Paradise Valley Stormwater Master Plan Update

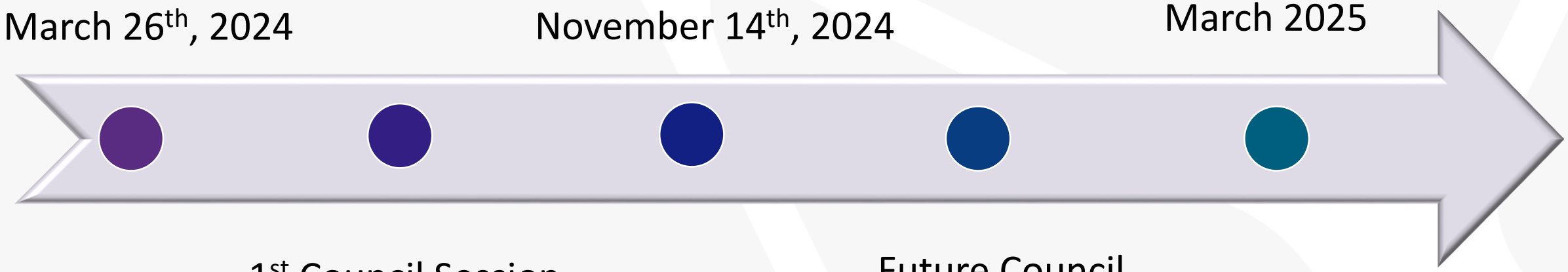
Town Council Work Session November 14, 2024

