



Eastern Corridor SR 32 Relocation, Segments II/III Status Update and Recommendations for Further Project Development



August 17, 2015

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This document presents a status update for the Eastern Corridor SR 32 Relocation Project (Segment II/III), including stakeholder and resource agency coordination and project situation and risk assessments conducted in 2013-2015. The Ohio Department of Transportation's (ODOT's) recommendation at this time is to stop expending further time and resources on previously considered new alignment corridors through the Little Miami River valley due to anticipated significant environmental impacts. ODOT's recommendation for further project development is to consider alternatives that have the potential for lower impacts, focusing on existing transportation corridors rather than new alignments through this environmentally complex area.

Background

The Eastern Corridor is a multi-modal program for improving mobility and connectivity between central Cincinnati and communities in eastern Hamilton County and western Clermont County. The purpose of the program is to implement multi-modal transportation improvements consistent with the Ohio-Kentucky-Indiana Regional Council of Governments (OKI's) 2040 Regional Transportation Plan (June 21, 2012), addressing priority needs and supporting transportation goals and concept plans established during the Eastern Corridor Major Investment Study (April 2000) and subsequent planning actions. The need for the action stems from high travel demand on an inadequate existing transportation network (including both highway and transit infrastructure), which is characterized by insufficient capacity, safety issues, limited transportation options, and inadequate linkage to the region's key transportation corridors for efficient movement of people, goods and services.

An Eastern Corridor Tier 1 Final Environmental Impact Statement (EIS) was approved in September 2005 and a Tier 1 Record of Decision (ROD) was issued in June 2006. The Tier 1 ROD established a multi-modal framework for enhancing the regional transportation network and identified transportation investments to be further evaluated in Tier 2, including new roadway and rail transit projects, local network improvements, expanded bus transit, and pedestrian/bikeway improvements. The Tier 1 recommended plan incorporated findings from an Eastern Corridor Land Use Vision Plan (2002) and Green Infrastructure Master Plan (2005), which through extensive public input, identified desired future land use and context-sensitive resource protection measures used as the framework to develop initial concepts for the multi-modal plan.

The SR 32 Relocation, as initially carried forward from the Eastern Corridor Tier 1 ROD, consisted of a controlled-access, relocated SR 32 from US 50 in Fairfax, Hamilton County to the I-275/SR 32 interchange in Clermont County, including new alignment through the Little Miami River valley west of Newtown and a multi-modal river crossing. Tier 1 identified a number of preliminary alternative corridors in which a potential SR 32 relocation could be located, as shown in Figure 1.

Early Tier 2 work conducted between 2010 and 2012 evaluated preliminary corridors carried over from Tier 1 and recommended a reduced number of corridors for further study. The evaluation considered information from Tier 1 as well as archaeology literature reviews, Little Miami River channel studies and various other environmental work performed after the Tier 1 ROD. Information was reported in a preliminary SR 32 Relocation (Segment II/III) Feasibility Study (March 2012) and presented for review at a Public Involvement Meeting held in August 2012. In December 2012, an Addendum to the preliminary Feasibility Study presented revised study corridors, as shown in Figure 2, based on public and agency input received regarding potential impacts to the "South 80" area of the Mariemont National Historic Landmark. Following the revised study corridors, however, conflicting interests from various transportation, environmental, historic and community positions continued to be associated with the SR 32

Relocation Project. As a result, ODOT, in coordination with the Federal Highway Administration (FHWA), made the decision in 2013 to put on hold further project development and seek assistance in identifying issues and collaboration opportunities, as described below.

Recent Project Efforts

Situation Assessment

Recognizing the complex interests associated with the SR 32 Relocation Project, ODOT and FHWA in 2013 engaged the U.S. Institute for Environmental Conflict Resolution (USIECR) and a facilitation team from the Consensus Building Institute (CBI) as neutral, outside entities. Their purpose was to review the project and examine whether a collaborative process might be feasible to help inform future decisions on project development. Completed in November 2014 and available for viewing on the project website (www.easterncorridor.org), CBI's situation assessment summarized key viewpoints from over 100 confidential stakeholder interviews representing a spectrum of project interests and concerns. Results identified three key perspectives:

- *The SR Relocation project is a well-conceived and much needed regional solution, and it is time to move forward.*
- *The SR 32 Relocation is an unnecessary and destructive project, and time/resources should be spent elsewhere.*
- *The SR 32 Relocation project needs new thinking, with complex and difficult trade-offs requiring a different approach.*

CBI identified key stakeholder interests associated with the SR 32 Relocation Project from their interviews, including the need to: improve transportation safety and efficiency; protect the natural environment; facilitate regional economic development; protect quality of life issues; be fiscally responsible and allocate limited dollars to the most pressing needs; safeguard historic and archeological resources; and make decisions in a reasonable timeframe. Their situation assessment presented eight options to consider in deciding whether and how to move ahead with the SR 32 Project. These ranged from not proceeding with the project at this time to proceeding as planned to fulfill NEPA, with various options in between that considered reframing/rethinking aspects of the project.

Tribal Coordination

FHWA and ODOT hosted an early tribal coordination meeting in Cincinnati, Ohio on May 31 and June 1, 2012. Six tribes participated in the two-day session either in person or via teleconference including: The Seneca Nation of Indians, Tuscarora Nation, Eastern Shawnee Tribe of Oklahoma, Delaware Tribe of Indians, Wyandotte Nation and the Tonawanda Seneca Nation. Comments were varied and received from the Eastern Shawnee Tribe of Oklahoma, Seneca Nation of Indians and Tonawanda Seneca Nation. The Tuscarora Nation indicated that they were in accord with the Tonawanda Seneca Nation's comments. The Wyandotte Nation did not provide comments. The Delaware Tribe of Indians confirmed that the tribe would not be participating as a consulting party, and therefore elected not to comment on the proposed treatment of archaeological and/or human remains and that it wished to be kept informed of the project's progress. A summary of this early tribal coordination is included as Appendix I of CBI's situation assessment (November 2014).

