Upper Makefield Township - Watershed Restoration Plan
Community Workshop

LandStudies, Township officials, EAC, Community Member

O9.11.2018

- Presentation by LSI:
    - Overview of the project goals: flood control and water quality improvements;
    - Assessment process: Visual assessment of the existing conditions and issues in Houghs Creek and Jericho Creek;
    - Identification of Issues and Opportunities – presented on Watershed Action Plan map and Opportunities and Issues Table;
        - Strategic locations for regional benefits - emphasis on stream and floodplain restoration opportunities because these projects provide the greatest cost benefit;
        - Restoration opportunities in both watersheds, but opportunities along the Jericho may be more of the immediate focus given the MS4 permit requirements for sediment reduction;
    - NOTE: Full LSI presentation attached;

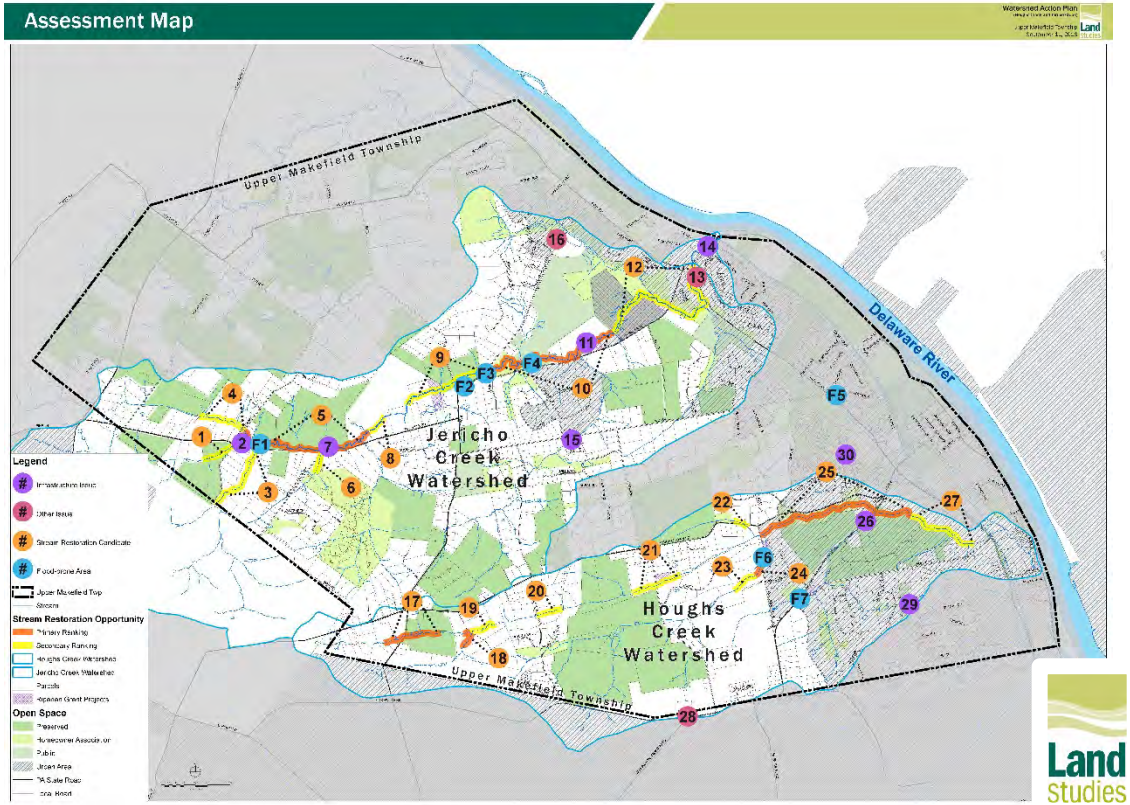
- Break-out discussion with workshop attendees to discuss the issues and opportunities as identified on the map, and on the table and to identify additional issues and opportunities not yet identified on the map and table;
    - General feedback from workshop attendees:
        - Strong interest in addressing the flooding issues in both watersheds, also interest in water quality issues;
        - Interest in grant funding sources that may be available to implement projects that would address flooding and water quality problems – PADEP, PADCNR, federal funding;
    - Feedback from workshop attendees regarding Jericho Creek:
        - Large trees frequently falling into creek and creating large debris jams;
        - Major flooding issues along Stony Brook Road, particularly where the unnamed tributary connects to the Jericho Creek above Slack Road and where the Jericho Creek runs under Stony Brook Road.
            - Significant erosion / loss of property and undermining of infrastructure;
        - Major flooding issues and loss of infrastructure downstream of Stony Brook Road;
        - Interest from attendees in how upstream restoration activities may alleviate flooding issues in the area around the Stony Brook Road bridge;
    - Feedback from workshop attendees regarding Houghs Creek:
        - The Petty property in the headwaters was identified as a location where the creek is severely incised and the landowner is willing to participate in any restoration opportunity.
        - Flooding at Whitman Rd and confluence of two headwater tributaries is associated with a potentially undersized culvert/bridge is causing problems for adjacent homes.

