	

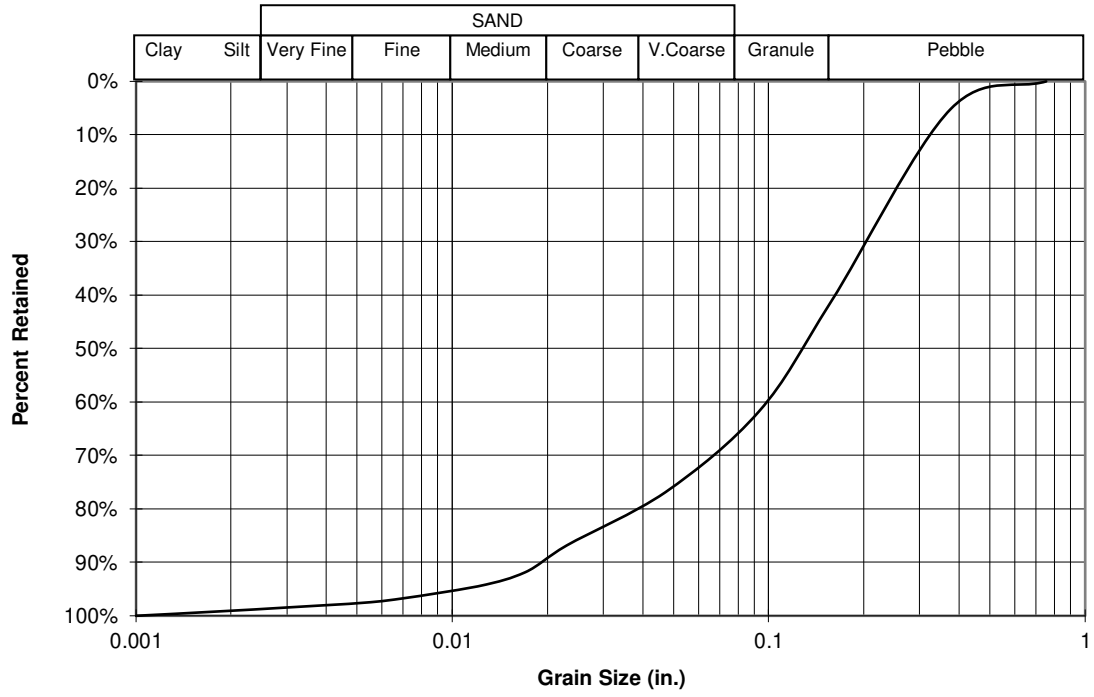
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**129**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	26	5%		0	0	0	0.164382
	0.157	208.5	41%		0	0	0.129624	0
	0.093	312.3	62%		0	0.067791	0	0
	0.047	388.5	77%		0	0	0	0
	0.023	439.2	87%		0.019186	0	0	0
	0.017	464.4	92%		0	0	0	0
	0.012	477.7	94%		0	0	0	0
	0.006	491.6	97%		0	0	0	0
	0.003	497.7	98%		0	0	0	0
	0.001	505.8	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			129	0.019	0.068	0.130	0.164	

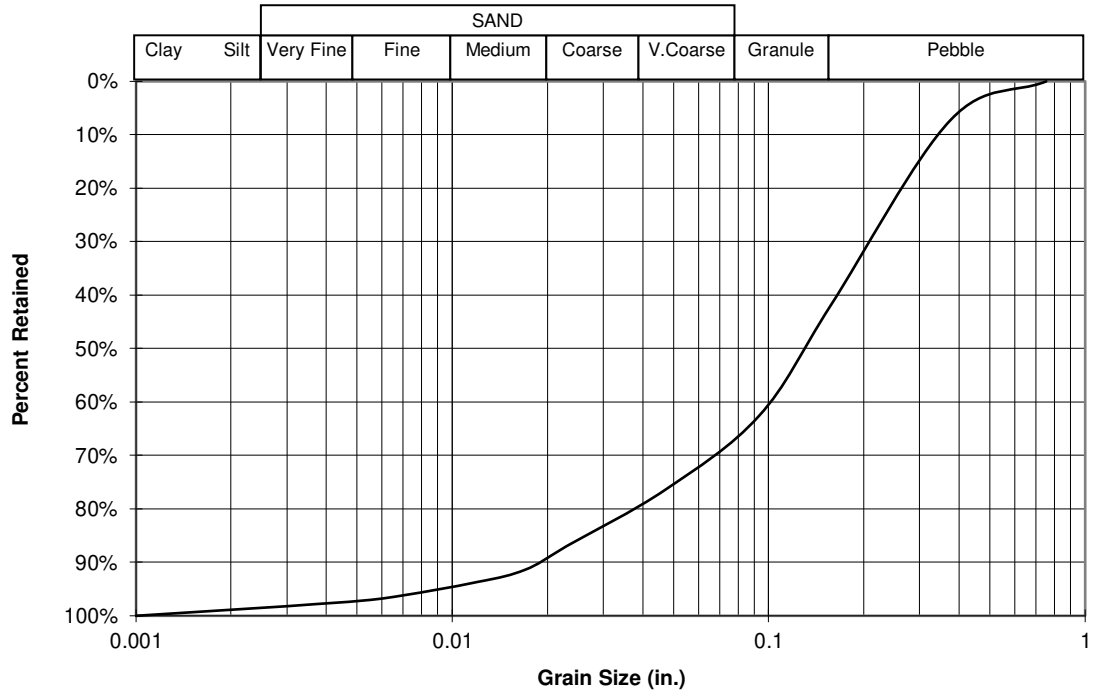
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**132**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	39.1	7%		0	0	0	0.168556
	0.157	227	42%		0	0	0.131798	0
	0.093	339.5	63%		0	0.06827	0	0
	0.047	414.5	76%		0	0	0	0
	0.023	471.6	87%		0.018815	0	0	0
	0.017	495.6	91%		0	0	0	0
	0.012	508.1	94%		0	0	0	0
	0.006	524.7	97%		0	0	0	0
	0.003	532.6	98%		0	0	0	0
	0.001	542.6	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			132	0.019	0.068	0.132	0.169	

