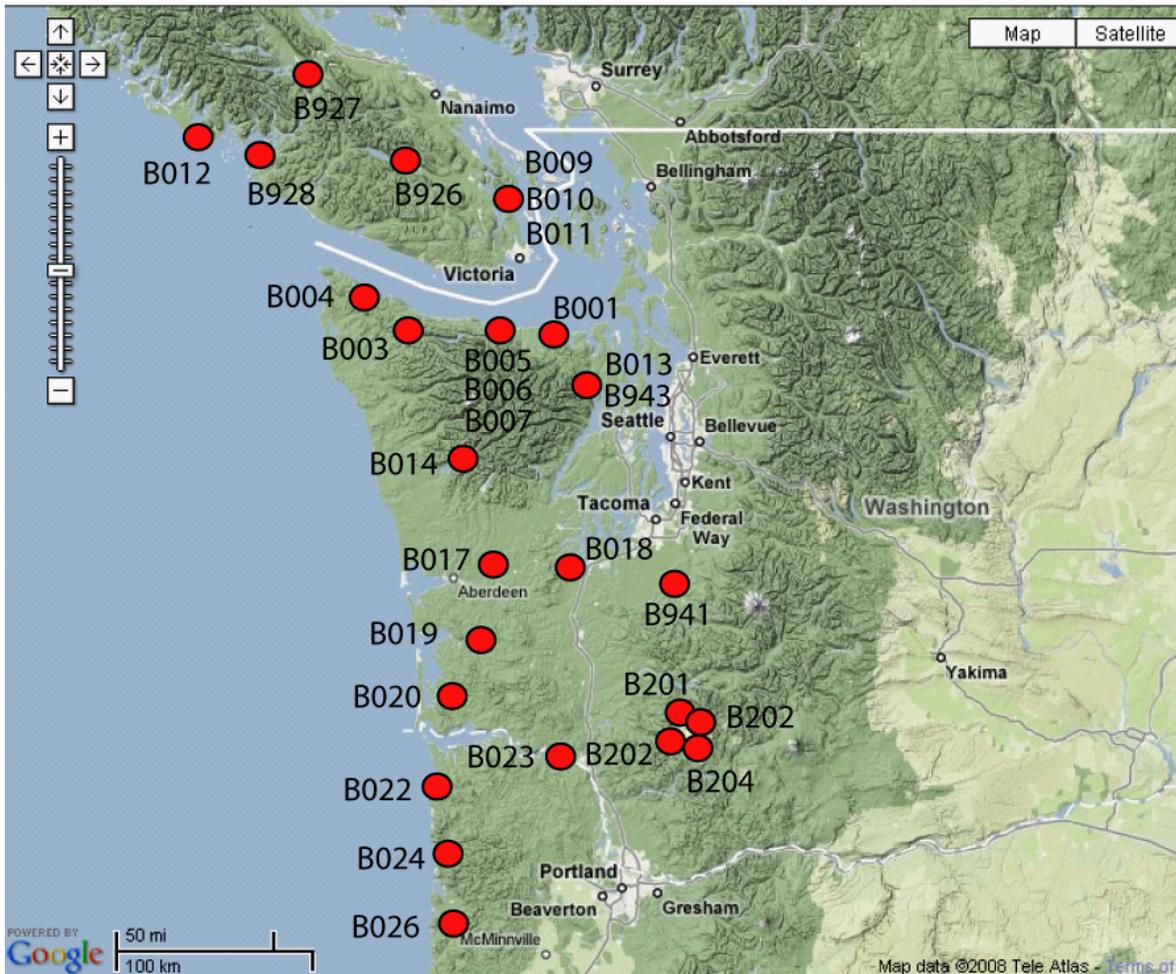


## Station Notes for B022, Sea Side, seaside22bor2006

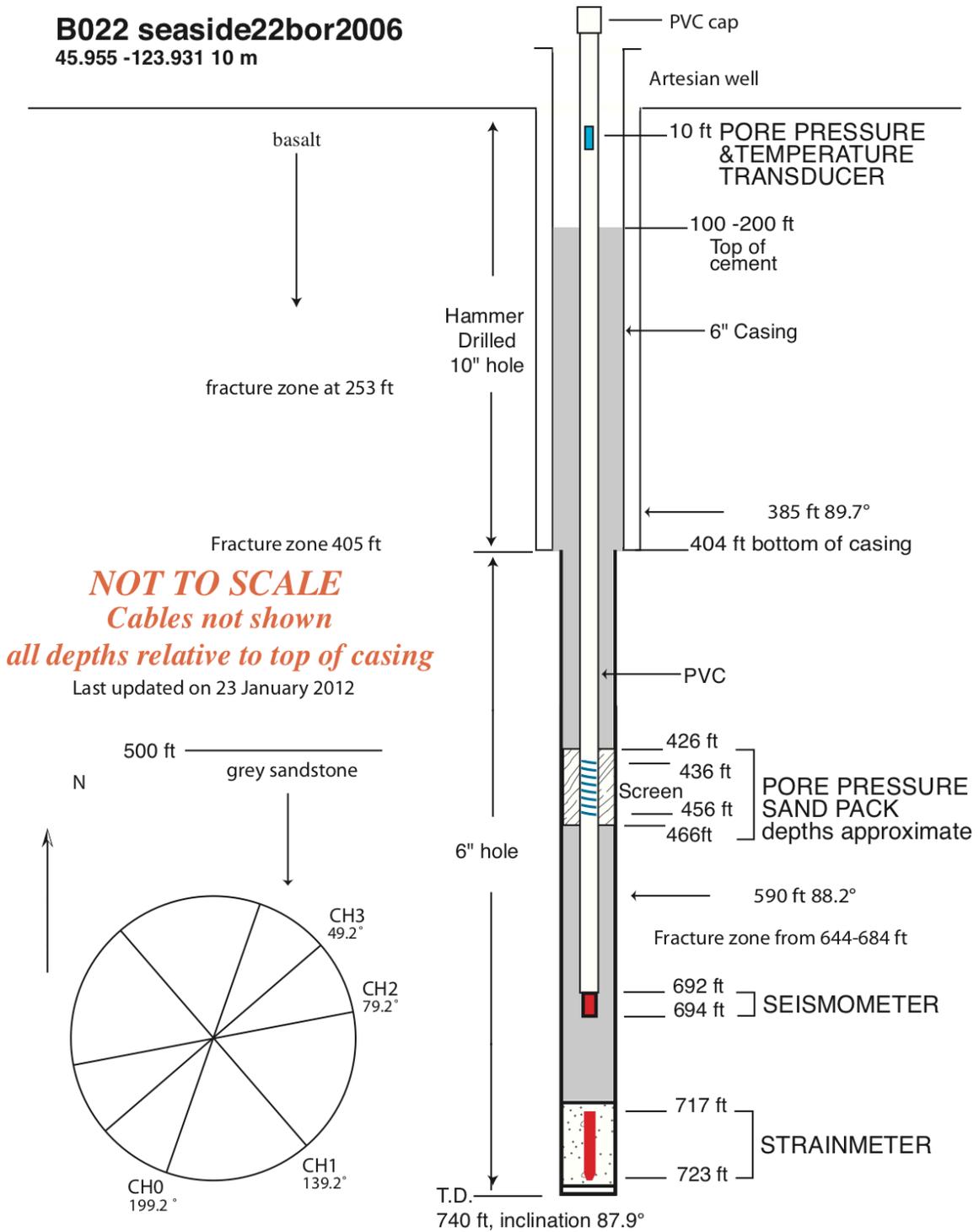
Latitude: 45.95461 (WGS 84)  
Longitude: -123.93105 (WGS 84)  
Elevation: 10 m / 33 ft  
Install Depth: 220.4 m / 723 ft  
Orientations: CH0=199.2, CH1=139.2, CH2=79.2, CH3=49.2  
Install Date: 2 February 2006  
GTSM Technologies #: US11  
Executive Process Version 1.14  
Software:  
Logger Software: Version 2.02.2  
Home Page: [www.unavco.org/instrumentation/networks/status/pbo/overview/B022](http://www.unavco.org/instrumentation/networks/status/pbo/overview/B022)  
Notes Last Updated: November 11, 2020

Install depth is from the top of the casing to the bottom of the strainmeter.  
Orientations are in degrees East of North.



