



THE STATE
of **ALASKA**

GOVERNOR MICHAEL J. DUNLEAVY

Department of Natural Resources

DIVISION OF MINING, LAND & WATER

Mining Section

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Red Dog Mine Inspection Report

Inspection Date: July 9, 2019 thru July 11, 2019

Weather: Partly Cloudy, Calm winds, 70 to 80 F

Time of Inspection: 8:00 AM to 5:00 PM

Operator Contact: Chris Eckert, Frank Bendrick, Robert Napier

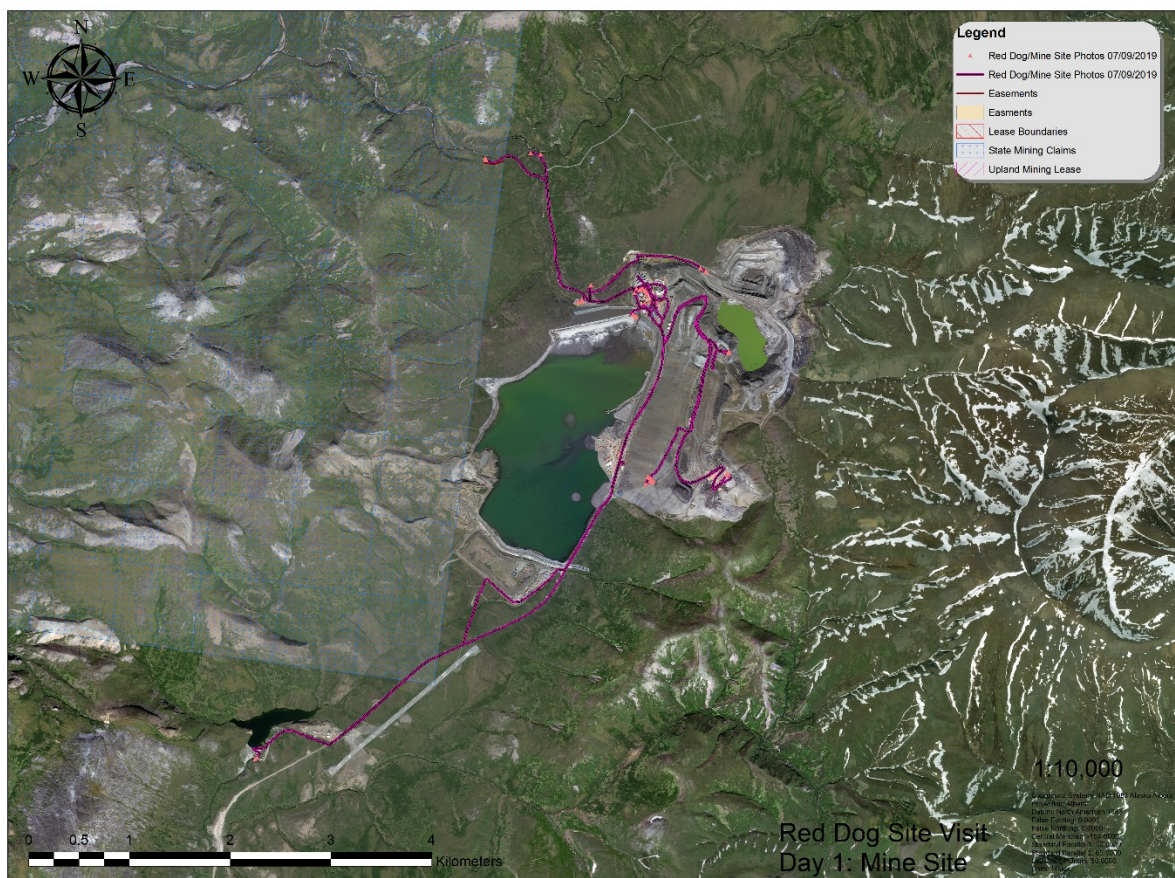
Agency Personnel: DNR: William Groom, Hollie, Chalup, Jenny March, Kyle Moselle & Emily Hart

DEC: John Clark & Tim Pilon

DF&G: Audra Brase

Inspection Objectives: This was a multi-day, multi-agency site visit to review the current Red Dog Operations and future expansion plans of the mine site and exploration program for Anarraaq and Aktigirug deposits. As a part of this trip, the agencies also looked at a recent Zinc Concentrate Spill along the Delong Mountain Transportation System (DMTS), plans for additional dust control water collection sites and a tour of the Port Facility.

