

Stormwater: You've Got to Move It, Move It!



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Today's Discussion



- Overview of Fort Wayne Stormwater Utility
- Stormwater Challenges
- Case Studies:
 - Aboite Meadows Storm Improvements
 - Lawrence Drain Improvements
 - Lakeside Sewer Separation Project
- Conclusions



History of Stormwater Utility



- Stormwater Utility established - 1991
- NPDES Permit Phase II implementation - 2004



WATER THAT WORKS

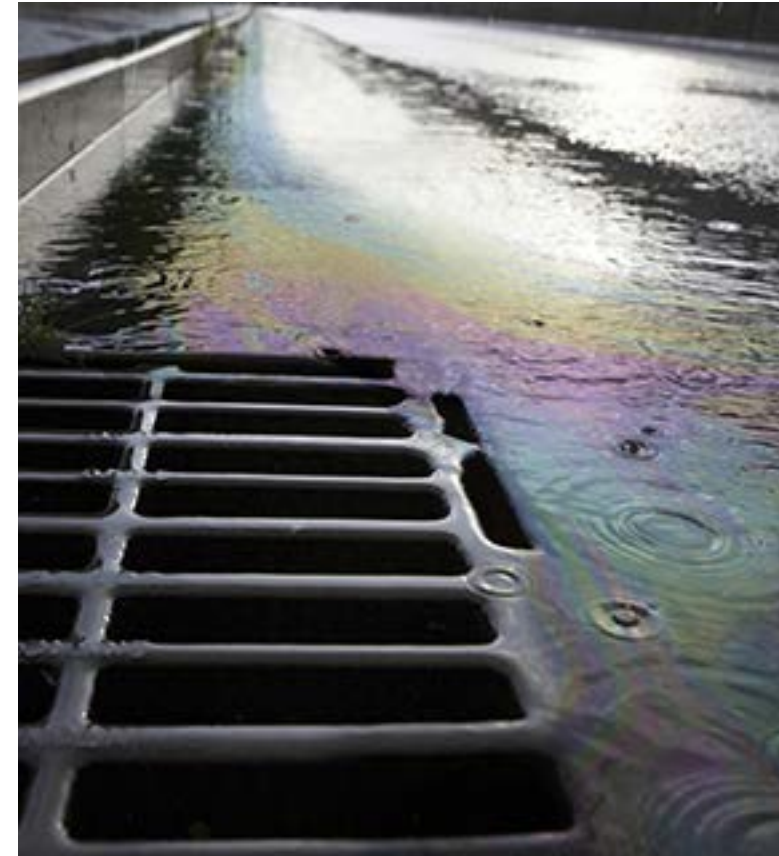
stormwater/utilities



2019 Stormwater System Size



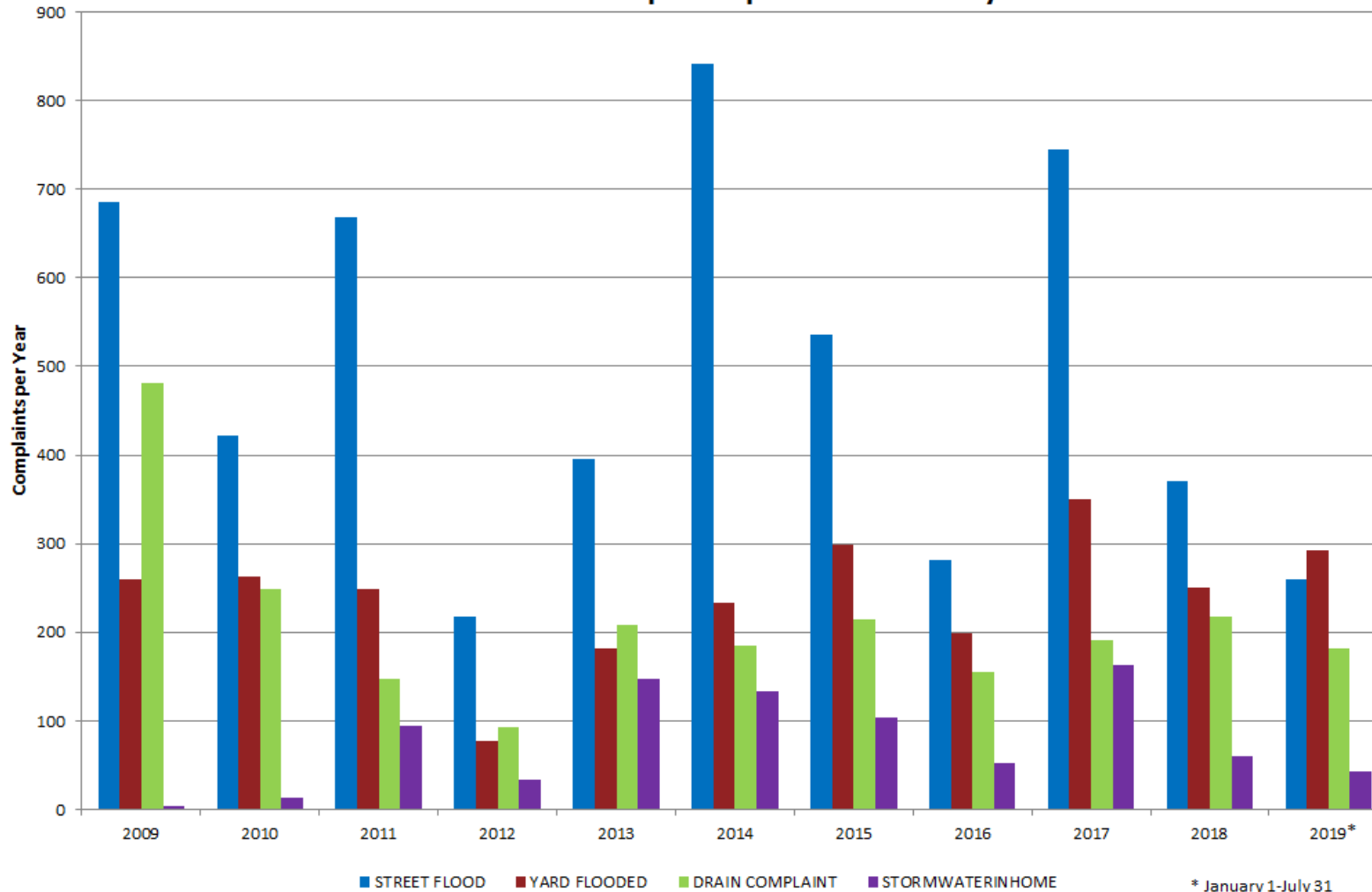
- 699 miles of storm pipe
- 74 miles of major ditches
- 20,289 inlets
- 741 catch basins
- 10,425 storm manholes
- Detention facilities
- 92 sq. miles service area



Stormwater Calls Since 2009



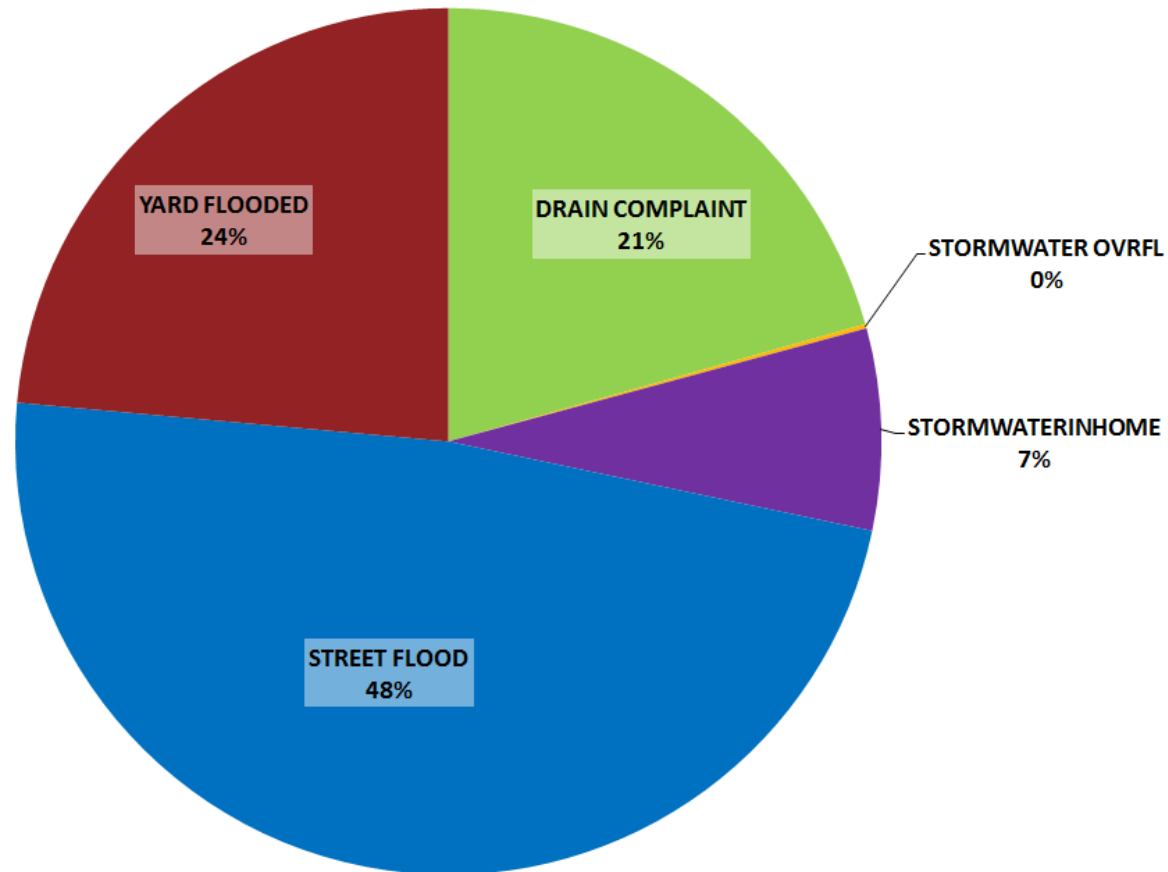
Stormwater Complaints per Year Summary



Stormwater Calls Since 2009



Stormwater Calls since 2009



*Through July 31, 2019

Not Every SR is easy



We like to move it move it,
Not dam it dam it.

