

The Beckett's Run Experience

Fort Wayne, Indiana

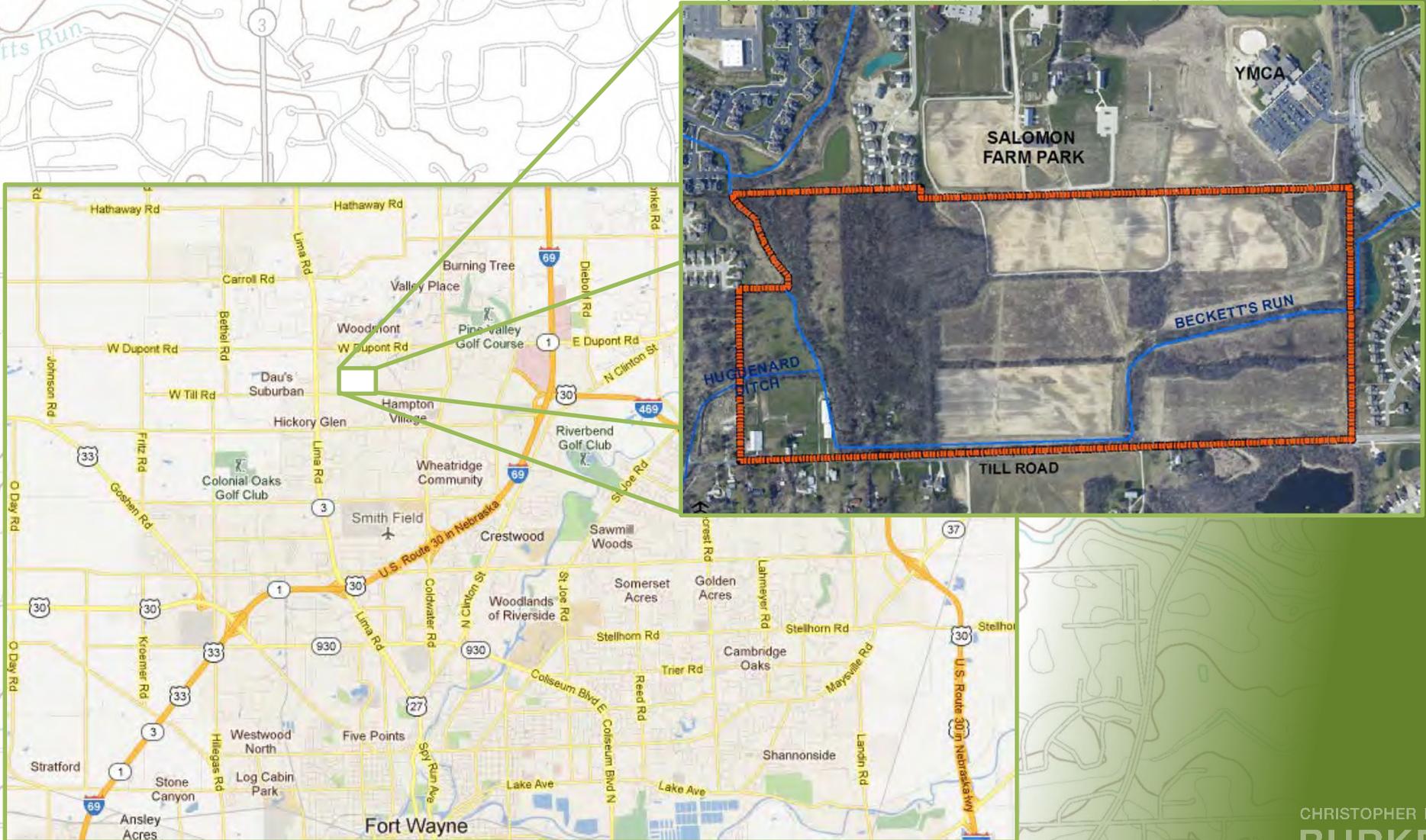


Introductions



- Charlie Cochran – City of Fort Wayne, Wet Weather Storm & Sewer Engineering
- Jason Durr, PE – Christopher B. Burke Engineering, LLC

A Little Background...



Salomon Farm Park Master Plan



Putting Culture Back in Agriculture

Project Area



A Dangerous Problem...!

