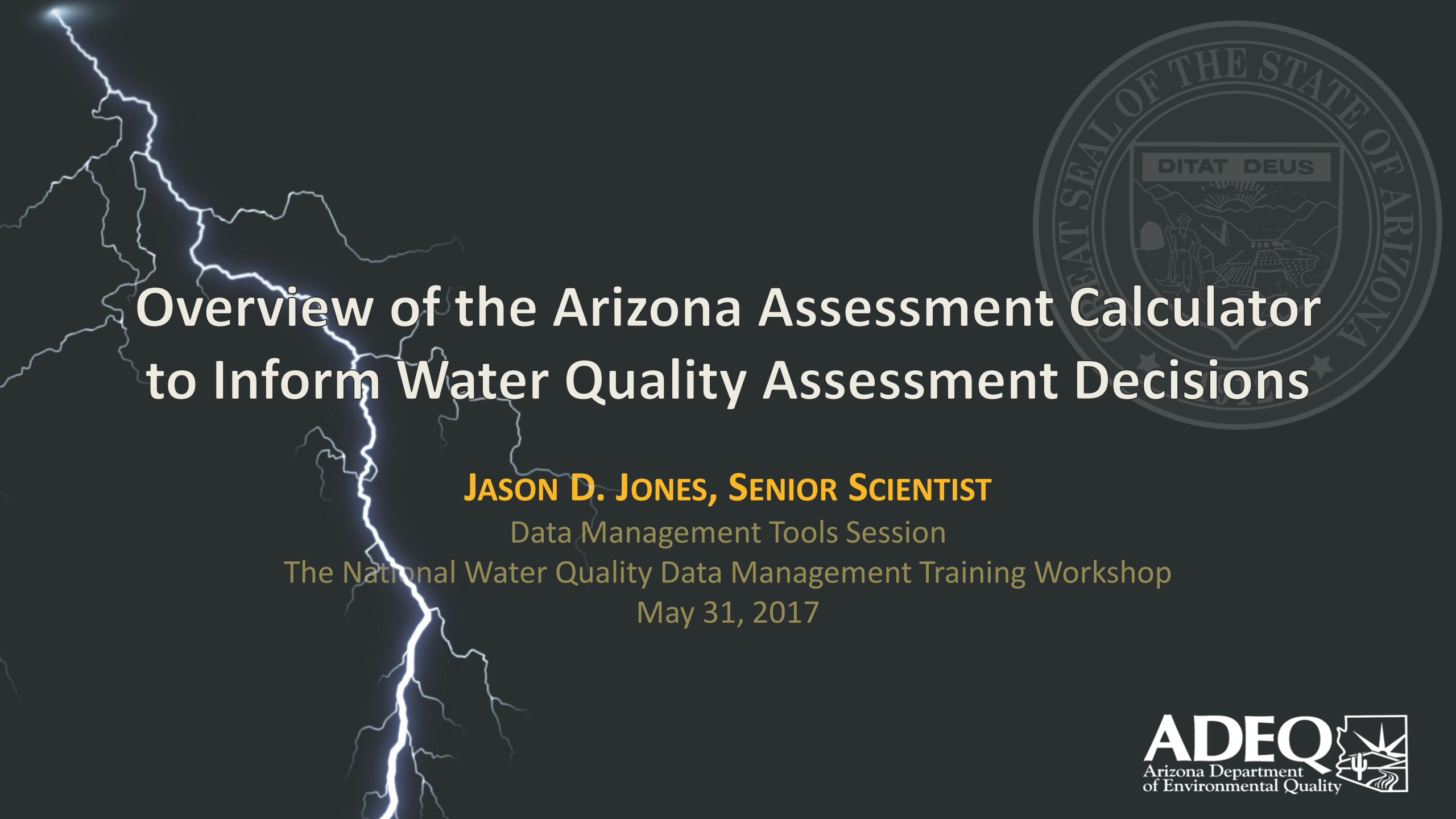

Overview of the Arizona Assessment Calculator to Inform Water Quality Assessment Decisions

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Data Management Tools Session

