

MILLCREEK PATHWAY FEASIBILITY STUDY

August 2021



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Concept Plans

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EXISTING CONDITIONS & ANALYSIS



INTRODUCTION

The purpose of this feasibility study is to explore potential pathway alignments from the intersection of McKennans Church Road and Duncan Road at the Delcastle Recreational Park to the Ashland entrance on and Hercules Road north of the Greenville Overlook residential development in New Castle County, Delaware. The pathway will link segments N07 and N24 as shown in **Figure 1**.

The map was prepared as a part of the Newark to Wilmington Trail Study published by the Delaware Department of Transportation (DelDOT) in 2014. That study evaluated routes across northern New Castle County at a high level and classified a pathway along Millcreek Road and Hercules Road as the highest level of difficulty for implementation. In 2021, DelDOT hired Whitman, Requardt & Associates, LLP (WRA) to conduct a pathway feasibility study for segments N07 and N24. Implementing a pathway in this area requires an understanding of the physical and social context.



Figure 1: Map showing segments N07 and N24 from the 2014 Newark to Wilmington Trail Study

The first step of this study is to document the existing conditions and identify the opportunities and constraints. This analysis will assist in the development of pathway alignment alternatives and further identify the next steps for this project including conceptual design, stakeholder involvement and construction. As of the date of this report, funding is not in place for any of these subsequent phases of work.

SITE AREA CONTEXT

The main land uses of the study area are single-family residential developments, major roadways and open space. Publicly owned property and private open space are also present.

The study area is located in the section of the Piedmont Region that has areas of steep grades as the hills transition to flatter areas of the Atlantic and Gulf Coast Plain Region. The grades are more challenging on the east side of Hyde Run, the stream that runs through the study area.

The majority of the natural resources, including streams and wetlands, in this study area are east of Newport Gap Pike on the State owned property and the Greenville Overlook private open space parcels. Hyde Run, a tributary to Mill Creek, flows in a general southeast direction through the project area. Additionally, wetlands, the 100-year floodplain and mature trees exist in this area. **Figure 2** is an aerial photograph that shows the existing land uses, property lines, and natural resources in the study area.

For this project, the main utilities are overhead utilities along McKennans Church Road, Newport Gap Pike and Hercules Road. A major sanitary sewer line is located along Hyde Run.

