

GIS Mapping Procedures

ArcMap Name: *CRS Renewal 2021--John Saunders 2021-12-29*

Shapefiles used/targeted for analysis

- *Stafford County Incorporated Boundary*
- *parcels*
- *Parcels ROW*
- *structures*
- *Hydro*
 - o *Streams*
 - o *Lakes*
 - o *Rivers and Creeks*
- *Watersheds*
- *RPAPOLY_use*
- *SFHA_FloodZones*

Steps for Geoprocessing/Analysis

1. Create 'SFHA Boundary' shapefile:
 - **Clip** '*SFHA_FloodZones*' from '*Stafford County Incorporated Boundary*'
 - o Removes Quantico Marine Corps Base from SFHA
 - o Creates '*SFHA_Stafford County Incorporated Boundary*' shapefile
 - **Merge** '*Streams*', '*Lakes*', '*Rivers and Creeks*'
 - o Creates '*HYDRO_Merge*' shapefile
 - **Merge** '*SFHA_FloodZones*', '*Watersheds*', '*HYDRO_Merge*'
 - o Consolidates all attributes from merged layers into a single shapefile
 - o Creates '*SFHA_HUC6_Hydrology_Merge*' shapefile
 - **Clip** '*SFHA_HUC6_Hydrology_Merge*' from '*SFHA_Stafford County Incorporated Boundary*'
 - o Removes Quantico Marine Corps Base from areas being analyzed
 - o Creates '*SFHA_HUC6_Hydrology_Clip SFHA*' shapefile
 - **Erase** '*HYDRO_Merge*' from '*SFHA_HUC6_Hydrology_Clip SFHA*'
 - o Removes major water bodies obtained from VGIN Hydrology data including major rivers and creeks, lakes, and streams
 - o All water bodies with a surface area >10 acres are removed from the SFHA, including County-owned reservoirs and areas impounded by regulated Dams/larger SWM retention facilities and wet ponds
 - o Creates '*SFHA_HUC6_Erase Hydrology*' shapefile
 - **Select All** features from '*SFHA_HUC6_Erase Hydrology*' and **Create Layers From Selected Features**

- Creates 'SFHA Boundary' shapefile
2. Create 'RPA_SFHA Union' shapefile:
- **Clip 'RPAPOLY_use' from 'SFHA Boundary'**
 - Removes areas of SFHA that are outside of the RPA
 - Creates 'SFHA_Clip RPA' shapefile
 - **Clip 'SFHA Boundary' from 'RPAPOLY_use'**
 - Removes areas of RPA that are outside of the SFHA
 - Creates 'RPA_SFHA Clip' shapefile
 - **Union 'SFHA_Clip RPA' and 'RPA_SFHA Clip'**
 - Creates single 'RPA_SFHA Union' polygon shapefile for areas that are both SFHA and RPA

Note The SFHA must be clipped from the RPA and vice versa to account for situations where either the SFHA exceeds the RPA boundary, or the RPA exceeds the SFHA boundary

3. Remove developed parcels from the RPA and ROW from 'RPA_SFHA Union' – create final 'Open Space Preservation Boundary' shapefile:

- **Select by location 'structures' that intersect, are within the boundary, touch the boundary of the 'RPA_SFHA Union' shapefile**
- **Create layer package from selection**
 - Creates 'Structures Intersecting or Touching RPA_SFHA Union' shapefile
- **Select by location 'parcels' that contain the source layer feature 'Structures Intersecting or Touching RPA_SFHA Union'**
- **Create layer package from selection**
 - Creates 'Parcels containing Structures Intersecting or Touching RPA_SFHA Union' shapefile
- **Erase 'Parcels containing Structures Intersecting or Touching RPA_SFHA Union' from 'RPA_SFHA Union'**
 - Removes all previously developed/re-developed parcels with RPA whose structures are within, intersect, or touch the consolidates RPA/SFHA boundary – these parcels are not eligible for inclusion as OSP since they have already been developed or may be re-developed in the future
 - Creates 'RPA_SFHA Erase Parcels w Structures Intersecting or Touching RPA_SFHA Union' shapefile
- **Erase 'Parcels ROW' from 'RPA_SFHA Erase Parcels w Structures Intersecting or Touching RPA_SFHA Union'**
 - Creates 'RPA_SFHA Erase Parcel ROW' shapefile
- **Select All features from 'RPA_SFHA Erase Parcel ROW' and Create Layer From Selected Features**
 - Creates 'Open Space Preservation Boundary'

4. Tabulate final acreage amounts by HUC6 in Microsoft Excel spreadsheet

- Both '*SFHA_Boundary*' and '*Open Space Preservation Boundary*' shapefiles are organized by HUC 6 watersheds with polygon areas tabulated in the attribute table
- The attribute tables can be exported to Excel or a Report can be created and queried to obtain acreage amounts of overall SFHA and SFHA as OSP per watershed

Note Geometry for shapefile areas should be re-calculated to confirm that polygon areas are given in "Acres"

CRS Activity 420 - Open Space Preservation
NFIP Number: 510154



ArcMap Name: CRS Renewal 2021--John Saunders 2021-12-29
 Date of GIS Analysis: 2021-12-29

HUC6	Total SFHA in Preserved Open Space Condition (SFHA in RPA)	Total SFHA (Zones A, AE, AO, V, VE)
	aOSP	aSFHA
	[Acres]	[Acres]
PL53	28.67	87.03
PL54	322.94	395.27
PL56	408.03	622.33
PL57	959.46	1,586.42
PL58	1,179.08	1,345.35
PL59	706.89	1,069.26
PL60	1,619.13	1,985.82
PL61	18.30	32.95
RA23	402.86	664.45
RA45	347.06	499.51
RA46	614.45	1,172.54
RA48	680.58	1,130.73
TOTAL	7,287.45	10,591.66

Impact Adjustment for OSP - CRS Coordinator's Manual, 420-8
 - Total points available for OSP = **1,450**

