Susquehanna River Rail Bridge Project

Appendix H

Public Involvement and Agency Correspondence

March 2017

Maryland Department of Transportation
AMTRAK

Interagency Review Meetings

Susquehanna River Bridge Reconstruction and Expansion Project

Interagency Review Meeting
February 19, 2014

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

MTA Maryland

AMTRAK

Project Introduction

- FRA grant awarded to MDOT for NEPA & PE through the High-Speed Intercity Passenger Rail Program.
- FRA is serving as lead federal agency for the NEPA Environmental Assessment. USCG and USACE will be invited to serve as Cooperating Agencies.
- MDOT is the grant recipient and project sponsor.
- Amtrak, as bridge owner, is providing engineering designs and acting in cooperation with FRA and MDOT.

U.S. Department of Transportation
Federal Railroad Administration

Maryland Department of Transportation

MTA Maryland

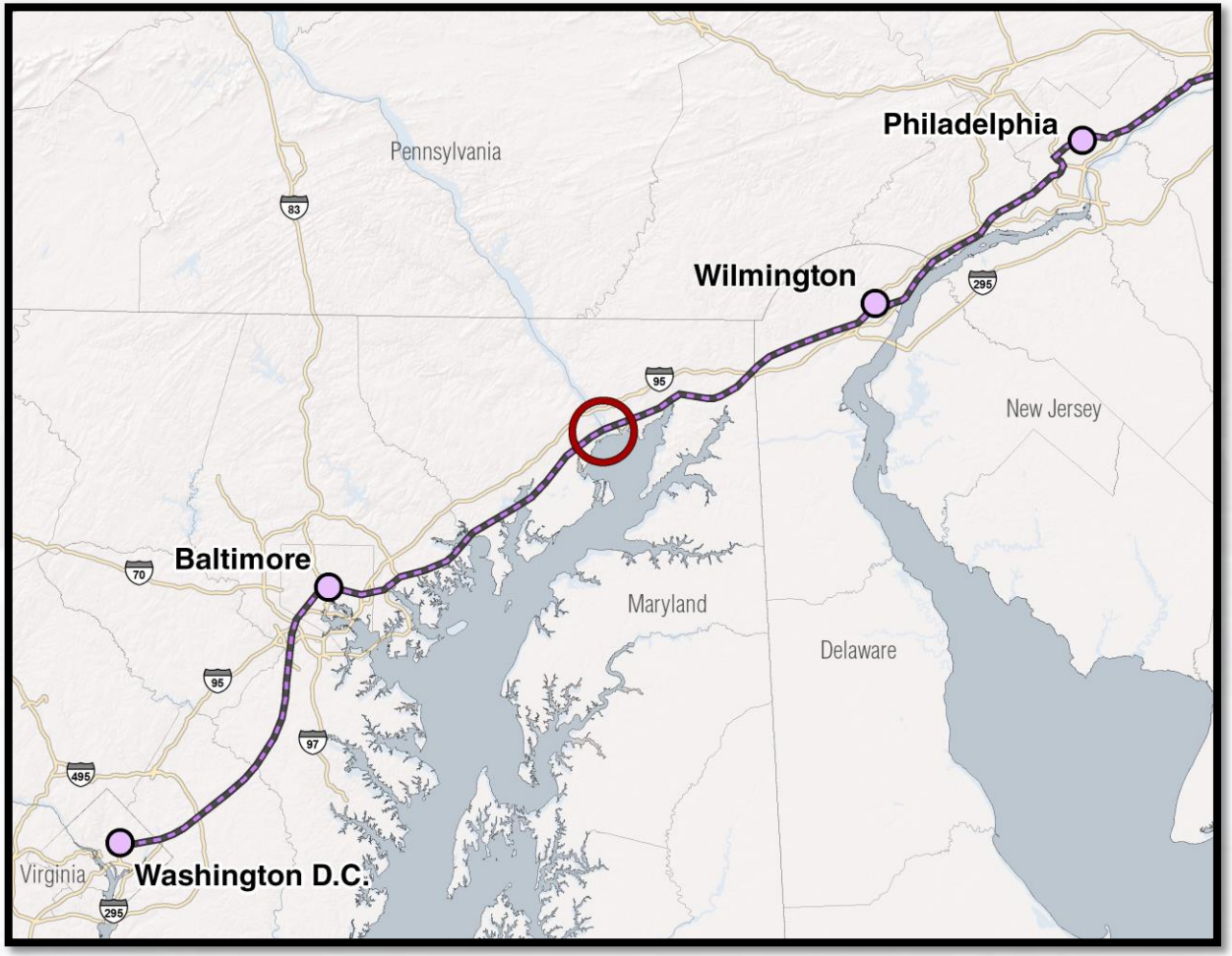
AMTRAK

Purpose of IRM Presentations

- Interagency coordination:
  - Proactively asking for your input on issues of concern to your agency as we progress through NEPA.
  - Not utilizing SHA's formal "Streamlined Environmental and Regulatory Process".
  - Using this forum to facilitate subsequent agency review of the EA.
- Today's IRM – present purpose & need, introduce study area and environmental features, overview of conceptual engineering.
- Next IRM – present conceptual alignments in detail.

Regional Project Vicinity

The Susquehanna River Bridge is a critical link along a USDOT-designated high-speed rail corridor (Boston to Washington, D.C.)



Project Location

- Existing bridge at Milepost 60 along Amtrak's Northeast Corridor (NEC).
- Spans City of Havre de Grace (Harford County) and the Town of Perryville (Cecil County).
- Project extends approximately 6 miles from OAK Interlocking to PRINCE Interlocking.

Project Limits

Purpose and Need

- 108-year-old structure, obsolete design, aging components. Labor-intensive swing span requires ~30 workers per bridge opening.
- Existing 2-track bridge creates speed and capacity bottleneck along the NEC.
- Need greater operationally flexibility to accommodate:
  - Amtrak (currently 88 trains/wkday)
  - MARC (currently 13 trains/wkday)
  - Norfolk Southern (currently 7-10/wkday)
- Maintenance windows are limited and disruptive; will worsen with time.
- Must accommodate marine traffic (existing 52’ vertical clearance).

Purpose and Need (cont.)

- Major Rehabs and Repairs – 1960s, 1985, 1991, 1998
- While existing bridge is safe for current and near term operations, it is wearing out and approaching the end of its service life.
- Bridge Inspections
  - 1996 Report: Worn/cracked metal pins, loose connections at eyebar members, improper seating of swing span ends.
  - 2013 Report: Section loss, cracks, corrosion, and deteriorations; heavy freight exacerbating losses.
  - Superstructure poor to fair structural condition. Some cracking & moisture leakage in stone abutments and piers.
  - Low bridge fatigue ratings, even at 30 mph. Bridge may have exceeded theoretical fatigue life.
- Even extensive retrofits and component repairs cannot restore bridge to state-of-good repair. Component failures will continue.

Purpose and Need (cont.)

The purpose of the Susquehanna River Bridge Reconstruction and Expansion Project is to:

- Improve reliability of the existing crossing;
- Enhance passenger and freight rail operations along the NEC;
- Maintain navigation along the Susquehanna River;
- Accommodate future freight, commuter, intercity, and high-speed rail operations.

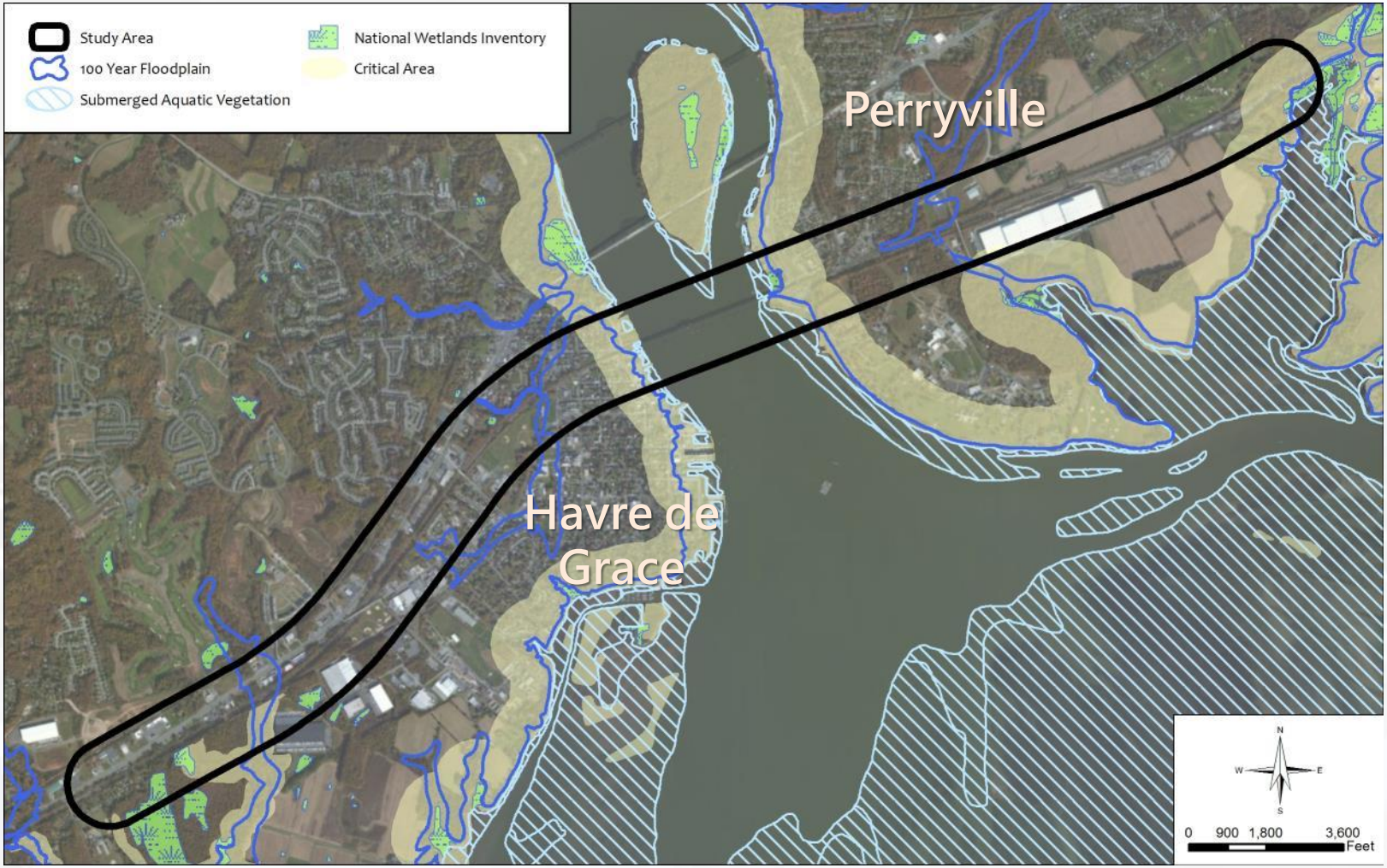
Project Description

- Developing conceptual alternatives involving:
  - Modification and/or replacement of the existing bridge
  - Construction of a new high-level bridge parallel to the existing bridge
- Movable bridge will be replaced with a fixed span at higher clearance that can accommodate navigation without disrupting rail operations.
- Number of tracks and layouts will improve operations and safety for users that share the crossing:
  - Amtrak intercity
  - MARC commuter
  - Norfolk Southern freight service

Environmental Resources

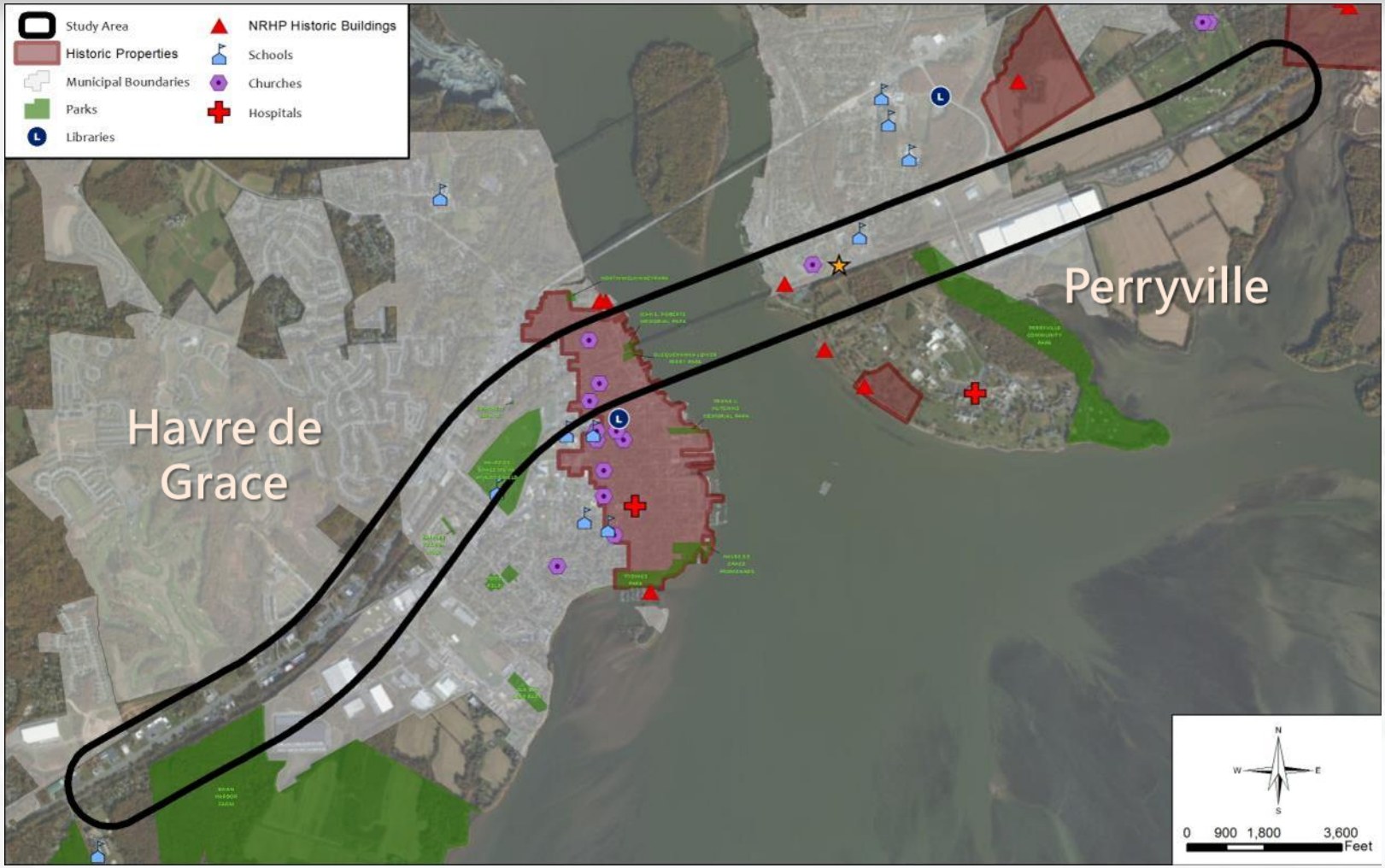
- Natural Resources
  - Susquehanna River, wetlands, submerged aquatic vegetation (SAVs), floodplains, streams, Critical Area
  - Aquatic and terrestrial species
- Cultural Resources
  - Havre de Grace Historic District (listed on the State/National Registers [S/NR])
  - Susquehanna River Bridge (S/NR-eligible)
  - Rodgers Tavern (S/NR-listed)
  - Others (MD inventory, National Historic Landmarks, locally designated resources, archaeological resources)
- Parkland and Community Facilities
  - Waterfront and neighborhood parks
  - Havre de Grace MS/HS
  - Religious institutions

Natural Resources



Note: Based on GIS data sources; to be verified.

Cultural Resources, Community Facilities and Parkland



Note: Based on GIS data sources; to be verified.

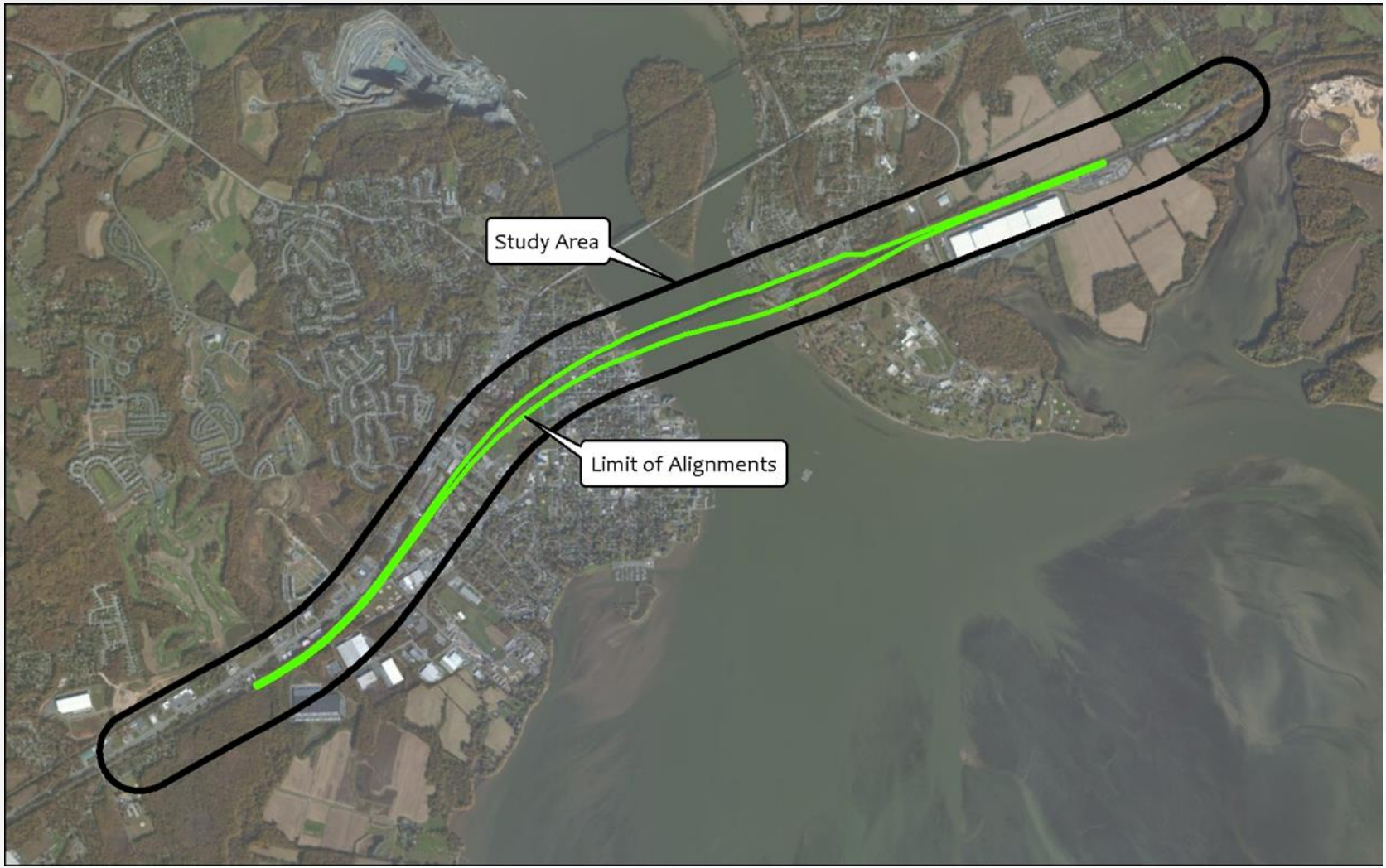
Conceptual Engineering

- Primary design considerations include:
  - Railroad geometry
  - Design speed
  - Profile / limiting freight grades
  - Navigational clearances
  - Construction staging to maintain rail ops and navigation
  - Right-of-way
  - Bridge spacing

Conceptual Alternatives

- Conceptual alternatives currently under development.
- Permutations vary by:
  - Number of bridges (1 or 2)
  - Number of total tracks (3 or 4)
  - Existing bridge (rehab, convert, replace)
  - New bridge location (east or west of existing alignment)
  - Maximum authorized speed (160 mph preferred)
  - New bridge type (fixed vs movable)
  - Interlockings / flyover / substation variations
- Obtain a standard of 160 mph while optimizing use of existing transportation right-of-way and minimizing adverse impacts.

Study Area and Conceptual Design



Agency & Public Involvement

- Public involvement & agency coordination began early:
  - ✓ May 2013 project introduction letter sent to federal and state agencies and local elected officials.
  - ✓ June 2013 meeting with elected officials of Perryville and Havre de Grace.
  - ✓ July 2013 IRM presentation.
- What did we learn from this early outreach?
  - ✓ Coordinate with USACE and USCG (Cooperating Agencies) for efficient NEPA and permitting.
  - ✓ Two active communities with a variety of notable land uses close to existing right-of-way (parks, school, Rodgers Tavern, etc.).
  - ✓ Initial public feedback emphasized desire for pedestrian and bicycle path across the river.

Agency & Public Coordination Milestones

IRM Meeting – P&N, study area, conceptual engineering overview	February 2014
Public Information Session – P&N, study area, present conceptual alternatives	March 2014
IRM Meeting – Present conceptual alternatives & screening methodology, summarize public input	April 2014
Public Information Session – Alternatives evaluation	June 2014
IRM Meeting – Alternatives evaluation	June 2014
Project Newsletter	Fall 2014
Publish EA/Section 4(f)	Winter 2015
IRM Meeting – EA comment period	Winter 2015
Public Information Session – EA comment period	Winter 2015
Final Environmental Determination	Spring 2015

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Questions & Comments

Susquehanna River Rail Bridge Project

Interagency Review Meeting

April 16, 2014

Purpose of IRM Presentation

- **February 2014 IRM:**
  - Present project purpose and need.
  - Review environmental features.
  - Provide overview of conceptual engineering.
- **Today's IRM:**
  - Receive comments and concurrence on purpose and need statement.
  - Review conceptual alternatives.

Purpose and Need

- **The problems posed by the existing Susquehanna River Rail Bridge include:**
  - Functionally obsolete and aging infrastructure.
  - Speed and capacity constraints.
  - Operational inflexibility.
  - Maintenance difficulties.
  - Conflicts with maritime uses.
- **The primary purpose of the Susquehanna River Rail Bridge Project is to provide continued rail connectivity along the Northeast Corridor (NEC).**

Purpose and Need (cont.)

Goals of the project include:

- Improve rail service reliability and safety.
- Improve operational flexibility and accommodate reduced trip times.
- Optimize existing and planned infrastructure and accommodate future freight, commuter, intercity, and high-speed rail operations.
- Maintain adequate navigation along the Susquehanna River.

Purpose and Need (cont.)

- Written Purpose & Need Statement distributed March 28, 2014.
- Input was requested by April 15, 2014.
- Requesting concurrence for the Purpose & Need Statement today.
- ***Comments/questions?***

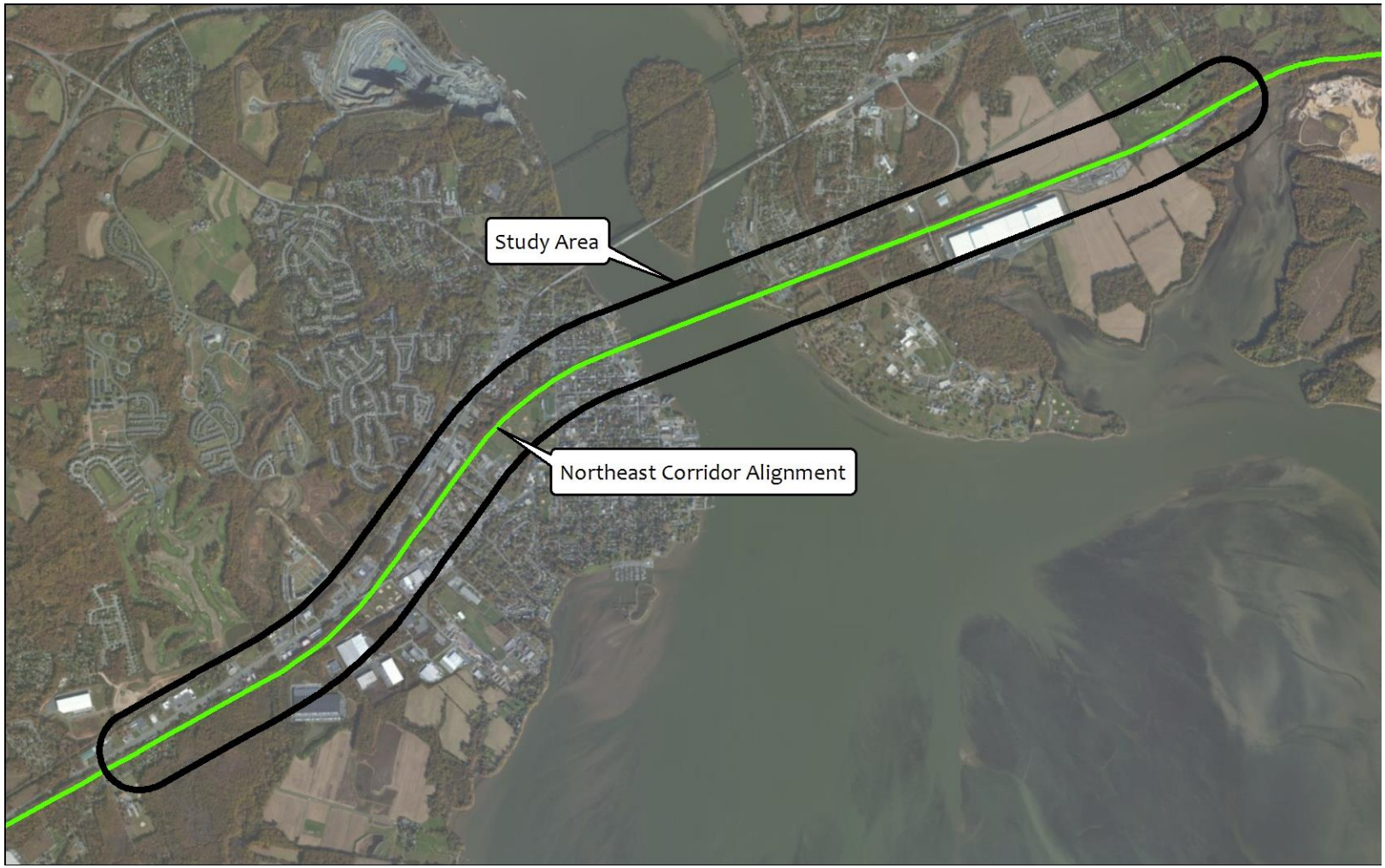
Conceptual Alternatives

Designing to Meet
Project Purpose & Need

Conceptual Alternatives Development

- Rail Connectivity
- Navigational Requirements
- Logical Termini
- Feasibility and Constructability

Existing Northeast Corridor Alignment



Conceptual Alternatives Development—Design Factors

Geometry	• Reduce curves to enable faster train speed. • Consider existing NEC and NS's Port Road Route.
Design Speed	• Consider 120 mph to 160 mph for intercity passenger trains. • 160 mph preferred speed for intercity passenger trains.
Bridge Spacing	• Minimize ROW impacts. • Consider existing swing span. • Consider constructability.
Navigational Clearances	• Accommodate marine traffic with fixed bridge. • Horizontal clearance maintained or improved.
Grades	• Higher fixed bridge requires steeper grades. • Heavy freight trains require lower grades.
Relationships to other planned projects	• Freight rail improvements. • MARC Maintenance Facility and Penn Line extension. • NEC Future Tier I EIS.

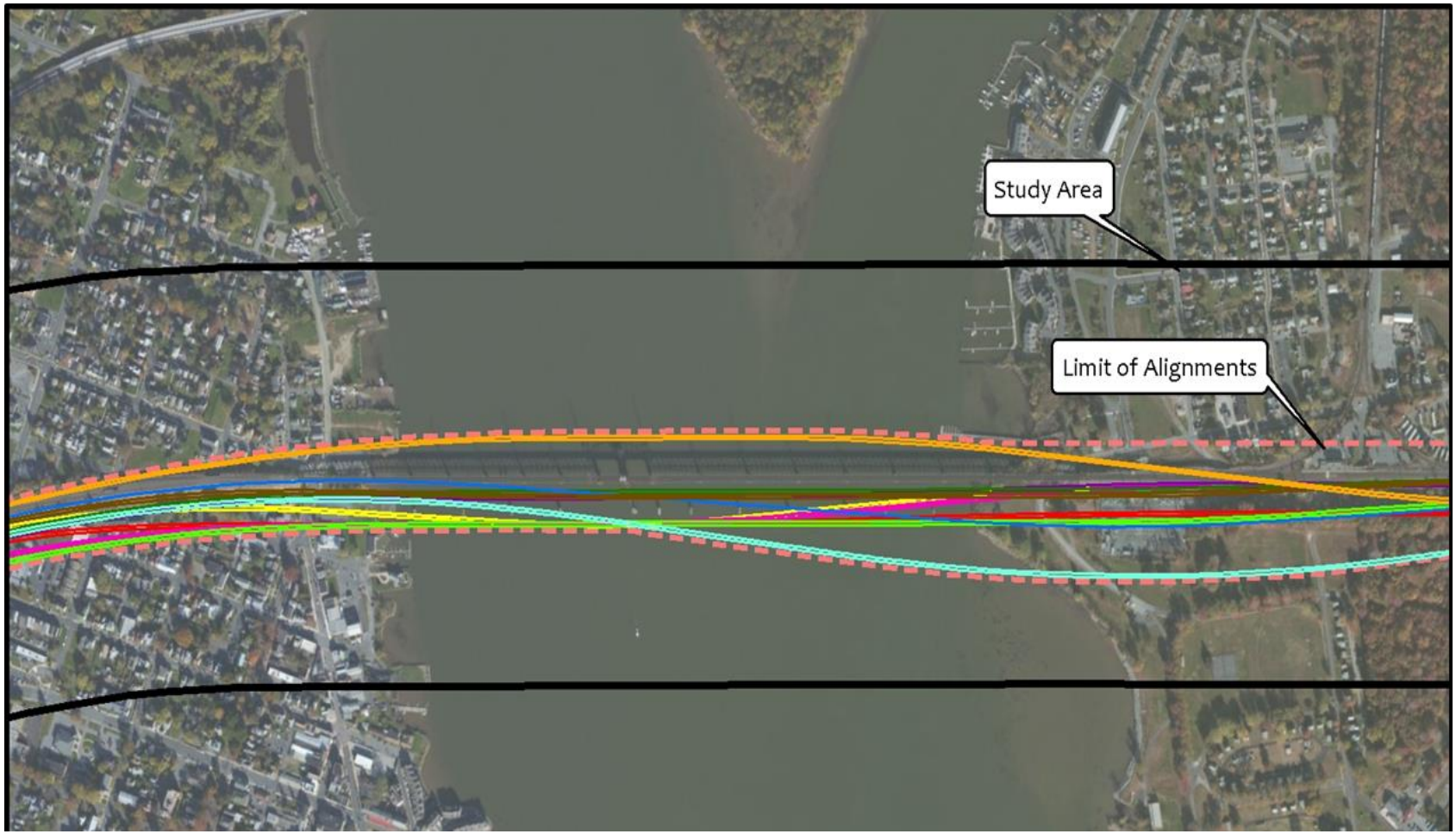
Conceptual Alternatives Development

Considered many design permutations

Number of Bridges	New Bridge Alignment	Total Tracks	New Bridge Type	Bridge Traffic	Existing Bridge
One rehab bridge	East of existing bridge	Three tracks	Fixed	Separate structure for intercity trains	Rehab bridge
One new bridge	West of existing bridge	Four tracks	Movable	Commingled Traffic	Rehab piers + convert to lift span
One new + one rehab bridge	On existing bridge alignment				Decommission + remove
Two new bridges					

Conceptual Alternatives Development

Evaluated many alignments



ALT #	Alternative Description	Winter Swing Span Closure? (Construction)	# of tracks	Maximum Speed	Anticipated Right of Way Impacts
1A	> Construct new bridge to the east of existing bridge. > Remove existing bridge and build second bridge on existing alignment.	No	3/4 tracks	140 mph	High
1B		Yes	3/4 tracks	140 mph	Low
2A	> Construct a new bridge to the west of existing > Flyover in Perryville and a curved bridge alignment. > Remove existing bridge and build second bridge on existing alignment. > Impacts to Rodgers Tavern.	No	3/4 tracks	135 mph	High
2B		Yes	3/4 tracks	135 mph	Medium
3A	> Construct a new bridge to the east of existing w/ curved bridge alignment. > Remove existing and build second bridge on existing alignment.	No	3/4 tracks	160 mph	High
3B		Yes	3/4 tracks	160 mph	Medium
4A	> Construct bridge to the east of existing with a tangent bridge alignment. > Remove existing bridge and build second bridge on existing alignment. > Would require rebuild of Lewis Lane overpass in Havre de Grace.	No	3/4 tracks	160 mph	High
4B		Yes	3/4 tracks	160 mph	Medium
4C		Yes	3/4 tracks	135 mph	Medium
4D	> Construct bridge to the east of existing with a 3-track tangent bridge. > Would require rebuild of Lewis Lane overpass in Havre de Grace.	Yes	3 tracks	160 mph	Medium
4E		Yes	3 tracks	135 mph	Medium
5	> Construct bridge to the east of existing with curved bridge alignment. > Remove existing bridge and build second bridge on existing alignment.	No	3/4 tracks	130 mph	Medium
6	> Construct bridge to the east of existing bridge. > Extensive and complex elevated structure (“double decker”). > Remove existing bridge and build second bridge on existing alignment. > Presents construction staging challenges.	Yes	3/4 tracks	160 mph	Low
7	> Bridge location to the east of existing with curved bridge alignment. > Remove existing bridge and build second bridge on existing alignment.	No	3/4 tracks	160 mph	Medium
8A	> Remove existing bridge and build second bridge on existing alignment. > Bridge location to the east of existing bridge with a 3-track bridge.	Yes	3/4 tracks	120 mph	Low
8B		Yes	3 tracks	120 mph	Low
9A	> New bridge to the west, primarily for freight and MARC. > Second new bridge along existing alignment primarily for high speed rail.	Yes	4 tracks	160 mph	Low
9B		Yes	4 tracks	150 mph	Low
10	> Rehabilitate existing bridge.	Yes	2 tracks	90 mph	None

Conceptual Alternatives Development

Fatal flaw criteria used to develop the initial "long list"

Rail Connectivity	• Must maintain rail connectivity along the NEC (during construction and operations). • Must provide sufficient capacity.
Navigational Requirements	• Must maintain navigation along the Susquehanna River (during construction and operations).
Logical Termini	• Must have rational end points and consider existing infrastructure. • USDOT grant defines project limits—NEC from MP 57.3 in Perryville to MP 63.5 in Havre de Grace.
Feasibility and Constructability	• Must be feasible and practicable from a construction and engineering perspective.

Next Steps

- Receive agency input to finalize Purpose & Need Statement and complete conceptual alternatives “long list”.
- Solicit public input (including Public Outreach Information Session on April 28, 2014 and www.susrailbridge.com).
- Complete Feasibility Report—studying these conceptual alternatives from an engineering and impacts perspective.
- Develop alternatives screening criteria. Screen “long list” down to shorter list of feasible alternatives.
- Return to IRM to present alternatives evaluation and feasible alternatives.

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Susquehanna River Rail Bridge Project

Interagency Review Meeting

June 18, 2014

Purpose of IRM Presentation

- **February 2014 IRM:**
  - Presented project purpose and need and environmental features.
  - Reviewed environmental features; conceptual engineering overview.
- **April 2014 IRM:**
  - Received and discussed comments on purpose and need statement.
  - Reviewed conceptual alternatives.
- **Today's IRM:**
  - Provide update on public involvement activities.
  - Provide detailed presentation of conceptual alternatives and fatal flaw screening.

