Strand Associates, Inc.®

Southwest Flood Study

Village of Prairie du Sac, WI

November 12, 2019

Southwest Flood Study Overview

- Study Area Description & Background
- March 2019 Flood Event Timeline & Flood Extents
- Review of Flood Mitigation Alternatives
- Summary of Recommendations
- List of Potential Standard Operating Procedures

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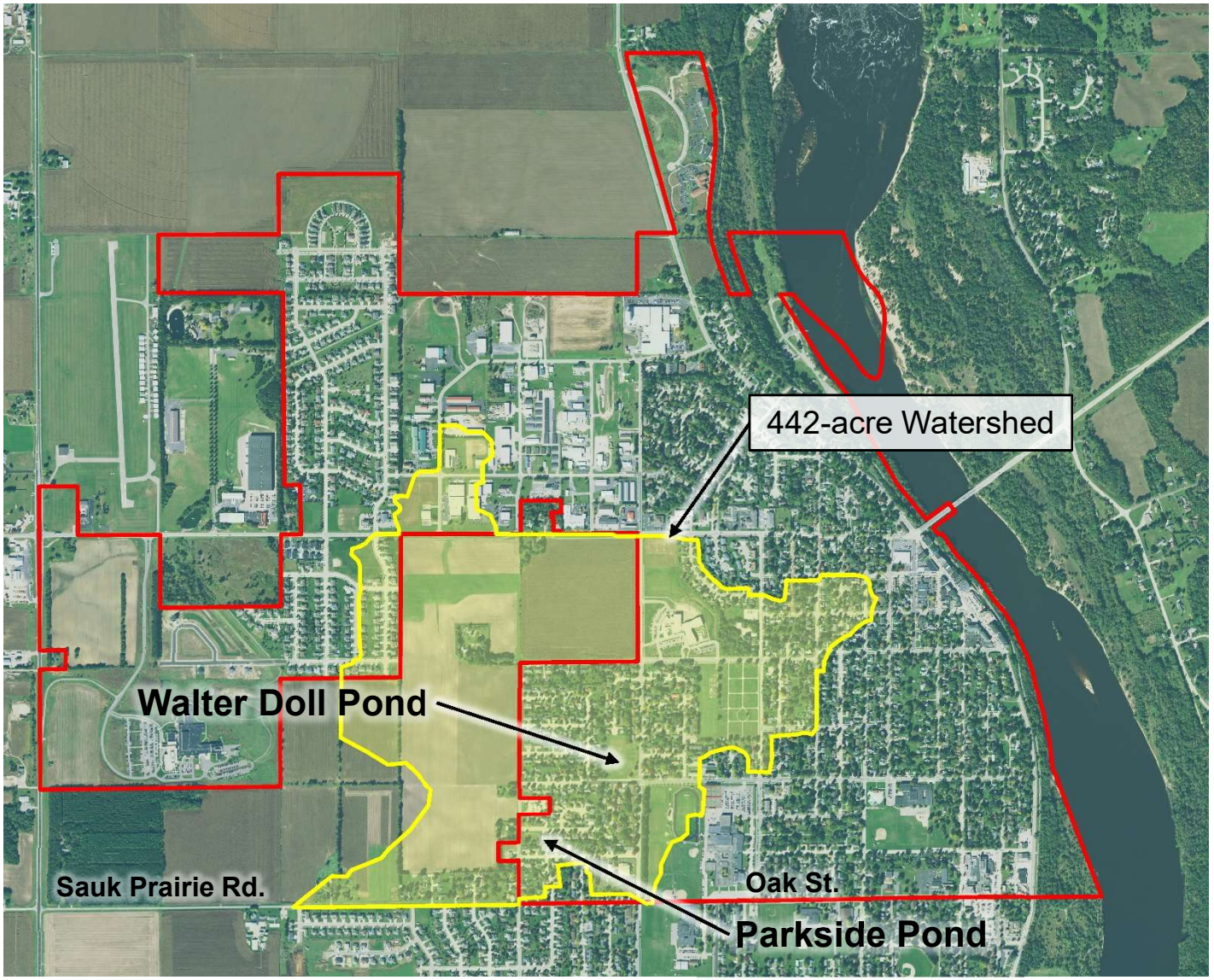
Study Area