The National Water Quality Data Management Training Workshop

May 31, 2017

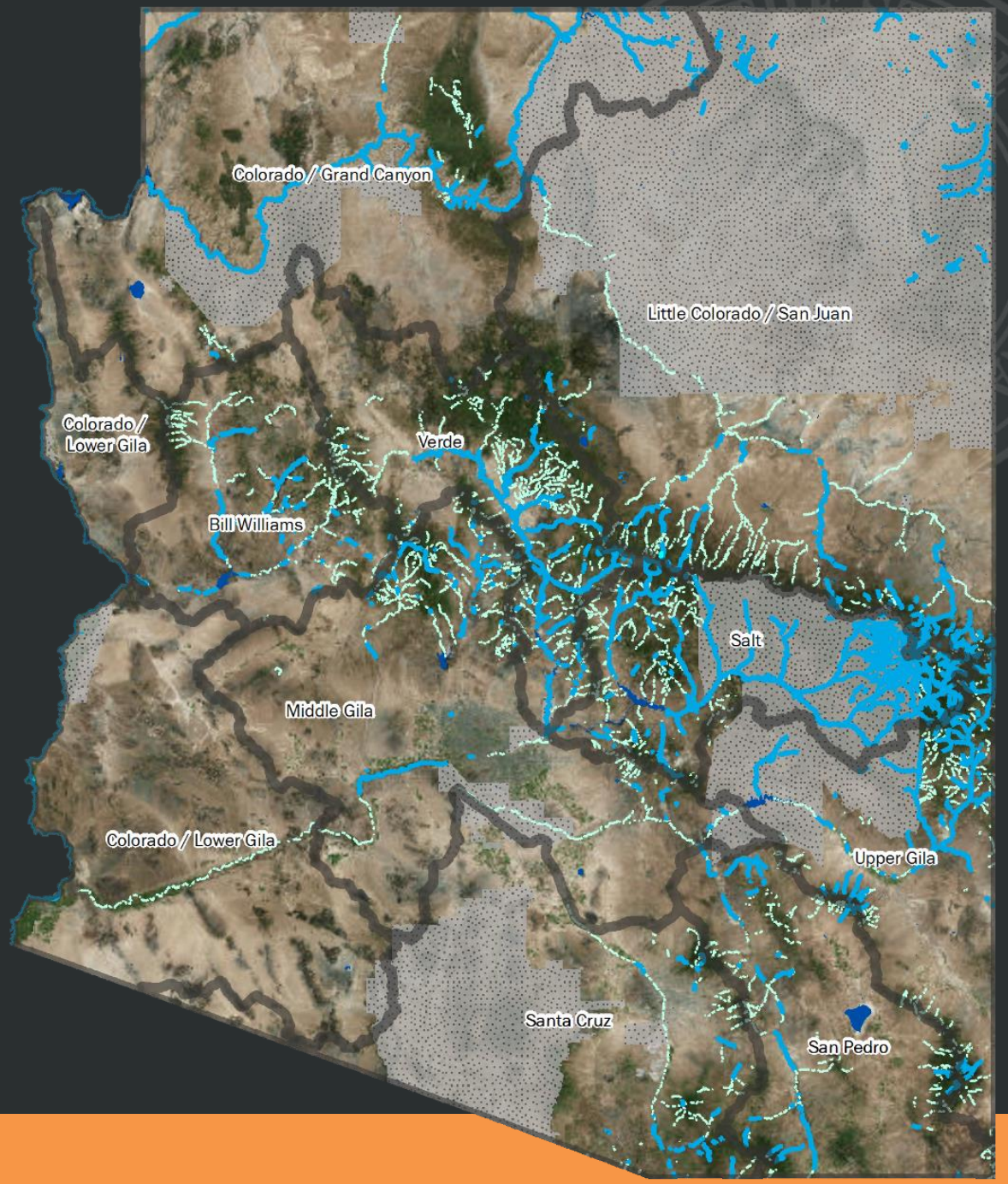
ADEQ Arizona Department of Environmental Quality

Problem Statement

- Make **attainment** and **impairment** decisions based on Arizona surface water quality **standards** as **quickly** and **accurate** as possible.