In conjunction with CBI's situation assessment process, FHWA in coordination with ODOT coordinated with nine federally-recognized tribes on two occasions, including the representatives from the following: Wyandotte Nation, Tonawanda Band of Seneca Indians of New York, Seneca-Cayuga Tribe of Oklahoma, Peoria Tribe of Indians of Oklahoma, Miami Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Delaware Tribe of Indians, The Delaware Nation, and Seneca-Nation of Indians. A brief summary of the coordination completed in conjunction with CBI's situation assessment follows:

1. June 26, 2014 – FHWA’s letter to the nine tribal representatives included an update on the SR 32 Relocation project status, explanation of the upcoming situation assessment by CBI, and invitation to participate in this collaborative effort. None of the tribes responded with a desire to participate at that time.
2. October 1, 2014 – FHWA’s letter to the nine tribal representatives provided them with CBI’s draft situation assessment report and opportunity to provide comments. Three tribal representatives (Peoria Tribe of Indians of Oklahoma, Seneca Nation, Wyandotte Nation) responded with comments and/or the need for clarification about the project, to which FHWA provided responses. Comments from the tribes included the following: 1) from a tribal perspective it makes sense to avoid locations that have a higher potential to contain archaeologically significant areas, especially if there are burials; 2) tribal monitors need to have expertise specific to the Indian tribe affected, and 3) there is a Miami Indian community near Dayton that could be a resource for Ohio historic Miami Village sites.

Resource Agency Coordination

In conjunction with CBI’s situation assessment process, FHWA in coordination with ODOT and USIECR/CBI coordinated with various resource agencies on three occasions. A brief summary of these agency coordination efforts follows:

1. June 3, 2014 – FHWA hosted a webinar (facilitated by CBI) to update resource agencies on the SR 32 Relocation project status and overview of the upcoming situation assessment by CBI. Letters of invitation to the webinar were sent to 49 resource agency representatives on May 20, 2014. One agency (U.S. Coast Guard) submitted a comment letter (dated June 12, 2014) noting that a Coast Guard permit is not required for the project.
2. June 18, 2014 – FHWA extended a letter of invitation to the National Trust for Historic Preservation (NTHP) to participate in CBI’s situation assessment following NTHP’s request in a letter to FHWA dated June 16, 2014. FHWA’s June 18th letter also addressed various concerns NTHP expressed regarding the situation assessment process and future Section 106 involvement.
3. January 7, 2015 – Following review of CBI’s situation assessment, specifically various resource agency perspectives, ODOT in coordination with FHWA determined that greater clarity was needed about the potential impact of the Wild and Scenic Rivers Act (WSRA) on the feasibility of various approaches to the SR-32 Relocation Project. An interagency meeting facilitated by CBI was held on January 7, 2015, involving representatives from ODOT, FHWA, the U.S. Department of Interior National Park Service (NPS), the Ohio Department of Natural Resources (ODNR), CBI/USIECR, and members of the consultant team. The meeting included a field review of the project area, presentations by ODOT on the SR 32 Relocation Project and NPS on Section 7(a) of the WSRA, and a discussion period. Key topics of discussion/clarification focused on: relationship between a Section 404 permit under the Clean Water Act and a Section 7(a) WSRA permit; evaluation of archaeological/cultural impacts under Section 7(a); relationship between state and federal scenic river law; applicability of Section 7(a) to a potential clear span bridge over the Little Miami River; project impacts on tributaries connected to the Little Miami River; integrity of the NEPA process; project funding; and refining the project corridors.

The primary points from the January 7th meeting relative to the SR 32 Relocation Project included the following: 1) early coordination is important to ensure compliance with Section 7(a) of the WSRA; 2) Section 7(a) would be triggered if the project affects the Little Miami River’s bed or bank, and NPS would not be able to issue an approval since Section 7(a) does not allow for mitigation of unavoidable impacts; 3) if the

project affects tributaries of the Little Miami River, a determination would be needed as to whether the project would “unreasonably diminish” scenery, recreation, fish, or wildlife within the protected river area; 4) quarry areas in Newtown may also be subject to evaluation under Section 7(a) if nexus to the Little Miami River mainstem is identified; 5) although the evaluation criteria is the same under Section 7(a) for every project, in practice it may be easier to obtain approval for modifying an existing structure over creating a new one, because the baseline is the condition of the river or river segment at the time of designation; and 6) it is important to uphold the integrity of the NEPA process and not eliminate project alternatives prematurely.

Risk Assessment

ODOT prepared a SR 32 Relocation Heat Map/Risk Assessment to assist in decision-making on future project development (attached). The assessment included twenty-eight risk categories identified from previous project studies and input/findings from the CBI situation assessment and resource agency and tribal comments received. Risk categories revolved around regulatory issues related to Section 4(f), Section 106, Section 6(f), WSRA Section 7(a), design/construction challenges, and hazardous materials liabilities, as well as public and resource agency input. For each risk category, ODOT considered the necessary work, time and cost needed to address that risk, and the likelihood and magnitude (impact) of occurrence.

