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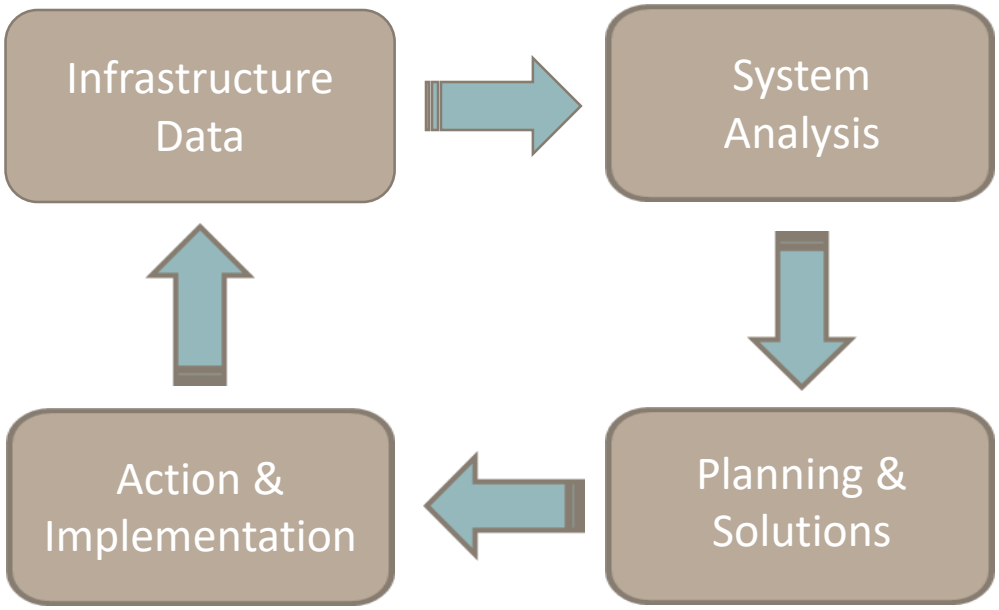
NOVEMBER 19, 2018

STORM WATER MASTER PLAN 2018 UPDATE

CITY OF INDIANOLA

Master Plan Elements



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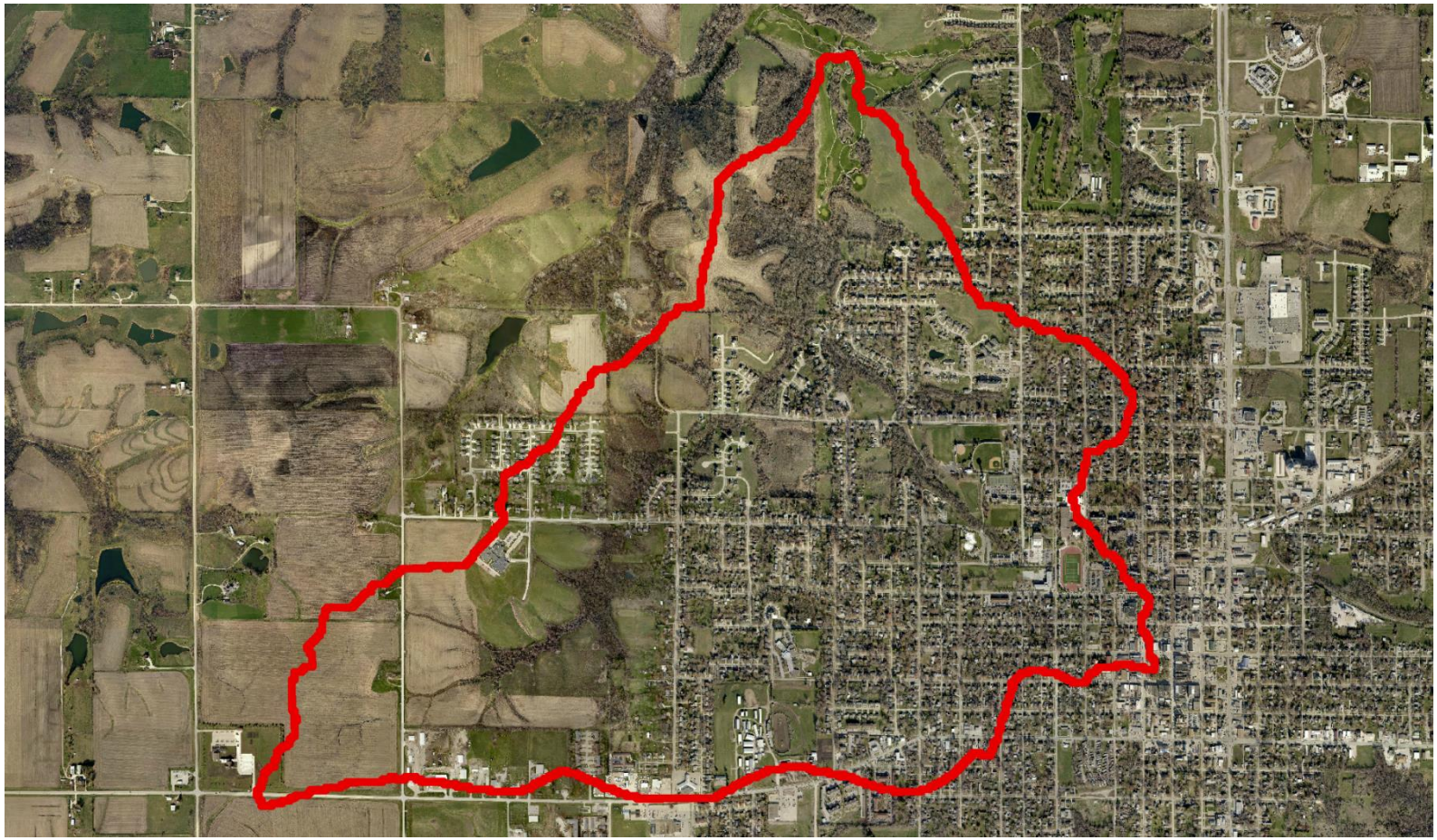
2018 Analysis Focus

