

Wrangell Junkyard Cleanup



**Innovative Remediation Technologies
Wrangell Junkyard site Cleanup
Wrangell, Alaska
October 6, 2016**



Site History Summary

- Virgil Byford purchases property in early 1960s, begins salvage yard operations
- Kurt Gibb purchases property from Byford, 1994, continues salvage yard
- City and Borough of Wrangell forecloses on property in 2008 due to unpaid taxes



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Site History Summary

- Concerned about Off-site lead migration Risk
- EPA contractors, Ecology and Environment, studied the site
 - E&E Preliminary Assessment 2001
 - E&E Site Characterization and Removal Estimate 2002
 - E&E Targeted Brownfields Assessment



Site History Summary

- Lead (Pb) was the primary contaminant at the Site.
- Previous investigations found total lead concentrations of up to 155,000 mg/Kg in surface soil and concentrations up to 8,440 mg/Kg at 3.0 feet below ground surface.
- These investigations also confirmed that the lead was leachable and posed a significant threat to residents on adjacent properties and biological resources in the marine waters of Zimovia Strait.



Site History Summary: ADEC Involvement

- Following EPA funding removal in 2015, ADEC decided to Fund Cleanup with Emergency Response Funds due to immediate threat to human health and risk to the environment.



Project Summary

- The ADEC awarded project to NRC Alaska to conduct a Remedial Action at the site under it's Spill Prevention and Response (SPAR) Term Contract
- NRC Alaska used a team of local and Alaskan contractors and consultants to complete the work



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Project Summary

- NORTECH
Environmental,
Energy, Health &
Safety – Juneau and
Fairbanks
- BW Enterprises of
Wrangell – Equipment
and shot rock/backfill
- Marine Transportation
and Haz Waste
Disposal
subcontractors Alaska
Marine Lines and WM
of Oregon



Original Scope of Work

- Develop and Implement IRAP/SCP/SWPPP
- Collect, Remove, Package, Ship, and Dispose of Bulk Lead Debris
- Build Site Access Roads and Pads for Soil treatment process
- Removal, Treatment, and Shipment of lead contaminated soil as Non Hazardous waste.



Change From Estimated Conditions

➤ Significant Changes

- Depth of Contaminated Soil is Estimated at an average of 3.5 Feet
- Similar to E&E Test Pits Instead of E&E Hand Borings
- E&E Assumption of Bedrock Depth Inaccurate
- Contamination Extends to Underlying Till Layer throughout majority of Site



Site Risks

- Drums Remaining as Potential Source Material
- Surface Debris and Trash as Physical Hazards
- Lead Plates and Battery Shards
- Lead Contaminated Soil
 - Six surface battery burn piles were evident
- Lead Leaching into Zimovia Strait
 - E&E found that clams on beach below the site are lead contaminated



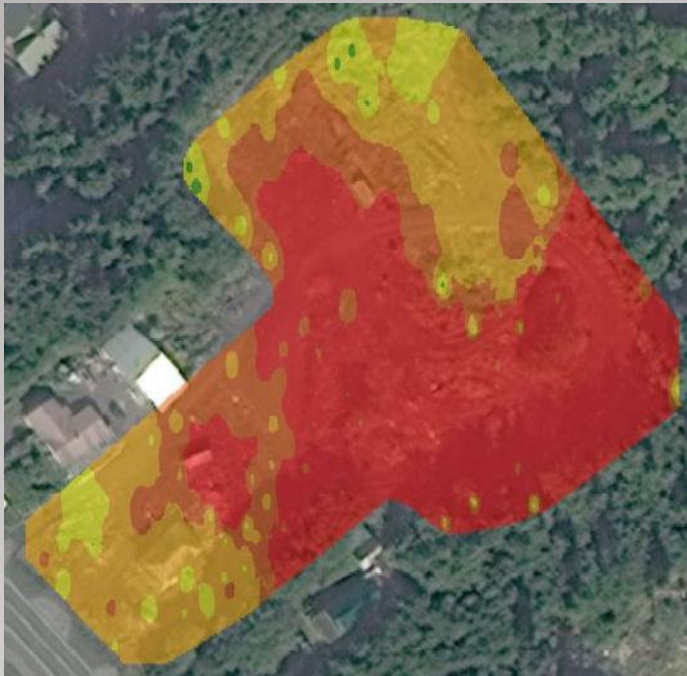
Change From Estimated Conditions

- Most Aspects of the Project Progressed as Anticipated
 - SWPPP Implementation Reduced Runoff Contact with Contamination
 - Debris Disposal at Wrangell Landfill
 - Off-site Burning of Woody Debris
 - Lead Contamination is Present Across >90% of Site