Day 1: The first day on this trip was dedicated to looking at the currently active workings at the Red Dog Mine Site, the Waste Rock Dumps, the Tailings Impoundment Dam, Water Discharges and test Reclamation Plots. Map 1 shows a GPS track and locations of photos taken on the mine site.



Map 1: Red Dog Mine Site with GPS Track and ground photo points.



Red Dog Main Pit & Aqqaluk Pit



Back filling of Red Dog Main Pit



Revegetation test plot on Main Waste Dump



Revegetation test plot on Main Waste Dump



Woodchipper to test adding wood chips to revegetation tests



Revegetation test plot on Main Waste Dump



Wood chip revegetation test cells



Seep near Qanaiyaq Pit



Water collection ditch on Main Waste Dump



Qanaiyaq Pit



Water Treatment Plant #2 Tank



Red Dog Main Dam from Mill Complex



Water Treatment Plant #2



New Seepage Collection system below downstream face of the Main Dam



Outfall 001



Red Dog Creek Fish Weir



Upstream Face/Backside of the Main Dam



Below Bons Creek Reservoir



Waterfall at Bons Creek

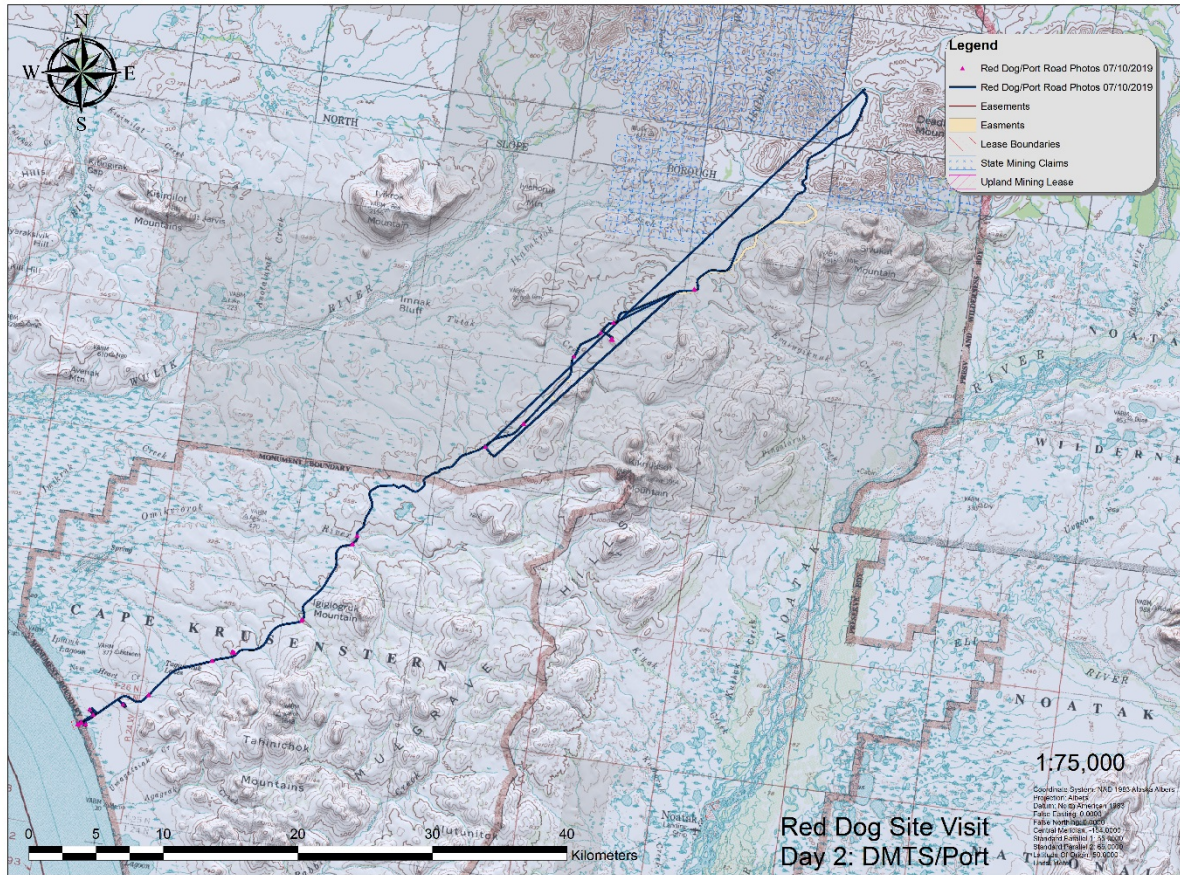


Red Dog Creek Diversion



Red Dog Creek Diversion looking Downstream

Day 2: The second day on this trip was dedicated to looking at material sites & water sources along the DeLong Mountain Transportation System (DMTS), the Zinc Concentrate Spill that occurred on June 20, 2019, previous spill site reclamation and the Port facility. Map 2 shows a GPS track and locations of photos taken along the DMTS & at the port facilities.



Map 2: Delong Mountain Transportation System/Port Site with GPS Track and ground photo points.



Calcium Chlorate Sacks at Water pumping site



Truck filling with water for DMTS road watering



Pump at water site along DMTS



Stormwater Pond at Material Site



Pump used to collect stormwater for road watering.



Bear track in dried mud at stormwater site



Cleanup of Zinc Concentrate Spill @ approx. MP 29 DMTS



Contractor measuring soil metals with mobile XRF



Excavator cleanup at approx. MP 29 DMTS



Old Material Site that is being examined for future water point for road watering work.



Concentrate Storage Buildings (CSB) at port site.



Covered conveyor from CSB to tender loading site



CSB and water collection ponds



Interior of CSB



New Fuel Storage tank construction site



Tender loading Concentrate onto waiting ship.



MP 29 Spill after excavator work.



Reclamation condition at the MP 35.2 spill from 2012.



