



Chesapeake Bay Program
Science. Restoration. Partnership.

June 23, 2025

Draft Phase 7 Land-River Segments (LR-Segs)

WQGIT Meeting
Alex Gunnerson, USGS

Agenda

1

Background

Review of previous discussions

2

P6 vs P7 Land Segments

Comparison of changes

3

P6 vs P7 River Segments

Comparison of changes

4

Land-River Segments – Option A

Maintains P6 Segmentsheds

5

Land-River Segments – Option B

Slight tweaks to P6 Segmentsheds

6

Discussion

Requesting a WQGIT decision on
P7 CAST Segmentation

Background

Previous Discussions

Previous WQGIT Meeting (Presentation)

Decided to use HUC 12 watersheds for River Segments.

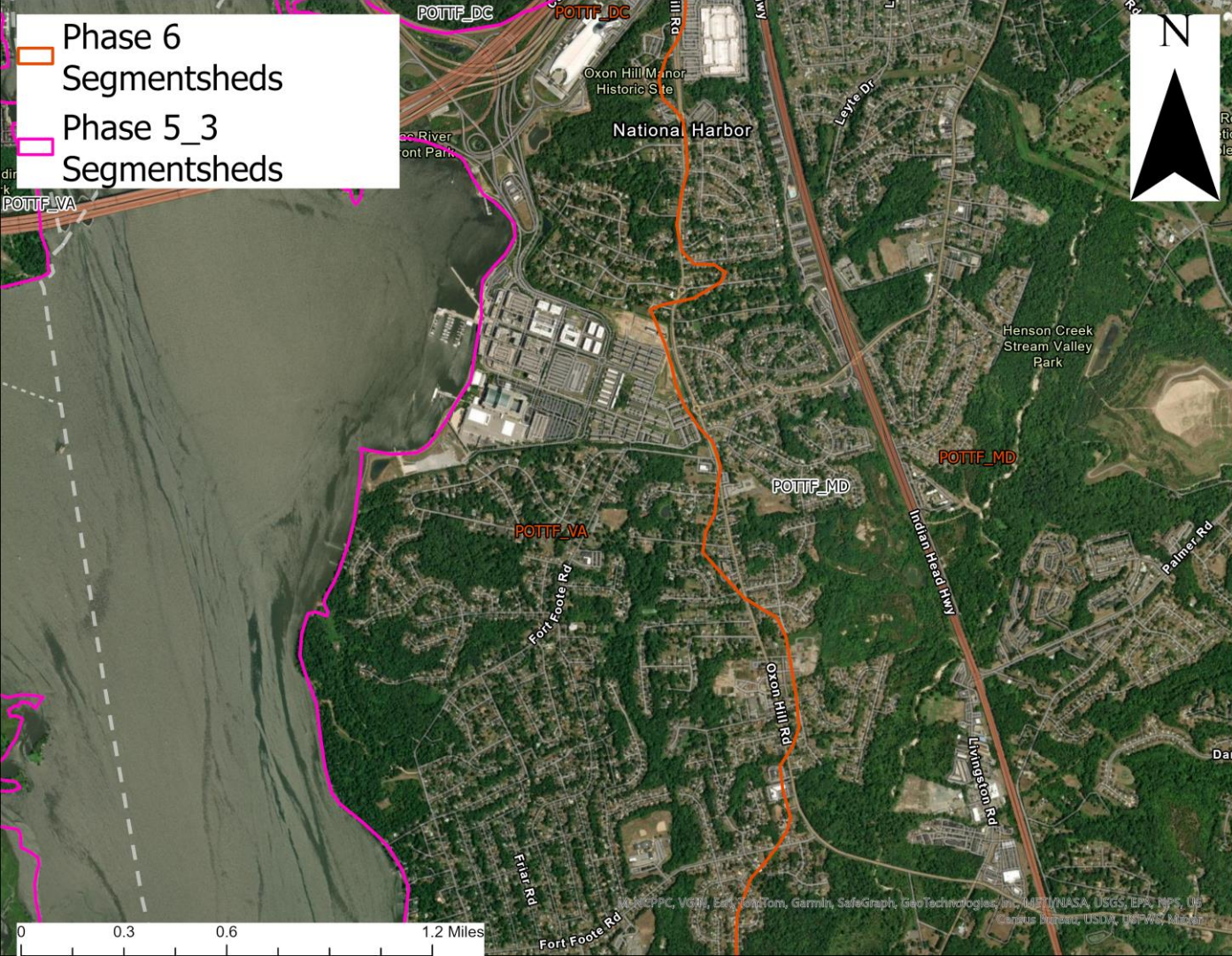
Proposed maintaining the Phase 6 Segmentsheds in the Phase 7 Land-River Segments for consistency across phases.

Proposed instituting a minimum size of 1000 to 5000 acres for a LR-Seg for Excel data export reasons.

NOTE

These numbers are overly inclusive, meaning that not all of these segments feed into CAST.

The P6 Segmentshed boundaries are covered by the Accountability Framework, meaning that the Partnership can decide to change them as they see fit through the WQGIT. Segmentshed boundaries **did change** from P5.3 to P6.



Segmentshed
boundaries
did change
from P5.3 to
P6.

