Collecting Data for Water Management

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WATER RESOURCES

INTERA

2022 Indiana Water Summit – Indianapolis

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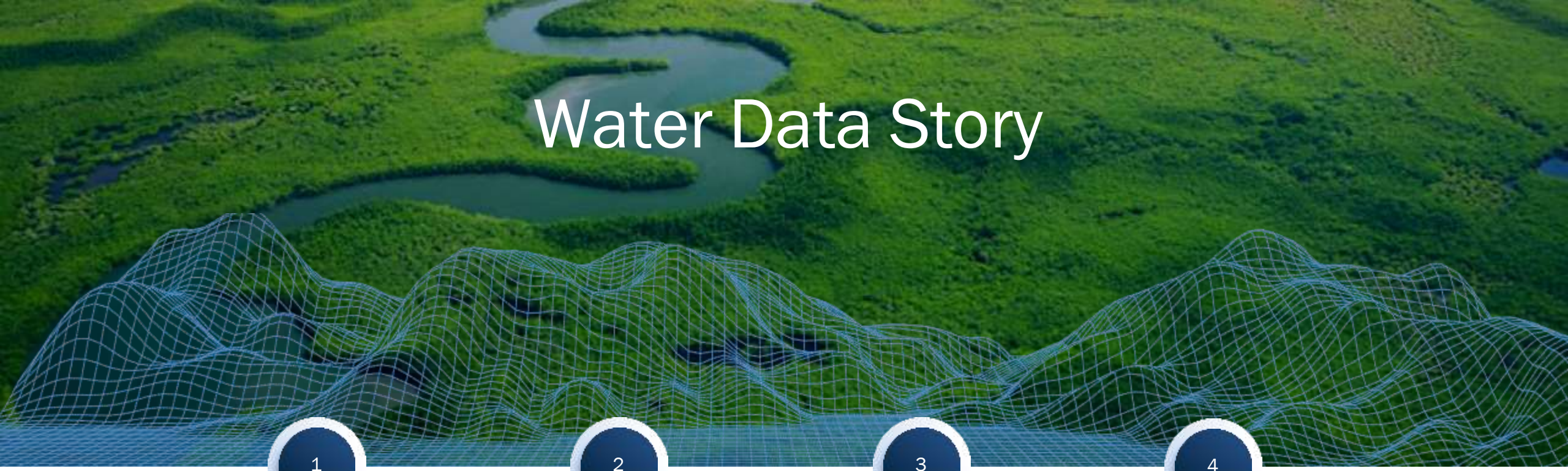
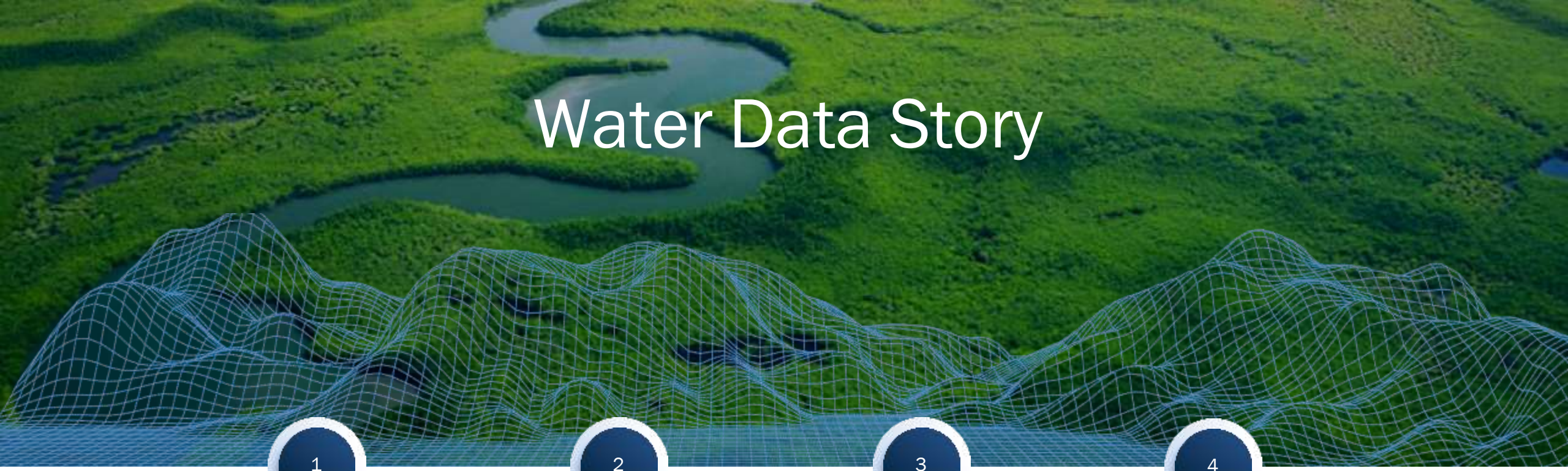
High-density, real-time information about groundwater fluctuations, surface water flows and precipitation, can inform how local water resources are used as the region grows.