About 78 percent of the risks evaluated fell within the “high” end of the assessment spectrum, indicating substantial difficulty (time/cost) to overcome and potential on-going concerns. The risk analysis identified four categories as having the highest risk for the SR 32 Relocation project. These identified “highest” risks were each associated with new corridors through the Little Miami River valley:

1. *Inability to obtain concurrence from Native American Tribes to impact resources within the Little Miami River valley.* Because of the government-to government-sovereign relationship FHWA has with Native American tribes, it would be difficult to move the project forward without tribal concurrence. In addition, archaeological resources in the valley would be considered for preservation in-place, and therefore treated as a Section 4(f) resource that must be avoided. Consequently, it is likely that the project cannot move forward with an alternative that includes a new relocated SR 32 in the river valley area, and ODOT will have to consider alternatives outside the existing study area.
2. *Inability to advance alignments through the Little Miami River valley due to viewshed impacts to the Mariemont National Historic Landmark (NHL).* Viewshed impacts for the NHL would be very difficult to mitigate, and would require extensive public and agency input. Consequently, the current northern study corridor is not likely feasible due to direct impacts to the NHL, and corridors on new location through the river valley within the viewshed, as a whole, are at risk. ODOT will have to consider alternatives outside the existing study area.
3. *Construction below the ordinary high water mark for the Little Miami River and its tributaries (potentially including the Newtown quarries) require approval by NPS under the WSRA.* Section 7(a) of the WSRA does not allow for mitigation of unavoidable impacts and thus the project would not be approvable if triggered. To avoid triggering Section 7(a), it would be necessary to span the Little Miami River and all other streams and/or waterways within the project area with a nexus to the Little Miami River, resulting in high construction costs. Consequently, a new alignment with a new river crossing across the broad floodplain/floodway and multiple quarries would not likely move forward due to the high potential for triggering Section 7(a), or high costs associated with Section 7(a) avoidance alternatives.

4. *New alignment impacts to an existing landfill adjacent to the Little Miami River causing future environmental uncertainty and liability issues for ODOT.* If a future release from the landfill were to occur, the impacts to the Little Miami River could be substantial. In addition, ODOT may be liable for millions of dollars in clean-up costs as any highway built on top of the landfill could be seen as the cause of a release. Comprehensive studies would be needed to identify what is in the landfill and what are the risks of a future release. Construction costs through the landfill would also be higher.

Recommendations

Congestion, delay and safety issues still exist in the Eastern Corridor, and transportation improvements within Segment II/III are needed as part of the overall multi-modal program to address regional network inadequacies and poor linkage to important economic, recreational and employment centers. The original Tier 1 corridors for Segment II/III were developed to address these regional transportation needs. Although feasible at that time, new information from public and agency input and further study has led to the conclusion that corridors on new alignment through the Little Miami River valley are not reasonable due to their potential for significant environmental impacts.

ODOT's recommendations for Segment II/III are presented below. The goal of these recommended changes to the project development approach is to better integrate/balance regional transportation needs with environmental protection, public interest on the quality of life of their communities, and ability to support economic development opportunities of the broader region.

- Do not expend additional time and resources on previously considered new alignment corridors through the Little Miami River valley at this time due to anticipated significant environmental impacts and public/agency controversy.
- Consider alternatives that have the potential for lower overall impacts, focusing on improvements to existing transportation corridors rather than new alignments through this environmentally complex area, as shown on Figure 3. Alignment alternatives on existing SR 32, US 50 and other roadways could include: adding turn lanes, interchange improvements, widening to enhance capacity; minor realignments; improving signal timing and/or coordination; installing new signal(s); and other improvements.
- Revisit and update the project's purpose and need to verify and prioritize problem areas, redefine the study area as needed, and focus on what can be reasonably addressed by the project given the significant environmental constraints.
- Investigate the possibility of separating roadway Segment II and Segment III of the Eastern Corridor into two independent projects:
 - Segment II, extending west from the Newtown area to the Red Bank corridor, would involve an expansion of the original study area to include portions existing SR 32, SR 125/Beechmont Levy, Wooster Road, and US 50 through Mariemont. Although many of the same environmental constraints occur in these corridors as along the Little Miami River valley, the potential for major impacts along existing alignments is expected to be lower.
 - Segment III, extending east from the Newtown area to the Eastgate area of Clermont County, would involve developing transportation improvements to help support the economic needs of the Ancor area. Segment III has far less potential for major environmental impacts and could be ready for implementation much quicker than Segment II.

Note: The exact beginning and endpoints for Segments II and III would be determined as part of the process to consider separating Segments II and III into separate projects.

These recommended changes to Segments II and III will also result in a more expedited approach/study of the Oasis rail transit component of the Eastern Corridor. Originally tied to the relocated SR 32 roadway through the Little Miami River valley, development of the Oasis rail transit could now proceed as a stand-alone project.

Next Steps

Public involvement has been a key effort in the development of the Eastern Corridor program since its inception. An active and evolving group of stakeholders from local communities, local and regional government, environmental interest groups, and state and federal agencies was engaged through all phases of project development, from the MIS planning and land use vision work, through the Tier 1 EIS/ROD and green infrastructure planning, and into early Tier 2 studies. Through the early Tier 2 studies, CBI's situation assessment and public and agency input received to date, ODOT obtained input and carefully considered current stakeholder concerns to develop a recommended plan for moving forward with this important component of the Eastern Corridor.

Immediate anticipated next steps include the following:

- Public Information Meeting to provide an opportunity to review and comment on ODOT's recommended plan for moving Segment II/III forward - *August 6, 2015*
- Finalize the recommended plan based on public input – *late August 2015*
- Update/revisit the project purpose and need to prioritize problem areas and needs that can be addressed by the project – *early 2016*
- Evaluate dividing Segment II and III into independent projects for further development – *early 2016*

Following completion of the updated purpose and need, specific study details and schedules will be developed for each project to complete environmental clearance and detailed design. Project construction will be phased to address priority needs and available funding. Additional details will be provided as they become available. Throughout project development, ODOT will continue to encourage public and stakeholder involvement through opportunities such as (but not limited to):

- Updating the project website with minutes from the Project Team Monthly Status Meetings,
- Updating the project website with minutes from the Quarterly Eastern Corridor Status Meetings with the project team, local funding partners and public stakeholders,
- Context and Aesthetic Committee Meetings with representatives from the project team, local funding partners and specific public stakeholders (approximately every 6 months), and
- Public Information Meetings per ODOT's project development process for each major decision point: i.e., Purpose and Need; Feasibility Study; Alternative Refinements; and NEPA documentation.

