



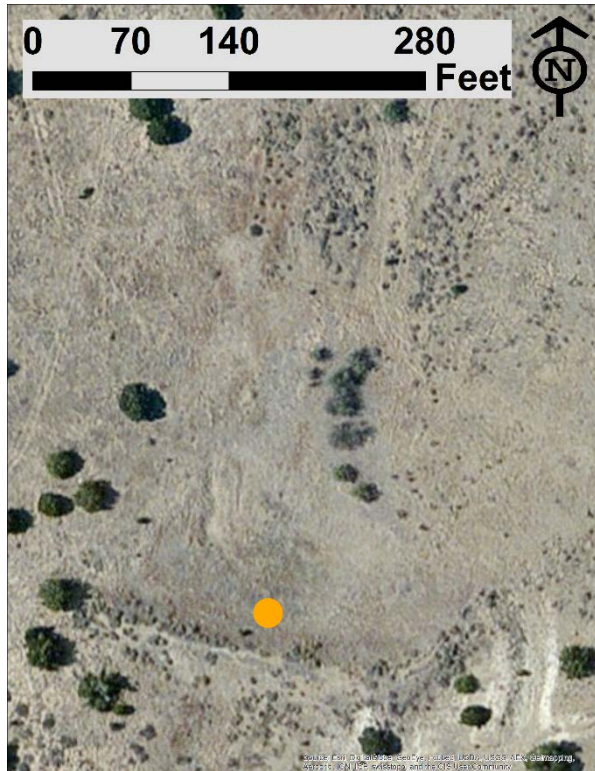


# Pond Characterization Tool

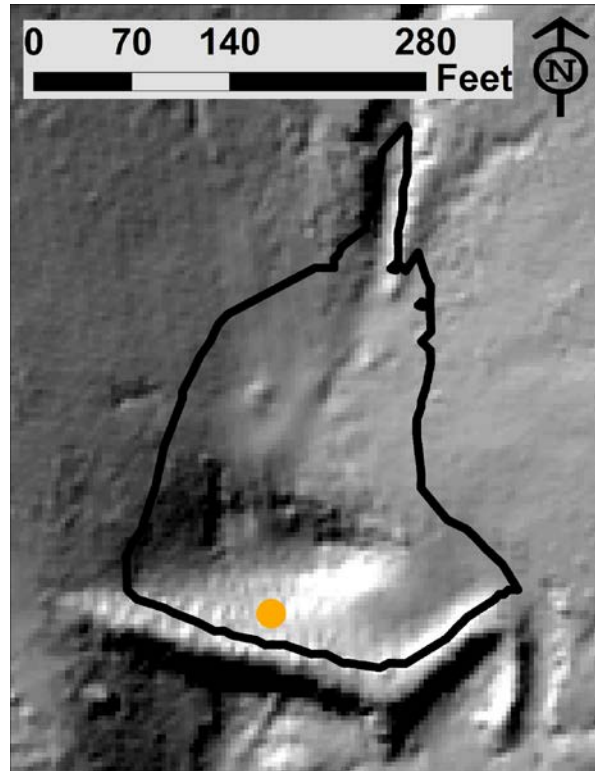
- Python Toolbox for ArcMap

- ▢  Pond Characterization Tool.pyt
  -  A. Identify and Characterize Existing Storage
  -  B. Calculate Dam Discharge
  -  C. Export summary files to KINEROS2 input files for use in AGWA Tool.

