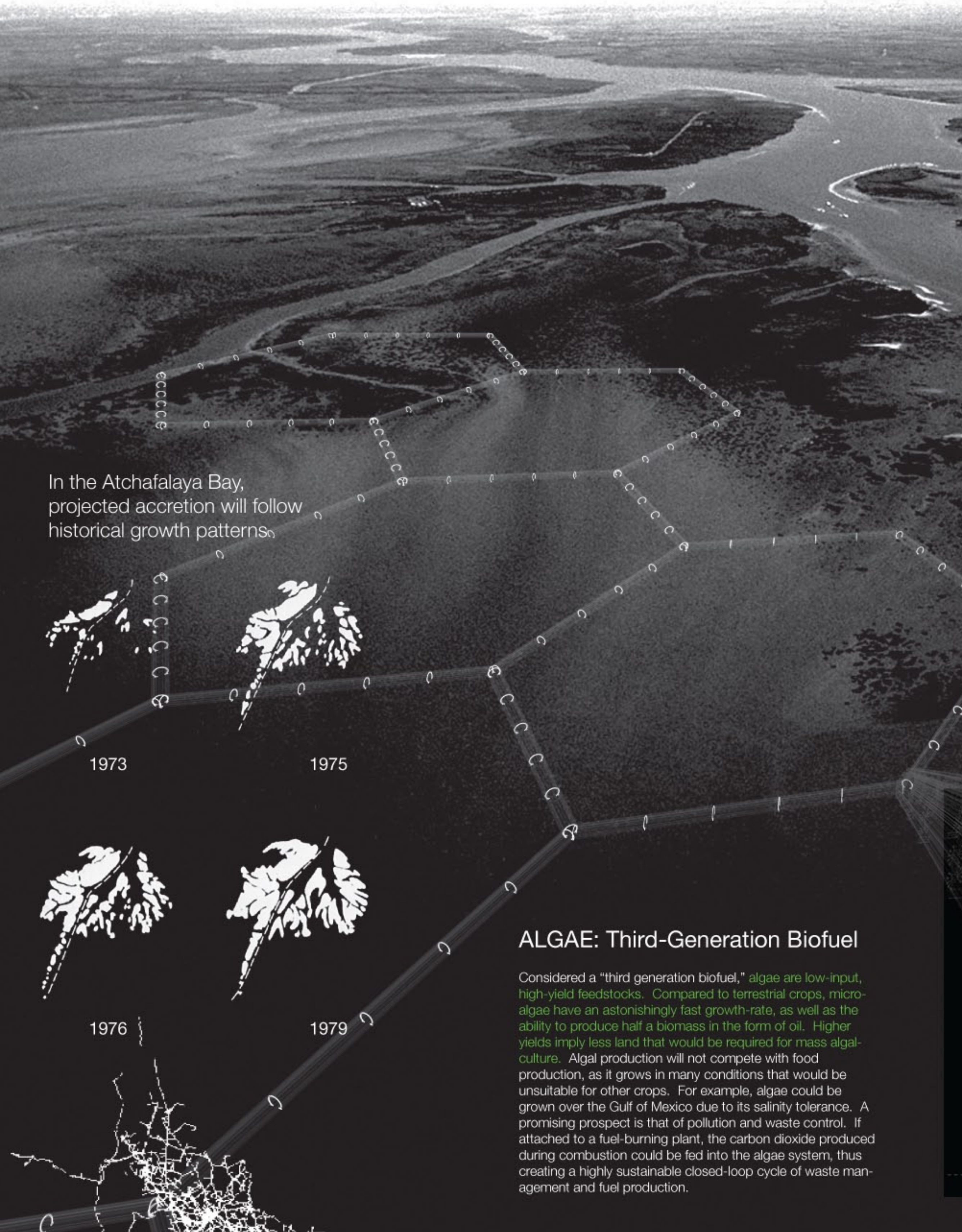


automated bloom

bio-farming in the atchafalaya bay, louisiana, usa



In the Atchafalaya Bay, projected accretion will follow historical growth patterns.