Water Data Story



1. Surface Water Recharge Along Vestal Ditch
2. Water-Level Monitoring Network
3. Water-Level Dashboard
4. Steps for Next Year

Water Data Story



1. Surface Water Recharge Along Vestal Ditch

How much water moves where, when?

2. Water-Level Monitoring Network

How dynamic are flows and levels?

3. Water-Level Dashboard

After installing sensors, how do we determine status?

4. Steps for Next Year

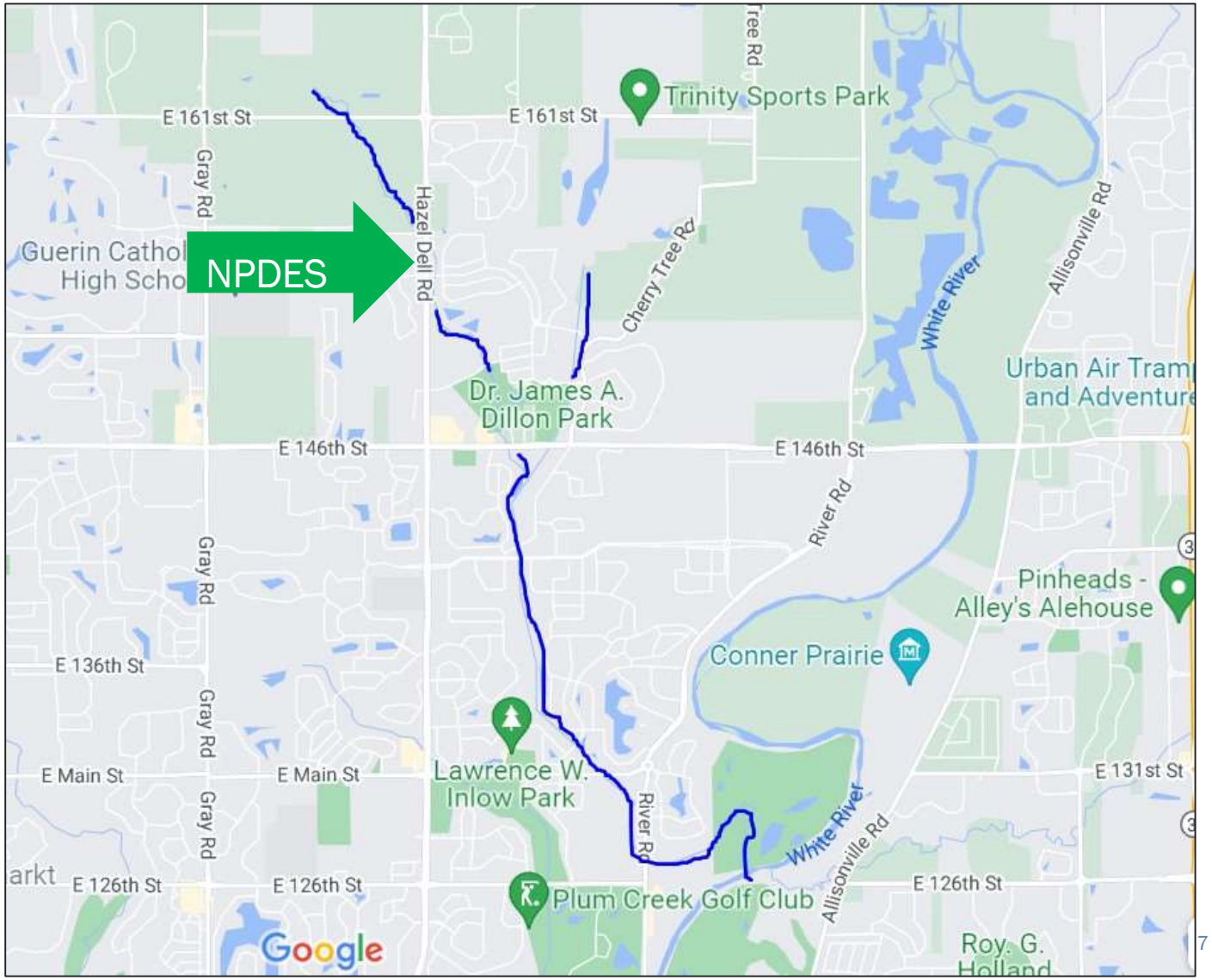
What steps can get us closer to our goal?

