

Danville & Ellsworth Park Dam Modifications
Strategic Planning Study Executive Summary Report
February 2013

Draft

Recommendations

The Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR) recommends Partial Dam Removal (alternative #2) for the Danville Dam on the Vermilion River, and Full Dam Removal (alternative #1) for the Ellsworth Park Dam on the North Fork Vermilion River. This recommendation is made based on the Department's established policies for state owned or controlled dams which indicate high preferences for public safety, ecological improvements and development of recreational opportunities, while giving full attention to economics and recognition of the bank stability issues at the existing Danville Dam site. Figures 1 and 2 illustrate the dam removal alternatives. These recommended measures will eliminate public safety liability concerns created by these dams, restore ecological connectivity to these rivers, improves recreational use of these rivers, and essentially eliminates the city's future dam maintenances costs. These recommendations are based on an IDNR/OWR study prepared under the authorization granted to the Illinois Department of Natural Resources under the 20 ILCS 805/805-100 Conservation of Fish and Game; and 20 ILCS 805/805-105 Conservation of Fauna and Flora.

Dam Information

The Danville Dam is located on the Vermilion River approximately 22 miles upstream of the confluence with the Wabash River. The Ellsworth Park Dam is located on the North Fork of the Vermilion River approximately 0.53 miles upstream of the confluence of the Vermilion River. Both dams are Class III run-of-river structures located within the city limits of the City of Danville (Figure 3). The more than 100-year old Danville Dam has a spillway length of 220 feet, a height of 11 feet, and currently serves no utilitarian purpose. The dam has a history of boater accidents. Both east and west abutments are being undermined by heavy erosion. A portion of the dam crest has eroded down approximately 1-foot and the dam face is deteriorating allowing seepage to occur through the dam.

The more than 90-year old Ellsworth Park Dam has a sharp crested spillway length of 90 feet and a height of 6 feet. The Ellsworth Park Dam is often visited by the public due to its location in a city park and also has a history of public safety incidents. Fishing is common in the scour hole located immediately downstream of the dam and occasionally in the pool upstream. The dam is in good condition except for some minor erosion occurring around the west abutment.

Watershed and Dam Assessments

Detailed field and bathymetric surveys of the dams on the Vermilion River and North Fork Vermilion Rivers were completed to adequately assess site characteristics at each dam and

hydraulic characteristics of the rivers. The Strategic Planning Study included an evaluation of watershed hydrology, existing and proposed river profile hydraulics, existing and potential sediment transport characteristics of the rivers, chemical constituents of the bed materials, biological resources in the watershed, and cultural resources in the vicinity of each dam. The study also evaluated the biological, archaeological, hydraulic and economic impacts, benefits and costs of four potential public safety improvements at the Danville and Ellsworth Park Dams on the Vermilion River and North Fork of the Vermilion River. A detailed Strategic Planning Study Report has been prepared to explain the details and results of this study.

Identify Alternatives

Five alternatives were developed for both the Danville Dam and the Ellsworth Park Dam. Four of the alternatives include both dams being modified, although it may be an option to modify only the Danville Dam. The five alternatives are:

1. Full Removal
2. Partial Removal
3. Stepped Spillway
4. Rock Ramp
5. Do Nothing

Table 1: Summary of Alternative Costs

Alternative	Danville Dam Alt. Costs	Ellsworth Park Dam Alt. Costs	Combined Alternative Costs	Combined Construction Costs	Combined Design Costs	Land Rights Costs
1 - Full Removal	\$1,464,300	\$275,500	\$1,739,800	\$1,364,600	\$375,200	\$0
2 - Partial Removal	\$1,832,000	\$198,900	\$2,030,900	\$1,592,800	\$438,100	\$0
3 - Stepped Spillway	\$3,725,600	\$1,043,100	\$4,768,700	\$3,551,900	\$976,800	\$240,000
4 - Rock Ramp	\$2,706,700	\$1,080,400	\$3,787,100	\$2,863,600	\$787,500	\$136,000
5 - Do Nothing	\$0	\$0	\$0	\$0	\$0	\$0

Table 2: Summary of Alternative Impacts

Alternative	Removes Pool	Public Safety	Safe Canoe Passage	Fish Passage	Acres of Easements	Tree Removal (Acres)
1 - Full Removal	Yes	Restored	Yes	Restored	0	0.52
2 - Partial Removal	Yes	Restored	Yes	Restored	0	0.52
3 - Stepped Spillway	No	Improved	Portage	Improved	60	2.52
4 - Rock Ramp	No	Improved	Portage	Improved	34	2.52
5 - Do Nothing	No	None	No	None	0	0.00

Environmental inventory

The Danville Dam currently fragments the Vermilion River by creating a barrier that denies fish and other aquatic organisms, including threatened species, access to 175 river miles of quality spawning and rearing habitat in the Vermilion River, Salt Fork and Middle Fork channels upstream of the dam. The Ellsworth Park dam currently fragments an additional 2.3 miles of the North Fork Vermilion River. IDNR conducted fish sampling in 2004 and 2011 immediately

upstream of Danville Dam and approximately 100 feet downstream of the dam. The results of the sampling is shown in Table 3.

