

NRS Jim Creek
Arlington, WA

June 15, 2022

Personnel On-Site: Ilka D. Dinkelmann, Jordan Peeny-Lemon, Jane Wiegand > Jacobs; Joe Staloch, Anthony Kiss, Taggart Knuston > Cascade Drilling.

Weather: Mostly cloudy, cool, 50's, Calm Winds

Objective: Complete Sl6 MW-08, finish mobilization to Sl6 MW-09 and begin drilling activities, set well.

0755 Arrive on Site. Jordan Peeny-Lemon leads HSE Briefing. Pinch Points, PPE, Slick conditions due to rain.

0815 Morning brief with Matt Moore. Discuss e-mail chain RE: Sample collected at 5.0' from Sl6 MW-08. Saturated. In water. likely crushed rock. Need to re-sample. Will use air knife to push a second hole close to well to collect sample above Water Table. (3.5-4.0') Discard original sample.

0830 Mobilize to laydown area. Speak with Taggart about using air knife for second sample.

0840 Contact Matt Moore RE: Taggart Response using air knife. Request if collection of sample ok from holes drilled for bollard placement. Will use hand auger instead of air knife. Will decon auger and collect equipment blank prior to sample collection. ~~Sogge~~ Request approved

will meet up with drillers to decon
augers and mobilize to Site 6.

0920 Meet at Site 6 MW-08. Stop at laydown
for decon materials and EB sample bottles

0950 Collect Equipment Blank

NRSTC-EB01-061522

1010 Collect Soil Sample

NRSTC-S6-SB08-3H04

Lithology very rocky. Refusal at 4.0' bgs.

1020 Set Bollards. Build form for
concrete Pad. Move materials to MW-09.

1230 Finish well completion activities and
Set up at S6 MW-09. Break for Lunch.

1300 Return from Lunch. Discuss sample
collection above water table.

1310 Current depth of hole ~ 3.5' bgs.

Large rock in hole prevented further
auger activities and approved to stop by
Greg Warren. Augered limited soil
from 3.5-4.0' before refusal. Talk with
Joe Staloch and will drill from 3.5'-

5.0' and pull core sample. If not
in water/wet will collect sample
from drilled core. Set up Rig.

1325 Jane Wiegand and Taggart mobilize to
Site 5 to air knife final location.

1330 Begin drilling at S6 MW-09.

1340 Pull core from 3.5-5.0' bgs

1355 Pull core from 5.0-10.0' bgs.

core sample from 5.0-10.0' wet / Saturated.
In water. Will collect sample from 4.5-5.0'
where sample is moist but appears to
be above water table

1415 Collect Sample from 4.5-5.0' bgs

NRSTC-S6-SBO9-4H05

1420 Jordan measure DTW @ MW-08

WL = 5.20 to concrete Pad ~ 4.95' bgs.

1430 Collect Field Blank Sample

NRSTC-FB01-061522

1435 Pull core from 10.0-20.0' bgs.

only 5.0' recovery. One bag ~ 50% water
with little matrix. Supersaturated.

1445 Speak with driller. Will complete well
and set to same specifications as MW-08
Clean out to 15' (cased)

#2/12 Sand to ~2.50' bgs [6 Bags] + 2

3/8" Bentonite to ~1.0' bgs [7 Bags]

Concrete to surface + 0.33 pad [17 Bags]

15:15 Clean out complete.

15:30 Well set from 4.0-14.0' bgs.

Begin addition of Filter Pack Sand

16:45 Well set complete. Drill holes for bollard
placement. Drillers ask to stay late.

Discuss Must depart NLT 6:00 pm

17:45 Complete drilling holes for Bollards

Clean area. Secure Site and Rig.

18:00 Depart Site.

John D. Quikelm
6-15-2022

NRS Jim Creek
Arlington, WA

June 16, 2022

Personnel On-Site: Ilka Dinkelmann, Jordan Peery-Lemon,
Jane Wiegand* To arrive following sample drop-off
at Fed-Ex ~ 11:30 > ~~Cascade~~ Jacobs
Joe Stalock, Anthony Kiss, Taggart Knuston > Cascade
Weather: Mostly Cloudy, Sun in afternoon.
Mild breeze, 50's - 60's.

Objective: Cleanup at Site 6. Mobilize to Site 1,
set up, and begin drilling at S1 MW-05

7:50 Arrive on site. Jordan to lead Safety
Meeting, Discuss mobilization hazards,
traffic safety and Slips, Trips, Falls.
Jane to arrive later. Will drop off
Samples at ~ 11:30 and mobilize to Site
Following Lunch.

835 Contact Jane RE: Sample COC. Make
corrections for FB Samples to include
Site ID / Location.

840 Call with Matt Moore to discuss the
higher water level measured at
B6 MW-04. Could not get lid removed
at B6 MW-03 will try again

B6 MW-01: 30.85'

B6 MW-02: 24.91'

B6 MW-04: 27.14'

Also discussed drilling schedule on
current drill rate.

- 0905 Complete call with Matt Moore. Mobilize to Site 6 MW-09 where drillers are completing pad and bollards installation.
- 0915 Set Bollards and Monument. Discuss the Mud Ruts at Site 6 and tracking of soil into Roadway. Large Soil clumps need to be removed.
- 1050 Finish Well completion activities. Joe Staloch will return with Skid Steer blade to smooth out Ruts and Incised areas
- 1100 Jordan Measure DTW at S6 MW-09 ~5.36' to top of pad. Pad height ~0.25' DTW ~5.11' bgs. Drillers move materials to Site 1 area (MW-05). Anthony Kiss to decon tooling prior to Mobilization to S1 MW-05.
- 1125 Contact Jane to confirm Shipping Samples and sending copy of COC. Needs to ice Samples and drop samples at Fed EX.
- 1250 Contact Peter Lawson RE: Higher Water Level at B6 MW-04. DTW during drilling measured ~31.2' bgs. Current depth increase in water surface elevation +4.0'. Will confirm. Also will check MW-03. Could not move lid
- 1215 Meet with Anthony Kiss. Decon Complete Request assistance in removing lid at B6 MW-03. Need to measure DTW.
- 1220 Mobilize with Jordan to B6.

Confirm DTW at MW-04 and MW-03

B6 MW-03: 31.0' bgs

B6 MW-04: 27.16' bgs

1230 Message Peter Lawson with B6
DTW info. Mobilize to S1 MW-05

1235 Drillers break for lunch

1300 Contact Matt Moore RE: Well

Completions at MW-05. Concerned Bollards
will be in road ROW if installed.

Inquire if Flush mount is possible.

Matt to speak with Washington
Department of Ecology to confirm
State Requirements.

1305 Drillers return from lunch. Speak
with Joe RE: Washington Requirements.
OR - Home office of Cascade requires
3.0' seal. Not same in WA. Waiting
confirmation

1330 Matt Confirm Flush Mount with two
bollards is approved by WA D.O. Ecology
if monument/riser installed must have
three bollards minimum required.

Also discuss seal. May reduce sand
to increase bentonite. Provide better
seal. Given location and conditions
at S1 MW-05 and MW-07 elevated
flush mount with 'thicker' seal is
better for integrity of well.

1345 Haul Materials and equipment for

drilling to location. Set up Sample area.

1445 Measure DTW = 4'8" = 4.66' bgs.

1450 Decon Auger to collect Sample above measured groundwater table.

1500 Collect Sample from 3.5-4.5' bgs.

NRSTC-S1-SB05-3H4H

1525 Mast up at S1 MW-05

1530 Begin Drilling activities

1535 Pull core Sample 5.0-10.0' bgs.

1545 Pull core Sample 10.0-20.0' bgs

1600 Measure DTW = 4.66' same as initial

Talk to drill RE: Well Installation. Will perform clean out to 15.0' bgs.

Screen Interval from 4.0-14.0' bgs.

Sand Pack/Filter to 3.0' bgs

This will provide 3.0' seal for well

Bentonite 3.0-1.0' bgs (3/8" chips)

Cement 1.0 to surface plus elevated pad to set flush mount completion.

Install 2 bollards for well protection.

1630 Driller addressing "heaving" sands. Sands 10.0-20.0' bgs. Will add approved and sample confirmed PFAS free water to weigh sand down for proper completion. Will clean out/blow out. Monitor volume added to be removed during development.

1730 Contact Matt Moore RE: Heaving Sands Complete activities. Secure Site.

Att. D. Dink
6-16-2022

NRS Jim Creek
Arlington, WA

June 17, 2022

Personnel On Site: Ilka Dinkelman, Jordan Peery-Lemon, Jane Wiegand > Jacobs; Joe Stalock, Anthony Kiss, Taggart Knuston > Cascade.

Weather: Partly-Mostly Cloudy. Rain expected. Possible lightning. 50's
Objective: Set well at S1 MW-05 and mobilize to S1 MW-07 begin drilling.

7:50 Arrive at Lodge. Let Jordan and team know to take photo of core samples (heaving sands) at S1 MW-05. Need to provide to Matt Moore & Peter Lawson. Discussed addition of water.

~~8:40~~^{8:15} Jordan leads HSEQ Meeting. Discuss fatigue. Possible lightning will monitor. Slick conditions. Also discuss objectives. Set well and mobilization.

8:40 Contact Matt Moore - Send photos. Approved for addition of water. Will track volume used.

9:00 Complete call. Meet team at Rig. Joe Stalock finishing Rig Inspections and Warm up. Prepare for drilling

9:20 Complete clean-out. Used 75 gallons Water. Prepare materials to set Well.

9:30 Set Well. Will set as proposed and approved on 6/16

Screen from 4.0 - 14.0' bgs

Sand to 3.0' bgs

Bentonite 1.0 - 3.0' bgs

Cement 1.0 - surface + Pad

10:00 Begin well completion activities

Elevated Flushmount + two bollards.

11:30 Finish completion of S1 MW-05

Mobilize Rig to S1 MW-07

12:00 Measure Depth to water ~ 4.2' bgs.

Will collect sample using hand auger
Decon auger.

12:20 Collect Equipment Blank Sample

NRSTC-S1-BBØ1-061722

12:25 During hand auger collect Field Blank.

NRSTC-S1-FBØ1-061722

12:30 Collect Sample from 3.0 - 4.0' bgs

NRSTC-S1-SBØ5-0304

12:45 Beginning to Rain heavily. Discuss
early departure - Friday Mobilization.

12:50 Secure and clean up Site. Jane/Jordan depart

13:00 Driller's depart. Check IDW area.

13:05 On phone call with Matt More. Realize
Roll-off not covered. Need to close for
weekend. Will check Bldg. 13. for
assistance or cover Solo. Staff gone
for holiday/extended weekend.

1325 Close Roll-off. Secure Site

1340 Depart Site to resume 6/20/22.

Alfred Dinkelmann
6-17-2022

NRS Jim Creek
Arlington, WA

June 20, 2022

Personnel On Site: Ilka Dinkelmann, Jordan Peery-Lemon,
Jane Wiegand > Jacobs; Joe Staloch, Anthony
Kiss > Cascade [Taggart on PTO]

Objective: Drill location S1 MW-07, Mobilize
to S1 MW-06.

Weather: Mostly Sunny, Mild Breeze, ~50's-60's

8:30 Arrive at lodge. Meet Field team

8:40 Jordan perform HSEQ. Discuss Federal
holiday, families and kids on site -
watch for unexpected traffic. Make
sure high vis PPE is visible. Safety
glasses. Slip-Trip-Falls. Lifting.

9:00 Complete HSE. Site Security unlock
gate for access to Site 1. Can "dummy"
lock and close/lock at end of day.
Limited Staff due to holiday.

9:10 Mobilize to laydown area. Pick up
equipment and materials. Discuss with
Cascade to ensure roll-off covered
to prevent excess water in Roll-off.

9:15 Morning call with Matt Moore to discuss
daily objectives and drilling status update

9:25 Stop at laydown area and load vehicle
with field equipment and supplies.

9:30 Mobilize to Site 1 MW-07. Perform
daily Rig Inspections and warm-up.

Prepare and Set up Samplers area for daily drilling activities.

10:05 Begin drilling at S1 MW-07

10:15 Pull core Sample 5.0-10.0' bgs.

10:25 Pull core Sample 10.0-20.0' bgs.

10:30 Begin Clean out. to prepare for well installation to 15.0' bgs.

10:45 Complete clean out. Use 75 gallons Water (PFAS: Approved for use) Begin Setting well.

Screen 4.0-14.0' bgs

Sand (2/12) to 3.0' [1.0' above screen]

Bentonite (3/8" chips) to 1.0'

Cement (1.0 - Surface) + Pad

11:30 Finish setting well. Prepare for well completion. Elevated flushmount and two bollards for well protection.

11:45 Mobilize Rig to Site 1 MW-06. Anthony Kiss remain at Site 1 MW-07 to hand auger holes for bollards.

12:00 Drillers set bollards ~~+ pad~~. Form

13:00 Break for lunch.

13:30 Upon return drillers mix concrete to finish setting bollards and Pad.

15:00 Mobilize materials to Site 1 MW-06 in Preparation of drilling activities

16:00 Mast up at S1 MW-06

16:10 Begin drilling at S1- MW-06

16:15 Pull Core Sample 5.0-10.0' bgs

1650 Collect Sample from 7.0-8.0' bgs.
Some "burned" wood perhaps from
historic wildland fire or clearance
of vegetation observed at ~7.5' bgs.
Known to be native soil vs. fill.

Collect MS-MSD

NRSJC-S1-SB06-0708

NRSJC-S1-SB06-0708-MS

NRSJC-S1-SB06-0708-MSD

1655 Pull core Sample 20-30' bgs. Bottom
of last core sample ~27.5-30.0 is
visibly wet. Possible groundwater ~29.0'

1700 Joe Straloch requested to work to
17:30. Would like to clean out
prior to Site departure.

17:30 Pull core sample 30.0-40.0'. Wet!

17:45 Secure Site. Jordan & Jane depart Site.

Speak with Cascade RE: IDW

Cannot have free water in Roll-off.

Also discuss Schedule as proposed

(Site 1 → Site 5 → Site 4 → Site 7)

18:00 Depart Area. Security to lock gate.

Drillers depart Site. Contact Matt

Moore RE: Free water in hopper.

Discuss Containerizing separately.

Will contact EM. Levi Pratt to confirm

Have clean drums on site if needed.

1815 Complete Call. Depart Site.

John D. Dinkel
6-20-2022

NRS Jim Creek
Arlington, WA

June 21, 2022

Personnel On-Site: Ilka D. Dinkelmann / Jacobs; Jordan Peeny-Lemon / Jacobs; Jane Wiegand / Jacobs -
Joe Straloch / Cascade, Anthony Kiss / Cascade,
Taggart Knuston / Cascade.

Weather: Partly Cloudy - Calm Winds - 60's - 70's

Objective: Complete drilling and set well at
~~Site 6~~ @ Site 1 MW-06. Begin Mobilization
to Site 5.

7:45 Meet at Lodge Parking Area

8:00 Jordan Peeny-Lemon leads Morning HSE
Briefing. Slip-Trip-Fall. Hydration.

8:15 Mobilize to Rig. Perform Warm-up and
daily inspections. Prepare for drilling
activities.

8:25 Measure DTW at MW-06. Dry ~ 30.0'

9:10 Resume drilling activities at S1 MW-06

10:15 Pull Core 40-50' bgs. DTW ~ 28.7'

11:00 Measure DTW ~ 31.25' bgs. Appears
Water Level Indicator not working.
Contact Matt Moore. Order new meter.

11:10 Use Cascade water level meter (decon)
Water level is rising. Will likely
recharge to water level measured
during drilling ~ 28.7' bgs.

9:40 Collect Field Blank Sample

NRSTC-S1-FB01-062122

- ~~1030 Collect Sample 27.0 - 28.0' bgs. DTW ~ 28.7'~~
~~[NRSJC-SI-SB06-2728]~~ Discarded @
- 1115 Speak to Peter Lawson. During drilling measure DTW ~ 28.7' bgs. Initially dry at 30.0' may be issue with Water Level meter. Current DTW ~ 30.2' likely to recharge. Agree to Set well ~ 28.5 - 38.5' bgs.
- 1130 Prepare to Set Well. Will Case off to ~ 40.0' bgs. & Clean out.
- 1140 Begin setting well. Clean out difficult due to 'heaving' sands.
- 1225 Well dropped slightly while setting ~ 0.25 - 0.5'
Top of Sand ~ 26.5'
Bentonite Chips ~ 3.0' bgs
Will set with Monument & 3 bollards
- 1320 Complete setting well at SI MW-06
- 1325 Break for Lunch.
- 1355 Begin Well Completion Activities
- 1430 Drill holes for bollard placement
Checked recharge and DTW ~ 26.4'
Contact Peter Lawson. Discard Previous Sample collected. Below Water
- 1435 Collect Sample from 25.0 - 26.0'
[NRSJC-SI-SB06-2526]
- 1550 Complete drilling for bollards.
Begin Mobilization to Site 5
- 1730 Depart Site.

Spencer D. Dinkelmann
6-21-2022

NRS Jim Creek
Arlington, WA

June 22, 2022

Personnel On-Site: Ilka Dinkelman, Jordan Peery-Lemon,
Jane Wiegand > Jacobs; Joe Straloch, Anthony
Kiss, Taggart Knuston > Cascade Drilling

Weather: Cooler Temps ~55-65°, Cloudy, Calm Winds

Objective: Complete Mobilization to Site 5. Set up
and begin drilling activities at S5 ~~MW-18~~^{OK} MW-18

7:55 Arrive on Site. Drillers not yet arrived.

0805 Contact Matt Moore RE: Locks, Yorick Wahaus
Site Visit and Loren Kaehn visit scheduled
for 06/23. Likely to meet at Site 5.

0825 Drillers arrive.

0830 HSEQ Briefing. Discuss Mobilization Safety.
Use Spotters. Remote location. Gate Access.

0850 Mobilize to Site 1. Complete load out -
Clean up and decon in preparation of
Mobilization to Site 5.

1005 Complete load up. Mobilize to Site 5
Jordan Peery-Lemon to lead. Will
follow drillers and skid-steer for safety.

1025 Team arrives at Site 5. Will set up
at low area close to creek towards Station.
(Location Site 5 MW-18).

1035 Contact Matt Moore RE: Port-o-Potty. Needs
immediate attention. Conditions poor. Need to
determine if Jacobs or Cascade placed order
and how to have cleaned or be replaced.

Requested 2 since team will be expanding over next few weeks.

10:40 Mobilize Rig to S5 MW-18 and begin Rig Set up.

11:50 Break for Lunch.

12:20 Spoke with Joe Staloch/Cascade Driller RE: Port-o-Potty. He will have Anthony Kiss go to area with phone service to contact Zane (Cascade Manager) to address immediately.

1230 Begin drilling activities at Site 5 MW-18

1235 Pull Core from 5.0-10.0' bgs. Previously Air knife to 5.0' bgs.

1255 Pull Core 10.0-20.0' bgs.

1315 Complete Clean out to 15.0' bgs.

1335 Pull Core 20.0-30.0' bgs.

1345 Measure DTW ~ 15.4' bgs.

1355 Contact Peter Lawson. Will screen 14-24'?

1400 Agree to set well 14.0-24.0' bgs. Good water producing.

1410 Confirm DTW ~ 15.2' bgs. Core moist up to ~ 7.5' bgs. Water level may be higher, but tight formation (Gravelly clay.) from ~ 7.0-17.5' bgs. Likely slow recharge.

1425 Contact Peter Lawson for confirmation.

Agree better to have screen in well producing lithology than to have low recharge. Confirm 14-24.0' Screen interval.

14:30 Driller to drive casing to 25.0' and

clean out to set well.

1445 | NRSJC-S5-SB18-0708 | Sample collected
based on Lithology

1450 Collect Sample 14-15.0' Above water.

| NRSJC-S5-SB18-1415 |

1500 Begin Setting well.

1545 Complete Setting well.

Screen 14.0-24.0'

Sand to 12.0' bgs

Chips to ~3.0' bgs.

1555 Talk to driller RE: Bollard Placement

Will need to hand auger one hole - Closest
to creek (cannot access Rig) due to
slope along road and trees.

1615 Complete drilling bollard holes

1630 Move Rig to location Site 5 MW-19
(Location is middle well). Begin hand
auger at last bollard location at S5 MW-18

1730 Complete daily field activities. Will

Finish hand auger 6-23 and set bollards
for well completion.

1740 Clean and Secure area.

1745 Depart Site.

Mike D. Dink
6-22-2022

NRS Jim Creek
Arlington, WA

June 23, 2022

Personnel On-Site: Ilka D. Dinkelman, Jordan Peery-Lemon,
Jane Wiegand > Jacobs; Joe Staloch, Anthony
Kiss, Taggart Knuston > Cascade Drilling

Visitors: Loren Kaehn / Jacobs RHSM
Yorick Wahaus / Navy RPM

Weather: Mostly Sunny, 50's-60's; Mild Breeze

Objective: Complete activities at S5 MW-18 and
mobilize and drilling at S5 MW-19.

Scope Wells at Site 7.

7:50 Arrive at Lodge.

8:00 Jordan leads HSEQ. Loren Kaehn expected
on Site. Topics include Lifting. Pinch
Points. PPE and Slip-Trip-Fall

8:20 Loren Kaehn arrives on Site. Joined HSEQ.
Introductions to Cascade Staff and
Jacobs team members.

8:35 Complete Safety Brief. Call Matt Moore
prior to departure for Site 5. Discuss
later Site visit with Yorick Wahaus
and walk at Site 7. Daily objectives

9:00 Complete Call. Prepare for Mobilization
to Site 5.

9:20 Arrive at Site 5 MW-18. Complete hand
auger and Finish well completion
activities.

1000 Meet with Loren Kaehn and Jordan Peery-

Lemon to Review On-site documentation (APP/SSHP), AHA's, Checklists etc.

Discuss best approaches for addressing HSEQ questions on Site.

1045 Message to Matt Moore RE: Meeting with Yorick Wahaus. Has not been to Site 5.

Completing activities at MW-18

11:15 Depart Site 5 to Meet with Yorick Wahaus. Accompanied by Loren Kaehn and Lead driller Joe ~~Straloch~~ Staloch.

Due to delay in departure from Site 5 Stop at Building 12 to check in with DPW.

1125 Met with Yorick Wahaus as departing Site 7. Meet at Site 7 to check on Selected Well locations for MW-11 & MW-12 MW-11 located on Slope. Safety concerns for rig placement.

MW-12 located along road. Request to move ~2.0' toward slope.

1220 Jane Wiegand on Site. Suggest proposed MW-11 location outside established cultural boundary. Move MW-11 to small area between cut-off and roadway. Safer for Rig and inside boundary area.

1300 Return to Site 5

1320 Begin drilling activities at Site 5 MW-19 Yorick Wahaus on Site. Presents requests to be addressed prior to final mobilization from Jim Creek.

Requests :

@ Building 6 : Smooth out track marks and ruts at MW-02 and re-seed

@ Laydown Area : Address Secondary containment of totes

- Pump water out
- Confirm if leaking at corner

@ Decon Area needs improvement

- Raise border near pump
- Sediment loss (fines)

@ Site 6 : Clean Chain & Sign

- Pick up any left behind materials (stakes & cones)
- Grade area from MW-10 to Coyote Camp loop and reseed area.