Public Involvement Update

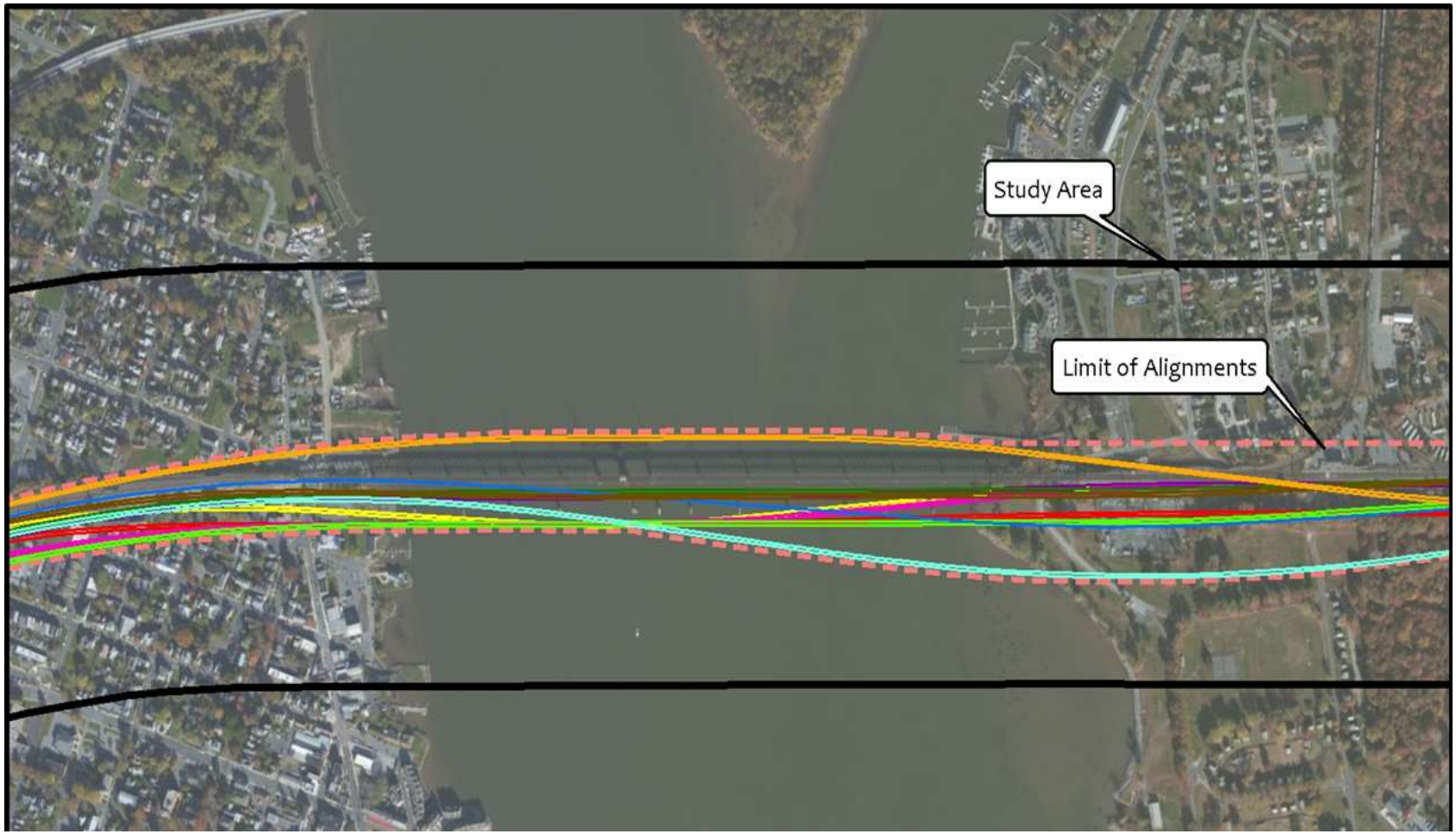
- **Public Information Session hosted on April 28, 2014 at Havre de Grace Activity Center.**
  - Important local resources, business & tourism, “signature bridge”.
  - Support for bicycle-pedestrian path.
- **Comments continually received through website comment form, regular mail, and via info@susrailbridge.com.**
- **Upcoming coordination:**
  - Local planning departments regarding parks and plans.
  - Individual meetings—Cecil County, East Coast Greenway.
  - Next Public Information Session to be scheduled in Perryville for late Summer 2014.

Alignment Alternatives Development

- **Alignments Developed During Conceptual Engineering**
  - 4 build scenarios.
  - 18 different alignments.
- **Alignments Suggested by Members of the Public**
  - 3 alignments suggested at coordination meetings and through website comment form.
- **Recommendations by Value Engineering**
  - VE in progress.

Conceptual Alternatives Development

18 different alignments



Two-Step Screening

- **Step 1: Fatal Flaw Screening—criteria developed from P&N.**
  - Rail Connectivity.
  - Navigation Requirements.
  - Logical Termini.
  - Feasibility & Constructability.
  - Critical Property Impacts (developed from community input).
  - ➢ *Pass/Fail—must satisfy all criteria to advance.*
- **Step 2: Detailed Screening—based on specific project goals.**
  - Optimize existing and planned infrastructure.
  - Construction, design, and operational considerations.
  - Environmental/cultural/socioeconomic/property impacts.
  - ➢ *Compare/contrast ability to meet goals & objectives.*

Fatal Flaw Screening

Compare each alignment to fatal flaw criteria

Input from freight RRs → **Rail Connectivity** ← Input from FTA/MTA
Maintain NEC rail connectivity

Input from USCG → **Navigational Requirements** ← Input from mariners
Maintain navigation along river

Logical Termini
NEC from MP 57.3 to MP 63.5

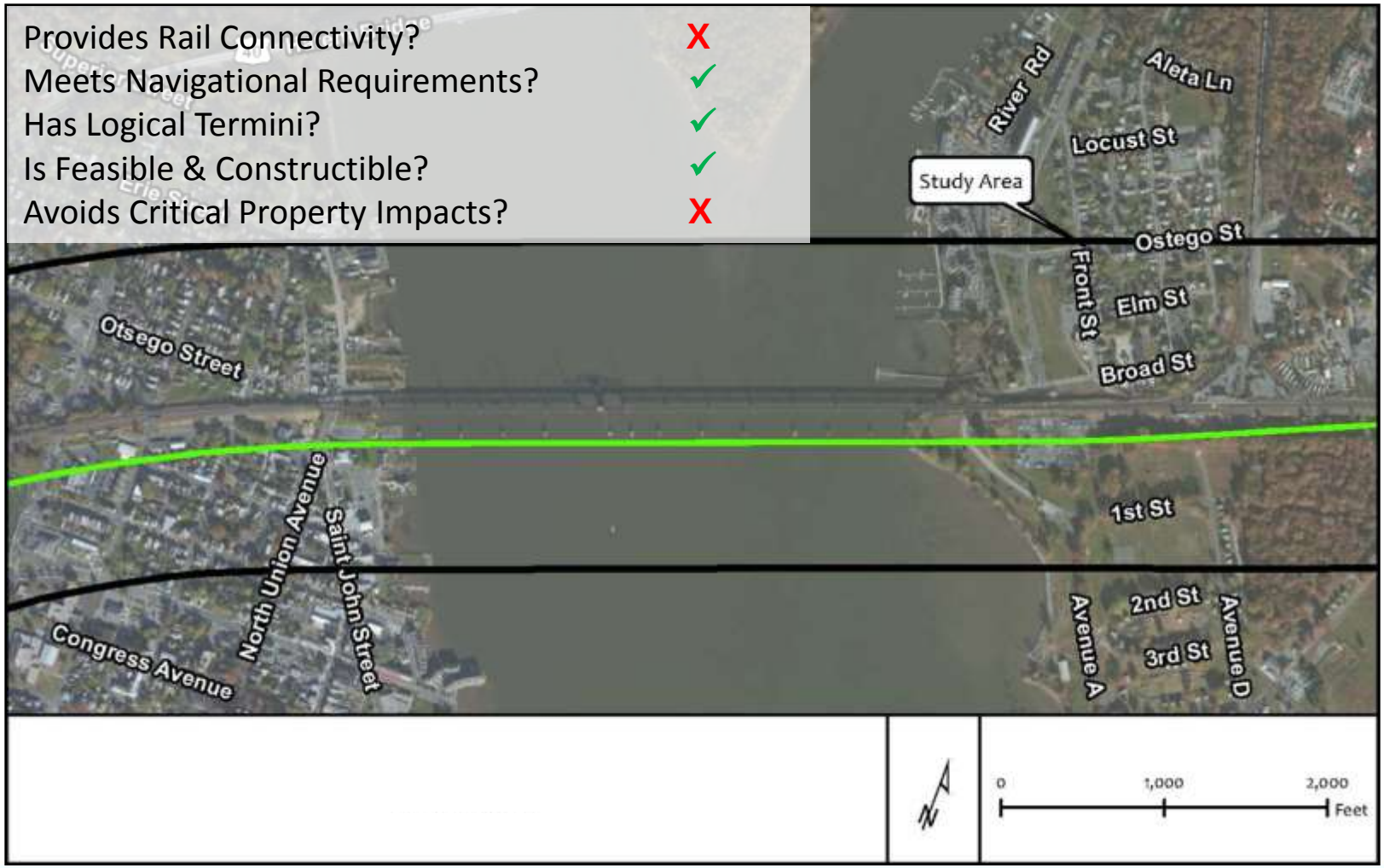
Feasibility and Constructability
Practical to engineer & construct

Input from Perryville → **Critical Property Impacts** ← Input from Havre de Grace
(e.g. Rodgers Tavern, Legion)

Alignment 4A X

High-speed 2-track bridge to east of existing + 1/2-track bridge in place of existing

Provides Rail Connectivity?	X
Meets Navigational Requirements?	✓
Has Logical Termini?	✓
Is Feasible & Constructible?	✓
Avoids Critical Property Impacts?	X



Screening of Conceptual Alternatives

#	Alignment Description	Fatal Flaw Screening Criteria				
		Rail Connectivity	Navigational Requirements	Logical Termini	Feasibility & Constructability	Avoids Critical Property Impacts
1A	High-speed 2-track bridge to ***east*** of existing 1 or 2-track in place of existing – clear of swing span	N	Y	Y	Y	N
1B	Similar to 1A but new bridge tighter to existing – temporary closure of swing span	Y	Y	Y	Y	Y
2A	High-speed 2-track to the ***west*** of existing 1 or 2-track in place of existing – clear of swing span > *Flyover in Perryville*	N	Y	Y	N	N
2B	Similar to 2A but tighter to existing – temporary closure of swing span	N	Y	Y	N	N
3A	Curved high-speed 2-track bridge to ***east*** of existing 1 or 2-track in place of existing	N	Y	Y	Y	N
3B	Similar to 3A but tighter to existing – temporary closure of swing span	N	Y	Y	Y	Y
4A	Straight high-speed 2-track bridge to ***east*** of existing 1 or 2-track in place of existing	N	Y	Y	Y	N
4B	Similar to 4A but tighter to existing – temporary closure of swing span	Y	Y	Y	Y	Y
4C	Similar to 4B but with reduced speed	Y	Y	Y	Y	Y
4D	High-speed ***3-track*** bridge to the ***east*** on 4B alignment – temporary closure of swing span > *Removes existing bridge and does not replace*	Y	Y	Y	Y	Y
4E	High-speed ***3-track*** bridge to the ***east*** on 4C alignment – temporary closure of swing span > *Removes existing bridge and does not replace*	Y	Y	Y	Y	Y

Screening of Conceptual Alternatives *(cont.)*

#	Alignment Description	Fatal Flaw Screening Criteria				
		Rail Connectivity	Navigational Requirements	Logical Termini	Feasibility & Constructability	Avoids Critical Property Impacts
5	High-speed 2-track bridge to ***east*** of existing 1 or 2-track in place of existing – clear of swing span *>Substantial curve to avoid right-of-way impacts*	N	Y	Y	Y	Y
6	High-speed 2-track bridge to ***east*** of existing but ***elevated*** through Havre de Grace 1 or 2-track in place of existing *> Extensive, complicated double decker structure*	N	Y	Y	N	Y
7	High-speed 2-track bridge to ***east*** of existing 1 or 2-track in place of existing ***>*** *Significant curvature to avoid substation*	N	Y	Y	Y	Y
8A	Similar to 1B but with fewer right-of-way impacts due to lower design speed	Y	Y	Y	Y	Y
8B	High-speed ***3-track*** bridge to the ***east*** of existing on 8A alignment – temporary closure of swing span. *> Removes existing bridge and does not replace*	Y	Y	Y	Y	Y
9A	2 track 90 mph bridge to the ***west*** of existing Higher speed 2-track bridge in place of existing	Y	Y	Y	Y	Y
9B	Similar to 9A but with fewer right-of-way impacts due to lower design speed	Y	Y	Y	Y	Y
10	Rehabilitate existing bridge	Y	N	Y	N	Y

Rehab Existing Bridge—Inspection Report

- **Existing Susquehanna River Rail Bridge is:**
  - Structurally deficient.
  - Functionally obsolete.
  - Fracture critical.
- **Not feasible from construction and engineering perspective and will eventually fail to provide continued rail connectivity and meet navigational requirements.**

Conceptual Alternatives Development

Considered many design permutations

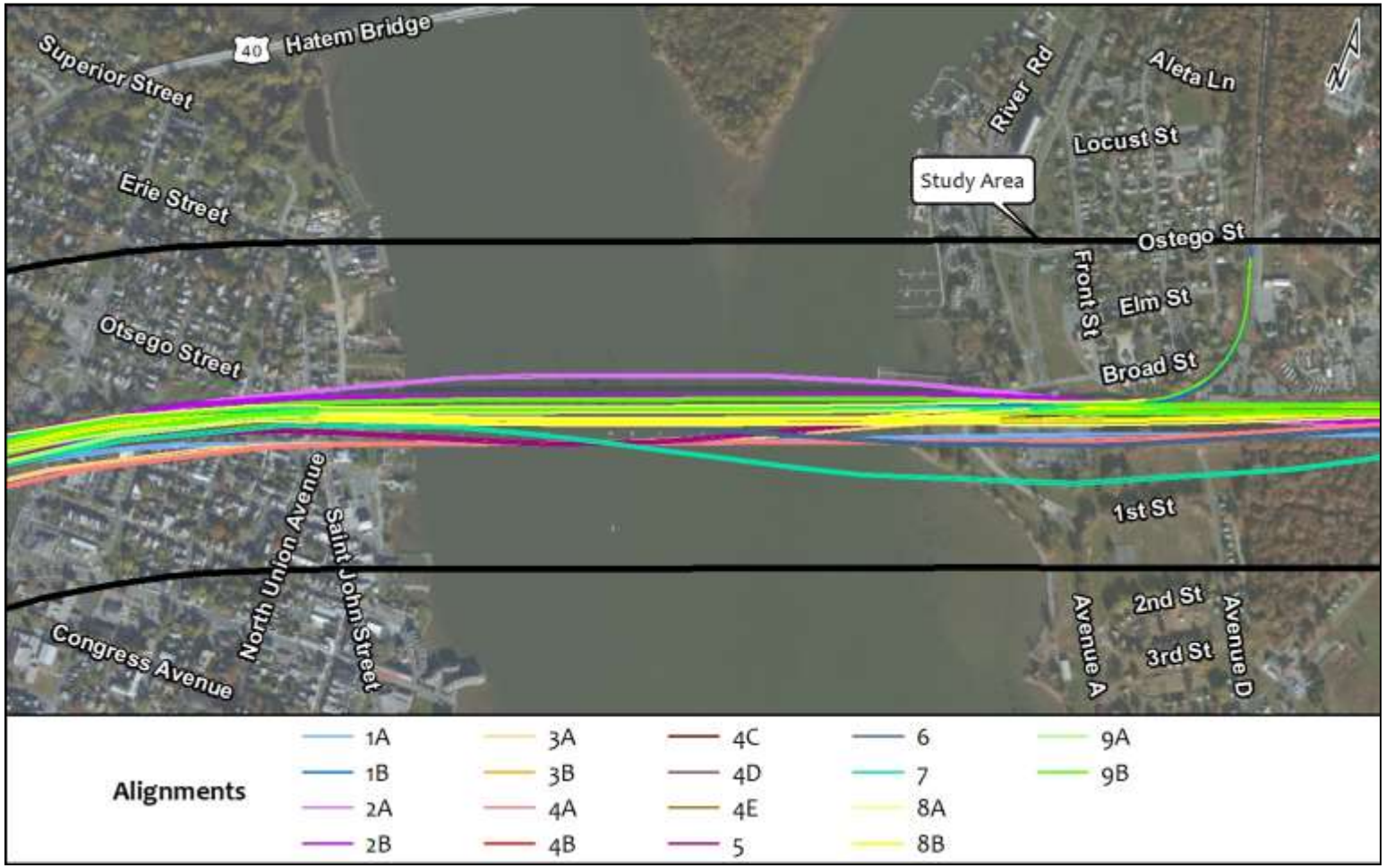
Number of Bridges	New Bridge Alignment	Total Tracks	New Bridge Type	Bridge Traffic	Existing Bridge
One rehab bridge X	East of existing bridge	Three tracks	Fixed	Separate structure for intercity trains	Rehab bridge X
One new bridge	West of existing bridge	Four tracks	Movable X	Commingled Traffic	Rehab piers + convert to lift span X
One new + one rehab bridge X	On existing bridge alignment				Decommission + remove
Two new bridges					

Feasible Alignments

- Fatal flaw screening identified 9 feasible alignments to proceed to detailed screening:
  - Alignments 1B, 4B, 4C, 4D, 4E, 8A, 8B, 9A, 9B.
  - Possible additional alignments identified through Value Engineering.
- Detailed screening will include:
  - Evaluation of each project goal identified in Purpose & Need.
  - Evaluation of potential environmental impacts (e.g., natural and cultural resources) and consideration of all property impacts.
  - Consideration of various bridge types and styles.
- MDOT and Amtrak are investigating bicycle-pedestrian path for all feasible alignments.

Conceptual Alternatives Development

18 different alignments



Conceptual Alternatives Development

9 remaining alignments

Next Steps

- Summer 2014—Schedule additional public meetings to present all alignments and fatal flaw screening.
- Summer 2014—Perform detailed screening and identify “Alternatives Retained for Detailed Study” (ARDS).
- Fall 2014—Submit Alternatives Screening Report to IRM for concurrence/comment.
- Fall 2014—Host public meeting/alternatives workshop to present ARDS.

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Susquehanna River Rail Bridge Project

Interagency Review Meeting

February 18, 2015

Purpose of IRM Presentation

February 2014 IRM

- Presented project purpose and need and environmental features.
- Reviewed environmental features; conceptual engineering overview.

April 2014 IRM

- Received and discussed comments on purpose and need statement.
- Reviewed conceptual alternatives.

June 2014 IRM

- Provided update on public involvement activities.
- Presentation of conceptual alternatives and fatal flaw screening.

Today's IRM

- Review alternatives screening process.
- Present alternatives retained for detailed study.
- Provide update on public outreach and involvement activities.

Project Purpose and Need

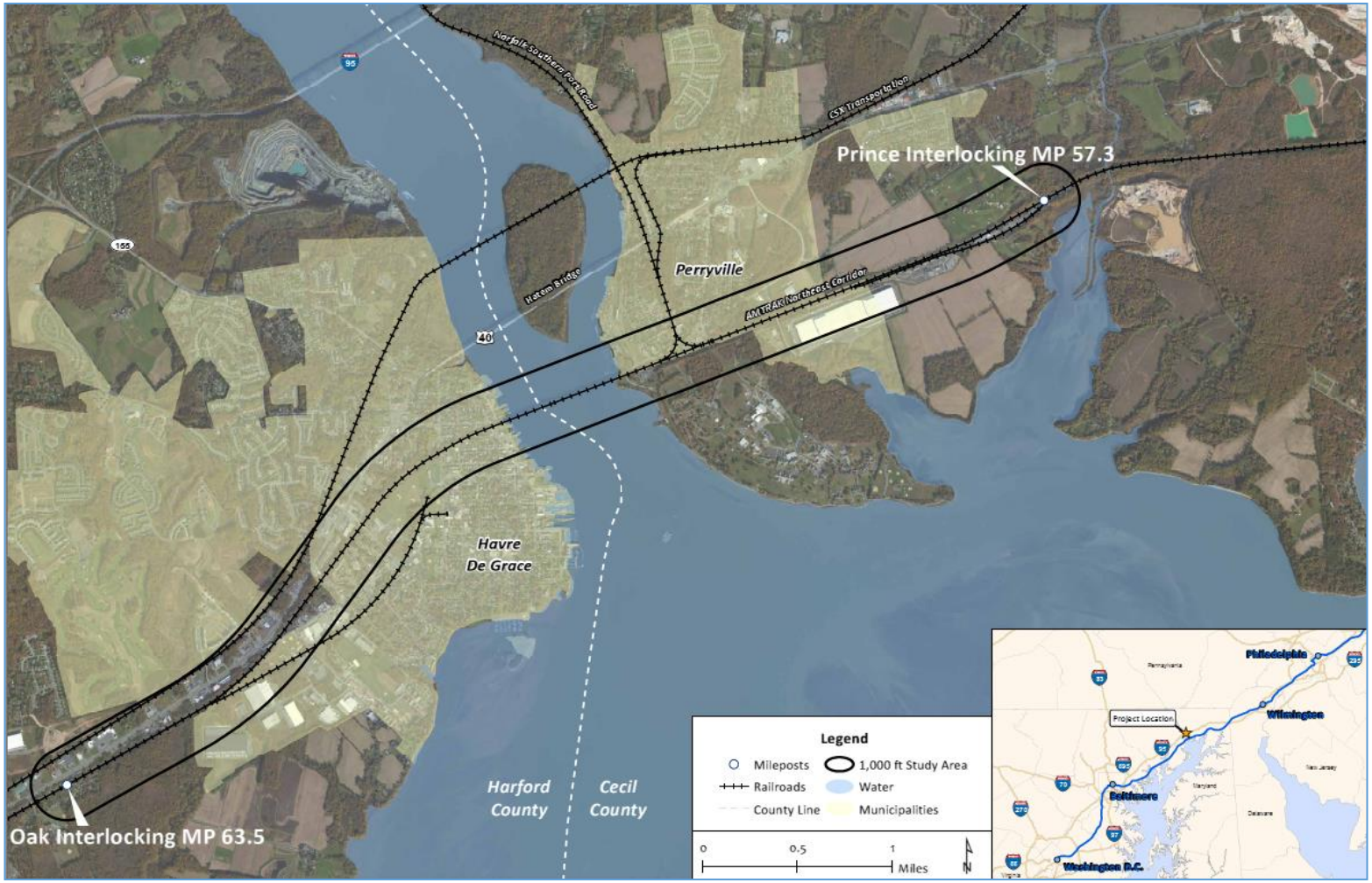
The primary purpose of the Susquehanna River Rail Bridge Project is to provide continued rail connectivity along the Northeast Corridor (NEC).

The project goals include:

- Improve rail service reliability and safety;
- Improve operational flexibility and accommodate reduced trip times;
- Optimize existing and planned infrastructure and accommodate future freight, commuter, intercity, and high-speed rail operations; and
- Maintain adequate navigation and improve safety along the Susquehanna River.

The Northeast Corridor merges from four tracks to two tracks (heading south from Perryville to Havre de Grace).

Project Limits (defined by grant)



Two-Step Alternatives Screening Process

Step 1: Fatal Flaw Screening—criteria developed from Purpose & Need

➤ ***Pass/fail test—alternative must satisfy all criteria to advance***

- Provides rail connectivity
- Meets navigation requirements
- Has logical termini
- Is feasible & constructible
- Avoids critical property impacts (developed from community input)

Step 2: Detailed Screening—based on specific project goals

➤ ***Relative test—compare/contrast each alternative's ability to meet goals & objectives***

- Optimizes existing and planned infrastructure
- Considers operational, design, construction requirements
- Minimizes environmental/cultural/socioeconomic/property impacts

Step 1: Fatal Flaw Screening

Fatal Flaw Screening Results

25 alternatives were evaluated:

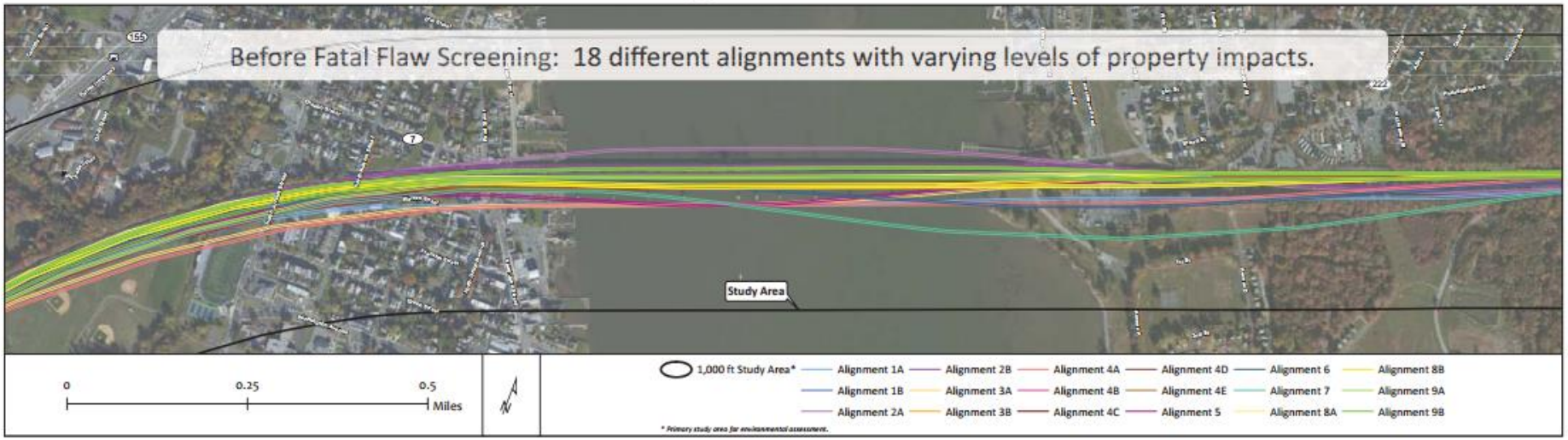
- 18 conceptual alternatives
- Rehabilitation of the existing bridge
- 6 other alternatives (value engineering, suggestions from public, etc.)

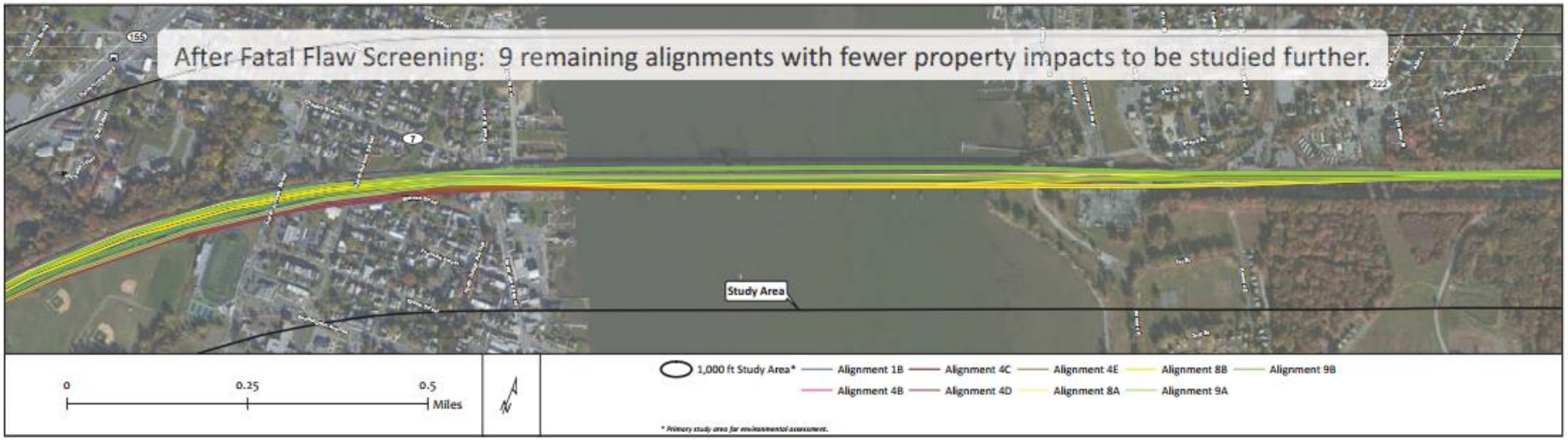
Rehabilitation alternative was eliminated because:

- Not suitable for continued freight rail and/or passenger rail use
- Would not allow required level of rail service during construction
- Retaining existing bridge with new bridge would increase right-of-way impacts and/or reduce achievable speed

10 of 25 alternatives proceeded to Step 2: Detailed Screening (9 conceptual alternatives + 1 from value engineering)

Conceptual Alignments Considered





Step 2: Detailed Screening

Alternatives Comparison Matrix

Screening Criteria	Alt 1B	Alt 4B	Alt 4C	Alt 4D	Alt 4E	Alt 8A	Alt 8B	Alt 9A	Alt 9B	VE
IMPROVE RAIL SERVICE RELIABILITY AND SAFETY										
Eliminates operational disruptions/ delays	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Connects to NS wye and provides grades acceptable for freight operations	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of bridge structures	2	2	2	1	1	2	1	2	2	2
IMPROVE OPERATIONAL FLEXIBILITY AND ACCOMMODATE REDUCED TRIP TIMES										
Reduces operational conflicts	Excellent	Excellent	Excellent	Fair	Fair	Excellent	Fair	Excellent	Excellent	Excellent
Eliminates or reduces speed restrictions for intercity trains	Eliminates	Eliminates	Eliminates	Eliminates	Eliminates	Reduces	Reduces	Eliminates	Eliminates	Eliminates
Provides flexibility for operational and maintenance work windows	Very Good	Very Good	Very Good	Good	Good	Very Good	Good	Good	Good	Good
OPTIMIZE EXISTING AND PLANNED INFRASTRUCTURE										
Eliminates two-track section in this portion of NEC*	Excellent 4 Tracks	Excellent 4 Tracks	Excellent 4 Tracks	Good 3 Tracks	Good 3 Tracks	Excellent 4 Tracks	Good 3 Tracks	Excellent 4 Tracks	Excellent 4 Tracks	Excellent 4 Tracks
Does not preclude future high-speed rail (NEC Future)*	140 mph Good	160 mph Excellent	135 mph Good	160 mph Excellent	135mph Good	120 mph Fair	120 mph Fair	160 mph Excellent	150 mph Very Good	140 mph Good
Impacts to Perry Substation	Major	Major	Major	Major	Major	Major	Major	Moderate	Moderate	Major
Allows shared corridor with bike/ped path**	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude
MAINTAIN ADEQUATE NAVIGATION AND IMPROVE SAFETY ALONG THE SUSQUEHANNA RIVER										
Provides suitable vertical clearance	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′	Yes – 60′
Maintains or widens horizontal clearance	Yes- 200′+	Yes- 200′+	Yes- 200′+	Yes- 200′+	Yes-200′+	Yes- 200′+	Yes- 200′+	Yes- 200′+	Yes- 200′+	Yes- 200′+
Requires temporary winter closure of movable span?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PROPERTY IMPACTS										
Potential property impacts*	1 Commercial (Indirect) 1 Undeveloped (Partial)	1 Residential (Full) 1 Commercial (Full) 1 Commercial (Indirect) 1 Institutional (Partial) 2 Undeveloped (Full) 1 Undeveloped (Partial) 2 Park (Partial)	1 Residential (Full) 1 Commercial (Partial) 2 Undeveloped (Full) 1 Park (Partial)	1 Residential (Full) 1 Commercial (Full) 1 Commercial (Indirect) 1 Institutional (Partial) 2 Undeveloped (Full) 1 Undeveloped (Partial) 2 Park (Partial)	1 Residential (Full) 1 Commercial (Partial) 2 Undeveloped (Full) 1 Park (Partial)	1 Commercial (Partial)	1 Commercial (Partial)	1 Residential (Partial) 1 Commercial (Full) 1 Undeveloped (Partial) 2 Park (Partial)	1 Residential (Partial) 1 Commercial (Partial) 1 Park (Partial)	1 Residential (Partial) 1 Commercial (Partial) 1 Park (Partial) 1 Undeveloped (Partial)
Retained for Further Evaluation?	**NO*** **	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**
Elimination Rationale	Better option available	High property impacts	Better option available	High property impacts	Better option available	Undesirable Speed	Undesirable Speed	N/A	N/A	Better option available

* Primary differentiator in selecting alternatives retained for detailed study

** Feasibility evaluation in progress

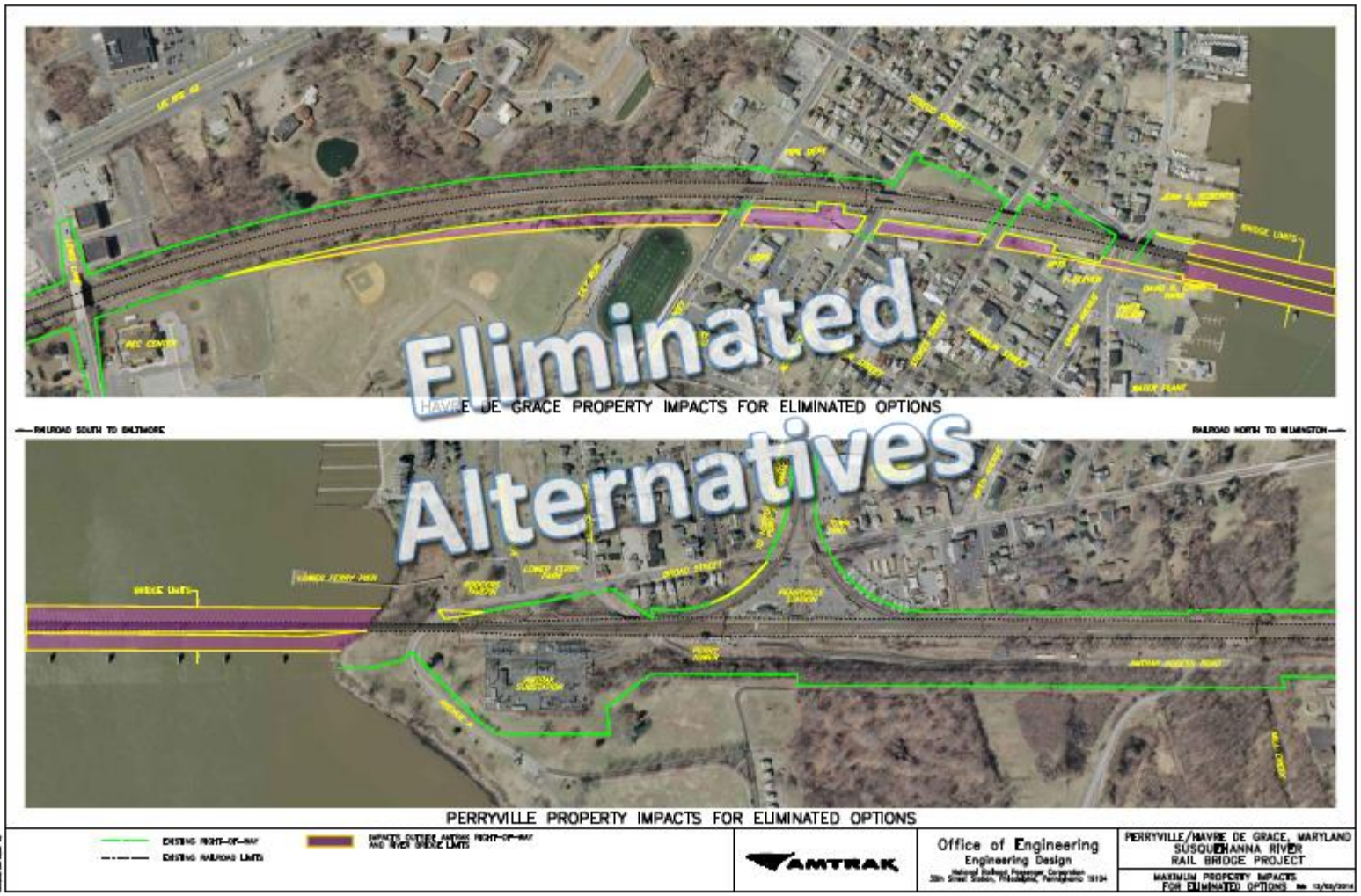
*** Subsequent to Dec 2014 public meeting, Alternative 1B was eliminated from further consideration. Max speed is 140 mph and no meaningful advantages over 9A/9B.