        - A tract of preserved land west of the Whitman Road crossing is a location where the stream needs attention and the neighbors felt the landowner, although not present, would be interested in improvements.
        - Two of the riparian buffer planting locations shown on the map were not implemented.
        - Residents in the headwaters were interested in whether the headwater tributaries in the adjacent Township were contributing to sediment loads in UMT

- Next Steps:
    - Update the Watershed Action Plan map and Issues and Opportunities table with modifications based on feedback from Community Workshop and prioritize projects based on issues / conditions;
    - LSI will coordinate with the Township once the map and table have been updated and the projects have been prioritized;

Upper Makefield Township

Watershed Action Plan



Community Workshop

September 11, 2018

Workshop Agenda

I. Project Overview and Goals

II. Project Tasks

III. Goals for Tonight's Workshop

IV. Existing Conditions and Typical Issues within the Jericho and Houghs Creek Watersheds

V. Assessment Process

VI. Ranking Criteria

VII. Example Restoration Projects

VIII. Break-out Discussion of Opportunities and Issues

- See Assessment Map and Opportunities & Issues Table

Project Overview and Goals

Funding:

Pennsylvania Department of Conservation and Natural Resources (DCNR)
Rivers Conservation Plan Grant

Goals:

Watershed Action Plan

A guide for implementation of quantifiable water quality improvement projects

Prioritization and Concept Plans

Concepts for Five (5) projects that will demonstrate water quality improvement, flood mitigation and ecological benefits.

MS4 Permit Support

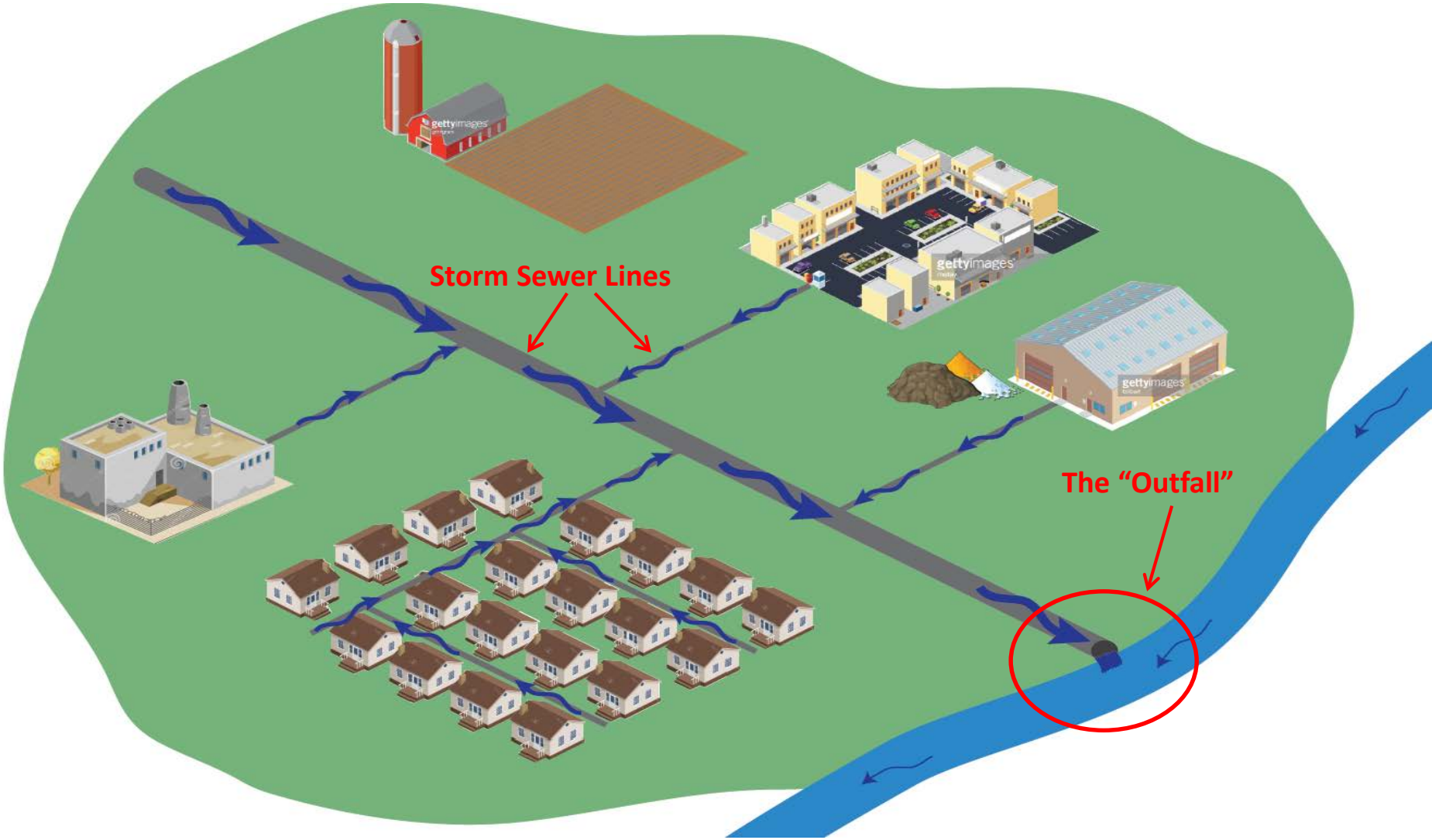
Provide support for the Township to achieve their MS4 permit requirements.