References

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- Federal Highway Administration. 2005. Tier I Environmental Impact Statement, Eastern Corridor Multi-Modal Projects, Hamilton and Clermont Counties, Ohio; PID 22970. Columbus, Ohio.
- Federal Highway Administration. June 2006. Record of Decision for HAM-SR32-0.00, Eastern Corridor Multi-Modal Projects – Tier 1, ODOT PID 22970, Hamilton and Clermont Counties, Ohio. Columbus, Ohio.
- Meisner + Associates. 2002. Existing and Future Land Use, Eastern Corridor Land Use Vision Plan. Cincinnati, Ohio.
- Meisner + Associates, Balke American and Gray & Pape, Inc. 2005. Eastern Corridor Green Infrastructure Concept Master Plan. Cincinnati, Ohio.
- Ohio Department of Transportation. March 2012 and December 2012. Feasibility Study, Segment II/III Relocated SR 32, Eastern Corridor Multi-Modal Projects, HAM/CLE-32F-2.50/0.00, PID 86462. Cincinnati, Ohio.

Figures

- Figure 1. Segment II/III Tier 1 Corridors (2006)
- Figure 2. Feasibility Study Revised Study Corridors (2012)
- Figure 3. Segment II/III Moving Forward (2015)

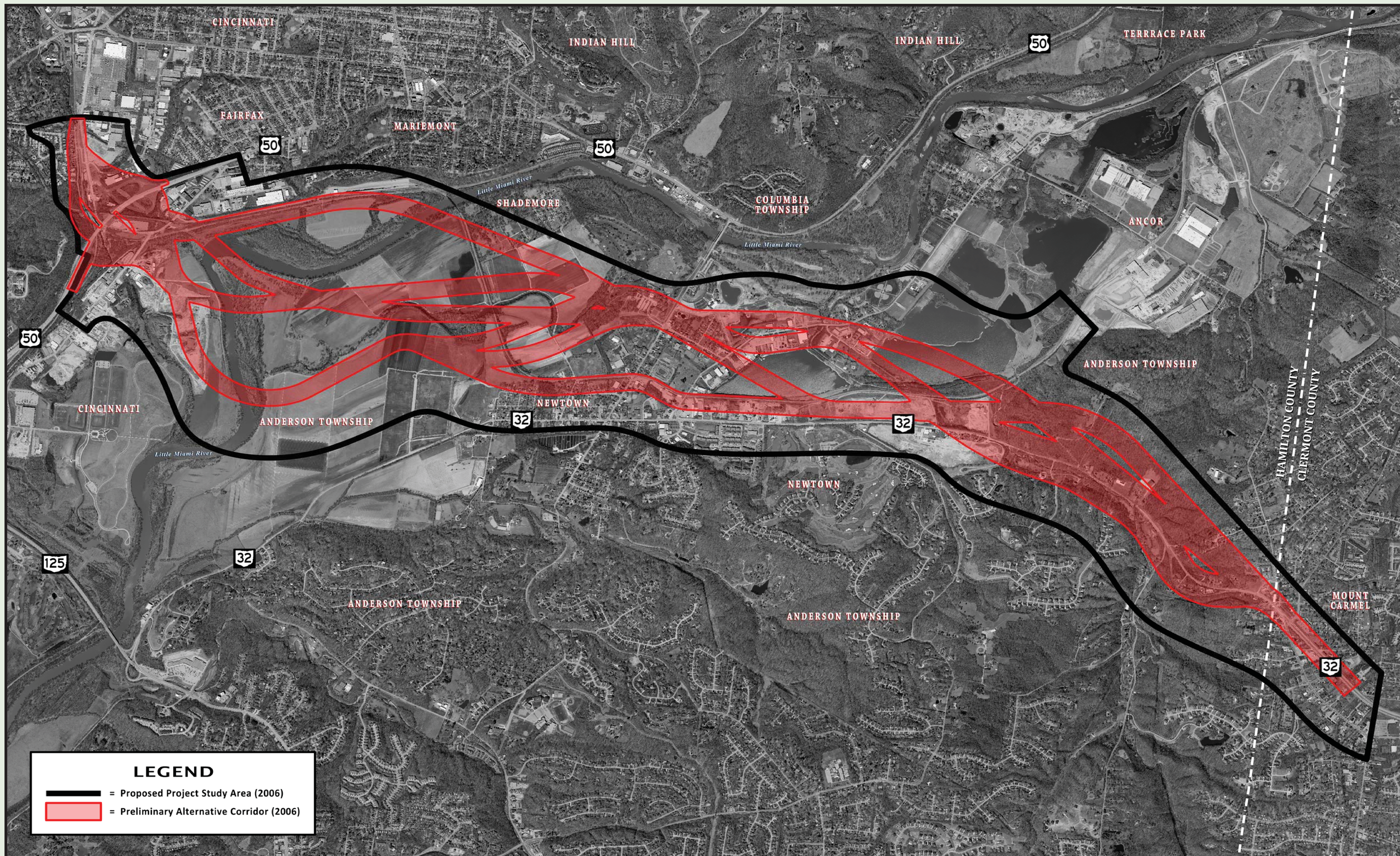
Attachment

ODOT Risk Assessment Summary



Figure 1

Where We've Been: Tier 1 Proposed Corridors (2006)





Where We've Been: Revised Corridors (2012)

