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A Repulsive River Comes Back

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by
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"The Buffalo River is a repulsive holding basin for industrial and municipal wastes," said the Federal Water Pollution Control Administration. "It is devoid of oxygen and almost sterile. Oil, phenols, color, oxygen-demanding materials, iron, acid, sewage, and exotic organic compounds are present in large amounts. Residents who live along its backwaters have vociferously complained of the odors emanating from the river and of the heavy oil films. In places the river's surface is a boundless mosaic of color and patterns resulting from the mixture of organic dyes, steel mill and oil refinery wastes, raw sewage, and garbage." (United States Department of the Interior, 1968)

The year was 1968, and the Buffalo River had reached the depths of environmental degradation. It had caught fire in January of that year, causing the South Park Avenue lift bridge over the river to be closed for several days as officials investigated the damage. But unlike Cleveland's Cuyahoga River, which made the national news magazines and had a popular song written about it when it burst into flame, the burning Buffalo River rated only three column inches in a back page of the local newspaper. Oil spills and even fires were hardly news on this river; as the Regional Engineer of the State Health Department noted, "it could have been just the normal oil load that happened to collect in that spot." (Buffalo Courier-Express, 1968.)

It had taken almost 150 years of abuse to make the Buffalo River "normally" anoxic, toxic, and flammable. Before humans started messing with it, the natural river was like a lot of tributary streams around the Great Lakes. Rising in the Allegheny foothills of Western New York, the many small creeks and streams feeding the Buffalo River coalesce into three creeks as they reach the flatter Lake Erie-Ontario plains. First Cayuga and Buffalo Creeks come together in the suburbs of Buffalo; then, inside the city, Cazenovia Creek joins up and forms the lower Buffalo River. For six and a half miles from this point, the river meanders slowly through its floodplain, cutting sinuous oxbows until it merges into Lake Erie in downtown Buffalo, within sight of the head of the Niagara River. Near its mouth, the Buffalo originally spread out to form large cattail marshes, and remnants of them can still be seen at the Tifft Nature Preserve in South Buffalo.

This was not the sort of river that developers would look at and inevitably see as a major shipping port. Hydrologically, the Buffalo was a small stream with intermittent flows during the dry summer months that left it deep enough to float a canoe, but not much more. It was, however, in the right place at the right time when the Erie Canal was being built in the early nineteenth century. As the canal was dug westward to link the Great Lakes above Niagara Falls to New York City and other ports on the Atlantic seaboard, the village of Buffalo vied with its neighbor, Black Rock on the Niagara River, to become the western terminus of the canal and the gateway to the rapidly developing interior of the continent. Each candidate village faced a serious handicap. Black Rock had deepwater docking, but a strong current coming down the Niagara made it necessary

to hitch up teams of oxen and haul the sailing ships upriver to Lake Erie where they could make their own way westward. Buffalo, on the other hand, had no problems with currents but also offered no protection from storms sweeping in off of Lake Erie--unless the river could be deepened enough to let ships find a haven there. In a remarkable feat of backwoods engineering, aided by a storm-fed spring freshet, the city's founders managed to cut through the sandbar at the river's mouth and create a working port. By 1825, the Erie Canal had come to the river, and the prosperity of the City of Buffalo was assured--for a time.

Grain was the first commodity to dominate commerce on the Buffalo River. As the Great Plains were settled, the breadbasket of America moved westward from central New York to the Midwest. Waves of immigrants followed, swelling the cities of the East and Midwest, populating the vast open spaces of middle America, and putting the great grasslands under cultivation. Buffalo became middleman to this massive human migration, shipping people and manufactured goods westward, taking back grain and raw agricultural products to the urban centers. The Buffalo River became crowded with ships, warehouses, docks, and grain elevators, and flour mills followed to make the city one of the largest milling centers in the world.