Municipal **S**eparate **S**torm **S**ewer **S**ystem

MS4

- Municipality must develop, implement and enforce a plan for water quality improvement. (Federal Clean Water Act)
- Regulated by Pennsylvania Department of Environmental Protection (PA DEP)
- Pollutant Reduction Plan (PRP) designed to reduce the discharge of pollutants.

Storm Sewer System



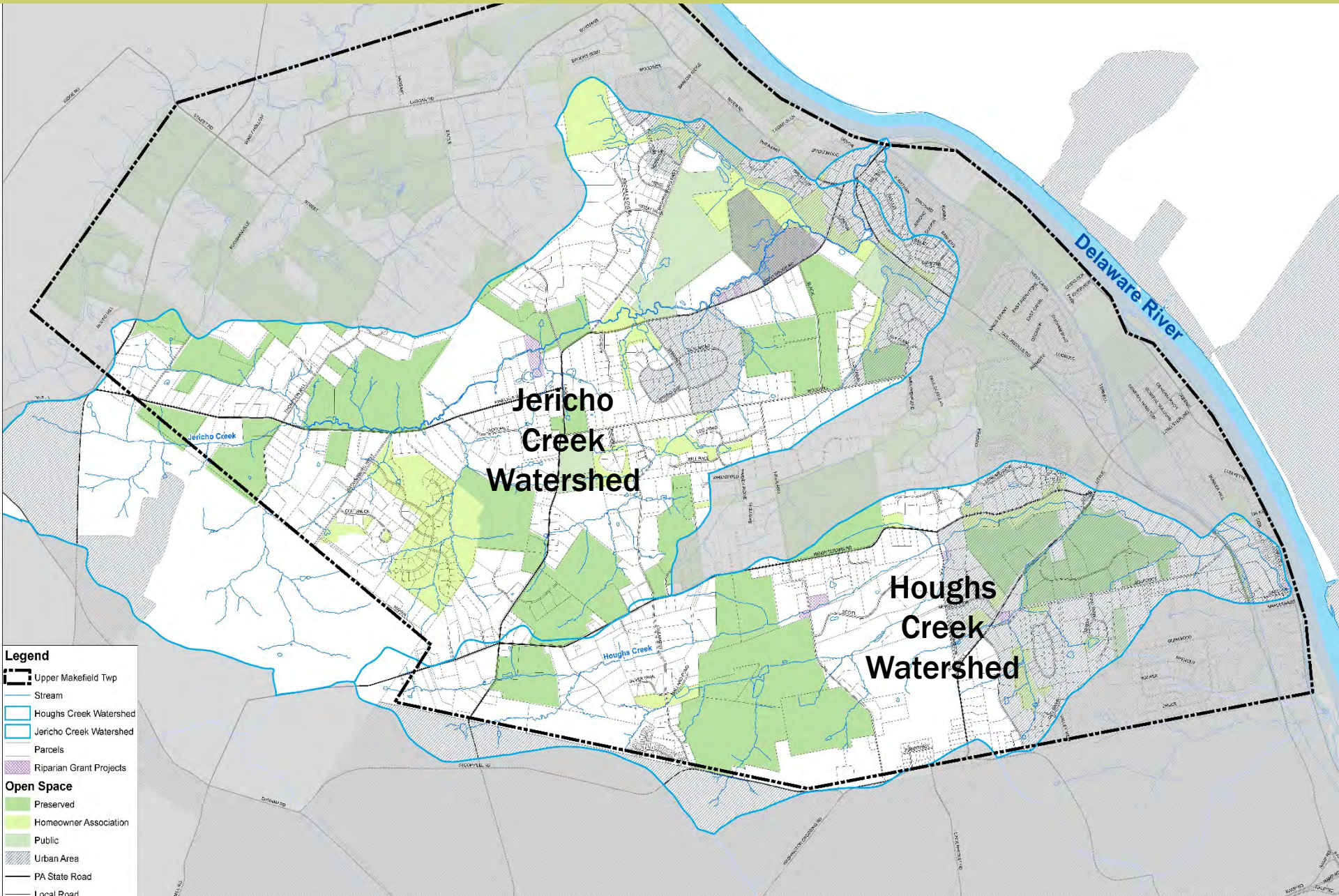
Scope of Work

- Preliminary Mapping, visual assessment, and analysis
  March – August 2018
- Stakeholder Input (includes UMT staff, EAC, and community representatives)
  April, June, July, Sept 2018
- Engineering and Analysis
  on-going
- Concept Restoration Plans five (5) prioritized projects
  Fall 2018
- Final Watershed Restoration Plan Report
  Dec 2018