most desirable | more desirable | least desirable

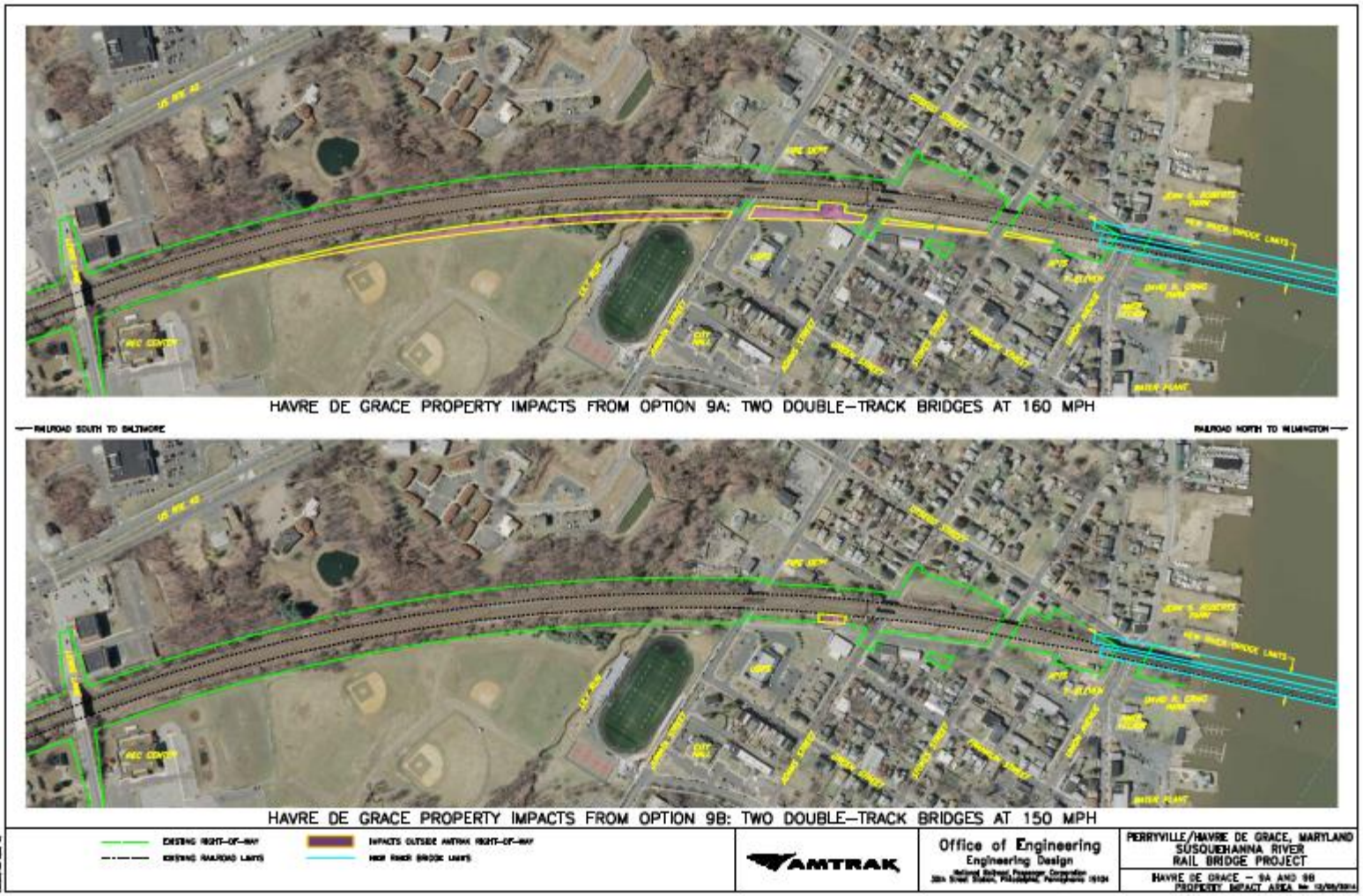
Maryland Department of Transportation

AMTRAK

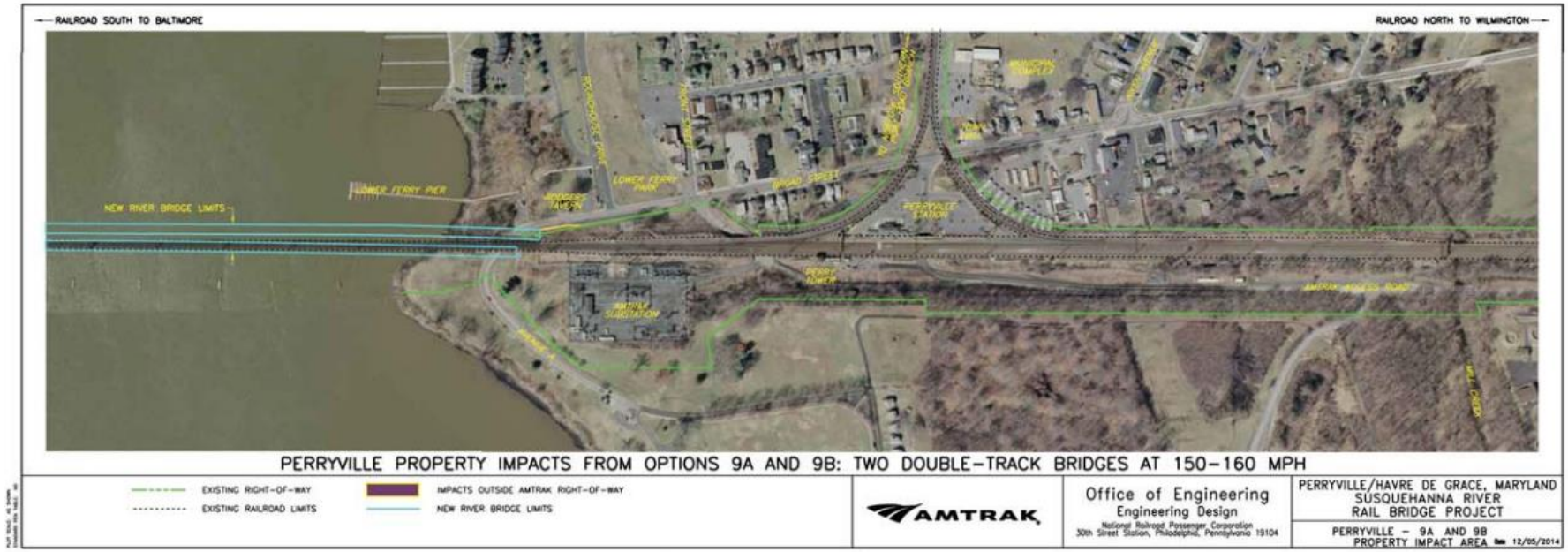
Potential Property Impacts from Eliminated Alternatives



Potential Property Impacts from Retained Alternatives

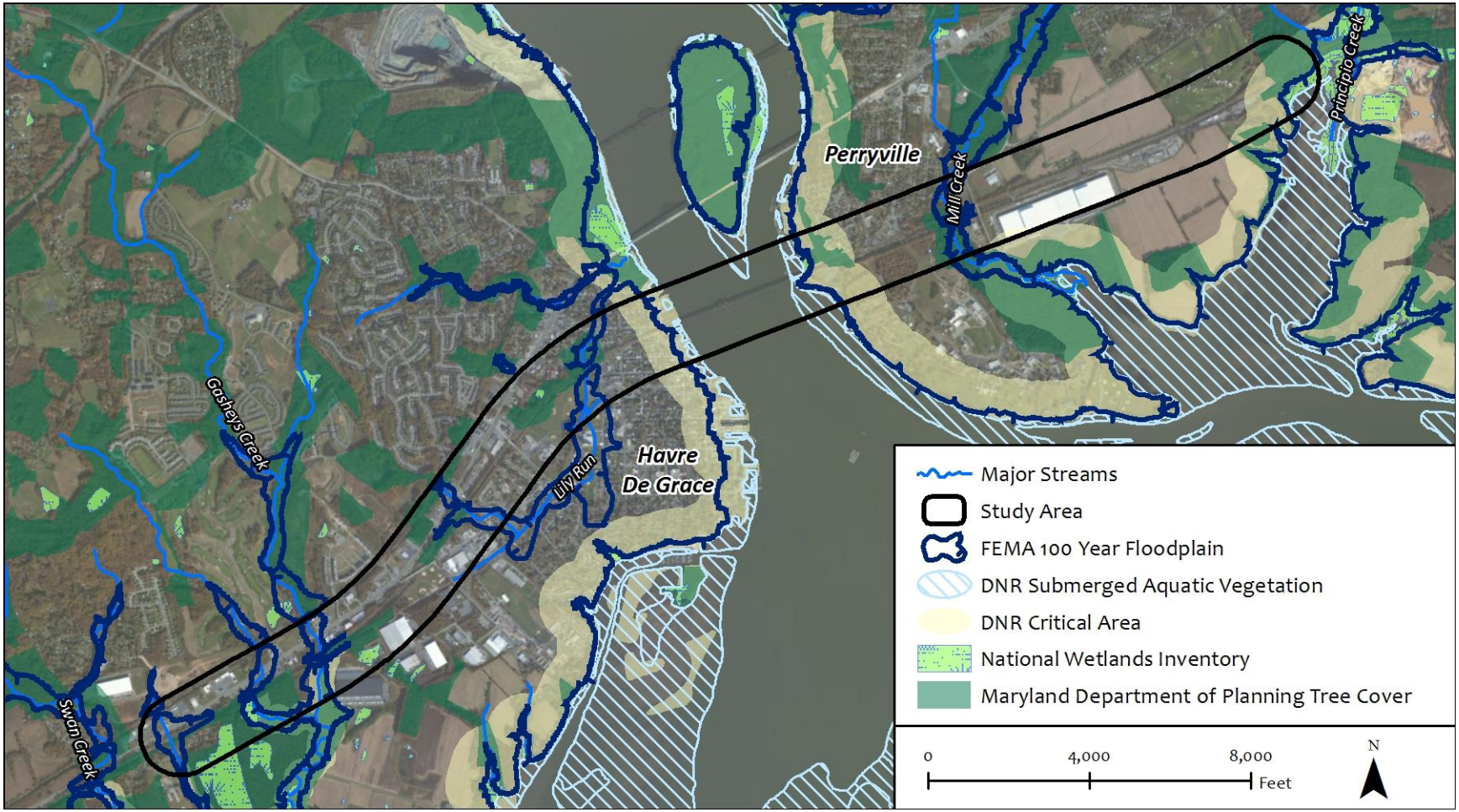


Potential Property Impacts from Retained Alternatives



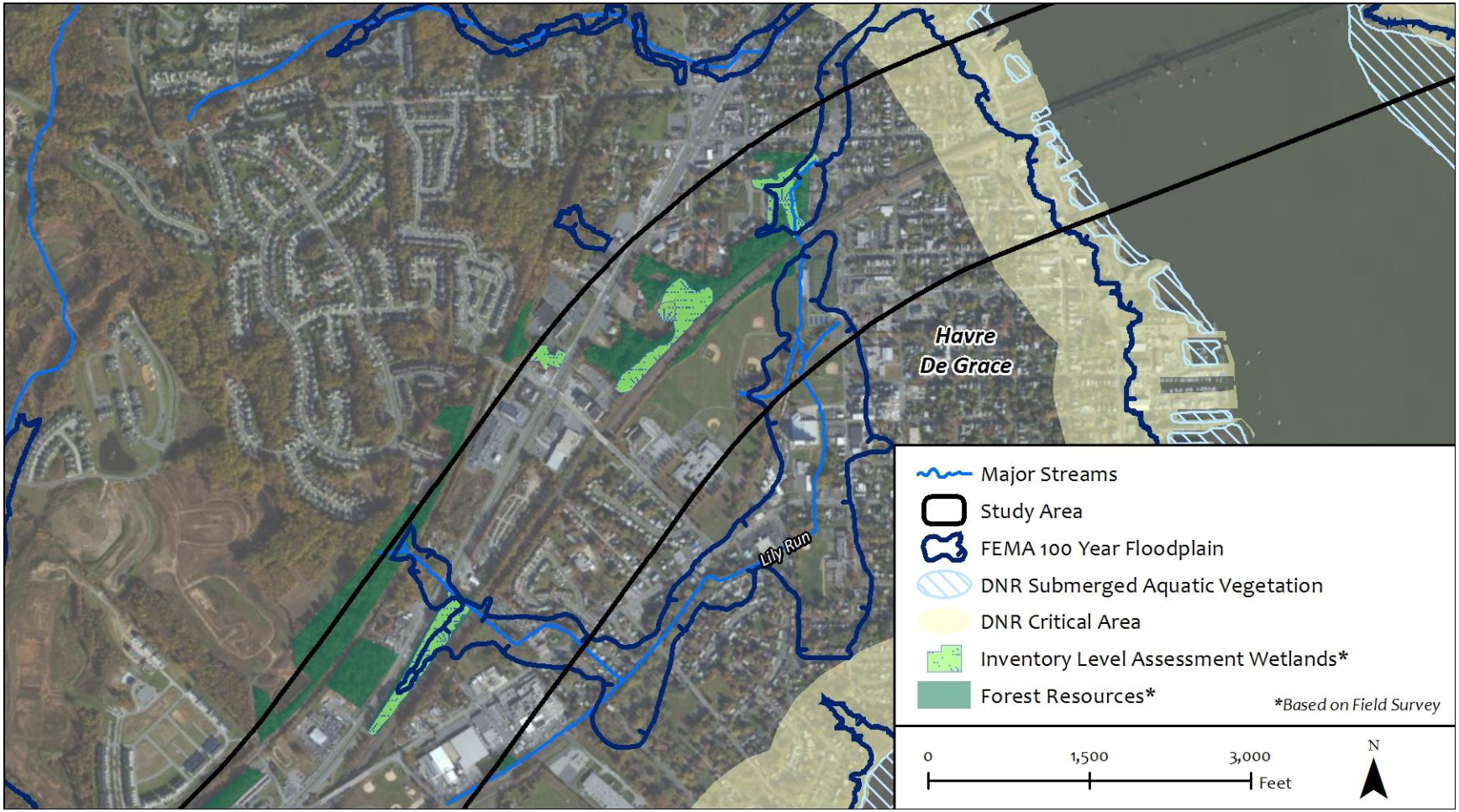
Natural Resources

Began With Desktop Studies



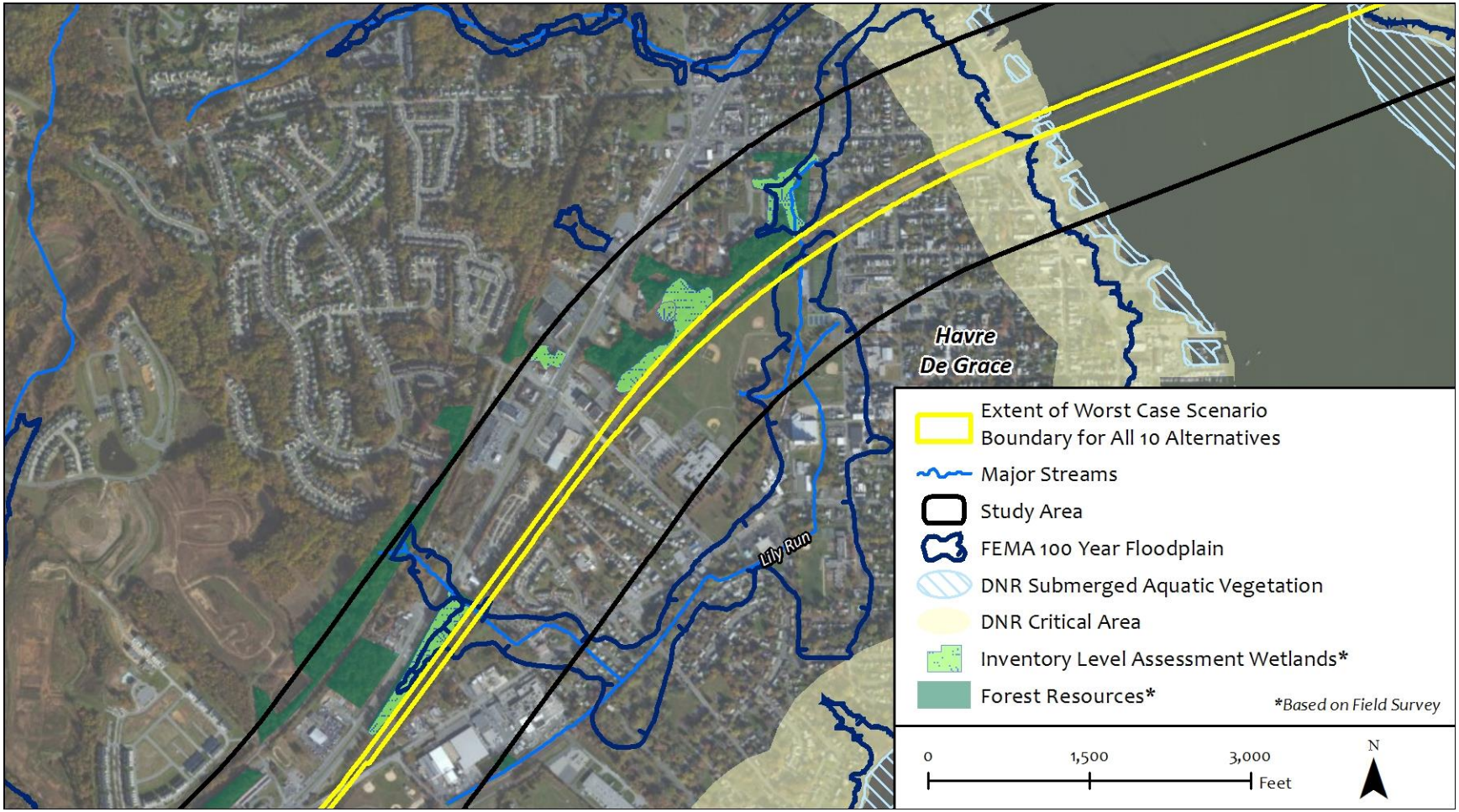
Natural Resources – Havre De Grace

Combining Desktop Studies with Fields Surveys



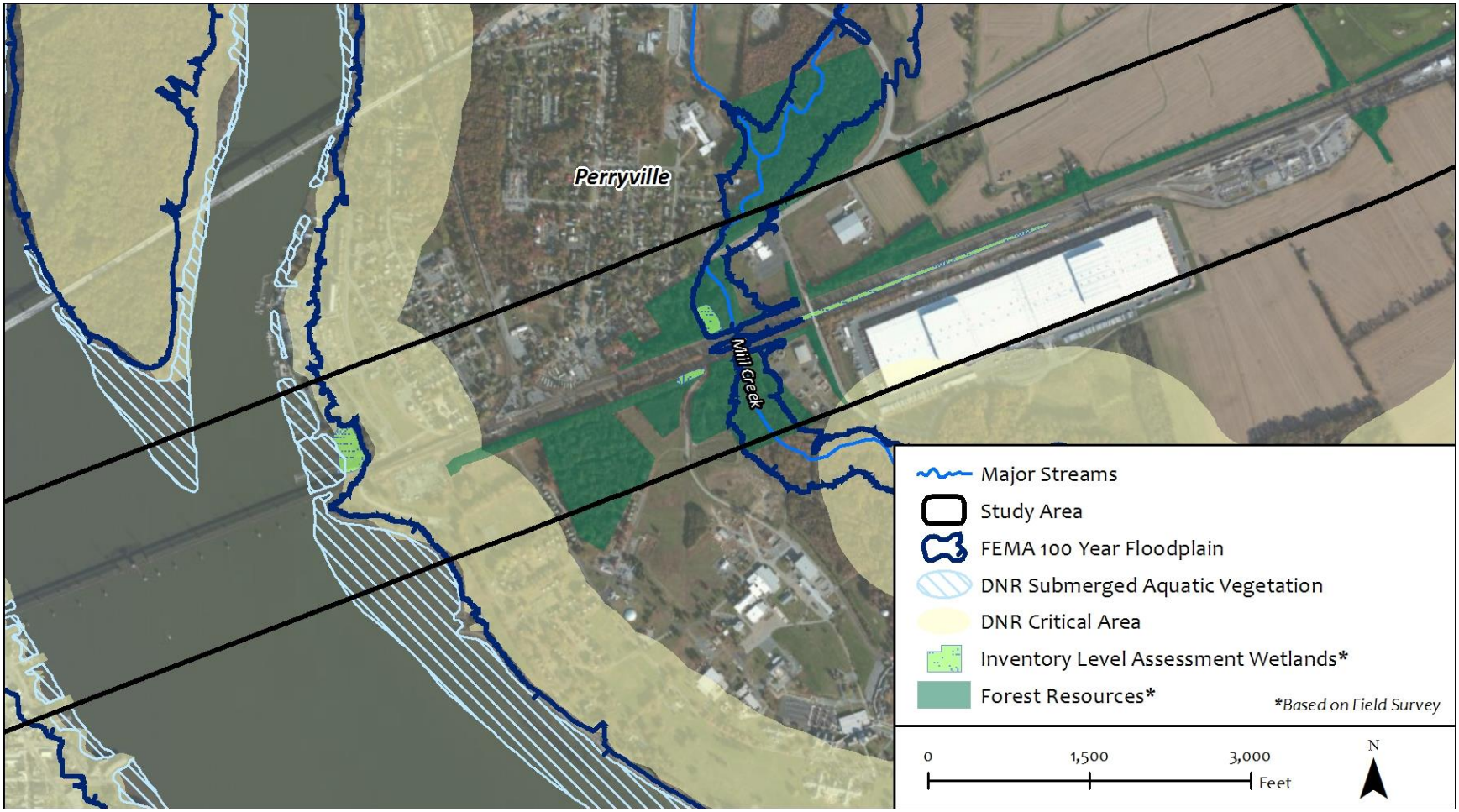
Natural Resources – Havre De Grace

Combining Desktop Studies with Fields Surveys



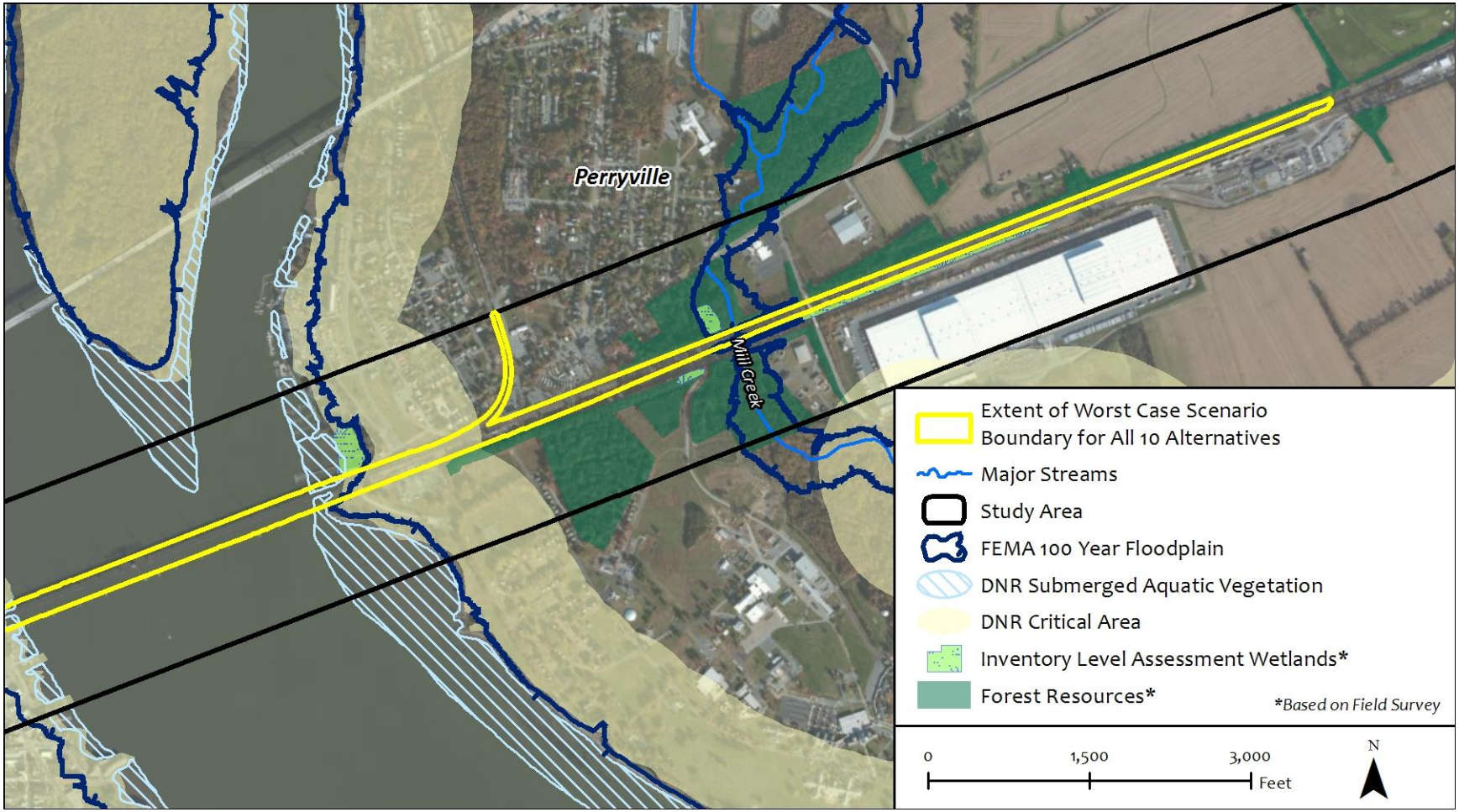
Natural Resources - Perryville

Combining Desktop Studies with Fields Surveys



Natural Resources - Perryville

Combining Desktop Studies with Fields Surveys

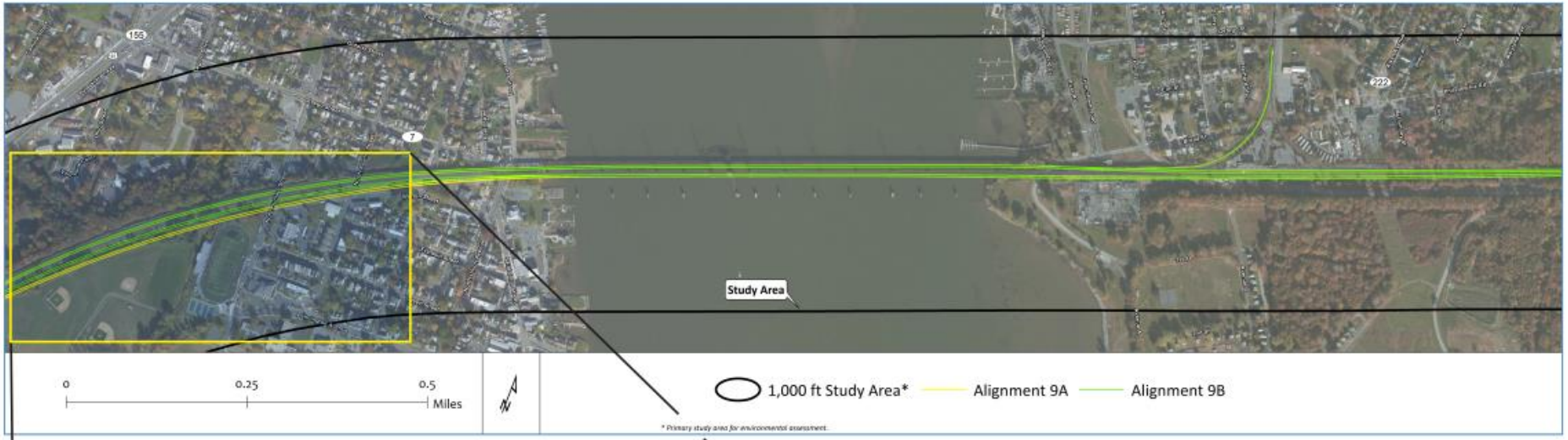


Natural Resources Impacts Matrix

Natural Resources	Alt 1B	Alt 4B	Alt 4C	Alt 4D	Alt 4E	Alt 8A	Alt 8B	Alt 9A	Alt 9B	Alt 12 (VE)
Number of Stream Crossings*	2	3	3	3	3	3	2	3	3	3
Impacts to Streams (linear feet)*	140	239	197	287	240	230	165	345	324	333
Impacts to Wetlands (acres)**	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Impacts to Wetland Buffers (acres)	0.1	0.1	0.1	0.2	0.3	0.2	0.25	1.2	1.2	1.2
Net impacts to the Susquehanna River surface (acres)	1.2	1.2	1.2	0.6	0.6	1.2	0.6	1.0	1.0	1.2
Impacts to floodplains (acres)	1.3	1.6	1.9	2.5	1.6	2.1	0.7	3.1	2.6	2.6
Impacts to Critical Area (acres)	6.8	6.2	6.2	5.1	5.1	6.6	5.9	7.0	6.8	7.3
Impacts to Submerged Aquatic Vegetation (acres)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.8	1.0
Impacts to Forest (acres)**	1.3	1.2	0.1	1.6	0.1	0.2	0.2	1.8	1.5	1.6

** Does not include the Susquehanna River. All alternatives cross the Susquehanna River.*
*** Based on preliminary field survey*

Detailed Screening Results



Alternatives Retained for Detailed Study: Alternatives 9A and 9B

- Maximum achievable speed, number of tracks, and property impacts were primary differentiators in selecting alternatives
- 9A/9B allows for 4 track capacity with up to 160/150 mph max speed

Bridge Design Types - Example Renderings

Bicycle/Pedestrian Interest

- **Met with trail planning and advocacy groups 6/14 and 12/14**
- **Next Steps for Project Team:**
  - Complete feasibility evaluation to: (1) assess feasibility of constructing multi-use path in conjunction with new rail bridge; (2) perform sufficient conceptual engineering to derive preliminary cost estimate [+$40-50M]
  - Conduct safety and hazard analysis
  - Continue these efforts regardless of which alternatives are retained
- **Next Steps for Bike/Ped Stakeholders:**
  - Identify potential funding sources and options for project sponsor/owner
  - Send case studies and economic analyses referenced at 12/14 meeting
  - Provide input on why this specific location is preferable to other possible
- **If deemed feasible, a separate project would be required for design, environmental review, and identification of potential funding for a bike/ped crossing.**

Bicycle/Pedestrian Options to be Explored

Separate Structure

- East of New Rail Bridge
- West of New Rail Bridge

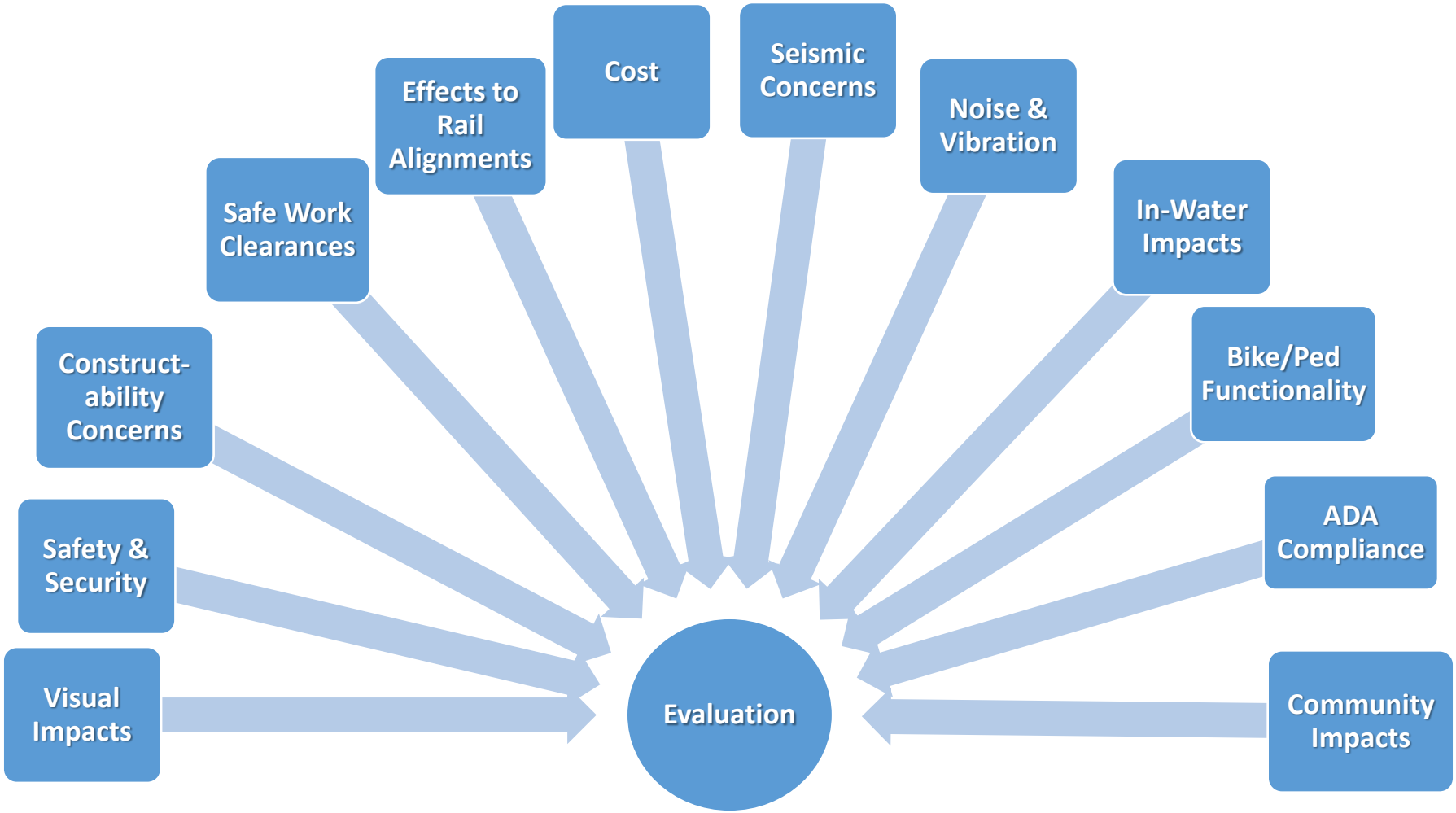
Reuse Existing Infrastructure

- Repurpose Existing Rail Bridge
  Piers & Trusses
- Repurpose Existing Rail Bridge
  Piers Only

Share New Bridge

- Shared bridge piers with separate superstructures
- Multi-use path underneath new bridge

Factors to be Considered



Coordination to Date

- Railroad coordination (NS, CSX, MTA);
- Public outreach information sessions (April, August, and December 2014);
- Local officials (Perryville, Havre de Grace, Cecil Co);
- SRRB Project Advisory Board;
- Bicycle/pedestrian meetings; and
- Section 106 consultation.

Input Received

Major Themes of Public Comments Received

- Importance of aesthetics and bridge design;
- Inclusion of bike/ped path;
- Transit/traffic/parking improvements;
- Minimizing property acquisition;
- Maintaining jobs;
- Enhancing public parks; and
- Encouraging tourism and local businesses.

SRRB Project Advisory Board Top 6 Priorities

1. Request for a Special Briefing;
2. Bridge Architecture;
3. Bridge Abutment Area;
4. Westerly Right-of-Way and Alignments;
5. Street and Lane Underpasses; and
6. Rail Commuter Station.

Summer 2013

Early Coordination
- Agency Coordination Meeting
- Met with Havre de Grace and Perryville Officials

Winter 2014

Agency Coordination Meeting
- Project Introduction
- Present Project's Purpose & Need

Spring 2014

Agency Coordination Meeting
- Obtain Input on Project's Purpose & Need
- Existing Environmental Conditions
- Conceptual Alternatives

Public Outreach Information Session
- Obtain Input on Project's Purpose & Need
- Existing Environmental Conditions
- Conceptual Alternatives

Summer 2014

Agency Coordination Meeting
- Summarize Public Input
- Present Feasible Alternatives

Public Outreach Information Session
- Meet with Local Officials and Stakeholders
- Present Feasible Alternatives

Fall 2014

Public Outreach Information Session
- Present Alternatives Retained for Detailed Study

Winter 2015 — We are Here

Agency Coordination Meeting
- Present Alternatives Retained for Detailed Study

Spring 2015

Agency Coordination Meeting
- Retained Alternatives Analysis

Public Outreach Information Session
- Retained Alternatives Analysis

Fall 2015

Publish Environmental Assessment (EA)

Agency Coordination Meeting
- NEPA Document Findings
- Preferred Alternative / Conceptual Mitigation

Public Outreach Information Session
- NEPA Document Findings
- Preferred Alternative / Conceptual Mitigation

Fall 2015 - Winter 2016

Complete Preliminary Engineering and NEPA Process

2017

Complete Federal Railroad Administration Grant Requirements

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Susquehanna River Rail Bridge Project

Interagency Review Meeting

April 15, 2015

Prior IRM Presentations

February/April/June 2014 IRM

- Presented purpose and need and environmental features
- Reviewed conceptual alternatives
- Provided update on public involvement activities
- Presented fatal flaw screening (Step 1)

February 2015 IRM

- Reviewed alternatives screening process (Step 2)
- Presented alternatives retained for detailed study
- Described public involvement activities & SRRBP Advisory Board bulletins

Purpose of Today's Presentation

- Explain status of ARDS
- Provide update on engineering design
- Recap field visit and environmental resources
- Review coordination to date
- Describe status of bike-ped path feasibility evaluation
- Identify next steps

Status of Revised ARDS Report

Updating impact matrix (10 alternatives) based on the following:

- Revised natural resources inventory
- Updated design information
- Agency comments received to date

Recent Development in Design

Design and operational updates:

- Modifications to interlockings
- Increasing tracks separation throughout project limits to meet current standards for high speed rail

IRM Agency Field Visit

March 12, 2015 Field Visit

- Walked along existing and proposed alignments in Havre de Grace and Perryville
- Viewed all types of environmental resources considered as part of NEPA (historic, natural, community facilities, parkland, businesses, etc.)
- Re-characterized natural resources where appropriate
- THANK YOU for making the trip and joining us

IRM Agency Field Visit – Overview

- City of Havre de Grace would like to realign Union Ave-Otsego St. intersection to create open gateway to downtown
- Alt 9A will impact a portion of the school track while Alt 1B and 9B will remain in Amtrak ROW near this location
- Alt 1B brings alignment closer to the Lafayette Senior Housing Complex (Section 8 low income housing)
- Discussed temporary in-water construction impacts near Rodgers Tavern and potential mitigation (i.e. phragmites removal/control)
- DNR to update RTE letter to account for the map turtle
- 500-year floodplain impacts to be added
- Discussed pursuing a preliminary Jurisdictional Determination

IRM Agency Field Visit – Overview (cont.)