1325 Pull Core Sample at MW-19 5.0-10.0'

1350 Pull Core Sample 10.0-20.0'

Vorick Wahaus depart Site 5

1430 Pull Core Sample 20.0'-30.0'

1440 Loren Kaehn debrief

1500 Loren Kaehn & Jordan Peery-Lemon to walk and assess Site 4. Discuss traffic control, utility mark / paint

1510 Measure DTW at Site 5 MW-19

DTW = 11.55' bgs

1515 Perform Clean out

1530 Contact Peter Lawson. Discuss Screen Interval. Set Screen 11.0-21.0' bgs

1535 Discuss with Cascade

Screen 11.0-21.0'

Sand to 9.0'

Bentonite to ~3.0'

Complete with Monument/Riser and Three Bollards.

1540 Collect Sample from 10.0-11.0'

[NRS JC-S5-SB19-1011]

1640 Complete Setting well. Loren Kaehn returns to Site 5. Visited other Sites. Discuss drilling holes for bollards.

- Difficult to hand auger locations due to localized lithology (rocks)
- Cannot air knife or would create large pit.

Need to submit formal approval. Although previously discussed with Matt Moore document approval. Understand rationale

1650 Debrief with Field team

1700 Loren Kaehn departs Site. Clean and Secure area. Mast down.

1730 Depart Site 5

1755 Debrief daily activities with Matt Moore

- Delay in meeting with Yorick Wahaws
- Drilling Bollards
- Loren Visit

Peter D. Dinkler
06-23-2022

NRS Jim Creek
Arlington, WA

June 24, 2020

Personnel On-Site: Ilka Dinkelman, Jordan Peery-Lemon,
Jane Wiegand > Jacobs; Joe Staloch, Anthony
Kiss, Taggart Knuston > Cascade Drilling

Weather: Mostly Sunny, Calm Winds, 60's-70's

Objective: Complete activities at Site 5 MW-19.

Address Requests made by Yorick Wahaus
at laydown area/decon. Mobilize Rig to
location Site 5 MW-16.

7:50 Arrive at lodge. Driller picking up Clean
Port-o-Potty at front gate. Jordan Peery-
Lemon to be late. Picking up marking Paint.

815 Jordan on Site. Leads HSEQ Briefing.

Discuss fatigue. Travel Safety. Complacency.

830 Review requests with drillers. Need
to address Secondary containment and
decon areas prior to departure.

835 Check Blk MW-02 Tracks.

840 Mobilize to laydown area. Photo request
areas. Drillers address laydown issues

- Pump water from Secondary containment.

Rainwater okay to pump to storm
drain if no visible sheen or no sediment
present in water.

- Repair decon area

- Add Secondary containment to
pressure washer and fuel generator

1010 Mobilize to Site 5

1030 Prepare for drilling bollard holes at MW-19

1125 Complete drilling bollard holes

1130 Mobilize Rig to Site 5 MW-16

1140 Jane Wiegand departs. No additional soil disturbance to occur. Finishing well completion activities.

1150 Measure DTW at MW-19 DTW = 11.16' bgs

1200 Begin Mixing Concrete to set bollards

1405 Complete well at completions at Site 5 MW-19. Clean and Secure Site

1430 Complete daily activities. Depart Site

Jane D. Dinkelmann
6-24-2022

NRS Jim Creek
Arlington, WA

6/27/2022

Personnel On-Site: Ilka Dinkelman, ~~Jordan Couture~~^{To arrive 6/28},
~~Caleb Torgerson~~^{To arrive 6/28}, Jane Wiegand > Jacobs
Joe Staloch, Anthony Kiss, Taggart
Knuston > Cascade Drilling

Weather: Mostly Sunny, Calm Winds, 60's-80's

Objective: Complete Site 5 MW-16, Begin
well development, Air Knife Site 7 locations.

0835 Arrive on-site. Jordan Peery-Lemon not
on site today. Will act as interim SSHO +
FTL. Air Knife and development Rig to
arrive at ~9:00 am

0850 Call with Matt Moore. Discuss Site 4
and Site 7: Approvals Still Pending.

0905 Development Rig and Air Knife on Site.
Review daily/weekly objectives. Schedule.
Discuss traffic safety, Also heat stress/
hydration and frequent rests. Likely
above average temperatures

930 Drop off development rig at laydown
area. Pick up materials for daily activities.

940 Complete Set up at MW-16. Warm up rig
and perform inspections.

1045 Begin drilling at Site 5 MW-16

1050 Check DTW @ MW-19 ~11.10' bgs

1055 Pull Core Sample 5.0-10.0' bgs

1105 Pull core sample 10-20.0' bgs

1115 Begin Clean out and drive casing. Moisture observed may be in water.

1120 Collect Field Blank

[NRSJC-S5-FB01-062722]

1125 Receive message from Matt Moore. Approved for Air Knife at Site 7. Also, MW-11 new location scoped on 6/23 with Yorick Wahaus approved. Will be in small grassy triangular area as discussed with team

1140 Jane Wiegand & Taggart Knuston depart Site 5 with Air Knife. Will complete MW-13 (current depth ~3.0') and move ~1.0' east at MW-12. Cannot move 2.0' due to slope & safety concerns (accessing tooling) will mobilize to Site 7 to mark out area for APS utility locate scheduled for 6/28. Mark out MW-11 & MW-12.

1150 Pull Core Sample 20.0-30.0'

1155 DTW measured ~18.0' bgs. Water level may be higher. Moist Soil ~14.5' bgs.

1215 Collect Sample 13.0-14.0' bgs

[NRSJC-S5-SB16-1314] (SB16) @

1220 Drillers take lunch. Rock 16.0-17.0'
Water measured ~17.5'

1235 Arthur Clark from Cascade on-site.
Mobilize to Site 7 to mark out areas for utility locate. Moved MW-12 Back ~18.0" and South ~10.0" to safer area.

Yorick Wahaus requested 2.0' back from staked location. Could only move ~18.0" due to accessibility concerns around drill rig.

1310 Contact Matt Moore. Site 4 approved.

1315 Contact Peter Lawson RE: Site 5 MW-16 Set well 16.5' if water recharges up to ~14.5' screen would not be too submerged. If lower at 17.5-18.0' groundwater would still cover sufficient screen length. Screen 16.5-26.5

1330 Drillers prepare to set well.

Screen 16.5-26.5

Sand 14.5

Chips to 3.0'

Complete with Monument + 3 bollards one bollard to be set in back to not encroach in roadway.

1445 Jordan Couture on Site. Received badge early. Discuss Site activities Health and Safety.

1515 Jordan to Meet with Jane at Site 7

1545 Drillers complete Setting well to specifications.

1615 Complete daily field activities. Ilka Binkelman departs. Jordan Couture to remain on-site until end-of day.

Ilka Binkelman
6-27-2022

NRS Jim Creek
Arlington, WA

6/28/2022

Personnel On-Site: Ilka D. Dinkelman, Jordan Peery-
Lemon, Caleb Torgenson, Jordan Couture,
Jane Wiegand > Jacobs; Joe Staloch,
Anthony Kiss, Taggart Knuston, Arthur Clark >
Cascade Drilling

Visitors: Chris Dunham APS-Utility Locator

Weather: Sunny, Warm, Calm Winds 60's-80's

0750 Arrive on-site at Lodge. Jordan leads
HSEQ. New Staff Introductions
Taggart Knuston to operate development
Rig and will be with Caleb Torgenson.
Jordan Peery-Lemon to accompany Chris
Dunham to Site 7. Will photograph and
mark out identified void. Jordan Couture
will measure DTW and TD at all
locations completed to date.

900 Contact Matt Moore. Approved to begin
development at Site Building 6 MW-01

910 Jane Wiegand to stop by Site 5 MW-16
to look at Cores

915 Stop at laydown area with Jordan Couture
and Caleb Torgenson pick up equipment
and materials for daily activities.

930 Stop at IDW with Caleb to identify
which drums/totes to use for well
development activities. Will use

drums for interim water well purge / development water and pump into totes.

1030 Contact Matt Moore RE: Sample bottles for groundwater sampling. do not have sufficient count for sampling. Six sets remain. Also discuss schedule and holiday mobilization

1120 Arrive at Site 5. Check in with Jordan Peery-Lemon and Jane Wiegand. Complete COC - sign. Jane Wiegand to ship Site 5 samples.

1135 Contact Matt Moore. Speeding truck at Site 5. Site worker for Jim Creek. Raises concerns of speeding vehicles when working at Site 4.

1145 Cascade brings tooling to decon and break for lunch. Jordan Couture at Site 5 for DTW-TD measurements.

1250 At decon. Drillers Anthony Kiss and Auther Clark to assist with setting up traffic control.

1435 Move Rig to Site 4 MW-14

1550 Speak with Caleb Torgerson RE: Well Development. Use turbidity, Parameter stabilization or time for proper development. Three well volumes

due to shallow well depth would likely not be sufficient for proper well development.

1600 Contact Matt Moore RE: Moving candlesticks further into left lane.

This may slow traffic in work area. Will look for signs to place.

1630 Candlesticks relocated. Vehicles will drive over shoulder part way. Needed to provide sufficient room for workers.

1620 Begin cutting asphalt at Site 4 MW-14

1655 Complete cutting asphalt ~ 18.0"

Mast down and mobilize rig to MW-15

1705 Clean up area and Secure Site.

Pull candlesticks in prior to departure.

1715 Complete daily activities. depart Site.

John D. Dinkelmann
6-28-2022

NRS Jim Creek
Arlington, WA

6/29/2022

Personnel On-Site: Ilka Dinkelman, Jordan Peery-Lemon, Jane Jordan Couture, Caleb Tongenson > Jacobs
Joe Staloch, Anthony Kiss, Arther Clark,
Taggart Knuston > Cascade Drilling

Weather: Mostly Sunny, Warm 60's - 70's low 80's

Objective: Complete Air Knife at MW-14 and
MW-15 at Site 4. Begin drilling. Site 4

750 Arrive on Site. Jordan Peery-Lemon to be late on Site. Lead HSE Meeting. Primary topic is traffic safety. Working on Jim Creek Road. Use spotters frequently. Watch for traffic. Do not work outside set exclusion zone.
Heat Stress and Hydration.

820 Mobilize to Site 4 to set up traffic control

830 Stop at DPW Facilities drop lock keys off with Jim at Building 12. Left key with James. Pick up available road signs (1) Reduce Speed Ahead (2) Speed Limit 5 mph.

845 Arrive at Site 4. Set signs up [Photos].

915 Complete Staging Area/Exclusion Zone. Begin Air Knife at MW-14.

940 Mobilize to Security to give keys for wells and discuss vehicles travelling at high speed along work area.

1000 Return to Site 4. Rig cut asphalt MW-15.
1030 Collect field blank sample. Collected

between MW-14 (Air knife) and MW-15 (Rig)

NRSJC-S4-FB01-062922

- 1035 Complete Air Knife activities to 5.0' at MW-14
1040 Move Air Knife to MW-15 and mobilize Rig
back to MW-14. Asphalt ~ 18.0"-20.0" thickness
1045 Set up at MW-14 in preparation of drilling.
Will collect sample below asphalt and
possible Road Base.

1100 Decon Hand Auger

1110 Collect Equipment Blank

NRSJC-S4-EB01-062922

- 1115 Collect 2.0-3.0 sample. May be native, but
likely still import material for Road construction.

NRSJC-S4-SB14-0203

1150 Complete Set up for drilling.

1200 Begin drilling at Site 4 MW-14

1215 Pull core sample 5.0-10.0'. Poor Recovery
Hard drilling. Mostly Rock.

1250 Pull core sample 10-20.0'

1300 Drive Casing

1315 Drillers Break for Lunch

1345 Resume drilling activities at MW-14

1505 Complete drilling to 30.0' bgs.

1510 Measure DTW ~ 18.1' bgs. Allow 5 min for recharge

1515 Confirm DTW ~ 18.10' bgs

1520 Contact Peter Lawson Screen 17.0-27.0' bgs

1530 Confirm with driller MW installation specifications

Screen 17-27.0' bgs

Sand to 15.0' bgs

Bentonite to ~ 2.0' bgs

16:10 Jane Departs Site. No additional soil disturbance for today

16:50 Complete Setting Well

17:00 Site Clean up and Secure area. Pull in exclusion zone / cones

17:15 Drillers depart Site. Meet with development crew at Building 6. Bailer down-hole will fish-out/retrieve in morning

17:30 Depart Site

18:00 Phone Debrief w/ Matt Moore

18:30 Complete Debrief. Complete daily field activities.

* Note: 15:20 collect sample 17.0-18.0'

John W. Dink
06-29-2022

NRS Jim Creek
Arlington, WA

6/30/2022

Personnel On-Site: Ilka D. Dinkelman, Jordan Peery-Lemon,
Jordan Couture, Caleb Torgenson, Jane Wiegand > Jacobs
Joe Staloch, Anthony Kiss, Arther Clark,
Taggart Knuston > Cascade Drilling

Weather: Sunny, Warm, 60's-80's.

Objective: Finish well completion at Site 5 MW-14
mobilize rig and drill at MW-15.

810 Arrive On-Site at Lodge. Delay with Jordan Peery-Lemon due to bridge work on Jim Creek Road

815 Morning Safety Brief. Re-iterate traffic safety.
Warm/humid conditions. Hydrate and rest if
needed. Pinch Points on development rig.

No development Rig available next week.

840 Contact Matt Moore. RE: Development Rig. Cascade
will hand develop next week.

855 Mobilize to Site 4 to meet up with drillers.

Stop at Building 12. Speak with Jeff. Confirm
received keys dropped off on 6/29. Also
confirm best location to Stage Rig at Site 7
for holiday weekend. Will mobilize 7/1.

915 Power out on Base expected to be down 2-3
hours. Gates to be opened manually.

920 Arrive at Site 4 MW-14. Rig inspection and
warm-up. Prepare materials for well completion.

945 Mobilize Rig to Site 4 MW-15

1015 Begin drilling at MW-15. Could not

collect sample below asphalt due to lithology. Large boulders and rocks.

1040 Pull Cone sample 5.0-10.0' bgs

1105 Finish well completion at S4 MW-14.

1210 Pull Cone sample 10.0-20.0' very slow

Drilling due to lithology. Rig getting a little hot during drilling through rock.

1220 Break for Lunch

1240 Resume drilling Drive casing to 20' : Clean out.

1325 Pull Cone 20.0-30.0' bgs.

1330 Measure DTW ~ 18.4'

1340 Contact Peter Lawson 0.3' change from location from MW-14. Nearly same lithology little variance keep same Screen interval 17.0-27.0'

1350 Discuss Well Specifications with driller

Screen 17-27.0'

Sand to 15.0'

Chips (3/8") to ~ 2.0' bgs.

1405 Begin Setting Well

1425 Collect Sample ~~17.0-18.0'~~ 16.0-17.0'

NRSTC-84-SB15-1718 @ 1617

Rock from 17.5-18.5' bgs. So most of Sample collected from 17.0-17.5' bgs.

1515 Valdez truck picked up Signs from facilities. (Building 12). Jordan to go to speak with Jim or Jeff. Truck Speeding through work area.

1625 Bring Rig to Site 7

1705 Drop off Materials at Site 7.

1730 Depart Site.

Mike O. Oule
6-30-2022

NRS Jim Creek
Arlington, WA

July 1, 2022

Personnel On-Site: Ilka DiDinkelman, Jordan Peery-Lemon,
Jordan Couture, Caleb Torgenson > Jacobs

* Jane Wiegand not on Site No disturbance

Joe Staloch, Anthony Kiss, Arther Clark,

Taggart Knuston > Cascade Drilling.

Weather: Sunny, Warm, 60-80's

① ~~8:00~~ Meet at Lodge. Objective: Clean up Site 4,
decon tooling, complete Mobilization to Site 7

8:00 Meet at Lodge. HSEQ, Travel Safety,
Holiday Weekend Travelers, Complacency,
Fatigue. Traffic Safety (use spotters)

845 Complete activities at Site 4 MW-15

915 Measure DTW @ MW-15 - 17.65' bgs

920 Measure DTW @ MW-14 - 18.13' bgs

925 Mobilize hopper to lay-down area. Complete
clean-up at Site 4. Leave 7/15 Candlesticks
along Jim Creek Road for use during well
development and GW Sampling.

1015 Following Rig Mobilization note some
track staining. Speak with Joe Staloch
RE: Possible Equipment leak.

1105 Send Images of Staining to Matt Moore.
Confirm no spill/release. Just Staining
from Rig tracks when moved. Will
powerwash Roadway.

1140 Check in with Anthony Kiss at Site 6

- Sign on gate repaired and chain link gate cleaned. (Yorick Wahaus request).
- 1245 Check Roll-off IDW No free water observed.
- 1255 Contact Matt Moore. Confirm with driller Joe Staloch that fan motor requires repair. Need to return to shop.
- 1315 Confirm labels on all drums. Clean and Secure Site.
- 1330 Drillers depart Site.
- 1345 Check power-wash areas. May need to clean again? Caleb Tongenson departs Site.
- 14:00 Jordan Peery-Lemon and I. Dinkelman depart Site.
- 14:20 Debrief with Matt Moore.

Note :

- 1015 Jordan Coature depart Site
- 9:45 Collected GW Sample at B6 MW-04
- 10:00 Collected EB Sample at B6 MW-04
- See GW Sampling Logs

Altan Dinkelman
07-01-2022

NRS Jim Creek
Arlington, WA

July 5, 2022

Personnel On-Site: Ilka D. Dinkelman > Jacobs

Anthony Kiss, Taggart Knuston > Cascade Drilling

Other: DH Environmental drop off Totes for IDW

Weather: Mostly Cloudy, light rain 60's

Objective: Tote delivery, begin well development

1145 Arrive On-Site. Wait at laydown area.

DH Environmental expected ~12:00-12:30

1210 DH Environmental on Site - Scott St. John
and Al Leiatava.

1225 Contact Joe Staloch RE: Skid Steer. Check
if okay for DHE to use to move equipment
out of way to build secondary containment.
Confirm location of keys.

1310 Contact A. Kiss from Cascade. At Site 4.
Have Anthony Kiss and Taggart Knuston
Meet at IDW location. DHE completing
Set up of Secondary Containment and Totes

1320 DH Environmental depart Site.

1325 Cascade uses skid steer to move back
materials in front of delivered totes

1330 Pick up equipment for well development

1345 Mobilize to Site 1 - MW-07. Set up and
prepare for well development.

1420 Measure DTW MW-07 = 4.65' TOC

Measure TD MW-07 = 14.55 TOC

1425 Begin Bailing activities

Prepare Equipment

- Turbidity Meter HACH 2100Q C103277
QA/QC with Standards
Standard 6.55 ntu $\rightarrow$ 5.98 ntu
Standard 495 ntu $\rightarrow$ 498 ntu
Standard 62.6 ntu $\rightarrow$ 63.1 ntu
- YSI 650 MDS #CH 102748
- W.L.I. Heron #C103248 dipper - T
- Multi-Rae #C102715

14:40 Complete Bail - discharge $\sim$ 2.5 gal
DTW = 4.65' bgs

14:42 Pump - On

14:47 Need to additionally pump 75 gallons of water that was added during drilling to address heaving sands.

- See Well development log

1552 Pump off. Prepare to mobilize drums to laydown area and pump development water into totes. Volume purged $\sim$ 140 gallons $\sim$ 2 $\frac{1}{4}$ drums

1700 Complete transfer of development water.

1705 Clean and Secure Site

1710 Depart Site

Alkan Dinkelmann
7-5-2022

NRS Jim Creek
Arlington, WA

July 6, 2022

Personnel On-Site: Ilka Dinkelman, Tom Chalmers > Jacobs
Anthony Kiss, Taggart Knuston

Weather: Mostly cloudy, Light Rain, 60's

Objective: Well development, ship samples (GW+54)

7:50 Arrive at Lodge Area. Meet with Tom Chalmers
and Cascade for HSED. Drilling Rig LS250
in shop. Joe Staloch not on Site.

8:00 Provide general Safety Briefing. Discuss Repetitive
Motion, Lifting, Proper PPE.

8:20 Mobilize to laydown area. Pick up required
well development equipment.

8:50 Arrive at MW-05 Site 1. Prepare for well
development activities. Calibrate equipment

Measure DTW = 5.35 TOC

Measure TD = 14.5 TOC

Equipment: [See Calibration Log]

YSI 650MDS C102748

MultiRae / PID C102715

Turbidity 2100Q C103277

9:05 Begin Surge

9:20 Complete Surge - Purge Volume ~ 2.5 gal

9:35 Complete Bail - ↑

9:37 Begin Pumping at Site 1 MW-05 ~ 2-3 gpm

9:45 Call with Matt Moore RE: Drill Rig.

Will likely be down remainder of week.

Unknown ETA of repair.

- 1010 Remove required 75 gallons of water.
There were ~75 gallons of water added due to heaving sands. Begin recording parameters.
- 1030 Complete pumping remove ~125 gal
- 1040 Depart MW-05. Final DTW = 5.36' TOC and Final TD = 14.5' TOC
- 1105 Depart Site to Ship Samples.
Samples from Site 4 and groundwater samples collected from Building 6.
- 1235 Samples Shipped:
Tracking # ~~25~~ 275208009328
Shipped Priority Overnight. Copy of CCC and tracking info on file.
- 1300 Return to Site.
- 1345 Meet with team at B⁶ Site 6 MW-09
Currently Pumping
- 1405 During pumping mobilize to Building 12 for access to MW-10 and MW-08
- 1440 Turbidity Stabilizing at ~30-35 ntu.
- 1450 Development complete. Purge ~120 gal
Final DTW ~ 8.80' BTOC TD ~ 17.58 TOC
- 1510 Have access to upper wells. Begin Surge activities at MW-08
DTW ~ 9.0' TOC TD = 16.50 Soft Bottom
- 1555 Surge Complete - Bail ~ 3.5 gallons
- 1650 Complete pumping purge water into tote
- 1705 Drillers Depart
- 1715 End of day - Depart Site.

John D. Outel
07-06-2022

NRS Jim Creek
Arlington, WA

July 7, 2022

Personnel On-Site: Ilka Dinkelman, Greg Warren / Jacobs
Anthony Kiss, Taggart Knuston / Cascade
Weather: Mostly Cloudy, Calm, 50's-60's-lower 70's
Objective: Well development

755 Arrive at lodge. Greg Warren arrival ~ 8:35

810 Discussion with Matt Moore RE: Drill Rig
Status, Schedule, well development.

840 Follow-up call. Learned Skid-Steer down
Error Code on Skid Steer E00279105
referencing EGR (Exhaust Gas Recirculation)
Likely requires full maintenance. Will
order new skidsteer for delivery by 07/11/22

920 Pick up field equipment.

950 Arrive at Site 6 MW-08. Set up and unload
from Greg Warren Vehicle. Mobilize to lodge
for BNC Meeting. (ORR)

1005 Measure DTW ~ 9.4' ^{pg}(TAC) TD=17.5 Hard Bottom
Note: Surged on 7/6/22

1010 Calibration

PID :- Fresh Air = PASS

Multi-Rae : OXY: 18% LEL: 50%

~~1015~~ VOC= 99.9 ppm CO₂ = 51 ppm H₂S: 10.2 ppm

1015 Set up pump at Site 6 MW-08

VOC= 0.2 ppm at hole

1020 Check Standards for turbidity meter
operations. Standards Provided

Standard 6.55 → 6.08 ntu
Standard ~~626.6~~ → 62.6 → 62.2 ntu
Standard 495 → 495 ntu

[PASS]

VSI 650 MDS # 103124

pH Check 7.0 → 7.01 [PASS]

Note: Surge/Bail activities at MW-08
occurred on 7/6/2022 3:00 - 3:50

1029 Pump On Flow rate ~ 2.0-3.0 gpm

1033 Well Sputtering. DTW ~ 13.5' bgs
Quick recovery. Reduce Flow rate
to ~ 0.5 gpm.

1040 Begin recording Water Quality Parameters

1130 Water Quality Parameters Stabilized
Turbidity < 5.0 ntu

Final Readings:

°C = 10.57

Sp. Cond = 0.119 mS/cm

DO = 0.52 mg/L

pH = 6.10

ORP = 92 mV

Turbidity = 2.39

1138 Pump Off

1140 Final Final DTW = 9.95' quick recharge

1145 Complete well development
Mobilize to Site 6 MW-10.

1158 Begin Set up. Measure DTW = 19.0'
TD = 27.45.

1205 Transition Well Development to Greg Warren.
(See Development Notebook)

1415 Complet development at Site 6 MW-10

$^{\circ}\text{C} = 10.1$

Sp. Con = 0.070 mS/cm

DO = 0.8 mg/L

pH = 5.2

ORP = 67.1 mV

Turbidity = 1.9 ntu

1430 Mobilize to Site 5 MW-18. lock gate (chain)

1445 Measure DTW = 18.23 TD = 25.7

1646 Pump off. Final Parameters:

$^{\circ}\text{C} = 9.8$

Sp Con = 0.114

DO = 0.7

pH = 6.3

ORP = 45 mV

Turbidity = 5.5 ntu

July 8, 2022

NRS Jim Creek
Arlington, Wa

Personnel On-Site: Ilka D. Binkelman, Greg Warren > Jacobs
Anthony Kiss, Taggart Knuston > Cascade Drilling

Weather: Mostly Cloudy, Calm, 60's - 70's

Objective: Well Development.

