

Paradise Valley Stormwater Master Plan Update

Town Council Work Session November 14, 2024

Kimley»»Horn



Agenda

- I. Project History
- II. Preliminary Flood Hazard Areas Analysis
- III. Flood Area Prioritization Process
- IV. Project Alternative Analysis Preview
- V. Project Schedule
- VI. Next Steps
- VII. Q&A

Project History

Project Kick Off
March 26th, 2024

Current Council
Session
November 14th, 2024

Project
Completion
March 2025



1st Council Session
June 13th, 2024

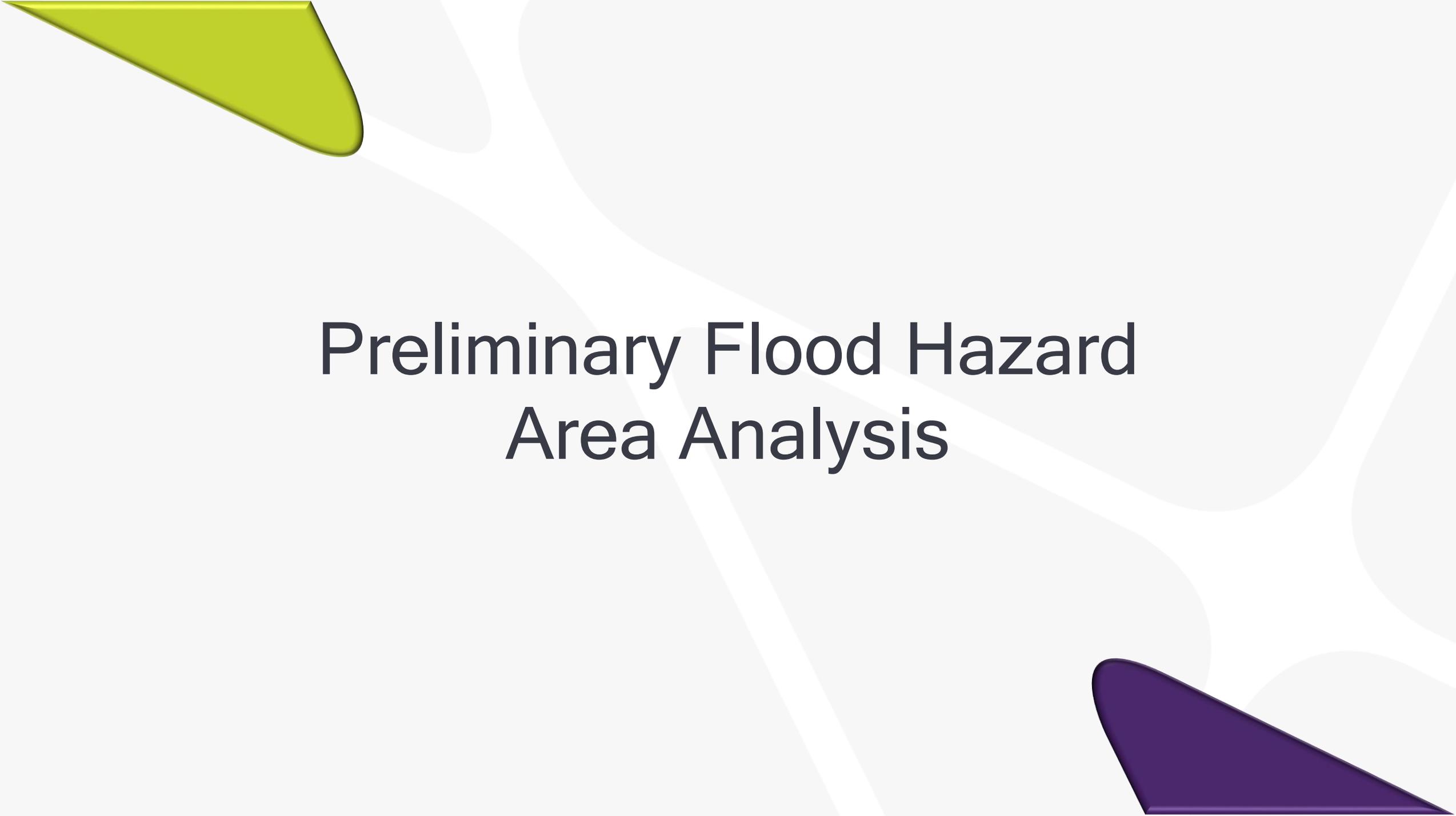
Future Council
Sessions
January &
February 2025

Previous Council Session Update

- Results of data collection and cataloguing
 - Reported flooding issues and studies
- Continuing efforts to refine comprehensive Town-wide two-dimensional hydrology and hydraulics model