Street flooding



Debris in Pipe



Trash Can

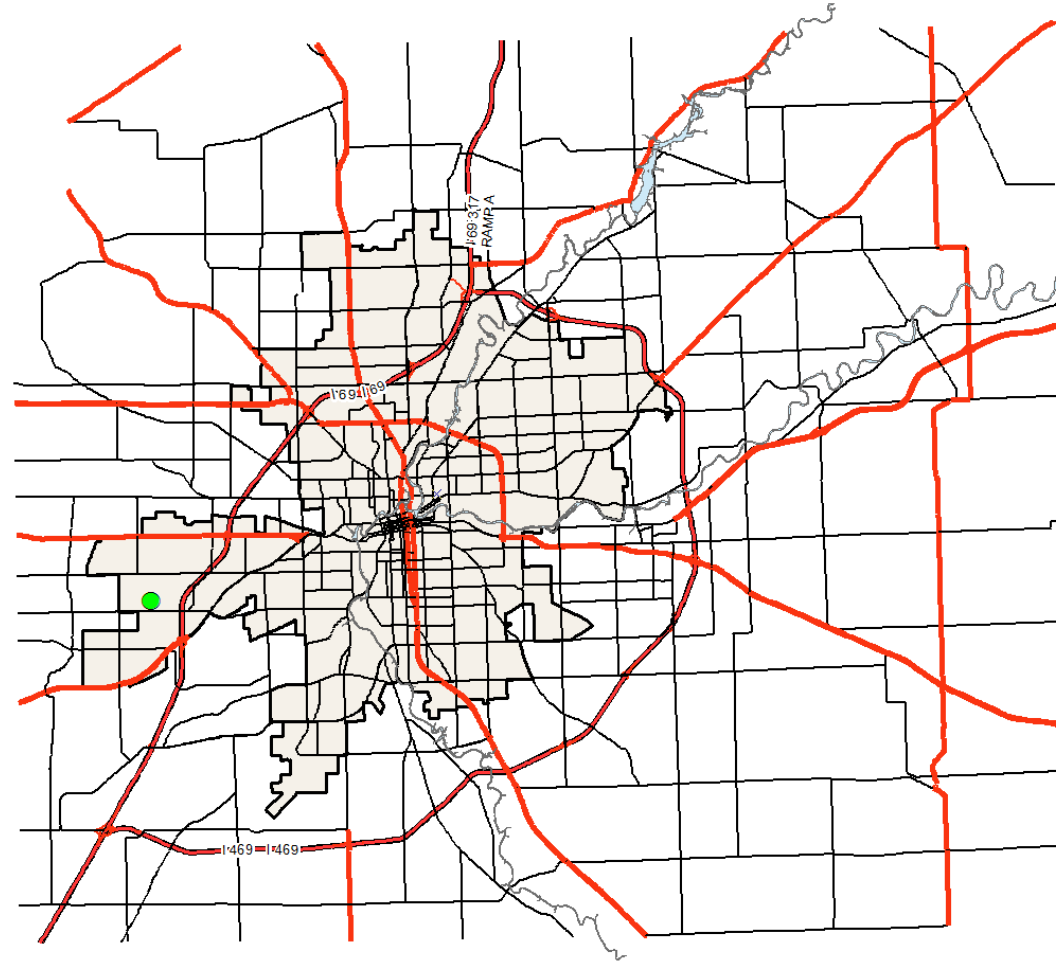


It's not always easy



Traveled 500 feet through pipe

Case Study – Aboite Meadows



Aboite Meadows Flooding



Carriage Lane

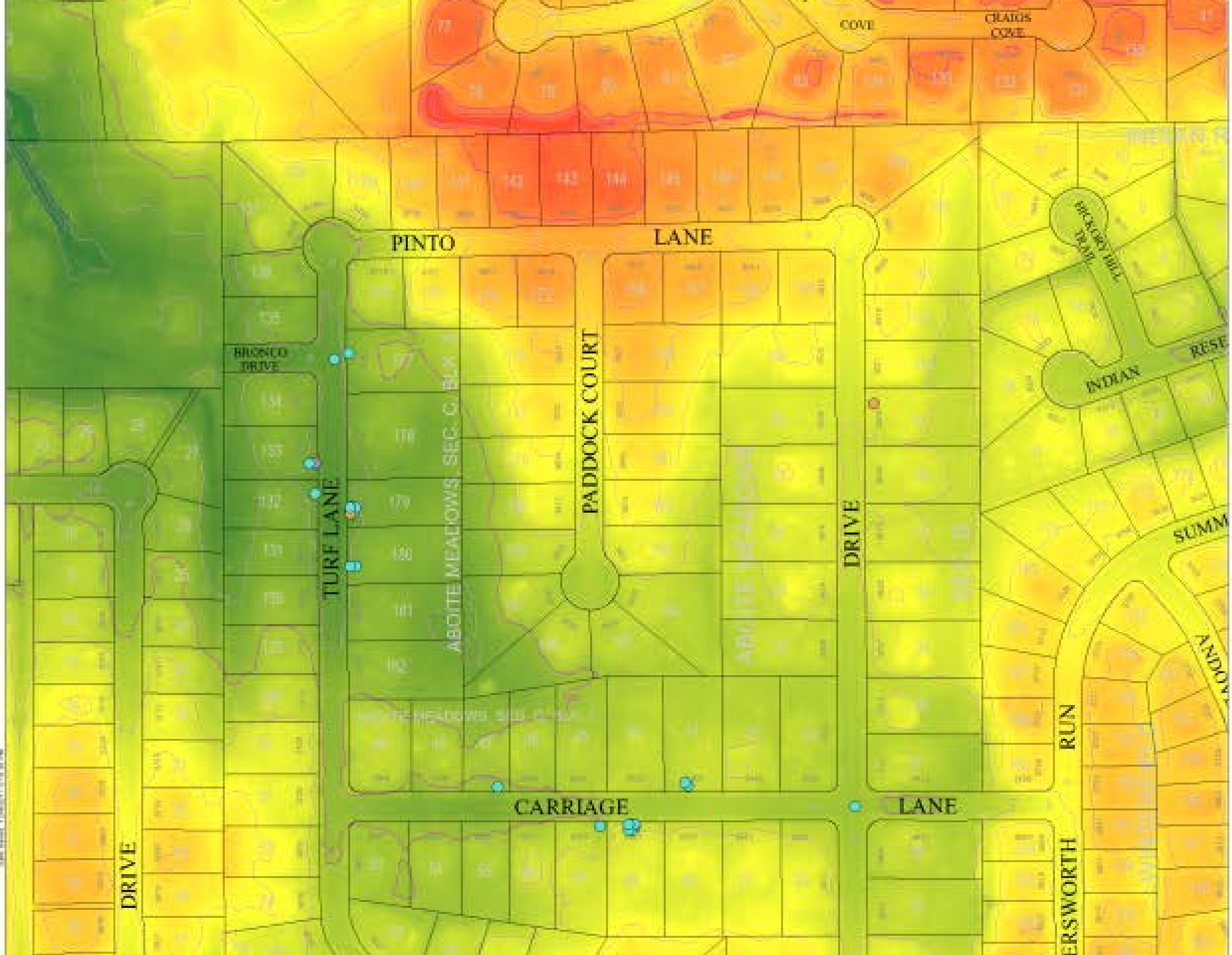


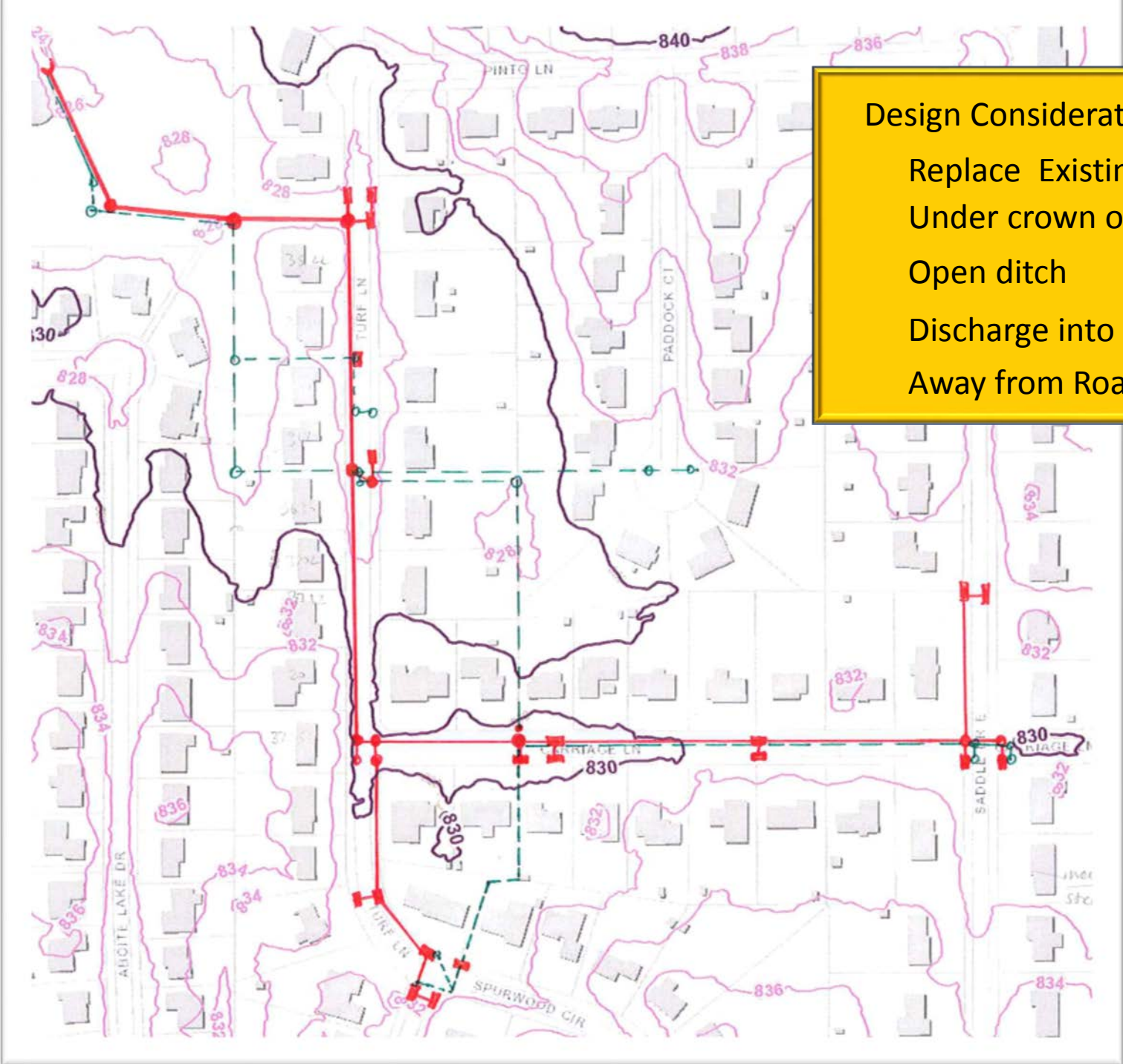
Carriage Lane



Turf Lane

Site Name: [unclear]





Design Considerations

- Replace Existing
- Under crown of road
- Open ditch
- Discharge into basin
- Away from Road



Use East ROW

<0.2% pipe slope

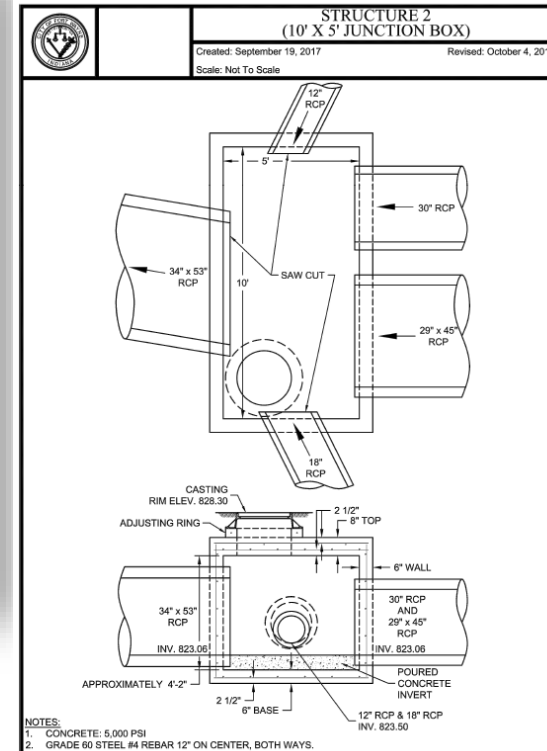
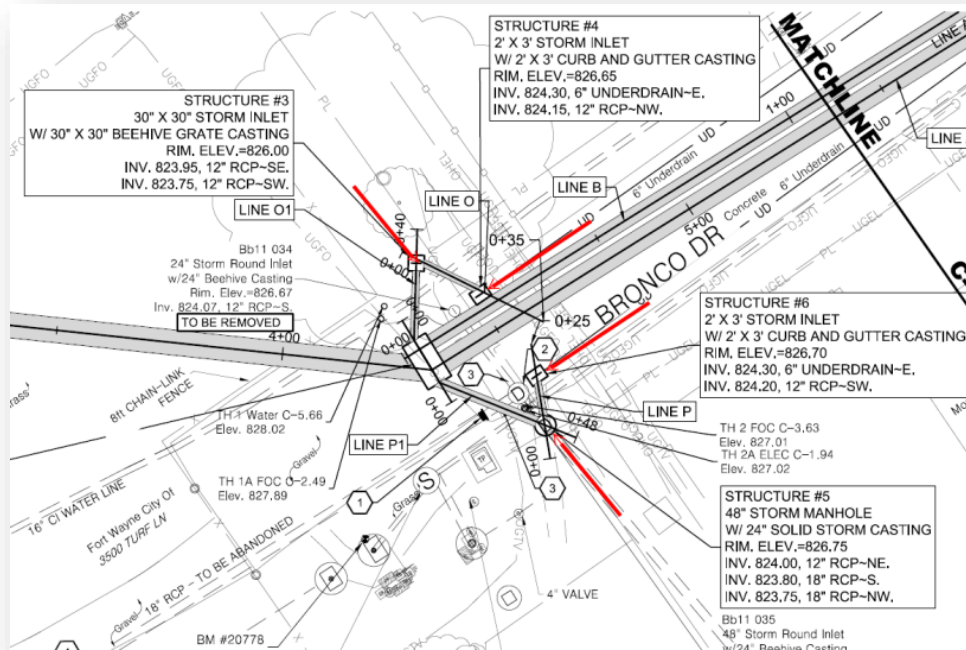
Split flow (30" & 36" Ellip.)