P6 vs P7 Land Segments

- Same orographic boundaries
Source: PRISM 1981-2010 Precipitation Normals
- 2010 vs 2020 county boundaries
Source: Census Bureau TIGER boundaries

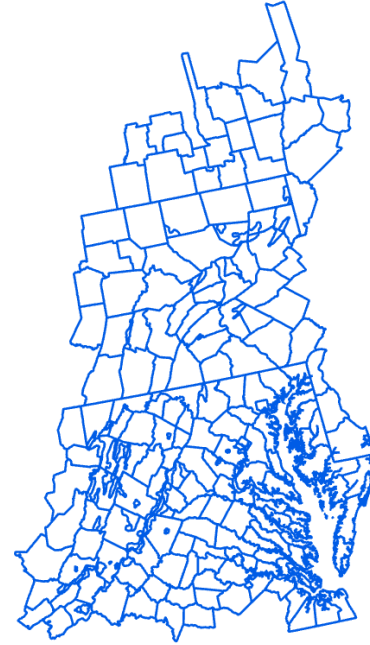
Phase 6



N= 244

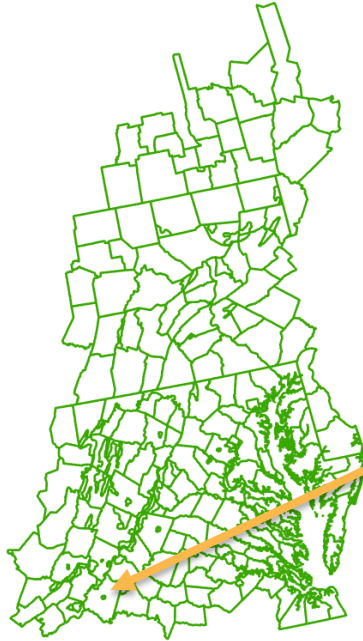
Land Segments

Phase 7



N= 243

Phase 6

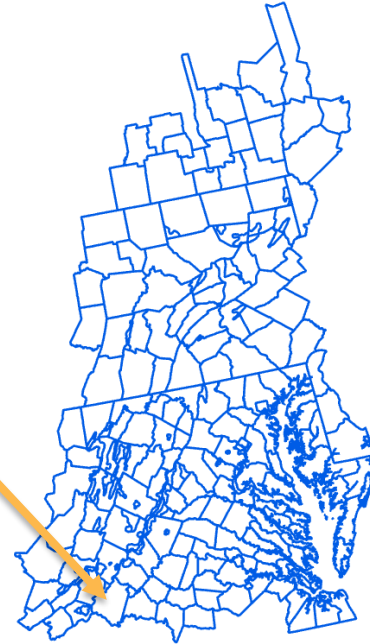


N= 244

Land Segments

Bedford City
was
absorbed by
Bedford
County

Phase 7



N= 243

P6 vs P7 River Segments

- Now using HUC 12 watersheds
- Aligned with P6 Segmentshed boundaries

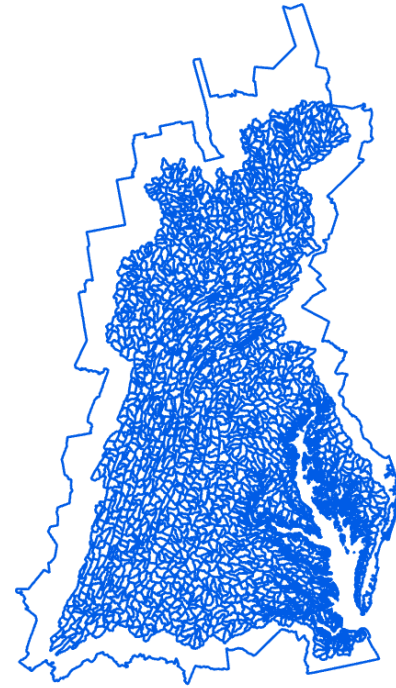
Phase 6



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River Segments

Phase 7

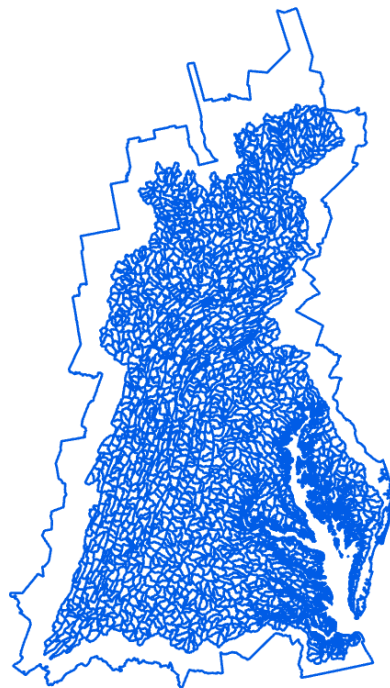


N= 2013

River Segments

- HUC 12 Watersheds (USGS Water Mission Area Version)
- Slight modifications in the Lower Susquehanna to account for mainstem impoundments
- Aligns with P6 Segmentshed boundaries