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



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

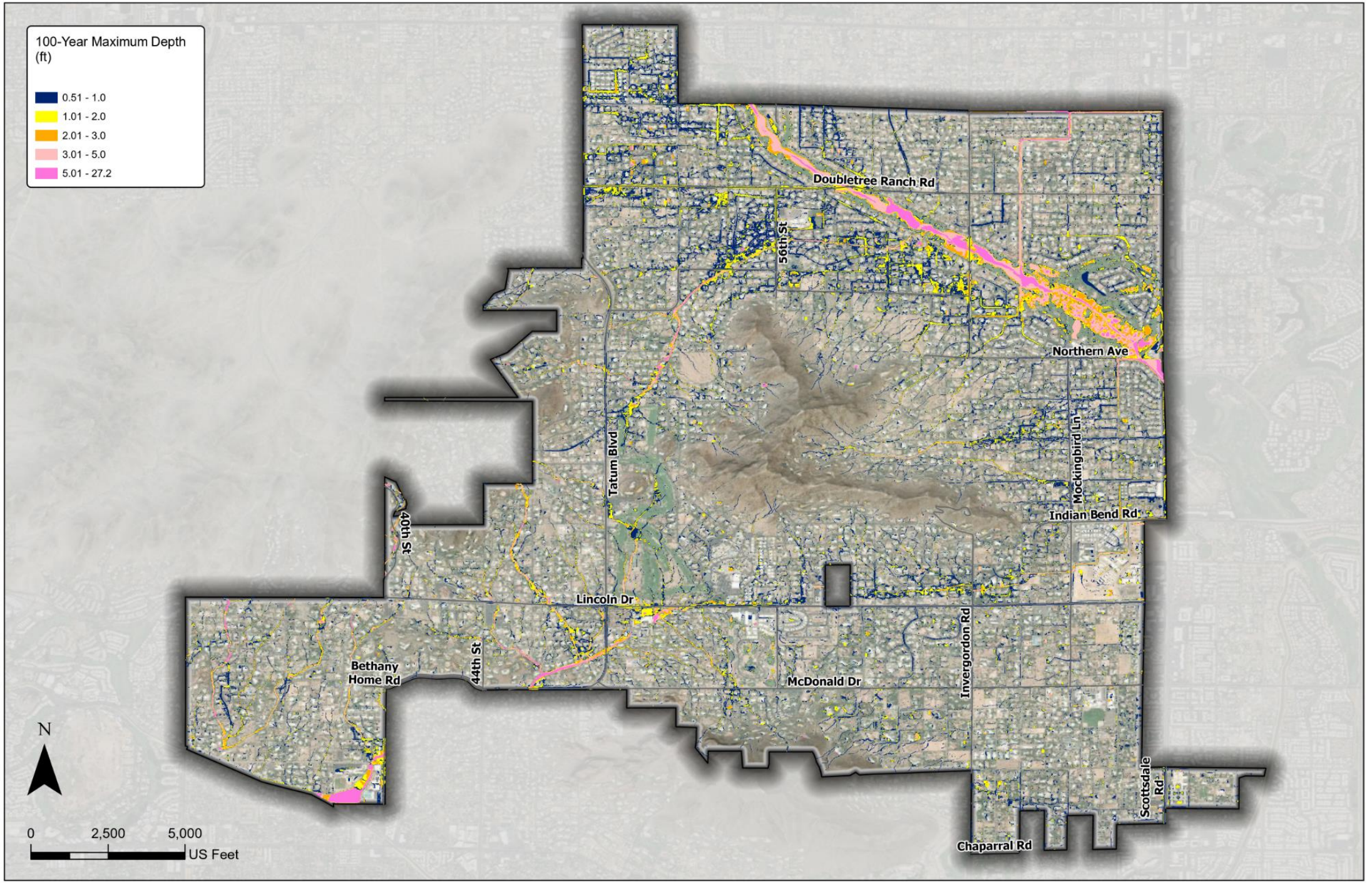
Flood Hazard Designations

