

Fishing for the Future

Re-imagining the Kalamazoo River to create regional economic development strategies for the City of Plainwell and Allegan County



Applied Policy Seminar, December 2012

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Outline

- Overview
- Analysis
- Recommendations

Overview



Mid-Kalamazoo River Landscape

- About 31 miles of the "Kazoo" stretch between Lake Allegan Dam and Plainwell, MI
- Dams along this span of the river:
 - Allegan Lake (Calkins)
 - Allegan City
 - Trowbridge
 - Otsego (Bittersweet)
 - Otsego City
 - Plainwell I and II (removed)
- Cities: Plainwell, Otsego, Allegan lie along the river
 - Townships: Otsego, Trowbridge and Allegan
- About 24,000 residents combined
- About \$990 million in total property value

River Stretch of Interest



Kalamazoo River Industrial History

- Paper mills and other factories once backbone of area economy
 - Utilized river
 - Severely polluted it
- In last twenty years, most mills have shut
- Declared EPA Superfund Site in 1990
 - Cleanup efforts have greatly improved water and environment quality
 - Still much work to be done to remove contamination
- Plainwell dams removed in 2009 due to critical contaminant danger
- Other dams remain in place



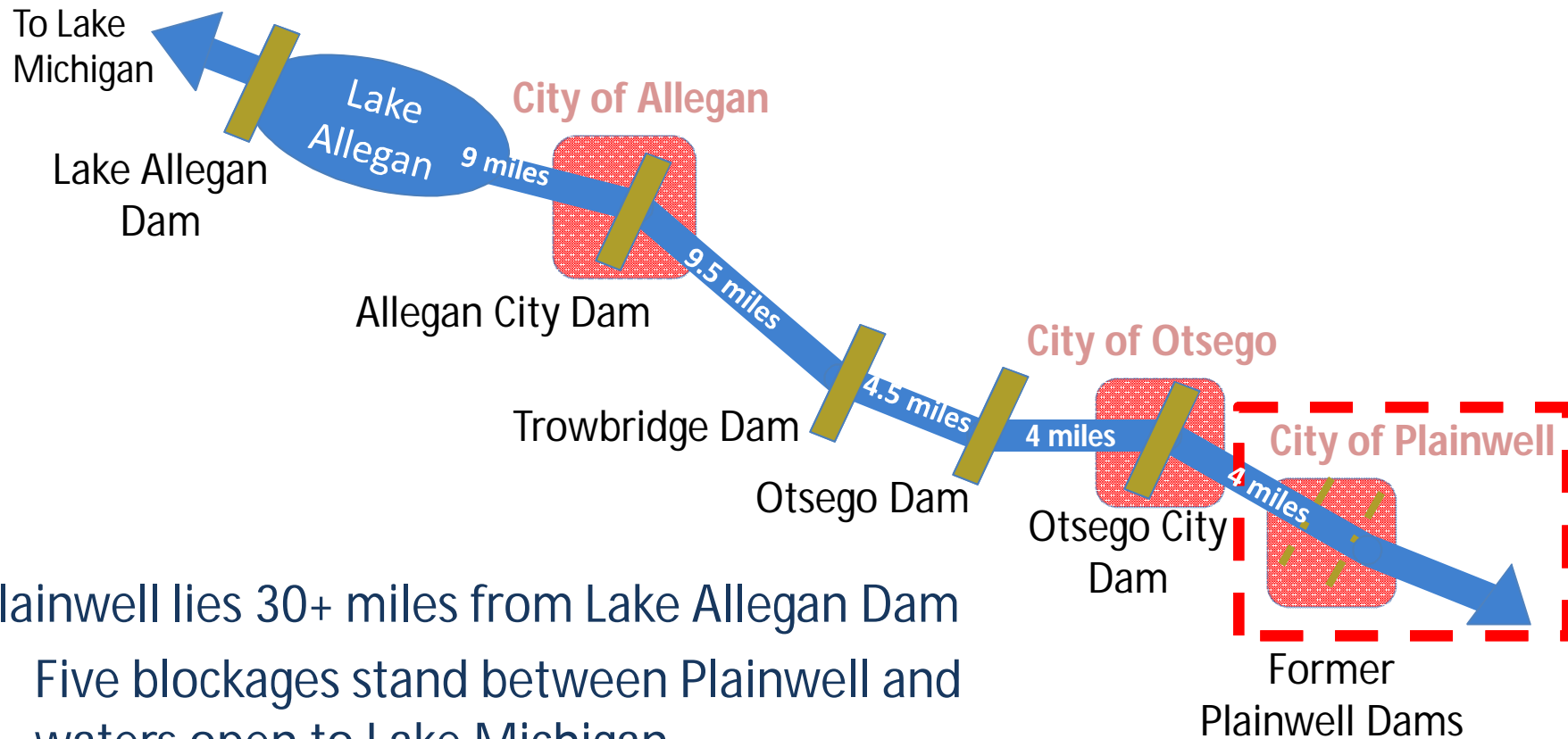
Problem: Residual Effects of Remaining Dams