- Cavitt Creek Watershed



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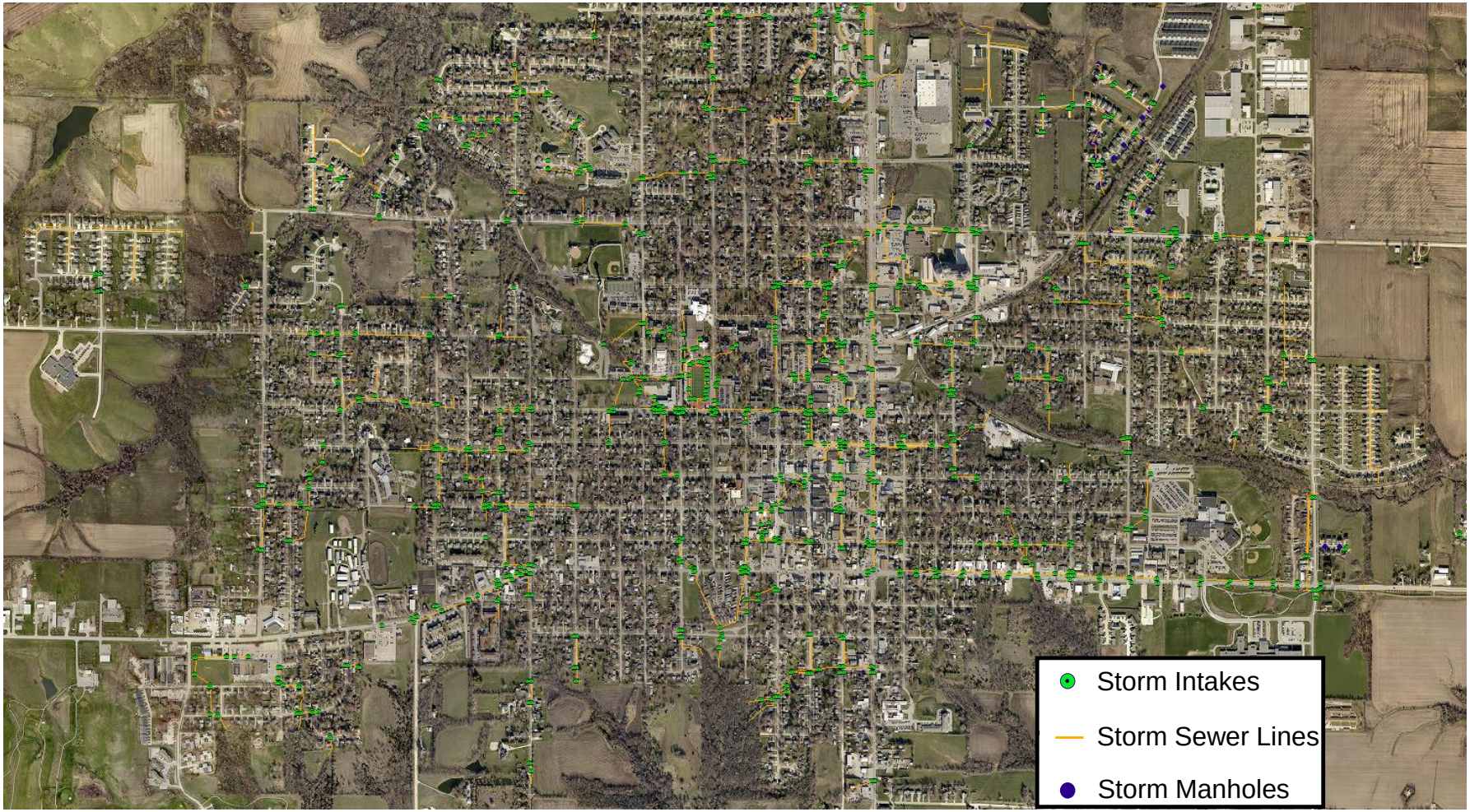
System Wide Issues

- GIS Data Confidence
- Storm Drainage Infrastructure Condition
- Open Channel Performance
- Facility Performance under Changed Conditions
- Policy Alignment