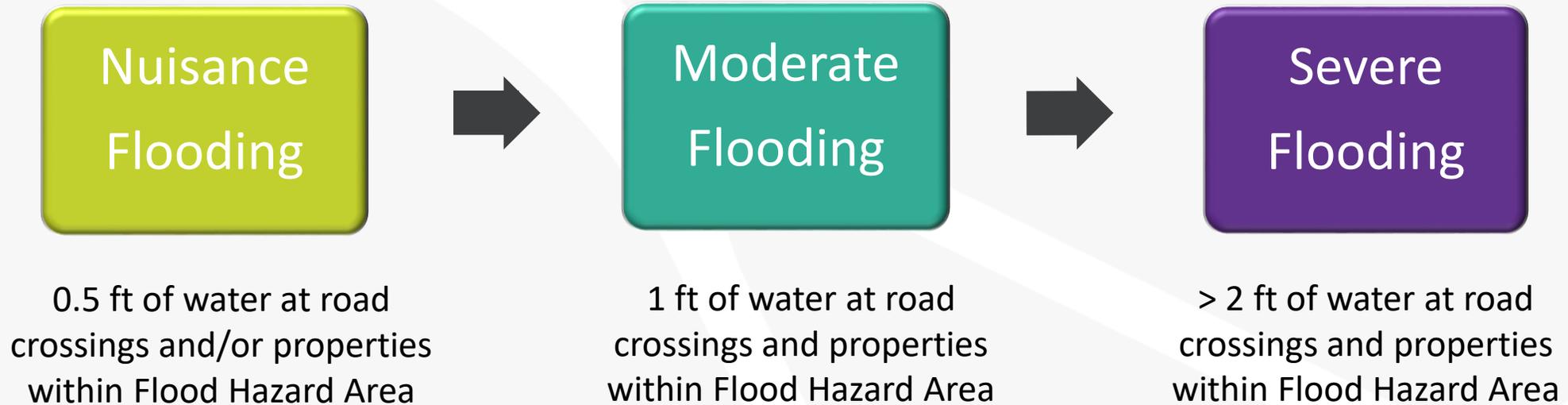
Progress Since Last Update

- Model refinement and calibration (in progress)
- Preliminary flood hazard analysis
 - Delineate areas and evaluate severity
- Proposed project analysis

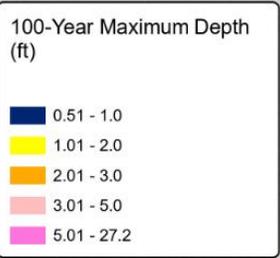


Preliminary Flood Hazard Area Analysis

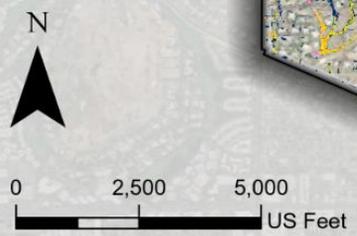
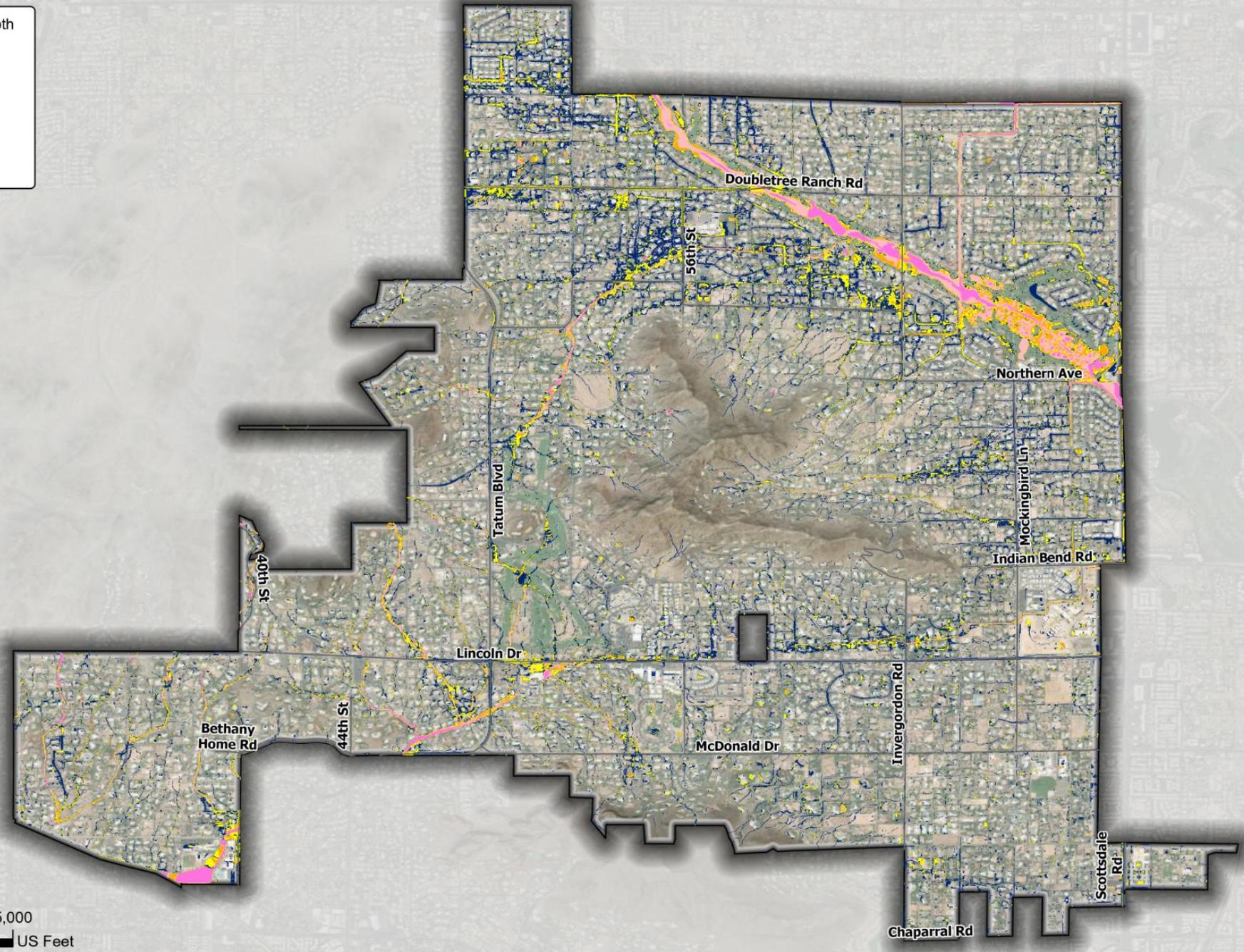
Flood Hazard Designations