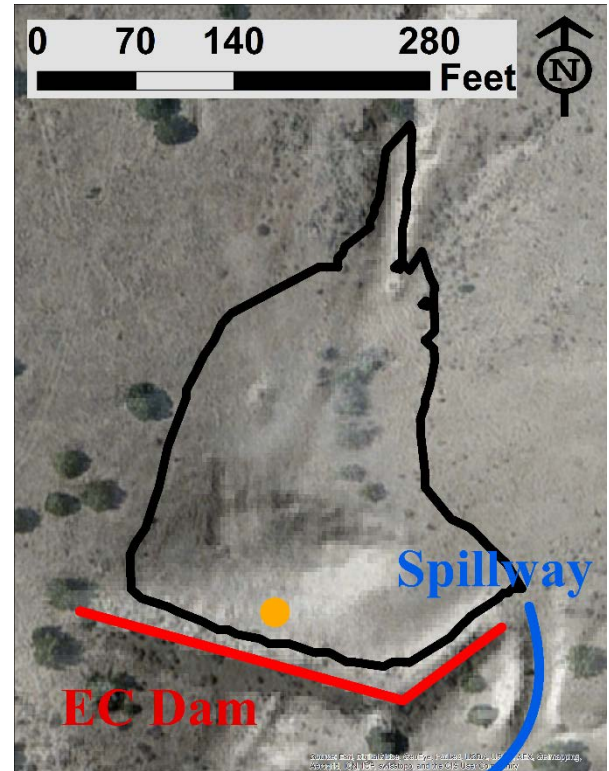
- Used to characterize existing structures
- Workflow to assess impact of future dam



User provides dam location (point file) and elevation data (DEM)



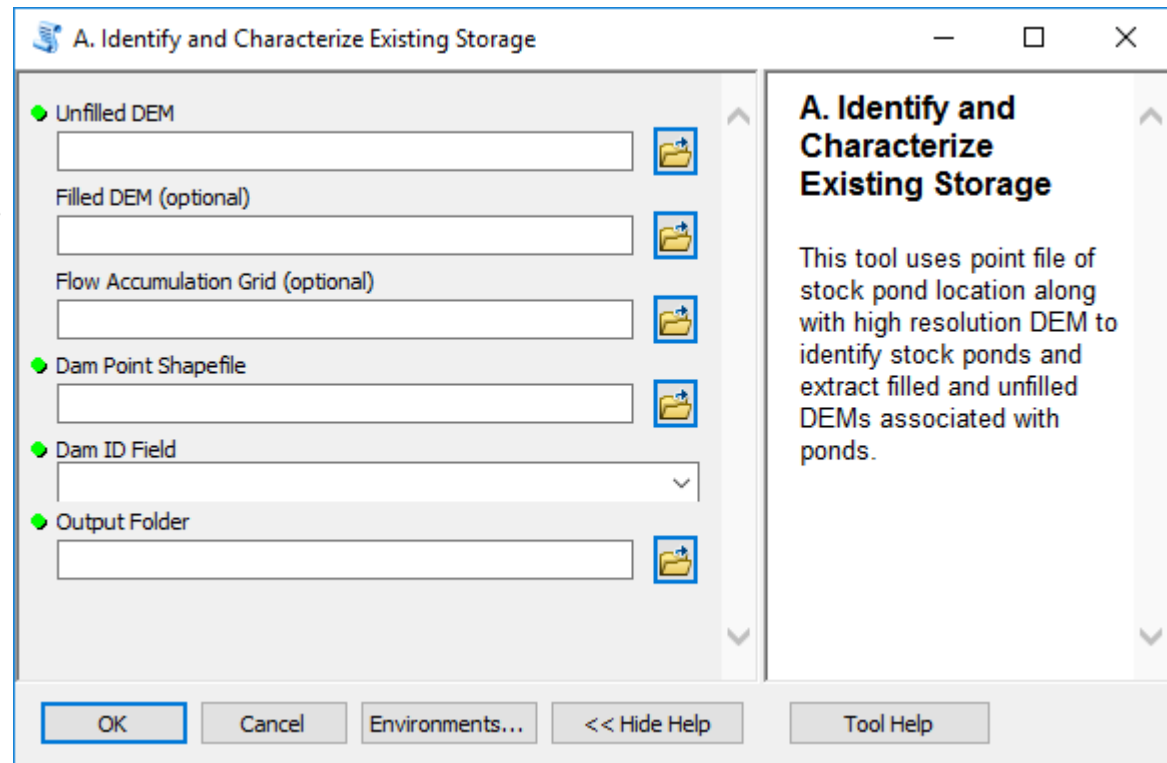
Tool defines storage behind dam using LiDAR DEM and associates with point locations



Volume, surface area, and discharge are calculated to get outlet structures

# A. Identify and Characterize Existing Storage

- Inputs
  - DEM
  - Storage Locations
- Outputs
  - Directory
  - Pond Shapefile
  - Point Shapefile
  - Stage-Volume-Surface Area