Pacific Northwest PBO strainmeter network, April, 2008

**B022 seaside22bor2006**  
45.955 -123.931 10 m



## Instrumentation at Strainmeter

Instrument	Units	Bottle/ASCII Scale Factor	SEED Scale Factor
Pore Pressure	Hecto Pascals	1.0	N/A
GTSM Barometer	Kilopascals	1.0	0.0001
Rain Gauge	Millimeters/hour	1.0	0.252
Down hole Temperature Sensor	Degrees Celsius	1.0	0.0001
Logger Temperature Sensor	Degrees Celsius	1.0	0.0001
Setra Barometer	Hecto Pascals	1.0	1.42925E-4

### 1. General Information

- The area around the strainmeter was flooded in November 2006, and February 2007. The strain signal may be influenced by the heavy rain and standing water.
- July 3 2006 - First set of processed data released June 3 2006.  
B022.2006.2006181201850.xml
- September 18, 2006 - 2B data updated to the 1 September, 2006.
- November 9, 2006 - Record amounts of rain fell on the Olympic Peninsula between the 1st and 9th November 2006.
- November 10, 2006 - Level 2B data updated.  
B022.2006.2006314192821.xml  
Trends were recalculated using data from 23 February 2006 to November 2006.
- Environmental door opened on Feb 9, 21, 28, March 2, 13, April 6, June 20, 21
- Logger restarted May 31, 2006
- B022 down from 14 Dec 2006 – 19 Jan 2007
- ~ Dec 28, 2007 there was a large blast at the nearby quarry. According to Neal who runs the office there, it was the biggest one he can remember and shook the house pretty hard.
- March 4, 2010 – Sensitivities of all EH channels corrected.
- The pore pressure sensor was installed at 10 feet, and no packer was installed. The pipe was flowing artesian and is sealed at the surface using a pvc cap with a pass-through for the cable sealed with epoxy.

### 2. Strainmeter Maintenance

- February 5-7, 9, 15, Aug 16 – 17, 2006 – Engineers on site
- January 19, 2007 - Wade Johnson and Time Tim rebooted the VSAT and the site came right back up.

- February 26, 2007 – The VSAT IDU was in a strange error mode, with just the transmit light blinking. Wade Johnson power cycled the IDU and to get it back up.
- April 5, 2007 – Andy visited the site. The system light was off on the vsat and after a reboot it wouldn't come back on properly. Andy was unable to connect to the vsat from the LAN side. After working on it for a while the vsat came back then after Andy left Warren was able finally get to the cisco. The site is currently running OK. The cisco was rebooted during the process but after troubleshooting is appeared to be a vsat issue.
- December 17, 2007 UTC – Chuck Kurnik visited the site.
  - 19:03 - Onsite.
  - GFI is located in the garage attached to house, below breaker box. Chuck reset the GFI and site came up.
  - Swapped all (2) GTSM batteries. Upon power up, GW power supply failed.
  - Request current-style AC panel, GW power supply, isobar, FO modems to be sent from Boulder
  - 20:15 - Offsite for lunch and errands.
  - 23: 27 - Onsite.
  - Remove Iota and GPS DC backpanel.
  - Upgrade with spare AC backpanel that Chcuk had in the truck.
  - Turn on GTSM.
  - There is water in the wellhead, about 1" from the top.
  - 01:10 - Offsite.
- December 18, 2007 UTC – Chuck Kurnik visited the site to install isobar and swap fiber optic modem.
  - 23:56 - Onsite.
  - Install isobar, and plug AC power supply into it. Cisco and VSAT are on UPS.
  - Swap black FO modem.
  - Move Cisco and VSAT from below GTSM to on top of GTSM.
  - Put wire ties around some cables.
  - RT2 on GTSM was reading "G2", all other channels reading "G3". Hit "Reset" on RT2 and after a few minutes, it was reading "G3".
  - 00:47 - Offsite.
- January 14, 2007 UTC – Wade Johnson visited the site to get it back online.
  - 00:30 - Arrive on site. Site is running, but VSAT IDU is frozen. The power, transmit, and lan lights are on, reboot IDU. IDU does not come back up. Log on, VSAT can not do its ranging. Wade decided to return the next day with a new IDU. He tried to pull data from the GTSM but the USB process froze. He rebooted the logger board, but never got data.
  - 01:30 - Leave site.
  - 19:00 - Onsite. Replace old IDU with new IDU, reprogramme old cisco.
  - 20:10 - System back online.