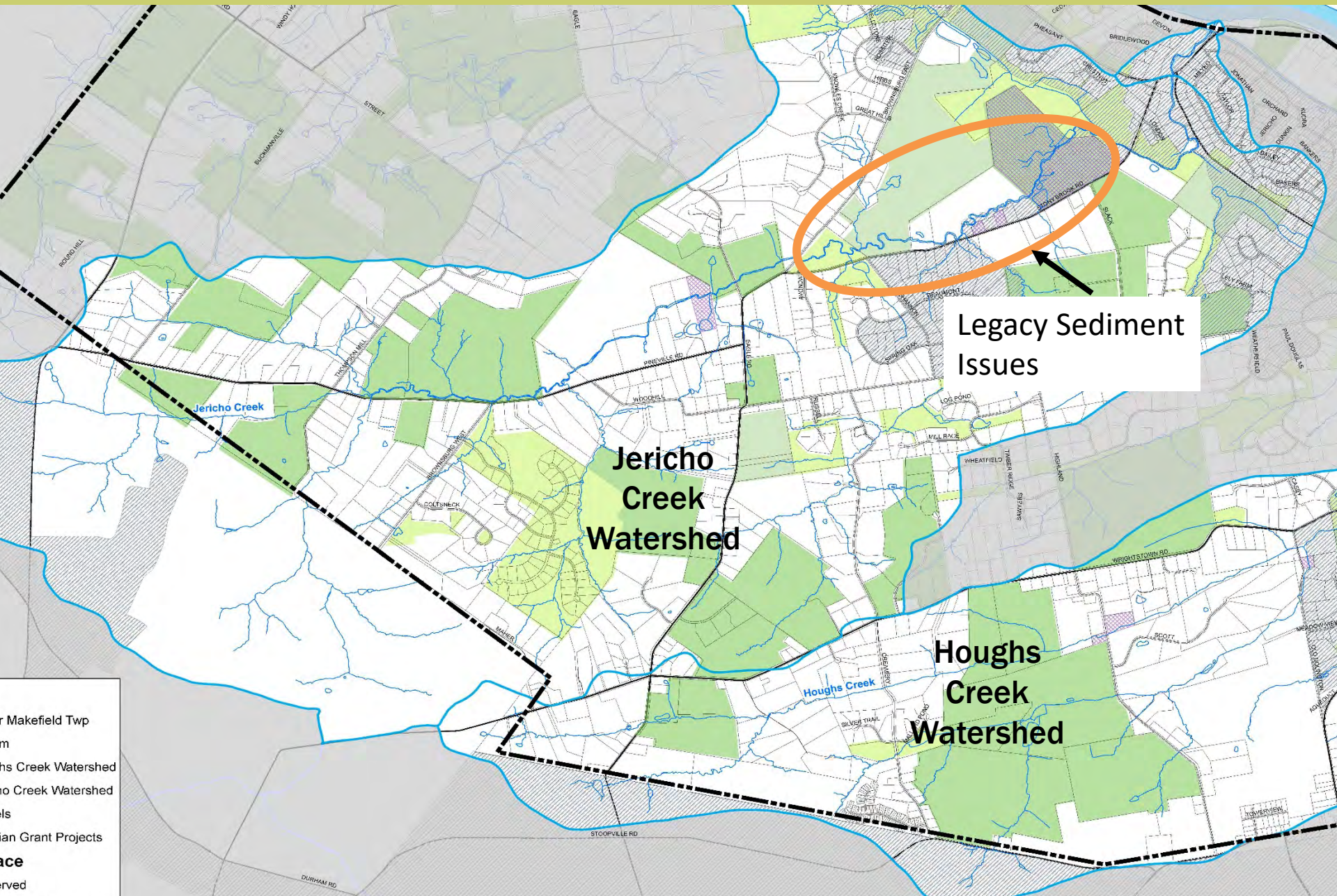
Goals for Tonight's Meeting

- Overview of existing conditions, mapping and assessment
- Feedback on opportunities / issues currently identified - Priorities, landowner interest, etc.
- Identify other opportunities, issues, or gaps