Easements

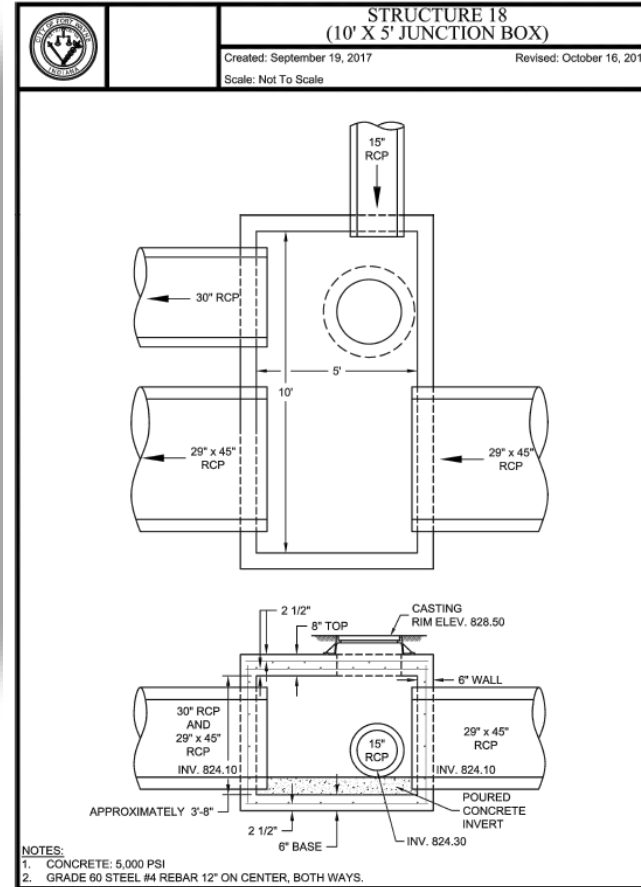
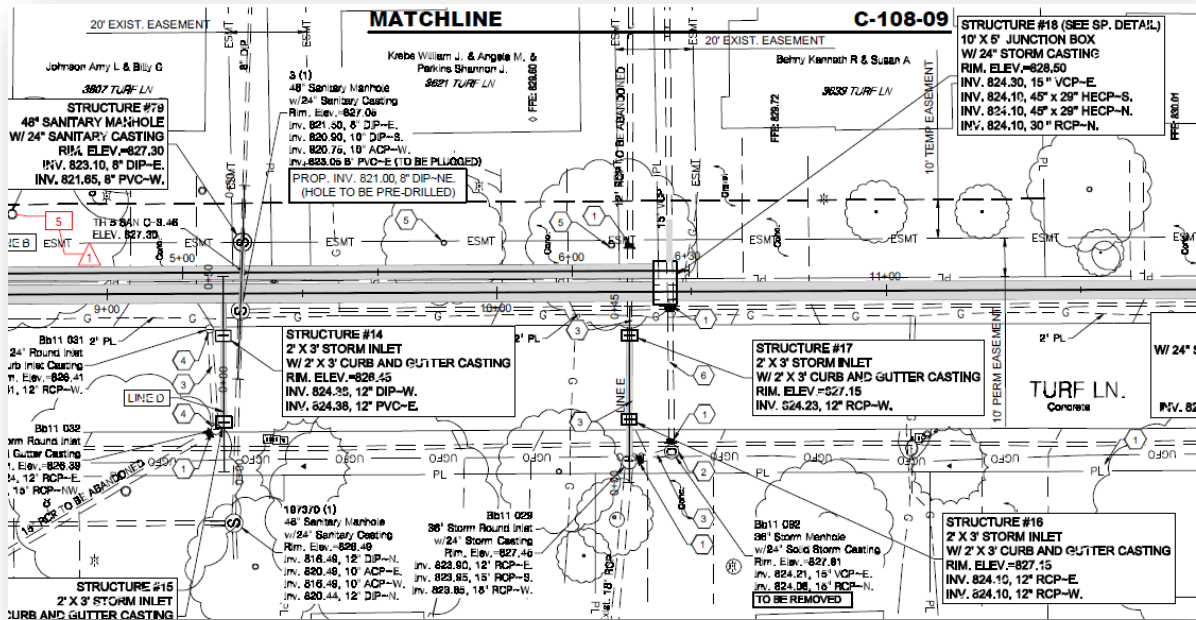
Street Replacement

Use South ROW

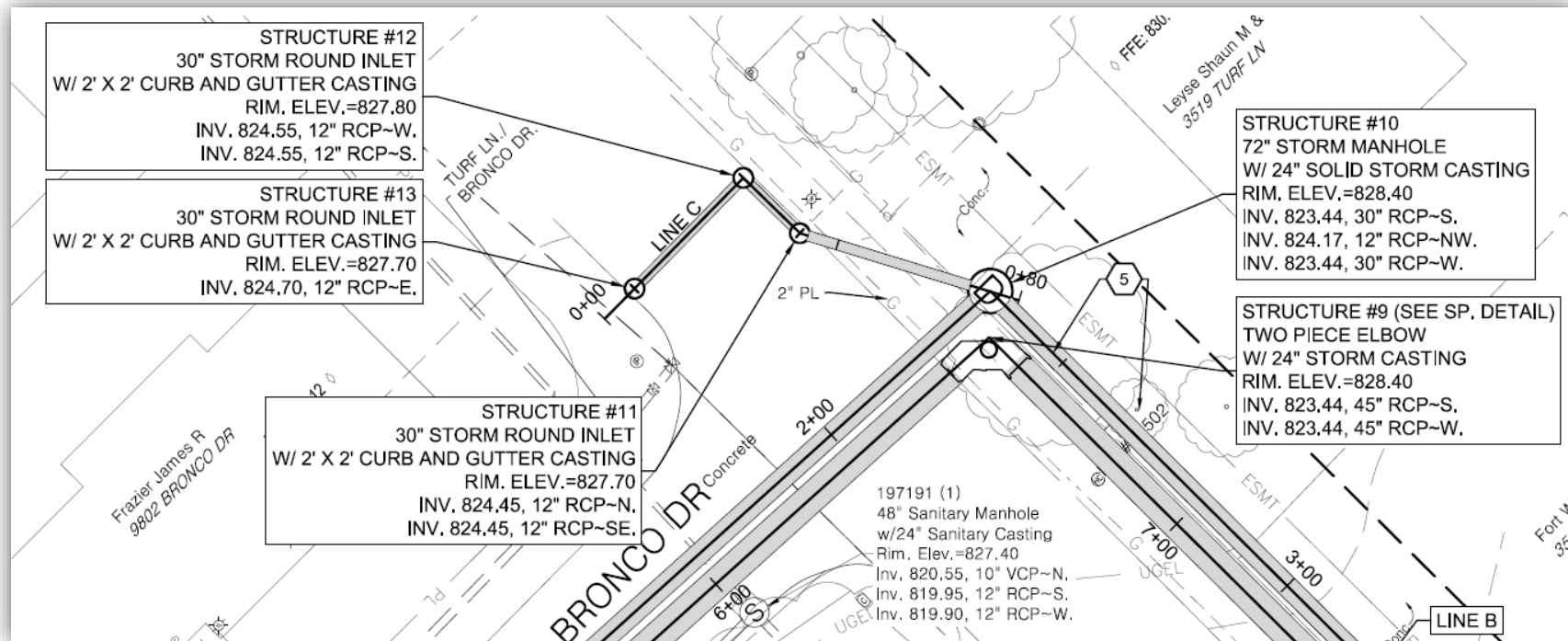
Merging Parallel Flows



Splitting Flow & Connecting existing



Turning Corner with Parallel Pipes



Turning Corner



Turning Corner



Turning Corner



Raised Sidewalk at pipe split



Aboite Meadows Draining

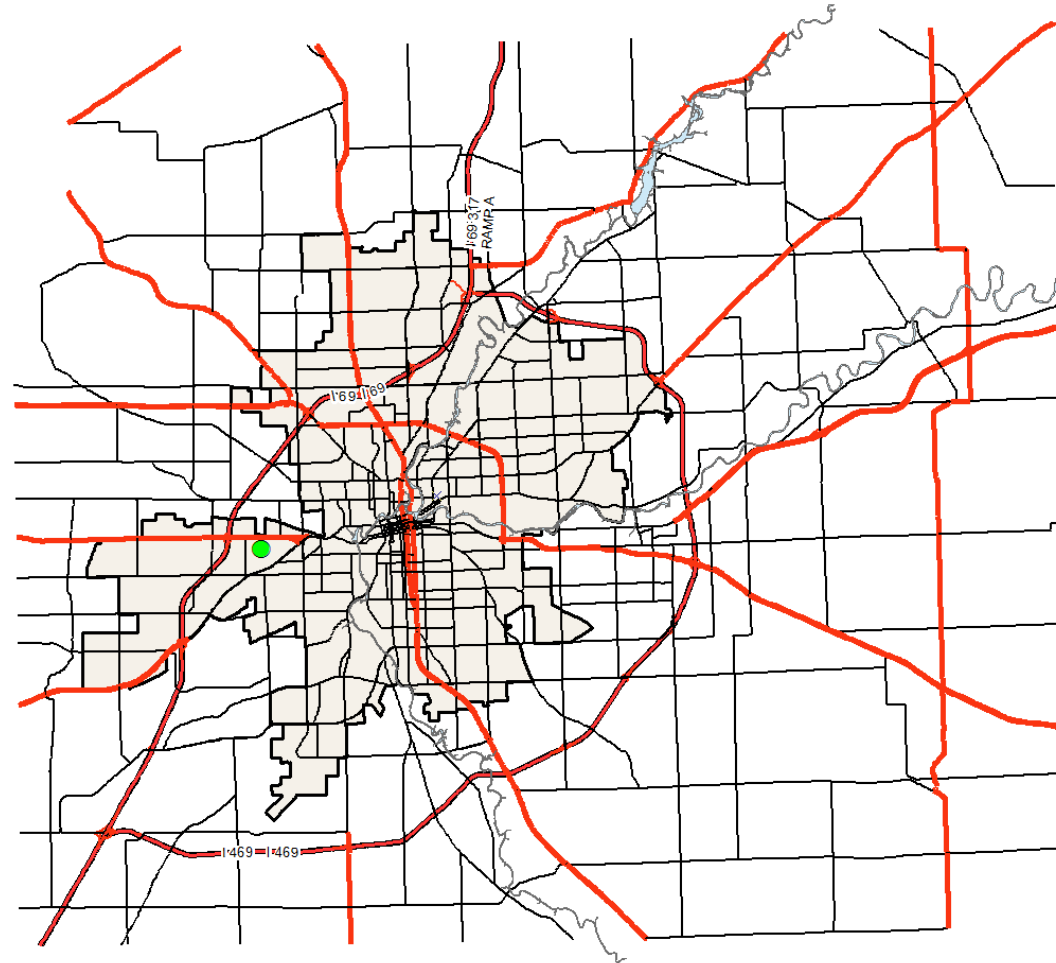


Successes:

- This street is not flooded
- 10yr storm
- Utility Coordination
- 1 Construction Complaint
- Under Budget
- Street Under Construction