Extant dams pose problems:

- Dormant sediments
- Subpar river ecology
- Fish impeded
- Negative water quality perceptions
- Underperformance of local economy



Plainwell: Access Blocked!



Plainwell lies 30+ miles from Lake Allegan Dam

- Five blockages stand between Plainwell and waters open to Lake Michigan
- Cannot reap benefits until all intermediate blockages are addressed

Current Status

- **Consensus:** Dams should be removed
- **Constraint:** Dam removal is expensive, primarily for toxic sediment clean-up
 - Potentially Responsible Parties (PRPs) are legally liable
 - Process to determine dollar liability and allocation of funds is unresolved
- **Tension between two options:**
 - Wait indefinitely for PRP pay-out
 - Act independently for short-term river rehabilitation

Purpose of Study

A photograph of a concrete bridge over a river. The bridge has several concrete piers supporting a flat deck. A person is visible on the left side of the bridge, possibly walking or standing. In the foreground, a person is fishing from a boat or pier, with a fishing rod extending into the water. The background shows a clear blue sky, some trees, and a building on the right side. The overall scene is a typical urban or suburban river setting.

Given limitations of time and money,
what is the most effective plan
for river restoration?

Analysis



Methodology

Scope

- Regional
- Local

Data Collection

- Literature Review
 - Kalamazoo regional data
 - Comparative case studies
- In-person interviews
- Site visit

Analytic Tool: Cost / Benefit Analysis

- Dam Removal vs. Dam Detour
- Regional Impact & Local Impact

Option 1: Dam Removal

- Optimal
- Free flow of water allows maximum restoration of ecosystem
 - Facilitates free movement of fish
 - Makes Kalamazoo navigable for recreational watercraft
- Main Costs: \$1 million to \$3 million per dam
 - Cost of removing physical dam structure
- Does not include:
 - Sediment clean up costs
 - PRPs liable for toxic sediments released in removal process
 - Not relevant to cost/benefit analysis

Dam Removal Costs

- **Total One Time Costs:** \$12 - \$20 million
 - Dam Removals = \$4 - \$12 million
 - Plus bypass at Lake Allegan Dam = \$8.25 million
 - Toxic Clean up = \$0
- **Annual Costs:** \$608,000
 - Fish Stocking = \$600,000
 - Chinook Salmon
 - Coho Salmon
 - Steelhead Trout
 - Brown Trout
 - Walleye
 - Fish bypass maintenance costs at Lake Allegan only \$4,500
 - Dam maintenance costs at Lake Allegan only \$3,500

Dam Removal Benefits

- **Total One Time Benefits: \$110 million**
 - Natural Environment Benefits = \$2.2 million
 - Property Value Benefits = \$108 million

- **Annual Benefits: \$5 million**

Estimated Increase in Angler Days per Year: 126,000

- Fishing Tourism Revenue = \$4 million
- Fishing Licenses (DNR) = \$900,000

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- Boating Tourism Revenue = \$60 per day per person
 - Volume of additional boating visitors dependent on future tourism strategies

Options 2: Fish Bypasses & Ladders

- Practical and Expedient
 - Achieves substantial ecosystem restoration
 - Free movement of most types of fish
 - Not navigable by watercraft between each dam
- Main Costs: \$250,000 per foot of dam height
 - Some annual maintenance costs
- Fish ladder or detour – dependent on topography

