ABSTRACT:
People have been building with mud or silt in proximity to rivers since the beginning of time, however there remains untapped possibilities along the water’s edge for material systems and space which can enhance the interface between everyday human activity and organic processes. This thesis looks at the material and temporal qualities of silt on the landscape and seeks an architectural response to the cycle of deterioration and deposition. Silt is a substance that functions in an elastic spectrum with the capacity to perform in multiple consistencies based on its dynamic response to water. If harnessed or harmonized with, the use of silt in building can allow for a range of material properties and texture in design while regulating the impact of sedimentation (both in surplus or loss) on the environment.
SEDIMENTATION TEST

“The mixture is stirred with a lot of water in a glass jar. The largest particles settle at the bottom, the finest on top. This stratification allows the proportion of the constituents to be estimated.”

_Gernot Minke, Building With Earth_
OPERABLE MODEL
The operable model was designed with three parts to simulate a basic sedimentary process including: a) dry material chamber with connecting water spray b) holding bath c) permeable filter. The filter separated the fine particles categorized as silt. A small pump was used to recirculate the filtered water for a second pass.

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RESEARCH
MATERIAL DATASCAPE (right)
Different types of soil resulted in varying absorption patterns and filter saturation. The Sierra Ginger Fines and Loamy Sand separated with the highest density of fine particles, while the grape pumice separated with the least density of fine particles. The Blue and Gold Fines and Red Lava sand created the most distinct penetration patterns on the filter.

STRUCTURES OF RETENTION AND EROSION
An exploration of continuous surface models that are 3d printed reveal the capability to both retain mud and to erode based on the coating of the model and the dilation of the pores. When placed in the path of run-off models slowed the drainage action, allowing silt material to condense. A separate iteration was tested out of a flexible silicone material to represent the void space.
FILTER SATURATION
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RESEARCH
Twenty five percent of domestic petrochemical derivatives and forty seven percent of U.S. Crude oils are produced and refined along a one hundred mile stretch of the Mississippi River northwest of New Orleans. Factory owners have worked with the political machinery to ensure that the Mighty Mississippi remains channelized to avoid jeopardizing existing infrastructure. This stasis is unsustainable: the hydrologic reality of the Great River’s meandering, the economic blight of the subsistence level working demographic, and the air, soil, and water table pollutants are all forces that are straining against this status quo.¹

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DESIGN PROPOSAL
This project is an attempt to transform a tainted section of water border between the Mississippi River’s edge and the levee into an interdisciplinary research station: a series of soil science testing facilities that develop remediative methodologies for ground contamination; hydrologic investigative sites that find new ways to capture and study silt propagation; a community center fostering public health improvement through soil and drinking water testing, disease screening, and medical liaising; and perhaps most importantly, an opportunity for companies who have spent decades profiting from the local resources to embrace the communities they depend on and help find a sustainable path forward.