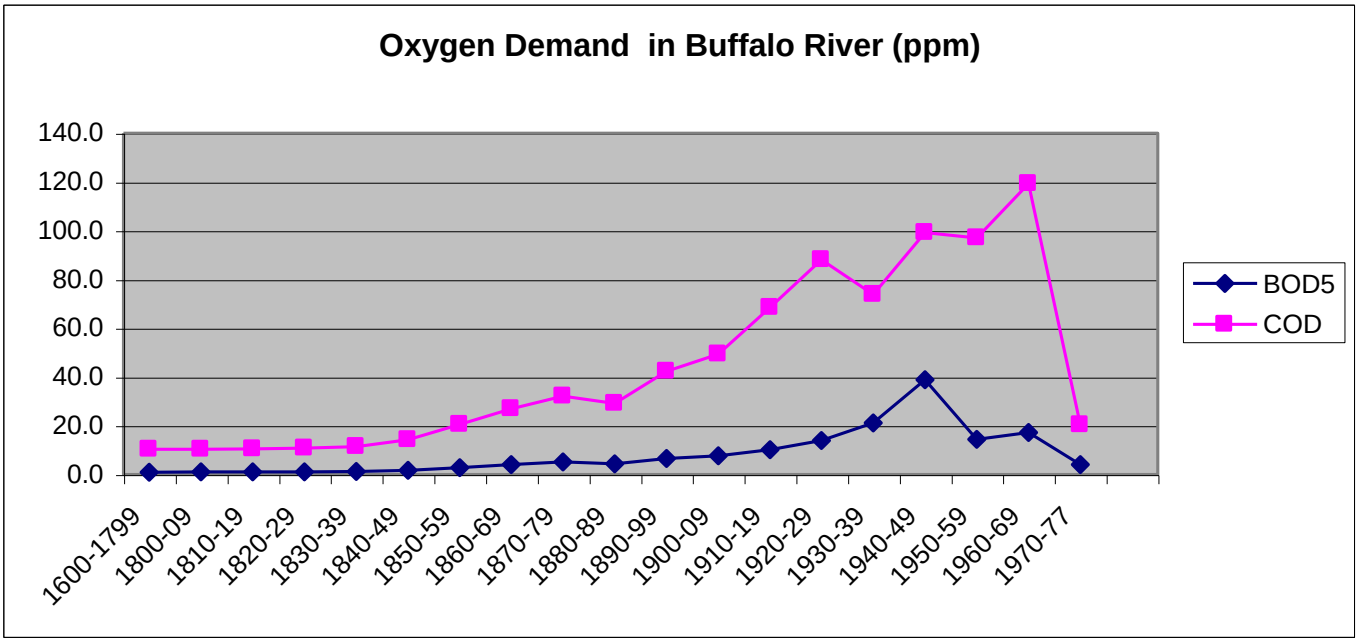
Grain milling and transshipment did not create serious pollution problems in their own right, but they caused further modifications of the Buffalo River's hydrology. As commerce spread up the river, and a variety of small manufacturing enterprises were built along its banks to enjoy the advantages of the port, the river was progressively dredged wider, deeper and farther upstream. The wetlands, which had provided rich fish and wildlife habitat, disappeared beneath dredge spoil and development. With a bigger, slower river, water flowing into the city now took several days to transit into Lake Erie: the river began to stagnate. And the people and industries that had come to enjoy the economic benefits of the river's development all contributed their bit to pollution.

By the mid-nineteenth century, conditions were ripe for a public health crisis. The ditches and crude sewers of the rapidly growing city carried waste and offal to the nearest stream, and in summer bacteria thrived in the warm, stagnant waters of the Buffalo River. When the Buffalo Water Works Company built intakes and a pumping station near the head of the Niagara River to supply the public with potable water, the circle was closed: bacteria coming out of the Buffalo River now had a pathway to new human hosts. By 1854, the death rate from Asiatic Cholera and other water-borne diseases reached 5 percent of the population (Sauer 1979:11).