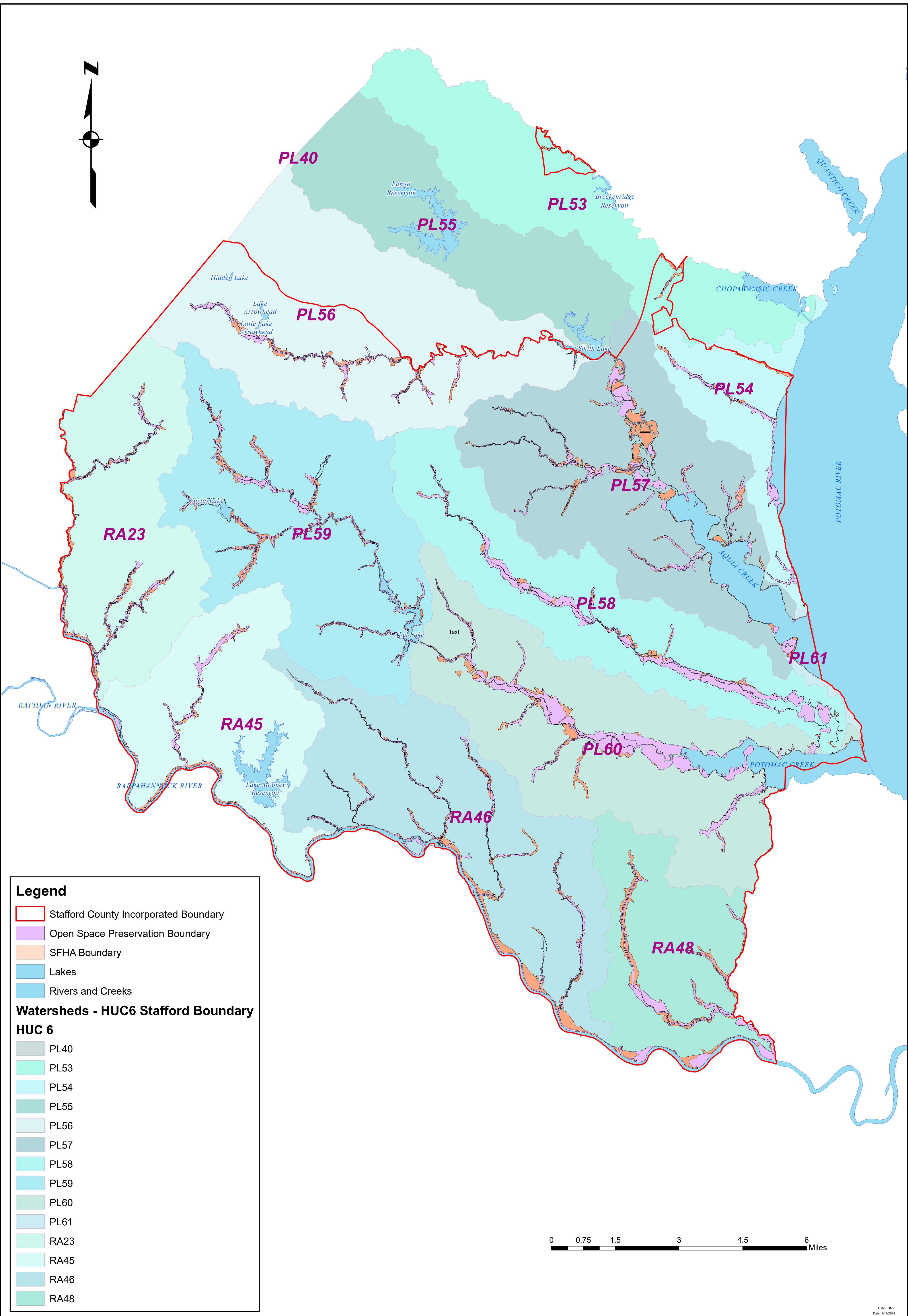
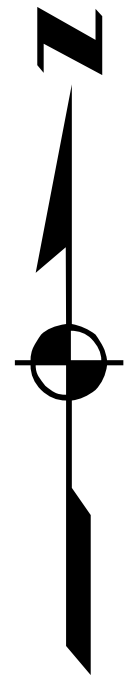
$rOSP = aOSP/aSFHA$

aOSP = the size of the area(s) preserved as open space in the regulatory SFHA

aSFHA = the size of the community's SFHA shown on its FIRM

aOSP = 7,287.45 Acres
aSFHA = 10,591.66 Acres
rOSP = 0.69
(rOSP x 1450) = 997.65 Points

Countywide Preserved Open Space Boundary (SFHA w/in RPA)



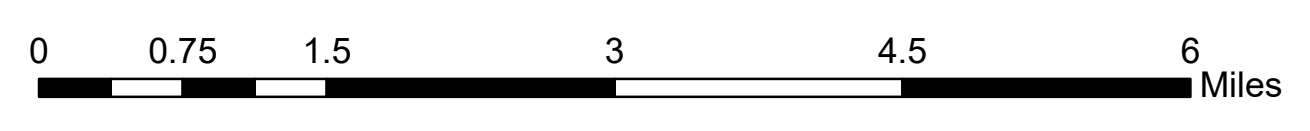
Legend

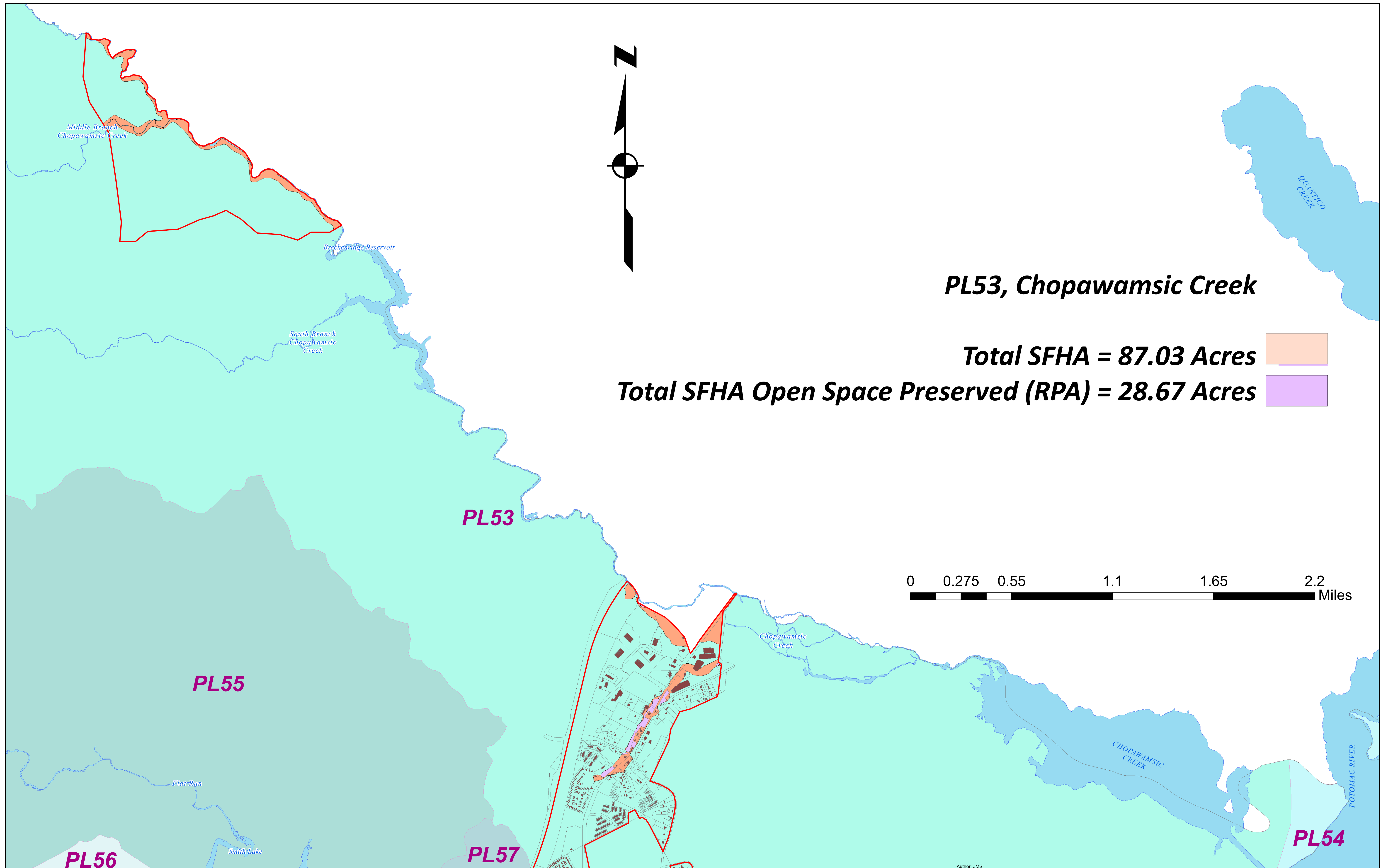
- Stafford County Incorporated Boundary
- Open Space Preservation Boundary
- SFHA Boundary
- Lakes
- Rivers and Creeks