Table 3: Fish Sampling Results

Sampling	2004 Upstream	2004 Downstream	2011 Upstream	2011 Downstream
#Species	23	37	22	39
Largemouth Bass	1	10	6	1
Smallmouth Bass	0	5	2	8
Spotted Bass	1	0	0	0
Crappie	1	17	0	8
Bluegill	7	38	3	7
Channel Catfish	2	13	0	23
Flathead Catfish	3	6	1	1
Walleye	0	3	0	1
Big Eye Cub	0	1	0	0
River Redhorse	0	2	0	7
Eastern Sand Darter	0	0	0	2
Fish Abundance	258	677	554	1,000

Although the dam modifications impact the pooled wetlands upstream of the dam modifications, it will improve the quality of wetland by increasing oxygen levels and reducing sediment deposition. Therefore, the wetland benefits outweigh the wetland impacts. Additionally, there are no cultural or historical concerns within the project areas.

Within the project area, six species of fish or mussels have been identified as a threatened or endangered species within the State of Illinois by the Illinois Endangered Species Protection Board, as documented in their February 22, 2011 report. A resource conservation plan will be developed to address the endangered species in the area.

Project Partnership

As a potential project sponsor, the City of Danville will be requested to obtain all local permits necessary to construct the project, acquire all land rights required for the construction, pay for any utility relocations required by the project, operate and maintain the project, and pay any construction cost of enhancements requested by the City. The IDNR/OWR is prepared to commit to finalizing all planning, design and construction documents, oversee the bid process, supervise construction, obtain all state and federal permits and pay for all construction costs directly related to the modification of the dams.

Status

The recommendations are being send to the City of Danville for the City's considerations.