Figure 2

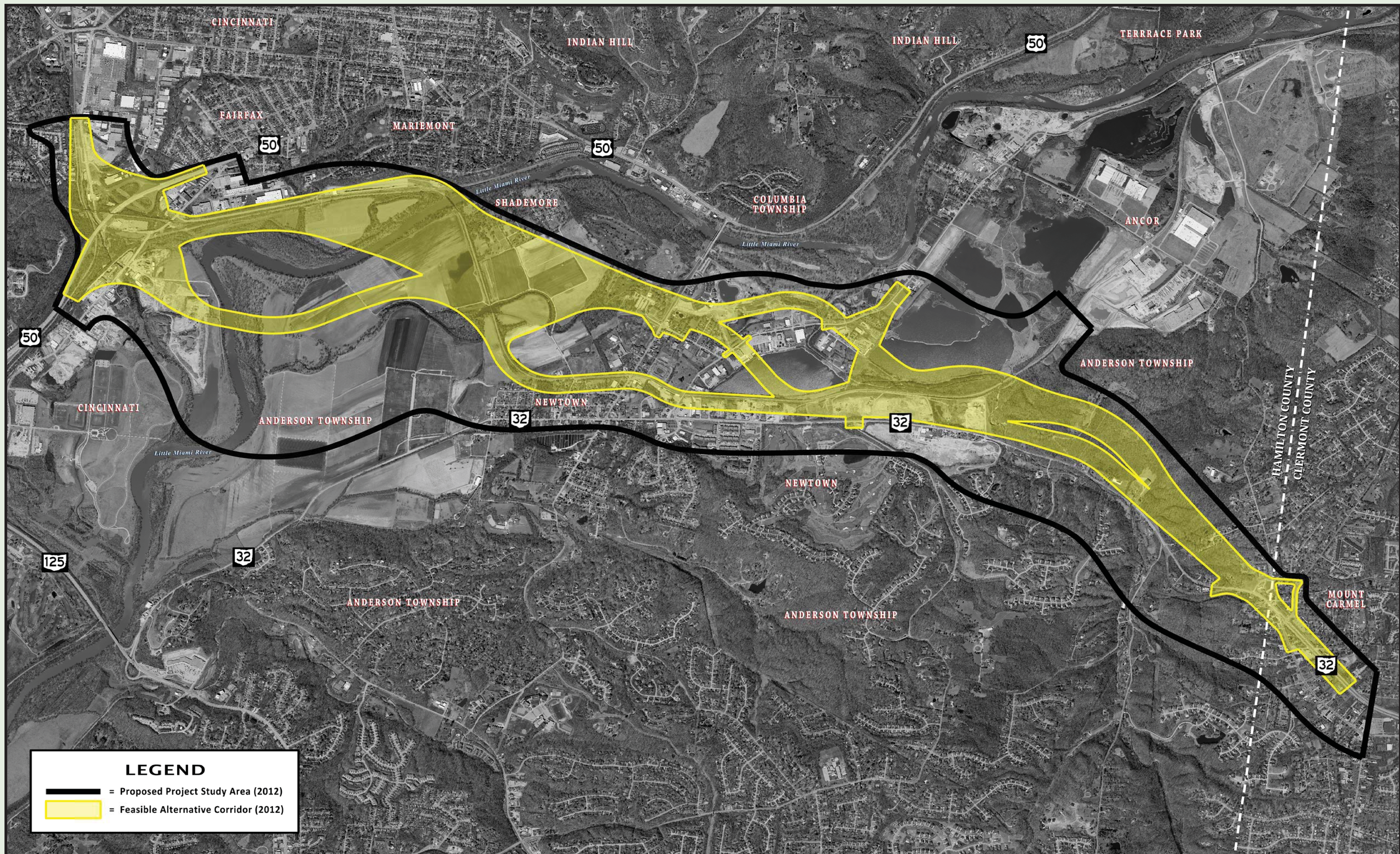
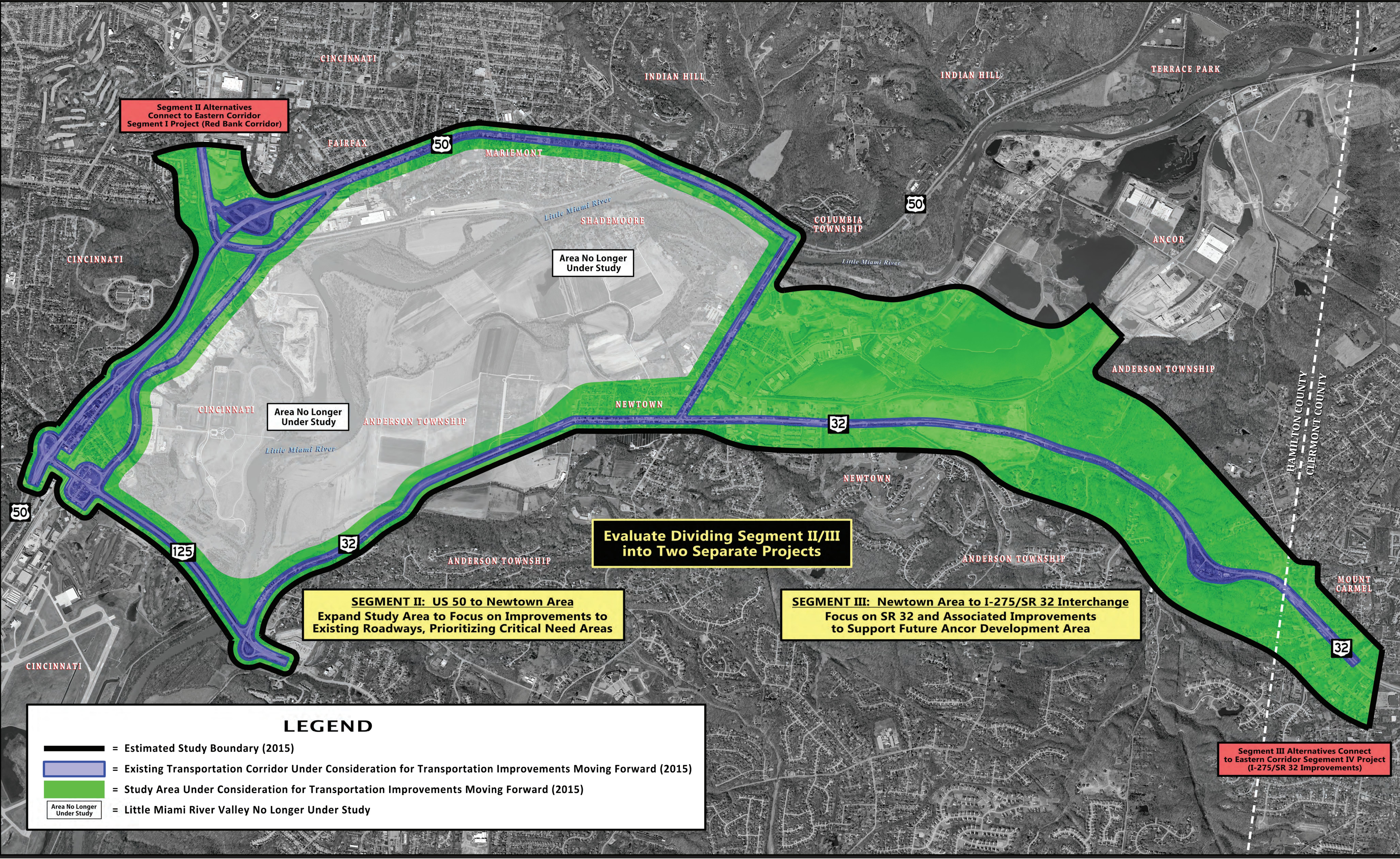