Existing Storm System GIS Data



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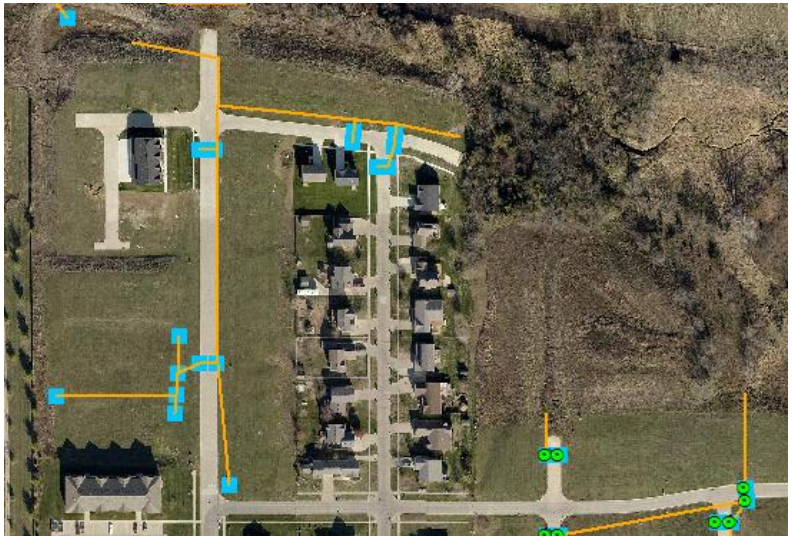
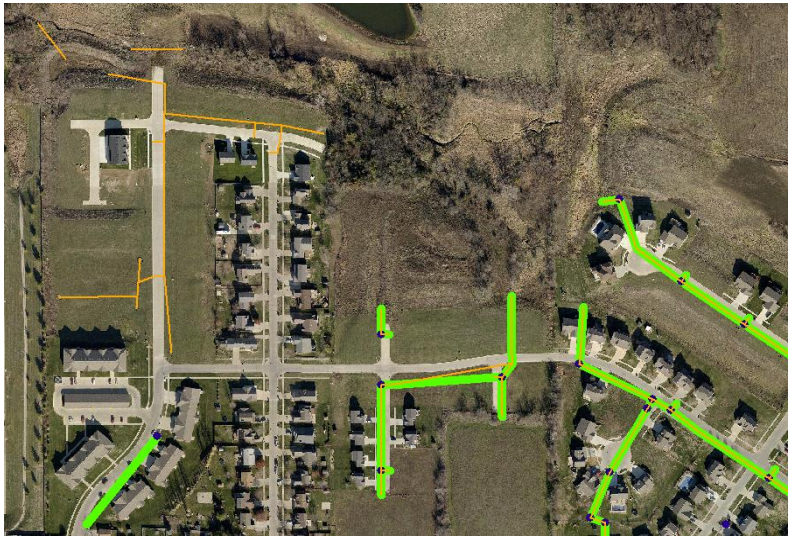
Existing Storm System GIS Data

- Multiple Layers of Similar Features





- Both the blue symbols AND the green symbols represent DIFFERENT data sets for intake structures

- Similarly, green segments AND the orange segments represent DIFFERENT data sets for storm pipe

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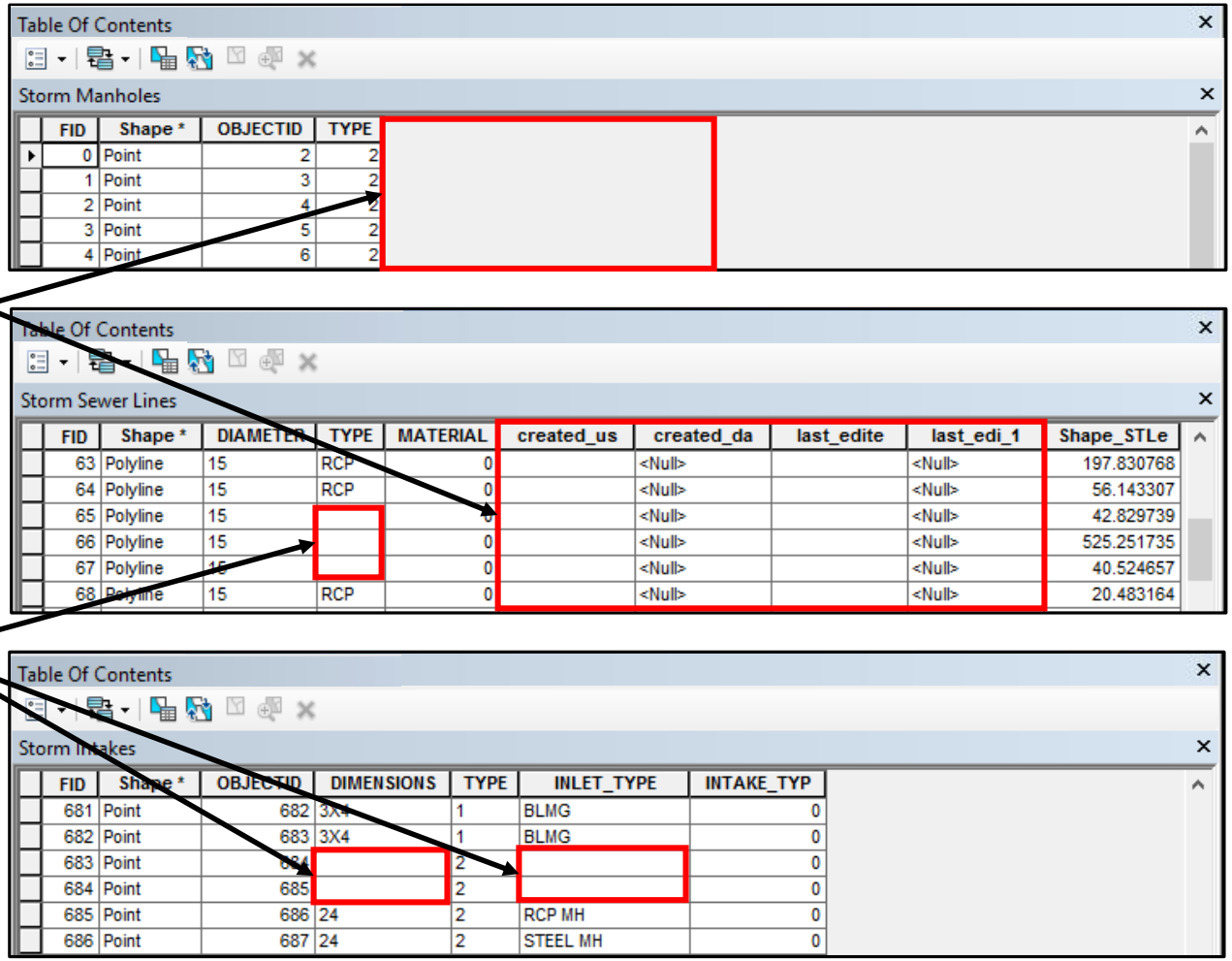
Existing Storm System GIS Data