Avoid-Minimize-Mitigate Discussions

- Incorporate retaining walls and optimize use of disturbed ROW
- Identify previously disturbed vs. undisturbed areas
- Further reduce in-water impacts by lengthening bridge spans
- Maximize use of drilled shaft technique without cofferdams (instead of pile driving)
- Temporary finger piers in lieu of dredging during construction
- Use bottomless culverts or bridges instead of box culverts
- Additional input on BMPs are welcome

IRM Agency Field Visit

Observed Other Environmental (Non-Natural) Resources

Potentially Historic Undergrade Culvert (Centennial Lane)

Rodgers Tavern (S/NR-listed)

Lafayette Senior Housing Complex (Section 8 low income housing)

Active Commercial Driveway

IRM Agency Field Visit – Natural Resources

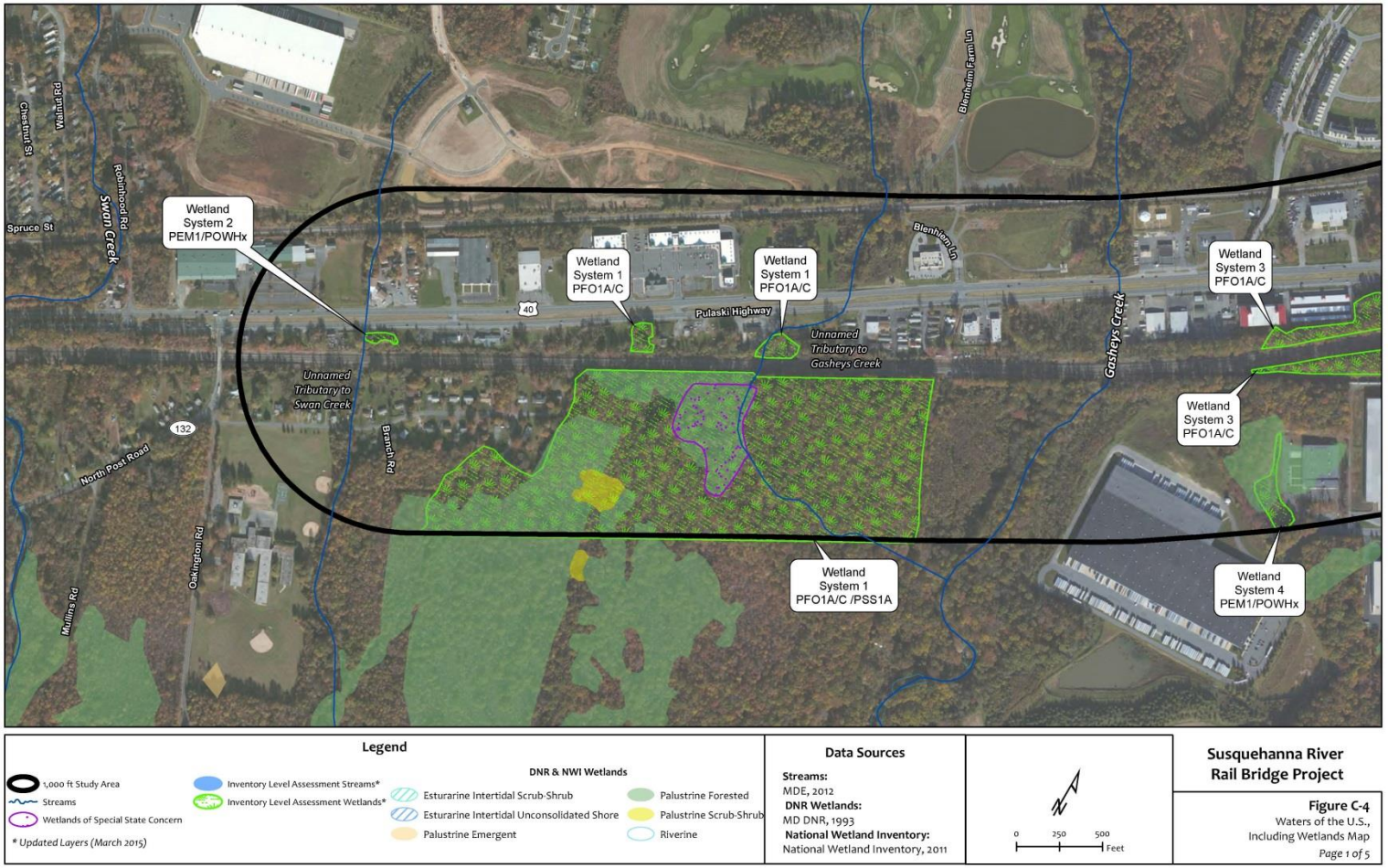
Resource Re-characterization

- Added an intermittent stream that drains from Wetland 12 along the south side of the Access Road to the substation
- Reclassified a portion of Wetland 13 as an intermittent stream
- Added Wetland 15 that is a PEM next to tracks, east of the Perryville Station
- Added Wetland 16 on the south side of Prince Interlocking that is a POW with an intermittent stream draining east to Principio Creek
- Added Wetland 17 that is a PEM in the floodplain of Lily Run adjacent to the Havre de Grace Middle School Track

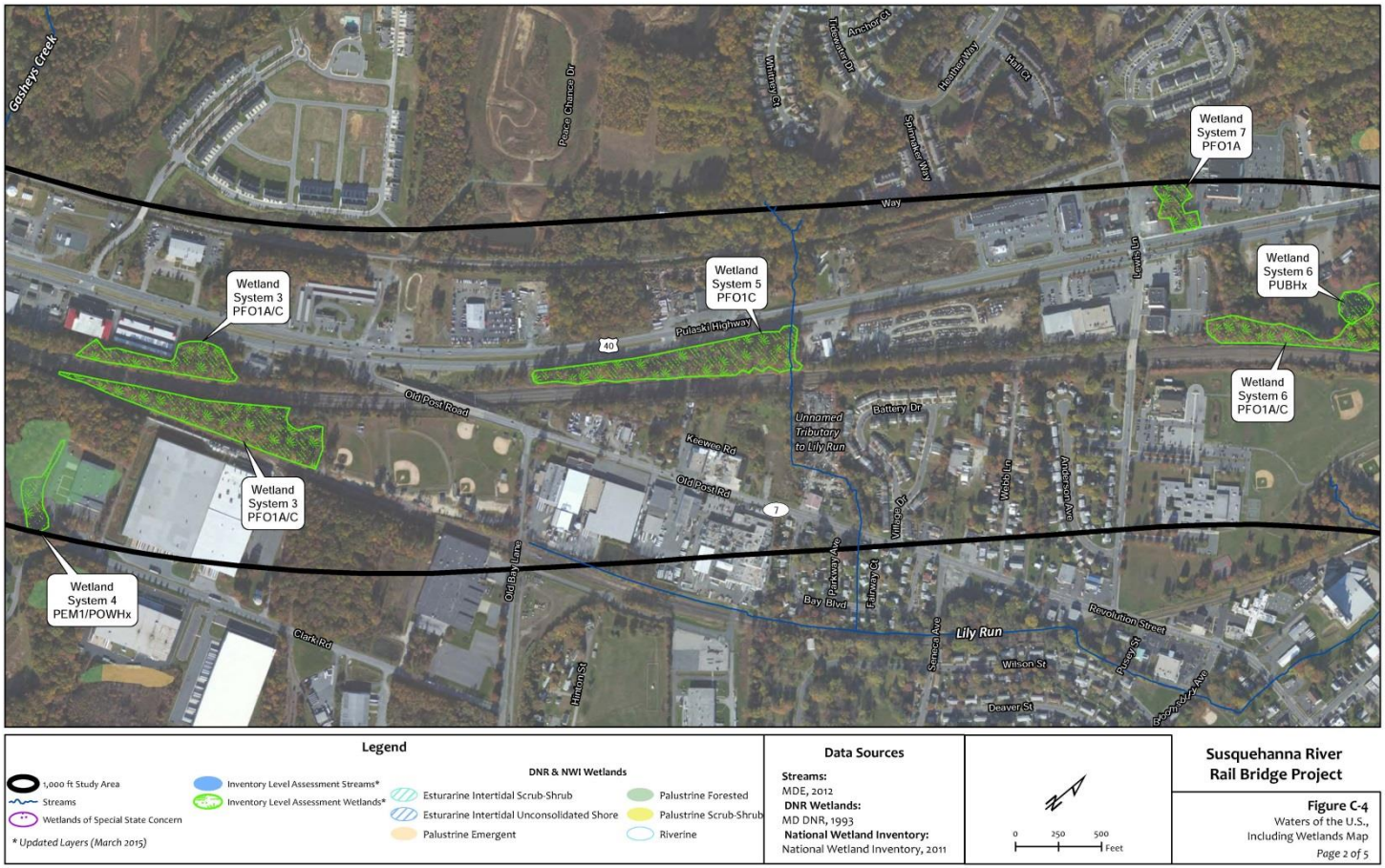
Looking northeast at PEM wetland portion of system 13

Looking southwest at intermittent stream portion of system 13

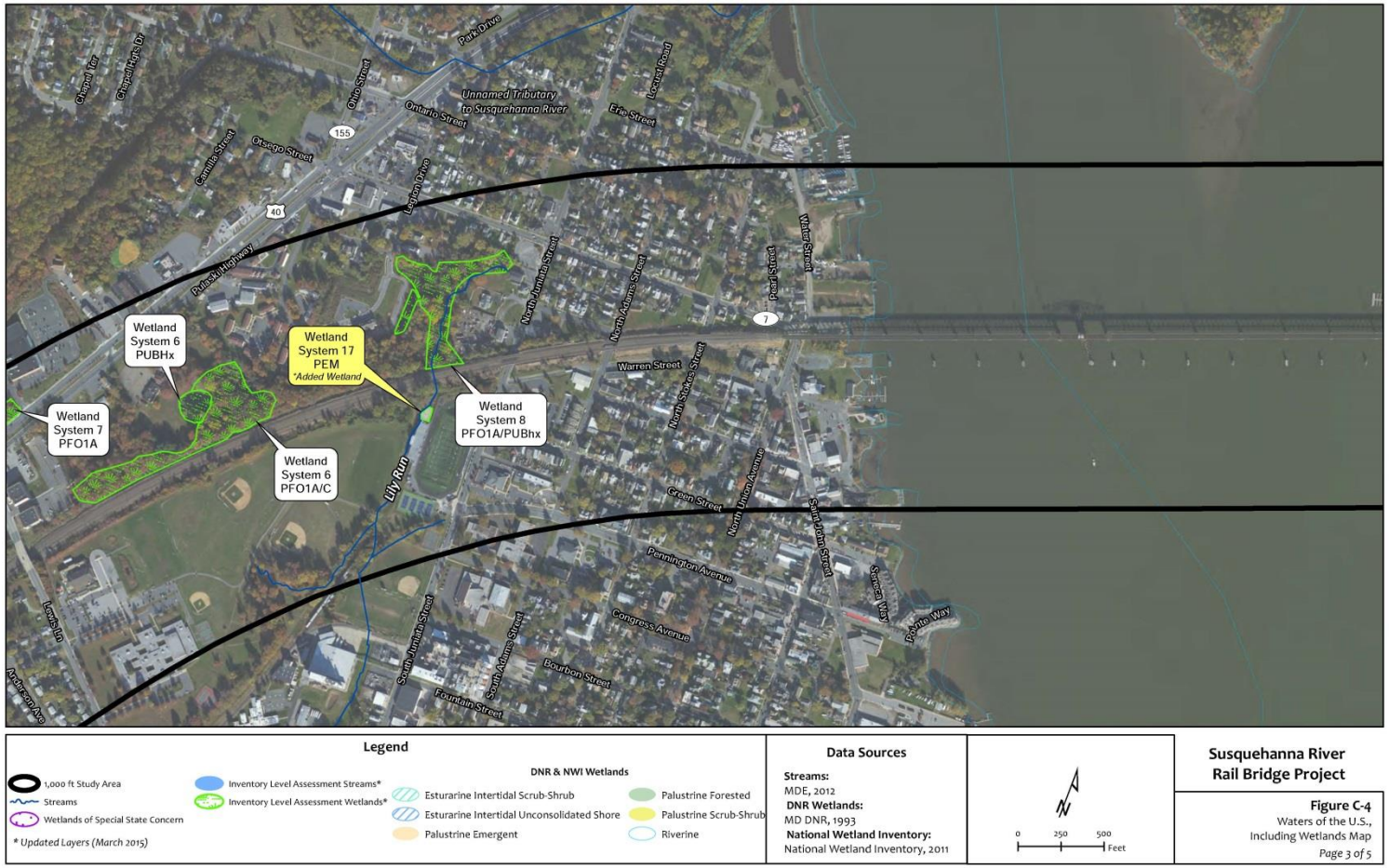
IRM Agency Field Visit – Natural Resources



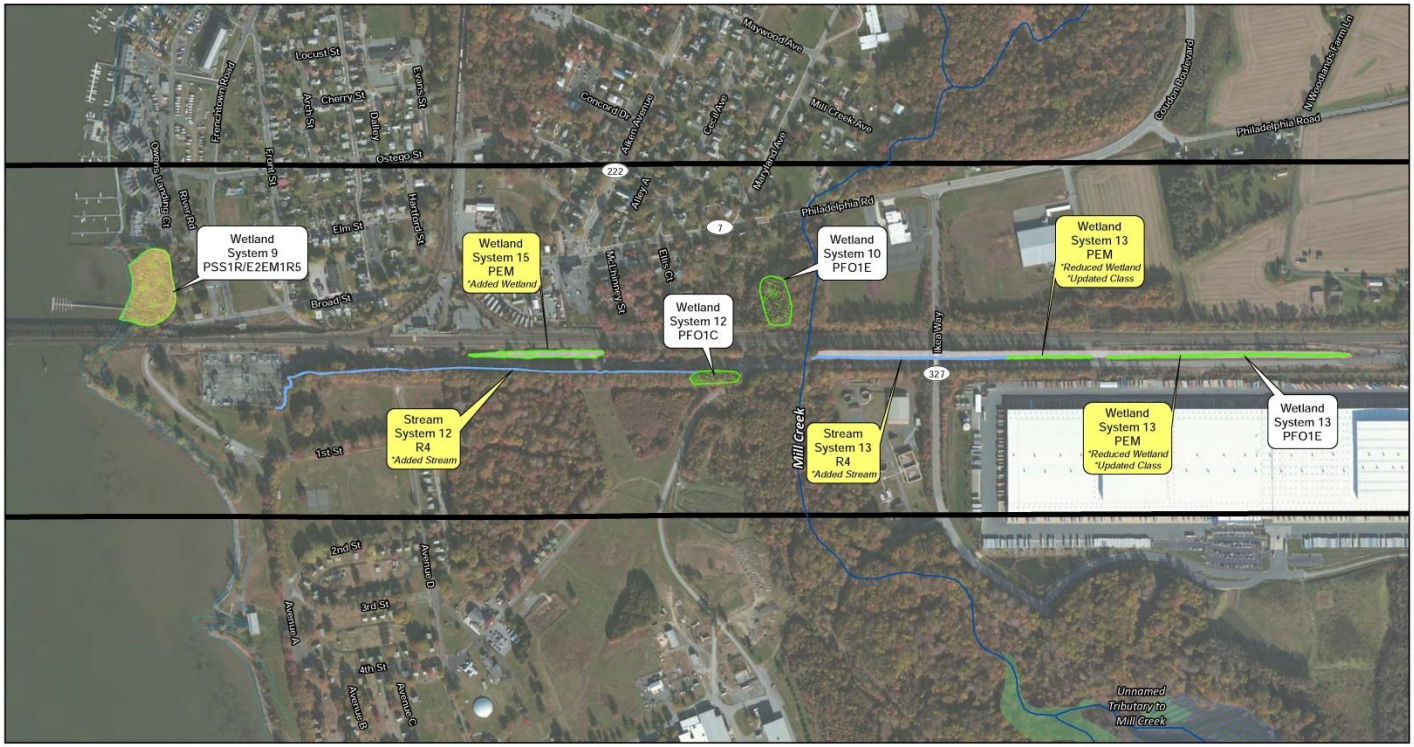
IRM Agency Field Visit – Natural Resources



IRM Agency Field Visit – Natural Resources



IRM Agency Field Visit – Natural Resources



IRM Agency Field Visit – Natural Resources

Coordination to Date

- Railroad coordination (NS, CSX, MTA)
- Public outreach information sessions (April, August, and December 2014)
- Local officials (Perryville, Havre de Grace, Cecil Co);
- SRRBP Advisory Board
- Bicycle/pedestrian stakeholders
- Section 106 consultation
  - Held consulting parties meeting on March 9, 2015
  - Discussed known historic resources

Public Input

- The Project Team has continued coordination with the SRRBP Advisory Board
- A recent Advisory Board Bulletin provided input on a safe pedestrian and bicycle river crossing
- SRRBP Advisory Board independently evaluated 11 different Susquehanna River crossings and selected Susquehanna State Park as its first choice
- All 19 bulletins are posted on City of HdG website
- **The project team is considering all input while proceeding with our bicycle-pedestrian feasibility evaluation**

Next Steps

ARDS Report

- Revise natural resources inventory map and accompanying descriptions
- Update Alternatives Comparison Matrix (including natural resource impacts matrix based on field observations)
- Recirculate ARDS report and seek concurrence

Coordination

- Continue public and stakeholder coordination
- Continue agency coordination

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Susquehanna River Rail Bridge Project

Interagency Review Meeting

June 17, 2015

Purpose of Today's Presentation

- Provide project update
- Provide Overview of Key Operational Considerations
- Present Detailed Screening Methodology and Results
- Discuss Next Steps

Recent IRM Agency Coordination

March 12, 2015 Field Visit

- Viewed all types of environmental resources considered as part of NEPA (historic, natural, community facilities, parkland, businesses, etc.)
- Re-characterized natural resources where appropriate

April 15, 2015 IRM Meeting

- Provided an overview of natural resource updates based on field review
- Updated agencies on design modifications

IRM Agency Field Visit – Resource Updates

Resource Re-characterization

- Added an intermittent stream that drains from Wetland 12 along the south side of the Access Road to the substation
- Reclassified a portion of Wetland 13 as an intermittent stream
- Added Wetland 15 that is a PEM next to tracks, east of the Perryville Station
- Added Wetland 16 on the south side of Prince Interlocking that is a POW with an intermittent stream draining east to Principio Creek
- Added Wetland 17 that is a PEM in the floodplain of Lily Run adjacent to the Havre de Grace Middle School Track

Looking northeast at PEM wetland portion of system 13

Looking southwest at intermittent stream portion of system 13

Development in Design

- Two further design developments since field visit
  - The bridge design was further developed following the field visit
    - Spans made longer for the girder approach style bridge
    - Number of piers reduced: 21 in-water pier-pairs down to 18 pier-pairs (Existing bridge currently has 16 in-water pier pairs)
  - A longer project length has increased tracks separation to meet current standards for high speed rail
    - This work remains well within the Amtrak ROW – maximum offset of outside track six feet
    - This work is mostly within the existing track bed
    - Possible effects to Lewis Lane Overhead Bridge
    - Possible need to bridge over small Lily Run tributary south of Lewis Lane

Key Agency Comments

- Environmental Protection Agency (EPA)
  - Environmental consideration in decision making
  - Max Allowable Speeds
  - Bridge Design Type
- US Fish and Wildlife (USFWS)
  - Avoid direct or indirect impacts to the Chesapeake Marshlands National Wildlife Refuge Complex (Garrett Island)
- Maryland Department of Planning (MDP)
  - Continued coordination regarding the bike/ped. trail
- Department of Natural Resources (DNR)
  - Ensure that the map turtle is included in the project's RTE information

Intercity Passenger Rail Service

- FRA High Speed Rail Program
- NEC FUTURE Program
- Congressional Mandate for Amtrak to reduce travel time along the Northeast Corridor
- Major “Long-term” Rail Infrastructure Investment

FRA NEPA Decision –

- “Balancing the Benefits and Consequences”

Operational and Design Criteria

Amtrak Response to Congress –

Interim Assessment of Achieving Improved Trip Times on the Northeast Corridor (Amtrak, October 21, 2009.)

- **Operational Criteria Considered in Evaluation**
  - Design Speed
  - Reduce Travel Time
  - Improve Train Operations
  - Improve Service Capacity
  - Maintain Rail Services

Detailed Screening Methodology

- Design Impact Boundary
- Project Limits
  - Oak to Prince Interlocking
  - Grace Interlocking
- Revised Alternatives Matrix
  - Human Environmental Impacts
  - Natural Environmental Impacts
  - Operational and Engineering Considerations

General Impact Matrix Discussion

- Agency questions
- Additional factors to consider
- Specific concerns
- Retained alternatives discussion

Next Steps - ARDS

- Revise ARDS Package and resubmit to agencies by early/mid July
  - ARDS report approach
- Present findings at July IRM
- Seek concurrence by early/mid August

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Susquehanna River Rail Bridge Project

Interagency Review Meeting

September 16, 2015

Purpose of Today's Presentation

- Provide updates on recent key stakeholder and Section 106 meetings
- Present the Alternatives Retained for Detailed Study (ARDS) - ***Alternatives 9A and 9B***
- Review comments on ARDS report
- Discuss anticipated ARDS concurrence milestone and next steps

Recent Meetings

Harford County Public Schools (7/8/2015 & 8/17/2015)

- Focused on impacts to Havre de Grace High School/Middle School property and athletic fields
- Reviewed proposed redevelopment plans for school
- Discussed potential physical impacts to the race track, high jump area, and proposed ball fields
- Continued coordination needed

Recent Meetings

Section 106 Consulting Parties (8/18/2015)

- Detailed discussions about Perry Interlocking Tower and potential for relocation rather than demolition
- Reviewed Rodgers Tavern and proposed retaining wall; design, height, possibility of architectural treatment and/or vegetation
- Discussed stone overpasses in Havre de Grace and Perryville
- Archaeological topics—unanticipated discoveries plan

Detailed Screening Methodology

Alternatives Comparison Matrix

- Human Environmental Impacts
- Natural Environmental Impacts
- Engineering & Operational Considerations

Additional Operational Considerations

- **Intercity Passenger Rail Service**
  - FRA High Speed Rail Program
  - NEC FUTURE Program
  - Congressional Mandate for Amtrak to reduce travel time along the Northeast Corridor
  - Major “Long-term” Rail Infrastructure Investment
- **Value of Time Travel Savings**
  - Calculated by multiplying minutes saved per passenger by value of travel time savings per hour (developed by USDOT)

Value of Time Savings Methodology

- **Developed to assess Air and HSR travel benefits**
  - Monetizes time factor for Business or Personal travel
  - Projects calculated value over assigned period of time
  - Inflation factor based on Bureau of Labor Statistics CPI
  - Asset (new bridge) assumed to have a 75 year life
  - Compared 160, 150, 140 mph network segments

- **Service Plan Assumptions (subset of NEC Future EIS)**
  - 32 HSR weekday round trips, 16 weekend roundtrips
  - 436 seats per train, 80% Load Factor
  - Weekdays; 78% Business Travel, Weekend: 29% Bus. Tvl.

Value of Time Travel Savings Chart

The table below lists the dollar value of passenger travel time savings of 160 mph vs. 150 mph vs. 140 mph for the current year as well as over the 75 year estimated life span of the Susquehanna Bridge.

	160 mph vs. 140 mph	150 mph vs. 140 mph	160 mph vs. 150 mph
Current Year	$801,000	$280,000	$521,000
Full 75 Years	$339,000,000	$118,000,000	$220,000,000

Alternatives Retained for Detailed Study

- Alternative 9A
  - Provides for a four-track crossing with max authorized speed of 160 mph, consistent with the operational goals and with broader plans along the NEC
  - Environmental impacts are comparable or less than other alternatives with similar benefits
  - Investigating potential impact avoidance/minimization and mitigation opportunities (i.e. Perry Interlocking Tower and Havre de Grace MS/HS complex)
- Alternative 9B
  - Provides for a four-track crossing with max authorized speed of 150 mph
  - Environmental impacts are comparable or less than other alternatives with similar benefits
  - Does not require property from Havre de Grace MS/HS complex

Next Steps - ARDS

- ARDS package provided for 30-day agency review
- Project team requests concurrence on ARDS by **Friday October 2, 2015**
- Project team proceeds to detailed study and additional coordination meetings
- Additional Project Milestones:
  - Effects report to MHT—Fall 2015
  - Environmental Assessment—Summer/Fall 2016
  - Estimated NEPA/PE completion—Spring 2017

Questions & Answers

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Susquehanna River Rail Bridge Project

Interagency Review Meeting

December 9, 2015

Purpose of Today's Presentation

- Provide project update
- Summarize recent community meeting
- Discuss narrowing bridge design type options
- Provide overview of recent wetland delineations
- Discuss next steps

Public Outreach Information Session
Nov 10, 2015

- Perryville High School; Approx. 60 attendees
- Overall positive support for the Proposed Project

Some Public Comments Received

- Stone formliner for retaining wall;
- Pedestrian/bikeway;
- Street parking;
- Improve drainage of Broad St.;
- Noise wall along wye tracks;
- Communication on barge movements during construction;
- Existing noise/air pollution due to idling NS trains.

Bridge Design Related Comments

- Girder Arch and Delta Frame bridge designs received most support;
- Top bridge factors: overall look, cost minimization openness;
- Improve vertical clearance;
- Unanimous support for the key hole pier over the fluted pier (girder configuration).

Bridge Design Type Renderings – Approach Span/ Channel Span

Delta Frame / Arch

Girder / Arch

Girder / Truss

Truss / Truss

Bridge Design Renderings – viewed from Havre de Grace

Existing View


Delta Frame Pier Design


Fluted Pier Design


Key Hole Pier Design

Bridge Design Renderings – viewed from Perryville

Existing View

Retaining Wall with Delta Frame Design

Retaining Wall with Haunched Girder Design

Detailed Bridge Type Comparison Matrix

	Delta / Arch	Truss / Truss	Girder / Arch	Girder / Truss
Environmental Considerations				
Number of in-water pier pairs	13	13	19	19
Size of in-water piers / structure volume (cy)	12,200	13,100	13,200	13,200
Surface Area at MHW (sf)	49,300	53,000	49,500	49,500
Impact to mud line / benthic habitat (sf)	7,300	7,300	4,600	4,600
Incorporates mariners input	Yes	Yes	Yes	Yes
Incorporates public input on design aesthetic	Favorable	Less Favorable	Favorable	Less Favorable
Bridge length between abutments (ft)	4,360	4,360	4,310	4,310
Cost	$577 Million	$623 Million	$494 Million	$516 Million

Bridge Type Comparison Matrix

	DELTA / ARCH	TRUSS / TRUSS	GIRDER / ARCH	GIRDER / TRUSS
INPUT RECEIVED				
Incorporates Mariners Input	YES	YES	YES	YES
Incorporates Public Input on Design Aesthetic	More Favorable	Less Favorable	More Favorable	Less Favorable
ENVIRONMENTAL RESOURCE CONSIDERATIONS				
Number of In-Water Pier Pairs	13	13	19	19
Size of In-Water Piers	More Favorable	Less Favorable	Less Favorable	Less Favorable
Impact to Surface Water	More Favorable	Less Favorable	More Favorable	More Favorable
Impact to Mud Line (river bottom)	Less Favorable	Less Favorable	More Favorable	More Favorable
Compatibility with Historic Bridge	Less Favorable	More Favorable	Favorable	Favorable
ENGINEERING AND OPERATIONS CONSIDERATIONS				
Ease of Maintenance - Approach Spans	Very Good	Good	Excellent	Excellent
Ease of Maintenance - Channel Span	Very Good	Good	Very Good	Good
Structural Redundancy - Approach Spans (key factor)	Excellent	Fair	Excellent	Excellent
Structural Redundancy - Channel Span (key factor)	Very Good	Fair	Very Good	Fair
Ease of Construction	Fair	Good	Excellent	Excellent
Trespasser Resistent From Water	Fair	Good	Excellent	Excellent
Side Span Navigation Clearance	Good	Very Good	Excellent	Excellent
Estimated Cost (2015 $)	$577 Million	$623 Million	$494 Million	$516 Million

LEGEND

- Excellent
- Very Good
- Good
- Fair
- Less Favorable

Wetland Delineation Overview

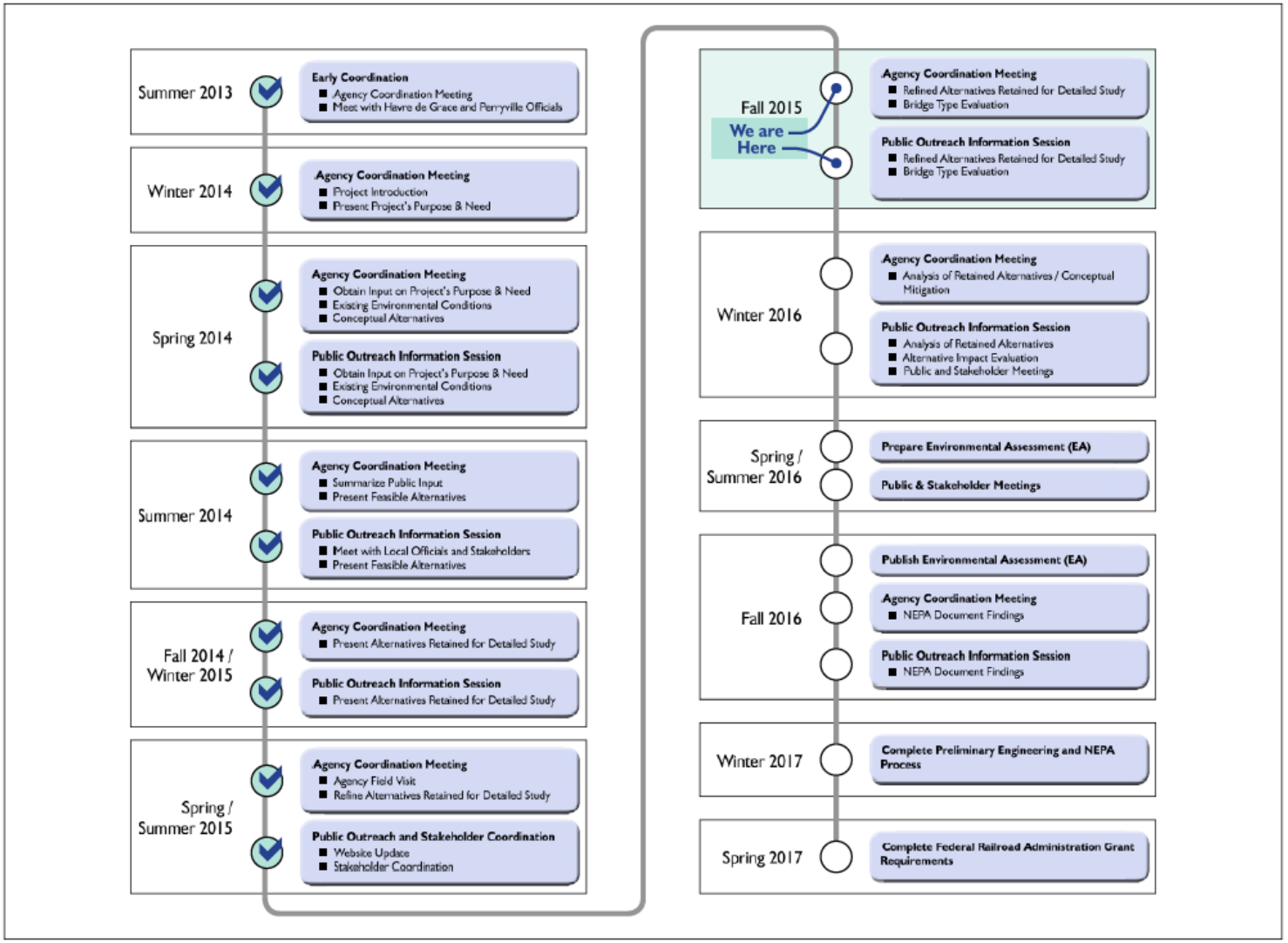
- Project team conducted a full corridor wetland delineation (including track-adjacent resources) in Fall 2015
- Several low-quality ditches/streams and wetlands were identified parallel to the existing tracks and within ballasted areas
- Detailed graphics, photos, and narratives are being developed and will be presented in the NETR
- Due to proximity of these resources to the existing track bed, Proposed Project will likely impact these linear features
- Magnitude of impact is being calculated and will be presented in the NETR, along with resource quality assessment
- Since a number of areas especially on the Havre de Grace side of the river were not observed during the agency site visit, the team wanted to update the agencies in advance

Newly Delineated System Photos

Next Steps

- Evaluate appropriate bridge types in the environmental documentation
- Bike / Ped. Preliminary Safety and Hazard report is currently under review by the project team and non-sensitive elements of the report will be shared with agencies in early 2016
- Continue developing technical reports and EA
- Hold bicycle / pedestrian stakeholder coordination meeting (early 2016) – e-blast notifications are currently going out to attendees
- Present PFA presentation to MDP and the smart growth committee (January / February 2016)
- Present results of detailed analysis to IRM agencies & public for review (Spring 2016)

Anticipated Project Schedule



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Susquehanna River Rail Bridge Project

Interagency Review Meeting

April 20, 2016

Purpose of Today's Presentation

- Detailed presentation of NETR (distributed to IRM agencies on April 8, 2016)
  - Discuss avoidance/minimization measures
  - Describe proposed wetland mitigation approach and potential on-site/off-site mitigation locations
  - Provide a summary of the mitigation site search results
- Distribute summary of all potential environmental impacts from Alternatives 9A and 9B
- Discuss next steps

Recent Project Activity

RECENT MEETINGS	DATE
WILMAPCO	12/14/15
Harford County Public Schools	1/20/16
Smart Growth Coordinating Committee	3/9/16
Susquehanna River Rail Bridge Advisory Board	3/17/16
WILMAPCO	3/17/16
Public Outreach Information Session	4/14/16
Section 106 Consulting Parties Meeting	4/14/16

Summary of Natural Environmental Impacts

Resource Type	Resource Category	Alternative 9A	Alternative 9B
Environmental Considerations			
Effective 100-Year Floodplain Encroachment (acres)	**100-Year**	2.72	2.15
	500-Year	4.83	4.24
Preliminary 100-Year Floodplain Encroachment* (acres)	**100-Year**	3.09	2.63
	500-Year	3.16	2.69
Wetlands (acres)	**Tidal**	0.06	0.06
	Nontidal	0.83	0.71
Streams (linear feet)	**Relatively Permanent Waterways**	3,190	2,943
	Ephemeral	19	19
Wetland Buffers (acres)	**Tidal**	0.27	0.27
	Nontidal	2.16	1.72
Forest Resources (acres)	------	2.92	2.08
Chesapeake Bay Critical Area (acres)	------	6.4	6.1
Susquehanna Riverbed/ Aquatic Biota (acres)	**Permanent**	0.37	0.37
	Construction (Temp. Impacts)	0.23	0.23
Submerged Aquatic Vegetation (square feet)	**Permanent**	3,357	3,357
	Construction (Temp. Impacts)	21,131	21,131

**Preliminary floodplain available for Harford County only*

Floodplains

Resource Type	Resource Category	Alternative 9A	Alternative 9B
Environmental Considerations			
Effective 100-Year Floodplain Encroachment (acres)	**100-Year**	2.72	2.15
	500-Year	4.83	4.24
Preliminary 100-Year Floodplain Encroachment* (acres)	**100-Year**	3.09	2.63
	500-Year	3.16	2.69

- Represent project footprint encroachments within the floodplain only and do not reflect actual fill volumes
- Major longitudinal floodplain impacts would not occur
- Increase due to project in the base flood elevation (greater than one foot) in the floodways is not anticipated

Avoidance/Minimization

- Bridge spans over the 100-year and 500-year floodplain;
- Reducing encroachments by using 2:1 minimum slopes for rail berms, and
- Building retaining walls where practicable.

Wetlands and Waters of the U.S.

Resource Type	Resource Category	Alternative 9A	Alternative 9B
Environmental Considerations			
Wetlands (acres)	**Tidal**	0.06	0.06
	Nontidal	0.83	0.71
Streams (linear feet)	**Relatively Permanent Waterways**	3,190	2,943
	Ephemeral	19	19
Wetland Buffers (acres)	**Tidal**	0.27	0.27
	Nontidal	2.16	1.72

- Consists of both tidal and nontidal impacts
- Alternative 9B would cross the same streams and impact same as Alternative 9A, to a lesser extent
- Bridge pier impacts within the Susquehanna River would be the same for Alternative 9B as for Alternative 9A.

Avoidance/Minimization

- Continue to explore minimization measure during final design (e.g., considering steeper slopes and/or additional retaining walls);
- Necessary extensions or replacements will use bottomless culverts to provide for a more natural stream bed through the culvert

Forest Resources

Resource Type	Resource Category	Alternative 9A	Alternative 9B
Environmental Considerations			
Forest Resources (acres)	------	2.92	2.08

- Majority of impacts would occur to forested habitat between the existing tracks and the Havre de Grace Middle School/High School
- FIDS habitat would not be impacted

Avoidance/Minimization

- Larger forested tracks have already been avoided
- Forest Conservation Plan (FCP) will be prepared in later stages

Critical Area, Aquatic Biota & SAV

Resource Type	Resource Category	Alternative 9A	Alternative 9B
Environmental Considerations			
Chesapeake Bay Critical Area (acres)	------	6.4	6.1
Susquehanna Riverbed/ Aquatic Biota (acres)	**Permanent**	0.37	0.37
	Construction (Temp. Impacts)	0.23	0.23
Submerged Aquatic Vegetation (acres)	**Permanent**	0.08	0.08
	Construction (Temp. Impacts)	0.49	0.49

- Impacts to Critical Area will occur within the city limits of Havre de Grace and Perryville
- Temporary impacts to the Susquehanna Riverbed/Aquatic Biota and SAV include all temporary impacts, including finger piers installation

Avoidance/Minimization

- Sediment containment techniques, such as turbidity curtains and other approved best management practices, will be used during construction
- Mitigation for unavoidable SAV impacts is typically done out-of-kind at a 3:1 ratio, and can include tidal wetland creation, shoreline stabilization, and various stream related improvements

Wetland/Waterway Mitigation

Resource	Alternative 9A			Alternative 9B		
	Impact (Ac/Lf)	Replacement Ratio	Mitigation (Ac/Lf)	Impact (Ac/Lf)	Replacement Ratio	Mitigation (Ac/Lf)
Minimum Required Mitigation						
Nontidal Forest (acre)	0.25	2:1	0.50	0.17	2:1	0.34
Nontidal Emergent (acre)	0.58	1:1	0.58	0.54	1:1	0.54
Tidal Forest (acre)	0.05	2:1	0.10	0.05	2:1	0.10
Tidal Emergent (acre)	0.01	2:1	0.02	0.01	2:1	0.02
Intermittent and Perennial Streams (linear feet)	3,190	1:1	3,190	2,943	1:1	2,943

- Majority of impacts would occur to nontidal emergent wetlands
- Ratios provide only a preliminary estimate of required mitigation and ratios may be adjusted at the discretion of the USACE or MDE depending on the practicability and functional effectiveness of the proposed mitigation.