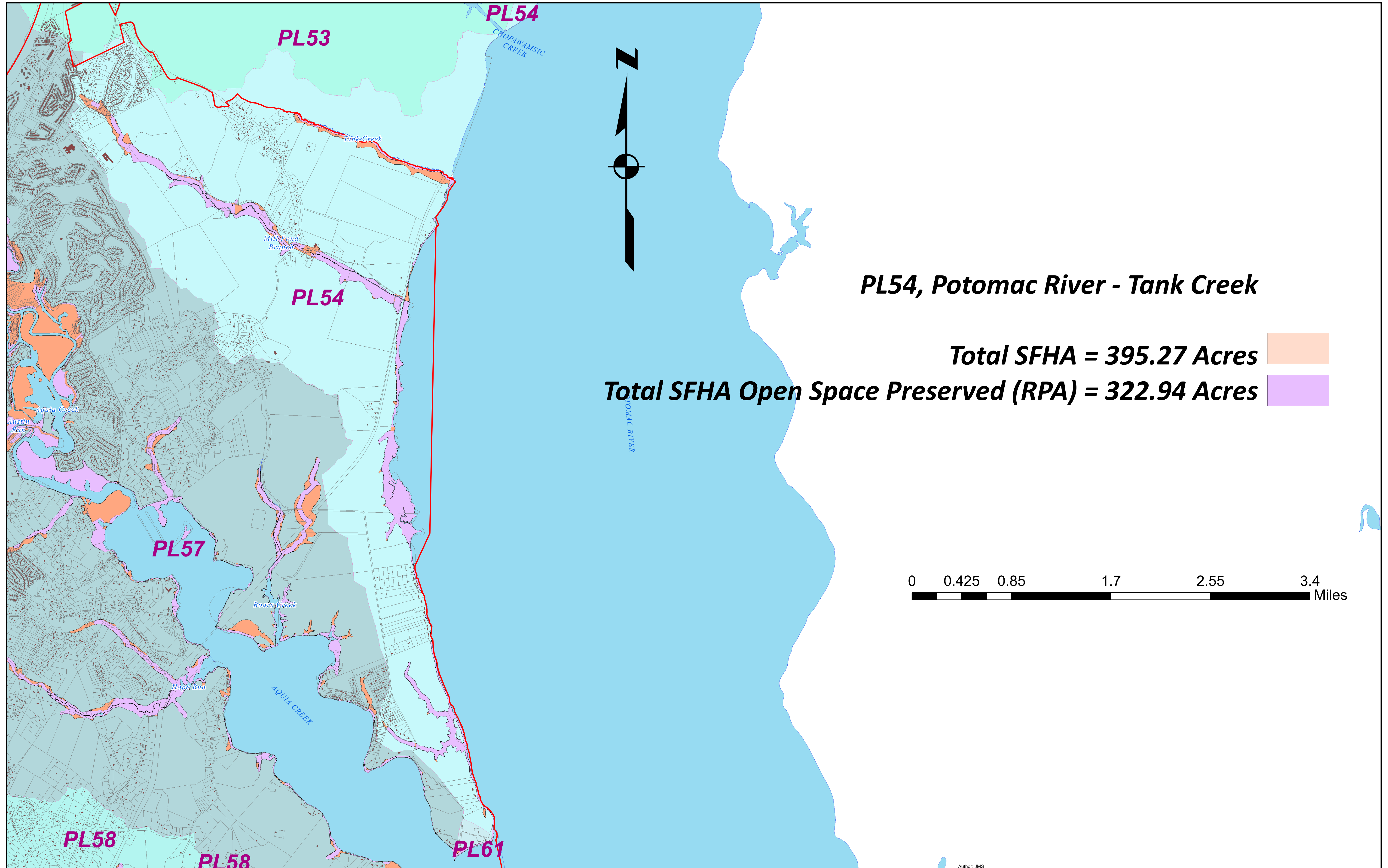
Watersheds - HUC6 Stafford Boundary

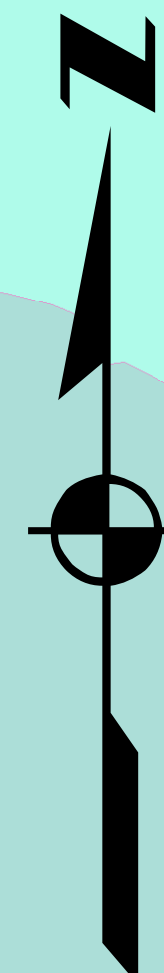
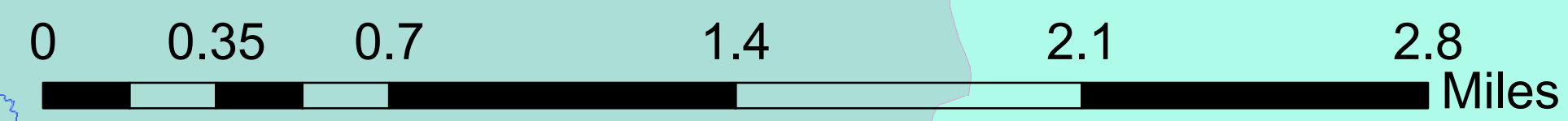
HUC 6