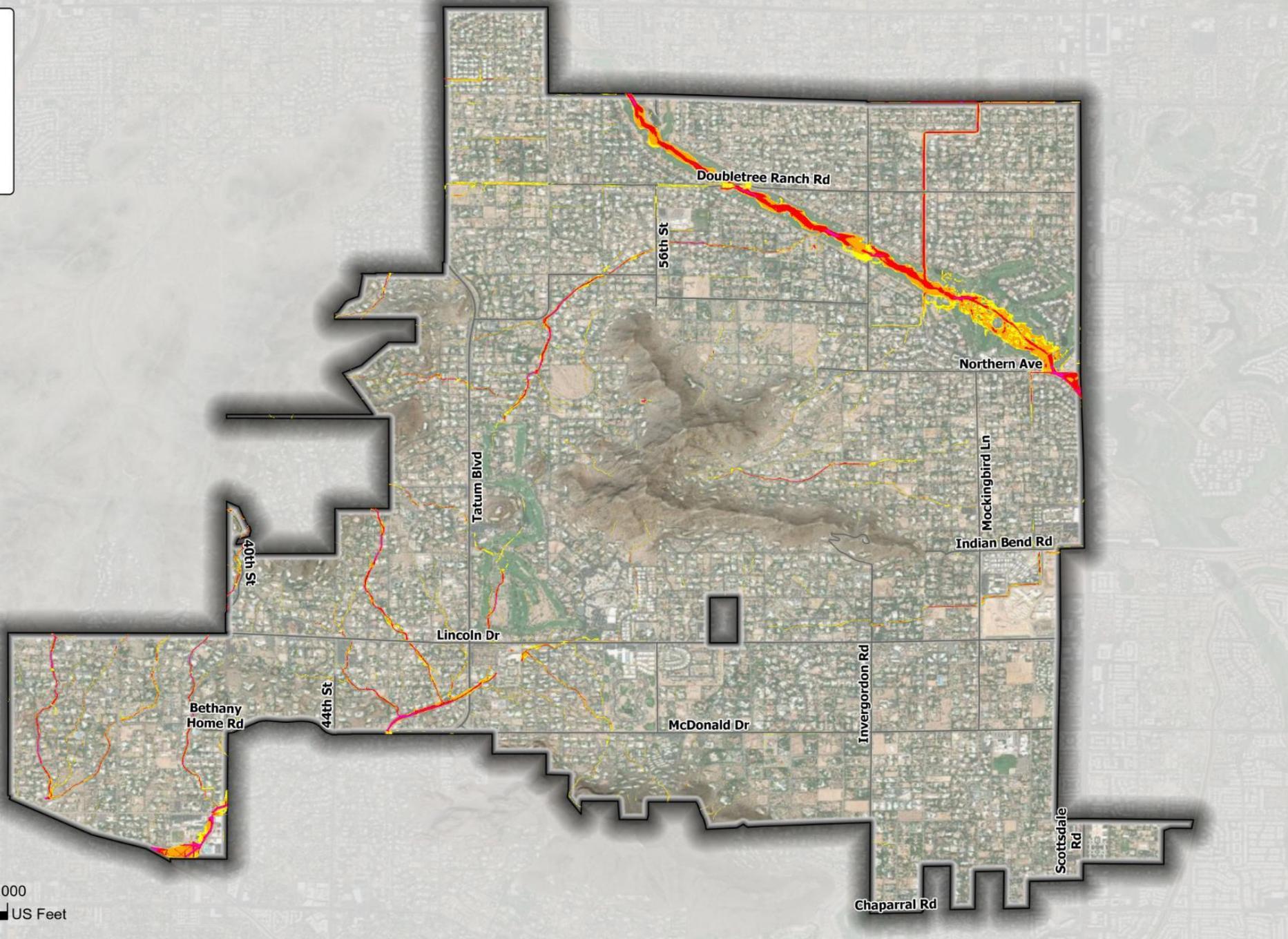
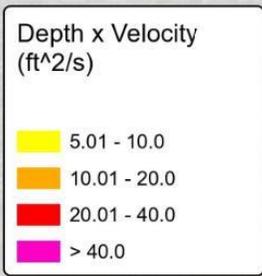


- Delineation of areas based on max depth, depth x velocity, erosion & sedimentation potential, and impacted properties & structures



