

Questions & Responses ***Feb. 22, 2017 Public Presentation***

The following questions and comments are those gathered on the index cards and collected at the Public Presentation by the Maumee Watershed Conservancy District and Stantec on Wednesday, February 22, 2017 at the Winebrenner Auditorium on the campus of the University of Findlay. Individual responses to each question and comment received are presented with the respective question and comment. The text of the questions and comments have been transcribed directly from the text on each index card, with the exception that any personal contact information provided on the index cards has been removed for the purposes of this document.

- For Alternative 4, what would be the reduction in flow by feet at Bright Road bridge over Blanchard in a 2007 like event?
 - Preliminary estimates show about a 2.3 feet water surface reduction during a 2007 like event at the Bright Road Bridge over the Blanchard River.
- Could federal or state funding still be available without this being an USACE plan?
 - Federal funding is unlikely. Grants from the State of Ohio will be pursued for certain environmental and flooding mitigation projects as part of the overall program.
- Everyone in Blanchard watershed will benefit from this and it's their water. Is there some way to make everyone in watershed pay for it?
 - Several alternative options for funding exist for the recommended program; however, the overall funding strategy cannot be developed until several administrative steps, as outlined within Section 6101 of the Ohio Revised Code related to Conservancy Districts, have been completed. Additional information related to project funding will be provided in the future.
- Will the dry storage areas, if chosen, use a passive gate system similar to the Army Corps plan?
 - The latest plan from the USACE proposed an active Obermeyer gate system. For the purposes of this analysis, Stantec assumed static culverts for each dry storage area.
- Will Aurand Run be gated at the crossing if diversion channel is chosen?
 - Conceptual design would have an at-grade crossing with Aurand Run. The headwaters of Aurand Run would drain directly into the diversion channel and be routed downstream to the Blanchard River.
- Will fresh and wastewater treatment plants be expanded/updated?
 - This analysis was not part of the Stantec study.
- Will there be a public comment period?
 - Yes. There will be several opportunities for public input throughout the development of the final proposed solutions.
- Will all the groups – first responders, churches, etc. be in a forum to consider how best to make a 100-year PLAN?
 - The local community will be engaged through additional local presentations and workshops, as well as continued discussion at various public meetings throughout the process. The Program Team, consisting of the City, County, MWCD and Stantec, will meet periodically with individuals and the public to share program progress and get stakeholder feedback.

Hancock County Commissioners and Maumee Watershed Conservancy District
Hancock County Flood-Risk Reduction Program

- How will you win the farmer's cooperation?
 - *Flooding is an issue that has impacted all communities within Hancock County; therefore, the program recommended by Stantec is intended to be one that benefits the entire community of Hancock County. The recommended program was developed to increase community-wide benefit through regional flood-risk reduction projects, while attempting to reduce the impacts on agricultural land, structures and infrastructure. The projects are spread throughout the watershed to reduce the overall flood risk relative to various storm shapes, sizes and distributions. Net benefits are expected to occur across Hancock County for thousands of acres of agricultural land, while at the same time removing thousands of parcels from the 1% ACE event floodplain.*

- Would your recommended plan help make the Blanchard River an asset to the community in terms of tourism, recreation, quality of life and enjoyment of our natural resources?
 - *Details related to the design of the hydraulic improvements along the Blanchard River are yet to be determined, however, ideas related to aesthetics and improvements to the parks have been discussed. Recreation opportunities and quality of life are expected to increase with the reduced risk of flooding.*

- Yesterday I was kayaking the Blanchard River up river from the Riverside Dam. It is a mess of large trees and branches and a large chunk of cement about 5' x 6" (This may be the end of drainage tile). Why hasn't this been cleaned up?
 - *The Hancock Soil and Water Conservation office is responsible for removing downed trees and log jams as a part of the effort funded by the six counties within the Blanchard River watershed.*
 - *Analyses were performed for a variety of alternative improvements along the Blanchard River corridor through downtown Findlay. The removal of the debris and obstructions upstream of the confluence with Lye Creek and the Riverside Dam does not provide measurable positive improvements to the water surface elevation.*