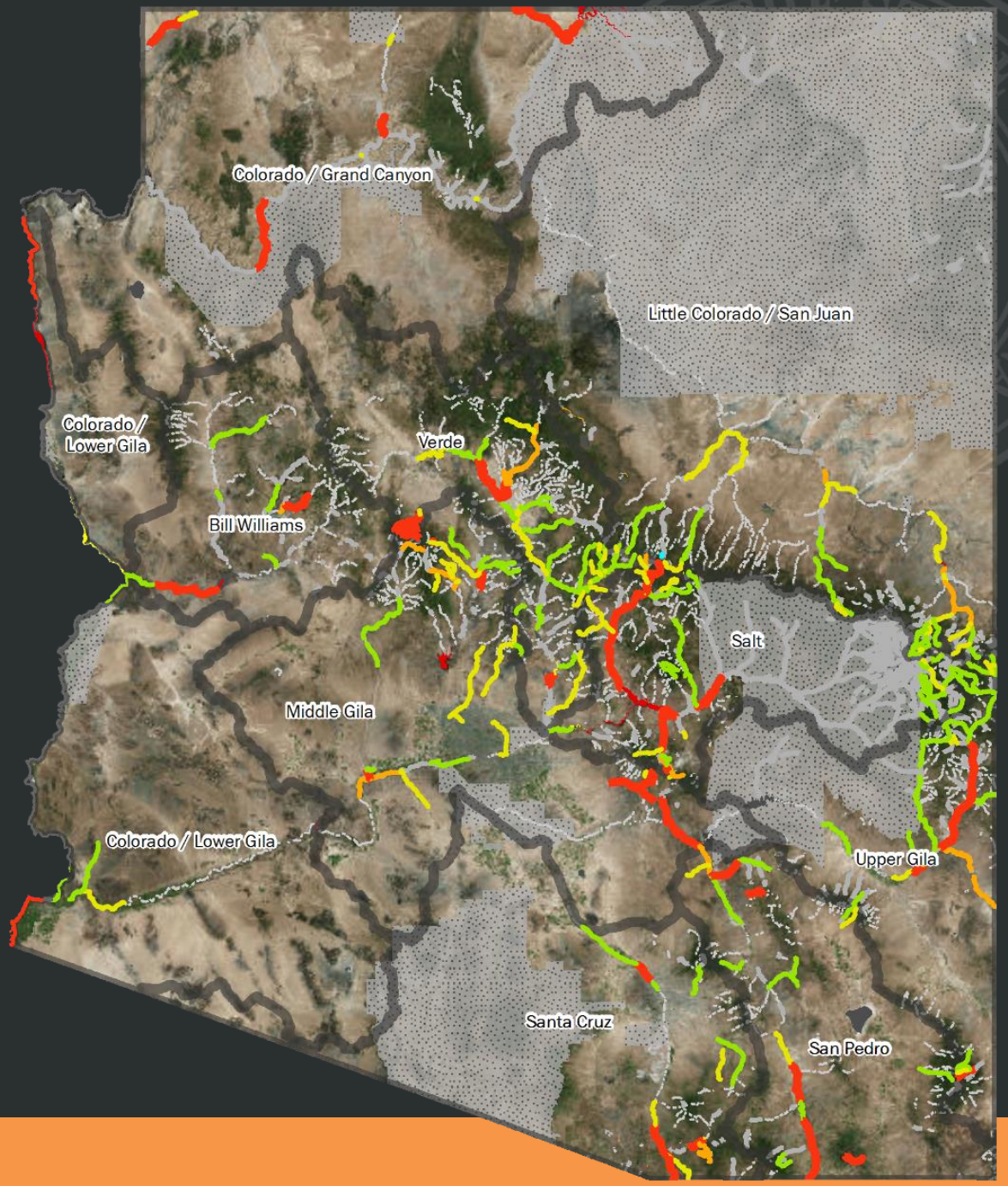
Context

- Universe:
  - Streams = **40,644 Stream Reaches**
    - ~ 1,220 Perennial Reaches
    - ~ 1,626 Intermittent Reaches
    - ~ 37,798 Ephemeral Reaches
  - Lakes = **257 Lakes**