Maximum Depth Map

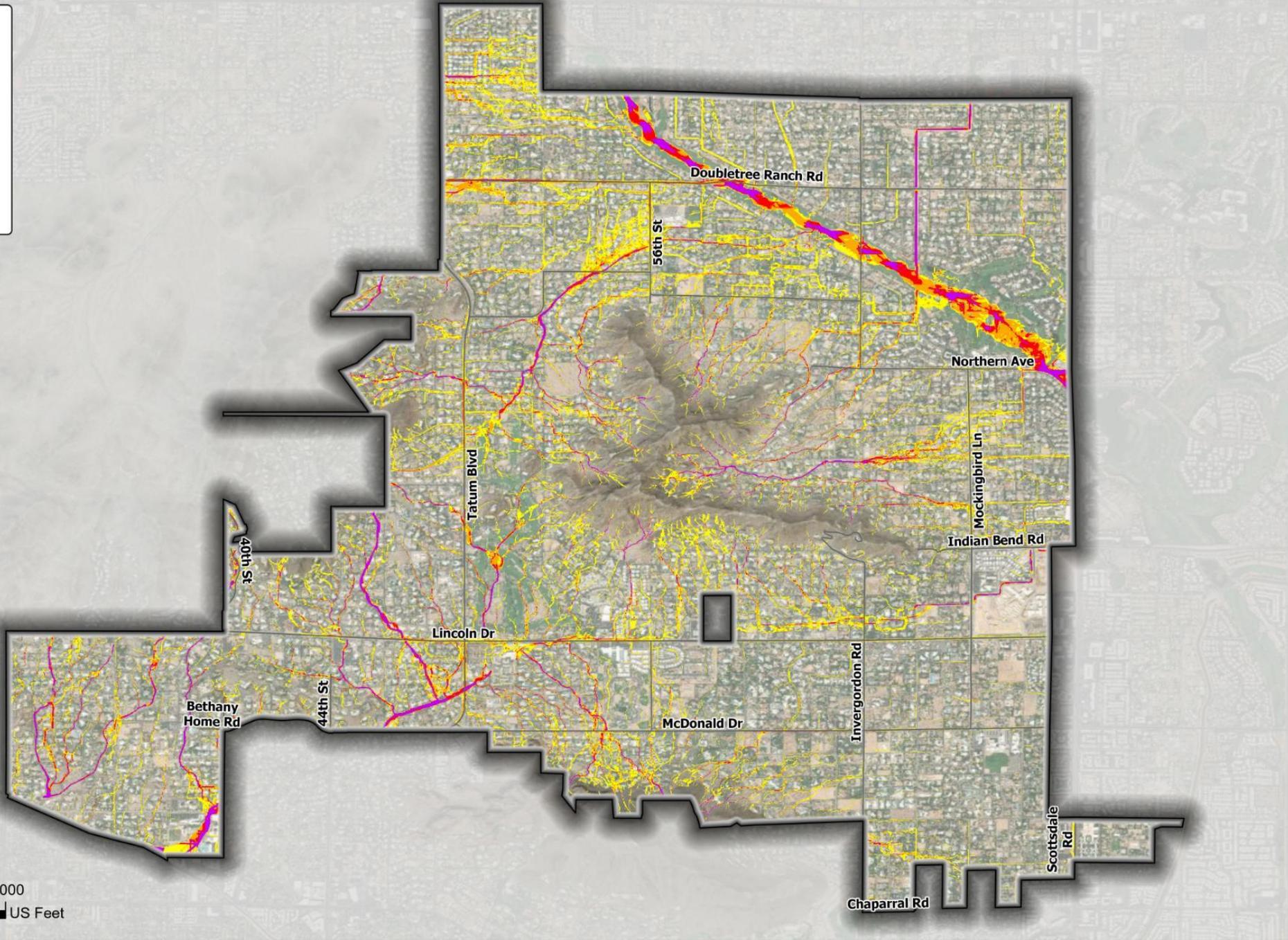




Depth x Velocity
Map

Erosion Potential

- Low Erosion Potential
- Moderate Erosion Potential
- High Erosion Potential
- Extreme Erosion Potential