Figure 3



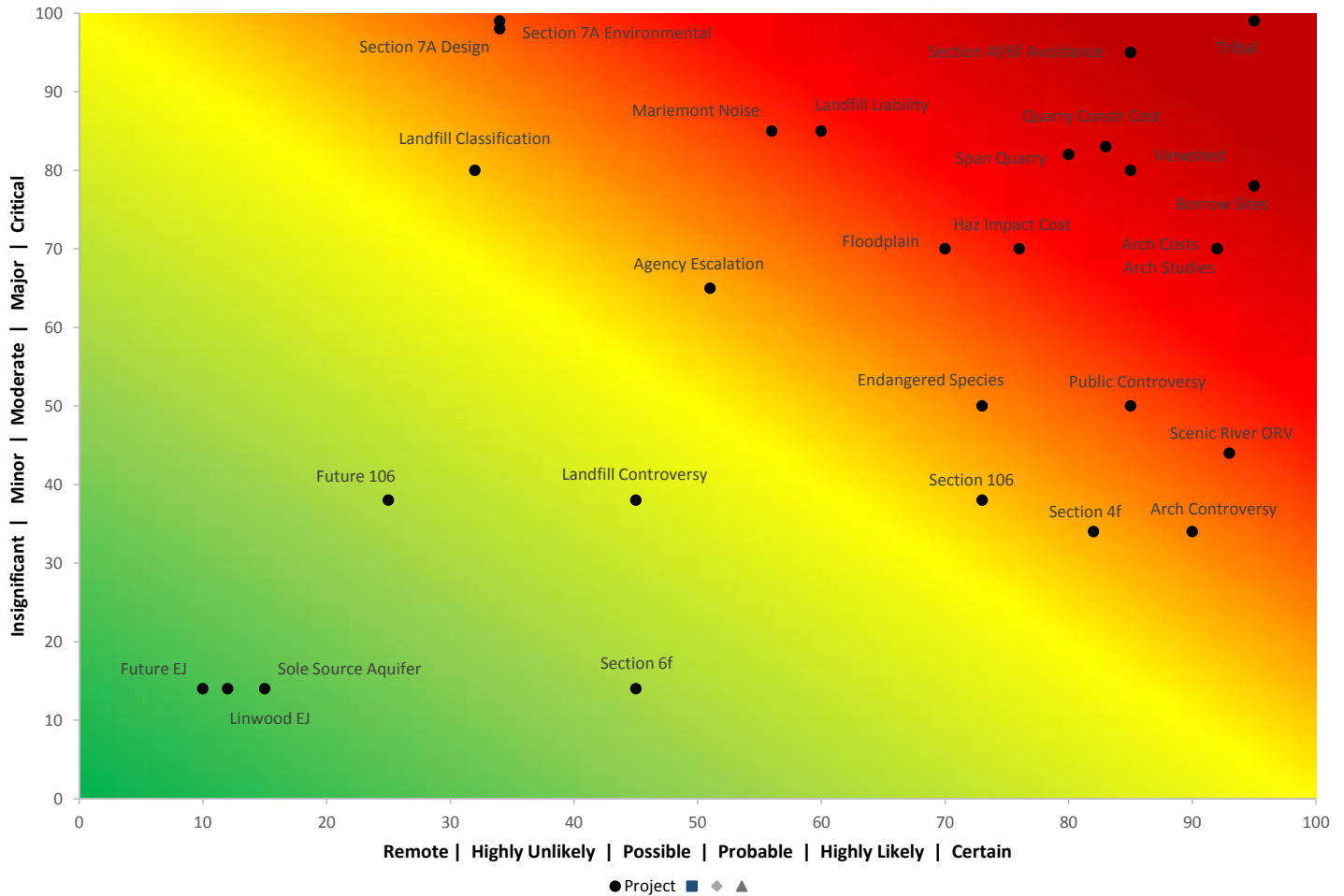
Moving Forward (2015)



ATTACHMENT

ODOT Risk Assessment Summary

Eastern Corridor Segment II - III Risk Heat Map All Alternatives



Definitions

Probability of Occurrence

- > Remote - Probability of less than 10%
- > Highly Unlikely - Probability between 10% and 35%
- > Possilbe - Probability between 36% and 50%
- > Probable - Probability between 51% and 60%
- > Highly Likely - Probability between 61% and 90%
- > Certain - Probability above 90%

Magnititude of Occurrence

- > Insignificant - Easily handled within the normal course of the process with no additional costs. (Impact level < 10)
- > Minor - Some disruption within the normal functions. Manageable risk with minimum estimated cost. (Impact level between 11 and 25)
- > Moderate - Immediate time/resource reallocation will be necessary with a moderate estimated cost. (impact level between 26 and 50)
- > Major - Operations are severely disrupted and significant risk of failure to part of the project is possible. (impact level between 51 and 75)
- > Critical - Significant ongoing concerns exist with the project and the risk is classified as critical (Impact level > 75)