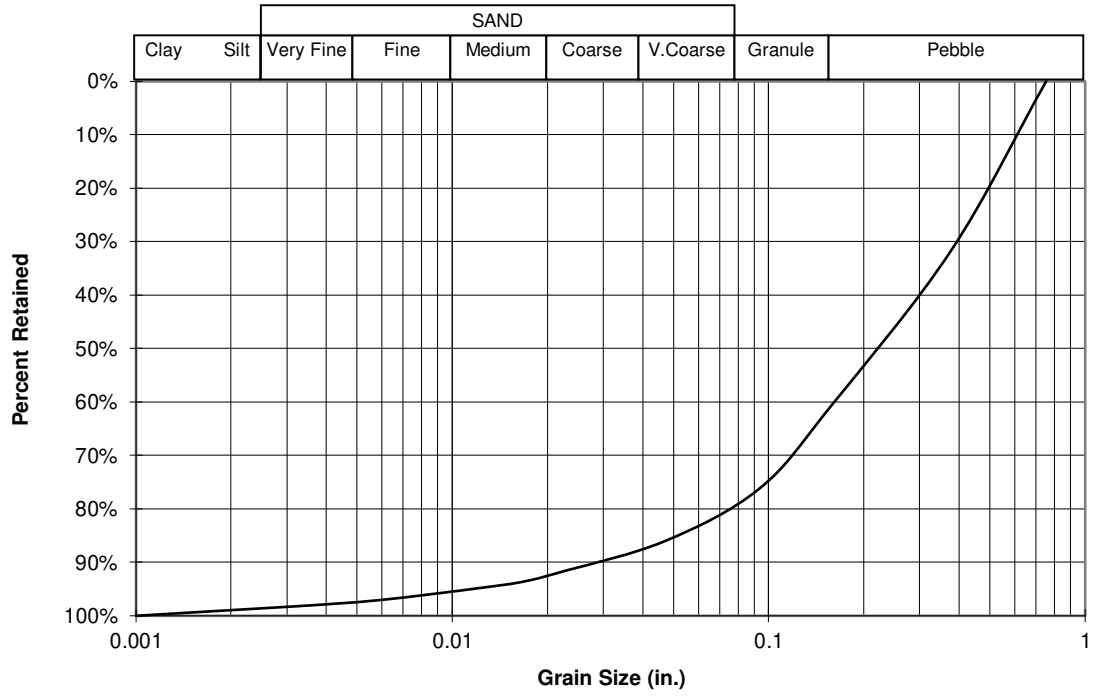
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**135**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	187.7	32%		0	0	0.237537	0.312944
	0.157	358.5	61%		0	0.118739	0	0
	0.093	450.6	76%		0	0	0	0
	0.047	508	86%		0.02943	0	0	0
	0.023	540.4	91%		0	0	0	0
	0.017	552.5	94%		0	0	0	0
	0.012	560.2	95%		0	0	0	0
	0.006	572.8	97%		0	0	0	0
	0.003	580.7	98%		0	0	0	0
	0.001	590.8	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			135	0.029	0.119	0.238	0.313	

