PNNL-16522



Borehole Data Package for Nine CY 2006 Polyphosphate Treatability Testing Wells, 300-FF-5 Operable Unit, Hanford Site, Washington

B. A. Williams

March 2007

Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830



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Summary

Nine new *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) groundwater monitoring wells were installed in the 300-FF-5 Operable Unit (OU) in calendar year 2006 to fulfill commitments for the EM-20 funded polyphosphate treatability test. These nine new performance monitoring wells were drilled into the uppermost unconfined aquifer, to the Hanford formation (fm.) – Ringold Formation (Fm.) contact boundary (Hanford – Ringold contact) (~50 ft bgs), and completed within the permeable Hanford fm. unit 1 gravel-dominated sequence (Hanford fm. unit 1).

The overall objective of the polyphosphate treatability test is to evaluate the efficacy of using polyphosphate injections to treat 300 Area uranium contaminated groundwater in situ. The objective of this work was to install the performance monitoring network surrounding the existing treatability injection well C5000 (399-1-23) in support of the implementation of a field scale demonstration of the polyphosphate technology.

These new wells were installed to collect treatability performance data in support of the polyphosphate injections and may also be used to supplement the water quality monitoring network for the 300-FF-5 OU. Recent work completed under a 300-FF-5 OU limited field investigation (LFI) determined that aqueous uranium contamination in groundwater migrates through the aquifer in the uppermost permeable portion of the unconfined aquifer constrained within the Hanford fm. unit 1 that exists in the saturated sediments above the Hanford – Ringold contact. The nine new polyphosphate performance monitoring wells were screened across all or portions of this uppermost interval.

This report supplies the information obtained during drilling, characterization, and installation of the new groundwater performance monitoring wells.

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1.0 Introduction

Nine new *Comprehensive, Environmental Response, Compensation, and Liability Act* (CERCLA) groundwater monitoring wells were installed in the 300 Area within the 300-FF-5 Groundwater Operable Unit (OU) in calendar year 2006 to fulfill commitments for a proposed polyphosphate injection monitoring network (Figure 1.1). These new wells were installed to collect treatability performance data in support of the polyphosphate injections to be performed in well 399-1-23 (C5000). These wells may also provide supplemental groundwater monitoring data for the 300-FF-5 OU groundwater monitoring network.

This report provides the information obtained during drilling, characterization, and installation of these new CERCLA groundwater monitoring wells in the 300-FF-5 OU.

1.1 New Groundwater Monitoring Wells

Nine new groundwater monitoring wells (Table 1.1) were installed between November and December 2006. The relative location of these wells is shown on the location map in Figure 1.1. The new wells were constructed to the specifications and requirements described in Washington Administrative Code (WAC) 173-160, the *Site Characterization Plan: Uranium Stabilization through Polyphosphate Injection*, (Vermeul et al. 2006), and specifications provided by Fluor Hanford, Inc. (FHI), Richland, Washington. During drilling and construction of the wells, sampling and analysis activities were conducted to support field screening for radiological and chemical contaminants and to collect near continuous sediment samples for geologic description.

This document provides a compilation of all available borehole data and well information obtained during drilling, well construction, and well development. The Appendix contains the Well Summary Sheets, the Well Construction Summary Reports, the geologist's borehole logs, the well development records, and the final well survey results.

Additional well construction documentation is on file with FHI. The Hanford Well Information System (HWIS) [http://apweb02/cfroot/rapidweb/phmc/cp/hwisapp/] contains electronic drilling and construction records for this well.

English units are used in this report, with the exception of well survey results (located in Table 2.2 and the Appendix) to describe drilling and well completion activities because that is the system of units used by drillers to measure and report depths and well construction measurements. Conversion to metric can be done by multiplying feet by 0.3048 to obtain meters or by multiplying inches by 2.54 to obtain centimeters.

	316-5 Proc	ess	Tren	ches			
•:	● 3-1-313 (399-1-26)						
C5000 (3)	99-1-23) •						
C5357 (399-1-3	• C5352 (399-1-25) (Deep) • C5351 (399-1-24) (Shallow)	_	_	Shall	ow/De	eep en	
C5354 (399-1-27) (Deep)			CI	usters	5	
					C5359 (3 99 -1-32)	
		ć					
Waste Sites Previously Existing Injection Well 399-1-23 New Monitoring Well for 399-1-23 New Monitoring Well for 399-1-23		2	010	4 12	8 - 24	12 36	16 m 48 ft

Figure 1.1. Location Map Showing the Relative Locations of Nine New Polyphosphate Performance Monitoring Wells Surrounding New Injection Well 399-1-23 (C5000), 300-FF-5 Operable Unit

Well Name	Well ID	Surface Elevation (ft)	Total Drill Depth (ft bgs)	DTW (ft bgs)	H/R Contact (ft bgs)	Saturated Hanford fm. (ft)	Elevation H/R (ft)	Screen Interval/Length (ft bgs [and ft])
399-1-23 ^(a)	C5000	378.84	116	34.5	51	16.5	327.84	25-50 (25 ft)
399-1-24	C5351	379.35	42	33.8	NDE	NDE	NDE	32-37 (5 ft)
399-1-25	C5352	379.27	50	34.3	48.2	13.9	331.07	42-47 (5 ft)
399-1-26	C5353	378.82	50.5	33.8	48.5	14.7	330.32	29-49 (20 ft)
399-1-27	C5354	379.59	50	34.9	48	13.1	331.60	42-47 (5 ft)
399-1-28	C5355	379.64	40.5	34	NDE	NDE	NDE	32-37 (5 ft)
399-1-29	C5356	379.60	51	35	49	14	330.60	29-49 (20 ft)
399-1-30	C5357	379.38	50.5	33.6	49.75	14.75	329.63	29-49 (20 ft)
399-1-31	C5358	379.03	51	33.7	48.5	14.8	330.53	29-49 (20 ft)
399-1-32	C5359	378.21	50.5	32.5	43	10.5	335.21	29-44 (15 ft)

Table 1.1.Polyphosphate Treatability Well Identification and Borehole Information,
300-FF-5 Operable Unit

(a) Pre-existing 6-inch-diameter injection well, all other wells are new and 4 inches in diameter. All screens completed with 20 slot wire-wrap stainless steel and 10-20 mesh silica sand pack.

bgs = Below ground surface

H/R = Hanford - Ringold contact boundary.

NDE = Not deep enough.

2.0 Well Installation

The nine new wells including the existing central injection well (Table 1.1) are located in the northern portion of the 300 Area, just south of the decommissioned 316-5 process trenches and northeast of the 399-1-17 well cluster (Figure 1.1). The wells are downgradient of the disposal end of the decommissioned 316-5 process trenches and will (1) provide polyphosphate treatability performance data during the polyphosphate injections into the central injection well 399-1-23 (C5000) and (2) help differentiate upgradient groundwater contamination emanating from the area near the 316-5 process trenches with contaminants released in other 300 Area waste disposal ponds. The new wells monitor the uppermost unconfined aquifer (Hanford fm. unit 1).

2.1 Drilling and Sampling

Wells 399-1-24 through 399-1-32 (nine total) were drilled with a sonic drill rig from surface to a total depth between 40 and 51 feet below ground surface (bgs) (Table 1.1). The drilling depth objective was to drill to a depth at least as deep as the Hanford – Ringold contact. Temporary 8 1/4-inch-outside-diameter (OD) casing was used during drilling to total depth. Drilling of the first well, 399-1-24, commenced on November 16, 2006, and total depth of the last well to be drilled, 399-1-32, was reached on December 1, 2006.

During drilling of each borehole, nearly continuous core barrel sediment samples were collected in plastic bags to support the subsurface lithologic/geologic descriptions from ground surface to total depth. The water table was encountered at approximately 34 feet bgs (Table 1.1). The geologist's borehole logs in the Appendix provide the lithologic description of sediments encountered during drilling.

Sediments encountered during drilling included surficial recent and/or man-made fill material from approximately 3 to 5.5 feet bgs. Below these surficial deposits were predominantly unconsolidated gravel dominated sediments of the Hanford fm. unit 1 ranging in thickness from approximately 31 to 46 feet. The Hanford – Ringold contact boundary ranged in depth between approximately 43 and 50 feet bgs in the new boreholes (Table 1.1).

The Ringold Fm. unit 5 that lies beneath the Hanford fm. is composed of mostly gravelly silty sand to sand. With the exception of two shallow well pairs, the wells were drilled a few feet into the Ringold Fm. to a total depth of approximately 51 feet bgs (Table 1.1); therefore, only the upper few feet of Ringold Fm. sediments were encountered. The field geologist's detailed borehole log, along with the well construction summary report, as-built diagram, well development records, and well survey results are included in the Appendix.

The borehole and drill cuttings were monitored regularly for organic vapors and radioisotope contaminants (i.e., gamma). Results of this monitoring revealed no contamination was present.

2.2 Well Completion

The permanent casings and screens were installed in the new wells between November and December 2006. Each well was completed with a continuous wire-wrap stainless steel screen and stainless steel casing. The annular space around each screen was backfilled with silica sand and the remainder of the annular space above the screen interval (behind the stainless steel casing) was sealed with bentonite and cement grout (Appendix). The well completion details are summarized in Table 2.1.

Wells 399-1-26 (C5353), 399-1-29 (C5356), 399-1-30 (C5357), and 399-1-31 (C5358) were completed with 20-foot-long, 4-inch-inside-diameter (ID), stainless steel, continuous wire-wrap 20 slot (0.02-inch slot) screens placed to monitor the entire thickness of the saturated Hanford fm. from the high water level to the Hanford – Ringold contact (Table 1.1). These wells screen the entire uppermost permeable portion of the unconfined aquifer above the Ringold Fm. contact.

Wells 399-1-24 (C5351) and 399-1-25 (C5352) comprise a cluster of two wells, screened within the upper 10 feet, and lower 10 feet of the approximately 20-foot-thick saturated Hanford fm., respectively. These wells were completed with 5-foot-long, 4-inch-ID, stainless steel, continuous wire-wrap 20 slot (0.02-inch slot) screens (see as-build diagrams in Appendix).

Wells 399-1-27 (C5354) and 399-1-28 (C5355) comprise a second well cluster, similar to wells 399-1-24 and 399-1-25, and are screened within the lower 10 feet, and upper 10 feet of the uppermost permeable portion of the unconfined aquifer (Hanford fm.), respectively. These wells were also completed with 5-foot-long, 4-inch-ID, stainless steel, continuous wire-wrap 20 slot (0.02-inch slot) screens (Appendix).

Well Name	Well ID	Total Drill Depth (ft bgs)	DTW [H/R Contact] (ft bgs)	Screen ^(a) Interval/Length (ft bgs (and ft))	Sand Filter Pack Interval (ft bgs)	3/8 Inch Bentonite Pellet Annular Seal (ft bgs)	Bentonite Crumble Annular Seal ^(b) (ft bgs)
399-1-23*	C5000	116	34.5[51]	25-50 (25 ft)	20-54.4	14.4-20	10.8-14.4
399-1-24	C5351	42	33.8[NDE]	32-37 (5 ft)	29.9-38	28-29.9	38-42, 9.7-28
399-1-25	C5352	50	34.3[48.2]	42-47 (5 ft)	39.9-49.5	30-39.9	10.5-30
399-1-26	C5353	50.5	33.8[48.5]	29-49 (20 ft)	26.5-50.5	18.5-26.5	9-18.5
399-1-27	C5354	50	34.9[48]	42-47 (5 ft)	38-48.1	48.1-50, 28.5-38	10-28.5
399-1-28	C5355	40.5	34[NDE]	32-37 (5 ft)	30-39	39-40.5, 22-30	10-22
399-1-29	C5356	51	35[49]	29-49 (20 ft)	26.7-50	50-51, 19-26.7	10-19
399-1-30	C5357	50.5	33.6[49.75]	29-49 (20 ft)	27-50	50-50.5, 19-27	10-19
399-1-31	C5358	51	33.7[48.5]	29-49 (20 ft)	27-50	50-51, 19-27	10-19
399-1-32	C5359	50.5	32.5[43]	29-44 (15 ft)	26.5-45.5	45.5-50.5, 19.5-26.5	9-19.5

Table 2.1. 300-FF-5 Polyphosphate Treatability Test Well Completions

* Existing 6-inch-diameter injection well, all other wells 4 inches in diameter. All screens completed with 20 slot wire-wrap stainless steel and 10-20 mesh silica sand pack.

bgs = Below ground surface.

H/R = Hanford - Ringold contact boundary.

NDE = Not deep enough.

(a) All screen are 20-slot stainless steel, continuous wire wrap.

(b) Surface seal is composed of Portland Cement from top of crumble seal to surface.

Well 399-1-32, the farthest east and downgradient from the injection well, was completed with a 15-foot-long, 4-inch-ID, stainless steel, continuous wire-wrap 20 slot (0.02-inch slot) screens placed to monitor the entire thickness of the saturated Hanford fm. from the high water level to the Hanford – Ringold contact (Table 1.1). The Hanford – Ringold contact was encountered several feet shallower in this well and drilling recovered approximately 7.5 feet of Ringold sand that is comparable to the Ringold undifferentiated fine grained unit found in the newly installed nearby well 399-3-18 (C4999) (Appendix).

In each new well a 1-foot-long, 4-inch-ID stainless steel sump is attached to the bottom of the screen and extends approximately 1.35 feet below the screen bottom (Appendix). The permanent well casings are 4-inch-ID, stainless steel, and extend from the top of the screen interval to approximately 2 feet above ground surface (Appendix).

The screen filter pack is composed of 10-20 mesh silica sand placed from total depth to approximately 2 to 4 feet above the screen interval of each well. The sand pack was developed with a surge block to settle the sand in each well before adding the bentonite seal material. The annular seals are composed of a 2- to 5-foot length of 3/8-inch bentonite pellets placed from the top of the sand pack, followed by granular bentonite crumbles placed to approximately 10 feet bgs. The surface seals are composed of Portland cement grout from approximately 10 feet bgs to ground surface. Approximately 4-foot by 4-foot by 6-inch concrete pads were placed around the wells at the surface. The pads for the paired well (shallow-deep completions) clusters were combined to form one large pad because of the close well spacing between the two wells. Protective well head casings with locking caps, four protective and removable steel posts, and brass markers stamped with well identification numbers and Hanford well numbers were set into the concrete pads.

The vertical and horizontal coordinates of the nine wells were surveyed by Fluor Government Group (FGG) on December 12, 2006 (Appendix). A second survey of the new wells was conducted on February 16, 2007, to incorporate the elevations and horizontal coordinates of other existing wells surrounding the nine new wells. This second set of survey coordinates will be used as the official survey data set for the nine new wells and for the existing wells that were included in the survey (Appendix). The horizontal position of the wells were referenced to FGG horizontal control monuments. The coordinates are Washington Coordinate System, South Zone, NAD83(91) datum. The vertical datum is NAVD88 and is based on FGG vertical control monuments. Elevation survey data are included in Table 2.2 and the complete survey reports are included in the Appendix.

Well Name	Easting	Northing	Elevation
(Well ID)	(meters)	(meters)	(meters)
399-1-24 (C5351)	594116.45	116449.68	115.621
399-1-25 (C5352)	594116.88	116450.35	115.595
399-1-26 (C5353)	594108.27	116456.21	115.459
399-1-27 (C5354)	594116.23	116446.18	115.693
399-1-28 (C5355)	594115.57	116445.84	115.707
399-1-29 (C5356)	594118.67	116445.75	115.697
399-1-30 (C5357)	594110.62	116449.68	115.630
399-1-31 (C5358)	594118.66	116456.15	115.522
399-1-32 (C5359)	594137.47	116432.44	115.273

Table 2.2. Survey Data for Nine New Polyphosphate Monitoring Wells, 300-FF-5 Operable Unit

2.3 Well Development and Pump Installation

The nine new wells were developed on December 6-8, 2006. These wells were developed by pumping groundwater from one or two different intervals within the screen interval, depending on screen length, using a temporary, Redi-Flo-3 GrundfosTM submersible pump. The initial depth to water, turbidity, specific conductance, pH, temperature, and volume of groundwater pumped were measured in each well during development (Appendix). Well development was completed after the field parameters stabilized. Table 2.3 summarizes the well development results for each well, including pump intake depth, pump rate, pump run time, total volume pumped, final turbidity (NTU), pH, specific conductance, and temperature readings.

There were no dedicated sampling pumps installed in the new wells for this project.

Well Number	Pump Rate (gpm)	Pump Intake Depth (ft btc)	Pumping Run Time (min)	Total Volume Pumped (gal)	Final Field Readings			
399-1-24	23	35	17	370	43.7 NTU, 484 μsm/cm, 14.9°C, pH = 7.55			
399-1-25	33	45	15	500	107 NTU, 484 μsm/cm, 14.6°C, pH = 7.50			
399-1-26	26.6	45	61	1620	2.24 NTU, 480 μsm/cm, 14.9°C, pH = 7.60			
399-1-26	26.2	38	55	1,470	1.21 NTU, 483 μsm/cm, 14.5°C, pH = 7.55			
399-1-27	2.3	45	108	230	47.2 NTU, 492 μsm/cm, 14.8°C, pH = 7.75			
399-1-28	20	35	32	640	18.9 NTU, 485 μsm/cm, 14.8°C, pH = 7.52			
399-1-29	19	45	67	1,290	6.25 NTU, 482 μsm/cm, 14.3°C, pH = 7.61			
399-1-29	19	38	68	1,290	1.32 NTU, 481 µsm/cm, 14.4°C, pH = 7.63			
399-1-30	24	45	20	480	9.71 NTU, 483 μsm/cm, 14.8°C, pH = 7.57			
399-1-30	25.5	38	18	460	2.13 NTU, 486 μsm/cm, 14.6°C, pH = 7.61			
399-1-31	24.4	45	68	1,660	1.72 NTU, 480 μsm/cm, 14.1°C, pH = 7.51			
399-1-31	29.1	38	33	960	2.55 NTU, 480 μsm/cm, 14.9°C, pH = 7.49			
399-1-32	20	40	39	950	2.87 NTU, 485 μsm/cm, 14.0°C, pH = 7.42			
399-1-32	24	37	19	460	2.06 NTU, 483 μsm/cm, 14.1°C, pH = 7.51			
ft btc = Feet below top of casing. N/A = Not available. NTU = Nephelometric turbidity unit.								

Table 2.3. Well Development Information for Nine New Polyphosphate Monitoring Wells

3.0 Sampling and Analysis During Drilling

This section describes the collection and analysis of sediment samples during drilling the nine new boreholes.

3.1 Field Screening

The drill cuttings from the wells were screened in the field for volatile organics and beta-gamma activity by radiation control technicians and site safety staff.

Radiation and organic screening of cuttings revealed only natural background levels. No actions were required.

3.2 Sediment Sampling

Sediment samples were collected for lithologic description at approximately 5-foot-depth intervals from surface to total depth in each borehole. The samples were obtained from near continuous borehole cuttings that were collected in plastic sleeves as they were extruded from the drill pipe at the surface. The geologic descriptions of these samples are contained in the wellsite geologist's borehole logs in the Appendix. No additional sampling was conducted during drilling in these boreholes.

3.3 Hydrogeologic Description of New Boreholes

The borehole logs (Appendix) for the nine new wells were evaluated to determine the stratigraphic contacts and key lithologic changes where possible. These results were compared to borehole investigation results from well 399-1-23 (C5000) in Williams et al. (2007).

Recent surficial sediments composed of reworked Hanford, eolian deposits, or man-made fill overlie the 300 Area and range in thickness from 1 foot to greater then 20 feet bgs. Beneath the surficial deposits, the Hanford fm. unit 1 comprises the entire vadose zone and the uppermost portion of the unconfined aquifer in all of the wells. The Hanford fm. unit 1 ranges up to approximately 46 feet thick, and is composed of unconsolidated sediments ranging in grain size from cobble to pebble gravel, coarse to fine grained sand, silty sand, and silt. There are no distinguishable hydrostratigraphic changes within the vadose zone. There does appear to be a couple intervals within some of the wells, around 10 feet bgs, and between 20 and 30 feet bgs, where an increase in fine-grained size material occurs within the gravel dominated sequence; these intervals commonly have an increase in fine sand, silt, and minor amounts of clay and may reduce the permeability of some intervals within the vadose zone (Appendix). It is not clear whether these fine-grained intervals are a result of mixing between the Hanford and Ringold Fm. sediments (Ringold rip-up clasts). In all the wells, from approximately 36 feet bgs to the Ringold Fm., the Hanford fm. consists predominantly of coarse sandy gravel to gravel. A more open framework, i.e., clast supported structure; composed of predominantly gravel to slightly sand gravel is reported in wells 399-1-24, 399-1-26, 399-1-30, and 399-1-31 in the lower Hanford fm. from approximately 36 feet bgs down to the Hanford – Ringold contact; where present the matrix sand is composed of medium to coarse sand.

The Ringold Fm. unit 5 contact with the overlying Hanford fm. is at approximately 48 feet bgs. In all of the wells this unit contact was distinguished by a distinct color change, decrease in gravel size and content, and a significant increase in fine sand. This sand unit is believed to be part of the Ringold Fm. unit 5 (undesignated fine-grained unit) and is hydrogeologically part of the lower portion of the unconfined aquifer beneath the 300-FF-5 OU. The selection of this contact is based on lithologic changes identified by the wellsite geologist's sample descriptions, and direct examination of near-continuous sediment core samples. In some cases this contact is gradational and may actually reflect a zone of mixing with the overlying Hanford fm. gravel. This zone of mixing can range up to several feet thick.

The eastern most well, 399-1-32, encountered the Hanford – Ringold contact approximately 4 to 5 feet higher in elevation than in the other new wells (Table 1.1). Approximately 7.5 feet of fairly uniform, Ringold Fm. sand with only minor amounts of gravel was recovered from the core barrel below the contact. The contact appears fairly well defined in this well and strongly suggests that the Ringold Fm. sand encountered in the other wells reflect the same unit. In well 399-1-32, there is a visual color transition in the sand with depth that indicates reducing conditions; in addition this lower sand interval contains black pieces of woody material (Figure 3.1).

The thickness of the uppermost unconfined aquifer (Hanford fm. unit 1) was determined in each new well (Table 1.1). More details about the hydrogeology and uppermost aquifer system and groundwater conditions within the area are available in the limited field investigation report (Williams et al. 2007).





4.0 References

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WAC 173-160. "Minimum Standards for Construction and Maintenance of Wells." *Washington Administrative Code*, Olympia, Washington.

Appendix

Geologic Logs, Well Construction, and Completion Documentation

WELL SUMMA	RY SHEET		-	Start	Date: 11-16-06	Page <u>(</u> of <u>)</u>
Well ID: C5351		Well Nan	ne:	3	99-1-24	
Location: 300 - FF-5		Project:	Poly	pho	sphate Treatability	Test
Prepared By: Michael E. Caron	Date: 12-5-06	Reviewe	d By:		L. D. Walker	Date: 12/13/06
Signature: MC		Signature	e:	1	O Waller	. , , ,
CONSTRUCTION DAT	ГА	Depth in			GEOLOGIC/HYDROLOG	SIC DATA
Description	Diagram	Feet	Gra	phic og	Lithologic De	scription
8" OD temporary casing		0 -	404			
Schubel 131399 9.7': neat Portland cement grout with 5' bentonite -8" SS protective casing 3:01'ags -> 1.99' bgs 43/8" ID SS type 304/3011 Sch. 10 riser: +1.94' to 32' 9:7-299': 201 20-299': 3/8" bentmite pellets Chorado silica sand 38-42': 3/8" bentonite pellets Colorado silica sand 38-42': 3/8" bentonite pellets 43/8" ID SS type 304/316 20-Slot wire wap screen: 32-37' 43/8" ID SS type 304/316 Sch. 10 Sump: 37 - 37.35' All temporary casing remerved. Depths in feet below ground Surface.					0-0.5': crus drill pad 0.5-4.3': fill; gravel, gravel 4.3-11': Hanford gravel 11-12': Hanford sandy gravel, c 12-22': Hanford gravel 22-28': Hanford sandy gravel, c 28-36': Hanford (< 20'6 Sance - water level = 33.5 TD = 42'	shed gravel crushed , sand d fm. sandy fm. silty clay-altered fm. sondy fm. silty clay-altered n. sandy fm. gravel d) b'(11-30-06)
C Dix centralizers		-				

Well 399-1-24 (C5351)

A-6003-643 (03/03)

				BORI	EHOLELOO	2			Date: 1-16
Well ID	: c	5351		Well Name: 3	319-1-24	Location:	300 - FF-	5	
Project:	Pal	n plus pl	t day	reatability	Test	Reference Measu	ring Point:	Aroun	d curface
	Sa	ample		T	Sample	Description			Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Nar Color, Moi	ne, Grain Size D sture Content, S Max Particle Siz	Distribution, Soil Class orting, Angularity, M ze, Reaction to HCI	sification, ineralogy,	Depth of Method o Samp	Casing, Drilling f Driving Sampl ler Size, Water
0				0-0.5' -	gravel pac	0		Sonic	- 6" dn
			0000	0-4.3' -	fill - mix	of sand and a	marel	barre	1, 8" casii
_			0.0	4.3-11.0 -	sandy gra	vel - coavse	sand,		
_				gravel v	with costole	s to 1-2",	mostly		
_			- 0	. well-r	unded to	Sub-vounded	basalts		
5-		1	0.0	2 - ~ 50%	Sand, 51%	<u>معاط ط هم</u>			
_			0.0	- genera	the well-sor	Hed I C			
_			0.00	11.0-12.0	silty san	dy gravel, fine	ave		
-				very de	ark colored	1 1	~ 1		1. A. 67 1 - 1 - 1 - 1
-				12.0-22	sandy gr	avel, sandy	del		
1° —			000	i busil	warse sa	A 7 " .:. 1.	'n welse		
-				- coil we	icture in cre	sees from a 1a	1 auto		······
-			000	well h	1 34.5'	100 210	+ 4mile		
-			0.00	- 22- 28	- fairly al	oundant days	bacalt		
15			1.0	cobble	s to 4-5"	indiamater,	nod evate		
"			0.00	vertic	n to HCI				
			0.00	- 28 - 31	6' - sandy	gravel as al	<u>o</u> ~~		
			000	: - well v	sunded K	asalt - domin	inted		
_		İ	00	s cobble	s average	cobble size	= 1.5"		
20 _			0,0	- 36 - 42	'(TD) -	gravel with .	< 20%		
~ _			90.3	sandy	matrix -	cobbles are	nell -		
4			0.0	: nound	ed, average	e size is a :	∟″,		
_			0.0	Sand	mative is	medium to c	Davie -		
_			00	grain	ed - cobl	es are quite	well-		
25			00	Sorted	- over all	color is ~	54/51		
-				2					
_			0.00						
-			200	:					
			100						
30			00	; 					
-			000	?.					
			0.0	: - water 1	unel = 33.8	3' (measured 11-17	1-06)		
		<u>v</u>	0.0	2			,		
35 _			00	2					
~ _			000						
_			000						
_			30%						
			000			1			
Report	ed By:	Michae	1 E.	Caron		Reviewed By:	L.D.U	alker	
Title:		Senior	Geol	ogist		Title: Geo	logist		
								1	

11-16-06

A-6003-642 (03/03)

						Laatier	-		-	Date: 11-16-0
vveil iD:		535)			399-1-24	Location:	300-	+	5	
Project:	<u> </u>	oly phos	phate (veato bili	ty lest	Reference	Measurin	g Point:	ground	surface
Depth	Sa	imple	Graphic		Sample	Description				Comments
(Ft.)	No.	Blows Recovery	Log	Color, Moi	me, Grain Size I isture Content, S Max Particle Si	orting, Angul ze, Reaction	arity, Mine to HCI	cation, ralogy,	Depth of 0 Method of Sampl	Casing, Drilling M Driving Samplin er Size, Water Le
40			000	ļ					sonic	- 6" drive
-			0000		<u></u>				barrel	, B' casing
-					<i>u</i>					
45_										
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Reporte	d By:	Micha	el E.C	Laron	·····	Reviewed	By: Z	. D . U	Jalker	
Title:		senior	Geolog	3 ut	1 <u>A</u>	Title:	6001	ogis	+	
Signatur	e:	In	Ľ		Date: 0-16-01	Signature:	20	Wal	her	Date: (2

				@ 11-16-06
				Page 1 of ZI
TILLED ACTIVITY		NO PLAN	Date: 11-	-16-06
Purpose: Polyphosphat	e Treatability Test	Location: 30) - FF-	5
Well ID: C535821	11-16-06	Well Name: 39	19-1-25	35 24 11-16-06
Drilling Co.: Prosonic		Rig No.: SR-071	Rig Make/	Ad.: Prosmic Smic Rig
Casing String No. (1) 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size8"	Auger	Air Water/	Mud	Make
Grade	Rotary	Reverse D	irect	Model
Lbs.Per Ft. 35	Tubex	Vol: cfm		Choke
Material carbon steel	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Weided Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At: 42 / 40 ± 2'	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Drig. Co.	Rig No.:		Rig Make/M	Nod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size	Auger	Air Water/M	/ud	Make
Grade	Rotary	Reverse D	irect	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		<u>Bit Size</u>
Set At:/	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Comments/Remarks:		·		Estimated Depth to Water
		·		
Reported By: M · L · L	E C			
Name/Title:	E. Caron	<u>.</u>		
Senior I	yeologist			11
Signature:	2			Date: 10-16-06
				A-6003-650 (04/03)

	EIEI					Page 1_	of <u>2</u>					
	FIEL		PORT - DAILY DR	ILLING		Date: 11-16-0	6					
Well ID:	CE	5358×1		Well Name: 39	9-1-	31 25 24						
Location:	300	-FF- 5		Report No.:		D VII-16-06						
	St	art	Finis	h		Total						
Time	0	600	Time 1530		Time	930						
Hole Dept	th/Csg	0 / 0	Hole Depth/Csg 47	2_1_42_	Hole [Depth/Csg 42	1_42_					
Reference	e Measuring GROUND	Point: SURFACE	Casing String No. (1)2 See Report No. 1	Casing String No. $(1)^2$ 3 4 Rod Size: $\mathcal{B}'' \circ \mathcal{D}$ See Report No. 1								
Time/	/Depth		Description of Activities/Operations with Depth									
From	ъ, To	(At	tach applicable drawing	gs and document	straigh	tness test results)						
	0 600	- geologist +	drillers on site									
	0650	. POD at we	Ilsite (3 dvillers	, BTR, scolo	tion							
	0805	- start dvill	ing with 20' a	core barrel	drive	Lo 16'	1					
		- sprayed dr	rive tube with wate	n to cool at	w/							
	0835	- add 6" bi	+ + 10.00 length	of 8" casin	<u> </u>	+ ubular tally	= 8.5'					
	0845	- am RCT d	heck - all < ba	deground								
0840	08400	- push 8" ca	sing to 16' (ad	d 10.0' tell	<u>n =</u>	18.5')						
	0858	- trip in 20' a	trive barrel, de	m out casing	101	6'						
0905	0930	- drive core	barrel to 36',	easy (Fuel)	dril	ling from 16 -	24' then					
0015		much slower										
0937		- add 10.00	of B' cusing	, tubular to	ny-	= 30.51	- [.					
01.40		- add 10.00	aing shoe is ~	, tubulan + 36.5' her	ally	= 40.5 , 54	thup is					
09:40	0950	- tripin cor	re barrel, clean	out casin	s to	36'	P					
	09.50	- attempt 1	o tae writer -	no writer a	+ 36	1						
	0955	- water level	in C5000 =	33.5' bas								
0955	1000	- drive cor	e borrel to 42	after adding	5'0	using - tally =	45.5 1					
1010	1030	- drive casing	a to 42' clean	nout to 42	/							
1030	12:15	- drillers de	an up leave si	ite for lunch	+	stainly well	materials					
12:20	12:55	- drillegs decon	n stainless shell	casing and so	reen							
	10:20	- straightness	test with 20'	x 6" core l	oa we	- DARS						
	1300	- tagged wat	er level at 34.2	/		T						
	1315	- add benton	ite pelletr in inte	erval 42-3	e/	(3 bucketr)						
	1320	- install sum p	screen, and	Casing .	- c	entralizer .	nstalled					
Reported	By: Mich	nael E. Caron		Reviewed By: L.D. Walker								
Title: <	Serior	Geologiot	Date: 11-16-06	Title: 600 (on	gist		Date: 12/13/06					
Signature:		hel		Signature:	IK	lelk						

A-6003-651 (04/03)

	FIE	ELD ACTIVITY REPORT - DAILY	ORILLING	Page 2 of 2					
		Continuation Page	12-11-06	Date: 11-16-02					
Well Nam	e: 🖂	5351 399-1-24	Well ID: 399-1-24	C5351					
Location:	3	- FF- 5	Continuation of Report No.:						
Time/	Depth To	Description of	ption of Activities/Operations with Depth						
			1 1						
13:25	13:40	at top and bottom of screen	and at 10 Dgs	d shuiten shal					
	12.10	casia dichus = 2'	Court has siller jon	to stam cars she					
	1845	- dvillers vemore 5' length	of 8' cooina	\					
	1355	- Sand level to cost at 3	sis' bec						
1402	1425	- surse filter pack with d	wal black surger - se	and fell out loop					
		than Oil' in last 15	minutes						
	1400	- Dm RCT check - < bac	kground.						
	14:30	- bring sand level up to 29.	9' (2 base)						
	1435	- add per bentinite pellet	to bring level to .	- 2.B (1 budget)					
	1440	- verion 10' length of 8	" caping						
ILLES	1450	- add bentonite pellets to	22'bgr (1 buc	het)					
	1450	- remove 10' length of E	3" casing						
1450		- add tentonce crumbles +	0 ~ 26 bgs (1	bag)					
L	1452	- remove 10' of Cabing		-					
	11722	- add bentmite crumbles +	0 9.7' bgs (2	bang)					
1500	1510	- mix grout for surface se	al - mix = 20 ga	11ons water, 2					
		bago of Portland Coment,	5% ground bentoni	te - inject one					
		mix - grout seal is a:	2.5' bgs						
	1512	- remove to of cabing							
	1514	- remove 10' of casing +	bit (al out)						
	1530	- left site for day (d)	rillers will more vig a	and set up on next					
		hole)							
<u> </u>		- not noe	ed @						
		- note - contralijents at top	s & buttom of scree	n and at 10 bg)					
			e						
<u> </u>			- Veo						
<u> </u>			10						
Reported	By: Maril	1E Com	Reviewed By: / o	/					
Title:	Sui 1	Date: 11-11 - 1	Title'	Date: 12/2/					
	Senior	Leologiot Dale. 11-16-06	The Goologist	Date: 12/13/01					
Signature		hel	Signature: 22 Walk	h					

A-6003-652 (04/03)

			FIELD	ACT		ORT						Page 1 of 1	_		
	-		TUB	ULAR	GOODS TAL	LY						Date: 11-16-06	-		
Well N	lame:	3	99-1-24			Well I	D:	C 53	51						
	TEMPO	DRARY				PERMANENT*						SCREEN/CAP*			
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length	(ft.)	С	Jt. #	Length (ft.)	С		
1	o.so (bit)	21		1			21	10.00(0	<u>@185</u>)	C	1	0.35 (ap)			
2	10.00 (casing)	22		2			22	10.01	<u>v</u>		2	4.99 (Serreen)	6		
3	10.60 (~)	23		3		+	23	10.01	/	C	3				
-4	10.60	24		4		-	24	5.00			4				
6	10.60 V	25		6		-	20			<u> </u>	6				
7	2.60	27		7			20				7				
8		28		8			28				8				
9 29 9 29 9 9 29 9															
10 30 10 30 10															
11 31 11 31 11															
11 31 11 12 32 12 32 12															
13		33		13			33				13				
14		34		14			34				14				
15		35		15		ļ	35				15				
16		36		16			36				16				
17		37		17			37				17				
18		38		18		+	38				18				
19		39		19			39				19				
Tet	155	40		20 Tel			40 Tot	20.0	•		20	5.01			
Com	nents/Remarks:	-		17											
Temp	orary: O.D./I.D.	81	7.25"	Perm	anent: O.D./I.D.	4.9	5" /	43/c"		So	reen:	0.D./I.D.4.5"/43	/\$"		
							/					1.1			
	bit	÷ (o" in lengt	-h	0D =	8.25	″,	ID =	7.7	25 "					
	1	- L					·								
	an		Davvel -		עם ו	, 8	1	\mathcal{V}							
	111 1														
											~~~~				
Repo	rted By: m	icha	el E. Ca	rm		Revi	ewed B	y: L.	0,0	Valk	ter				
Title:	Sen	ior	Geologist	Da	ate: 11-16-06	Title:	(	seolo	gis.	<i>f</i>		Date: 12	13/06		
Signa	ture:	In	L			Sign	ature:	20	Way	the			-		

A-6003-655 (04/03)



A-6003-644 (03/03)