Eastern Corridor Risk Register								
							Qualitative Rating	
	Risk Identification		Risk Response				Project	
Reference	Risk Category	Risk Identification	Risk Response= necessary work and steps to address the identified risk.	Trigger	Time Needed to Address (Months)	Estimated Cost to Address	Probability of Occurrence	Magnitude of Occurrence
Viewshed	Section 4f and 106	Viewshed impacts on the NHL of Mariemont that can't be mitigated.	Visual assessment study, enough design to be able to identify alignment and profile. Extensive public and agency involvement. Develop Effects document for CR and establish a MOU with consulting parties on Mariemont NLM.	Failure to establish an approved MOU w/consulting parties and agencies on Mariemont NLM	24-32	\$ 500,000	85	80
4f/106 Avoidance	Section 4f and 106	Alternatives to be considered outside of current Tier 2 boundaries because of section 4f and 106. Avoidance alternatives will increase time and cost. Could also result in the revisit of purpose and need.	Development of alts outside of viewshed of the resource. New study areas to be determined and all necessary project development studies (modeling, NEPA studies, etc.) considered. Revisit Purpose and Need as needed.	Adverse impacts to NLM and section 106 resources (preservation in place)	24-36	\$ 4,000,000	85	95
Tribal	Section 4f and 106	Native America Tribes not in concurrence with impacts, studies or project which results in extensive coordination at the highest level of gov't agencies. Leads to a high concern area with an unknown conclusion.	Conduct extensive coordination with tribes to determine minimization alternatives. (Includes many one-on-one meetings with the tribes, consultant support efforts and high gov't agency involvement.)	Development of a Native American Programmatic Agreement	24-28	\$ 750,000	95	99
Archy costs	Section 4f and 106	Archaeological studies for NEPA/PE require extensive time and costs to address.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Conduct archaeological surveys in a phased approach. Ensure extensive coordination with public and agencies.	Known alignment/foot print/profile and an approved Native American Programmatic Agreement	18-24	\$ 1,000,000 to 3,000,000	92	70
Archy controversy	Section 4f and 106	Extensive Agency and public controversy of archeological impacts increase time to coordinate and resolve issues.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Conduct archaeological surveys in a phasing approach. Ensure extensive coordination with public and agencies.	Known alignment/foot print/profile and an approved Native American Programmatic Agreement	18-24	\$ 300,000	90	34
Archy Studies	Section 4f and 106	Archaeological studies for Construction/mitigation requires extensive cost and time to address.	Secure ROW and conduct extensive archaeological studies to address sites prior to construction.	Approved Native American PA, preferred alignment, completed CR studies and secured ROW	24-36	\$ 20,000,000	92	70
7A Design	Design	Alternatives that impact the LMR or tribes below OHWM that cannot be avoided and trigger 7A.	From the design perspective, develop alternatives that allow full span of the resources.	Design information that shows that it can't be built w/o impacts below the OHWM	8 to 12	\$ 750,000	34	98
7A Env.	Scenic River 7A	Alternatives that impact the LMR or tribes below the OHWM that cannot be avoided and trigger 7A.	If 7A is triggered, the project could not be approved by NPS and thus cannot be constructed.	Design information that shows that it can't be built w/o impacts below the OHWM	8 to 12	Already covered above in Line 11	34	99
4f	Section 4f	Alternatives that impact recreation 4(f) resources resulting in additional time and cost to coordinate.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Known alignment/foot print/profile	16-24	\$ 500,000	82	34
Scenic River ORV	Scenic River 7A	Extensive coordination required to address Scenic River corridor/ORV's and NEPA coordination and studies.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Assess all environmental impacts associated with river and trib corridor. Coordinate with agencies and NPS.	Known alignment/foot print /profile and environmental studies per the PDP	36-48	\$ 500,000	93	44
Mariemont Noise	Section 4f and 106	Noise impacts on the NLM of Mariemont that can't be mitigated.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Conduct extensive noise modeling and testing. Coordinate with public and agencies per PDP process. Investigate noise mitigation options beyond normal PDP approaches (heavy screening, mounds, plantings, etc.).	Known alignment/foot print /profile and environmental studies per the PDP. Adverse impact detemination.	24-36	\$ 250,000	56	85
106	Section 4f and 106	Alternatives that impact other section 106 properties within the study area.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Known alignment/foot print /profile and environmental studies per the PDP	24-36	\$ 400,000	73	38
Future 106	Section 4f and 106	If avoidance alternatives required additional corridor development outside of the current study area, additional Section 106 resources are identified that impact alternatives under development. This would require re-coordination and/or additional effort in design.	If avoidance alternatives force consideration of corridor's outside of the current study area, then additional section 106 studies area necessary. Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Failure to get a Native American PA approved or inability to mitigate for impacts to the NLM or other 4(f) resources.	24-36	Already covered above in Line 6	25	38
Floodplain	Design	Design must address floodway/floodplain requirements which could force higher project and/or structure cost.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and cost estimates and coordinate per normal PDP process.	Known alignment/foot print /profile and hydraulic studies per the PDP	8 to 12	\$ 500,000	70	70