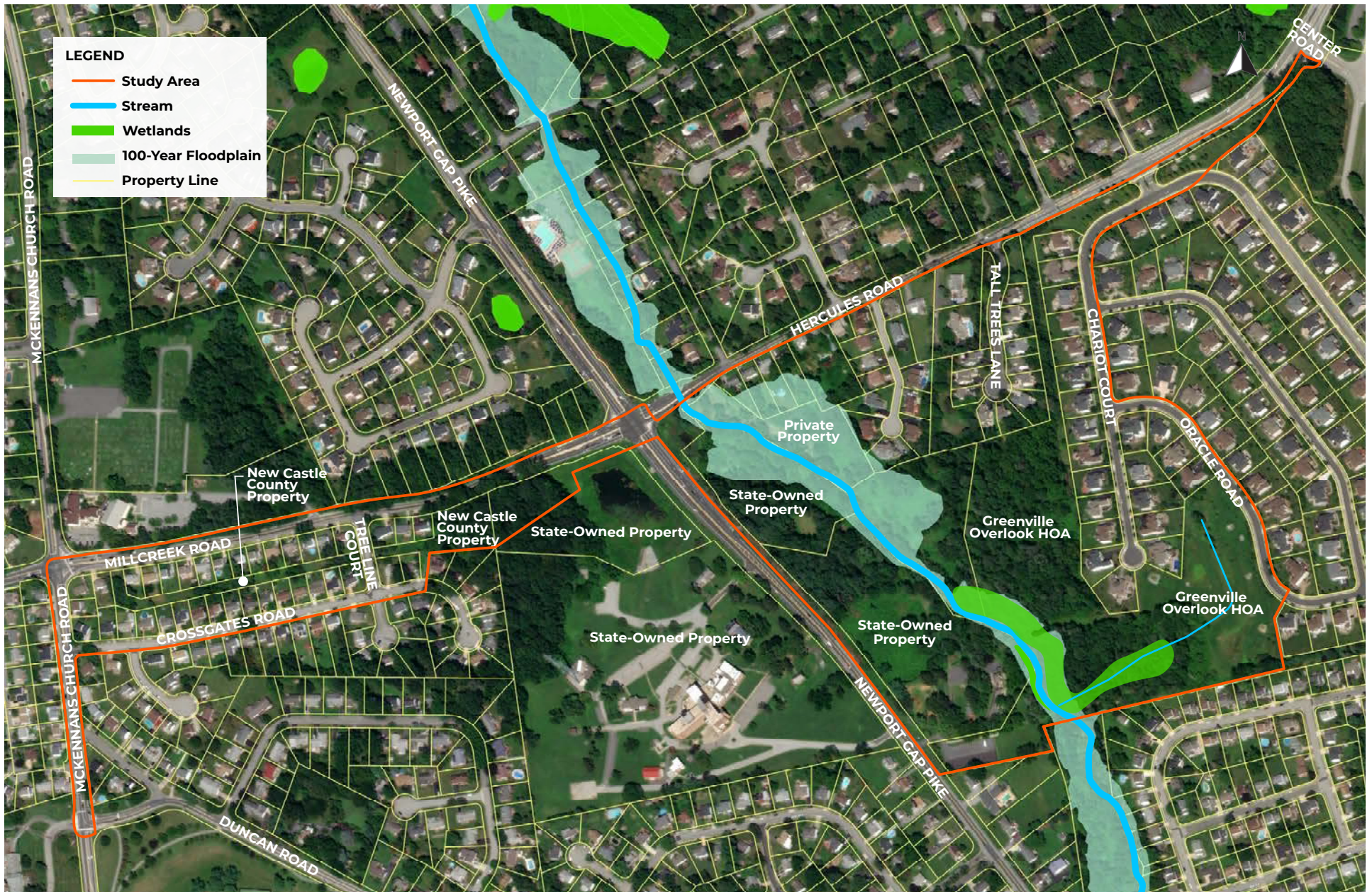


Figure 2: Aerial photograph showing existing land uses, natural resources, property lines and project study area limits

OPPORTUNITIES & CONSTRAINTS

The opportunities and constraints in the study area inform pathway development. The main opportunities for this project include:

- Publicly owned property
 - County owned open space parcel in the Crossgates development
 - Cross Gate Park
 - State-owned property east of Newport Gap Pike
 - DeIDOT roadway right-of-way
- Existing driveway on state-owned property
- Existing disused driveway bridge over Hyde Run
- 50' landscape buffer, 20' pedestrian easement and sewer easement within Greenville Overlook open space
- Low stress residential development streets with existing sidewalks; these streets are suitable for walking and bicycling as they are

The main constraints include:

- The narrow right-of-way on McKennans Church Road and Millcreek Road
- Existing mailboxes, drainage inlets and areas for trash pickup along McKennans Church Road and Millcreek Road
- The existing slopes near the stormwater basins at the Millcreek Road and Newport Gap Pike intersection.
- Historic home close to curb on Hercules Road
- Tall Trees stormwater management facility and lack of space for adequate path
- Environmental resources: Hyde Run, the floodplain, wetlands and mature trees
- The steep slopes on the east side of Hyde Run to Greenville Overlook development
- Greenville Overlook entrance and stormwater drainage

A selection of photos have been included in this report to highlight some of the opportunities and constraints. **Figure 3** shows their locations of the opportunity or constraint.



Photo 1: View of New Castle County owned parcel between residential homes in Crossgates development



Photo 2: View from existing asphalt path facing east to Cross Gate Park



Figure 3: Aerial photograph with photo locations and callouts of opportunities and constraints within the project study area limits



Photo 3: View of existing asphalt driveway on state-owned property that connects to the existing bridge crossing over Hyde Run



Photo 5: View from Hyde Run facing east towards Greenville Overlook showing county sewer easement and 20' pedestrian easement area



Photo 4: View of existing bridge crossing over Hyde Run

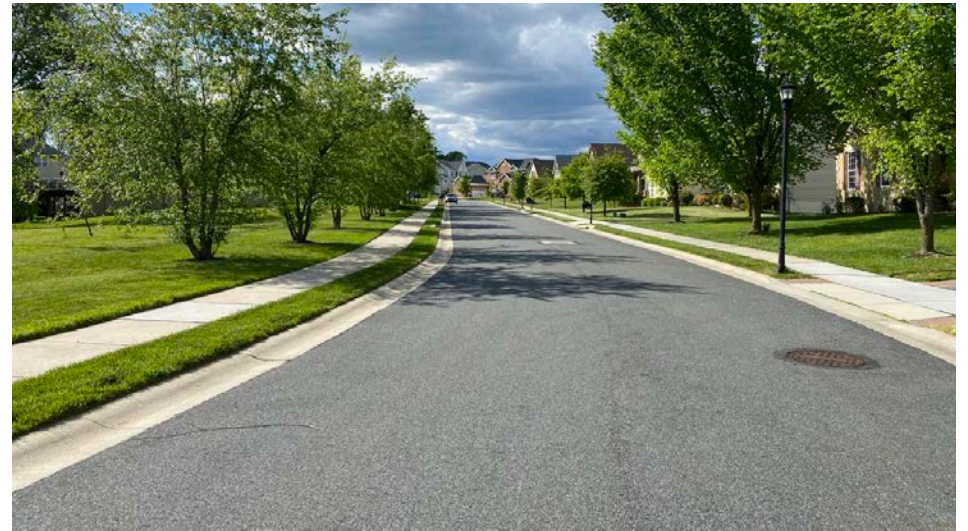


Photo 6: View of typical street and sidewalks in Greenville Overlook development



Photo 7: View of McKennans Church Road facing north towards Millcreek Road intersection from Crossgates Road