Visitor: Yorick Wahaus / Navy RPM

8:05 Arrive on Site. Delay due to bridgework along Jim Creek.

8:20 Complete HSEQ. Discuss end of week fatigue. Travel Safety, repetitive motion.

8:25 Mobilize to laydown area. Pick up equipment and materials for well development.

8:35 Arrive at Site 7. Check on ~~materials~~ materials stored for drilling activities.

Secure cover. Site wells MW-11, MW-12 & MW-13 Confirm "Void Area".

8:50 Mobilize to Site 5. Pick up locks/keys for wells at laydown for Yorick Wahaus.

8:55 Arrive on Site 5 MW-19. Drillers on-Site Yorick Wahaus on-Site.

DTW = 14.7 TOC TD = 23.2' TOC

09:05 Start Surging

09:20 Complete Surging. Allow for settle

09:25 Bail at MW-19 ~ 2.5 gallons

09:40 Start Pumping at Site 5 MW-19

10:28 Pump off. Parameters Stabilized.

Yorick Wahaus discusses Seeding areas. Hold off. May use straw. Will confirm.

Final Parameters

$^{\circ}\text{C} = 9.8$

Sp. Cond = 0.117 mS/cm

DO = 1.1 mg/L

pH = 6.3

ORP = 56 mV

Turbidity = 4.3

Final TD = 23.47 DTW = 14.75 TOC

11:00 Set up for well development at Site 5 MW-16
DTW = 22.07 TOC TD = 27.9 TOC Soft Bottom

11:25 Surge

11:40 Complete Surge

11:50 Bail ~ 3.0 gallons

12:05 Yorick Wahaus departs Site.

12:14 Pump - On. Very muddy viscous water.

12:20 Pump - off. Will bail additional
sediment.

12:35 Pump on. Current Flow rate ~ 3 gallons per min.

12:50 Pump off. Greg Warren & Ilka Dinkelman go
to laydown area for Jim Creek team
conference call. Drillers to record
measurements at Site 4 during call.

13:30 Call complete. Mobilize back to Site 4

13:31 ~~1444~~ Pump back on at Site 5 MW-16

13:45 ~~1445~~ Purge water brown allow to pump

14:05 Greg Warren to continue development.

Depart Site 5. Complete daily activities

14:15 Depart Site Jim Creek.

~~Ilka Dinkelman~~
7-8-2022

Well Development

6/29/22

Task: Well development

Personnel: Caleb Torgerson / Jacobs

Weather: 50°F - 65°F, cloudy

0830 mob to MW02, calibrate equipment

YSI 650 MD5 C102748

pH: 3.99/4.0, 7.00/7.0, 10.03/10.0

spcnd: 1413 / 1413 $\mu\text{S}/\text{cm}$

ORP: 229.9/230 mV

DO: 100% / 100%

HACH 2100Q C103277

6.50/6.55, 62.9/62.6, 499/495

DID MultiRAE 46730

Fresh Air: 0 ppm

VOC: 100 ppm

CO: 49.8 ppm

O₂: 18%

H₂S: 10 ppm

CH₄: 2.4%

0900 Pump on at MW02

1005 pump off, development complete at MW02

1020 Mob to IDW storage to empty drums into totes

1120 Set up development rig on MW03

1140 Decon equipment

1220 Begin surging

1235 Finish surging

1240 Begin bailing

1255 Finish bailing, 2 gal bailed

1317 PUMP ON

1321 pump off, well went dry

1325 well recharges over ~2 mins but
cannot keep up with pump speed

1330 pump on with ball valve

1449 well purged dry, letting it recharge

1515 pump off, development complete

1350 MWC to MW04, DTW = 27.55

TD = 40.

1612 Begin surging

1629 Finish surging

1635 ^{CP} Begin bailing

1715 ~~1650~~ ^{CP} Finish bailing, 4.52 ^{CP} gal bailed

Bailer lost down well, shackle failed. Will be
recovered after consulting with lead driller.

~~to~~ 1723 Demob for the day

CXT
6/29/22

6/30/22

Task: Continue Well Development

Personnel: Caleb Torgerson / Jacobs

Weather: 60 - 70°F, Sunny

0850 Mob to MW04, attempt to remove bailor
Calibrate equipment

YSI 650 MDS C102748

pH: 4.00/4.0, 7.00/7.0, 10.01/10.0

SpCond: 1410/1413 $\mu\text{S}/\text{cm}$

ORP: 230/238 mV

DO: 99.9%/100%

HACH 2100Q C103277

6.6/6.55, 63.0/62.6, 495/495

PID MULTIRAE 46730

Fresh Air: 0 ppm VOC: 100 ppm

CO: 50 ppm O₂: 18%

#2S: 10 ppm CH₄: 2.5%

0920 Bailor removed and shackle retrieved

0943 Pump on at MW04

1100 Pump off, development complete. ~45 gal purged

1115 Retrieve skidsteer, move drums to IDW
Storage

1145 Return skidsteer,

1200 Begin emptying 55 gal drums into poly totes

1245 Finish emptying drums, started NRSTC - W04

1320 Set up on MW06

1353 Begin surging at MW06

1400 Estimated ~1 ft of sediment at bottom of well

1405 switch to bailing to remove sediment before surging more

1510 Resume surging - 3 - 3.5 gal bailed

TD moved from ~38.2 to ~42 ft after bailing.

1525³⁰ Finish surging. Pausing to let sediment settle and measure TD

1545 TD: 41.6

1550 Resume bailing

1605 Finish bailing, 5 gal bailed, TD ~42 ft

1632 Pump on

1700 pump off, demob for the day

17 Offsite

CKT

6/30/22

7/11/22

Task: Continue well development

Personnel: Caleb Torgerson/Jacobs

Weather: 55-70 °F

0820 Mob to MW06, calibrate equipment
YSI 650 MDS C102746

pH: 4.00/4.0, 7.00/7.0, 10.01/10.0

SpCond: 1412/11.413 $\mu\text{S}/\text{cm}$

ORP: 230/230 mV

DO: 100.1%/100%

HACH 2100Q C103277

6.59/6.55, 62.5/62.6, 490/495

PID MultiRAE 46730

Fresh Air: 0 ppm

O₂: 18%

CO: 50 ppm

CH₄: 2.5%

H₂S: 10 ppm

0845: DTW = 29.72

0849 pump on

0909 pump off, clarity reached <10 NTU

0930 Move drums to IDW storage

0950 Mob to MW05

1005 Development rig stuck in mud by MW05

1030 Rig no longer stuck, plan to develop MW05
and MW07 by hand due to muddy uneven ground

1045 setting up on MW07, DTW: 4.66, TD: 13.70

Dipper covered in sediment

1044 Begn bailing first to remove sediment

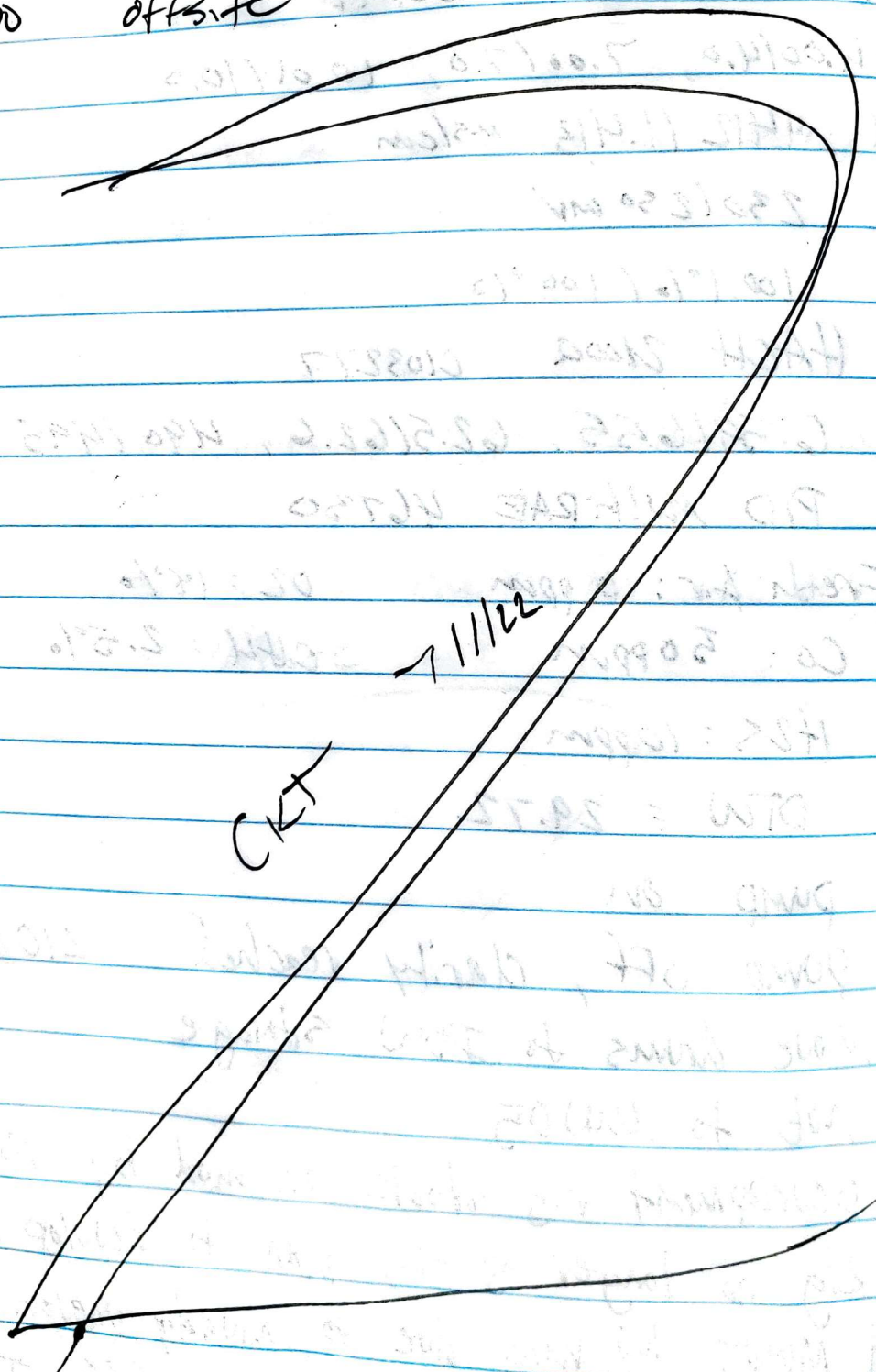
1106 Bailed 25 gal, TD: 14.60

Begn surging

1120 Finish surging, demob

1135 Emptying drums into plastic totes

1300 offsite



7/7/22 Jim CR.

1200 SET up e NR85C - MW10.

1205 SURGE 15 min

1220 SETTLE OUT

1235 BAIL. 3 GALLONS; SAND - FREE, PUMP ON

1315 WATER CLEARING; START PARAMETERS

1430 FINISH; TURBIDITY < 2. MOVE TO MW-18

1450 MW-18 DIVE 18.23 TD = 25.7 STABBY.

1455 START BAILING. 2 GAL. (LOTS OF SEDIMENT)

1500 SURGE. 15 MIN.

1525 BAIL AGAIN TO CLEAR SEDIMENT, TD = 26.9 (+1.2)

1545 DEPLOY PUMP, PUMP ON

1700 FINISH DEVELOPING, CLEAN UP, DECANT PUMP H₂O

1715 OFF SITE

D. J. W.

7/7/22

JLM CREEK

7/8/22

0755 ON SITE (GWARREN, IDINKELMAN)

0800 SAFETY MTG. (CROSBY = TKNURSON, A KISS)

0830 MOB TO SITE 5

0900 SITE 5; MW-19, DTW = 14.7', TD = 23.2'

0905 START SURGING

0920 FINISHED SURGING, SETTLE

0926 BAIL 2 GALLONS

0940 DEPLOY PUMP, START @ 1 gpm

1030 PUMP OFF - DONE. CLEAR < 5 NTU.

1100 SET UP @ MW-16 DTW = 22.05'

TD = 27.9' YELLOW-Y, SALTY

1125 BAIL; 1 SURGE 15 mins

1150 BAIL (LET SETTLE) 3 GAL

1200 PUMP ON; MUDDY, PUMP CLOGGED.

1220 PUMP OFF, BAIL MORE

1235 PUMP BACK ON; DRAWING DOWN

1250 PUMP OFF - LET RECHARGE

1300 - 1330. CALL W/ MATT MOORE & FIELD CREW.

1330 BACK AT MW-16

1340 RESUME PUMPING @ 0.5 gpm

1415 STOP PUMP, ONLY CLEAR TO 500 NTU;

(WILL RESUME MONDAY)

1445 PUMP PURGE WATER INTO TIRE

1515 SECURE SITE, DEPART

7/8/22

7/11/22
Jim Creek.
0830 GARDNER & C. ROYKO ON SITE.

WEATHER: 60s SUNNY → 80s SUNNY.

0840 CASCADE ON SITE (TRIMMER, AKI88)

0900 SAFETY MTG.: MOSQUITOS, SUN, BURNOUT.

0930 MOB TO SITE 5, SET UP ON MW-16

DTW = 22.30 TD = 27.9.

1000 PUMP ON @ 1 gpm.

1105 CLEAR, STABLE. TURB < 5 NTU.

PUMP OFF FOR NOW.

RETURN TO BLDG 6; MEET COLEB THORNTON

DISCUSS SAMPLING / DRILL ON SITE THURSDAY.

1300 SET UP MW-15 DTW = 17.69; TD = 26.15

STUCK / GIPPY → BAL THEN SURGE THEN BAL

1325-1340 SURGE; BAL

1355 PUMP ON 1.5 gpm

1505 END. TURB < 2.5. WEATHER

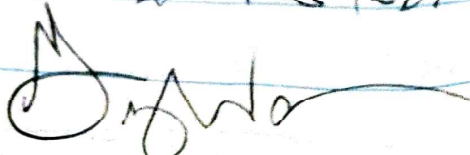
HEATED UP IN THE SUN.

1530 GO PICK UP REPLACEMENT SKID STEER

1545 CALL M MOORE. REG WILL BE MOVING
BLDG TOMORROW (TUESDAY).

1600 PUMP PULSE WATER INTO TOTES
FROM DRUMS (MW-15, 16)

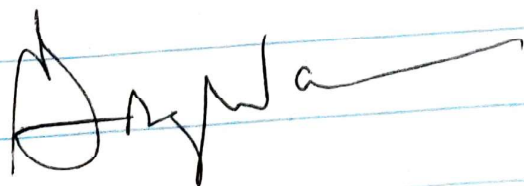
1630 CHECK ON GU SAMPLE TREN
1715 OFF SITE



JIM CREEK

7/12/22

- 0645: TALK TO M. MADRE ABOUT SET UP SITE 7.
- 0815 ON SITE; MEET CASCADE (A KISS; T KNUTSON).
+ JACOBS (C. ROYKO, C. TORGESEN, K SMITH).
- 0830 SAFETY MTG: BUGS, SUN, NEW SITE PERSONNEL.
- 0900 C TORGESEN + ~~K SMITH~~ ^{SMITH} ~~PROX~~ C. ROYKO,
K SMITH, + GILBERT COMBUST SITE TOOL
- 1000 SET UP SITE 4 MW-14 TO DEVELOP.
- 1200 FINISH DEVELOPING MW-14. BACK TO MEETING
SPOT, CASCADE PUMPS OFF DRUMS TO TOTES.
- 1330 CASCADE DRILL RIG ON SITE (!) START
LOADING + PREPARE TO MOB TO SITE 7.
- 1430 TRUCK RIG + SKID STEER UP TO SITE 7,
SET UP @ MW-12.
- 1530 BRING RODS / WELL MATERIALS etc.
- 1645 DONE SETTING UP @ MW-12; WILL
BEGIN DRILLING 11 a.m.
- 1700 MEET GW SAMPLE TEAM.
- 1720 CLEAN UP, OFF SITE



7/12/22

JIM CRANE 7/13/22

0745 ON SITE. 60% CLOUDS → 70% SUNNY.

THOBS: G. WARREN, C. ROYKO, K. SMITH*, C. FORGESSON*

J. WIEGAND (ARCHAEOLOGIST).

SAMPLE TEAM

CASCADE: J. STOLICH, A. KISS, T. KNUTSON, A. CLARK

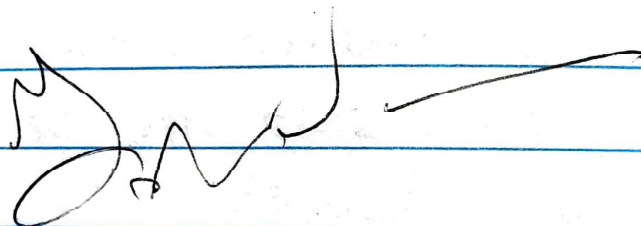
0800 SAFETY MEETING; DRILLING SAFETY.

0830 MOVE UP TO SITE 7. PREPARE TO DRILL MW-12

0930 START DRILLING MW-12

1700 STOP @ 80' FOR DAY. HARD DRILLING
IN COBBLES / GRAVELS 69-80'. SLOW.

1715 OFF SITE.



7/13/22

JIM CREEK

7/14/22

745 ON SITE.

- GWARREN; CHARLIE ROYKO. (JACOBS) JULES
- JOE STOLCH, A KISS, THURSON (CASCADE).
- SAFETY MTG, RESUME DRILLING FROM 80'

C SITE 7, MW-12.

1000 C. TORGESEN & K SMITH ON SITE TO

SAMPLE IDW FOR PFAS. COLLECT 2

AQUEOUS & 1 SOIL, FOR PFAS/ PFAS.

1100 EVERETT TRANSITION CALL w/ MAT/CHARLIE/GW.

1200 DRILL TO 90' HARD DRILLING, SAMPLE

FALLS OUT, RETRIEVE w/ AUGER BIT.

1300 REPLACE TEETH ON TAWS ON RIG.

1400 O-RING FAILURE ON HYDRAULICS;

NEED NEW PART → WILL ARRIVE TOMORROW

0800.

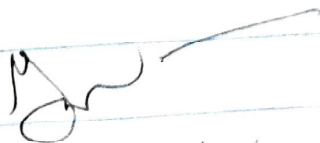
1500 - OFF SITE — CALL MATS MOORE, PETE LARSON/

1600 GWARRAH / ROYKO TO DISCUSS DRILLING

PROGRESS @ SITE 7. POSSIBLE OTHER OPTIONS

(SOIL ONLY, 2 HOLES, BIGGER RIG).

1700 DONE;



7/14/22

JIM CREEK

7/15/22

0830 ON SITE. DRILLER S NEED TO REPAIR O-RING.

- SAFETY MGR: G. WARREN, CROYKO, J. WIEGAND (STANBOS)
- JOE STANBOS, AKISE, T. KNUSSON (CASCADE)

0900 RESUME DRILLING c MW 12 FROM 90'

0945 YORICK WOHANUS, KORA, DAVE
FROM NAVFAC ON SITE.

1300 YORICK / NAVFAC OFF SITE

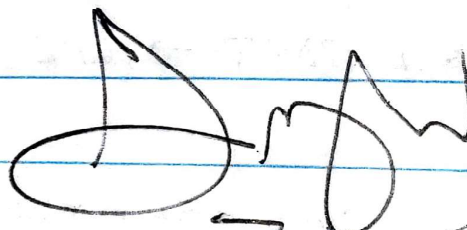
1340 AT 110', GASKET / FILTER BLOWS OUT
END OF DRILLING TODAY.

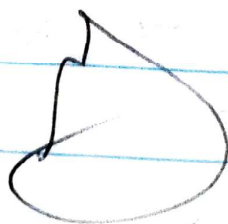
1410 CASCADE OFF SITE

G. WARREN & CROYKO OFF-LOAD

- GEDAL, CALL PETE L. & MATT M.

1530 OFF SITE -


7/15/22



Jim CR.

7/18/22

0845 @ SITE - cool / misty / cloudy

• Gwarren, CROYKO (JDoss); J WIGGINTO (JDoss)

• J. SINDLOCH, A KISS, T KNUSSON (CASCADIA)

0900 SAFETY MEETING - WET, HARD DRILLING.

0918 CHARLY & DRILLERS @ SITE, RESUME DRILLING.

1000 C. DRAFIELD @ SITE; SITEWORK BEHIND.

1030 on site @ Site 7 MW12. Drillers retrieve 100-110' core sample from 7/15. Continue drilling / advancing casing.

1150 Stop for lunch. G. Warren off site for week.

1220 Resume work.

1340 Retrieve 110-120' core.

1545 Rig overheating. Allow to cool down

1600 Resume drilling

1720 Drilled to 130' bgs. Drillers attempted recovering core 2x, but unsuccessful. All off-site for day.

7/18/22

Jim Creek PFAS SI

7/19/21

Personnel: Charlie Payko, Caitlin Dronfield / Jacobs, Jane Wiegand / Jacobs, Cascade - Joe Staloch, Anthony Kiss, Taggart Knutson

Weather: 62°F, sunny (AM), 77°F (PM)

Task: Continue sonic drilling Site 7 MW12

0750 C. Dronfield meets team @ Bldg 4. Hollett's meeting - discuss complacency. J. Wiegand stays on site @ Bldg 4, rest of team mobs to laydown area to pick up equipment.

0810 Team arrives @ Site 7. Drillers perform rig inspection, warm it up.

0840 Begin attempt to bring up 120-130' core

0940 Rig overheating, allow to cool.

0950 Resume drilling

1100 Retrieve 120-130' core interval. Advance casing to 130'.

1200 Rig overheats. Take lunch.

1230 Resume work, advance casing. 1300 Sonic drilling

1355 Rig overheating, allow to cool

1405 Resume work

1515 retrieve 130-140' core.

