



DETAILED ACTION PLAN

OSCARVILLE SCHOOL TANK FARM

WASTE EROSION ASSESSMENT & REVIEW (WEAR)

MAY 2015

The **Oscarville School Tank Farm** is located at latitude 60.722953 and longitude -161.772458 and was inspected for the Waste Erosion Assessment and Review (WEAR) project on September 17, 2012. The tank farm is owned and operated by the Lower Kuskokwim School District and the landowner is the State of Alaska Department of Education, per Quit Claim Deed 1989-000131-0 in the Bethel recording district.



Imagery Dated 2012. WEAR Map at <http://dec.alaska.gov/eh/sw/wear.html>

Community* – OSCARVILLE – Located on the north bank of the Kuskokwim River, across the river from Napaskiak, 6 miles southwest (downriver) of Bethel and 401 miles west of Anchorage. Oscarville is primarily a Yup'ik Eskimo village. Subsistence is an integral part of the daily lifestyle, with commercial fishing a main source of employment for many residents.



CONTAMINANT RISK

The tank farm has operated since the mid-1980s and is considered a small site at 0.09 acres. It consists of five single-walled, vertical fuel tanks with a total capacity of approximately 28,000 gallons of heating oil. It supplies heating oil to the Qugcuun Memorial School's generator building and the tanks are filled once a year from a fuel barge via hose connection. The tanks stand on wooden foundations surrounded by a wooden perimeter dike. During the inspection, no liner was evident within the perimeter dike as vegetation was growing throughout the enclosure and around the tanks. The vegetation's root system has the potential to penetrate any liner making a pathway to the underlying soil. Contaminants associated with heating oil include benzene and polycyclic aromatic hydrocarbons (PAHs). These contaminants are known to cause cancer and other chronic diseases.

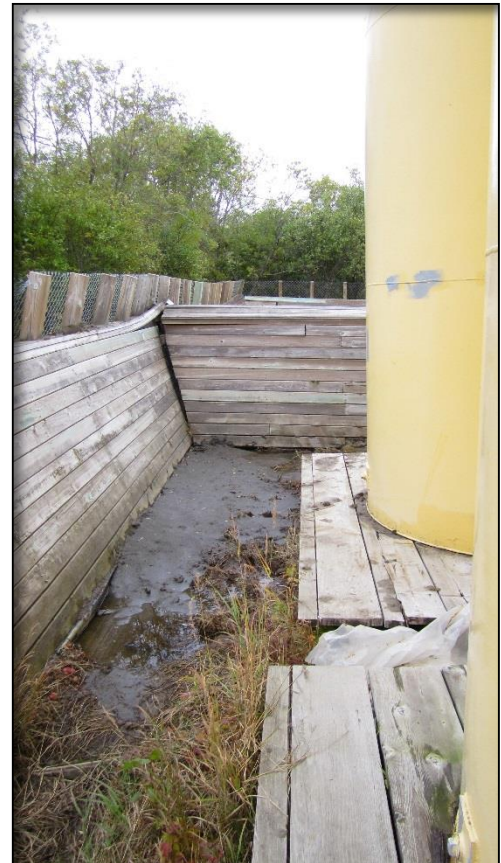
The tank farm is located 120 feet from the school well, 165 feet from residences, and 790 feet from a subsistence fishing area. The tank farm sits within the drinking water protection zone for the school's drinking water well, which draws from groundwater. According to the Alaska Department of Environmental Conservation's (ADEC), Drinking Water Watch database, the well is monitored annually for a group of volatile organic compounds (VOCs) related to fuel products. Although no VOCs have been detected above the drinking water standards, xylenes are consistently detected.



Vegetation Growing in Tank Farm (ADEC 2012)



School Tank Farm (ADEC 2012)

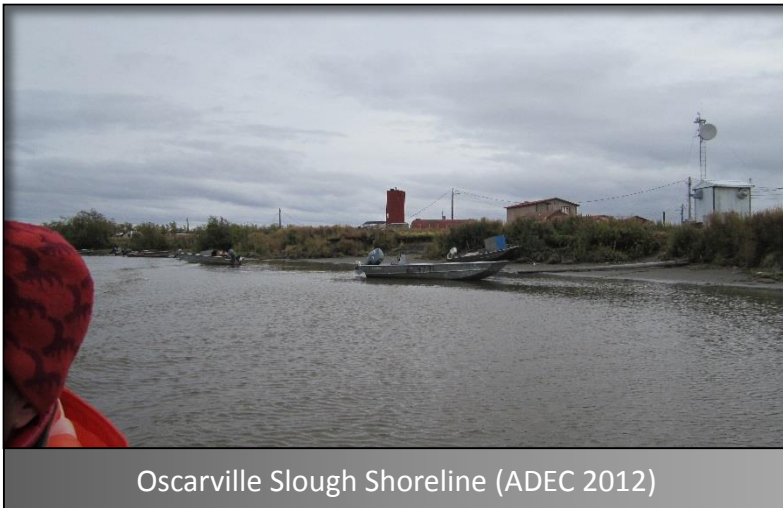


Wooden Fence and Vegetation (ADEC 2012)