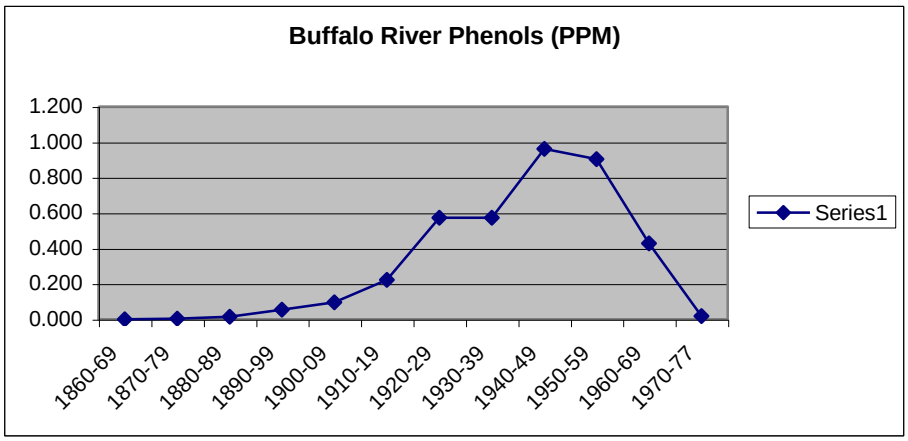
Like many Great Lakes cities, Buffalo responded by moving the water intakes farther out into the lake, and eventually by upgrading its sewers. In 1883, the Great Interceptor Sewer was built to cut off the flow of pollutants toward the Buffalo River and re-direct it into the nearby Niagara, which had much greater dilution capacity. But, again like most of the Great Lakes cities, Buffalo's sewers combined sanitary and industrial wastes with stormwater runoff, thereby guaranteeing that every significant rainfall would continue to dump raw sewage into the river as the interceptor filled up. And, to a large and growing extent, the industrial fraction of that pollution began to take its toll on the river.

After the Civil War, Buffalo began the transition from a grain-based commercial city to a diverse industrial economy. Multiple factors drove this change, including the city's status as a major rail center as well as a lake shipping port. Iron ore began to move down the Great Lakes along with grain, and the construction of rail lines into the coal fields of Pennsylvania made Buffalo an attractive site for steel makers to locate. Automobile and machinery manufacturers followed. At the same time, the development of hydroelectric power at Niagara Falls and the perfection of alternating current technology made it possible to export surplus power to Buffalo. The city's strategic location fed the growth of a wide variety of industries, from candy to caskets, from paint to pianos (Goldman 1983:149).

This economic diversification was visible along the Buffalo River, where five major manufacturing industries came to share the river banks with massive new concrete grain elevators: an aniline dye factory, a major steel mill, batteries of coke ovens, an industrial chemical plant, and an oil refinery. Since all of these, and more, took their process and cooling water from the river and discharged their effluents back into it, their presence was also reflected in the quality of river water. According to David Sauer's reconstruction of pollution, chemical oxygen demand soon began to exceed biological by a huge margin, and it remained very high until the federal pollution control laws of the 1970s began to take effect.



Manmade chemicals also began to appear in the river, as Sauer's reconstruction of phenol contamination suggests:



While phenols are obnoxious and destructive pollutants, they were hardly the worst contaminants finding their way into the Buffalo River during the middle twentieth century. Polynuclear aromatic hydrocarbons, PCBs, chlorinated organic pesticides, exotic aniline dye byproducts such as naphthylamines, and a rich collection of heavy metals became prominent constituents of the Buffalo River, and many came to rest in the sediments that deposited in the lower river.

Slowly, things began to turn around in the decades following World War II. Outraged citizens, led by self-educated Buffalo jeweler Stan Spisiak, began to complain loudly and publicly about the river's pollution. The local newspapers assigned environmental reporters to cover the issue in depth, and a steady drumbeat of stories kept the public informed and aroused. Politicians took up the cause, with the result that both state and federal pollution laws began to get real teeth. Industry, on its part, made significant investments in reducing effluents and increasing the river's flow artificially. Gradually, a stream that had been dismissed as "a septic tank" (Buffalo Courier-Express, April 14, 1967) and "a dead river" (Argenio, 1967) began to come back to life.

At first, the river's recovery was partial and tentative. Pollution-tolerant fish such as carp and bullheads were able to survive in a stream that had regained some dissolved oxygen and benthic organisms; but the river was still stressed by combined sewer overflows, contaminated sediments, and continued dredging for navigation. Many of the fish recolonizing the Buffalo River carried high body burdens of contaminants that made them unsafe to eat, and some developed tumors from their exposure to toxics. Then, in the 1980s several things happened that opened up the prospect for more fundamental improvement.

The river's economy was changing again, but this time it was evolving toward lesser impact on the river ecosystem. The recession of the early 1980s shut down many of the

polluting industries along the river, leaving only the acid factory and the dye plant operating at a reduced scale. Gradually, the realization grew in the river neighborhoods and the larger region that Buffalo's old industrial economy was gone, and it was time to begin building a different future. As the former industrial properties on the river banks became vacant, abandoned, and cleared, the lower river turned greener, almost rural in character. Recreational users began to find their way down to the shore. The prospect for a more natural, restored river became visible on the ground rather than merely in the visions of a few environmentalists.