Fish Bypass & Ladder Costs

- **Total One Time Costs:** \$17.5 million
 - Fish bypasses / ladders = \$17.5 million
- **Annual Costs:** \$650,000
 - Fish Stocking = \$600,000
 - Chinook Salmon
 - Coho Salmon
 - Steelhead Trout
 - Brown Trout
 - Walleye
 - Fish bypass/ladder maintenance costs \$10,000
 - Dam maintenance costs \$40,000

Fish Bypass & Ladder Benefits

- **Total One Time Benefits:** \$109 million
 - Natural Environment Benefits = \$1.3 million
 - Property Value Benefits = \$108 million
 - **Annual Benefits:** \$5 million

Estimated Increase in Angler Days per Year: 126,000

 - Fishing Tourism Revenue = \$4 million
 - Fishing Licenses (DNR) = \$900,000
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- No measurable commercial boating tourism if river is not navigable for longer stretches

Key Assumptions

- Analysis is generalized to all stakeholders in the area
 - Assesses total value creation for the region
 - Takes into account both active and passive parties
- Costs will be apportioned between stakeholders
 - Cost distribution between state and local entities not yet determined
- Property Values
 - River improvements expected to enhance local property values to cities and townships along the mid-Kalamazoo by 12%.
 - May result in as much as \$4 million in additional local tax revenue per year.
 - Property taxes not separately considered because they are accounted for in enhanced property value.

Implications - Regional and Local

- We have broadly considered costs and benefits to the mid-Kalamazoo area
- Also important to identify implications for Plainwell specifically
 - How will these costs and benefits accrue to Plainwell individually?

Summary of Options Evaluation

Dam Removal Option

(Detour at Lake Allegan Dam only)

Dam Detour Option

Costs & Benefits

Regional Area

One Time Cost: **\$12 – \$20m**
Annual Cost: **\$600,000**

One Time Benefits: **\$110m**
Annual Benefit: **\$5m**

One Time Cost: **\$17.5m**
Annual Cost: **\$650,000**

One Time Benefits: **\$109m**
Annual Benefit: **\$5m**

Plainwell

One Time Cost: **\$0**
Annual Cost: **\$40,000**

One Time Benefits: **\$7.1m**
Annual Benefit: **\$300,000**

One Time Cost: **\$0**
Annual Cost: **\$40,000**

One Time Benefits: **\$7m**
Annual Benefit: **\$300,000**



Regional and Local Implications

How do river restoration efforts affect Plainwell?

How can Plainwell maximize local benefits in a regional context?

Recommendations



Pros and Cons

Dam Removal

- Is less expensive but timeframe is uncertain
- Confers full benefits to environment, fishes and watercraft movement, tourism

Dam Detour

- More expensive but can be implemented in the short-term
- Will confer most of the desired benefits to the environment, fish movement, tourism

Concerns to Address

- If fish ladders are built, will there be less enthusiasm to later remove dams?
- Is it a good idea to create fish ladders when a cheaper and more optimal dam removal option may be available in future?

Consecutive Dam Solutions

- Beneficial to move ahead with dam detours EVEN IF opportunity to remove dams arises soon after.

\$ 17.5 million spent on ladders
+ \$ 4 to 12 million for dam removal

= \$ 21.5 to \$33.5 million total spent

↙ If ladders are considered a sunk cost, equal or higher benefits and similar annual costs can be attained for an additional \$4 - \$12 million.

- Worse case scenario: Money is spent for fish ladders AND dam removal at each location.
- Total costs of both projects will likely be absorbed within 10 to 25 years.

First-Mover Advantage

- Much of the positive benefits start to accrue as soon as a detour is created.
- The sooner this process is initiated, the sooner river health improves, positive public perceptions improve and an uptake in the economic activity can begin.
- It takes time for perceptions to change. Timeframe for full fruition will depend on marketing and public relations efforts.

Regional Cooperation

Full Benefits require Full Regional participation

- Maximizing results contingent on coordinated action
 - Isolated action at any given dam brings limited benefits
 - Parallel actions at adjacent dams multiplies benefits

Leadership needed to achieve comprehensive river restoration for mid-Kalamazoo area

Low Risk, Large Benefit for Plainwell

- Plainwell already did its heavy lifting in dam removal
- Now stands to benefit with relatively few costs
- Well-positioned to take lead

Questions?



Thank you!



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