							Qualitative Rating	
	Risk Identification		Risk Response				Project	
Reference	Risk Category	Risk Identification	Risk Response= necessary work and steps to address the identified risk.	Trigger	Time Needed to Address (Months)	Estimated Cost to Address	Probability of Occurrence	Magnitude of Occurrence
Public controversy	Public Involvement	Extensive public controversy will cause increased time and cost to coordinate and address.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. The PI process will be extensive as meetings with small groups will be held as well as large normal NEPA PI meetings. Expect high volumes of comments and tracking of responses. Need active WEB site to Q&A's, etc.	Known alignment/foot print /profile and environmental studies per the PDP	24-36	\$ 1,000,000	85	50
Landfill Controversy	Hazardous Materials	Extensive Agency and public controversy of landfill impacts increase time to coordinate and resolve issues.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. The PI process will be extensive as meetings with small groups will be required as well as the public at large. Will need to ensure agencies approve long term containment plans.	Known alignment/foot print /profile and environmental studies per the PDP	6 to 8	\$ 200,000	45	38
Landfill liability	Hazardous Materials	Alternatives that impact the landfill has a future release that results in clean up or liability considerations.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. Extensive Hazardous Materials studies will be required. Specialty consultants will need to examine landfill drainage and potential for long term run off and drainage.	Complete studies that identify what is in the landfill and research on long term liability associated with building in a landfill.	6 to 8	\$ 200,000	60	85
Hazardous Impact cost	Hazardous Materials	Alternatives that impact the landfill result in a higher cost to develop.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. Extensive Hazardous Materials studies will be required. Specialty consultants will need to examine design to ensure highway is on stable ground if material is not removed.	Known alignment/foot print /profile and environmental studies per the PDP	12 to 16	\$ 300,000	76	70
Landfill classification	Design	Concern that the landfill will contain material other than construction debris that will result in a higher cost to develop and build.	Extensive Hazardous Materials studies will be required to ensure the proper classification will be given. If landfill is classified as hazardous, then extra protections will be required to ensure LMR is not impacted by the project both during construction and for the next 50+ years.	Studies that identify what is in the landfill and research on long term liability associated with building in a landfill.	12 to 16	\$5,000,000 to \$10,000,000	32	80
Linnwood EJ	EJ	Alternatives that impact potential EJ populations in Linnwood, result in higher cost and time to develop.	If avoidance alternatives require to reconsider the Beechmont Levy. Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Failure to get a Native American PA approved or inability to mitigate for impacts to the NLM or other 4(f) resources.	8 to 10	\$ 100,000	12	14
Future EJ	EJ	If avoidance alternatives required additional corridor development outside of the current study area, additional EJ populations are identified. This would require re-coordination and/or additional effort in design.	If avoidance alternatives force consideration of corridor's outside of the current study area, then additional EJ studies are necessary. Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Failure to get a Native American PA approved or inability to mitigate for impacts to the NLM or other 4(f) resources.	24-36	Already covered in Line 6 above	10	14
Endangered Species	Endangered Species Act	Alternatives that impact the endangered species require higher costs and time to address.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Known alignment/foot print /profile and environmental studies per the PDP	14-16	\$ 500,000	73	50
Borrow Sites	Construction	Large portions of the study area cannot be used for borrow area due to cultural resource issues. This increases cost and time for construction.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. Borrow areas (even out of the project area) may require environmental review.	Known alignment/foot print /profile and environmental studies per the PDP	12 to 14	\$ 20,000,000	95	78
Sole Source	Design	Alternatives have an extensive impact to sole source aquifer that require higher cost to develop the project.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Known alignment/foot print /profile and environmental studies per the PDP	4 to 6	\$ 25,000	15	14
Span quarry	Design	Ecological studies show a water connection to the LMR which results in the requirement to span project area wetlands, open water and tribs which results in a higher cost to the project.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. Will require Ecological JD to be performed and coordinated with the agencies. If there is a water connection to the LMR, then spanning the resource will be required.	Known alignment and foot print and ECO studies (JD) per the PDP	8 to 10	\$ 250,000	80	82
Quarry Const cost	Design	Impacts to the Quarries require additional cost to construct.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process. Quarries are 70' deep and several hundred feet across. If a full span is required this will result in a large bridge and substantial cost.	Approved JD	12 to 14	\$ 20,000,000	83	83

							Qualitative Rating	
	Risk Identification		Risk Response				Project	
Reference	Risk Category	Risk Identification	Risk Response= necessary work and steps to address the identified risk.	Trigger	Time Needed to Address (Months)	Estimated Cost to Address	Probability of Occurrence	Magnitude of Occurrence
6(f)	Section 6f	Alternatives that impact Section 6f could result in additional time necessary to coordination and cost to mitigate any impacts.	Develop Alignments to the detail necessary to determine footprint impacts (may require up to stage 1 in some areas). Determine impacts and coordinate impacts per normal PDP process.	Known alignment/foot print /profile and environmental studies per the PDP	4 to 6	\$ 50,000	45	14
Agency Escalation	Agency	Project impacts are elevated to the highest levels within gov't agencies and as a result, other projects are impacted by changes in relationships or processes.	For the level of issues on the EC, specially communication efforts will be required to ensure all levels of gov't agencies are kept up to speed as the project develops, not just when issues are elevated. This includes weekly/monthly updates, special meetings and constant coordination efforts.	Unresolved issues or failure to gain approve on the Native American PA	12 to 18	Unknown	51	65
Definitions					Definitions			
Reference: Unique identifier assigned to each risk.								
Risk Category: Categorization of risks by area of project affected, source of risk or other useful category.					Probability of Occurrence			
Risk Identification: The risk stated in a complete sentence which states the cause of the risk, the risk, and the effect the risk causes to the project.					> Remote - Probability of less than 10%			
Risk Response: The action which is to be taken if this risk occurs.					> Highly Unlikely - Probability between 10% and 35%			
Trigger: Something which indicates that a risk is about to occur or has already occurred.					> Possible - Probability between 36% and 50%			
Probability: The likelihood that a risk will occur (on a scale from 0 to 100).					> Probable - Probability between 51% and 60%of less than 10%			
Magnitude: The impact of the risk on the project if the risk occurs (scale Risk from 0 to 100).					> Highly Likely - Probability between 61% and 90%			
					> Certain - Probability above 90%			
					Magnitude of Occurrence			
					additional costs. (Impact level < 10)			
					> Minor - Some disruption within the normal functions. Manageable risk with minimum			
					> Moderate - Immediate time/resource reallocation will be necessary with a moderate			
					> Major - Operations are severely disrupted and significant risk of failure to part of the			
					> Critical - Significant ongoing concerns exist with the project and the risk is classified			