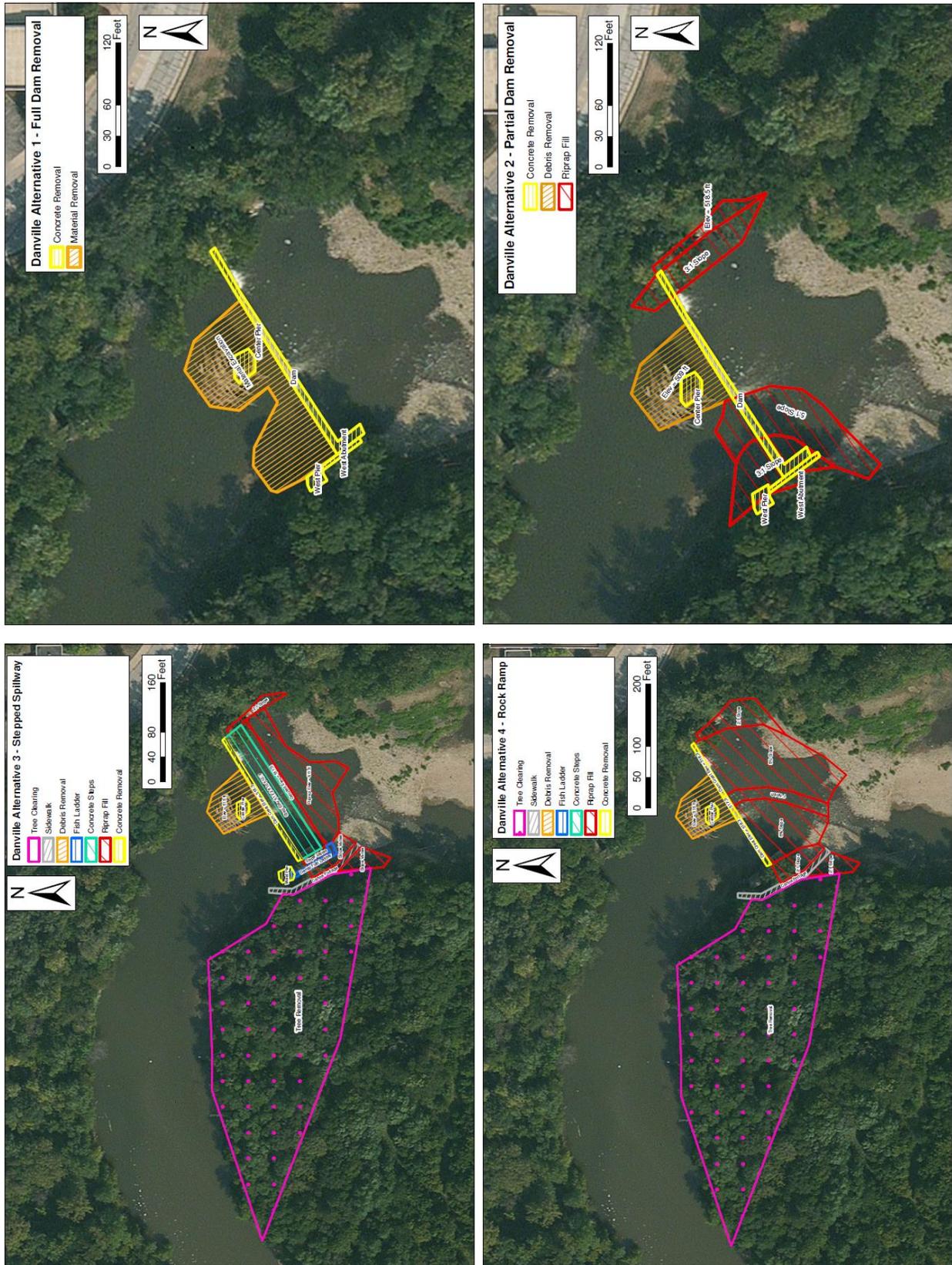


Figure 1: Danville Dam Alternatives

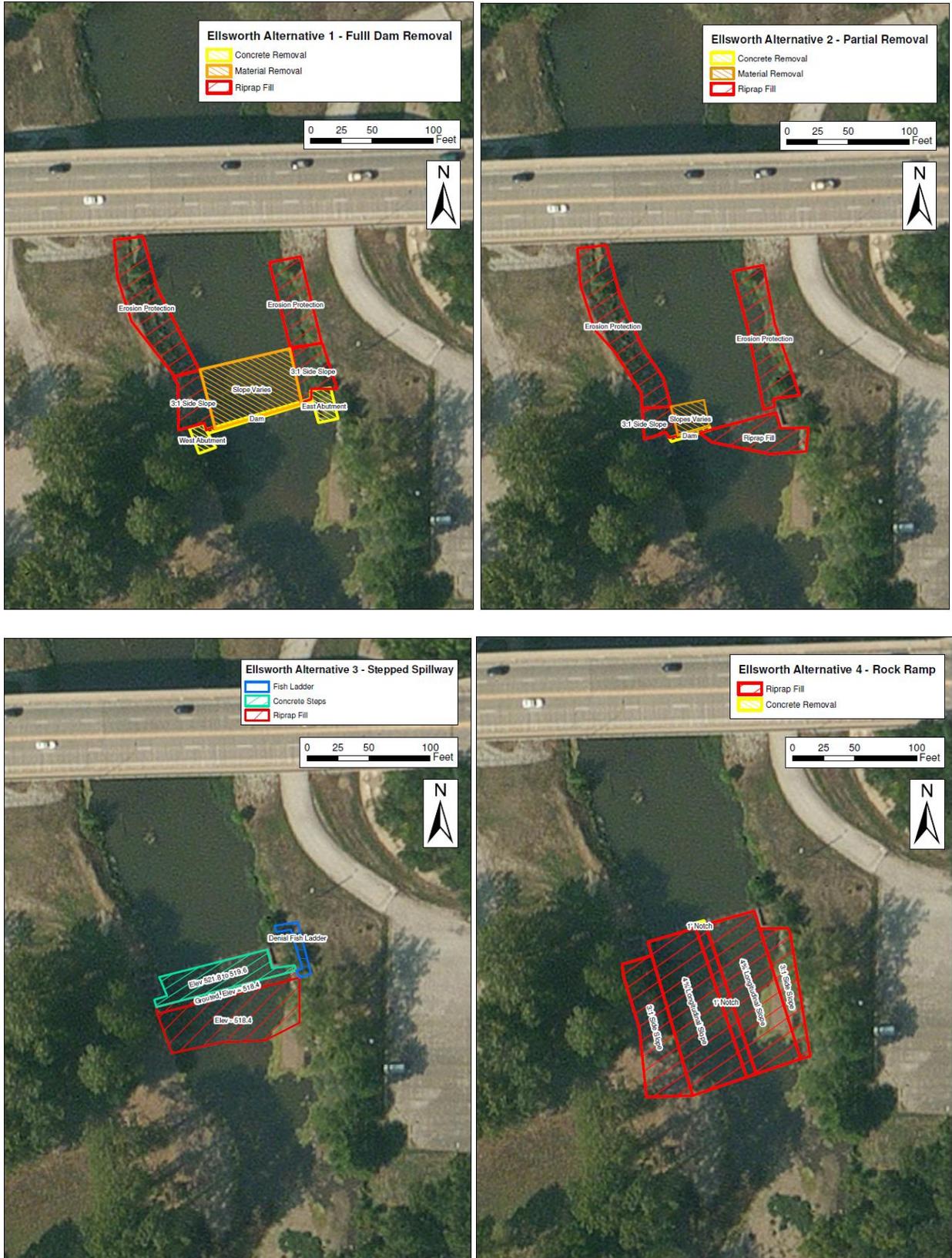


Figure 2: Ellsworth Park Dam Alternatives



Danville & Ellsworth Park Removal
 Vermilion River & North Fork
 of Vermilion River
 Danville, IL
 Vermilion County

Figure 3: Location Map