Additional information. ~ Two weeks ago (Dec 28, 2007?) there was a large blast at the nearby quarry. According to Neal who runs the office there, it was the biggest one he can remember and shook the house pretty hard.

- February 7. 2008 UTC – Chuck Kurnik visited the site to get it back online.
  - 16:15 - Onsite.

The GFI in house was tripped. After it was reset, most items come back up, except for Cisco and VSAT. These are plugged into an old-style UPS. The old UPS was removed and the Cisco and VSAT were plugged into the Isobar surge suppressor. All equipment come on line. 17:00 - Offsite.

- February 11, 2008 UTC – Wade Johnson visited the site.  
19:00 Onsite. He replaced the old IDU with a new one. The new IDU is a HN7000S. He also reprogrammed the old cisco.  
20:10 System back online.

Additional information. Approximately two weeks earlier there was a large blast at the nearby quarry. According to Neal, who runs the office there, it was the biggest one he can remember and shook the house pretty hard.

- January 22, 2009 – Ken Austin visited to the site to repair the GPS antenna. He noted that the floor of the BSM enclosure was wet, and that there was a lot of mineral deposits on the floor. He also noted that water was dripping from well head.
- Fri March 27 04:02:32 GMT 2009. Logger Software Version upgraded from 1.15 to 2.02.2.
- May 7, 2009. Large variations in downhole temperature. Reason unknown.
- July 15, 2009. Dausz at site. RT upgrade to 1.20. New power box installed. New marmot data logger installed. Pore pressure sensor was also plugged in and is now collecting data.
- July 21, 2009 – Marmot was replaced.
- October 21, 2009 – Pore pressure has been switched from NetRS to Q330. Replaced GPS antenna for GTSM21. Station now logging good time.
- November 1, 2009 - Site is toggling between .5mm of rain to 0 mm every hour. Wade rebooted BSM at 3:20 PDT with the hope that this would clear up issue (it didn't). He will bring a new rain gauge and power box on the next visit.
- November 18, 2009 - Site had no a/c power, both LVDs powered off, GTSM still running on battery power. Apparently a transformer blew a few days earlier and the GFI inside the garage of the North Coast Land Conservancy needed to be reset. This was done at 13:30 PST and power returned to the station. Seismic data was lost during this short outage, but no strain data.
- December 8, 2009 – Wade visited the sited to clean out and test a partially blocked rain gauge.
- Feb 8, 2010 – Wade visited the station with Friesen and Kamer. They removed the GPS antenna (leaving mount). Wade shut down the station, removed old enclosure and replaced it with standard one. He installed electronics rack and replaced the GPS antenna and raydome. GTSM would not turn on, so Wade replaced the powerbox. Station was back online by 12P:00 PST. The wellhead is still artesianing, slowly dripping inside enclosure. The station still has the original fiber modems, these need to be upgraded during the next visit.

- Feb 23, 2010 – Replaced RT board and repaired battery cable.
- March 4, 2011 – Liz visited the site to figure out why it was offline. Everything was off except the FO Modem to the GTSM. The battery main bank had 11.11 Volts. There was no power coming into the site. Power comes from the garage of the Conservancy building. No one is on the premises so a note and voice mail was left for the Conservancy.
- March 7, 2011 – The power was reset and the site is back online.
- April 21, 2011 – Site was not receiving power. All equipment was off upon arrival at the site. The breaker for the site, in the garage, had to be reset. Both fiber-optic data ports were replaced to meet the current BSM site standard.
- October 24, 2011 – The VSAT IDU, dish, and ODU were removed. Cable and mount were left on site. The mount was heavily corroded and cannot be reused. The aluminum parts of the ODU were also heavily corroded, but it still works. I marked on the pole with tape the direction to point a VSAT for the Sat. H1 if one is reinstalled.
- October 31, 2011 – The Sprint card was removed from the proxicast and placed in a PC (PCMCIA/Express card slot) and the Sprint software of Smartview was used to attempt to update the card. This did not initially work. The PC had the most current version of Smartview installed. For other cards with the same issue, it should be noted to install the version of Smartview that matches the card and 3G network. Once the older version of Smartview was installed on the PC the card automatically updated. The Proxicast was reassembled and returned to the site. They could ping and log onto the strainmeter without re-initiating the VPN.
- December 5, 2012 – The office building/house for the North Coast Land Conservancy in Seaside, Oregon, burned to the ground as of this morning. The fire department advised that the box and equipment at the surface were heated quite a bit and to let you know that possibly there could have been damage to it. It is too early at this point in time to know how soon it will be before power is restored or when the new office will be reconstructed, and where.