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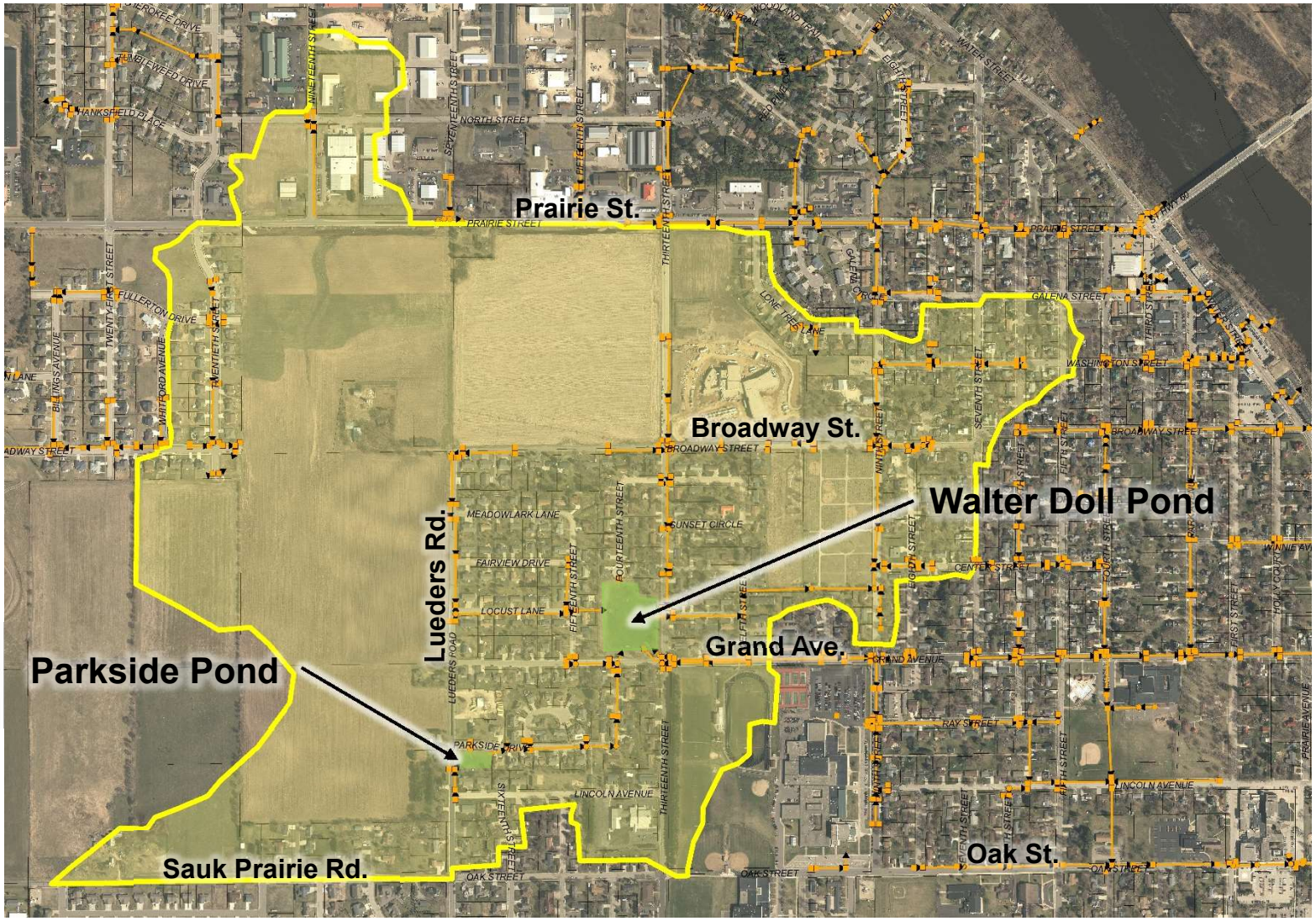
Study Area Watershed