Phase 7



N= 2013

DRAFT P7 Land-River Segments

Option A: Consistent with P6
Segmentshed Version

Phase 6

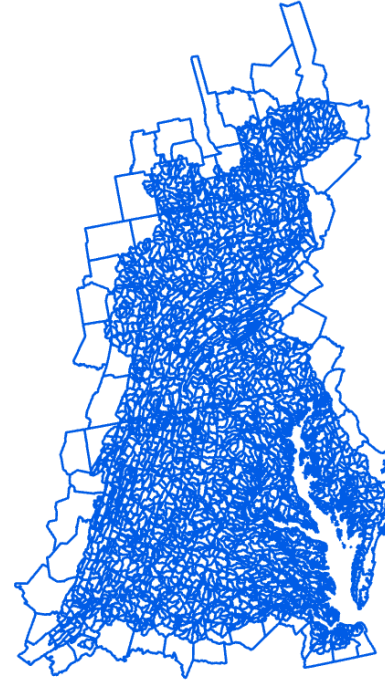


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Land- River Segments Option A

[Interact with the
different layers in this
web map.](#)

Phase 7



N= 3784

Land-River Segments – Option A

	Phase 6	Phase 7 Option A
Total Area (acres)	60,104,160	60,103,980
# of Segments	2,058	3,784
# of Segments < 1000 Acres	204	553
# of Segments < 100 Acres	4	220
Minimum Segment Size	~19 acres	~0 acres
Average Segment Size	29,205 acres	15,883 acres
Median Segment Size	11,680 acres	10,040 acres

Land-River Segments – Option A

	Phase 6	Phase 7 Option A
Total Area (acres)	60,104,160	60,103,980
# of Segments	2,058	3,784
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# of Segments < 100 Acres	4	220
Minimum Segment Size	~19 acres	~0 acres
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Difference caused by change from 2010 to 2020 County Boundaries.

Land-River Segments – Option A

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Total Area (acres)	60,104,160	60,103,980
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Slivers caused by maintaining the consistency of the P6 Segmentsheds.



LRSegs – Option A Slivers

Issue #1:

P6 Segmentshed boundaries don't align with county boundaries along ridgelines.