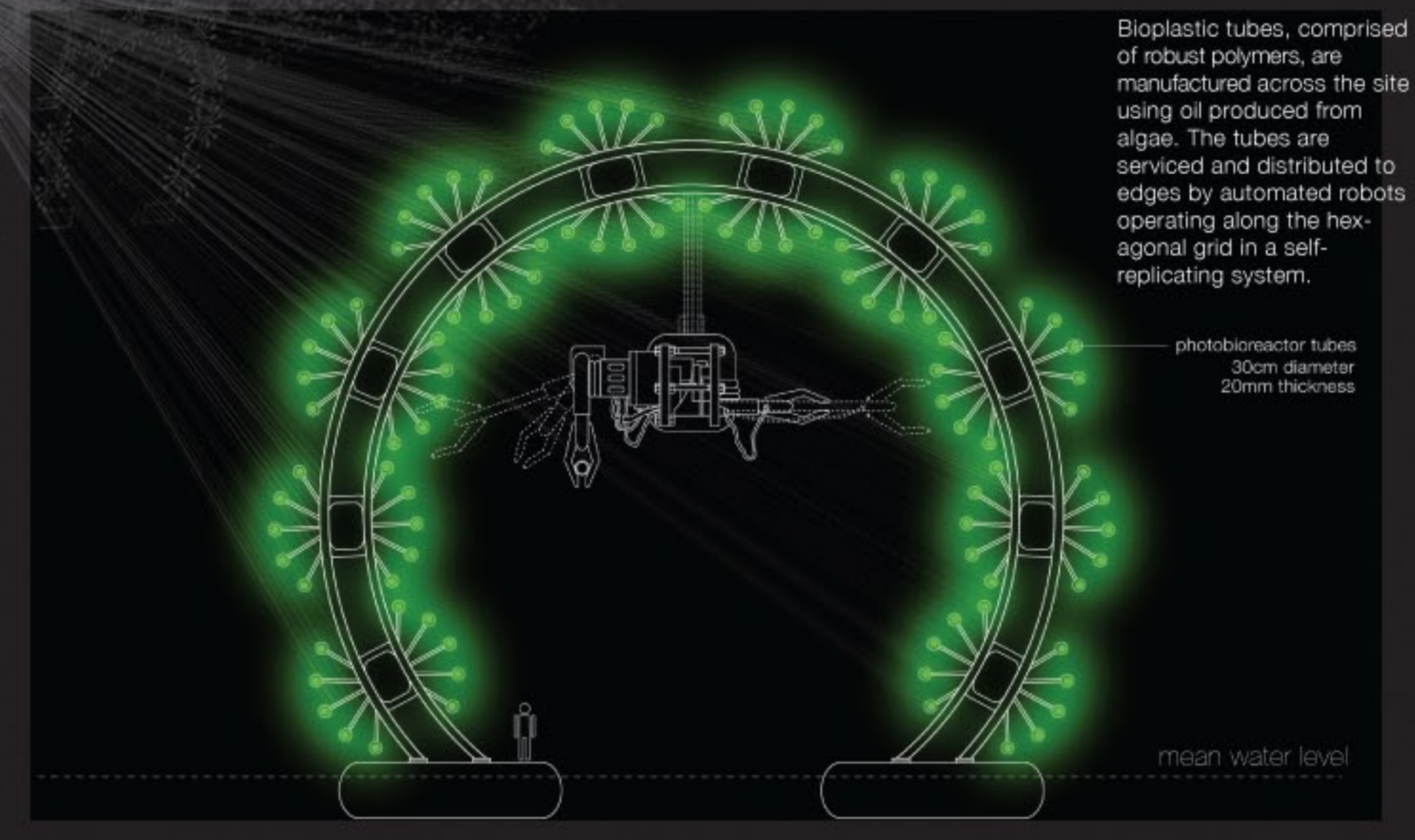
ALGAE: Third-Generation Biofuel

Considered a "third generation biofuel," algae are low-input, high-yield feedstocks. Compared to terrestrial crops, microalgae have an astonishingly fast growth-rate, as well as the ability to produce half a biomass in the form of oil. Higher yields imply less land that would be required for mass algal-culture. Algal production will not compete with food production, as it grows in many conditions that would be unsuitable for other crops. For example, algae could be grown over the Gulf of Mexico due to its salinity tolerance. A promising prospect is that of pollution and waste control. If attached to a fuel-burning plant, the carbon dioxide produced during combustion could be fed into the algae system, thus creating a highly sustainable closed-loop cycle of waste management and fuel production.