These possibilities gained focus and momentum in 1987 when the New York State Department of Environmental Conservation began working to develop a Remedial Action Plan (RAP) for the Buffalo River. RAPs were invented by the International Joint Commission, the binational agency administering the Great Lakes Water Quality Agreement between the United States and Canada. The RAP process was a new and undeveloped approach when work on the Buffalo River began with the State Department of Environmental Conservation's appointment of a Citizens Advisory Committee. Without much official guidance, funding, or legislative mandate, the participants had to make up the process as they went along. Some problems can become opportunities, and in this instance the lack of structure made it possible for all of the stakeholders to begin coming to terms with the river as a whole, rather than as a series of disconnected problems.

The resulting plan, which emerged from innumerable meetings two years later, was an eye-opening synthesis for most of the stakeholders. For the first time, one document tried to pull together everything that was known about the river's environment and analyze it in an "ecosystem approach" (New York State Department of Environmental Conservation, 1989). There were huge gaps in this picture--a telling commentary on the shortcomings of piecemeal environmental regulation--but nonetheless a clear sense of priorities emerged: combined sewer overflows, and contaminated sediments outside of the navigation channel, were the main problems that had to be solved if the river was to be become viable fish and wildlife habitat, and a true amenity for the public. Other stresses on the river ecosystem were identified--for example, there were 32 listed state Superfund sites in the river's watershed--but existing programs seemed adequate to deal with these pollution sources.

The RAP identified the two big problems of CSOs and sediments, but it couldn't point the way to a solution because there were no regulatory or funding programs adequate to resolve these problems in the short run, and not much data from which to define a practical long-term solution. The question, then, was how to proceed? Waiting until the studies were completed, new programs enacted, and implementing guidelines put in place could be a matter of decades, and in the meantime the vacant lands along the river would be attracting development that might be difficult to work around when it came time to do the remedial work, or inconsistent with the community's vision for a restored river. The situation called for a two-track approach: while the rational planning tasks of collecting and analyzing data and assessing remedial options went forward, a new nonprofit

community group, the Friends of the Buffalo River, Inc. was formed to deal with land use and public access issues as opportunities arose (Boyer and McMahon, 1992).

Looking back over the fifteen years since the RAP process began, both halves of this strategy have enjoyed some notable successes. Funding was found for two major modeling studies of combined sewers on the lower river, and work will soon begin on a long-term control plan. Several small projects have already been completed to separate storm and sanitary sewers in neighborhoods along the Buffalo River. A local congressman was successful in getting the river designated as a project site for the demonstration of sediment cleanup techniques in the Great Lakes Critical Programs Act of 1990. This led to major advances in understanding the locations and risks of sediment contamination hotspots in the Buffalo River, and possible ways of remediating them. The Army Corps of Engineers is currently pursuing further analytical work leading toward a full-scale feasibility study of sediment cleanup scenarios. And, thanks to the state Superfund program, most of the inactive hazardous waste sites have been contained, or moving down the path toward cleanup.

The Friends organization, in partnership with the City, Erie County, and local community organizations, has also crossed a number of important milestones in the lands along the river, including:

- Preparation of plans and design guidelines for a greenway/industrial heritage trail along the lower river, which would improve habitat values, reduce nonpoint source pollution, and improve recreational and aesthetic values on the river. These proposals are now being incorporated into the city's Local Waterfront Revitalization Plan.
- A 25-foot setback ordinance was enacted for new development along the river banks, and later expanded to 100 feet through much of the area.
- Five parcels of property on the Buffalo River have been retained or acquired for public access, with three developed as "pocket parks" and the other two currently in the planning stages.
- Designs and workplans are being finalized for a bird sanctuary and public boardwalk system at the mouth of the river, on a former diked disposal area containing contaminated sediments dredged from the river.

There is still much work to be done--and much money to be raised--before the Buffalo River is fully restored, and some stakeholders are frustrated with the often slow pace of progress. Nature still holds some surprises, too: recent studies suggest that the river's upper watershed has much more serious pollution problems than previously known, and these pollutants are impacting the lower Buffalo River. Nevertheless, the overall direction is encouraging. And, canoeing the river on a warm summer day, with herons foraging in the shallows, people enjoying the riverfront parks, and nature gradually reclaiming the vacant industrial lands, you can catch a glimpse of what this river can become: a vibrant natural habitat, and a true resource for the community.

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