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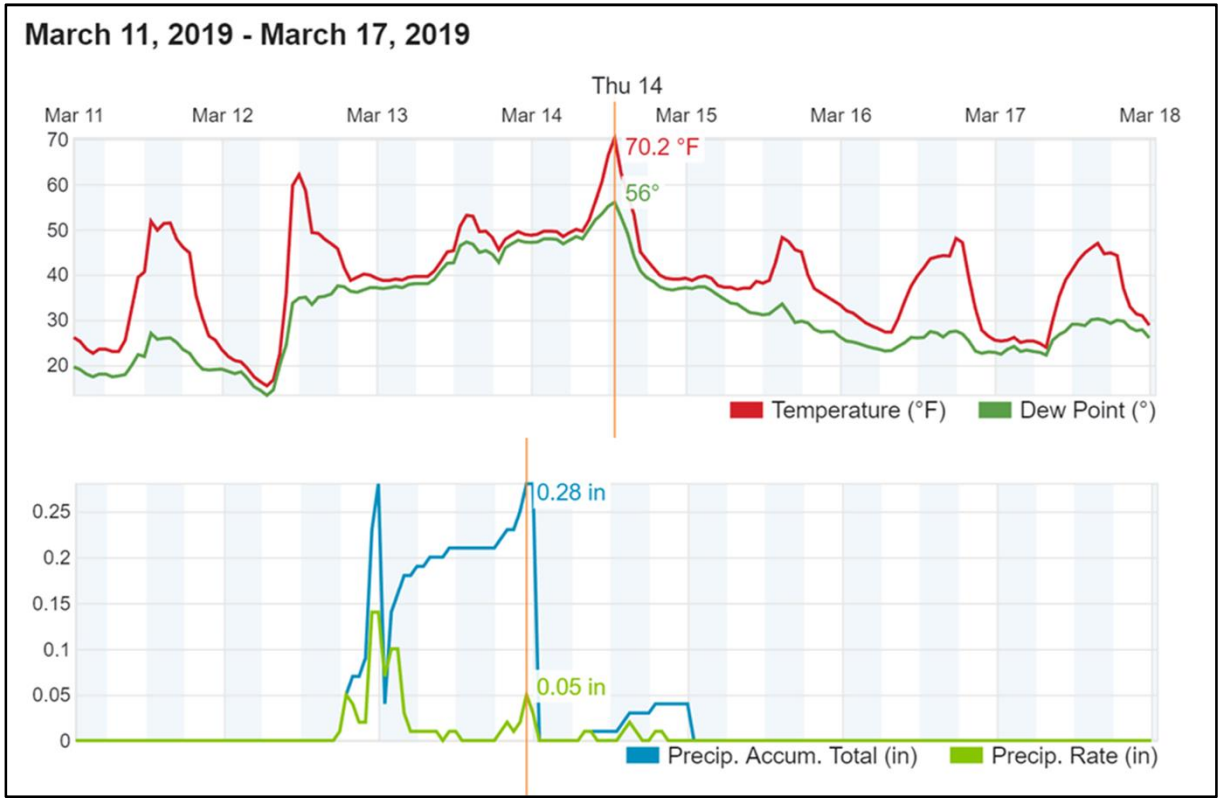
March 2019 Flood Event – Unique Flooding Event

- Frozen ground conditions
- Approx. 8-inches of snow cover
- Prolonged period of unseasonably warm weather
- 0.6-inches of rainfall



Plot of Temperature and Precipitation in Prairie Du Sac for the Week of March 11, 2019 (source: Weather Underground)

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March 2019 Flood Event - Timeline

- **Monday, March 11th, 2019**
  - No rainfall was recorded.
  - High temperature was 52 degrees.
  - Low temperature was 15 degrees.

- **Tuesday, March 12th, 2019**
  - Rainfall begins around 6:00 pm. Approximately 0.3-inches of rain fell through midnight.
  - High temperature was 62 degrees.
  - Low temperature was 40 degrees.

- **Wednesday, March 13th, 2019**
  - Rainfall continued to fall throughout the day. Approximately 0.28-inches fell through midnight.
  - High temperature was 53 degrees.
  - Low temperature was 46 degrees.
  - Parkside pond was reported to be filling up.

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March 2019 Flood Event – Timeline (cont.)

