



MS4 Statewide Stormwater Summit
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Planning for and Managing Stormwater Flow & Impacts of LID on Urban Flooding

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Department Mission

- The mission of the Flood Control District of Maricopa County is to provide flood hazard identification, regulation, remediation, and education to the people in Maricopa County so that they can reduce their risks of injury, death, and property damage due to flooding while enjoying the natural and beneficial values served by floodplains



Flood Control District Water Quality Overview:

FCD has been actively involved in stormwater issues since the NPDES program began.

- Phase I (1990)
- Phase II (1999)

We will continue to comment on proposed regulations and arid southwest regional issues



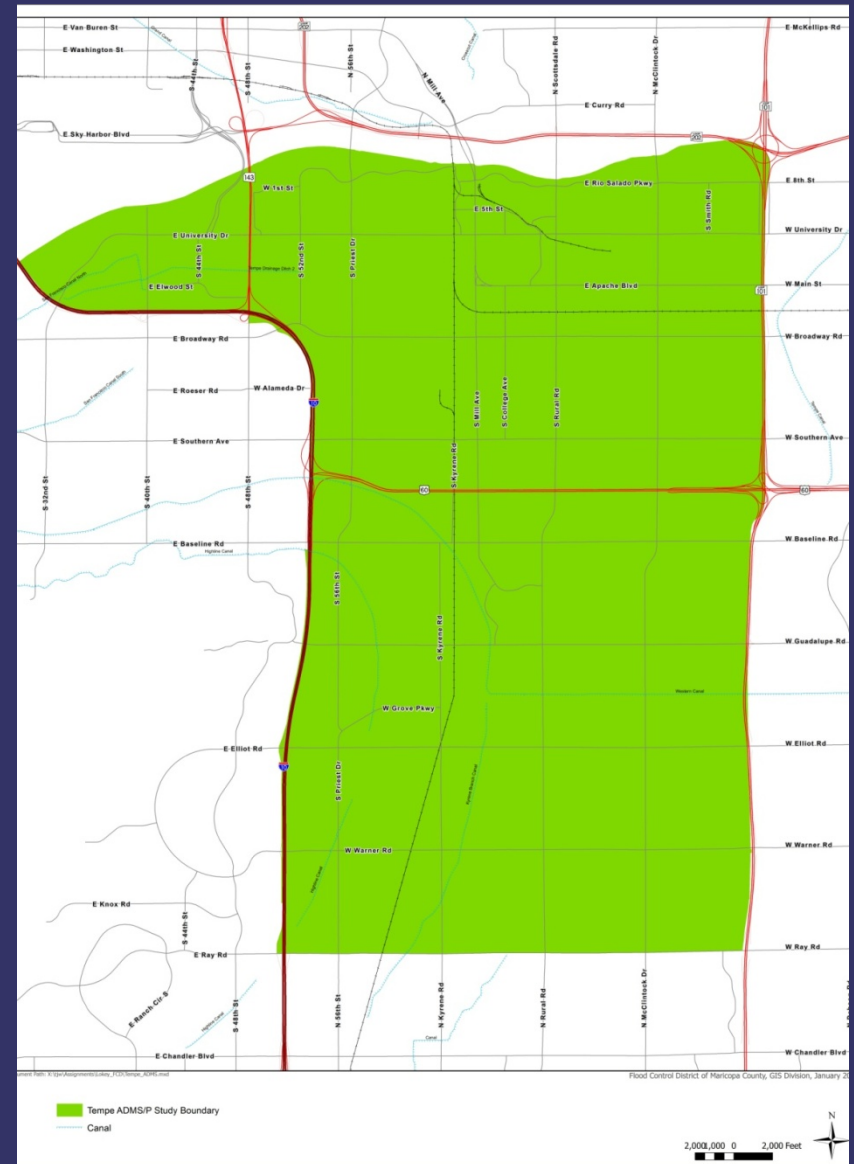
TEMPE ADMS

- Project Context
- Purpose and Need
- Background
- Project Scope
- 2D Model Overview
- Expectations



Project Context

- Tempe and parts of Phoenix & Chandler
- Approach – 2D surface model w/ integrated storm drain analysis
- Fine grid (20') model w/ extraordinary detail
- Volume conservation & reporting
- GIS-based data input and output