Location: Southeastern edge of Randolph County, WV

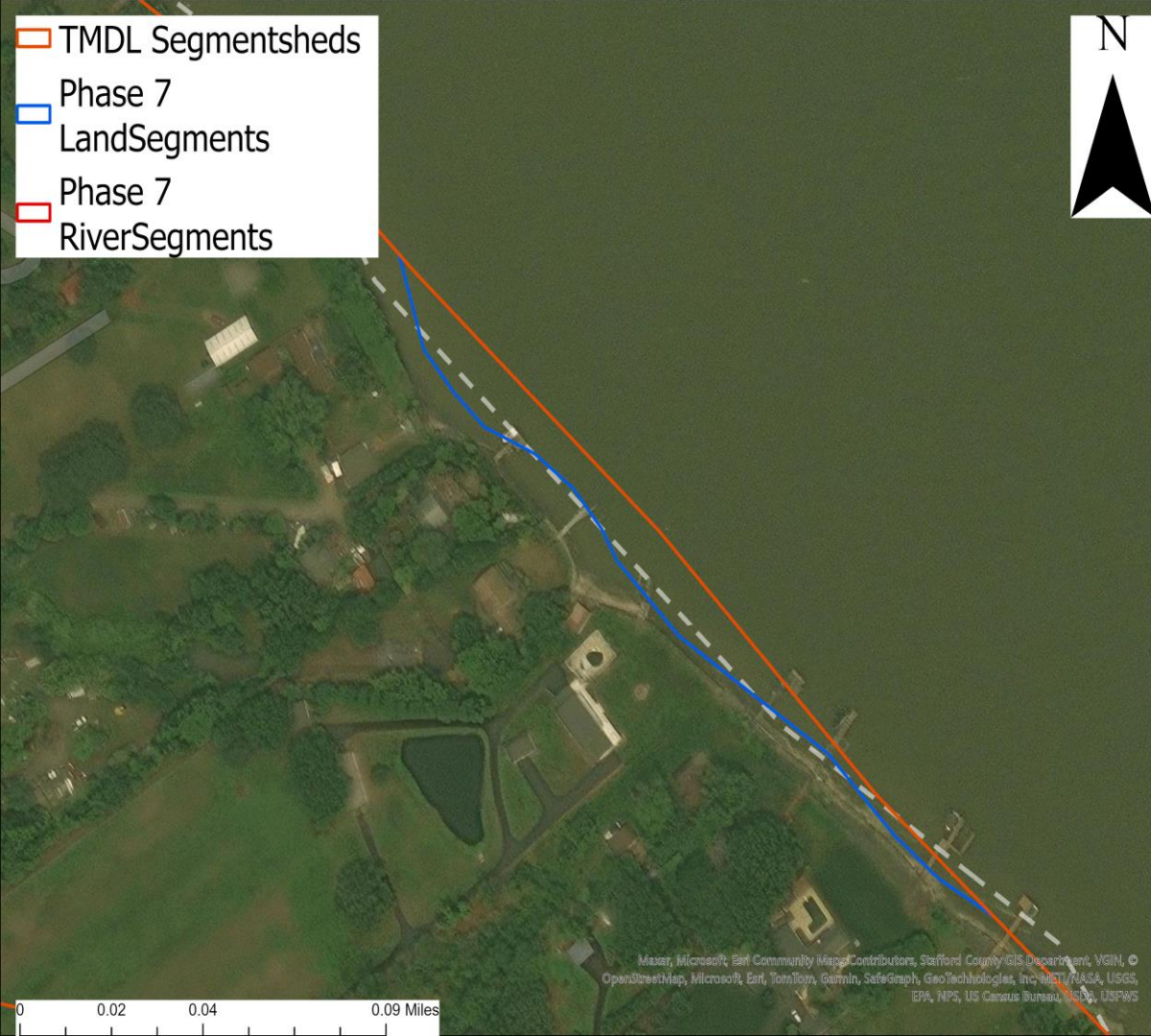


LRSegs – Option A Slivers

Issue #1:

P6 Segmentshed boundaries don't align with county boundaries along ridgelines.

Location: boundary between Augusta and Albemarle counties in VA



LRSegs – Option A Slivers

Issue #2:

P6 Segmentshed boundaries don't align with county boundaries in tidal waters.