- Underutilized Entry Fields
- Missing Information



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Storm Manholes

FID	Shape *	OBJECTID	TYPE
0	Point	2	2
1	Point	3	2
2	Point	4	2
3	Point	5	2
4	Point	6	2

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Storm Sewer Lines

FID	Shape *	DIAMETER	TYPE	MATERIAL	created_us	created_da	last_edite	last_edi_1	Shape_STLe
63	Polyline	15	RCP	0		<Null>		<Null>	197.830768
64	Polyline	15	RCP	0		<Null>		<Null>	56.143307
65	Polyline	15		0		<Null>		<Null>	42.829739
66	Polyline	15		0		<Null>		<Null>	525.251735
67	Polyline	15		0		<Null>		<Null>	40.524657
68	Polyline	15	RCP	0		<Null>		<Null>	20.483164

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Storm Intakes

FID	Shape *	OBJECTID	DIMENSIONS	TYPE	INLET_TYPE	INTAKE_TYP
681	Point	682	3X4	1	BLMG	0
682	Point	683	3X4	1	BLMG	0
683	Point	684		2		0
684	Point	685		2		0
685	Point	686	24	2	RCP MH	0
686	Point	687	24	2	STEEL MH	0

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Proposed GIS Data Collection

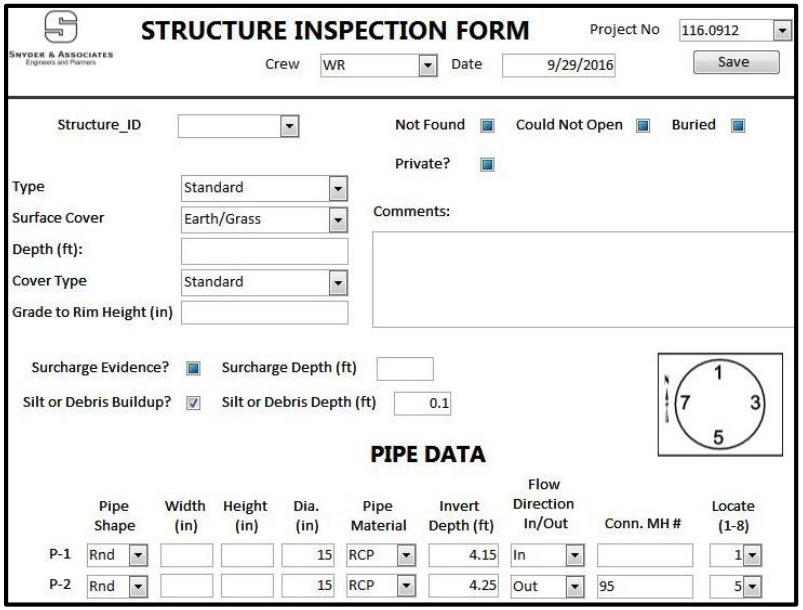
- Determine initial information fields needed in the system database

Hydraulic Data
Existing Conditions (calibrated)

Conduits

Link	Nodes		Conduit Type	Dia. (ft)	Width (ft)	n	Slope (%)	Length (ft)	Inverts		Entrance Loss	Exit Loss	Cap. (cfs)	Description
	US	DS							US	DS				
L100	L100	N100	Circular	4.0	0.0	0.013	0.72	68.0	881.44	880.95	0.50	0.50	121.9	
L101	L101	N101	Circular	4.0	0.0	0.013	0.46	59.0	881.71	881.44	0.50	0.50	97.2	
L102	L102	N102	Circular	4.0	0.0	0.013	0.63	120.0	882.46	881.71	0.50	0.75	113.6	

- Storm water collection and conveyance focus on:
  - Type
  - Condition
  - Capacity/Changes Upstream



STRUCTURE INSPECTION FORM

Snyder & Associates Engineers and Planners

Project No: 116.0912
Crew: WR
Date: 9/29/2016
Save

Structure_ID:
Not Found ☐ Could Not Open ☐ Buried ☐
Private? ☐

Type: Standard
Surface Cover: Earth/Grass
Depth (ft):
Cover Type: Standard
Grade to Rim Height (in):

Comments:

Surcharge Evidence? ☐ Surcharge Depth (ft):
Silt or Debris Buildup? ☑ Silt or Debris Depth (ft): 0.1

PIPE DATA

	Pipe Shape	Width (in)	Height (in)	Dia. (in)	Pipe Material	Invert Depth (ft)	Flow Direction In/Out	Conn. MH #	Locate (1-8)
P-1	Rnd			15	RCP	4.15	In		1
P-2	Rnd			15	RCP	4.25	Out	95	5