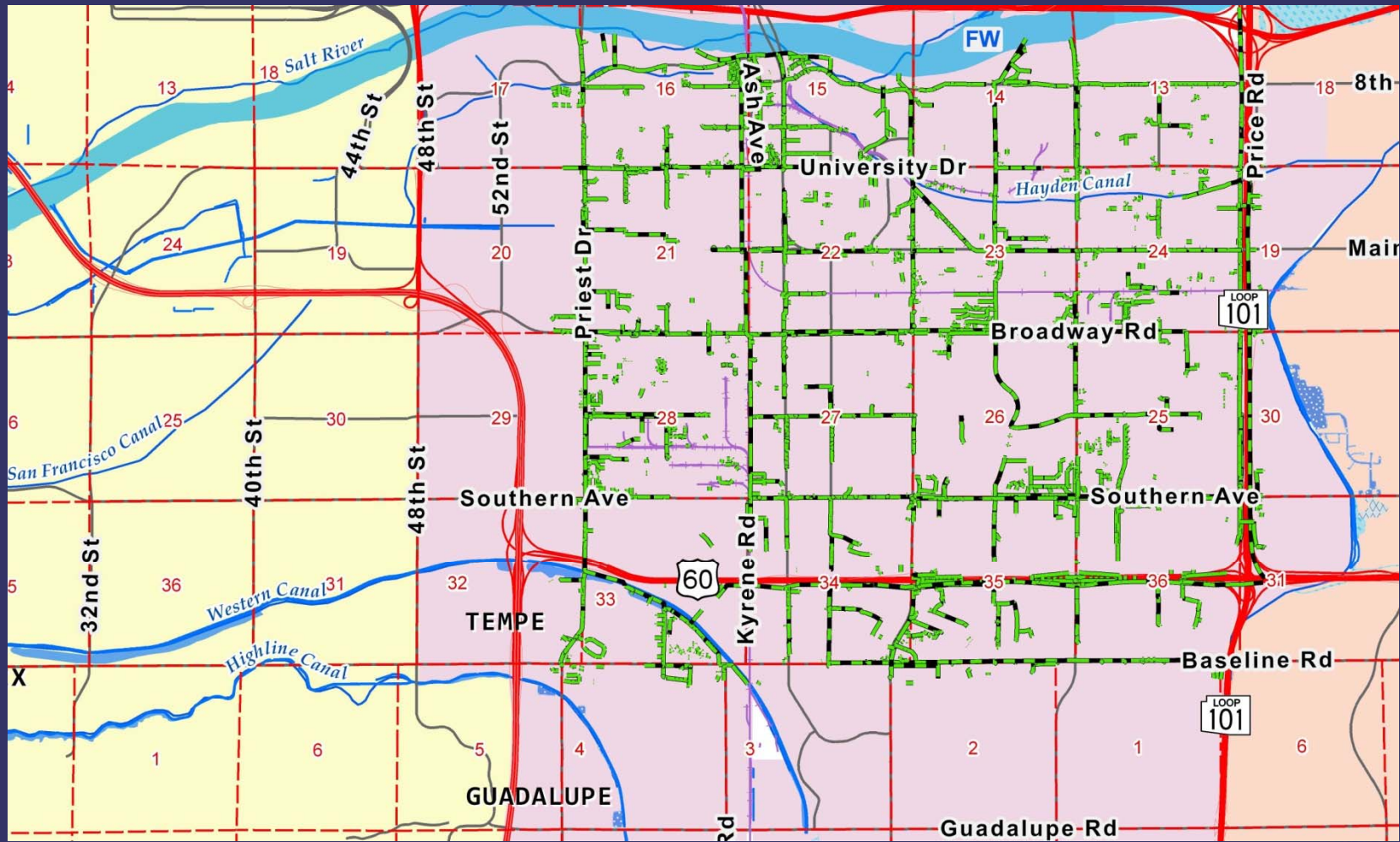


Background

- TEMPE ADMS will be third urban FLO-2D model
- Study area – 37 sq mi
- New mapping w/ enhanced DTM (April 2013)
- Extensive storm drain system (~104 mi modeled with SWMM)
- Major partners and stakeholders include:
 - City of Tempe, ASU
 - ADOT, SRP
 - Town of Guadalupe, Cities of Phoenix & Chandler



Background



Project Purpose

- **Identify existing & future flooding and drainage problems**
- Provide a regional hydrology model for the City of Tempe
- Advance FCD's ability to model urban hydrology using FLO-2D/SWMM
- Use model to quantify retention effectiveness & flood mitigation impacts of LID



Why is The Project Needed?