Location: Boundary between Stafford County, VA and Charles County, MD

- TMDL
- Segmentsheds
- Phase 7
- LandSegments
- Phase 7
- RiverSegments

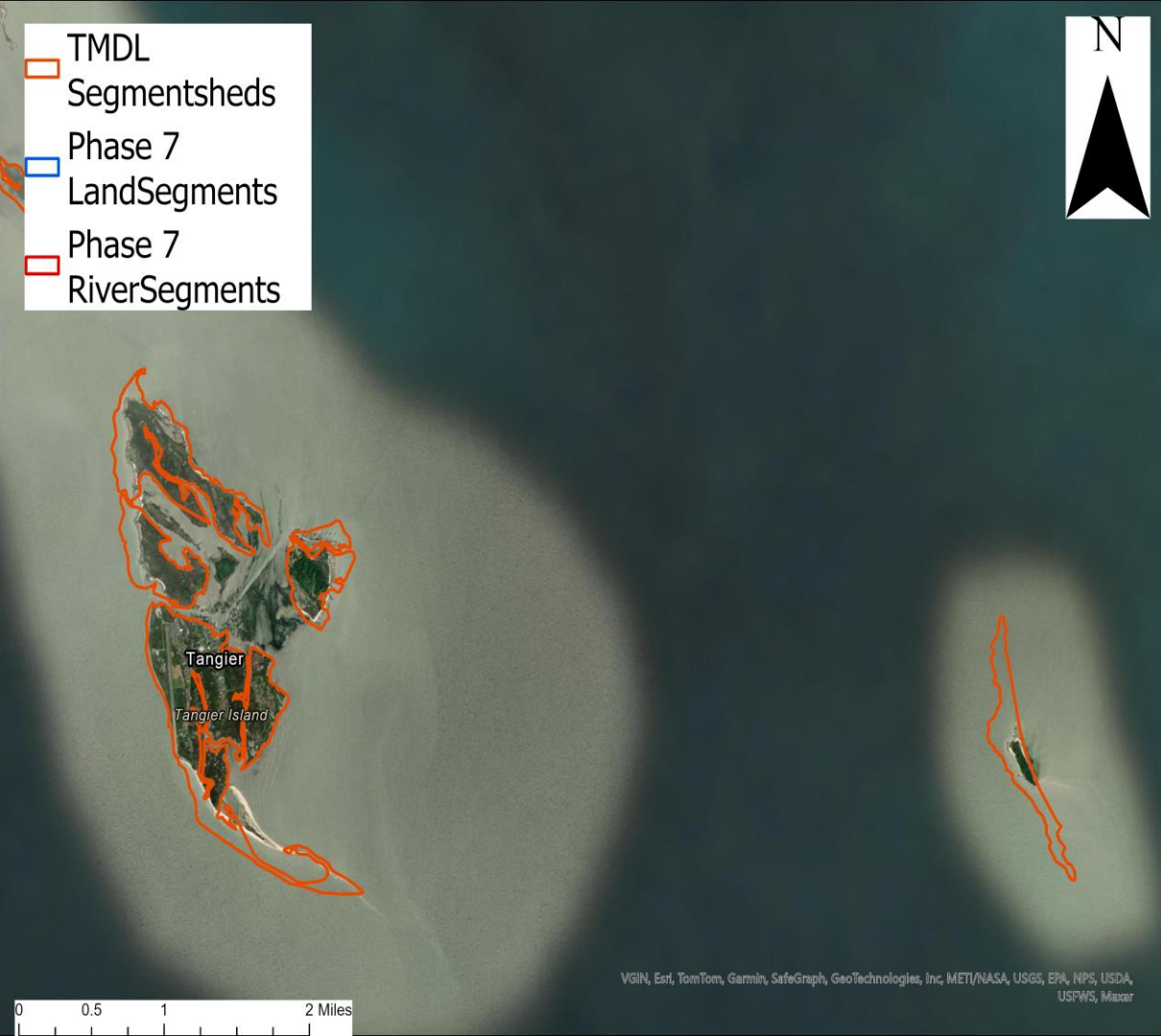


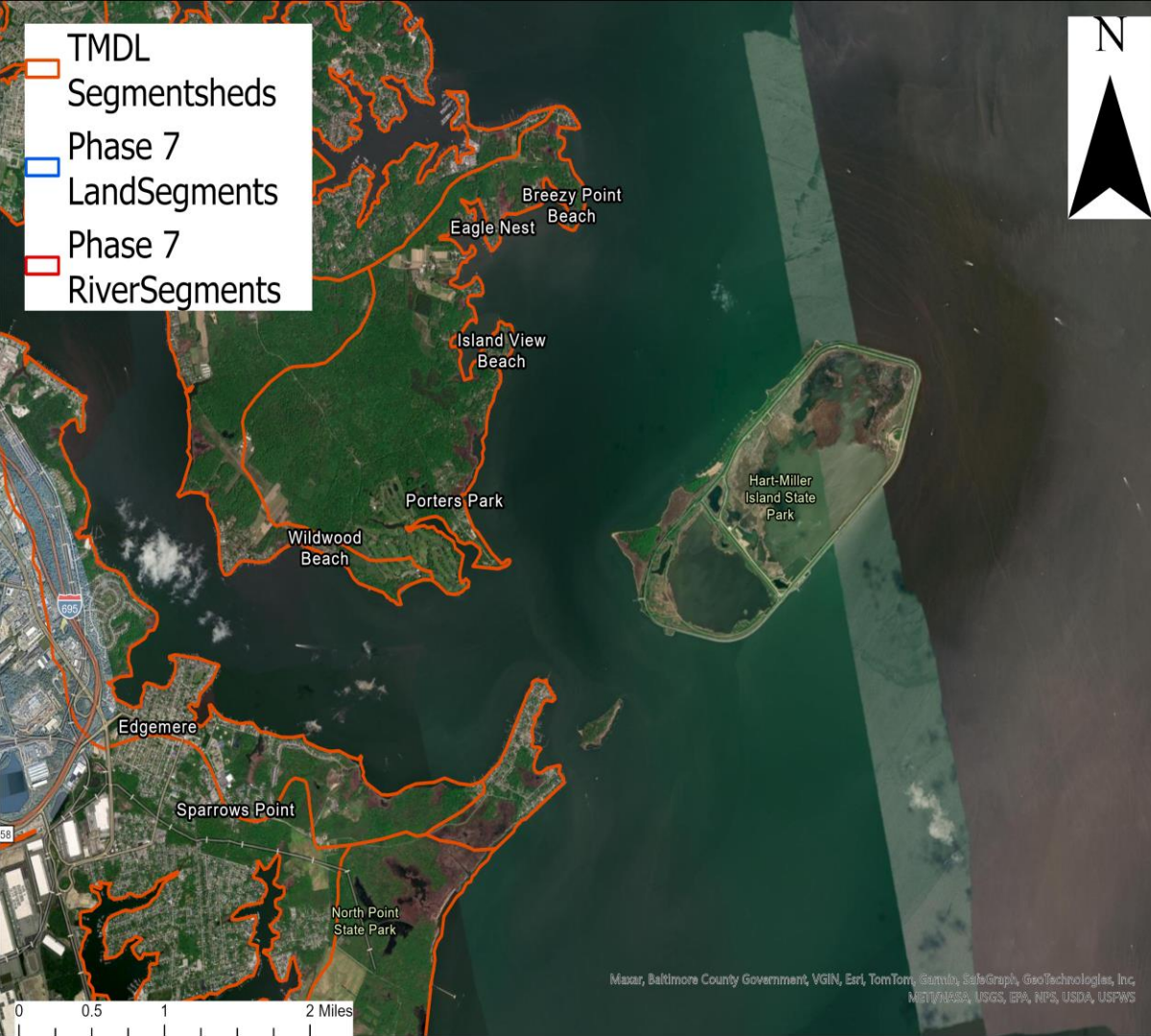
LRSegs – Option A Slivers

Issue #3:

P6 Segmentshed boundaries include island extents that are much greater than current extents.

Location: Tangier Island, VA





LRSegs – Option A Slivers

Issue #4:

P6 Segmentshed boundaries exclude some islands.

Location: Hart-Miller Island, MD

- TMDL
- Segmentsheds
- Phase 7
- LandSegments
- Phase 7
- RiverSegments



LRSegs – Option A Slivers

Issue #4:

P6 Segmentshed boundaries exclude some islands.

Location: Poplar Island, MD

DRAFT P7 Land-River Segments

Option B: New Shoreline Version

Phase 6

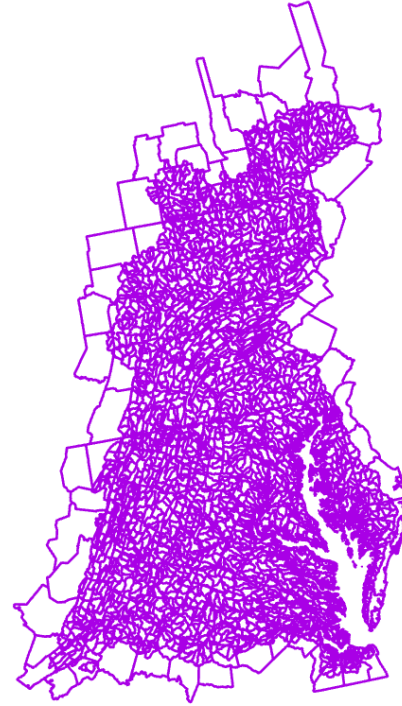


N= 2058

Land- River Segments Option B

[Interact with the
different layers in this
web map.](#)

