ROLLING MEADOWS ESTATES DRAINAGE STUDY

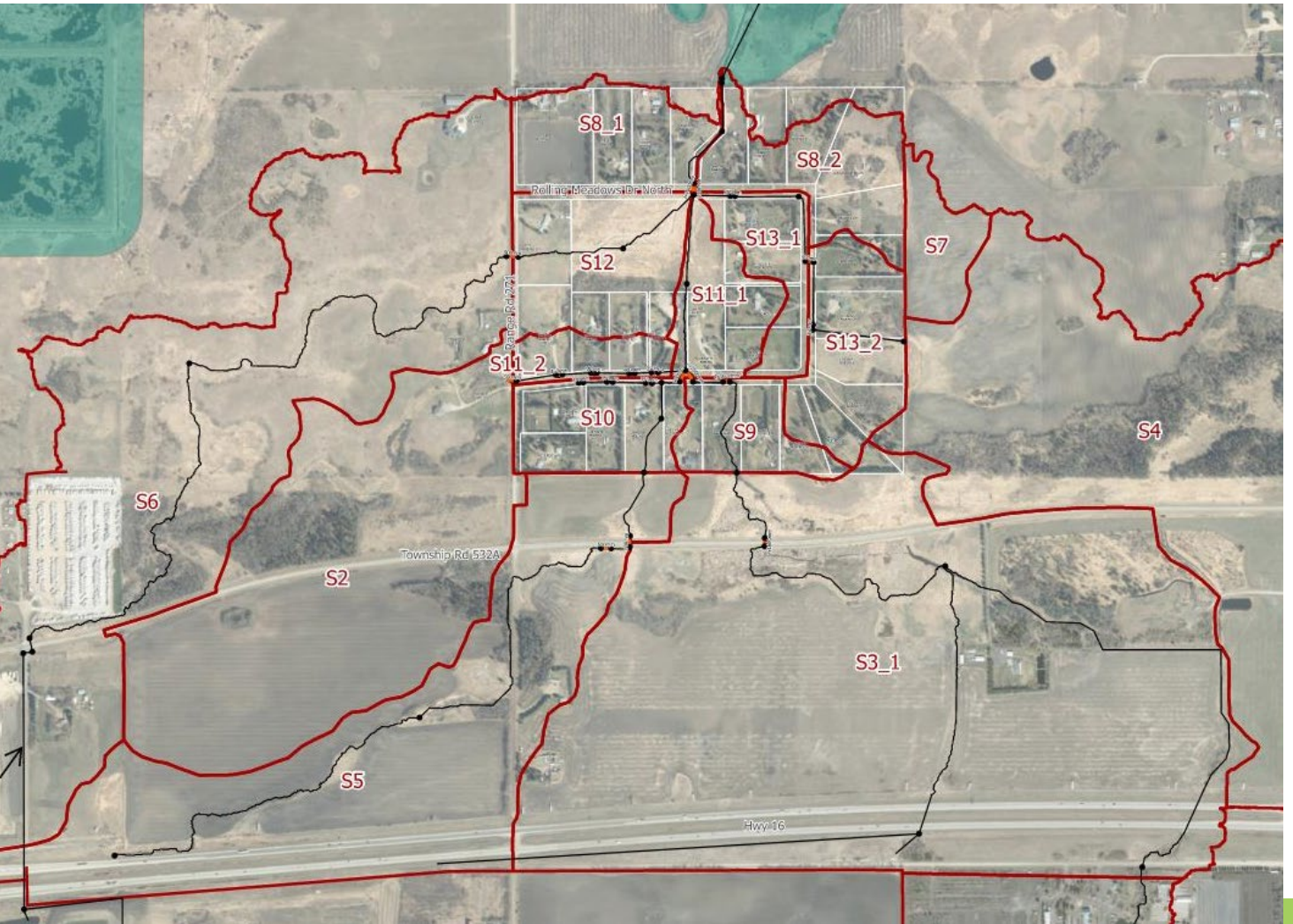
Governance & Priorities Committee

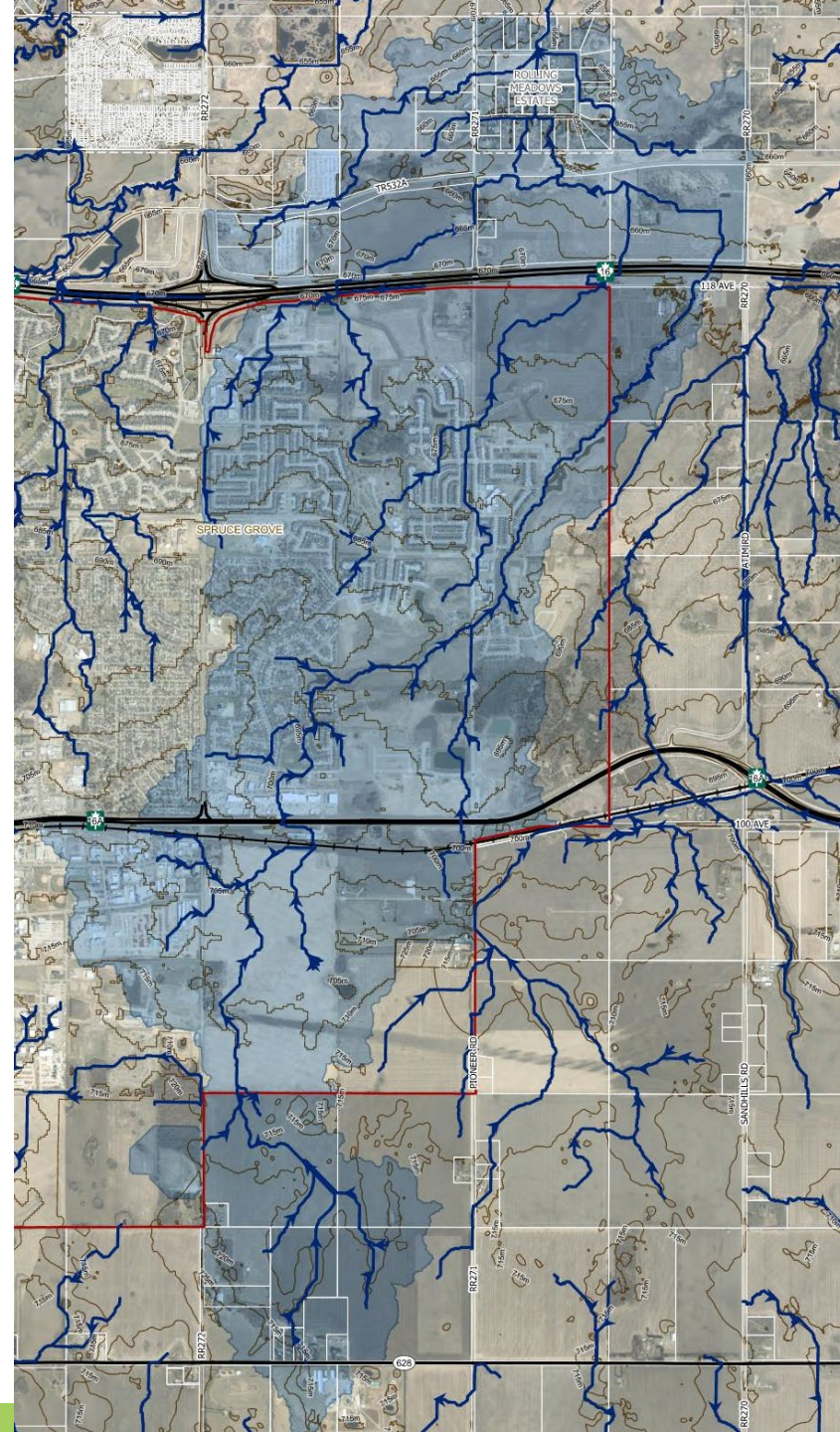
May 20, 2025

Overview of Study

- Existing Topography and Drainage
- Rolling Meadows Estates Development
- Reported Flooding Issues
- November 2024 Open House
- Hydraulic Analysis
- Assessment
- Flood Mitigation Options
- Cost Estimates
- Implementation