- Models can be used:
 - to identify & quantify flooding problems
 - for long range planning
 - to provide design parameters for CIP projects
 - to guide new/redevelopment
- LID Applications impact (reduce) run-off
- EPA pushing Cities towards LID
- Possibility that LID will provide feasible flood mitigation options



Scope Overview

ADMS PHASE (Major Tasks)

- Data collection, storm drain database
- FLO-2D/SWMM models for existing conditions and effectiveness of retention, other LIDs
- Public Outreach/Stakeholder Coordination
- **FHA** - Evaluate & Prioritize Drainage Issues

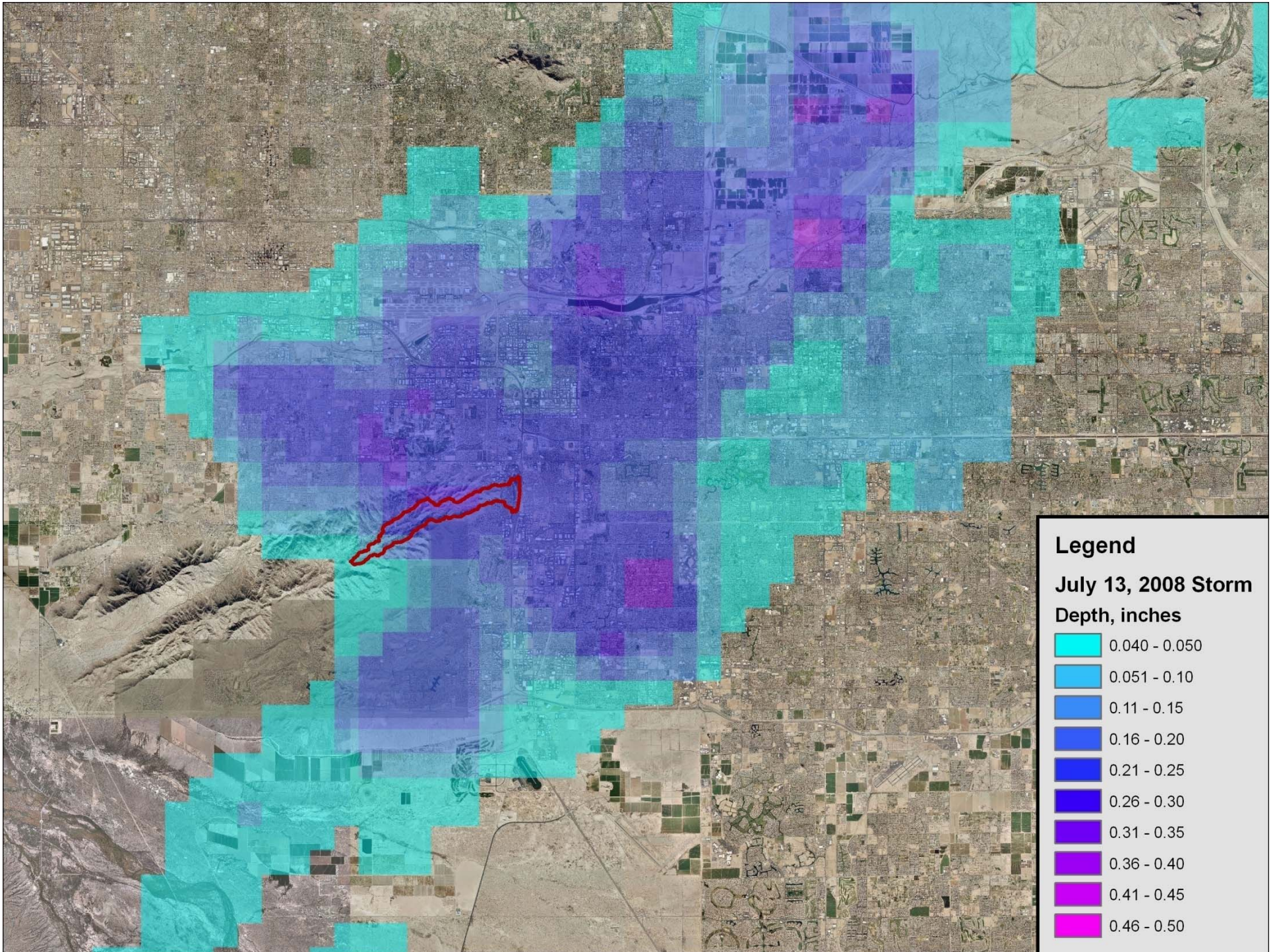
Decision Milestone (Proceed w/ ADMP)