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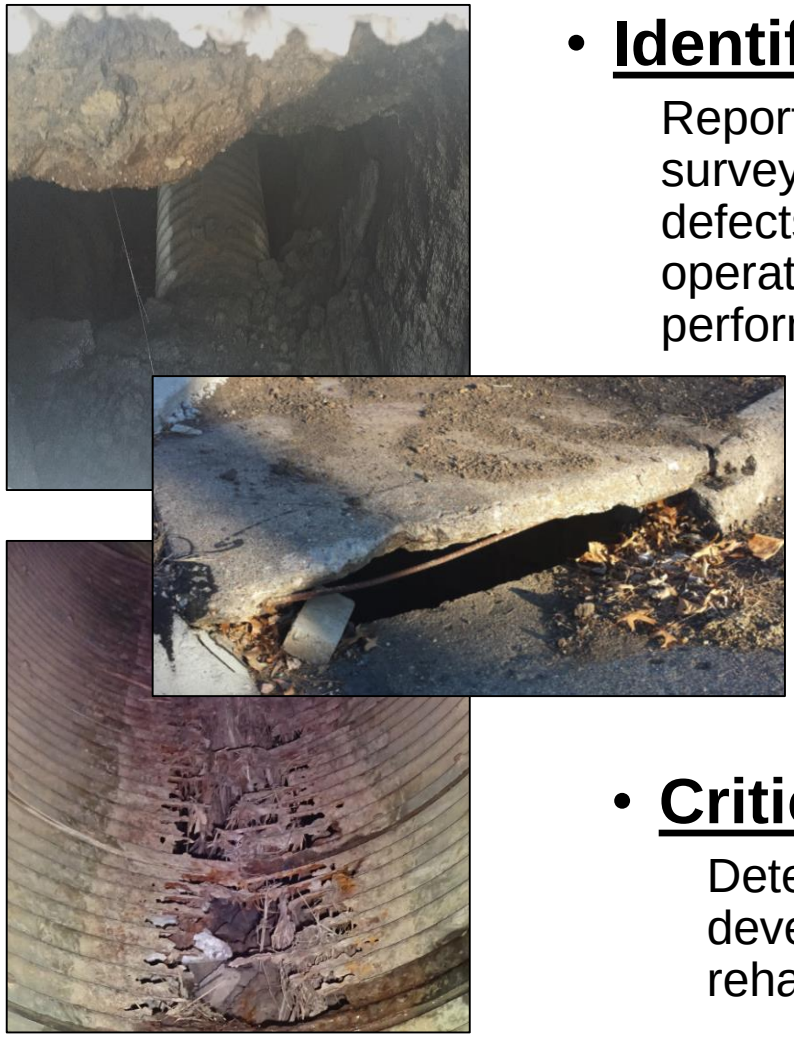
Proposed GIS Data Collection



- **Identify System Condition Indicators**

  Reports generated from sewer investigation and survey of structures provide the ability to observe defects and determine the structural, erosional, and operational parameters that influence asset performance

- **Grade Impact of Defects Found**

  A risk analysis must be performed on each of the issues discovered in order to grade severity based on likelihood of asset failure and the consequences of asset failure

- **Critical Asset & Rehabilitation Rating**

  Detect critical infrastructure within project area and develop preliminary maintenance plan that ranks rehabilitation by significance of system integrity

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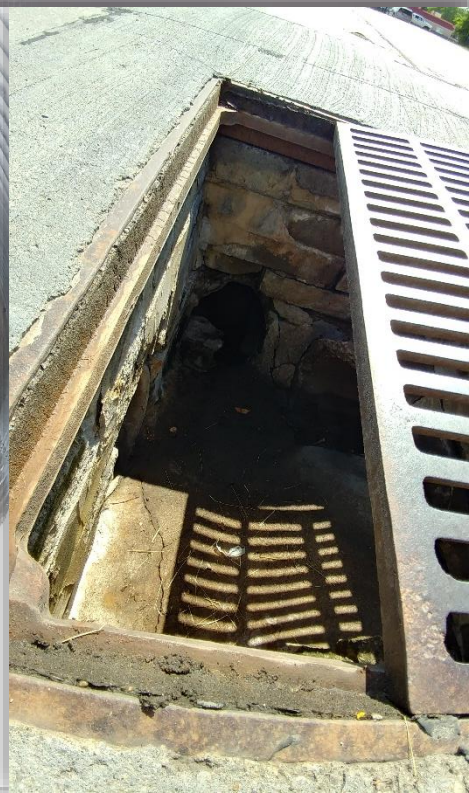
System Condition

- Lots of variability
  - Types
  - Materials
  - Conditions



Open Channel Performance

- 38% of concerns expressed to City staff related to open channel erosion.
- Typical drainage areas:
  - Less than 1 acre
  - Greater than 10 Acres

System Performance

- Changing rainfall patterns
  - Impacts to small watersheds
    - Intakes & gutters
    - Small detention ponds
  - Impacts to large watersheds
    - Overflow frequency