Wetland/Waterway Mitigation: On-Site Opportunities

- Few onsite mitigation options are likely available to compensate for unavoidable wetland and waterway impacts given the linear nature of the Amtrak ROW. Potential on-site opportunities include:

  - ✓ Enhancement of Wetland 13 (Cecil County)
  - ✓ Wetland creation adjacent to expanded Amtrak ROW near Havre de Middle School
  - ✓ Relocation and enhancement of existing ditched streams along toe of railroad embankments
  - ✓ Mitigation on-site may include control of existing, invasive common reed and establishment of native, tidal wetland species

- Other potential onsite mitigation options will also be investigated as the project advances through later design phases

Off-Site Mitigation Opportunities

- Preliminary level mitigation site search was conducted within the Lower Susquehanna River and Swan Creek watersheds
- Potential use of a nontidal wetland mitigation bank (Swan Creek watershed)

Site Selection Process

Non-forested sites within topographic depressions/floodplains with areas of mapped hydric soils

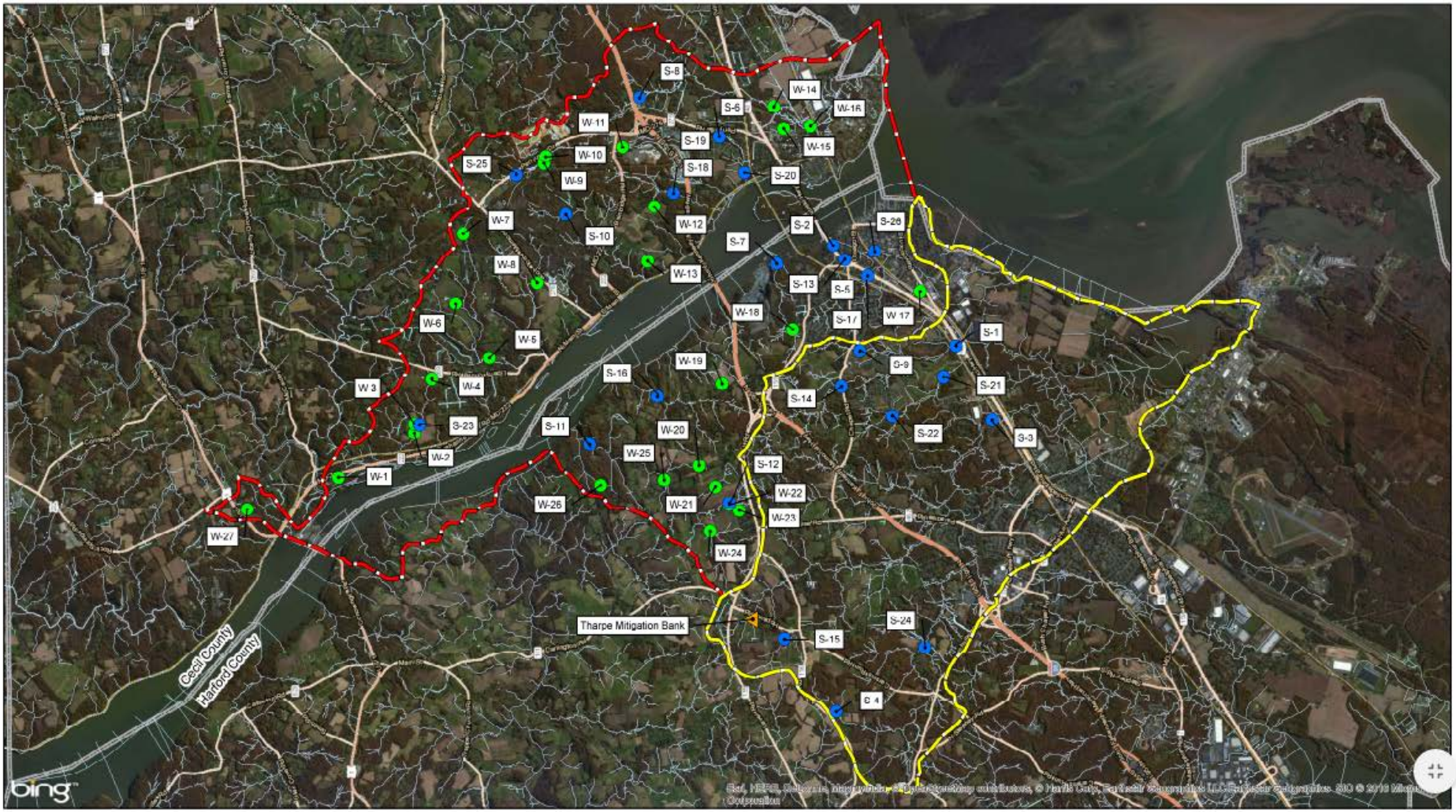
Tidal wetland creation/restoration sites and hardened shoreline areas where more natural shoreline protection measures might allow for creation or enhancement of aquatic habitat

Riparian areas and their restoration potential, including:

- **stream channel stabilization,**
- **fish blockage removal,**
- **in-stream habitat improvements,**
- **riparian buffer enhancements, and**
- **water quality improvements.**

Site Search Summary

- **27 potential nontidal wetland creation sites** totaling approximately 123 acres; 10 in Harford County (43 acres) and 17 in Cecil County (80 acres)
- **Twenty-six (26) stream restoration sites** were located, including nine (9) in the Swan Creek watershed and 17 in the Lower Susquehanna River watershed
- Fifteen (15) of the sites had **potential fish blockage removal opportunities** and two (2) sites also had **wetland creation potential**



Legend

- County Boundaries
- Swan Creek Watershed
- Streams
- Lower Susquehanna River Watershed
- Mitigation Bank
- Potential Wetland Sites
- Potential Stream Sites

0 1.25 2.5 Miles

Susquehanna River Ra
Bridge Proju

Preliminary Mitigati
Site Search Map

Current Project Schedule

Summer 2013
- **Early Coordination**
  - Agency Coordination Meeting
  - Meet with Havre de Grace and Perryville Officials

Winter 2014
- **Agency Coordination Meeting**
  - Project Introduction
  - Present Project's Purpose & Need

Spring 2014
- **Agency Coordination Meeting**
  - Obtain Input on Project's Purpose & Need
  - Existing Environmental Conditions
  - Conceptual Alternatives
- **Public Outreach Information Session**
  - Obtain Input on Project's Purpose & Need
  - Existing Environmental Conditions
  - Conceptual Alternatives

Summer 2014
- **Agency Coordination Meeting**
  - Summarize Public Input
  - Present Feasible Alternatives
- **Public Outreach Information Session**
  - Meet with Local Officials and Stakeholders
  - Present Feasible Alternatives

Fall 2014 / Winter 2015
- **Agency Coordination Meeting**
  - Present Alternatives Retained for Detailed Study
- **Public Outreach Information Session**
  - Present Alternatives Retained for Detailed Study

Spring / Summer 2015
- **Agency Coordination Meeting**
  - Agency Field Visit
  - Refine Alternatives Retained for Detailed Study
- **Public Outreach and Stakeholder Coordination**
  - Website Update
  - Stakeholder Coordination

Fall 2015
- **Agency Coordination Meeting**
  - Refined Alternatives Retained for Detailed Study
  - Bridge Type Evaluation
- **Public Outreach Information Session**
  - Refined Alternatives Retained for Detailed Study
  - Bridge Type Evaluation

Winter / Spring 2016 — **We are Here**
- **Agency Coordination Meeting**
  - Analysis of Retained Alternatives / Conceptual Mitigation
- **Public Outreach Information Session**
  - Analysis of Retained Alternatives
  - Alternative Impact Evaluation
  - Public and Stakeholder Meetings

Summer 2016
- **Prepare Environmental Assessment (EA)**
- **Public & Stakeholder Meetings**

Fall 2016
- **Publish Environmental Assessment (EA)**
- **Agency Coordination Meeting**
  - NEPA Document Findings
- **Public Outreach Information Session**
  - NEPA Document Findings

Winter 2017
- **Complete Preliminary Engineering and NEPA Process**

Spring 2017
- **Complete Federal Railroad Administration Grant Requirements**

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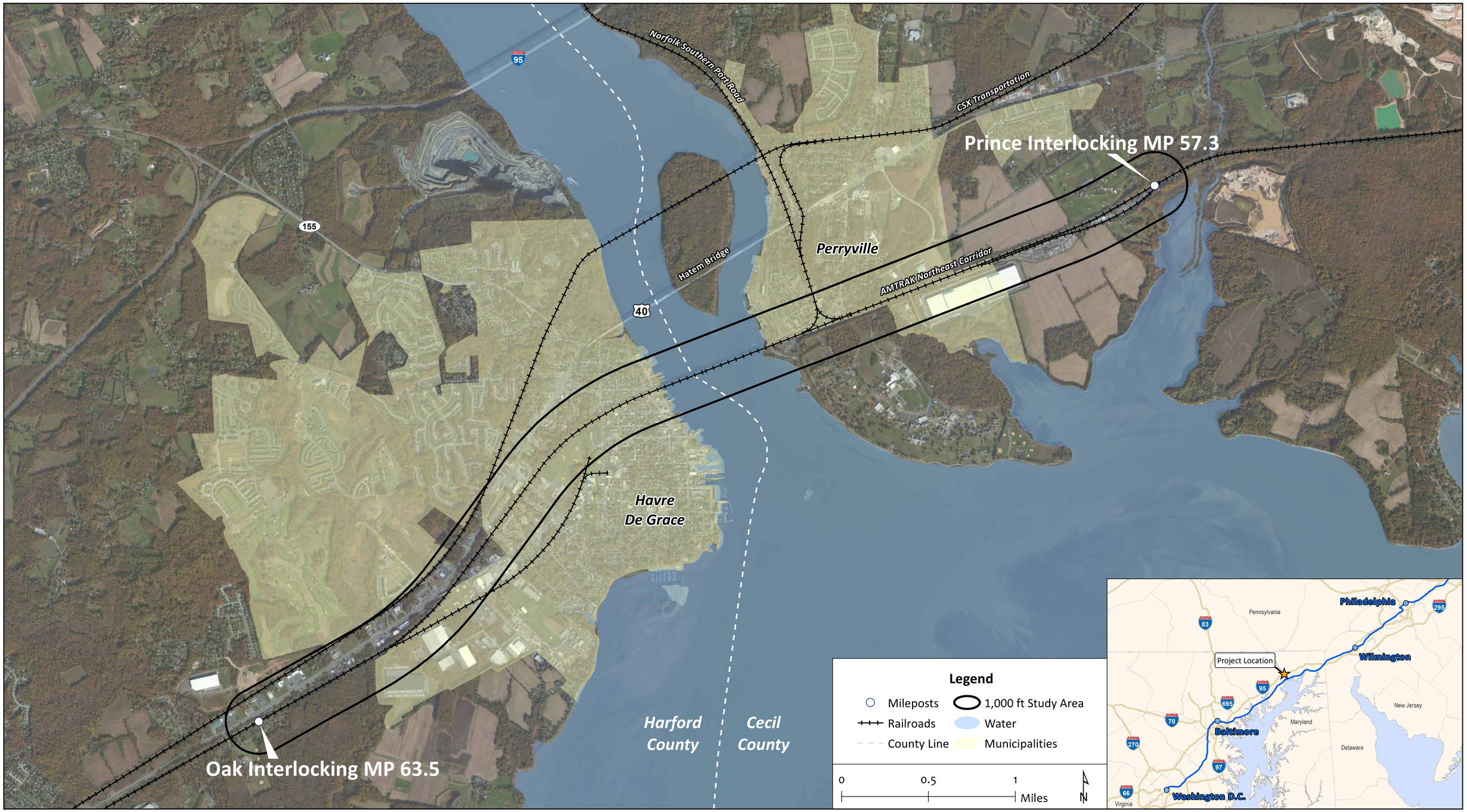
Public Outreach Information Sessions

Welcome!

Susquehanna River Rail Bridge Project

Public Outreach Information Session

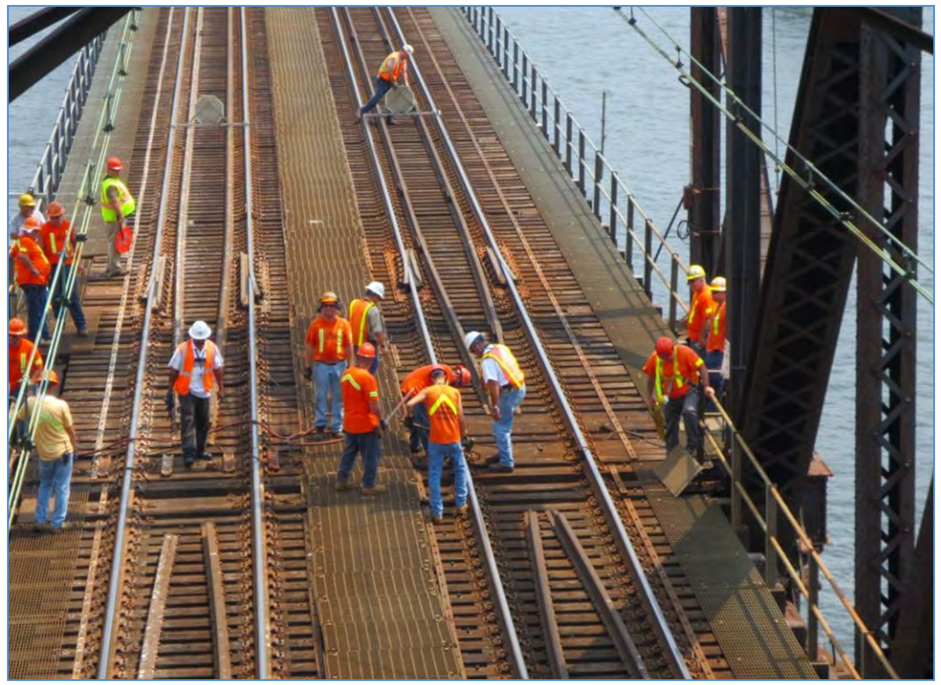
Project Location



Project Purpose and Need

The problems posed by the existing Susquehanna River Rail Bridge include:

- Functionally obsolete and aging infrastructure;
- Speed and capacity constraints;
- Operational inflexibility;
- Maintenance difficulties;
- Conflicts with maritime uses.



Amtrak crew manually opening the movable bridge span to accommodate marine traffic.

Project Purpose and Need

The primary purpose of the Susquehanna River Rail Bridge Project is to provide continued rail connectivity along the Northeast Corridor (NEC).

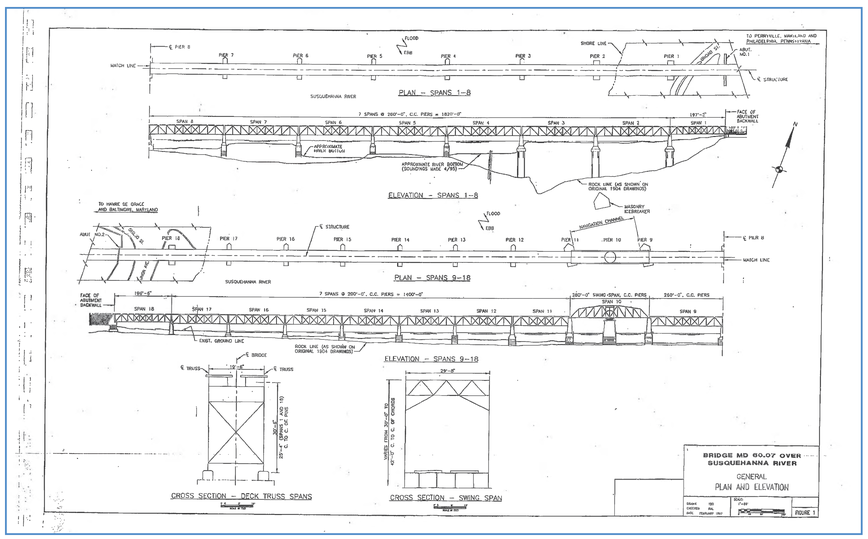
The project goals include:

- Improve rail service reliability and safety;
- Improve operational flexibility and accommodate reduced trip times;
- Optimize existing and planned infrastructure and accommodate future freight, commuter, intercity, and high-speed rail operations; and
- Maintain adequate navigation and improve safety along the Susquehanna River.

The Northeast Corridor merges from four tracks to two tracks (heading south from Perryville to Havre de Grace).

Existing Susquehanna River Rail Bridge

Movable Swing Span



Existing Bridge Conditions

- The bridge is structurally safe but nearing the end of its useful life.
- Major Rehabs: 1960s, 1985, 1991, 1998
- Bridge Inspections:
  - 1996 Report: Worn/cracked metal pins, loose connections at eyebar members, improper seating of swing span ends.
  - 2013 Report: Section loss, cracks, corrosion, and deteriorations; heavy freight exacerbating wear.
  - Superstructure poor to fair structural condition. Some cracking & moisture leakage in stone abutments and piers.
  - Low bridge fatigue ratings, even at 30 mph. Bridge may have exceeded theoretical fatigue life.

Existing Susquehanna River Rail Bridge

Environmental Considerations
National Environmental Policy Act (NEPA)

Requires that we do everything possible to protect and enhance the natural, cultural and human environment. A complete study of all reasonable alternatives (including measures to avoid and minimize impacts) must be prepared, and the results must be made available to public officials and citizens before decisions are made.

Natural Environment

- Geology / Groundwater Resources
- Soils
- Surface Water
- Floodplains
- Wetlands
- Aquatic Life
- Wildlife







Socio-Economic Environment

- Demographics
- Community Facilities
- Economic Setting and Land Use
- Noise
- Air

Section 404 of the Clean Water Act, Nontidal Wetlands Protection Act

Regulates dredge and fill of Waters of the United States. Guidelines published by the Environmental Protection Agency for evaluating alternatives require that the Corps of Engineers evaluate the proposed project for environmental impacts (including historic and rare/threatened/endangered species impacts) and select the least environmentally damaging, practicable alternative.

Endangered Species Act

Ensures that actions are not taken to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Cultural Environment

- Historic Structures
- Archaeological Sites

Section 106 of the National Historic Preservation Act

Requires that agencies take into account the effects of a project on properties that are included in or eligible for the National Register of Historic Places.

Section 4(f) of the US Department of Transportation Act

Requires that special effort be made to preserve publicly owned public parks and recreation areas, wildlife / waterfowl refuges and historic sites. No project which requires land from these resources may be approved unless 1) there is no feasible and prudent alternative to the use of the land and 2) the action includes all possible planning to minimize harm to the property resulting from such use.

Clean Air Act and Clean Air Act Amendments

An air quality analysis must be performed to determine if there are violations of the State or National Ambient Air Quality Standards.

Farmland Protection Policy Act

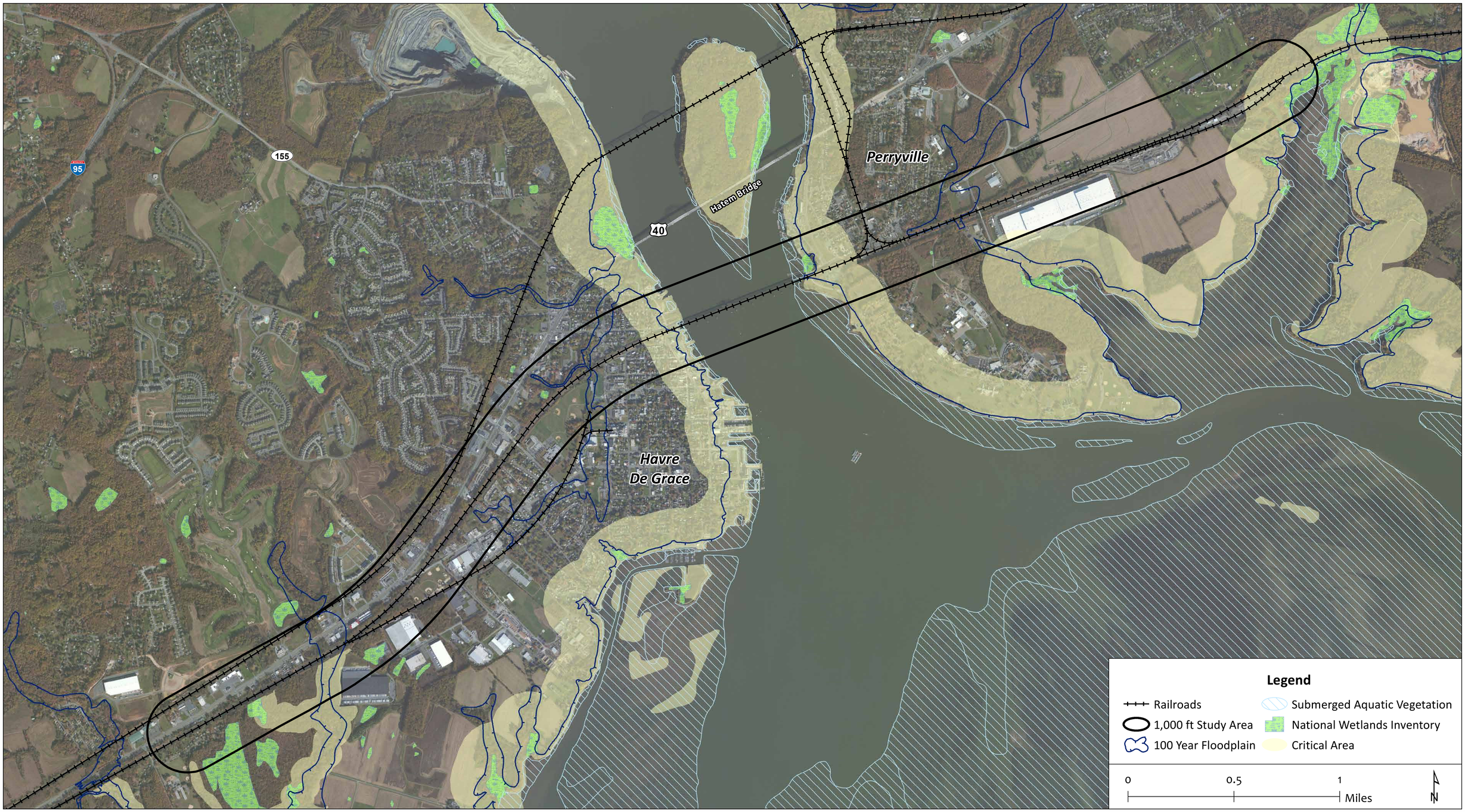
Requires that federal programs minimize conversion of farmland to non-agricultural uses (does not apply to farmland that is zoned or committed (planned) for urban development).

Executive Order 12898 (Environmental Justice)

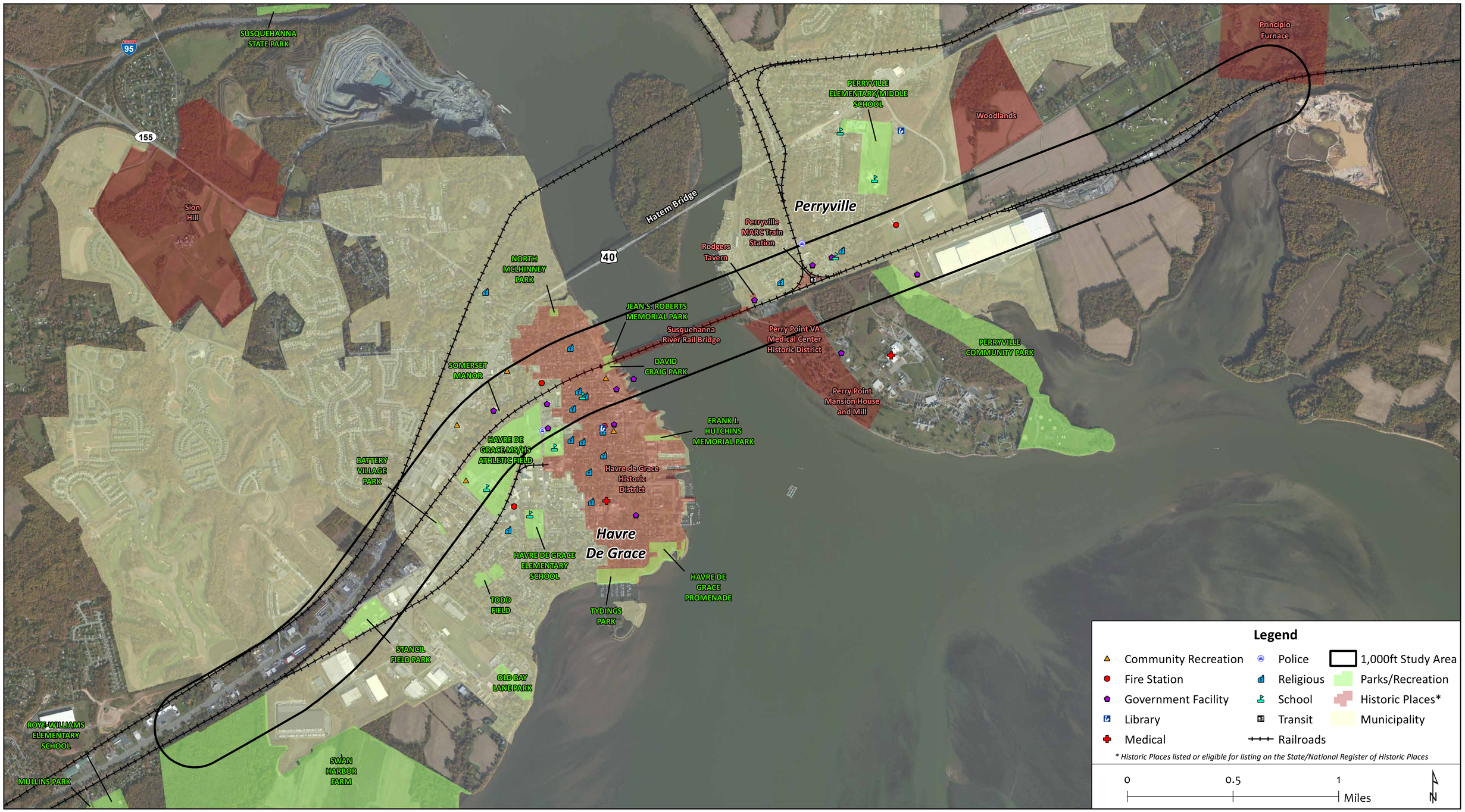
Requires that agencies identify and address disproportionately high and adverse human health or environmental effects on minority or low-income populations.

Natural Resources

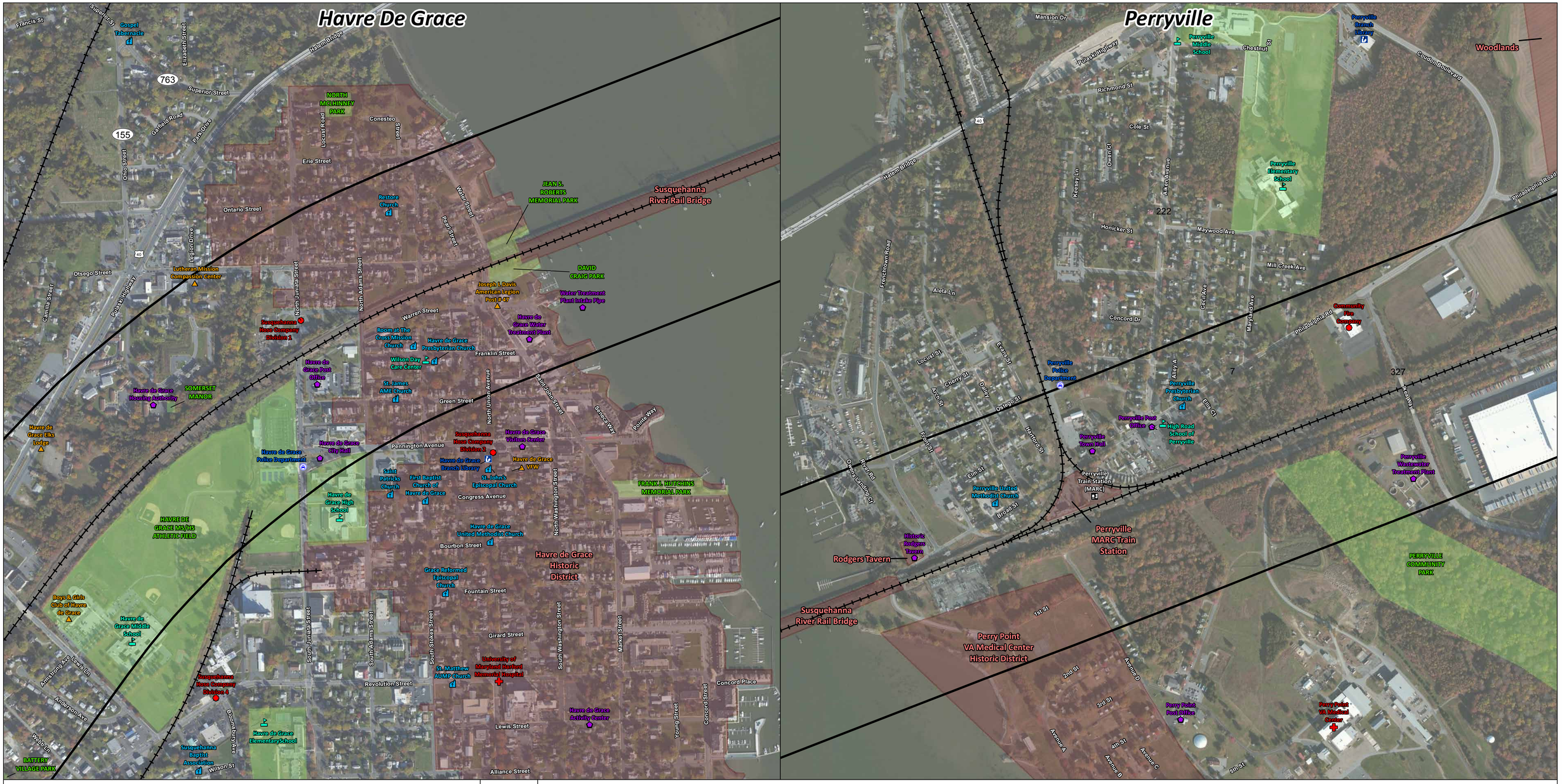
Coordinating with resource agencies to identify species or habitats of concern



Parks, Historic Places, and Community Facilities



Parks, Historic Places, and Community Facilities



Conceptual Alternatives Development

Designing to Meet Project Purpose and Need

Rail Connectivity	• Must maintain rail connectivity along the NEC (during construction and operations). • Must provide sufficient capacity.
Navigational Requirements	• Must maintain navigation along the Susquehanna River (during construction and operations).
Logical Termini	• Must have rational end points and consider existing infrastructure. • USDOT grant defines project limits—NEC from MP 57.3 in Perryville to MP 63.5 in Havre de Grace.
Feasibility and Constructibility	• Must be feasible and practicable from a construction and engineering perspective.
Optimize Infrastructure	• Optimize existing infrastructure and accommodate planned infrastructure.

Conceptual Alternatives Development

Design Factors

Geometry	• Reduce curves to enable faster train speed. • Consider existing NEC and NS's Port Road Route.
Design Speed	• Consider 120 mph to 160 mph for intercity passenger trains. • 160 mph preferred speed for intercity passenger trains.
Bridge Spacing	• Minimize ROW impacts. • Consider existing swing span. • Consider constructibility.
Navigational Clearances	• Accommodate marine traffic with fixed bridge. • Horizontal clearance maintained or improved.
Grades	• Higher fixed bridge requires steeper grades. • Heavy freight trains require lower grades.
Relationships to other planned projects	• Freight rail improvements. • MARC Maintenance Facility and Penn Line extension. • NEC Future Tier I EIS. • Regional bicycle and pedestrian trails.