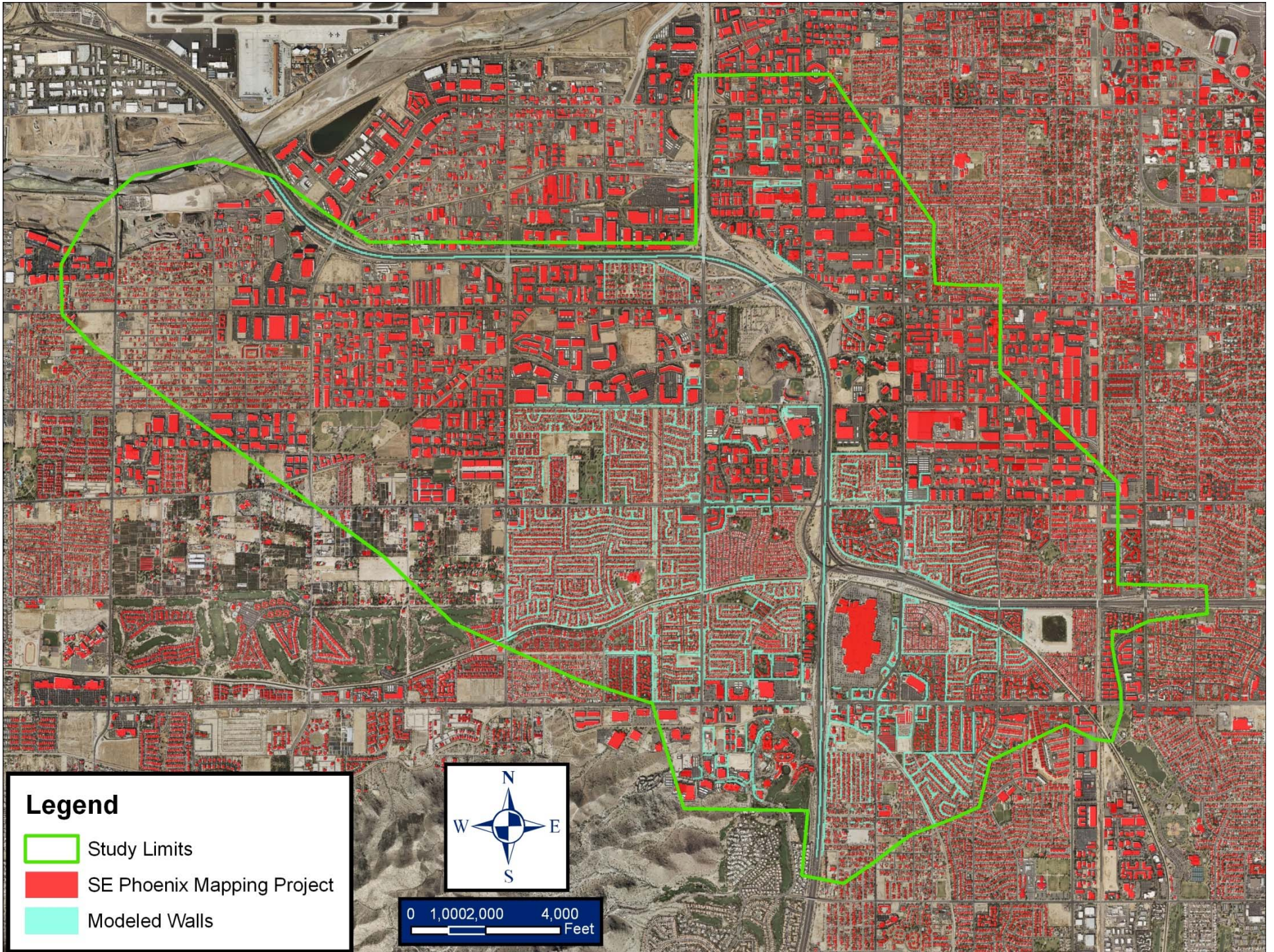


2D Model Overview




- Using FLO-2D for hydrologic and hydraulic modeling in areas where 1D models are less effective – especially urban areas.
- The model can simulate:
 - Precipitation and rainfall losses.
 - Multiple flow paths & effects of building and wall obstructions.
 - Storm drains, inlets & catch basins
 - Actual storm events using NEXRAD radar grid based data in 5-minute time steps.
- Results include depth and velocity grids, flow direction, and animations

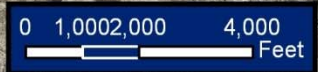






Legend

-  Study Limits
-  SE Phoenix Mapping Project
-  Modeled Walls



Hohokam ADMS/P

Results



Project Expectations

- Develop & validate urban FLO-2D / SWMM model, balancing performance with usefulness (toolsets)
- Model results used to identify and prioritize flooding and drainage problems
- Quantify retention policy effectiveness
- Evaluate potential of LID applications for flooding mitigation alternatives
- Provide objective and quantifiable basis for evaluating cost and effectiveness of alternative flooding mitigation strategies





Questions ?

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