Vegetative regrowth at 2012 Concentrate Spill

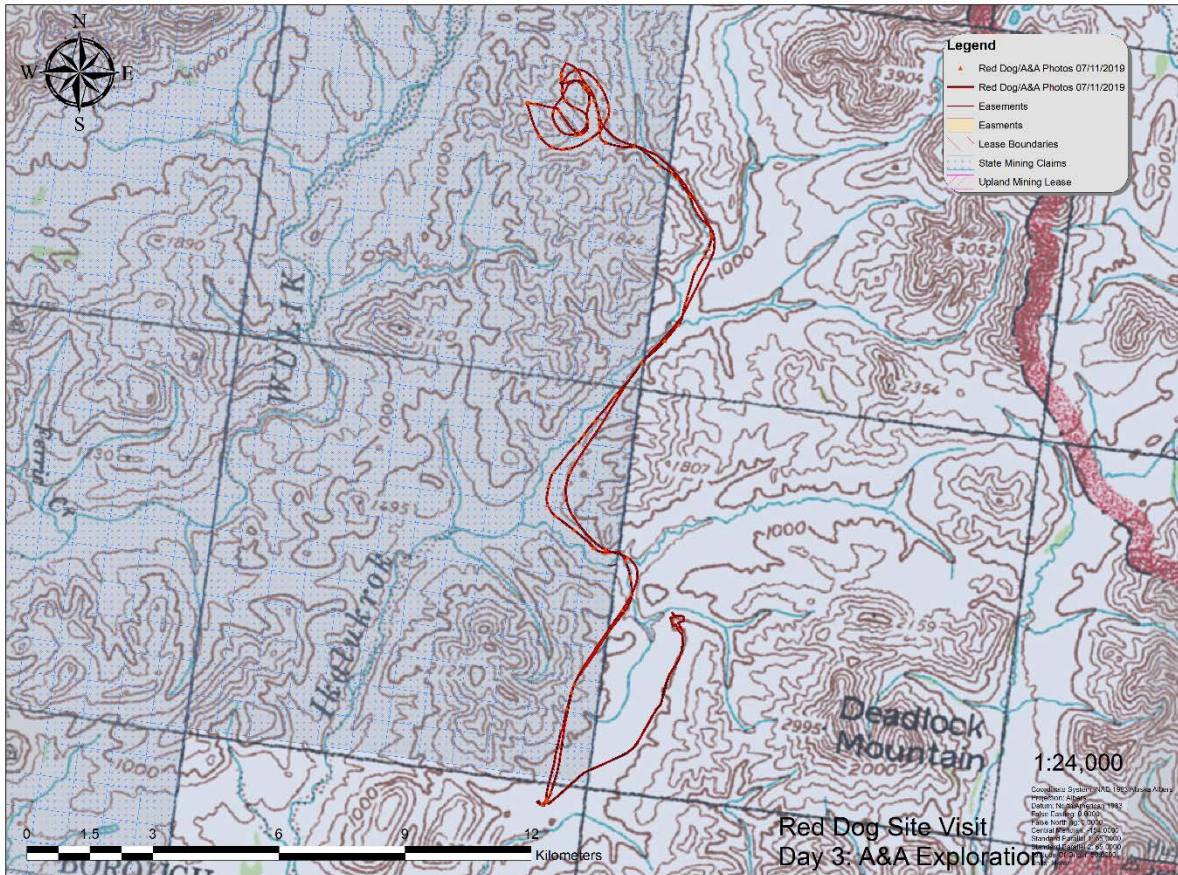


Vegetative regrowth at 2012 Concentrate Spill



Vegetative regrowth at 2012 Concentrate Spill

Day 3: The third day on this trip was dedicated to examining the proposed route out to the Anarraaq & Aktigiruaq Exploration program as well as the current drilling occurring on site. Map 3 shows a GPS track and locations of photos taken on the route to and at the A&A Exploration site.



Map 3: Anarraaq & Aktigiruk Exploration (A&A) route/site with GPS Track and ground photo points.



Helicopter Pad for A&A program



Start of Potential A&A exploration road site and future Material Site



Start of Potential A&A exploration road site and future Material Site



Old structure near abandoned airstrip



Rock outcrop in Ikalukrok Creek



Natural Mineral Seep along Ikalukrok Creek



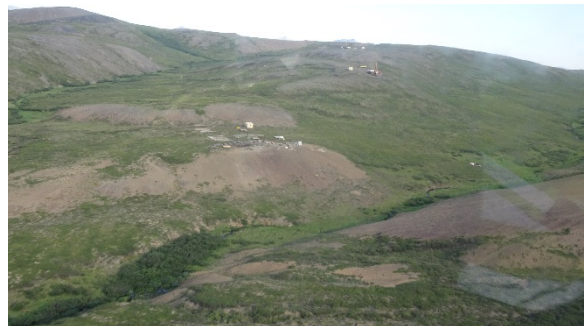
Potential stream crossing site



Terrain along Ikalukrok Creek and potential access alignment.