System Performance

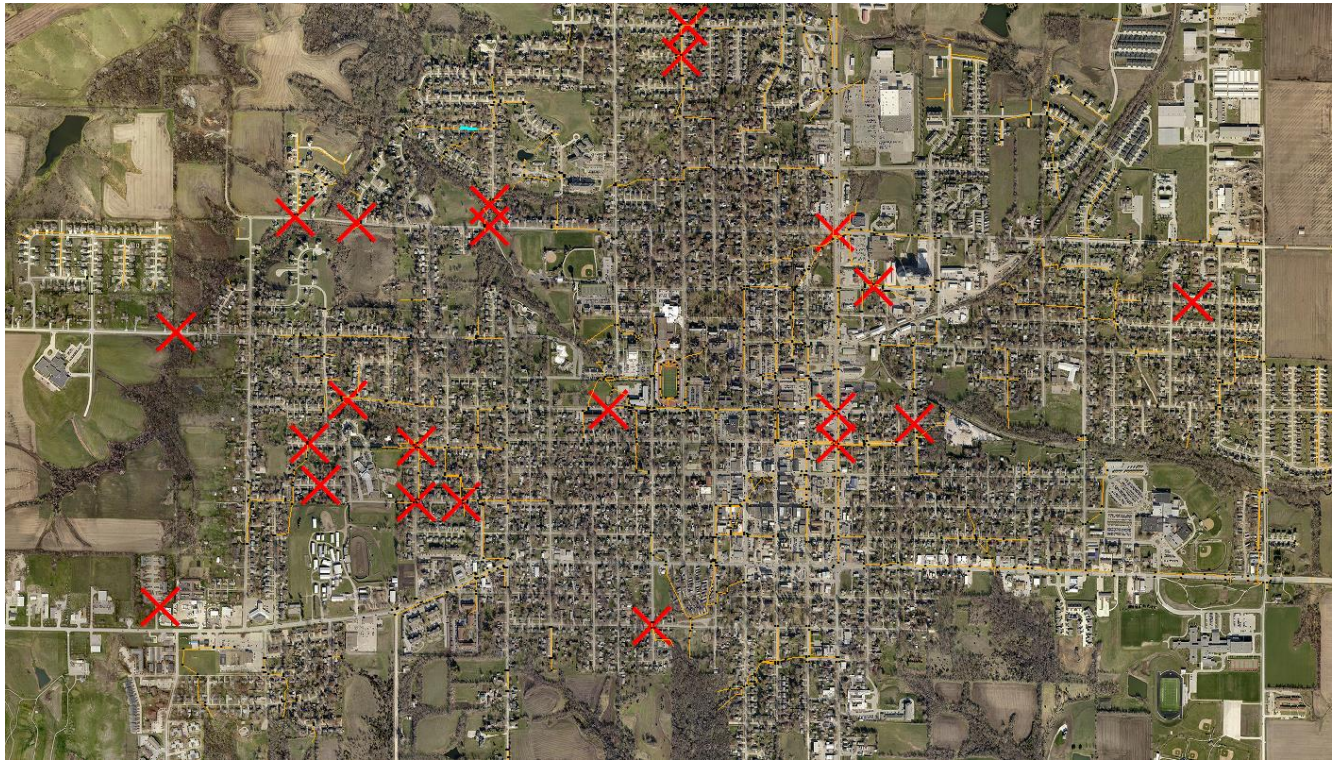
- Long Term Maintenance
  - Neighborhood drainage facilities
    - Small detention ponds
    - Storm water flowage easement
      - Local drainage
      - Overflow swales
  - Flood Plains & Flood Ways
    - Large storm conveyance

Recommendations

- GIS data expansion & continuous updates
- Develop Indianola's version of SUDAS standards
  - Materials, design details, construction details
- Encourage sustainability and insist on resiliency in development drainage review
- Clarify drainage facility maintenance responsibility & cooperative funding program
- Continue fund balance for emergency repairs
- Continue planned intake reconstruction

NEXT STEPS

Project Setup



- Known flooding issues evaluated within the target drainage area to identify future projects

Project Setup

Drainage Concern Locations

	Street 1	Street 2	Location Description	Date	Description	Floodplain?
1	W Euclid Ave.	250' west of Brookwood Drive	Cavitt Creek	7/23/2010	Banks Washed Out	No
2	W Iowa Ave.	N O Street	Intersection	7/23/2010	House / Street Flooding	No?
3	W Iowa Ave.	N L Street	Intersection	7/23/2010	Banks Washed Out	No?
4	W Iowa Ave.	100' east of Stephen Ct.	Ditch / unnamed tributary	7/23/2010	Banks Washed Out	No
5	Stephen Ct.	300' North of W Iowa Ave	Ditch	7/23/2010	Banks Washed Out	No
6	W Norwood Pl.	N C Street	Street		Street Flooding	No
7	W Orchard Ave	200' East of N C Street	Street		Street Flooding	No
8	Iowa	N Jefferson Way	Intersection	7/23/2010	Intersection	No
9	E Girard Ave	150' East of N 3rd St.	Street		Street Flooding	No
10	E Girard Ave	250' East of N 12th St	Street		Street Flooding	No
11	W Clinton Ave	100' west of N L Street	Street	7/23/2010	Street & House Flooding	No
12	W Boston Ave	200' west of North N Street	Channel	7/23/2010	Bank Washed Out	No
13	W Salem Ave	300' west of N M St	Street		House / Street Flooding	No
14	S Spruce St.	250' North of W 2nd	???	7/23/2010	Storm Sewer Caving	No
15	W Salem Ave	S J St	Intersection		House / Street Flooding	No
16	W Salem Ave	200' west of N H Street	Street		House / Street Flooding	No
17	W Boston Ave	N J Street	Intersection		House / Street Flooding	No
18	W Clinton Ave	500' west of N D Street	Street		Street Flooding	No
19	Johns Street	150' South of	Street		House / Street Flooding	Yes
20	N Jefferson Way	E Boston Ave	Intersection		Street Flooding	No
21	N Jefferson Way	E Clinton Ave	Intersection		Street Flooding	No
22	N 5th Street	E Clinton Ave	Intersection	7/23/2010	House / Street Flooding	No