Photo 9: View facing west along Millcreek Road near Tree Line Court showing mailboxes, driveways and drainage inlets



Photo 8: View of McKennans Church Road facing south from Crossgates Road



Photo 10: View of emergency spillway and slopes along stormwater basin west of Newport Gap Pike



Photo 11: View of utilities at the southeast corner of Newport Gap Pike and Millcreek intersection with slope challenges along stormwater management facility



Photo 13: Historic house along Hercules Road east of Newport Gap Pike intersection



Photo 12: View of Hyde Run and wetlands south of the existing bridge



Photo 14: View of open space between two homes in Tall Trees with a stormwater management facility in background



Photo 15: Stormwater management area with the headwaters of the tributary to Hyde Run in background



Photo 17: View of landscaping and one of the drainage features along Hercules Road at Greenville Overlook



Photo 16: Entrance signage and treatments at the Hercules Road entrance of Greenville Overlook

Following a project area site visit and the evaluation of the opportunities and constraints, potential alignments were eliminated from the study.

Continuing the path east of the Newport Gap Pike intersection along Hercules Road was eliminated due to the main constraint of a historic home, the limited right-of-way, stream crossing, and existing slopes. An option connecting through open space in the Tall Trees development was eliminated from the study due to the limited space between two homes for an adequate shared use path and the existing stormwater management facility in the open space.

DRIVEWAY BRIDGE EVALUATION

On June 9, 2021, WRA structural engineering staff performed an informal evaluation on the existing driveway bridge over Hyde Run in the project area. The evaluation found that the bridge is in poor condition. The bridge superstructure consists of five steel beams, most of which exhibit impact and horizontal translation of the lower portions of the beams. Three of the beams exhibit severe deformation of the bottom flanges with longitudinal tears. This is evident throughout the length of the beam located at the bridge centerline. In summary, the beams are in bad enough shape that the bridge cannot reasonably be reused for trail purposes.

Further evaluation including analyzing the bridge for hydraulic opening and scour is needed in addition to structural engineering to determine if it is feasible to replace the superstructure by using the existing abutments or new abutments behind the existing abutments, thereby reducing or eliminating the wetland, stream and floodplain impacts.

Additionally, the existing abutments are not parallel, resulting in different span lengths for the beams. With new abutments behind the existing, the new bridge span could then be detailed for a uniform span length.

For the purpose of this study, it will be assumed that a bridge that includes a new superstructure with new abutments behind the existing abutments will be necessary at this location for options that utilize this crossing.



Photo 18: View from the existing driveway on the west side of the existing bridge



Photo 19: View facing upstream toward the existing bridge



Photo 20: View of existing bridge beams with impact and horizontal translation of the lower portions of the beams