# B. Calculate Dam Discharge

- Input
  - User Defined Outlet(s)
- Output
  - Discharge

**B. Calculate Dam Discharge**

• Pipe/Culvert Outlet Size

Pipe Slope (ft/ft) (optional)

• Outlet Height (ft)

• Spillway Width (ft)

• Spillway Height (ft)

• Spillway Type

• Pond Summary Files for Calculation

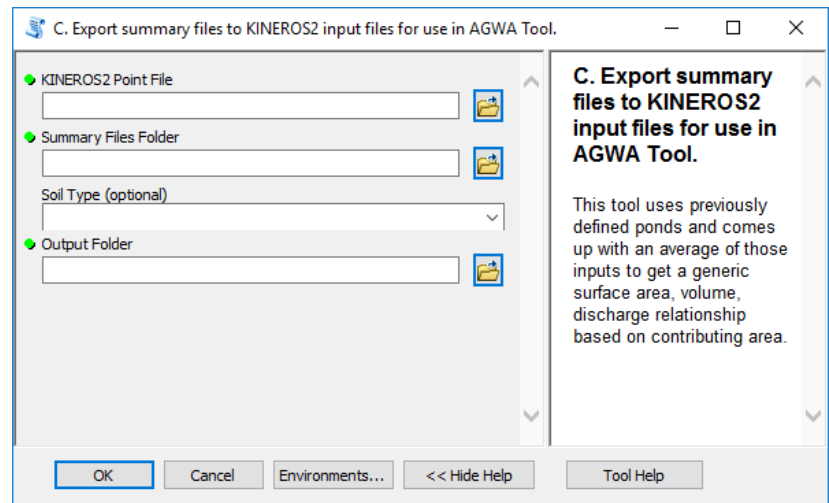
**B. Calculate Dam Discharge**

This tool uses previously defined and characterized ponds to calculate discharge for different stages.

OK Cancel Environments... << Hide Help Tool Help

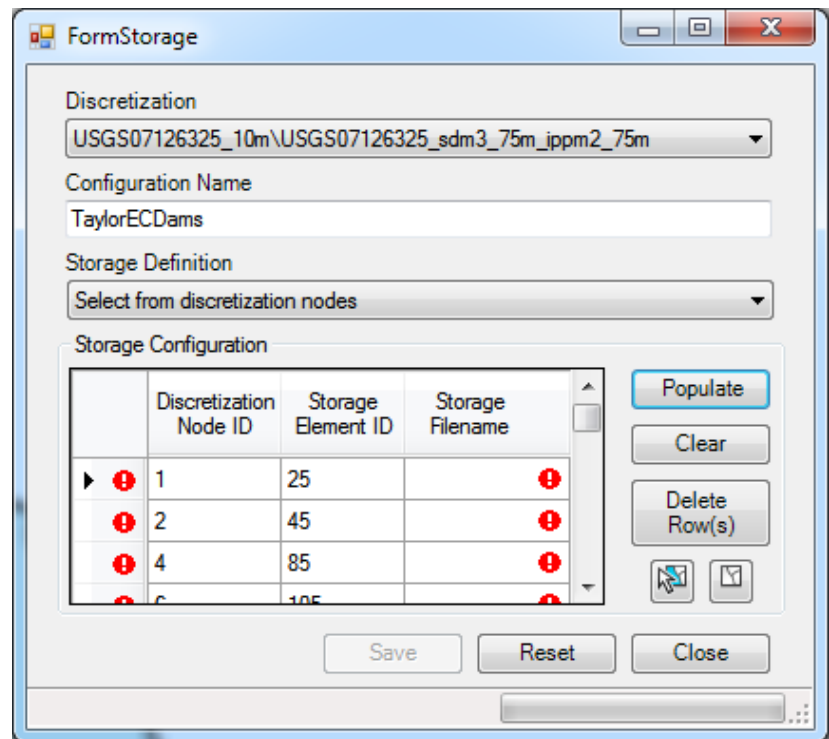
# C. Export

- Input
  - Point File
  - Summary Files
- Output
  - Input File for Add Storage Tool



# AGWA Add Storage

- Adds storage to watershed



The screenshot shows the 'FormStorage' application window. It contains several input fields and a table for configuring storage elements.