Jericho Creek and Houghs Creek Watersheds



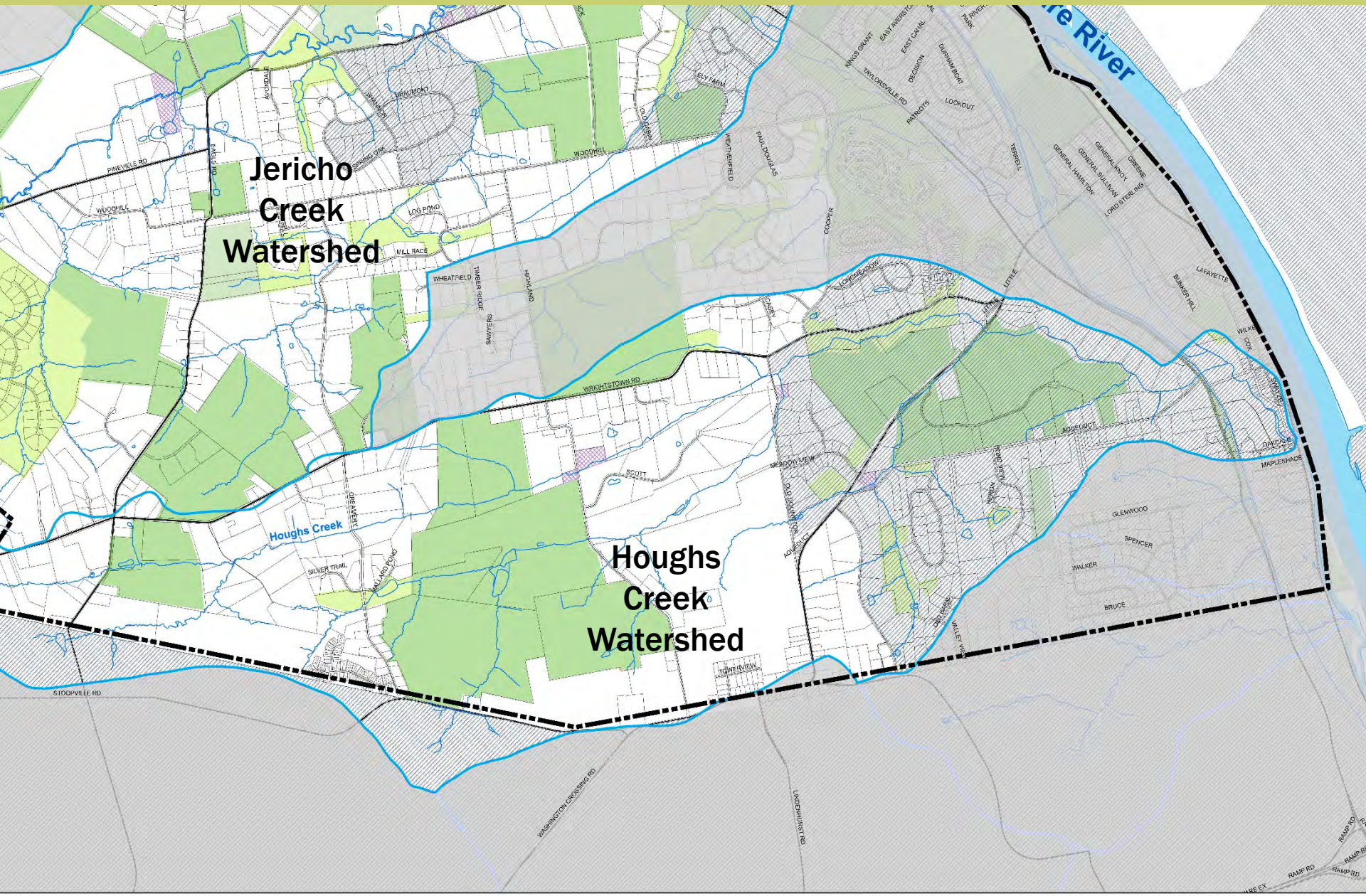
Jericho Creek Watershed



Jericho Creek Typical Conditions

- Suburban and agricultural land with forested buffers
- Impaired Stream (PA DEP)
  - Sedimentation from streambank erosion
- Conditions:
  - Erosion
  - Highly unstable streambed and streambanks
  - Deposition issues
  - Legacy sediment downstream
  - Infrastructure issues

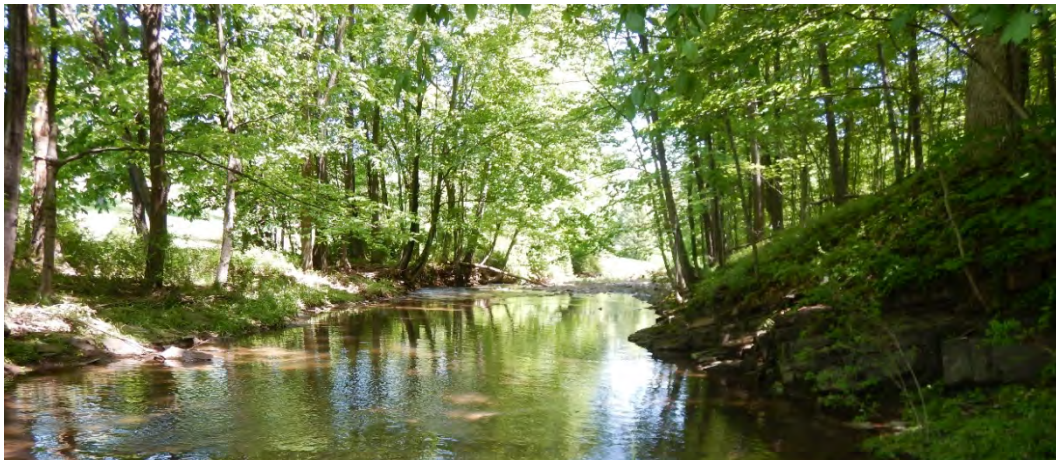
Houghs Creek Watershed



EXISTING CONDITIONS MAP

Houghs Creek Existing Conditions

- Suburban and agricultural land with forested buffers
- More stable than Jericho because of bedrock control through much of the watershed
- Not Impaired Stream due to Sedimentation (PA DEP)
- Conditions:
    - Erosion
    - Unstable streambanks
    - Deposition issues
    - Infrastructure issues



Typical Issues – Historical Channelization

Stream channelized on the right valley wall – Bedrock Control

Typical Issues – Historical Channelization

Historic floodplain terrace is 2-4 feet

Typical Issues – Constrictions

Typical Issues – Constrictions

Overtopping causes flooding and loss of infrastructure

Typical Issues – Constrictions

Typical Issue – Legacy Sediment

- What is it?
  - Deposition built up behind the thousands of dams constructed during early days of settlement
  - Filled in the stream valleys as a result of forest clearing and poor agricultural practices between the 18th and early 20th centuries.
  - Results in High terraces (floodplains) and bare streambank walls.

Symptoms - Erosion and Deposition

Symptoms - Erosion and Deposition

Bedload movement contributes to sediment issues

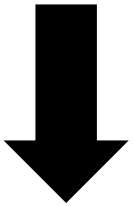
Symptoms - Erosion and Deposition

Sediment movement through the system creates instability

Symptoms - Erosion and Deposition

Assessment Process

Visual Assessment



Issues and Opportunity Areas

Mapping and Prioritization

Strategic Locations for Regional Benefits

- Emphasis on stream and floodplain restoration opportunities because these projects provide the greatest cost benefit