Phase 7



N= 3608

Land-River Segments – Option B

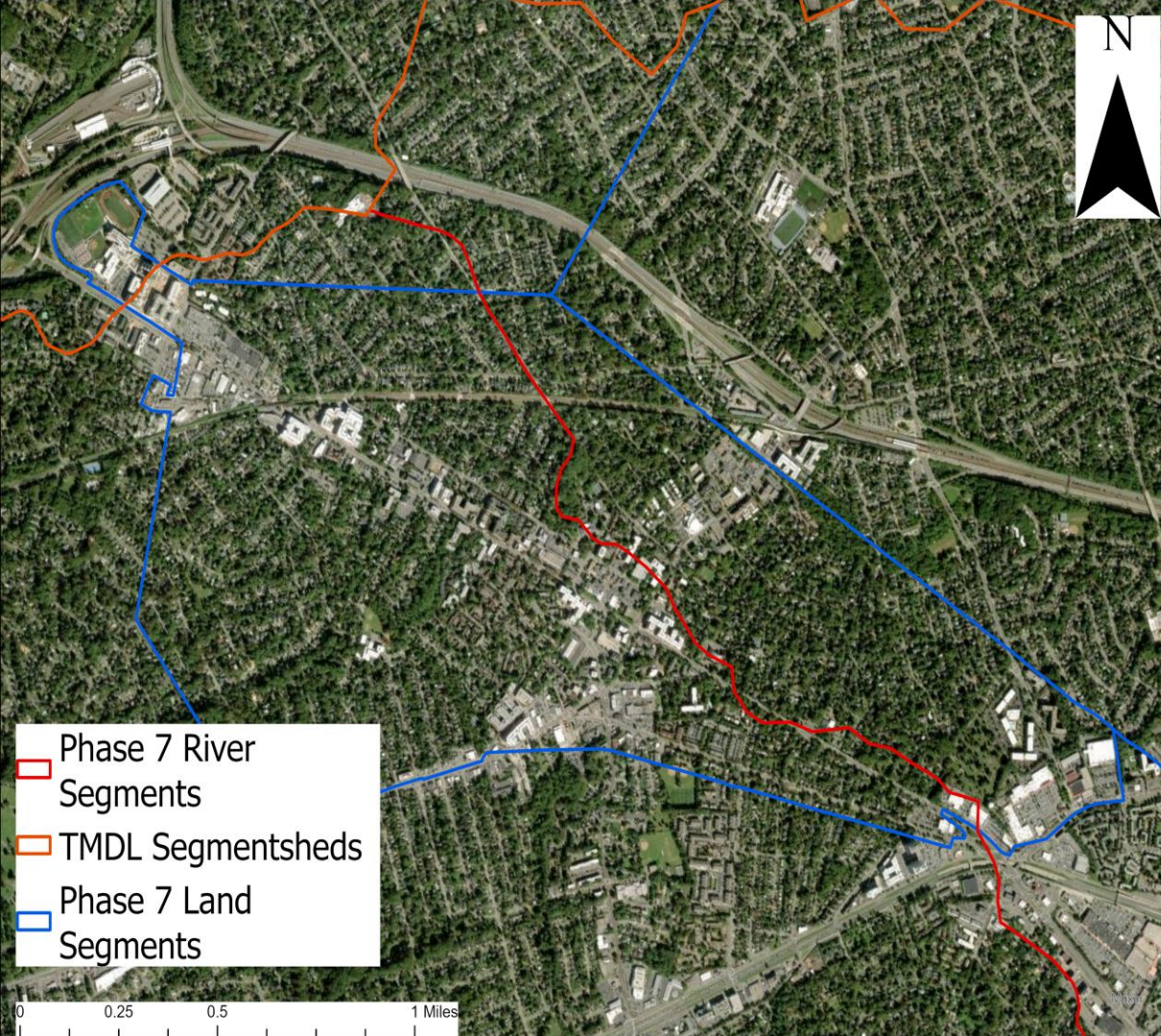
	Phase 6	Phase 7 Option B
Total Area (acres)	60,104,160	60,044,248
# of Segments	2,058	3,608
# of Segments < 1000 Acres	204	373
# of Segments < 100 Acres	4	59
Minimum Segment Size	~19 acres	~14 acres
Average Segment Size	29,205 acres	16,641 acres
Median Segment Size	11,680 acres	10,526 acres

Difference caused by change in tidal shoreline and updating county boundaries.