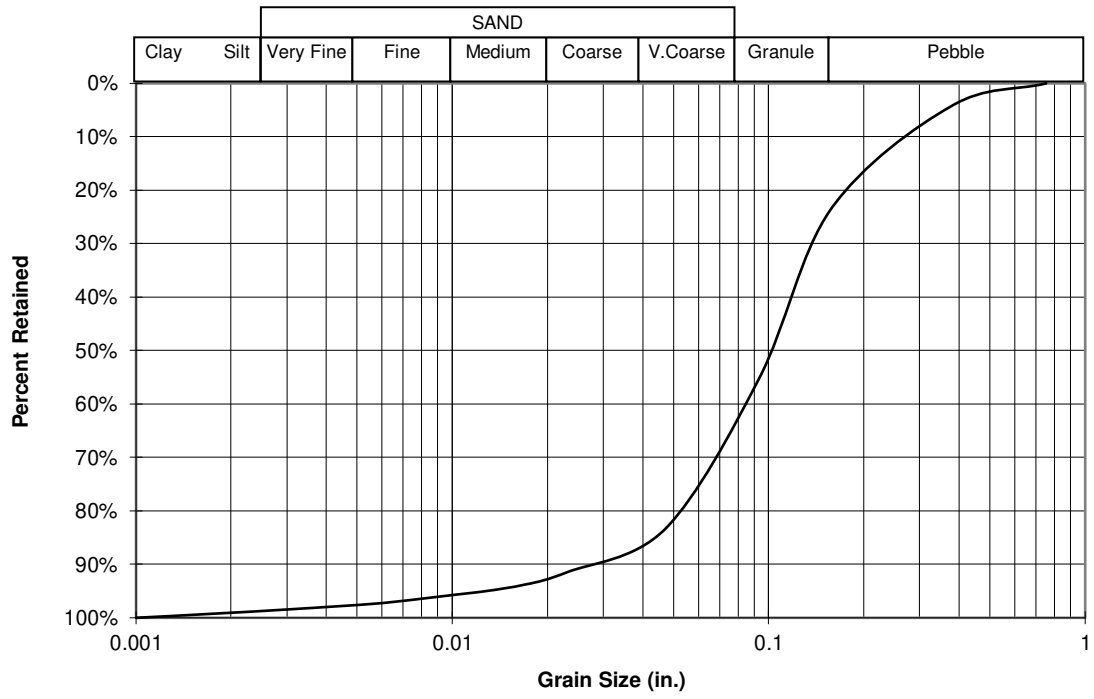
Grain Size Distribution



Grain Size Calculations

Job	**Forks**							
Job #	**1308-005A**							
Well	**New Forks Well**							
Depth	**138**							
					Calculations			
		Weights	**Percentage**		0.9	0.7	0.5	0.4
Sieve Sizes (Assumes Max.Size of 3/4")	0.75	0	0%		0	0	0	0
	0.375	22.7	4%		0	0	0	0
	0.157	125.1	24%		0	0	0.103597	0.123764
	0.093	293.9	55%		0	0.068787	0	0
	0.047	442.9	83%		0.027243	0	0	0
	0.023	486.4	91%		0	0	0	0
	0.017	498.7	94%		0	0	0	0
	0.012	506	95%		0	0	0	0
	0.006	516.8	97%		0	0	0	0
	0.003	523.3	98%		0	0	0	0
	0.001	531.9	100%		0	0	0	0
			Depth	**D10**	**D30**	**D50**	**D60**	
			138	0.027	0.069	0.104	0.124	

Grain Size Distribution



APPENDIX B

WATER MANAGEMENT LABORATORIES INC.

1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

Chemistry - Report of Analysis

Date Collected: 06-14-2020	System Group Type: (circle one) (A) B Other
Water System ID Number: N/A	System Name: Forks
Lab Number / Sample Number: 089 / 02812	County: Clallam
Sample Location: New Forks Well	Source Number(s): (list all sources if blended or composited)
Sample Purpose: (check appropriate box) ☐ RC - Routine/Compliance (satisfies monitoring requirements) ☐ C - Confirmation (confirmation of chemical result)* ☒ I - Investigative (does not satisfy monitoring requirements) ☐ O - Other (specify - does not satisfy monitoring requirements)	Date Received: 06-15-2020 Date Reported: 07-13-2020 Supervisor Initials:
Sample Composition: (check appropriate box) ☐ S - Single Source ☐ B - Blended (list source numbers in "Source Number" field) ☐ C - Composite (list source numbers in "Source Number" field) ☐ D - Distribution Sample	Sample Type: (check one) ☒ Pre-treatment/Untreated (Raw) ☐ Post-treatment (Finished) ☐ Unknown or Other Sample Collected by: Matthew Lutz Phone Number: 253-475-7711
Send Report & Bill to: Robinson Noble 2105 South "C" Street Tacoma WA 98402	Comments: Sample exceeds 15 minute holding time for pH measurement

ANALYTICAL RESULTS

DOH#	ANALYTE	DATA QUALIFIER	RESULT	SDRL	TRIGGER	MCL	UNITS	EXCEED MCL?	DATE ANALYZED	METHOD/ INITIALS
0004	Arsenic	--	<0.0010	0.001	0.010	0.010	mg/L	No	06-20-2020	200.8/JMB
0005	Barium	--	<0.10	0.1	2	2	mg/L	No	06-20-2020	200.8/JMB
0006	Cadmium	--	<0.0010	0.001	0.005	0.005	mg/L	No	06-20-2020	200.8/JMB
0007	Chromium	--	<0.0070	0.007	0.1	0.1	mg/L	No	06-20-2020	200.8/JMB
0011	Mercury	--	<0.00020	0.0002	0.002	0.002	mg/L	No	06-20-2020	200.8/JMB
0012	Selenium	--	<0.0020	0.002	0.05	0.05	mg/L	No	06-20-2020	200.8/JMB
0110	Beryllium	--	<0.00030	0.0003	0.004	0.004	mg/L	No	06-20-2020	200.8/JMB
0111	Nickel	--	<0.0050	0.005	--	--	mg/L	--	06-20-2020	200.8/JMB
0112	Antimony	--	<0.0030	0.003	0.006	0.006	mg/L	No	06-20-2020	200.8/JMB
0113	Thallium	--	<0.0010	0.001	0.002	0.002	mg/L	No	06-20-2020	200.8/JMB
0116	Free Cyanide	--	<0.05	0.05	0.2	0.2	mg/L	No	06-22-2020	4500CNF/JA
0019	Fluoride	--	<0.20	0.2	2.0	4.0	mg/L	No	06-15-2020	300.0/BG
0114	Nitrite - N	--	<0.10	0.1	0.5	1.0	mg/L	No	06-15-2020	300.0/BG
0020	Nitrate - N	--	0.62	0.5	5.0	10.0	mg/L	No	06-15-2020	300.0/BG
0161	Total Nitrate/Nitrite - N	--	0.62	0.5	5.0	10.0	mg/L	No	06-15-2020	300.0/BG