Discretization: USGS07126325\_10m\USGS07126325\_sdm3\_75m\_ippm2\_75m

Configuration Name: TaylorECDams

Storage Definition: Select from discretization nodes

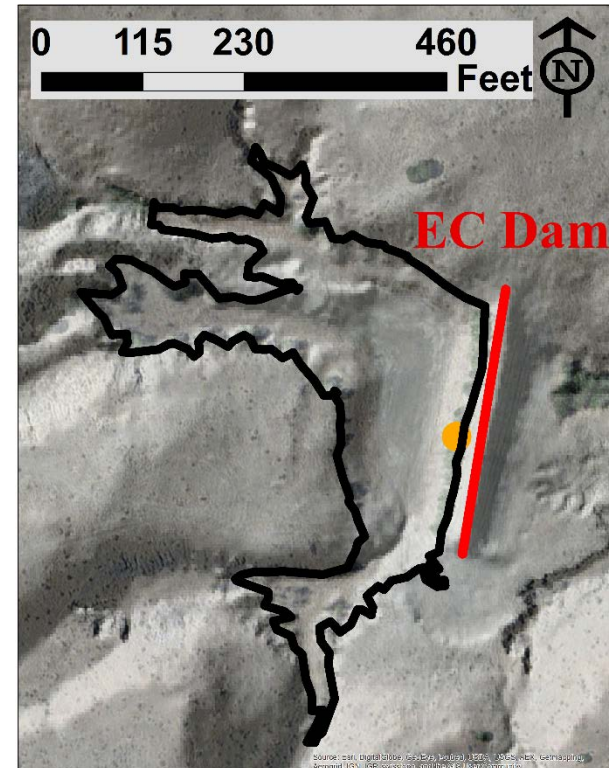
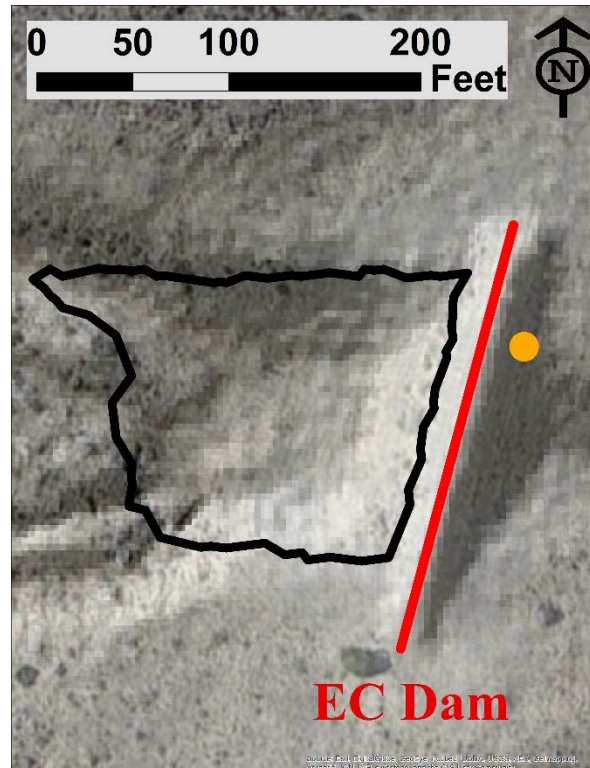
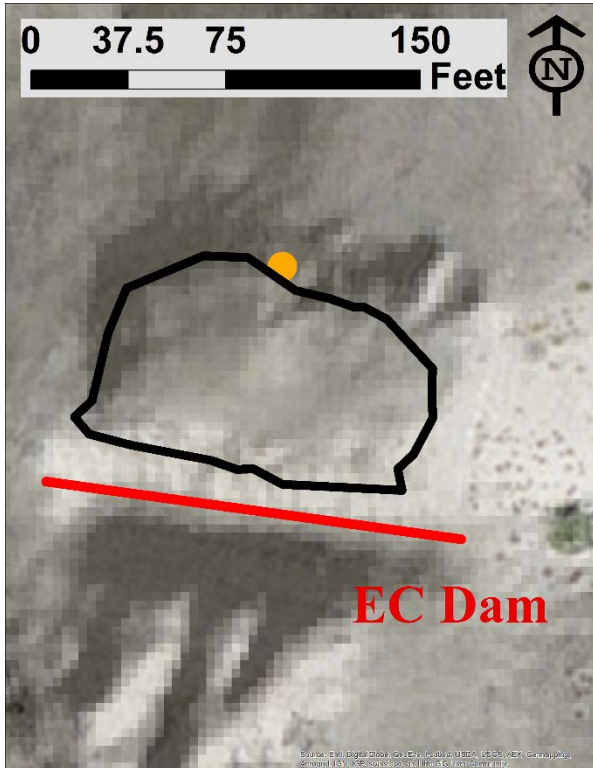
Storage Configuration Table:

	Discretization Node ID	Storage Element ID	Storage Filename
▶ !	1	25	!
!	2	45	!
!	4	85	!
!	6	105	!

Buttons: Populate, Clear, Delete Row(s), Save, Reset, Close



# Default Ponds



## Small

Drainage Area < 40 ac  
Outlet = Spillway

## Medium

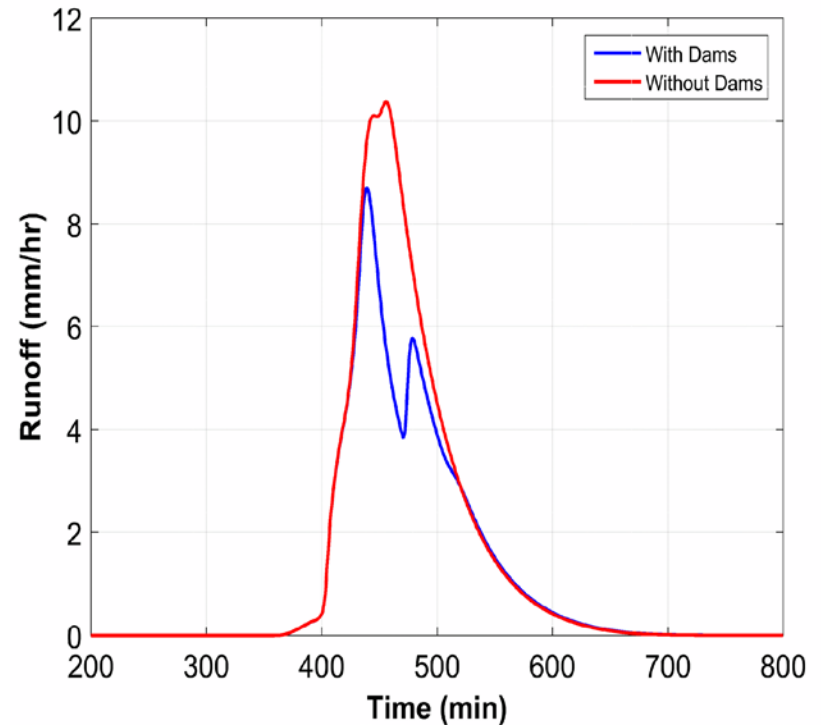
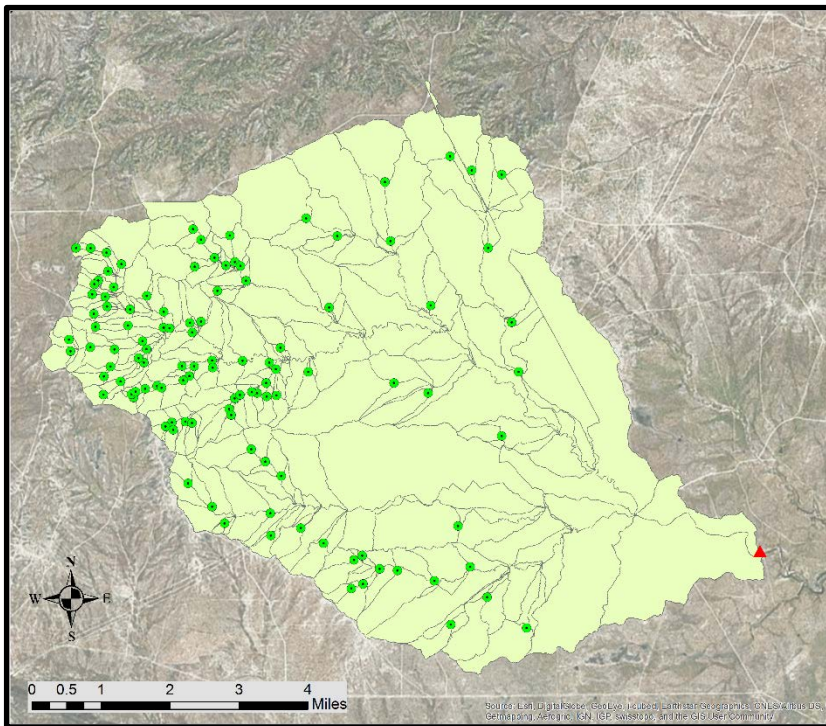
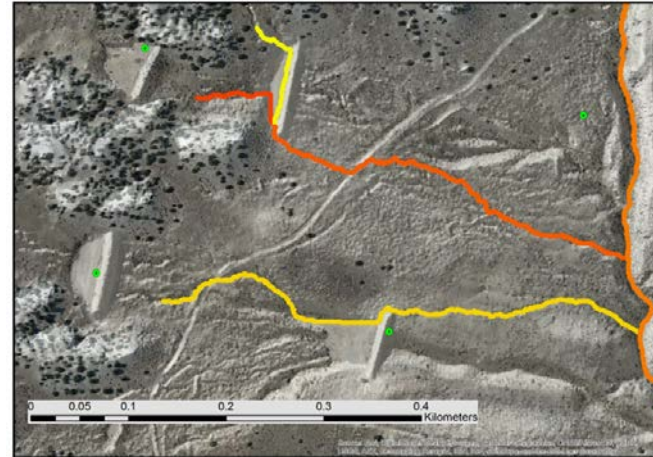
Drainage Area  $\geq$  40 ac  
Outlet = 18" CMP +  
Spillway