The existing alignment of Beckett's Run ran directly adjacent to Till Road

- Significant erosion and undermining of the roadway
- Dangerous side slopes adjacent to roadway

Additional Causes for Concern:

- downstream flooding
- environmental quality of the stream



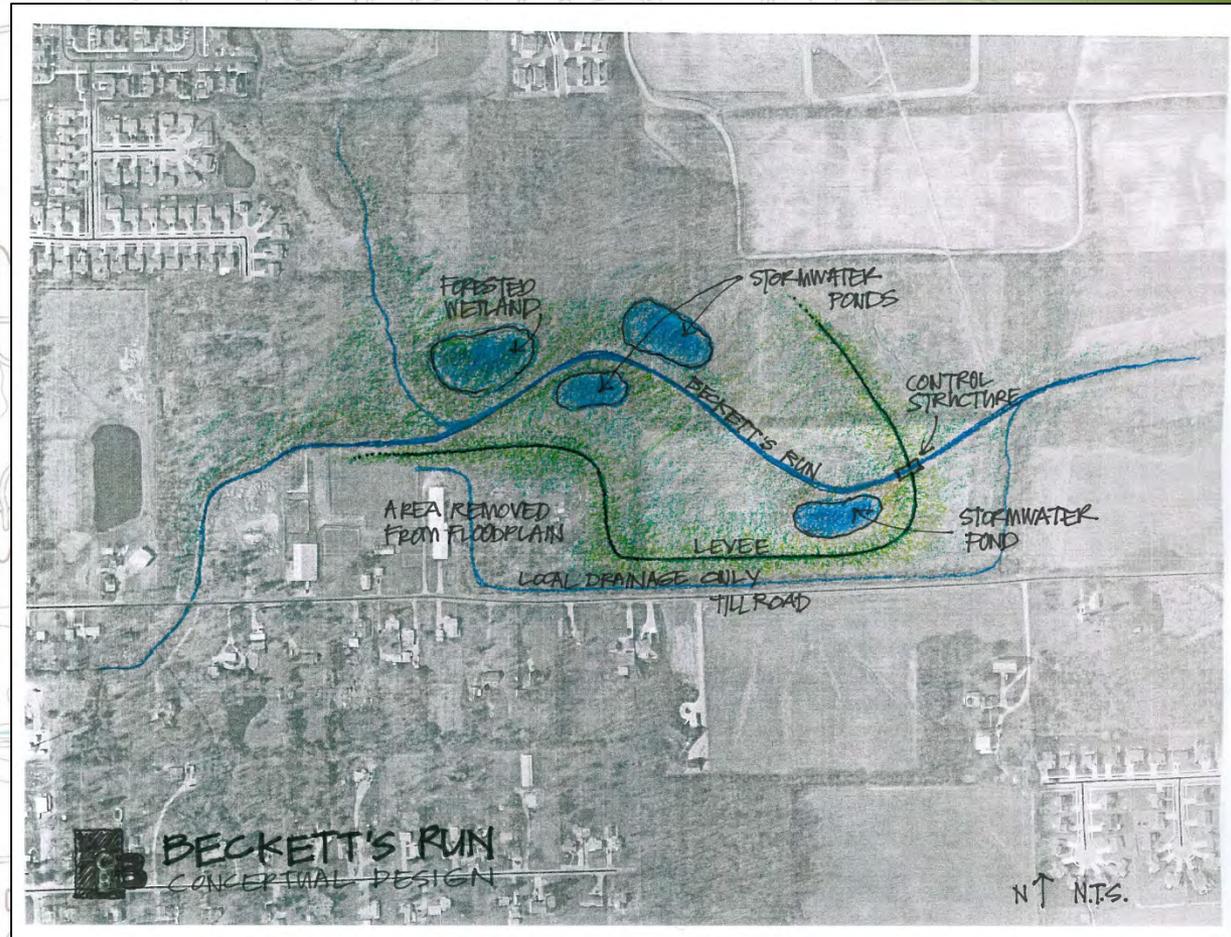
Project Objectives

Primary Objective

- Eliminate the safety hazards and ongoing maintenance requirements by relocating Beckett's Run away from Till Road

Secondary Objectives

- Provide space for additional lanes to be added to Till Road at a future time
- Provide environmental enhancements along the new stream
- Provide areas for future wetland mitigation
- Consider additional stormwater management opportunities



Additional Project Performance Criteria:

A set of criteria were developed to aid in the evaluation of project alternatives in addition to satisfying the technical criteria outlined in the project objectives:

Environmental Criteria

- Must not negatively impact the environment, recreational opportunities, or fish and wildlife resources.

Institutional Criteria

- Acceptable to the City of Fort Wayne officials and wildlife resources.
- Permits must be attainable under existing federal, state, MRBC, and City permit programs.

Economic Criteria

- Must be fundable and reduce the economic damages resulting from flood events.
- Must be the most economically feasible and effective solution to reduce flooding problems.

A small project, a lot of people....