PRAIRIE VIEW DRAINAGE IMPROVEMENT UPDATE

Prairie View Drainage Improvements

- Contemplated SRF Sponsored Project Site
- Water quality improvements were not practical
- Revised concept to address basin performance issues

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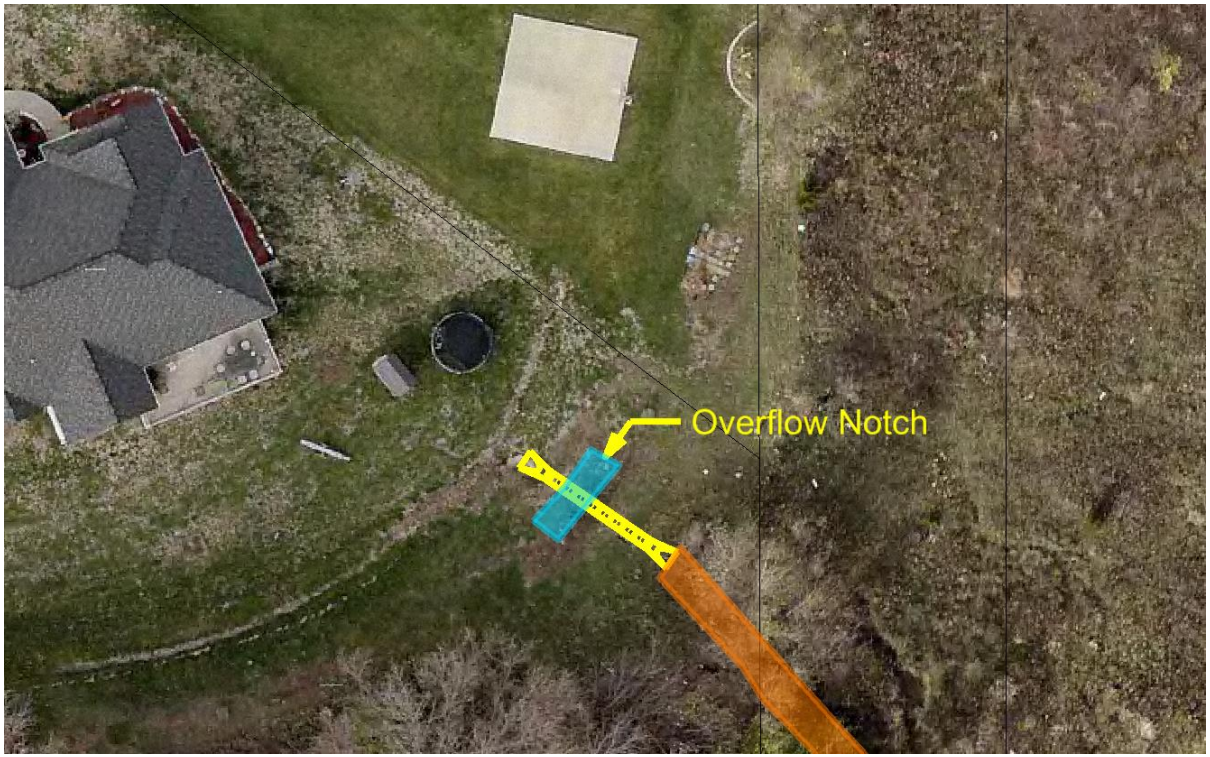
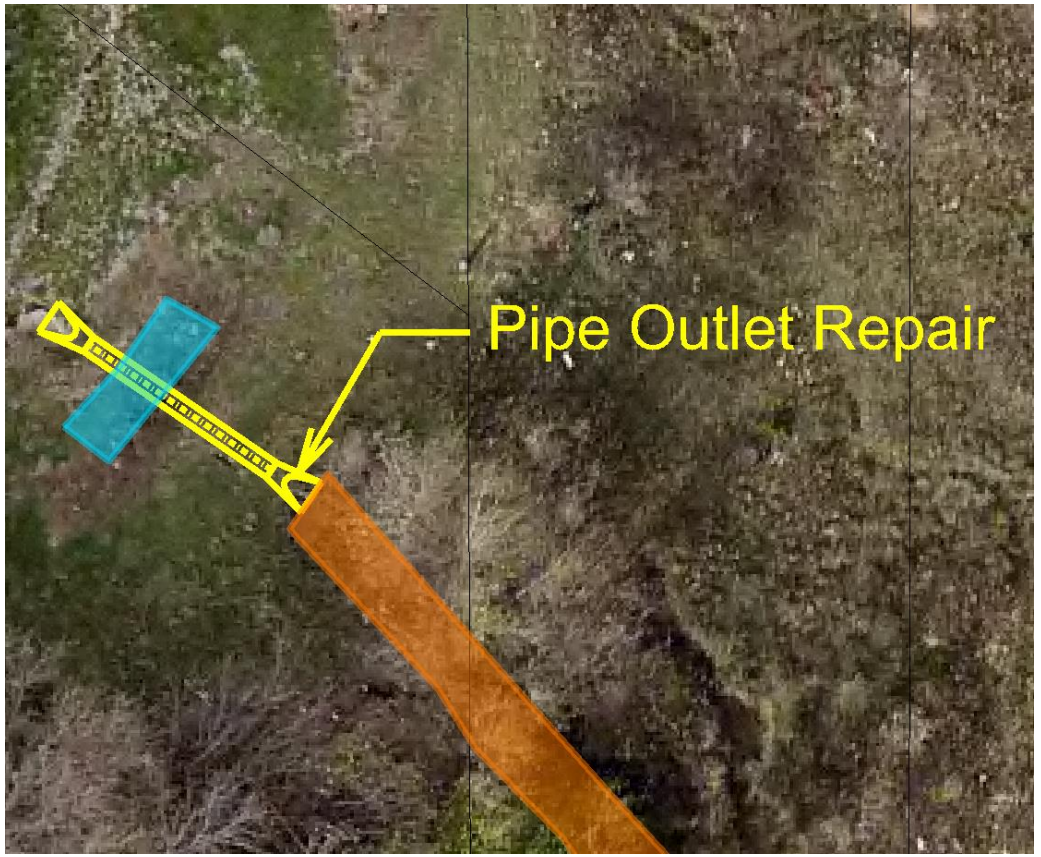
Prairie View Drainage Improvements