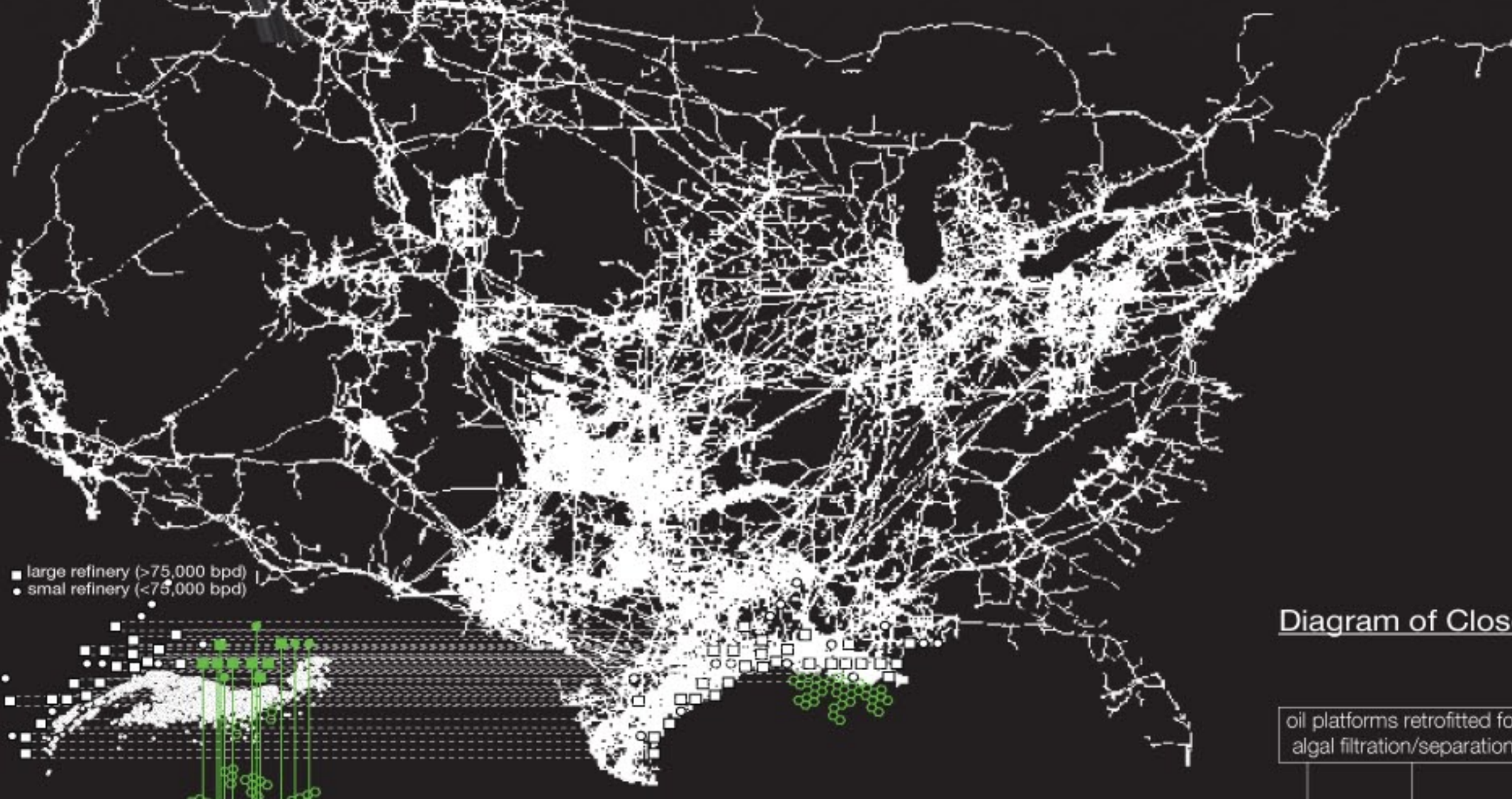
[Automated Bloom] explores the possibilities of addressing relative sea level rise through the pairing of multiple goals and layered systems. The combination of new methods of energy production, carbon sequestration, sustainable aquacultural extraction, and sediment accretion, promotes a more holistic, economically viable response to climate change. The proposal for a floating algae farm in the Gulf of Mexico suggests the mass retrofitting of the United States' shoreline oil infrastructure. The operative landscape is strategically sited in the open water off the Atchafalaya Bay. This area is the only part of Louisiana's coast to be *gaining* landmass. By appropriating the existing oil infrastructure of the southern coast, from the platforms, to the refineries, to the pipelines, the algae farm subversively asserts its post-industrial agenda.

In plan, the hexagonal organization of the algal cultivation tubes acts as a catalytic framework encouraging sediment accretion. Shown in a diagram below, accretion occurs when water bifurcates, losing its velocity, and dropping suspended sediment. The "walls" of tubes act as windbreaks, buffering newly emergent landmass.