1555 Rig overheating, allow to cool.

1610 Resume work.

1700 Casing @ ~136' lgs. All off site for day.

Tim Creek PFAS SI

Personnel: C. Dronfield, C. Royko/Jacobs. T. Staloch, T. Knutson, A. Kiss/Cascade 7/20/22

Weather: 68°F, sunny (AM). 87°F (PM) ⁽²⁰⁾

Task: Borehole abandonment, demobilization
0745 Team meets @ Bldg 4. Hold this meeting - discuss deer/dogs in road, work for day. Jacobs team determined day previous to abandon site 7 MW12; mobilize to NAVSTA Everett.
0805 Mob to laydown area, pick up abandonment materials

0820 Arrive onsite @ site 7. Drillers begin pulling casing from borehole.

0925 Complete pulling casing. Mix grout

0935 C. Dronfield is informed 14 bottlewave coolers delivered to hotel in Everett, need to pick up. Offsite to get coolers

1135 C. Dronfield onsite @ site 7. Drillers complete grouting MW12 borehole using Quikgrout, 5 bags in 135 gal H₂O, pumped through rig mounted hose into PVC tremie pipe. Drillers begin packing up equipment.

1200 Drillers take lunch

1230 Resume work. Continue packing/loading - soil hopper, rods/casing, materials. Abandon

Tim Creek PFAS SI

7/29/20

cleared boreholes for MW11, 13.

1335 All mob down to lay down area. Drillers put rig on trailer, continue packing. Jacobs team unloads bottleware, performs count. 1450 Cascade decours rods/casing. Jacobs performs waste area inspection. Generate iPad waste tracking logs.

1620 M. Moore/Jacobs on site. Hold H²O Scrimentation

1710 Cascade off site for day. Jacobs on site

visit to Sites 6, 7 + 44/McMoore

1800 All off site for day

~~7/29/20~~

~~7/29/20~~

NRSTC PFAS SI

7/21/22

Personnel: C. Dronfield, C. Royko, M. Moore/Jacobs,
J. Staloch, A. Kiss, T. Knutson / Cascade

Weather: 68°F, sunny (AM)

Task: IDW sampling @ NRSTC, demob to Everett
0750 C. Dronfield onsite @ laydown area,
meets J. Staloch, M. Moore. C. Royko arrives.
Hold this meeting, discuss work for day
0805 A. Kiss, T. Knutson arrive. Continue this
work discussion, logistics brainstorming for demob
0830 Drillers resume packing up. Jacobs mobs
to shed, consolidates equipment, packs up
0915 M. Moore offsite to Everett
1000 Jacobs begins soil sampling of IDW soil
roll off

1030 Collect NRSTC-IDW-S01-072122 from roll off
S01, S-point composite (VOCs - ^{no PID hit}
not composite)

1050 Collect NRSTC-IDW-S02-072122 from roll off
S02, S point composite (VOCs - ^{no PID hit}
not composite)

1100 complete IDW soil sampling. Mob to shed to
make IDW aqueous kits.

1205 Collect NRSTC-TBO1-072122-S0 for VOCs

1215 complete packing IDW kits. Mob to
laydown area. Drillers take lunch.

1245 Resume work

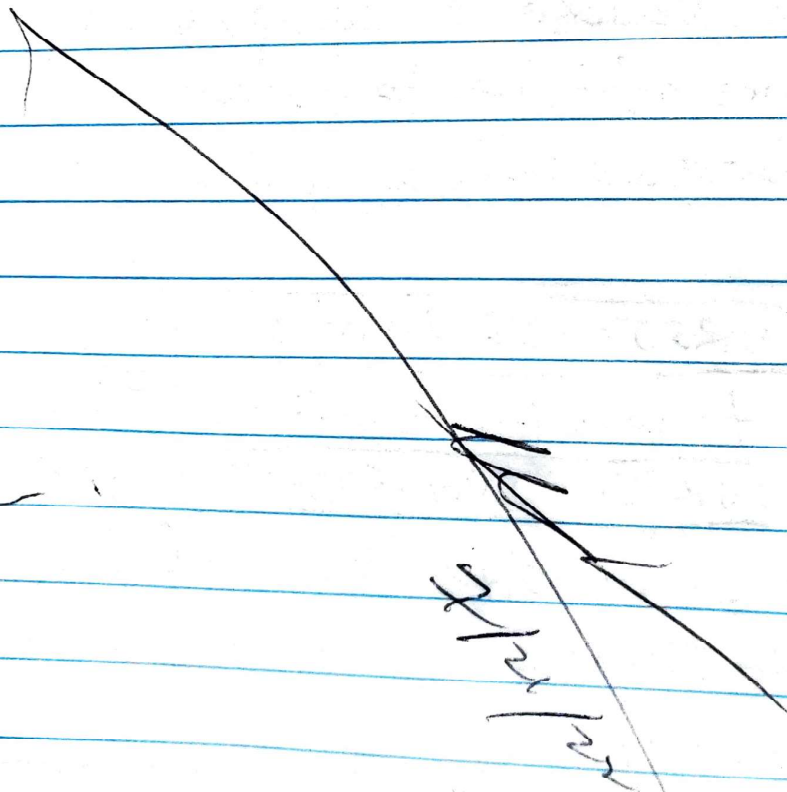
7/2/22
Jim Creek PFAS SI/ Everett

1310 All mob to NAVSTA Everett. Jacobs to FedEx
to drop off samples, Cascade to drop off rental
skid steer

1445 Jacobs arrives @ NAVSTA Everett, meets M,
Moore. Recon laydown area, soil boring lo-
cations, unload equipment.

1600 Cascade through gate. Unload equipment,
stage trailer.

1700 All off site for day.



NRSTC/NAUSTA Everett PFAS SI

7/22/22

Personnel: C. Drorfield, C. Royko, M. Moore/Jacobs
J. Staloch, A. Kiss, T. Knutson/Cascade

Weather: 60°F, cloudy

Task: Demob from NRSTC, set up @ Everett
IDW sampling NRSTC-aqueous

0745 All meet @ laydown area. Hold HHS
meeting, discuss work for day.

0800 Cascade prepares to mob to Everett
Jacobs sets up for IDW sampling

0820 Cascade/M. Moore depart for Everett

0840 Collect NRSTC-IDW-W05-072222

0900 Collect NRSTC-IDW-W03-072222

0920 Collect NRSTC-IDW-W04-072222

0940 Collect NRSTC-IDW-W07-072222

1000 Collect NRSTC-IDW-W08-072222

1050 Collect NRSTC-IDW-W02-072222

1110 Collect NRSTC-IDW-W06-072222

1020 Collect NRSTC-IDW-W01-072222

1140 Collect NRSTC-TB01-072222-AQ for VOCs

1220 complete sampling, packing coolers.

Mob to shed to pack up remaining materials

1230 off base to get ice, ship coolers from Everett

1340 onsite @ Everett. Drillers off site. Continue

packing. 1420 off site for day to FedEx.

NAVSTA Everett

7/24/2

see logbook #3 for L. Tochno notes

4/24/2

NAVSTA Everett

7/27/22

Personnel: C. Dronfield, M. Moore, Carlin Coleman,
Laura Tochko/Jacobs. Taggart Knutson, Aaron

Bradley/Cascade

Weather: sunny, 75°F (AM)

Task: hand clearance, sonic drilling

0705 C. Dronfield on site, preps for day.

0730 A. Bradley, M. Moore, L. Tochko @ lay down
area. Hold HHS meeting - discuss traffic, heat,
hydration. Scope out hydrant location.

0755 T. Knutson on site. Review HHS, discuss work
for day.

0805 Mob vac truck to SS01, complete hand
clearance to 5' lgs (4-5')

0820 Mob to SS03, set up to begin hand clearance
w/ vac truck. Checked MultiRae cal @ 0800, cal good.

0835 Collect [NSE-B2114-SS03-0001] for PFAS
from 0-6" lgs w/ trowel

0920 Complete hand clearance to 5' lgs @ SS03.

Mob rig, equipment to MW01 location. Set up
for drilling @ NSE-B2114-MW01

1030 Begin advancing sonic @ MW01.

1050 Complete advancing sonic to 20 lgs. Water
observed @ 10' lgs. P. Lawson confirms screen
should be set 9'-9' lgs. begin constructing well.
CP

NAUSTA Everett

1130 Collect NSE-B2114-SB01-0809 ⁰⁹¹⁰ for PFAS ^{MS/MSD} 7/27/22

1200 Complete setting screen/filter pack/seal. Allow to hydrate. All take lunch. C. Dronfield to Fed.

1230 Cascade resumes work. Chip borehole to surface, begin constructing pad.

1305 Dronfield back onsite.

1400 complete constructing well pad @ MWO2.

Move rig, equipment over to NSE-B2114-MWO2 location, set up for drilling.

1455 Begin sonic drilling @ MWO2.

1535 Complete sonic drilling to 30' bgs. Water observed ~20' bgs. Set screen 19-29' bgs.

1545 Collect NSE-B2114-SB02-1920 for PFAS

~~CP 1550 Collect NSE-B2114-SB02-0910 for PFAS from~~

~~interval above perched wet zone. team directed not to collect samples from above perched wet zones.~~

~~1745 complete setting well screen, filter pack, seal. Drillers report well came up 1.6' while setting screen, then came up more while setting filter pack. Will need to overdrill next day. All offsite.~~

7/27/22

NAVSTA Everett

Personnel: Caitlin Dronfield, Laura Tochko/Jacobs 7/28/22
Taggart Knutson, Aaron Bradley/Cascade

Weather: 64°F, sunny

Task: Sonar drilling, well install

0720 C. Dronfield onsite w/ L. Tochko, prep for day.

0730 Cascade onsite. Hold H+S meeting - discuss spotting/moving skid steer in small space.

0740 Set up to overdrill @ NSE-B2114-MW02.

0755 Begin overdrilling @ MW02. Mult. fac cal good.

0835 Carlin Coleman onsite. L. Tochko mobs w/ her to NRST Jim Creek for PFAS IDW sample collection from rolloff #2.

0855 Unable to set MW02 dry. Drillers mob to get water from hydrant.

0920 Begin constructing well - flush casing w/ water. Use ~50 gal to construct.

1030 complete setting screen/filter pack/seal @ NSE-B2114-MW02. Screen @ 19-29' bgs.

Allow seal to hydrate. Begin packing materials to move to MW03, breaking up ground to construct MW02 well pad

1100 C. Coleman, L. Tochko onsite. Report collected IDW soil sample for PFAS.:

[1000 collect [NRSTC-IDW-Sol-072812] for PFAS]

NAVSTA Everett

7/28/20

1130 Break for lunch

1200 Resume work. Drillers construct well pad @ MW02.

1255 Complete constructing well pad. Move rest of material/equipment to NSE-BZ114-MW03.

Set up for sonic drilling

1330 Begin sonic drilling @ MW03.

1355 Complete sonic drilling to 30' bgs. observe water ~ 20' bgs in core. However, water observed coming higher in core barrel. Allow well to equilibrate

1430 Water level in well ~ 7' bgs (casing to 10' bgs)

Pete Lawson advises team to set screen 15-25' bgs, to ensure at least some of screen is w/in verified saturated zone (10-17' core lost)

1440 Collect [NSE-BZ114-SD03-1920] for PFAS

1550 Use ~80 gal water to construct MW03.

Complete installing screen/filter pack/seal.

Allow seal to hydrate. NO VOCs/LEY/H2S readings observed @ MW01/MW02/MW03 borehole mouths through continuous monitoring while drilling. Set up to install well pad.

1700 Completed pad install. Tidy site.

1715 All offsite for day.

NAUSTA Everett

7/29/22

Personnel: C. Droutfield, C. Coleman/Jacobs, A. Bradley, T. Knutson/Cascade

Weather: 65°F, sunny

Task: Decon, Demobilization

0740 C. Droutfield arrives onsite, meets team.
Hold H+S meeting - discuss wearing hard hats around elevated loads, rushing.
0750 Drillers begin bringing all remaining equipment/materials to laydown area.
0825 Begin decon of all rods/casing used.
0915 Complete decon. continue packing.
1030 Complete packing up for day. All offsite. Jacobs to FedEx to ship extra equipment

~~7/29/22~~

NAUSTA Everett

Personnel: C. Dronfield, C. Royko / Jacobs
Cascade / T. Knutson, A. Kiss, J. Staloch

8/1/22

Weather: sunny, 71°F

Task: Well Development @ B2114 wells

0830 C. Dronfield onsite, preps for day. J. Staloch onsite. Check Mullikae cal - cal good.

0840 T. Knutson onsite. Report A. Kiss ^(ED) still in quarantine. Hold H+S meeting.

0855 Start setting up for development @

NSE-B2114-MW01. Calibrate YSI #C-102748 ^(Jacobs)

Cond - 1505 → 1413 $\mu S/cm$, lot# 2GB743, exp. 2/23 ^(650 MDS)
mmHg = 740.5

DO - 104 → 100%

pH 4 - 4.09 → 4.00

Jacobs
lot# 2GB002, exp. 2/24

pH 7 - 7.10 → 7.00

2GB1074, exp. 2/24

pH 10 - 9.94 → 10.00

2GB069, exp. 2/24

ORP - 207.9 → 230.5 YSI lot# 21L100333, exp. 11/18/26

0935 Complete calibrating YSI

1000 Begin surging NSE-B2114-MW01 w/ metal

surge tank @
batter. Check Hach 2100Q cal #C-103277

496/495, 62.0/62.6, 6.05/6.55, cal good

1043 Complete bailing MW01 to remove sediment

Set up submersible pump

1050 Begin pumping @ MW01 - 1-2 gpm Well

purges dry in ~1 min. Recharges in ~2 min.

NAUSTA Everett

8/1/22

Restart pump w/ flow restricter in 1054.

1155 Complete development of MW01 - 73 well
vol purged (~20 gal), turb < 10 NTU (7.63 NTU).

initial DTB - 16.09' btoe | initial DTW - 5.26' btoe

final DTB - 18.90' btoe | final DTW - 5.26' btoe

riser height: -0.40' (btoe) @ NSE-BZ114-MW01

Driller reports NSE-BZ114-MW02 was surged/
bailed while MW01 was completed. Set up to

purge @ MW-02

1220 NSE-BZ114-MW02 initial DTW - 7.31' btoe,

DTB - 28.75' btoe, riser height -0.40' (0.40' btoe)

1250 Begin pumping @ NSE-BZ114-MW02. Used

50 gal H₂O to construct well

1355 Drillers advise that NSE-BZ114-MW03

has been surged/bailed.

1440 Complete development of MW02 - 73 well vol
purged + 50 gal (~85 gal purged), well stabilized +
C. Dronfield offsite to pick up bottleware ^{usually clear}

1515 C. Dronfield on site. Continue setting up on
NSE-BZ114-MW03 for development. MW03 DTW -
6.51' btoe; DTB - 24.16' btoe; riser -0.24' (btoe)

1530 Begin pumping @ NSE-BZ114-MW03

1610 Collect [NSE-BZ114-FB01-080122]

1620 Collect [NSE-BZ114-EB03-080122] ^{from equipment for SB samples week of 7/26}

NAUSTA Everett

8/1/22

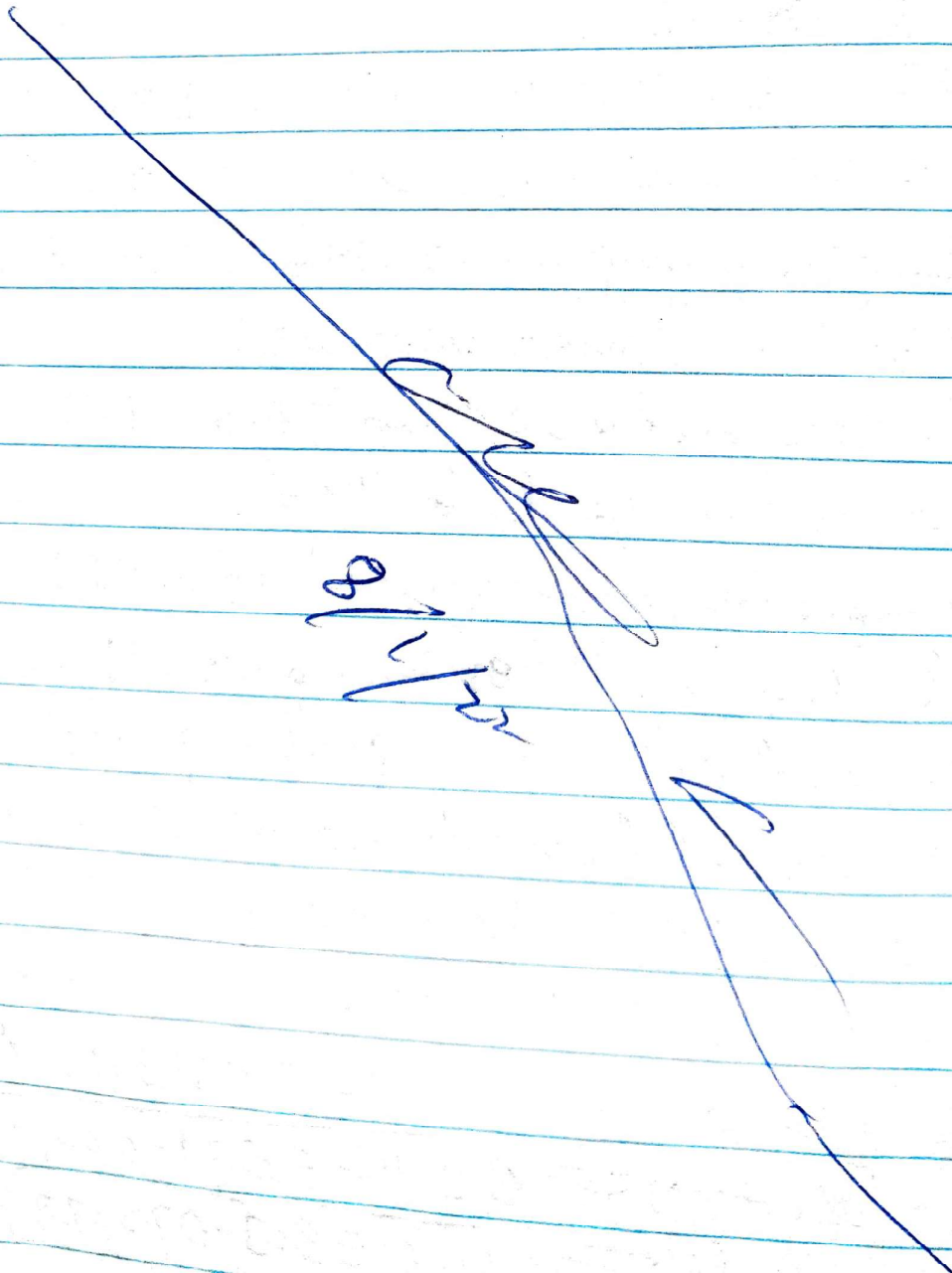
1630 Collect NSE-B2114-EB02-080122

from travel for
SS03

1640 Collect NSE-B2114-EB01-080122

from travel for
SS01 + SS02

1645 Complete development of MW03. Purged
> 3 well vol + 80 gal H₂O used to construct well
(~120 gal), well stabilized, visually clear
Pack up equipment, close up wells.
1745 All off site for day



NAUSTA Everett / NRC Pacific Beach

8/2/22

Personnel: C. Drönfeld, C. Royko/Jacobs; T. Kuntson,
T. Staloch/Cascade

Weather: 65°F, cloudy to sunny in PM

Task: GW Sampling B2114 wells (NAUSTA Everett),
mob to Pacific Beach

0830 C. Drönfeld, C. Royko onsite, meet drillers.
Hold H₂S meeting, discuss work for day.

0840 Drillers resume packing up. C. Drönfeld,
C. Royko gather equipment for GW sampling.
check MultiPac #046730 (Pine) calibration,
cal good. Fresh air cal.

0920 Cascade offsite to NRC Pacific Beach.

Jacobs sets up on NSE-B2114-MW01

0940 Perform air monitoring @ MW01 ^{well @} ~~shore~~
north when remove J-plug. LEL observed @ 99%

Move away from ^{well north @} ~~shore~~, allow to dissipate.

Breathing zone @ ^{well north @} ~~shore~~ 0% LEL, but ^{well} ~~shore~~
^{mouth @} ~~well~~ remains @ 999%. Replace J-plug. Mob to
check other wells

0955 NSE-B2114-MW02 - 99% LEL @ ^{well north @} ~~shore~~
(0% breathing zone). NSE-B2114-MW02 - 44%
LEL @ well north (0% breathing zone). Inform
team of methane presence @ wells, pack up
to mob to Pacific Beach.

NAUSTA Everett / NRC Pacific Beach

8/2/22

1030 Jacobs mobs to Pacific Beach.

1430 Jacobs arrives @ Pacific Beach. Meet
drillers ^{Navy CP} personnel onsite @ discuss where
laydown area will be located. Recon site.

1515 Begin unloading trailers, materials, equip-
ment into fenced area near Bldg 104.

1545 Offsite for day.

8/2/22

NS EVERETT

7/26/22

OBJECTIVE: HAND CLEAR TO 5 FEET

PROPOSED MW LOCATIONS (NS EVERETT)

WEATHER: LOW 63°F, HIGH 89°F, CLEAR, SLIGHT BREEZE

PERSONNEL: L. OLAKO + M. MOORE / JACOBS

0940 W ONSITE / CASCADE

H+S TOPIC: HEAT, STAY HYDRATED

PARKING LOT TRAFFIC

1100 SET UP (P/MW-01)

1110 COLLECT (NSE-B2114-SS01-0001)

FROM 0 TO 6 INCHES BGS

1112 COLLECT (NSE-B2114-SS01-0001P)

FROM 0 TO 6 INCHES BGS

NOTES ON LITHOLOGY

0-2 FT BGS BROWN SILT W/ SOME

FINE SAND

2-3 FT BGS GRAY/BROWN SAND W/

TRACE FINES + ~5% GRAVEL

3-4 FT TRANSITIONS TO GRAY SAND

W/ ~30% GRAVEL + ~5%-15%

ANGULAR CRUSHED ROCK

1430 DIFFICULTY IN REMOVING SOIL BELOW 4 FT BGS

DUE TO ANGULAR CRUSHED ROCK, DECIDE TO

COVER HOLE + MOVE ON TO MW-02

~20 GAL 10W SOIL GENERATED

1455 SET UP @ MW-02

1458 COLLECT. INSE-B2114-SS02-0001
FROM 0 to 6 INCHES BGS

NOTES ON LITHOLOGY

0-2 FT BGS BROWN SILT W/ SAND
+ GRAVEL

2-4.5 FT BGS GRAY SAND W/ TRACE
FINE + ~10% GRAVEL

4.5-5 FT BGS GRAY SAND W/ FINES
+ W/ SHELL HASH

1545 FINISHED HAND CLEARING LOCATION
NO ~~NEW~~ OBSERVABLE STAINING OR
ODOR IN SOIL. ⁽¹⁾Note = not staining

1700 observed in SS01 either.
off-site

7/26/22

NAVSTA Everett / NEC Pacific Beach

8/3/22

Personnel: C. Drönfield, C. Royko / Jacobs; A. Kiss,
T. Knutson, J. Staloch / Cascade

Weather:

Task: Sonic Drilling @ NCS Pacific Beach

0845 C. Drönfield onsite @ Bldg 104, meets
team. Hold HOS meeting - discuss traffic/
maneuvering in tight space in parking lot

0900 Prepare to cut through asphalt w/ rig @
NRCPB-B106-MW01 - mob rig to Bldg 106

0915 Begin using rig head to punch through
asphalt

0945 Complete punching through asphalt @
MW01. Mob rig to do the same @ MW02. Set
up vac truck on MW01 to begin hand clearance.

1000 Begin hand clearance @ MW01

1020 Complete hand clearance @ MW01 to 5' bgs

1030 Collect NRCPB-B106-SS01-0001 } for PFAS

1035 Collect NRCPB-B106-SS01P-0001 }

Begin hand clearance @ MW02 w/ vac truck/
air knitting.