Even though the project site is not a large one, the complex and environmentally-sensitive nature of this project requires the involvement of a lot of parties:

City of Fort Wayne

- Utilities
 - Water
 - Sanitary
 - Storm
- Parks
- Transportation

Other Utilities

- Electric
- Gas
- Phone
- Cable, etc....

Permitting Agencies

- Indiana Department of Environmental Management
- Environmental Protection Agency
- US Army Corp of Engineers
- Local Soil & Water Conservation District

Engineering Partners

- CBEL
- CTL Engineering (geotech consultant)
- Russell Engineering / VS Engineering (surveyors)
- DLZ Indiana (Pedestrian Bridge / Inspection)

Who regulates what?

The numerous regulatory agencies and their relative permitting processes can be daunting.

- **IDEM and USACE 401/404 Water Quality**

- Required coordination the EPA

- **IDNR – Construction in a Floodway**

- Required for any work in a floodway

- **IDEM – Rule 5**

- Required for any land disturbing activities greater than 1 acre

Consideration of the time required to obtain the proper permits is an important, but easily overlooked, part of the overall project timeline.

Base Hydrologic Model

HEC-HMS model based on NRCS TR-55 parameters:

- Watershed delineation
- Land Use Data
- Soil Data
- Curve Numbers
- Time of Concentration
- Reach Routing
- Precipitation Data
- Runoff Hydrograph

The model was then calibrated and compared to the coordinated discharge curve from the Ungauged Streams in Allen County Coordinated Curve.

Location	Drainage Area (Sq. mi.)	Coordinated Curve 100-Year Discharge (cfs)	Calibrated HEC-HMS 100-Year Peak Discharge (cfs)
2,000 feet East of SR 3 and 500 feet North of Till Road	2.916	784	770
2,250 feet upstream of Dawsons Creek Blvd	3.160	826	817
Mouth	9.438	1685	1,814

Hydraulic Study - Reach Analysis

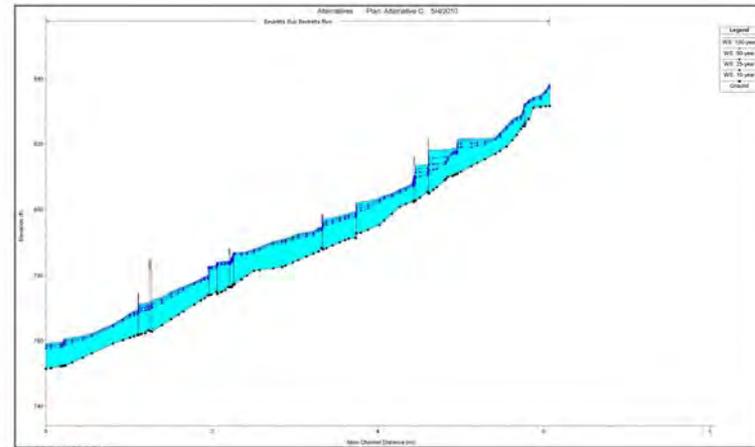


Hydraulic Modeling Process

The data from the hydrologic model was then used to create a base hydraulic model to analyze the impacts of the proposed detention facilities.

HEC-RAS Computer Model and Input Data

- Topographic base map and cross section location data
- Cross section geometry data
- Manning's roughness coefficients
- Bridge data
- Flow data
- Starting water surface elevations



The model was used to develop an existing water surface profile for Beckett's Run to use for the basis of analysis for the possible alternatives.

Alternative Evaluation

A preliminary grading plan and detailed hydraulic model were developed for each of 4 possible alternatives and each was evaluated based on the following:

- Impact of proposed detention facility on peak discharge and downstream flood elevations
- Possible funding opportunities
- Geomorphic conditions at the site
- Impact on storage within the existing floodplain
- Potential wetland creation schematics
- Limits of necessary property acquisition and/or easements
- Estimate of construction costs
- Permitting time frames
- Operation and maintenance considerations
- Cost/benefit analysis

And the survivor is...