- **Thursday, March 14th, 2019**
  - Minimal rainfall fell during the day. Daily rainfall total was about 0.05”.
  - High temperature was 70 degrees.
  - Low temperature was 40 degrees.
  - In the morning, overland drainage started crossing Lueders Road from the west into Parkside Drive. Note that this is the first time that flow overtopping Lueders Road from the west has ever been observed or experienced.
  - Far west end of Broadway Street flooded at the intersection of Lueders Road. Storm inlets at this location were reported to be taking in flow. Note that this is the first time flow overtopping Broadway Street from the north has ever been observed or experienced.
  - At 9:00 am, fire truck started pumping at approximately 700 gallons per minute (gpm) from Walter Doll Pond. Pumped approximately 1,500 feet through a 5-inch diameter hose. Water elevation in Walter Doll Pond continued to rise.

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March 2019 Flood Event – Timeline (cont.)

- **Thursday, March 14th, 2019 (cont.)**
  - In the morning, the Village ordered two 5,000 gpm pumps from an area farm pumping company. The first pump arrived by noon and pumping at Walter Doll Pond began at 1:00 pm. Flow was directed to the east down Grand Avenue via 10-inch flexible hose and discharged into the storm sewer system. Pumps initially cavitated, limiting the flow rates until the problem was resolved after a few hours.
  - A second pump arrived later in the afternoon and starting pumping at Parkside Drive pond with discharge being directed to Walter Doll Pond.
  - The two pumps pumped into the night.

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March 2019 Flood Event – Timeline (cont.)

- **Friday, March 15th, 2019**
  - Both pond elevations were lowered substantially by 2:00 am on Friday morning.
  - Both pumps were shut off mid-morning after 20 hours of pumping.
  - By noon, area roads were opened back up.

- **Sunday, March 17th, 2019**
  - Village witnessed that frost came out of Walter Doll Pond and remaining water in the pond quickly infiltrated.

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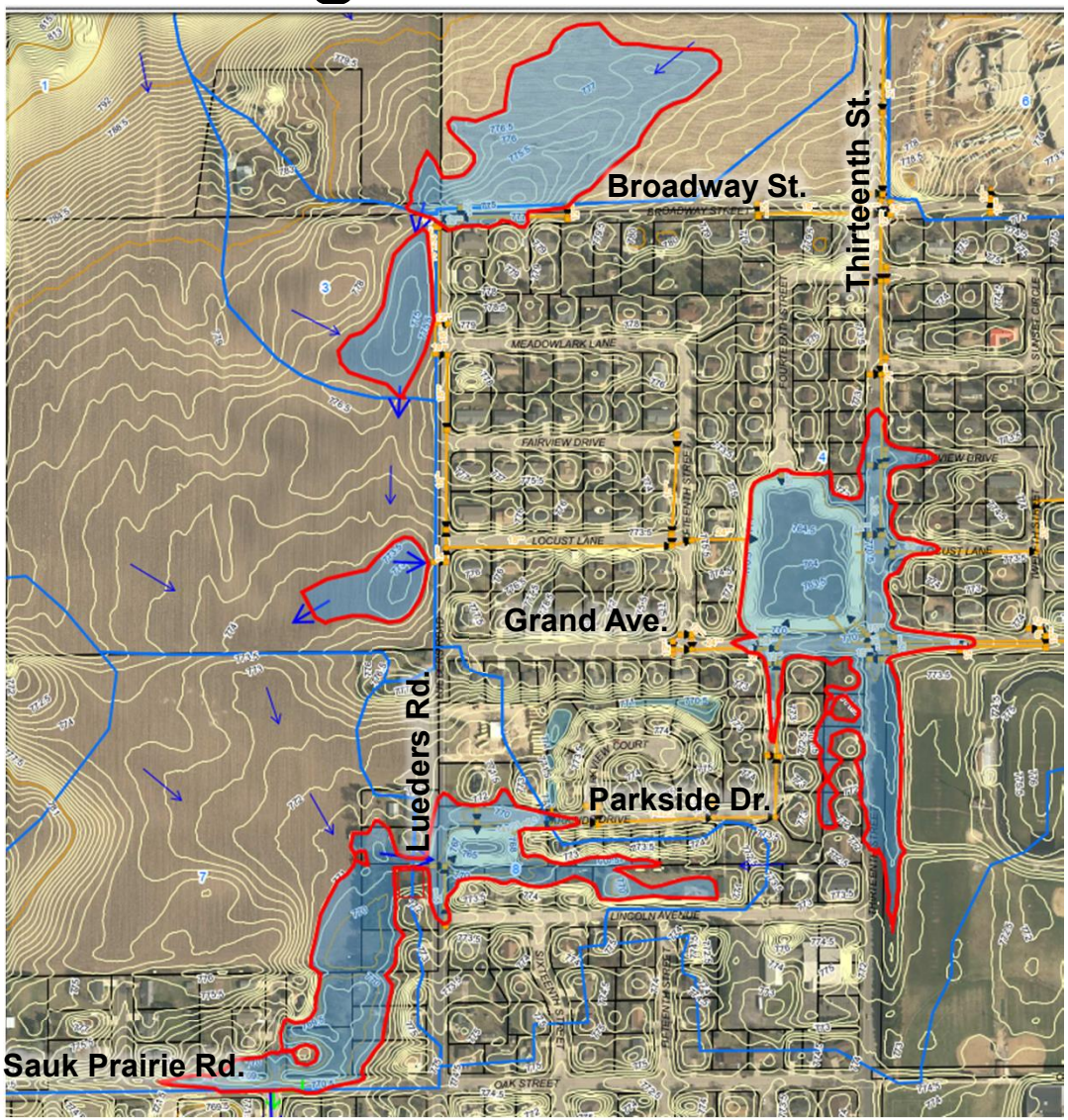
March 2019 Flood Event – Estimated Flooding Extents