Case Study – Lawrence Drain

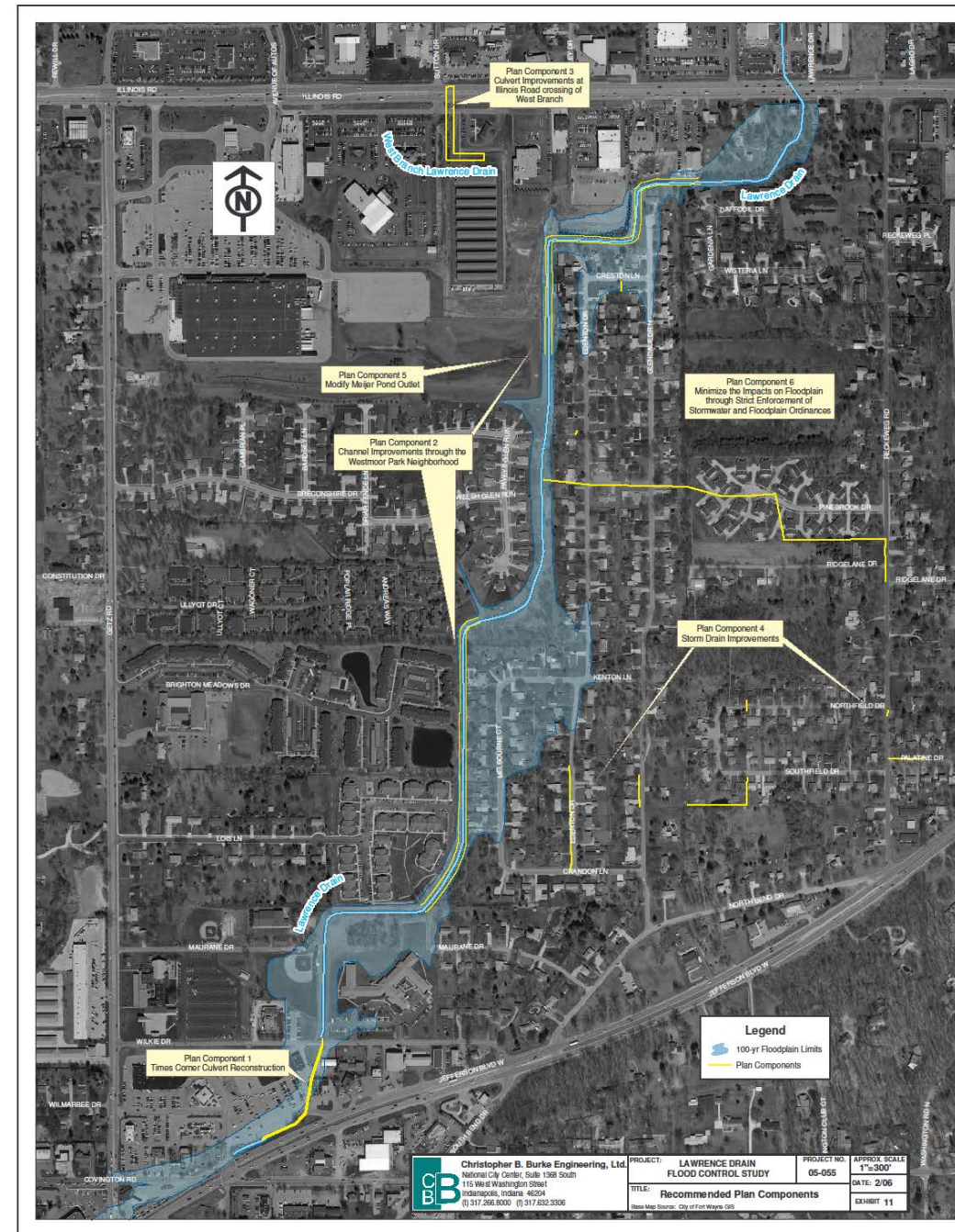


Lawrence Drain - Melbourne Court

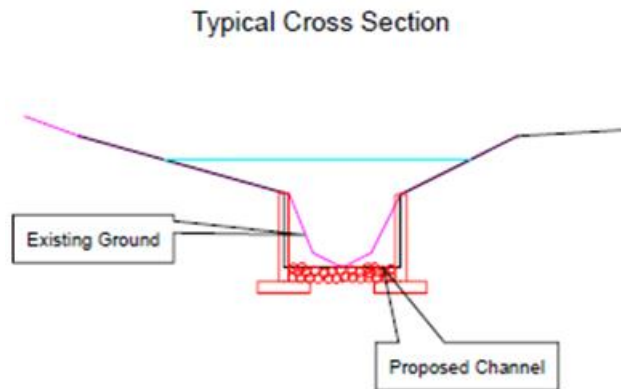


Design Considerations

1. Times Corners Culvert Replacement
2. Channel Improvements in Westmoor Park Neighborhood
3. Culvert Improvements at Illinois Road
4. Storm Drain Improvements
5. Modify Meijer Outfall
6. Minimize Floodplain Impacts



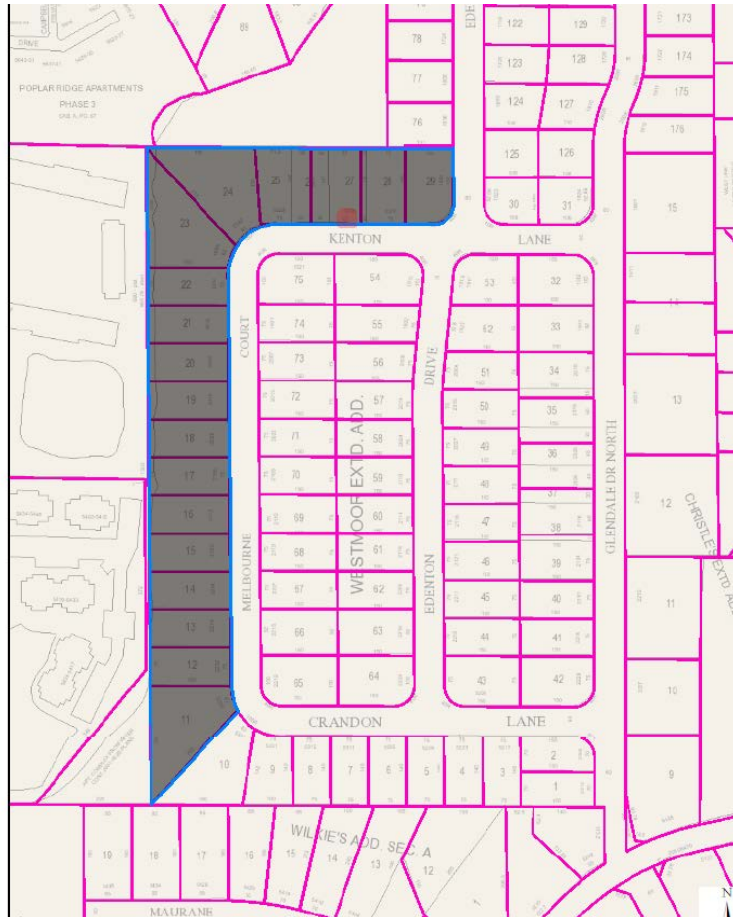
Channel Reconstruction



Design Considerations**



Voluntary Buyout Initiative

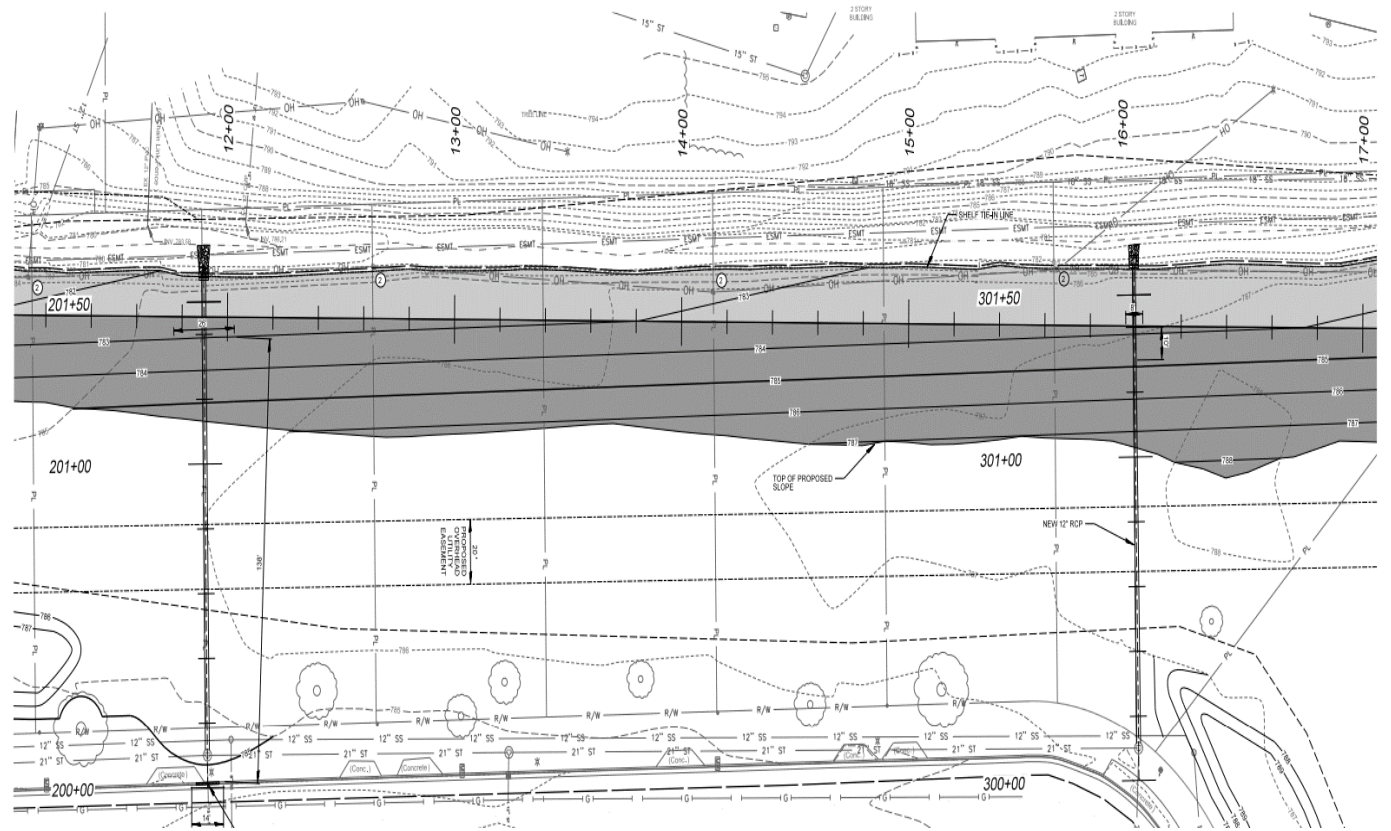
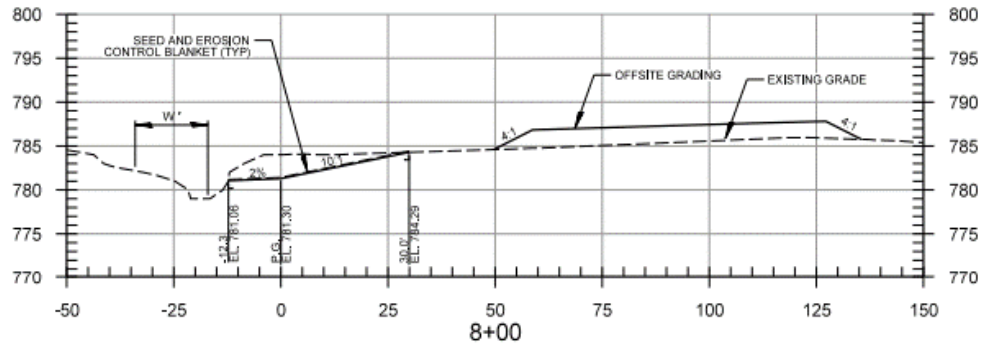


Homeowner Concerns



- What is a Voluntary Buyout Initiative?
- How is the value of my home determined?
- What happens to my property if I decide to participate in the Voluntary Buyout Initiative?
- Why doesn't the City just fix the flooding problem?