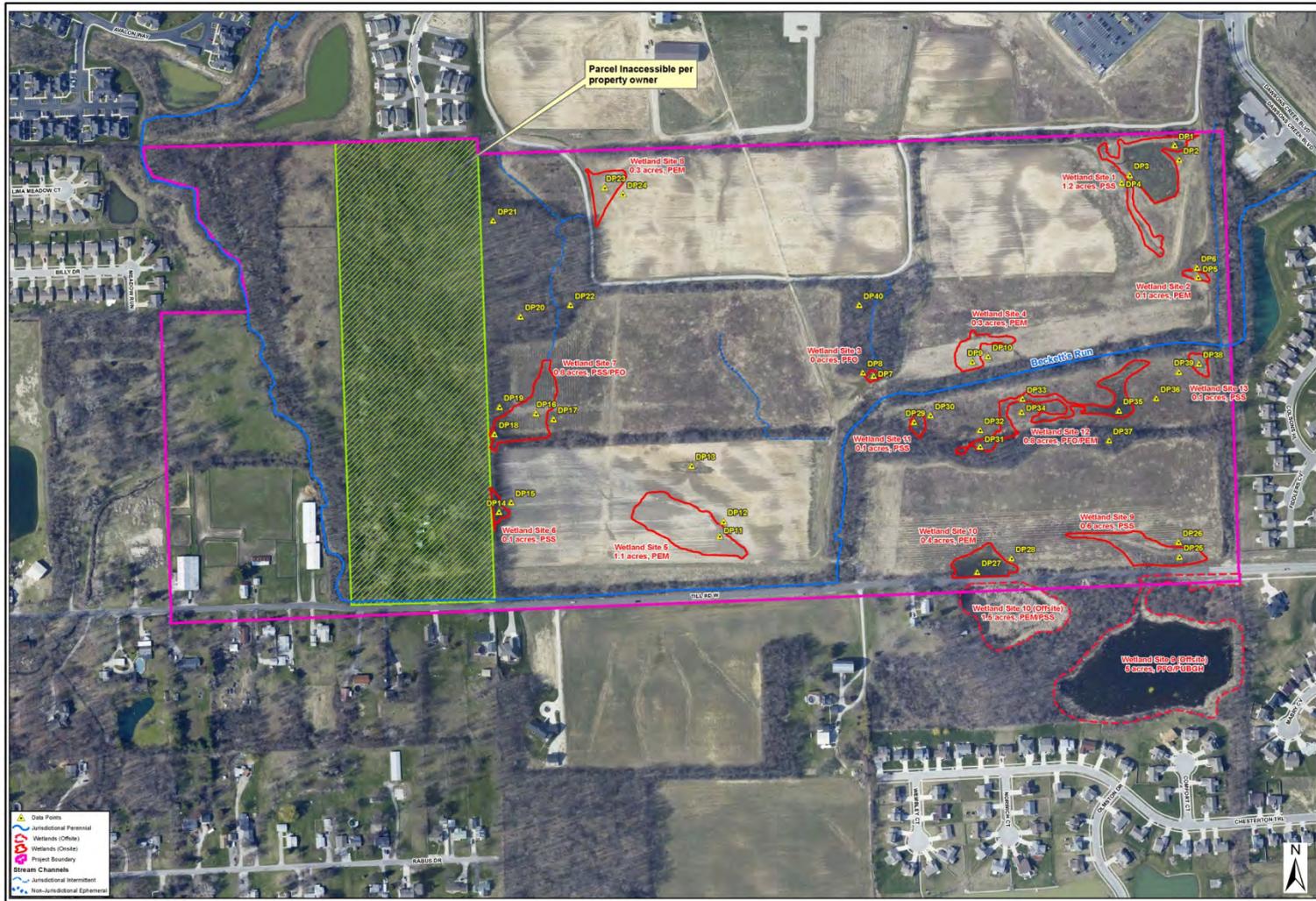


Project Development

Design and Construction Document Process

- Survey
- Geotechnical Investigation
- Verified adequate wetland mitigation is provided for disturbed wetlands
- Rerun and verified hydraulic model
- Adjusted plans per comments and initiated utility coordination process
- Designed utilities
- Drafted specs
- Adjusted plans per comments and completed fine grading
- Completed specifications, cost estimate
- QA/QC Review
- Completed bid documents and engineer's estimate