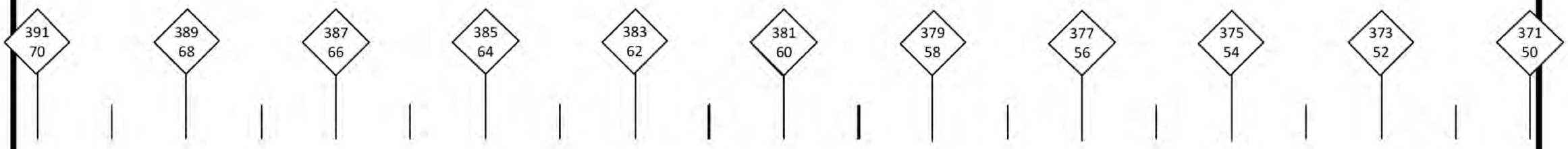
Conceptual Alternatives Development

Considered many design permutations

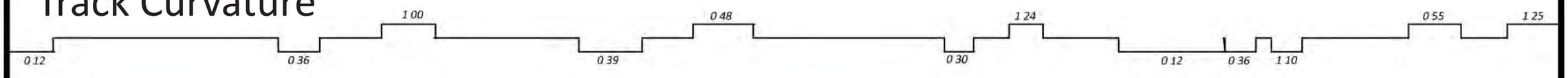
Number of Bridges	New Bridge Alignment	Total Tracks	New Bridge Type	Bridge Traffic	Existing Traffic
One rehab bridge	East of existing bridge	Three tracks	Fixed	Separate structure for intercity trains	Rehab bridge
One new bridge	West of existing bridge	Four tracks	Movable	Commingled Traffic	Rehab piers + convert to lift span
One new + one rehab bridge	On existing bridge alignment				Decommission + remove
Two new bridges					

Existing Speed and Capacity Bottleneck

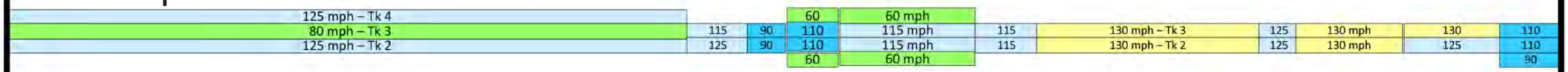
Milepost



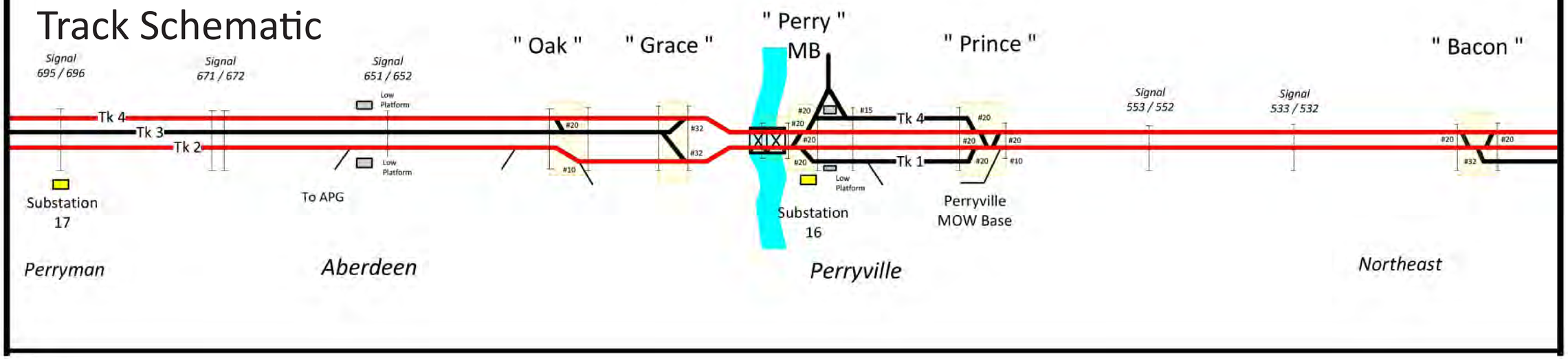
Track Curvature



Track Speed

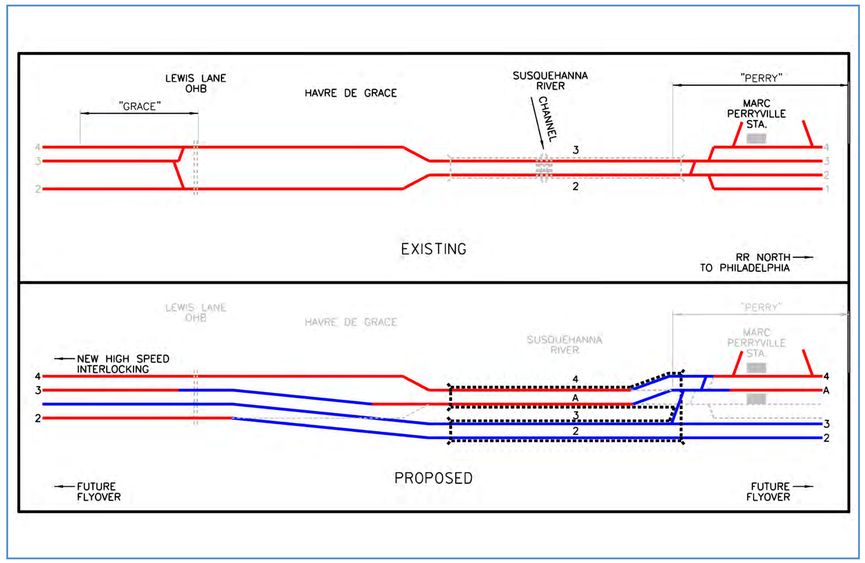


Track Schematic

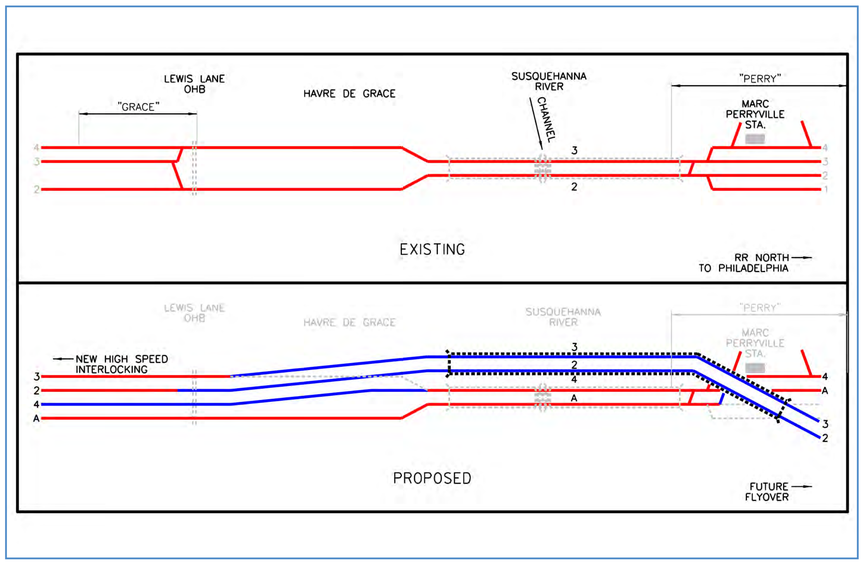


Conceptual Track Schematics

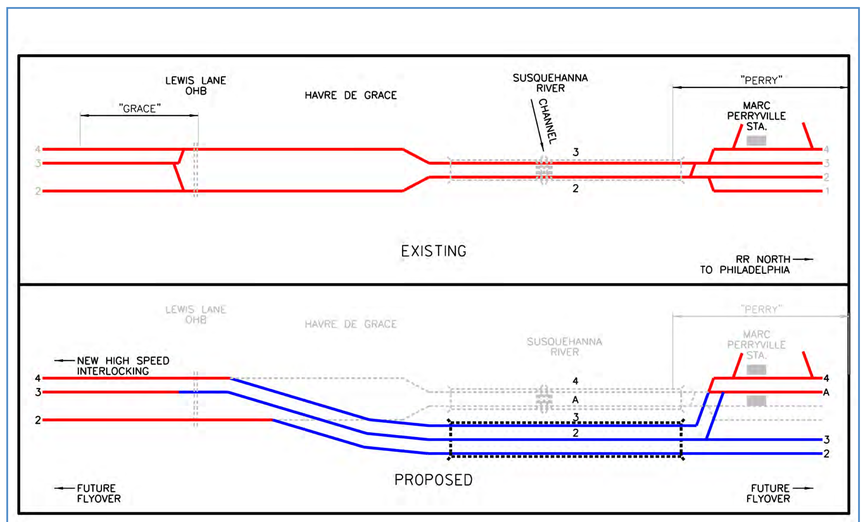
Track Schematic 1



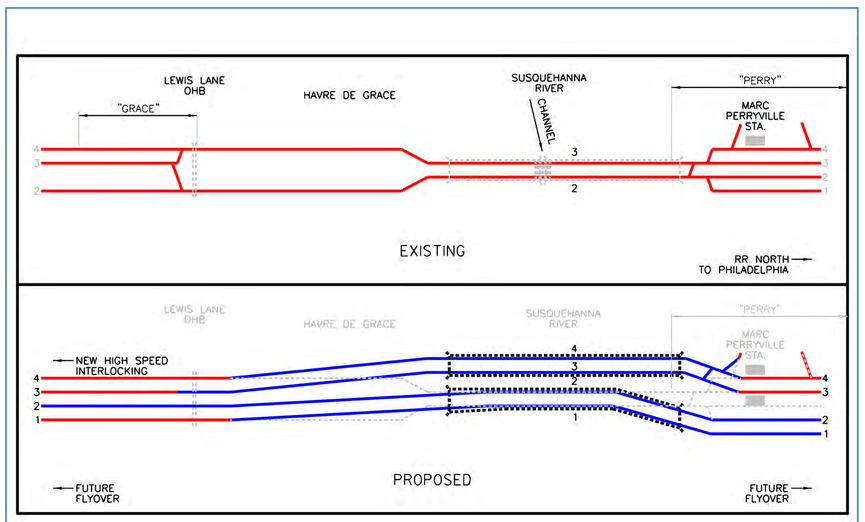
Track Schematic 2



Track Schematic 3



Track Schematic 4



Anticipated Project Schedule

Summer 2013

Early Coordination
- Interagency Review Meeting
- Meet with Havre de Grace and Perryville Officials

Winter 2014

Interagency Review Meeting
- Project Introduction
- Purpose & Need

Spring 2014

Public Outreach Information Session
- Purpose & Need
- Existing Environmental Conditions
- Conceptual Alternatives

Interagency Review Meeting
- Purpose & Need
- Existing Environmental Conditions
- Conceptual Alternatives

Fall 2014

Public Outreach Information Session
- Present Detailed Alternative(s) / Preferred Alternative(s)

Interagency Review Meeting
- Present Detailed Alternative(s) / Preferred Alternative(s)

Winter 2015

Distribute Project Newsletter

Spring 2015

Publish Environmental Assessment (EA)

Public Outreach Information Session
- NEPA Document Findings
- Preferred Alternative, Impacts, Conceptual Mitigation

Interagency Review Meeting
- NEPA Document Findings
- Preferred Alternative, Impacts, Conceptual Mitigation

Summer 2015 - Winter 2016

Complete Preliminary Engineering and NEPA Process

2017

Complete Federal Railroad Administration Grant Requirements

Stay Connected

- Visit the project website at **www.susrailbridge.com** to get project updates, learn more about the project, submit a comment, or join the project mailing list.
- Send a letter to:
  Susquehanna River Rail Bridge
  PO Box 68
  Elkton, MD 21922

Welcome!

Susquehanna River Rail Bridge Project

Public Outreach Information Session

Project Purpose and Need

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- Functionally obsolete and aging infrastructure
- Speed and capacity constraints
- Operational inflexibility
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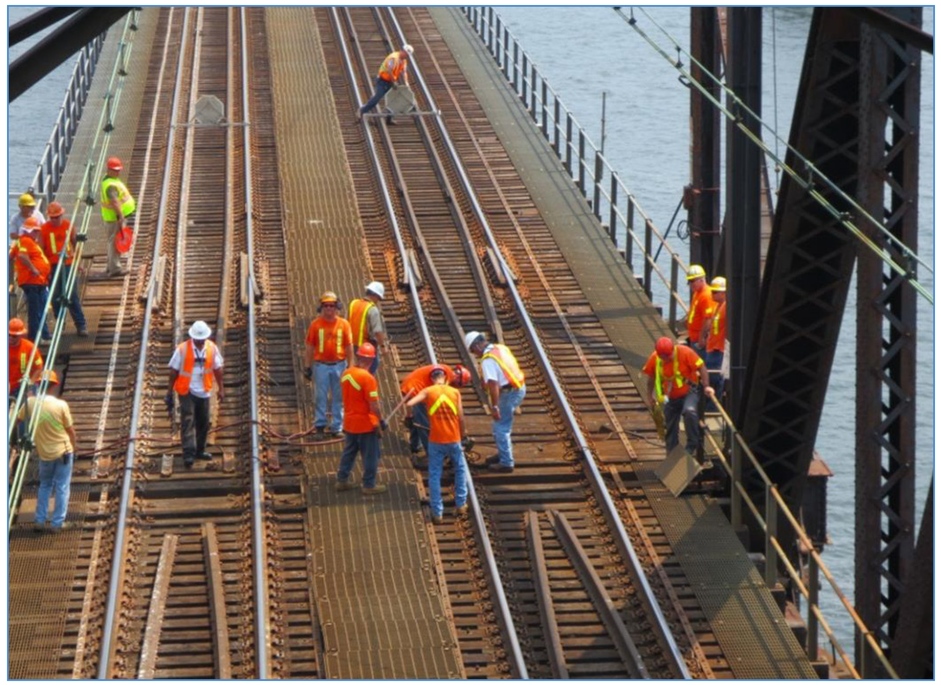
- Conflicts with maritime uses



Amtrak crew manually opening the movable bridge span to accommodate marine traffic.

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The Northeast Corridor merges from four tracks to two tracks (heading south from Perryville to Havre de Grace).

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Requires that we do everything possible to protect and enhance the natural, cultural and human environment. A complete study of all reasonable alternatives (including measures to avoid and minimize impacts) must be prepared, and the results must be made available to public officials and citizens before decisions are made.

Natural Environment

- Geology / Groundwater Resources
- Soils
- Surface Water
- Floodplains
- Wetlands
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Socio-Economic Environment

- Demographics
- Community Facilities
- Economic Setting and Land Use
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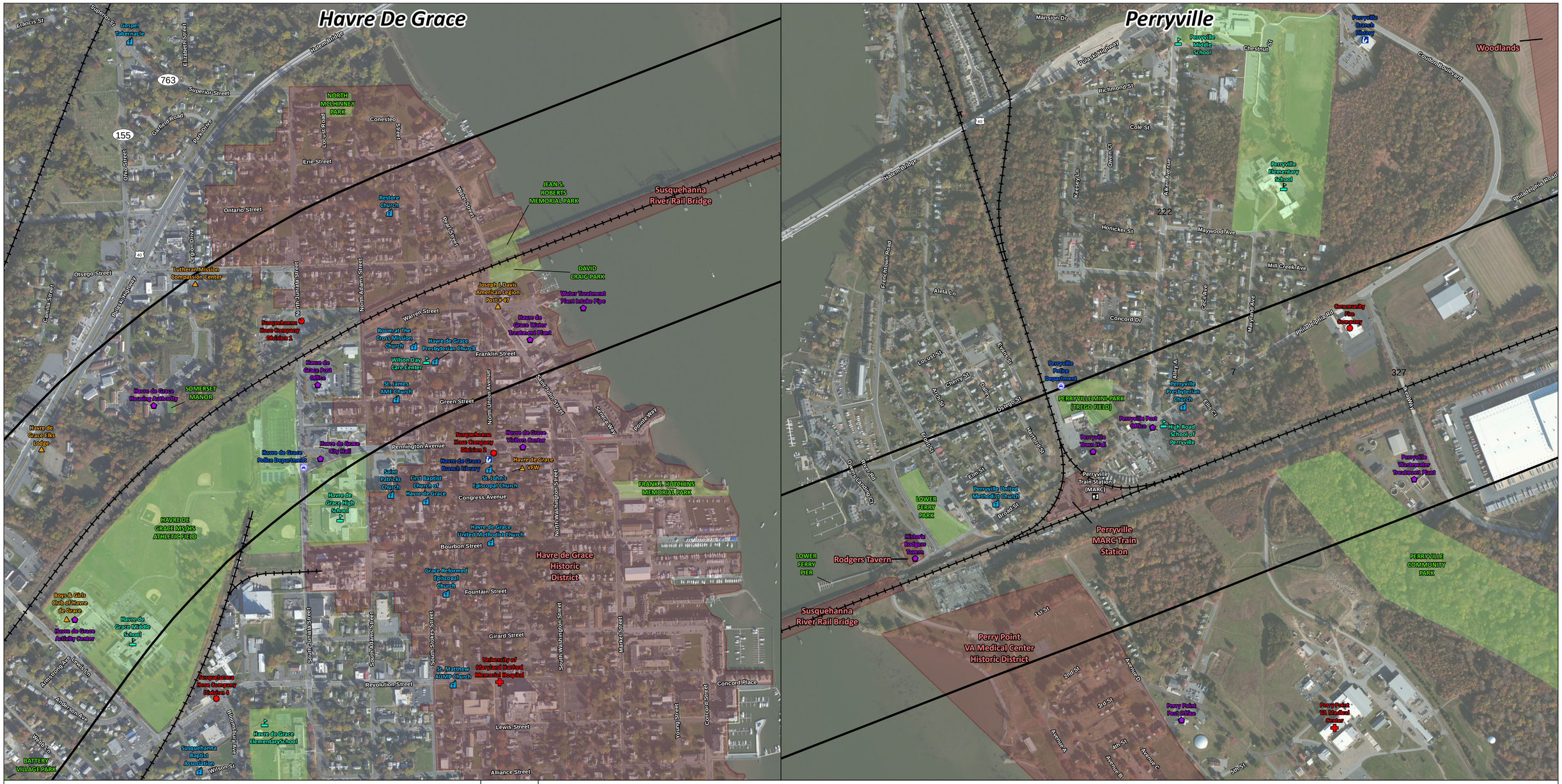
Natural Resources

Coordinating with resource agencies to identify species or habitats of concern.

Parks, Historic Places, and Community Facilities



Conceptual Alternatives Development

Designing to Meet Project Purpose and Need

Rail Connectivity	• Must maintain rail connectivity along the NEC (during construction and operations). • Must provide sufficient capacity.
Navigational Requirements	• Must maintain navigation along the Susquehanna River (during construction and operations).
Logical Termini	• Must have rational end points and consider existing infrastructure. • USDOT grant defines project limits—NEC from MP 57.3 in Perryville to MP 63.5 in Havre de Grace.
Feasibility and Constructibility	• Must be feasible and practicable from a construction and engineering perspective.
Optimize Infrastructure	• Optimize existing infrastructure and accommodate planned infrastructure.

Conceptual Alternatives Development

Design Factors

Geometry	• Reduce curves to enable faster train speed. • Consider existing NEC and NS's Port Road Route.
Design Speed	• Consider 120 mph to 160 mph for intercity passenger trains. • 160 mph preferred speed for intercity passenger trains.
Bridge Spacing	• Minimize ROW impacts. • Consider existing swing span. • Consider constructibility.
Navigational Clearances	• Accommodate marine traffic with fixed bridge. • Horizontal clearance maintained or improved.
Grades	• Higher fixed bridge requires steeper grades. • Heavy freight trains require lower grades.
Relationships to other projects	• Freight rail improvements. • MARC Maintenance Facility and Penn Line extension. • NEC Future Tier I EIS. • Regional bicycle and pedestrian trails.

Conceptual Alternatives Development

Considered many design permutations

Number of Bridges	New Bridge Alignment	Total Tracks	New Bridge Type	Bridge Traffic	Existing Traffic
One rehab bridge	East of existing bridge	Three tracks	Fixed	Separate structure for intercity trains	Rehab bridge
One new bridge	West of existing bridge	Four tracks	Movable	Commingled Traffic	Rehab piers + convert to lift span
One new + one rehab bridge	On existing bridge alignment				Decommission + remove
Two new bridges					

Two-Step Alternatives Screening Process

Step 1: Fatal Flaw Screening—criteria developed from Purpose & Need

➤ ***Pass/fail test—alternative must satisfy all criteria to advance***

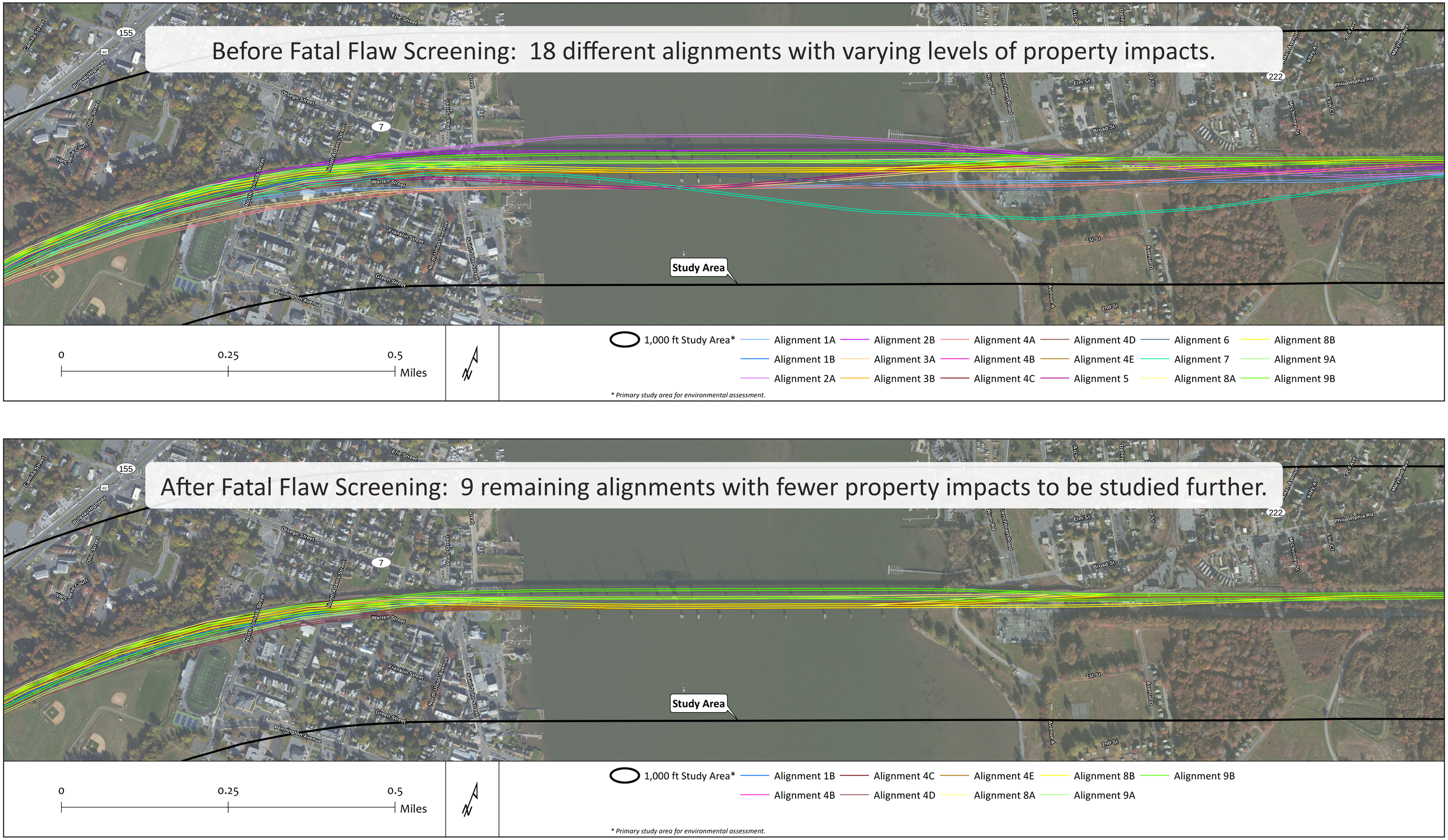
- Provides rail connectivity
- Meets navigation requirements
- Has logical termini
- Is feasible & constructible
- Avoids critical property impacts (developed from community input)

Step 2: Detailed Screening—based on specific project goals

➤ ***Relative test—compare/contrast each alternative's ability to meet goals & objectives***

- Optimizes existing and planned infrastructure
- Considers operational, design, construction requirements
- Minimizes environmental/cultural/socioeconomic/property impacts

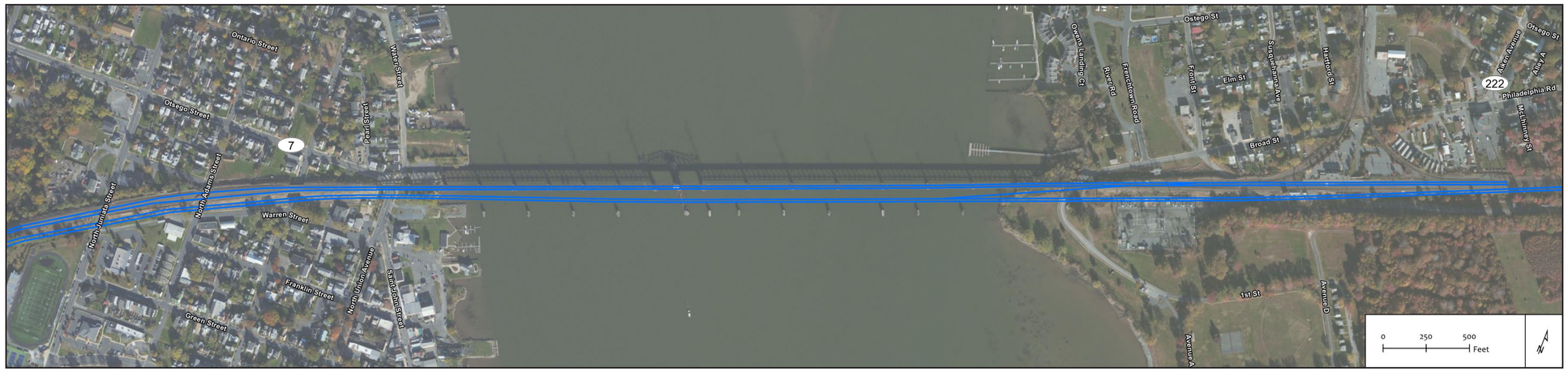
Conceptual Alignments Considered



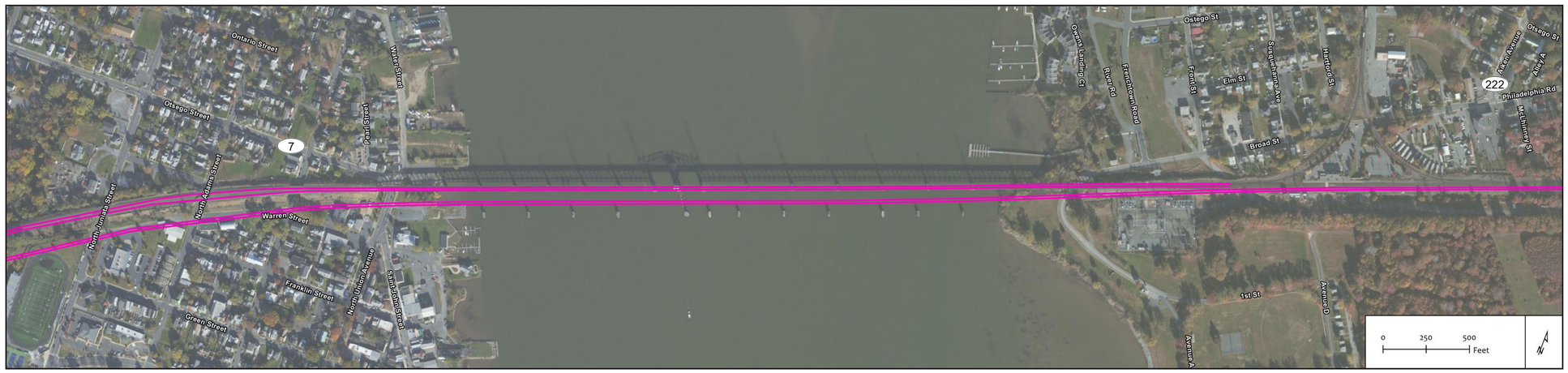
Two-Step Alternatives Screening Process

- Conceptual engineering identified 18 possible alignments, with different advantages and disadvantages and varying levels of property impacts.
- **Step 1 - Fatal flaw screening** eliminated alignments with the greatest property impacts and resulted in 9 alignments to proceed to detailed screening: Alignments 1B, 4B, 4C, 4D, 4E, 8A, 8B, 9A, 9B.
- **Step 2 - Detailed screening** will consider various bridge types and styles, environmental factors, operational/design considerations, and further evaluation of property impacts.
- Additional alternatives may be identified through Value Engineering and public and agency coordination.
- MDOT and Amtrak are investigating a bicycle-pedestrian path for all feasible alignments. Considerations include safety, vibration, property acquisition, connectivity, cost, and impacts to surrounding communities and environment.

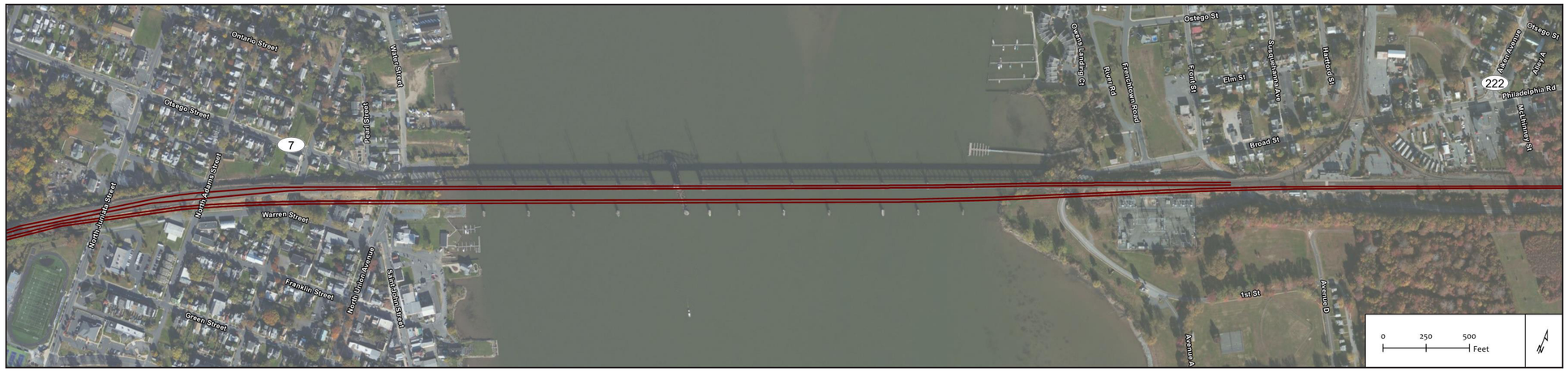
Alternatives Development and Screening



Alignment 1B

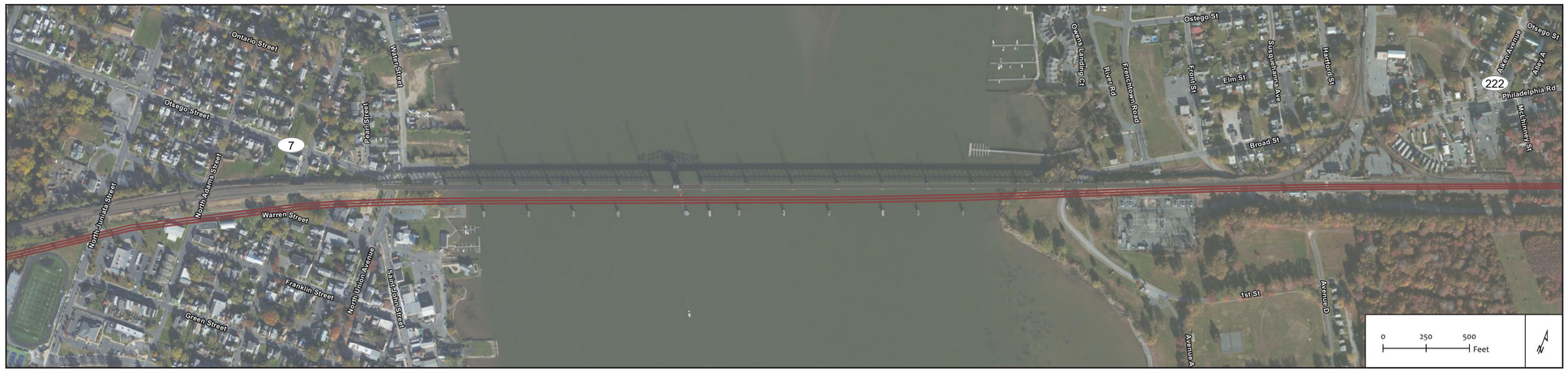


Alignment 4B



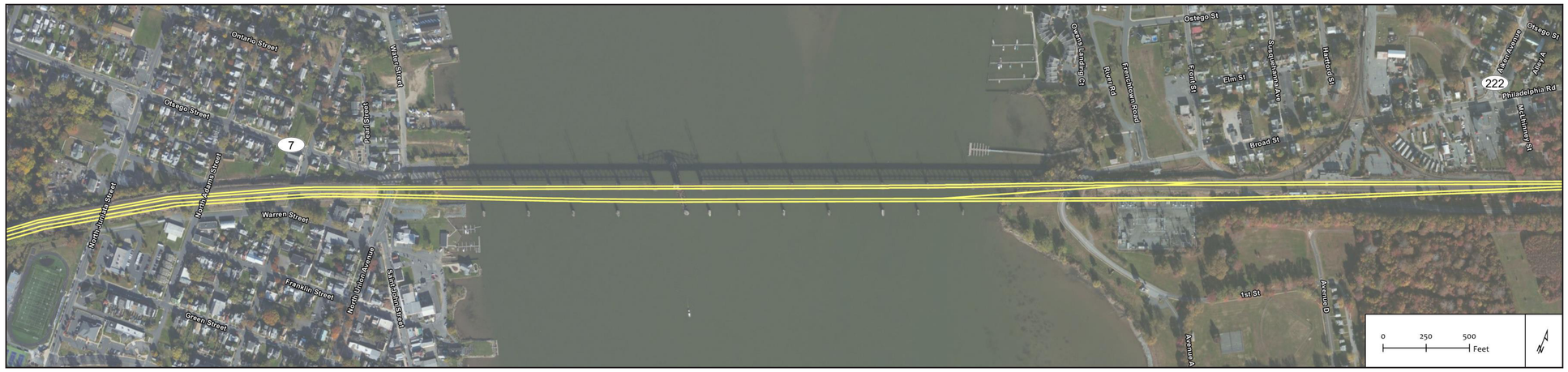
Alignment 4C

Alternatives Development and Screening



Alignment 4D

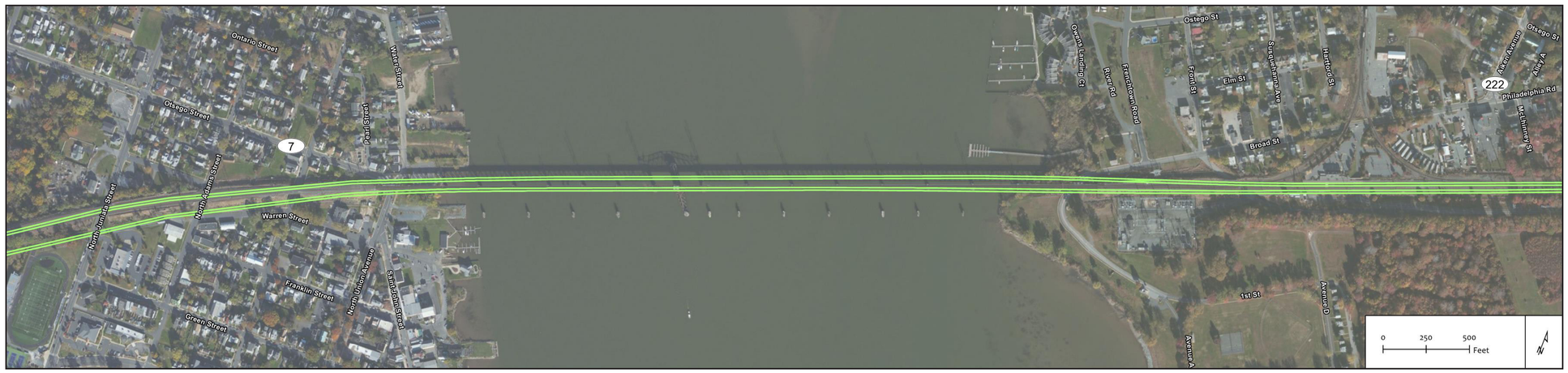
Alignment 4E



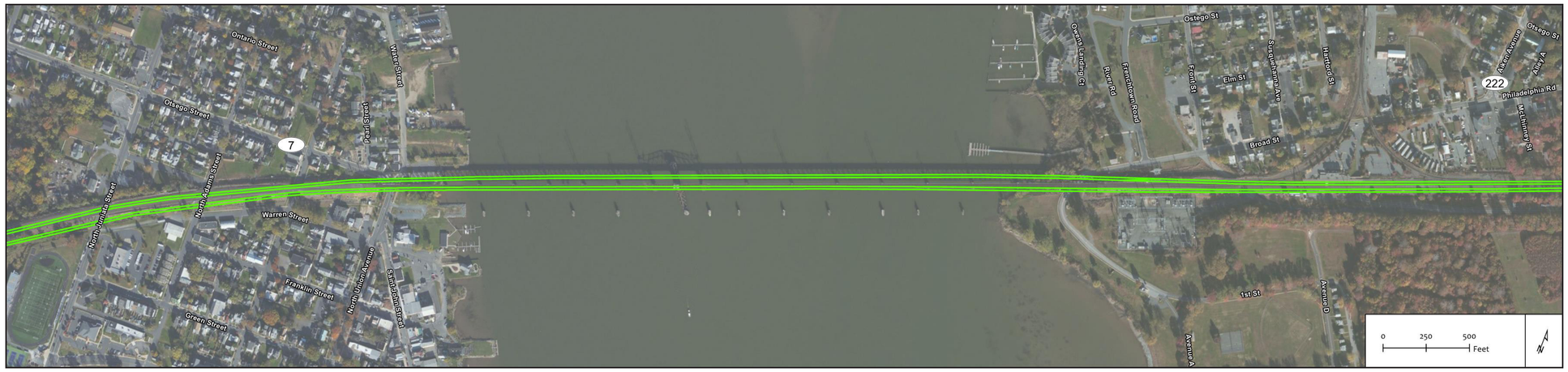
Alignment 8A

Alternatives Development and Screening

Alignment 8B



Alignment 9A



Alignment 9B

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- Present Preferred Alternative

Public Outreach
- Distribute Project Newsletter

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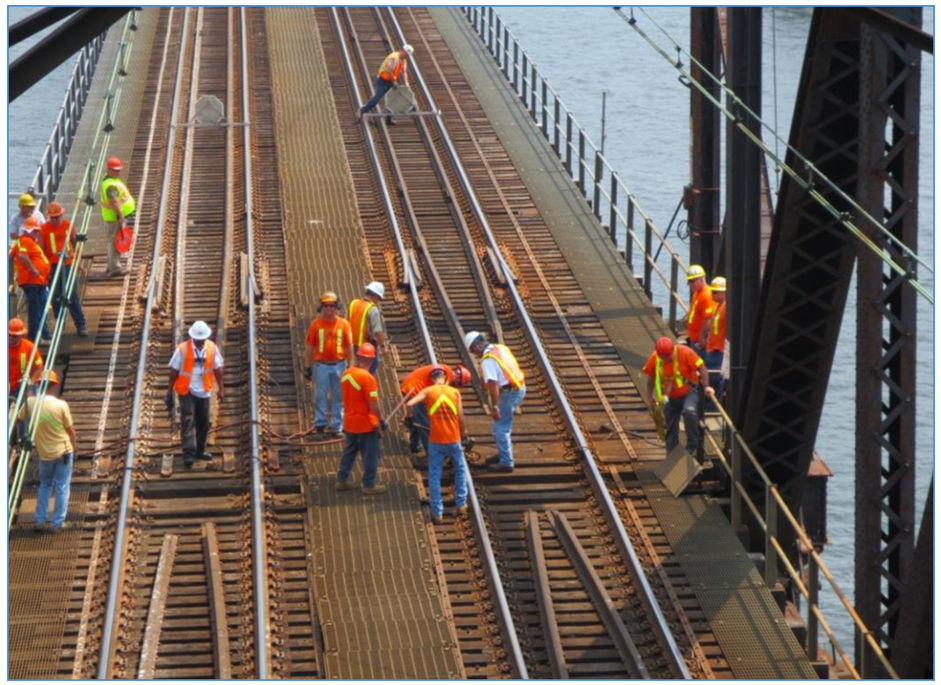