- PL40
- PL53
- PL54
- PL55
- PL56
- PL57
- PL58
- PL59
- PL60
- PL61
- RA23
- RA45
- RA46
- RA48







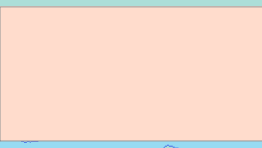


PL40

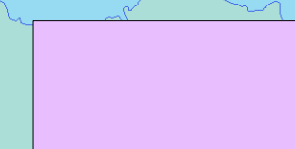
PL53

PL56, Upper Aquia Creek

Total SFHA = 622.33 Acres



Total SFHA Open Space Preserved (RPA) = 408.03 Acres



PL55

PL56

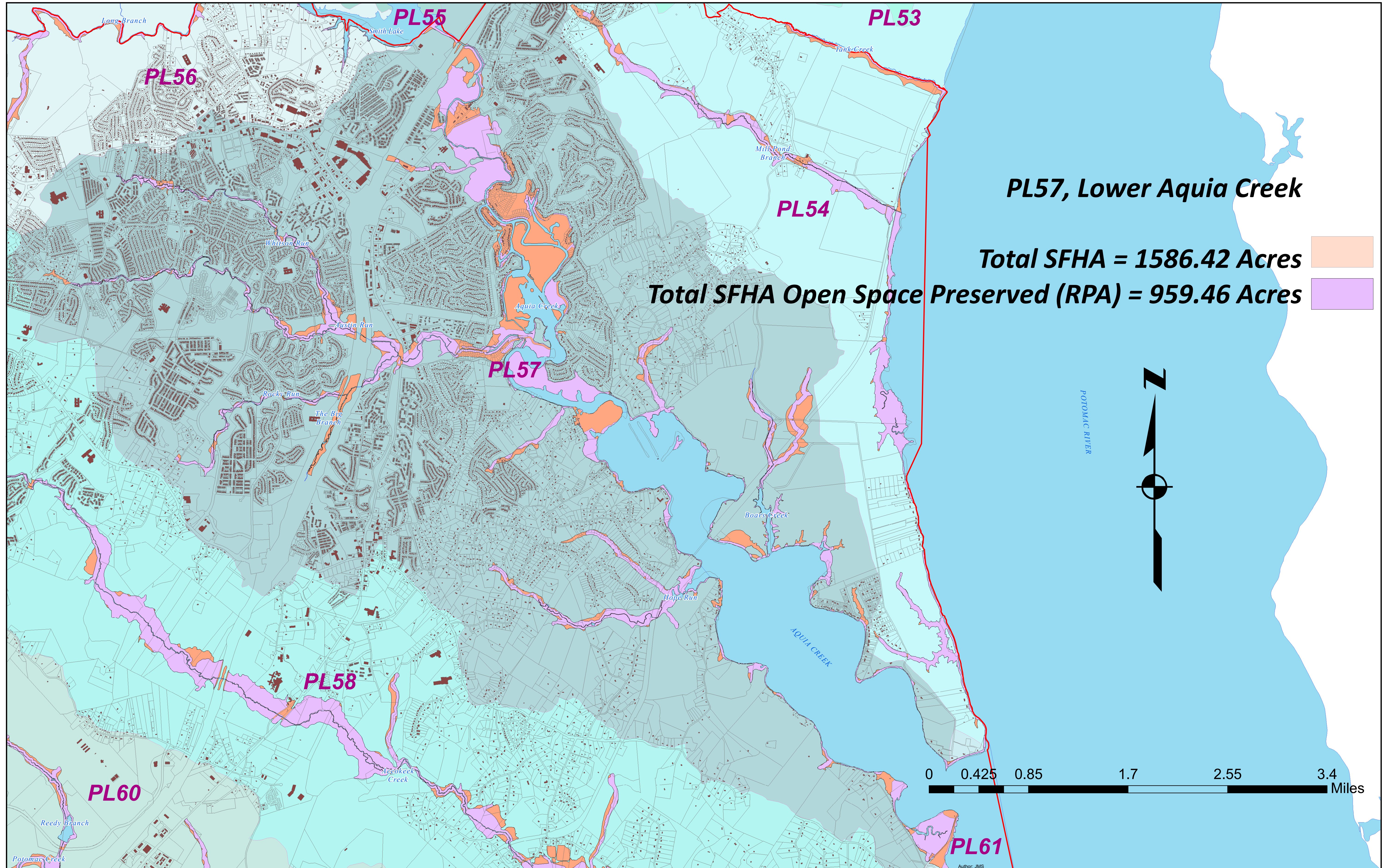