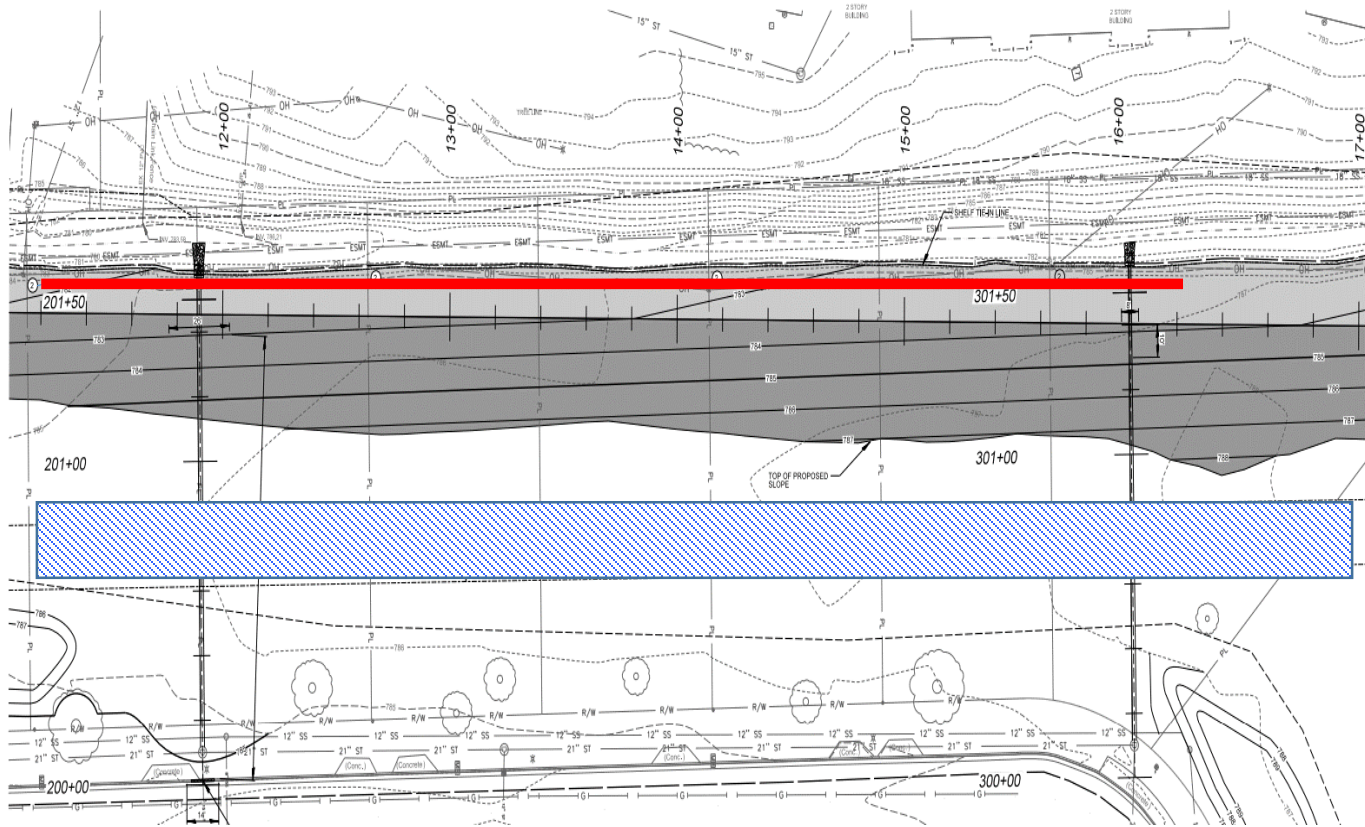
Final Design



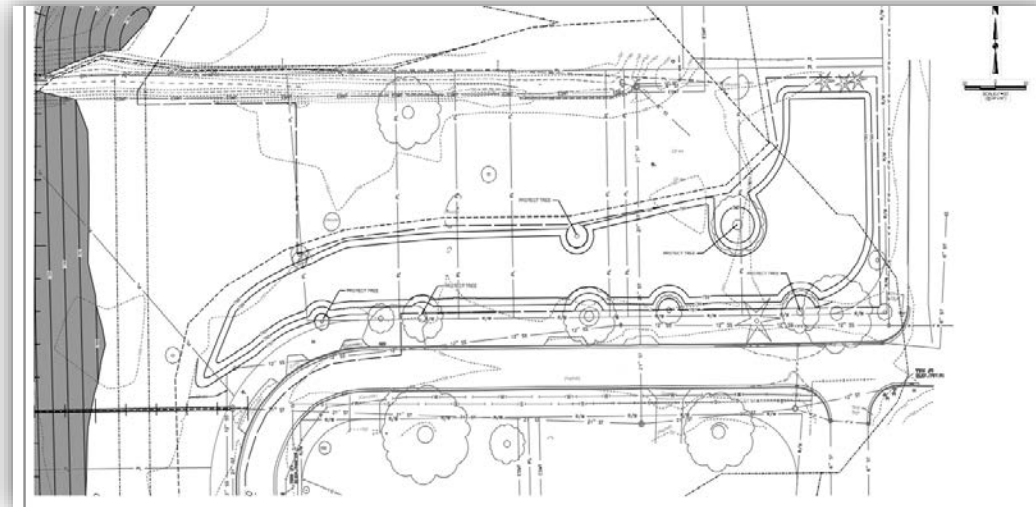
Meijer Detention Basin



Utility Coordination



Moving Forward

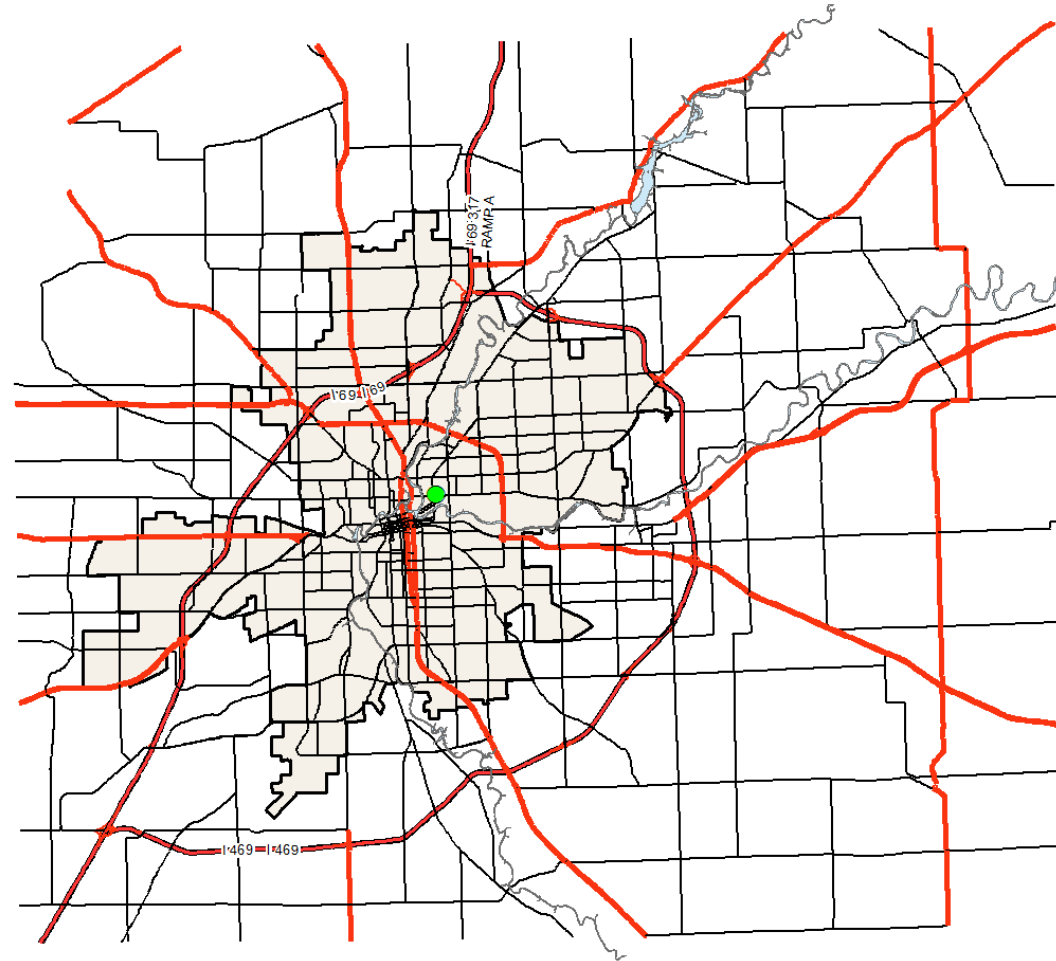


Lessons Learned

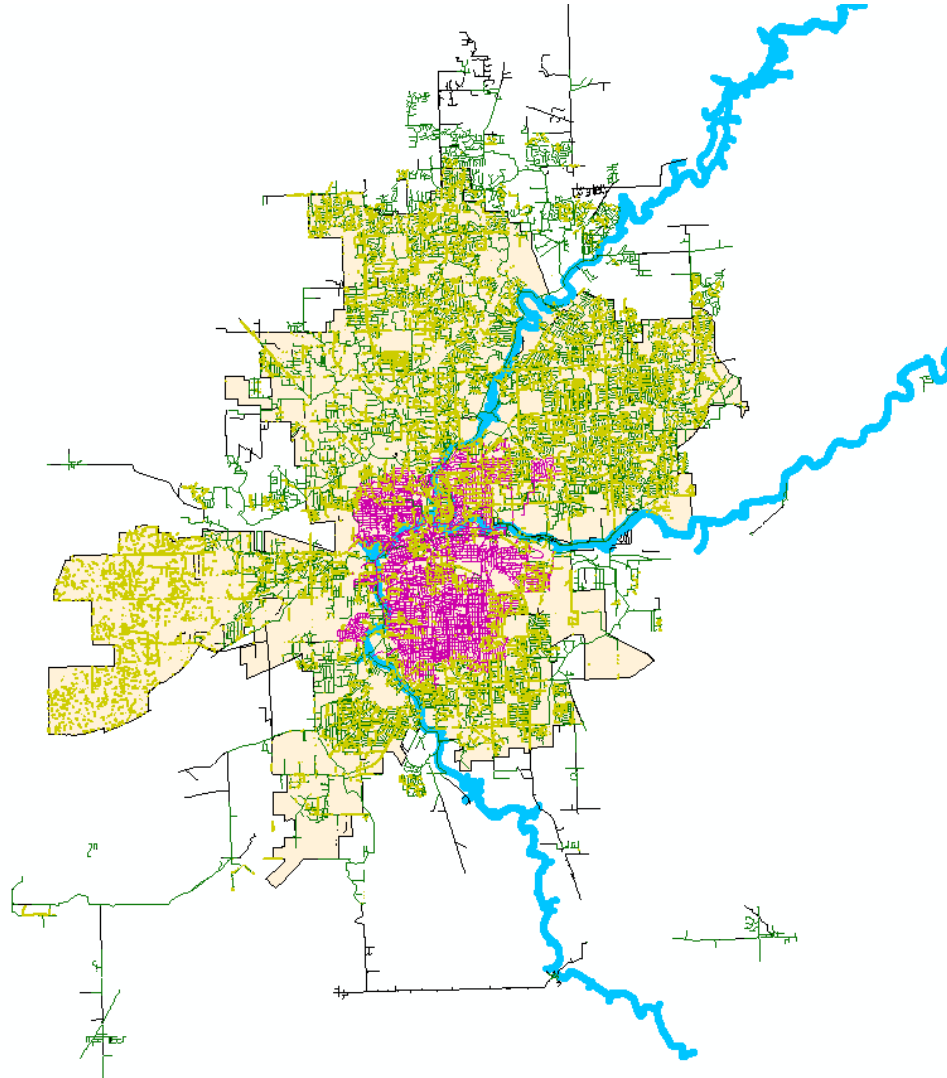


- Coordination with the Public
- Public Education
- Coordination with Businesses and Utilities
- Communication

Case Study – Lakeside Sewer Separation



Other Utility Statistics



Combined System

- 19 sq. miles service area
- 359 miles combined sewer
- 41 CSOs

Separate Sanitary System

- 188 sq. miles service area
- 1043 miles sanitary sewer

Combined Sewer Capacity Improvement Program



- **Background:**

- City initiated program to address basement flooding in combined sewer area.
- Sewer Task Force formed in 1995 to define and prioritize subbasins for improvement
- 29 subbasins prioritized in 1996
- Goal was protection to a 25-year storm level
- Original goal was to complete \$90M of capital improvements over a 10 year period.

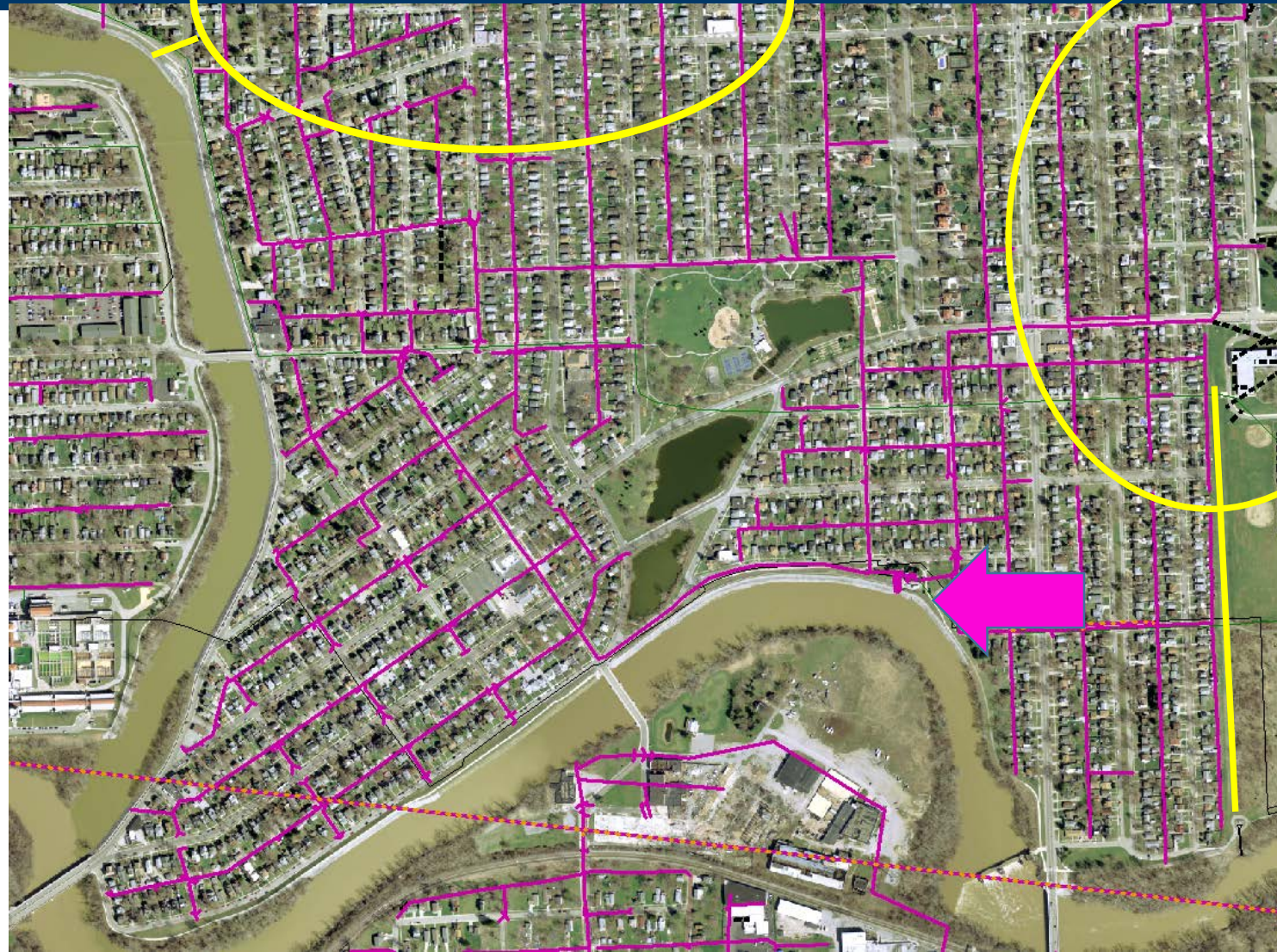
- Pursued aggressively from 1998 to 2002