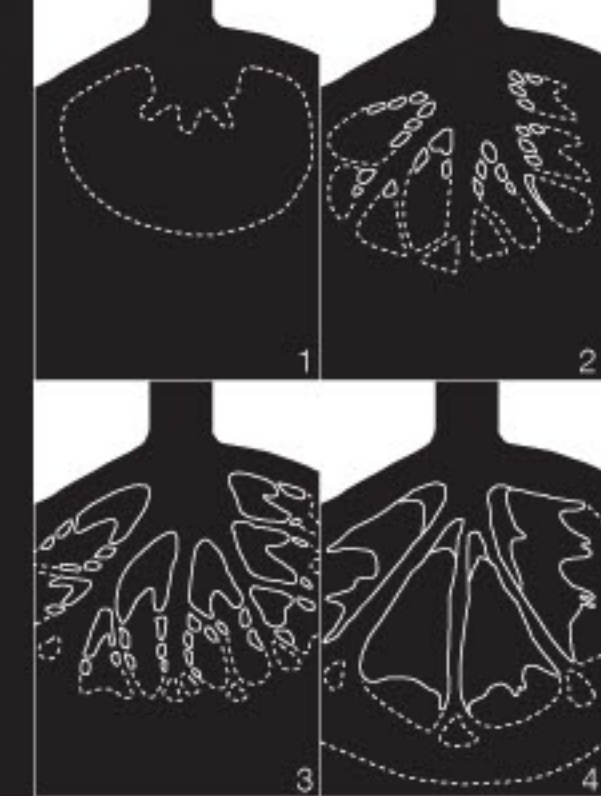
The end goal is mutualism: adapting a near-obsolete energy infrastructure to be more sustainable, while encouraging the creation, restoration, and protection of healthy wetlands.



