REHABILITATING DISTURBED LAND BRINGING ECOLOGY AND ECONOMY BACK TO SOUTH WESTERN PA ARCHITECTURE THESIS PROPOSAL // YING LIN // 8_12_2013

THESIS TOPIC: In southwestern Pennsylvania coal mines have impacted more than 90 percent of farmland, as a result leaving farmers with no other source of income. In 1977, the "Surface Mining Control and Reclamation Act" required coal companies to reshape the disturbed mined area. This included purifying the water, growing natural vegetation, and bringing back other native habitats. This Act was not regulated to its full intent until the last decade. REHABILITATING DISTURBED LAND would explore what it means to bring natural ecology back to south western PA. This will include farm land and markets for organic foods, recreational zones, and housing for those who hunt and fish. With a focus on how water purification in this area can be restored through mechanical and natural systems.

WHY: I grew up in Greene County PA where coal mining and farming are the two largest income sources to families. Dominating the excavation of the natural resources are Alpha Natural Resources and Consol Energy, both of which have recently been forced into building water purification systems throughout the county. The Global Partnership on Forest and Landscape Restoration has been working with Southwestern PA on possible solutions to how farming can be brought back to the area.

Coal mines and gas companies will continually disrupt the land, and as builders one must adapt to the needs to people. An architect can design a net-zero home, an engineer can design an electric car, however one must explore how to rehabilitate and use what corporations have left disturbed.



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OVERVIEW

The rehabilitation process is primarily



Can these potentially be used to transport farmed goods?

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SITE VISIT & PHOTOS

Images taken from a recent tour of a underground mined site in Waynesburg, PA. All contaminated water must be contained on site and "neutralized". The last two images are taken of reclaimed sites after one year of the mines moving out. Natural vegetation has began to grow, but the soil is still is contaminated.

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1 RESEARCHING THE PROCESS

How much of the land is affected? (Cut in fill ratios) Types of infrastructure built on the site Time line of permit to reclamation Landscape affected by coal mines

2 Changes to EPA REQUIREMENTS

How much covering is needed on coal slag? How clean the water must be? How much by product can be sent to waste plants?

3. THE APPROACH

 Protection : Reducing erosion and stabilize
Conservation : enhancing the native plant species and wild life habitat

3. Production : Improving soil fertility and growing crops

4. Economy and infrastructure: Producing crops and farms that would localize food production in PA. On the larger scale how local farming can impact the community

4 THEORY AND SOLUTION

Economy drives most decision making, especially in architecture and construction. With large corporations - gas and coal - they dedicate 5 - 10 % of their budget to meet EPA regulations. If a designer and a corporation were to team up, the outcome could be more than just planting grass to reclaim the land. Housing ? Museum? Farmers Market? Retreat? Water filtration park?

RESEARCH QUESTIONS

Mapping the damages Mapping the reclamation Mapping shipments of farmed products

Exploring uses of coal slag Exploring farming uses Exploring how infrastructure will impact disturbed land

Calculating the productivity of localizing rural farming Understanding what other needs of residents



What this will lead to ?

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TENTATIVE SCHEDULE (FALL)



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