0.5 ft of water at road crossings and/or properties within Flood Hazard Area

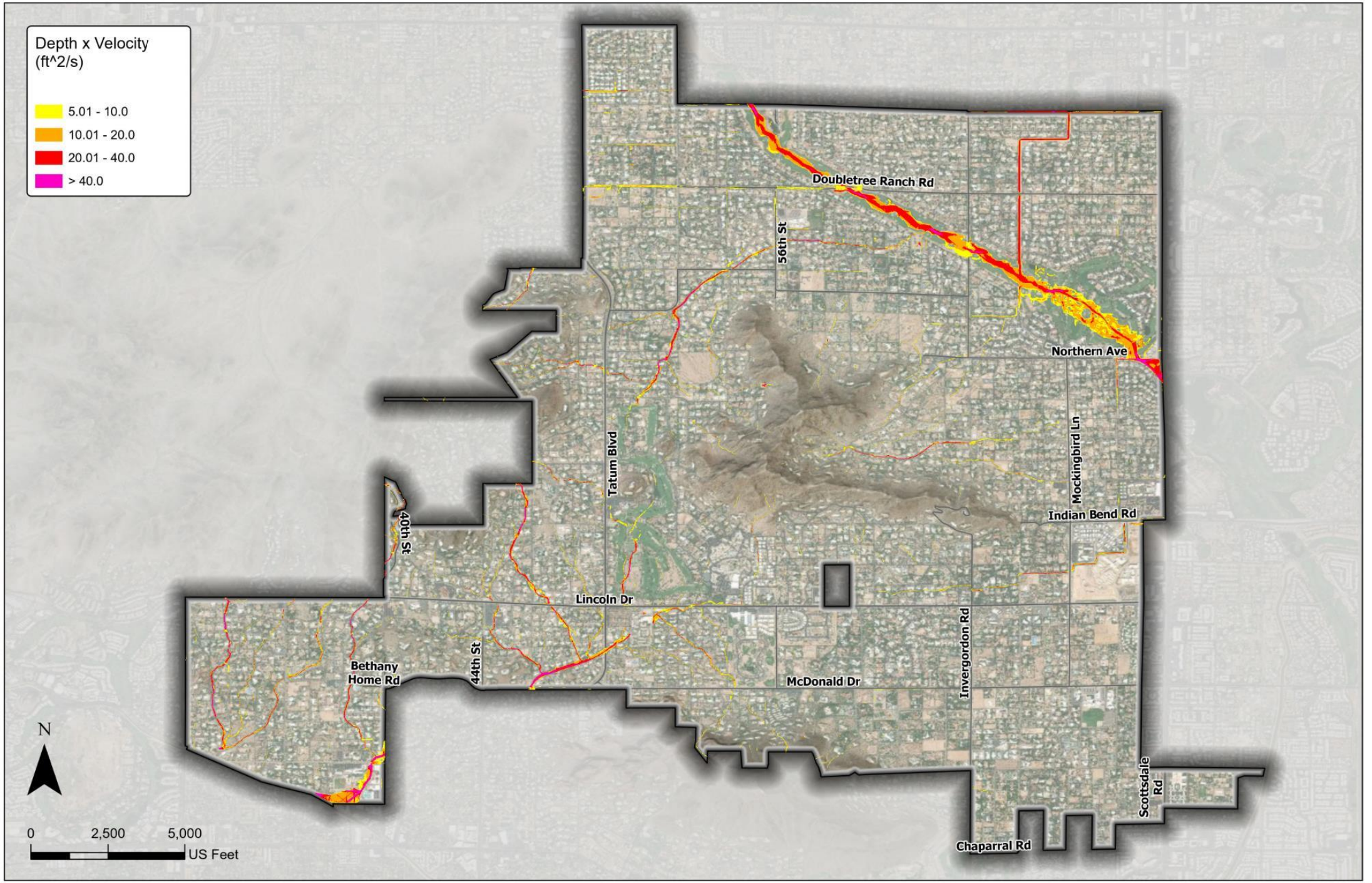
1 ft of water at road crossings and properties within Flood Hazard Area