- Has anyone given serious review of flood mitigation plan utilizing pumps which was proposed by Carl Bach (See Courier article 7/14/14) – Intended to keep water moving through and lessen back-up. If yes, what are pros & cons? Feasibility? If no, why has no one looked at it?
 - *Technically feasible alternatives related to pumping flows from the Blanchard River were analyzed for consideration within the proposed suite of improvement projects. Developing pump systems with the capacity to carry the range of flows that could provide similar levels of flood-risk reduction are exceedingly expensive to construct and maintain. It is Stantec's opinion that the costs to build such a facility would be at least equivalent to the recommended solution, and the annual costs to operate and maintain the facility would be three (3) to five (5) times greater. Additionally, pumping systems and related controls could be affected by electrical and mechanical failure. Stantec's recommendations would rely on static devices that do not require electrical or mechanical systems.*
 - *The concept of utilizing pumps to fill the Findlay Reservoir during flood events was also explored as a technically feasible alternative to reduce the size of the other alternatives. However, the capital and operational costs of such a mechanical system are greater than the passive systems recommended. And again, the risk of failure for a mechanical system is far greater than for a passive system.*

- "It's really flat here" – Wouldn't pumps help push flow through?
 - *Not really. Additional in-stream capacity would be required downstream to provide the ability to take the flows from the pumping systems. The transfer of pumped flows downstream would likely induce flooding significantly to downstream areas.*

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- Explain why Federal USA says not feasible to do and asking Canada to give Hancock County the green light?
 - *The USACE provided a technically feasible alternative to convey the 4% ACE (25-year flow) from Eagle Creek that would have resulted in only a nominal decrease in WSE downstream during larger events evenly distributed throughout the Blanchard River watershed. Rain events that did not affect the Eagle Creek watershed would not result in positive impacts during flood conditions on the Blanchard River.*
 - *Stantec has recommended a suite of projects that will result in a greater reduction in the risks associated with local flooding and would provide positive results, regardless of the distribution of the rainfall events.*
 - *The Canadian government is not engaged in any part of the recommended Program.*

- Silt in river ~ clean the river.
 - *Analyses have been completed that show the removal of silt and debris from the main channel of the Blanchard River will result negligible changes to the water surface elevation (WSE) within the river.*

- Lynn Army from the Conservancy District told me they do not make a new problem to fix an old one. Is this no longer true?
 - *The program recommended by Stantec was developed to increase community-wide benefit through regional flood-risk reduction projects, while attempting to reduce the impact on land, structures and infrastructure. The projects are spread throughout the watershed to reduce the overall flood-risk relative to various storm shapes, sizes and distributions. Net benefits are expected to occur across Hancock County for thousands of acres of agricultural land, while at the same time removing thousands of parcels from the 1% ACE event floodplain.*

- Please do the downstream benching and riffles -NOW- should have been done a long time ago.
 - *The detailed design phase for the recommended hydraulic improvements may not advance until after there is concurrence by the MWCD Board of Directors and Conservancy Court judges. It is anticipated that this could occur as early as May 2017 and allow for construction to possibly commence in 2018.*

- Move slowly on projects one at a time -To See-
 - *The parcels along the Blanchard River within the city are primarily owned by the City of Findlay and Hancock County. As such, the hydraulic improvements project on the Blanchard River could be advanced more rapidly following concurrence from the MWCD Board of Directors and Conservancy Court judges.*
 - *Recommended modifications to the railroad bridge will require interaction with the owners of the facility and could take a few years to finalize.*
 - *The other alternatives would be implemented over a significantly longer timeframe, following additional refinement, review and local community input.*