FIEL	D ACTIVITY RE				Page 1 of 1						
					Date: 12-7-06						
Well ID:	C5351	3 m ² + 10 mm	Well Name:	$\neg 99$	7-1-24						
Location: 3	00 - FF-5		Report No.:		3						
Sta	rt	Finist	h		Total						
Time 151	2	Time 1538	<u>š</u>	Time	0025						
Hole Depth/Csg	A / NA	Hole Depth/Csg NA	- / NA-	Hole [	Depth/Csg <u>NA</u> / <u>NA</u>						
Reference Measuring GROUND S	Point: SURFACE	Casing String No. 1 2 See Report No. 1	34 Ro	od Size	e:						
Time/Depth		Description of A	Activities/Operation	ns with	n Depth						
From To	(At	tach applicable drawing	ach applicable drawings and document straightness test results)								
1513	- flowmetter -	9810 gal.									
1522	- start Lest	# 1 (Bull winkle)	), probe =	ou	t of wrater						
	time ph)	conductivity .	temp turb	fibin	y probe						
	1523 7.56	0,488	13.8° ove	r lim	it not in use						
	1528 7.48	0.487	<u>14.7°</u>	216							
	1533 7.55	0.484	15°	99.7	✓						
	1537 7.55	0.484	14.9°	43.7	✓						
1538	- stop pump	test - dr	au down (	e-	tope) = 1.5'						
	- flow meter	= 10180									
	-	/									
					/						
				_ /							
				/							
	/										
			8								
					/						
			20								
	/	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<								
f		2									
	· · · ·	1	··								
Reported By: M.J	nael E. Carr	<u> </u>	Reviewed By:	6,6	.10alket						
Title: Sonio	Geologist	Date: 12-7-04	Title:	lon	Date: 12/11/2						
			<u></u>	1091	111 1						
Signature:	Me		Signature:	$\triangleright$	Walk						

A-6003-651 (04/03)

WELL	WELL CONSTRUCTION SUMMARY REPORT												
						ŀ	Finish Date	e: 1/-16-	06				
WHID CEREL	Well Name: 700	-1 - 7	11				Fage	<u></u>	<u> </u>				
Well ID: C5551	Well Name: 399	1-1-2	4	Approximate Location:	3	00 - FF	- 5						
Project: Foly phosphale	Ireatability 195	· +		Geologist(s):	<u>н,</u>	GRA	M, INC						
Drilling Company: Troson	12			_ Micho	hel	E. C	(v-0)						
Driller: Haron Holams	Licen	se #: 28	317										
TEMPURARY C	ASING AND DRILL D	EPIH	0.0.4.0	DRILLING METHOD		IOLE DIAN	E DIAMETER (In.) / INTERVAL ( $\pi$ )						
		3110	u /	Auger:	Diar	neter	From to						
8" / carbon steel		- 8.29	5/7.25	Cable Tool:	neter	From	to						
	·	-		Air Rotary:	Diar	neter	From	to _					
		_		A.R. w/Sonic:	Dian	neter	From	to	4.0				
	<u>-</u>			Sonic	Dian	neter <u>8</u>	From	to	42				
	· •				Dian	neter	From _	to					
*Indicate Welded (W) - Flush	Joint (FJ) Coupled (	C) & Threa	ad Design		Dian	neter	From	to					
FJ													
	Drilling Fluid: - none -												
Total Drilled Depth: 42'	Hole Dia @ TD:	8.25	"	Total Amt. Of Water Added During Drilling: - O -									
Well Straightness Test Results:	Pass			Static Water Level: 3	3.8	Date:	11-17	- 0 6					
Sandas (tuna)	late and	GE	OPHYSIC	AL LOGGING		1-4-							
Sondes (type)	Interval	Da	ate	Sondes (type)		Inte	rval	Dat	e				
					1								
A					1								
	· •				$\mathcal{T}$	·	, <u> </u>						
			Slot			Inte	rval	1	Mesh				
Size/Wt./Material	Depth 1-4-0-	Thread	Size	Туре		Annular Sea	VFilter Pack	Volume	Size				
4" stainles	<u> </u>			bentmite pellets			42	3 buckets					
				10-20 adorado silica sa	M	29.2 .	38	5 begs					
	·			bentonite pellet		22 .	29.2	2 budids					
				bentonite erumble	。	9.7	22	3 bags					
				Portland convent arou	t I		9.1	20 591					
			OTHER A	CTIVITIES									
Aquifer Test:		Date:		Well Decommission:		Yes:	No:	Date:					
Description:				Description:									
									_				
		WELL SI	URVEY D	ATA (if applicable)		Not	ret su	inversed	at				
				Protective Casing Elevation		thi	3 tin	ч <i>р</i> ′					
Washington State Plane Coordin	nates:			Brass Survey Marker Eleval	tion:			-					
		co	MMENTS	/ REMARKS									
								_					
Reported By: Michael E.	Gavon Title: Ser	vior G	- cologio-	Signature:	2	_		Date:	06				

A-6003-658 (04/03)

WELL SUMMAR	RY SHEET		SI		Page <u>1</u> of <u>1</u>
Well ID: C5357		Well Nan	ne:	299-1-25	
Location: 300 - FF- 5		Project	P	Jusharahab Trada	hility Ist
Prepared By: Dickard E Course	Date: 12-5-04	Reviewer	d By:	ly phosphate treatra	Date: 12/1-/
Signature: A.Q	Date. 12-5-06	Signature	u by.	L.D. Walker	Date. 12/13/0
	۵	Signature		GEOLOGIC/HYDROLO	
		Depth in	Granh	ic	GIC DATA
Description	Diagram	reet	Log	Lithologic De	escription
8" OD temporary caning	W W	0-	A664	0-0.5' crucher	angunal duall
8"ss protective casing 29785-203			0.40	and and	grupe ann
D = 10 5' and Partland by			0.4	0 post ( D)	لا م م
canad and ill 5' badaits		-	0000		usked gravel,
Cement growth with 34 penonic		-	0.000	gravel, sand	<u> </u>
13/" Dec 1 2011 /211		10-	000.0	2 3-20: Hantord	+m. sandy
4/8 10 55 type 304/516		-	000	granel	//- 0
sch. 10 riser: + 1.93 to 42	12 13	-	0.00	20-22: Hanford	+m. silty
	12 12	-	0.00	sandy gravel,	clay - altered
10.5-30: bentonite crumbles		-	2.00		0
1 2/11 1 1		20-	0.0	22-24: Hanford	fm. sandy
30-39.9: 3/8 bentonite pellets		4	-0	gravel	
		4	0. 0	a	
39.9-49.5: 10-20 mesh Coloradu		_	0.0	24-29: Hanford	fm. silty
silica sand		1	10	sandy gravel,	clay -altered
		30_	0.0.00		
49.5-50: natural slough			000	0 29-48.2 : Hanf	ord fm. sandy
	XXX XXX		0.0	gravel	. ,
42-471: 43/8" ID 55 type 304/	XXX XXX		0.00	<u>o</u>	
316 20-slot wire wrap screen			0.00	48.2-50': Ringel	Fm. sand
47-47.35': 43/3" ID ss tuge		- 1	0.00	and silty so	ndy amuel
304/316 Schild SUMD:		40-	0000	3	and June
47-47.35'		-	.000		(12001)
All burners are in a start		-	0.00	D WARE REVEL - 54.5	(1-30-00)
Deally in Cot Library			000	TD = 5.1	
succession the second ground		-	0:01	10-20	
>uv tace.	· · · · · · · · · · · · · · · ·	50 -	Perrs		
	logical states	-			
		-	4		
		-			
1 centraliyers		_			
				· · · · · · · · · · · ·	

## Well 399-1-25 (C5352)

		· · · · · ·	BORE	HOLE LOG				Page 1_ of Z K
								Date: 11-17-06
Well ID	C 5352	W	/ell Name: 390	7-1-25	Location: -	300 - FF -	5	
Project	Polyphosph	ate Trea	tability Tes	+	Reference Me	asuring Point:	groun	d surface
Death	Sample	Craphic	,	Sample D	escription			Comments
(Ft.)	Type Blows No. Recovery	Log	Group Name Color, Moist	e, Grain Size Di ure Content, So lax Particle Size	stribution, Soil ( rting, Angularity e, Reaction to H	Classification, y, Mineralogy, ICI	Depth of 0 Method of Sample	Casing, Drilling Method, Driving Sampling Tool, er Size, Water Level
0_		0000					Sonic	- 6" drive
	1	000	0-0.5' - 0	gravel pad		l a sel	Damel	, 8" casing
			0.5-30	- filler	te	o , gravel		
-		100.		<u>, , , , , , , , , , , , , , , , , , , </u>				
			5.0.7.0'-	coaver av	ravel (sand	y gravel)		
] _		00g	(56) -	40-50%	meduim so	nd, coldes		
		000	<u>average</u>	2.5-3"	in deaine	her, mustly		
-		.006	basalt			the last		
1 -		0.0 0	(1.5	$\frac{(s(j))}{(s(j))}$	Sanay Gr	the formed		
10		0000	sye	de to	bldes more	e heterolithic		
-			and	sub-angul	an to sub	- roundat		
]		0.00	11.5 - 12.5	5' - 00 0	bove			<del></del>
		÷ <u></u>	12.5-14.0	- very	coarse cl	ant- supportal		
15-		0.00	gravel	(«() ~	20-406	med. sand,		
-		0,00	Dapat	t co lobus	+0 > 6	, coolid		
· -			and	Dorver Sc	ov ted			
-		0.000	14.0-305	andy ara	vel (sG)	with		
20		:03:	very	coaver san	nd matrix	sand		
		000	in 4	0- 60%	cobbles	<1 im		
_		000	_ cliain	der, sub.	ongular .	tes Sula-		
-		000	round	led at an a	la . 11000	1. ~ h		
-		0.00	14-24 -	strong C	cla olto	wature		
25-		0.0	30-36 -	coarse s	and grav	el(sG)		
	]	0 10'	- coa	rse Gand	matrix (	260:()		
-		0.00		oles genera	<u> </u>	<u>' in dia</u>		
-		00.0	36-48	2 48.2' -	as abre	(56)		
30 -		00	- sand	med. to	<u>coarse</u> g	, hil		
-	{ }	000	Cobb	L MAR 1	" to ? "	in dia make		
-	1 1	0.0		<u> </u>				
-	1	000						
35		1000	-				water lev	el = 34.3' (11-20-06)
-	, I	1.00						
-	{	0.0.0	·					
-	{ }	000	>					
Repor	ted By: Multi		Care		Reviewed Bv	: L.D. 11.	Kar	
Title	C.	C	L il		Title: /		(	
	Senior	1 eo	m st	Data at a	Cimpations	20109151		Date: 1- / /
Signat	ure:	/		Date: 11-17-06	Signature:	po Wa	er	Date: 12/13/06

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A-6003-642 (03/03)

				BC	DREF	IOLE L	.OG					Date:	11-17-01
Well ID:	C	5352		Well Name	: 399	1-1-25	; ]	ocation:	300	·FF-	5		
Project:	Po	Haboral	nate T	ventabili	ty T.	es f		Reference	Measurii	ng Point:	ground	d sui	-faco
Denth	Sa	imple	Crank		Sample Description							Com	ments
(Ft.)	Type No.	Blows Recovery	Log	Group Color,	Name, Moistu Ma	Grain Siz re Conter ax Particle	ze Dist nt, Sort e Size,	ribution, S ing, Angul Reaction f	oil Classi arity, Min to HCI	fication, eralogy,	Depth of Method o Samp	Casing f Drivin ler Size	i, Drilling Me ig Sampling e, Water Lev
40			000								Son	ic	
. –			000	0 48.2	48.2-50 (D) Ringold Fm - sandy						6" drive bar		
-			0.00	j_grav		<u>s () 1</u>	inin	g down	word	into		<u>{" ci</u>	rsing
-			00.0	Some Some	in a sol	) and (49-	$\frac{\varepsilon_{11+1}}{\varepsilon_{12}}$	hana	Silt.	- tmer			
			0.0	e tha	t has	gone to	مات ہ	45 - 0	obbles	in			
*_			0.00		ven ?	Fractio	<u>v</u> 0	ve well	1- vour	ded			
4			000	a and	hete	ino lithi	ic, w	ithas	ignifice	int .			
4			0.0	<u>i fra</u>	tion	of an	<u>Leoit</u>	ric volci	anics	<u>- sand</u>			
				a van	geo p	m m	dan	- to t	ine gr	aner has			
50				<u> </u>	well -	devel	- OPe	iron	oxide	coating			
7				~ 00	enll	cobr	10 10	NE-4/	6 - 6	in			
_				C	<u> - a</u>	Hered	sul	2-angi	ulen cl	asts,			
-				mo	st like	ely after	<u>en 5</u>	hales or	$\frac{r}{1}$	Pines			
				- ava	nive	Ag'ha		al for	m Ura	Lind Cu			
1				at	47'	bgs		,		10.0 (			
_					= 50	<u>२ मुद</u>							
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Reporte	d By:	Michae	el E	. Carn	<u>^</u>			Reviewed	By:	L.D.	Walk	er	
Title:	$\leq$	Senior	6	to polos	-			litle:	Gro	logis	+		
Signatur			.D			late: u Jo	-06	Signature:	2	0112	14		Date: 12

A-6003-642 (03/03)

			Date:	11-17-06
Purpose: Polyphosphat	e Treatability Test	Location: 300 -	FF-	5
Well ID:	2	Well Name: 399	- 1- 25	5
Drilling Co.: Pro sonic		Rig No.: ≤ R-071	Rig Make/	Mod .: Prosonic Sonic Ric
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size8 "	Auger	Air Water/M	/ud	Make
Grade	Rotary	Reverse Di	irect	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material <u>Carbon</u> steel	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At: 5012/50	Other:	Additives		Туре
Shoe OD/ID 8.25/97.25		- none -		Nozzles
Reference Measuring Point:		_		Rod Size
GROUND LEVEL		_		
Drig. Co.	Rig No.:		Rig Make/	Mod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size	Auger	Air Water/N	/lud	Make
Grade	Rotary	Reverse Di	rect	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At:/	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Comments/Remarks:				Estimated Depth to Wate
				- measured at
	· · · · · · · · · · · · · · · · · · ·			33.8 bgr m
				proximal well
Papartad Pur NA · 1	5 (			C5351 11-17-04
Namo(Title:	E. Caron			····
Manier nue. Semior (	realogist			

A-6003-650 (04/03)

	FIEL	D ACTIVITY RE	PORT - DAILY DR	RILLING		Page of _2		
						Date: 11-17-06		
Well ID:	C	5352		Well Name: 30	<del>1</del> 9- 1	- 25		
Location:	300	0-FF-5	1	Report No .: 11-17-06	<u>e</u> A	x D		
	St	art	Finis	h		Total		
Time	06	ю	Time 1520		Time	1e 1120		
Hole Dept	h/Csg	0_1_0	Hole Depth/Csg5	<u> </u>	Hole [	Depth/Csg <u>50 / N/A</u>		
Reference	Measuring GROUND	Point: SURFACE	Casing String No. 2 See Report No. 1	234Ro	od Size	" <b>E</b> "		
Time/	Depth		Description of	Activities/Operation	ns with	1 Depth		
From	То	(At	tach applicable drawin	gs and document s	straigh	tness test results)		
	0600	- POD at sit	e trailer (3 dr	illers, BTR, se	cologis	+)		
	0655	- mensuro ura	ter level in C5	351 = 33.8	<u> </u>	permanent casing		
		stickup =	3.15' abre a	pound sur fac	പ	, <u> </u>		
0715	0840	- drillers work	to repair proble	m with one a	of H	e rig leveling jacks		
0853		- start dvill	ing with b" core	barrel - 1	0' 1	in length		
	0903	- add addit	imal 10 core	barrel				
	2930	- push casi	ing and bit to	16.0' (+	-ubnl	Lon tally = 20.5')		
	0500	- am RCT	chede - nothing	to survey,	retur	mat 1030, all < background		
	0945	- clean out	caping to 16'					
	0950	- resume du	rilling - PNNI	- grob samp	h f	m 32-34		
	1005	- add 10'	cooing (tubu	lan telly =	40.5'	)		
	1007	- resume drill	ing, push con	a barrel to	50'			
	10:15	- add if ca	ang Chadd is	casing (tub.	nlan.	tally = 55.5'		
	1035	- clean or	nt coving to 5	>´				
	1050	- break for	lunch					
	10 40	- well straig	ghtness test with	h 6"x20' c	ione	barrel - pass		
	208	- pull casin	y back 2' to	48', both	em a	fhole tagged at 49.5'		
	1215	- construct	with 4"	stainless steel				
		- central izen	installed at	top and bot	tom	of screen and 25'		
		above the te	op of the scree	n - screen	o.	initially set at		
		42-47'	, nominal sticl	up is 3'				
	1240	- add z ba	g 10-20 filter	pack sand,	Pull	8" casing back remove		
		5' casing	joint - tubular	tally = 50.5	51.5	stickup = ~ 5'		
Reported 8	By: Mich	hael E. Caron	<b>\</b>	Reviewed By: 2	<u>L.D.</u>	Walker		
Title:	senior	Geologist	Date: 11-17-06	Title: (geol	log i	54 Date:12/13/06		
Signature:	Ma	e~		Signature:	D	Valler		

A-6003-651 (04/03)

	FIELD ACTIVITY REPORT - DAILY I	DRILLING	Page <u>2</u> of <u>2</u>						
	12-11 ⁻⁰ Continuation Page	12-11-06	Date: 11-17-06						
Well Name:	<del>65352</del> 399-1-25	Well ID:	C 5352						
Location:	300 - PF- 5	Continuation of Report No.:	B"-17-06 ()						
Time/Depth	Description of	of Activities/Operations with Depth							
			1 1 00' "						
123	- bollow . [ Capine is ~ 4	AS', 5' of overlap							
132	S - drillers lose stainless steel	taxe on contraliner	- while retrieving						
	tare - after consultation	with this Wright	determination						
	was made to leave tape"	t well	1						
134-	2 - pull 8" casing back -	3.5' ( bittom of	capitic at 41.5')						
134	7 - add bentonite pellets to	7' inside capina	- lose 2nd						
	weight ( stainlass steel	bailer) at 34.5'	bas						
13 5	o - pull off 10' length of	caping (8"), tubal	an fally = 40.5'						
	stickup = 4.5', bottom o	f casing is = 36' bg	s						
140	>> - add bentomte pellets +	o 30' bgs - total	= 2.5 buckets						
140	6 - pull 8" caping back	- 5'	-						
146	7 - add bentomite of cru	mbles (3 bags)							
1410	- Jull off 10' length of B'	" casing - tubular	tally = 30.5'						
H1-	2 - add bentonite crumbles	( 6 bags), fill de	pth = zift						
143	· - pull B' Casing back ~	<u> </u>							
143	2 - add bentmite crumbles	(2 bags)							
143	5 - pull off 10' length of B'	casing - tubular	tally = 20.5'						
	18 - add bontonite crumbles	(2 bags) - fill deg	sth = 10.5'						
	2 - mix 56 tentonite Po	vtland cement - 2	bags coment +						
	20 gallong water -	inject grout to e	2						
144	5 - pull off 10' length of	B" Casing - tubulo	v telly = 10.5'						
144	17 - inject grout, level is	2 3' bas							
144	19 - pull of 10' length of 8	3" caping + bit - a	11 out						
150	s - measured wrater level	in c 5351 at 33.	۹′						
15:	20 - left site for day								
	not used	e/							
1205 #12:	20 Surge well, sand level d	diops total of 0.25 ft, drops <0.1							
	1 ft in last 15 minut	ute							
Reported By:	Michael E. Carm	Reviewed By: L.D.U	la lker						
Title: Send	Date: 11-77-06	Title: Geologist	Date: 12/13/06						
Signature:	me	Signature: 32 Walk	h						

A-6003-652 (04/03)

			FIELD	ACT	IVITY REP	ORT					Page 1 of	
			TUB	ULAR	GOODS TAL	LY					Date: 11-17-0	5
Well N	ame: 39	9-1	- 25			Well II	<b>)</b> :	C 5352				
	TEMPO	RARY				PERMA	NENT				SCREEN/CAP*	
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С
1	0.50(b;+)	21		1			21	0.35 (cump)		1		
2	10.00 (Cabing)	22		2			22	4.99 (screen)	C	2		
3	10.00	23		3		ļ	23	10.01 (casing)		3		
5	10.00	24		4			24	10.01		4		ļ
6	10.00	26		6			26		<u> </u>	6		
7	10.00	27		7			27	10.07 4		7		
8	5.00	28		8			28	9.17 ×				
9		29		9			29			9		
10		30		10			30			10		
11         31         11												
12		32		12			32			12		
13		33		13			33			13		
14		34		14			34			14		
15		35		15			35			15		
16		36		16			36			16		
17		37		17			37			17		
18		38		18			38			18		
19		39		19			39			19		
20		40 Tot		20			40			20		
*Indica ALL C	te those joints with asing length shall t	centra pe meas	lizers with a C in t sured to the neare	he availa st 0.01 fi	able box.			50. 26				
Comm	ents/Remarks:											
								0				
											_	
Tempo	orary: O.D./I.D.	8"	7,25"	Perm	anent: O.D./I.D.	Ч.5	" /	4 3/8 "	Sci	reen: C	D.D./I.D. 4.5"/4	\$8"
	have have	• •	)" -> D		ID							
	hit		, <u> </u>	ملار	8.25"	OD		1.35" ID				
		-		<u>,</u>			-					
											. <u></u>	
Dest						Devi				6		
Title		$\frac{ae1}{}$	E. Caron			Title	wed By	<u> </u>	Nall	Ker		4
Signet	) Jenior	De	ologist	Da	11-17-06	Signa	iture:	leologis	+ //	•	Date: /2/	3/06
Signat	ure: mel	$\sim$	-			Signa	iture:	no war	k	۲		

A-6003-655 (04/03)

		WELL DI	EVELOPMEN	AND TEST	ING DATA		
Well Name: 39	19-1-25 5352-02-11	Well ID: C	5352	Well Location:	300-FF	-5	Date: 12-7-06
	Reference Me	asuring Poin	t (unless otherw	ise noted): TO	OP OF OUTER	CASING (T	OC)
Has the well be	en surveyed?	O Yes (	9 No	Does the well	have a cement	pad? Ø	Yes () No
PART 1			PART 4				
STATIC WATE	R LEVEL:					[	
Start of Job 35.55			Measuremer	ed Its		Ci M	easurements
End of Job 33.60			Date: N	4		Da	ate: 12-6-06
DEPTH TO BO	TTOM:			· · · · · · · · · · · · · · · · · · ·	_	L	
Start of Job 47.2			<u></u>	·			C' ,
End of Job	47.2		<b>▲</b>		└┰╼┩┡╾┯┙		<b>≜</b>
PART 2			]				▲
WELL D	EVELOPMENT	DATA	A				A'
Pump Model	Red: flow	3	] _ В	Gratinal arial			B'
Intake Depth	45'		en	and level		-20-	
Starting Turbidi	ty over his	mit (>1000)	]. ,,				/
Pump Start	<u>Stop</u>	Flow Rate	A =			A' =	2.97
1435	1450	33 gpm	В =			B' =	1.95
			C =			C' =	1.02'
			]				
			Are there any re	eference marks	on the casing s	trings? C	Yes 🛇 No
Total Pumped	500 a	;a).	PART 5				
Final Turbidity	107		COMMENTS:				
XD SN/Range (	PSI)						
PART 3							
INSTANTANEOUS SLUG TEST							
Static Water Level (TOC)							
Transducer Depth							
Baseline Start							
Injection Start	A						
Baseline Start							
Withdrawal Star	t						
Slug Vølume							
XD SN/Range (	PSI)						
Prepared by (print name):			Signature				Date:
Illich gel E. Larm			0	me	•		12-7-06
/ / neviewea by	λ (μh. 1k-		Signature	A In	L/h		Date:
<i>L</i>	. D. Valle	·V-		an po	man		12-13-06

A-6003-644 (03/03)

	FIEL	D ACTIVITY RE		RILLING	Page _1	of			
					-06				
				Depert No.	399-1-25				
Location: 300			Finie	h Kepon No.:	(2) Tatal				
Start			r ma		lotal				
Time         1405           Hole Depth/Csg         NA         /_NA			Time 1455		Time 005	0			
			Hole Depth/Csg NA	/ <u>NA</u>	Hole Depth/Csg <u>NA</u> / NA				
Reference Measuring Point: GROUND SURFACE			Casing String No. 1 2 3 4 Rod Size: See Report No. 1						
Time/Depth			Description of	Activities/Operation	s with Depth				
From	То	(Attach applicable drawings and document straightness test results)							
	1405	- decon pu	mo - Anne,	meter = 9310	>				
	1407 - trin in Dung set prime inlet at w46' and - 9191								
1435 - chart that the 18 s in all cor									
Line all contractivity denna techidate avabo									
		1436 7.64 0.482 137° are limit 2.904							
		1441 7	58 0.487	14.7	385 1	003			
		1446 7	.56 0.486	14.8	155 0.	500			
		1451 7	.50 0.484	14.62	107 0.	034 (out of water)			
	1450	- stop lest	#9 - nore	covern lest	,	(00) (0			
- drawtown test stapped on advice of PAINL (W						Williams)			
		- Anneter	10 = 9810	on one of					
		Franklin	@12-2-06						
					/				
					/				
			/	/					
		R							
		, ve							
		- / · · · · · · · · · · · · · · · · · ·							
		, 2°							
		[	/	· · · · · · · · · · · · · · · · · · ·					
Reported	By: M	ichael E. Gr	~~	Reviewed By:	L.D. Walker				
Title:	Senior	Geologist	Date: 12-06	Title: Gcolu	gist	Date: /2~/3~06			
Signature:		he		Signature: Al	Walk				

A-6003-651 (04/03)

							Start Date	11-17-	o (	
WELL	(Y REPORT			Finish Date: 11-17-06						
							Page	e_/of		
Well ID: C5352 Well Name: 399-1-25				Approximate Location: 3co - FF - 5						
Project: Poly phos phate	= Treatability -	Test		Other Companies: GRAM, INC.						
Drilling Company: Proson	ic			Geologist(s): Michael E Caron						
Driller: Aaron Ad										
TEMPORARY C	ASING AND DRILL D	DEPTH		DRILLING METHOD	DRILLING METHOD HOLE DIAMETER (in.) / INTERVA				L (ft)	
*Size/Grade/Lbs. Per Ft.	interval S		e O.D./I.D.	Auger: Diameter			From	to		
B" of carbon steel	0 - 50 8.2		5"/7.25	Cable Tool: Diar		ameter From to				
	·	_		Air Rotary:	Diar	neter	From _	to		
· · · · · · · · · · · · · · · · · · ·		_		A.R. w/Sonic:	Diar	neter	From	to		
		_		Suite	Diar	neter 8	" From	o to	56'	
		_		Jonic	Diar	neter	From	to		
*Indicate Welded (W) - Flush	Joint (FJ) Coupled (	 C) & Threa	ad Design		Diameter From to					
					[ Dia			0 _		
								·		
						-				
Table Diffed Deaths		~ /	,	Drilling Fluid: - Nono -						
Total Drilled Depth: 50	Hole Dia @ 1D:			Total Amt. Of Water Added During Drilling:						
Well Straightness Test Results:	pass 11-	-17-06		Static Water Level: 34	1.3 '	Date	: 11-20-	-06		
Sondes (type)	Interval	D	ate	Sondes (type)		Int	erval	Dat	e	
	-			0011000 (13 pc)			-			
· · · · · · · · · · · · · · · · · · ·										
			COMPLET							
Size/Wt./Material	Denth	Thread	Slot	Type		Int	erval	Volume	Mesh	
	6 47.1 /	Thread	Size			Annular Se	al/Filter Pack	Volume	Size	
4 stainwo	<u> </u>		20	10-20 Journdo site	n Saue	2-1-7	70.0	35 bmp		
	·			benfourte pellets		<u>30</u>	· <u> </u>	2.5 bucke	8	
	<u> </u>			bentowite crumbles	2	10.3	- 30	10 begn		
				neat Portand comen	4		- 10.5	zogal.		
		.,	OTHER AC	TIVITIES						
Aquifer Test: Date: W			Well Decommission: Yes: No: Date:							
Description: C			Description:							
		WELL S	URVEY DA	TA (if applicable)	/	vof s	urveved	at the	ሪ	
				Protective Casing Elevation	on:			tim	e	
Washington State Plane Coordin	nates:			Brass Survey Marker Elev	ation:					
	-	co	MMENTS	REMARKS						
Reported By:	Title:		$\bigcirc$	Signature:				Date:		
Michael E.C.	aron Se	nior	Crealog	ot mel	$\sim$	-	11	.17-06		
							A	-6003-658	(04/03)	

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A.20
#### Start Date: 11-20-06 WELL SUMMARY SHEET Page 1 of 1 Finish Date: 11-20-06 Well Name: Well ID: C 5353 399-1-26 Project: Polyphosphate Treatability Location: 300 - FF - 5 lest Prepared By: Michael E. Caron Date: 12-13-06 Date: 12-5-06 Reviewed By: 1 Walke mel 10 Signature: Signature: 11/2 CONSTRUCTION DATA GEOLOGIC/HYDROLOGIC DATA Depth in Graphic Feet Description Diagram Lithologic Description Log 0 022 8" of temporary casing crushed gravel drill 0-0.5': 8"ss protective caping: 3.11ags -> 188 bgs pad 0 - 9.0: neat Po .... Hland 0.5 - 4 ... 5 Cement quout with 5% Sandy mite æ コヨ 10 ビンドレントン 9-18.5': bentonite crumbles growe 18.5-265': 3/8" bentonite Dellets 7-185:1-イイ 26.5-50.5': 10-20 mesh ( 0 bloral fm 18.5 silt silica sand 0:0 sandy 2 Ó 5-10 10,000,000 20 30-48.5': Hanford fm Sandy 43/8" 1D 55 type 304/36 .0 gravel 0 sch 10 risen: +1.35 > 29 0:0 2011:1-1010 48.5-50.5 : Ringold Fm. Sand 43/8" 1D 55 + Pe 304/316 1000 gravel 30 20-slot wive -wrap 40 water level = 33.8 (11-30-06) screen : 29-49' 000000 43/8" 10 SS TD = 50.5' YPE 304/316 0.0 1:20 sch.10 sump: 49-49.35' 0.0 40 0 0: 00 0 0 ð. 0.000 1711 temporary caping removed Droths in feet below ground surface 50 centralizers

## Well 399-1-26 (C5353)

A-6003-643 (03/03)

			T						Date: 11-21-0
Well ID	C5	353	W	ell Name: 39	9-1-26	Location: 30	O Area		
Project	Palu	shoesh	A To	atapilites	Teet	Reference Meas	uring Point:	Genun	d Surface
Decth	Sa	mple	Crachie		Sample	Description			Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Name Color, Moist N	e, Grain Size I ure Content, S lax Particle Si	Distribution, Soil Cla Sorting, Angularity, M ze, Reaction to HCI	ssification, Mineralogy,	Depth of ( Method of Sampl	Casing, Drilling Mett f Driving Sampling T ler Size, Water Leve
				0-0.5':	Lrushe	d cark		Sonto	- deilling
			<u>, 6:9 40</u>	0.5'-4.0'	: S: 14	sand my		8"0.0	casing is
_				Mod - sont	al brow	un w/ 80%	2070 M	an 8%	1" O.D. Shoe
-				4.0'- 7.0	:: 5:14	Sandy Grandel	(msb)		
~ -			0.00	Pourly sur	fed wit.	5090 ana s	16. rnd		
5			0.00	m-f co	toles \$	sebbles 30	Tam-f		
			000	ang. S &	2090 51	H. Light bre	which		
_			00	groy (2.5	Y, 6/2	dry), dk. go	with her		
			000	(2.54,4/	z, maist,				
10 —			00	7.0.00	, , ,	t 1 1			
-			$O \circ$	7.0-18.5	- Sandy	toravel (	s(		
_			000	m - f cu	b-rad	+ 34pporter	In he call	,	
–	1		0g	15-205	4 45	20 M.	y wery		
	]		$\dot{q}$	· cohba	is prese	nt 10'->			
/s _			00	· 19 co	666 (8" d	jometer) @ 1	5 '		
_			000	• 44'	M fraction	n increases	to ~ 10%		
-			$O_{\partial}O_{i}$	18.5 - 30	: Silty S	endy bravel			
	1		0:0:	Poorly-so	A. Clas	t supported	w/up		
2 <i>0</i>	1		00	40 +0 10	IE of an	1159 5 JA	1 comes.		
-	1		0	(2.5 V . 4/	(1) year	mains + + clan	like.		
			$: \bigcirc \circ$						
· _			<u> </u>	30' -485.	Sandy	Gravel_			
25-	-		00	60% vf	- ve pe	bbles & sma	11 cobble	5	· · · · · · · · · · · · · · · · · · ·
-	-		0.0	ang - sub	rnd (most	ly susalt)	<u>v/35%-</u>		
-	1		00	5070 and	matic S	(76070 bes	ert F		
-	1		00	· c:/1 1	Enction -	PLADACOC	to doubt		
-	1		00	·SEM	devines	with dep	h		
30-	]		000	. 240'	clost suc	ponted 7800	o quavel		
			000			/	/		
-			000	L					
-	-		0000						
35-	-		000			····			
-	{		200					-	
-	1		000			· · · ·			
			000						
Report	ted By:	Jake	Horn	er		Reviewed By:	L.D.W.	alker	
Title:	Ged	igist-				Title: Geo	logist		
Signat	ure: 1	11			Date:	, Signature:	18 Istal		Date: 17/1

				BOR	EHOLE LO	G		Date: +//z/
Well ID:	(5	3.52		Well Name: 3	99-1-210	Location: 300 Ar	<b>c</b> 0	7.7
Project:	Palu	shacah	k Te	Achi li hi	Test	Reference Measuring Poin	t: (zrou	nd Surface
Death	/ /Sa	mple	Graph	/	Sample	Description		Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Na Color, Mo	ame, Grain Size bisture Content, Max Particle S	Distribution, Soil Classification Sorting, Angularity, Mineralogy ize, Reaction to HCI	, Depth of Method o Samp	Casing, Drilling M of Driving Sampling ler Size, Water Le
40			0.0000000000000000000000000000000000000	48.5'- 2 ingo 12 ingo 10 smiller 5 mb - ang 00 H. alither 00	: Send Id Fm, - th: c med. obbles_ w mlm felsic brn (2:5) 50.5 b	4y Guerrel (5(2) 100-7070 well-rad - course pebbles ± 14 30-4090 well-ta 5(78070 felsic) 1,5/3) ω/ 3-570 mile 45	South ( 8'' cD 8'/4 " c	drilling u . custing u D. shoe
					· · · · · · · · · · · · · · · · · · ·			
Benort	ed By:					Reviewed Bv: / Å	Ket	
Title	Gal	Jaxe	TOry	<u> </u>		Title: Gentlante	4	
Cince.	5001	og ist	11		Data: 1	Signature:	200	Date: 4
Signati	ure:	4h	1 mm		1 Dale. 11/21/1	6 Olynaule.	eller	Date. /z

Purpose: 21	Thull The	Location:	1	
Well ID: 052 53	reation 11 ty 105 1	Well Name: 200	Arta	
Drilling Co.: Product		Rig No.: 62-21	Rig Make/	Mod.: Deservice
Casing String No. A 2 3 4	Drilling Method	Circulation		D.H. Hammer
	Ausse		<b>() A</b>	Maka
	Auger	_ Air Vvater	/Mud	Make
Grade	Rotary	_ Reverse	Direct	
Lbs.Per Ht.	Tubex	_   Vol: cfm		Споке
Material <u>Carbon Hicl</u>	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	_ Pressure	psi	Make
Welded	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	_ Tool Joint Size		Bit Size
Set At: _~52 /	Other:	_ Additives		Туре
Shoe OD/ID 8.25/7.25"		-		Nozzles
Reference Measuring Point:		-		Rod Size
GROUND LEVEL		_		
Drig. Co.	Rig No.:		Rig Make/	Mod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size 9"	Auger	Air Water	/Mud	Make
Grade	Rotary	Reverse	Direct	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material Stainless Steel	Cable Tool	apm		Casing Hammer
	Sonic	Pressure	psi	Make
Welded That	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At: 49' 1 49'	Other:	Additives		Туре
Shoe OD/ID w/a				Nozzles
Reference Measuring Point:		-		Rod Size
GROUND LEVEL				
Commonite/Domonites		-		Estimated Death to Mar
u" china u	annument parties	-		
p	A and a custor	<b></b>		
Reported By:				J
Name/Title:				
01010437				

1

	FIEL	D ACTIVITY RE	PORT - DAILY DR	ILLING		Page _/_ of _3
						Date: 11/21/06
Well ID:	<u>C535</u>	3		Well Name: 399	-1-	26
Location:	300	Anea		Report No.: /		
	Sta	art	Finist	h		Total
Time	06	30	Time153	5	Time	9 hrs
Hole Depti	n/Csg	5_1_ <i>p</i>	Hole Depth/Csg_50.	<u>s'   _so' ©</u>	Hole I	Depth/Csg <u>50.5´   50´</u>
Reference	Measuring GROUND	Point: SURFACE	Casing String No. (D)	034R	od Size	: B - 8" a.D. Temp. : C - 45"0.D. Perm.
Time/	Depth		Description of /	Activities/Operatio	ns wit	h Depth
From	То	(At	tach applicable drawing	gs and document	straigh	ntness test results)
0630	0650	POD mee	Ling			
0650	6738	Move drill	Ag from C53	358 OVER	40	C5353
	0735	Tagged DTW	in well C.535	8@ 34.1	ba	٤
0738	0745	Push 20	core barrel.	from d'	- 6	<u> </u>
0745	0755	Push 20'	conchaverel	from lo	1-11	<u>1 - 595</u>
07.55	0810	Push to 1	5.5' + stopped	I on smill	/ be	ulder
0810	0830	Advancing	20' 8" CASI'	29		Tu/key = 20.5
		· cleanout	while adval	deing casi	'ng	· · · · · · · · · · · · · · · · · · ·
0830	0841	drilling for	om 15.5' - 3	6 6 6 5	$\mathcal{O}$	
0841	0905	Borchole e	leanout	L		
0905	0910	Add up +	advante cas	ing to -:	36 4	5 Talley = 40.5'
0910	0920	drilling for	om 36' - 50.	50' bas		7
0920	09415	Borchole cle	anout & advas	ne casing	to	50 bys Tulley= 50.5
0945	1005	Prepose to	trip in ss	screen #	5 mer	(20 screen)
		· Total ken	th succon/up	/riser = s	55.2	29'
1005	1020	Trip in	53			
1020	1115	Lunch br	eak			
1115	1125	Prep work				
1125	1130	Adding 5	'stickup to	B" tru	p. 1	asing
1130	1133	Adding 10	-20 mesh si	ilica send (	2 30	as) & then spt
		ss strin	on bottom	(-50' 44)	) 0	1
//33	11.38	Trip in	surge block	tan s	Q	44.7 635
1138	1145	Suratna wi	the femo. ca.	sing still	on	bottom, which doesn't
		make am s	ense (Intr.	= 46-49'	45)	
Reported	By: Jul	ie Horner	· · · · · · · · · · · · · · · · · · ·	Reviewed By:	5 2	.D. Welker
Title: G	ologis	4	Date: //-2/-06	Title: Geol	69 i	54 Date: 12/13/06
Signature:	John	Her		Signature:	9 U	alk
0	1	-				A-6003-651 (04/03)