INTERA

Vestal Ditch
Can Surface Water Supplement Aquifers?

Is the Mine Water Recharging the Outwash?

Analysis of surface water recharge from Vestal Ditch

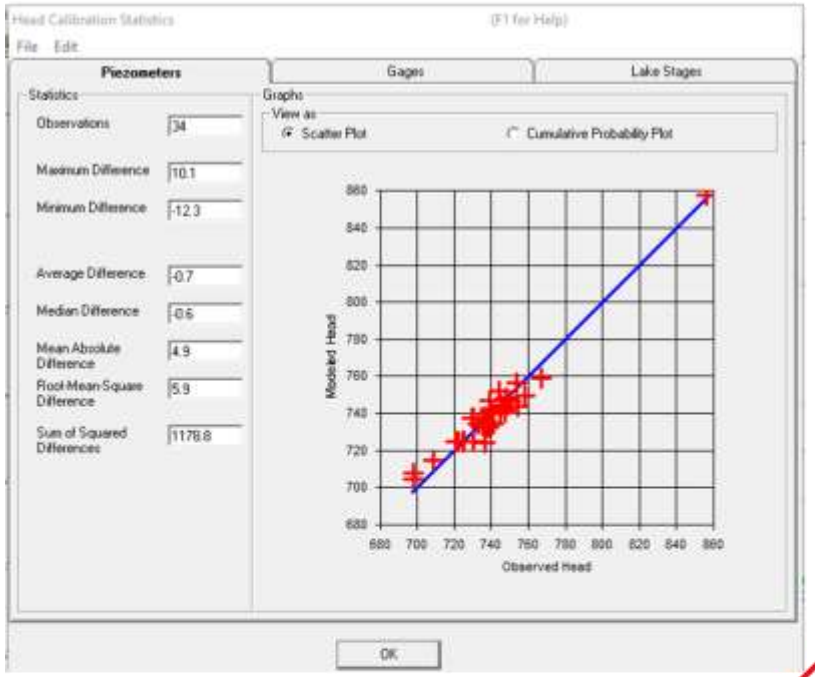


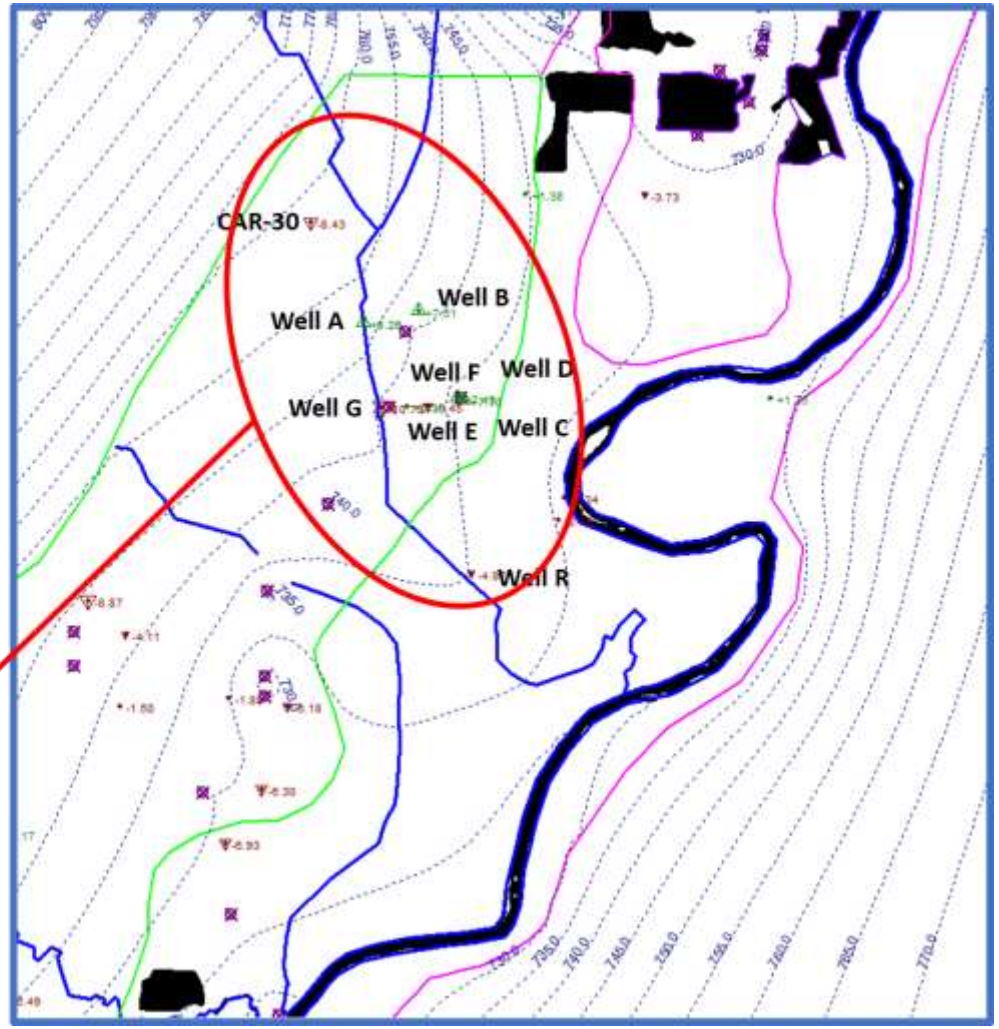
Discharge Supports Flows

Long-term point discharge located ~0.5 miles south of E 161st Street.