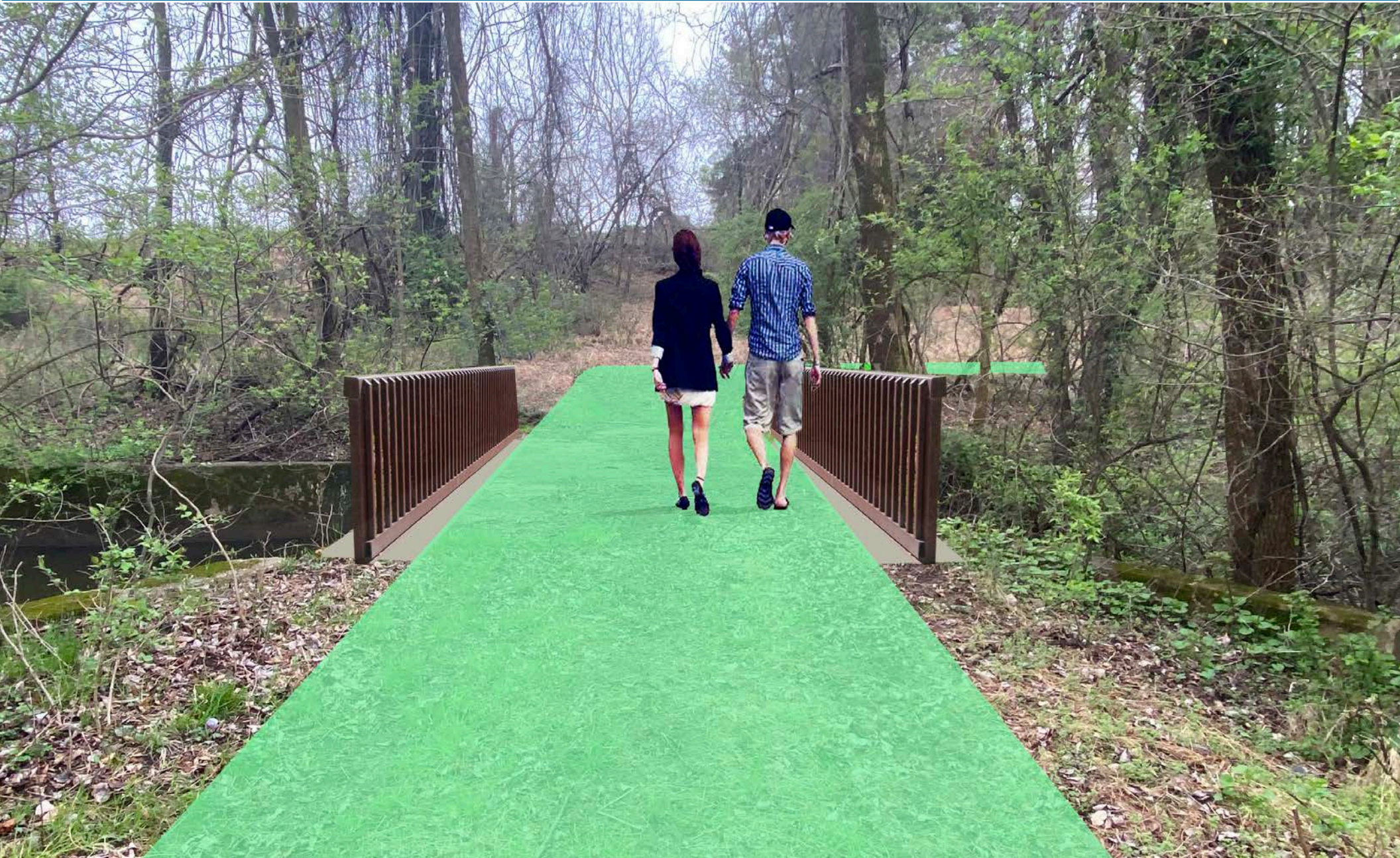
Photo 21: View of existing bridge beams with longitudinal tears



Photo 22: View downstream of retaining walls and weir structure

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POTENTIAL PATHWAY ALIGNMENTS



INTRODUCTION

This section of the study identifies potential pathway alignments for the study area. As stated in the previous chapter, potential alignments are based on desktop research and on-site analysis. Two path typologies, a shared use path and signed shared lane markings (with existing sidewalks for pedestrians), are the proposed treatments. For this study, the area is divided into six segments to provide greater detail and to explore multiple route options for two segments; Segment 2 and Segment 5. The six segments are:

West of Newport Gap Pike

1. McKennans Church Road from Duncan Road to Millcreek Road
2. Millcreek Road to the Cross Gate Park via
 - Option 1 - Shared Use Path on Millcreek Road and New Castle County Parcel
 - Option 2 - Shared Use Path along Millcreek Road and Tree Line Court
 - Option 3 - Signed Shared Lane Markings and existing sidewalks on Crossgates Road
3. Cross Gate Park to Newport Gap Pike

East of Newport Gap Pike

4. Newport Gap Pike to existing bridge
5. Bridge over Hyde Run to Greenville Overlook entrance at Hercules Road via
 - Option A - Existing driveway bridge to 50' Greenville Overlook landscape buffer area
 - Option B1 - Existing driveway bridge to 20' pedestrian easement to Chariot Court
 - Option B2 - Existing driveway bridge to 20' pedestrian easement to Oracle Road
 - Option C1 - New southern bridge to 20' pedestrian easement to Chariot Court
 - Option C2 - New southern bridge to 20' pedestrian easement to Oracle Road
6. Greenville Overlook entrance at Hercules Road to Ashland entrance

Figure 4 shows an overview of the project area with the segment locations. Concept plans showing all of the potential alignments on aerial photographs are included in the **Appendix**.

PATH TYPOLOGIES

Due to the traffic volumes, vehicle speeds, and level of traffic stress on McKennans Church Road, Millcreek Road and Hercules Road, the recommended treatment for the pathway is a shared use path. For all typologies, wayfinding signage is to be implemented to provide directional guidance for people walking and bicycling.