		Continuation Page		Date: 1/-2/-06
Well Name	e: 200-	1-24	Well ID: rEPEZ	
Location		1	Continuation of Report No.	1
Time	<u>300 -</u>	trea		_/
- Time/		Description of	f Activities/Operations with De	pth
From	10			
1145	1150	Stop surging & backpull	casting	· · · · · · · · · · · · · · · · · · ·
1150	1207	back pulled 3.5 & add	1 1 by sand the	vesume surgin
		from 46'- 49'643		00
		· Sund dron set from	50.7' - 50.8' TOL	
/207	1213	Bucknull naciona tr. 4	5.5 415	
12 /2	1222	Suraina 412' - 418' La	0	
LE 2	10.26	. Sol 1	H3 H' to H2 HE'	in tatal Line
(22 -		All II II III		1 e ad 1/ 1
1232	1240	Itad beg sand a b	allipall to the	5g5, aux 12 10
		I tun sand @ 40 has	(2 over lap)	
1240	1255	Surging 40 45 bgs	sand dropped to	40.1 6gs in 15%
1255	<b> </b>	Add \$.5 bags sand \$	backpull to 35.5	694
	1300	+ then add I bay s	sund tug @ 3	3.2' 29.5
1500	1320	Surge 37' - 42' 595	and chopped 03'	in 5 min t
		was stable for 15 min.		
1330	1345	Surge 34'-39'	60.1' in 15 mm	s.)
1320	1330	Alded 2.5 bugs sand	& buckeyen bled to	3.2.5 615
1345	1350	Added 1.5 bears send	1 tag @ 26.5'	6m 5 0
13.50	1254	Ald Saal (1 bucket)	bent. wellets	× * )
1354	1358	Backpull casing to	25' 50 7 E ad	1/2 bucket
13.58	1415	Suradan from 32'- 28	i has (DTW =	37 34 500
<u>ne ve b</u>		· Sca chance in the	while surveying	3. 5
14.0	11120	Addense Pl/ Lichet	rellets	
17/5	17 20	the chart	prove -	
		R 0 11	20111	
1420	147.2	Date will carry to	do bys	
1422	1425	Add I backet pellets		
		tug (a) 18.5 by 5		
1425	1428	Adding bent. crum	bles ( 3 6 eg	<u> </u>
1428	1430	Backpull casting to	10 bg 3	
		· tug @ 9'byy	v	
Reported	By: Jake	Horner	Reviewed By: L.D.L	lalker
Title:	neology	57 Date: 1/-21-0	6 Title: Geologist	Date: /2/
	,0	11	20 111	11.
Signature	e: Cha	Am	Signature: Un Way	n

A-6003-652 (04/03)

	Fil	ELD ACTIVITY REPO	DRT - DAILY	DRILLING		Page	3_of 3_
		Continua	tion Page	-		Date: 1/- 2	1-06
Well Nam	ie: 399-	1-26		Well ID:	H-21-06	5353	
Location:	300	Area		Continuation of Re	port No.: /		
Time	/Depth		Description of	Activities/Operation	ons with Dep	oth	
From	10						
1430	1430	Prepare to mi	x grout				
1430	1435	Mixing & pur	uping qu	out (2×94	# 5493 W	2/ ~ gat	hent.)
1435	1440	Backpull casin	q 5°, c	heck grow	t Tevel	\$ 7	hen remove
		last 5' of CUST	ng				
1440	1450	Mixing anothe	1 betch of	mont to to	p off	nearby	wells
1450	1510	Ringe off s	s stickup	a t have	att di	ill rig	
1510	1535	More over #	set up t	qui prent	on n	at all	1 ste (05357
		* Removed 4.	98' 55	casing, 1	<u>eaving</u>	0.5' 3	HILUP
		total length	<u> 55 = 5</u>	0.27 - 0.	5' 5#	chup =	49.77 Las
	ļ	screen int	nval = 20	9.42'-49.	fr by		
					E 1421-02		
		Summery of b	ackfiff:	10-20 5	- 26	5'- 50.	5
		/		Bent. pell.	- 18	5'-26.	5'
l				Bent. cruns.	- 9.0	1- 18.	5'
$\geq$				comment	~ _	- 9.0	<u>, ´</u>
-							
			Max				
			and the	<b>.</b>			
				se la			
					$\searrow$		
						Lec	
			10/620				
Reported	By: Tak	a Hannar	· · · ·	Reviewed By:	L.D.L	Chilken	
Title: ∠		To mar	Date://-7/-0/	Title:	100,54		Date: 12/17/00
C1	, sologis			0.60	1 1.0	11	
Signature	: John	Kon		Signature:	2 May	h	
	1						

A-6003-652 (04/03)

	WELL DE	EVELOPMENT AND TESTING DATA	
Well Name: 399-1-26 	Well ID:	25353 Well Location: 399-1-262-14-06 300 - FF- 5	Date: 12-6-06
Reference	e Measuring Point	(unless otherwise noted): TOP OF OUTER CASING	(TOC)
Has the well been surveye	d? OYes 🔇	No Does the well have a cement pad?	ØYes ○ No
PART 1		PART 4	
STATIC WATER LEVEL:			Current
Start of Job 34	1.4'	Measurements	Measurements
End of Job not	measured	Date: NA	Date: 12-6-06
DEPTH TO BOTTOM:			
Start of Job not	masurad		<u>+ C'</u>
End of Job 🔨	bomcomment f		Ī
PART 2			
WELL DEVELOPN	IENT DATA		
Pump Model Red; FI	ew 3		
Intake Depth 45' &	38'	ground level	
Starting Turbidity 38.0	£ 3.67 NTU		3.11
Pump Start Stop	Flow Rate		1.01
1000 1101	26.6 gpm	B = B' = _	(.81
11 19 1214	26.2 Spm	C = C' = _	1.30
		Are there any reference marks on the casing strings?	
Total Pumped 30	bu gal	PART 5	
Final Turbidity 2.24	e 1.21 NTU	COMMENTS:	
XD SN/Range (PSI)		4	
PART 3		4	
INSTANTANEOUS	SLUG TEST	4	
Static Water Level (TOC)		4	
I ransducer Depth		4	
Baseline Start		4	
Injection Start	4	4	
Baseline Start		4	
Shur Marwai Start		1	
Slug Volume		4	
Repared by (print name)		Signature:	Date:
Misland	E Cara	Senion (redenist	12-6-06
Reviewed by (print name):	<u> </u>	Signature:	Date:
L.D. U	alker	JAN Malk	12-13-06
			A-6003-644 (03/03)

	EIEI						F	Page _ I	of R	0,126-06
	FILL		FORT - DAILT	DRI	LLING		Date: 1	2-6-0	6	<u> </u>
Well ID:	C 5	353			Well Name:	399-1	- 26	1		
Location:	. 300	- FF - 5			Report No.:		$\hat{\mathbf{x}}$			
	St	art	F	Finish				Total		
Time	07	30	Time1	220	>	Time	c	450		
Hole Dept	th/Csg	A / NA	Hole Depth/Csg	NA	/_NA	Hole I	Depth/Csg	NA	_/	NA
Reference	e Measuring	Point:	Casing String No.	1 2	3 4	Rod Size	):			
	GROUND	SURFACE	See Report No. 1							
Time/	/Depth		Description	n of A	ctivities/Oper	ations with	n Depth			
From	То	(At	tach applicable dra	awings	s and docum	ent straigh	tness test	results)		
	0730	- on site								
	2755	- wet herd	measuremen	th:	- protect					
		1.	permanent?	agin	ig abre	Concre	te pa	1 =	2.651	1
		2.	pad = 0.	46 '			`			
		3.	top of prote	dia	- casing	toto	p of	4"perm	naner	1
			ansing = 1	1.3'	protect	pinnana	nt casir	is still	(mp)	b 1.76'
		- water level	= 34.4', ini	it ial	prote rea	ading =	10.906	,"		
	0505	calibrations.		5	Fandand	<u> </u>	ready			
		1) turbidity	meter:		4.37		4.38			
		CHach 210	UP)		43.0		42.9			
					ડપ્ડ		54.5			
		(2) pH meder	:		7.00		7.04			
					10.00		10.13			
<u> </u>		3 conductiv	itymeter:		14.19	@ h	4.04 14	. 15		
		(Orion 13	5 Á)							
		- probe is 1.9	' abrue cente	v of	pump i	mbt sc	reen,	mlet c	45'	bgs
<u>.</u>	1000	- start test	#1 (draw	town	n) - st	and pump	2 at 10.	00 1 2	<u>6 gp</u>	n.
<u> </u>		time	pH. C	induc	<u>ctivity</u>	turbi	dity	temp	.(°C	) pobe
<u> </u>		1003	1.13	0.49	3 15	38.7	5 NTU	14.3 0		
ļ		1008	7.63 0	9. 482	2 ms	12.0	~	15.2		
		1013 0	8. 7.58	0.481		8.23		15.2		
		1019	7.54	0.48	V	4.83	<u>v</u> @	7.54	4.7°	11.274
		1025	7.57 6	0.482	. ✓	3.65	· ·	14.7°	,	11,252
				0.484		3.53	5 V	14.6		11.285
Reported	BAR U	lichael E. (	ann		Reviewed By:	4. D.	Uh /ke	<b>L</b>	-	
litle:	Sence	or Geologist	Date: 12-6-	-06	litle:	eo log i	st		Date:	12-13-06
Signature		W/		5	Signature:	20,	Valle			

A-6003-651 (04/03)

	FI	ELD ACTIVIT	Y REPOR	T - DAILY C	RILLING		Page 2 of 2
		12-11-06 (	Continuatio	n Page		Date	12-6-06
Well Nam	e:	£5353°	399-1-	-26	Weil ID: 399-1	26-	c5353
Location:	3;	0-FF-5			Continuation of Report N	lo.: (	3
Time/	Depth		1	Description of	Activities/Operations wi	th Donth	
From	То		······		Activities/Operations wi	ui Depui	
		time	PH	conductivity	+unbidity	temp (°c	) probe
		1035	7.50	0.482 M	S 3.31NTU	15.10	11.315
		10 40	1.54	0.482 1	3.15 1	14.8°	11.359
		10.45	7.55	0.483	2.93	14.8	11.395
	ļ	1050	7.53	0.479 v	2.39	150°	11.413
		1055	7.55	0.481 ~	2.44	14.9	19.461
		100	7.60	V 084.0	2,24	14.90	11.443
	1101	- start re	covery te	est (ter	+====)		
	11.12	- end re	corry te	ot - pa	obe = 11.608		
L		- total wo	ter pun	ped = 10	520 gal = 27	gpm	
	1115	- pull pu	mp up	- <u>-</u> , in	lit at 38'bas	5	
	1119	- test # 3	- in	itial probe	reading = 4.1	53'	
		time	pH	conductivi	ty finbidity	tempi	C) probe
L		1.06 1124	7.54	0.482 .	15 3.67 NTI	1 14.0	4.230
		P @ #921129	7.55	0.482	V 1.88 V	14.8 °	4.313
		1134	7.61	9.481 V	1.47 -	15.0	° 4.381
		1139	7.62	0.481 1	2.651	15.0	4.455
		1) 44	7.66	0.484	1.28 1	14.1	° 4.517
		1449	7.48	0.481	✓ 1.14 ✓	15.	3 4.550
		1154	7.60	0.482	V 1.07V	14.	9° 4.648
		1159	7.64	0.483	√ 1.29√	14.9	° 4.704
		1204	7.65	0.4841	1.27 1	15.7	2° 4.778
		1209	7.55	0.480	1.36 /	14.	8 + 1828
		1214	7.64	0.483	1.2)	14.5	4.870
L	1214	start r	ecoley -	test # 4	flow meter	= 3090	2 Sa).
	1220	end test	<u>+</u> 4,	Tobe	- 5.079'		
		_	$\angle$ ''	1,100			
				Dot 8			
			/				
Reported	By: M	ichael E.	Carm		Reviewed By: L.D	. Wall	ter
Title:	Seni	ion Geoly	uit D	ate: 12-6-04	Title: Geolog	ist	Date: 12/13/06
Signature:	_	me			Signature: RAL	Ush	1

A-6003-652 (04/03)

			TUB	ULAR	GOODS TALL	.Y				ŀ	Date: //_ a -
Well N	lame: 200					Molu	D:	- 2 - 2		1	1-21
venn	TEMP	ORARY	2	<del></del>		PERM		553		<b>_</b>	SCREEN/CAL
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)		Jt. #	Length (ft.)	Гс	Jt. #	Length (ft.)
1	05'11	21		1	0 40	6	21			1	0.35
2	10.12'	22		2	10.0	<u> </u>	22			2	9.98
3	10.0'	23	· · · · · · · · · · · · · · · · · · ·	3	10.0	c	23			3	9.99 80
4	10.0'	24		4	9.90 4.94		24			4	
5	10.0'	25		5	P 11-21-06		25			5	
6	10.0	26		6			26			6	
7		27		7			27			7	
8		28		8			28			8	
9		29		9			29			9	
10		30		10			30			10	
11		31		11			31			11	
12		32		12			32			12	
13		33		13			33			13	
14		34		14			34			14	
15		35		15		<u> </u>	35			15	
10		36		16			36		1	16	
1/		3/		11/			3/	1-11-2-1 ····		1/	
10		30		10			30			10	
20		40		20		<u> </u>	40			20	
20		40		20	0000					20	
Tot *Indica ALL C	50.5 ate those joints wi casing length shall nents/Remarks:	Tot th central be meas	lizers with a C in sured to the near	Tot the avail est 0.01	39.97 able box. P ₁ -2	1-06	Tot			Tot	20.32'
Tot *Indica ALL C	50.5 ate those joints wi Casing length shall nents/Remarks:	Tot th central be meas	lizers with a C in ured to the near	Tot the avail est 0.01	35.44 39.97 able box. P ₁₁₋₂	1-06	Tot			Tot	20.32'
Tot *Indica ALL C Comm	50.5 ate those joints wi casing length shall nents/Remarks:	Tot th central be meas	izers with a C in ured to the near	Tot the avail	35.97 39.97 able box. E ₁₁ -2	1-06	Tot			Tot	20.32'
Tot *Indica ALL C Comm	50.5 ate those joints wi casing length shall nents/Remarks:	Tot th central be meas	izers with a C in sured to the near	Tot the avail est 0.01 f	able box. $\mathcal{P}_{ll}$ -2	1-06	Tot	sched 1		Tot	20.32'
Tot *Indica ALL C Comm Tempo	50.5 ate those joints wi casing length shall nents/Remarks: orary: 0.D./I.D.	Tot th central be meas 8''	izers with a C in sured to the near 7.25 " 2.74 B	Tot the avail est 0.01 f	35.97 39.97 able box. $\mathcal{P}_{1-2}$ t. nanent: O.D./I.D. /7.25''	(~06	4"ID /I. r	sched. 1	0 Sc	Tot	20.32'
Tot *Indica ALL C Comm Tempo	ste those joints wi asing length shall nents/Remarks: orary: O.D./I.D.	Tot th central be meas 8''	izers with a C in sured to the near 7.25'' 2172 B	Tot the avail est 0.01 f	35.47 39.77 able box. $\mathcal{P}_{1-2}$ t. nanent: O.D./I.D. /7.25''	(~04	<u>4"ID</u> /I.r	sched. I	0 Sc	Tot	20.32'
Tot *Indica ALL C Comm Tempo	ste those joints wi asing length shall nents/Remarks: orary: O.D./I.D. oe = O.S re barre	Tot th central be meas 8''/ 5' 4	Tizers with a C in sured to the near 7.25'' 7.25'' 7''/6'''	Perm	35.47 37.77 able box. $\mathcal{O}_{11-2}$ t. hanent: O.D./I.D. /7.25'' 2.D. /I.D.	(-#L	4"ID	sched. I	0 Sc	Tot	20.32'
Tot *Indica ALL C Comm Tempo Sch	50.5 ate those joints wi asing length shall nents/Remarks: orary: 0.D./I.D. ce = 0.5 re barre	Tot th central be meas 8''/ 5' 4	The formula f	Perm	39.97 39.97 able box. $P_{11-2}$ t. nanent: O.D./I.D. /7.25'' 2.D./J.D.	(-84	<u>4″</u> <i>T</i> ₀t	sched. 1	0 Sc	Tot	20.32'
Tot *Indica ALL C Comm Tempp SA	50.5 ate those joints wi asing length shall nents/Remarks: orary: 0.D./I.D. cc = c.s	Tot   th central   be meas   8''/   5'   4'	The formula f	Perm	35.47 34.77 able box. $\mathcal{P}_{1-2}$ t. nanent: 0.D./I.D. /7.25'' 2.D. /J. D.	(-84	4"ID /I.r	sched. 1		Tot	20.32'
Tot ¹ Indica ALL C Comm Tempp <u>S</u> A	ste those joints wi asing length shall nents/Remarks: orary: O.D./I.D. oe = O.S re barre	Tot th central be meas 8''/ 5' 4	The formula f	Perm	35.47 39.77 able box. $\mathcal{P}_{1-2}$ t. nanent: 0.D./I.D. /7.25'' 2.D./J.D.	(-84	<u>4"ID</u> /I.r	sched. 1		Tot	20.32 [°]
Tot *Indica ALL C Comm Tempi Sh	50.5 ate those joints wi asing length shall nents/Remarks: orary: 0.D./I.D. oe = 0,5 re barre	Tot   th central   be meas   be meas   5'   6''	izers with a C in sured to the near 7.25 " 7.16 "	Perm	35.47 39.77 able box. $\mathcal{P}_{11-2}$ t. nanent: O.D./I.D. /7.25'' 2.D. /J. D.	(-84	4″ID	sched. 1		Tot	20.32'
Tot ¹ Indica ALL C Comm Tempp <u>S</u> A	50.5 ate those joints wi asing length shall nents/Remarks: orary: 0.D./I.D. ce = co.5	Tot   th central   be meas   8''/   5'   4'	Tizers with a C in sured to the near 7.25'' 2.7h B 7''/6'''	Perm	39.97 39.97 able box. $\mathcal{P}_{1-2}$ t. nanent: 0.D./I.D. /7.25'' 2.D./J.D.	(-84	<u>4"ID</u> /I.r	sched. 1		Tot	20.32'
Tot *Indica Comm Tempi SA	ted By: Jake	Tot th central be meas 8''/ 5' 4 2' =	izers with a C in sured to the near 7.25" 2172 B 7"/6"	Perm	39.97 39.97 able box. $P_{1-2}$ t. nanent: O.D./I.D. /7.25'' 2.D. /J. D.	(-#4	4″ID /I· r	sched. 1		reen: C	20.32'
Tot *Indica: Comm Tempor Sh Con Repor Title:	ted By: Jake	Tot th central be meas 8''/ 5' (4 5' (4))))))))))))))))))))))))))))))))))))	izers with a C in sured to the near 7.25 " 2.7 B 7 / $6$ "	Perm	39.97 39.97 $3ble box. P_{11-2}1_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-21_1-2$	C. P.	4″ <i>T</i> ₀ <i>4″T</i> ₀ <i>/T</i> . r ewed By:	sched. 1	0   Sc 0   Sc 	Tot reen: C	20.32'

A.31

							Start Date:	11-21-	۰۵ (
WELL	CONSTRUCT	ION SI	UMMAF	RY REPORT			Finish Date	11-21-	04
							Page	<u> </u>	<u>,</u>
Well ID: 65353	Well Name: 399	-1-2	26	Approximate Location:	30	00 A.	rea		
Project: Polypho sphale	Treatability	Te	st	Other Companies:	RA	M, F	- H		
Drilling Company: Proson	<i>i c f</i>			Geologist(s):	27 IA~	410			
Driller: Aaron Adam	Licen	se #: 🔿	1531	7					
TEMPORARY C	ASING AND DRILL D	EPTH		DRILLING METHOD	н	OLE DIAN	METER (in.)	/ INTERVA	L (ft)
*Size/Grade/Lbs. Per Ft.	Interval	Shoe	e O.D./I.D.	Auger:	Diam	neter	From	to _	
8"		- 84"	17/4	Cable Tool:	Diarr	neter	From	to	
		-		Air Rotary:	Diam	neter	From	to	
		-		A.R. w/Sonic:	Diarr	neter	From	to	
		_		Somic	Dian	neter <u>S</u>	' From	<u></u> to	50.5
		-			Diam	neter	From	to _	
*Indicate Welded (W) - Flush	Joint (FJ) Coupled (	C) & Threa	ad Design		Diam	neter	From	to	
				Drilling Fluid:	/A				
Total Drilled Depth: 50.5	' Hole Dia @ TD:	8 14	1.	Total Amt. Of Water Add	ded Du	uring Drillin	ig: $\Lambda$	14	
Well Straightness Test Results:			-	Static Water Level:	33.8	Date	11-30	-06	
		GE	OPHYSICA	AL LOGGING					
Sondes (type)	Interval	Da	ate	Sondes (type)		Inte	erval	Dat	e
	·						·		
	·								
		· · · · · ·		ED WELL		Inte	erval		Mesh
			0.01					Volume	Size
Size/Wt./Material	Depth	Thread	Size	Type	-06	Annular Se	al/Filter Pack		0120
Size/Wt./Material	Depth	Thread	Size 20	Type hentonite petlet	-06 5	Annular Se	al/Filter Pack		0.20
Size/Wt./Material	Depth <u></u>	Thread	Size 20	Type Hentonite Dellat. 10-2.0 silica San	-06 5 1d	Annular Se	al/Filter Pack  50.5		
Size/Wt./Material	Depth <u>44.8</u> 	Thread	Size 20	Type Hentonite petlet 10-20 silica san hentonite pellete	-06 5 1d	Annular Se 26.5 18.5	al/Filter Pack  - <u>50.5</u> - <u>6.5</u>		
Size/Wt./Material	Depth <u>44.8</u>  	Thread	Size 20	Type Inentonite petter 10-2.0 silica san hentonite petter bentonite crumble	-06 5 1d	Annular Se 26.5 18.5 9	al/Filter Pack  6.5 18.5		
Size/Wt./Material	Depth <u>44.8</u>	Thread	Size 20	Type Hentonite petlet 10-20 silica san hentonite pellete bentonite crumble nest Portland cem	rob 15 1d 1ec mt	Annular Se 26.5 18.5 9	al/Filter Pack                                                                                                                                                                                                                                                              -		
Size/Wt./Material	Depth <u>44.8</u>		Size 20 OTHER AC	Type 11-21 bentonite petlet 10-20 silica san bentonite pellete bentonite crumble nest Portland cem- crivities	-06 5 id ecc mt	Annular Se. 26.5 18.5 9	a/Filter Pack                                                                                                                                                                                                                                             	0 L	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type 11-21 10-20 silica san hendenik pellek bendenik pellek nest Port lend cem CTIVITIES Well Decommission:	-06 5 Id ec	Annular Sec 26.5 18.5 9 Yes:	a/Filter Pack                                                                                                                                                                                                                                                         	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type 11-2.0 silica san henden & petlet 10-2.0 silica san henden & petlet benden & petlet nest Port land common CTIVITIES Well Decommission: Description:	rob 5 id ecc mt	Annular Se 26.5 18.5 9 Yes:	al/Filter Pack             No:	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type 1-20 bentonite petlet 10-20 silica san hentonite crumble neat Port land ceme CTIVITIES Well Decommission: Description:	rob 5 id icc mt	Annular Se <u>26.5</u> <u>18.5</u> <u>9</u> Yes:	al/Filter Pack                                                                                                                                                                                                                                                         	e La Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type 11-21 Bentonite petitet 10-20 silica san hentonite crumbu neutonite crumbu neutonite crumbu Mentonite crumbu Description: Description:	-06 5 1d ec mt	Annular Se <u>26:5</u> <u>18:5</u> <u>9</u> Yes:	al/Filter Pack                                                                                                                                                                                                                                                           	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type II-21 Hentonite petitot 10-2.0 silica san hentonite petitot bentonite rumble neat Port lead ceme CTIVITIES Well Decommission: Description: ATA (if applicable)	rot	Annular Se 26:5 13:5 9 Yes: yef	al/Filter Pack - <u>50.5</u> - <u>26.5</u> - <u>18.5</u> - <u>18.5</u> - <u>10-9</u> No: No: Scaneyo	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type II-21 Jon tonite petitot 10-2.0 silica san hendenite petitot bendenite crumble nest Port land cemm CTIVITIES Well Decommission: Description: ATA (if applicable) Protective Casing Elevation	rob s id iec mt	Annular Se 26:5 18:5 9 Yes: yef f	al/Filter Pack - <u>50.5</u> - <u>26.5</u> - <u>18.5</u> - <u>18.5</u> - <u>10-9</u> No: No: Sconego Ars 4	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type II-21 Jon tonic petitot 10-2.0 silica san hendenic petitot territer (rumble nest Port land comm CTIVITIES Well Decommission: Description: ATA (if applicable) Protective Casing Elevation Brass Survey Marker Elevation	rot n: ation:	Annular Se 26.5 18.5 9 Yes: yef f	al/Filter Pack                                                                                                                                                                                                                                                        	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type 11-21 Sentenite petitet 10-20 silica san hentenite petitet nestenite petitet mestenite petitet Mentenite  Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Mentenitet Me	rob s id iec mt not n: ation:	Annular Se <u>26:5</u> <u>15:5</u> <u>9</u> Yes: <u>yef</u> <del>f</del>	a/Filter Pack - <u>50.5</u> - <u>26.5</u> - <u>18.5</u> - <u>18.5</u> - <u>18.5</u> - <u>19.6</u> No: No: Scenege	Date:	
Size/Wt./Material	Depth	Date: WELL S	Size 20 OTHER AC	Type II-21 Sentenite petitet 10-2.0 silica san henvenite petitet neat Port lead ceme CTIVITIES Well Decommission: Description: ATA (if applicable) Protective Casing Elevation Brass Survey Marker Eleva / REMARKS	rot nit	Annular Se <u>26:5</u> <u>13:5</u> <u>9</u> Yes: <u>yef</u> <del>f</del>	al/Filter Pack - <u>50.5</u> - <u>26.5</u> - <u>18.5</u> - <u>18.5</u> - <u>10-9</u> No: No: Scaveyo A13 4	Date:	
Size/Wt./Material	Depth	Date:	Size 20 OTHER AC	Type II-21 Hentonik petitor 10-2.0 silica sam hentonik petitor bendonik rumbla nest Port land cem CTIVITIES Well Decommission: Description: ATA (if applicable) Protective Casing Elevation Brass Survey Marker Eleva / REMARKS	rot not	Annular Se 26:5 13:5 9 Yes: yef f	al/Filter Pack                                                                                                                                                                                                                                                          -	Date:	
Size/Wt./Material 4"	Depth	Date:	Size 20 OTHER AC	Type II-21 ID-2.0. silica sam henden ik pelluk nest Port land common CTIVITIES Well Decommission: Description: ATA (if applicable) Protective Casing Elevation Brass Survey Marker Eleva / REMARKS	not	Annular Se 	al/Filter Pack                                                                                                                                                                                                                                                          -	Date:	
Size/Wt./Material 4"	Depth	Date:		Type II-21 Jon tonite petitot- 10-2.0 silica san henden i k petitot- benden i k petitot- benden i k ernebe neat Port land common CTIVITIES Well Decommission: Description: ATA (if applicable) Protective Casing Elevation Brass Survey Marker Eleva / REMARKS Signature: Signature: John	not n: ation:	Annular Se 26.5 18.5 9 Yes: yef f	al/Filter Pack                                                                                                                                                                                                                                                          -	Date:	1-06

A-6003-658 (04/03)

WELL SUMMA	RY SHEET		Start Date: 11-28-06 Page 1 of
Well ID: C 5354		Well Name	le: 399-1- <b>3</b> 7
Location: 300 - FF - 5		Project:	Polyphosphet (reatability Test
Prepared By: Michael E. Caron	Date:12-5-06	Reviewed	By: L, D. Who like b Date: 12/1-
Signature: Med		Signature:	Apinally in
CONSTRUCTION DAT	ГА	Denthin	GEOLOGIC/HYDROLOGIC DATA
Description	Diagram	Feet	Graphic Log
8" oD temporary caping	K IX	0	Q: isi 0-0.5': crushed gravel drillo
8" protective caving: 3.18 ags -> 1.82' bgs 0 - 10': neat Portland cement growt with 5% bentonite		10	0.00 0.00 0.00 0.00 0.00 5-20': Hanford fm. sandy 0.00 0.00 0.00 0.00 0.00 5-20': Hanford fm. sandy
43/3" D SS type 304/316 sch. 10 risen :+1.92' > 42' 43/3" D SS type 304/316 20-slot wire wap screen: 42-47'			20-24': Hanford fm. silty 20-24': Hanford fm. silty 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 200 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2
+3/8" DSS type 304/312 sch. 10 sump: 47-4735' 10-28: E: bentonite crumbles		30	26-28 S: Hanford fm. silty 26-28 S: Hanford fm. silty 28-5-48: Hanford fm. sandy 28-5-48: Hanford fm. sandy gravel
286-38: 78 pentonite pellets 38-481': 10-20 mesh Colovado silica sand 48.1-50': 3/8" bentonite pellets		42 42 42	48-50': Ringold fm. sand 0000 -water level = 34.9'
Ill temporary casing removed. Depths in feet bulow ground surface.			2.007 0.00 0.00 0.00 0.00 0.00 0.00 0.00
Centralizers		-	

ű,

# Well 399-1-27 (C5354)

A-6003-643 (03/03)

				BOREHULE LC			Date: 11-28-06
Well ID:	CS	354	W	ell Name: 399-1-27	Location: 300-	F-5	
Project:	Pal	shos pha	to Treat	tability Test	Reference Measuring Point	ground	d surface
	Sa	mple		Sampl	e Description		Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Name, Grain Size Color, Moisture Content, Max Particle	e Distribution, Soil Classification, Sorting, Angularity, Mineralogy, Size, Reaction to HCI	Depth of Method Samp	Casing, Drilling Metho of Driving Sampling To bler Size, Water Level
			-	0-0.5': grave	1 prod	Somi	c, part 9 7"
이그			Q 0 0 0	0.4-5.0 : Fill	(gravel, sand, crushed	driv	e barrel
4			40.0	roch			
-				5.0-20 : candy	growel ( S ( ), MID.	14	
_ +			0.0.0	- for 10 - 16'	cobbles up to s"		
5-				in diameter,	mostly well-pounded		
				basalt			
-			0.0				
-			0 0	20-24: silty	Sundy gravel (msu),	<u> </u>	
10			0.00	- strong clay	a teration		
-			0.0	24-26: Sanchy	gravel (56), CONVSH		
			0.0	sandy matric	" mostly basilt	∔	
_			2.0	cobbles to	2", poorly sorted		
15		ļ	0.00	al 25 6 ; silty	Eard a care ( us ( )		
-			0	store clas	alteration	·	
-			00000	, .			
			0.0	28.5-76 : 50	may growel (sh)		
20-			0.00	cobbles to	~ 2", well - vounded	,	
_			5-0	poorly sorted	musty basalt		
_			0.0				
_			0.00	36-48: Sand	y growed (s()		
~			000,	Cobbles VANIO	bl to ~ 3" mostly		
			0.0	well-nounded	basalts, med. to		
-			0.70	Coarse sand	matrix		
-			010-		· · · · · ·		
-		ļ	000	· · · · · · · · · · · · · · · · · · ·			
30 <u> </u>	1		0.00				
		l	0.0				
_	Į		60	·			
-	-		0.0				
35—	ł		0				
-	1		0.0				
	]		0.00				
L	L		:0.0	1			
Report	ted By:	, 10:	thal	E. Caron	Reviewed By: L.J.	Uh/Ker	- · · · ·
Title [.]		S.	in (	replayint	Title: (2000 St		

A-6003-642 (03/03)

				BOR	EHOLE LOG	· · · · · · · · · · · · · · · · · · ·		Page <u>2</u> of <u>2</u>
			T	Ge Ce	11-28-06			Date: 11-28-06
vveli iD		354		vvell Name:	399-1-27	Location: 300 - FF	- 5	
Project	: Foly	phospha	le liver	stability T	tza	Reference Measuring Point	t grow	nd surface
Depth	Sa	mple	Graph	ic	Sample D	Description		Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Nai Color, Moi	me, Grain Size Di sture Content, Sc Max Particle Size	stribution, Soil Classification, rrting, Angularity, Mineralogy e, Reaction to HCl	Depth of Method o Samp	Casing, Drilling Method, f Driving Sampling Tool, ler Size, Water Level
40			0.0	36-48	Sandy gran	rel (s6), cobbles	Servic	, 7" drive
-			0,0	Varia	buto 3" a	tiameter, mostly	barr	
			0,0	Cant	matrix	JAIL NOT HE COALT		
			000					
45_			°.0'°	o,				
-			.0.0	0				
-								
-				48-50';	Rincold F	m. sond with		
50-			0	: relati	with spanso	apples (S)		
_				- strong	h oxidized	from 48-49',		-
-				grey	unavidige	& sands from 49		
				- 50'				
_								
, –								
-								
_								
-								
							-	
_								
-						· · · · · · · · · · · · · · · · · · ·	1	
-								
Reporte	ed By:	Micl	ael E	E. Carm		Reviewed By: 2. 4.	Walker	
Title:		Senio	$\gamma \rho$	terbusist		Title: Geologist		
Signatu	ire:	And	Y_	-	Date: 11-28-06	Signature: ZA	aller	Date:12/14/06

A-6003-642 (03/03)

			Page 1 of 1
	REPORT NO. 1 - DRIL		Date: 11-28-06
Purpose: Poly phosphate	Treatability Test	Location: 300	- FF-5
Well ID: C 5354		Well Name: 399 -	1-27
Drilling Co.: Prosonia	<u>د</u>	Rig No.: 52-071 R	ig Make/Mod .: Prospric Smic Ric
Casing String No. 1 2 3 4	Drilling Method	Circulation	D.H. Hammer
Casing Size 8"	Auger	Air Water/Mu	d Make
Grade	Rotary	Reverse Dire	
Lbs.Per Ft. 35	Tubex	Vol: cfm	Choke
Material _ Carbon stel	Cable Tool	gpm	Casing Hammer
Туре:	Sonic	Pressure	psi Make
WeldedThd.	A.R. w/Sonic	Drill Pipe O.D.	Model
Planned / Actual	Geoprobe	Tool Joint Size	Bit Size
Set At: 50+2 / 50.5	Other:	Additives	Туре
Shoe OD/ID _ 8.23" /7.21"			Nozzles
Reference Measuring Point:			Rod Size
GROUND LEVEL			
Drig. Co.	Rig No.:	R	ig Make/Mod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation	D.H. Hammer
Casing Size	Auger	Air Water/Mu	d Make
Grade	Rotary	Reverse Dire	ct Model
Lbs.Per Ft.	Tubex	Vol: cfm	Choke
Material	Cable Tool	gpm	Casing Hammer
Type:	Sonic	Pressure	psi Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D	Model
Planned / Actual	Geoprobe	Tool Joint Size	Bit Size
Set At:/	Other:	Additives	Туре
Shoe OD/ID			Nozzles
Reference Measuring Point:			Rod Size
GROUND LEVEL			
Comments/Remarks:	I		Estimated Depth to Water
<u> </u>			
	· · · · · · · · · · · · · · · · · · ·		
Benerted Bur (Mark)			
Namo(Title:	. Caron		
Marrier Jerior	ficologist		
Signature:			Date: 11-29-06

A-6003-650 (04/03)

Well ID:		C 62 6 N		Well Name:		, 77			
Location:		200 EE-5		Papart Na :	-399-	1-37			
Location	St	art	Fini	sh		Tota			
		201				0151			
Time	0	107	Time146		Time	0455	- /		
Hole Dep	th/Csg	/	Hole Depth/Csg	<u>.0 / 56</u>	Hole Dept	h/Csg	.0 / 36		
Reference	e Measuring	Point:	Casing String No.	2 3 4	Rod Size:	8" caa	ina		
	GROUND	SURFACE	See Report No. 1				, 		
Time	Depth		Description of	f Activities/Operati	ons with De	pth	- )		
From	То	(A)		ngs and documen	t straightnes	s test result	5) 		
	0904	- commence	driving 7"	drive barrel	, advan	a to 11	, /		
	0930	- am RCT	e IIIT deck	, all oh			A for the second se		
	0935	- add 6"	bit $+ 10'$ .	4 8' cas	ing				
	0937	- add 10'	of casing ,	drive to 16'	, problem	s with be	ulders		
	1002	- resume a	drilling with 7" drive barrel, clem out to 16						
	1012	- add 20'	rods, drive bo	urvel advan	ad to	36'			
	1030	- add 20'	8" carling,	dive to ?	36', cl	ean out			
	1040	- add 20'	drilling rodo	drive 7 "	trive b	arrel to	45'		
	1100	- shut do	in due to problem with somic drill head - driller						
		will tear a	town & insp	ect after 1	unch				
	1045	- site visit	from C. W.	night, W. Chr	ckabem	1. 2.12	orgheas,		
		+ one oth	n Fit took	lead	- (				
	1345	- resume di	Uning proh c	or barrel to		50)			
	1400	- rig needs	gasket on her	ad, driller	will m	eplace in	the		
	h	morning -	- done for a	tay - left !	site				
		/	/			/	·		
				. 8					
·····									
		/	//						
		/	20	-	/	/	······································		
					<u> </u>				
Reported	By: M.	chael E. Co	ron	Reviewed By:	L.D.1	Valker			
Title:	<u>C</u>	( Calmint	Date: 11-28-06	Title:	logert		Date: /2-/2		