RA23

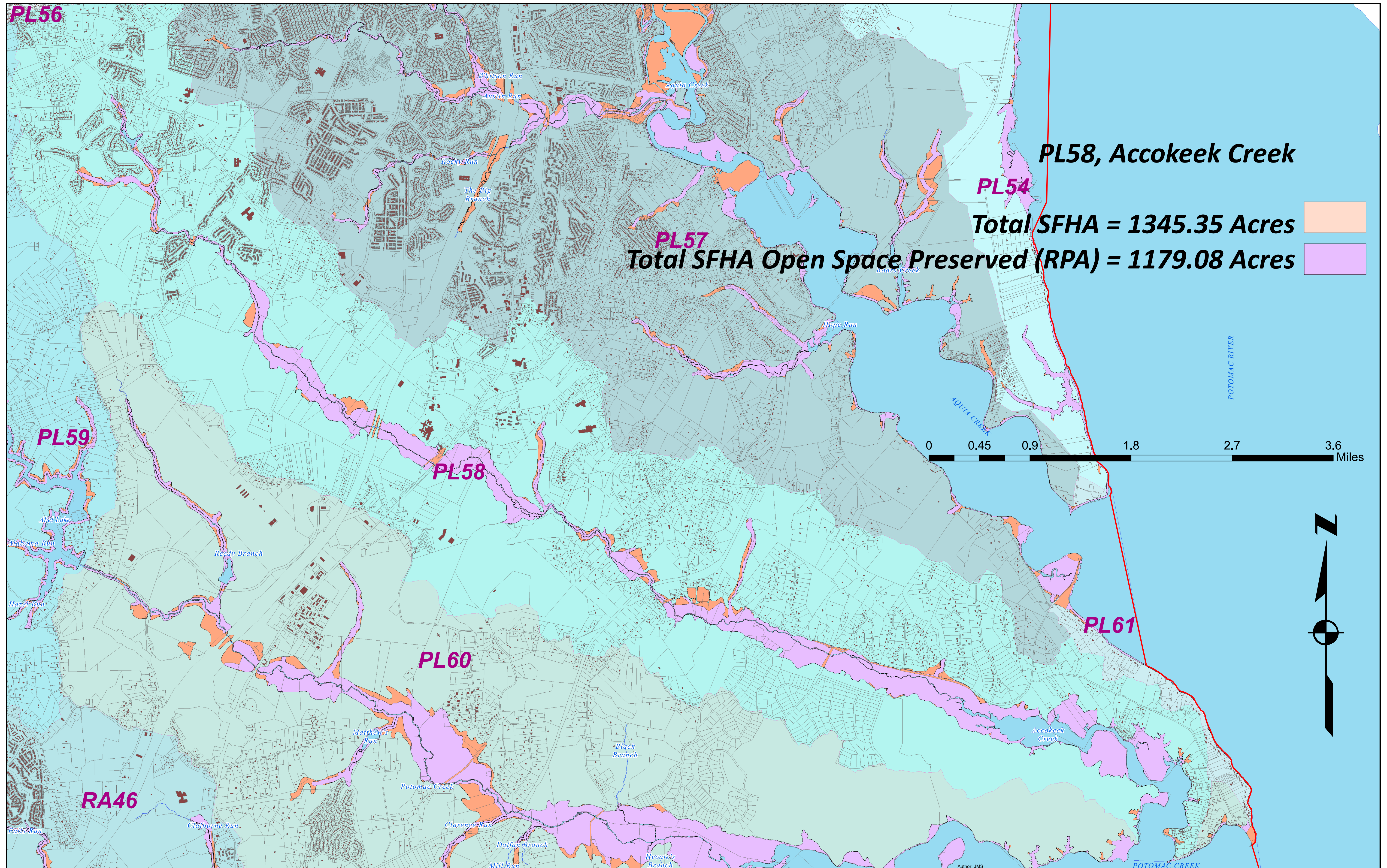
PL59

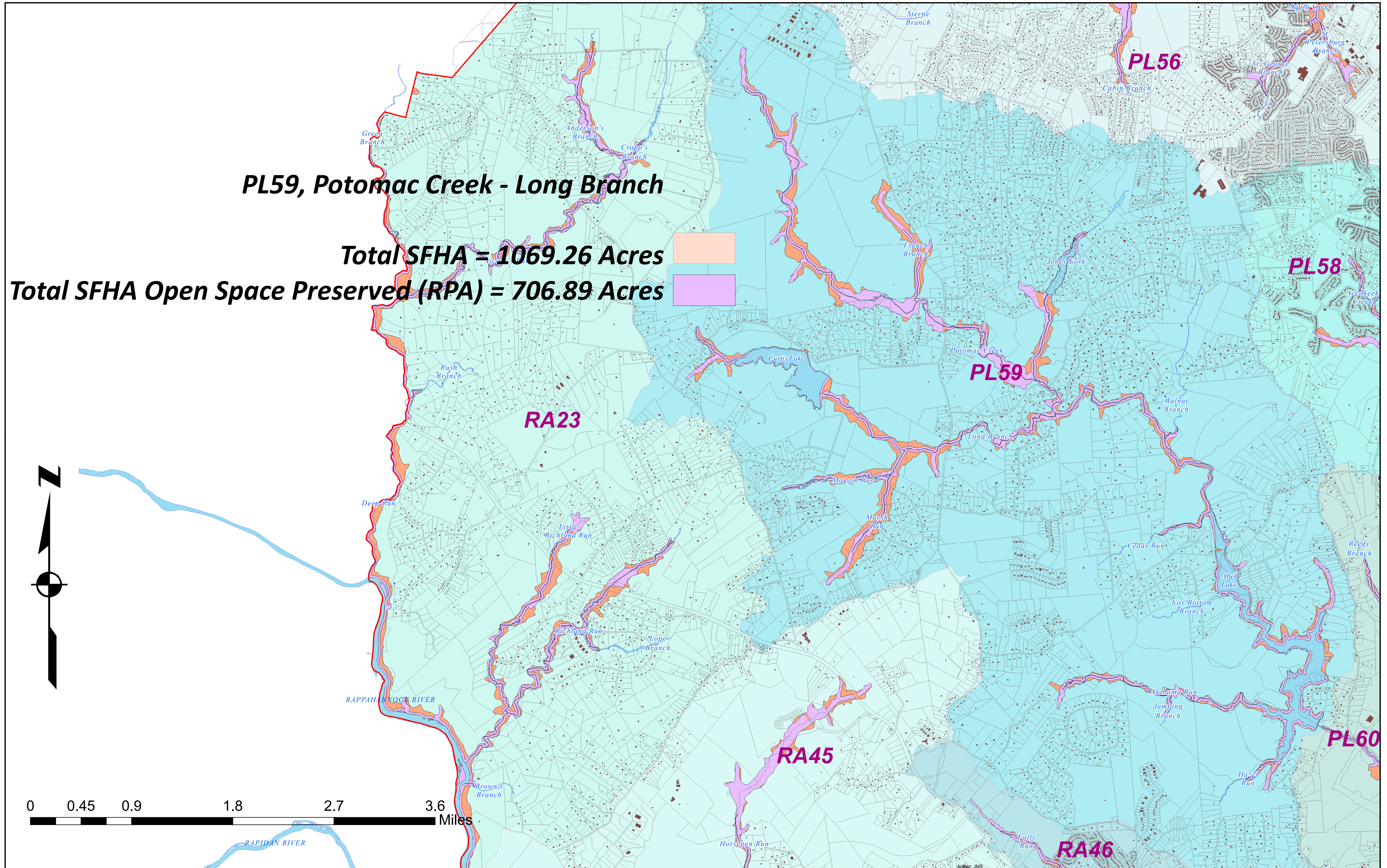
RA23

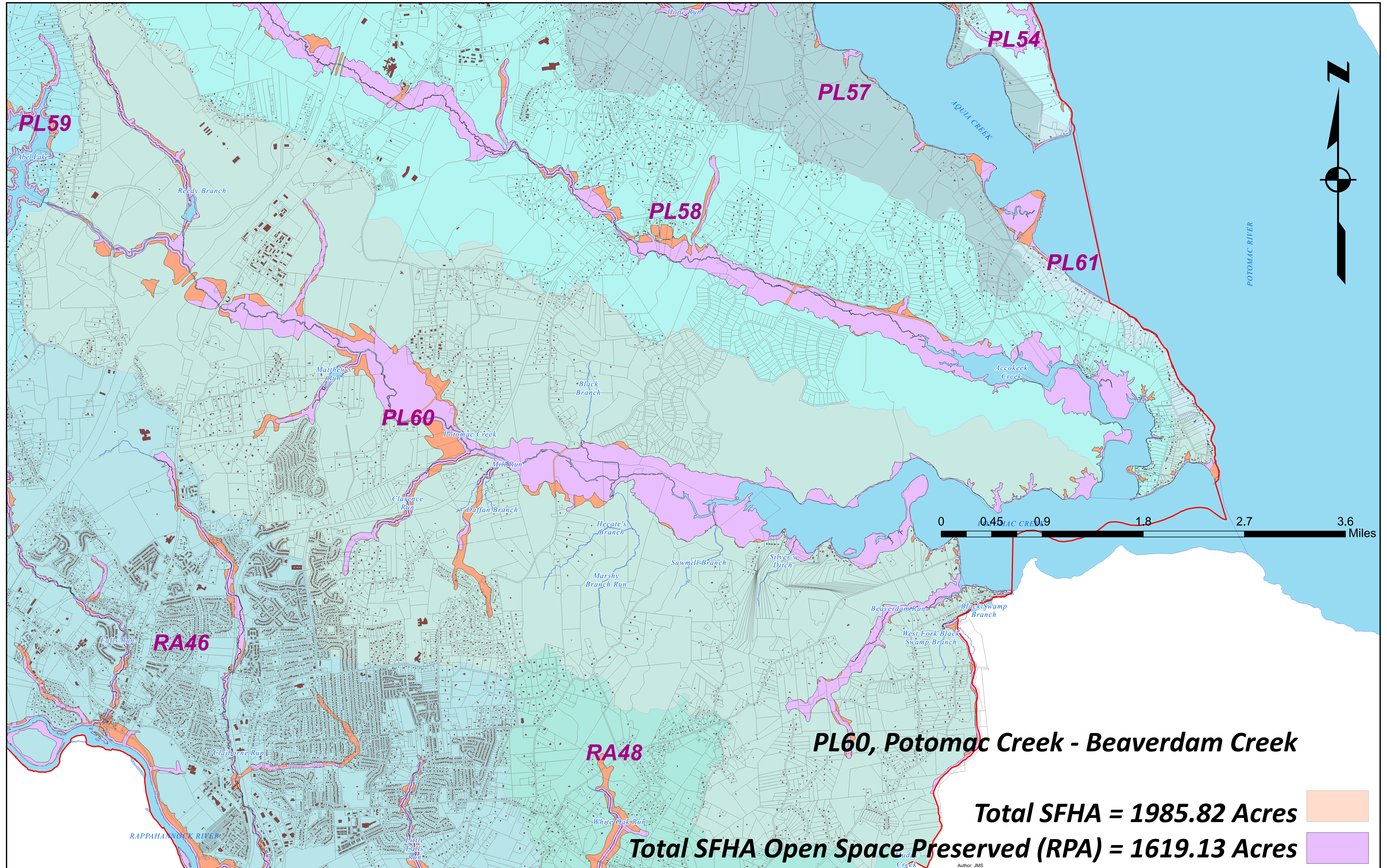
PL59