- You cannot stop the Blanchard River from flooding.
 - *The purpose of the technically feasible program of improvements is not to eliminate flooding, but to reduce the risk of potential impacts related to flooding. All parties associated with the recommended Flood-risk Reduction Program acknowledge that the suite of improvements will not prevent flooding resulting from all possible rainfall events within the watershed, but will reduce the water surface elevation (WSE) under most events and reduce the risks for flood-related damages that may occur.*

- Have you thought about widening the river from Main Street bridge to the west edge of city limits FIRST? This would reduce the destruction to downtown businesses by getting water out of the buildings sooner.
 - *Analyses were performed for several options involving the hydraulics of the Blanchard River. The recommended program incorporates some of these improvements in the form of floodplain bench widening, inline structure removals and modifications to a bridge identified as a flow constriction. The recommended program includes cost-effective and environmentally “permissible” measures that would provide meaningful benefit in flood-risk reduction.*

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- *Additional improvements downstream of the bridge at Broad Avenue do not provide appreciable reductions in water surface elevation farther upstream.*
- How would the 500-Yr flood be affected?
 - *The benefit expected during the 0.2% annual chance exceedance event (500-year flood) would depend on the location and intensity of the storm. While there are an infinite number of storm event combinations and locations, the recommended program is expected to provide flood reduction benefit during the more frequent events (2-year, 10-year, 25-year) as well as the extreme, less common events (100-year, 500-year) no matter where these storms may occur across the watershed.*
- When will the diversion channel construction begin?
 - *The various projects that comprise the overall Flood-risk Reduction Program are still under review and a decision has not been made to move forward with a specific project or set of projects. The Program Team, including the MWCD, City, County and Stantec, will continue to collaborate to allow Stantec to finalize the Proof of Concept Report and update the benefit to cost ratio (BCR) calculations. The local community will review, discuss and consider the program recommendations. The MWCD will then take the Proof of Concept report into consideration to determine which, if any, of the recommendations should move forward for additional plan refinement.*
- Is there any difference between 6 ft. of water in my basement and 4 ft. of water in my basement!?
 - *The recommended program is intended to reduce the risk of flooding along the Blanchard River and its tributaries and not necessarily eliminate localized flooding or basement backups resulting from other issues within the sanitary or storm sewer collection systems. Even with the construction of the projects within the recommended program, some locations are likely to still be subject to localized flooding during various events.*
- Are provisions being made to compensate farmers for loss of crops due to storage basins? Example – Pay for crop insurance.
 - *Opportunities and protections will be afforded for impacted property owners, as outlined within Section 6101 of the Ohio Revised Code related to Conservancy Districts. Purchase of lands required to implement the final recommended program will be negotiated with individual property owners as further development of the detailed designs progress. There are several options under consideration, including continued agricultural use. Decisions related to property purchase negotiations would be made following detailed design and discussed on an individual basis.*
- Have you (Stantec) looked into what was done in Tiffin, Ohio – after the 1913 flood? They have not had any problems with flooding there. They did not have to do channels or levees etc.
 - *Problems and solutions are generally unique to each community based on layout of the watershed, topography, land use, and available funds. Findlay is a unique situation that must be addressed with the individual community's constraints in mind.*
- What happens with the drainage on a farm that has the channel across it?
 - *For the diversion channel alternatives, it is anticipated that the drain tiles would be cut and redirected into the diversion channel where necessary. In locations where berms would be constructed, the USACE plan had suggested several gates to allow land to property drain. These details would be finalized during detailed design if the diversion channel option is selected.*

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- People back in the early 1900's predicted more flooding everywhere because of deforestation – we used to have fences, more trees, shrubs- that held the water back in the fields. If vegetation was planted on fields in fall – (built up the soil) - Fertile soil holds more water. We could prevent more flooding without the cost. Why not copy nature?
 - *Field fencing and vegetation would provide micro-storage across the watershed and would likely provide some benefit in terms of flood-risk reduction. However, individual farming practices are up to the discretion of the land owner and are extremely difficult to enforce, especially on a large scale. Therefore, using this strategy as a reliable large-scale flood-risk reduction measure is not recommended.*