Existing United States Pipeline Infrastructure



Process of Sediment Accretion



Sectional Stratigraphic Relationships

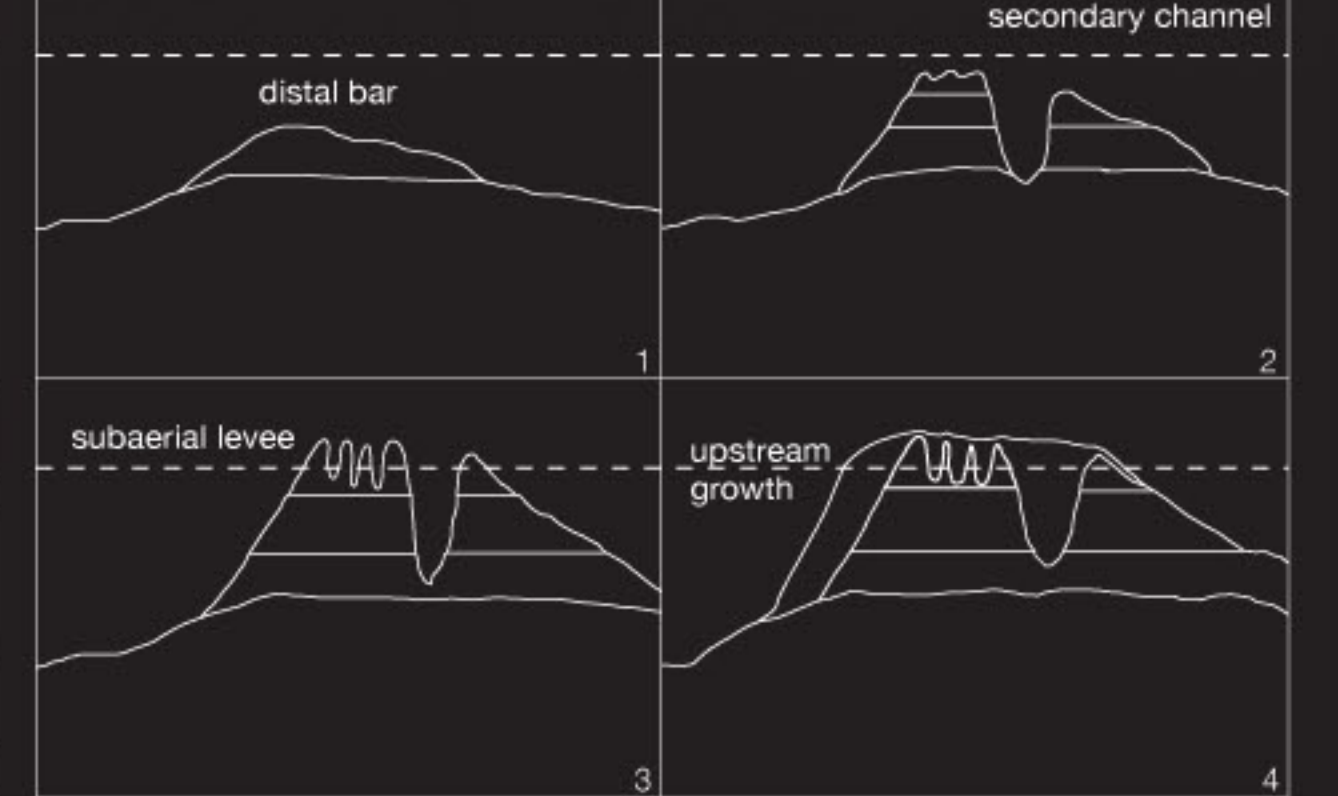
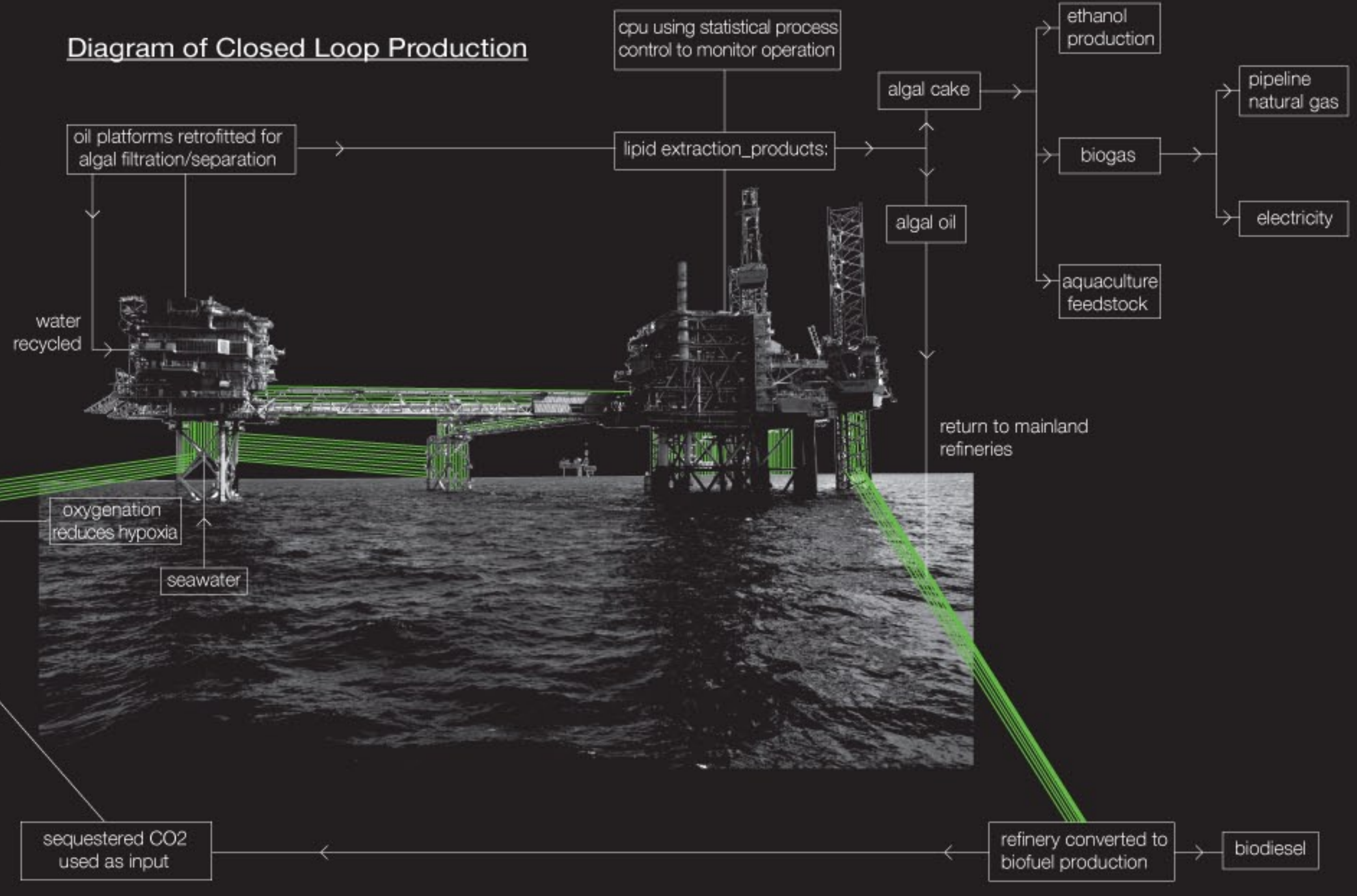


Diagram of Closed Loop Production



Annual Louisiana Field Production of Crude Oil
source: US EIA



The downward trend of field production implies higher refining capabilities that are going unused. Thus, in lieu of idleness, the refineries can be used to manufacture biofuels.

Nutrient Loads on the Mississippi River