Recently, approximately 7 MGD discharged to Vestal Ditch, which would otherwise be dry.

Analysis of surface water recharge from Vestal Ditch

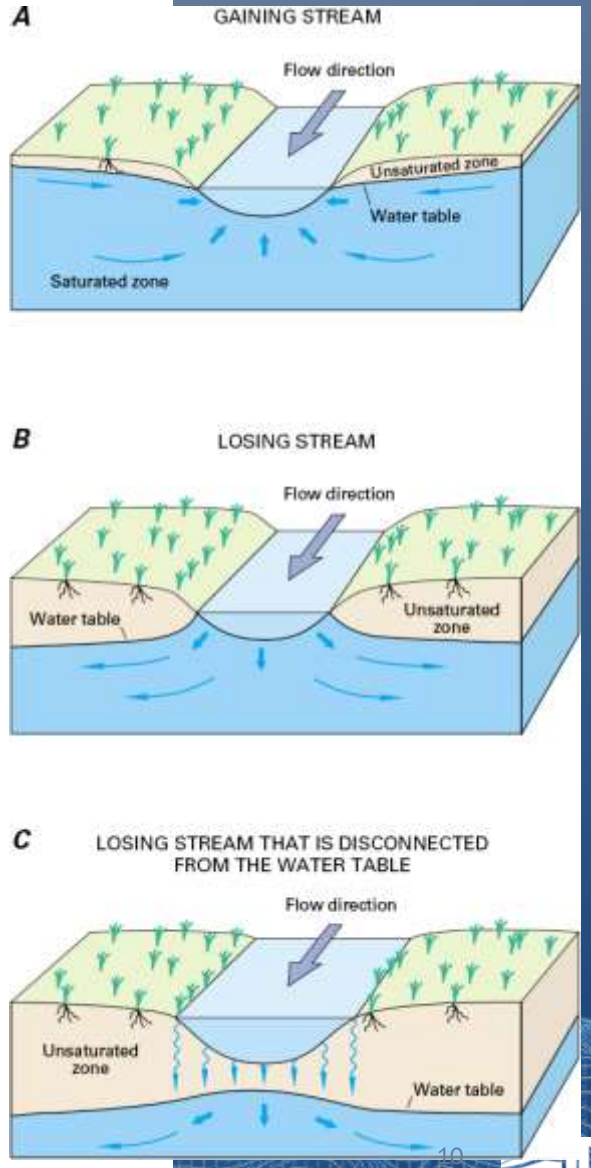




Data from USGS monitoring wells near the ditch suggest the formation of a groundwater mound near Well G