- At what point in time will there be an ACCURATE project estimate?
 - *Stantec assumed a flat 30% contingency for each line item in the preliminary cost estimates for the alternatives considered. While cost estimates were reviewed for accuracy at the conceptual level, the 30% contingency covers unforeseen administrative and legal fees and obstacles that may arise during the detailed design and construction phases. As any selected project progresses through preliminary design to final design, the project contingency will decrease at each step. It is anticipated that the estimates for the probable cost of construction will be provided with a 10% contingency as the final designs are refined.*

- At what point in time will proposed project funding plans be made public knowledge? How is this project going to be paid for? Where will the money come from? Who is going to pay for this? Who will be paying for the project? Will it go on all property taxes including home owners in the City of Findlay?
 - *A portion of the project may be paid for by the existing flood mitigation funds, generated by the 2009 local sales tax. Several alternative options for funding exist for the recommended program; however, the overall funding strategy cannot be developed until several administrative steps, as outlined within Section 6101 of the Ohio Revised Code related to Conservancy Districts, have been completed. Additional information related to project funding will be provided in the future.*

- How much money has been spent so far?
 - *Approximately \$8.5 million was paid to the US Army Corps of Engineers for their study and approximately \$1.4 million will be paid to Stantec for their Gap Analysis and Proof of Concept efforts.*

- Will the flood problem and solution go to a county or community for a vote?
 - *The local community will be engaged through additional local presentations and workshops, as well as continued discussion at various public meetings throughout the process. The Program Team, consisting of the City, County, MWCD and Stantec, will meet periodically with individuals and the public to share program progress and get stakeholder feedback. The MWCD will take the Proof of Concept report into consideration to determine which, if any, of the recommendations should move forward for additional plan refinement.*
 - *If the Conservancy Court determines that the recommended program of projects meets the needs of the community and provides benefits that exceed the overall costs and impacts, the program may be added to the MWCD Official Plan as provided within Section 6101 of the Ohio Revised Code. That process affords multiple opportunities for input and discussion. Once adopted for inclusion within the Official Plan, the proposed suite of solutions will not be subject to the right of referendum.*

- Great report and explanation.
 - *Thank you.*

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- Who is responsible to make money source decisions?
 - *The Maumee Watershed Conservancy District along with the Hancock County Commissioners will work together to formulate a funding plan. A portion of the project may be paid for by the existing flood mitigation funds, generated by the 2009 local sales tax. Several alternative options for funding exist for the recommended program; however, the overall funding strategy cannot be developed until several administrative steps, as outlined within Section 6101 of the Ohio Revised Code related to Conservancy Districts, have been completed. Additional information related to project funding will be provided in the future.*
 - *The MWCD is a political subdivision of the State of Ohio established under Ohio Revised Code Chapter 6101. The MWCD oversees water management, including flood-risk reduction programs and represents 15 counties in northwest Ohio, including Hancock County and the upper reaches of the Blanchard River.*

- May I make a statement of less than 60 seconds? (I live 300 feet from the river and have monitored it for 50 years)
 - *The local presentation and update was provided for all local elected officials and residents. Opportunity for public comments was not provided beyond the written questions and comments obtained on the index card. Additional local meetings and presentations will occur in the near future to provide further opportunity for public input.*

- What about the bottle neck on County Road 140 and raised road intersection 224 West?
 - *Analyses were performed for several options involving the hydraulics of the Blanchard River, including analyses related to CR140. While removing the embankment of this bridge would reduce the water surface elevation for several hundred feet upstream of that location, the benefit is reduced to less than 0.1 feet when major flooding along the Blanchard River occurs.*
 - *The recommended program incorporates some of these hydraulic improvements in the form of floodplain bench widening, inline structure removals and modifications to a bridge identified as a flow constriction. The recommended program includes cost-effective and environmentally “permissible” measures that would provide meaningful benefit in flood- risk reduction.*