SHARED USE PATH

A shared use path is the preferred treatment to accommodate all types of path users. Shared use paths for this area may be constructed of asphalt or concrete. To be ADA compliant, a shared use path must have a running slope of 5% or less and a cross slope of 2% or less. To provide adequate space for two-way traffic, a 10' width is preferred for the shared use path. Where space is available, a 6' buffer should be provided between the road and the path. The path should maintain an 8' vertical clearance at trees and signs.

SIGNED SHARED LANE MARKINGS

Signed shared lane markings designate streets shared by bicyclists and motor vehicles. Also known as “sharrows,” shared lane markings are the road markings used to indicate the shared lane for bicycles and motor vehicles. Wayfinding signage is used along these routes. For this study, this facility is a viable option on residential development streets that have low speeds and low traffic volumes. There are currently sidewalks along the segments in this study that have this facility as an option.

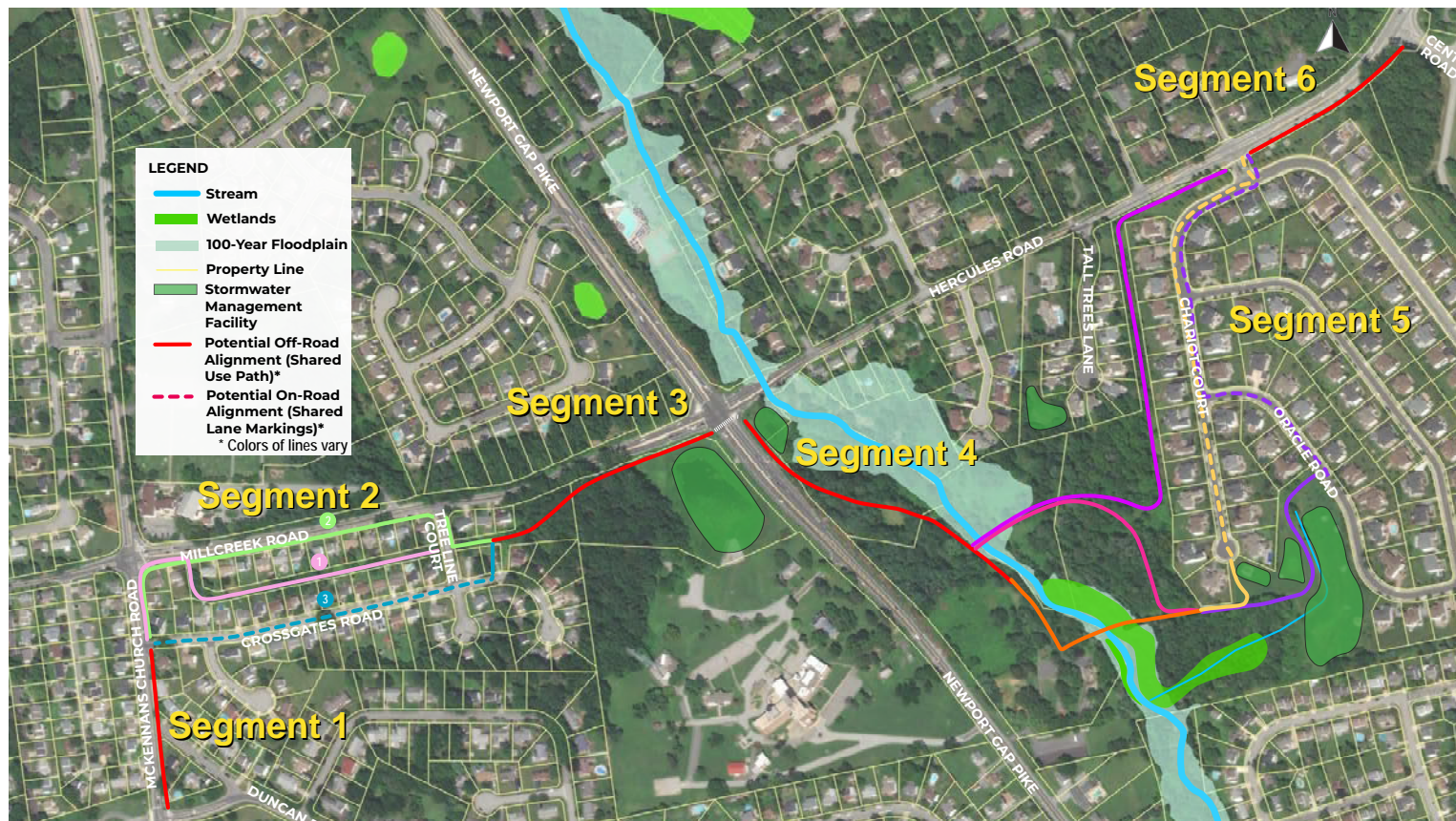


Figure 4: Aerial photograph with segment locations for the project.