1100 collect NRCPB-B106-SS02-0001 for PFAS

1105 collect NRCPB-B106-EB01-080322 from towel

Complete hand clearance @ MW02 to 5' bgs.

1110 collect NRCPB-B106-FB01-080322 for PFAS

NRC Pacific Beach

8/3/22

Set up for sonic drilling @ NRC PB-B106-MW01

1140 All set up. Break for lunch.

1210 Resume work. Begin sonic drilling @ MW01

1540 complete sonic drilling to 25' bgs. Water

observed ~14' bgs; concrete 10-13'. Pete Lawson

directs team to set well screen 11-21' bgs

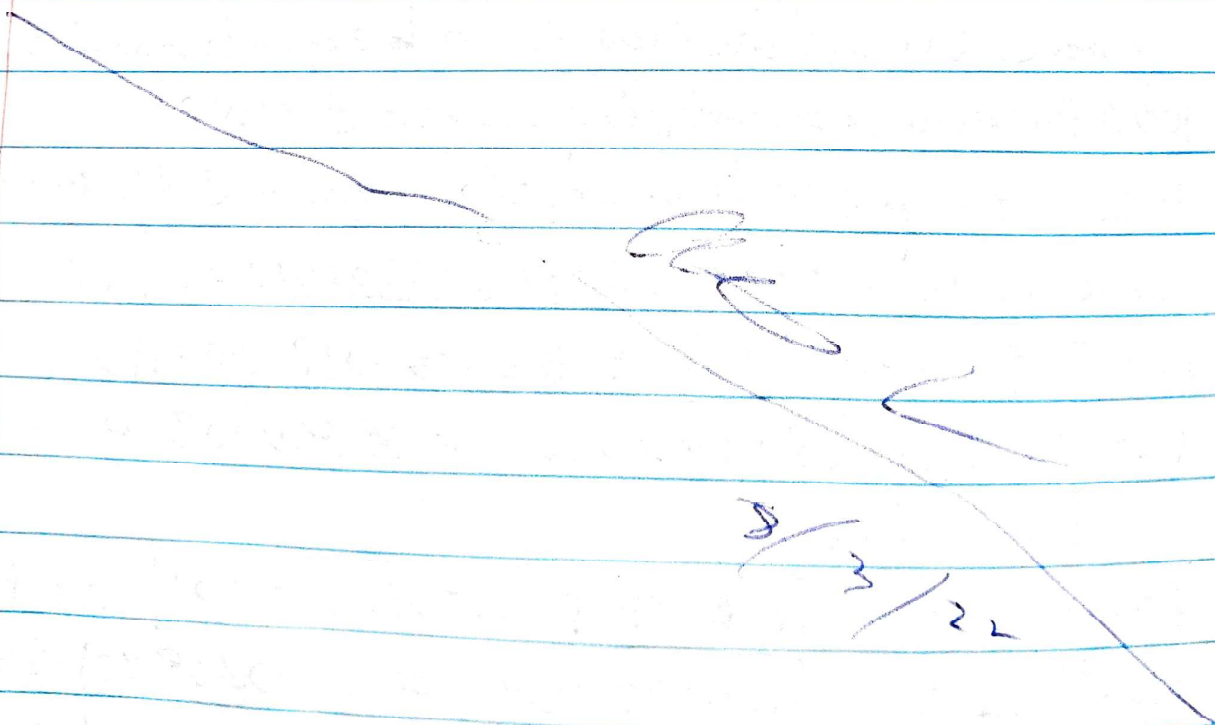
(^{unsaturated (CP)} fines observed below 20' bgs). Begin setting well.

1650 Collect NRC PB-B106-SB01-13/14 + MS/MSD for PFAS

1745 Complete setting filter pack, seal, screen.

Pack up for day

1800 All off site



NRC Pacific Beach PFAS SI

8/4/22

Personnel: C. Dronfeld, C. Royko / ^{Jacobs ED} ~~Cascade~~; T. Knutson,
A. Kiss, J. Staloch / Cascade

Weather: 60°F, p. cloudy (AM)

Task: Well Installation, Sonic Drilling
0740 Team meets @ Bldg 106. Hold H/S meeting -
discuss working in parking lot w/ people in area.
0750 Begin setting up to drill @ NRCPB-B106-MW02.
Resume installing MW01 - chip borehole up,
construct concrete pad. Check Multifrac cal, good.
0850 Begin drilling @ MW02
0925 Complete sonic drilling to 20' bgs @ MW02.
Water observed @ ~10' bgs. Prepare to set screen
10-20' bgs. No water used to construct MW01 or MW02.
0940 Collect NRCPB-B106-SB02-0910 for PFAS
0955 Gauge NRCPB-B106-MW01. DTW - 11.97' bto c
1000 Collect NRCPB-B106-EB01-080422 for SB samples
1005 DH Environmental arrives on site. Unload tote & 4
drums, build secondary containment area w/in
gate around Bldg 104. offsite @ 1030.
1220 Complete setting filter pack/seal/screen. Allow
to hydrate. All to lunch.
1250 Resume work. Begin constructing MW02
(after chipping up borehole) concrete pad.
Prepare to decon rods/casing

NRC Pacific Beach AFAS SI

8/4/22

1530 Complete decon, remaining tasks for day.

All offsite for day

JP

8/4/22

NRC Pacific Beach PFAS SI

Personnel: C. Dronfield/Cascade; A. Kiss, T. Knutson, J. Staloch/Cascade 8/5/22

Weather: Sunny, 50°F

Task: Well development

0740 C. Dronfield meets cascade onsite. Hold H&S meeting. Check Multifac cal, good.

0750 Begin surging NRCPB-B106-MW01. Calibrate Horiba U-52* 44010 (Pine)

pH- 3.99 0.0 NTU-turb

cond- 4.51 mS/cm 107.5% DO

cal sln lot* 22010218, exp. 2/28/23 (Pine)

0820 Complete surging, bailing w/ metal bailer.

Begin pumping @ MW01 w/ submersible pump

0930 Complete development of NRCPB-B106-MW01.

Turb < 10 NTU, > 3 well vol purged (~160 gal). Pack
p, transport tote to laydown area.

1100 Complete IDW management, activities
for week. All offsite for day.

8/5/22

NRC Pacific Beach PFAS SI

Personnel: Caitlin Dronfield, Carlin Coleman
8/8/22
Cascadia

Weather: cloudy/fog, 56°F (AM)

Task: MWO2 develop, MWO3 drill/install

0840 C. Dronfield onsite, meets team (C. Coleman, J. Stalder)

0900 Calibrate Horiba U-52 #44010 (Pine)

pH - 3.97

turb - 0.0 NTU

Cond - 4.55 $\mu\text{S}/\text{cm}$

DO - 8.79 mg/L

see 8/5 entry for cal sln details.

Check Multisrae PID cal - fresh air cal, good to go.

Check Hach 2100Q cal # C-103277

6.55/5.78

62.6/60.6

495/494

0920 Cascade (A. Kiss) (T. Knutson) onsite.

Hold H2S meeting.

0930 Bail NRCPB-B106-MWO2

0950 Begin purging MWO2 w/ submersible pump.

1020 APS onsite. Begin utility locate for

② * MWO3 - trace conduits from vaults.

1040 Yorick Wahawans onsite.

1100 Complete utility locate. APS offsite. No utilities found near NRCPB-B106-MWO3 location.

1115 Begin breaking up asphalt @ MWO3 w/ rig.

1130 Begin air knitting/vac clearance @ MWO3

1155 complete hand clearance @ 5' bgs @ MWO3.

NRC Pacific Beach PFAS SI

8/8/22

set up for sonic drilling

1200 Collect NRCPB-B106-S503-0001 for PFAS

1220 Collect NRCPB-B106-FB01-080822 for PFAS
from trowel

④* 1035 Collect NRCPB-B106-FB01-080821 for PFAS

1230 Complete setting up to drill. All take lunch

1300 Resume work. Begin sonic drilling @ MW03

1315 Complete drilling @ MW03 to 18' lgs. Water
observed ~6.5' lgs. Begin setting well screen
6-16' lgs.

1340 Collect NRCPB-B106-SB03-0506 for PFAS

1520 Complete installing MW03 w/ filter pack. Pre-
pare to develop MW03. Yerrick Wahaus offsite for day

1550 Begin purging NRCPB-B106-MW03 w/ sub-
mersible pump after surging, bailing 1 gal.

1630 Complete development of MW03. Purged 73
well vol, turb < 10 NTUs. Manage IDW, pack up.

Chop MW03 to surface.

1700 All offsite for day.

8/8/22

NRE Pacific Beach PFAS SI

8/9/22

Personnel: C. Drönfeld, C. Coleman/Jacobs, T. Knutson, A. Kiss, J. Staloch/Cascade

Weather: 60°F, cloudy/fog to rain

Task: MWO3 pad install, GW sampling
0740 C. Drönfeld meets team. Hold HHS meeting

discuss complacency

0800 Calibrate Horiba U-52 #44010 (Pine)

pH - 4.00 DO - 10.48 mg/L

cond - 4.51 mS/cm turb - 0.0 NTU

MWO1 DTW - 12.24' btoe, DTB - 20.86' btoe

6.55/587 62.6/61.7 495/495

checked Hach 2100Q cal. Fresh air cal

MultiRae #46730 (Pine), cal good

0830 Pump on @ NRCPB-B106-MWO1. Gauge:

MWO2 11.98' btoe DTW, 19.52' btoe DTB

MWO3 12.47' btoe, 15.82' btoe DTB

0900 Pump control box broken - throttle gauge does not move. Pine tech support advises there might be internal leak. Work to troubleshoot.

1000 Determine air leak originates in control box. C. Coleman off site to Seattle Pine to return bladder pump, pick up per. pumps.

1010 collect [NRCPB-B106-EB01-080922] for PFAS

NRC Pacific Beach

8/9/22

(for SB sample from MW03)

1100 Drillers complete packing up offsite for week.

1115 Collect NRC PB-B106-EB02-080902 for PFAS from disposable HDPE bailer. C. Drownfield note to bail NRC PB-B106-MW01. 3 well vol = 4.22 gal

1135 Complete bailing 4.5 gal from MW01.

1140 Collect NRC PB-B106-GW01-0822 } for PFAS
1145 Collect NRC PB-B106-GW01P-0822 }

WQPs for MW01:

Temp cond pH ORP DO turb

15.65 0.307 6.05 139 7.15 7000 (light brown)

1200 Mob to NRC PB-B106-MW02. Prepare to bail.

3 well vol = 3.69 gal

1220 Begin bailing NRC PB-B106-MW02

1235 Complete bailing MW02 = 3 well vol, 4 gal.

WQPs for MW02:

Temp cond pH ORP DO Turb

15.85 0.159 6.15 123 11.22 7000 (light brown)

1240 Collect NRC PB-B106-GW02-0822 for PFAS

1300 Organize cedar/SE RDP split samples

1400 offsite for day.

~~8/9/22~~

NRC Pacific Beach PFASSI

8/10/22

Personnel: C. Dronfield, C. Coleman/Jacobs

Weather: rain, 60°F

Task: GW Sampling MW03

0845 C. Dronfield onsite, meets C. Coleman.

Hold HHS meeting, discuss rain/slips.

0900 Prepare to sample MRCPB-B106-MW03 w/
peristaltic pump. Calibrate Horiuba U-52⁴⁴⁰¹⁰

pH-4.00

DO-10.24 mg/L

cond-4.50 ^{ns/cm} ~~mg/L~~

turb-0.0 NTU

Check Hach 2100Q calibration - allow in 10%

Fresh air cal MultiRae PID #46730 - cal good

0930 Pump on @ MW03, begin purging

1015 Collect MRCPB-B106-EB01-081022 for PFA
from per pump. Prepare SERDP split samples.

1035 Collect MRCPB-B106-GW03-0822 H15/H5D

1105 Complete packing up for day offsite

8/10/22

NRC Pacific Beach / Everett

8/11/22

Personnel: C. Dronfield, C. Coleman

Weather: 70°F, sunny

Task: IDW sampling NRC PB, GW sampling NSE
0740 Team meets @ laydown area @ NRC PB.
Hold H₂S meeting.

0750 Begin sampling IDW

0755 collect NRC PB-IDW-W01-081122 from
tote #1

0800 collect NRC PB-IDW-S01-081122 from 3
soil drums

0815 collect NRC PB-IDW-W02-081122 from
tote #2

0820 collect NRC PB-B106-TB01-081122 for
soil VOCs trip blank

0825 collect NRC PB-B106-TB02-081122 for
aqueous trip blank

0900 Complete collecting samples. Label
samples, pack up to mob to NSE.

1030 Mob to NSE

1520 Team arrives @ NSE after dropping of
extra equipment @ Redmond WA warehouse.
Calibrate Horiba U-52*44010 (see prev. entry
for cal details)

pH - 4.00

DO - 11.20

Cond - 5.01

turb - 0.0

CP

NRC Pacific Beach/NSE

8/11/22

check Hach 2000 cal:

6.12/6.55 62.6/61.2 495/494

1555 Turn on pump @ NSE-B114-MW01. Multirae
@ well mouth reads 99% LEL initially; breath-
ing zone monitored continuously, @ 0% LEL.

open up NSE-B114-MW02; LEL = 99% LEL

MW02: DTW-7.82' to c DTB-28.29' to c @ 1610

MW03: DTW-6.68' to c DTB-24.05' to c @ 1620

NSE-B2114-MW03 - 72% LEL

1630 collect [NSE-B2114-EB01-081122] for PFAS
from ferri pump

1635 collect [NSE-B2114-FB01-081122] for PFAS
waste tracking log NSE:

Drums:	S01	7/27/22	NSE-B2114-MW02 ¹ , MW02	Full
	S02	7/27/22	NSE-B2114-MW01, MW02	
	S03	7/27/22	NSE-B2114-MW02	
	S04	7/28/22	NSE-B2114-MW03	
Tote:	W01	8/1/22	NSE-B2114-MW01, MW02, MW03	

waste tracking log NRC PB:

Drums	S01	8/3/22	NRC PB ¹ NSE-B106-MW01	Full
	S02	8/4/22	NRC PB-B106-MW02	
	S03	8/8/22	NRC PB-B106-MW03	
Tote:	W01	8/5/22	NRC PB-B106-MW01, MW02, MW03	
	W02	8/8/22	NRC PB-B106-MW01, MW02, MW03	25%

NRC Pacific Beach/NSE

1740 collect

NSE-B2114-GW01-0822

1745 collect

NSE-B2114-GW01P-0822

8/11/22

} for
PFAS

calibrate YSI #C-102748

DO - 101.8 → 100% Cond - 4.99 → 4.49 mS/cm

pH 4.4.00 → 4.00

ORP - 232 → 232 mV

pH 7 - 7.05 → 7.00

pH 10 - 10.09 → 10.00

1755 Turn on pump @ NSE-B2114-MW03

1815 Turn on pump @ NSE-B2114-MW02

1845 collect NSE-B2114-GW03-0822 + MS/MSD

1930 collect NSE-B2114-GW02-0822

Pack up for day.

1950 All offsite.

8/11/22

CLASS SCHEDULE

NAME: _____ EMAIL ADDRESS: _____
SCHOOL: _____ GRADE: _____ CELL: _____

Semester/Quarter

Period	From/To	Subject	Rm #	Instructor	Days
		FOREST SCIENCE/SECURITY			

Semester/Quarter

Period	From/To	Subject	Rm #	Instructor	Days

Semester/Quarter

Period	From/To	Subject	Rm #	Instructor	Days

Semester/Quarter

Period	From/To	Subject	Rm #	Instructor	Days

NRS JIM CREEK - PFAS SITE 1

10/11/2022

WEATHER: 55-68°F, CALM 0-5 MPH
OBJECTIVE: INSTALL MONITORING WELL
CH2M: DAVID LUBELL (FL/SSM), CARLIN COLEMAN
CASCADE: CARLOS ANGELIANO (DRIVER), ANTHONY KISS, TREVOR BROWN
H45: LEVEL D
EQUIPMENT: TERRASONIC T150CC, BOSCH, T300
DAILY LOG:
0645 D. LUBELL MOBILIZES TO EVERETT FOR DRUGS BAGGING
0830 D. LUBELL RECEIVES DRUGS BAGGING
0835 MEET CARLIN COLEMAN/CH2M AT HOTEL, DRUGS BAGGING FROM LAST WEEK
ON ICE IN SAMPLE COOLER. MOVE TO GAS STATION FOR ICE, SUPPLIES
AND DROPPING SAMPLE COOLER AT FEDEX
0930 LEAVE AT FEDEX LOCATION, PACK COOLER WITH (3) 10 LB BAGS OF ICE,
EARLIEST SOIL SAMPLE COLLECTED ON 10/5/22
1030 DROP (1) SAMPLE COOLER AT FEDEX 940347008522 FOR
PRIORITY OVERNIGHT TO CHITELLE LABORATORY FOR PFAS ANALYSIS
1100 D. LUBELL + C. COLEMAN PRINT OUT PROJECT INSTRUCTIONS + SAMPLE TABLE
~ 1130 CH2M MOVES TO NRS JIM CREEK
~ 1210 CH2M ARRIVE AT NRS JIM CREEK, CARLOS ANGELIANO (CASCADE DRIVER)
ON-SITE @ ~ 1220
1230 DENNIS BALLUM/PM + YORRICK WAHMAN'S ON-SITE
~ 1300 JANE WIEGANDS/CH2M ARCHAEOLOGIST
1300 D. LUBELL PERFORMS DAILY SAFETY BRIEFING, CHECK POWER IN SURVEY R3
1315 DRILLER TAPS BOTTOM OF HOLE @ 240 FT, FEW INCHES H₂O (CAUSING SGT IN
GLACIAL TILL)
1345 D. LUBELL, D. BALLUM, Y. WAHMAN'S MEET TO FACILITIES MANAGER JEFF HARTMAN
1405 MOVE TO TOWN STORAGE YARD AND CHECK KILNWORKS FOR DISPOSAL
NOTE: DRILLERS ALLOWED TO USE ON-BACK H₂O, ANY SPILLAGE PERMITTED, CAN USE
FIRE HYDRANT AS LONG AS DOUBLE CAP BACKFLOW PREVENTER

(2)

NRS JIM CREEK - SITE 7 MW12

10/11/2022

DAILY LOG

NOTE:

(1) SOIL DRUM MARKED W/ ~~MW12 CUTTINGS~~ ~~DATE~~ MW12 + MW13
CUTTINGS DATED 10/3/22

1415

YARRICK WAHAUS/NAVY OFFSITE

1430

D. LUBELL + D. BALLUM RETURN TO SITE; CASCADE DRILLING TREVOR BROWN
AND ANTHONY KISS

1440

CASCADE ⁽¹⁾ PREPARING TO INSTALL MONITORING WELL ST-MW12A

NOTE:

CASCADE INDICATES SOIL DRUM AT TDW STORAGE YARD WITH MW12 + MW13
SOIL CUTTINGS ⁽¹⁾ FROM AIR KNIFE

1555

INSTALL CATED PREGROUND MONIUM CUTLIPS FROM 240.0 ft bgs TO 244.75 ft bgs
USED 0.5 x 50 LB BAGS, ALLOW BENTONITE TO HYDRATE

NOTE:

4.5" FEM FEMALE THREDS END CAP + 0.020" SLOTTED SCREEN
INSTALLED, CENTRALIZERS ADDED AT TOP/BOTTOM OF SCREEN, THEN EVERY
30 FT, ALL SIZED 80 PVC RISER/SCREEN

1515

RENNIS BALLUM OFFSITE

1530

TRAVEL WITH NATE HODGE/AL JONES AT HNSP, SAP, RECD INSTRUCTION HAND COPIES

1540

ST-MW12 WELL TRING, BEGON INSTALLING RITEXL PACK CEMENT #2/12
(SAP STATES # 0/20 SAND OR EQUIVALENT), CENTRALIZERS TOP/BOTTOM SCREEN AND
30 FT INTERVALS

NOTE:

MIXED 1 x 50 LB BAG SAND TO BACKFILL FROM 244.75 ft TO 243.5 ft bgs
TO INSTALL WELL ON TOP OF SANDPACK

1600

CASCADE INDICATES 55-GAL DRUM OF SOL REMAINS AT ST-MW12 FROM AIR KNIFE
ACTIVITIES

1605

DRIVER INFORMS D. LUBELL THAT PVC BROKE SOMEWHERE DOWNHOLE AS HE
TRIED TO TRIP OUT 5A OILING

1622

TRIPPED OUT (10) PVC STICKS BROKEN THROTH RIGHT AT 180' HO-H

NOTE:

8" CASING TO 50 FT, 6" CASING TO BOTTOM, 4" COIL CABLE

1630

REMOVE 180 FT CASING AND PLACE ON DECKED BACK

(2) 1640

A KISS DEPARTS FOR TACOMA TO PICK UP BENTONITE GEL, SCHED 80 PVC-5A RISER
AND 80 PVC-5A RISER

(3)

NRS JIM CREEK - SITE 7 MW12

10/11/2022

1645

SECURE WORK AREA

1700

CH2M/CASCADE DEPART SITE

1740

CH2M RETURNS TO HOTEL - END OF FIELD ACTIVITIES

David J. Hall
10/11/2022

(2)

(4)

NRS JIM CREEK SITE 7 MW12

10/12/2022

Weather: 48-63°F, PARTLY CLOUDY, NW 5-10 MPH
 Objective: SOT-MW12 WELL INSTALLATION
 CH2M: DAVID LUBEN (M/SSHD), CARLIN COLEMAN
 CASCADE: CARLOS ANGLIANO (DRILLER), ANTHONY KISS, TREVOR BROWN
 H&S: KYLE D
 EQUIPMENT: TERRASONIC 150CC, BOBCAT ^(DU) T300, LANDA PRESSURE WASHING, STEAM CLEANER

DAILY LOG

0615 D. LUBEN DEPARTS EVERETT, WA, FOR NRS JIM CREEK
 0705 ARRIVE AT NRS JIM CREEK, MEET CASCADE DRILL CREW
 0715 D. LUBEN PERFORMS DAILY SAFETY BRIEFING
 0735 SAFETY BRIEFING COMPLETED, SIGN ELECTRONIC POWRA FORM, TOPICS DISCUSSED:
 - HEAVY EQUIPMENT
 - PROPER LIFTING
 - REFUELING/SPILL KIT
 - SPOTTING/BACKING
 - WORK/REST REGIMEN
 - PPE
 0740 REFUEL TERRASONIC 150CC, DIAPERS USED AT FILL PORT, SPILL KIT CONSISTS OF DIAPERS/PADS ON SUPPORT TRUCK
 0745 CASCADE BEGINS PREPARATIONS FOR DRILLING OUT SOT-MW12 ROD-243 FT
 0801 STARTED DRILLING TO DEPTH USING DRILL RODS 4" OD
 0805 JOE ANDREWS/PUBLIC WORKS UNSITE FOR EARTH MOVING, RELOCATE CH2M SUPPLIES FOR ACCESS TO DIRT STACKS
 0805 TALK WITH MATT MOORE/PM ABOUT SOT-MW12 RODS, WITH COMPLETION (STICKUP) TABLE 4 IN DRILLER SOIL STATES 3AT SUMP, NEXT WEEK SCHEDULE, WASTE MGMT PICKUP SCHEDULED ON FRIDAY (4 KOLLOFF AND 8-9 TOTES), SATURATED SOILS SHOULD BE SEGREGATED INTO DRUMS
 0838 JOE ANDREWS/PW RETURNS WITH DUMP TRUCK FOR SOIL LUMP OUT
 0840 RETRIEVED TOP OF BROKEN RISER PIPE USING 4" DRILL ADD, STRAP PVC TO EXPOSE CLEAN JOINT