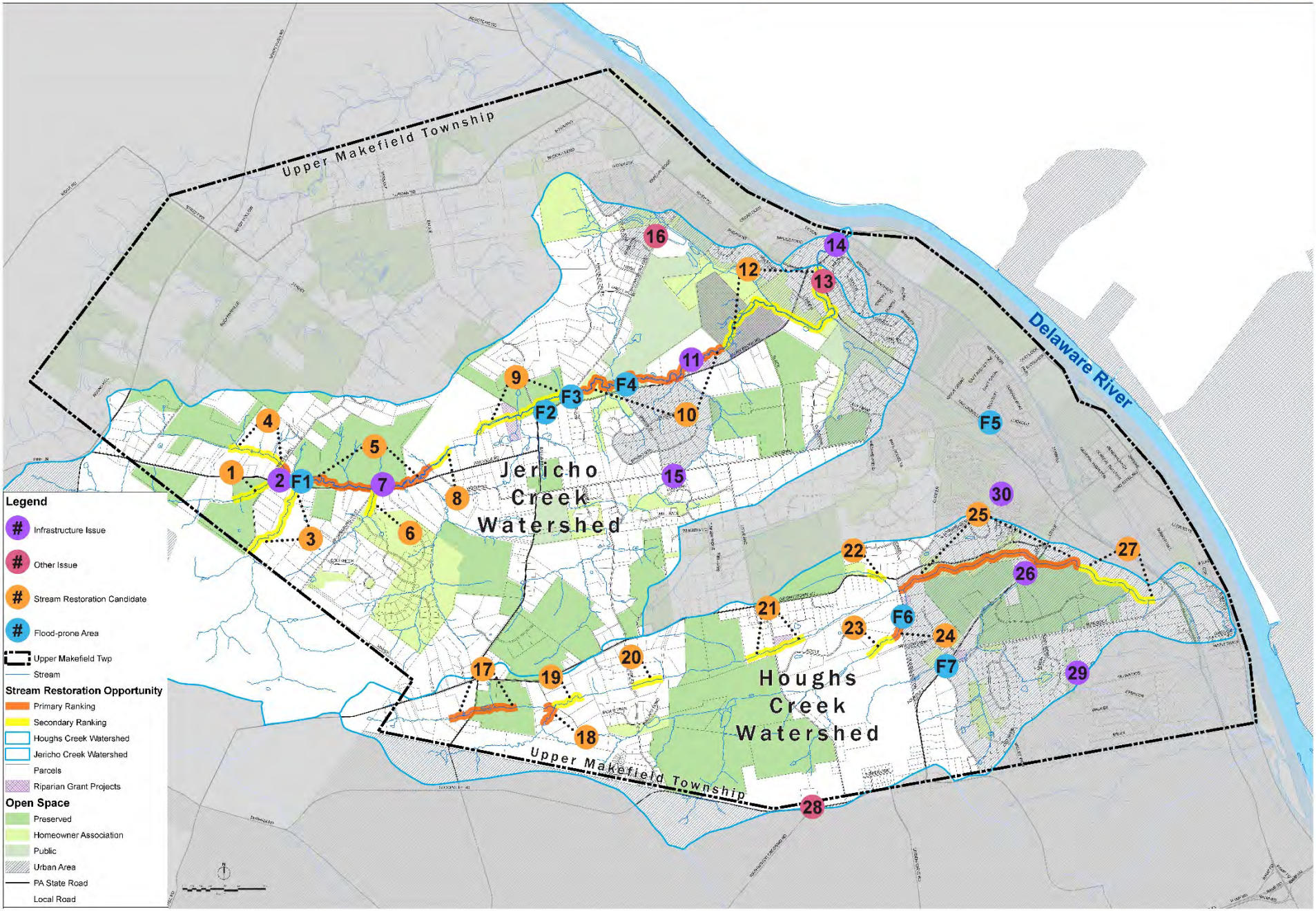
Multiple Benefits

flood control and water quality improvements prioritized, but also provide many others

Multiple Benefits

- Stormwater Management
- Flood Reduction
- Riparian Buffers
- Sediment and Nutrient Reduction
- Groundwater Recharge
- Wetland Creation
- Pollution Reduction
- Wildlife Habitat Improvement
- Invasive Plant Species Removal
- Consistent Hydrology
- Aesthetic Enhancement
- Topsoil Generation
- Environmental Education

Assessment Map



Prioritization

- Primary Ranking:
  - Significant instability
  - Flood risk and/or adverse impacts to infrastructure
  - Other considerations: landowner interest, etc.
  - Significant opportunity to achieve project goals