- Slower pace since 2002, as CSSCIP efforts and commitments tied into Consent Decree negotiations

- City's Consent Decree was signed at the end of 2007



Combined Sewer Subbasin 010 101



Lakeside Park



Design Considerations

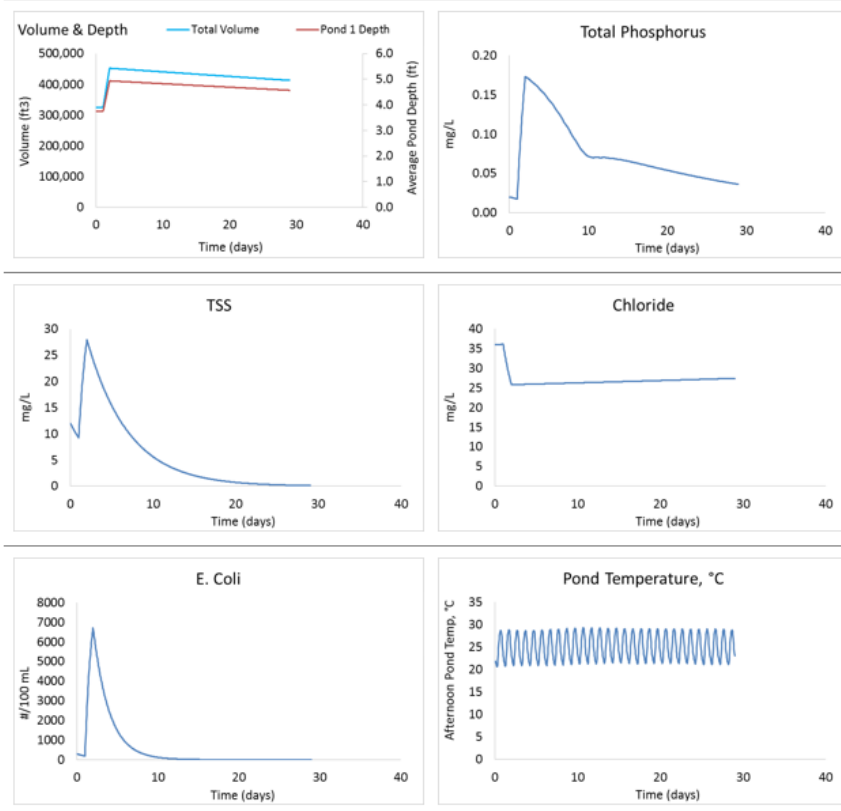


- ✓ No change in current water quality to the ponds
- ✓ Pump station forcemain discharge
 - *Army Corp Levee Permit*
- ✓ Pump and aquatic life protection
- ✓ Utility Conflicts
 - *Lots of Fiber Ductwork in the area*
 - *Watermain transmission lines*

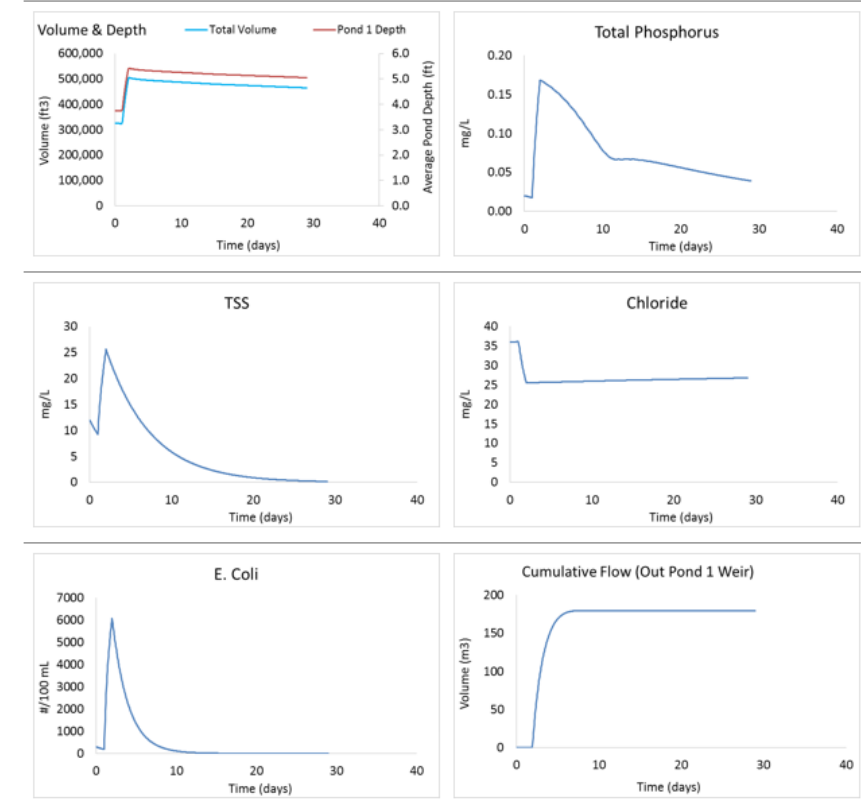
Pond Water Quality



Pond 1 – Pipe Closed



Pond 1 – Pipe Open, Pumps Available



Before



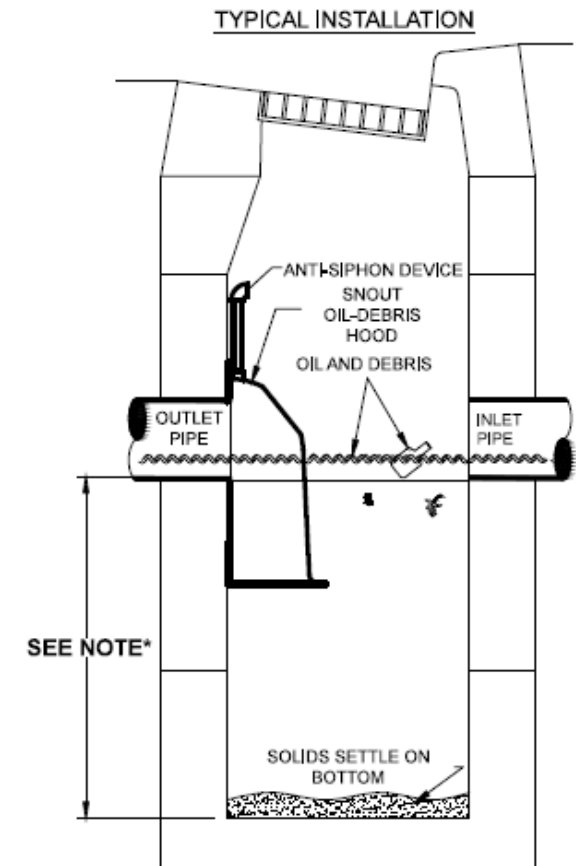
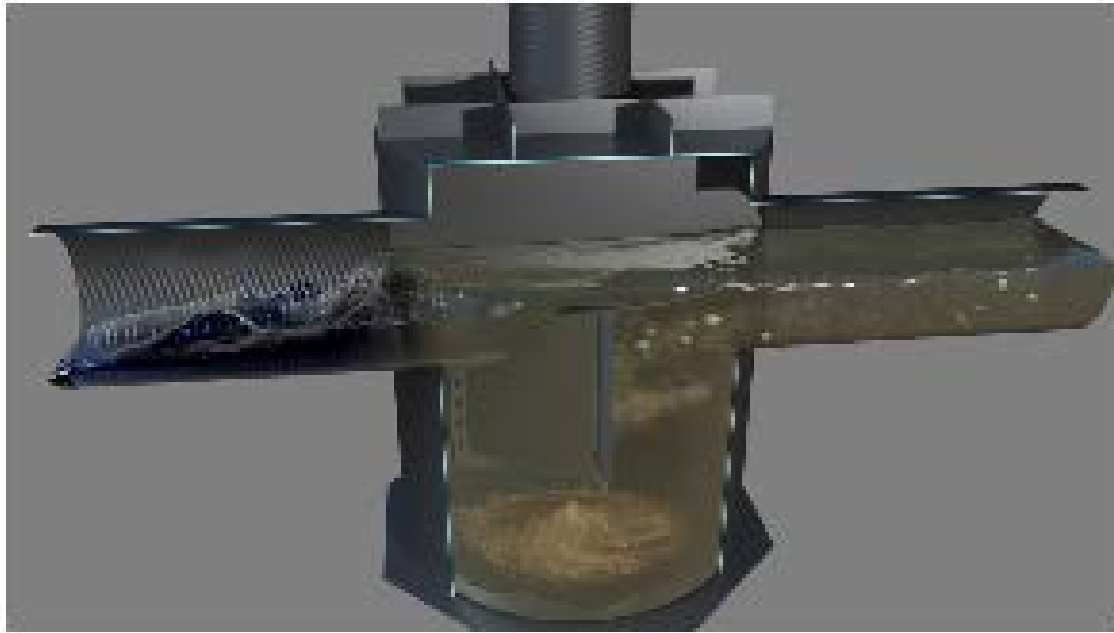
cityoffortwayne.org/utilities