> 2 ft of water at road crossings and properties within Flood Hazard Area

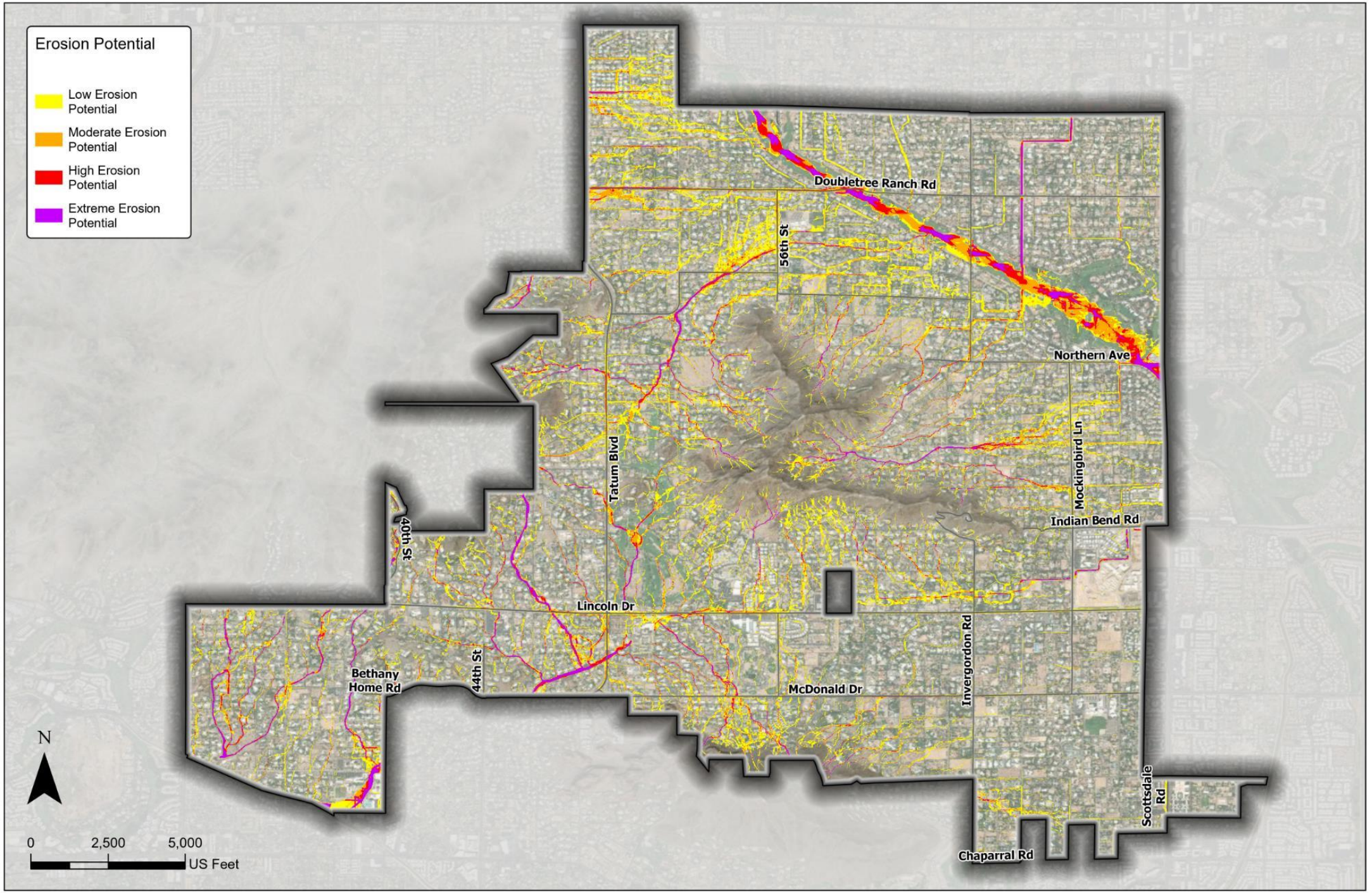
- Delineation of areas based on max depth, depth x velocity, erosion & sedimentation potential, and impacted properties & structures



