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Contaminated Sites

Environmental Engineering

Active cap stops LNAPL sheen on canal

Tektoseal Active installed with anchor trench at sheet pile wall

Petroleum sheen prior to installation

Situation

A major oil company operated a tank farm in the Midwest adjacent to a canal. A leak developed resulting in a petroleum plume at the air-water interface of the groundwater. The plume migrated toward the canal and daylighted on the bank resulting in sheen on the waterway. Arcadis US was contracted to design a remediation plan. A boom was deployed to contain the sheen. Assessment and design began to remediate the main source zone of the LNAPL plume. LNAPL was still expected to continue to migrate into the canal until the full remedy was complete.

Solution

As an interim LNAPL barrier, an active cap was designed for the canal bank. Based upon estimated LNAPL mass over the life of the interim barrier, the active cap consisted of four layers; three layers of Tektoseal® Active OC overlain by one layer of Tektoseal Active AS. Both the organo-clay in Tektoseal Active OC and the melt-blown polymer in Tektoseal Active AS adsorb LNAPL. Both are initially highly permeable to water, and decrease in permeability in the areas where they adsorb LNAPL. The Tektoseal Active AS layer LNAPL interaction is quicker than the organo-clay interaction. So addition of the Tektoseal Active AS layer increases the contact time between the organo-clay and LNAPL and precludes short circuiting.

Work was done in winter when a frostline existed near the surface which temporarily stopped the seep. There was existing armor stone and debris along the shoreline which was first removed to the extent possible. Where debris and other protrusions could be feasibly removed, a sand levelling layer was placed. The Tektoseal Active panels were deployed perpendicular to the shoreline and anchored in a trench at top of the slope. Adjacent panels were overlapped a minimum of 1 foot. Panels were cut, as needed, to fit around pipelines and bridge structures. Since the canal

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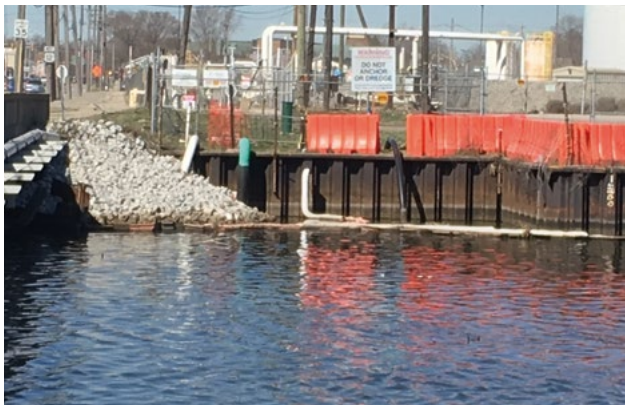
Tektoseal Active installation prior to cover placement



15 months after installation – view across canal

15 months after installation – no sheen

was freshwater, sodium bentonite could be used to seal around details and structures. Cover consisted of ¾" stone and rip rap.
A visit to the site was conducted 15 months after the construction of the project, The boom has been kept in place as a precaution, but there is no petroleum sheen observed in the waterway.

Advantages

Tektoseal Active geocomposites provided an active cap that allows groundwater to flow through, but adsorb LNAPL in areas of where the seep emanates along the shoreline. Tektoseal Active geocomposites were readily deployed in harsh winter conditions. Tektoseal Active geocomposites were easily cut and fit around pipe penetrations and structures. Tektoseal Active AS and OC have been effective in eliminating sheen on the waterway over the interim action period.

Project:	Canal Active Cap
Location:	Midwest US
Client:	Major Oil Company
Design:	Arcadis US
Construction:	Environmental Restoration LLC
Construction period:	January 2018
HUESKER Product(s):	Tektoseal Active AS and Tektoseal Active OC

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HUESKER Synthetic is certified to ISO 9001 and ISO 50001.