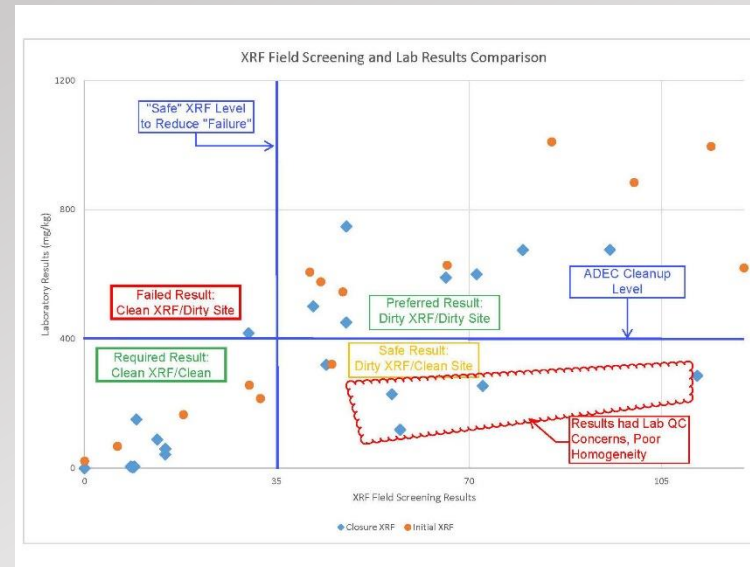


Lead Correlation

- Previous Observations
 - 90% of Surface >400 mg/kg



- NITON XRF and Lab Results
 - NITON Screening is Effective
 - Action Level of <35 (3 Shot Ave) Corresponds to <400 mg/kg



Extensive Lead Contamination

- Batteries and battery fragments were found throughout the soil matrix



Lead Contamination Existed at Depth

- Excavation work to construct road through Area A noted depth of lead, POL and assorted automotive debris extends to the till layer at depths ranging from **3 to 5 feet**.
- Excavation work and test trench on Area B noted contaminated material ranging from **3 to 6 feet** to the till layer
- Excavation work to construct the pad for the screen plant on Areas C & D also noted contaminated material extends to till layer at **3 to 5 feet**.



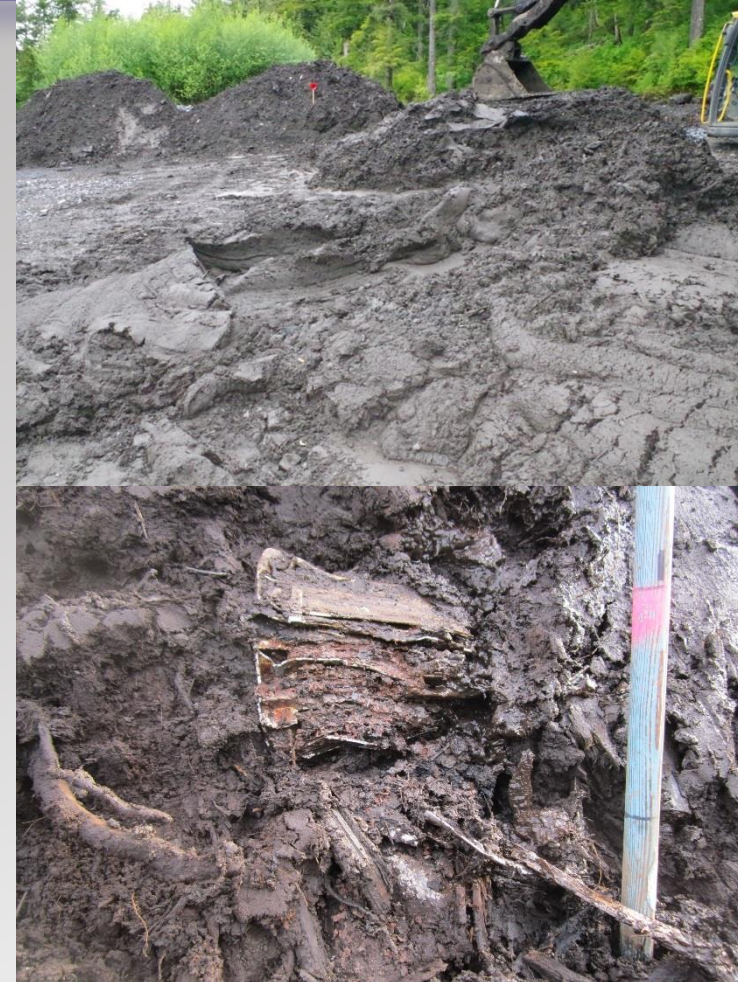
Contaminated Soil Quantities

- Lead Contamination Present in Surface Soil/Organic Layer
 - Surface Soil/Organic Layer was disturbed or otherwise churned to Till
 - Till Depth Ranges from 2.5 to 5 Feet (Average is 3.5 Feet)
 - Mixed Lead, POL contamination and Car Parts Throughout
- Original Estimate: 4,000 CY
- Revised Estimate: 16,500 CY
- Actual Quantity: 18,300 cubic yards of stabilized contaminated soil was left stockpiled at the Site