A-6003-651 (04/03)

	FIEL	D ACTIVITY RE	PORT - DAILY DR	RILLING	Page _1	of			
Well ID:	<u> </u>	354		Well Name:	399-1-27	-06			
Location	 	300 - FE-5		Report No.:	11-25 (2) (2)				
	St	art	Finis	h	Tota	i			
	00	30	1150		Time 32.0				
	5	5 / 2/		<u> </u>	Hale Death/Cas	1 - 36			
Hole Dept	n/Csg	/	Hole Depth/Csg		Hole Depth/Csg				
Reference	Measuring	Point:	Casing String No. 1 2	34 Ro	od Size:				
	GROUND	SURFACE	See Report No. 1						
Time/	Depth		Description of A	Activities/Operation	ns with Depth	e)			
From	То	(A)				s)			
	0530	- geologist o	n site, drillers	finishing with	allation of gas	kets on			
		dvilling hear	d						
	0840	- trip out d	rive barrel string	5					
	0843	- add 15 ft	of 8" casing	- tubular	fally = 55.5	-			
	0847	- pull off a	5' length of B"	casing - tu	Isulan talky = 50.	<u>ς</u> ΄			
		- stickup i	5 ~ 1.5', bit	is set at ~	49' bgs				
	0850	- clean ou	+ borehob to	depth of 49	bgs				
	0938	- trip in s	tainless steel per	manent caping	3, centralizers	in stalled			
		at top an	is pottom of s	cross and at	12' bgs, sticken	p is set at			
		3.3' (3'	+"), bottom of	screen is at	47'bss				
	0730	- am RCT	check - nothing.	to survey					
	1005	- add 1.5 b	ickets of bentruite pellets - bottom of hole = 48.1						
	1010	- add 3	bags of sand	es of sand <u>ell-24-ob</u>					
	1013	- put back	m 5 length	of 8" casin	g, pull casing	back 5% remove			
~~~~		bottom of	casing at 45	<u>44'</u>					
1025	10 40	- surge into	wal from 47 - 4	14', sand fe	11 out < 0.1	in 15 min.			
	ļ	- sand level	is ~ 2627 38'	255					
	10 50	- add bent	onite pellets (1	. 5 buckets)					
	1052	- remore 10	longth of casir	ig, tally = 4	0.5' 5' stick	7,			
	10 55	- add a bu	dects of bentoni	te pellas, tag	buttom at 28	·S			
	1057	- remaine 10	tength of cal	sing / pull	casing back 5				
	1. 58	- add 3 ba	es of pontmit	e crumbles					
	1100	- remore 1	o' length of casi	ng, $fally = 30$.	5' 5' stickup	>			
	1105	- add 3 1	xgo of bentonite	crumbles	1 1 1 1 1 1				
Reported	By: M	ichael E.C	arm	Reviewed By:	L.D.UklKer				
Title:	Sen	201 Geologis	Date: 11- 29-26	Title: Geolo	gist	Date: /2-/3-06			
Signature	:	the	Ø.	Signature: 70	9 Halk				

A-6003-651 (04/03)

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	FI	ELD ACTIVITY REPORT - DAILY	DRILLING	Page 2 of 2							
		12-11-06 Continuation Page	12-11-06	Date: 11-29-06							
Well Name	: e	5354 399-1-27	Well ID: 349-1-3	= C5354							
Location:	300	-FE-5	Continuation of Report No.: @	1° 6 (2)							
Time/	Depth	Description of	Activities/Operations with De	pth							
From	То										
	1106	- pull casing back 5'									
	701	- add 3 beep of Dent	mite crumbles								
	1110	- pull of 10' of Caoing, tally = 20.5', stick up = 5'									
	114	- pull casing back 5'	1								
	1115	- add 1/2 bag of bonton	uite crumbles, both	com tagged at 10 bas							
	11 20	- mix grout for surfaces	Real, Rogal. Wat	u, 2 sacks fortland							
	1030	- and visit from Prosm	ic May								
	1125	- inject anout	······································	· · · · · · · · · · · · · · · · · · ·							
	1128	- mix additional grant (20 gal. water, 2 5	acks Portland comment.							
		5% bentonite inject a	+ well (5357 a	noutlevel brought to							
		a' bas	, ,								
	1131	- remove 10' length of	coosing, fally = "	0.5', stickup = 5'							
	1134	- inject additional grout an	+ well C5354								
	11 42	- remove remaining 10' of	cooing and bit	- all out of hole							
	1150	- break for lunch		/							
			/	·							
				/							
			/								
			/								
			/	/							
			<u> </u>	/·							
		/	1 sed								
			· · · · · · · · · · · · · · · · · · ·								
		þ									
				/							
Reported E	<u> 3y: M, 7</u>	chael E. Caron	Reviewed By: L.D. Wa	lker							
Title:	Deniu	or (reduit Date: 11-29-06	Title: beologist	Date: / 2-13-06							
Signature:		Ind	Signature: 79Ula	eh							

A-6003-652 (04/03)

Well Name: 39	9-1-27 54-012-11-06	کو: Well ID: C	5354 1-1-2 7 0211-06	Well Location: 3٤	0-97-5	Date: ר- בד
	Reference Me	asuring Point	(unless otherw	ise noted): TOP OF	OUTER CASING	(TOC)
Has the well be	en surveyed?	O Yes	No	Does the well have	a cement pad?	ØYes ONo
PART 1			PART 4			
STATIC WATE	R LEVEL:		· · · · · · · · · · · · · · · · · · ·		• • • · ·	r
Start of Job	34.90	•	Last Recorde	ed d		Current
End of Job			Date: A/A			Date: 12-6-06
DEPTH TO BO	TTOM:					
Start of Job	@ 39.05	46.3	с,	·		↓ C'
End of Job		46.3	1		┦┍╌┦	_
PART 2	n		1		<u> </u>	_
WELL D	EVELOPMENT	DATA	A			
Pump Model	Retificon	3	В			B'
Intake Depth	45'			Ground Level		<u> </u>
Starting Turbidit	ly over limit (> 1000)	<u> </u>			
Pump Start	Stop	Flow Rate	A =		A'=_	3.18/
1204	1342	2.3 gpm	В=		B'=_	1.92'
			C =		C' =	1.26'
					-	
			1			
			Are there any re	eference marks on th	e casing strings?	O Yes O'No
Total Pumped	230 50	.)	PART 5			
Final Turbidity	47.2		COMMENTS:			
XD SN/Range (PSI) 5219/	20 psi]			
PART 3						
INSTANT	ANEOUS SLU	G TEST]			-
Static Water Le	vel (TOC)					
Transducer Dep	oth					
Baseline Start						
Injection Start	1/4					
Baseline Start						
Withdrawal Star	ŕ					
Slug Volume						
XD SN/Range (PSI)					
Prepared by (pr	int name):		Signatur	e:		Date:
11	lichael E	. Carm		Me	-	12-1-0
Device 11 1	dat many - N		O ¹			D :

	FIEL		Y REPO	RT - DAILY DI	RILLING		Page 1	of
		@ 12.7					Date: 12-7-	06
Well ID:	- C -	5355	<5354		Well Name:	399.	-1- 28 27	
Location:		300 - FF	-5	El-tr	Report No.:	·	<u>(3)</u>	
	50	art		Finis	sn		lotal	
Time	1	204	Tim	12 <u>12</u>	-54	_ Time	00 50	<u>></u>
Hole Dept	h/Csg	<u>NA / N</u>	A Hol	e Depth/Csg <u>ک</u>	<u>A/NA_</u>	Hole De	pth/Csg <u> </u>	_/_ <u>N</u> /
Reference	Measuring	Point:	Ca	sing String No. 1	234	Rod Size:		
Times	GROUND	SURFACE	See	e Report No. 1				
l ime/	Depth		(Attach	Description of	Activities/Opera	tions with [Depth	
From	10					ni stratyriti		
	1204	- start f	est #7	, flowmeter	= 9050,	probe	= 9.137	
		time	<u>pH</u>	conductivity	temp. 1	m'bid it	y proke	
		1206	8.19	0.842	12.9	offsa	0.088	<u>Cout of</u>
		1212 12420	7.95	0.603	IH.9°	✓	5.0	~
		1218	7.85	0.547	16.1	666	0.063	v
		1226	7,82	0.526	۲°-۱۶	433	0.087	v
	-	1231	781	0.516	^ه ۲.5۱	440	0.091	~
		1236	7.80	0.509	15.5	292	0.103	v
		1241	7.79	0.504	15.40	214	0.061	\checkmark
		1246	7.85	0.498	15.7	183	0.062	~
		1252	7.76	O. 499	15.3°	139	0.070	\checkmark
		13oz	7.81	0.492	15.1 °	69.8	0.075	~
		1307	7.77	0.496	15.4 "	18.5	0.069	
		1312	7.75	0.492	15.8 "	66.1	0.073	v
		1317	7.70	0.496	15.2 D	105	0.067	v
		1322	7.68	0.497	15.6°	וסו	0.069	~
		1327	7.13	0.495	15.40	71.5	0.067	~
		1332	7.75	0.491	15.50	654	0.067	~
		1337	7.75	0.492	14.8	@ \$ 47	1.2 0.066	~
	1342	- start	est #7	flowmete	n = 9310	2.3	SPM	
	1342	- start 1	est #8			1	J+	
	1354	- ston	ent # 8					
			/	<u>ه</u> /	$\langle \rangle$	re with		
				4	2. ⁷ No	/	/	
Reported	By: M	ichael E.	Carm		Reviewed By:	L.D. U	lalker	
Title:	Sonio	~ Greating vi	51	Date: 12-7-06	Title: 6e	ologis	+	Date: /z
Signature		W	-		Signature:	3 A U	hell.	

A-6003-651 (04/03)

			Page of	_									
		12-1	Lob TUBI	JLAR	GOODS TALL	.Y		12-11	-04		Date: 11-28-0	6	
Well N	ame:	65	354e	39	9-1-27	Well IC); ·	3-9-1-2-	70		C 5354		
	TEM	PORARY		PERMANEN			NENT*	NT*			SCREEN/CAP*		
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С	
1	0.5 (bit) 21		1			21	10.00 (00mg)		1	0.35 (cap)		
2	10.00 (000	22		2			22	10.00 -		2	4.99 (scr.)		
3	10.00 0	23		3		<u> </u>	23	10.00 -		3			
4	10.30 V	24		4			24	9,99 -		4			
5	0.00 V	25		5			25	5.00 -		5	·····		
6	5.00 1	26		67			26			7			
-	0.80	2/					27			/ 8			
-		20		0			29			9			
10		30		10			30			10		<u> </u>	
11		31		11			31			11			
12		32		12			32			12			
13		33		13		<u> </u>	33			13			
14		34		14			34			14			
15		35		15			35			15			
16		36		16			36			16			
17		37		17			37			17			
18		38		18			38			18			
19		39		19		ļ	39			19	· -		
20	76.71	40		20			40	A11 60		20	Call		
Tot	55.5'	Tot	linere with a C in f	Tot		<u> </u>	lot	44.14		101	5.34	1	
ALL	Casing length sh	all be mea	sured to the neare	st 0.01	ft.								
Com	nents/Remarks:												
T		0"	1	Darr			c"/.	3/ "	Sci		00/10/1 5"/.	3/0	
Temp	orary: O.D./I.D.	8	/7.25	Perr	nanent: 0.D./I.D.	4.1	5/4	178	30	leen.	0.0.11.0.4.3 / 4	18	
	bit =	6" ir	length,	õ	D = 8.25	"	D	= 7.25"					
—	Li, h.	1			(")D								
<u> </u>	arive ba	** 6 1											
								() () (12.11-				
Repo	rted By: M	ichael	E. Carm	- 1 -		Revi	iewed B	Y L.D.U	Valke	2 r-			
Title:	Serior	Geolog,	át	D	ate: 11-25-0 (Title	:	bee log ist			Date: / 2	/14/06	
Signa	ature:	uØ				Sign	ature:	70° Wa	le	7			

A-6003-655 (04/03)

						Start Date:	11-28-1	06
WELL	. CONSTRUCT	ION S	UMMAF	RY REPORT		Finish Date	: 1)-29-0	de
						Page	of	_
Well ID: C5354	Well Name: 390	3-) -	27	Approximate Location:	300	- FF - 5		
Project: Polyphosphat	Treatability	Test		Other Companies:	H, G	RAM		
Drilling Company: Pro	ioni è			Geologist(s): M.E.	Grow			
Driller: Davar Ad	ams Licen:	se #: -	2831	- ·				
TEMPORARY	ASING AND DRILL DI	EPTH		DRILLING METHOD	HOLE	DIAMETER (in.)	/ INTERVA	L (ft)
*Size/Grade/Lbs. Per Ft.	Interval	Sho	e O.D./I.D.	Auger:	Diameter	From _	to	
8" / 35	0 - 50.5	- 8.2	5"/7.25"	Cable Tool:	Diameter	From _	to	
		_		Air Rotary:	Diameter	From _	to	
		-		A.R. w/Sonic:	Diameter	From	to	
		_		Sonic	Diameter	8 From	0to	۶- مح
		_			Diameter	From _	to	
*Indicate Welded (W) - Flush	Joint (FJ) Coupled (C) & Threa	ad Design	1	Diameter	From _	to	
				Drilling Fluid	$-\gamma$	me -		
Total Drillad Dapth: 50 m		821	/	Total Amt. Of Water Adde	d Durina	Drilling - ~	~ - e~	
Mall Straightness Test Begults:		* Juio	hance 1)	Static Water Level: 34	4 9 1	Date: 11 - 2	29-06	
weil Straightness Test Results.	QUAS (20 × 1	GE	OPHYSICA	AL LOGGING	111	Duto. (1		
Sondes (type)	Interval	D	ate	Sondes (type)		Interval	Dat	e
	-					·		
						-	1	
			COMPLET	ED WELL			1	
Size/Wt./Material	Depth	Thread	Slot	Туре		Interval	Volume	Mes
	6 073		Size		40	8.1 - 50	1 childe	5120
4" stainlus steel	<u> </u>		20	bentonite pellets_	1 36	48.1	1.5 Duotes	
				10-20 Lolorado Silica San	nd	6 38	3 begs	
		<u> </u>	te 10	bentovite pellets	<u>بر ا</u>		3.5 briddes	
	·	100mm	Vanio	10-20 Colorado Silica Se	<u>wet – ~~</u>	· · <u>A6:3</u>	8.5 begs	<u> </u>
	·			Portland cement grow	at			
			OTHER A					
Aquifer Test:		Date		Well Decommission:	Y	es: No:	Date:	/
Description:				Description:		1		
	NA					04 /		
		WELL S	URVEY DA	ATA (if applicable)	Not y	let surve	red at	
				Protective Casing Elevation:		this	time	
Washington State Plane Coord	nates:			Brass Survey Marker Elevat	ion:			
		C	OMMENTS	/ REMARKS				
Reported By:	Title:	\sim	<u>()</u>	Signature:	XT		Date:	,
Whichael E.	Caron S	enior	Leslop	st the	/	١١	1-29-0	de
Reported By: Michael E.	Caron Title:	enior	Goolop	Signature:	Ŋ	N	Date: 1-29-0	d

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A-6003-658 (04/03)

WELL SUMMA	RY SHEET		Start Date: 11-29-06 Page 1 of 1 Finish Date: 11-30-06 Page 1				
Well ID: C5355		Well Name: 399-1-28					
Location: 300-FF-5		Project:	Polyphosphate Reatability Test				
Prepared By: Michael En Carm	Date: 12-5-06	Reviewed	d By: L.D. Walker Date: 12/14/				
Signature: Mel		Signature	e: 19Walker				
CONSTRUCTION DAT	A	Denth in	GEOLOGIC/HYDROLOGIC DATA				
Description	Diagram	Feet	Graphic Log Lithologic Description				
8" oD temporary caoing 8" protective caoing: 3.12 ass	K IX	0	in an one of the server drill on				
B" protective caoing: 3.12'ass -> 1.88' bgs 0-10': neat Portland comment great with 5% bentonite 43/x" ID ss type 304/316 sch 10 nisen: +1.86 > 32' 43/x" ID ss type 304/316 20-slot wire wrap schaen: 32 > 37' 43/x" ID ss type 304/316 20-slot wire wrap schaen: 32 > 37' 43/x" ID ss type 304/316 20-slot wire wrap schaen: 32 > 37' 43/x" ID ss type 304/316 22-30': 3/x" bentonite pellets 30->39': 10-20 mesh Colorado sillica sand 39-40.5': 3/x" bentonite pellets All temporary caoing remarket. Depths in fact bolow ground surface (bgs).		20	0.5-45: crushed gravel dvill pa 0.5-45: fill; crushed rock, 5000 sond sparse gravel 4.5-54: Hamford fm. Sandy gravel 0000 9-10': Hamford fm. silty Sandy gravel, clay-altered 0000 10-27: Hamford fm. Sand 0000 gravel 0000 27-30: Hamford fm. Silty 5000 27-30: Hamford fm. Silty 5000 27-30: Hamford fm. Silty 5000 27-30: Hamford fm. Silty 5000 sendy gravel, clay-altered 5000 sendy gravel, clay-altered 5000 - water level = 34.0'				
		-					

Well 399-1-28 (C5355)

				BOR	EHOLE LOG			Page 1 of 2
Well ID		255		Well Name: 7	99-1-28	Location: 200 - FF	- 5	Date. (1-24-06
Project	Di	- <u> </u>	17	- Llilt -	Teil	Reference Measuring Point:		ad surface
	Sa	mple	SATE ()	Catability_	Sample D	escription	- <u>Grew</u>	Comments
Depth (Ft.)	Type No.	Blows Recovery	Graph Log	ic Group Nar Color, Moi	me, Grain Size Di sture Content, So Max Particle Size	stribution, Soil Classification, rting, Angularity, Mineralogy, e, Reaction to HCI	Depth of Method o Sampl	Casing, Drilling Method, f Driving Sampling Tool, er Size, Water Level
0_				0-0.5'	: growel p) and	Sonic	, 7" duive
			<u> </u>				- Darr	el
				0.5-2 	: crushed	rock fill, sandy		
-				1 - 4.5'	's sand with	th space septles		
5				- 21	what fil	1 - protections		
			000		()			
-			000	4.5-9	: sandy g	ravel (sG), mod.		
-			0	Sand	watrice ce	obbles to ~ 3" max,		
-			· · · · ·	Sub	- to well - M	Sunda, Martin		
10			0.0	9-10'	silty sandy	gravel (MSG), silts		
				? alle	ud to clawy	J		
_				້: 10 - ນາ :	Sandy gr	wel(56) mod. to		
-					are sand, a	abbles to 6",		
15			. 00	: Sub	-to well - r	ounded, Mostly		
-			°		F 11-24 00 Daz			
· _			000	: 27-30:	silty Sand	y gravel strong		
_			0.0	o' clory	altonation	(meG)		
20_			0.0	»:	- 1			
-				30.36'	Sandy gra	rel (56), generally		
-			0.0		4" in diam	eter locally norman		
_			00	0 704	2 (<1') with	the peobles < 1"		
25			: 0.°	o pertek	les mostly !	Das. H. sub-rounded		
			0.0	o to w	rell-rounded			
-			0.0	9 2 4 - 110 ('				
-			ê. ;	a ahr	<u>· sanay gr</u>	aver (su) ao		
-			1	5.	<u>к</u>			
50			0.0.	G.				
_			.0:0					
- 1			0.0					
-			:0,	;. 				
35—			0.0					
			00.	0.				
			0.0	s :				
			0.	<u>.</u>				
Report	ed By:	Which	<u>xel E</u>	- Carm		Reviewed By: L.S.U	alker.	
Title:		enior	ge	ologiot		Title: Geologist	20	
Signati	lite:	<u> Null</u>			Date: 11-29-06	Signature: 20 Wa	ler	Date: 12/14/06

A-6003-642 (03/03)

	BOREHOLE LOG										
Well ID	: CC	355	w	Location:	300-F	F-5	Date. 11-29-06				
Project	Pal	akasaha	to Turo	hubility Lect		Reference Mea	suring Point:	a 100 11	nd surface		
Denth	Sa	y nory ~ mple	Creation 1		Sample D	escription		<u>,,,,</u>	Comments		
(Ft.)	Type No.	Blows Recovery	Log	Group Name, G Color, Moisture Max	rain Size Di Content, So Particle Size	stribution, Soil Cl rting, Angularity, e, Reaction to HC	assification, Mineralogy,	Depth of Method o Sampl	Casing, Drilling Method, f Driving Sampling Tool, er Size, Water Level		
40			0.00	30-405': 5	andy g	owel (s G))	sonic, -	7" drive barrel		
-		1						D= 40			
-									· · · · · · · · · · · · · · · · · · ·		
45											
-											
50_											
-				TT VILLAV III TY							
				and het \$1.4							
-											
_											
-											
-											
-											
				- Henry Contraction - 7 -							
-					<u> </u>						
-											
-											
Reporte	ed By:	Mich	ael E	Garm		Reviewed By:	L.D.U	Valker			
Title:	5	erion	Ged	urist		Title: Geo	logist				
Signatu	ire:	Mel		Date	:11-29-06	Signature:	ab Ula	elle	Date: 12/14/06		

A-6003-642 (03/03)

FIELD ACTIVITY	REPORT NO. 1 - DRILLI	NG PLAN		Page 1 of
			Date: 1	11-29-06
Purpose: Poly phos phate	Treatability lest	Location: 30	10 - FF-	-5
Well ID: C5355		Well Name: 39	9-1-2	8
Drilling Co.: 751-	Prosonic	Rig No.: ۲۶٬۲۰۰۱	Rig Make/Me	od .: Promic sonic rig
Casing String No. 12 3 4	Drilling Method	Circulation - Nor	Q-	D.H. Hammer
Casing Size 8"	Auger	Air Water/M	/lud	Make
Grade	Rotary	Reverse Di	rect	Model
Lbs.Per Ft. 35	Tubex	Vol: cfm		Choke
Material <u>carbon</u> steel	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
WeldedThd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At:/	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:]	Rod Size
GROUND LEVEL			.	
Drig. Co.	Rig No.:		Rig Make/Mo	od.:
Casing String No. 1 2 3 4	Drilling Method	Circulation	<u> </u>	D.H. Hammer
Casing Size	Auger	Air Water/N	ud	Make
Grade	Rotary	Reverse Di	rect	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At:/	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:			I	Rod Size
OROUND LEVEL				
Comments/Remarks:		,,_,_,_,_,_,,		Estimated Depth to Water
			_	34'
Reported By: Michael	E. Carm			
Name/Title: Senior	Jeologiet			
Signature:				Date: 11-29-06

A-6003-650 (04/03)

	FIEL	D ACTIVITY RE	PORT - DAILY D	RILLING	Page <u>1</u> of <u>1</u>
					Date: 11-29-06
Well ID:	<	_5355		Well Name:	399-1-28
Location:	3	00 - FF- 5		Report No.:	De ""
	Sta	art	Fini	ish	Total
Time	130	, 5	Time 1630		Time 325
Hole Dept	th/CsgC	>	Hole Depth/Csg). ⁵ / <u>33</u>	Hole Depth/Csg 40.5
Reference	e Measuring GROUND	Point: SURFACE	Casing String No. 1)2 3 4 F	Rod Size: 😕 "
Time/	/Depth		Description of	f Activities/Operativ	
From	То	(At	tach applicable drawi	ings and document	straightness test results)
	1305	- commence	dvilling with	7" drive !	parrel, drive to 16'
	1325	- add bit +	10' of 8' car	sing folly	= 10.5'
	1328	- add 10' 1	of cosing , t	ally = 20.5'	advance to 16
	1342	- AMRCT de	rech - all <	2× backerwand	
	1345	- advance	drive barrel	to 36'	(U-27-02)
	1405	- add 20' ;	of cosing toll.	= 40.5' adv	ance to 25 37'
-	1415	- advance d	wive Darrel to	40.5'	
	1450	- tripin	a" stainless c	teol string	contralizers at to
		bottom of	screen and	at 12 bes	bottom of screen s
		at 37' (3.3'of dick.	~ <u>)</u>	
	1520	- add 1/2 b	inclust of bont	mite, 3 ba	es of sand
	1530	- add 5' c	asing jount.	ull casing he	de 4' remove 5' ju
		- button of	casine at 33'	fally = 40	.5'
	1430	- PM INT	check - all less	than detation	'n
1 555	1610	- suge interv	x1 from 33-3-	", sound (ell out less the o.1' u
		15 minutes	···· · · · · · · · · · · · · · · · · ·		
	1620	- left st	<u>د</u>		
_					7
				/	/
				×@́	/
		/	/	. Dre	
				Ž [*]	
			/	, X	
	By: M.:	hoel E. Carr	/	Reviewed By:	L.D. Walker
Reported					
Reported Title:	Seria	~ Geolorist	Date: 11-29-06	Title: Geo	Date Date
Reported Title: Signature	Senic Senic	- Geologist	Date: 11-29-06	Signature:	Date

	FIEL	D ACTIVITY RE	PORT - DAILY DR			Page 1	_ of
						Date: 11-30 -	06
Well ID:	C	5355		Well Name:	399-	1-28	
Location:	30	0-FF-5		Report No.:	Ø	5 "H-30-06 (2)
	St	art	Finisl	h		Total	
Time	0	630	Time09	7	Time	02	47
Hole Dept	h/Csg	o.5 <u> 33</u>	Hole Depth/Csg 50.	510	Hole [Depth/Csg 💁 🖕	
Reference	e Measuring GROUND	Point: SURFACE	Casing String No. 1 2 See Report No. 1	34Ro	od Size	e: 8"	
Time/	/Depth		Description of	Activities/Operation	ns with	n Depth	
From	То	(At	tach applicable drawing	gs and document s	straigh	tness test results)
	0630	- POD at sit	te trailer (B-	TR, 3 drillers	, 90	elosial)	
	0732	- add 1.5 ba	sof sind	tax level a	<u>+</u> 3	6/	
	0734	- add 1.5 bu	chets of bonton	ite pellets			
	6738	- remove 10	i length of a	asing tub	nan	tally = 30	5.5
		stickup =	5', bottom of	casing at	25.5	, 1	,
	0742	- add z]	ouckets of bent	mite pelletr, -	Lac	bottom at	21.5'
	0746	- add 1 k	sage of benta	ute crumble	<u>ہ</u>		
	0748	- remove 10	' long th of bear	tente casin	9,t	ally = 20.5	stickup
		= 5', bot	tum of casing at	1 15.5'			
	0752	- add 2 bag	s of bentonite c	rumbles, brit	ng le	rel to 10'	
	0754	- remove 10'	length of pull	casing back 5	5',	stickup = 9	, bottom
		of casing	is at 11.5'	-			
	0805	- vemore al	I casing from h	ole			
		- not enoug	h water left in	tank on +	ruck	to mix g	rout
	0820	- vig offsi	te to fill water	- tanke		_	
	0830	- water level	A: C5353	= 33.8'			
			C5357	= 34.5 '			
			C5351	= 0, 34 .6 34 .3			
			C5352 :	34.8 34.3			
			C5358 =	- 34.0			
	0547	- dvill rig bac	k on site				<u> </u>
	0908	- mix grout	(20 gal water, 2	saches You Han	nd c	ement, 56	ben toute
	0915	- inject prou					
	0915	- PNNL/DWM	tek on site to	pull pump in	04	ijinal well	
Reported	By: 1	hichael E.	arm	Reviewéd By:	1.0	.Walker	
Title:	Seni	on Geologioit	Date: (1-30-06	Title: Geolo	gis	+	Date: /2/14/06
Signature:		Mil		Signature:	9 []	all	

A-6003-651 (04/03)

	FI	ELD ACTIVITY F	REPORT - DAILY	DRILLING	Page <u>2</u> of <u>7</u>
		Con	tinuation Page		Date: 11-30- 06
Well Name		5355 @ 12-11-06-	399-1-28	Well ID: 399-1	- 280 12.11-04 C.5355
Location:	300 -	- FF- 5		Continuation of Report No .: 1	B B
Time/I	Depth		Description	of Activities/Operations with D	epth
From	То				
	0917	- mix addite	ind most i	jection at C5354	and C 5355.
		- rig cot i	up m c 535	5.6	
			· /		
				/	
			/	/	
				/	
		-/			
					1177 ±
					/
			40		
				······································	
			/		
					/
		/		/	/
		/			.
		<u> </u>		/	
			/		
Reported F	v: DO-	alizat 5 (Reviewed By: しんね	Valkan
Title:		ichael E. C	Date: 11-30-04	Title: Goolan sel	Date: 12/14/av
Signature:	<u>senta</u>	Mel		Signature: BUlle	 K

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A-6003-652 (04/03)



A-6003-644 (03/03)

	FIE	LD ACTIVITY RE	PORT - DAILY DR	RILLING		Page 1 of
		7-06			Date:	12-7-06
Well ID:	<u> </u>	354 C5355	5	Well Name:	399-1-	3-1-28
Location:	3	00 - FF - 5		Report No.:	3	
	· St	art	Finis	h		Total
Time	lo	59	Time 1141		Time	0042
Hole Dept	h/CsgN	A / NA	Hole Depth/Csg NA	/ NA	Hole Depth/C	>sg <u>NA</u> / <u>NA</u>
Reference	Measuring	Point: SURFACE	Casing String No. 1 2	234R	od Size:	
Time	Depth			Activities/Operatio	ne with Donti	
From	То	(At	tach applicable drawing	gs and document	straightness	test results)
	1059	- start tet	-#5 - flown	veter = 044	0	
		time of	+ enductiont	y temp to	nbidity	probe
		1104 7.	53 0.491 m	5 15.5°C	810 NT	Ū 0.079
		1109 7.	52 0.487	15.3°	340	0.095
		114 7.	52 0.485	15.2°	67.6	0.081
-		11 19 7.	51 0.485	149	33.5	0.108
		1124 7	.50 0.486	14.9°	24.7	a.17
		11zg 7	.52 0.485	14.8°	18.9	111.6
	1031	- stop lest	# 5 - flow meter	= 9080	640 Sal.	ZD SOM
	1431	- start test	# 6)	, ,	51
	1/ 41	- stop lest	#6			
	note:	# - probe is	most likely out	of the wat	er for H	is drawdown,
		date logg.	n data may	ber subject.		
		- flow meter	= 9060			
		,	/			
					/	
				/		/
			/			
				. >°		
				No		
				<u>></u>		
			/			
Reported	By: Mi	chael E. Car	m	Reviewed By:	L.D. Wa	lker
Title:	Seni	or Geologist	Date: 12-7-06	Title: Geol	ogist	Date: 12/14/06
Signature		he		Signature:	BULL	le

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A-6003-651 (04/03)

			FIELD	ACT	IVITY REP	ORT					Page 1 of 1		
	TUBULAR GOODS TALLY												
Well N	ame: 🗲	5355	(12-11-06	19-1-28	Well ID: 399-1-2.8 @					⊂5355			
	TEN	PORARY				PERMA	ANENT	*			SCREEN/CAP*		
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length (ft	.) C	Jt. #	Length (ft.)	С	
1	0.5 (bit)	21		1			21	9.99 (cas	ung)	1	3.34 (cap)		
2	10.00 Crasing	22		2			22	10.00 1	. "	2	4.93 (scr)		
3	10.00 1	23		3			23	10.00 0		3			
4	10.000 V	24		4			24	4.49 0		4			
5	0.00	25		5		1	25	Sor	Contract	5			
7		20		0 7			26		_	6			
8		27		(8			2/		_	;;;;;;;;	·		
-		20		0			20		_		<u> </u>	<u> </u>	
10		30		10			29				<u> </u>	<u> </u>	
11		31		11			30			11			
12		32		12			32			12			
13		33		13			33			13			
14		34		14		+	34			14			
15		35	*	15			35			15			
16		36		16			36			16			
17		37		17			37			17			
18		38	<u>.</u>	18			38			18			
19		39	~	19			39			19			
20		40	·	20			40		-	20			
Tot	40.5	Tot		Tot			Tot	39.98.34	98	Tot	5.32		
ALL C	asing length sha	all be meas	sured to the neares	st 0.01 f	t.			10-29-0L					
Tempo	rary: O.D./I.D.	8	" [7.25"	Perm	anent: O.D./I.D.	45'	/4	3/8 "	5	Screen: (D.D./I.D. 4-5"/43	8"	
	b;t =	6" ii	length,	D) = 8.2	*ء	ľ	D = 7.2	<u>s</u> "				
	drive	barra	el	ר" כ	D 6.	D							
Report													
Title		<u>ichael</u>	C		1 at -1	T:00		<u> </u>	. wall	ler		()	
nue:	Sen	or fr	reologist	Da	10-11-24-06	Title:		beolog	ist		Date: /2/	14/06	
Signati	ure: 🗸	ul_				Signa	ture:	AS U	ralle	7			

A-6003-655 (04/03)

@ 11-20-06

· · · · · · · · · · · · · · · · · · ·						Start Date	29		
WEL	L CONSTRUCT	ION S	UMMA	RY REPORT		Finish Date	1-30-0	206	
						Pag	e_lof_/		
Well ID: (5355	Well Name: 30	29-1-	28	Approximate Location:	300-	FF-4	<u></u>		
Project: Polyphosphat	* Treatability	Test	-	Other Companies:	FU G	PAM			
Drilling Company: Dro	soule			Geologist(s):	Course				
Driller: Davon	Alams Licen	se #: C	821	- II.E-	Caron				
TEMPORARY	CASING AND DRILL D	EPTH		DRILLING METHOD	HOLE DI	METER (in.)/INTERVA	AL (ft)	
*Size/Grade/Lbs. Per Ft.	Interval	Sho	e O.D./I.D.	Auger:	Diameter	From	to		
B'(contrasteel 35	0 - 40.5	8.2	5" /7.25	Cable Tool:	Diameter	From	to		
		-	_,	Air Rotary:	Diameter	From	to		
		-		A.R. w/Sonic:	Diameter	From	to		
	·	-		Sonie	Diameter	From_	⊖ to	40.5	
		-			Diameter	From	to		
*Indicate Welded (W) - Flush	h Joint (FJ) Doupled (C) & Thre	ad Design		Diameter	From	to	,	
	·····			Drilling Fluid:	-nove -				
Total Drilled Depth: 40.5	Hole Dia @ TD:	8.4	2.5"	Total Amt. Of Water Add	ed During Drill	ing: ~ ~	me -		
Well Straightness Test Results:	Dass - 20'	×7"	dnivebar	Static Water Level: 3	4.0 Dat	e: 1/~:	30-05		
		GE	OPHYSICA	L LOGGING					
Sondes (type)	Interval	D	ate	Sondes (type)	In	Interval		Date	
	·					· ·			
						· ·			
	·								
	- do		COMPLET	EDWELL					
Size/Wt./Material	Depth 0	Thread	Size	Туре	Annular S	eal/Filter Pack	Volume	Size	
4" (stainles steel	0 - 49.5'			bentonite pellets	- 38	- 40.5	1/2 budget		
				10-20 silica sand	30	- 38	4.5 begs		
				bentonite pelletry	21.5	- 30	2 budiets		
				bentonite pettetso	numbers 10	- 21.5	3 5000		
	·			Portland cement 9m	mt	- 10	20 gal.		
			OTHER AC	TIVITIES					
Aquifer Test:		Date:		Well Decommission:	Yes:	No:	Date:	/	
Description:				Description:					
/ <i>\</i>	IA				NA	/			
							.		
		WELL S	URVEY DA	TA (if applicable)	Not	vef so	krveyca	P	
				Protective Casing Elevation	:	at the	is ti	me	
Washington State Plane Coordin	nates:			Brass Survey Marker Elevat	tion:				
		cc	MMENTS /	REMARKS					
				<u></u>					
Reported By:	Title:		\bigcap	Signature:		. 1	Date:		
Whichael E. Car	m X	no	Veroly	it m		11	-30-06		

A-6003-658 (04/03)



Well 399-1-29 (C5356)

A-6003-643 (03/03)

				BOR	REHOLE LOG			Page 1_ of 2
);					Landon		Date: 11-30-06
	<u>, Ca</u>	356	17	vven Name:	399-1-29		F- 5	
Project	: Folu	Phesphe	nte (v	retobility	Los t	Reference Measuring Point:	ground	d Surface
Depth	Sa		Graph	nic	Sample D	escription		Comments
(Ft.)	No.	Blows Recovery	Log	Color, Mo	ame, Grain Size Di bisture Content, So Max Particle Size	stribution, Soil Classification, rting, Angularity, Mineralogy, e, Reaction to HCI	Depth of Method of Sampl	Casing, Drilling Method, f Driving Sampling Tool, ler Size, Water Level
0 _			000		· · · · · · · · · · · ·	. 1	Sonic	7" drive barrel
-			00	3-0.3	- grower po	·d		
				0.5-2	1: fill - cm	ushed work, sand and		
				- qa	el			
5-			. 0 . •	2-4.0'	: fill - so	and with sparke		
-			0'00	6 51	all pebbles			
				0 4.0'-4.	s' ÷ fil - ci	rushed veck		
			0.0	6. 455.5	: sandy fi	<u>N</u>		
10		-	0.0		5- @ 11-70-04			
-		-	0.0	5.5.16	: sandy gr	avel (s(1), mod uni	<u> </u>	
			000	e. 1.2	", well-vo	unded mostly baselt		-
			.00	clau	-vich layer	(silts?) from 10-11'		
15			00	. (m.	G layer?)			
-			000	1/-26	1			
-				0 0000	savey grav	Her Los ~ 3" will		
-				6 rou	nded, must	hy basatt		
20			0.	25-26	: silly sand	y gravel (msG)		
			0	. wit	h strong c	by component		
-				26.36	: sandy op	wel (SG), CORVIA		
-			0.0	i dia	mater sub	cobbus 1-2 in		
25 _			000	bac	, <u>, , , , , , , , , , , , , , , , , , </u>	, Wight		
			:: : : : : :	+ 29-30:	sitty sandy	growel (msG) with		
			.0.0	oj <u>stra</u>	my day com	genent		
-			0.0	30-44	Sometry gre	wel (SU) coarse		
20 -			~~~~~	and and	meter comes	ally well - vounded		
			.ó.?	•.				
			, , , , , , , , , , , , , , , , , , ,	ō				
						· · · · · · · · · · · · · · · · · · ·		
			.0 . 0	2	· · · · · · · · · · · · · · · · · · ·			
32			0	· ·				
			,					
				0				
Reporte	ed By:	Milen	.\ =	Green	I	Reviewed By: / A // 2	alkes	
Title:	,	Same		dou:L		Title: Gentionie L	11-01	
Signatu	ire:	Me		Tale	Date: 11-30-06	Signature: 39 (Jale	2	Date: 12/14/21

A-6003-642 (03/03)
			BOR	EHOLE LOG				Page 2 of
Well ID	: C5356		Well Name:	399-1-29	Location:	300 . FF-	- 5	2010: 11- 90-08