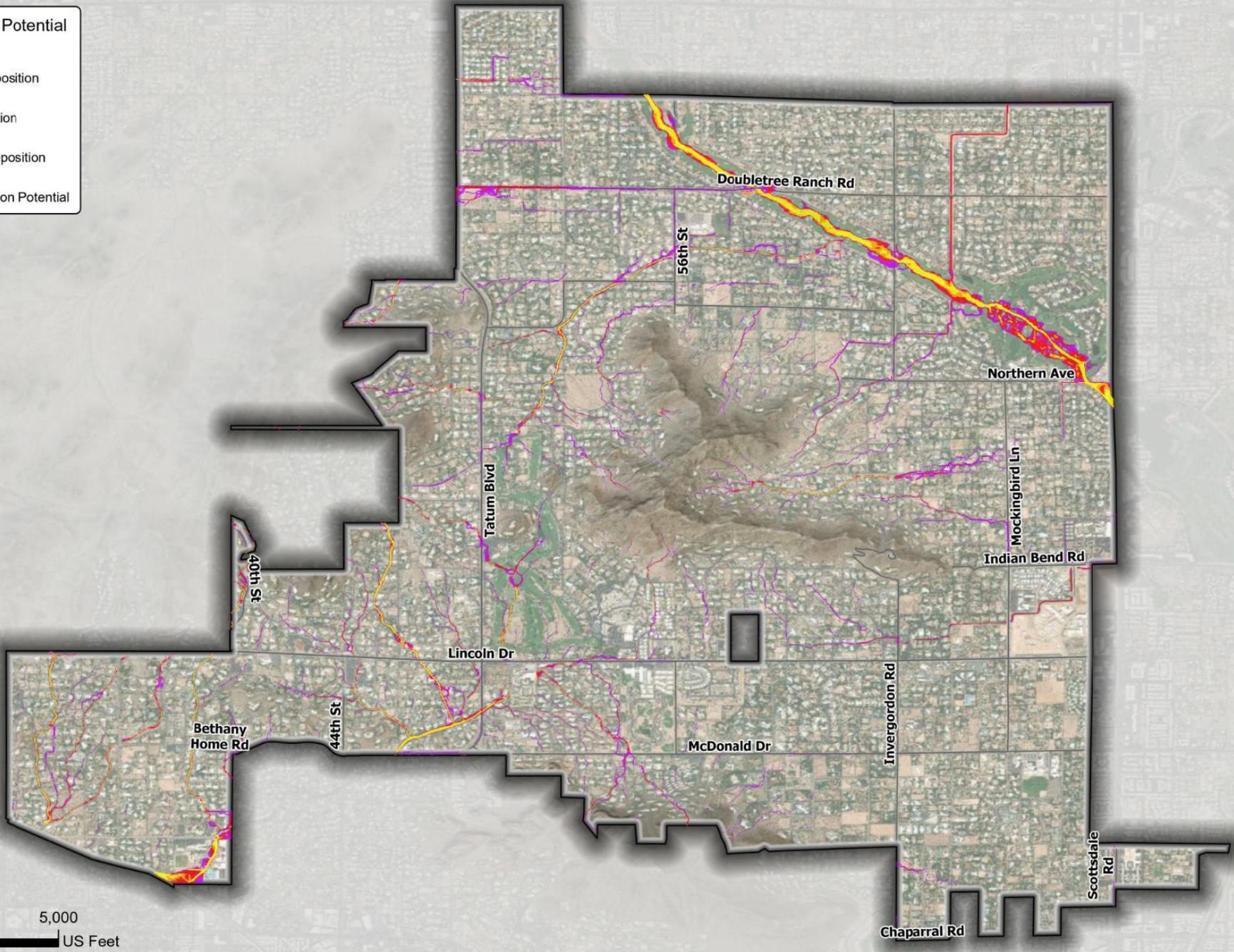
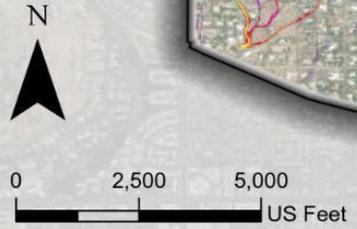
Erosion Potential

Sedimentation Potential

- Extreme Deposition Potential
- High Deposition Potential
- Moderate Deposition Potential
- Low Deposition Potential