- Run off added I-75?
 - *There are likely several factors related to increased runoff across the watershed (climate, agricultural practices, land development, etc.). The intent of the study was to focus on solutions for the flooding, not necessarily trying to pinpoint the various reasons for why major flooding appears to be occurring more frequently.*

- Have you considered cleaning and widening the Blanchard River as was previously suggested? Please explain in detail.
 - *Analyses were performed for several options involving the hydraulics of the Blanchard River. The recommended program incorporates some of these improvements in the form of floodplain bench widening, inline structure removals and modifications to a bridge identified as a flow constriction. The recommended program includes cost-effective and environmentally “permissible” measures that would provide meaningful benefit in flood-risk reduction.*

- If it is okay to widen the Blanchard River in town, wouldn't it be more cost effective to clean and widen the Blanchard west all the way to Hancock/Putnam line and drop the diversion project completely? It would increase the flow of the river taking the water out of Findlay quicker.
 - *Analyses were performed for several options involving the hydraulics of the Blanchard River. The recommended program incorporates some of these improvements in the form of floodplain bench widening, inline structure removals and modifications to a bridge identified as a flow constriction. The recommended program includes cost-effective and environmentally “permissible” measures that would provide meaningful benefit in flood-risk reduction.*

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- Who will maintain the Diversion Channel when we can't even maintain the Blanchard River?
 - *The diversion channel alternative will be maintained by the Maumee Watershed Conservancy District if this option is selected to move forward.*

- Presently, the river is very shallow in many places, plus the river is full of dead trees and debris. Why clear trees and lay them on the banks? Haul them away.
 - *The Hancock Soil and Water Conservation office is responsible for removing downed trees and log jams as a part of the effort funded by the six counties within the Blanchard River watershed.*
 - *Based upon the preliminary modeling completed for the development of technically feasible alternative, the removal of log-jams and significant debris from within the river bed and/or along its banks will not provide appreciable reductions in the water surface elevation during flood conditions. Due to the limited changes in elevation within the floodplain areas adjacent to the stream, when over-bank flooding occurs within the Blanchard River, the water spreads widely and is either stored or seeks "alternate routes" to convey the flows.*

- What about actually cleaning the river? And I don't mean cutting down trees and leaving them on the banks to float away. At one point it was possible to canoe the river in Hancock County – Now you would spend more time portaging than floating on water. (this was in the 1980s - 1990s).
 - *The Hancock Soil and Water Conservation office is responsible for removing downed trees and log jams as a part of the effort funded by the six counties within the Blanchard River watershed.*
 - *Based upon the preliminary modeling completed for the development of technically feasible alternative, the removal of log-jams and significant debris from within the river bed and/or along its banks will not provide appreciable reductions in the water surface elevation during flood conditions.*

- All old oil and water wells have to be plugged – Oil wells will be 20,000 to 100,000. How much cost?
 - *These items were considered during the preliminary opinion of probable cost review. The costs associated with addressing the abandoned oil wells in the area will be further refined during detailed design.*

- 6 or 7 pipe lines to move. How much cost?
 - *Relocation costs related to the large transmission gas and oil pipelines were included within the original USACE cost estimate for utilities. If the alternatives selected to move forward for design require such improvements, the costs will be further refined during detailed design.*

- Roads and bridges have to be raised and rebuilt.
 - *Modifications to roads and bridges were a major cost included within the original USACE cost estimates and have been included within the current estimates for the proposed suite of improvement projects.*