Land-River Segments – Option B

	Phase 6	Phase 7 Option B
Total Area (acres)	60,104,160	60,044,248
# of Segments	2,058	3,608
# of Segments < 1000 Acres	204	373
# of Segments < 100 Acres	4	59
Minimum Segment Size	~19 acres	~14 acres
Average Segment Size	29,205 acres	16,641 acres
Median Segment Size	11,680 acres	10,526 acres

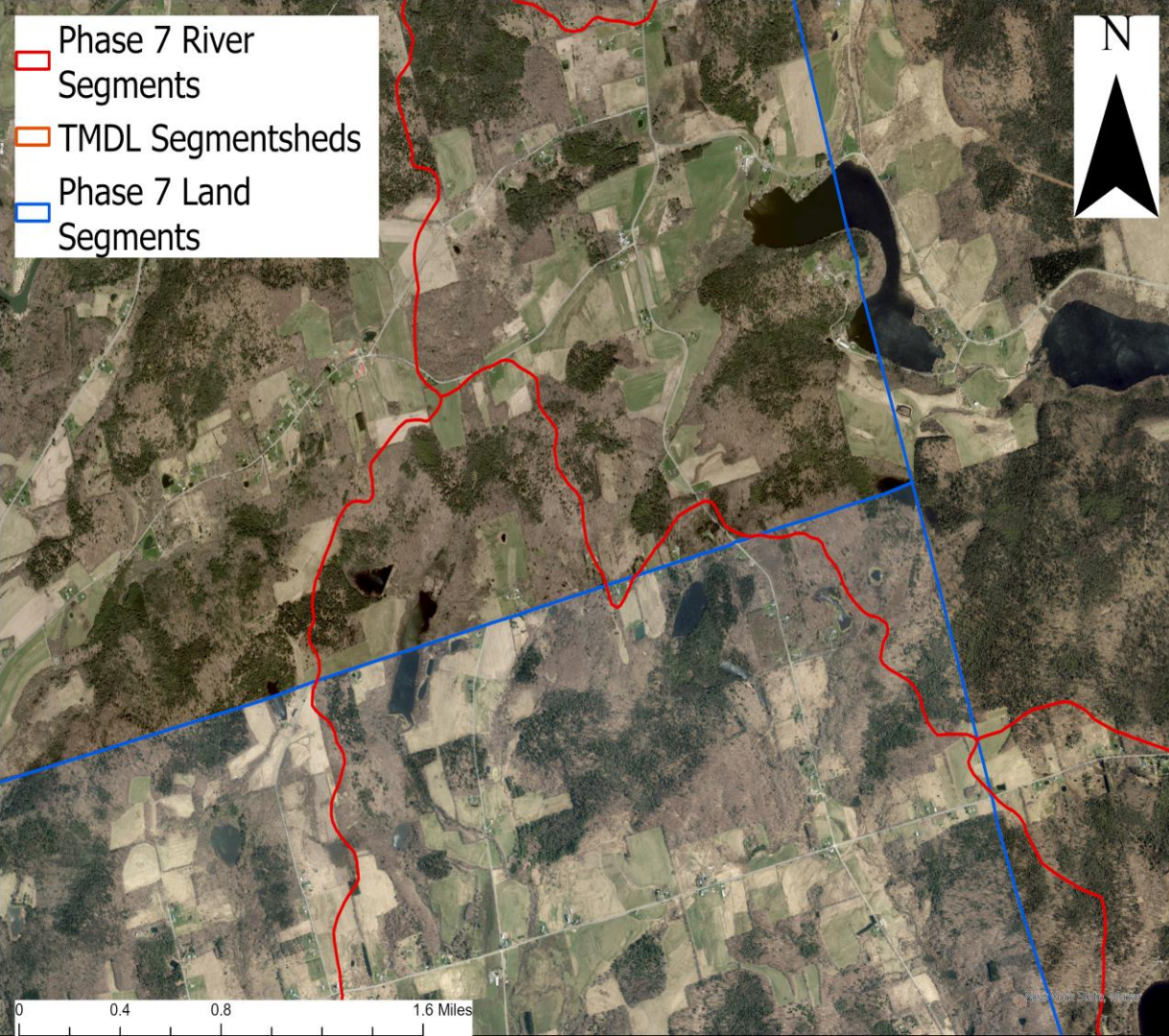
These are legitimate Land-River Segments.



LRSegs – Option B

Example of why a Land-River Segment < 1000 acres is legitimate: County Boundaries crossing P6 Segmentshed boundaries.

Location: Falls Church, VA



LRSegs – Option B

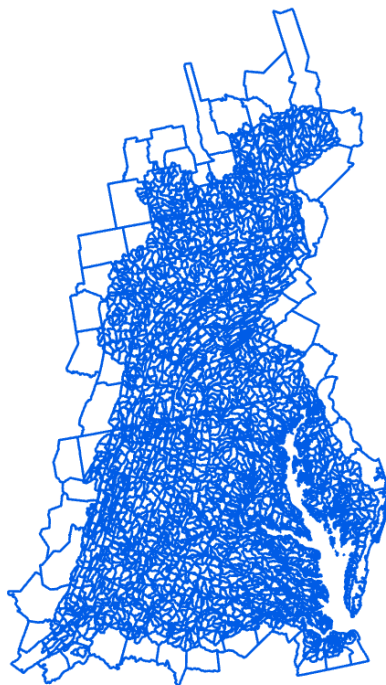
Example of why a Land-River Segment < 1000 acres is legitimate: HUC 12 Watershed boundaries crossing county boundaries.

