Clearwater River Petroleum
Seep
Hunt Oil Card Lock
Orofino, Idaho

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Nez Perce Tribe
Gasoline “Blooms”
Reported New Years Eve 2011
Hunt Oil Card Lock

- Above Ground Storage Tanks (ASTs)
  - 3 Clear Diesel 30,000 gal
  - 1 Dyed Diesel 20,000 gal
  - 1 Regular Gasoline 20,000 gal
  - 1 Premium Gasoline 10,000 gal (closed 2010)
  - Secondary containment
  - 4 buried pressurized lines to dispensers
Hunt Oil AST

Underground Fuel Lines to dispensers

40 ft Trench
UST Inventory–Orofino, ID

Clearwater River Gasoline Seep
NRC # 1003665; State Hazcom # H-2011-00275

NO SCALE PROVIDED
Hunt Oil
Petroleum Leak Detection

- Inventory Control 2010–2012
  - Manually gaged–wooden stick
  - No drop tube
  - No temperature correction
  - Sales vs gaging errors ranged between +3,843 and −1,951 gallons

- Line Tightness Testing
  - Fall 2011 Passed
  - January 2012 Passed
  - February 2012 Passed
  - July 2013 Failed
January 5, 2012
Petroleum slick after river drops
Search for the guilty

- Hunt never sold lube oil
- Abandoned county landfill was located on the banks of Clearwater River
- Hunt Oil claimed it was Clearwater County’s spill
- Hunt was willing to clean-up their contamination, but not everybody else’s!
March 14, 2012
Sheen from sand
LNAPL Measured in Wells

- Petroleum Forensics
- 1 ft gasoline found in MW–2
- 0.7 ft diesel found in MW–3
- LNAPL collected from wells and tanks and sent to US Coast Guard petroleum forensics
- Gasoline in MW–2 matches unleaded in tanks
- Diesel in MW–3 highly weathered
Lnapl Recovery–Vacuum truck

- 1.8 gal fresh gasoline recovered
- 1.2 gal weathered diesel recovered
- Vacuum Truck ineffective at recovering free product
MW-2
LNAPL Recovery

Cumulative Ounces

Oz LNAPL

3 Monitor Wells Drilled Air Rotary

- 2 wells downgradient towards river,
- 1 up-gradient/uphill from dispensers
- 150 cubic ft per second added to remove cuttings
- Very little odor/PID readings
- No free product
- Tentatively conclude Hunt Oil not source of gasoline
- Continue looking for alternative source
Clearwater County UST Investigations

- UST closure a mess
- Unclear if there were 6 tanks or 3 tanks reported twice
- Size of tanks removed did not match tanks installed
- Hunt Oil had prior knowledge of gas spill during tank removal
Clearwater River Sheen
July 23, 2013
Sheen at Clearwater River’s edge

Coon tracks and sheen

Transformer – no BCBs
Pacific Lamprey, Bonneville Dam
Elmer Crow, NPT Elder
Lamprey Ammocoetes
Oil Stringers in Shovel Pit
July 23, 2013
Vapor Monitoring River Seep

7/30/2012 PID Readings
Beach Air vs Shovel Pit Air
BTEX from Shovel Pit Water

Orofino Gasoline Seep
7/23/2012

The graph shows the concentration of various compounds in the Orofino Gasoline Seep on 7/23/2012. The x-axis represents the distance in feet west from the transformer, while the y-axis shows the concentration in parts per million (ppm). The compounds measured include Benzene, Ethylbenzene, Toluene, and Total Xylene, as well as Total VOC and PID (detail) ppm.
BTEX in River Water

Clearwater River Water Samples  7/24/2012

- Benzene
- Ethylbenzene
- Toluene
- Total Xylene
- Total VOC
- Napthalene
Pressure “failed” line Removed
Pressure “tight” line gasoline wet
Failed Cathodic Protection

New Mg Anode

Corroded Hunt Oil anode
2300 cu yds excavated
December 17, 2012
Insitu Chemical Oxidation (ISCO) Mixing Regenesis™
Spreading Regenesis™
Clearwater River Hydrograph vs Sheen
Conclusions

- Gasoline sheen enters river only at elevations between 5.5 and 2 ft
- Gasoline acted as a solvent mobilizing weathered diesel and engine oil
- ISCO was not effective down gradient from pit
- The vacuum truck was ineffective at removing free product from monitoring wells
- Leak detection procedures were inadequate
- A significant amount of fuel remains between excavation and river
- Groundwater remediation is needed