Losses to groundwater in Vestal Ditch

- Vestal Ditch flows across the Outwash Aquifer and discharges to the White River
- Available monitoring data and groundwater modeling suggest that the Ditch is a major recharge area, essentially reinjecting the ditch flow into the Outwash Aquifer, which is the main source of Public Supply
- Modeling results indicate that the recharge water is essential to the operation of Carmel PS wells operating to the south
- The ditch is providing an unplanned source for water reuse in the region
- Maintenance and improvement of county regulated ditches over the outwash along with stormwater retention and infiltration becomes a focus of future work

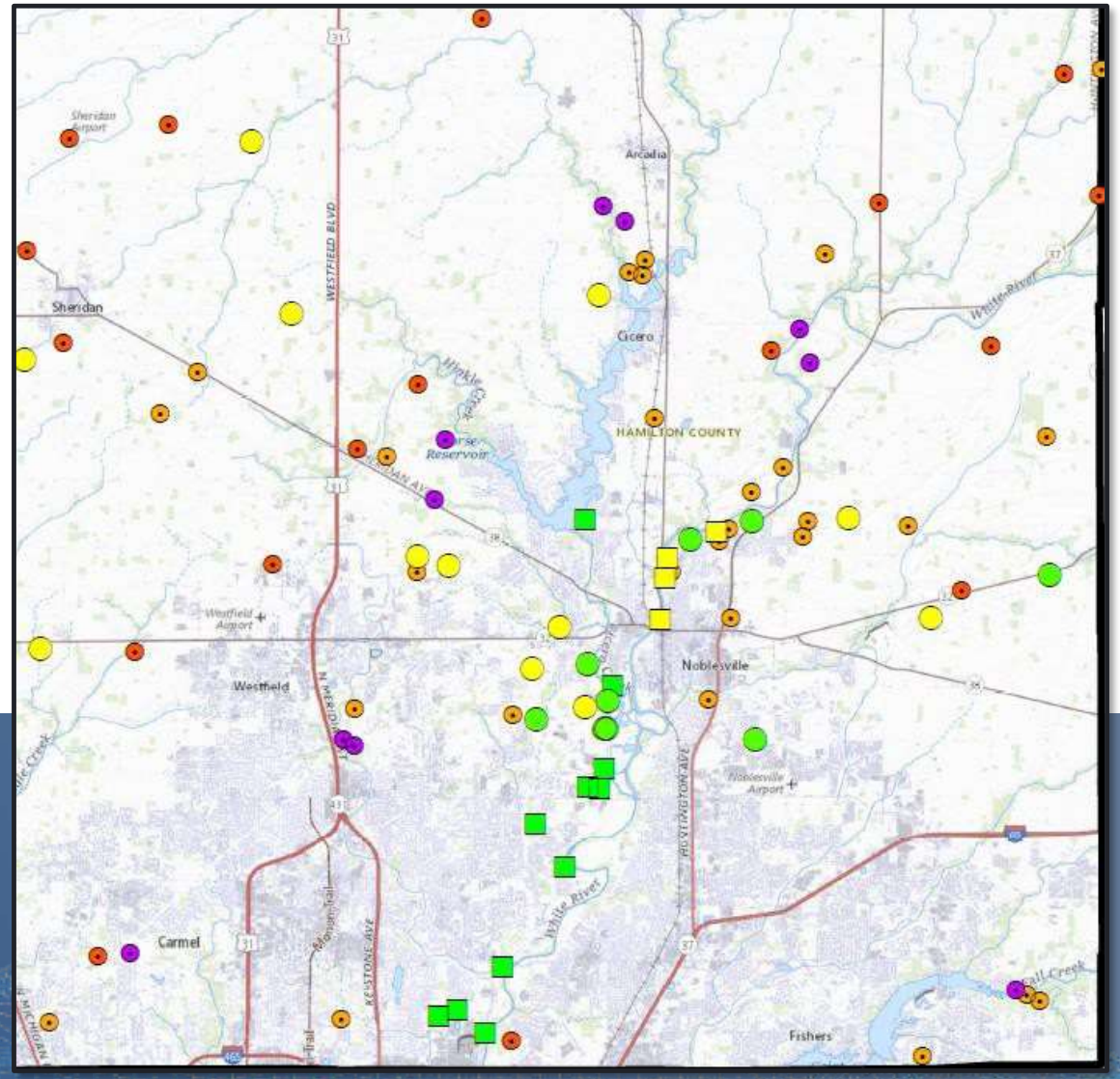


Monitoring the Hydrologic System

GW Monitoring Network – Expanding in 2023

Legend

- Homeowner Installed
- Utility Installed
- Homeowner (September)
- Utility (October)
- County Parks
- Homeowner
- Homeowner