Lab Number / Sample Number: 089 / 02812

DOH#	ANALYTE	DATA QUALIFIER	RESULT	SDRL	TRIGGER	MCL	UNITS	EXCEED MCL?	DATE ANALYZED	METHOD/ INITIALS
0008	Iron	--	<0.10	0.1	--	0.3	mg/L	No	06-20-2020	3111B/JMB
0010	Manganese	--	<0.010	0.01	--	0.05	mg/L	No	06-20-2020	200.8/JMB
0013	Silver	--	<0.01	0.1	--	0.1	mg/L	No	06-20-2020	200.8/JMB
0021	Chloride	--	3.5	20	--	250	mg/L	No	06-15-2020	300.0/BG
0022	Sulfate	--	4.2	50	--	250	mg/L	No	06-15-2020	300.0/BG
0024	Zinc	--	<0.20	0.2	--	5	mg/L	No	06-20-2020	200.8/JMB
0014	Sodium	--	<5.0	5	--	--	mg/L	--	06-20-2020	3111B/JMB
0015	Hardness	--	72.0	10	--	--	mg/L	--	06-16-2020	2340C/MV
0016	Conductivity	--	127.8	70	--	700	µmhos/cm	No	06-15-2020	2510B/JA
0017	Turbidity	--	0.67	0.1	--	--	NTU	--	06-15-2020	2130B/JA
0018	Color	--	<5.0	15	--	15	color units	No	06-15-2020	2120B/JA
--	Total Dissolved Solids	--	94.5	100	--	500	mg/L	No	06-16-2020	2540C/MV
0009	Lead	--	<0.0010	0.001	--	--	mg/L	--	06-20-2020	200.8/JMB
0023	Copper	--	<0.020	0.02	--	--	mg/L	--	06-20-2020	200.8/JMB
0405	Calcium	--	26.4	10	--	--	mg/L	--	06-23-2020	3500CaB/MV
0404	Magnesium	--	1.4	1	--	--	mg/L	--	06-23-2020	3500-MgB/MV
0423	Potassium	--	<1.0	--	--	--	mg/L	--	06-20-2020	200.8/JMB
N/A	Bicarbonate as CaCO3	--	69.0	--	--	--	mg/L	--	06-15-2020	2320B/JA
N/A	Carbonate as CaCO3	--	0.0	--	--	--	mg/L	--	06-15-2020	2320B/JA
--	pH	--	7.0	--	--	--	units	--	06-15-2020	4500-H+B/JA
--	Silica	--	15.4	1.0	--	--	mg/L	--	06-16-2020	4500SiO2C/BG

NOTES:

*** Confirmation:** Include the original lab number, sample number, and collection date of original sample in either comment section.

-- No exisiting value.

ANALYTE: The name of an analyte being tested for.

DATA QUALIFIER: A symbol or letter to denote addtional information about the result.

DOH#: Department assigned analyte number.

EXCEED MCL: (Maximum Contamination Level): Marked if the contaminant amount exceeds the MCL under chapters 246-290 and 246-291 WAC. Please contact the department's drinking water regional office in your area to determine follow-up actions.

METHOD/INITIALS: Analytical method used. / Initials of the analyst that performed the analysis.

mg/L: milligrams per liter or parts per million.

RESULT: The laboratory reported result.

SDRL: (State Detection Reporting Limit): The minimum reportable detection of an analyte as established by the Department of Health

TRIGGER: The department's drinking water response level. Systems with contaminants detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact the department's drinking water regional office in your area for further information.

LAB COMMENTS

WATER MANAGEMENT LABORATORIES INC.

1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

Volatile Organic Compounds
Report of Analysis

Date Collected: 06-14-2020	System Group Type: (circle one) A (A) B Other
Water System ID Number: N/A	System Name: Forks
Lab Number / Sample Number: 089 / 02812	County: Clallam
Sample Location: New Forks Well	Source Number(s): (list all sources if blended or composited)
Sample Purpose: (check appropriate box) ☐ RC - Routine/Compliance (satisfies monitoring requirements) ☐ C - Confirmation (confirmation of chemical result)* ☒ I - Investigative (does not satisfy monitoring requirements) ☐ O - Other (specify - does not satisfy monitoring requirements)	Date Received: 06-15-2020 Date Analyzed: 06-15-2020 Date Reported: 07-13-2020 Supervisor Initials:
Sample Composition: (check appropriate box) ☐ S - Single Source ☐ B - Blended (list source numbers in "Source Number" field) ☐ C - Composite (list source numbers in "Source Number" field) ☐ D - Distribution Sample	Sample Type: (check one) ☒ Pre-treatment/Untreated (Raw) ☐ Post-treatment (Finished) ☐ Unknown or Other Sample Collected by: Matthew Lutz Phone Number: 253-475-7711
Send Report & Bill to: Robinson Noble 2105 South "C" Street, Tacoma WA 98402	Comments: Sample exceeds 15 minute holding time for pH measurement