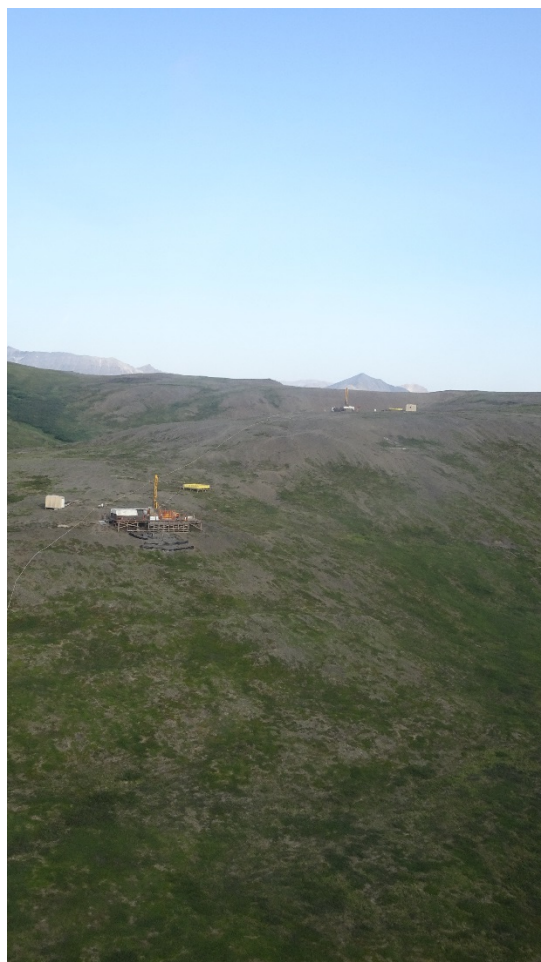
Rock outcrop along Ikalukrok Creek



Drill site at A&A program.



Drill at A&A program



Exploration Drill at A&A program



Water pumping site at A&A.



Looking at proposed A&A exploration pad site.



Boart Longyear TruScan core logging XRF being tested at Geology camp.

Additional photos of all three days on site are available.

Conclusion: Operations at the Red Dog Mine Site appear to be in good condition and the test plot revegetation sites on the Main Waste Dump are growing well. There did not appear to be any offsite discharges of material from the mine site. There is also a high level of continued development activity as Teck works on the current Main Dam lift, moving the seepage collection site, backfills the Main Pit lake and continues mining from the Aqqaluk and Qanaiyaq Pits.

Along the DMTS, Teck is looking at potentially reopening a closed Material Site on State Lands to collect spring snow melt to help water the roadway. Also, while travelling the DMTS, Agency and company staff spent considerable amount of time trying to locate older concentrate spill locations along the roadway. This task was not made easier due to the Agency staff only having dates and milepost numbers for the spills. When we traveled the DMTS roadway, Teck representatives were able to pull up some Lat/Long coordinates for spills, but others as written descriptions and the Lat/Long coordinate for one site was in an older coordinate system (NAD27). At the Port Facility, Teck is in the process of constructing a new Fuel Storage Tank to help offset any future issues with fuel barges not being able to arrive on schedule as well as developing plans to reskin the Concentrate Storage Buildings.

The A&A Exploration Program appeared to be in good condition with two Geotechnical Drills and two Exploration Drills in operation on site. The proposed road corridor is still being refined and Material sites for road base material being identified. The exploration program has also identified a different site that they may pursue for the placement of an underground exploration portal. Current exploration drilling is using a new drill rig in order to help with offsetting the amount of the 2000 feet of overburden core the project drills through.

Action Items:

1. Teck and the Agencies need to work better in coordinating a unified method of locating and documenting the old spill sites along the DMTS for follow-up inspections to ensure that sites are properly revegetating and not presenting any long-term issues.

2. To ensure that all State permits are timely identified and received, Teck should coordinate with DNR/DMLW-Northern Region Office concerning the reopening of a closed Material Site along the DMTS to serve as a water collection site.

End of Report

Cc: Kyle Moselle (ADNR)
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Steve Buckley (ADNR)
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Allan Nakanishi (ADEC)
Tim Pilon (ADEC)
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