Location: Southeastern corner of Cortland County, NY

Discussion

Requesting input and a decision

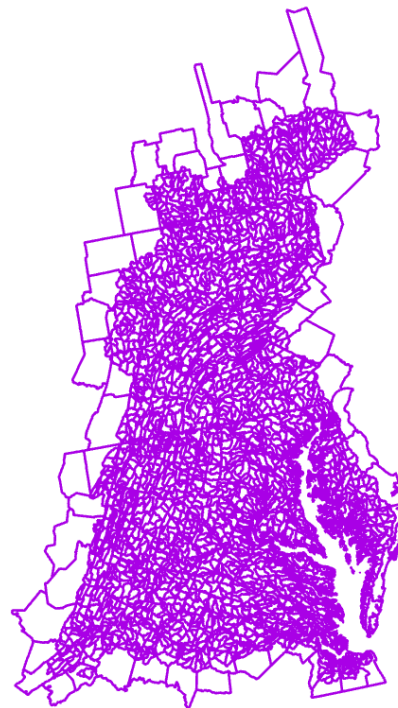
Phase 7 Option A



N= 3784

Interact with the
different layers in this
web map.

Phase 7 Option B



N= 3608

Land-River Segments – Comparison

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	60,104,160	60,103,980	60,044,248
# of Segments	2,058	3,784	3,608
# of Segments < 1000 Acres	204	553	373
# of Segments < 100 Acres	4	220	59
Minimum Segment Size	~19 acres	~0 acres	~14 acres
Average Segment Size	29,205 acres	15,883 acres	16,641 acres
Median Segment Size	11,680 acres	10,040 acres	10,526 acres

Decision Requested: P7 LR Segments

- Approve Phase 7 Land-River Segments Option A or Option B.
- **IF** the WQGIT wants to utilize a minimum size threshold for Land-River Segments, then it would need to establish decision rules to handle the examples displayed in this presentation.

Implications

- LR-Segs will be overlaid with federal facilities and MS4s when used for rolling up BMPs and Land Use.
- Small slivers from Option A increases the likelihood of excess BMPs that require customized rules and thus less transparency in CAST.
 - Example: Allocation of reported timber harvest clearcuts and selective cuts vs mapped areas.



Thank you!

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Land-River Segments – DC

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	39,759	39,778	39,501
# of Segments	12	11	9
# of Segments < 1000 Acres	4	3	1
# of Segments < 100 Acres	0	2	0
Minimum Segment Size	~165 acres	~0.26 acres	~235 acres
Average Segment Size	3,313 acres	3,616 acres	4,389 acres
Median Segment Size	1,503 acres	1,694 acres	3,661 acres

Land-River Segments – Delaware

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	1,266,476	1,266,495	1,266,558
# of Segments	63	42	41
# of Segments < 1000 Acres	3	5	4
# of Segments < 100 Acres	0	1	0
Minimum Segment Size	~198 acres	~0 acres	~198 acres
Average Segment Size	20,102 acres	30,154 acres	30,891 acres
Median Segment Size	14,753 acres	10,561 acres	11,383 acres

Land-River Segments – Maryland

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	6,305,059	6,305,196	6,267,512
# of Segments	521	537	506
# of Segments < 1000 Acres	37	66	35
# of Segments < 100 Acres	1	34	5
Minimum Segment Size	~98 acres	~0 acres	~24 acres
Average Segment Size	12,101 acres	11,741 acres	12,386 acres
Median Segment Size	7,940 acres	9,809 acres	10,517 acres

Land-River Segments – New York

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	10,339,853	10,339,793	10,339,793
# of Segments	153	388	380
# of Segments < 1000 Acres	12	46	36
# of Segments < 100 Acres	0	10	4
Minimum Segment Size	~105 acres	~0.68 acres	~14 acres
Average Segment Size	67,580 acres	26,648 acres	27,209 acres
Median Segment Size	23,908 acres	10,725 acres	10,884 acres

Land-River Segments – Pennsylvania

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	19,532,154	19,532,281	19,532,281
# of Segments	525	1,197	1,179
# of Segments < 1000 Acres	56	166	147
# of Segments < 100 Acres	0	39	23
Minimum Segment Size	~117 acres	~0 acres	~18 acres
Average Segment Size	37,204 acres	16,317 acres	16,566 acres
Median Segment Size	15,834 acres	11,120 acres	11,233 acres

Land-River Segments – Virginia

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	17,467,607	17,467,154	17,445,321
# of Segments	661	1,352	1,260
# of Segments < 1000 Acres	77	216	123
# of Segments < 100 Acres	3	109	23
Minimum Segment Size	~19 acres	~0 acres	~14 acres
Average Segment Size	26,426 acres	12,919 acres	13,845 acres
Median Segment Size	12,979 acres	8,868 acres	9,882 acres

Land-River Segments – West Virginia

	Phase 6	Phase 7 Option A	Phase 7 Option B
Total Area (acres)	5,153,249	5,153,279	5,153,279
# of Segments	123	257	233
# of Segments < 1000 Acres	15	51	27
# of Segments < 100 Acres	0	25	4
Minimum Segment Size	~129 acres	~0 acres	~46 acres
Average Segment Size	41,896 acres	20,051 acres	22,117 acres
Median Segment Size	10,123 acres	7,871 acres	9,362 acres