ANALYTICAL RESULTS

DOH#	ANALYTE	DATA QUALIFIER	RESULTS	SDRL	TRIGGER	MCL	UNITS	EXCEEDS MCL?	METHOD/ INITIALS
0045	Vinyl chloride	--	ND	0.5	0.5	2	µg/L	No	524.2/RL
0046	1,1- Dichloroethylene	--	ND	0.5	0.5	7	µg/L	No	524.2/RL
0047	1,1,1 Trichloroethane	--	ND	0.5	0.5	200	µg/L	No	524.2/RL
0048	Carbon tetrachloride	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0049	Benzene	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0050	1,2 Dichloroethane	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0051	Trichloroethylene	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0052	Para-dichlorobenzene	--	ND	0.5	0.5	75	µg/L	No	524.2/RL
0056	Dichloromethane	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0057	trans-1,2-Dichloroethylene	--	ND	0.5	0.5	100	µg/L	No	524.2/RL
0060	cis- 1,2-Dichloroethylene	--	ND	0.5	0.5	70	µg/L	No	524.2/RL
0063	1,2- Dichloropropane	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0066	Toluene	--	ND	0.5	0.5	1000	µg/L	No	524.2/RL
0067	1,1,2-Trichloroethane	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0068	Tetrachloroethylene	--	ND	0.5	0.5	5	µg/L	No	524.2/RL
0071	Monochlorobenzene	--	ND	0.5	0.5	100	µg/L	No	524.2/RL
0073	Ethylbenzene	--	ND	0.5	0.5	700	µg/L	No	524.2/RL
0076	Styrene	--	ND	0.5	0.5	100	µg/L	No	524.2/RL
0084	Ortho-Dichlorobenzene	--	ND	0.5	0.5	600	µg/L	No	524.2/RL
0095	1,2,4- Trichlorobenzene	--	ND	0.5	0.5	70	µg/L	No	524.2/RL
0160	Total Xylenes	--	ND	0.5	0.5	10000	µg/L	No	524.2/RL
0074	m/p Xylenes (MCL for Total)	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0075	o- Xylene (MCL for Total)	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0027	Chloroform	--	ND	0.5	--	--	µg/L	--	524.2/RL

DOH#	ANALYTE	DATA QUALIFIER	RESULTS	SDRL	TRIGGER	MCL	UNITS	EXCEEDS MCL?	METHOD/ INITIALS
0028	Bromodichloromethane	--	ND	0.5	--	--	µg/L	--	524.2/RL
0029	Dibromochloromethane	--	ND	0.5	--	--	µg/L	--	524.2/RL
0030	Bromoform	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0031	Total Trihalomethanes	--	ND	--	--	80	µg/L	No	524.2/RL
0053	Chloromethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0054	Bromomethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0058	1,1 Dichloroethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0072	1,1,1,2-Tetrachloroethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0078	Bromobenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0079	1,2,3- Trichloropropane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0081	O-Chlorotoluene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0085	Trichlorofluoromethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0086	Bromochloromethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0089	1,3,5- Trimethylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0091	1,2,4- Trimethylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0092	sec- Butylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0093	p- Isopropyltoluene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0094	n- Butylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0096	Naphthalene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0104	Dichlorodifluoromethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0154	1,3 Dichloropropene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0062	1,1 Dichloropropene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0064	Dibromomethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0070	1,3- Dichloropropane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0080	1,1,2,2 Tetrachloroethane	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0082	P-Chlorotoluene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0083	m- Dichlorobenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0087	Isopropylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0088	n- Propylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0090	tert- Butylbenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0097	Hexachlorobutadiene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0098	1,2,3 Trichlorobenzene	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0427	EDB (screening)	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
0428	DBCP (screening)	--	ND	0.5	0.5	--	µg/L	--	524.2/RL
N/A	MTBE	--	ND	0.5	0.5	--	µg/L	--	524.2/RL

Lab Number / Sample Number: 089 / 02812

Volatile Organic Compounds (cont)

LAB COMMENTS

*** Confirmation:**Include the original lab number, sample number, and collection date of original sample in either comment section.

Analysis for EDB and DBCP is screening only. Detections of EDB and DBCP are confirmed using the fumigant test panel.

--No exisiting value.

µg/L:micrograms per liter or parts per billion.

ANALYTE: The name of an analyte being tested for.

DATA QUALIFIER:A symbol or letter to denote addtional information about the result.

DOH#: Department assigned analyte number.

EXCEED MCL:(Maximum Contamination Level): Marked if the contaminant amount exceeds the MCL under chapters 246-290 and 246-291 WAC. Please contact the department's drinking water regional office in your area to determine follow-up actions.

METHOD/INITIALS: Analytical method used. / Initials of the analyst that performed the analysis.

RESULT: The laboratory reported result.

SDRL:(State Detection Reporting Limit): The minimum reportable detection of an analyte as established by the Department of Health

TRIGGER: The department's drinking water response level. Systems with contaminants detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact the department's drinking water regional office in your area for further information.

WATER MANAGEMENT LABORATORIES INC.