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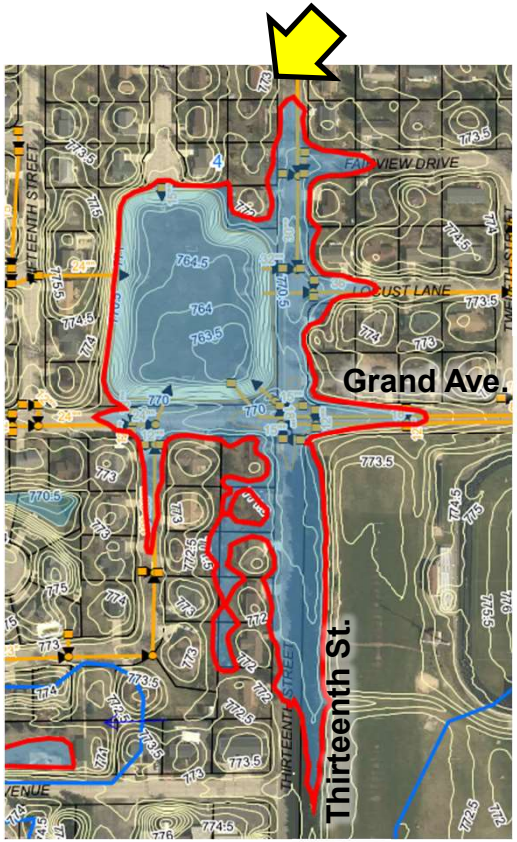
March 2019 Flood Event – Estimated Flooding Extents



Looking southwest along Thirteenth St. and Walter Doll Park

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March 2019 Flood Event – Estimated Flooding Extents

Looking northeast along Grand Ave. and Walter Doll Park

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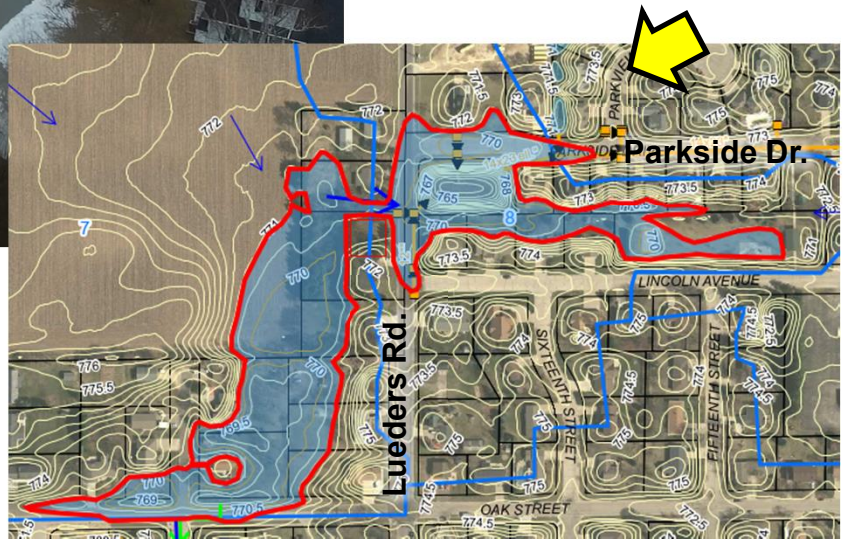
March 2019 Flood Event – Estimated Flooding Extents