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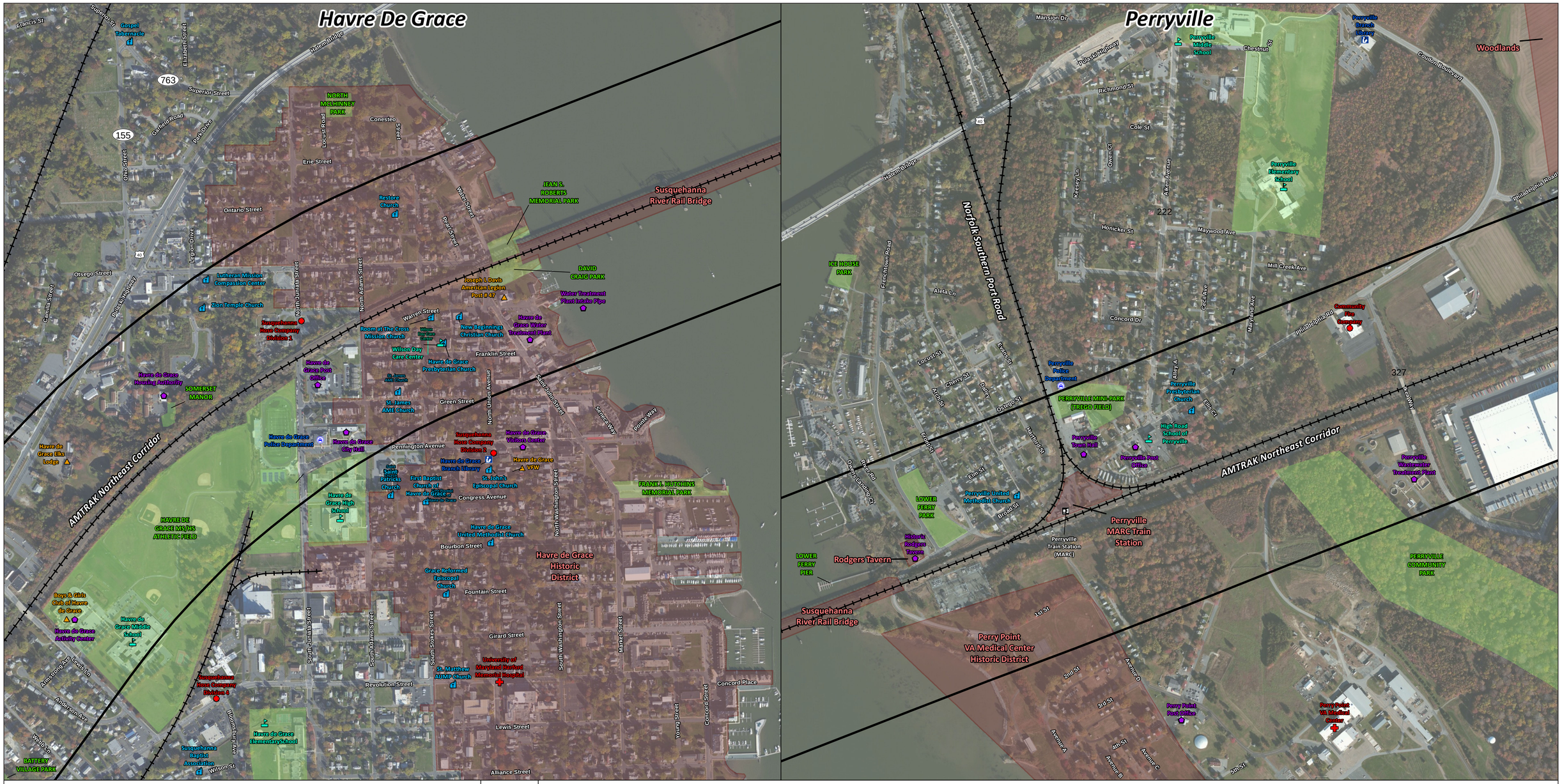

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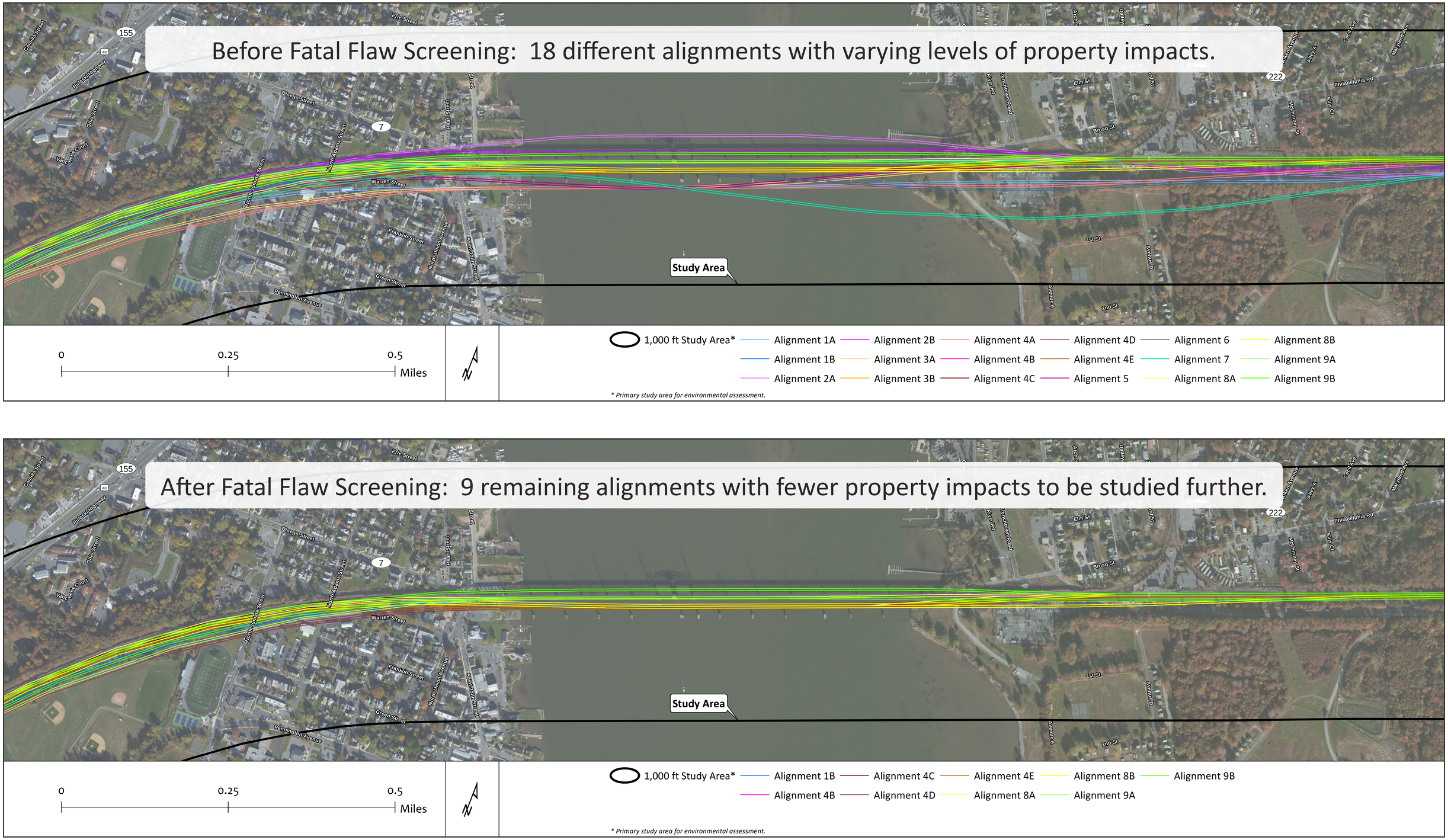

Two-Step Alternatives Screening Results

- ***Fatal Flaw Screening—18 conceptual alignments were evaluated and 9 were eliminated***
  - Rehabilitation of existing bridge was eliminated; not feasible from construction and engineering perspective; will fail to provide continued rail connectivity and meet navigational requirements
- ***Detailed Screening—9 remaining alignments and 1 value engineering alignment were evaluated; all but 3 alignments were eliminated***
  - Alignments eliminated based on maximum achievable speed, number of tracks, and property impacts
- ***Alternatives Retained for Detailed Study—Alignments 1B, 9A, and 9B***

Potential Property Impacts from Eliminated Alternatives

HAVRE DE GRACE PROPERTY IMPACTS FOR ELIMINATED OPTIONS

PERRYVILLE PROPERTY IMPACTS FOR ELIMINATED OPTIONS

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PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

EXISTING RIGHT-OF-WAY
EXISTING RAILROAD LIMITS
IMPACTS OUTSIDE AMTRAK RIGHT-OF-WAY AND RIVER BRIDGE LIMITS

AMTRAK

Office of Engineering
Engineering Design
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

PERRYVILLE/HAVRE DE GRACE, MARYLAND
SUSQUEHANNA RIVER
RAIL BRIDGE PROJECT

MAXIMUM PROPERTY IMPACTS FOR ELIMINATED OPTIONS Date 12/03/2014

SUSQUEHANNA RIVER
RAIL BRIDGE PROJECT

susrailbridge.com

Alternatives Comparison Matrix

Screening Criteria	Alt 1B	Alt 4B	Alt 4C	Alt 4D	Alt 4E	Alt 8A	Alt 8B	Alt 9A	Alt 9B	VE
IMPROVE RAIL SERVICE RELIABILITY AND SAFETY										
Eliminates operational disruptions/ delays	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Connects to NS wye and provides grades acceptable for freight operations	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of bridge structures	2	2	2	1	1	2	1	2	2	2
IMPROVE OPERATIONAL FLEXIBILITY AND ACCOMMODATE REDUCED TRIP TIMES										
Reduces operational conflicts	Excellent	Excellent	Excellent	Fair	Fair	Excellent	Fair	Excellent	Excellent	Excellent
Eliminates or reduces speed restrictions for intercity trains	Eliminates	Eliminates	Eliminates	Eliminates	Eliminates	Reduces	Reduces	Eliminates	Eliminates	Eliminates
Provides flexibility for operational and maintenance work windows	Very Good	Very Good	Very Good	Good	Good	Very Good	Good	Good	Good	Good
OPTIMIZE EXISTING AND PLANNED INFRASTRUCTURE										
Eliminates two-track section in this portion of NEC*	Excellent 4 Tracks	Excellent 4 Tracks	Excellent 4 Tracks	Good 3 Tracks	Good 3 Tracks	Excellent 4 Tracks	Good 3 Tracks	Excellent 4 Tracks	Excellent 4 Tracks	Excellent 4 Tracks
Does not preclude future high-speed rail (NEC Future)*	140 mph Good	160 mph Excellent	135 mph Good	160 mph Excellent	135mph Good	120 mph Fair	120 mph Fair	160 mph Excellent	150 mph Very Good	140 mph Good
Impacts to Perry Substation	Major	Major	Major	Major	Major	Major	Major	Moderate	Moderate	Major
Allows shared corridor with bike/ped path**	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude
MAINTAIN ADEQUATE NAVIGATION AND IMPROVE SAFETY ALONG THE SUSQUEHANNA RIVER										
Provides suitable vertical clearance	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’	Yes – 60’
Maintains or widens horizontal clearance	Yes- 200’+	Yes- 200’+	Yes- 200’+	Yes- 200’+	Yes-200’+	Yes- 200’+	Yes- 200’+	Yes- 200’+	Yes- 200’+	Yes- 200’+
Requires temporary winter closure of movable span?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PROPERTY IMPACTS										
Potential property impacts*	1 Commercial (Indirect) 1 Undeveloped (Partial)	1 Residential (Full) 1 Commercial (Full) 1 Commercial (Indirect) 1 Institutional (Partial) 2 Undeveloped (Full) 1 Undeveloped (Partial) 2 Park (Partial)	1 Residential (Full) 1 Commercial (Partial) 2 Undeveloped (Full) 1 Park (Partial)	1 Residential (Full) 1 Commercial (Full) 1 Commercial (Indirect) 1 Institutional (Partial) 2 Undeveloped (Full) 1 Undeveloped (Partial) 2 Park (Partial)	1 Residential (Full) 1 Commercial (Partial) 2 Undeveloped (Full) 1 Park (Partial)	1 Commercial (Partial)	1 Commercial (Partial)	1 Residential (Partial) 1 Commercial (Full) 1 Undeveloped (Partial) 2 Park (Partial)	1 Residential (Partial) 1 Commercial (Partial) 1 Park (Partial)	1 Residential (Partial) 1 Commercial (Partial) 1 Park (Partial) 1 Undeveloped (Partial)
Retained for Further Evaluation?	**YES**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**
Elimination Rationale	N/A	High property impacts	Better option available	High property impacts	Better option available	Undesirable Speed	Undesirable Speed	N/A	N/A	Better option available

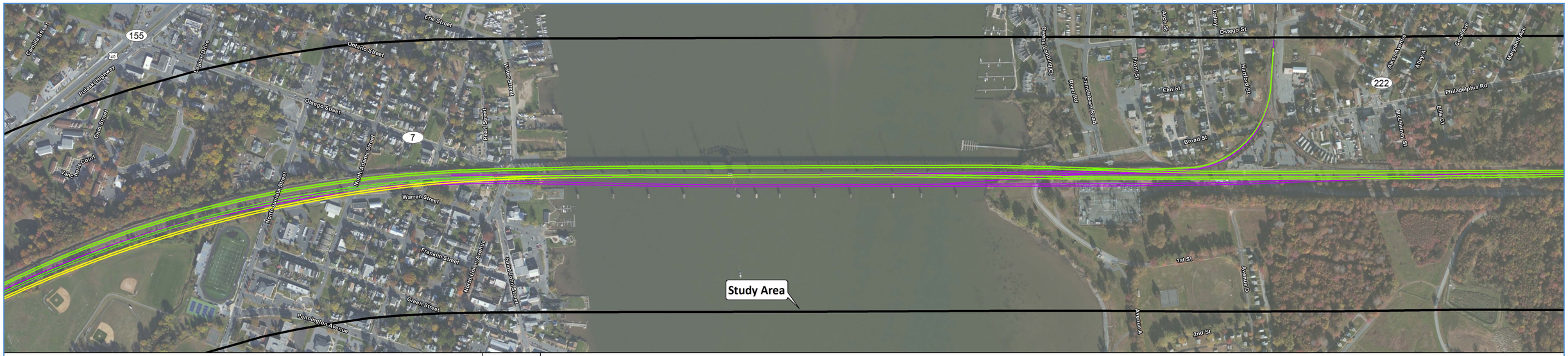
* Primary differentiator in selecting alternatives retained for detailed study | ** Feasibility evaluation in progress

most desirable more desirable least desirable

Maryland Department of Transportation

AMTRAK

Alternatives Retained for Detailed Study



Retained for detailed study: Alignments 1B, 9A, and 9B

- Allows for 4 track capacity with up to 160 mph max speed
- Lesser property impacts than other alternatives
- Compatible with several bridge types
- Maximum achievable speed, number of tracks, and property impacts were primary differentiators in selecting alignments

Potential Property Impacts from Retained Alternatives

HAVRE DE GRACE PROPERTY IMPACTS FOR OPTION 1B: TWO DOUBLE-TRACK BRIDGES AT 140 MPH

← RAILROAD SOUTH TO BALTIMORE

RAILROAD NORTH TO WILMINGTON →

EXISTING RIGHT-OF-WAY
EXISTING RAILROAD LIMITS
IMPACTS OUTSIDE AMTRAK RIGHT-OF-WAY
NEW RIVER BRIDGE LIMITS

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PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

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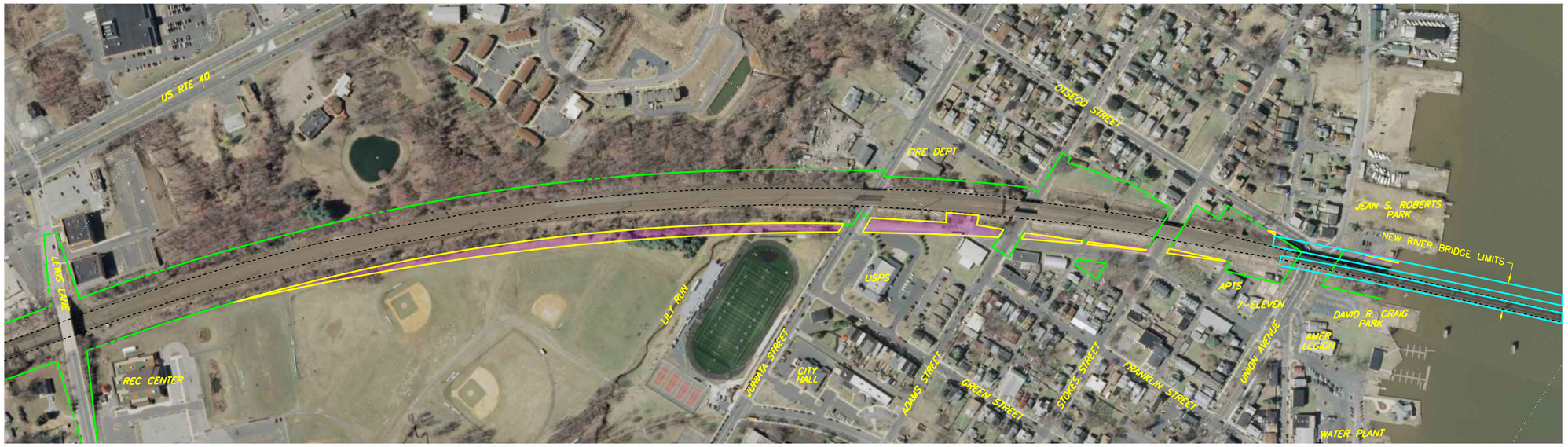
PERRYVILLE/HAVRE DE GRACE, MARYLAND
SUSQUEHANNA RIVER
RAIL BRIDGE PROJECT

HAVRE DE GRACE – 1B
PROPERTY IMPACT AREA Date 12/05/2014

Potential Property Impacts from Retained Alternatives



HAVRE DE GRACE PROPERTY IMPACTS FROM OPTION 9A: TWO DOUBLE-TRACK BRIDGES AT 160 MPH

← RAILROAD SOUTH TO BALTIMORE

RAILROAD NORTH TO WILMINGTON →

HAVRE DE GRACE PROPERTY IMPACTS FROM OPTION 9B: TWO DOUBLE-TRACK BRIDGES AT 150 MPH

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PLOT SCALE: AS SHOWN
STANDARD PEN TABLE: NO

EXISTING RIGHT-OF-WAY
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IMPACTS OUTSIDE AMTRAK RIGHT-OF-WAY
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SUSQUEHANNA RIVER
RAIL BRIDGE PROJECT

HAVRE DE GRACE – 9A AND 9B
PROPERTY IMPACT AREA Date 12/05/2014

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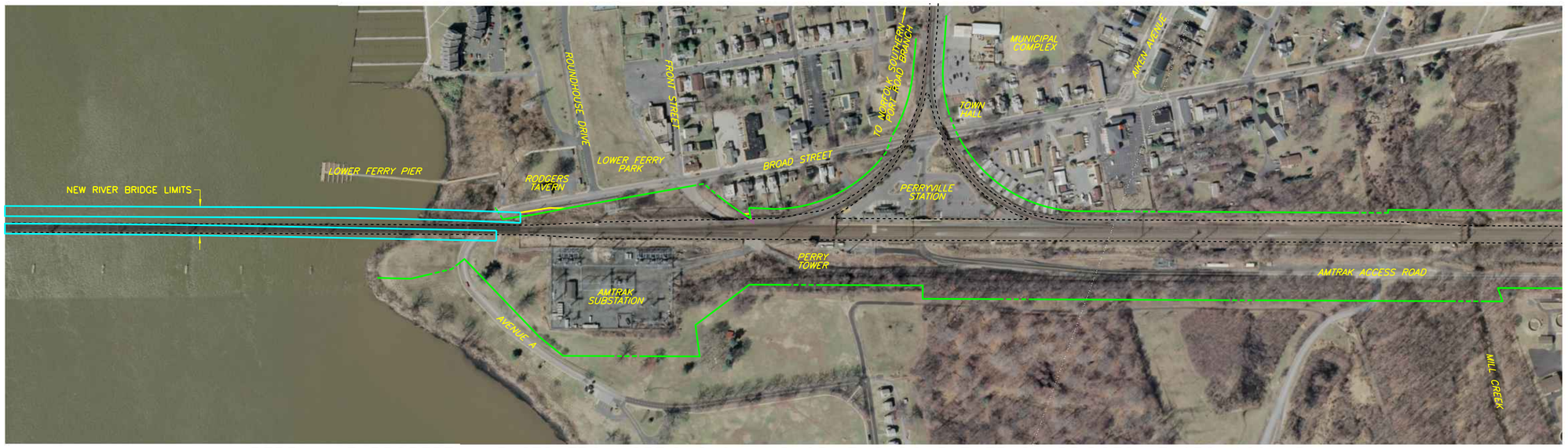
PERRYVILLE PROPERTY IMPACTS FROM OPTION 1B: TWO DOUBLE-TRACK BRIDGES AT 140 MPH

RAILROAD SOUTH TO BALTIMORE — RAILROAD NORTH TO WILMINGTON



PERRYVILLE PROPERTY IMPACTS FROM OPTIONS 9A AND 9B: TWO DOUBLE-TRACK BRIDGES AT 150-160 MPH

EXISTING RIGHT-OF-WAY
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IMPACTS OUTSIDE AMTRAK RIGHT-OF-WAY
NEW RIVER BRIDGE LIMITS

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PERRYVILLE - 1B, 9A, AND 9B
PROPERTY IMPACT AREA Date 12/05/2014

Bridge Design Types - Example Renderings

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- Maintenance difficulties
- Conflicts with maritime uses

Amtrak crew manually opening the movable bridge span to accommodate marine traffic.

Project Limits (defined by grant)

Recent Project Activity

STAKEHOLDERS

- Coordinated with key stakeholders:
  - Susquehanna River Rail Bridge Project Advisory Board (3/26/15)
  - Harford County Public Schools (7/8/15 & 8/17/15)
    - Discussed impacts to the HdG HS/MS and reviewed proposed redevelopment plans for the school
- Conducting Bicycle/Pedestrian Crossing Hazard Analysis and Security Risk Assessment

SECTION 106

- Coordinated with MHT to confirm potentially eligible historic resources
- Held Section 106 Consulting Parties Meetings:
  - Havre de Grace – 3/9/15
  - Perryville – 8/18/15
    - Discussed known and potentially eligible historic resources
    - Discussed potential impacts to historic and archaeological resources and conceptual mitigation

AGENCY

- Submitted preliminary Alternatives Retained for Detailed Study (ARDS) report
- Held Interagency Review Meeting field visit
- Submitted Refined ARDS report
- Obtained ARDS report concurrence
- Presented at Interagency Review Meetings 2/18/15, 4/15/15, 6/17/15, 9/16/15

Environmental Considerations
National Environmental Policy Act (NEPA)

Requires that we take appropriate measures to protect and enhance the natural, cultural and human environment. A complete study of all reasonable alternatives (including measures to avoid and minimize impacts) must be prepared, and the results must be made available to public officials and citizens before decisions are made.

Natural Environment

- Geology / Groundwater Resources
- Soils
- Surface Water
- Floodplains
- Wetlands
- Aquatic Life
- Wildlife

Socio-Economic Environment

- Demographics
- Community Facilities
- Economic Setting and Land Use
- Noise
- Air

Section 404 of the Clean Water Act, Nontidal Wetlands Protection Act

Regulates dredge and fill of Waters of the United States. Guidelines published by the Environmental Protection Agency for evaluating alternatives require that the Corps of Engineers evaluate the proposed project for environmental impacts (including historic and rare/threatened/endangered species impacts) and select the least environmentally damaging, practicable alternative.

Endangered Species Act

Ensures that actions are not taken to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Section 106 of the National Historic Preservation Act / Cultural Environment

Requires that agencies take into account the effects of a project on properties that are included in or eligible for the National Register of Historic Places. Cultural Resources include both historic structures and archaeological sites.

Section 4(f) of the US Department of Transportation Act

Requires that special effort be made to preserve publicly owned public parks and recreation areas, wildlife / waterfowl refuges and historic sites. No project which requires land from these resources may be approved unless 1) there is no feasible and prudent alternative to the use of the land and 2) the action includes all possible planning to minimize harm to the property resulting from such use.

Clean Air Act and Clean Air Act Amendments

An air quality analysis must be performed to determine if there are violations of the State or National Ambient Air Quality Standards.

Farmland Protection Policy Act

Requires that federal programs minimize conversion of farmland to non-agricultural uses (does not apply to farmland that is zoned or committed (planned) for urban development).

Executive Order 12898 (Environmental Justice)

Requires that agencies identify and address disproportionately high and adverse human health or environmental effects on minority or low-income populations.

Two-Step Alternatives Screening Process

Step 1: Fatal Flaw Screening—criteria developed from Purpose & Need

➤ ***Pass/fail test—alternative must satisfy all criteria to advance***

- Provides rail connectivity
- Meets navigation requirements
- Has logical termini
- Is feasible & constructible
- Avoids critical property impacts (developed from community input)

Step 2: Detailed Screening—based on specific project goals

➤ ***Relative test—compare/contrast each alternative's ability to meet goals & objectives***

- Optimizes existing and planned infrastructure
- Considers operational, design, construction requirements
- Minimizes environmental/cultural/socioeconomic/property impacts

Alternatives Comparison Matrix - Environmental Considerations

EVALUATION CRITERIA		Units	Alternative 1B	Alternative 4B	Alternative 4C	Alternative 4D	Alternative 4E	Alternative 8A	Alternative 8B	Alternative 9A	Alternative 9B	VE
HUMAN ENVIRONMENTAL CONSIDERATIONS												
Permanent Impacts to Land Use and Community Facilities (Where structure demolition is required, a full parcel acquisition is assumed) *The Lafayette Senior Living Center accounts for 15 residential displacements.	Total Number of Parcels	#	3	8	5	8	5	3	3	6	4	5
	Total Acreage	Acres	0.35	4.69	0.98	4.72	0.98	0.10	0.10	2.71	0.32	0.36
	Potential Number of Residential and/ or Commercial Relocations	#	0	16	15	16	15	0	0	1	0	0
Permanent Impacts to Parks and Recreational Resources (Parks avoided include Lower Ferry Park & Pier, Trego Field/Mini-Park, Perryville Community Park, and Existing bike/ped trails)	Total Number of Parks Affected	#	0	2	1	2	1	0	0	2	1	1
	Total Acreage	Acres	0	2.52	0.14	2.56	0.14	0	0	2.29	0.79	0.79
Potential Impacts to Cultural Resources	Number of Impacted Historic Properties	#	2-3	2-3	2-3	2-3	2-3	2-3	2-3	3	3	2-3
	Total Acreage of Potentially Sensitive Archaeological Areas	Acres	0.20	0.20	0.20	0.11	0.11	0.20	0.11	0.31	0.31	0.31
Potential Impacts to Section 4(f) Resources	Total Number of Section 4(f) Resources with Potential Impacts	#	3	5	4	5	4	3	3	5	4	4
NATURAL ENVIRONMENTAL CONSIDERATIONS												
Number of Stream Crossings		#	3	3	3	3	3	3	3	3	3	3
Impacts to Streams***	Total Stream Impacts	Linear Feet	330	450	292	430	271	290	269	376	308	333
Impacts to Wetlands****		Acres	0.65	0.66	0.68	0.60	0.59	0.65	0.59	0.18	0.18	0.65
Impacts to Natural Wetland Buffers			1.41	1.47	1.71	0.78	0.72	1.41	0.72	1.15	1.15	1.42
Impacts to Floodplains	100 year floodplain		2.40	3.29	2.23	2.94	1.87	2.23	1.91	2.70	2.15	2.48
	500 year floodplain		52.66	58.99	51.27	56.44	48.43	50.21	47.63	55.45	51.67	56.07
Impacts to Chesapeake Bay Critical Area			6.90	7.27	7.13	7.25	6.98	6.79	6.46	6.23	6.09	8.01
Impacts to Submerged Aquatic Vegetation			0.63	0.57	0.57	0.57	0.57	0.63	0.64	0.60	0.59	0.74
Number of known / suspected contaminated properties directly impacted		#	2	3	2	3	2	2	2	2	2	2
Impacts to Rare, Threatened or Endangered Species Habitat		Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Impacts to Forest****		Acres	1.74	2.75	0.59	2.34	0.17	0.63	0.23	2.92	2.08	2.08
Bridge Deck Acreage over Susquehanna River*****			6.30	6.30	6.30	4.30	4.30	6.30	4.30	6.30	6.30	6.30
Existing Pier Removal Acreage			0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Retained for further evaluation			No	No	No	No	No	No	No	Yes	Yes	No
Elimination Rationale			Lower maximum allowable speed than 9B with comparable environmental impacts	Impact to Lafayette Senior Housing Facility	Impact to Lafayette Senior Housing Facility and low maximum authorized speed	Impact to Lafayette Senior Housing Facility; provides three tracks only	Impact to Lafayette Senior Housing Facility; offers low maximum authorized speed and three tracks only	Undesirable maximum authorized speed	Undesirable maximum authorized speed	N/A	N/A	Higher property and natural environmental impacts, but lower speed than 9B

*** Does not include the Susquehanna River. All alternatives cross the Susquehanna River.

**** Based on preliminary field survey

*****Actual impacts to be determined by bridge type.

First Tier of Impacts | Second Tier of Impacts | Third Tier of Impacts

Alternatives Comparison Matrix - Operational and Engineering Considerations

EVALUATION CRITERIA	Units	Alternative 1B	Alternative 4B	Alternative 4C	Alternative 4D	Alternative 4E	Alternative 8A	Alternative 8B	Alternative 9A	Alternative 9B	VE
IMPROVE RAIL SERVICE RELIABILITY AND SAFETY											
Eliminates operational disruptions/delays	Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Connects to NS wye and provides grades acceptable for freight operations		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of bridge structures	#	2	2	2	1	1	2	1	2	2	2
IMPROVE OPERATIONAL FLEXIBILITY AND ACCOMMODATE REDUCED TRIP TIMES											
Reduces operational conflicts	Level at which alternative meets criteria	Excellent	Excellent	Excellent	Fair	Fair	Excellent	Fair	Excellent	Excellent	Excellent
Eliminates or reduces existing speed restrictions for intercity trains		Eliminates	Eliminates	Eliminates	Eliminates	Eliminates	Reduces	Reduces	Eliminates	Eliminates	Eliminates
Provides flexibility for operational and maintenance work windows		Very Good	Very Good	Very Good	Good	Good	Very Good	Good	Very Good	Very Good	Very Good
Ability to provide for NS/MARC Operations during Construction		Good	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Good
OPTIMIZE EXISTING AND PLANNED INFRASTRUCTURE											
Eliminates two-track section in this portion of NEC and meets corridor wide improvement needs along NEC	# of tracks provided by alternative	4 tracks	4 tracks	4 tracks	3 tracks	3 tracks	4 tracks	3 tracks	4 tracks	4 tracks	4 tracks
Meets future planned 160 mph corridor-wide improvement without future speed restrictions for intercity trains	Y/N - Maximum allowable speed (mph)	No - 140 mph	Yes - 160 mph	No - 135 mph	Yes - 160 mph	No - 135 mph	No - 120 mph	No - 120 mph	Yes - 160 mph	No - 150 mph	No - 140 mph
Impacts to Perry Electrical Substation	Level of impact	Major	Major	Major	Major	Major	Major	Major	Minor	Minor	Major
Allows shared corridor with Bike/Ped path (feasibility evaluation in progress)	Whether alternative precludes	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude	Does not preclude
MAINTAIN ADEQUATE NAVIGATION AND IMPROVE SAFETY ALONG THE SUSQUEHANNA RIVER											
Provides suitable vertical clearance (at least 60')	Y/N - Clearance provided (feet)	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'	Yes - 60'
Maintains or widens horizontal clearance (at least 200')		Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +	Yes - 200' +
Requires temporary winter closure of movable span?	Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Retained for further evaluation		No	No	No	No	No	No	No	Yes	Yes	No
Elimination Rationale		Lower maximum allowable speed than 9B with comparable environmental impacts	Impact to Lafayette Senior Housing Facility	Impact to Lafayette Senior Housing Facility and low maximum authorized speed	Impact to Lafayette Senior Housing Facility; provides three tracks only	Impact to Lafayette Senior Housing Facility; offers low maximum authorized speed and three tracks only	Undesirable maximum authorized speed	Undesirable maximum authorized speed	N/A	N/A	Higher property and natural environmental impacts, but lower speed than 9B

First Tier of Impacts Second Tier of Impacts Third Tier of Impacts

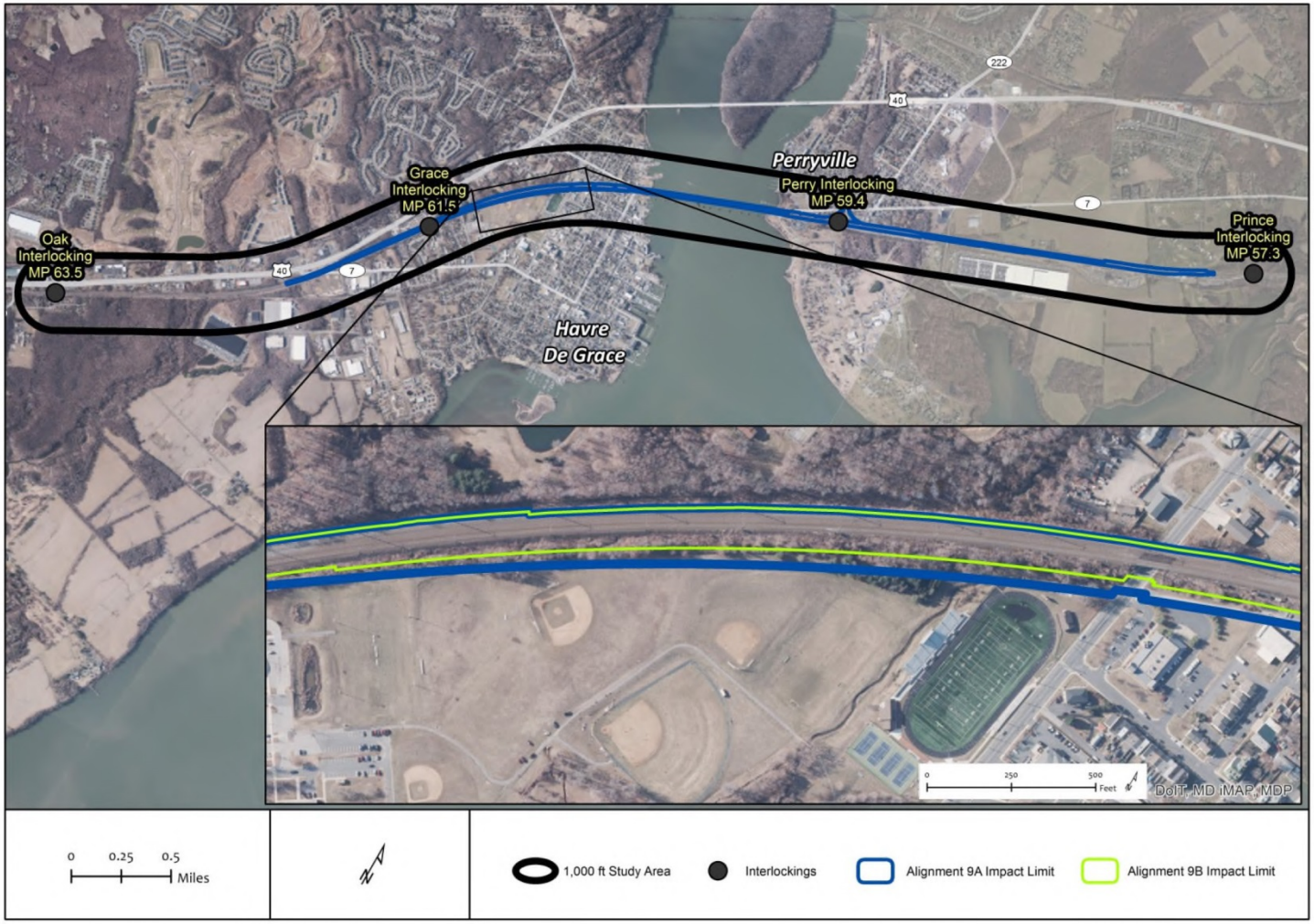
Two-Step Alternatives Screening Results

- ***Fatal Flaw Screening—25 conceptual alignments were evaluated and 15 were eliminated***
  - Rehabilitation of existing bridge was eliminated; not feasible from construction and engineering perspective; will fail to provide continued rail connectivity and meet navigational requirements
- ***Detailed Screening—9 remaining alignments and 1 value engineering alignment were evaluated; all but 2 alignments were eliminated***
  - Alignments were eliminated based on the following factors:
    - Natural and Human Environmental Impacts
    - Operational and Engineering Considerations
- ***Alternatives Retained for Detailed Study—Alignments 9A and 9B***