1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

Herbicides
Report of Analysis

Date Collected: 06-14-2020	System Group Type: (circle one) (A) B Other
Water System ID Number: N/A	System Name: Forks
Lab Number / Sample Number: 089 / 02812	County: Clallam
Sample Location: New Forks Well	Source Number(s): (list all sources if blended or composited)
Sample Purpose: (check appropriate box) ☐ RC - Routine/Compliance (satisfies monitoring requirements) ☐ C - Confirmation (confirmation of chemical result)* ☒ I - Investigative (does not satisfy monitoring requirements) ☐ O - Other (specify - does not satisfy monitoring requirements)	Date Received: 06-15-2020 Date Analyzed: 06-29-2020 Date Reported: 07-13-2020 Supervisor Initials:
Sample Composition: (check appropriate box) ☐ S - Single Source ☐ B - Blended (list source numbers in "Source Number" field) ☐ C - Composite (list source numbers in "Source Number" field) ☐ D - Distribution Sample	Sample Type: (check one) ☒ Pre-treatment/Untreated (Raw) ☐ Post-treatment (Finished) ☐ Unknown or Other Sample Collected by: Matthew Lutz Phone Number: 253-475-7711
Send Report & Bill to: Robinson Noble 2105 South "C" Street, Tacoma WA 98402	Comments: Sample exceeds 15 minute holding time for pH measurement

ANALYTICAL RESULTS

DOH#	ANALYTE	DATA QUALIFIER	RESULTS	SDRL	TRIGGER	MCL	UNITS	EXCEEDS MCL?	METHOD/ INITIALS
0137	Dalapon	--	ND	1	1	200	µg/L	No	515.1/JA
0037	2,4-D	--	ND	0.1	0.1	70	µg/L	No	515.1/JA
0038	2,4,5-TP (Silvex)	--	ND	0.2	0.2	50	µg/L	No	515.1/JA
0134	Pentachlorophenol	--	ND	0.04	0.04	1	µg/L	No	515.1/JA
0139	Dinoseb	--	ND	0.2	0.2	7	µg/L	No	515.1/JA
0140	Picloram	--	ND	0.1	0.1	500	µg/L	No	515.1/JA
0138	Dicamba	--	ND	0.2	0.2	--	µg/L	--	515.1/JA
0135	2,4 DB	--	ND	1	1	--	µg/L	--	515.1/JA
0136	2,4,5 T	--	ND	0.4	0.4	--	µg/L	--	515.1/JA
0220	Bentazon	--	ND	0.5	0.5	--	µg/L	--	515.1/JA
0221	Dichlorprop	--	ND	0.5	0.5	--	µg/L	--	515.1/JA
0223	Acifluorfen	--	ND	2	2	--	µg/L	--	515.1/JA
0225	DCPA (Acid Metabolites)	--	ND	0.1	0.1	--	µg/L	--	515.1/JA
0226	3,5-Dichlorobenzoic Acid	--	ND	0.5	0.5	--	µg/L	--	515.1/JA

Lab Number / Sample Number: 089 / 02812

Herbicides (cont)

NOTES:

*** Confirmation:** Include the original lab number, sample number, and collection date of original sample in either comment section.

µg/L: micrograms per liter or parts per billion.

ANALYTE: The name of an analyte being tested for.

DATA QUALIFIER: A symbol or letter to denote addtional information about the result.

DOH#: Department assigned analyte number.

EXCEED MCL: (Maximum Contamination Level): Marked if the contaminant amount exceeds the MCL under chapters 246-290 and 246-291 WAC. Please contact the department's drinking water regional office in your area to determine follow-up actions.

METHOD/INITIALS: Analytical method used. / Initials of the analyst that performed the analysis.

RESULT: The laboratory reported result.

SDRL: (State Detection Reporting Limit): The minimum reportable detection of an analyte as established by the Department of Health

TRIGGER: The department's drinking water response level. Systems with contaminants detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact the department's drinking water regional office in your area for further information.

LAB COMMENTS:

WATER MANAGEMENT LABORATORIES INC.

1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

Pesticides
Report of Analysis

Date Collected: 06-14-2020	System Group Type: (circle one) (A) B Other
Water System ID Number: N/A	System Name: Forks
Lab Number / Sample Number: 089 / 02812	County: Clallam
Sample Location: New Forks Well	Source Number(s): (list all sources if blended or composited)
Sample Purpose: (check appropriate box) ☐ RC - Routine/Compliance (satisfies monitoring requirements) ☐ C - Confirmation (confirmation of chemical result)* ☒ I - Investigative (does not satisfy monitoring requirements) ☐ O - Other (specify - does not satisfy monitoring requirements)	Date Received: 06-15-2020 Date Analyzed: 07-06-2020 Date Reported: 07-13-2020 Supervisor Initials:
Sample Composition: (check appropriate box) ☐ S - Single Source ☐ B - Blended (list source numbers in "Source Number" field) ☐ C - Composite (list source numbers in "Source Number" field) ☐ D - Distribution Sample	Sample Type: (check one) ☒ Pre-treatment/Untreated (Raw) ☐ Post-treatment (Finished) ☐ Unknown or Other Sample Collected by: Matthew Lutz Phone Number: 253-475-7711
Send Report & Bill to: Robinson Noble 2105 South "C" Street, Tacoma WA 98402	Comments: Sample exceeds 15 minute holding time for pH measurement