POTENTIAL PATHWAY ALIGNMENTS

West of Newport Gap Pike



Figure 5: Potential alignments west of Newport Gap Pike from McKennans Church Road to Cross Gate Park. The segment options include 1, 2 and 3. See the Millcreek Pathway Feasibility Study Concept Plan in the Appendix for entire project area.

Segment 1: McKennans Church Road from Duncan Road to Millcreek Road

This segment of the study area currently has one travel lane each way with shoulders, a center turn lane and sidewalk on the east side. The sidewalk is 5' wide and adjacent to the roadway curb. Constraints for this section include the limited public right-of-way on the east side, the existing mailboxes, driveways and areas needed to accommodate trash receptacles at the curb.

Adjustments to the travel lane and shoulder widths and the relocation of the east side curb would need to occur to accommodate a shared use path along this section. **Figure 6** shows the existing section with the current roadway layout and the proposed section with roadway and curb adjustments. An 8'-10' wide shared use path is recommended for this segment. The goal is maintain a 10' width for the entire segment, but portions of the shared use path may be 8' wide to accommodate mailboxes, trash pickup and potentially the limited public right-of-way at the Millcreek Road intersection. There are two single-family homes along the east side of McKennans Church Road in the study area. Due to traffic volumes and speeds, signed shared lane markings are not recommended as an option for this segment.

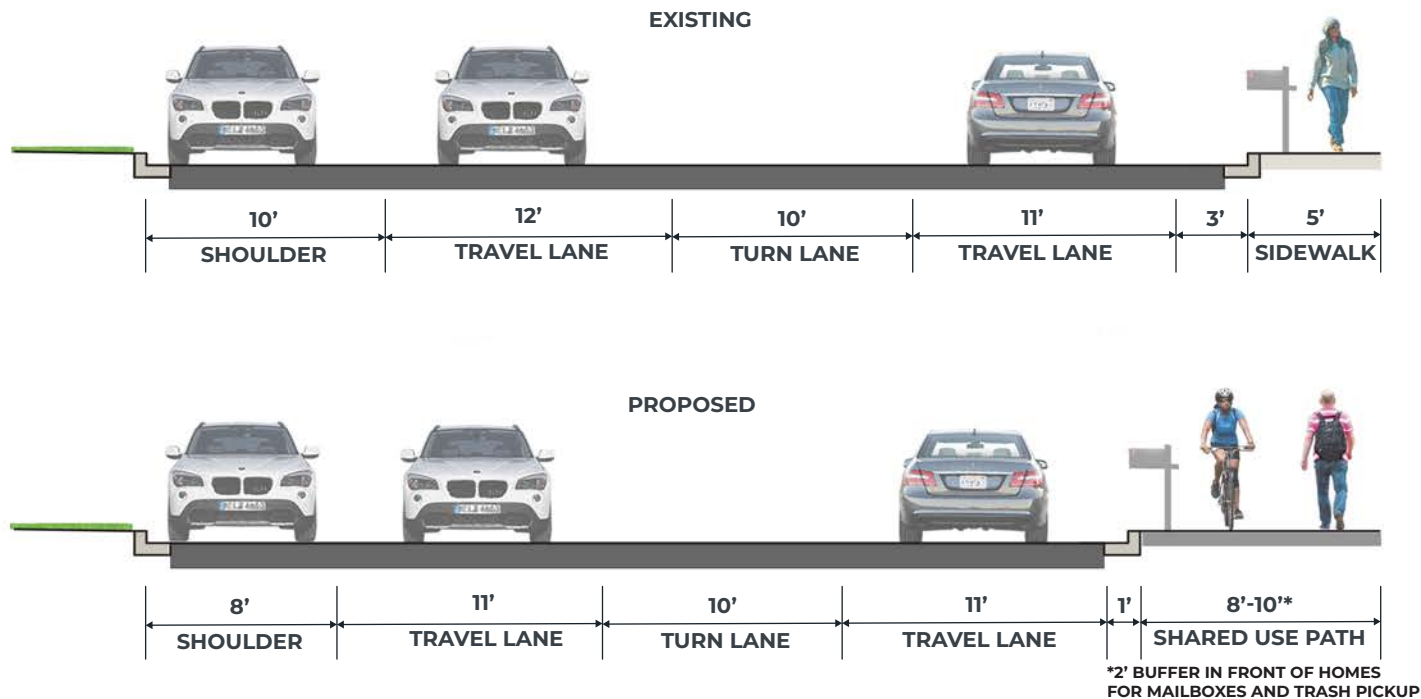


Figure 6: Existing roadway layout and proposed roadway adjustments to include a shared use path on McKennans Church Road from Duncan Road to Millcreek Road.