- December 10, 2012 – Liz met with the Director of the Conservancy to discuss the power issue prior to visiting the site. He was willing to let us take power from the nearby barn or have our own drop. They do plan on rebuilding the house/office, but that will be in half a year, if not longer. There was no heat damage to the site. Batteries were at 11.5V and the LVD had powered down all equipment except the GTSM. There were people working at the Conservancy and they allowed Liz to plug the site into a nearby barn. A hole was drilled into the enclosure to run the extension cord through (this will be used for a MetPack in the future). She moved the Sprint Proxicast power into the main power block. The BSM side was offline because it was wired into the comms power block. Liz was alerted that the property has a theft problem, and the Seaside Detective stops by and talks to her. Lize plans to hire an electrician to provide a drop from the nearby barn to the site. John Wickershame, representing the Conservancy, will approve the work. More batteries should be added to the main bank.
- January 14, 2013 – Liz met the electrician at the site to hand of the enclosure key and go over the trenching plan. She also spoke with the director of the Conservancy to make sure they did not trench though any lines. Also replaced the Q330 GPS, but still no improvement.
- January 18, 2013 – Electrician trenched and ran power from the shed.
- January 19 2013 – Inspector approved the work.
- March 5, 2013 – The batteries were replaced. The site had six batteries, which were replaced with 10. 6 for the main bank and 4 for the GTSM. There was a limited room for the battery main bank. Also, there were 4 batteries labeled that they were added in 2010. They are still at the site. Liz cleaned the corrosion off of the terminals, which was caused by the constant dripping of the wellhead. A flow stone is beginning to surround the batteries. The marmot and Q330 were both power cycled. Liz also added Velcro straps to secure all equipment to the equipment rack and completely re-organized the site wiring.
- March 6 2013 – A MetPack was installed.
- March 12, 2013 – Q330 was replaced.
- May 8, 2013 – Sealed MetPack prongs/ports to keep moisture out. Set quads and chop. Only CH3 needed the quads adjusted, and chops were only set on CH2 and CH3. Desiccants were added to the site.
- May 14 - 16, 2014 – Site was powered by a generator. Battery main bank bean at 11.22V. A utility worker arrived while fueling the generator. He said the meter was too rusty and should not be attached to the power pole, the meter will need to be replaced. A temporary solar array will be set up for the summer.
- May 21, 2014 – Began temporary solar panel construction. Powered site with generator and left it overnight to charge batteries.
- May 22, 2014 – Replaced GTSM cable connector that goes into GTSM power box (cable goes from GTSM batteries into the power box battery A). GTSM battery bank was too low for GTSM to turn on. Later it come on at 12.5 volts. Completed temporary solar panel construction. 6 panels are leaning against the south side of the enclosure (GTSM access side) and old VSAT pole. Solar panels were secured to the enclosure. Reconfigure and wired back

panel, added a solar charge controller, switch, solar section, and tested with volt meter. A few hours after leaving it became cloudy. Should add tension straps to ensure panels cannot be blown over in strong winds.