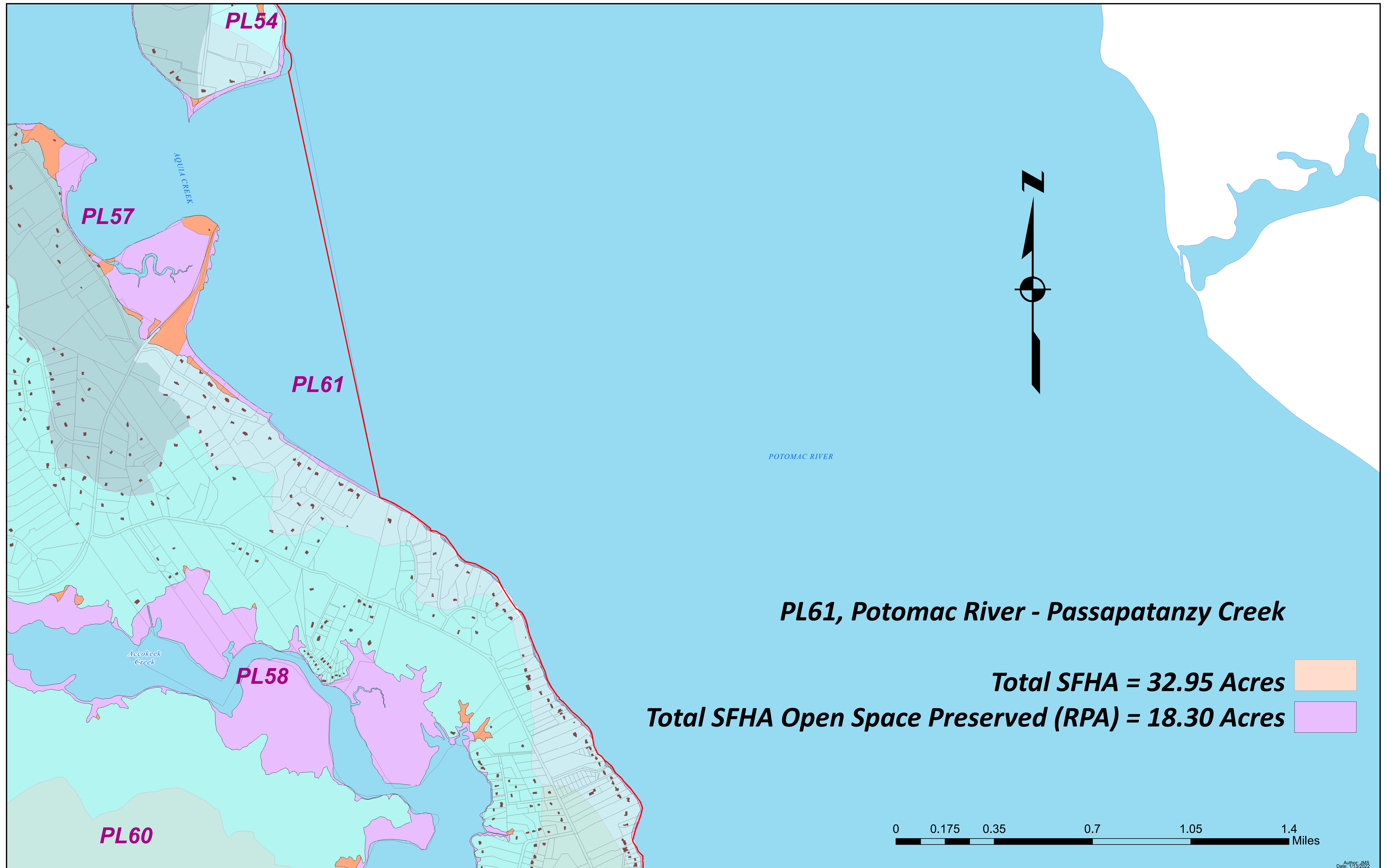
PL57

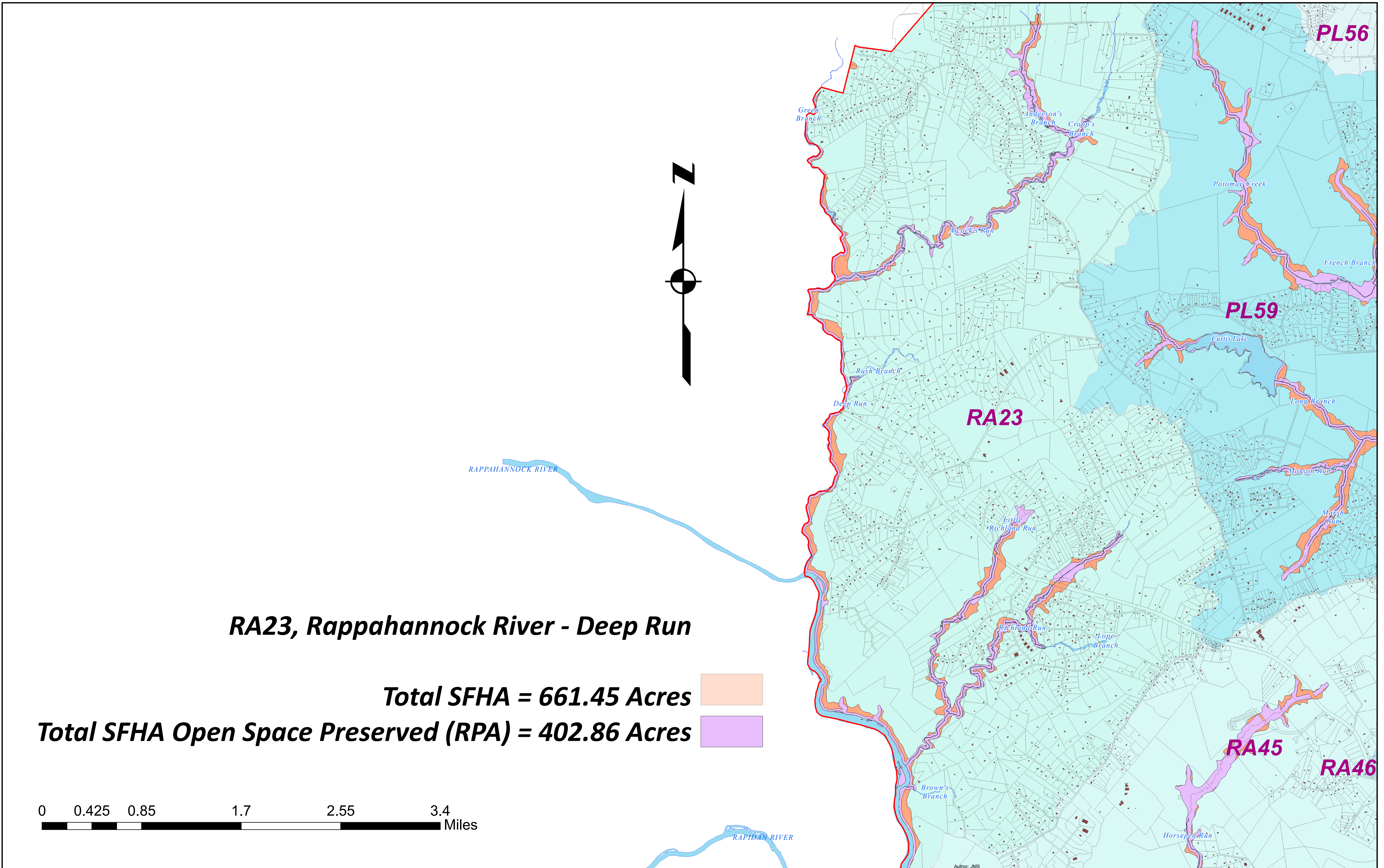


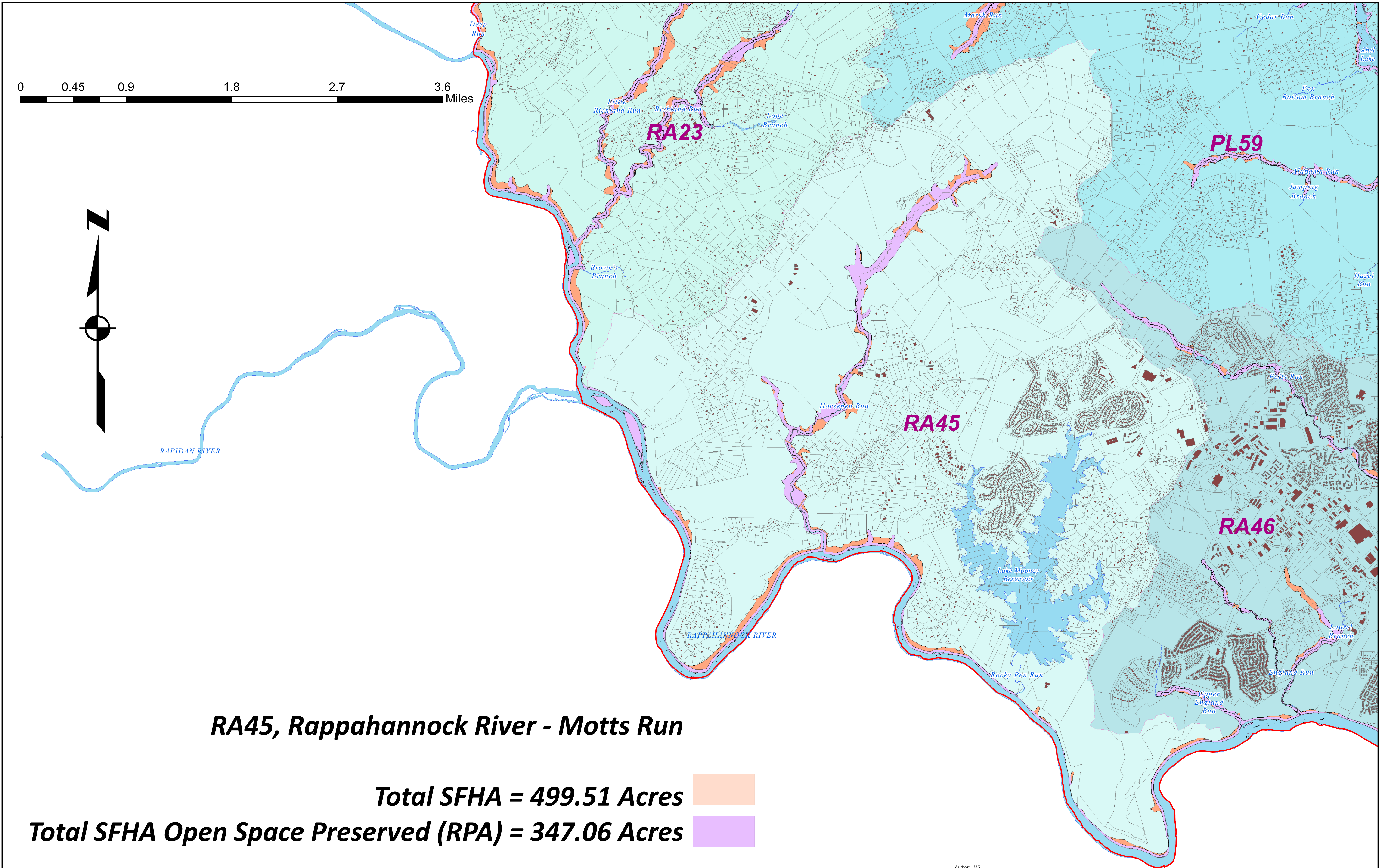


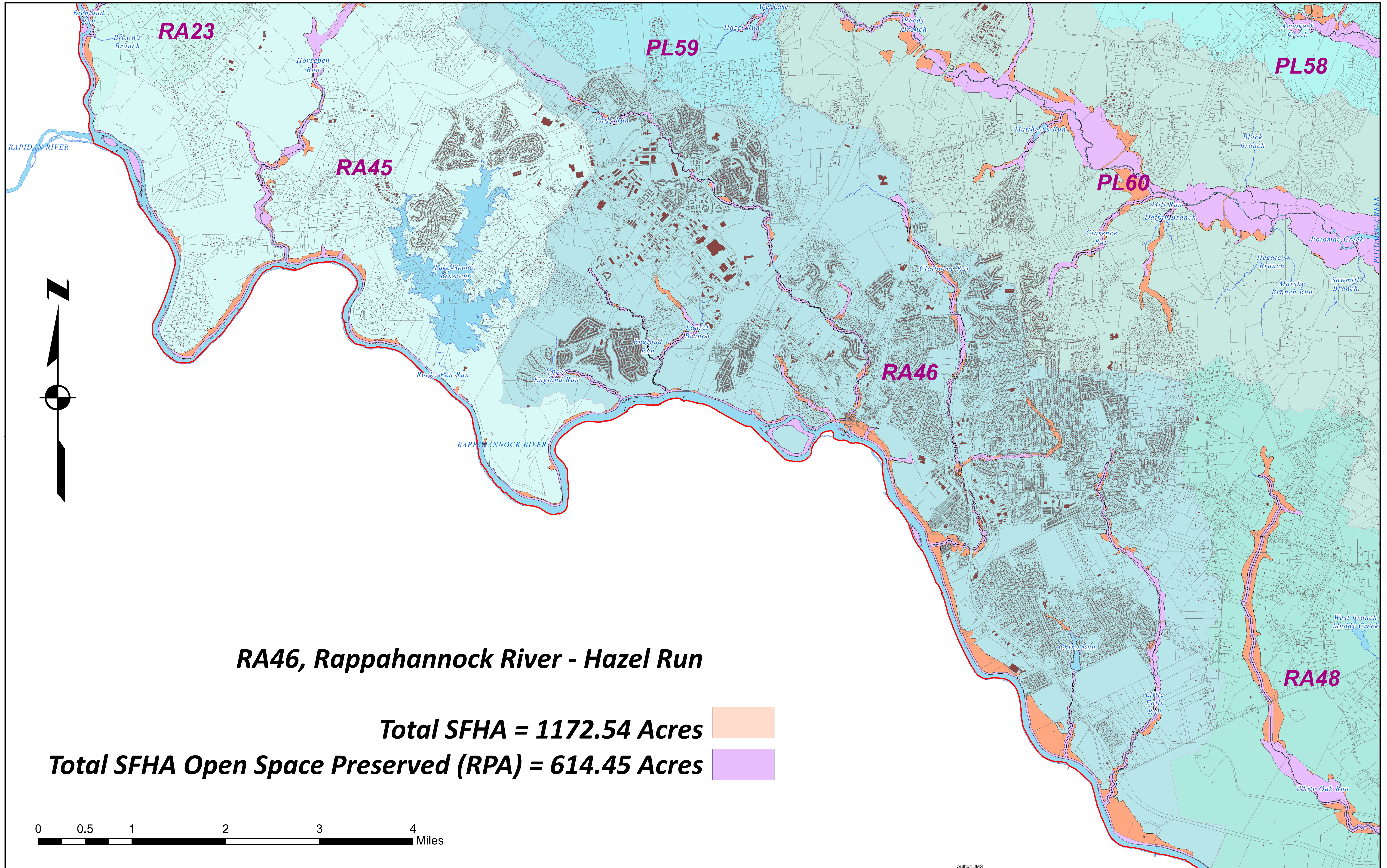