ANALYTICAL RESULTS

DOH#	ANALYTE	DATA QUALIFIER	RESULTS	SDRL	TRIGGER	MCL	UNITS	EXCEEDS MCL?	METHOD/ INITIALS
0033	Endrin	--	ND	0.01	0.01	2	µg/L	No	525.2/EW
0034	Lindane (BHC-gamma)	--	ND	0.02	0.02	0.2	µg/L	No	525.2/EW
0035	Methoxychlor	--	ND	0.1	0.1	40	µg/L	No	525.2/EW
0036	Toxaphene	--	ND	1	1	3.0	µg/L	No	508.1/EW
0117	Alachlor	--	ND	0.2	0.2	2	µg/L	No	525.2/EW
0119	Atrazine	--	ND	0.1	0.1	3	µg/L	No	525.2/EW
0120	Benzo(a)pyrene	--	ND	0.02	0.02	0.2	µg/L	No	525.2/EW
0122	Chlordane (total)	--	ND	0.2	0.2	2	µg/L	No	508.1/EW
0124	Di(2-ethylhexyl)adipate	--	ND	0.6	0.6	400	µg/L	No	525.2/EW
0125	Di(2-ethylhexyl)phthalate	--	ND	0.6	0.6	6	µg/L	No	525.2/EW
0126	Heptachlor	--	ND	0.04	0.04	0.4	µg/L	No	525.2/EW
0127	Heptachlor epoxide	--	ND	0.02	0.02	0.2	µg/L	No	525.2/EW
0128	Hexachlorobenzene	--	ND	0.1	0.1	1	µg/L	No	525.2/EW
0129	Hexachlorocyclopentadiene	--	ND	0.1	0.1	50	µg/L	No	525.2/EW
0133	Simazine	--	ND	0.07	0.07	4	µg/L	No	525.2/EW
0118	Aldrin	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0121	Butachlor	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0123	Dieldrin	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0130	Metolachlor	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0131	Metribuzin	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0132	Propachlor	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0254	Fluorene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0173	Arochlor 1221'	--	ND	20	20	--	µg/L	--	508.1/EW
0174	Arochlor 1232'	--	ND	0.5	0.5	--	µg/L	--	508.1/EW

DOH#	ANALYTE	DATA QUALIFIER	RESULTS	SDRL	TRIGGER	MCL	UNITS	EXCEEDS MCL?	METHOD/ INITIALS
0175	Arochlor 1242'	--	ND	0.3	0.3	--	µg/L	--	508.1/EW
0176	Arochlor 1248'	--	ND	0.1	0.1	--	µg/L	--	508.1/EW
0177	Arochlor 1254'	--	ND	0.1	0.1	--	µg/L	--	508.1/EW
0178	Arochlor 1260'	--	ND	0.2	0.2	--	µg/L	--	508.1/EW
0179	Bromacil	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0180	Arochlor 1016'	--	ND	0.08	0.08	--	µg/L	--	508.1/EW
0190	Terbacil	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0208	EPTC	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0218	Molinate	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0232	4,4 DDD	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0233	4,4 DDE	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0234	4,4 DDT	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0243	Trifluralin	--	ND	0.1	0.1	--	µg/L	--	525.2/EW
0244	Acenaphthylene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0246	Anthracene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0247	Benzo(a)anthracene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0248	Benzo(b)fluoroanthene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0250	Benzo(k)fluoranthene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0251	Chrysene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0253	Fluoranthene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0256	Phenanthrene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0257	Pyrene	--	ND	0.2	0.2	--	µg/L	--	525.2/EW
0258	Benzyl butyl phthalate	--	ND	1.0	1.0	--	µg/L	--	525.2/EW
0259	Di-n-butyl phthalate	--	ND	1.0	1.0	--	µg/L	--	525.2/EW
0260	Diethyl phthalate	--	ND	1.0	1.0	--	µg/L	--	525.2/EW
0261	Dimethyl phthalate	--	ND	1.0	1.0	--	µg/L	--	525.2/EW

Lab Number / Sample Number: 089 / 02812

Pesticides (cont)

NOTES:

*** Confirmation:** Include the original lab number, sample number, and collection date of original sample in either comment section.

If Arochlors are detected using 505, 508, or 508.1, sample must be reanalyzed using Method 508A to quantify PCBs (as decachlorobiphenyl).

-- No exisiting value.

µg/L: micrograms per liter or parts per billion.

ANALYTE: The name of an analyte being tested for.

DATA QUALIFIER: A symbol or letter to denote addtional information about the result.

DOH#: Department assigned analyte number.

EXCEED MCL: (Maximum Contamination Level): Marked if the contaminant amount exceeds the MCL under chapters 246-290 and 246-291 WAC. Please contact the department's drinking water regional office in your area to determine follow-up actions.

METHOD/INITIALS: Analytical method used. / Initials of the analyst that performed the analysis.

RESULT: The laboratory reported result.

SDRL: (State Detection Reporting Limit): The minimum reportable detection of an analyte as established by the Department of Health

TRIGGER: The department's drinking water response level. Systems with contaminants detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact the department's drinking water regional office in your area for further information.

LAB COMMENTS:

WATER MANAGEMENT LABORATORIES INC.