INTERA

Enthusiastic Stakeholder Engagement

- County Surveyor's Department facilitating homeowner engagement
- Homeowner and Business Volunteers – sensors installed, volunteers waiting
- Actively engaging aggregate operators
- County surveyor's role in facilitating collaboration and sustaining water supplies fits within operation and maintenance of regulated drainages

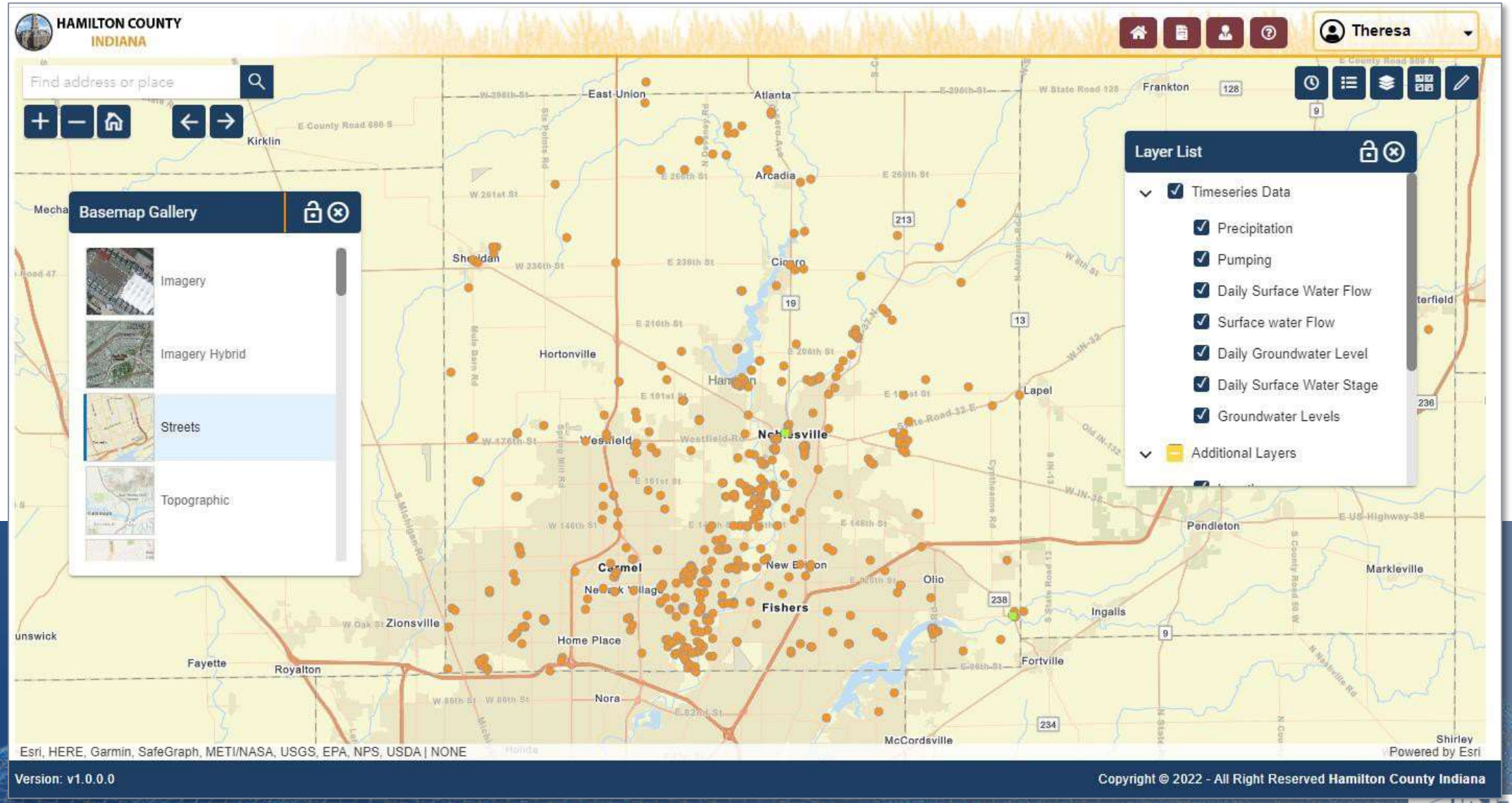
Water Status Dashboard

Water Status Dashboard

Purpose:

- To make new and existing hydrologic data available in a single location
- To provide a tool to quickly assess current aquifer conditions and trends in conditions
- To facilitate a quick review and assessment of hydrologic data in one location
- To make the data public, and promote collaboration between all stakeholders in the public water supply throughout the county

Water Status Dashboard



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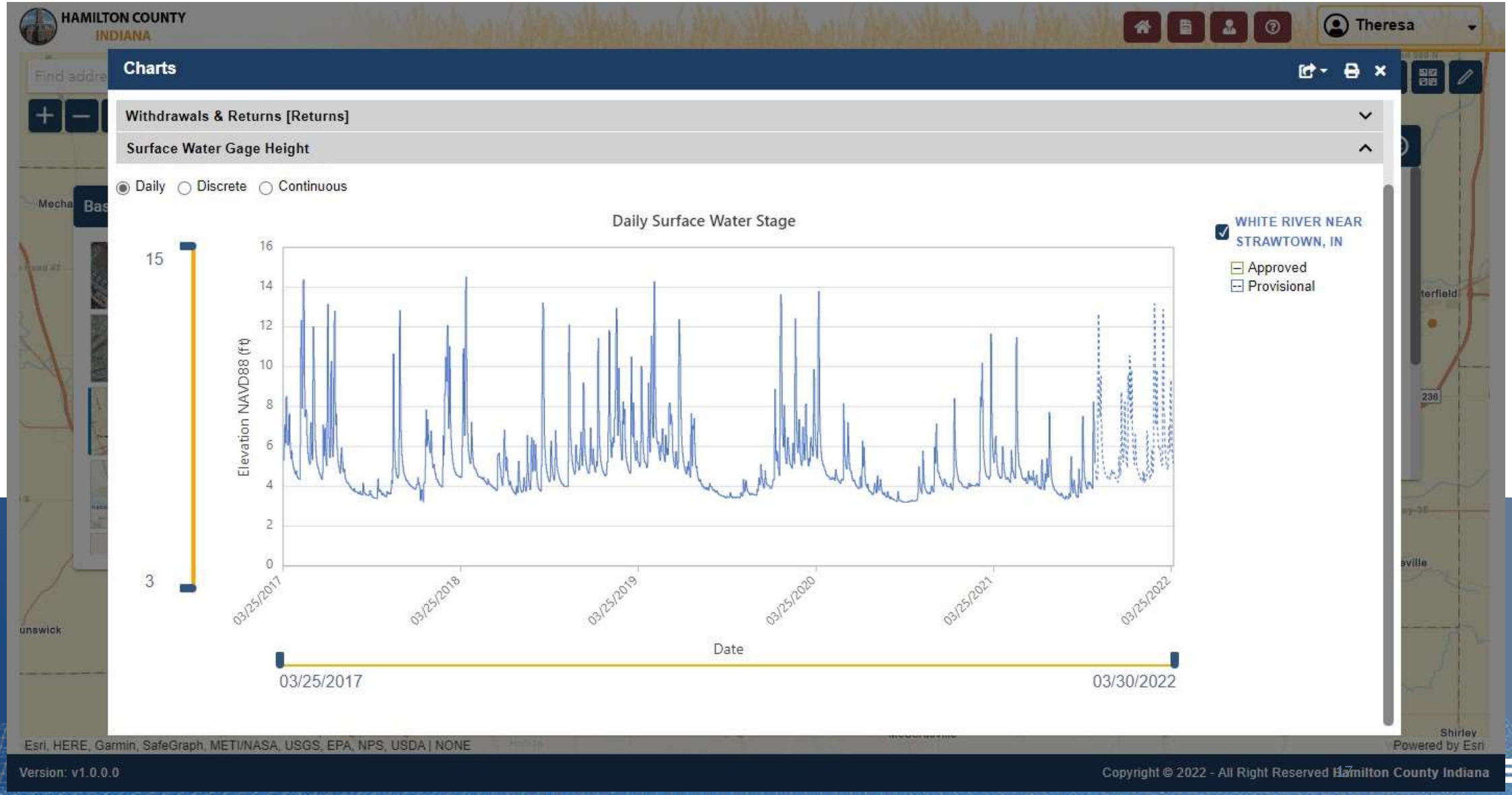