(5)

NRS JIM CREEK SITE 7 MW12

10/12/2022

DAILY LOG:

0850 USE THREADED PIPE HANGER TO TRIP OUT REMAINING 53 FT PIPE, FIRST 10 FT 180-190 FT BROKEN (LIFTING BELL FOR 2" SCHED 80 PVC)
 0855 TALK WITH MATT MOORE, FIELD BOOKS AND GROUND CONDS OF MP/HASP, SAP, FIELD BOOKS NOT IN RENTON WAREHOUSE; WILL NEED CARLIN COLEMAN TO PRINT OUT AND BRING TO SITE
 0912 TRIP OUT CORE BARREL, 25 FT WELL SCREEN WEDGED INSIDE, ATTEMPT TO DISLODGE WITH H₂O, STOP WORK TO DISCUSS WITH DRILL CREW
 POTENTIAL ISSUE OF PRESSURE BUILDUP ASSOCIATED WITH SOIL INSIDE CASING + WEDGED WELL SCREEN, INSTRUCT HELPERS TO STAY BACK AND DRIVEN TO MONITOR PRESSURE GAUGE
 0925 ENTIRE WELL SCREEN RECOVERED FROM HOLE, BOTTOM HOLE @ 243' 4"
 HOLDING FROM 243.3 FT TO 245.0 FT H₂O
 0935 DRILLER HELPERS SETTING UP TO REEN SCHED 80 PVC PIPE (220 FT)
 NOT PLANNING TO USE FACE SHIELD, STOP AND HAVE HELPER DON FACE SHIELD - FIND CRACKED THREADS ON 10 FT HISS AND REMOVS FROM HISS REUSE PIPE TO REEN
 NOTE: LANDA STEAM CLEANER HAS TEFLON TAPE ON PIPE THREADS, TALK TO CARLOS ABOUT REMOVING TAPE BEING REQUIRED TO PREVENT PPAR GGS INTRODUCTION (QUALITY ISSUE FOR PPARS - NEED ALTERNATIVE) - JOHN GIMME ARE SERVANT (KIDEN SURF)
 1000 START REINSTALLATION OF SOT-MW12 USING NEW 10 FT SCREEN, CENTRALIZERS AT TOP AND BOTTOM OF SCREEN
 NOTE: TARGED TOP OF BENJAMITE @ 245.0 FT (0.5 x 50 FT BAG BACKFILL)
 1015 CONFIRM WITH MATT MOORE + MARGIE HADPOED THAT ALTERNATIVE THREADED SERVANT REQUIRED INSTEAD OF TEFLON TAPE
 1025 INSTALLED 10 FT 0.020-SCREEN + 22 10 FT RISER PIPE (220 FT TOTAL) AND ONE 5 FT RISER SCHED 80 (245 FT TOTAL PIPE), SET
 1033 START INSTALLING SAND PACK INSIDE ANNULUS FROM 245 TO 230 FT
 NOTE: CONFIRM CASCADE USING BIOLUBE TJC COMPOUND FOR CASING/RODS

(6)

DAILY LOG

NRS JIM CREEK ST-MW12 10/12/2022

1100 START ADDING CEMEX #12 1/2 FILTER SAND BAGS

1127 SAND PACK SET @ 229.9" = 229.75 ft bgs (5 x 50 lb BAGS)

1130 INSTALL CETO POREGOLD MEDIUM CHIPS FROM 229.75 ft to 224.33 ft bgs (15 x 50 lbs)

HYDRATE BENTONITE SEAL USING ¹⁰⁰ 100 GALLONS WING DRILL RIG IN HOLE DUMP

1145 CASCADE DRILLING TAKES LUNCH BREAK. DUBBEL MOVES TO IDW

STORAGE AREA, PICK UP SAMAR COOLERS + SUPPLIES

NOTE: DISCUSSED REMOVING TEFION TAPE FROM STEAM CLEANER FITTINGS PER SOP

1215 DUBBEL RETURNS TO SITE, MARK ST-MW12 LOCATION IN COLLECTOR

1245 CASCADE RESUMES DRILLING ACTIVITIES, MONG PAULST HALIBURTON GRout GRout TO ST-MW12 (20% BENTONITE SOLIDS - 24 GALS H₂O / 50 LBS QUIK GROUT)

1250 TAG TOP OF BENTONITE @ 22.5 ft (POST HYDRATION/SWELLING)

1255 INSTALL 1" INCH TREMIE PIPE TO 220 ft PER GRROUTING (BOTTOM FEED TREMIE PIPE)

NOTE: EACH 50 LBS + 24 GALS BATCH QUIK GROUT SHOULD YIELD 26 GALS SLOPE

ACCORDING TO MANUFACTURER PRODUCT SHEET

1322 CARLIN COLEMAN ONSITE

1324 CASCADE BEGINS MIXING QUIK GROUT BATCH #1 (1.5 BAGS x 50 lbs + 36 GALS H₂O)

1330 REVIEW POWFA FORM WITH CARLIN COLEMAN

1346 PUMPED ⁴⁰ 40 GALS SLOPE @ 220 ft bgs

1355 BEGIN MIXING GROUT BATCH #2 (1.5 x 50 lbs QUIK GROUT + 36 GALS H₂O x 40 GALS)

1400 REVIEW CH2M ALIBS WITH CARLIN COLEMAN

1410 INJECT GROUT BATCH #2 @ 180 ft

1415 MIX GROUT BATCH #3 (1.5 x 50 lb QUIK GROUT + 36 GALS H₂O x 40 GALS)

1425 MIX + PUMP GROUT BATCH #4 (1.5 x 50 lb QUIK GROUT + 36 GALS H₂O x 40 GALS)

1440 TRIP OUT 40 ft TREMIE PIPE TO 140 ft

1447 MIX GROUT BATCH #5 (1.2 x 50 lbs QUIK GROUT + 36 GALS H₂O) = 40 GALS

1455 INJECT GROUT #5 @ 140 ft

1505 MIX GROUT BATCH #6 (1.5 x 50 lbs QUIK GROUT + 36 GALS H₂O x 40 GALS)

1505 TAG TOP OF GROUT @ 80 ft

(7)

DAILY LOG

NRS JIM CREEK SITE 1 MW12 10/12/2022

1515 PUMPED GROUT BATCH #5

1525 TRIPPED OUT ALL TREMIE PIPE; START TRIPPING OUT 6" CASING AND HAVE 8" OUTER CASING TO 90 ft

1610 GROUT LEVEL @ 170 AFTER 6" CASING TRIPPED OUT

1615 CARLOS/DRILLER ASKS IF WE CAN PUMP GROUT USING 1" INCH TREMIE INSTEAD OF PUMPING BOTTOM UP DIRECT CASCADE TO USE TREMIE ALL THE WAY TO JUST ABOVE TOP OF GROUT PER SOL / SOP

1620 PUMP GROUT BATCH #6 (1.5 x 50 lbs QUIK GROUT + 36 GALS H₂O x 40 GALS)

1630 MIX GROUT BATCH #7 (1.5 x 50 lbs QUIK GROUT + 36 GALS H₂O x 40 GALS)

1645 TALK WITH MATT MOORE ABOUT DRILLING/INTERNAL PROGRESS AND SUGGEST DELAYING DEVELOPMENT BASED ON CURRENT ST-MW12 PROGRESS, ALSO DISCUSS ADDRESSING TEFION TAPED JOINTS ON STEAM CLEANER AND DRILL RIG

1710 TRIP OUT TREMIE PIPE

1725 TRIP OUT 10 ft 8" INCH CASING (BORE IN HOLE REMAINING)

1724 TALK WITH MATT MOORE ABOUT TEFION TAPE REMOVAL ON STEAM CLEANER AND HOLD OFF ON MOVING PUMP PER DIRECTION OF DENNIS BALLAM

1730 40 ft x 8" INCH CASING REMAINING IN DIRECTION

1745 CH2M + CASCADE DEPART NRSJ FOR HOTEL

1755 CH2M DRIVERS ENCOUNTER (2) YOUTHS STANDING IN MIDDLE OF JIM CREEK RD - ADD B20 FOR DRIVING

1835 CH2M RETURNS TO EVERETT - END OF FIELD ACTIVITIES

Daniel Shull
10/12/2022

(4)

NAS JIM CREEK SITE 7 MW12

10/13/2022

WEATHER: 39-73°F, OVERCAST / CLOUDY, 0-5 MPH

OBJECTIVE: CONTINUE ST-MW12 WELL INSTALLATION, DECON

CH2M: DAVID LUGGAL (H/SSH), CARLIN COLEMAN

CASCADE: CARLOS ANGELES (DRILLER), ANTHONY KISS, TROYER BROWN

HIS: LEVEL D

EQUIPMENT: TORSONIC 1500C, BOULAT T300, PRESSURE WASHER

DAILY LOG:

0700 CH2M + CASCADE ONSITE @ SITE 7

0705 DAILY SAFETY BRIEFING PERFORMED, DISCUSS TOPICS:

- PPE

- LIFTING / MANUAL LIFTING

- SPOILING / BACKING

- HEAVY EQUIPMENT IN TIGHT AREA

0720 DAILY SAFETY BRIEFING COMPLETED, SIGN POWRO FORM ELECTRONICALLY

0735 CASCADE PURCHASED RECTORSEAL SLOW DRY (5) SOFT SET, PIPE THREAD SEALANT THAT DID NOT LIST PIPE, AS ACTIVE INGREDIENT - HAVING MATT MOORE OR AM-SALUTER BLANK CHECK IF PRODUCT IS OK TO USE

0745 CASCADE BEGINS PREPPING FOR GROUTING REMAINDER OF ST-MW12 ANNULUS

0805 TRG TOT OF GROUT @ ~52 ft by 1/40 ft casing in hole

0818 JOE ANDREWS / NANN PW ONSITE FOR CEMENTMOVING / SOIL LOAD OUT

0820 DRILLERS PREPARING TO MIX GROUT BATCH #9 (15 x 50 lb QUIK GROUT + 36 GALS H₂O + 40 GALS)

0826 PUMPED GROUT BATCH #8

0828 TALK W/ JOE ANDREWS ABOUT MOVING TO ST-MW13 TODAY / TOMORROW

IN ORDER TO COORDINATE VEHICLE TRAFFIC, ALSO DISCUSSED HIM NOT

PARKING DUMP TRUCK AT LANDSLIDE AREA AND LOADING SOIL - HIGHLY SIK

POE TRUCK TO GO OVER EDGE, HE IS AWARE OF HAZARD AND INDICATED

HE HELPED BUILD SLOPE RECENTLY, BUT DECIDE TO MOVE TRUCK

CLOSER TO SOIL STOCKPILE FOR LOADING

0853 MIX GROUT BATCH #9 (15 x 50 lb QUIK GROUT + 36 GALLONS H₂O + 40 GALLONS)

(9)

NRS JIM CREEK SITE 7 MW12

10/13/2022

DAILY LOG:

0845 PUMPED MIXED GROUT BATCH #9 @ 40 ft by 5

0853 MIX GROUT BATCH #10 (15 x 50 lb QUIK GROUT + 36 GALS H₂O + 40 GALS)

NOTE: CASCADE DRILLER INDICATED THEY USED (17) BAGS QUIK GROUT YESTERDAY

0900 USED 7.5 x 50 lb BAGS QUIK GROUT TODAY 50 BAG, GROUT LEVEL

@ ~15 ft by 5

0925 TRIPPED OUT ALL 8" CASINGS (40 ft), ST-MW12 INSTALLED

0925 @ 26.5 x 50 lb BAGS QUIK GROUT

0930 CASCADE TAKING APART STEAM CLEANER TO REMOVE TEPION TUBE ON THERCDS

0935 TALK WITH MATT MOORE ABOUT PIPE THREAD USAGE (NOT APPROVED YET), DISCUSS

WASTE MANAGEMENT PICKUP / DELIVERY @ NRS EVERETT + NRS JIM CREEK

(BLOG 2150 @ NRS EVERETT @ 10 AM 10/14/22)

NRS JIM CREEK PICKUP @ 1300 HRS FOR 275 ON-THE-PICKUP

1000 RUN DOWN TO JOW STORAGE AREA, TOGET CAN BE PICKED UP DIRECTIONALLY

WITHOUT MOVING ROULDETS

1030 JANE WILGAND / HYDROLOGIST, ONSITE, REVIEW POWRA

1110 LINDA STEAM CLEANER FITTINGS PUT BACK TOGETHER W/ TEFLOON TAPE ON PIPE THREAD

1120 START DECONNING 6" + 8" CASING + 4" RODS

1125 JANE WILGAND MOVED TO BLOG 4

1128 STEAM CLEANER OPERATING W/O ISSUES, SIGNIFICANT H₂O LEAKAGE AT MANIFOLD

AND FITTINGS WITHOUT TEFLOON TAPE, BUT ALL CLEAN WATER

1135 TOP OFF GROUT SURVEY TO 4 ft by 36

1142 DISCUSS REORIENTING DECON RACK IN DECON PAD TO CAPTURE OVERSPRAY USING

BACKSLASH AGAINST RIG

1200 JOHN JOW PICKUP ^{TO} CALL WITH MATT MOORE AND CAT MCDONALD -

ISSUES WITH KEVIN JOSEPH MCKEAG / NSG

1215 CASCADE DRILLING DRIFTS FOR LUNCH

1300 CASCADE RESUMES DRILLING + DRILLING ACTIVITIES

NOTE: (25) BAGS QUIK GROUT USED, X 24 GALS / BAG X USED SINCE 20% SURVEY

(10)

(10)

NRS JIM CREEK SITE 7 MW13 10/13/2022

DAILY LOG:

- 1325 MOVE DRILL RIG TO ST-MW13
- 1345 CALIBRATE MULTIRAE LITE (PINE ENV #43061) - SEE CAL LOG FORM
- 1400 DRILLER TAKING ADJUST TIGHTENINGS ON CONTROL PANEL TO REMOVE TOPCON TAP ON WATER LINES
- 1440 M. MOORE INFORMS CH2M STAFF THAT RECTORSEAL GLOW DRY (5) SOFT SET PIPE THREAD SEALANT IS PFAS FREE - INFORM CASCADE IMMEDIATELY
- 1502 WATER MANIFOLD / VALVE THREADS PIPE DO NOT APPEAR READY FOR DRILLING. BEEN MOVING RECONNECT 8" CASING TO ST-MW13
- 1520 DRILLER WILL ADVANCE 8" CASING + 7" CORE BARREL TO 90 FT THEN SWITCH TO 4" x 6" CASING - SCTVP
- 1525 TAG BOTTOM OF AIRKNIFE BOREHOLE @ 6 FT BGS
- 1530 JANE WIEGAND / ARCHITECT ON SITE
- 1535 START DRILLING ST-MW13 FROM 6 TO 4 FT
- 1610 PERFORM DE AIR MONITORING @ DRILLING
VOC 0.0 PPM CO 0.0 PPM CH4 0% H2S 0 PPM
- 1640 END OF DRILLING HDR PM - SAILS 0-40 FT, 8" CASING 0-40 FT, J. WIEGAND OFFSITE
- 1645 LOAD SOIL HOPPER AUTO FLATBED TRUCK TO TRANSFER INTO ROLLOFF #2
- 1700 COLLECT SUBSURFACE SOIL SAMPLE FROM 58-74 IN INTERVAL (MOST SW IN GRAVEL)
- SAMPLE ID: NRSJC-ST-SB13-3839 @ 1700
- ANALYSIS: 1 X 80Z HDPE PFAS
- 1720 COLLECT FIELD BLANK SAMPLE USING LABORATORY SUPPLIED PFAS-FREE 420 + BOTTLES
- SAMPLE ID: NRSJC-FB01-101322 @ 1720
- ANALYSIS: 2 X 250ML HDPE
- 1725 C. COLEMAN DEPARTS SITE
- 1730 ST-MW13 SOIL CUTTINGS 0-40 FT PLACED IN HOPPER AND TRANSPORTED TO IDW AREA
- 1750 ST-MW13 SOIL PLACED INTO ROLLOFF #2/S-2
- 1800 CH2M + CASCADE DEPART SITE
- 1845 END OF FIELD ACTIVITIES

10/13/2022

(11)

NRS JIM CREEK SITE 7 MW13 10/14/2022

- WEATHER: 50 TO 70°F, OVERCAST/HAZY, 0-10 MPH
- OBJECTIVE: DRILLING ST-MW13 TO DEPTH / SOIL SAMPLING
- CH2M: DAVID LUBBE (PR/SRD), JANE WIEGAND, CARLIN COLEMAN
- CASCADE: CARLOS ANGUIANO (DRILLER), ANTHONY KISS, TREVOR BROWN
- HIS: LEVEL D
- EQUIPMENT: TRANSONIC T150C, BOPAT SHIELDSTEEL 1500, STEAM CLEANER, MULTIRAE LITE
- DAILY LOG:
- 0700 CH2M + CASCADE DRILLING ON SITE, CUB GATE LOCKED, D. LUBBE TO PW
- 0710 GATE UNLOCKED BY FACILITIES
- 0720 PERFORM DAILY SAFETY BRIEFING, DISCUSS TOPICS:
- DRIVING, USING LIGHTS ON SKID STEER
 - TRIGGER STATES (RUSHING, COMPLACENCY, FATIGUE, FRUSTRATION)
 - ARCHITECT BY MONITORING
 - INCIDENT REPORTING
 - HEAVY EQUIPMENT
 - PINCH POINTS / HAND PLACEMENT
- 0745 SAFETY BRIEFING COMPLETED, SIGN ELECTRONIC POWERS
- 0750 J. WIEGAND MOBS TO BLDG 4
- 0755 BUMP CHECK MULTIRAE VOC 97/100 PPM, H2S 9.4/100 PPM, REL 47.4/50%, CO NOT WORKING
- 0755 CASCADE ADVANCING CORE / CASING FROM 40-50 FT
- 0820 DRILLED FROM 40-75 FT FROM 0800-1005 (125 MINS) @ 0.28 FT/MIN = 1.534 FT/HR
- 1025 AIR MONITORING DRILLING BZ: VOC 0.0 PPM CH4 0% H2S 0 PPM
- NOTE: CARLOS ANGUIANO NONSUCCEED CORE BARREL TEMP 100°F @ 75 FT (BED)
- 1035 COLLECT SUBSURFACE SOIL SAMPLE FROM 84-85 FT
- SAMPLE ID: NRSJC-ST-SB13-B435 @ 1035
- ANALYSIS: 1 X 80Z HDPE
- 1130 DRILLERS BOOTH FOR LUNCH
- 1155 DRILLED TO 105 FT OVER 4 HRS (1045 FT/HR OR 0.27 FT/MIN). END OF 8" CASING + 7" BOREHOLE
- 1200 J. WIEGAND INDICATES SHE WILL NOT BE ON SITE NEXT WEEK + WILL BE REPLACED BY PATRICK ELLIOT / SEA ON MONDAY BUT NEEDS TO GET BARRED @ WASTEWATER

(12)

NRS JIM CREEK SITE 7 MW13

10/14/2022

DAILY LOG:

CONT:

- PER NAVY, AN ARCHAEOLOGIST IS SUPPOSED TO BE ON SITE FOR ALL INTRUSIVE WORK. J. WEGAND INDICATES SINCE WE ARE IN NATIVE MATERIAL, GLACIAL OUTWASH, THERE IS NO REAL CHANCE TO ENCOUNTER PRIMITIVE ARTIFACTS. NEED TO CONFIRM IF DRILLING CAN BE PERFORMED PRIOR TO ARCHAEOLOGIST ONSITE. ALL SOILS WOULD BE AVAILABLE FOR REVIEW IN CORE BAGS. JUST UNCERTAIN ON WHAT TIME D. ELLIOT WOULD ARRIVE. LEAVE MESSAGE FROM MOORE/PM AND DENNIS BALLAM/AM.
- 1215 DRILL CREW MOVING 4" X 6" TOOLING TO ST-MW13, NEED TO ADVANCE 6" CASING TO 105 FT.
- 1235 START ADVANCING 6" CASING TO 105 FT - ALL SOIL SAMPLES WILL BE COLLECTED WITH 4" CORE BARREL.
- 1245 TALK W/ DENNIS BALLAM AND RECEIVING APPROVAL TO PERFORM INTRUSIVE WORK WITHOUT DIRECT OVERSIGHT OF ARCHAEOLOGIST. ALL SOIL CUTTINGS WILL BE AVAILABLE FOR REVIEW AND NO SOIL SAMPLING FOR ~~THE~~ UNTIL ARCHAEOLOGIST REVIEW.
- 1250 J. WEGAND INDICATES AQI IS 245, THRESHOLD FOR RESPIRATOR USE ~~21~~ ²¹ ~~150~~ IS 150. STOP WORK AND DISCUS WITH DRILL CREW, CASCADE + CH2M WILL DON NRS RESPIRATORS (DISK MASK) PER ADP/HASP FOR VOLUNTARY USE (150-500 ~~ADP~~ AQI).
- 1300 RESUME DRILLING / 6" CASING ADVANCEMENT TO 105.
- 1346 CAT McDONALD / WM INDICATES WASTE SUBCONTRACTOR EN ROUTE.
- 1400 STOP DRILLING @ 125 FT; TRANSPORT SOIL HOPPER TO WASTE AREA.
- 1415 WASTE CONTRACTOR AT STORAGE AREA TO PICK UP ROLLOFF.
- 1415 C. AUGERANO WORKING ON HOIST PUMP TO REPLACE TENSION W/ HIPE SCALANT (APPROX).
- 1420 D. LUBELL MOVES TO WASTE STORAGE AREA.
- 1430 JASON EDMONDS, R TRANSPORT.
- 1433 CARLIN COLEMAN + WASTE CONTRACTORS ONSITE; REVIEW HASP W/ CONTRACTORS.
- AL LEXATUOR + JAKE HEATHCOTE ~~FOR~~ ^{FOR} DH ENVIRONMENTAL.
- 1435 REVIEW HASP W/ DH ENVIRO + R TRANSPORT.
- 1450 NEED TO MOVE EMPTY PILES (b), (c) FULL TOTES, ROLLOFF S-2 ~~DO~~

NRS JIM CREEK SITE 7

10/14/2022

DAILY LOG

1455

MOVE ALL EMPTY PALLETS + DRUMS, PLANT TO PLACE ^(d) TOTES ON NORTH END OF EXISTING SECONDARY CONTAINMENT AND DROP ROLLOFF S-2 AT SOUTH END OF NEW SECONDARY CONTAINMENT.

1520

PICKUP ROLLOFF S-2 + MOVE OUT OF WAY TO ACCESS ROLLOFF S-1.

1538

CASCADE DRILLING OFFSITE.

1645

RECEIVE (29) 55-GAL DRUMS, NON + REPOSE (6) DENTED DRUM.

1630

NEW SECONDARY CONTAINMENT SETUP BACK TO BACK, BEGIN OFFLOADING BULK TOTES FOR STORAGE IN CONTAINMENT.

1630

TEST EMAIL DRAFT COPY OF MANIFEST TO CAT McDONALD.

1705

(14) TOTES PLACED IN SECONDARY CONTAINMENT - ALL EMPTY.

1720

FILL OUT MANIFEST FOR SOIL / H₂O, CAT McDONALD REMOVED DRAFT + APPROVED.

1755

ALL (8) PAIL TOTES LOADED IN (2) BOX TRUCKS FOR TRANSPORT.

1800

CH2M + DH ENVIRO DEPART SITE.