## Large

Drainage Area  $\geq$  150 ac  
Outlet = 24" CMP + Spillway

# Example

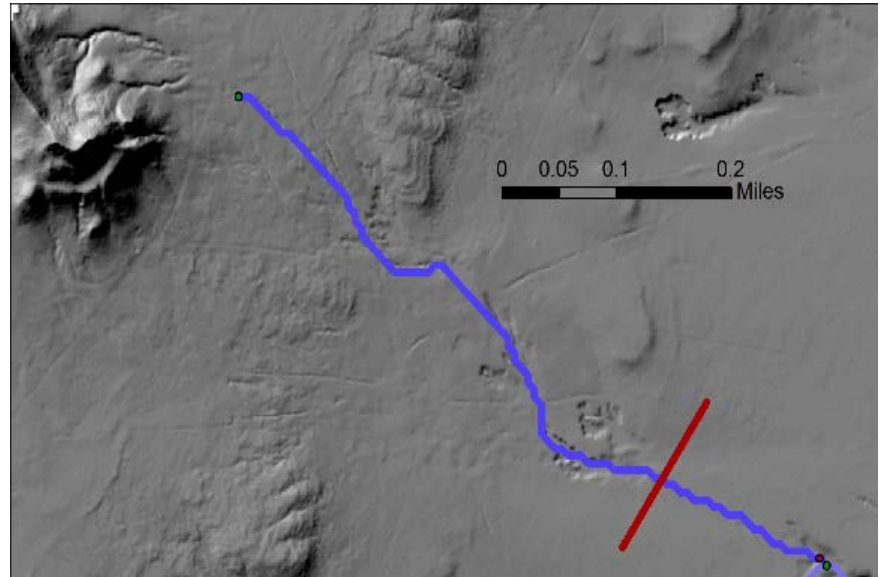
- 112 Dams





# Potential Application

- Draw proposed dam
- Extract channel cross section
- Set dam height
- Not automated



Proposed Dam - Profile Perpendicular to Channel