After

Water Quality Technologies

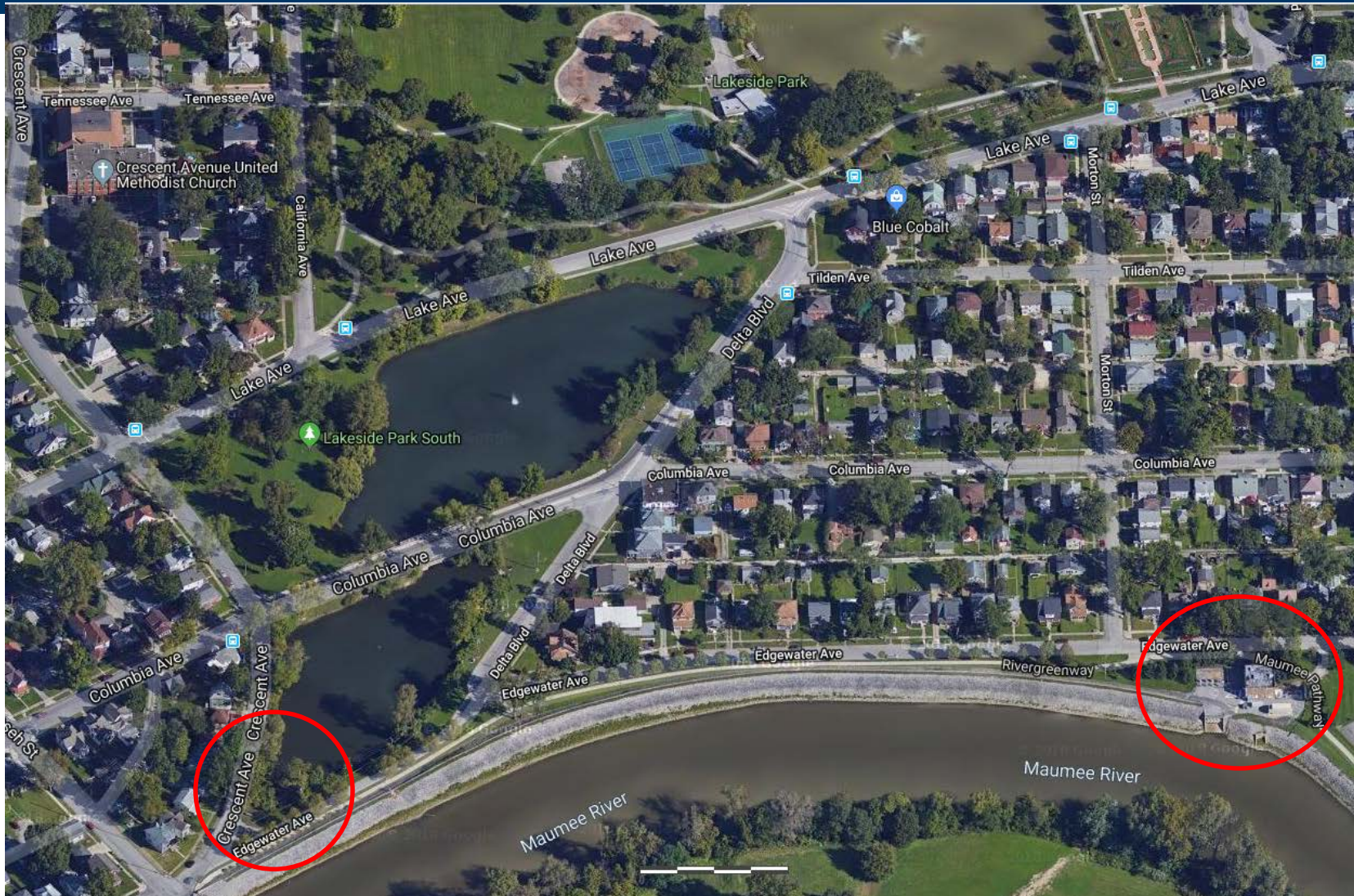


- Aqua Swirl Concentrator
- Sump and Hoods

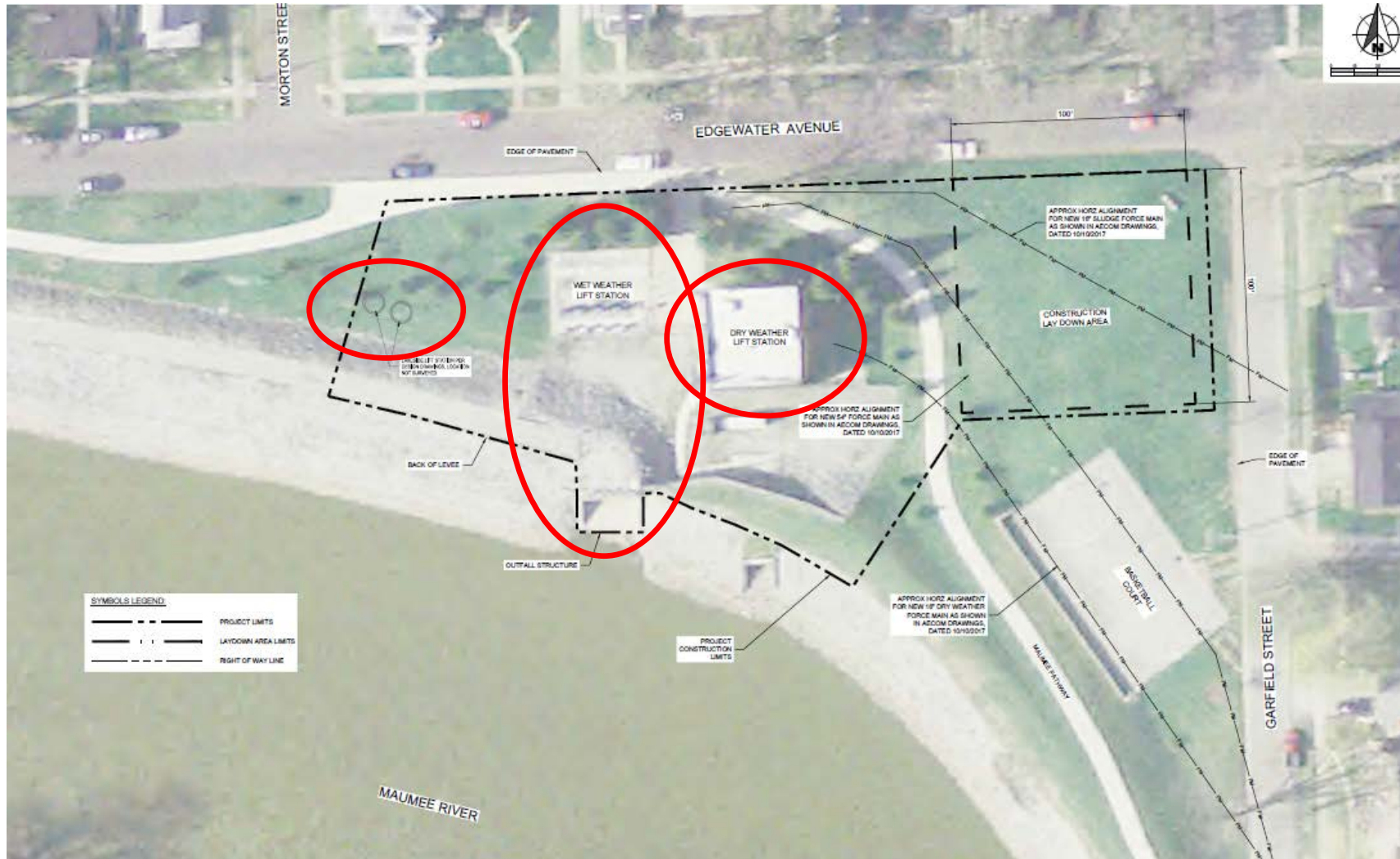


*NOTE- SUMP DEPTH OF 36" MIN, FOR UP TO 12" ID PIPE, OUTLET, FOR PIPES 15" ID AND ABOVE SUMP DEPTH OF 2.5 TO 3 TIMES PIPE ID RECOMMENDED (E.G. 5' DEEP for 24" PIPE)