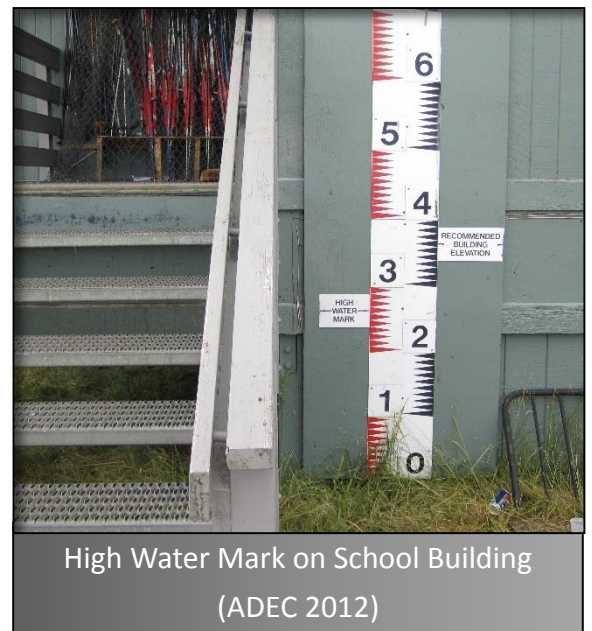
EROSION RISK

The school tank farm is located 145 feet from the Oscarville Slough that connects to the Kuskokwim River. Community residents report an erosion rate of 3 feet per year. Erosion is primarily caused by river currents and ice jams, with other factors including boat wakes and pedestrian and off-road vehicle traffic on the riverbank. The last known large flood impacting the site was the flood of 1989 that produced state and federal disaster declarations and resulted in the Army Corps of Engineers placing a high water mark on the school to document the event. The riverbanks are comprised of silt, which is more easily eroded than granular soil types such as gravel.

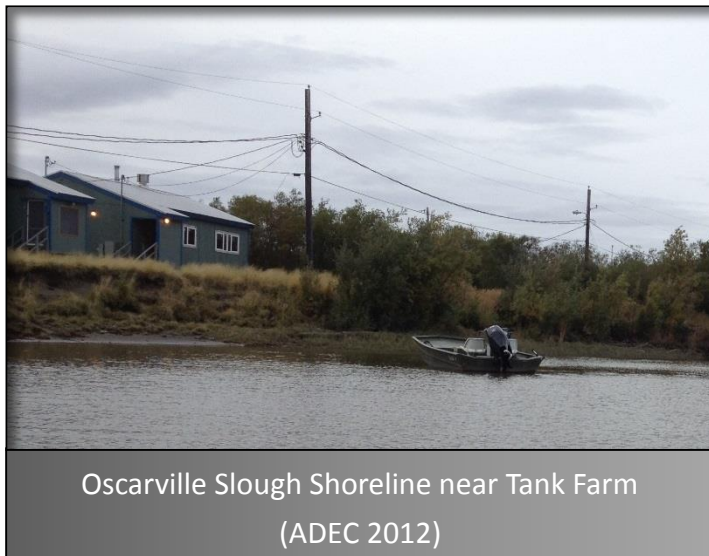
At current erosion rates, the site will be impacted around 2055.



Oscarville Slough Shoreline (ADEC 2012)



High Water Mark on School Building
(ADEC 2012)



Oscarville Slough Shoreline near Tank Farm
(ADEC 2012)

MITIGATION

There were no erosion mitigation measures in place on Oscarville Slough as of the 2012 WEAR inspection.

Mitigation Options

- A. **No Action** – Based on the reported erosion rate of 3 feet per year, erosion is estimated to impact this tank farm in approximately 2055. If no action is taken for this site, the Oscarville Slough will continue to erode at its current rate, potentially impacting the site and other school-related infrastructure.
- B. **Remove Site** – Relocation of the tank farm by decommissioning the current site and building a new tank farm further away from the slough is another option. A new site would require code compliant secondary containment and installing new fuel lines to the generator building. The soil under the current tank farm would need to be characterized to determine if any contamination has occurred. The cost of these measures should be weighed carefully during planning stages as the school buildings would likely be destroyed by erosion before the tank farm was impacted.
- C. **Erosion Mitigation** – River currents and ice jams along the Oscarville Slough are the primary cause of erosion. The Department of Commerce, Community, and Economic Development’s Division of Community and Regional Affairs handbook, *Understanding and Evaluating Erosion Problems*, suggests the best methods for protection against erosion due to these causes are: spur dikes, revetments, seawalls, vegetation, groins, beach fill, or relocation. The full list of suggested methods is provided in Table 2 of the document which is available online at <http://commerce.state.ak.us/dnn/dcra/PlanningLandManagement.aspx>.

SUMMARY

The Oscarville School Tank Farm is currently in use for the Qugcuun Memorial School’s power generator. It has the capacity to hold 28,000 gallons of heating oil in five single-walled vertical tanks. The tanks are within a wooden dike with a locked gate, but whether the area is lined is unknown. Should a spill occur at the site, any fuel that escapes the diked area could impact the soil and the school’s drinking water well located 120 feet away. The well is monitored annually for a group of volatile organic compounds (VOCs) related to fuel products and xylenes are routinely detected.

The site is located 145 feet from Oscarville Slough which is eroding at 3 feet per year. At the current rate of erosion in the Oscarville Slough, erosion will not impact the tank farm until approximately 2055. There are no erosion mitigation measures in place to slow or stop further erosion from occurring.

RECOMMENDATIONS

The presence or absence of a liner beneath the tank farm should be confirmed either by reviewing the design documents or by careful excavation within the diked area. If present, an effective liner must be intact and impermeable with no vegetation or soil present on the liner. If a liner is not present, one should be installed as a code-compliant liner system is necessary to protect the soil and nearby drinking water well. The school's drinking water well should continue to be monitored for VOCs in accordance with the Drinking Water Program's requirements.

Although the school tank farm is not likely to be impacted by erosion in the immediate future, erosion control measures should be investigated for Oscarville Slough. Erosion mitigation may benefit the community, school, and main infrastructure in addition to the tank farm. The slough should also be monitored and yearly erosion rates documented, as storm and flooding events can cause these rates to change.



Imagery Dated 2012. WEAR Map at <http://dec.alaska.gov/eh/sw/wear.html>

*Community Database Online, Division of Community and Regional Affairs, Department of Commerce, Community and Economic Development

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