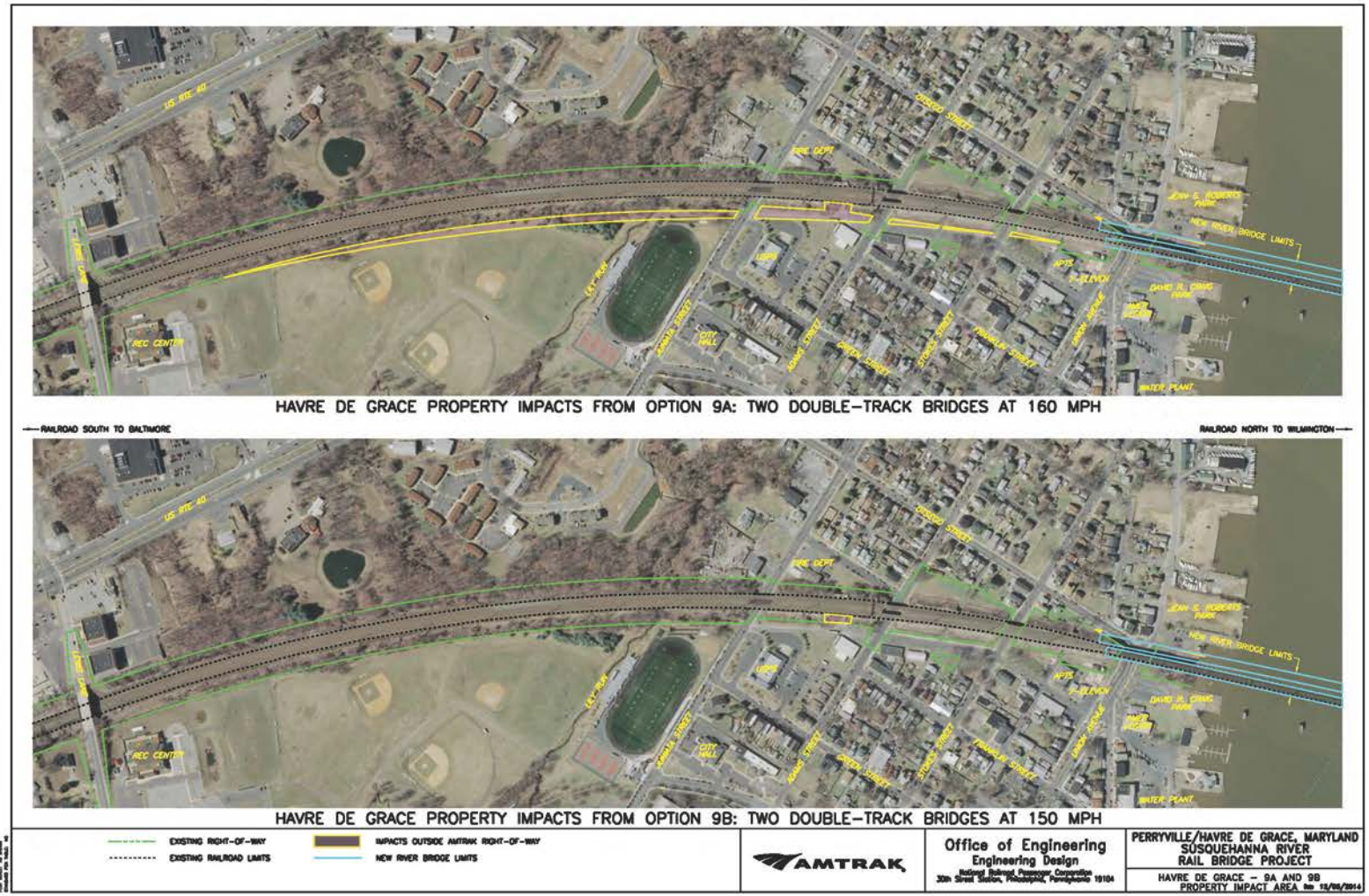
Alternatives Retained for Detailed Study

- ***Alternative 9A***
  - Provides for a four-track crossing with max authorized speed of 160 mph, consistent with the operational goals and with broader plans along the NEC
  - Environmental impacts are comparable or less than other alternatives with similar benefits
  - Investigating potential impact avoidance/minimization and mitigation opportunities (i.e. Perry Interlocking Tower and Havre de Grace MS/HS complex)
- ***Alternative 9B***
  - Provides for a four-track crossing with max authorized speed of 150 mph
  - Environmental impacts are comparable or less than other alternatives with similar benefits
  - Does not require property from Havre de Grace MS/HS complex

Alternatives Retained for Detailed Study Design Limits



Potential Property Impacts from Retained Alternatives



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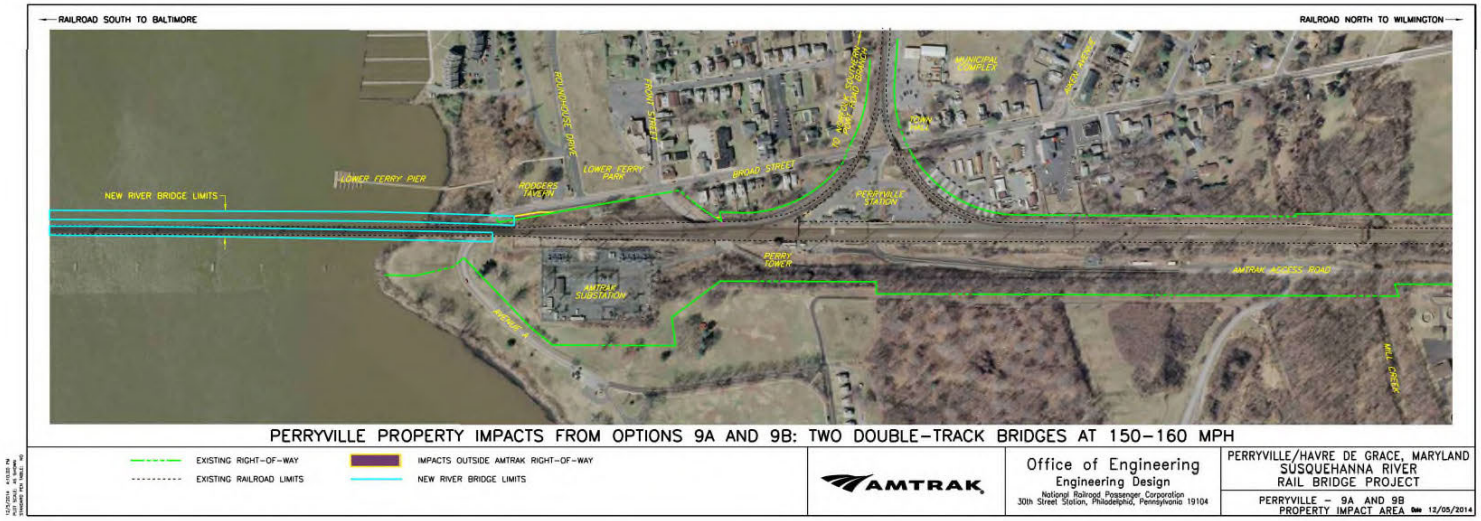


Bridge Design Type Renderings - Approach Span / Channel Span

Bridge Type Comparison Matrix

	DELTA / ARCH	TRUSS / TRUSS	GIRDER / ARCH	GIRDER / TRUSS
INPUT RECEIVED				
Incorporates Mariners Input	YES	YES	YES	YES
Incorporates Public Input on Design Aesthetic	More Favorable	Less Favorable	More Favorable	Less Favorable
ENVIRONMENTAL RESOURCE CONSIDERATIONS				
Number of In-Water Pier Pairs	13	13	19	19
Size of In-Water Piers	More Favorable	Less Favorable	Less Favorable	Less Favorable
Impact to Surface Water	More Favorable	Less Favorable	More Favorable	More Favorable
Impact to Mud Line (river bottom)	Less Favorable	Less Favorable	More Favorable	More Favorable
Compatibility with Historic Bridge	Less Favorable	More Favorable	Favorable	Favorable
ENGINEERING AND OPERATIONS CONSIDERATIONS				
Ease of Maintenance - Approach Spans	Very Good	Good	Excellent	Excellent
Ease of Maintenance - Channel Span	Very Good	Good	Very Good	Good
Structural Redundancy - Approach Spans (key factor)	Excellent	Fair	Excellent	Excellent
Structural Redundancy - Channel Span (key factor)	Very Good	Fair	Very Good	Fair
Ease of Construction	Fair	Good	Excellent	Excellent
Trespasser Resistent From Water	Fair	Good	Excellent	Excellent
Side Span Navigation Clearance	Good	Very Good	Excellent	Excellent
Estimated Cost (2015 $)	$577 Million	$623 Million	$494 Million	$516 Million

LEGEND

- Excellent
- Very Good
- Good
- Fair
- Less Favorable

Bridge Design Renderings - viewed from Havre De Grace

Bridge Design Renderings - viewed from Perryville

Anticipated Project Schedule

Summer 2013
- **Early Coordination**
  - Agency Coordination Meeting
  - Meet with Havre de Grace and Perryville Officials

Winter 2014
- **Agency Coordination Meeting**
  - Project Introduction
  - Present Project's Purpose & Need

Spring 2014
- **Agency Coordination Meeting**
  - Obtain Input on Project's Purpose & Need
  - Existing Environmental Conditions
  - Conceptual Alternatives
- **Public Outreach Information Session**
  - Obtain Input on Project's Purpose & Need
  - Existing Environmental Conditions
  - Conceptual Alternatives

Summer 2014
- **Agency Coordination Meeting**
  - Summarize Public Input
  - Present Feasible Alternatives
- **Public Outreach Information Session**
  - Meet with Local Officials and Stakeholders
  - Present Feasible Alternatives

Fall 2014 / Winter 2015
- **Agency Coordination Meeting**
  - Present Alternatives Retained for Detailed Study
- **Public Outreach Information Session**
  - Present Alternatives Retained for Detailed Study

Spring / Summer 2015
- **Agency Coordination Meeting**
  - Agency Field Visit
  - Refine Alternatives Retained for Detailed Study
- **Public Outreach and Stakeholder Coordination**
  - Website Update
  - Stakeholder Coordination

Fall 2015 — We are Here
- **Agency Coordination Meeting**
  - Refined Alternatives Retained for Detailed Study
  - Bridge Type Evaluation
- **Public Outreach Information Session**
  - Refined Alternatives Retained for Detailed Study
  - Bridge Type Evaluation

Winter 2016
- **Agency Coordination Meeting**
  - Analysis of Retained Alternatives / Conceptual Mitigation
- **Public Outreach Information Session**
  - Analysis of Retained Alternatives
  - Alternative Impact Evaluation
  - Public and Stakeholder Meetings

Spring / Summer 2016
- **Prepare Environmental Assessment (EA)**
- **Public & Stakeholder Meetings**

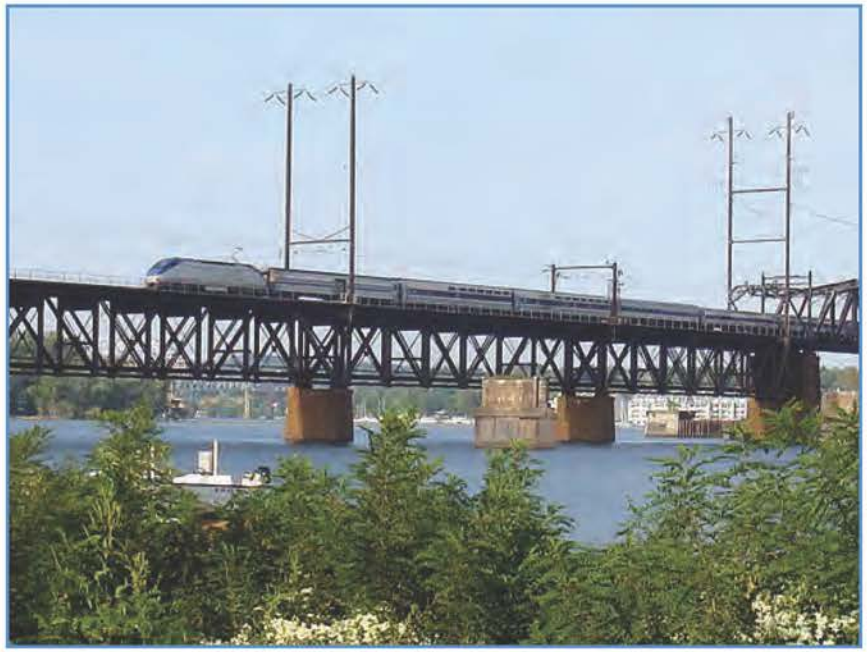
Fall 2016
- **Publish Environmental Assessment (EA)**
- **Agency Coordination Meeting**
  - NEPA Document Findings
- **Public Outreach Information Session**
  - NEPA Document Findings

Winter 2017
- **Complete Preliminary Engineering and NEPA Process**

Spring 2017
- **Complete Federal Railroad Administration Grant Requirements**

Stay Connected

- Visit the project website at **www.susrailbridge.com** to get project updates, learn more about the project, submit a comment, or join the project mailing list.
- Send a letter to:
  Susquehanna River Rail Bridge
  PO Box 68
  Elkton, MD 21922



Welcome!

Susquehanna River Rail Bridge Project

Public Outreach Information Session

Project Purpose and Need

The primary purpose of the Susquehanna River Rail Bridge Project is to provide continued rail connectivity along the Northeast Corridor (NEC).

The project goals include:

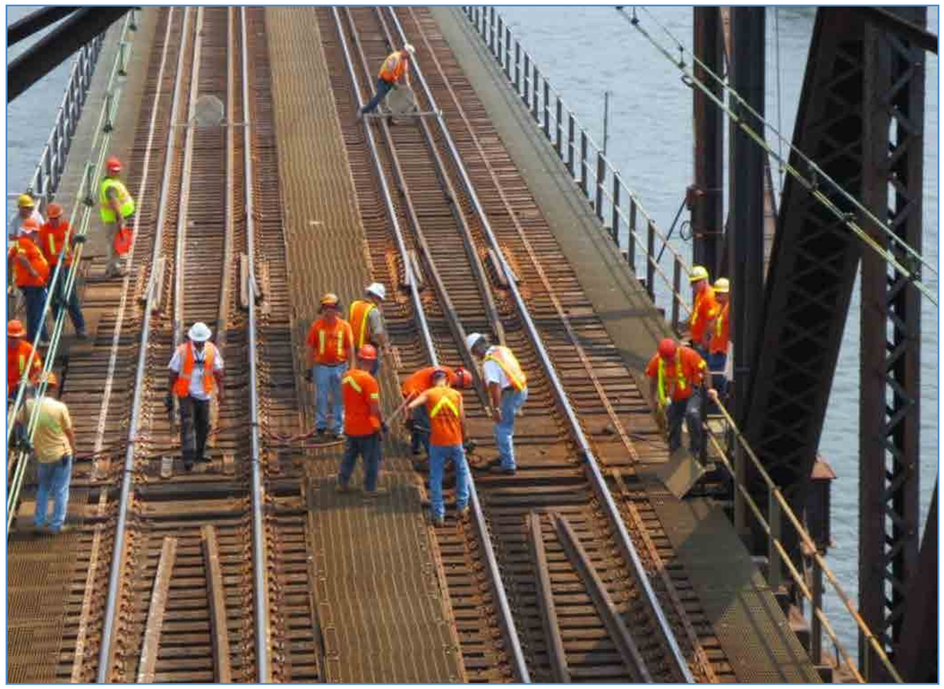
- Improve rail service reliability and safety
- Improve operational flexibility and accommodate reduced trip times
- Optimize existing and planned infrastructure and accommodate future freight, commuter, intercity, and high-speed rail operations
- Maintain adequate navigation and improve safety along the Susquehanna River

The Northeast Corridor merges from four tracks to two tracks (heading south from Perryville to Havre de Grace).

Project Purpose and Need

The problems posed by the existing Susquehanna River Rail Bridge include:

- Functionally obsolete and aging infrastructure
- Speed and capacity constraints
- Operational inflexibility
- Maintenance difficulties
- Conflicts with maritime uses



Amtrak crew manually opening the movable bridge span to accommodate marine traffic.

Two-Step Alternatives Screening Process

Step 1: Fatal Flaw Screening—criteria developed from Purpose & Need

➤ ***Pass/fail test—alternative must satisfy all criteria to advance***

- Provides rail connectivity
- Meets navigation requirements
- Has logical termini
- Is feasible & constructible
- Avoids critical property impacts (developed from community input)

Step 2: Detailed Screening—based on specific project goals

➤ ***Relative test—compare/contrast each alternative's ability to meet goals & objectives***

- Optimizes existing and planned infrastructure
- Considers operational, design, construction requirements
- Minimizes environmental/cultural/socioeconomic/property impacts

Two-Step Alternatives Screening Results

- ***Fatal Flaw Screening—25 conceptual alignments were evaluated and 15 were eliminated***
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- ***Detailed Screening—9 remaining alignments and 1 value engineering alignment were evaluated; all but 2 alignments were eliminated***
  - Alignments were eliminated based on the following factors:
    - Natural and Human Environmental Impacts
    - Operational and Engineering Considerations
- ***Alternatives Retained for Detailed Study—Alignments 9A and 9B***

Alternatives Retained for Detailed Study

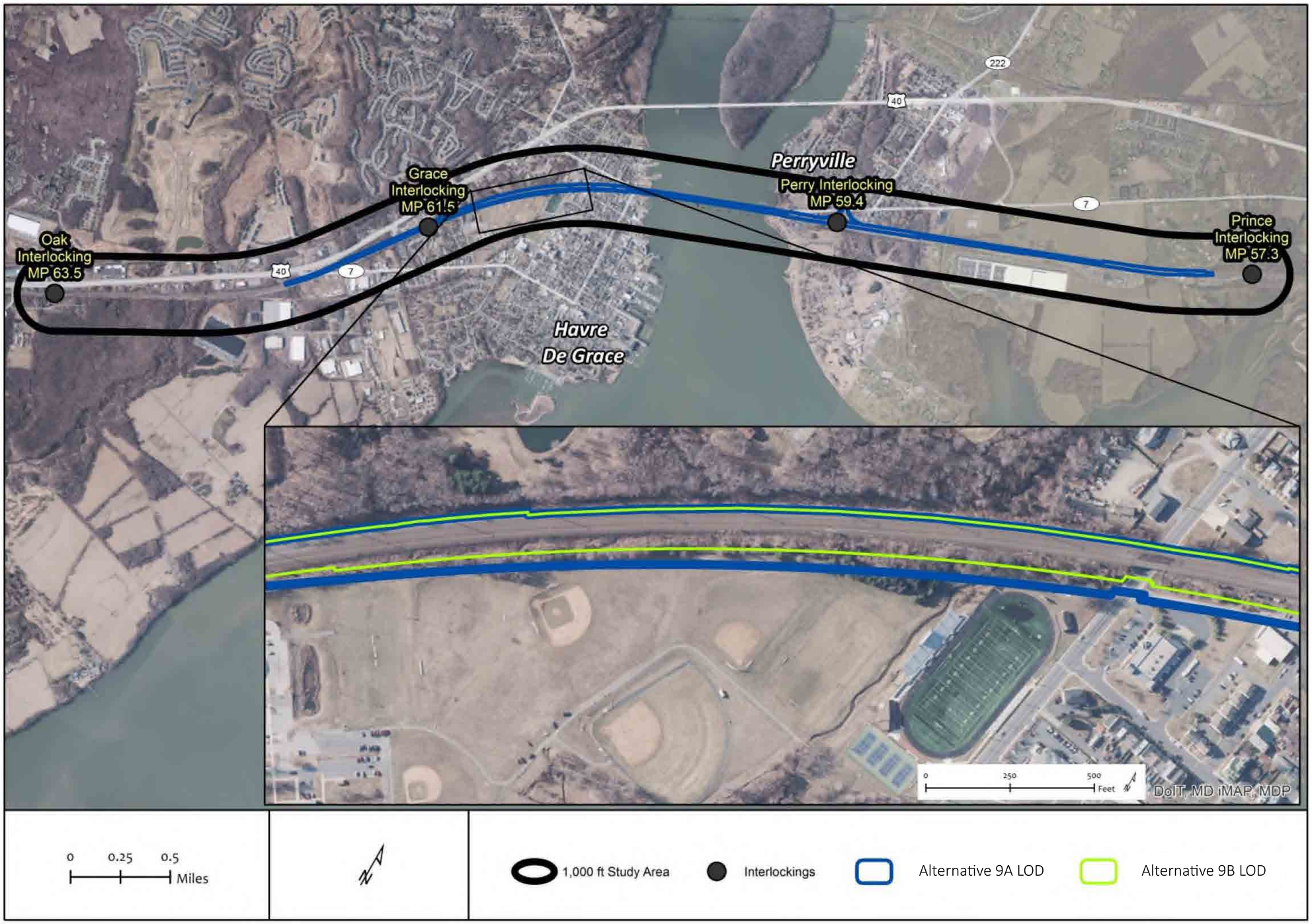
➤ ***Alternative 9A***

- Provides for a four-track crossing with max authorized speed of 160 mph, consistent with the operational goals and with broader plans along the Northeast Corridor (NEC)
- Environmental impacts are comparable or less than other alternatives with similar benefits
- Investigating potential impact avoidance/minimization and mitigation opportunities (i.e. Perry Interlocking Tower and Havre de Grace MS/HS complex)

➤ ***Alternative 9B***

- Provides for a four-track crossing with max authorized speed of 150 mph
- Environmental impacts are comparable or less than other alternatives with similar benefits
- Does not require property from Havre de Grace MS/HS complex

Alternatives Retained for Detailed Study Design Limits



Land Use—Property Acquisition

- **To mitigate all property acquisitions, the project team will coordinate with property owners and comply with all Uniform Act requirements, including relocation services and compensation**

	Alternative 9A	Alternative 9B
Commercial	1.14 acres (full acquisition of a property)	0.30 acres (partial acquisition of a property)
Residential	0.058 acres (including 0.05 acres of undeveloped land)	0.008 acres
Havre de Grace MS/HS Athletic Fields	1.50 acres (2.6%)	None
City-owned Jean Roberts Park	0.01 acres	0.01 acres
Warren Street Public ROW	0.1 acres	None
Broad and Otsego Streets Public ROW	0.034 acres	0.034 acres
Total Potential Property Acquisition	2.84 acres	0.35 acres

Potential Property Impacts from Retained Alternatives

HAVRE DE GRACE PROPERTY IMPACTS FROM OPTION 9A: TWO DOUBLE-TRACK BRIDGES AT 160 MPH

RAILROAD SOUTH TO BALTIMORE — RAILROAD NORTH TO WILMINGTON

HAVRE DE GRACE PROPERTY IMPACTS FROM OPTION 9B: TWO DOUBLE-TRACK BRIDGES AT 150 MPH

EXISTING RIGHT-OF-WAY
EXISTING RAILROAD LIMITS
IMPACTS OUTSIDE AMTRAK RIGHT-OF-WAY
NEW RIVER BRIDGE LIMITS

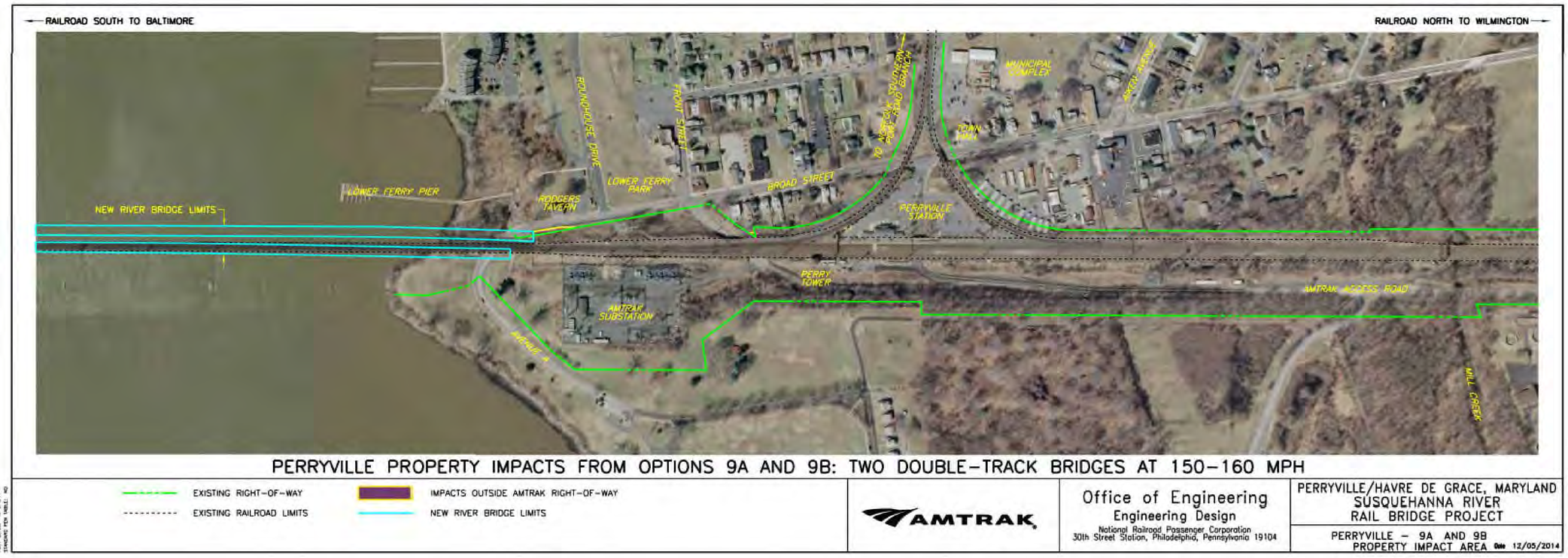
AMTRAK

Office of Engineering
Engineering Design
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

PERRYVILLE/HAVRE DE GRACE, MARYLAND
SUSQUEHANNA RIVER
RAIL BRIDGE PROJECT

HAVRE DE GRACE – 9A AND 9B
PROPERTY IMPACT AREA Date 12/05/2014

Potential Property Impacts from Retained Alternatives



Parks/Section 6(f)

	Alternative 9A	Alternative 9B
Amtrak-owned Jean Roberts Park	0.26 acres (100%)	0.26 acres (100%)
City-owned Jean Roberts Park (boat ramp & portion of pier)	0.01 acres (2.26%)	0.01 acres (2.26%)
Havre de Grace MS/HS Athletic Fields*,**	1.50 acres taking (impacts to track, football field, ballfields)	None

**Section 6(f) process applies to this property, requiring land replacement*

***Mitigation will require modification of planned facility upgrades and coordination with Harford County Public Schools*

Note: Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (16 USC 460) requires that any park or recreational resource that received grants from the LWCF is considered a Section 6(f) resource and therefore afforded certain rights. As a result, the conversion of lands improved or acquired through LWCF funding for other uses (i.e. transportation) must be replaced with land of at least the equivalent area, value, and usefulness.

Section 4(f) Properties

Section 4(f) requires that special effort be made to preserve publicly owned parkland and recreation areas, wildlife / waterfowl refuges and historic sites.

Based on preliminary assessment, the Proposed Project would result in the use of the following Section 4(f) Properties:

Alternative 9A	Alternative 9B
• Amtrak railroad bridge over the Susquehanna River and overpasses (the Susquehanna River Rail Bridge) • Jean S. Roberts Memorial Park • Perryville Railroad Station • Havre de Grace Historic District • Havre de Grace MS/HS athletic fields	• Amtrak railroad bridge over the Susquehanna River and overpasses (the Susquehanna River Rail Bridge) • Jean S. Roberts Memorial Park • Perryville Railroad Station • Havre de Grace Historic District

Section 4(f) Properties

Legend

- Havre de Grace Middle/High School Athletic Fields
- Havre de Grace Historic District
- Jean S. Roberts Memorial Park
- Rodgers Tavern
- Perry Interlocking Tower
- Access Road Under Grade Bridge 59.39
- Alternative 9A LOD
- Alternative 9B LOD
- Susquehanna River Rail Bridge Overpasses
- Perryvile Train Station
- Railroad
- 1,000 ft Study Area

Data Sources

Historic District and Rodgers Tavern:
Maryland Historical Trust

0 1,000 2,000 Feet

Susquehanna River Rail Bridge Project

Section 4(f) Properties

Summary of Natural Environmental Impacts

Resource Type	Resource Category	Alternative 9A	Alternative 9B
Environmental Considerations			
Effective FEMA Floodplain Encroachment (acres)	100-Year	2.72	2.15
	500-Year	4.83	4.24
Preliminary FEMA Floodplain Encroachment* (acres)	100-Year	3.09	2.63
	500-Year	3.16	2.69
Wetlands (acres)	Tidal	0.06	0.06
	Nontidal	0.83	0.71
Streams (linear feet)	Relatively Permanent Waterways	3,190	2,943
	Ephemeral	19	19
Wetland Buffers (acres)	Tidal	0.27	0.27
	Nontidal	2.16	1.72
Forest Resources (acres)	------	2.92	2.08
Chesapeake Bay Critical Area (acres)	------	6.4	6.1
Susquehanna Riverbed/ Aquatic Biota (acres)	Permanent Impacts	0.37	0.37
	Construction (temp. impacts, including finger piers)	0.23	0.23
Submerged Aquatic Vegetation (acres)	Permanent Impacts	0.08	0.08
	Construction (temp. impacts, including finger piers)	0.48	0.48

**Preliminary floodplain available for Harford County only*

Environmental Resources

Historic and Archaeological Resources

- Total acreage of potentially sensitive archaeological areas for Alternatives 9A and 9B — approximately 0.31 acre.
- Team is exploring design measures to minimize adverse effects to historic resources (compatibility of materials, color, retaining walls, aesthetic treatments)
- Coordination with MHT and Section 106 consulting parties is required

Historic Resources	Potential Issues
Susquehanna River Rail Bridge and Overpasses	Removal of existing bridge and alterations to eight historic bridges
Havre de Grace Historic District	Expansion of existing railroad right-of-way will move tracks closer to contributing structures within the Historic District
Rodgers Tavern	Retaining wall will be constructed near Rodgers Tavern
Perryville Railroad Station	Alterations to Undergrade Bridge MP 59.39 (contributing element of NR-eligible station complex) Shifting Perry Interlocking Tower within Amtrak property, instead of demolishing

Visual and Aesthetic Considerations

- **Visual resources study area is within the State-designated Lower Susquehanna Heritage Greenway (LSHG); multiple natural areas and historic sites with high visual and aesthetic value**

- **The project results in adverse visual impacts to the following resources:**
  - Havre de Grace Historic District from railroad right-of-way expansion and new retaining walls
  - Rodgers Tavern from new bridge approach and retaining wall
  - Eight undergrade bridges; altering stone construction and/or arch design

- **Adverse visual impacts avoided and/or minimized through:**
  - Use of a bridge and pier design that has traditional features and allows greater views under the bridges
  - Design modifications to maximize compatibility with historic materials, features, etc
  - Aesthetic treatments
  - Complying with *Secretary of Interior's Standards for the Treatment of Historic Properties*

Air Quality

- Regional air pollutant emissions below thresholds (not significant)
- With other corridor improvements, improved regional air quality (from reduced car travel)
- Effects on local air quality are being evaluated

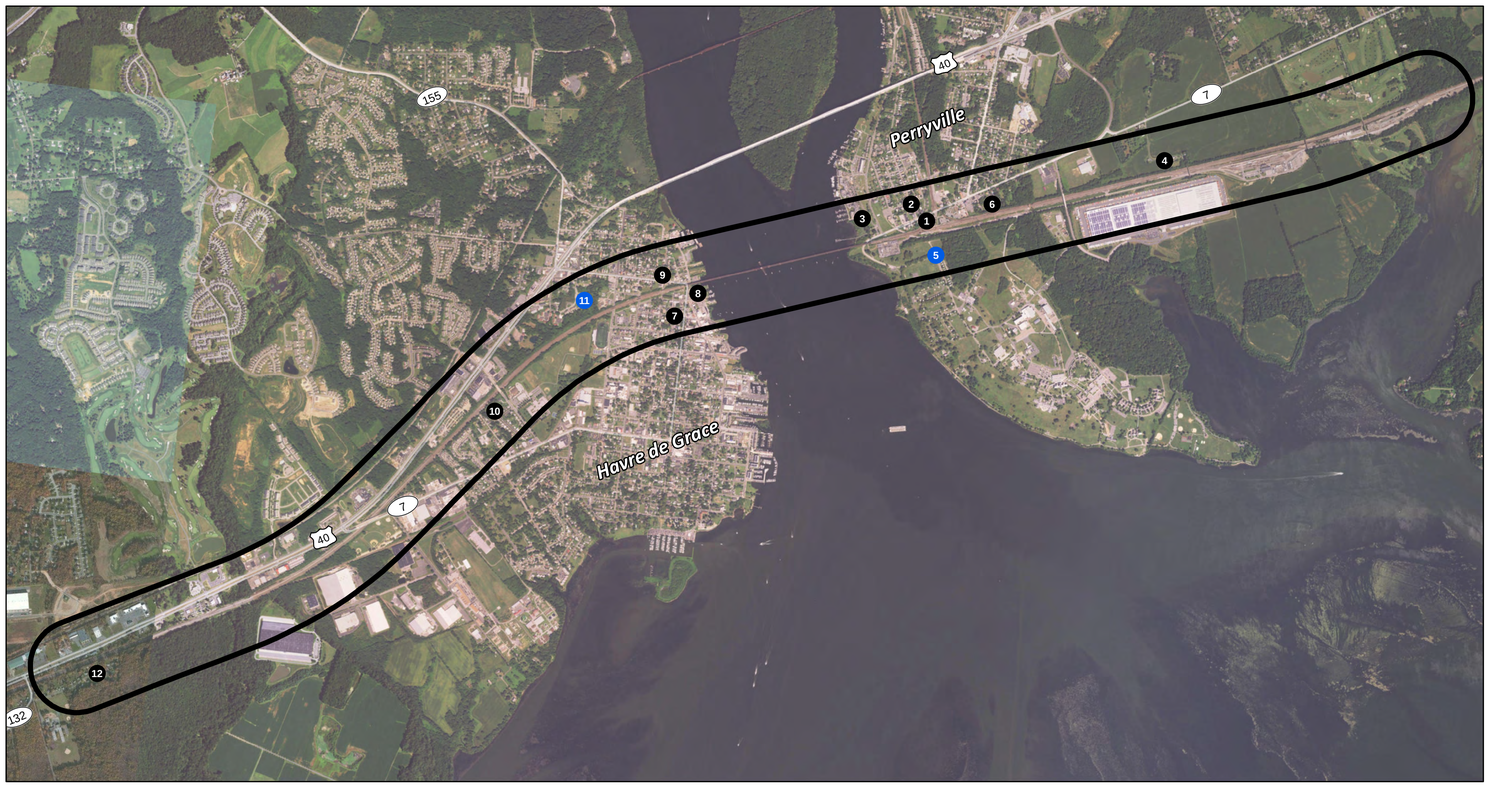
Amtrak train crossing the Susquehanna River Rail Bridge

Noise and Vibration

Analysis based on FTA and FRA criteria indicates no mitigation is required

Predicted Noise Levels:

- No “Severe Impacts” for Alternative 9A or 9B
- ”Moderate Impacts” at some locations along railway for both Alternative 9A and 9B
  - Increments would be “barely perceptible” to “readily noticeable”
  - Total levels would be comparable to existing levels in the study area
  - Not considered significant



Predicted Vibration Levels:

- Reach but not exceed impact threshold at nearest sensitive receptor for Alternative 9A and 9B
- Below impact thresholds farther from the railway

Predicted Ground-Borne Noise Levels:

- Exceed impact threshold for Alternative 9A and 9B at nearest sensitive receptor
- Noise level increment “barely perceptible,” not considered significant
- Below impact thresholds farther from the railway

Selected Bridge Type Design:
Girder Approach / Arch Main Span

Key Hole Pier Design

Viewed from Havre de Grace

Profile View

Approach Span/Main Span

Anticipated Project Schedule

Summer 2013

Early Coordination
- Agency Coordination Meeting
- Meet with Havre de Grace and Perryville Officials

Winter 2014

Agency Coordination Meeting
- Project Introduction
- Present Project's Purpose & Need

Spring 2014

Agency Coordination Meeting
- Obtain Input on Project's Purpose & Need
- Existing Environmental Conditions
- Conceptual Alternatives

Public Outreach Information Session
- Obtain Input on Project's Purpose & Need
- Existing Environmental Conditions
- Conceptual Alternatives

Summer 2014

Agency Coordination Meeting
- Summarize Public Input
- Present Feasible Alternatives

Public Outreach Information Session
- Meet with Local Officials and Stakeholders
- Present Feasible Alternatives

Fall 2014 / Winter 2015

Agency Coordination Meeting
- Present Alternatives Retained for Detailed Study

Public Outreach Information Session
- Present Alternatives Retained for Detailed Study

Spring / Summer 2015

Agency Coordination Meeting
- Agency Field Visit
- Refine Alternatives Retained for Detailed Study

Public Outreach and Stakeholder Coordination
- Website Update
- Stakeholder Coordination

Fall 2015

Agency Coordination Meeting
- Refined Alternatives Retained for Detailed Study
- Bridge Type Evaluation

Public Outreach Information Session
- Refined Alternatives Retained for Detailed Study
- Bridge Type Evaluation

Winter / Spring 2016

We are Here

Agency Coordination Meeting
- Analysis of Retained Alternatives / Conceptual Mitigation

Public Outreach Information Session
- Analysis of Retained Alternatives
- Alternative Impact Evaluation
- Public and Stakeholder Meetings

Spring / Summer 2016

Prepare Environmental Assessment (EA)

Stakeholder Coordination

Fall 2016

Publish Environmental Assessment (EA)

Agency Coordination Meeting
- NEPA Document Findings

Public Outreach Information Session
- NEPA Document Findings

Winter 2017

Complete Preliminary Engineering and NEPA Process

Spring 2017

Complete Federal Railroad Administration Grant Requirements

Stay Connected

- Visit the project website at **www.susrailbridge.com** to get project updates, learn more about the project, submit a comment, or join the project mailing list.
- Send a letter to:
  Susquehanna River Rail Bridge
  PO Box 68
  Elkton, MD 21922

Amtrak train crossing the Susquehanna River Rail Bridge