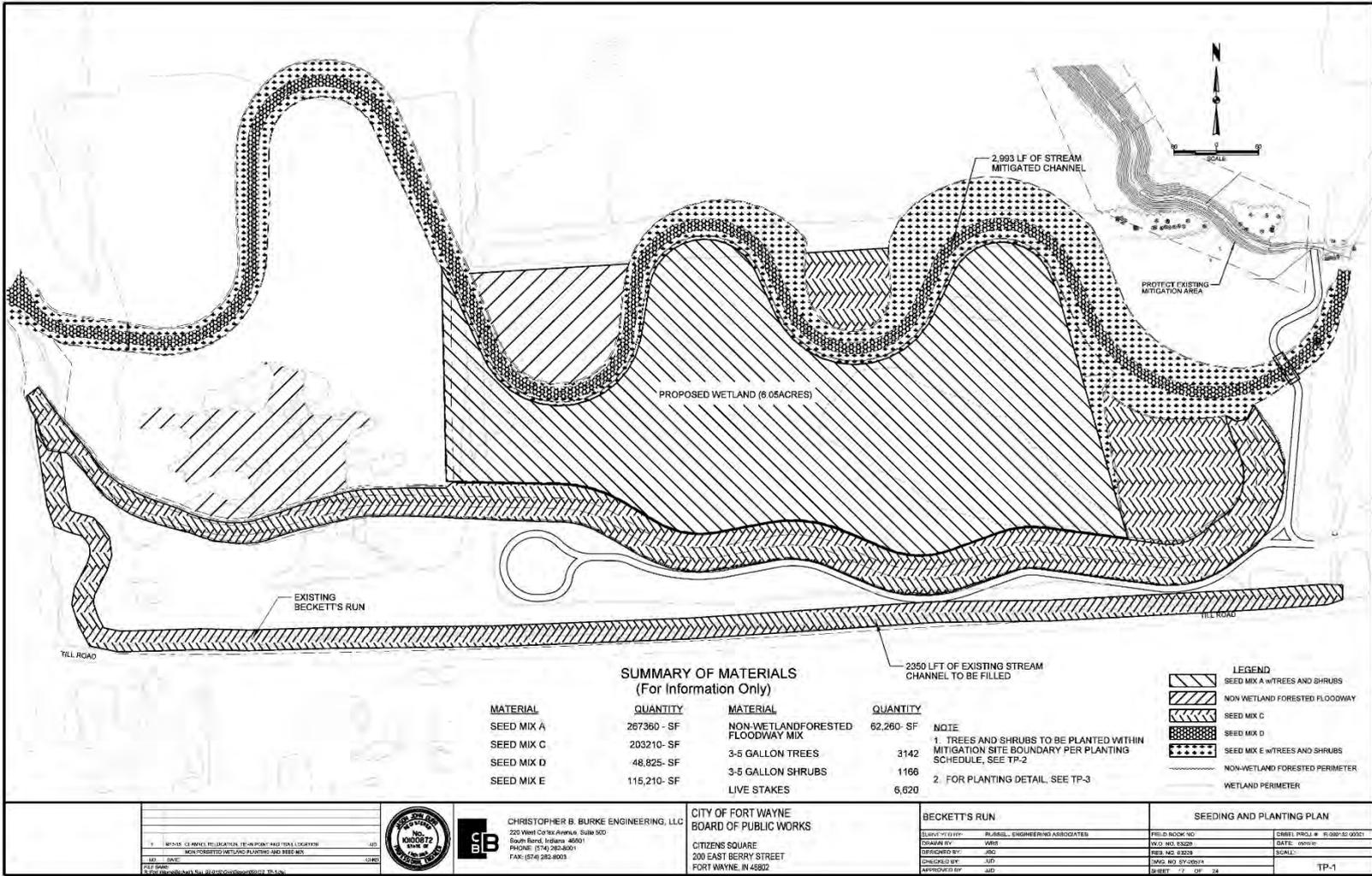
If it were only that easy...



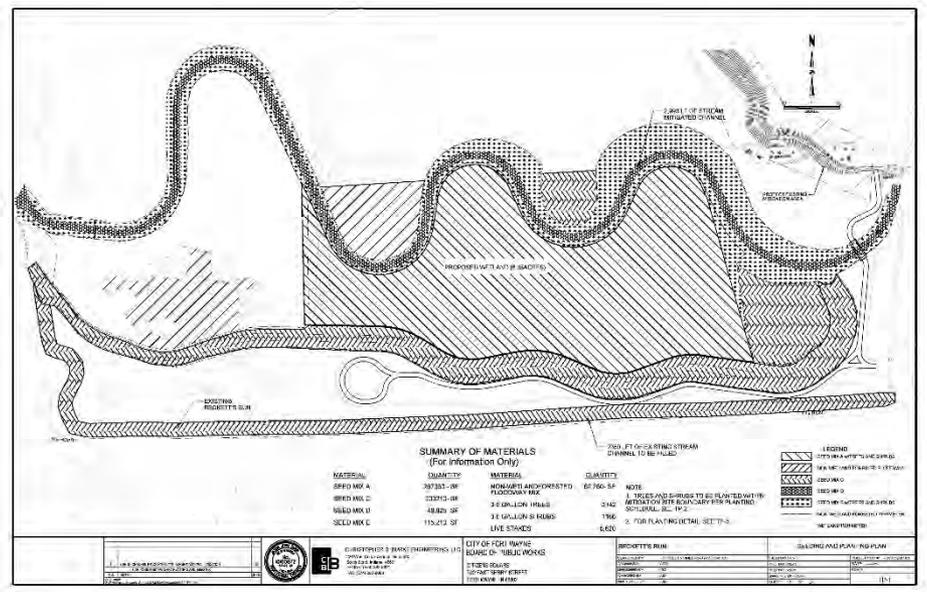
Source of Data:
 1 Aerial Photography, 2006 Allen County
 2 02005 Aerial Survey, February 2005