Segment 2 - Millcreek Road to Cross Gate Park

As the path approaches Crossgates Road and Millcreek Road, there are three route options for the path to continue that were identified in this study. All of these potential alignments should be presented to stakeholders before a preferred alignment is selected for design and construction.

Option 1 - Shared Use Path on Millcreek Road and New Castle County Parcel

This option would continue the shared use path that is proposed for Segment 1 along Millcreek Road to the New Castle County parcel in the Crossgates development. The county open space parcel runs between residential backyards to Cross Gate Park with a mid-block crossing at Tree Line Court. The improvements include a shared use path and plantings for screening. These improvements are shown in the sketches below.



Figure 7: Photo sketch showing shared use path on the county open space parcel with plant screening along the backyards



Figure 8: Photo sketch showing shared use path on the county open space parcel near Cross Gate Park with plant screening

Option 2 - Shared Use Path along Millcreek Road and Tree Line Court

This option would continue the shared use path that is proposed for Segment 1 along Millcreek Road to Tree Line Court. Constraints for this section include the existing mailboxes, driveways and areas needed to accommodate trash receptacles at the curb.

Near the intersection on Millcreek Road, the south side shoulder could be reduced by moving the curb to accommodate the shared use path. **Figure 9** shows the existing section with the current roadway layout and the proposed section shows roadway and curb adjustments. This segment proposes a 10' shared use path with a buffer between the curb and path to accommodate mailboxes and trash pickup. As the path continues further down Millcreek Road to Tree Line Court, the shared use path would have to be located behind the existing curb due to the roadway width. The path would continue on Tree Line Court to Cross Gate Park via the New Castle County parcel. Due to traffic volumes and speeds, signed shared lane markings are not recommended as an option on Millcreek Road.