Project	Poly ph	solate	Treatobility	Test	Reference	Measuring Point:	mound	surface
Denth	Sample	Granhi		Sample I	Description		0	Comments
(Ft.)	Type Blow No. Recove	s Log ery	Group Nar Color, Moi	me, Grain Size D sture Content, So Max Particle Siz	istribution, So orting, Angula e, Reaction t	oil Classification, arity, Mineralogy, o HCI	Depth of Method of Sampl	Casing, Drilling Method, f Driving Sampling Tool, ler Size, Water Level
10_		-00	30-49':	Sandy gra	<u>el (sG)</u>	coave	Smic	, 7" drive burel
			; duin	reter, ger	really w	rell - rounded		
			,					
			, . .					
₩			-					
		0.0						
50 -			: 49-51';	sand (S) with s	paver probles		
–		· • • • •	- dr		Ringold,	well -	TD = 5	, '
-			oxid	yea, me	. Sand			
']								
-								
-								
-								
					1 - 14 - 14 - 14 - 14 - 14 - 14 - 14 -			
-			<u>-</u>					
-								
Report	ed By: M.	chael E	. Carm		Reviewed 8	зу: <u>(</u> , <u>)</u> , (Walkow	
Title:	Seni	or Ge	-logist		Title:	Geologist		
Signatu	ıre: M	el		Date: 11-20-06	Signature:	AD US	elf.	Date: 12/14/06

A-6003-642 (03/03)

				Page 1 of
FIELD ACTIVITY	REPORT NO. 1 - DRILL	ING PLAN	Date:	11-30-06
Purpose: Poly photo hate	Treatability Tect	Location: 300	- FF-	5
Well ID: C5356		Well Name: 399-	1-29	
Drilling Co.: Presonic		Rig No.: 52-071	Rig Make/	Mod .: Prozenic Smic Ric
Casing String No. 1 2 3 4	Drilling Method	Circulation 1/A		D.H. Hammer
Casing Size 8"	Auger	Air Water/N	Aud	Make
Grade	Rotary	Reverse Di	rect	Model
Lbs.Per Ft. 35	Tubex	Vol: cfm		Choke
Material Carbon steel	Cable Tool	qpm		Casing Hammer
Туре:	Sonic V	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	_ Tool Joint Size		Bit Size
Set At:/	Other:	Additives		Туре
Shoe OD/ID		_		Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Drig. Co.	Rig No.:		Rig Make/N	Mod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation		P.H. Hammer
Casing Size	Auger	Air Water/M	HIC	Make
Grade	Rotary	Reverse Di	rect	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material	Cable Tool	gpm		Casing Hammer
Туре:	SonicA	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	_ Tool Joint Size		Bit Size
Set At:	Other:	Additives		Туре
Shoe OD/ID		-		Nozzles
Reference Measuring Point:		-		Rod Size
GROUND LEVEL		-		
Comments/Remarks:	•			Estimated Depth to Water
	·			
	· · · · · ·			
				·
Reported By: Michael E	Carro			L <u> </u>
Name/Title:	abunt			
Signature:	-			Date: 11-30-06
				A-6003-650 (04/03)

	EIEI					Page 1 of 2
	CIEL		FORT - DAILY DR	ILLING		Date: 11- 30- 06
Well ID:		C 5356		Well Name:	399-	1-29
Location:		300-FF-5		Report No.:	\bigcirc	
	St	art	Finist	ו		Total
Time		0943	Time 16	00 11-30-06	Time	067
Hole Depti	n/Csg	0- 1-0-	Hole Depth/Csg	51 / 57 46	Hole D	Depth/Csg 51 / 46
Reference	Measuring	Point:	Casing String No (1)2	3.4 R	d Size	· • • "
	GROUND	SURFACE	See Report No. 1	<u> </u>		. <u>х</u>
Time/	Depth		Description of A	Activities/Operation	ns with	Depth
From	То	(At	tach applicable drawing	s and document	straight	tness test results)
	0943	- commence a	dvilling with 7'	drive barr	- 1-	advance to 16'
	1002	- AM IHT :	survey 20-06 -	all less the	n e	detection
	1015	- add 20.5'	at 150 8" c	asing adu	ance	to 16 bgs
	1010	- AM RCT	survey all so	liments ~	2 x	back ground
	1030	- resume dri	ling with 7" d	rive tamel,	adu	anes to 36'
	1045	- add 20'	of casing,	fally = 40	.s',	advance to 36'
	1100	- resume divit	ling with " d	ivice barrel	, ad	vance to SI'(TD)
	1120	- add 10. 0	f casing adu	lance to 50.4	5'	
	1155	- instell A"	casing string	, 20' = 1 :	20- 5	lot screen set
		at 49-20	i' central izeri	set at toy	p an	d bottom of scien
		and at i	o bgs, stickuy	s set at 6	14"	(6.35')
	1220	- break for	~ lunch			
	1315	- add 1/2	packet of ben	louite pellete	_1	ig bottom at 50'
	1317	- add San	d (2 bags)	,		
	1325	- permanent	casing came	up ~ 3' u	ship	extracting permanent
		casing - d	willers will extra	act stainless	stee	1 permanent casing,
		clean ant	hole, and reinst	all - drille	n p	umped in ~ 200 gal.
		of potabl	o water to free	up the sc	veen	
	1517	- add 1/2 b	ncket of bent	onite pelle	ts,	tag bottom at 50'
	1518	- add 2 h	lags of sand	,		
	1323	- pull casin	g back 2'			1
	1524	- add 1.5b	ags sand			
	1526	- pull casi	ng back i' ('	3 of screen	ex !	posed)
1540	1545	- surge inter	val from 49-4	6', Sand fell le	uss Hha	moli in 15 minutes
Reported B	$\frac{\partial y_{i}}{\partial y_{i}} = \frac{\partial y_{i}}{\partial y_{i}}$	chael E. Car	11-30-0,6	Reviewed By:	1.0.0	Valker
Title:	Seri	or (realequist	Date: 12-1-05	Title: Geolo	gist	Date: / 2/14/01
Signature:	Me	L		Signature:		lelle

(

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	FIE	ELD ACTIVITY R	EPORT - DAILY	DRILLING	Page 7_ of 2_
		Cont	tinuation Page		Date: 11-30-06
Well Name		5356@12+106	399-1-29	Well ID: 399-1-2	9@12-11-06 C5356
Location:	300) - FF- 5		Continuation of Report No.:	Ø
Time/[Depth To		Description o	f Activities/Operations with De	epth
	1600				
	1000	- left site-	for day	/	
					/
				/	/
		_			
		/		/	
					•••••
				/	
			/		
' <u> </u>			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		/
			}*		
			\rightarrow		
				· · · · · · · · · · · · · · · · · · ·	
				/	/
		/			
				/	
			/		
Reported B	y: Mit	hael E. Gr	M Determine of	Reviewed By:	lalket
	Serio	2 Geograft	Date: 11-30-06	inue: Geologist	Date: /?//4/66
Signature:		Mel		Signature: D Walk	is

<u> </u>	E I E I					Page 1	of R	
	FIEL	D ACTIVITY RE	PORT - DAILY DR	ILLING		Date: 12-1-0	6	
Well ID:		2535L		Well Name:	3	99-1-29	·	
Location:	30	0-FF- 5		Report No.:		2		
	Sta	art	Finisł	ו		Total		
Time	0	630	Time 103	Ø	Time	040	0	
Hole Dept	h/Csg	751 / 51 47	Hole Depth/Csg5	1 ~ 47	Hole (Depth/Csg / _ #7		
Reference	Measuring	Point:	Casing String No. 12	34 R	od Size	. 8"		
	GROUND	SURFACE	See Report No. 1					
Time/	Depth		Description of A	Activities/Operation	ns with	n Depth		
From	То	(At	tach applicable drawing	s and document	straigh	tness test results)		
	0630	- POD at si	te trailer (the	ree divilling cr	εW.	BTR, geologi	al)	
	0735	- add 1 bag	sand	1				
	0742	- pull casing !	back, stickup.	= 6.5' Sove	in el 2	exprand from	44-491	
0745	0800	- SWAR , inter	val from 44-47	sand fell	out	less than 0	1' m	
		15 minutes			-			
	0804	- add 1 1	Dago of sand					
	0806	- pall coasing	back 13',	stickup = B	is'	screen expos	red from	
L		42-49		•				
	0808	- add 1/2	boy of sand					
0814	0830	- surge inter	ral from 42-45	', sand fell a	sut 1	es than o.1'	in 15 minutes	
	0833	- add 2 bags	sand					
	0835	- pull off	10' length of c	asing, folly	3	40.5' sticl	1 mp =	
		5', bottery	t of calling = 3	5.5', screen e	esq e s	d from 35.5'-	. 49'	
	0846	- add' the ba	g sand, sand	level at 33	169	5		
0847	0902	- surge inter	val from 38-4	2', sand fal	1 out	les than 0.1' in	n 15 minutes	
	0904	- add1.5 bag	5 Sand					
· · · · · ·	0906	- pull Casin	g back 2', sc	reen expose	d f	am 33.5-49'		
0910	0925	- sange in the	enval from 34 - 3	B' sand fell .	nt les	o than 0.1'm	15 minutes	
	0928	- add 13	beep Sand					
	0930	- pull caoi	ing back 3', o	idd 1/2 bag	Sand	, tag bottom	at 26.7'	
	ə933	- add 2 buc	ket of bowlonit	e pellets				
	0937	- remove 10	length of casin	y, tubulan to	<u>14 =</u>	30.5, stickup	= 5'	
	0940	- add old bu	<u>cket</u> bentmite p	ellets				
	0942	- acld 10 bag	s dentonite crun	ibles				
Reported	By: [Y]	ichael E. Ca	aron	Reviewed By:	1.1	Walker		
Title:	Ser	tor healogio	+ Date: 12-1-06	Title: Geolo	<u>g is</u> :	£	Date: 12/14/06	
Signature:	L	wel		Signature:	9 U	Valke		

	Fil	ELD ACTIVITY REPO	DRT - DAILY	DRILLING	Page 2 of 2
		Continua	tion Page	·	Date: 12-1~06
Well Nam	e:	-5356 @ 12-11-06	399-1-26	Well ID: 299-1-2	9 m 1 4 @ 12-1-01
Location:	300-	FF-S		Continuation of Report No.:	3
Time/	/Depth		Description of	Activities/Operations with De	pth
) /		
	09445	- pull casing be	ach 3		N , W , ,
	0917	- add 2 bags	bentonite c	rumbles - obvious	hole is taking
		more bentraite -1	han anticip	nated	1 1-1 1
	0 951	- remove 10 leng	th of Casi	ng, tubular tolly =	20.5, stickup = 5
	c956	- add 2 bags to	entonite cru	mbles	
	69 59	- pull casing back	3'		
	10.05	- mix groat (2	sacks Portl	and comment, aogal. w	ater, 5% tentonite)
	1007	- inject grout at	c 5356		
	1009	- mix grout (a sacks Por	Fland cement, 20 gal.	water)
	10 (0	- inject grout	at c5350	4 and c 53 55	
	1019	- remove 10' leng	th of capir	1g - tally = 10.5'	
	1021	- remove 10.5 of	caping -	all out of hole	
	1030	- rig mored to u	Jell C5359		
<u> </u>			/		
					/
			(G		
			1.200		
			No.		
			/	· · · · · · · · · · · · · · · · · · ·	
					1
				/	·
					······································
		/			
		<i>f</i>			
Reported	By: Mie	hael E. Carm		Reviewed By:	Uplker
Title:	Senior	Geolocust	Date: 12-1-06	Title: (geologist	Date: /2/11/nr
Signature:	And	Ĺ		Signature: 79 Wal	the second

w	ELL DEVEL	OPMENT A	ND TESTING D	ΑΤΑ	
Well Name: 399-1 - 29 Well	ID: 399-1	56 We	ll Location: ろゅっ-ディ	-5	Date:
Reference Measuri	ng Point (unle	ess otherwise	noted): TOP OF (OUTER CASIN	G (TOC)
Has the well been surveyed? O	Yes 🗭 No	Do	es the well have a	cement pad?	Ø Yes O No
PART 1	PAR	<u>T 4</u>			
STATIC WATER LEVEL:					
Start of Job 35.0	La M	ast Recorded easurements			Current
End of Job 34.15	D	ate: NA			Date: 12 - 7 - 06
DEPTH TO BOTTOM:	L				
Start of Job 49.2		<u>_</u> c↓		<u> </u>	<u></u> C'
End of Job 49.1			L		▲
PART 2		≜		\square \square	▲
WELL DEVELOPMENT DATA	A /	A			A'
Pump Model Rediflow 3		B			B'
Intake Depth 45'/38	<u> </u>	- a round leve			·¥¥
Starting Turbidity 17.0 / 4.78		5			
Pump Start Stop Flo	w Rate A =			A' = -	3.21
0740 0547 1	9 ggm B=			B' = _	1.86
0905 1013 1	9 gpm C=			C' =	1.35'
	"				
			Ľ		
	Are t	here any refere	nce marks on the	casing strings?	O Yes 🛇 No
Total Pumped 2580 gal.	PAR	<u>T 5</u>			
Final Turbidity 6.25 / 1.32	CON	IMENTS:			
XD SN/Range (PSI)					
PART 3					
INSTANTANEOUS SLUG TES					
Static Water Level (TOC)					
Transducer Depth					
Baseline Start					
Injection Start A					
Baseline Start					
Withdrawal Start					
Slug Volume					
XØ SN/Range (PSI)					
Prepared by (print name):		Signature:	M		Date:
Illichael E. Carn	^	-1	Ne		12-7-06
() / //// ///		Signature:	20/11/ P		Date:
L.w.wainer			~ ware	۲	12-14-06

A-6003-644 (03/03)

	EIEI							Page _ 1 _ c	of <u>2</u>
	FIEL	DACHVI			KILLING		Date:	12-7-01	
Well ID:		C5356			Well Name:	30	19-1 -	29	
Location:	3	00 - FF-	5		Report No.:				
	St	art		Finis	h			Total	
Time	06	530	Ti	me(07	52	Time		0402	
Hole Dept	th/Csg	A/_N	<u>е</u> н	ole Depth/Csg	/_NA	Hole D)epth/Cs	g <u>NA</u>	/_NA
Reference	e Measuring GROUND	Point: SURFACE	C	asing String No. 1	234	Rod Size	:		
Time	/Depth			Description of	Activities/Operat	tions with	Denth		
From	То		(Attac	h applicable drawin	gs and documer	nt straigh	tness te	est results)	
	0630	-POD at	site -	traiker (sdill	crew, BTR,	2 geol	opists)	
	0720	- instrum	nent c	alibration	, ,		7		
		O turbid	ity me	len sta	ndard	readin	g		
			·	4	.37	064.52	4.49		
				4	3.o	43.8			
				54	5	549			
		B pH m	eten	10.	0	10.12			
ļ				7.	0	7.13			
		3 Londuc	tivity 1	Meter 1.4	19 1.	406			
	5250	- initial p	no be rea	rdnig = 10.67	5 , flow me	ter :	5750		
	0740	· Test 1	#1 sta	rted					
		time	<u>PH</u>	conductivit	y tomp	turbi	dity	probe	
		0745	7.32	0.489	14.00	17.0	2	10.5 2 8	3
		0750	7.49	0.48z	<u>14.3°</u>	70	3	10.535	<u>.</u>
		0755	7.48	0.479	14.4	4.9	7	10.543	3
		0800	7.51	0.478	14.30	11.5		10.562	<u></u>
		0805	7.60	0.483	14.20	5.9	/	10.51	3
		0810	7.60	0,484	14.4°	8.3	3	10.78	7
		0815	7.61	0,484	14.00	6.7	:Z	10.64	Ζ
		08Z0	7.60	6,481	14.40	7.2	.1	18.671	
		0825	760	0,989	[4,3	6.7	12	10,685	·
		0830	7.01	0.791	14.9	6.6	0	10,652	2
		0855	7.60	0,406	14.30	5.8	7	10,690	
Papartad		0840	4.62	0,981	19.6	5.6	6	[0.699	
Title	by. 111.24	oel E. Carm		Data	Title:	L.D.	Walk	er	
	entor (re	elegiot		Date: 12-7-06	- Ge	<u>ologis</u>	+	[[Jate: /2/14/06
Signature:	ul	~			Signature:	7) Na	the		

	FI	ELD ACTIVITY	REPORT -	DAILY	RILLING	;	Page	2_of_2_			
		C	ontinuation Pa	age			Date: 12-	7-06			
Well Name	e: 🗲	5356 @ 12-11-06	399-1-	29	Well ID:	399-1	-29 @12.11-06	C 5356			
Location:		300-FF	-5		Continuation of Report No.: 3						
Time/ From	Depth To		Desc	cription of	on of Activities/Operations with Depth						
			A. (A		h				
		fine	7.61	2010	. те /4	(3° (ZC IN	97-			
	NB47	Tred at 3	Tivi E Ediado	0.709	Rain		<u> </u>	013			
	00-17	Test #2	- Starle	a see	<u>Reca</u>	der tor /	OMIN.				
	Dana	Test # C	Topper .	P'	-t h	2 2 7	and the				
	0700	Russed pump	<u>up 7</u>	Trepping 7 SAZ	<u>76 18</u>	-1 -1	JAND Mer	19/			
	0403	Track of 3	reading -	0.00 4		TOWMEN	7070				
	0405	The st and	<u>Started</u> PH:		a dur tinit	Jam	- tech	Realize			
		nain	770	 	480	17 6	<u> </u>	3			
		1915	7.10	<u></u> ろ	482	15.2 15.2	° 703	7605			
		0920	7.62	0,'	1433	14.40	7.10	3.683			
		0925	766	<u> </u>	84	14.50	1.81	3.719			
		0930	245	0.4	185	14,50	1.73	3.796			
		0935-	7.66	0.4	83	14.30	1,48	J. 84 Z			
		0940	7.66	0,4	183	14.50	1.66	3.891			
		Days	7.60	0.4	84	14.60	1.43	2 891			
		0450	762	0.4	85	14.60	1.76	4079			
		0455	766	0.4	83	14.50	1.30	4,105			
		10.00	7.67	0.48	7	14.4°	1.31	4 156			
		10:05	7.66	1.48	3	14.60	1.35	4.74Z			
		10:10	7.63	0.48	/	14.40	1.32	4,795			
	10:13	Test # 4	started			Robberg	for 10 min				
	10:25	Flows meter	- : 9830			1					
	10:26	Tost #4 5	topped	BACK AU	line Que	2					
	10:30	Taccord wind	a 2 3	3-945	34	1.5					
	10:32	Decon Pump									
			/		$\overline{\ }$		/				
		/	/	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Co &						
			-	2.			/				
Reported	By: Mich	acl E. Gron			Reviewed B	By: L.S.	Walker				
Title: Sen	nior Ge	olociot	Date:	12-7-06	Title: 6	cologist		Date: 12/14/06			
Signature:	La	Ľ			Signature:	DUla	the	· · · · · · · · ·			

		Page of	Page of Date: 1-30-ph										
	11-06	Date: 11-30-06											
		5366	@ 12-11-00	3	99-1-29	Well II	D: *	3991		e ~		<u>C5356</u>	_
1+ #	IEMP	UKARY	Longth (A)		Less the (ft.)	PERMA	NENT		. (0.)			SCREEN/CAP*	_
1		JL. #	Length (ft.)	JL. #	Length (ft.)		Jt. #	Lengt	h (π.)	C	Jt. #	Length (ft.)	+
	0.5 (6.7)	22				<u> </u>	21	10.00	(casing)		1	0.35 (ap)	4
-3	10.00(001)) 22		2			22	10.00	5		2	1000 (Ser)	ļ
4	10.000	20					23	10.01	•	<u> </u>		10.00 1	╡
5	10.00	25		5			24	2,02			4		+
6		26		6			26				6		ł
7	10.83 V	27		7			20				7		+
8		28		8			28				8		╀
9		29		9			29				9		ł
10		30		10			30				10		╀
11		31		11			31				11		+
12		32		12			32				12		╀
13		33		13			33				13		╀
14		34		14			34				14		ł
15		35		15			35				15		t
16		36		16			36				16		t
17		37		17			37				17		t
18		38	-	18			38				18		t
19		39		19			39				19		t
20		40		20									t
							40				20		L
Tot *Indica ALL Ca Comm	50.5 ate those joints win asing length shall ents/Remarks:	Tot th central be meas	lizers with a C in the sured to the neares	Tot ne availa st 0.01 ft	able box.		40 Tot	35.0	2		Tot	20.35	
Tot *Indica ALL Ca Commu	50.5 the those joints wind asing length shall ents/Remarks:	Tot th central be meas 8 ⁿ [-	izers with a C in the ured to the neares	Tot ne availa st 0.01 ft	able box.	4.5"	40 Tot	35.0	2	Scr	20 Tot	20.35 D.J.D. 4.5"/43	7
	50.5 Ite those joints will asing length shall ents/Remarks: brary: O.D./I.D. Hength = nive barre	Tot th central be meas 8" [- 6"	izers with a C in th ured to the neares 1.2.5" , D	Tot Tot availa st 0.01 ft Perm = {	anent: O.D./I.D. 3,-2.5"	4.5"	40 Tot	35.0; //s* 2 S "	2	Scr	20 Tot	20.35 D.N.D. 4.5"/43	
Tot *Indica ALL C Comm Tempo L Report Title:	50.5 Ite those joints will asing length shall ents/Remarks: brary: O.D./I.D. H length = rive barret ed By: Micl Series	Tot th central be meas 8" [- 6" 6"	izers with a C in the unred to the nearest 1.25" D D E. Carm aleased t	Perm	anent: O.D./I.D. 3.25" c	4.5"	40 Tot	35.0; /8" 2 S " (Seo/	2 	Scr Scr	20 Tot	20.35 D./I.D. 4.5"/47	

						Start Date	11-30-0	56
WELI		ION S	UMMA	RY REPORT		Finish Date	e: 12-1-	06
						Page	e of	
Well ID: C 5356	Well Name: 399	-1-29		Approximate Location:	-	300 - FF-5		
Project: Poly phosphate	Treatubility T	est		Other Companies:	ΨĤ	GRAM		
Drilling Company: Pro	Sovi c			Geologist(s): M.E.(Cav	, m		
Driller: Aaron Ada	Licer	nse #: 0	831					
TEMPORARY	CASING AND DRILL D	EPTH		DRILLING METHOD		OLE DIAMETER (in.)	/ INTERVA	L (ft)
*Size/Grade/Lbs. Per Ft.	interval 6-0-12-19-06	Sho	e O.D./I.D.	Auger:	Dia	meter From _	to	
8" / 35	5+0-51	- 8.=	5"/7.25	5" Cable Tool:	Dia	meter From _	to	
		_		Air Rotary:	Dia	meter From _	to	
		-		A.R. w/Sonic:	Dia	meter From _	to	
		_		SONIC	Dia	meter 9,25	O to	51'
7		-		• -	Dia	meter From _	to	
*Indicate Welded (W) - Flust	Joint (FJ) Coupled (C) & Threa	ad Design		Dia	meter From	to	
				Drilling Fluid	_	Ning -		
Total Drilled Denth: 5/0			."	Total Amt. Of Water Add	led D		ang -	
Well Straightness Test Results:)	5	Static Water Level:	5		-1-01	
Wen outlightness rest results.	2010 (11-30-00	GE	OPHYSIC	AL LOGGING		Date.	106	
Sondes (type)	Interval	Di	ate	Sondes (type)		Interval	Dat	e
							1	
	-					-		
		I	COMPLET	ED WELL				
Size/Wt./Material	Depth	Thread	Slot Size	Туре		Interval	Volume	Mesh
1"/ chille alal	0 . 49.3		2.0	hand a line with		50 - 51	12 hours	0.20
st / stanles star	-			10-20 Charabachic can	1	26,7 - 50	12 bees	
				to tout adositice saw	0	19 - 26.7	2 hudete	
	-			bataite any		40 - 19	10 hero	
				P. H. Loo at a	<u>,</u>	0.10		
			OTHER AC	CTIVITIES	ИТ		20 941	
Aquifer Test:		Date:-		Well Decommission:		Yes: No	Date	
Description:				Description				
	VA					NA		
						1017		
		WELL S	URVEY DA	TA (if applicable)		of wat com	even	
				Protective Casing Elevation	1:	of the	41	
Washington State Plane Coordin	nates.			Brass Survey Marker Eleva	tion	ar inco	TIM	
- admington otate Flarie Cooldin	na(03,	cc	MMENTS	/ REMARKS				
				· •			A	
Reported By:	Title:		~	Signature:			Date:	
Michael E	Michael E Caron Centra Calant March							



Well 399-1-30 (C5357)

A-6003-643 (03/03)

				BOR	EHOLE LOO	3			Page o	f <u>&</u>
Well ID	· ~ 6	357	Ň	Well Name:	299-1-20	Location:	200- 66	- 5	Date: 11-	21-06
Project	Pal	harah	ala Ti	retability	Test	Reference M	Aleasuring Point:	Execution in the second	A curle	
	Sa	mple			Sample	Description			Comments	<u>~</u>
(Ft.)	Type No.	Blows Recovery	Log	Group Na Color, Moi	me, Grain Size D isture Content, S Max Particle Siz	vistribution, Soi orting, Angular e, Reaction to	il Classification, ity, Mineralogy, HCl	Depth of 0 Method of Sampl	Casing, Drillir Driving Sam er Size, Wate	ng Method, Ipling Tool, er Level
0 -			0000	a					nic dri	lling
$ $			000	0-0.5	: gravel p	od		8	25" OD	hand
			0.00	0.5 - 4.0	': f.11 - ev	rushed vock	, gravel, sand			
5-			2.00	4.0 - 16.	s: sandy	gravel (sG) -			
			. 0. 0		A", sub	- rounded	to well -			
			·0 . 0		unded mo	sthy base	A overall			
	grab		00000	an	$\frac{pr}{4v-1} \left(< 1^{\prime} \right)$	from 8.5'	- 10.0'			
			0.00	5 16 - 27'	: sandy	gravel	(cG) unth			
-			0.0	60-	soi basal	+ remain	dis must			
			000	: 	mty, col	phles vas	rable to			
15 -			.0:00		3", mrs.	the base	$\frac{1}{5}$			
_			0.00	? well	1- developer	day C	emponent in			
		•	0.0	5 the	matini					
20 _	gnb		0.0	5400	sindy gro	nd matin	× mistly			
			0.0	: med	luim- gravi	ned, col	obles sub-			
			0.0.0	mc3	the baselt	nded, ~	1 to 74			
			0.0.0					T.5.5.11		
25 —			.0.0.0							
-			0.0							
-				:						
30-			0							
-	,		0.0)							
-	gab		0.0.			101 B 114				
			· · · ·	,						
35-				; 						
1										
-	gmb		0.0							
Reporte	d By:	Mil	.تا ا م	. Carm	 \	Reviewed By	r: L.D.	Walks	r	
Title:		Sen	in (ederist		Title:	beologist	4		
Signatu	re:	Mel			Date: 11-27-06	Signature:	as W	alle	Date:	12/14/06

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A-6003-642 (03/03)

				BORE	HOLE LO	G			Page \underline{Z} of \underline{X} Date: $11 - 27 - 06$
Well ID:	C	5357	V	Vell Name: 🤈	199-1-30	Location:	300 -	FF-5	
Project:	F	èle ales	ahote	Treatabil	ity Test	Reference M	Aeasuring Point:	gro	and surfice
Danth	Sa	mple	Crashi		Sample	e Description			Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Nan Color, Mois	ne, Grain Size sture Content, Max Particle S	Distribution, Soi Sorting, Angular Size, Reaction to	I Classification, ity, Mineralogy, HCI	Depth of 0 Method of Sample	Casing, Drilling Method, Driving Sampling Tool, er Size, Water Level
to	Konit)		0.00	34-49:	Soundy	gravel (s	G), clast-	5	onit
-			0.0	. supp	w ted, 50	no matrix	merstly	<u>8. 2</u>	5" OD shoe
-			0.0.0	: medu	Im - grain	ed Cobb	Les sub-	· · ·	drive barre
-			00	had	the basalt	HOU - TOWNE	o, ci 107,		
ر			0.00	;	<u></u>				
\Box			0.0						
			0.0			-			
-			:0.0	: <u> </u>					
. +	erah	ł	.0.0:0	49.75 -	50.5 :	welly sound	(95)		
~	<u></u>			Rin	aold Fm	well-oxid	ized, color	TD = S	à.5'
]				io	about 10	1R- 5/2,	meduin		
_				saa	nd, relat	mely span	re coldes		
4				to	1° well	-minded	•		
·									
-									1
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-									
Reporte	ed By:	Meha	ael E	. Caron		Reviewed B	iy: 6.0	. Walk	er
Title:		Suni	or (-	icolor ist		Title:	Geologi	st	
Sizzati	Ire.	1.	00		Date: 11-2.7 -		29	Vall	Date: 12/11/m

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A-6003-642 (03/03)

FIELD ACTIVITY	(REPORT NO. 1 - DRILL	ING PLAN		Page 1 of]
			Date: 11	-27-06
Purpose: Poly phosphat	e Treatability Test	-من 3 Location:	FF-5	
Well ID: C5357	· · · · · · · · · · · · · · · · · · ·	Well Name: 399-	1-36	
Drilling Co.: Presenie		Rig No.: ۲۵-۱۵	Rig Make/M	Mod.: Prosonic Soni
Casing String No. 12 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size8"	Auger	Air Water/M	Aud	Make
Grade	Rotary	_ Reverse Di	irect	Model
Lbs.Per Ft. 39	Tubex	Vol: cfm		Choke
Material <u>carbon steel</u>	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd	A.R. w/Sonic	_ Drill Pipe O.D		Model
Planned / Actual	Geoprobe	_ Tool Joint Size		Bit Size
Set At:52 /	Other:	_ Additives		Туре
Shoe OD/ID 8.25"/ 7.75"	-	_		Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL		-		
Drig. Co.	Rig No.:		Rig Make/M	lod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size	Auger	Air Water/N	/ud	Make
Grade	Rotary	_ Reverse Di	rect	Model
Lbs.Per Ft.	Tubex	_ Vol: cfm		Choke
Material	Cable Tool			Casing Hammer
Type:	Sonic	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	_ Drill Pipe O.D.		Model
Planned / Actual	Geoprobe 7	_ Tool Joint Size		Bit Size
Set At:/	Other:	_ Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:		_		Rod Size
OROUND LEVEL		-		
Comments/Remarks:				Estimated Depth to Wa
		·····		
Reported By: Mr. 1	E Can			
Name/Title:	E. Larin			
Senior	Leoweist			
Signature: M. 1				Date:

· · · · · ·						
	FIEL	D ACTIVITY RE	PORT - DAILY DR	RILLING	Page of _2	
					Date: 11-27-06	
		5357		Well Name: -	599-1-30	
Location:	22	0-FF-5		Report No.: \\-	And Be	
	St	art	Finis Finis	h	Total	
Time	063	30	Time 041	30	Time000	
Hole Dep	th/Csg1	0_1_6	Hole Depth/Csg50	.s / allout	Hole Depth/Csg /	
Reference	e Measuring	Point:	Casing String No. 3 2	34 Ro	d Size: O" casing	
	GROUND	SURFACE	See Report No. 1			
Time	/Depth		Description of	Activities/Operation	s with Depth	
From	То	(At	tach applicable drawing	gs and document s	traightness test results)	
	0630	- POD 0	it site traile	v (3dvill	arew, BTR, geology) (k
0100	1000	- offsite	- dviller's	helper in tr	aining	
	1004	- commence	dvilling with 7	"drive barre	dvill to 16'	
L	1030	- add bit	+ 2 lengths c	asing (tall	= 20.5'), drive-	to 16'
	1045	- clean out	borehol with du	rive barnel to	16'	
	1048	- add 20'4r	ods to 20' drive	- barrel, res	ume drilling, dvill to	361
	1100	- add 20 '	of 8" casing	, drive to	36'	
	1105	- add 20' 0	frods to driv	ie barrel stri	ng, clean out to 36'	,
	0111	- drill to	TD at 50.5'		<u> </u>	
	1125	- dean bo	rehole out to	36' with	" drive barrel	
	1157	- trip m	stainless stee	well storm	·	
		- centraline	at top and	1 bottom	of screen and a	Ŧ
		12' 655	stick up is	set at 6'	so screen is from	
		29' to 4	9.			
	1217	- am RCT	check - no a	ceeps since	no hard hat availal	ole
1220	1315	- drillen +	also lunch break	L		
	1245	- measure	water level in w	ell c 5353	at 34.9'	
	13 18	- add ~!	14 bucket of be	intanite pelle	rs, tag at 50'	
	1319	- add 2	bass of 10-20	(elorado	sidica sand sand le	rel
		b'up ins	ide casing			
	1326	- pull'8" c	ching back 3,	2' .f ou	estap inside casing	
1331	1346	- surge inter	wal from 47-50	1, sind fell	out less than 0.1'	
	1350	- add 2 b	up sand, pull	caping back	(2' remove 5' 102	<i>mit</i>
		Ctubalan	tally = 50.5')		· · · · · · · · · · · · · · · · · · ·	
Reported	By: Dic	hael E. Car	m	Reviewed By:	L.D. Walker	
Title:	Sen	ion Geologist.	Date: 11-27-06	Title: 6col	ogist Date: 1	2/14/06
Signature	:	mel		Signature:	Walk	

	FI	ELD ACTIVITY REPORT - DAILY D	DRILLING	Page 2 of 2
		Continuation Page		Date: 11-27-06
Well Name	e: _4	25357@ 1271-06 3519-1-30	Well ID: 399	Q 12+1-06 C5357
Location:	3	00-FF- 5	Continuation of Report No.:	$\mathcal{D}_{0}^{\mu_{2}}$ (1)
Time/ From	Depth To	Description of	Activities/Operations with De	pth
<u> </u>	1302	= Oll and had a f		1
1359	1445	- surce interval from All - 1	t at the prod	south for the send
		to maintain overlaps son	adfell out los than	Del in last
		15 minutes	to fell out was that	
	1453	- add 1.5 basp of sand, pu	Il casing back 3'	, bottom of
		casis at 41.5'		·
1455	1510	- surge interval from 41.5	- Hy, send fill on	ut less than 0.1 in
		15 minutes		
	156	- vomere 10'length of cas	ing - tubelon tally	= 40.51
1(2)	1671	- Dottom it casing at m	34' about 4' of a	renterp
15 21	12.20	- singe interval from 350	- 41.5', sand fe	11 out Uss Han
	1600	Din RCT chacks all	< back mound	
	10 4)	- am 11+7 chech - all	< totestions	
	1542	- add I have a Cramb	Pull O" Crain La	le z'hellen f
		Coping of 7 31' add	house be card	males - 12
1547	1602	- surge interval from 35	-38' sand fell un	tlessthen oil in
		15 minutes 11-27-06		
	1607	- add 1 back of sand,	add 2 buckets a	f bentonite pellets
		- sand level at 29 -	remove 10' Longth	of 8" casing,
	145	+ally = 30.5' 11-27-26		
	16 se"	- add budget of per ben	storite pellets, pelle	tlevel at 18'
	1620	- pull casing back 4', ben	tonite pellets at 18.7	1 bgs
		- add 2 bags of bentorite	crumbles pull	off 10 length
		of casing - tally = 20.	5'	
	1627	- add I bags of pentoni	te crumbles, fille	d to 10 bgs
	1629	- pull cosing back 4		
	1630	- drue for day - left site	c	
		not used @	2	
Reported E	<u>3y: M</u>	ichael E. Carm	Reviewed By: (, d. Wa	lker
Title: S	enior	(icologist Date: 11-22-06	Title: Geologist	Date: 12/14/06
Signature:		mel	Signature: 20 Wal	the

	FIEL	D ACTIVITY RE	PORT - DAILY DI	RILLING	Pa	age 1_ of
					Date: 1	-28-07
Well ID:	C 9	5357		Well Name: 39	9-1-30	
Location:		300 - FF-5		Report No.: Cw	18-0 A	(2)
	St	art	Finis	h		Total
Time	067		Time0 \$ 45	Ti	meO	145
Hole Dept	h/Csg5	0.5 1 20	Hole Depth/Csg_56.	5 / 20- Ho	ole Depth/Csg	-0-1-0-
Reference	Measuring	Point [.]		C 11-28 706		Cample (Jamp)
	GROUND	SURFACE	Casing String No. 1 2 See Report No. 1	2 3 4 Rod \$	Size: out	of hole
Time/	Depth		Description of	Activities/Operations	with Depth	
From	То	(At	tach applicable drawin	gs and document stra	aightness test r	esults)
	0630	- POD at	site trailer	(3 drill crew ,	BTR, ge	(fãigale
	0700	- warming	up drill rig (T= ~ 15°) -	tubular fall	y = 20.5' of
	P 1-28.	B" temporar	y casing, stick	up is ~ 8.5'	bit in -	- 12' bgs
	0\$35	- mix grout	for surface so	1 (20 gal. Hz	D, 2 base	Portland ament,
		5% bentom	te), inject grou	.t.	-	
	0742	- pull off	10' length of	B" casing , tal	ly = 10.5'	
	0745	- pull remain	ning temporary	casing out of	hole, tally	= 0'
	0810	- remove 5'	ongth of 4" per	manent casing,	stickup is	21
		- prepare to	nove rig to ne	et hole	,	
				/		
			/			
				/		/
		/		/		
		/		&/		/
				e		/
		/	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
			r			
					/	/
				<u></u>		
· · · · · · ·			/			
Reported 6	By: M∖.	chael F. Car	ron	Reviewed By: /	A Walke	
Title:	Senio	r Geolorist	Date: 11-28-06	Title:	a set	Date: 12/14/m
	2 01.00	- 1		0.010		<u></u>
Signature:		me		Signature:	Welke	5

		WELL DE	EVELOPMENT AND TESTING DATA
Well Name: 39	19-1-30 5357012-11-0		5357 Well Location: Date: -1-30012-11-06 300-FF-5 12-7-06
	Reference Me	asuring Point	(unless otherwise noted): TOP OF OUTER CASING (TOC)
Has the well be	en surveyed?	O Yes	No Does the well have a cement pad? Of Yes O No
PART 1			PART 4
STATIC WATE	R LEVEL:		