<p>Christopher B. Burke Engineering, Ltd. National City Center, Suite 1308 South 115 West Washington Street Indianapolis, Indiana 46204 (317) 266-8000 (317) 632-3306</p>	PROJECT: BECKETT'S RUN WETLAND DELINEATION	PROJECT NO: 09-0132	APPROX. SCALE: 1"=200'
	TITLE: WETLANDS & DATA POINTS	DATE: 02/2010	EXHIBIT 6

But finally...



Selected Alternate vs. Actual



Engineer's Estimate / Bids

Updated Project Estimate

- \$2,318,000

Bids Received

- Atlas Exc. - \$2,447,499
- Fleming Exc. - \$2,472,310
- Ironclad Exc. - \$2,482,737
- Geiger Exc. - \$2,498,070
- Haynes Cons. - \$2,893,701
- Crosby Exc. - \$2,998,440

Awarded to Atlas Excavating End of 2014

Next Step...Construction....



Construction Milestones and Schedule

Milestones

- Water Main relocated & construction fencing.
- New Channel & Coir Logs installed.
- Plant wetland, construct & seed the berm.
- Complete the bridge, fill existing ditch & install storm sewer.

Schedule

- December 31, 2015 - Existing ditch filled, storm sewer installed
- May, 2016 - Final restoration for storm sewer construction.
- Delay due to redesign of east (tail) end of stream
- November 4, 2016 – All milestones and final completion.