Sedimentation Potential

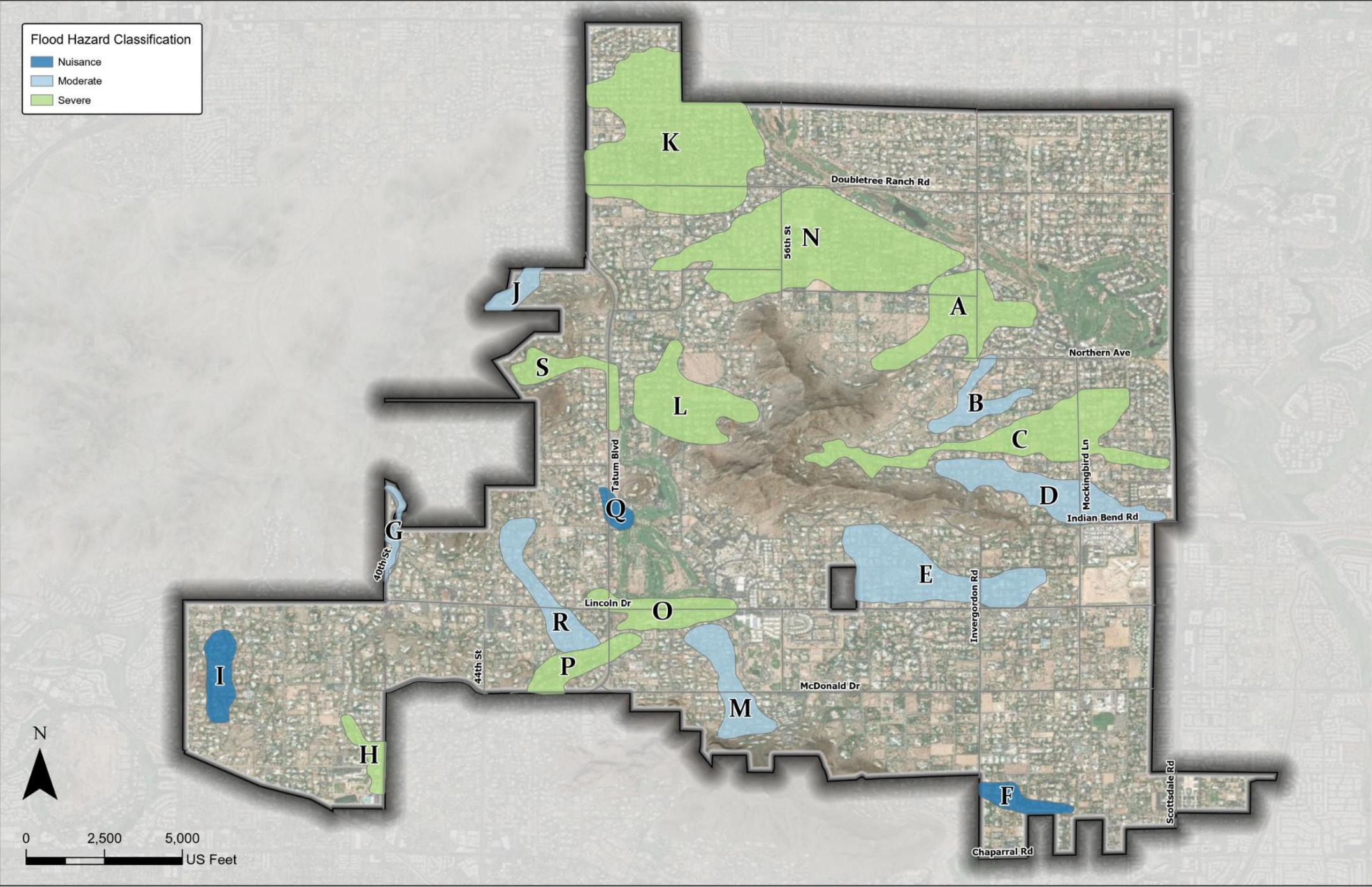


Flood Hazard Classification

- Nuisance
- Moderate
- Severe



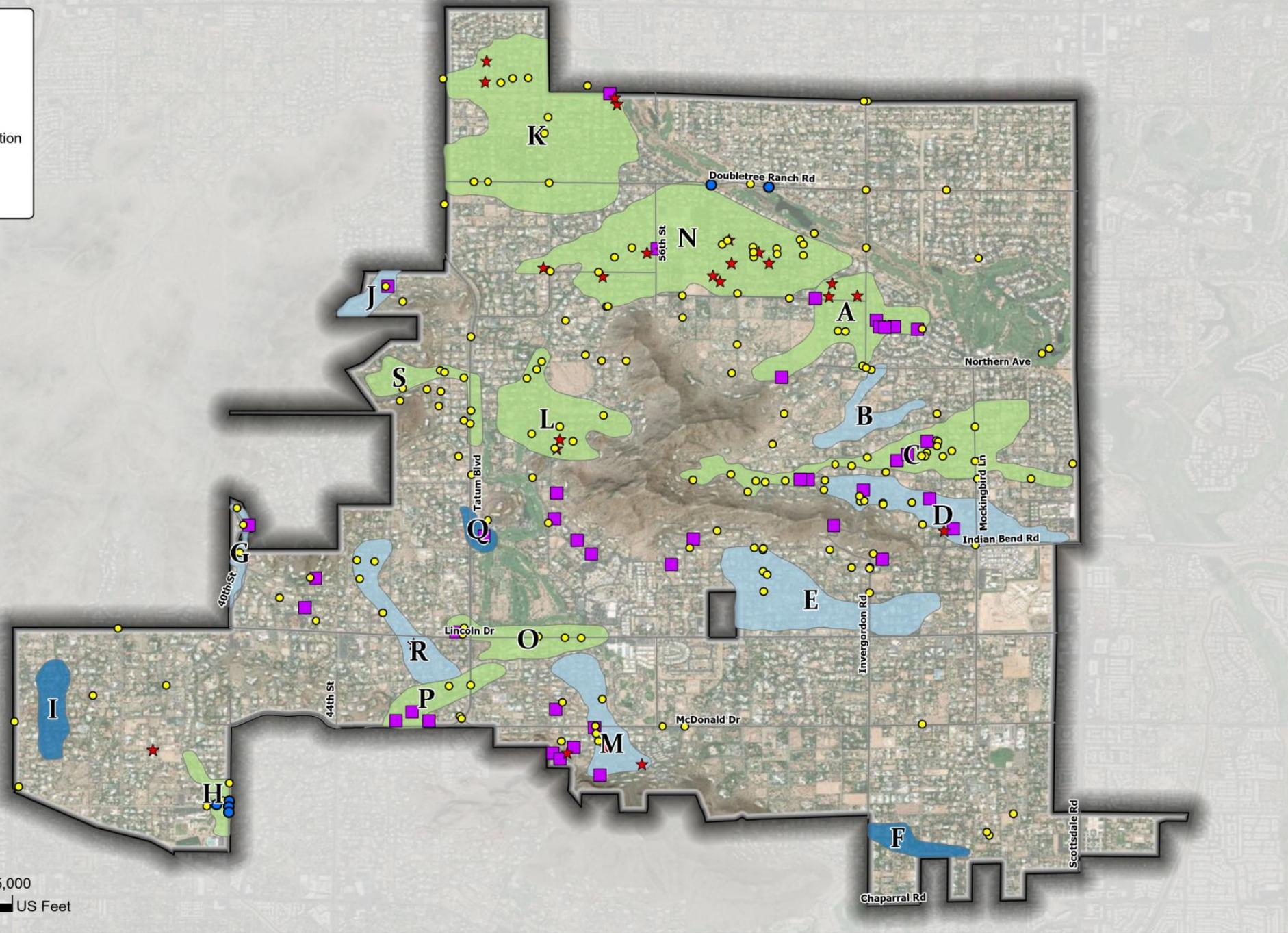
Flood Hazard Areas





Reported Flooding Issues

- Known Flooding Issues**
- Property Flooding
 - Road Closure
 - Road Flooding
 - Structural Flooding
- Flood Hazard Classification**
- Nuisance
 - Moderate
 - Severe