Start of Job	33.6		Measurements Measurements
End of Job	33.75		Date: 1MA Date: (2-7-0/-
DEPTH TO BO	TTOM:		
Start of Job	50.0		
End of Job	50.0		
PART 2			
WELL D	EVELOPMENT	DATA	A A'
Pump Model			
Intake Depth			ground level
Starting Turbidi	ty 31.3/	17.5	
Pump Start	<u>Stop</u>	Flow Rate	A = A =
1603	1623	24 gpm	B = B' = 80
1629	1647	25.5gpm	C = C' = '۲
			Are there any reference marks on the casing strings? O Yes O No
Total Pumped	12.7-26 940	sal sal	PART 5
Final Turbidity	9.71957 / 2.1	3	COMMENTS:
XD SN/Range (PSI)		
PART 3		-	
INSTANT	ANEOUS SLUG	S TEST	
Static Water Le	vel (TOC)		
Transducer Dep	oth		
Baseline Start	N/		
Injection Start	4		
Baseline Start			
Withdrawal Star	t		
Slug Volume			
XD SN/Range (PSI)		
Prepared by (pr	int name):		Signature: Date:
Beviewed by (a	hael E. Car	~m	Signature: 12-7-06
r eviewed by (p		5.0	Date:
<i>L</i>		er	12/19/06

							Page ZI of Z	(1
	FIEL		ITY REP	ORT - DAILY D	RILLING	Date:	12-7-06	
Well ID:		C535	7		Well Name:	299-1-30		
Location:		300-	FF-5		Report No.:	2		
· · · · · · · · ·				Fini	sh		Total	
Time		15	-	Lime 170	10	Time	0105	
Hole Dept	h/Csg 🔼 🖊	1_1_	— ,	Hole Depth/Csg N	+_/NA	Hole Depth/Csg	NA /	NA
Reference	Measuring	Point:	_					
	GROUND	SURFACE			234	Rod Size:		
Time/	Depth			Description of	Activities/Opera	ations with Depth		
From	То		(Atta	ch applicable drawin	ngs and docume	ent straightness te	st results)	
	1355	- flows	meter =	10,180 , 70	ble = 10	894		
		- pump	inlet se	+ at 45'				
	1603	- start	+ tot #	2 (Bullwin	de), probe	= 10.996 (test# 1 not	used)
		time	PH	conductivity	temp	turbidity	probe	Ound
	160	1607	7.49	0.483	13.90	31.3	11.026	2446
		1611	7.54	0.485	14.8°	19.2	11.091	
		1617	7.58	0.480	14.6°	8.83	11.162	
		1621	7.57	0.483	14.8°	9:71	11.197	
	1623	- stop +	est #2	- no re	covery test	· Cattin d	tak)	
	1625	- pull	pump	mp 7' -	inlet set	- at 38'		
	1629	- 5+	and tex	rt # 3	, probe	= 3,923,	floormeter	= 10
		time	pH c	Enductivity	temp tu	obidity Dr	she ou	~ <u>~</u>
	1	1630	7.56	0.486	14.00	17.5 3.9	83 2	5 gpm
		1635	7.52	0.486	0 r.r.	4.16 4.0	39	
		1640	7.54	0.484	14.60	3.09 4.1	089	
		1645	7.61	0.486	14.60	2.13 41	84	
	1647	- stop	feat #	3, flowing	eter = 11,12	20 total =	940 Gallons	
	1647	- sta	Attot #	34 e 12-7-	06	,	,	
	1655	- shu	p test #	- 4				
	1700	- left	site					
			/	/				
					J. YB		/	
				2°	£	/	/	
			-					
Reported I	By: Mid	hael E.	Caron		Reviewed By:	L.D. Wal	'ker	

			FIELL		IVITY REPO	JRI					Page of
			TUB		GOODS TAL	LY 					Date: 11- 27-
Well N	lame: 🗲	535-	7@12-11-26	39	19-1-30	Well I	D:	399-1-2	30 -€ ^{\?}	2-11-01	° C535
	TEMPO	DRARY				PERM	ANENT*				SCREEN/CAP
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)
1	0.5 (bit)	21		1			21	10.00	C	1	0.35 (cmp)
2	10.00 (casing)	22		2		L	22	10.01		2	9.99 (Ser.)
3	10.00 0	23		3			23	10.02	C	3	9.97 V
- 4	10.00	24		4		ļ	24	5.00		4	
6	10.00 2	25		5		-	25			5	
7	5.00	20			······		20		·	0	
8	9.00	28		8	······································		28		· · · ·	8	
9		29		9			29			9	
10		30		10		+	30		<u> </u>	10	
11		31		11			31			11	
12		32		12			32	·····		12	
13		33		13			33			13	
14		34		14			34		 	14	
15		35		15			35			15	
16		36		16			36			16	
17		37		17			37			17	
18		38		18			38			18	·
19		39		19	-		39			19	
20		40		20			40			20	
A11 C	asing length shall b	be meas	sured to the neare	st 0.01 fi	!.						
Comme	ents/Remarks;										
Comm	ents/Remarks:										
ALL Ce Comm	ents/Remarks; rary: O.D./I.D.	8	*[7.25*	Perm	anent: O.D./I,D.	4.4	5 ⁿ / 1	щ ³ /ç"	Scr	een: C	D.Л.D. 4. S"/и
ALL Ce Commi	ents/Remarks; rary: O.D./I.D. bit = 6*	8 	* (7.25*	Perm	anent: O.D./I.D. = 8.2.5 "	ų.4	D =	4 3/2" 7.25"	Scr	een: C	D.D.Л.D. 4,5" /г
Tempo	rary: O.D./I.D. bit = 6' drie bay	8 m rel	"/7.25" length, = 7"	Perm OD OD	anent: 0.D./I.D. = 8.2.5"	4.4 + 1	D =	4 3/2" 7.25"	Scr	een: C	р. р.л.р. 4.s" / ц
Tempo	ents/Remarks; rary: O.D./I.D. bit = 6' duie bay	8 m rel	"/7.25* length, = 7 "	Perm OD OD	anent: 0.D./I.D. = 8:25" , 6" IT	4.4 + 1	D =	4 3/8" 7.25″	Scr	een: C	р.р.л.р. 4. s"/L
Tempo	ents/Remarks; rary: O.D./I.D. bit = 6' drie bav	8 m rel	"/7.25" length, = 7"	Perm OD OD	anent: 0.D./I.D. = 8.25" , 6" IT	4.4 • • •	D =	4 ³ /2" 7.25"	Scr	een: C	р.р.л.р. 4. s" / L
	ents/Remarks: rary: O.D./I.D. bit = 6" durie bay	B m rel	"(7.25" length, = 7"	Perm OD OD	anent: O.D./I.D. = 8:25" , 6" IT	4.4	D =	<u>µ</u> 3/ ₂ " 7.25″		een: C	D.D./I.D. 4. 5" / L
Tempo	ents/Remarks: rary: O.D./I.D. bit = 6" drie bay ed By: Do.ich	8 m rel	"(7.25" Length, = 7" E. Carr	Perm OD OD	anent: 0.D./I.D. = 8.2.5" , 6" IT	4.4	D =	μ ³ / ₂ " 7.25"	Scr Va //	een: C	р.D.Л.D. 4. S" / L

	CONSTRUCT						Start Date	: 11-2	1
VVELI	CONSTRUCT	IONS	UMMAI	REPORT			Finish Dat	ie: 11-29	3 -
							Page	e <u> </u>	1
Well ID: C 5357	Well Name: 3	19-1-	30	Approximate Location:	3	10-F	F-5		
Project: Polyphosphel	e Treatability	Tec }		Other Companies:	FH.	GR	AM		
Drilling Company: Pro	somic			Geologist(s):	.E. (ARU	2		
Driller: Parm Ac	ams Licer	ise #: 🖸	2831				-		
TEMPORARY	ASING AND DRILL D	EPTH		DRILLING METHOD	но	E DIA	IETER (in.) / INTERV	Á
*Size/Grade/Lbs. Per Ft.	Interval	Sho	oe O.D./I.D.	Auger:	Diamet	er	From	to	_
8" carbon steel, = 35		5 8.	25"/7.25	Cable Tool:	Diame	er	From _	to	_
1bs/A	·			Air Rotary:	Diamet	er	From _	to	_
		_		A.R. w/Sonic:	Diamet	er	From _	to	_
		_		sonic	Diamet	er	. 25 From_	O to	_
	·	_			Diamet	er	From	to	
*Indicate Welded (W) - Flush	Joint (FJ) Coupled (C) & Thre	ad Design		Diamet	er	From	to	_
FT	- 15			-					-
				Drilling Fluid	- r	me	_		_
Total Drilled Depth: 50.5	Hole Dia @ TD:	8.29	4	Total Amt. Of Water Ad	ded Durin	a Drillin	a: • • •	TV 8 -	
Well Straightness Test Results	Dessel		-	Static Water Level:	33 /		<u> </u>	28-00	
	Fussea	GE	OPHYSICA	L LOGGING	1.6	Date		20-06	
Sondes (type)	Interval	D	ate	Sondes (type)		Inte	rval	Da	te
	·								_
			COMPLET	ED WELL					
Size/Wt./Material	Depth	Thread	Slot	Туре		Inte	rval	Volume	Ι
4" duile	0 . 49.3	20	0120	had the ul		50	- 50.5	11 1 1	+
		20	++	Dentroute peller		27	50	12 5464	t
			<u>├</u>	here it it it it	5000	18	- 20	211+	ť
	-		+ +	bailaite pellets		0	18	3 brues	╋
			+	Dentonite Grumby	- 2		. 10	- sco	╉
			OTHER AC	TIVITIES				10 911	1
Aquifer Test:		Date:		Well Decommission:		Yes	No	Date	-
Description:				Description:		105.	1110.	Date.	
	NA				/	NIA			_
	/ //			/		/0/1			
		WELL S	URVEY DA	TA (if applicable)	Ale	(1 Fair)
			ſ	Protective Casing Flevatio		- <i>y</i> e	L	J	~
Washington State Plane Coordin	ates:			Brass Survey Marker Flev	ation:	91	7115	TI m	2
		cc	MMENTS /	REMARKS					-
									•
									_
Reported By:	Title:			Signature:				Date [.]	

A-6003-658 (04/03)



Well 399-1-31 (C5358)

A-6003-643 (03/03)

									(11- 20. Ob
				BOR	HOLE LOG				Page ZI of Z
									Date: 11-20-0
Nell ID:	C 535	58	1	/ell Name: 3	99-1-31	Location:	300-FF-5	5	
Project:	Polyp	haph	at Tre	ata bility -	Test	Reference M	easuring Point:	groun	d Surface
Jonth	Sampl	le	Craphia		Sample D	escription		0	Comments
(Ft.)	Type B No. Re	Blows covery	Log	Group Nar Color, Mois	ne, Grain Size Di sture Content, So Max Particle Size	stribution, Soil rting, Angulari e, Reaction to	Classification, ty, Mineralogy, HCI	Depth of 0 Method of Sample	Casing, Drilling Met f Driving Sampling er Size, Water Leve
,				0-0.5'	- dvill pad			Sonia	C. 6" drive
			0	0.5 -4.5'	- fill (sur	id, gravel	crushed vock)	Daw	el
4			00						
4		1		4.5 - 14' -	- sandy grave	1 (56) .	f the Hamford		
4			. • . ۵	fm.	well-round	ed boartt c	obbles to		
5			0.0	3"-	generally	in crease in	<u>n size with</u>		
			8.0	depth	- COAVSE	sand Mat	vit, color		
_		ł	ÖÖ.Ö	= 541	- 4/1				
-			000	14-16' -	sandy gro	wel (sh)	- cobbles		
_		.	0,00	Seneral	y <1 ' in c	tiamder,	Very Coarse		
$\rightarrow -$			000	some v	natrix ~	build basal	t clasts,		
		-	000	40%	quartz				
-			200	16-20'	as above	1 (
-			000	20-30 -	clay conte	<u>mt (silt:</u>	mereases		
-			20.0	writh .	depth - 28	3-20' mte	wal is		
5			<u> </u>	wean	He clay (s	ilt interva	1), color		
-			పిం	20.01/-	<u><u>R-J/1</u></u>	11(0)			
			· O.·	2-26	sandy grow	er C s ur	very		
-			· · · · ·	coavi	e sand n	native, p	bory some		
-			000	(100		4			
° —				36- 48.3	sanay gr	are mos	+4 CLAOT -		
-			0	supp	oted, aver	de cobbe	sye is		A
-			-:00	in chi	J	allo , wi	20. 2000		
-	1			1101. 61	- Ringeld	En sed	ne.tz		
. –				- OI	diand sound	Fm sea	in UR.S-		- ,
· −	1			49.5	1 - Maturic	Color in	10VI -5/L		
-				~ 110	t -> Conve	Sand C	and the		
-	1		_0	de	minated -	coler fin	49.5-		
-1				Si'	in Gley 1 -	- 4 /04			
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eporte	d By: M	ichan	IF	Carm		Reviewed By	: L.A	Walk	ker
itle:			<u> </u>			, Title	64.1	- /	
		<u>seni</u>	22 U	eologist		100.	Geologi	54	
ignatur	re: 🖊	well	_		Date: 11-20-06	Signature:	200	Vælk	2 Date: 12/1

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A-6003-642 (03/03)

				BOR	EHOLE LOG				Page <u>2 of </u> 2
Well ID	- C5	358		Well Name: 34	39-1-31	Location:	300 - 5		Date: 11-20-08
Project	Pal	- Luc	+. 7	Tedialated	Tel	Reference	e Measuring P	Point:	15.0
	Sam	ple	naie v		Sample D	escription		<u>- 5,000</u>	Comments
Depth (Ft.)	Type No. R	Blows ecovery	Graph Log	ic Group Nar Color, Mois	ne, Grain Size Di sture Content, Sc Max Particle Size	stribution, rting, Angu	Soil Classificat Ilarity, Mineral	tion, Depth of o ogy, Method o Sampl	Casing, Drilling Method, f Driving Sampling Tool, er Size, Water Level
40 —			0,000	36	+48.5':	Sandy	GRAVEL ((s6) sonic	, 6" drive
-					Descriptia	1 Dh	Previous Fano	Davra	
			0,00	o,			<u>r</u>		
			08.0						
45 —									
-				· 48.	5'-> 51':	Ribert	O Fm	1	
			0.0.	2	Sand	V GRA	VEL		
			200	<u>- c</u>	lescription	onf	revious p	age	
50-			0.0	2 70 - 5					
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Reporte	ed By: 0	0.1		G		Reviewed	By: / /	118-14-	
, Title:	$\overline{\mathbf{C}}$	VIICU2	() and a	. <u> </u>		Title:	Geolog	set	
Signatu	re:	me	-	<u> </u>	Date:11-20-06	Signature		Wall	Date: 12/14/01

A-6003-642 (03/03)

				Page 1 of
			Date: N	1-20-06
Purpose: Poly phosphate Tu	catability Test	Location: 300	- FF-5	
Well ID: CS758	20-de	Well Name: 399	-1-31	
Drilling Co.: 399-1-5	St Prosonic	Rig No.: SR-071	Rig Make/M	Ad.: Proximic Sonic Ric
Casing String No. 12 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size8"	Auger	Air Water	/Mud	Make
Grade	Rotary	Reverse I	Direct	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material car bon steel	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd.)	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At: 52 50.5	Other:	Additives		Туре
Shoe OD/ID 7.25" / 7.25"		- none -		Nozzles
Reference Measuring Point:	·			Rod Size
GROUND LEVEL				
Drig. Co.	Rig No.:		Rig Make/	Mod.:
Casing String No. 1 (2) 3 4	Drilling Method	Circulation	1 0	D.H. Hammer
Casing Size4*	Auger	Air Water	/Mud	Make
Grade	Rotary	Reverse	Direct	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material stainlup steel	Cable Tool	gpm		Casing Hammer
Type:	Sonic	Pressure	psi	Make
Welded Thd.)	A.R. w/Sonic	Drill Pipe O.D		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set 49 49	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Comments/Remarks:	L			Estimated Depth to Water
- 4" permanent	casing			34'
Reported Burr M 1 1 F	E Curr			
Name/Title:	<u>c. aven</u>			
, N		·····		
Signature:				Date: 11-20-06
		· · · · ·		A 6003 650 (04/03

						Page 1 of 3		
	FIEL	D ACTIVITY RE	PORT - DAILY DR	ILLING		Date: 11-20-06		
Well ID:	C	5358		Well Name: 39	79-1-	31,		
Location:	30	0-FF-S		Report No.:	C	11-20-05 (1)		
	St	art	Finisl	ו <u>ווווווווווווווווווווווווווווווווווו</u>		Total		
Time	06	30	Time 163	Þ	Time	(0		
Hole Dept	th/CsgC	<u> </u>	Hole Depth/Csg51	/	Hole D	Depth/Csg / NA		
Reference	e Measuring GROUND	Point: SURFACE	Casing String No. ①2	34 Ro	od Size	÷ &"		
Time	/Depth		Description of A	Activities/Operation	ns with	Denth		
From	То	(At	tach applicable drawing	gs and document	straigh	tness test results)		
	0630	- POD at	site trailer	-		- AV4		
	0705	- at drill sit	~					
	0735	- water level	in well C 5352 =	= 34.3				
	0747	- commence	dvilling with 6"	drive barrel				
	0821	- add bit	+10' B" cas	ing (tally	<u> </u>	20.5')		
		- drive can	ing to 16' bgs					
	0840	- am RCT	check, all < t	packground_				
	0845	- resume di	<u>villing with dr</u>	ive barrel	4 *	20-06		
	0907	- add 20'	of B" caping (tally = Zo.S'), bit at 36'					
	0912	- repune du	illing with 6" d	nie Damel				
	2918	- waste man	agement on site -	checking du	nums			
	0438	- pubh 8"	coving to 50.9	s' (Inbul	an +	ally = 50.5'), dean		
		out bore h	<u>de to 50.5</u>					
1020	10 38	- trip in	stainless steel we	Il tubing a	<u>nd s</u>	creon-stabilizers		
		at 48.5, 2	B.S' Ctop/both	rm of screen		and 10' bas		
		- screen Se	t in interval	from 29-4	9 6	23), Dottom of		
		sump su	2+ 44.35 bgs	Shieleun	φ	5'10'		
10:55	11:45	- preak for	lunch	1 1 1	1.	1 1 - 1		
	1150	- add < 14	bucket bentarite	e pellett Lac	<u>ç bat</u>	Lom at 50		
		- add 10-	Lo Colovado Sil	ica Sano, +	ag !	Dattern at 45		
1203	1223	- sunce wel	1 with dwal bl	acle surcer -	- Sana	d fall out 0.15' in first		
		5 minutes	, stable therea	fter - inte	enval	= 46-49'		
	122.5	- add 1.5 k	ags sand to a	bottom a	+ 4	2'		
Reported	By: N	Nichael E.	Caron	Reviewed By:	2.0	.Walker		
Title:	Senior	- acolomit	Date: 11-20-06	Title: Ge	olog	ist Date: 12/14/06		
Signature	: Me	el_		Signature:	10 1	Valke		

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	FI	ELD ACTIVITY REPORT - DAILY	DRILLING	Page	2_ of Z 3			
		Continuation Page		Date: 11-	-20-06			
Well Name	e: 🗲	-5358 e 12-11-06 399-1-31	Well ID: 399-+-	-31 e 12-11-06	C5358			
Location:	300	- FF- 5	Continuation of Report N	NO. CHAD	\bigcirc			
Time/	Depth	Description	of Activities/Operations w	ith Denth				
From	То	Description e	Activities/Operations with	an Depin				
	1225	- pm RCT check - al	1 < back ground					
1230	12.50	- sunge interval from 4	3-46', sand fe	Il out 0.3'	m 5 min			
		stable thereafter						
	1252	- pull 8" caping back 4'	bottom of casing :	= 46.5' . 2000	hlap = 4.2			
	1257	- add 2 bags 10-20 saw	nd, tag bottom a	+ 39:2	·			
1300	1330	- surge interval from 40-	47', sand fell a	mt 0.4'	n 15 min,			
		stable thereafter			· · · · · · · · · · · · · · · · · · ·			
	1345	- pull off 5' of 8' cap in	ig, stick up = 5'	tally = 50'	bottom of car			
(1740	- add 2 bags sand, to	9 bottom at 26					
		- 5' joint added after -	D					
1355	14 4 5	- surge interval from 37-4	10', sand fell	out 1.35	still fall			
		at > 0.1' is minutes	at i hour ma	rk				
	1502	- Jull 8" caping back 3'	, bottom of ca	sing to at	~ 42', tag			
		Dottom at 38'	.) 00 (0				
	1505	- add 3 bags at sand	pull off 10	<u>of 8" cao</u>	ing, botton			
		of casing is 35.5'	tubular tally =	40.5', tag	bottom at			
		54, add (bag of	Sand, tag Dotter	<u>m at 31.7</u>	/			
121	1536	- surge interval from 34-	57, sand fell or	$\frac{1}{2} + \frac{1}{2} + \frac{1}$				
-	1245	pull casing back 5	tag soften at	249.5	10-06			
		- add same (1.3 back	1, tas bottom	L L 11	Se 1			
	1552	- and of in the	8" casing 11	to Dense	· · · · · · · · ·			
<u></u>		- add isbachets of biotomite pallots Is a hattam of 10'						
	1557	- Dull casing back 5'	ade 3 been of	bontonito cu	runhler			
		tachatten at 10'						
	1602	- oull off to lorth of 8" caping and be of hard it.						
		crumbles the bottom	at 10'	· · · · · ·				
	1607	- mix neat Parthand car	ment grout 20	gal water.	5% bontonit			
		2; bays cement	0, >	,,				
Reported	By: M	ichael E. Caron	Reviewed By:	.Walker				
Title:	Senior	Date: 11-20-06	Title: Geolog	st	Date: [2/14]			

-	FI	LD ACTIVITY REPO	ORT - DAILY	ORILLING	Page 3 of 3
		Continua	tion Page		Date: 11-20-0-6
Well Name	e: _	C53586 30	19-1-21	Well ID: 399-1->+ @	2-11-06 C5358
Location:		300-FF-5		Continuation of Report No.:	1.20° B ()
Time/	Depth		Description of	Activities/Operations with De	nth
From	То		Description of	Activities/operations with be	
	1610	- inject quent	, 2' abre	ground but settling	
	1612	- venire 10'	0 + 8" C	aoing,	
	1615	- mix grout	- 10 5	al water, 56 bent	mite, i by cement
L	1616	- inject pour	t in annu	Les spre for well	C5352
	1622	ig + bit (all out	-), apont has		
		settled to be	elow surface		
	_163>	- left site for	· · · · · · ·		
	1627	- drutters rema	ve 5' lengt	-h of stainless car	sing
				/	
		/			
				/	
			/-		/
			, e		
			14		
				r - r - r - m - m	
			,		
					/
		/			
	-				
				/	
Reported	By: M	ichael E. Garm		Reviewed By: L.D.U	Dalker
Title:	Seri	or Creatoriat	Date: 11-20-05	Title: Geologist	Date: 1 2/14/06
Signature:		he		Signature: DUa	the

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A-6003-652 (04/03)

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A-6003-644 (03/03)

$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		FIEL	D ACTIVITY RE	PORT - DAILY DR	ILLING	P	age <u>)</u> of _	2	
Weak Number $(2 \le 3 > 3 \le 3$			C 260			Date:)	2-6-06		
Kepot No::(Report No::(B)StartFinishTotalTime1570TotalTime1570TotalTime1570TotalTime1570TotalTime1570TotalTime1570TotalTime1570TotalTime1570TotalGROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:GROUND SURFACECasing String No. 1 2 3 4 Rod Size:Time/DepthCasing String No. 1 2 3 4 Rod Size:Casing String No. 1 2 3 4 Rod Size:Casing String No. 1 2 3 4 Rod Size:Total String No. 1 2 3 4 Rod Siz			2 2 2 2 2 8		vvell Name:	599-1-31			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Location:		200-77-5	Finial	Report No.:	<u> </u>	Tetel		
Time1500Time1570Time2.30Hole Depth/Csg $\sqrt{1.44}$ Hole Depth/Csg $\sqrt{1.44}$ Hole Depth/Csg $\sqrt{1.44}$ Reference Measuring Point: GROUND SURFACECasing String No. 1 2 3 4 Rod Size: See Report No. 1Rod Size: See Report No. 1Rod Size: See Report No. 1Time/DepthDescription of Activities/Operations with Depth (Attach applicable drawings and document straightness test results)1300- well head measurements1300- well head measurements (1) $portective to permanent = 0.85'$ (2) $portective to permanent = 0.85'$ (3) - vacture (ure) = 23.67' (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4) (3) (4) (3) (4) (3) (4) <t< td=""><td></td><td>51</td><td>art</td><td>FINIS</td><td>n</td><td></td><td>Iotai</td><td></td></t<>		51	art	FINIS	n		Iotai		
Hole Depth/Csg \underline{JA} Hole Depth/Csg \underline{NA} Hole Depth/Csg \underline{NA} Hole Depth/Csg \underline{NA} \underline{NA} Reference Measuring Point: GROUND SURFACECasing String No. 1 2 3 4 See Report No. 1Rod Size: See Report No. 1Time/DepthDescription of Activities/Operations with Depth (Attach applicable drawings and document straightness test results)1300- well head measuremento 1300 - well head head measuremento 1300 - well head measuremento 1300 - well head head measuremento 1300 - well head head measuremento 1310 - head Head head head head head head head head h	Time	13	00	Time 1530	·	Time	230		
Reference Measuring Point: GROUND SURFACE Casing String No. 1 2 3 4 Rod Size: See Report No. 1 Time/Depth Description of Activities/Operations with Depth (Attach applicable drawings and document straightness test results) 1300 - well head measurements 0 Description of Activities/Operations with Depth (Attach applicable drawings and document straightness test results) 1300 - well head measurements 0 Description of Activities/Operations with Depth (Attach applicable drawings and document straightness test results) 1300 - well head measurements Operations with Depth (Attach applicable drawings and document straightness test results) - well head measurements - well head measurements - well head measurements - proble is 1.9' abre gump inlet, inlet is Seet at 45' bgs / " - proble is 1.9' abre gump inlet, inlet is Seet at 45' bgs / " - walk level is 1.9' abre gump inlet, inlet is Seet at 45' bgs / " - Proble is 1.9' abre gump inlet, inlet is Seet at 45' bgs / " - Proble is 1.9' abre gump inlet, inlet is Seet at 45' bgs / " - 1310 - Iso for inlet for inlet for inlet for inlet for inlet for inlet	Hole Depti	h/Csg	JA / NA	Hole Depth/Csg NA	/ NA	Hole Depth/Csg	NA	NA	
Time/Depth Description of Activities/Operations with Depth (Attach applicable drawings and document straightness test results) 1300 - well head measurements 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 1310 - test this (drawdown) - start time = 1310, flammelin = 3090 13110 - test this (drawdown)	Reference	Measuring GROUND	Point: SURFACE	Casing String No. 1 2 See Report No. 1	34 R	od Size:			
From To (Attach applicable drawings and document straightness test results) 1300 - well head measurements Image: Ima	Time/i	Time/Depth Description of Activities/Operations with Depth							
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $			- water line	1 = 33.67'	T			it's b	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			- probe is 1.	q'abre sump	inlet, inlet	is set at	45 hs	5 / = ((-)	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1310	-test #5 (a	trandown) -	start tim	e = 1310	flormation	= 309090	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			time	pH conductiv	ity (ms) tw	bidity (NTU)	tompie)	Probe	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1315	7.56 0.48	31	24.7	15.D°	11.518	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1320	7.55 0.48	7	10.03	14.4 0	11.643	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1325	7.54 0.48	3	7.68	14.90	11.711	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1330	7.57 0.470	7	5.10	15.2°	11761	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			1335	756 0.48	li l	4.35	14.80	11.824	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1340	7.54 0.486	6	4.50	14.8 °	11.901	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1345	7.55 0.481		3.91	14.40	11.949	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			1350	7.55 0.484	}	3.30	14.30	12.005	
1400 7.53 0.481 2.41 14.1° 12.100 1405 7.53 0.480 2.41 14.8° 12.142 1410 7.45 0.482 2.40 14.5° 12.142 1410 7.45 0.482 2.40 14.5° 12.168 1415 7.51 0.480 1.72 14.1° 12.180			1355	7.55 0.48	3	3.00	14.80	12.044	
1405 7.53 0.480 2.41 14.8° 12.142 1410 7.45 0.482 2.40 14.5° 12.168 1415 7.51 0.480 1.72 14.1° 12.180			(4,00	7.53 0.48	1	2.41	14.10	12.100	
1410 7.45 0.482 2.40 14.5° 12.168 1415 7.51 0.480 1.72 14.1° 12.180			1405	7.53 0.46	D	2.41	14.8°	12.142	
1415 7.51 0.480 1.72 14.10 12.180			1410	7.45 0.48	32	2.40	14.5°	12.168	
			1415	7.51 0.4	80	1.72	14.10	12.180	
1418 and test # 5, probe reading = 12.186, and formation = 4750		1418	end test #	5, probe rea	di = 12.1	86' end a	innetes =	4750	
1418 start test #6 (recovery)		1418	stast test #	6 (recovery)	<u> </u>	/			
1421 Stop test # 6 V, probe = 12.233		1429	Stop test #	6 v pol	= = 12.233				
Reported By: Michael E. Com Reviewed By: L.D. Walker	Reported E	By: M.	chael E. Care	~	Reviewed By:	L.D. Walke	r		
Title: Senior Geologist Date: 12-6-01 Title: Geologist Date: 12/14/1	Title:	Seri	or (reologist	Date: 12-6-01	Title: Gca	ologist	Da	te: 12/14/06	
Signature: Jule	Signature	L	ha		Signature:	O Walk	2	,	

		FI	ELD ACTIVIT	Y REPORT -	DAILY DR	ILLING		Page	2 of 2			
				Date: 12	-6-06							
	Well Name	:	C 5358 012	-11-D6 399-1-	-32 "	ell ID:	399-1-510	12-11-00	C 5358			
	Location:	30	D-FF-5 Continuation of Report No.:					2				
	Time/[Depth	epth Description of Activities/Operations with D									
	From	То										
		14 30	start pull	up pump 7	1. inte	t at :	38' bas,	flowmeter	= 4750 gal			
		1433	- stant te	ot # 7	'							
			time	pH	Conductiv	ty _	two bility	temp	probe			
			1438	7.47	0.48	2	10.5	14.3°	4.161			
			1443	7.56	0, 481	-	4.63	<i>۱</i> 4.4°	4.267			
			1448	7.48	0.48	ł	4.45	14.50	4.338			
			1453	7.49	0.481		3.51	14.60	4.451			
			1458	7.51	0.48)	2.94	14.9°	4.551			
		_	1503	7.49	0.460		2.55	14.9 °	4.676			
		1506	stop te	ot #7,	flow mete	= 5-	110					
		1506	start	eo+ # 8 (re	covery),	probe	= 4.756					
		1516	stop +	est # 8								
		1520	- well he	ad measu	rements	0 2) () (Se	e page 1)			
			well:									
			C5357	C9352	C535	1 cs	354 C	5355 053	556 C5359			
			G 2.42	124 653 2.47	2.51	2.60	» 7.	54 2.6	9 2.47			
			\$ 0.45	0.50	0.50	0.58	0.5	3 0.5	2 0.64			
			3 1.07	1.02	1.13	1.2	, 1.14	1.35	1.10			
		1536	-left site	e for da	7							
				/								
							<i>_</i>					
						/						
						<u> </u>						
								/	F			
					<u> </u>							
			4		/		/					
	Reported B	y: Mic	hael E. C	im	Re	viewed By:	L.D.W	a/ker				
1	Title:	Seni	or healogic	Date:	2-6-06 11	le: 6	<u>cologist</u>		Date: /2/14/06			
[Signature:		ME	2	Si	nature:	TO Wa	lpr				

A-6003-652 (04/03)

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			FIELD	ACT	IVITY REP	ORT					Page of	(
			TUB	ULAR	GOODS TAL	LY				کم	Date: 11-20-	.06
Well N	ame:	580 12-11-0	-1-31	1 Well ID: 399-1-3+e12-1			e12-11	C 53 58				
TEMPORARY						PERMA	NENT				SCREEN/CAP*	
Jt. #	Length (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	c
1	0.so(bit)	21		1			21	CASSESUMP)	C	1	9. 19	C
2	10.00 (cooing)	22		2			22	9.19	C	2	9.97	
3	10.00 1	23		3			23	9.97		3	D.75(54.00)C
4	10.00 -	24		4		<u> </u>	24	04.01	C	4		+
5	10.03 11-20-6	25		5			25	5.00				
6	-500-44 K	26					26					
7	10.00	27		<u> </u>			27		<u> </u>			╂──
8		28		°.			20			- °		<u> </u>
9		29		10			29			10		+
10		30		10		+	21			11		+—
11		31		12			32		<u> </u>	12		+
12		32		12			33			13		+
14		34		14			34			14		
15		35		15		+	35		<u> </u>	15		+
16		36		16			36			16		+
17		37		17		+	37	<u> </u>	<u>├</u> ──	17		
18		38		18		+	38			18		+-
19		39		19		+	39			19		+
20		40		20			40			20		1
Tot	50.50	Tot		Tot		+	Tot	3496	<u> </u>	Tot	20.31	
Comm	entralize	5	set at	top,	/ bottom	°t	sca	oon and	~	10'	bgs	
Temp	orary: O.D./I.D.	8'	125"	Perr	manent: O.D./I.D	. 4	-5" /	43/8"	Sc	creen:	0.D./I.D. 4.5"/4	3/ 4
										_		
	bit = 6''	. نه او	encth	8.25	" OD , 7	1.25"	D					
	drive bai	rel	= _7 "	oD	, 6" ,7	>		_			_	
											4	
			<u> </u>									
Repor	rted By: Mic	hael	E. Cav	ŝ		Revi	ewed E	By: L.D.C	Val	ker		
Title:	<u>C.</u> .		Jest and and		ate: 11-20-06	Title	:	Geologia	+		Date: /	2/14/2
Signa	>enc	DA	Aco og or			Sign	ature:	AR 111	00	,		1 10
Signa	iure:	Re-	_			Joigh	ature.	nrWa	lp	-		

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							Start Date:	11-20-	-06
WELL	CONSTRUCT	ION SI	RY REPORT			Finish Date	11-2	0-06	
							Page	of	_
Well ID: C5358	Well Name: 399	-1-31		Approximate Location:	3	10 - F	F-5		
Project: Polyphosphe	te Treatability	y Tes	<u>, </u>	Other Companies:	Gr	LAM .	FH.		
Drilling Company: Proc	on c			Geologist(s): M.	E.(CARON			
Driller: Aarm Ad	ems Licen								
TEMPORARY	ASING AND DRILL D	EPTH		DRILLING METHOD	н		METER (in.)	/ INTERVA	L (ft)
*Size/Grade/Lbs. Per Ft.	Interval	Shoe	e O.D./I.D.	Auger:	Diam	neter	From	to	
8*		- 8.2	-5" /7.25	Cable Tool:	Diam	neter	From	to	
		-		Air Rotary:	Diarr	neter	From	to	
	·	-		A.R. w/Sonic:	Diarr	neter	From	to	
	Sonic	Diam	neter 👱 😕	From _	0to	51'			
			Diam	neter	From	to			
*Indicate Welded (W) - Flush	Joint (FJ) Coupled (C	c) & Threa	ad Design		Diam	neter	From	to	
				100 A.					
				Drilling Fluid:	VA				
Total Drilled Depth: 51,0	Hole Dia @ TD:	8.2	5″	Total Amt. Of Water Add	led Du	uring Drillin	ng: N	4	
Well Straightness Test Results:	passe	Static Water Level: 3	3.7	1 Date	: (l-	20-0	6		
		GE	OPHYSICA						
Sondes (type)	Interval	Da	ate	Sondes (type)		Int	erval	Dat	te
	·						<u> </u>	-	
	·								
	· ·								
			COMPLET	ED WELL		Int	erval		Mesh
Size/Wt./Material	Depth	Thread	Size	Туре		Annular Se	al/Filter Pack	volume	Size
4" stainless	0 - 41.3		50	bentonite pellets		50	- 50.5	1/4 budiet	
				10-20 Colorado 50	nd	7	- 55	13.5 bags	
	· •			bentonite pellet	5	19	- 27	2.25 bude	95
				bentomite crumb	les	10		4 bags	L
				neat Portand conner	<u>+</u>		10	zo gal	
			OTHER AC	CTIVITIES					
Aquifer Test:		Date:		Well Decommission:		Yes:	No:	Date:	
Description:				Description:					
		WELL S	URVEY DA	TA (if applicable)	NC	,t ve	+ Sun	reyed	
		_		Protective Casing Elevatio	n:	at	His	time	
Washington State Plane Coord	inates:			Brass Survey Marker Eleva	ation:				
		C		/ REMARKS					
				r. 181					
<u> </u>									
								2.1.	
Reported By:	Title:	<u>`</u>		Signature:			,1	Date:	,

A-6003-658 (04/03)