Notice To Proceed – January 20, 2015

Solomon Farm

W Till Rd

CLEARING



EXCAVATION





GEOWEB INSTALLATION



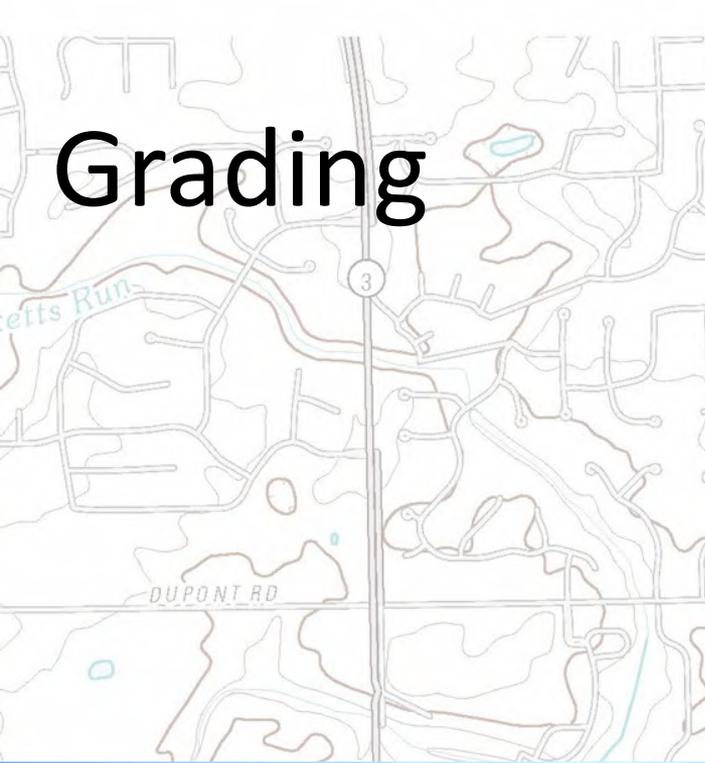
Plantings



Plantings



Grading





Solomon Farm Rd

www.cbe.com



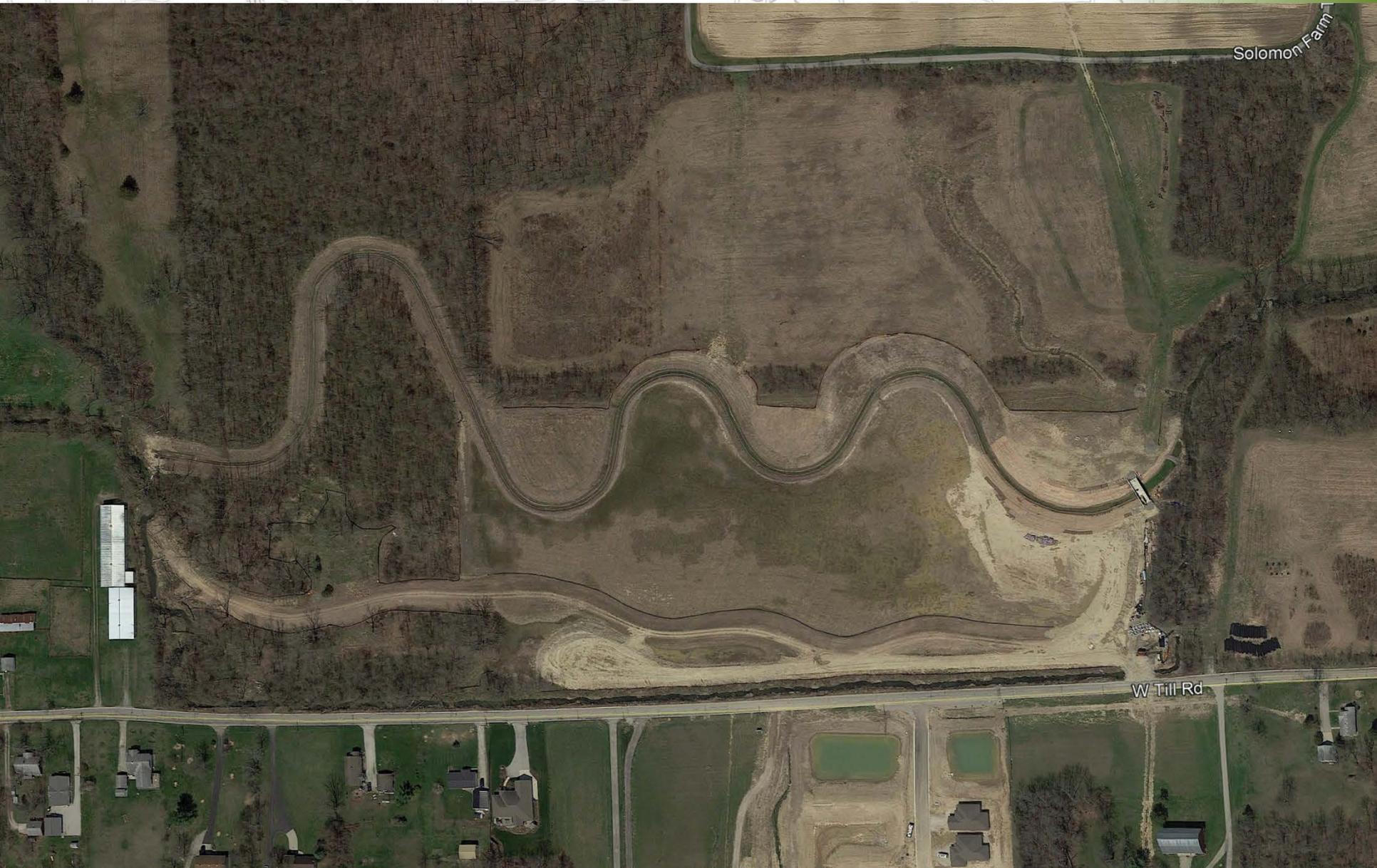
Stop point for redesign of tail



Plantings



Solomon Farm

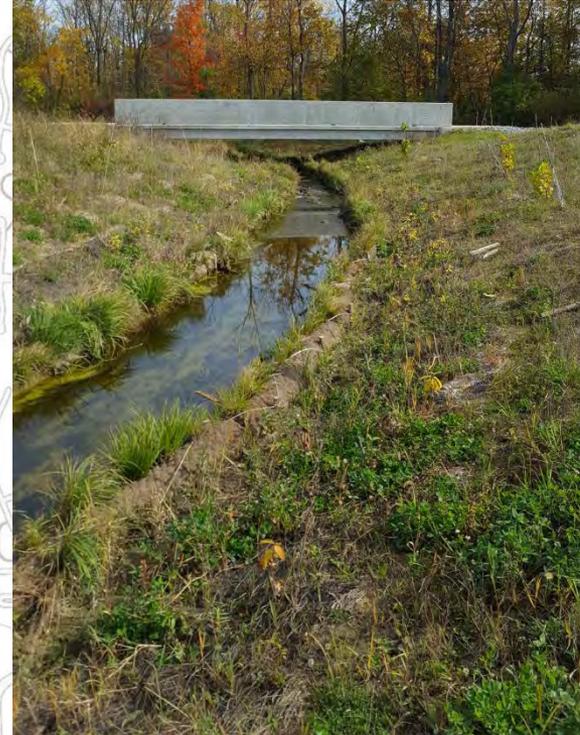


W Till Rd

UTILITY COORDINATION



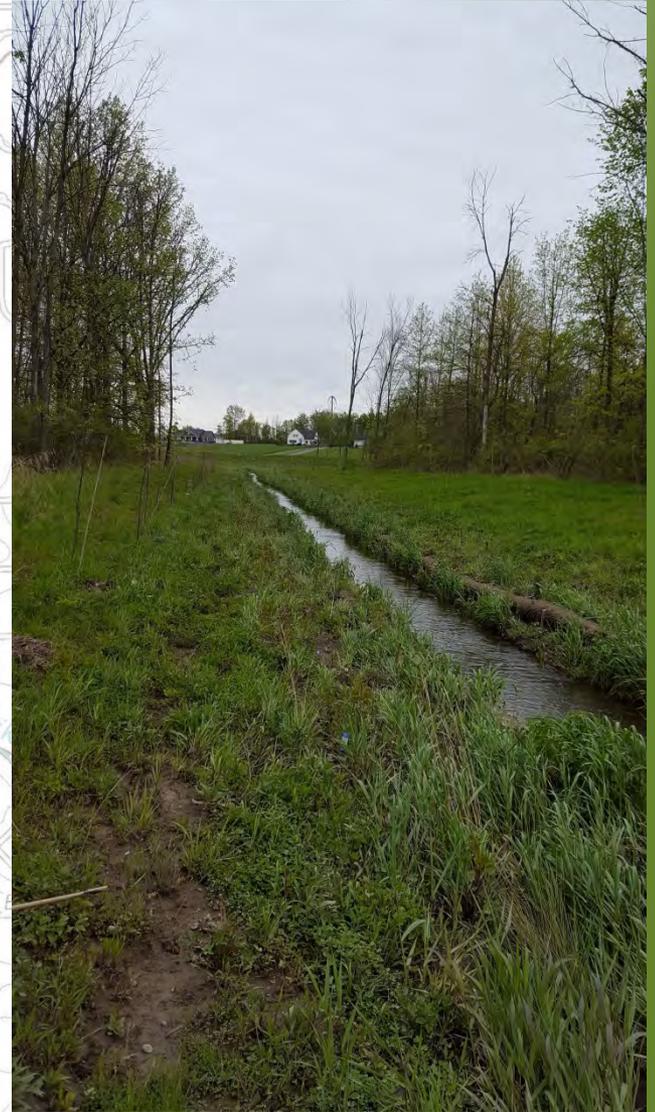
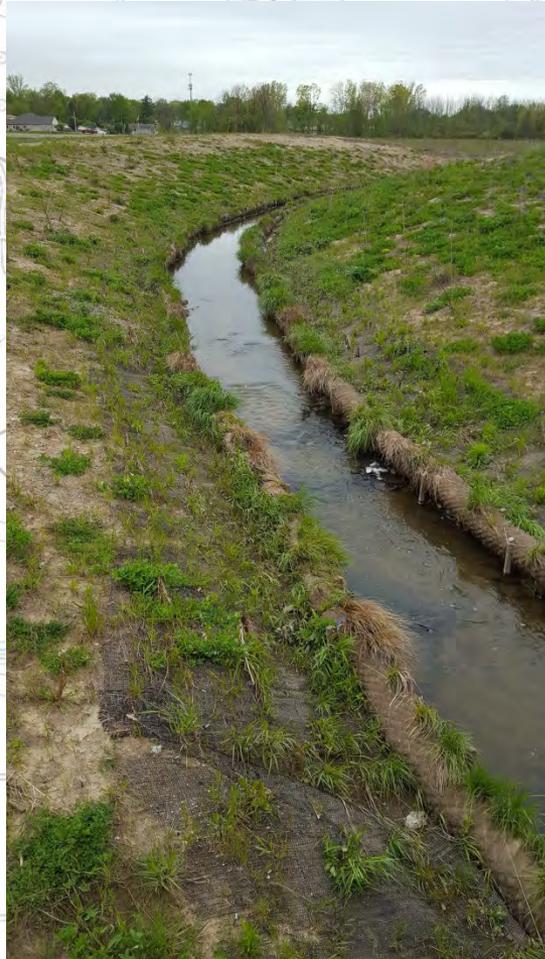
Monitoring



Monitoring



Monitoring



Monitoring



Monitoring



May, 2017



August, 2017



Monitoring



Challenges / Successes:

Challenges during and after construction

- Sanitary Sewer conflict
- Existing Mitigation conflict
- Seasons changing affecting plantings and coir logs
- Washouts from wetlands discharging back into ditch

Successes

- Project is functioning as intended
- Wetland growth
- Water clarity improves throughout site
- Aquatic Wildlife

Questions?