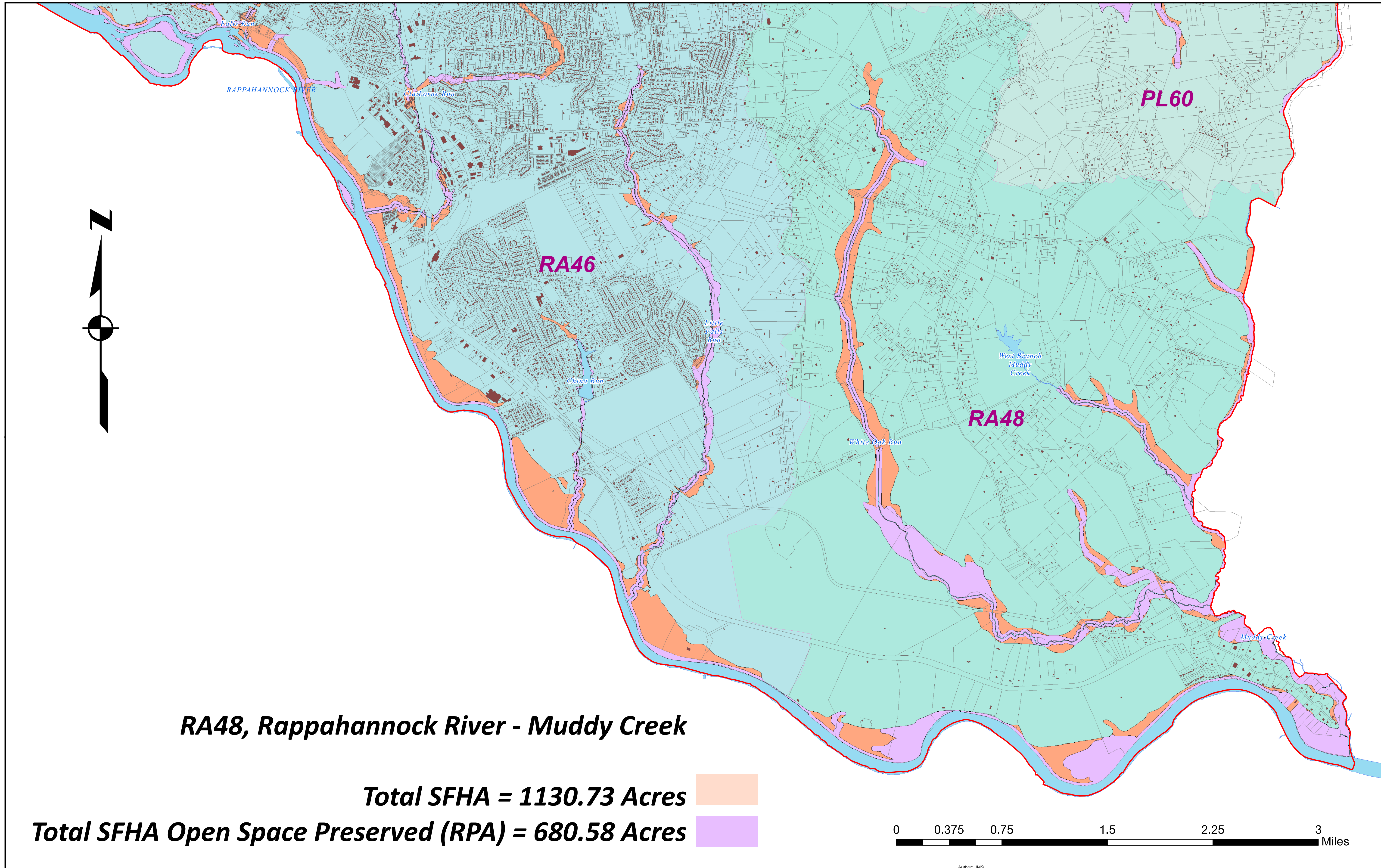












RA48, Rappahannock River - Muddy Creek

Total SFHA = 1130.73 Acres



Total SFHA Open Space Preserved (RPA) = 680.58 Acres