Flood Area Prioritization

A matrix comparing:

- Severity of flooding
- Potential benefits to streets/structures
- Emergency access
- Multi-use opportunities

Area Matrix

	Severity of Flooding	Potential Stuctures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
<i>Priority Weighting 1 - 5</i>	5	5	4	3	1		
Area N	3	3	3	2	1	12	49
Area A	3	2	3	2	2	12	45
Area O	3	2	3	2	2	12	45
Area K	3	3	3	0	1	10	43
Area L	3	2	2	2	2	11	41

Decision Variables

★ Severity of Flooding

- 1 - Nuisance
- 2 - Medium
- 3 - Severe

★ Potential Structures Benefited

- 1 - 1 to 30 Structures
- 2 - 31 to 50 Structures
- 3 - >51 Structures

★ Streets Benefited

- 1 - Local street benefits only
- 2 - Arterial/collector street or multiple local streets benefits
- 3 - Multiple arterial/collector & local street benefits

Decision Variables

★ Emergency Access (3' depth)

- 0 - No impact to emergency access
- 2 - Impacts to emergency access

★ Multi-use Opportunities

- 1 - No opportunities
- 2 - Possible opportunities

Area Matrix

	Severity of Flooding	Potential Structures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
<i>Priority Weighting 1 - 5</i>	5	5	4	3	1		
Area N	3	3	3	2	1	12	49
Area A	3	2	3	2	2	12	45
Area O	3	2	3	2	2	12	45
Area K	3	3	3	0	1	10	43
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Area Matrix

	Severity of Flooding	Potential Structures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
<i>Priority Weighting 1 - 5</i>	5	5	4	3	1		
Area H	3	1	3	2	2	11	40
Area P	3	1	3	2	2	11	40
Area C	2	3	3	0	2	10	39
Area E	2	3	3	0	1	9	38
Area S	3	1	2	2	2	10	36
Area R	3	1	2	2	2	10	36

Area Matrix

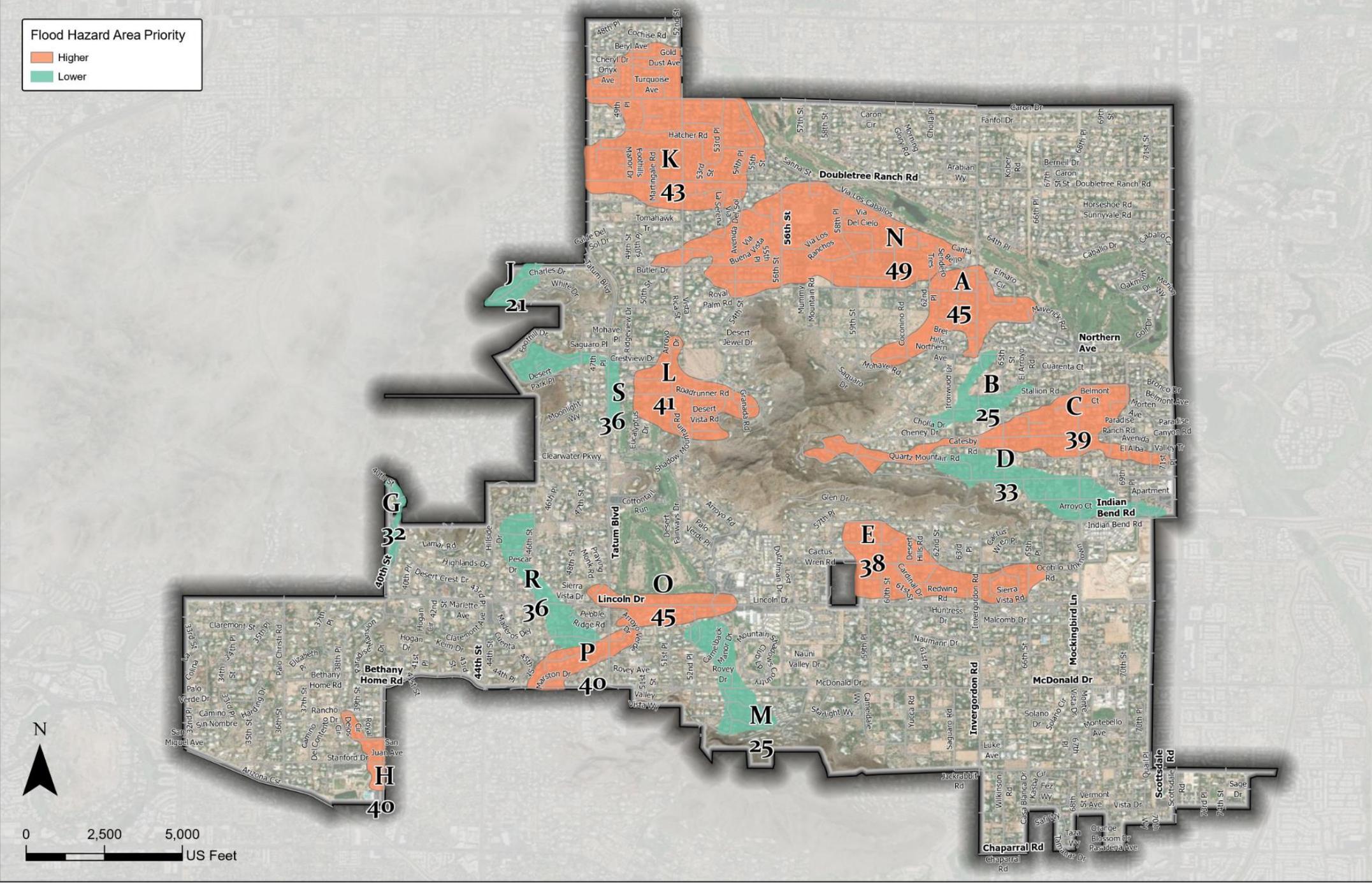
	Severity of Flooding	Potential Structures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
<i>Priority Weighting 1 - 5</i>	5	5	4	3	1		
Area D	2	2	3	0	1	8	33
Area G	3	1	1	2	2	9	32
Area M	2	1	2	0	2	7	25
Area B	2	1	2	0	2	7	25
Area J	2	1	1	0	2	6	21