- Bore on both sides of river to determine how much city has filled river in so it can be widened to original width.
 - *Based upon a review of available records, including aerial photography, the original alignment of the Blanchard River through Findlay included several meander points and potential oxbow formations. Efforts completed as part of the Civil Conservation Corp (CCC) and Works Progress Administration (WPA) straightened portions of the channel within the City of Findlay, resulting in a far more efficient flow path through the City.*

- Tear out old sewer plant dike and open up mouth of Eagle Creek where city filled in.
 - *Analyses were performed for a variety of alternative improvements along the Blanchard River corridor through downtown Findlay. The removal of the former WWTP embankment does not provide measurable positive improvements to the water surface elevation.*

- Ohio EPA says to dredge river within 1 foot of low water level.
 - *Based upon investigations of the river channel, the bottom of the Blanchard River is set on hard-pan clay and, in many locations, bedrock.*

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- New bridges on I-75.
 - *If the diversion channel alternative from Eagle Creek were to advance, construction of two new bridges would be required on I-75. Preliminary contact has been made with ODOT to discuss the planning process for these structures and the costs have been included within the estimate provided for the diversion channel alternatives.*
 - *If the above question relates to the possibility of reconstructing the I-75 bridges over the Blanchard River, the modeling indicates no appreciable reduction in water surface elevation resulting from such an improvement.*

- What will be done with all rock?
 - *Rock excavation is a significant cost factor that will continue to be examined as alternatives are developed and refined. As noted in Stantec's presentation, proposed modifications to the diversion channel that was originally proposed by the Army Corps included adjustments in the vertical profile of the channel to minimize the rock excavations.*

- Why not clean the river to improve flow along with Alt. plan 2?
 - *Analyses were performed for a variety of alternative improvements along the Blanchard River corridor through downtown Findlay. The removal of sediment and debris from within the existing channel does not provide measurable positive improvements to the water surface elevation.*

- Why did property owners see a special assessment for the Blanchard River on their February real estate tax bills? What was the tax for?
 - *The special assessment was to pay for clearing work done across five counties in the Blanchard River watershed. The five counties split the cost of this work. This cost was inadvertently applied to the tax bills as the flood mitigation fund covered the cost of the work. The assessment will be refunded on the next tax bill.*

- In the meantime, is there any plan to repair/maintain existing levees for example at Eagle Creek along Brookside Drive in Findlay? Another flood could cause it to let loose.
 - *The existing levee along Eagle Creek was constructed by the developer of the adjacent subdivision in the 1950's and the levee is currently located on lands owned by the City of Findlay. Any concerns related to retention of this facility would be the responsibility of the City of Findlay.*
 - *The implementation of alternative solutions to provide either dry storage or flow diversion from Eagle Creek will provide appreciable reductions in flood risk along the Eagle Creek corridor.*

- Tell us about your work on Grand Lake St. Mary's.
 - *Stantec has not been engaged in design work relative to improvements at Grand Lake St. Mary's. Rather, Stantec staff were retained as an expert witness on behalf of the Ohio Department of Natural Resources (ODNR) for an analysis of work completed by another firm at Grand Lake St. Mary's.*

- Was any further study done on the impact of the relocation project of Route 30?
 - *State Route 30 is located in the most upstream reaches of the Blanchard River watershed and would have minimal impact on flooding across Hancock County.*
 - *The drainage included within the ODOT design for the recent realignment of US-30 was reviewed in detail prior to construction. The facilities completed as part of that work did not introduce significant additional uncontrolled runoff to the watershed.*

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- It is clear that you are assuming only those properties that will lose physical property to have lost value. Your single home buyout shown on the diversion channel is off by roughly 20 residential properties that have already lost value just by the threat of this project. Please discuss your planned funds set aside for the dozen of cases of inverse condemnation. Tonight.
 - *Opportunities and protections will be afforded for impacted property owners, as outlined within Section 6101 of the Ohio Revised Code related to Conservancy Districts. Purchase of lands required to implement the final recommended program will be negotiated with individual property owners as further development of the detailed designs progress. There are several options under consideration, including continued agricultural use. Decisions related to property purchase negotiations would be made following detailed design.*

