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USA

After the Deluge

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When the National Weather Service issued a flood warning for central Michigan, residents weren't worried because they had been through a similar warning two years before. But this time two of the four dams on the Tittabawassee River burst, causing 10,000 residents to flee from their homes in the middle of the governor's "stay at home" order necessitated by the COVID-19 pandemic.

And perhaps they didn't think that the floodwater would rush as far as the Dow Chemical plant, where it would mix with the water from the company's containment ponds.

Originally designed for flood control, the two dams are more than 90 years old. For over twenty years the first of the four, at Edenville, had been generating hydropower for Consumer Energy. Licensed by the Federal Emergency Regulatory Commission, the dam had just two spillways. Over a 14-year period, the commission demanded its owner, Boyce Hydro, build additional spillways to withstand heavy rains. The company maintained they didn't have the money for repairs. Two years ago, the FERC revoked Boyce Hydro's license and regulation reverted to the Michigan Department of Environment, Great Lakes and Energy. The state environmental agency negotiated the sale, remediation, and transfer of all four dams to a multi-county trust no later than 2024.

Why didn't either the federal or state agency move quickly to make sure these dams were structurally sound? This is particularly important in Michigan where there has been a 10% increase in precipitation over the last 50 years. Because of violent storms, four of the five Great Lakes and many of the state's rivers are at higher water levels and three of them touch Michigan's shoreline, which is fast eroding.

EGLE oversees regulating the quality of the state's lakes and rivers, including overseeing 1,061 dams. (FERC remains in charge of 99 Michigan dams that generate hydropower.) While dams are typically designed for a 50-year life, within five years 80% of the Michigan dams will be older than that. Two hundred and seventy-one were built before 1900!

Seventy percent of these dams are privately owned, some by a lake association created by the dam or a group of homeowners. The owners are responsible for inspecting and maintaining their property, but frequently have difficulty in doing so. Yet the budget for Michigan's dam safety unit is only \$400,000 a year; its staff consists of a supervisor and two inspectors. While state inspectors are largely dependent on reviewing the owner's reports, in 2018 they received only 83% of the reports scheduled for the high-hazard dams. They might inspect a few high-hazard dams, as well as 40-80 sites owned by state or local governments. Generally state and federal agencies encourage compliance, and do not issue an emergency order or take legal action.

Why Are Dams Built?

The reasons for building dams vary, but generally are justified as bringing water to population areas that need it, providing electricity or bringing irrigation to industrial agriculture. In the case of Michigan, there is a fourth reason: recreation and tourism. The lakes created by the dams provide for fishing, boating, beaches, and parks along with enhanced residential developments.

According to the American Society of Civil Engineer's 2017 Infrastructure Report Card, the United States has 90,580

dams; their average age is 56 years. Of the total, 15,500 are classified as "high hazard," meaning that if breached, would result in loss of life. Another 11,882 have "significant hazard potential." While they may not result in loss of life, they would certainly involve economic loss.

When the report was updated in 2018, the report gave Michigan a C-. The average state spends \$695 per dam on yearly safety regulation, Michigan spends \$375.

More than half of the country's dams are privately owned! The federal government owns 3,381, the ones most likely to be inspected. However few states devote sufficient regulation and resources nationally each state employee is responsible, on the average, for 205 dams! Some states such as "California, Colorado, New Jersey, and Pennsylvania have less than 135 dams per staff member (the California Division of Safety of Dams, a robust state dam safety program with regulatory oversight over many of the nation's most consequential dams, has only 20 dams per staff member)." Alabama is the only state without a dam safety regulatory program, yet it has 676 high-hazard and significant hazard dams. Only 50 even have an emergency action plan in place.

Yet even in California, where inspection is on the high end, in February 2017 rain caused the lake on the Oroville dam to overflow and release water to its spillways. This forced 180,000 people out of their homes. As the tallest U.S. dam it could have sent a 30-foot wall of water into the Feather River below, flooding communities downstream. The collapse of a concrete weir never occurred, but the main spillway suffered significant damage. Records revealed that the dam was not inspected on a yearly basis.

Currently 77% of the high-hazard dams have Emergency Action Programs in case of dam failure or the uncontrolled release of water. However the report does not examine how climate change has already impacted dams. In both Houston and New Orleans, homes were built in areas where it was clear that dams could breach. Yet developers made money by building in watershed areas.

In 2017 Hurricane Harvey flooded Houston, a city with no zoning rules. In order to prevent two dams from collapsing, there was a "controlled release" into nearby communities built in the watershed areas. Every petrochemical plant in the area was breached, sending chemical seepage to join with raw sewerage. Hurricane Harvey will impact on the air, water, and land for years to come. [\[1\]](#).

On the first anniversary of Hurricane Harvey, the New York Times carried a featured story on how those living in the poorest neighborhoods were not living in safe conditions. [\[2\]](#) In fact, given that four out of five homeowners had no insurance, investors are able to sweep in and buy up the damaged homes for resale. [\[3\]](#)

While the ASCE recommendations about dams call for more money to be allotted to regulation and repair, there is little attention to a) examining dam infrastructure in an era of climate change, and making decisions about which are needed and which should be decommissioned; and b) ending the private ownership of dams. Dam projects are expensive even when the social and environmental costs are not considered. Instead we need water security through regulation and coordination of groundwater use and a policy of recharging depleted aquifers. In this process, it is necessary to get rid of "plantation: agriculture that sucks up so much water. Industrial agriculture, described by Carey McWilliams's 1939 *Factories in the Fields*, is profitable for the few while impoverishing and poisoning its workers.

Dams as a Development Strategy

Building dams was a strategy used by the World Bank to foster development in poor countries. As Patrick McCully,

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director of International Rivers Network in the United Kingdom, pointed out, the combination of corruption in such large-scale construction projects combined with the power of the big-dam lobby produces feasibility studies that underestimates costs and exaggerates benefits.

Currently 400 dams are planned or under construction in Bhutan, India, Nepal, and Pakistan with at least 100 more in Tibet. Yet dam building becomes a zero-sum game as one set of users who have water loses out to another set. This is an even larger problem across national borders, as one country captures water that was more equitably distributed along the river.

Second, the region transformed by the construction usually means displacement of indigenous and rural populations. In India alone, the displacement is estimated at somewhere between 16-40 million people. Biodiversity is also threatened with the submersion of forests and the animals that are displaced.

Third, dam projects have their own problems, whether from potential collapse from earthquakes or floods, significant leakages, and silting. Climate change will intensify these issues. [4]

Both nationally and internationally, building, maintaining, or replacing dams needs to be carefully considered. Structurally and politically they are not a wise investment but a source of corruption that reinforces inequality and even more dangerous given climate change.

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Source [Solidarity](#).

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[1] Jennifer Wingard, *Against the Current* 192 "[A Catastrophic Neoliberal Legacy - Harvey's Toxic Aftermath in Houston](#)".

[2] Manny Fernandez, *New York Times*, 3 September 2018 "[A Year After Hurricane Harvey, Houston's Poorest Neighborhoods Are Slowest to Recover](#)".

[3] NPR, 8 November 2017 "[Real Estate Investors Rush To Buy Houston Homes Damaged By Flooding](#)".

[4] Sunil S. Amrith, *New York Times*, 1 December 2018 "[The Race to Dam The Himalayas](#)".