1850

CH2M RETURNS TO HOTEL - END OF FIELD ACTIVITIES.

David Lubell
10/14/2022

(14)

NRS JIM CREEK SITE 7 MW13 10/17/2022

WEATHER: 48-68°F, CLOUDY/OVERCAST, W 0-5 MPH

OBJECTIVE: CONTINUE ST. MW13 DRILLING

CH2M: DAVID LUBELL (FL/SSHO), TOMMY TA (PTM)

CASCADE DRILLING: CARLOS ANGUIANO (DRILLER), ANTHONY KUSS, TREVOR BROWN

HIS: LEVEL D

EQUIPMENT: TERRASONIC T150CC, BOBCAT S450TCR T300, LANDA STEAM CLEANER

Daily Log:

0700 CH2M + CASCADE DRILLING ARRIVE AT NRSJC. BASE SECURITY INDICATES ACCESS RESTRICTED TO ESSENTIAL PERSONNEL. FIRES ARE ON BLUG + WHEELER MOUNTAINS. AQI HAZARD HIGH. COMMUNICATIONS ON ISSUE. FIRE THREAT

0710 TALK WITH MATT MOORE ABOUT FIRE THREAT NEEDED CLEARANCE FROM LOREN KASHN/HSN AND YORICK WAHAUS/NAVY TO PROCEED ON BASE

NOTE: BASE SECURITY INDICATES SITE 7 IS 0.3 MILES FROM BLUG MTN FIRE

0745 TALK WITH LOREN KASHN + MATT MOORE ABOUT FIRE PREVENTION

NEED TO CHECK FIRE PREVENTION TRACKING, FIRE ON INSTALLATION

- NEEDED MAP

- FIRE RESPONSE/EVACUATION

- INCIDENT COMMAND/POC

0805 CH2M + CASCADE DEPART NRSJC

0900 CH2M RETURNS TO EVERETT - PACK UP SAMPLES FROM LAST WEEK TO SHIP TO BATTERUG LABORATORY

1000 TOMMY TA TAKES SAMPLES TO BATTERUG LAB¹⁰ FEDEX; D. LUBELL TRANSFERS SOIL BORING LOG HARD COPY INTO SURVEY 123

1025 RECEIVE IOW SAMPLE COOLER AT HOTEL INDOOR - WILL BRING TO SITE WHEN SAFE. DEEMED SAFE TO RETURN DUG TO WILDFIRE AT NRS JIM CREEK

1040 TALK WITH MATT MOORE + LOREN KASHN REGARDING JIM CREEK FIRE/AIR MONITORING; NEED TO FIND FIRE LOCATION AND POINT OF CONTACT AT NAVSTA EVERETT (DNR + DOO RUNNING FIRE SUPPORT)

1420 TALK W/ MATT MOORE ABOUT NRSJC FIRE STAND DOWN TOMORROW. D. LUBELL TO

(15)

NRS JIM CREEK SITE 7 10/18/2022

WEATHER: 48-65°F, HEAVY FOG, 0-5 MPH

OBJECTIVE: CHECK WILDFIRE STATUS + OBTAIN CONTACT INFO

CH2M: DAVID LUBELL (FL/SSHO)

CASCADE: N/A

HIS: LEVEL D

EQUIPMENT: N/A

Daily Log:

0700 D. LUBELL DEPARTS FOR NRSJC

0800 D. LUBELL ARRIVES AT NRSJC - INCIDENT COMMAND POST (ICP) ESTABLISHED AT BUILDING # 3

0815 TALK W/ SPAN MEERILL - FIRE CHIEF NAVSTA/ WINDPBT ISLAND
360-320-3115 (PERSONAL CELL)
- FIRE "CONTAINED"

- NEXT WEEK RETURN

- LEAVE RIG ONSITE

- CONCERNED ABOUT RAIN/SNOW FORECAST FRI-SUN AND LANDSLIDES - DRESS NOT WANT US AT SITE 7 THIS WEEK

- DISCUSSED MOVING RIG DOWN TO LAYDOWN BUT BLOCKING ACCESS/EGRESS NOT DESIRABLE

0830 TALK W/ MATT MOORE + LOREN KASHN ABOUT UPDATE/DISCUSSION WITH FIRE CHIEF
- NEED TO ENGAGE CASCADE DRILLING ABOUT RIG MOVEMENT AWAY FROM TREE LINE

- CONTACT CH2M STAFF ABOUT SITUATION

- DISCUSS STORAGE OF BOTTLES/EQUIPMENT

- LEAVE CONSUMABLES AT LAYDOWN

- EQUIPMENT TO BE GIVEN TO TOMMY TA

- PAPERWORK/FIELD BOOK/FIELD INSTRUCTIONS TO BE GIVEN TO TOMMY TA

- D. LUBELL TO CONTACT MATT SPANKAMP, PATRICK ELLIOTT, TOMMY TA, CASCADE

0900 TALK W/ CARLOS ANGUIANO ABOUT SITUATION - HE WILL CONTACT OFFICE ABOUT LEAVING/MOVING RIG
10/18/22

(16)

NRS Jim Creek Site 7 MW13 10/25/2022

Task: Resume drilling from ~125 ft bgs

Personnel: Jacobs: G. Gardner, I. Valdez, T. Ta, J. Wiegand
Cascade: C. Anguiano, A. Kiss, T. Brown

Location: Near 7 Triffin, WA

Weather: ~45-35°F, constant rain

12:20 G. Gardner arrive at Jim Creek Bldg 4.

Drive up to Site 7 with J. Wiegand

Notes: T. Ta and J. arrived at 11:00

Cascade arrived shortly after 11:00 and began setting up at MW13

13:00 I. Valdez arrives at site 7

Cascade transfer soil bags from plastic to hopper.
Hopper is full, take down to 10W to transfer to roll off (~1 yard of soil).

13:45 Resume drilling MW13.

14:20 Having rig issues, losing power when trying to vibrate.
Carlos goes to make call.

14:45 Carlos back from call. Determined to change a filter within the fuel. Drilling rig back in operation. Water level measured.

15:17 Soil core from 125' to 135'. 9 ft of total recovery.
No sign of saturated soil.

15:56 Soil core from 135' to 145'.

16:15 Collected sample: NRSJC-S73B13-128129 / MS / MSD

16:30 Soil core from 145' to 155'. Soil cuttings placed on hopper. No sign of saturated soils.

16:40 - Completed drilling for the day at approximately 155'. Stop activities and start securing site.

(17)

NRS Jim Creek Site 7

10/25/22

1655 - Cascade head off to laydown area to empty soil drum w/ S7-MW12A/MW13, transfer soil into roll off S-2.

1730 - Cascade empty/transferred the soil from hopper, with contents from MW13 soil cores from past field event.

1745 - Hot @ Cascade offsite

1755 - Jacobs offsite

10/25/22

(18)

NRS Jim Creek PFAS SI

10/26/22

Personnel: Tommy TA, June Wigand, Gerrit Ender, Isa Valdez (Jacobs), C. Anguiano, A. Kiss, & T. Brown (Cascade)

Weather: 40°, Rainy, Cloudy, Windy

Task: Resume drilling at ST-MWB from 155 ft bgs.

0700: Jacobs and Cascade arrive at NRSTC Bldg 4.

Conduct daily safety / POWRA meeting. Reminder to stay dry & use tools to stay warm while working safely.

0730: Mobilize to laydown area to start preparing for the day. GG contacted Jeff (NRSTC) to open gate access to site 7.

0745: Cascade & Jacobs on site 7, start preparing the drill for operations.

0800: IV & TT used water level meter for well MW-2a, realize well meter max. reach is of 200'

0805: IV offsite to call Matt Moore.

0815: Communicated that water level meter (300') is needed. Matt to coordinate shipping overnight.

0815: Cascade start drilling at 155' ft bgs to continue advancing borehole. PFAS free water added to well.

0900: Soil core from 155' - 165' ft. 9 ft of soil recovered. 1 ft of soil cuttings into hopper. Soil dry, no visible saturation nor odor detected. Photo taken by Geo. Geo logged soil boring log in paper.

0955: Soil core from 165' - 175' ft. Well graded sand w/ gravel. 9 ft of soil recovery, 1 ft of soil cuttings into hopper.

Dry to damp soil, no visible saturation nor odor. Soil boring log into paper form.

1036: Soil core from 175' to 185'.

(19)

NRS Jim Creek PFAS SI

10/26/22

1110: Tommy TA offsite, going to Pine Environmental office in Tukwila, WA to rent a 300' water level meter.

1120: Soil core from 185' to 195'. Well graded sand. 9 ft of soil recovery, 1 ft of soil cuttings into hopper.

1125: Lunch time for Cascade. Drill stops.

1148: Yonck stopped by on site to observe operations.

1210: Cascade back from lunch break.

1220: Rig starts drilling operations. IV offsite.

1225: Collected sample NRSTC-ST-SB13-187-178

1255: Soil core from 195' to 205'. Well graded sand. 9 ft of soil recovery, 1 ft of soil cuttings into hopper.

1355: Soil core from 205' to 215'. Dry to damp core. No saturation observed. 9 ft of soil recovery, 1 ft of soil into hopper - cuttings.

1436: Soil core from 215' to 225'. Damp to dry.

1505: Tommy TA back on site.

MW-2a, measured water level / TD at 231.55' top of the casing. Communicated w/ Matt Moore.

1525: Soil core from 225' to 235'. Damp to dry. Poorly graded sand w/ silt. 9 ft of recovery & 1 ft of soil cuttings placed in the hopper.

1535: Sample collected NRSTC-ST-FA01-102622

1640: Soil core from 235' - 245'. Fracture tilt observed. Wet to moist layers observed. 9 ft of recovery soil. 1 ft of soil cuttings into hopper. JW offsite.

1655: After review it's determined that drill to run an additional 10'. Rig stopped for the day. Cascade starts to transfer soil cores into hopper, and start demobilizing from site.

(20)

NRS Jim Creek PFAS SI 10/26/22

1705 - Sample collected NRSJC-S7-SB13-234235

1710 - Sample collected NRSJC-S7-SB13P-234235

1730 - Cascade & Jacobs mobilize to laydown area.

Cascade transfer soil from MW-13, cuttings and
cores to roll off. 1 cubic yard of soil total

1750 - Cascade transfer 4 drums into secondary containment,
H's not clear what e/drum contains, tomorrow to
determine contents and transfer accordingly into
soil rolloff or totes.

1805 - Cascade offsite

1810 - Jacobs offsite

10/26/22

(21)

NRS Jim Creek Site 7 MW13 10/27/2022

Task: Continue sonic drilling at MW13, begin well installation

Location: NRS Jim Creek, near Trafton, WA

Personnel: Jacobs: G. Gardner, T. Ta, J. Weigand, I. Valdez

Cascade: C. Arguiano, A. Kiss, T. Brown

Weather: Overcast, 30-40 °F, windy

0700 Meet at Bldg 4 for safety Briefing. Discuss
working in windy conditions.

Note: I. Valdez not feeling well. May come to site later if
feeling better (migraine).

0730 Mob to IDW area. Label drums

0750 Mob to Site 7

0815 Check TD of MW13. TD=240. Casing at 230.

Tape was wet. Check DTW. DTW= 237 ft bgs.

Will drill to ~250 while G.G. contacts P. Lawson
to discuss well screen placement.

0930 Pull soilcore 243-250 ft bgs

1020 Finished consulting with P. Lawson. Will place
20-ft screen from 217-237' bgs

1115 T. Ta off-Base to ship samples

Note: Collected a soil sample at 215-216 at 0830

NRSJC-S7-SB13-215216

FD: NRSJC-S7-SB13P-215216

Will not analyze sample from 234-235 (discarded)

1120 Back fill to 238' with bentonite chips; sand to 237'.

1130-1135 Begin setting well screen,

1200 Lunch break

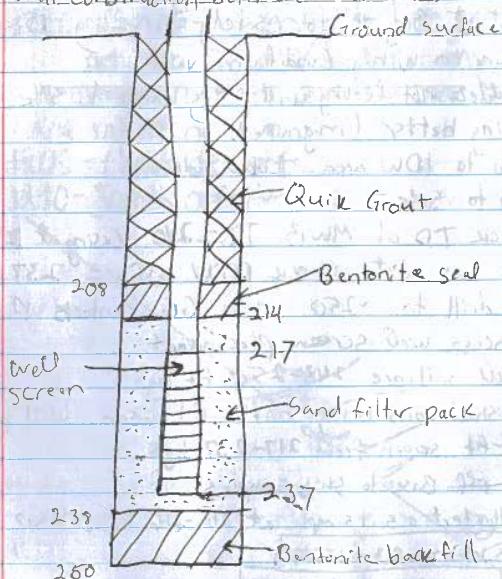
1245 Resume installation

Note: J. Weigand off site at 1000; Archaeologist not required
on site when not drilling.

(22)

NRS Jim Creek Site 7 MW13 10/27/2022

1345 I. Valdez on site - Continue transferring MW12A log info to tablet.

1415 1415 Finished pouring bentonite seal; allow seal to hydrate while preparing equipment to mix grout.
Well Construction Details (not to scale)

1500 T. Ta back on site

Take supplies down to IDW area

1530 Drillers rethreading pressure washer with PFAS-free thread sealant. Will finish grouting MW13 in the morning.

1645 Mob to IDW area

Drillers transfer 0.5 yd of soil from MW13

(23)

NRS Jim Creek Site 7 MW13 10/27/2022

1715 Transfer 1 drum of soil to roll-off

1744 Off-site

Scrub
Gardner

10/27/2022

(24)

NRS Jim Creek Site 7 MW13 10/28/2022

Task: Finish well installation of MW13, demobilization

Location: NRS Jim Creek, near Trafton, WA

Personnel: Jacobs: G. Gardner, I. Valdez, T. Ta

Cascade: C. Arguiano, T. Brown, A. Kiss

0715 Meet at Bldg 4 for H+S meeting.

0730 Mob to IDW area, drillers fill up water from hydrant.

0800 Drillers mob to Site 7

0830 Begin mixing grout. Drillers estimate they will need approximately 15 batches to grout the well.

1045 Continuing to grout. Finished pulling 6-inch casing.

1145 Pulling 8-inch casing.

1215 Finished pulling 8-inch casing. Lunch Break.

1245 G. Gardner off demob off-site

1330 Finished grout. Start decon equipment and well casing rods.

13:50 Isa demob off-site

14:00 Finished decon 3 3/8 rods. Cascade crew added 5 bags of bentonite chips to well MW12A

14:50 Stopped decon. Still have 6 and 8 inch casings remaining to decon

15:15 Cascade crew and Tommy demob from site

10/28/22

(25)

NRS JIM CREEK SITE 7 10/31/2022

WEATHER: RAIN, 48-50°F, CLOUDY, E/SE 0-5 MPH

OBJECTIVE: DECON CASING + RODS, SETUP AT ST-MW11, COLLECT ST-MW11 SURFACE SOIL

CH2M: DAVID LUBELL (PT/SSH0)

CASCADE: CARLOS ARGUIANO (DRILLER)

HIS: LEVEL D

EQUIPMENT: TERRASONIC T150G, BOBAT T300

DAILY LOG:

- 1100 D. LUBELL ARRIVES AT NRS JIM CREEK LAYDOWN AREA TO PICK UP SUPPLIES + CHECK IDW STORAGE AREA
- 1115 ROLLOFF OWNER HAS POOLED H₂O ON IT, NEED TO CHECK WITH CASCADE IF THEY HAVE TRASH PUMP TO EMPT POOLED H₂O ON TARP ALONG WITH H₂O INSIDE SECONDARY CONTAINMENT
- 1140 TALK WITH FACILITIES ABOUT USING BASE DUMPSTER FOR DISPOSAL OF ORIGINAL DH ENVIRONMENTAL SECONDARY CONTAINMENT - THEY DO NOT WANT CH2M TO FILL BASE DUMPSTER AT NORTH END OF LAYDOWN AREA. WILL NEED TO DISPOSE OF PLASTIC IN ROLLOFF, NEED TO CONFIRM WITH JEFF HARTMAN/NRSTC PW/FACILITIES MGR
- 1145 D. LUBELL MOVES TO SITE 7 - FIND FIELD INSTRUCTIONS, DOCUMENTS, TAGSET AND EQUIPMENT IN CASCADE SUPPORT TRUCK
- 1155 C. ARGUANO/CASCADE ONSITE
- 1200 MEASURE ST-MW13 DTB 241, DTW ~240 (FALSE POSITIVE SOUNDING @ 217.4 BUT TAPE ONLY BIGGEST FOR -1 FT), STICKUP 2.95 FT
- 1225 ANTHONY KISS, TREVOR BROWN, + YANICK WAHAUS ONSITE
- 1235 PERFORM DAILY SAFETY TOOLBOX + REVIEW E-POUND FORM, DISCUSS TOPICS
- ADVISE WEATHER
 - SLIP/TRIP/FALL
 - DECON/STEAM CLEANER/ PUMP/OUT AT ROLLOFF + 2ND CONTAINMENT
 - HEAVY EQUIPMENT
- 1250 SIGN POWER + BEGIN WORK ACTIVITIES

(26)

NRS JIM CREEK SITE 7

10/31/2022

Daily Log:

- 1300 SCAN COPIES OF NRSJC + NAVSTA EVERETT WASTE/MANIFESTS,
PROVIDE HARD COPIES TO YORICK WAHANS/NAVY
- 1310 CANSOLAND MEASURES DEPTH ~~AT~~ TO GROUT SLURRY IN ST-MW13
(P 16 ft 365 -
- 1310 A. KISS + T. BROWN BEGIN DECON 6" CASING
- 1400 DRILL RIG SETUP AT ST-MW11
- 1400 DECON 6" CASING (~140 ft) + 90 ft x 8" CASING
- 1430 Y. WAHANS OFFSITE, WILL BE ONSITE NEXT WEEK
- 1453 ALL 6" CASING HAS BEEN DECONNING
- 1509 T. BROWN/CASCADE INDICATES (2) FULL DECON H₂O DRUMS HAVE
BEEN PLACED INSIDE SECONDARY CONTAINMENT @ LAYDOWN AREA, AND
(3) FULL H₂O DRUMS GENERATED ALREADY ONSITE THAT NEED TO BE
LABELED/MARKED
- 1517 START DECONNING 90 ft x 8" CASING
- 1625 ADD (10) BAGS x 50 LBS COTCO PUREGOLD H60 CMPS 3/8" BENTONITE
TO BRING SEAL UP FROM 16 ft TO 9 ft - HYDRATE BENTONITE
W/ 10 GALS H₂O
- 1550 JORDAN COUTURE/CH2M ARRIVES ONSITE
- 1555 REVIEW APP/HASP + ATLAS W/ JORDAN COUTURE
- 1630 CASCADE DRILLING OFFSITE
- 1640 CH2M MOVES TO LAYDOWN AREA TO CHECK # OF H₂O TOTES
- 1645 (2) DECON H₂O + (1) WET SOIL WITH 2BS MW12A DRUMS IN SECONDARY
CONTAINMENT - NO POLY TOTES HAVE BEEN USED
- 1650 ~~ST-MW11~~ CH2M DEPART SITE
- 1745 D. LUBELL OFFSITE FOR DAY

David Lubell

10/31/2022

(27)

NRS JIM CREEK SITE 7

MW11/12

11/1/2022

- WEATHER: 45-50°F, OVERCAST, 0-5 MPH
- OBJECTIVE: INITIATE ST-MW11 DRILLING + ST-MW12A DEVELOPMENT
- CH2M: DAVID LUBELL (PL), JORDAN COUTURE (SSHD), PUG SHELDON (ARCH.)
- CASCADE: CARLOS ANGLIAND (DRILLER), ANTHONY KISS, TREVOR BROWN, TAGART KNUITSON (DEVELOP)
- HIS: LEVEL D
- EQUIPMENT: TERRASONIC T1500, BOBERT T300
- Daily Log:
- 0700 CH2M + CASCADE ONSITE AT LAYDOWN AREA
- 0705 START DAILY SAFETY BRIEFING, DISCUSS TOPICS:
- DRIVING SAFETY
 - WORKING HOURS/LUMENS REQUIRED
 - LINE OF FIRE/KAUGHT BETWEEN OBJECTS
 - HEAVY EQUIPMENT (CASCADE + NAVY PW)
- 0720 SAFETY BRIEFING COMPLETED, SIGN E-ROWRA
- 0725 DISCUSS PUMPING H₂O OFF ROLLOFF S-2 TARP INTO 275-GAL TOTE DUE
TO POTENTIAL REAS CONTAMINATION + DIRECTION FROM YORICK WAHANS.
WATER INSIDE ROLLOFF SECONDARY CONTAINMENT WILL ALSO BE PUMPED INTO
TOTE. WATER INSIDE NEW SECONDARY CONTAINMENT WILL BE DISCHARGED
TO GROUND SINCE IT WAS NEVER USED
- 0800 TAGART KNUITSON/CASCADE DRILLING
- 0810 J. COUTURE REVIEWS HASP/HIRAC WITH T. KNUITSON
- 0840 D. LUBELL MOVES TO SITE 7, CASCADE SETTING UP @ ST-MW11
- 0900 USE HAND TROWEL TO COLLECT MW11 SURFACE SOIL SAMPLE TO 1 ft
- SAMPLE ID: NRSJC - S7-SS11-000H @ 0900
- ANALYSIS: 1 x 80Z HDPE PEAS GSM 5.3 TABLE 15
- SAMPLE ID: NRSJC - S7-SS11P-000H @ 0905
- ANALYSIS: 1 x 80Z HDPE PEAS GSM 5.3 TABLE 15
- COLLECT FIELD BLANK @ SITE 7 USING LAB-REAGENT H₂O
- SAMPLE ID: NRSJC - S7-FB01-11/01/22 @ 0915

(30)

NRSJC SITE 7 MW11 11/2/2022

DAILY LOG:

1245 LUNCH BREAK OVER - RESUME DRILLING ACTIVITIES

1305 DRUM NRSJC-S10 FULL; START NRSJC-S11 DRUM

1340 PLACE ST-MW11 SOIL CORE BAGS/LINERS INTO DRUMS NRSJC-P01 + NRSJC-P02

1440 COLLECT SUBSURFACE SOIL SAMPLE FROM 191-192 FT

SAMPLE ID: NRSJC-S1-SB11-191/192 @ 1440

ANALYSIS: 1 X 802 HDPE PFAS

1520 J. COUTURE TO LAYDOWN TO LABEL SOIL DRUMS W/PAINT PEN

1535 J. COUTURE RETURNS TO SITE 7; A. KISS INDICATES T. KNUISEN MW NOT RETURN TO SITE TODAY

1700 END OF DRILLING @ 215 FT

NRSJC-S11 @ 50%

NRSJC-P01 @ 100%

NRSJC-P02 @ 50%

NRSJC-P03 @ 100% (1" TUBING) 11/2/22

1710 SITE SECURED, CH2M + CASCADE DEPART SITE 7

1800 END OF FIELD ACTIVITIES

David Lubell
11/2/2022

(31)

NRSJC PFAS SITE 7 MW11 11/3/2022

WEATHER:

37-48°F, CLOUDY, S/SE 0-10 MPH, SLEET/RAIN PM

OBJECTIVE:

COMPLETE ST-MW11 DRILLING/START WELL INSTALLATION, ST-MW12A DEVELOPMENT

CH2M:

DAVID LUBELL (PI), JORDAN COUTURE (SSHD), DAVE SHELDON (ARCHAEOLOGIST)

CASCADE:

CARLOS ANDRANO (DRILLER), TAYLOR BROWN

HIS:

LEVEL D

EQUIPMENT:

TERRASONIC T1500C ~~DRUM~~ T300, SHIM RIG

DAILY LOG:

0700

CH2M + CASCADE ARRIVE AT SITE 7

0705

J. COUTURE / D. LUBELL PERFORMS DAILY SAFETY BRIEFING, DISCUSS TOPICS:

- DRIVING

- COMMUNICATIONS

- HEAVY EQUIPMENT TRAFFIC

- WASTE MANAGEMENT

0730

SAFETY BRIEFING CONCLUDED, SIGN E-POWER FORM

0735

REFUEL DRILL RIG + SLIPSTREAM, DEVELOPMENT CREW USING 1/2" x 3/8" NPT AT ST-MW12A

0800

RESUME DRILLING AT ST-MW11

0900

TALK W/ MATT MOORE AND JANE WIEGAND/ARCHAEOLOGIST AVAILABLE ON 11/7/2022

0900

DEVELOPMENT @ ST-MW12A HAS NOT PRODUCED ANY WATER, CONTINUES PUMPING WATER 1 HR ELAPSED AND THEN SWITCH TO BAILING AGAIN

0945

ADVANCED TO 235 FT, NO VISIBLE ZONES OF SATURATION OR SIGNIFICANT MOISTURE, SOIL CORES HAVE BEEN HEATED UP DUE TO FRICTION W/CORE BARREL WHICH MIGHT HAVE CAUSED SOME EVAPORATION IN CORE.