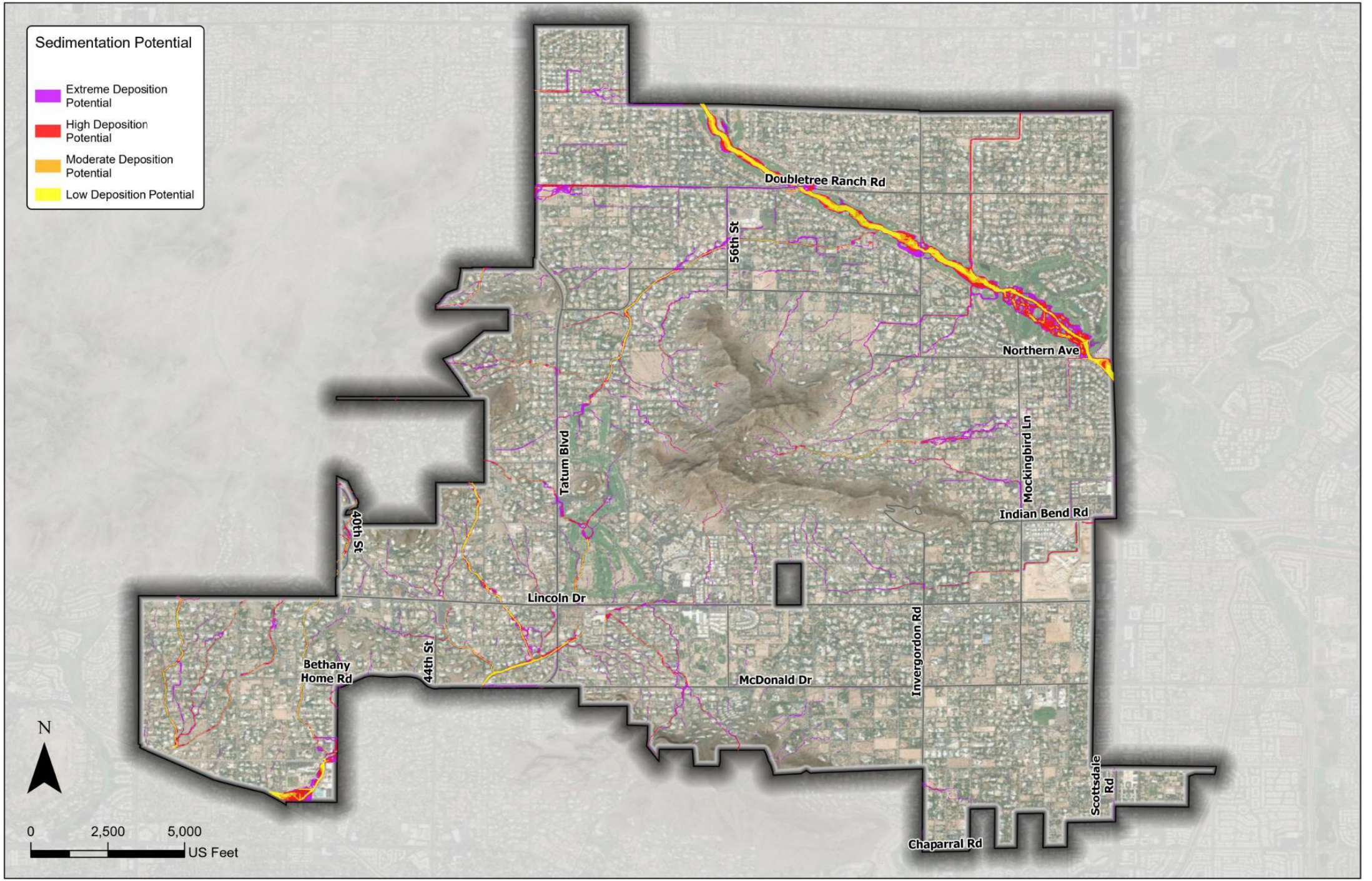
Maximum Depth Map



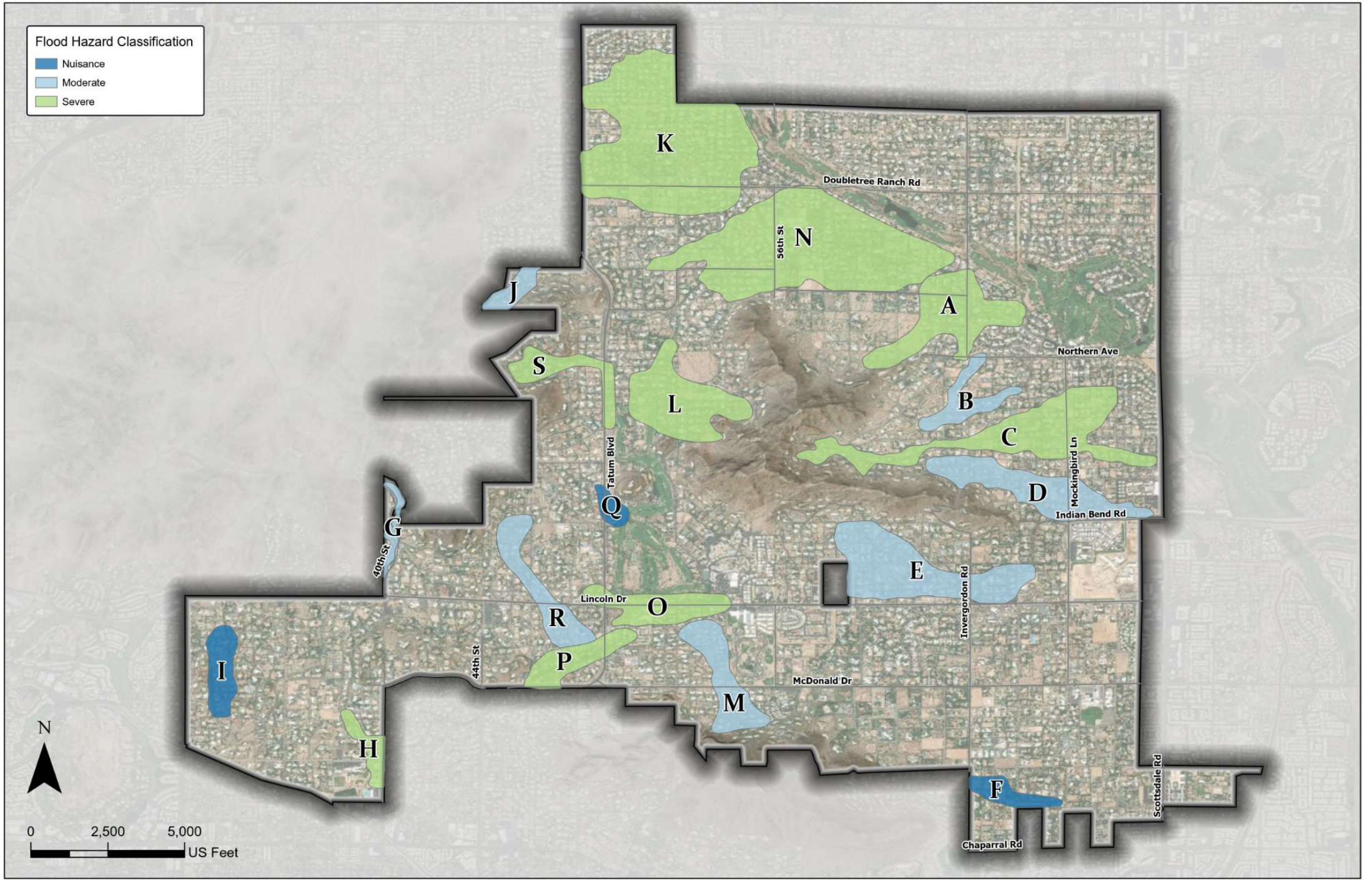
Depth x Velocity Map



Erosion Potential



Sedimentation Potential