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Vell ID: C 5359 ocation: 300 - FF - 5 repared By: Michael E. Gavon Dai ignature: Model CONSTRUCTION DATA Description Dia B" oD + empovary caring B" protective caring: 3.11'ags > 1.89'bgs > 1.89'bgs > 9.189'bgs > 9.190'bgs > 9.1	agram	Well Name Project: Reviewed Signature: Depth in Feet	e: 399-1-32 Poly phosphate Treatability T By: L. D. Walker Date: <i>AB Walker</i> GEOLOGIC/HYDROLOGIC DATA Graphic Log 0-3': fill; sand with 0:0:0 0-3': fill; sand with 0:0:0 0-3': Hanford fm. sandy 0:0:0 9-11.5': Hanford fm. silfy gravel, clay-altered	spavse grave sand
ocation: 300 - FF - 5 repared By: Michael E. Caron Dat ignature: Michael E. Caron Dat CONSTRUCTION DATA Description Dia 3" oD temporary caaing 3" oD temporary caaing 3" protective caaing: 3.11' ags > 1.89' bas > 1.89' bas > 1.89' bas 0 > 16': neat Portland Cement with 5% bentowite 43/6" 1D 55 type 304/216 5ch.10 visen: +2.01 -> 29' +3/6" 1D 55 type 304/216 20-510t wire wrap screen:	ate: \2- 11-06	Project: Reviewed Signature: Depth in Feet	Polyphosphate Treatability T By: L. D. Walker Date: The Walker Date: GEOLOGIC/HYDROLOGIC DATA Graphic Lithologic Description 0-3': fill; sand with : 0-3': fill; sand with : 0-3': fill; sand with : 0:0:0 pebbles 0:0:0 9-11.5': Hanford fm. sally 0:0:0 9-11.5': Hanford fm. silly	spavse sand
repared By: Michael E. Caron Dat ignature: MC CONSTRUCTION DATA Description Dia B" oD temporary caring B" protective caring: 3.11'ags → 1.89'bgs → 1.89'bgs 0 → 10': neat Portland Cement with 5% bentonite +3/e" ID 55 type 304/216 t ³ /e" ID 55 type 304/216 20-510t wire wrap screen:	ate: 12-11-06	Reviewed Signature: Depth in Feet	By: L. D. Walker Date: The Walker Date: GEOLOGIC/HYDROLOGIC DATA Graphic Lithologic Description 0-3': fill; sand with 0:0:0 0-3': fill; sand with 0:0:0 0-3': Hanford fm. sandy 0:0:0 0-3': Hanford fm. silfy 0:0:0 0.0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0	12/14, spavse
ignature: CONSTRUCTION DATA Description Dia B" oD + emporary carring B" protective caring: 3.11 ags → 1.89 bgs → 1.89 bgs 0 → 10": neat Portland Cement with 5% bentonite +3/e" ID 55 type 304/216 5ch.10 visen: +2.01 → 291 +3/e" ID 55 type 304/216 20-510t wire wrap screen:	agram	Signature: Depth in Feet	GEOLOGIC/HYDROLOGIC DATA Graphic Log 0-3': fill; sand with 0-3': fill; sand with 0-3': fill; sand with 0:0:0 0-3': Hanford fm. sandy 0:0:0 0-3': Hanford fm. sandy 0:0:0 0-3': Hanford fm. silfy 0:0:0 0-3': Hanford fm. silfy 0:00 0-3': Gay-altered	spavse gvave sand
CONSTRUCTION DATA Description Dia <u>B'' oD + emporary caaing</u> <u>B'' protective caaing: 3.11'ags</u> $\rightarrow 1.89' bgs$ $\rightarrow 1.89' bgs$	agram	Depth in	GEOLOGIC/HYDROLOGIC DATA Graphic Log 0-2': fill; sand with 0-2': fill; sand with 0:0:0 0-2': fill; sand with 0:0;0 0-2': fill; sand with 0:0;0 0-2': fill; sand with 0:0;0 0-2': fill; sand with 0:0;0 0:0 0:0 0:0 0:0 0:0 0:0 0	spavse gvave sand
Description Description Dia B" oD temporary casing B" oD temporary casing B" protective casing: 3.11' ags -> 1.89' bgs ge 12-8-01 -> 1.89' bgs ge 12-8-01 -> 1.89' bgs ge 12-8-01 -> 1.89' bgs -> 1.89'	agram	0	Graphic Log D-3': fill; sand with Debbleo D-3': Hanford fm. Sandy D:0:0 D-3': Hanford fm. Silfy D:0:0 D-3': Hanford fm. silfy D:0:0 D-3': Hanford fm. silfy D:0:0 D-3': Hanford fm. silfy	spavse gvave sand
B" oD temporary caoing B" protective caoing: 3.11'ags → 1.89'bgs 0 → 10': neat Portland Cement with 5% bentonite 4 ³ /e" 1D 55 type 304/316 5ch.10 viser: t2.01 → 29' t ³ /e" 1D 55 type 304/316 5ch.10 viser : t2.01 → 29' t ³ /e" 1D 55 type 304/316		0	0-3': fill; sand with pebbles 3-9': Hanford fm. sandy 0:00 9-11.5': Hanford fm. silfy gravel, clay-altered	sand
B" protective casing: 3.11' ags → 1.89' bgs 0 → 10': neat Portland Cement with 5% bentonik 4 ³ /e" 1D ss type 304/316 sch.10 viser: + 2.01 → 29' + ³ /e" 1D ss type 304/316 20-slot wire wrap screen:			0-3': fill; sand with: 0.00 pebbles 0.00 3-9': Hanford fm. sandy 0.00 9-11.5': Hanford fm. silty 0.00 gravel, clay - altered	gvave sand
→ 1.89'bgs 0 → 10': neat Portland Cement with 5% bentonite 4 ³ /e" 1D ss type 304/216 sch.10 visen: +2.01 → 29' t ³ /e" 1D ss type 304/216 20-slot wire wrap screen:			0:0:0 3-9': Hanford fm. sandy 0:0:0 9-0.0 9-11.5': Hanford fm. silfy 9-11.5': Hanford fm. silfy	gvave sand
equiprenent →10": neat Portland Cement with 5% bentonite 4 ³ /e" 1D ss type 304/316 sch.10 viser: +2.01 → 29' + ³ /e" 1D ss type 304/316 20-slot wire wrap screen:		0	0.00 3-9': Hanford fm. sandy 0.00 0.00 9.00 9.00 9.00 9.00 9.00 9.0	gvave
Cement with 5% bentonite $\frac{4^{3}/\epsilon^{"} D ss type 304/316}{sch.10 visen: +2.01 -> 29'}$ $\frac{1^{3}/\epsilon^{*} D ss type 304/316}{20-slot wire wrap screen:}$		10	9:00 9-11.5': Hanford fm. silty gravel, clay - altered	sand
4 ³ /e ⁿ 1D ss type 304/216 sch.10 visen: +2.01 → 29 ¹ + ³ /e ⁿ 1D ss type 304/216 20-slot wire wrap screen:		10	9-11.5': Hanford fm. silty	sand
$\frac{4^{3}/\epsilon^{"} D \text{ss type } 304/316}{\text{sch.io visen} : +2.01 \rightarrow 29'}$ $\frac{1^{3}/\epsilon^{"} D \text{ss type } 304/316}{20-\text{slot wire wrap screen}}$		10 -	avavel, clay - altered	
sch.io visen: +2.01 -> 291 +3/e" ID ss type 304/216		-1:		
t ³ /e [*] 1D ss type 304/216	1:1		0.0.0	
an-slot wire wrap soren:			000 11 Easte's Han Fand Con son	Augo
SO-SIOT WIVE WYUD SUCCED.	1	-	or of the second	ay gra
File File	12			. 1
		20	0. 20 18-20 = Havtore tm. silty	Sand
F/18 10 >> + 1pe 304 / 711 KX8	× ××	-;	gravel, clay-altered	-
sch. 10 sump: 44 - 44.35	× × ×		0.00	-
19.5 / 1 1 / XX	The second	-	0.0	
1+26.5: bentonite crambles	8	-	0.0 01 20-33.5: Hanford fm. 50	indy
1.5 +45.5 : @ 12-11-06		30-	gravel	
1.5 = 26.5: 3/8" bentonite pellets				
and bentonite chips			33.5-35: Hanford frn. sil	ysan
6.5 + 45.5 : 10-20 mesh Glorado		- C	20:0: gravel, clay-altered	
silica sand				_
5.5 + 50.5': 3/8" bentmite pellets		40 -	0.0. 0 35-43': Hanford fm. sandy	grave
		-	0 6 6	_
till temporary coving removed.		-	ALC O' PULE	1
Septhis in feet below ground surface.		-	TO SOLS . Kingold Tm. San	
		50 -		_
		-	- Water level = 32.5	
Centralizers		-	TD = 50.5	
]		

Well 399-1-32 (C5359)

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				BOREHOLE LOG	;		Page 1 of 2
Well ID		53.59	W	ell Name: 399-1-32	Location: 200 - FE-	5	Date. 12-1-06
Project	PI		1	Alaility Tel	Reference Measuring Point:		A surface
	Sa	imple	are (ve	Sample I	Description	Stem	Comments
(Ft.)	Type No.	Blows Recovery	Graphic Log	Group Name, Grain Size D Color, Moisture Content, So Max Particle Siz	istribution, Soil Classification, orting, Angularity, Mineralogy, e, Reaction to HCl	Depth of Method o Sampl	Casing, Drilling Method, f Driving Sampling Tool, er Size, Water Level
0						Sonic,	" dnie barnel
-			0	0-3': sandy fi	11, spavse pebbles		
			0	3-Q': sandy qu	avel, medium savel,		
			00.0	poorly-sorted, u	vell- rounded baself		
5-			00000	cobbles to 5",	clast-supported (56)		
			0.00	9-11.5': silty send	y spacel (msG),		
-			0000	sitty fractions	trongly clay - altered		
			· · · · · ·	11.5-15: Sandy a	vovel (56) meducin		
10-			010	sand, cobbles	to 3" (one much		
-			0:0:0	Ingn - dailled -	through)		
-			$\circ \bigcirc$	15-18 : Sandy and	w (s() coose		
15_			000	sand, cobbles	1-3", well-		
-			000	rounded, mos	the basalt, better		
! _			5.000	sorting than si	a closer to surface.		
. –				18-20': silty cam	dy enavel (msG)		
2			0,10	strong clay a	impment		
I			0.00	, ,			
			$^{\circ}$ \bigcirc $^{\circ}$	20-33.5: Sandy	gravel (SG) met to		
-			\bigcirc	cobbles to 2	> 6", generally		
25 -			0.00%	well -rounde.	s mustly basalt		
-			1	35 @ 12-1-06			
			/	33.5-45: silly sa	ndy gravel (MSW),		
-				MOG. TO STUTIC	- clay component		
20 _			\bigcirc				
			0.000	35-43': sandy gr	wel, same as interval		
-			200	fum 20-33.5"	<6)		
-			00	43-50.5 : Qine ald	and (S) some		
			2.64	to moderate pet	tets iz-1-06 cobbles		
- ¹			0.0	to 2" throughout	, clay from 43-44,		
-			0.0	reduced (gray)	2000 50.5 to 49, SUMO		
-			0.0.6	from 42 - 45'	oxioisec (oralig)		
Report	ed By:	Mich	ael F	Caron	Reviewed By: L, D. (Valke.	v
Title:	(Gral	ociat	Title: Geologist		·
Signati	ure:	Ind	7	Date: 12-1-d	Signature: 79 ///	el.	Date: 12/14/ar
		21102			or wa	700	/06

A-6003-642 (03/03)
				BORE	HOLE LO	G			Page <u>2</u> of <u>2</u>
						-			Date: 12-1-06
Well ID	: 65	359	1	Vell Name: 30	19-1-32	Location:	300 - F	F-5	
Project	Poly	pho spha	te Tre	tability To	est	Reference	Measuring Point:	ground	surface
Depth	Sa	mple	Graphic		Sample	Description		`	Comments
(Ft.)	Type No.	Blows Recovery	Log	Group Nan Color, Mois	ne, Grain Size I sture Content, S Max Particle Si	Distribution, So Sorting, Angula ze, Reaction to	il Classification, rity, Mineralogy, hCl	Depth of 0 Method of Sampl	Casing, Drilling Method, f Driving Sampling Tool, er Size, Water Level
40			0.00	35-43:	sandy g	ravel (s.6), mod. to	Sonic	, 7" drike barrel
-		ĺ	9.00	colubi	is the >	en poory	valle		
			0.0.0	well-	voundet.	mostle	basat		
			~=	1		7			
45-			.0. 6	:	. 67		\sim		
_				43-50.5	: Kingol	d sand (S), sparse	<u> </u>	
-		ļ	00	-b me	alight c	law Gom	47-44		
-			·	- Aldin	ed (ovan	re) from	43-49'		
5-				reduce	d (gray)	from 50.5	to 491, Some		
_			<u> </u>	- wood	fragment	5	,	TD=	SO.S'
-				·					
-									
-									· · · · · · · · · · · · · · · · · · ·
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Repor	ted By:	Michan	IF.			Reviewed B	By: L.D.	Walke	· ·
Title:			G	aciat	<u></u>	Title:	Geologist		
Signat	ure:	110		<u> </u>	Date: 12-1-0	[Signature:	2D UL	le.	Date: 12/14/06

A-6003-642 (03/03)

	Page 1 of 1			
FIELD ACTIVITY	REPORT NO. 1 - DRIELI	NG FLAN	Date:	12-1-06
Purpose: Polyphosphate	Treatubility Text	Location: 300	-FF-	5
Well ID: C5359		Well Name: 39	7-1-7	32
Drilling Co.: Prosonic		Rig No.: 57-071	Rig Make/	Mod. Prosumic Swit Rig
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size	Auger	Air Water/	Mud	Make
Grade	Rotary	Reverse D	irect	Model
Lbs.Per Ft. 35	Tubex	Vol: cfm		Choke
Material <u>carbon</u> steel	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
WeldedThd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprobe	Tool Joint Size		Bit Size
Set At: 52+2 / 50.5	Other:	Additivesnone	2	Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Drig. Co.	Rig No.:		Rig Make/M	Aod.:
Casing String No. 1 2 3 4	Drilling Method	Circulation		D.H. Hammer
Casing Size	Auger	Air Water/I	Mud	Make
Grade	Rotary	ReverseD	irect	Model
Lbs.Per Ft.	Tubex	Vol: cfm		Choke
Material	Cable Tool	gpm		Casing Hammer
Туре:	Sonic	Pressure	psi	Make
Welded Thd.	A.R. w/Sonic	Drill Pipe O.D.		Model
Planned / Actual	Geoprete	Tool Joint Size		Bit Size
Set At:/	Other:	Additives		Туре
Shoe OD/ID				Nozzles
Reference Measuring Point:				Rod Size
GROUND LEVEL				
Comments/Remarks:	1	•		Estimated Depth to Water
		1.9785		
				· · · · · · · · · · · · · · · · · · ·
Reported By: Million E	Causa			
Name/Title:	Caron it			
Senor	Creating			······································
Signature:				Date: 12-1-06

A-6003-650 (04/03)

	rir!				Page of						
	FIEL		FORT - DAILT DR		Date: 12-1-06						
Well ID:	C	5359		Well Name:	399-1-32						
Location:			Report No.:								
	Sta	art	Finisl	n	Total						
Time	12	215	Time 144	5	Time 23 °						
Hole Dept	n/Csg	010	Hole Depth/Csg 50.	5 1 47	Hole Depth/Csg <u>50.5</u> / 47						
Reference	Measuring GROUND	Point: SURFACE	Casing String No. 2 See Report No. 1	34 Ro	d Size: 8"						
Time/	Depth		Description of	Activities/Operation	ns with Depth						
From	То	(At	tach applicable drawing	gs and document s	traightness test results)						
	1215	- commence	drilling with 7	" drive barre	, advance to 16'						
	1250	- add alen	sthe caping + bi	+ (tally =	20.5'), advance to 16'						
	1305	- resume d	rilling with 7"	ine with 7" drive barrel, advance to 36'							
1200		- PM RCT S	irreys								
	1310	- PM IHT	survey, all read	ling < detect	in						
	1325	- add 20'	of casing, a	drance to 36'							
	1330	- resume d	villing with 7'	drive barrel	, advance to 50.5'						
	1420	- clean o	ut borehole te	s 46', add	10'sf casing, advance						
		6 47'									
	ILLIS	- done for	r day - dril	lers need 1	o get 5' length of 2						
		slost scree	en to set wel	1 in interv	al from 44-29'.						
					/						
				/	,						
		/-									
		-/									
				2	/						
		/		Y							
					/						
			/								
			-/								
Reported	By: M.	chael E. Car	<u>м</u>	Reviewed By:	L.D. Walker						
Title:	Ser	nor Geologist	- Date: 12-1-06	Title: (9Pm	log 'st Date: 12						
Cianat		100		Signature	Allalk						
Signature		- unc	±.	Signature:	Ward						

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A-6003-651 (04/03)

	EIEI					Page 1	of 2		
						Date: 12-4-	06		
Well ID:	С	5359		Well Name:	399	1-1-32			
Location:	300	-#-5	Report No.:			Ì			
	Sta	art	Finish			Total			
Time	do	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Time <u> </u>			445			
Hole Depth/	/Csg <u>50</u>	.5 / 47	Hole Depth/Csg _ 50.9	<u> </u>	Hole D	epth/Csg 505	_/_NA		
Reference M	Measuring GROUND \$	Point: SURFACE	Casing String No. 1 2 3 4 Rod Size: 8 "						
Time/D	epth		Description of A	Activities/Operation	ns with	Depth			
From	То	(At	tach applicable drawing	gs and document s	straight	tness test results)			
	0630	- on site at	site trailer						
	0700	- POD at	site trailer (dvillers arrived	late	because they	needed to		
		pickup 5'	screen) - POD	attendees includ	æ 3d	villers, BTR,	geologiat		
	0 500	- decon sta	inters steel scree	m					
	०४४०	- trip in	stainless steel	screen and co	wing	i, set scree	nat		
		29-44',	stickup = 6'4'	<u>centralij</u>	ens	at top and	bottom		
		of screen	and at 11 bgs	11 1 1	1	1 1 1 1 1 1 1 1			
	0847	- add 1 bu	ckets of bentrnits	e pellet, Drm	is lin	<u>el to 45.5 ba</u>	<u>;</u> S		
	0850	- add 2 bg	es of 10-20 Co	Lavada silica	San	d s' mala			
	0000	- pull casim	s back s c	at 4	2	2.3 20010	ρ		
	0986	- 200 2	is back 35' bottom of raping at 42' screen						
		expisel f	$\frac{1}{20}$ 41.5 - 44'	001-4m 0-7		9 4, 40 ,	200000		
0905	0920	- surse int	erval from 4	1.5- 44', Sa	nd fe	Il out les +	than 0.1		
		in 15 min	uteo						
	2923	- add 2 b	gs sand, remo	ve 10' length	af	Casing, tally	= ta.s!		
		bottom of	Casing at 35	/		<u> </u>			
	o 929	- add 1 b	as of sand.						
0930	0947	- surge inter	ral from 41.5.	3B', sand	ful	out less the	m 0.1		
		in last 1s	minutes						
0948 1	10 02	- surge witer	val from 38 - 7	35', Sand f	ell or	ut less than	0.1		
094× 1	õoz _e	in 15 m	inutes						
	004	- add 1.5 bea	s sand						
Density 12	1007	- pull cooing	brde 3	Devices (D	/ 1				
Reported By	y: 18)"	chael E. Carr	C Data:	Reviewed By:	6.0.	Walker	Data is 1. 1		
	Senior	- Ucolociat	Date: 12-4-06	Title: Geol	09:5	57	Date: 12/14/06		
Signature:		Mel		Signature:	æ l	Valk			

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A-6003-651 (04/03)

	FIE	LD ACTIVITY REPORT - DAILY D	ORILLING	Page 2 of 2				
		Continuation Page		Date: 12-4-0-6				
Well Name:		C535 9 @ 1211-06 399-1 -32	Well ID:	-2-11-06 C5359				
Location:	300	- FF-5	Continuation of Report No.:	3				
Time/Dep	oth	Description of Activities/Operations with Depth						
From	То	Description	Activities/Operations with De					
10	600	- add 1.5 bags sand, tag	bottom at 27'					
0	010	- AMRCT check, no cutting	igs to survey					
14	SIO	- pull caving back 3', +	ag sand level at 2	6.5'				
10	yių.	- add 2 brokets of b	entinite pellets					
10	710	- remove 10' casing, 1	ally = 30.5', both	m = 25, tag				
		bentmite at 24'						
10	121	- switch to bentruite a	hips (out of pal	tt), add 3 bags				
		of chips		· · · · · · · · · · · · · · · · · · ·				
ю	25	- pull cosing back 3', 1	ag bottom at 19.5	1				
10	28	- add 2 beep of bentomit	e crumbles	1				
(0)	29	- remove 10 'of casing	, fally = 20.5',	bottom = 15',				
		tag bentonite at 15'						
10	32	- add 2 bacs bentonite	e crumbles, tag:	bottom at 9'				
10	3)	- pull casing back 3'						
lc	74	- mix grout (2 sachs co	ement, 51 Sentonite,	20 gal water)				
10	50	- inject grout						
10.	53	- mix grout (1 soch cen	ment, 56 Suntonite,	io gal water)				
16	555	- inject grout						
10	59	- remove 10 of casin	5 + talky = 10.5					
<u>\</u>	102	- remove 10.5' of casing	s (incl. bit), all	l out of hole				
	115	- left site for the da	η					
			·/	/				
				/				
			Q					
				/				
			~	/				
		P	2					
		//						
	00	ilal E Car	Reviewed By: / Å /	12.1400				
Title:	(dy	- Clib Data: 12 11 -6	Title:	Larker				
nue:	Sania	27 (reals not Date: 12-4-06	1111e. (920/09/3	+ [Date: / 2//4/				
Signature:		mel	Signature:	lka				

A-6003-652 (04/03)

WELL	DEVELOPMENT AND TESTING DATA
Well Name: 399-1 - 32 Well ID: -5359 0 12-11-0 34	C 5359 Well Location: Date: 79-1-32 0 12-11-06 300-FF-5 12-0-06
Reference Measuring Po	pint (unless otherwise noted): TOP OF OUTER CASING (TOC)
Has the well been surveyed? O Yes	No Does the well have a cement pad? Yes O No
PART 1	PART 4
STATIC WATER LEVEL:	
Start of Job 32.45	Last Recorded Current Measurements Measurements
End of Job 32.50	Date: NA Date: 12-8-06
DEPTH TO BOTTOM:	
Start of Job 44.2	
End of Job 44-2	
PART 2	
WELL DEVELOPMENT DATA	
Pump Model Red: flow 3	
Intake Depth 40' 37'	ground level
Starting Turbidity 3 22/ 6.69 NTU	
Pump Start Stop Flow Ra	
0839 04180916 242	o B = B' =
0931 0950 24	C = C' =
	Are there any reference marks on the casing strings? O Yes O No
Total Pumped 1410 gal	PART 5
Final Turbidity 2.87 / 2.06 NT	
XD SN/Range (PSI)	_
	7
INSTANTANEOUS SLUG TEST	-
Static Water Level (TOC)	
Baseline Start	-1
	-1
Baseline Start	
Withdrawal Start	-1
Slug Volume	-1
XD-SN/Range (PSI)	-1
Prepared by (print name):	Signature: Date:
Michael E. Caron	Ml 12-11-06
Reviewed by (print name):	Signature: Date: Date:
I.D. Walker	a water 12-14-06

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A-6003-644 (03/03)

	EIEI					Pag	ge _1 of _2			
	FIEL		PORT - DAILT DE	(ILLING		Date: 12	-8-06			
Well ID:	C	5359		Well Name:	399-1	- 32				
Location:		300 - FF- 5		Report No.:		$\overline{2}$				
	St	art	Finis	h		Total				
Time	06	45	Time 1030 Tim			03	45			
Hole Dept	h/Csg 🗾	DA / NA	Hole Depth/Csg N A	/NA	Hole [Depth/Csg _	JA / NA			
Reference	Measuring GROUND	Point: SURFACE	Casing String No. 1 2	2 3 4	Rod Size	e:				
Time	Depth		Description of Activities/Operations with Depth							
From	То	(At	tach applicable drawings and document straightness test results)							
	0645	- m site	for walkdown							
	OXIO	- calibrate	instruments		-					
		turbidity me	ter	standard	v	reading				
				4.37		4.29				
				43.0		44.2				
		· · · · · · · · · · · · · · · · · · ·		545		548				
		pH moter	10			10.02 7.06				
		,								
		conductivi=	ty mater	1.419		1409				
	0820	- flow meter	= 11,120, pr	-obe = 4	.942,	<u>scraen (p</u>	ump) sot at 40'			
	0839	- start lest	#5 (Jeff)				-			
		time pH	conduction ity	temp tur	bidity	probe	Pump			
	ļ	0840 7.39	0.496	13.0	322	5156	zogon			
		0 845 7.4	7 0.487	H.1 °	7.87	5.171				
		0850 7.45	5 2 2 4 0.483	14:7 "	3.65	5.192				
		0855 7.46	0.488	14.40	1.97	5.213				
		0900 7.43	0.487	14.2*	4.79	5.293	dape = 32.55			
		0905 7.47	0.484	14.4°	3.14	5.340				
		0910 7.51	0.485	13.8°	2.79	5.477				
		0915 7.4	0.485	1400	2.87	5.595	e-tape = 32.45			
	0918	- stop test	#5, flow mele	= 12070	, 950	gallons				
	0918	- start test	#6			-				
	0927	- probe = 5.6	. 5y							
	0930	- pull pumo	up 3', inlet	set at .	37'					
Reported	By: M.C	hael E. Car	· ~	Reviewed By:	٤.	D. Walke	۲.			
Title:	Sen	woo (realogist	Date: 12-8-06	Title: 66	eologi.	s f	Date: /2/14/06			
Signature		Mal	7	Signature:	70 U	alpr.				

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A-6003-651 (04/03)

	FI	ELD ACT	IVITY R	EPORT - DAI	LY DRILL	ING		Page 2 of 2
			Cont	inuation Page			Dat	te: 12-8-06
Well Name	÷	3590	2-11-06	399-1-3	2 Well II	D: 399-1	-32 @	12-11-06 C53 59
Location:		300-6	FF-S		Contin	uation of Report	No.: 2)
Time/ From	Depth To	-		Descriptio	on of Activitie	es/Operations v	vith Depth	
	0931	chul	1.1 # 7		2 64	<u>()</u>	- 100	17 070
	0121	- 1007 ·		proze =	Jano	- fuelitite	Danke	august
		0933	7.55	0.506	11.40	6.69	2 709	22 = 0.00
		0938	7.55	0.484	14.50	4.30	2.839	jpm
		0943	7.51	0.483	14.4°	1.95	2.919	
		0948	7.51	0.483	(4.) °	2.06	3.069	
	09 50	stop	Hest #	7, flow	miler =	12530		
	0950	stant	that #	÷6				
	1000	Ste	testet	8				
	1030	- left	site					
						/	11 1/14	
l			/		/	/		/
			$-\!/-$					
		L	/		/			
				R				
		\vdash		<u>></u>				
		/				1 1000		
				- <u>×</u>				/
				<u> </u>			/	/
			/					
							$-\!\!/-$	
		- 7	<i>/</i>			/	/	
		/						
				- <u>-</u> ·		/		
Reported E	By: M.2	had to	Ga	*	Reviev	ved By: /	b. Walk	́о (r
Title:	Sen	427 (lesiot	Date: 12-4	·ol Title:	Geolog	ist.	Date: 12/14/A/
Signature:		10	7		Signat	ure: DDD	leth	

A-6003-652 (04/03)

	FIELD ACTIVITY REPORT										Page <u></u> of	1_	
				TUB	JLAR	GOODS TAL	LY					Date: 12-1-0	6
Well N	lame:	÷	5359	70 12-11-06	399	-1 -32	Well I	D:	399-1-	32@	2-11-0	C535	9
		TEMPO	ORARY			PERMANENT*						SCREEN/CAP*	
Jt. #	Leng	th (ft.)	Jt. #	Length (ft.)	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	С	Jt. #	Length (ft.)	C
1	0.5	(bit)	21		1			21	10.01 (ading)		1	0.35(ap)	
2	10.00	(CALING)	22		2			22	10.00 1		2	4.97 (ser)	C
3	10.40	~	23		3			23	10.00 0	C	3	9.95	C
4	10.00	J	24		4			24	5.00 "		4		
5	10.00	~	25	· · · · · · · · · · · · · · · · · · ·	5		ļ	25			5		ļ
	10.00	<u> </u>	26		6			26			6		ļ
8			27					21			/ 。		
			20		°			20			°		<u> </u>
10			29		10			29			9		<u> </u>
11			31		11			31			11		
12			32	-	12			32			12		
13		-	33		13			33			13		<u> </u>
14			34		14			34		<u> </u>	14		
15	——		35		15			35			15		-
16			36		16			36			16		<u> </u>
17			37		17			37			17		
18			38		18			38			18		
19	-		39		19		+	.39			19		
20			40		20	10 10 YO		40			20		
Tot	50	.05	Tot		Tot			Tot	35.01		Tot	15.30	
*Indica ALL C	ate those asing len	joints witl gth shall l	h centra be meas	lizers with a C in the sured to the neares	he availa st 0.01 f	able box. t.							
Comm	ents/Ren	narks:											
									<u>,</u>				
<u> </u>										-			
Tempo	orary: O.I	D./1.D.	e"	7 2 5 "	Perm	anent: O.D./I.D.	4.5"	/ 1	3/0"	Sc	reen: C	D.D./I.D. 4 (*/))	3/ 4
			0 1	1.00	1			/ ٩	. / 8				3
b	it =	6" ii	n len	cth, c	D.	= 8.25"		Q1	= 7.25"				
				, ,									
9	nie -	Darr	el -	- 7" O	D, 6	, iD							
					-			~ 					
<u> </u>													
Tatler	ted By:	Micho	iel C	- Caron			Revie	wed By	C (Uall	ter		
nule:		eni	<u>~(</u>	gelecist	Da	te: 12-4-06	Title:		beologist		2	Date: / Z	14/06
Signat	ure:		∕h€	1-			Signa	ture:	70 UN	all.	z		

A-6003-655 (04/03)

						Start Date	= 12-1-0	6			
WELI	L CONSTRUCT	ION S	UMMA	RY REPORT		Finish Da	te: 12-4-	6			
						Pag	e 1_ of	1			
Well ID: C 5359	Well Name: 34	19-1-	32	Approximate Location:		300 - FF- 5	5				
Project: Polyphoph	ate Treatability	Tes	1	Other Companies:	F	H, GERM					
Drilling Company: R	ISONIĊ			Geologist(s): M.E. Carm							
Driller: Aavon	Adams Licer	nse #: C	2831	7							
TEMPORARY	CASING AND DRILL D	EPTH		DRILLING METHOD	I	HOLE DIAMETER (in	.) / INTERVA	L (ft)			
*Size/Grade/Lbs. Per Ft.	Interval	Sho	e O.D./I.D.	Auger:	Dia	meter From	to				
<u>8 / 35 lbs</u>	<u> </u>	- 8.2	5"/7.25"	Cable Tool:	Dia	meter From	to _				
	·	_		Air Rotary:	Dia	meter From	to				
		_		A.R. w/Sonic:	Dia	meter From	to _				
					Dia	meter <u> </u>	₽ to	50.5'			
		-			Dia	meter From	to				
*Indicate Welded (W) - Flush	Joint (FJ) doupled (C) & Thre	ad Design		Dia	meter From	to _				
				Drilling Fluid:		- nono -	_				
Total Drilled Depth: 50.5	Hole Dia @ TD:	8.29	5	Total Amt. Of Water Add	ed D	uring Drilling:	0 ~				
Well Straightness Test Results:	Pass			Static Water Level: 32,	Static Water Level: 32.50' Date: 12-8-06						
		GE	OPHYSIC	AL LOGGING							
Sondes (type)	Interval	Di	ate	Sondes (type)	Interval	Dat	te				
	·										
<u>.</u>											
	·										
				ED WELL				Mach			
Size/Wt./Material	Depth	Thread	Size	Туре	p.4	Annular Seal/Filter Pack	Volume	Size			
4" stainless	0 - 4435		20	pentonite pellete		4845 - 50.5	12" budget				
				Colorado silicasand 10-	-26	26.5 - 4845	10 bays				
				bentonite pelleti		19.5 - 26.5	7 Jadets				
				bertonite crumbled	,	9 - 19.5	2 begs				
				next Portland cemen	1t	<u> </u>	20 901.				
			OTHER AC	CTIVITIES							
Aquifer Test:		Date:		Well Decommission:	_	Yes: No:	Date:				
Description:				Description:							
		WELL S	URVEY DA	TA (if applicable)	Vot	yet surve	yed at	:			
	Protective Casing Elevation: this time										
Washington State Plane Coordin	Washington State Plane Coordinates: Brass Survey Marker Elevation:										
	=	co	MMENTS	/ REMARKS				_			
·											
Dec. 1 1 D				A							
Reported By:	Caura Title:		21. 1	Signature:			Date:				
inchael E.	arm zevi	wr G	reoby ist	T		12	-11-06				

A-6003-658 (04/03)

Survey Data Report

	SURVEY DATA RI	EPORT			Re 072	quest No. 2-154		
Project No.	Title: Civil Survey of 22 Wells / North	Side of 300 Area			Fil 3A	File No. 3AT10R28		
Job No. 65400811.1224710 CA10	Prepared By N.P. Fastabend	Date 2/19/07		Reviewer SAW-			Page 1 of 23	
	DESCRIPTION OF WORK		DISTR	IBUTION	SDR	PLOT	DWG	
Civil Survey for horizon C5359, A5018, A5020,	tal and vertical position of Wells C50 A5021, A5025, A5035, A5040, A504	000, C5351-	Survey	File	OR			
A5412 and A5414.			B.J. Ho	ward	1 1			
Horizontal Datum: NAI Vertical Datum: NAVD	D83/91 (Meters) 88 (Meters)		G.G. Kelty					
	SURVEY REG	SULTS AND COM	MENTS					
NOTE: This Survey wa: Washington.	s performed under the supervision of	a Licensed Profess	ional Lan	d Surveyor re	gistered i	n the State	of	
					-	(* XI	246 (000	

This information is PROPRIETARY and is provided solely for use in conjunction with work managed and controlled by Fluor Federal Services.

	v	VELL SUR	/EY	DATA REPO	DRT				
Project:			Pr	epared By:	N.P. Fastaber	nd			
			Co	mpany:	FGG				
Date Reques	sted: 1/24/07		Requestor: C.S. Wright (FH)						
Date of Surv	/ey: 2/16/07		Surveyor: N.P. Fastabend						
FRC Point o	f Contact:		Su	INAN CO PO	int of Contact				
	i oomact.			J.M. So	hwing (FGG)	•			
Description	of Work:		Ho	orizontal Dat	um: NAD83(9	1)			
Civil Survey	of Groundwater I	Monitorina	Ve	rtical Datum	NAVD88				
Well #C5000	(399-1-23)		Ur	its:	METER	S			
			Hanford Area Designation: 300A						
Coordinate	System: Wash	ington State	e Pla	ane Coordina	tes (South Zor	ne)			
Horizontal Co	ontrol Monument	s: GABLE	MTN	N (FH), 300-7	'0 (FGG)				
Vertical Cont	rol Monuments:	300-28 (FC	3G),	300-60 (FG	iG)				
Well ID	Well Name	Easting)	Northing	Elevation				
C5000	399-1-23	594113.5	51 /	116453.15		Center of Casing			
					115.987	Top Inner 4" Casing, S. Edge			
					116.308	Top Outer 8" Casing, S. Edge			
					115.466	Brass Survey Marker			
Notes:						1 1 1			
EQUIPMENT	USED: TRIMBI	LE GPS 580	00 F	RTK	A	TRACE			
	TRIMB	LE DiNi 12	LE\	/EL	A A A A A A A A A A A A A A A A A A A	SHIN AND			
				(N/E E	02			
Surveyor St	atement:			V	PRO Feb	N N			
I, Larry A. Henk	ke, a Professional La	and Surveyor	regis	stered	4 3897	5 .4 8			

I, Larry A. Henke, a Professional Land Surveyor registered in the State of Washington (Registration No. 38975), hereby certify that this report is based on a field survey performed in February, 2007 under my direct supervision, and that the data contained here is true and correct.

Original to: Distribution by DIS: EXPIRES

2007

WELL SURVEY DATA REPORT								
Project:			Pr Co	epared By: Nompany: F	I.P. Fastaben GG	d		
Date Reques	ted: 1/24/07		Re	equestor: C.	S. Wright (FH)		
Date of Surve	ey: 2/16/07		Su	Irveyor: N.P. FGC	Fastabend Survey Dept	t.		
ERC Point of	Contact:		Su	J.M. Sch	nt of Contact nwing (FGG)	E		
Description	of Work:		Ho	orizontal Datu	m: NAD83(9	91)		
Civil Survey o	f Groundwater N	Aonitorina	Ve	rtical Datum:	NAVD88			
Well #C5351	(399-1-24)	loring	Ur	nits:	METER	S		
			Ha	nford Area D	esignation:	300A		
Coordinate System: Washington State Plane Coordinates (South Zone)								
Horizontal Co	ntrol Monuments	S: GABLEN	ΛTN	(FH), 300-70	(FGG)			
Vertical Contr	ol Monuments:	300-28 (FC	GG),	300-60 (FG	G)			
Well ID	Well Name	Easting		Northing	Elevation			
C5351	399-1-24 /	594116.4	I5 ∉	116449.68		Center of Casing		
					116.056	Top Inner 4" Casing N. Edge		
					116.366	Top Outer 8" Casing, N. Edge		
					115.621	Brass Survey Marker		