ST-MW12A WET @ 238 FT

ST-MW13 V. MOIST @ 234-235 FT

1022

OBSERVE ^(P) SATURATED SOIL + STANDING WATER 235-236 FT IN (SW) MATERIAL, FOLLOWED BY MOIST TO WET SP FROM 236-244

1040

TALK WITH MATT MOORE ABOUT ST-MW11 WATER, DECIDE TO ^(P) ADVANCE ADDITIONAL 10 FT TO 255 FT

(2)

NRS JIM CREEK SITE 7 MW11

11/3/2022

DAILY LOG

1046 START DRILLING 245-255 ft

1100 COLLECT SUBSURFACE SAMPLE AT 231-232 ft (MALLARY FRINGE)

SAMPLE ID: NRSJC-ST-SB11-231.232 @ 1100

ANALYSIS: 1 x 802 HDPE PPAS

1140 ADVANCED TO 255 ft, CASCADE BREAKS FOR LUNCH

1200 TALK W/ RIE LAWSON + MATT MOORE REGARDING ST-MW11 LITHOLOGY AND SCREEN INTERVAL / SLOT SIZE. TEAM IN AGREEMENT TO INSTALL 20 ft SCREEN (0.020 SLOTTED) FROM 234-254 ft bgs.

1215 PACK ST-MW11 SOIL SAMPLES ON ICE IN COOLER FOR SHIPPING TO BATTELLE LABORATORY

1235 CASCADE TO BEGIN WELL INSTALLATION @ ST-MW11

1250 DAVE SHEDDEN TAKES SAMPLE COOLER TO FORD

① NOTE: DEVELOPMENT CREW RESUMES ST-MW11A POREING

1335 INSTALL 20 ft WALL SCREEN 0.020 234-254, CENTRAL VENTS
ADDED BOTTOM OF SCREEN + TOP AND EVERY 30 ft

0-234 ft SCHED 80 CASING/RISER

234-254 ft SCHED 80 PVC SCREEN (0.020-SLOTTED)

254-254.3 ft SCHED 80 PVC FEMALE THREADED END CAP

231-255 FILLER SAND PACK (CMEX #2/12 (9 x 50 lb BAGS))

225.5-231.0 BENTONITE SEAL CETO PURGOLD (1.25 x 50 lb BAGS)

SDO

(D)

1400 ST-MW11 INSTALLED

1400 START DEVELOPING ST-MW13

NOTE: SOIL DRUMS NRSJC-S11, -S12, -S13 FULL

PPE TUBING / HNGR DRUMS NRSJC-P02, -P03, -P04 FULL

1420 INSTALL SAND PACK

1449 TRIPPED OUT 20 ft x 6" CASING

(33)

NRS JIM CREEK SITE 7 MW11

11/3/22

DAILY LOG

1513 BENTONITE SEAL INSTALLED HYDRAULIC WITH PIPS ALG #2 (5 GALLONS)

1520 STA ALLOW BENTONITE TO HYDRATE, START DECONNING CORE BARREL AND RODS

1600 LOAD SOIL + PPE DRUMS UNTO FLATBED TRUCK TO TAKE TO HAYDOWN

1650 MOVE TO HAYDOWN AREA

1725 ALL SOIL / H2O / PPE DRUMS PROPPED IN SECONDARY CONTAINMENT

1730 CHIMNEY CASCADE DEPART EATDOWN FOR HOTEL

1830 END OF FIELD ACTIVITIES

David
11/3/2022

(34)

NRS JIM CREEK SITE 7

11/4/2022

WEATHER: RAIN, 35-42°F, OVERCAST/CLOUDY, 5-10 MPH

OBSERVATIONS: COMPLETE ST-MW11 WELL INSTALL, DECON TOOLING

CH2M: DAVID LUTELL (FL), JORDAN COUTURE (SS/ID)

CASCADE: CARLOS ANGUIANO (GRUER), ARTHUR CLARKE, TREW BROWN, TAGESET KNUITSEN

HYS: LEVEL D

EQUIPMENT: TERRACONIC T150LC, BUCKEY T300, SNEUM RIG

DAILY LOG:

0700 CH2M + CASCADE ON SITE @ NRSJC LAYDOWN AREA

0705 DAILY SAFETY BRIEFING

0720 FIELD PROD - SETUP FOR DRAINING TANK ON ROLLOFF + SECONDARY CONTAINMENT, TRANSFER (5) DECON WATER DRUMS INTO POLY TOTE (W1)

0730 CASCADE MOVES TO SITE 7

0735 CH2M PUMPING DRUMS, TANK, 2ND CONTAINMENT

0745 DILUBEN MOVES TO SITE 7

0758 CASCADE HAS MIXED (6) BATCHES GROUT AND PUMPED INTO ST-MW11 (7 BAGS + 500)

0836 TAGESET KNUITSEN ^{CASCADE} ~~DECON~~ ^{ON SITE}0940 ESTIMATED 20% BENTONITE SLURRY VOLUME @ 1800 GALLONS PUMPED DOWNHOLE
THEORETICAL GROUT VOLUME SHOULD BE ~440 GALLONS

0958 MIXED GROUT BATCH #8 (15 x 50 lb BENTONITE + 36 GALS = 40 GAL SLURRY)

1015 MIXED GROUT BATCH #9 (15 x 50 lb BENTONITE 20% + 36 GALS = 40 GAL SLURRY)

1015 ALL 6" CASING HAS BEEN TRIPPED OUT; 90 ft x 8" CASING REMAIN IN HOLE

1020 TALK WITH MATT MOORE REGARDING STATUS UPDATE, DRILLING BOLLARDS
PILOT HOLES, WASTE MANAGEMENT (RAINWATER + STORAGE), DEVELOPMENT
SCHEDULE - STOP PUMPING RAINWATER FROM TANK/CONTAINMENT INTO TOTES

1100 J. COUTURE TO PUMP STANDING WATER TO GROUND PER MATT MOORE

1105 TOTAL BAGS 20% BENTONITE USED = 15 x 50 lbs = 750 LBS

NOTE: (1) POLY TOTE CONTAINS ALL MW12A/MW13 DECON H₂O(A) POLY TOTES CONTAIN RAIN H₂O FROM ROLLOFF TANK + SECONDARY CONTAINMENT

(15) SOIL DRUMS FROM ST-MW11

(35)

NRS JIM CREEK SITE 7

11/4/2022

DAILY LOG

1125 USED (5) BAGS OF 20% BENTONITE SLURRY ~ 390 GAL SLURRY

1125 TALK W/ CAT McDONALD ABOUT WASTE STORAGE

- EMERGENCY ROLLOFF PICKUP FOR S-2

- BLEND/MERGE ST-MW11, ST-MW12A, ST-MW13

- EMPTY RAIN WATER TOTE #4 TO GROUND

- MOVE (2) TOTES IN FRONT OF ROLLOFF TO BACKSIDE OF ROLLOFF

- DRAIN (1) TOTE PUMPED THIS MORNING FROM TANK, KEEP ORIGINAL (2) TOTES
CONTAINING ROLLOFF TANK / SECONDARY CONTAINMENT

1240 T. KNUITSEN OFF SITE

1245 START RECONNING 6" x 8" CASING + RODS

1300 DRILL PILOT HOLES FOR BOLLARDS @ ST-MW11, BOLLARDS 3 1/2" DIA x 6 ft L

1335 ALL BOLLARD HOLES DRILLED OUT AT ST-MW11, MOVE TO ST-MW13

NOTE: ^{OLD} PILOT HOLE = 6"

1358 ST-MW13 BOLLARD HOLES DRILLED

1415 ALL BOLLARD BOREHOLES HAVE BEEN DRILLED, SOIL PLACED IN NRSJC-SILO

1445 DINE SHED ON OFF SITE

1505 GAUGE ST-MW11 DTW @ 235.75 ft HOC DTB 254.60 ft HOC

1510 GAUGE ST-MW13 DTW @ 239.60 ft HOC DTB 240.90 ft HOC

1515 GAUGE ST-MW12A DTW @ 236.84 DTB 245.85 ft HOC (STRUCTURE WILL BE
RAISED DURING WELL COMPLETION)

1518 TOMMY TA INDICATES (A) SAMPLE COULERS DELIVERED TO HOTEL (SUN BOTTLEWARE)

1530 START LOADING EQUIPMENT/SUPPLIES/TOOLING ONTO SUPPORT/HAUL TRUCK

1600 PLACE DECON PAD POLY INTO DRUM NRSJC-P06

1600 MOVE DRILL RIG + SUPPORT TRUCK TO LAYDOWN AREA

1720 DRUMS OPERATED, RIG PARKED

1745 CH2M + CASCADE DEPART NRSJC

1805 END OF FIELD ACTIVITIES

11/4/2022

David G. Hul

FED

(34)

NRS JIM CREEK SITE 7

11/4/2022

WEATHER: RAIN, 35-42°F, OVERCAST/CLOUDY, 5-10 MPH

OBSERVATIONS: COMPLETE ST-MW11 WELL INSTALL, DECON TOOLING

CH2M: DAVID LUTELL (FL), JORDAN COUTURE (SS/ID)

CASCADE: CARLOS ANGUIANO (GRUER), ARTHUR CLARKE, TREW BROWN, TAGESET KNOTSEN

HYS: LEVEL D

EQUIPMENT: TERRACONIC T150LC, BUCKEY T300, SNEUM RIG

DAILY LOG:

0700 CH2M + CASCADE ON SITE @ NRSJC LAYDOWN AREA

0705 DAILY SAFETY BRIEFING

0720 FIELD PROD - SETUP FOR DRAINING TANK ON ROLLOFF + SECONDARY CONTAINMENT, TRANSFER (5) DECON WATER DRUMS INTO POLY TOTE (W1)

0730 CASCADE MOVES TO SITE 7

0735 CH2M PUMPING DRUMS, TANK, 2ND CONTAINMENT

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0758 CASCADE HAS MIXED (6) BATCHES GROUT AND PUMPED INTO ST-MW11 (7 BAGS + 50 LBS)

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PILOT HOLES, WASTE MANAGEMENT (RAINWATER + STORAGE), DEVELOPMENT
SCHEDULE - STOP PUMPING RAINWATER FROM TANK/CONTAINMENT INTO TOTES

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NOTE: (1) POLY TOTE CONTAINS ALL MW12A/MW13 DECON H₂O(A) POLY TOTES CONTAIN RAIN H₂O FROM ROLLOFF TANK + SECONDARY CONTAINMENT

(15) SOIL DRUMS FROM ST-MW11

(35)

NRS JIM CREEK SITE 7

11/4/2022

DAILY LOG

1125 USED (5) BAGS OF 20% BENTONITE SLURRY ~ 390 GAL SLURRY

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- EMERGENCY ROLLOFF PICKUP FOR S-2

- BLEND/MERGE ST-MW11, ST-MW12A, ST-MW13

- EMPTY RAIN WATER TOTE #4 TO GROUND

- MOVE (2) TOTES IN FRONT OF ROLLOFF TO BACKSIDE OF ROLLOFF

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CONTAINING ROLLOFF TANK / SECONDARY CONTAINMENT

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1600 PLACE DECON PAD POLY INTO DRUM NRSJC-P06

1600 MOVE DRILL RIG + SUPPORT TRUCK TO LAYDOWN AREA

1720 DRUMS OPERATED, RIG PARKED

1745 CH2M + CASCADE DEPART NRSJC

1805 END OF FIELD ACTIVITIES

11/4/2022

David G. Hul

FED

(40)

NRS JIM CREEK SITE 7

11/7/2022

Daily Log

NOTE:

QED SAMPLE PLOT TETRAON BLADDER IS AVAILABLE W/ 1/2" x 1/4" HOPE TUBING IN STOCK

1515

TALK W/ LARRY LORENZO / FINE ENV. ABOUT GW SAMPLING, INDICATED THE PUMP SENT WILL NOT WORK UNLESS PUMP IS SUBMERGED IN WATER W/ DROP TUBE NEED TO FIND ALTERNATE PUMP TO USE

1620

CONTACT MATT MOORE REGARDING ABOUT GW SAMPLING ISSUE AND WASTE MANAGEMENT

NOTE:

* NEED 12' x 12' TARP FOR SOIL DRUM COVERING

* SHIP IDW SOIL + AQUEOUS SAMPLES TO EUROSENS TEST AMERICA

* NEED PPT'S SOIL TAG IDW SAMPLE

1545

TALK TO ALI SALTERS BUENC / SMG ABOUT USING TETRAON BLADDER FOR SAMPLING - NOT PERMITTED FOR PPT'S

1640

TALK W/ NICO @ GEOTECH ABOUT GETTING GRUNDOS RP2-300 FT LOCATED IN VERMONT OFFICE

NICO (CELL) 720-979-2289

1630

ST-MW13 WELL COMPLETION + BOLLARDS INSTALLED

1700

ST-MW13 + ST-MW14 SOIL CATH NOS PLACED IN DRUM NRSJC-SIT

1705

CH2M + CASCADE DEPART SITE 7

1800

END OF FIELD ACTIVITIES

David L. Leland
11/7/2022

(41)

(41)

NRS JIM CREEK SITE 7

11/8/2022

WEATHER:

32-45°F, CLOUDY, NE 0-5 MPH

OBJECTIVE:

ST-MW11 WELL DEVELOPMENT, + WELL COMPLETION

CH2M:

DAVID LUBELL (ETC), JORDAN COUTURE (SSHO)

CASCADE:

TAGGART KNOTSEN, TREVOR BROWN

HIS:

LEVELLED

EQUIPMENT:

BOBCAT R300, SHEL RIG, HOSEA, SCOUT W/ WATER PUMP

Daily Log

0700

CH2M ON SITE TO PERFORM WASTE MANAGEMENT (COVER SOIL DRUMS WITH TARP)

0730

CASCADE DEVELOPMENT CROW SITE

0735

PERFORM DAILY SAFETY BRIEFING, DISCUSS TOPICS

- ADVERSE WEATHER CONDITIONS

- SLIPS / TRIPS / FALLS

- TRIGGER STATES

- WORK / REST REGIMENT

- SECURITY (DUMMY LOCK BLUE MTN. GATE)

0745

CH2M + CASCADE MOBILIZE TO SITE 7

0800

RESTART WATER PUMP AT ST-MW11

~ 0815

STOP PUMPING AS WATER VISIBLE ABOVE SURFACE BUT WONT FLOW, TAP OUT TUBING AND FIND ~ 10 FT SAND IN BOTTOM + CLOSED CHECK VALVE

~ 0905

NOTED CLOGGED TUBING AND REINSTALL @ ~ 235-240 FT (PREVIOUSLY 1 FT OFF BOTTOM) AS THAT WAS WATER BEARING ZONE WITH COARSE GRAINED MATERIAL COMPARED TO 240-250 WITH FINE GRAINED SP-GM

0920

COLLECT FIELD BLANK REAGENT SAMPLE USING LAB SUPPLIED KIT

SAMPLE ID:

NRSJC-S7-FB21-110822 @ 0925 FB21

ANALYSIS:

(2) 250ML HOPE PPT'S

1100

ATTEMPT TO COLLECT GW GRAB SAMPLE USING BAILER @ ST-MW13

1145

ONABLE TO COLLECT SAMPLE, BAILER CHECK VALVE UNSORTS DURING RETRIEVAL EVERY TIME

NOTE

DEVELOPMENT CONTINUING @ ST-MW11 USING BAILER TO REMOVE (D)

(44)

NRS JIM CREEK SITE 7

11/9/22

DAILY LOG

0945 CASCADE AFFIXING WA DEPT OF ECOLOGY TAGS TO WELLS

#476 = ST-MW12A

#477 = ST-MW13

#478 = ST-MW11

NOTE: CASCADE USED BBOX AT TO SMOOTH / FIN RITS BY ST-MW12A

1030 CHECK HIGH 2102Q TURBIDITY METER

STANDARD 50.1 NTU - 50.0 NTU

" 50.1 NTU - 50.6 NTU

" 5.3 - 5.47 NTU

1100 START PREP FOR ST-MW12A GW SAMPLING USING 1/2" x 5/8" HDPE TUBING

1110 TUBING SIZE IS NOT SEATING PROPERLY ON 1/2" BORE / NIPPLE

1140 HDPE TUBING NOT LONG ENOUGH, SPLICED ADDITIONAL SECTION USING 1/2" COUPLER + (2) HOSE CLAMPS

1200 TOP SECTION OF HDPE TUBING UNCOUPLED ATTEMPT TO PULL GRUNDFOS PUMP OUT BUT PUMP STUCK IN WELL

1245 J. COURTNE DEPARTS NRSJC FOR AIRPORT

1255 M. MOORE TO ASSIST IN PUMP RETRIEVAL

1300 TALK WITH DENNIS BILHAM ABOUT PATH FORWARD REGARDING ST-MW11 SAMPLING (BAILER) AND REMOVE ATTEMPT OF GRUNDFOS PUMP @ ST-MW12A OK WITH PUMP MOTOR LEAD SEPARATED FROM PUMP, NEED TO REMOVE TUBING

141500 COLLECT GRAB SAMPLE USING BAILER AT ST-MW11, AND COLLECT FIELD DUPLICATE SAMPLE, SPLIT CLEAR / TURBID SAMPLE FOR NATE AND DUPLICATE (HIST. BAILER PULSED CLEAR 1ST, 2ND NOT TURBID - CONVEIN W/ SHOWN ACTION TO SPLIT CLEAR / TURBID AND NOTE ON COC.

SAMPLING-JD
ANALYSIS

NRSJC ST-GW11-1122 @ 1515

2 x 250ML HDPE

SAMPLE TO: NRSJC ST-GW11 D-1122 @ 1520

(45)

NRS JIM CREEK SITE 7

11/9/22

DAILY LOG

1540 COLLECT EQUIPMENT BLANK USING LAB SUPPLIED H₂O AND DISPOSABLE HDPE BAILER

SAMPLE TO: NRSJC-ST-EGP1-110922 @ 1600

ANALYSIS: 2 x 250 ML HDPE

1615 TALK W/ CHIT McDONALD ABOUT ITW NGMT, KEEP PRE/PLASTIC / OTHER DRUMS OUTSIDE OF CONTAINMENT, SAME FOR EMPTY DECON DRAINER H₂O DRUMS ALSO. PLACE (1) 275-GALLON TOTE FOR FUTURE RAINWATER/PRECIPITATION IN SECONDARY CONTAINMENT.

(2) EMPTY DRILLER DECON H₂O DRUMS

(3) PRELINED / PLASTIC DRUMS NRSJC POL THRU NRSJC-POS

(13) NEW UNUSED DRUMS

(15) EMPTY TOTES

1700 SEARCHED ROLLOFF YARD + TRAP OVER SOIL DRUMS

1715 D. WHEEL + M. MOORE DEPART NRSJC

David
11/9/2022

(46)

NRS JIM CREEK

11/10/2022

WEATHER: 30-45 OF CLOUDY, FOG, 0.5 MPH

OBJECTIVES: RECOVER GRUNDOS @ ST-MW12A, SHIP SAMPLES/EQUIPMENT, WASTE PICKUP

CH2M: DAVID LUBEN^{SS10}, MATT MOORE (FEL)

HIS: Level D

EQUIPMENT: HAND TOOLS

Daily Log:

0630 DEPART HOTEL FOR LONES. TO PICK UP TOOLS/EQUIPMENT TO

RECOVER GRUNDOS PUMP IN ST-MW12A

0730 MOVE TO WALMART FOR ADDITIONAL SUPPLIES

0815 MOVE TO NRSJC SITE 7

0840 ARRIVE AT SITE 7

0845 PERFORM DAILY SAFETY BRIEFING, SIGN R-POWRA

1000 MOVE TO LAYDOWN AREA TO MEET JAKE HEATHERLY AND

AL LEITAVA OF DH ENVIRONMENTAL FOR PICKUP OF (13)

EMPTY TOTES + (13) NEW UNUSED DRUMS

1005 PERFORM SAFETY BRIEFING WITH DH ENVIRONMENTAL

1015 DH ENVIRONMENTAL BEGINS LOADING TOTES + DRUMS (EMPTY/NEW)

1130 DH ENVIRONMENTAL OFFSITE: ALL SAMPLE COOLERS PACKED UP FOR SHIPMENT (2) EUROFINS TEST AMERICA + (1) BATTELLE LABORATORY

1210 MOVE BACK TO SITE 7 TO TROUBLESHOOT ST-MW12A

1245 RECOVERED GRUNDOS PUMP FROM ST-MW12A

1300 COLLECT GW GRAB SAMPLE USING HDPE BAILER DTW

1320 Measured DTW @ MW-12A = 234.12 ft. b TOC

" TO @ MW12A = 248.44 ft. b TOC

1335 Collected ST-MW12A + MS/MSD SAMPLES

SAMPLE ID: NRSJC-ST-GW12A-1122 @ 1335

ANALYSIS: 2 x 250ML HDPE PFAS

SAMPLE ID: NRSJC-ST-GW12A-1122-MS @ 1335

ANALYSIS: 2 x 250ML HDPE PFAS

(47)

NRS JIM CREEK SITE 7

11/10/2022

Daily Log:

SAMPLE ID: NRSJC-ST-GW12A-1122-MSD @ 1335

ANALYSIS: 2 x 250ML HDPE PFAS

1400 GAUGE ST-MW11 DTW 238.55 DTB

NOTE: ST-MW12A PVC STICKUP = 36"; ST-MW11 STICKUP 33.5"

1425 SITE 7 CLEANED UP AND MOBE TO LAYDOWN TO DROP TRASH

1445 CH2M DEPARTS NRSJC FOR FEDER SHIP CENTER IN EVERETT

1530 ARRIVE AT FEDEX EVERETT

1645 DEPART FEDEX FOR JACOBS REDMOND WAREHOUSE

1737 ARRIVE IN REDMOND; OFFLOAD EQUIPMENT/SUPPLIES

1745 FEDEX AWD RECEIPTS

BATELLE 3904 9042 9922

DWH 3904 9104 3163

EUROFINS 3904 9024 1891

GEOTECH ENV. 3904 9085 1627

PING ENV. 3904 9151 8057

" " 8068

" " 8079

" " 8080

" " 8090

" " 8105

1800 END OF FIELD ACTIVITIES FOR WEEK

David Luben
11/10/2022

(48)