Flood Hazard Area Priority

- Higher
- Lower



Results of Area Ranking Matrix



N

0 2,500 5,000
US Feet



Proposed Project Alternative Analysis

Project Categories

Small

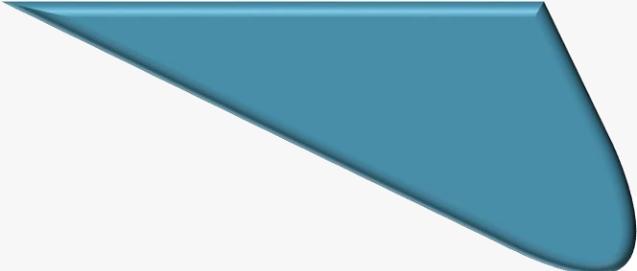
- < \$250,000
- Maintenance Type Projects

Medium

- < \$ 1.3M
- FCDMC SPAP Eligible

Large

- > \$1.3 M
- FCDMC CIPPP Eligible
- May Qualify for FEMA BRIC Grants



Project Alternatives

- Small project list based off Town staff priorities
- Medium/Large projects will be analyzed using decision matrix with Council input

Project Considerations

Variable	Preliminary Weighting Score
Potential Structures Protected	5
Design & Construction Cost/Benefit	5
Potential Streets Protected	4
Green Stormwater Infrastructure	1
Project Partnership	4
Multi-use Opportunities	2
Operation and Maintenance Costs	3
Utility Constraints	3

Schedule for Paradise Valley Stormwater Master Plan - April 4, 2024

	3/24	4/24	5/24	6/24	7/24	8/24	9/24	10/24	11/24	12/24	1/25	2/25	3/25
Kick-Off	3/26/2024												
Task 1 - Monthly Progress Meetings (365 days)													
Task 2 - Data Collection (120 days)	3/26/2024												
2.1 Storm Related Site Visits (As Needed)													
Task 3 - Mapping and Assessment of Storm Drain Assets (90 days)													
3.1 Terrain Mapping Inventory (30 days)													
3.2 Culvert/Storm Drain GIS Inventory (90 days)													
Task 4 - Townwide FLO-2D Modeling (365 days)													
4.1 Previous Studies (30 days)													
4.2 Base Modeling (120 days)					7/26/2024								
4.3 Detailed Modeling (120 days)									11/27/2024				
4.4 Calibration/Verification (90 days)													
4.5 Results for Web Viewer (Support As Needed)													
Task 5 - Long Range Capital Improvement Plan (365 days)													
5.1 Existing Capacities (60 days)													
5.2 Previously Identified AOMIs (60 days)													
5.3 Flood Hazard Determination (60 days)													
5.4 New Flood Mitigation Projects (60 days)													
5.5 Preliminary Flood Mitigation Project Evaluation (120 days)													
5.6 Recommended Flood Mitigation Projects (90 days)													
Task 6 - Development of Stormwater Master Plan (120 days)													
6.1 Draft Report (60 days)													
6.2 Final Report (30 days)											1/9/2025		
													3/1/2025
Task 7 - Town Council Coordination (365 days)													
7.1 Council Working Sessions				6/13/2024					11/14/2024			2/13/2025	
Project Completion Date													3/1/2025



Next Steps:

- Finish modeling effort (calibration)
- Prioritize flood hazard areas based on Council input
- Alternative project formulations
- Council coordination for project determination
- Refinement of selected alternatives (conceptual plans & cost)
- Funding opportunities
- Draft and final report

Kimley»»Horn

Expect More. Experience Better.

Questions