Notes: Brass	survey marker i	n concrete	pac	l in poor condi	tion.	· · · ·		
EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL								
Surveyor Sta I, Larry A. Henke in the State of W certify that this r February, 2007 contained here i	Surveyor Statement: I, Larry A. Henke, a Professional Land Surveyor registered in the State of Washington (Registration No. 38975), hereby certify that this report is based on a field survey performed in February, 2007 under my direct supervision, and that the data contained here is true and correct. EXPIRES CEPT, 73, 2007							

WELL SURVEY DATA REPORT								
Project:			Prepa Comp	Prepared By: N.P. Fastabend Company: FGG				
Date Reques	ted: 1/24/07		Reque	stor: C	S. Wright (FH)		
Date of Surve	ey: 2/16/07		Surve	/or: N.P. FG(. Fastabend 3 Survey Dept			
ERC Point of Contact:			Surve	y Co. Poi J.M. Sc	nt of Contact hwing (FGG)	•		
Description of	of Work:		Horizo	ntal Dat	um: NAD83(9	1)		
Civil Survey o	f Groundwater N	Aonitorina	Vertica	ai Datum	: NAVD88			
Well #C5352	(399-1-25)	lonnoning	Units:		METERS	S		
			Hanfo	rd Area [Designation:	300A		
Coordinate S	ystem: Washi	ngton State	Plane	Coordina	tes (South Zor	ne)		
Horizontal Co	ntrol Monuments	: GABLEN	/ITN (FH), 300-70	(FGG)			
Vertical Contr	ol Monuments:	300-28 (FC	GG), 30	0-60 (FG	iG)			
Well ID	Well Name	Easting	N	orthing	Elevation	T		
C5352	399-1-25	594116.8	38 11	6450.35		Center of Casing		
					116.030	Top Inner 4" Casing, N. Edge		
					116.374	Top Outer 8" Casing, N. Edge		
					115.595	Brass Survey Marker		
Notes: Brass survey marker in concrete pad in poor condition. EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL								
Surveyor Sta I, Larry A. Henke in the State of W certify that this m February, 2007 contained here i	ternent: e, a Professional La /ashington (Registra eport is based on a under my direct sup s true and correct.	nd Surveyor ation No. 389 field survey p pervision, and	registered 75), here performed I that the d	l by l in data	ROT 19 38 ROT 19 38	175 175 175 175 175 175 175 175		

	w	ELL SURV	ΈY	DATA REPO	RT				
Project:			Pr Co	epared By: Normpany: F	I.P. Fastaben GG	d			
Date Requested: 1/24/07			Re	equestor: C.	S. Wright (FH)			
Date of Survey: 2/16/07			Surveyor: N.P. Fastabend FGG Survey Dept.						
ERC Point of Contact:			Sı	J.M. Scl	nt of Contact nwing (FGG)	:			
Description of Work:				orizontal Dati	Im: NAD83(9)1)			
Civil Survey	Civil Survey of Croundwater Monitoring			rtical Datum	NAVD88				
Well #C5353	Well #C5353 (399-1-26)			nits:	METER	S			
					esignation:	300A			
Coordinate	Coordinate System: Washington State Plane Coordinates (South Zone)								
Horizontal Co	ontrol Monuments	; GABLEN	ITN	(FH), 300-70	(FGG)				
Vertical Cont	rol Monuments:	300-28 (FC	G)	300-60 (FG	G)				
Well ID	Well Name	Easting		Northing	Elevation				
C5353	399-1-26	594108.2	27 -	116456.21		Center of Casing			
					115.872	Top Inner 4" Casing, N. Edge			
					116.269	Top Outer 8" Casing, N. Edge			
					115.459	Brass Survey Marker			
Notes: Brass EQUIPMEN Surveyor St I, Larry A. Henl in the State of V certify that this February, 2007 contained here	s survey marker i T USED: TRIMBL TRIMBL tatement: ke, a Professional La Washington (Registra report is based on a ' under my direct sup is true and correct.	n concrete E GPS 580 E DiNi 12 and Surveyor ation No. 389 field survey p pervision, and	pac 00 F LEV regis 75), perfo	d in poor cond RTK VEL stered hereby ormed in t the data	ition.	Result 3,2007			

	w	ELL SURV	/EY	DATA REPO	RT			
Project:			Pro Co	epared By: N mpany: F	I.P. Fastaben GG	d		
Date Reques	ted: 1/24/07		Re	questor: C.	S. Wright (FH))		
Date of Surve	ey: 2/16/07		Su	rveyor: N.P. FGG	Fastabend Survey Dept	•		
ERC Point of	Contact:		Su	I rvey Co. Poi J.M. Sch	nt of Contact nwing (FGG)	:		
Description of	of Work:		Ho	orizontal Datu	Im: NAD83(9	1)		
	f Groundwater N	Aonitorina	Ve	rtical Datum:	NAVD88			
Well #C5354	(399-1-27)	nonitioning	Un	nits:	METER	S		
			Ha	Inford Area D	esignation:	300A		
Coordinate System: Washington State Plane Coordinates (South Zone)								
Horizontal Co	ntrol Monuments	S: GABLEN	ΛTN	(FH), 300-70	(FGG)	- L		
Vertical Contr	ol Monuments:	300-28 (FC	GG),	300-60 (FG	G)			
Well ID	Well Name	Easting		Northing	Elevation			
C5354	399-1-27	594116.2	23	116446.18		Center of Casing		
					116.109	Top Inner 4" Casing, N. Edge		
					116.486	Top Outer 8" Casing, N. Edge		
					115.693	Brass Survey Marker		
Notes: Brass	survey marker	in concrete	pac	in poor cond	ition.	transfer P		
EQUIPMENT	USED: TRIMBL TRIMB	LE GPS 58 LE DiNi 12	00 F LE\	RTK /EL	Feb	227 5		
I, Larry A. Henki in the State of W certify that this r February, 2007 contained here i	e, a Professional La /ashington (Registr eport is based on a under my direct sup is true and correct.	and Surveyor ation No. 389 field survey pervision, and	regis 975), perfo d that	stered hereby ormed in t the data	expires of 2	2. 5 10 3. 2007		

WELL SURVEY DATA REPORT								
Project:			Prepared B Company:	y: N.P. Fas FGG	tabend	ł		
Date Reques	ted: 1/24/07		Requestor:	C.S. Wrigh	nt (FH)			
Date of Surve	ey : 2/16/07		Surveyor:	N.P. Fastabe FGG Survey	end Dept.			
ERC Point of	Contact:		Survey Co. J.M	Point of Co Schwing (F	ntact: GG)			
Description of	of Work:		Horizontal	Datum: NA	D83(9 [,]	1)		
Civil Survey o	f Groundwater N	<i>I</i> onitorina	Vertical Da	tum: NA	/D88			
Well #C5355	(399-1-28)	loning	Units:	ME	TERS	3		
		-	Hanford Ar	ea Designat	tion:	300A		
Coordinate System: Washington State Plane Coordinates (South Zone)								
Horizontal Co	ntrol Monuments	S: GABLEN	ITN (FH), 30)-70 (FGG)				
Vertical Contr	ol Monuments:	300-28 (FG	G), 300-60	(FGG)				
Well ID	Well Name	Easting	Northin	g Eleva	tion			
C5355	399-1-28	594115.5	7 116445.	84		Center of Casing		
				116.1	32	Top Inner 4" Casing, N. Edge		
				116.4	179	Top Outer 8" Casing, N. Edge		
				115.7	707	Brass Survey Marker		
Notes: Brass	survey marker i	n concrete	pad in poor o	ondition.	and the second			
EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL								
Surveyor Sta I, Larry A. Henke in the State of W certify that this re February, 2007 contained here i	tement: e, a Professional La /ashington (Registra eport is based on a under my direct sup s true and correct.	nd Surveyor r ation No. 389 field survey p pervision, and	registered 75), hereby erformed in that the data	PROFESSIO EXPIRES	b 33975 NOISTED NALLA Sept.	23,2007		

WELL SURVEY DATA REPORT								
Project:			Pre Coi	epared By: 1 mpany: 1	N.P. Fastaben FGG	d		
Date Reques	ted: 1/24/07		Red	questor: C.	S. Wright (FH)		
Date of Surv	ey: 2/16/07		Sur	rveyor: N.P. FGC	Fastabend Survey Dept			
ERC Point of	Contact:		Sur	rvey Co. Poi J.M. Sc	nt of Contact hwing (FGG)			
Description of	of Work:		Ho	rizontal Datu	Im: NAD83(9)1)		
Civil Survey o	f Groundwater M	Monitorina	Ver	tical Datum	NAVD88			
Well #C5356	(399-1-29)	nonntoning	Uni	its:	METER	S		
			Har	nford Area D	esignation:	300A		
Coordinate S	Coordinate System: Washington State Plane Coordinates (South Zone)							
Horizontal Co	ntroi Monument	S: GABLEN	MTN ((FH), 300-70	(FGG)			
Vertical Contr	ol Monuments:	300-28 (FC	3G),	300-60 (FG	G)			
Well ID	Well Name	Easting	1	Northing	Elevation			
C5356	399-1-29	594118.6	67	116445.75		Center of Casing		
					116.115	Top Inner 4" Casing, N. Edge		
					116.521	Top Outer 8" Casing, N. Edge		
:					115.697	Brass Survey Marker		
Notes: Brass	survey marker	in concrete	pad	in poor cond	ition.	t		
EQUIPMENT	EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL							
Surveyor Sta 1, Larry A. Henke in the State of W certify that this m February, 2007 contained here	e, a Professional La /ashington (Registr eport is based on a under my direct sup s true and correct.	and Surveyor ation No. 389 field survey p pervision, and	regist 975), h perfor	ered hereby med in the data	PROTESSED	23,2007		

7

WELL SURVEY DATA REPORT									
Project:			Prepare Compar	d By: iy:	N.P. Fastaben FGG	d			
Date Reques	ted: 1/24/07		Request	tor: C	S. Wright (FH)			
Date of Surve	ey: 2/16/07		Surveyo	r: N.P FG(Fastabend Survey Dept				
ERC Point of Contact:			Survey	Co. Poi J.M. Sc	nt of Contact hwing (FGG)	:			
Description of	of Work:		Horizon	tal Dati	um: NAD83(9	1)			
Civil Survey o	f Groundwater N	Monitorina	Vertical	Datum	: NAVD88				
Well #C5357	(399-1-30)	5	Units:		METER	S			
			Hanford	Area [Designation:	300A			
Coordinate S	Coordinate System: Washington State Plane Coordinates (South Zone)								
Horizontal Co	ntrol Monuments	S: GABLEN	ATN (FH) ,	300-70	(FGG)				
Vertical Contro	ol Monuments:	300-28 (FC	G), 300-	-60 (FG	G)				
Well ID	Well Name	Easting	Nor	thing	Elevation				
C5357	399-1-30	594110.6	1164	49.68		Center of Casing			
					116.048	Top Inner 4" Casing, N. Edge			
					116.375	Top Outer 8" Casing, N. Edge			
					115.630	Brass Survey Marker			
Notes: Brass	survey marker i	n concrete	pad in po	or cond	ition.	SCORE STORE			
EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL									
Surveyor Sta I, Larry A. Henke in the State of W certify that this re February, 2007 to contained here is	Surveyor Statement: I, Larry A. Henke, a Professional Land Surveyor registered in the State of Washington (Registration No. 38975), hereby certify that this report is based on a field survey performed in February, 2007 under my direct supervision, and that the data Expires Sept. 23, 2007								

WELL SURVEY DATA REPORT							
Project:			Pro Co	epared By: N ompany: F	I.P. Fastaben GG	d	
Date Reques	ted: 1/24/07		Re	questor: C.	S. Wright (FH))	
Date of Surve	ey: 2/16/07		Su	rveyor: N.P. FGG	Fastabend Survey Dept	•	
ERC Point of	Contact:	5	Su	J.M. Sch	nt of Contact wing (FGG)		
Description of Work:			Ho	orizontal Datu	m: NAD83(9	1)	
	f Groundwater N	lonitoring	Ve	rtical Datum:	NAVD88		
Well #C5358	(399-1-31)	normoring	Un	its:	METERS	S	
			Ha	inford Area D	esignation:	300A	
Coordinate System: Washington State Plane Coordinates (South Zone)							
Horizontal Co	Horizontal Control Monuments: GABLEMTN (FH), 300-70 (FGG)						
Vertical Contr	ol Monuments:	300-28 (FC	GG),	300-60 (FG	G)		
Well ID	Well Name	Easting	1	Northing	Elevation		
C5358	399-1-31	594118.6	66	116456.15		Center of Casing	
					115.982	Top Inner 4" Casing, N. Edge	
					116.236	Top Outer 8" Casing, N. Edge	
					115.522	Brass Survey Marker	
Notes: Brass	survey marker i	n concrete	pac	in poor cond	ition.		
EQUIPMENT	USED: TRIMBL TRIMBI	e gps 58 Le dini 12	00 F LEV	RTK /EL			
Surveyor Sta I, Larry A. Henke in the State of W certify that this r February, 2007 contained here i	Itement: e, a Professional La /ashington (Registra eport is based on a under my direct sup s true and correct.	and Surveyor ation No. 389 field survey pervision, and	regis 975), perfo d that	stered hereby ormed in t the data	PROFILES OF	75 75 76 76 70 70 70 70 70 70 70 70 70 70	

WELL SURVEY DATA REPORT								
Project:			Pr Co	epared By: Normpany: F	I.P. Fastaben GG	d		
Date Requested: 1/24/07			Re	equestor: C.	S. Wright (FH))		
Date of Surve	ey: 2/16/07		Su	rveyor: N.P. FGC	Fastabend Survey Dept	•		
ERC Point of Contact:			Su	I rvey Co. Poi J.M. Scl	nt of Contact nwing (FGG)	:		
Description of Work:			Ho	orizontal Datu	Im: NAD83(9	1)		
Civil Survey o	f Groundwater N	<i>I</i> onitoring	Ve	rtical Datum	NAVD88			
Well #C5359	(399-1-32)	normoring	Ur	nits:	METERS	3		
			Ha	Inford Area D	esignation:	300A		
Coordinate System: Washington State Plane Coordinates (South Zone)								
Horizontal Co	ntrol Monuments	S: GABLEN	ITN	(FH), 300-70	(FGG)			
Vertical Contr	ol Monuments:	300-28 (FC	GG),	300-60 (FG	G)			
Well ID	Well Name	Easting		Northing	Elevation			
C5359	399-1-32	594137.4	17	116432.44		Center of Casing		
					115.691	Top Inner 4" Casing, N. Edge		
					116.028	Top Outer 8" Casing, N. Edge		
					115.273	Brass Survey Marker		
Notes: Brass survey marker in concrete pad in poor condition. EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL								
Surveyor Sta I, Larry A. Henke in the State of W certify that this r February, 2007 contained here i	Surveyor Statement: I, Larry A. Henke, a Professional Land Surveyor registered in the State of Washington (Registration No. 38975), hereby certify that this report is based on a field survey performed in February, 2007 under my direct supervision, and that the data EXPIRES Sect. 23 2 007 M							

WELL SURVEY DATA REPORT							
Project:			Pro Co	epared By: N mpany: F	I.P. Fastaben GG	d	
Date Reques	ted: 1/24/07		Re	questor: C.	S. Wright (FH)	
Date of Surve	ey: 2/16/07		Su	rveyor: N.P. FGC	Fastabend Survey Dept	t.	
ERC Point of Contact:			Su	J.M. Sch	nt of Contact nwing (FGG)	:	
Description of	of Work:		Ho	rizontal Datu	Im: NAD83(9	91)	
	f Groundwater N	Ionitorina	Ve	rtical Datum	NAVD88		
Well #A5018	(399-1-1)	nonicoring	Ur	its:	METER	S	
			Ha	nford Area D	esignation:	300A	
Coordinate S	ystem: Washi	ngton State	e Pla	ane Coordinat	es (South Zo	ne)	
Horizontal Co	ntrol Monument	s: GABLEN	MTN	(FH), 300-70	(FGG)		
Vertical Contr	ol Monuments:	300-28 (FC	GG),	300-60 (FG	G)		
Well ID	Well Name	Easting	1	Northing	Elevation		
A5018	399-1-1	594359.9	96 /	116588.84		Center of Casing	
					115.844	Top Pump Baseplate, N. Edge	
					115.834	Top of Casing, N. Edge	
					115.065	Brass Survey Marker	
Notes: EQUIPMENT Surveyor Sta I, Larry A. Henke in the State of W certify that this r February, 2007 contained here	USED: TRIMBL TRIMB atement: e, a Professional La Vashington (Registr eport is based on a under my direct su is true and correct.	LE GPS 58 LE DiNi 12 and Surveyor ation No. 389 field survey pervision, and	00 F LE\ regia 975), perfo d that	RTK /EL stered hereby prmed in t the data	Porce And	2007 (C) 23007 (C) 23,2007	

	N	ELL SURV	/EY	DATA REPO	RT	
Project:			Pr Co	epared By: Normpany: F	I.P. Fastaben GG	nd
Date Reques	ted: 1/24/07		Re	equestor: C.	S. Wright (FH)
Date of Surve	Date of Survey: 2/16/07			rveyor: N.P. FGG	Fastabend Survey Dep	t.
ERC Point of Contact:			Sι	J.M. Sch	nt of Contact wing (FGG)	t:
Description of	of Work:		Ho	orizontal Datu	m: NAD83(9	91)
Civil Survey o	f Groundwater N	Monitoring	Ve	ertical Datum:	NAVD88	
Well #A5020	(399-1-11)	liointoinig	Ur	nits:	METER	S
			Ha	anford Area D	esignation:	300A
Coordinate S	system: Washi	ington State	Pla	ane Coordinat	es (South Zo	ne)
Horizontal Co	ntrol Monument	s: GABLEN	ATN	(FH), 300-70	(FGG)	
Vertical Contr	ol Monuments:	300-28 (FC	GG),	, 300-60 (FG	G)	
Well ID	Well Name	Easting		Northing	Elevation	
A5020	399-1-11	594109.8	81 /	116660.16		Center of Casing
					116.160	Top Pump Baseplate, N. Edge
					116.156	Top of Casing, N. Edge
					115.676	Brass Survey Marker
Notes: EQUIPMENT Surveyor Sta I, Larry A. Henke in the State of W certify that this re February, 2007 contained here i	USED: TRIMBL TRIMB Itement: e, a Professional La Vashington (Registr eport is based on a under my direct sup s true and correct.	E GPS 580 LE DiNi 12 and Surveyor ation No. 389 field survey p pervision, and	00 F LE\ regis 75), perfo	RTK /EL stered hereby prmed in t the data	P R R R R R R R R R R R R R R R R R R R	23,2007

WELL SURVEY DATA REPORT									
Project:			Prepared By: N.P. Fastabend Company: FGG						
Date Reques	ted: 1/24/07		Requestor	: C.	S. Wright (FH))			
Date of Survey: 2/16/07			Surveyor:	N.P. FGC	Fastabend Survey Dept				
ERC Point of Contact:			Survey Co J.N	. Poi I. Scl	nt of Contact nwing (FGG)	:			
Description of Work:			Horizontal	Datu	Im: NAD83(9	1)			
Civil Survey o	of Groundwater M	Aonitorina	Vertical Da	tum	NAVD88				
Well #A5021	(399-1-12)	lonnoring	Units:		METERS	3			
			Hanford A	rea D	esignation:	300A			
Coordinate System: Washington State Plane Coordinates (South Zone)									
Horizontal Co	ntrol Monuments	S: GABLEN	1TN (FH), 30	0-70	(FGG)				
Vertical Conti	ol Monuments:	300-28 (FG	G), 300-60) (FG	G)				
Well ID	Well Name	Easting	Northi	ng	Elevation				
A5021	399-1-12	594040.2	2 116548	.51		Center of Casing			
					118.198	Top Pump Baseplate, N. Edge			
					118.195	Top of Casing, N. Edge			
					117.466	Brass Survey Marker			
Notes: EQUIPMENT Surveyor Sta I, Larry A. Henk in the State of V certify that this I February, 2007 contained here	USED: TRIMBL TRIMBI atement: e, a Professional La Vashington (Registra eport is based on a under my direct sup is true and correct	E GPS 580 LE DiNi 12 and Surveyor ation No. 389 field survey p pervision, and	00 RTK LEVEL registered 75), hereby performed in that the data		Report of the second se	975 LAND 5 55 5 1 1 23, 2007			

	w	ELL SURV	EY DATA REP	PORT	
Project:			Prepared By: Company:	N.P. Fastaben FGG	d
Date Reques	ted: 1/24/07		Requestor:	C.S. Wright (FH)
Date of Surve	əy: 2/16/07		Surveyor: N. FC	P. Fastabend GG Survey Dept	t.
ERC Point of	Contact:		Survey Co. P J.M. S	oint of Contact Schwing (FGG)	:
Description of	of Work:		Horizontal Da	tum: NAD83(9	91)
Civil Survey o	f Groundwater M	Ionitorina	Vertical Datu	m: NAVD88	······································
Well #A5025	(399-1-16A)	g	Units:	METER	S
			Hanford Area	Designation:	300A
Coordinate S	system: Washi	ngton State	Plane Coordin	ates (South Zor	ne)
Horizontal Co	ntrol Monuments	S: GABLEN	ITN (FH), 300-7	'0 (FGG)	The second s
Vertical Contr	ol Monuments:	300-28 (FG	iG), 300-60 (F	GG)	
Well ID	Well Name	Easting	Northing	Elevation	
A5025	399-1-16A	594318.1	1 116414.16	j /	Center of Casing
				117.303	Top Pump Baseplate, E. Edge
				117.300	Top of Casing, E. Edge
				116.906	Brass Survey Marker
Notes: EQUIPMENT Surveyor Sta I, Larry A. Henke in the State of W	USED: TRIMBL TRIMBL Itement: e, a Professional La	E GPS 580 E DiNi 12	00 RTK LEVEL		Scot - 2

	w	ELL SURV	EY (DATA REPO	RT	
Project:			Рге	pared By: N	I.P. Fastaben	d
			Cor	npany: F	GG	
Date Reques	ted: 1/24/07		Rec	uestor: C.	S. Wright (FH)
Date of Surve	əy: 2/16/07		Sur	veyor: N.P. FGC	Fastabend Survey Dept	
ERC Point of	Contact:		Sur	vey Co. Poi J.M. Sci	nt of Contact nwing (FGG)	
Description of	of Work:		Hor	rizontal Datu	m: NAD83(9	1)
Civil Survey o	f Groundwater N	Monitorina	Ver	tical Datum:	NAVD88	
Well #A5035	(399-1-2)	ionitoring	Uni	ts:	METERS	\$
		F	Har	nford Area D	esignation:	300A
Coordinate S	iystem: Washi	ngton State	Pla	ne Coordinat	es (South Zor	ne)
Horizontal Co	ntrol Monuments	s: GABLEM	TN (FH), 300-70	(FGG)	
Vertical Contr	ol Monuments:	300-28 (FG	G),	300-60 (FG	G)	
Well ID	Well Name	Easting		Northing	Elevation	
A5035	399-1-2	594082.3	6 /	116329.53		Center of Casing
					118.981	Top Pump Baseplate, N. Edge
					118.975	Top of Casing, N. Edge
					118.201	Brass Survey Marker
Notes:					AST 201077779710700	
EQUIPMENT	USED: TRIMBL TRIMBI	.E GPS 580 LE DiNi 12 L	0 R LEVI	TK EL		
Surveyor Sta I, Larry A. Henke in the State of W certify that this n February, 2007 contained here i	tement: e, a Professional La /ashington (Registri eport is based on a under my direct sup s true and correct.	and Surveyor r ation No. 3897 field survey p pervision, and	regist 75), h erfor that t	ered lereby med in the data	A PART A	2007 2007

	w	ELL SUR	/EY	DATA REPO	RT	
Project:			Pre Co	epared By: Normany:	I.P. Fastaben GG	d
Date Reques	ted: 1/24/07		Re	questor: C.	S. Wright (FH)
Date of Surve	ey: 2/16/07		Su	rveyor: N.P. FGC	Fastabend Survey Dept	
ERC Point of	Contact:		Su	rvey Co. Poi J.M. Scl	nt of Contact nwing (FGG)	•
Description of	of Work:		Ho	rizontal Datu	Im: NAD83(9	1)
Civil Survey o	f Groundwater M	Aonitorina	Ve	rtical Datum	NAVD88	
Well #A5040	(399-1-7)	lonitoning	Un	its:	METER	S
			Ha	nford Area D	esignation:	300A
Coordinate S	ystem: Washi	ngton State	e Pla	ane Coordinat	es (South Zor	ne)
Horizontal Co	ntrol Monuments	: GABLEN	MTN	(FH), 300-70	(FGG)	
Vertical Contr	ol Monuments:	300-28 (FC	GG),	300-60 (FG	G)	
Well ID	Well Name	Easting	,	Northing	Elevation	
A5040	399-1-7	594260.0	06	116335.09		Center of Casing
					118.558 -	Top of Casing, W. Edge
					,	Brass Survey Marker (Destroyed)
Notes: Temp	orary Plate on C USED: TRIMBL TRIMBL	asing, Bra E GPS 58 E DiNi 12	ss S 00 R LEV	Survey Marker RTK /EL /	Destroyed.	
Surveyor Sta I, Larry A. Henke in the State of W certify that this ro February, 2007 contained here in	tement: e, a Professional La /ashington (Registra eport is based on a under my direct sup s true and correct.	nd Surveyor ation No. 389 field survey pervision, and	regis 975), l perfoi d that	stered hereby rmed in the data	PROFILES STONAL L	75 - 2007 - 2007 ANO SUT 23,2007

WELL SURVEY DATA REPORT						
Project:			Prepared Company	By: 1 /: 1	N.P. Fastaben FGG	t
Date Reques	ted: 1/24/07		Requesto	or: C.	S. Wright (FH))
Date of Surve	ey: 2/16/07		Surveyor	: N.P. FGC	. Fastabend G Survey Dept	
ERC Point of	Contact:		Survey C J.	o. Poi M. Sc	nt of Contact hwing (FGG)	
Description of	of Work:		Horizonta	al Dati	um: NAD83(9	1)
Civil Survey o	f Groundwater N	<i>I</i> onitoring	Vertical C	atum	: NAVD88	
Well #A5043	(399-2-1)	normornig	Units:		METERS	3
			Hanford /	Area D	Designation:	300A
Coordinate S	ystem: Washi	ngton State	Plane Co	ordinat	tes (South Zon	e)
Horizontal Co	ntrol Monuments	S: GABLEN	/TN (FH), 3	300-70	(FGG)	
Vertical Contr	ol Monuments:	300-28 (FC	G), 300-6	60 (FG	G)	
Well ID	Well Name	Easting	Norti	ning	Elevation	
A5043	399-2-1	594467.2	1 11612	1.21		Center of Casing
					115.412	Top Pump Baseplate, N. Edge
					115.399	Top of Casing, N. Edge
					114.666	Brass Survey Marker
Notes: EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL						
Surveyor Statement: I, Larry A. Henke, a Professional Land Surveyor registered in the State of Washington (Registration No. 38975), hereby certify that this report is based on a field survey performed in February, 2007 under my direct supervision, and that the data contained here is true and correct.						

	w	ELL SURV	EY DATA REF	PORT	
Project:			Prepared By: Company:	N.P. Fastaber FGG	nd
Date Reques	ted: 1/24/07		Requestor:	C.S. Wright (FF	1)
Date of Surve	ey: 2/16/07		Surveyor: N. F(P. Fastabend GG Survey Dep	t.
ERC Point of	Contact:		Survey Co. P J.M. S	oint of Contac Schwing (FGG)	t:
Description of	of Work:		Horizontal Da	atum: NAD83(91)
	f Croundwator N	Appitoring	Vertical Datu	m: NAVD88	
Well #A5044	(399-2-2)	nonitoring	Units:	METER	S
			Hanford Area	Designation:	300A
Coordinate S	System: Washi	ngton State	Plane Coordin	nates (South Zo	ne)
Horizontal Co	ntrol Monuments	s: GABLEM	ITN (FH), 300-7	70 (FGG)	
Vertical Contr	ol Monuments:	300-28 (FG	G), 300-60 (F	GG)	
Well ID	Well Name	Easting	Northing	Elevation	
A5044	399-2-2	594385.6	9 116282.61	1	Center of Casing
				116.095	Top Casing, N. Edge Fnd. Stamped "X"
				115.324	Brass Survey Marker
Notes: Pump	Baseplate not f	ixed in posi	tion. 00 RTK	6 JRAA	K. P

	w	ELL SURV	EY DATA REPO	DRT	
Project:			Prepared By:	N.P. Fastaben	nd
•			Company:	FGG	
Date Reques	ted: 1/24/07		Requestor: C	.S. Wright (FH)
Date of Surv	ey: 2/16/07		Surveyor: N.P FG	. Fastabend G Survey Dep	t.
ERC Point of	f Contact:		Survey Co. Po J.M. So	int of Contact hwing (FGG)	E:
Description	of Work:		Horizontal Dat	um: NAD83(9	91)
Civil Survey o	of Groundwater M	Monitorina	Vertical Datum	NAVD88	
Well #A5045	(399-2-3)	loning	Units:	METER	S
			Hanford Area	Designation:	300A
Coordinate S	System: Washi	ngton State	Plane Coordina	tes (South Zor	ne)
Horizontal Co	ntrol Monument	s: GABLEN	ITN (FH), 300-70	(FGG)	
Vertical Contr	ol Monuments:	300-28 (FG	iG), 300-60 (FC	GG)	
Well ID	Well Name	Easting	Northing	Elevation	
A5045	399-2-3	594377.4	4 116220.46	7	Center of Casing
				115.456	Top Casing, N. Edge Fnd. Stamped "X" Brass Survey Marker
		<u> </u>			
Notes: Pump EQUIPMENT Surveyor Sta 1, Larry A. Henk in the State of W certify that this r February, 2007 contained here	Baseplate not f USED: TRIMBL TRIMB atement: e, a Professional La Vashington (Registr eport is based on a under my direct sup is true and correct.	E GPS 580 E GPS 580 LE DiNi 12 and Surveyor ation No. 389 field survey p pervision, and	tion. No Brass S 00 RTK LEVEL registered 75), hereby performed in that the data	urvey Marker	Found.

	w	ELL SURV	/EY	DATA REPO	RT	
Project:	Project:			epared By: Nompany: F	I.P. Fastaben GG	d
Date Reques	sted: 1/24/07		Re	equestor: C.	S. Wright (FH)
Date of Surv	ey : 2/16/07		Su	Irveyor: N.P. FGG	Fastabend Survey Dept	
ERC Point o	f Contact:		Su	J.M. Sct	nt of Contact wing (FGG)	:
Description	of Work:		Ho	orizontal Datu	m: NAD83(9	1)
	of Groundwater	Ionitoring	Ve	rtical Datum:	NAVD88	
Well #A5411	(399-1-10A)	nominoming	Ur	nits:	METER	S
			Ha	inford Area D	esignation:	300A
Coordinate S	System: Washi	ngton State	Pla	ane Coordinat	es (South Zor	ne)
Horizontal Co	ntrol Monuments	S: GABLEN	/TN	(FH), 300-70	(FGG)	
Vertical Contr	rol Monuments:	300-28 (FG	GG),	300-60 (FG	G)	
Well ID	Well Name	Easting		Northing	Elevation	T
A5411	399-1-10A	594346.5	53	116733.99		Center of Casing
					114.898	Top Pump Baseplate, S. Edge
					114.895	Top of Casing, S. Edge
					114.377 🖉	Brass Survey Marker
Notes: EQUIPMENT Surveyor Sta I, Larry A. Henk in the State of V certify that this in February, 2007 contained here	USED: TRIMBL TRIMBL atement: e, a Professional La Vashington (Registra report is based on a under my direct sup is true and correct.	E GPS 580 E DiNi 12 and Surveyor ation No. 389 field survey p pervision, and	00 F LE\ regis 75), perfo	RTK /EL stered hereby prmed in t the data	HAND AND AND AND AND AND AND AND AND AND	ROT SO

	w	ELL SURV	/EY	DATA REPO	RT	
Project:			Pr Co	epared By: Normpany:	I.P. Fastaben GG	ld
Date Reques	ted: 1/24/07		Re	equestor: C.	S. Wright (FH)
Date of Surve	ey: 2/16/07		Su	Irveyor: N.P. FGG	Fastabend Survey Dep	t.
ERC Point of	Contact:		Su	I rvey Co. Poi J.M. Scl	nt of Contact hwing (FGG)	t:
Description of	of Work:		Hc	rizontal Datu	Im: NAD83(9	91)
Civil Survey o	f Groundwater N	Aonitoring	Ve	rtical Datum	NAVD88	
Well #A5412	(399-1-13A)	nonitoring	Ur	nits:	METER	S
			Ha	nford Area D	esignation:	300A
Coordinate S	ystem: Washi	ngton State	Pla	ane Coordinat	es (South Zo	ne)
Horizontal Co	ntrol Monuments	S: GABLEN	ΛTN	(FH), 300-70	(FGG)	
Vertical Control	ol Monuments:	300-28 (FC	G),	300-60 (FG	G)	
Well ID	Well Name	Easting		Northing	Elevation	
A5412	399-1-13A	593910.4	11	116557.26		Center of Casing
					119.467	Top Pump Baseplate, N. Edge
					119.464	Top of Casing, N. Edge
					118.622	Brass Survey Marker
Notes: EQUIPMENT Surveyor Sta I, Larry A. Henke in the State of W certify that this re February, 2007 (contained here it	USED: TRIMBL TRIMBI Itement: e, a Professional La /ashington (Registra eport is based on a under my direct sup s true and correct.	E GPS 580 E DiNi 12 and Surveyor ation No. 389 field survey p pervision, and	00 F LEV regis 75), perfo	RTK /EL stered hereby mmed in the data	R CD SING R CD S	7.007 - 20 7.007 - 20 19 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

WELL SURVEY DATA REPORT						
Project:			Prepared By: Company:	N.P. Fastaben FGG	d	
Date Reques	ted: 1/24/07		Requestor: (C.S. Wright (FH)	
Date of Surve	y: 2/16/07		Surveyor: N.F FG	P. Fastabend G Survey Dept	t.	
ERC Point of	Contact:		Survey Co. Po J.M. S	oint of Contact chwing (FGG)	:	
Description of	of Work:	, , , , , , , , , , , , , , , , , , ,	Horizontal Da	tum: NAD83(9	91)	
Civil Survey o	f Groundwater N	Aonitorina	Vertical Datur	n: NAVD88		
Well #A5414	(399-1-21A)	g	Units:	METER	S	
			Hanford Area	Designation:	300A	
Coordinate S	Coordinate System: Washington State Plane Coordinates (South Zone)					
Horizontal Co	ntrol Monument	B: GABLEN	/TN (FH), 300-7	0 (FGG)		
Vertical Contr	ol Monuments:	300-28 (FG	GG), 300-60 (F	GG)		
Well ID	Well Name	Easting	Northing	Elevation		
A5414	399-1-21A	594160.7	75 116183.88		Center of Casing	
				117.568	Top Pump Baseplate, N. Edge	
				117.563	Top of Casing, N. Edge	
				116.795	Brass Survey Marker	
Notes: EQUIPMENT USED: TRIMBLE GPS 5800 RTK TRIMBLE DINI 12 LEVEL Surveyor Statement: I, Larry A. Henke, a Professional Land Surveyor registered in the State of Washington (Registration No. 38975), hereby certify that this report is based on a field survey performed in February, 2007 under my direct supervision, and that the data contained here is true and correct.						

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