- Overflow notch in berm
  - Lower maximum ponding level of basin by 6 inches
  - Protect adjacent structures from flooding



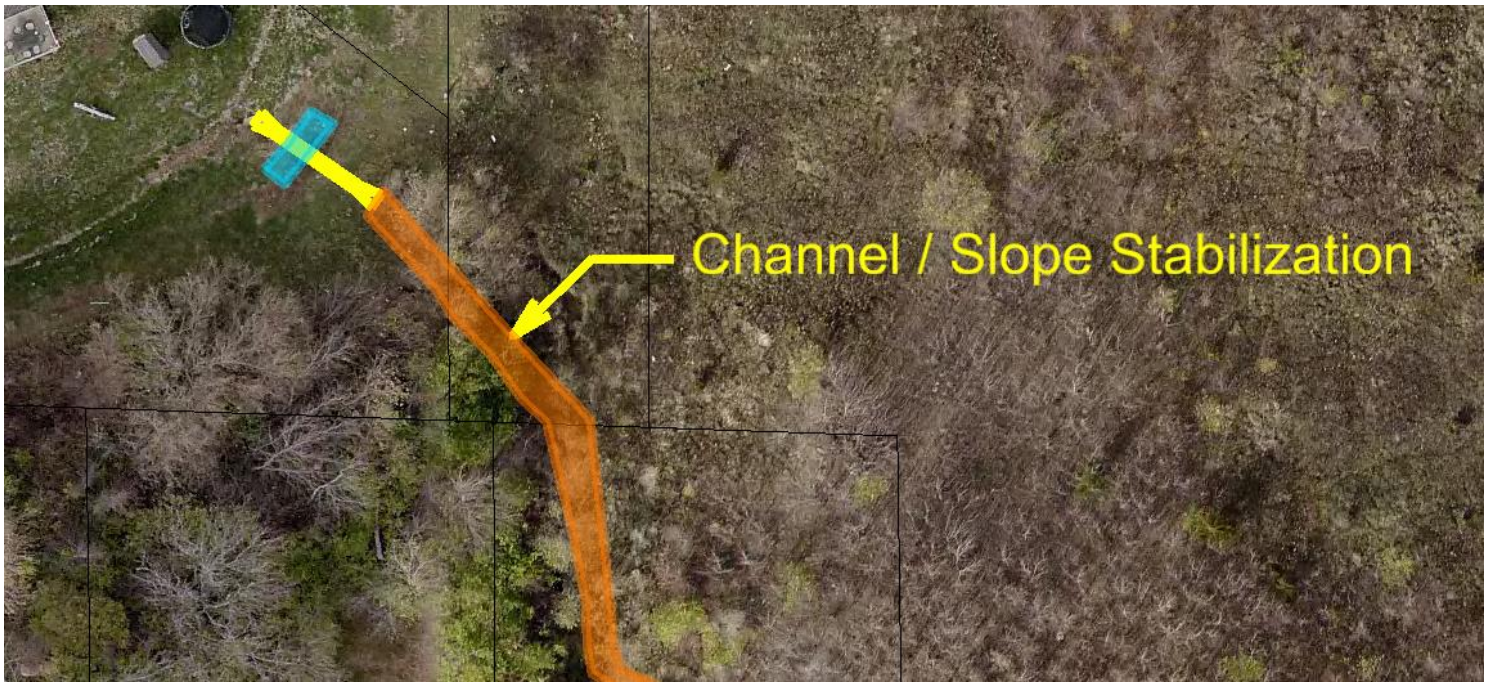
Prairie View Drainage Improvements

- Repair culvert outlet
  - Modify outlet structure
  - Remove and replace outlet section



Prairie View Drainage Improvements

- Outlet Protection
  - Stabilize channel/slope to Cavitt Creek
  - Reduce erosion
  - Improve water quality



Prairie View Drainage Improvements

- Schedule:
  - Design: Winter - 2018
  - Construction: Spring/Summer - 2019
- Estimated Cost: $50,000 - $85,000
  - City Cost (not eligible for SRF)

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QUESTIONS?