- Secondary Ranking:
  - Varying degrees of instability, generally less severe than primary ranking
  - Success of downstream work not dependent upon completing work on upstream secondary ranking
  - Still have potential for significant sediment reductions

Note: Primary and secondary rankings do not necessarily identify optimum sequencing of projects

Example Floodplain Restoration

Example Floodplain Restoration

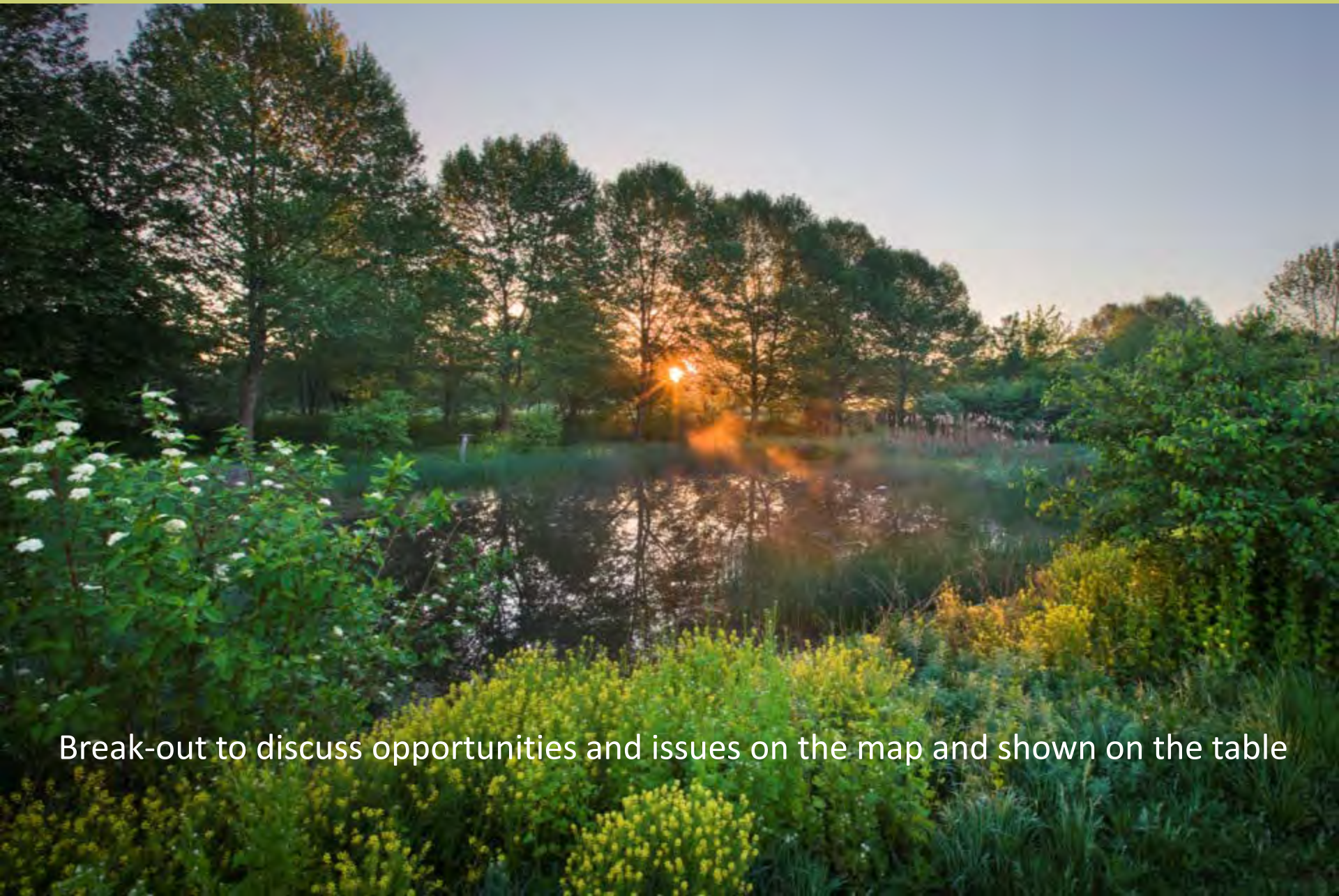
Bedford Springs Resort Floodplain Restoration

Example Project – Lititz Run Watershed Banta Site

Example Project – Bedford Springs Resort, Bedford, PA

Golf Inc. Magazine
"2007 Restoration of the Year"

Discussion of Opportunities and Issues



Break-out to discuss opportunities and issues on the map and shown on the table