Looking southwest along Parkside Dr. and Parkside Pond



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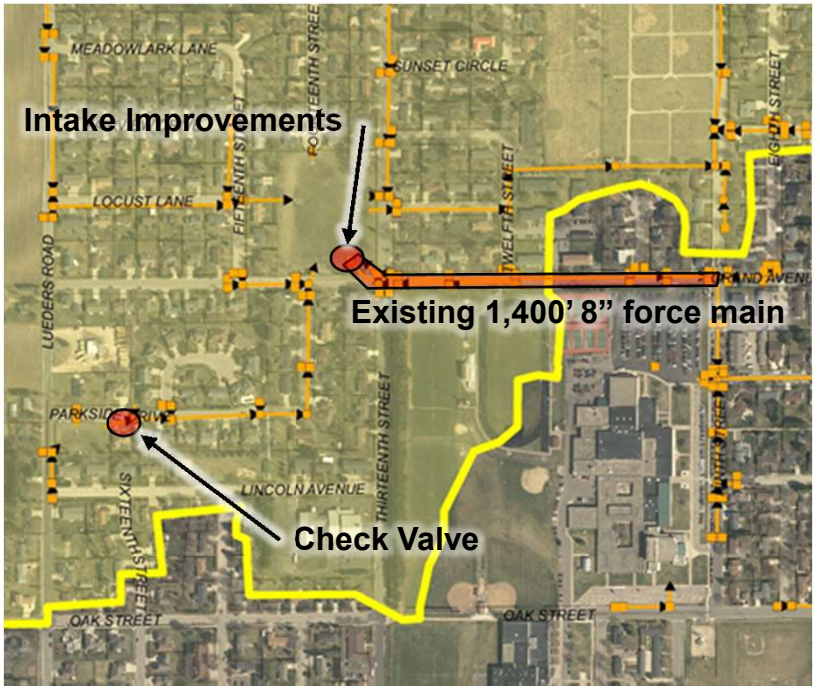
Summary of Recommendations

- Purchase (2) trailer mounted 8" portable pumps (option available to implement a perm. pump station in lieu of (1) portable pump) - **Cost = $164,000**
- Condition assessment of 1,400 lf of exist. 8" force main – **Cost = $5,000**
- Intake improvements to ex. 8" force main allowing quick connect. – **Cost = $20,000**
- Purchase 2,800 lf 10" dia. flexible hose to be laid along Grand Ave. between Walter Doll and Ninth St. – **Cost = $84,000**
- Install 18" inline check valve with storm sewer system connecting Walter Doll & Parkside Ponds – **Cost = $30,000**

Total Cost = $303,000



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List of Potential Standard Operating Procedures

- Closely monitor local weather forecast with frozen ground and/or high snow depth for unusually warm temperatures and/or rainfall. If conditions are favorable, then:
  - Mobilize portable pumps and accessories to Walter Doll Pond to prepare for pumping activities.
  - If flood conditions are anticipated or forecasted beyond the Village's capacity to manage, contact pumping company. Ensure they are available on "on-call" basis.
  - Inspect the intake of the existing 18" storm sewer apron end wall located on the north side of Sauk Prairie Road and the 14"x23" intake from Parkside Pond. Remove any blockages that are evident.
  - E-mail blast notifications to residents to provide advanced warnings of high potential for flood conditions.
  - Make a sandbag filling station available to residents at the public works garage or other designated location.
  - Prepare traffic control measures to detour traffic around flooded areas.
  - Contact police/fire/emergency responders to make sure all entities are fully informed of flooding conditions.
  - Install frost depth probe in Walter Doll Pond to monitor frost depths.

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