TOWN OF PARADISE VALLEY INCORPORATED MAY 1961

Flood Hazard Areas

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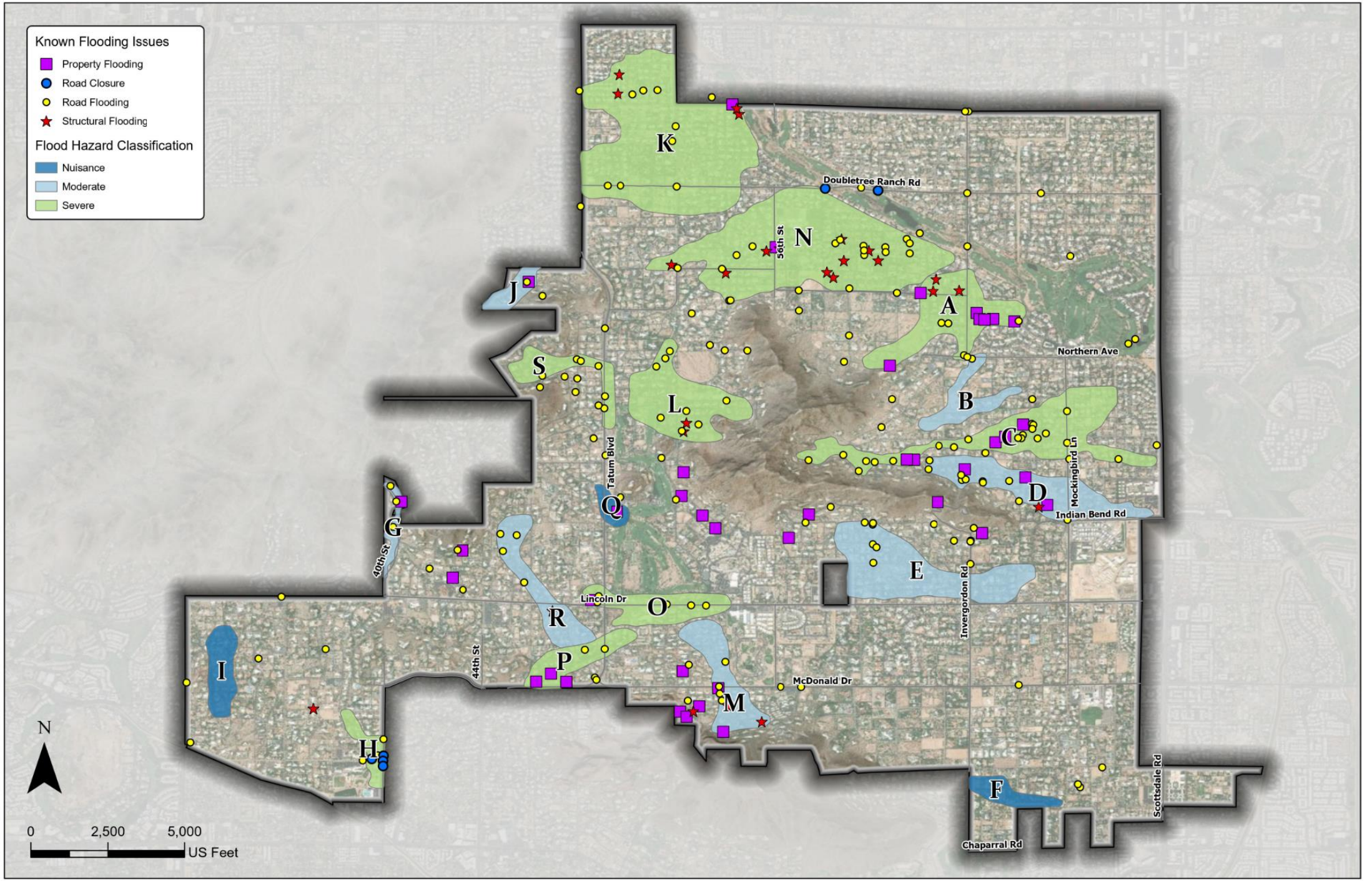