Project Approach

- Removed Debris and Establish Site Control
- Installed SWPPP BMPs to Manage Runoff
- Setup Soil and Water Handling Areas
- Characterized, overpacked, and shipped for disposal site drums
- Removed Bulk Lead (Battery plates, shards and fragments) as Hazardous Waste



Revised Project Approach

- Excavate and Stabilize Lead Contaminated Soil
- All Soil Above 400 mg/kg Lead Treated with ECOBOND to Reduce/Eliminate Lead Leachability
- Creation of a secure stockpile to be left on-site for future move to a local monofill.



Project Approach

- Project divided into four main areas during Site survey prior to work
- The project site has been mapped using GPS
- Project maps are updated daily
 - Sample and site progress map
 - SWPPP BMP Map



Site Screening and Mapping Techniques

- The Site was mapped using a Trimble TSC3 GPS surveying unit with base station
- Excavation done in one foot lifts, with samples collected for field screening at 10' grid nodes
- If field screening displays positive results for lead or POL contamination, the excavation is advanced another foot in depth in that area



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Project Approach

- Installed SWPPP BMPs to Manage Runoff
- Setup Water Handling Areas
- Processed nearly 115,000 gallons of water for surface discharge



Project Approach

- Construct Capture/settling trench
- Set up Settling tank
- Filters – zeolite and carbon
- Post treatment holding tank and test prior to discharge



Petroleum Contamination

- Petroleum contamination was present in roughly 5-8% of the excavated material
- Subsurface crushed drums containing petroleum were located



Extensive Debris

- Debris, including automotive, industrial and marine engines and parts and tires was present throughout the site, throughout the soil matrix



NRC Project Progress Timeline

- October 2015: NRC Technical Proposal Submitted
- November 2015: NRC Awarded Cleanup Project
- December 2015: Draft Plan Development
- January 2016: IRAP/SCP/SWPPP Submitted
- Early February 2016: Plans Approved
- Late February 2016: Mobilization and Implementation
- Early March 2016: Completion of IRAP area work



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NRC Project Progress Timeline

- March/April 2016: Site access established and shot rock brought in to establish working surfaces
- May/June 2016: Water treatment system/soil treatment systems up and running
- June/July 2016: Perfection of soil treatment and debris management
- July/August 2016: Majority of soil treatment and building of secure stockpile for treated soil



Aerial View of Project Progress March 15, 2016



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Aerial View of Project Progress April 15, 2016



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Aerial View of Project Progress May 4, 2016



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Aerial View of Project Progress May 24, 2016



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Aerial View of Project Progress May 31, 2016



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Aerial View of Project Progress June 16, 2016



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Aerial View of Project Progress June 22, 2016



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Aerial View of Project Progress June 27, 2016



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Aerial View of Project Progress July 20, 2016



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Aerial View of Project Progress July 28, 2016



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Project Completion August 02, 2016



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Project Area Photos



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Project Area Photos



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Project Area Photos



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Definition of Project Success

- Reduction of Human Health Risk
- Use of Funding Cost Effectively
- Safe operations on a technically challenging site in sometimes very challenging conditions
- Right people, right equipment and techniques



Project Take-Aways

- Sometimes Project Completion is not Achievable Due to Funding
- Sometimes speed is needed for elimination of the threat
- Access challenges for a small, steeply sloped site in a wet area
- High priority project in a highly visible area



Project Take-Aways

- Access issues for ~300 cubic yards of material on adjoining land owned by the Alaska Mental Health Trust (AMHT), and ~450 cubic yards from the neighboring residential property



Project Take-Aways

- Management of water and runoff – big challenge
- Successful on-site treatment, use of local subcontractors, Consultants and transportation experts
- Local buy-in from all levels in a small community



Special Recognition

- ADEC – Division of Spill Prevention and Response
- ADEC – Contaminated Sites Division
- ADEC Administration up to and including the Commissioner's office
- City of Wrangell and its fine citizens
- Dedicated Environmental Professionals from all Companies involved