- Will this flood plan have any benefit to the residential Hunter Creek homes?
 - *Yes, a reduction in flow along the Blanchard River is likely to reduce the water surface elevation along Lye Creek within the Hunters Creek subdivision.*

- The riffle structures were supposedly installed to aerate the water during low flow times. Would removing them adversely affect water quality?
 - *There will be opportunities during detailed design of the hydraulics improvements to address the water quality benefits associated with riffle structures and provide similar results.*

- You seemed to dismiss the hazardous waste situation. Might this not affect water quality and wildlife welfare downstream?
 - *Preliminary studies show that hazardous waste is expected to be located in very isolated areas along the Blanchard River. Additional investigations will be conducted if this project is authorized to move forward. Areas identified as containing certain materials would be excavated and hauled away carefully to a nearby landfill or other environmentally acceptable disposal site.*

- What will Eagle Creek dry basins do to acreage south of it?
 - *Areas south of the Eagle Creek dry basin are expected to have minimal additional flooding impacts and quickly recede back to the 1% ACE floodplain extent when the storage area is at capacity. Locations such as the Boy Scout Camp and Equine Center are expected to have minimal additional flooding impacts.*

- What about the flow downstream to Ottawa and Dupont?
 - *Dry storage basins would reduce the peak flow rates downstream into Putnam County along the Blanchard River for events that occur in the upstream portions of the watershed within Hancock, Hardin and Wyandot Counties.*

- What is a realistic timeframe for Stage 1, 2, 3, and 4?
 - *The detailed design for the recommended hydraulic improvements cannot advance until after there is concurrence by the MWCD Board of Directors and Conservancy Court judges. It is anticipated that this could occur as early as May 2017 and allow for construction of the proposed Hydraulic Improvements to possibly commence in 2018.*
 - *Recommended modifications to the railroad bridge will require interaction with the owners and could take a few years to finalize. The other alternatives would likely be implemented over a significantly longer timeframe, following additional refinement, review and local community input.*

- Will the floodplain west of the city be enlarged?
 - *Dry storage basins would reduce the peak flow rates downstream into Putnam County along the Blanchard River for events that occur in the upstream portions of the watershed within Hancock, Hardin and Wyandot Counties. The floodplain areas west of the City of Findlay would likely remain the same and could potentially be reduced during certain events.*

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- Are there issues with the present road system retaining flood water west of the city?
 - *Analyses were performed for several options involving the hydraulics of the Blanchard River, including analyses related to CR140 and CR139. While removing the embankment of these bridges would reduce the water surface elevation for several hundred feet upstream, the benefit is reduced to less than 0.1 feet where major flooding along the Blanchard River occurs.*

- Clean and widen the river with setbacks and levees
 - *Due to the limited changes in elevation within the floodplain areas adjacent to the stream, when over-bank flooding occurs within the Blanchard River, the water spreads widely and is either stored or seeks “alternate routes” to convey the flows.*
 - *Constructing levees along the riverbanks could result in increased flooding because the floodplain storage that is currently provided would be eliminated. Additionally, flood levels inside the levees during smaller events would prevent the discharge of local stormwater drainage by gravity and would require the installation of stormwater pumping stations in several locations.*

- Straighten portions
 - *Analyses were performed for several options involving the hydraulics of the Blanchard River. The recommended program incorporates some of these improvements in the form of floodplain bench widening, inline structure removals and modifications to a bridge identified as a flow constriction. The recommended program includes cost-effective and environmentally “permissible” measures that would provide meaningful benefit in flood-risk reduction.*
 - *Creating an alignment for the Blanchard River that provided more efficient flow characteristics would result in additional induced flooding downstream. Further, a concept of straightening significant portions of the Blanchard River would likely not result in a solution that would be permitted through the various regulatory agencies.*