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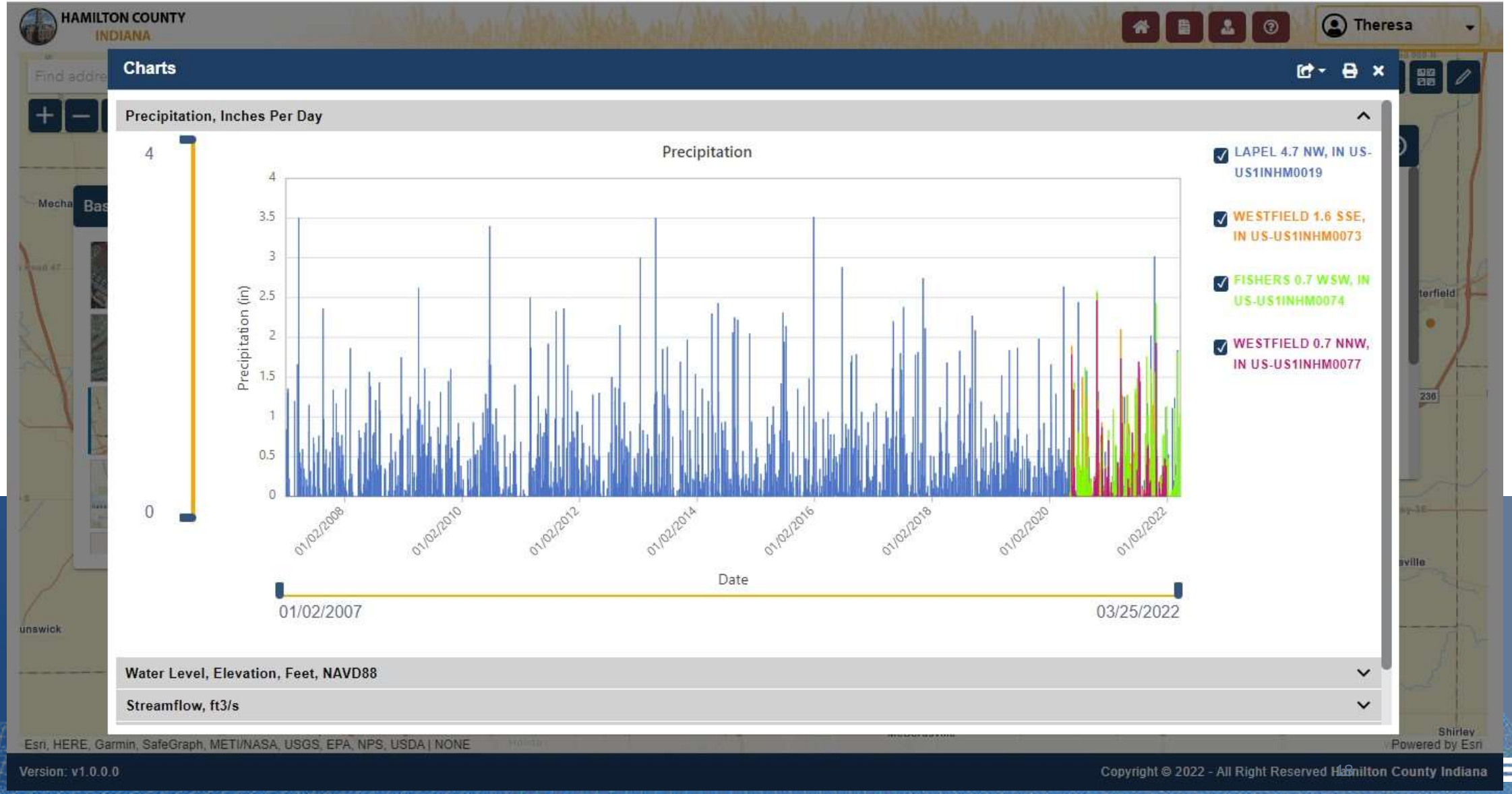

Key Year 1 Results

- Refining Water Availability for the County
- *New* 3D Geologic Model of County
- Water Demand, Wastewater Treatment, Stormwater Infrastructure Forecasts (Wessler)
- Initial sensors installed and operational (INTERA and WellIntel)
- Static and continuous database constructed
- Preliminary dashboard being beta-tested

Plans for Year 2

- Expand/revise WellIntel network, incorporate Utility and Mine data (total ~55 new wells)
- Expand dashboard and database to include IDEM water quality
- Field survey to connect monitoring network to NAVD 88 (Wessler)
- Hydrologic analysis and modeling guided by monitoring network data
- Field investigation of Vestal Ditch recharge (case study)
- Watershed focused stormwater studies to enhance recharge over outwash (Wessler)


Thank you
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