- June 3, 2014 – Visited site and will use the generator for the rest of the week to help the batteries catch up. Re-angled the six solar panels. The Oregon coastal clouds are not helping. Nature Conservancy is working on restoring power, but it could be a month before power is restored. The Generator was run on June 2,3,5.
- July 10, 2014 – The electrician completed his work the first week of July. Was waiting for the inspector approval and the power company to install the meter. Dropped by site and notice there was a meter and the site had power again. Removed solar panels and rewired the back panel from DC back to AC.
- September 15, 2015 – Annual O&M visit. Adjust GTSM chops and quads, and check site. Refreshed GTSM desiccants and replaced rusted locks.
- November 24, 2015 – GTSM was running on arrival. CH3 was in G2. Power cycled CH3 board. CH3 returned to G3. Pinging from blue Ethernet coming out of GTSM failed. Power cycled Logger board. GTSM data flow was restored. Liz could not test remote ping. Lancell II showed good service. Logged on and rebooted twice. Site comms were restored. Lancell took the site off-line last weekend. Plan on replacing Lancell during planned coastal O&M. The wellhead has well formed stalactites, which are constantly dripping, and a flow stone on the cement pad around the wellhead. Water was pooling in corners of the enclosure floor.
- July 6, 2016 – GTSM was offline. Tried pinging GTSM working from the Lancell to the GTSM ethernet connections. No ping success. All GTSM boards were on. Power cycled complete system, including the fiber optic data port for the GTSM. Can now ping GTSM. Cannot ping Marmot and NetRS. Rebooted Marmot twice, but no change. Played with 4-port fiber optic data port by switching ports. Reseating Marmot ethernet connection resolved issue. The ethernet cable for the NetRS was bad and was replaced.
- August 3, 2016 – Tested capacitance and resistance of downhole instruments.
- September 22, 2016 – Power cycled GTSM. This is the second time the logger board has been power cycled for this issue. On arrival notice CH3 was in G2. Power cycled RT board while power cycling logger board. Returned to Gain 3.
- December 13, 2017 – Logger board had failed and was replaced. Reviewed GTSM chop and quad field practices. Turned off GTSM and discuss downhole instrument testing. Swapped out bad LED board on CH2 RT board.
- February 23, 2017 – Swapped out CH3 RT board. Will remotely monitor gain status text file. Checked the quadrature after the RT board swap and there was less noise.
- September 13, 2017 – Logger board had failed and was replaced. Rain gauge was very clogged, cleaned it out.
- November 29, 2017 – Rain Gauge was clogged and pooling water. Cleaned rain gauge. Opened GTSM power box to test the battery charge settings, set at 1.2 V. Site has a small

over charge. Did not adjust.

- January 9, 2018 – Comms equipment upgrade. Swapped proxicast LC2 for RV50. Moved VPN connection to ASA.
- January 24, 2018 – One of the back panel breaker switches was tripped. All equipment was offline except GTSM. All equipment except the cell modem powered up normally. Swapped failed cell modem.
- August 16, 2018 – RV50 was completely dead, replaced with a new one. Site had both a Setra and a Metpack, removed Setra.
- November 28, 2018 – RV50 in site would not power on, swapped with new RV50. Cleared out clogged rain gauge. Adjusted GTSM chops and quads, small adjustments. All channels are noisy.
- April 28, 2020 – Rebooted marmot
- May 7, 2020 – Chad arrived to find 10A breaker leading to LVD was tripped and would not reset. RV50, Q330, Marmot and Rx5 were all offline. Swapped breaker, but new breaker also would not reset. Re-installed original breaker, and began disconnecting equipment and trying to reset the breaker. When the Rx5 was removed from the load circuit, the breaker reset and stayed closed. When the Rx5 was re-connected, the breaker failed. The Rx5 and power cable was replaced. The new receiver eliminated the breaker failure, but the antenna would not track satellites. Antenna was replaced, as well as the in-line huber-suhner lightning sponge.
- May 29, 2020 – Liz met with electrician to review site power surge issue. Power comes from the small easternmost shed. Roofing over breaker box was missing and the knockouts on the top of the breaker box were open. Rainwater had been able to run in. Breaker box was highly corroded. Electrician cleaned up all breaker box connections, sealed the open knockouts, and reinstalled a new GFCI outlet in the site enclosure. Liz cleaned out clogged rain gauge. She removed a main battery bank of 3 so that electrician could get into site enclosure to work. Swapped in 3 new batteries. She will replace the other main battery bank of 3 and report a battery bank swap when returning to site to complete other site issues. Installed new power box because of bad GPS timing. Swapped CH0 RT board. Logger board was stuck in event mode. Did basic logger board set-up on-site.
- October 9, 2020 – PacifiCorp completed work. Switched on breakers and reset GFCI outlet. Documented trenching of underground line. Complete swap of main battery bank. Swapped in 3 new batteries. Main battery bank is 2 banks, each with 3 batteries.