1515 80th St E, Tacoma, WA 98404

COLIFORM BACTERIA ANALYSIS FORM

Date Sample Collected	Time Sample Collected	County
6 / 14 / 20 (Month / Day / Year)	6 : 40 ☒ AM ☐ PM	Clallam

Type of Water System (check only one box)

☒ Group A ☐ Group B ☒ Other PWS

Group A and Group B Systems – Provide from Water Facilities Inventory (WFI):

ID# _____

System Name: Forks

Contact Person: Mike Piechowski

Day Phone: (253) 475-7711 Cell Phone: ( )

Email: mpiechowski@robinsonnoble.com Eve. Phone: ( )

Send results to: (Print full name, address and zip code)

Mike Piechowski
210 S C ST
Tacoma, WA 98402

SAMPLE INFORMATION

Sample collected by (name): MGL

Specific location where sample collected: New Forks Well

Special instructions or comments:

Type of Sample (select only one type of sample from types 1 through 5 below)

1. ☐ **Routine Distribution Sample (A/P)**
   Chlorinated: Yes_____ No_____
   Chlorine Residual: Total____ Free____

2. ☐ **Repeat Sample (A/P)**
   (from distribution system after unsat. routine)
   Unsatisfactory routine lab number:
   _____
   Unsatisfactory routine collect date:
   _____/_____/_____
   Chlorinated: Yes_____ No_____
   Chlorine Residual: Total_____ Free_____

3. **Ground Water Rule Source Sample**
   S | | |
   ☐ Triggered (A/P)
   ☐ Assessment (A/P)

4. **Surface or GWI Raw Source Water Sample** (Enumeration)
   S | | |
   ☐ *E. coli* ☐ Fecal Filtered Yes____ No____

5. ☐ Sample Collected for **Information Only:**

LAB USE ONLY **DRINKING WATER RESULTS** LAB USE ONLY

☐ **Unsatisfactory** Total Coliform Present **and**
☐ *E.coli* present ☐ *E.coli* absent

☐ **Satisfactory**

Bacterial Density Results: Total Coliform < 1 /100ml. *E.coli*_____/100ml.
Fecal Coliform_____/100ml. HPC_____/1 ml.

Replacement Sample Required: ☐ TNTC ☐ Sample too old
☐ Sample Volume ☐ Damaged Container ☒ _____

Date/Time Received: 6-15-2020 1200 PM MM	Lab Reference Number: MMO QT
Receipt Temp C°:	Method Code: SM 9223B
Date Reported to DOH: 6-19-20	Lab Use Only:
DOH Lab-Sample#: 089 60511	

APPENDIX C

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission *("x" in circle)*

⊗ Construction

○ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

CURRENT

Notice of Intent No. WE 38199

Unique Ecology Well ID Tag No. BJE 749

Water Right Permit No. _____

Property Owner Name CITY OF FORKS

Well Street Address _____

City FORKS County CLALLAM-5

Location NW 1/4-1/4 NE 1/4 Sec 9 Twn 28N R 13W EWM or (WWM) circle one

Lat/Long (s, t, r Still **REQUIRED**) Lat Deg _____ Lat Min/Sec _____

Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☒ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____

☒ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven ☐ Deepened ☒ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 12 inches, drilled 152 ft.

Depth of completed well 148 ± 10" ft.

CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 12" Diam. from +2.5 ft. to 105 ft.

☒ Liner installed 10" Diam. from 83'-3 ft. to 104'-5" ft.

☐ Threaded 8" Diam. from 104'-5 (138'-8) ft. to 123'-5" (148'-10) ft.

Perforations: ☐ Yes ☒ No

Type of perforator used _____

SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: ☒ Yes ☐ No ☐ K-Pac Location _____

Manufacturer's Name JOHNSON

Type _____ Model No. _____

Diam. 8" PIPE Slot size .060 from 104'-5" ft. to 114'-5" ft.

Diam. 8" PIPE Slot size .060 from 123'-5" ft. to 138'-8" ft.

Gravel/Filter packed: ☒ Yes ☐ No ☒ Size of gravel/sand 6-9

Materials placed from 83'-3" ft. to 148'± 10" ft.

Surface Seal: ☒ Yes ☐ No To what depth? 47 ft.

Material used in seal HYDRATED BENTONITE CHIPS

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 93.04 ft. below top of well Date _____

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☒ Yes ☐ No If yes, by whom? HOLT SERVICES

Yield: 343 gal./min. with 6.12 ft. drawdown after 72 hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water 52°F Was a chemical analysis made? ☒ Yes ☐ No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
GRAY SAND SILT, GRVLS & COBBLES	0	8
BROWN SILTY SAND GRVLS & COBBLES	8	40
BROWN SILT BOUND GRVLS	40	42
BROWN SILTY SAND GRVLS	42	45
BROWN SILTY SANDY GRVLS & COBBLES	45	58
GRVLS, SAND SLIGHTLY SILTY & COBBLES	58	83
BROWN SILTY GRVLS SOME SAND	83	106
GRVLS WITH SOME SAND W/B	106	115
GRAY GRVLY CLAY	115	123
CLAY BOUND GRVLS W/B	123	132
SILTY GRVLS. W/B	132	138
TIGHT GRVLS. W/B	138	140
GRVLY GRAY CLAY	140	152

Start Date 5-12-2020 Completed Date 6-18-2020

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) RICHARD A. MILLER

Driller/Engineer/Trainee Signature _____

Driller or trainee License No. 1691

Drilling Company HOLT SERVICES

Address 10621 TODD RD. E

City, State, Zip EDGEWOOD, WA. 98372

Contractor's Registration No. HOLTSSI898JG Date 7-24-20

If TRAINEE,

Driller's Licensed No. _____

Driller's Signature _____

Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 3/05) **The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.**