Existing Topography and Drainage





Development of Rolling Meadows Estates

Reported Flooding Issues

- Reviewed historic flooding complaints from 2017 to 2022
  - Excessive runoff from south
  - Partially plugged culverts
  - Frozen culverts
  - Flooding of private lots

November 2024 Open House

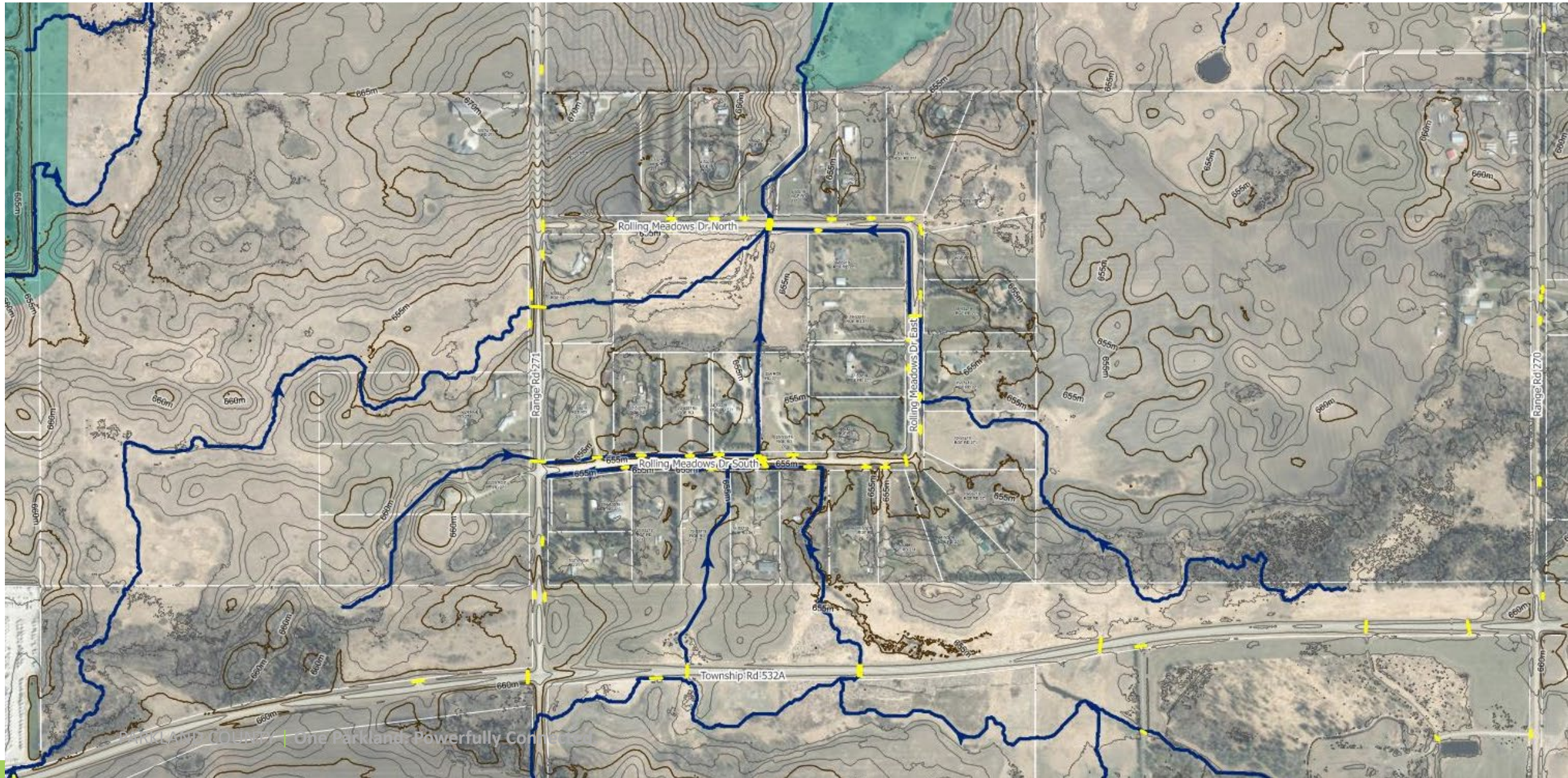
Summary of Open House Questionnaire Responses