Siting the New Pump Station

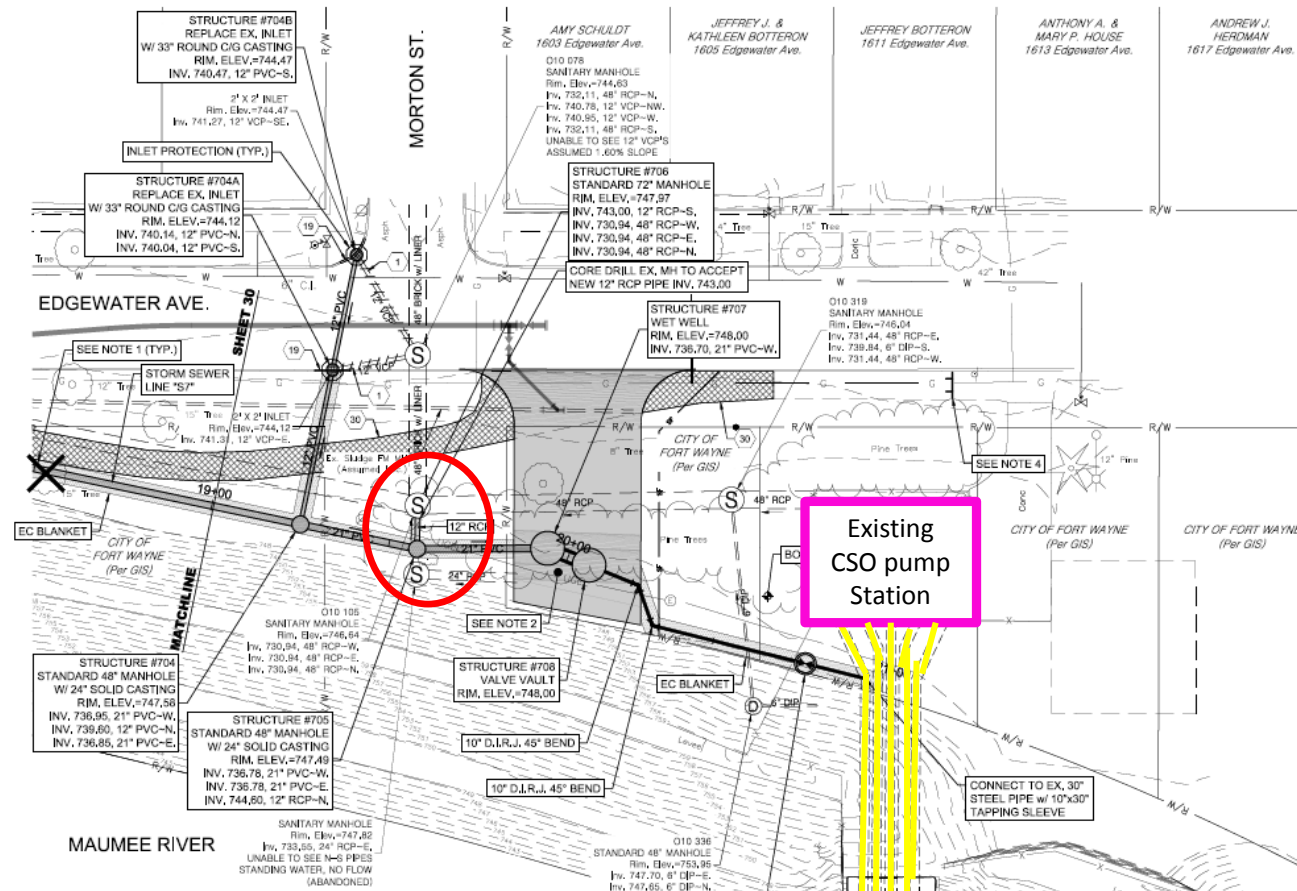


Siting the New Pump Station



SYMBOLS LEGEND	
—	PROJECT LIMITS
- - -	LAYDOWN AREA LIMITS
- · - · -	RIGHT OF WAY LINE

Pump Station and Forcemain Design



Forcemain Connection

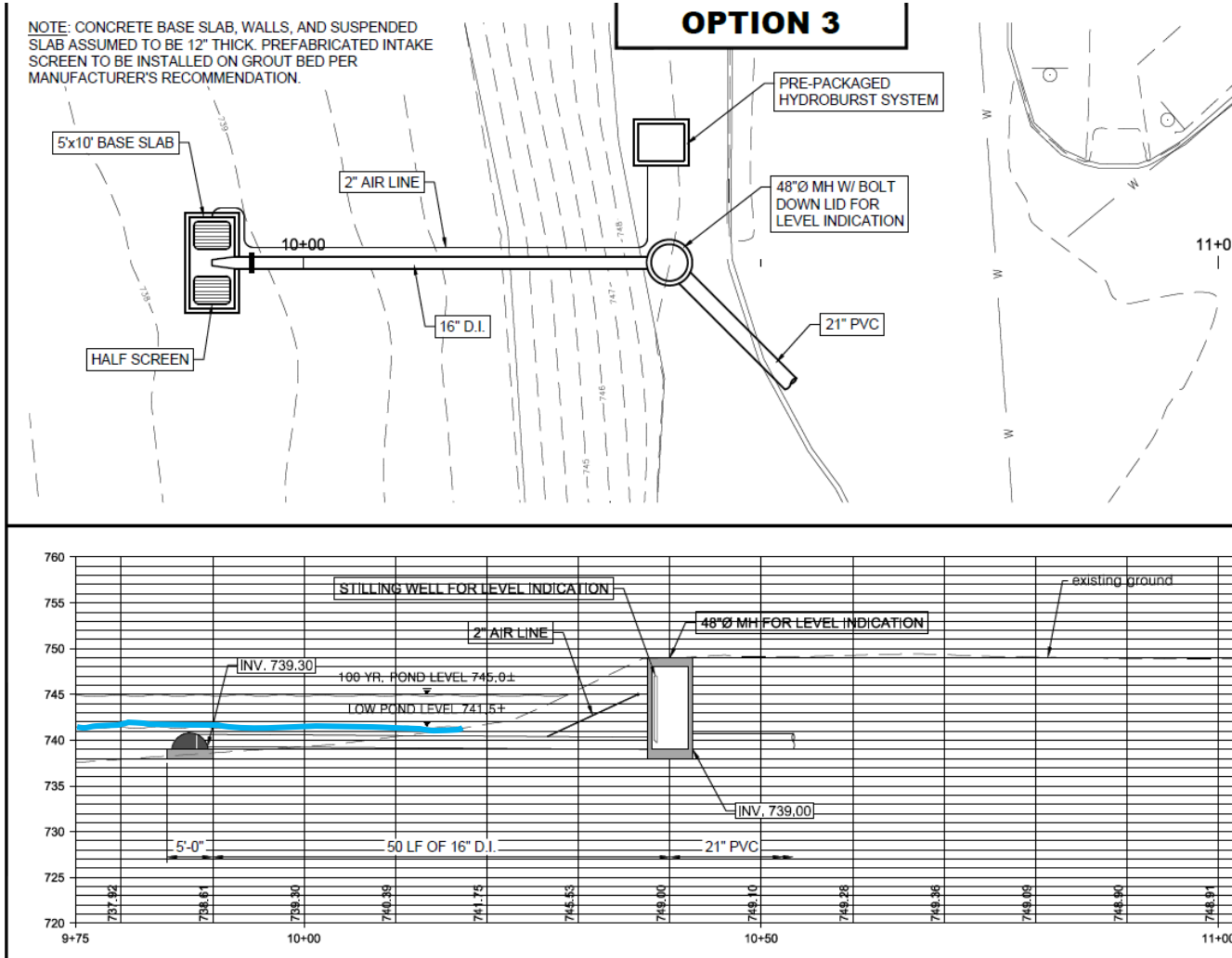


Existing FM Connection



Proximity to Levee

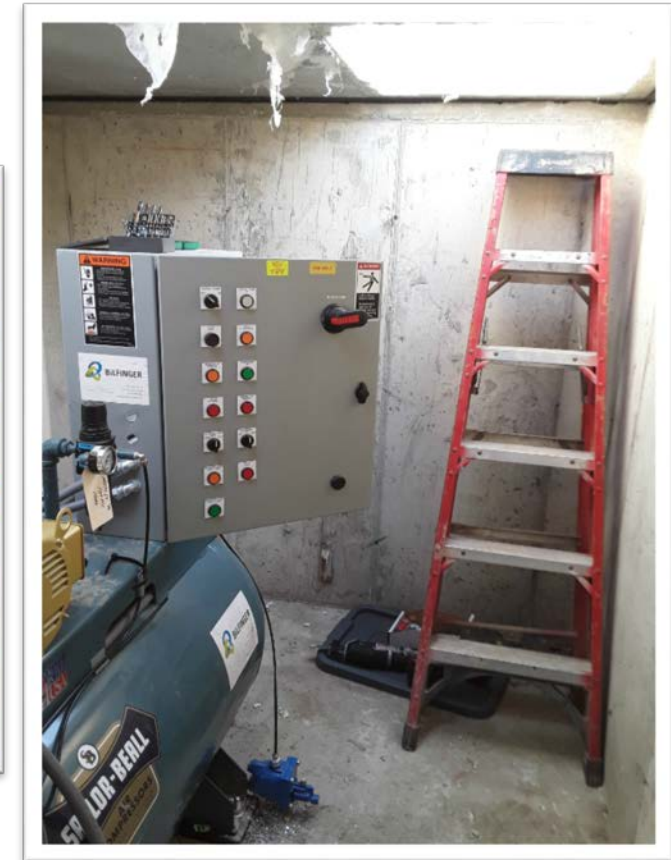
Pump and Aquatic Life Protection



Johnson Hydroburst Screen



- Protects the pumps
- Protection of aquatic life



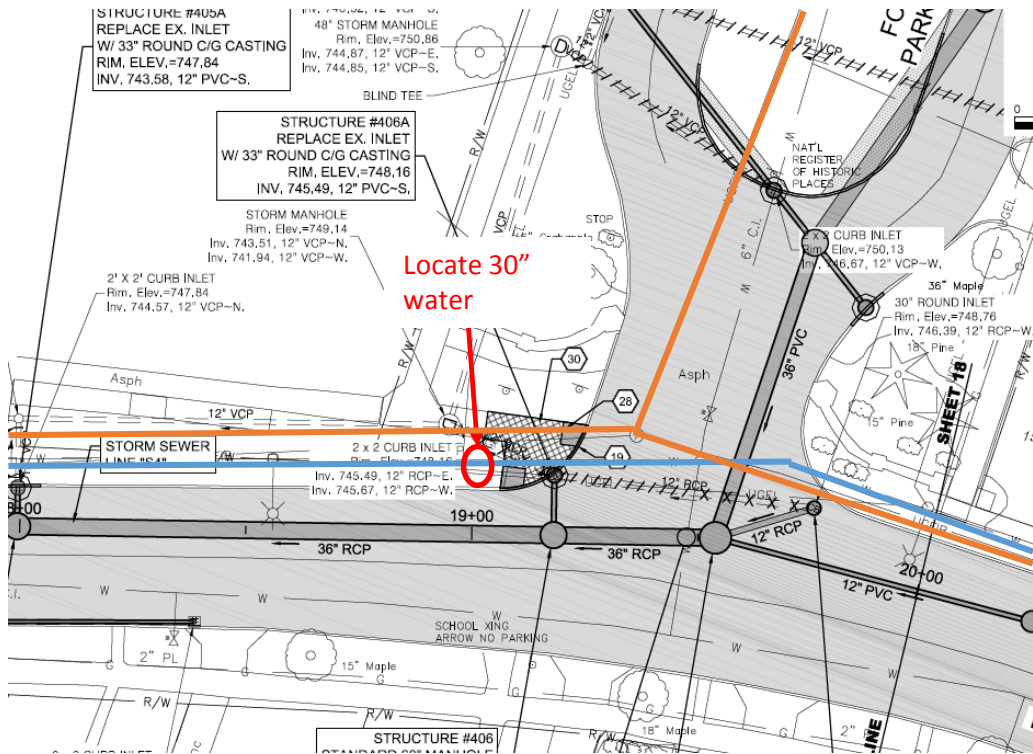
Johnson Screen in Action



Utility Conflicts at Forest Park Blvd



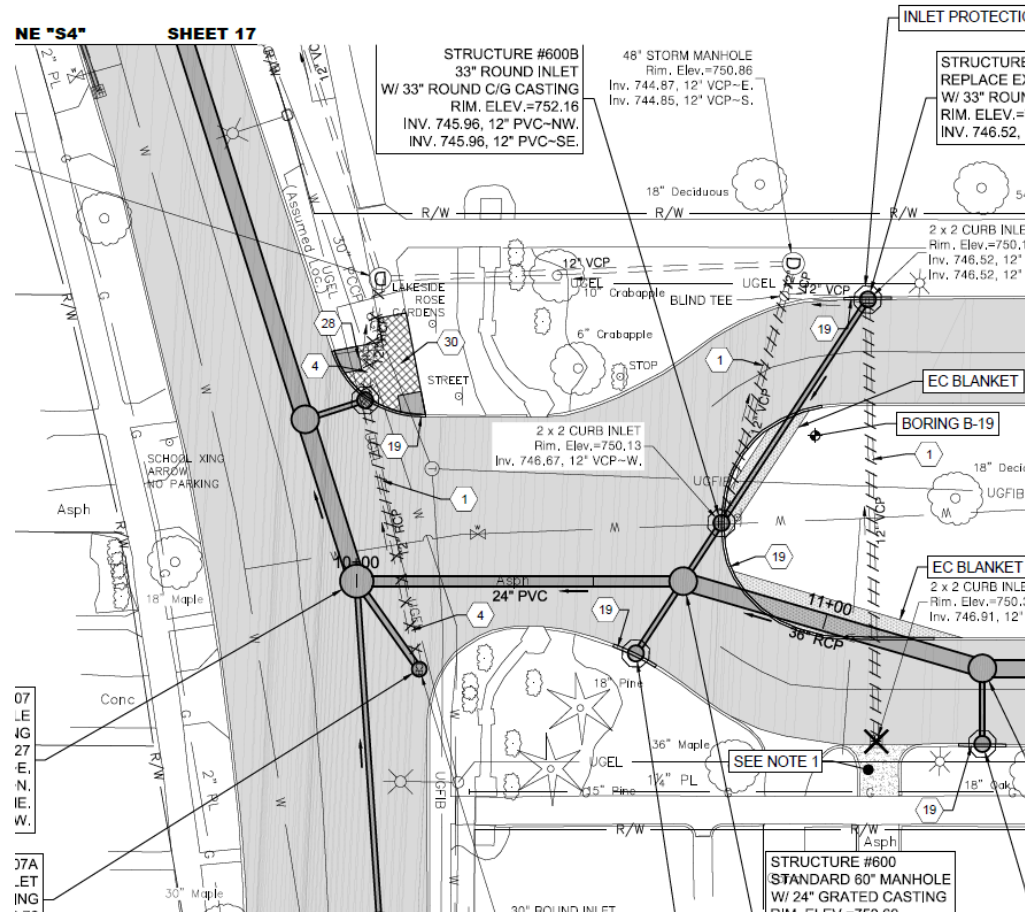
- Utility Locates
- Pot holing



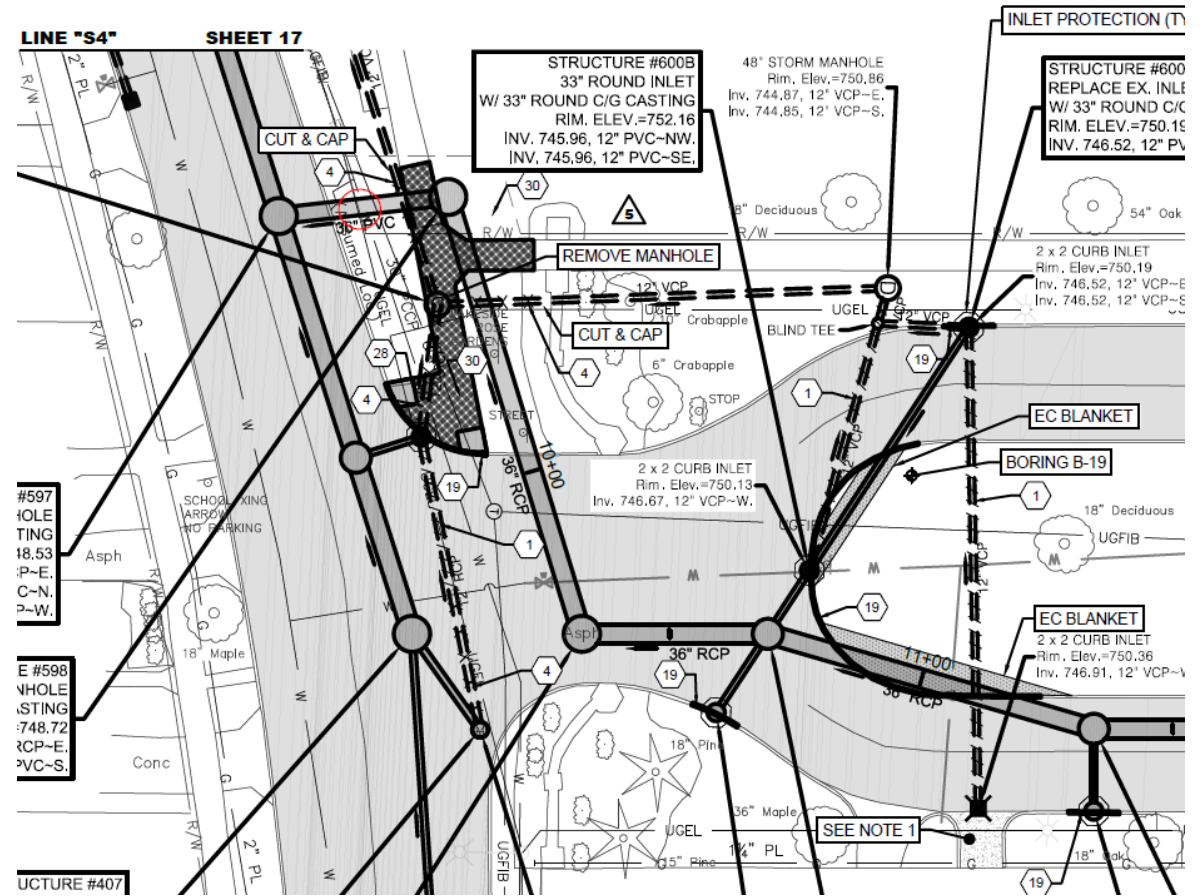
Utility Conflicts



Changed the Sewer Alignment



Original Design



Revised Design

Fiber Relocation



Project Challenges Summary



Project Success's



No complaints from parks on water quality or pond level



Easy connection to existing forcemain making permitting easier



Successful pump and aquatic life protection



Met the Consent Decree Deadline.



Conclusions



- ✓ The solution to stormwater problems is more than simple engineering.
- ✓ Moving stormwater is not always as easy task.
- ✓ Patience + Creativity = Success
- ✓ Stormwater is highly complex; requires out-of-the-box thinking



Well boys, we did it. Stormwater problem solved

Questions