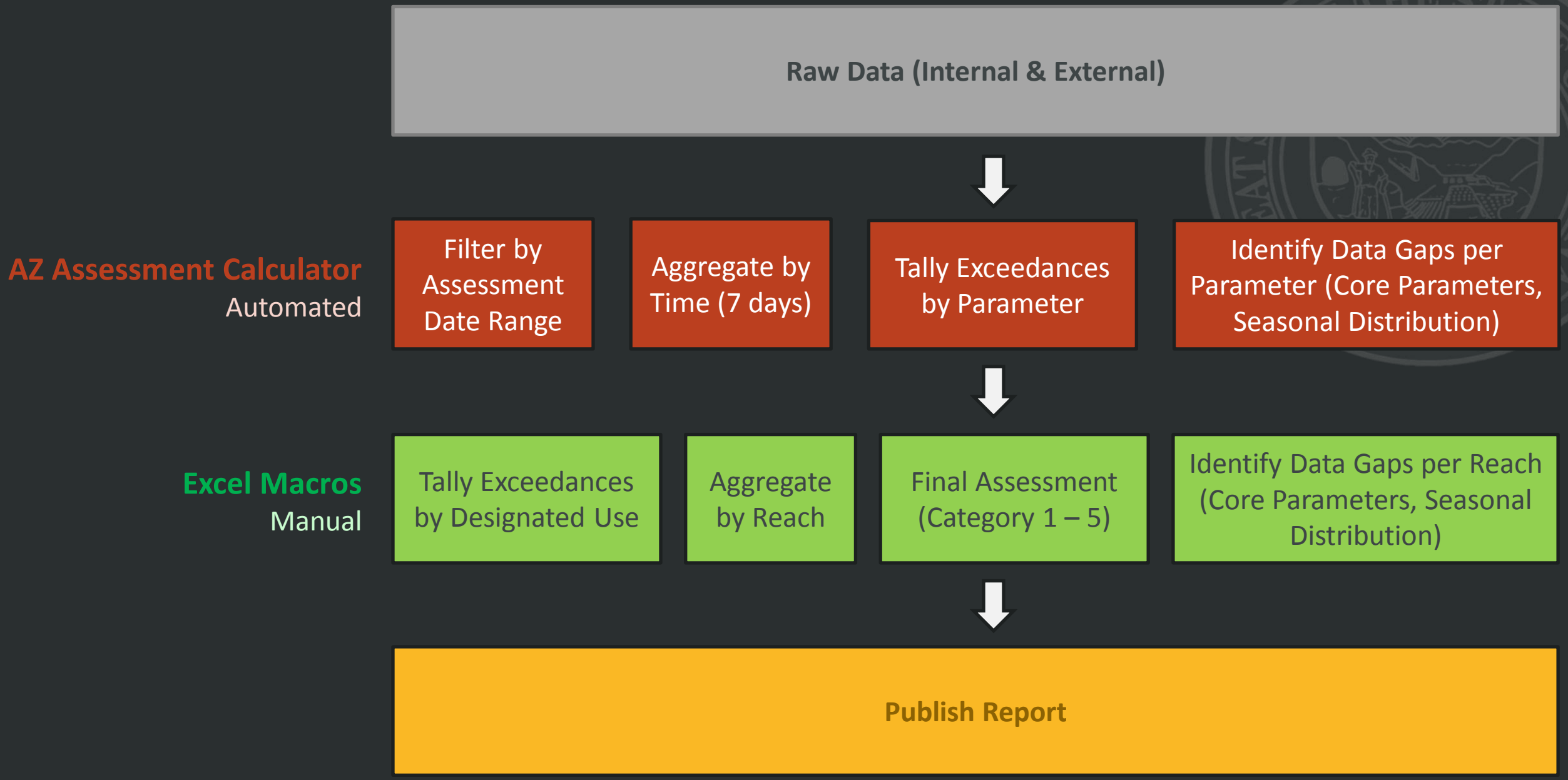
Context

- Waterbodies Assessed in 2016 Assessment (5 year window)
  - Attaining All = 20
  - Attaining Some = 92
  - Inconclusive = 94
  - Not Attaining = 75
  - Impaired = 68
  - **Total = 349**
- Number of records used in 2016 Assessment = **140,000**
  - Internal 54%
  - External 46%



The Arizona Assessment Calculator

- What is the Arizona Assessment Calculator (AZAC)?
  - AZAC is a Java based tool developed by TetraTech in 2003 and upgraded in 2010.
- How has the tool / process improved workflow?
  - Reduced Analysis from 8 hours to 30 minutes per waterbody.
- Are AZAC or the Excel macros available for use?
  - Not really. AZAC is heavily tied to STORET codes and requires a Java Developer to modify. The Excel macros are tailored for AZAC outputs.


Raw Data (Internal & External)
AZ Assessment Calculator
Automated
Filter by Assessment Date Range
Aggregate by Time (7 days)
Tally Exceedances by Parameter
Identify Data Gaps per Parameter (Core Parameters, Seasonal Distribution)
Excel Macros
Manual
Tally Exceedances by Designated Use
Aggregate by Reach
Final Assessment (Category 1 – 5)
Identify Data Gaps per Reach (Core Parameters, Seasonal Distribution)
Publish Report

Like

- Filters out non-credible data
- Handles Complex Standards
  - Binomial rule
  - Geomeans
  - Other statistical standards
  - Time sensitive calculations
  - Site specific standards

Change

- More automated
- Simplify process
  - Need for aggregation by time?
- Calculator needs to feed other parts of the assessment process
  - Integrated Report
  - ATTAINS

Punch Line

- Don’t invest in a system that requires experts you don’t have to maintain.