Item	Resident's Responses
Flooding Description	• Spring runoff and heavy rainfall • Water ponding on lot for extended time • Ditches not draining
Impacts on Residents	• Tree and grass loss • Septic field damage • Land settlement • Damage to home • Damage to driveway
Factors	• Lack of ditch maintenance • Ditches not adequate • Increased runoff from Spruce Grove • Frozen culverts not thawed in time • Farmer installed crossing to north • Saturated ground

Hydraulic Analysis

- Atim Creek Tailwater Analysis
  - 1:100 year Big Lake High Water Level (HWL) 653.29 m
  - Estimated Atim Creek tailwater level
- Hydraulic Modeling
  - Farm crossing raises HWL by ~0.3 m
  - Large diameter culverts appear to be adequate
  - Off-site flows from southeast drain through Lot 12 uncontrolled
  - Off-site flows from southwest high for Lot 21 to 24 driveway culverts
  - Good correlation between modeling results and historic complaints

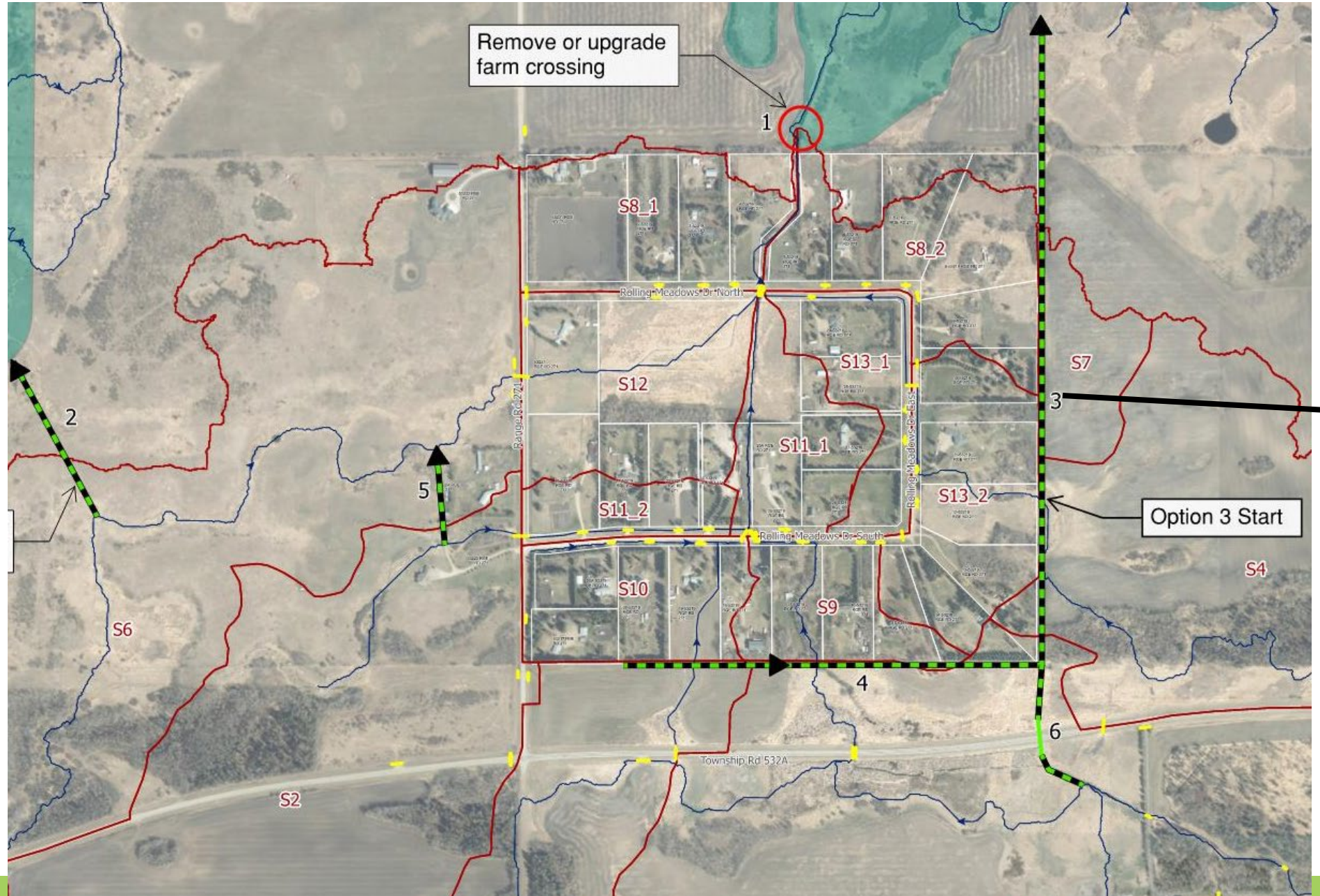
Hydraulic Analysis

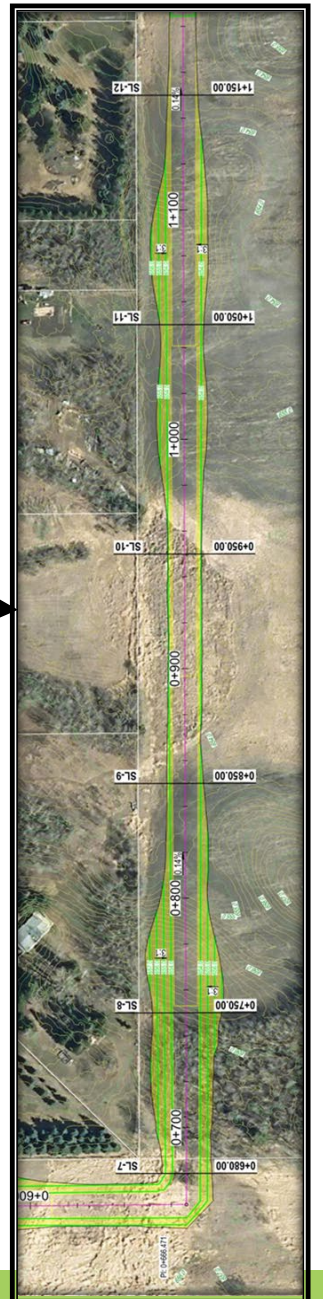


Assessment:
Factors influencing Flooding

- Elevation of Rolling Meadows relative to Atim Creek floodplain
- Location of Rolling Meadows within historic watercourses and wetlands
- Farm crossing
- High groundwater levels
- Local drainage system not designed for off-site flows
- Development of Spruce Grove

Flood Mitigation Options – Off-site





Flood Mitigation Options – On-site

- Culvert upgrades (#7-10, 13-14, 16-17)
- Ditch upgrades (#15)
- Swale (#11)

Cost Estimates – Recommended Upgrading

- Farm crossing
  - Remove farm crossing $20,000
  - Upgrade farm crossing $100,000 (order of magnitude)
- All on-site upgrading $360,000
  - Culverts $310,000
  - Ditch $20,000
  - Swale $30,000
- Total Cost $380,000
  - (based on removal of farm crossing)

Implementation Strategy

- Short term
  - Remove or upgrade farm crossing
  - On-site upgrades
  - Desktop hydrogeological study
- Medium term
  - Monitor surface water levels
  - Subject to monitoring results, consider additional ways to minimize impacts of large rainfall / spring runoff events
  - Consider hydrogeological study
  - Work with Spruce Grove to understand future stormwater discharges
- Long term
  - If necessary, revisit need for south and east diversion ditches

Questions?