Reported Flooding Issues

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
Priority Weighting 1 - 5	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 Stuctures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
Priority Weighting 1 - 5	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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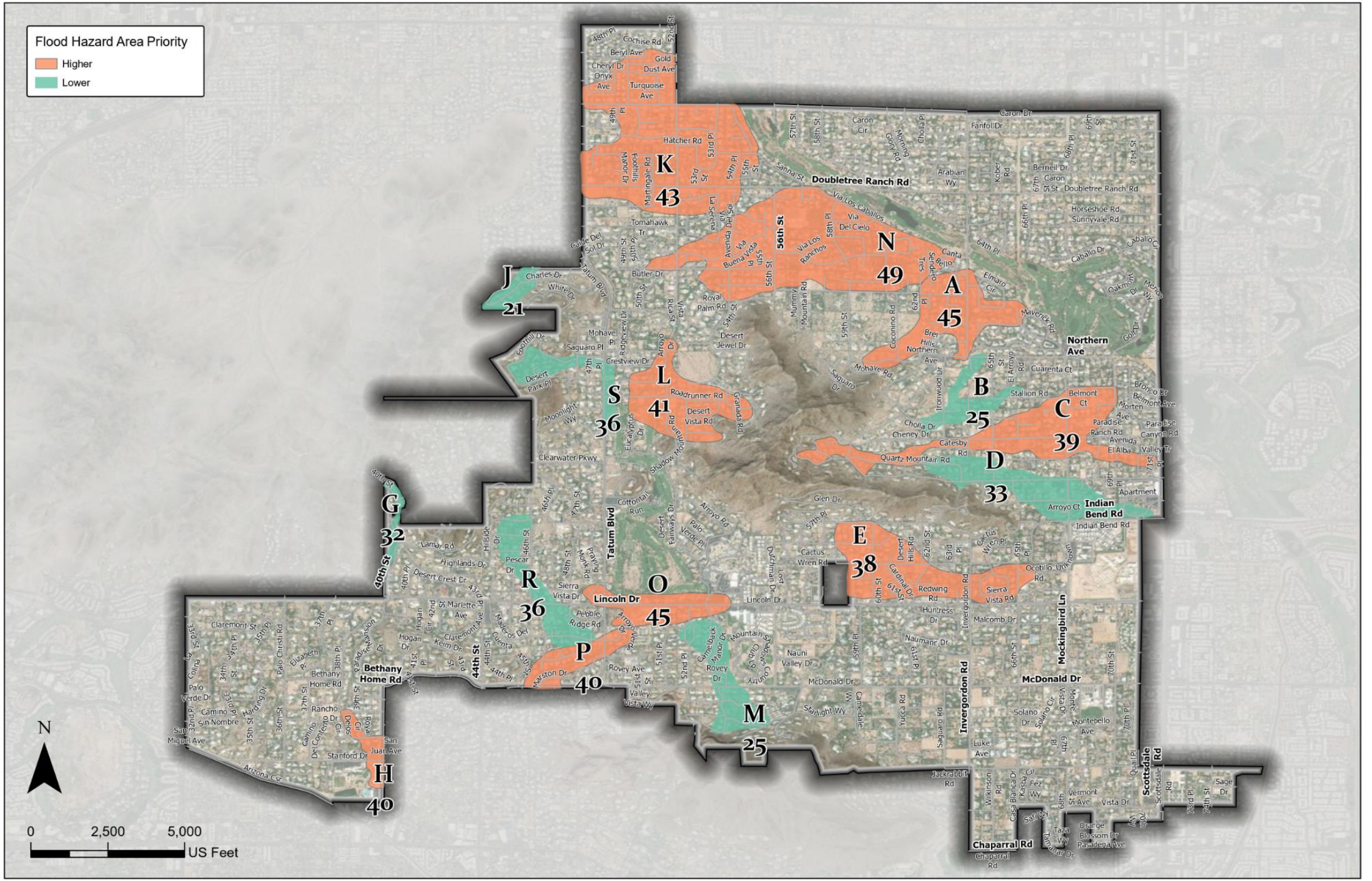
Area Matrix

	Severity of Flooding	Potential Stuctures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
Priority Weighting 1 - 5	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 Stuctures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
Priority Weighting 1 - 5	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



Results of Area Ranking Matrix

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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 Invetory (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

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Expect More. Experience Better.

Questions