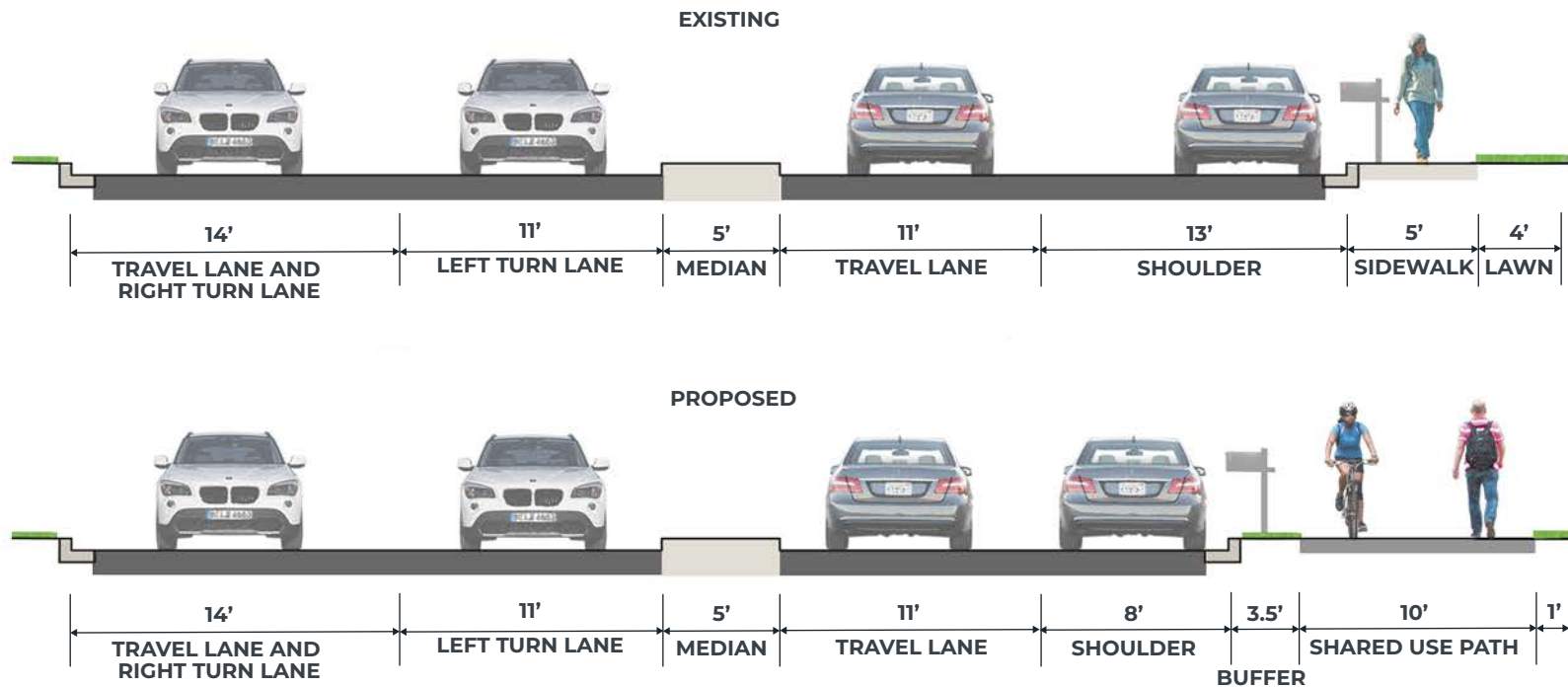


Figure 9: Existing roadway layout and proposed roadway adjustments to include a shared use path on Millcreek Road from McKennans Church Road to Tree Line Court.

Option 3 - Shared Lane Markings and Existing Sidewalks on Crossgates Road

For this option, the shared use path along McKennans Church Road would transition to shared lane markings on Crossgates Road for bicycles and existing sidewalks for pedestrians. Improvements would include sharrows on the roadway and wayfinding signage to direct users along the route. These improvements are shown in the sketches below.

For this option, as the route approaches Cross Gate Park, the on-street route transitions to a widened shared use path to access the park. Another option is to continue the shared lane markings onto Tree Line Court and transition to a shared use path on the New Castle County parcel to Cross Gate Park.



Figure 10: Photo sketch showing signed shared lane markings on Crossgates Road with the existing sidewalks



Figure 11: Photo sketch showing the connection from Crossgates Road to Cross Gate Park

Segment 3: Cross Gate Park to Newport Gap Pike

For all three options in Segment 2, the alignments continue through Cross Gate Park. Cross Gate Park amenities include play equipment and a basketball court that are in disrepair. The shared use path continues through Cross Gate Park on the east side of the existing basketball court. Tree removal would be necessary to implement the shared use path. A further recommendation would be to refurbish the existing amenities at the park to support the new shared use path.

The shared use path continues to the intersection of Millcreek Road and Newport Gap Pike. The path is set away from the roadway to avoid the drainage swales, slopes, and infrastructure along Millcreek Road. As the path approaches the stormwater basin before the intersection, the difficult grades and emergency spillway may call for a retaining wall to accommodate the path.

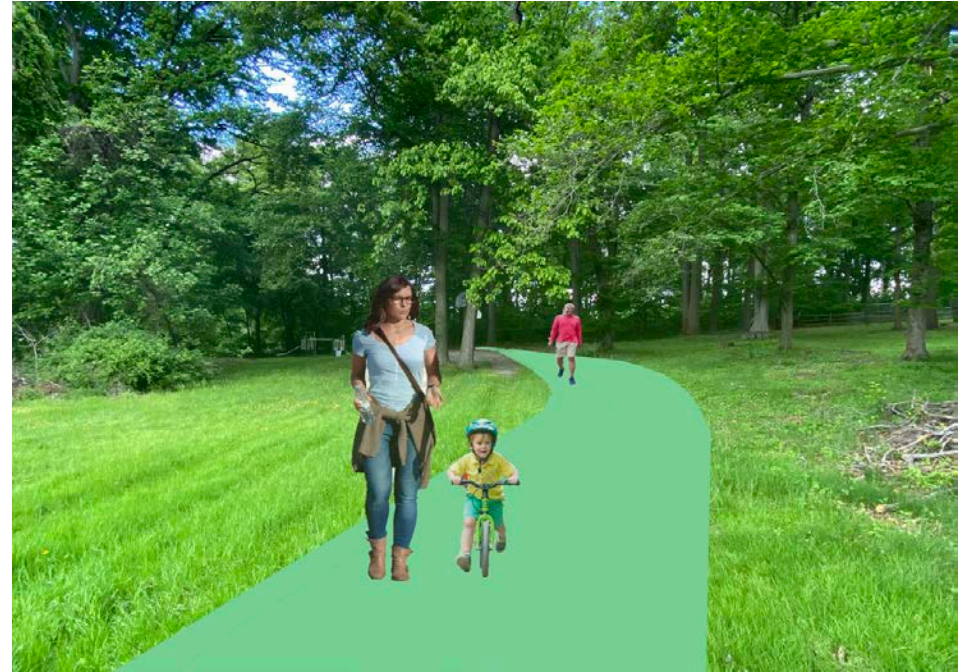


Figure 13: Photo sketch showing shared use path through Cross Gate Park



Figure 12: Photo sketch showing shared use path adjacent to the existing stormwater management facility east of Newport Gap Pike



Figure 14: Photo sketch of shared use path between Millcreek Road and existing stormwater management facility that may require a retaining wall

East of Newport Gap Pike

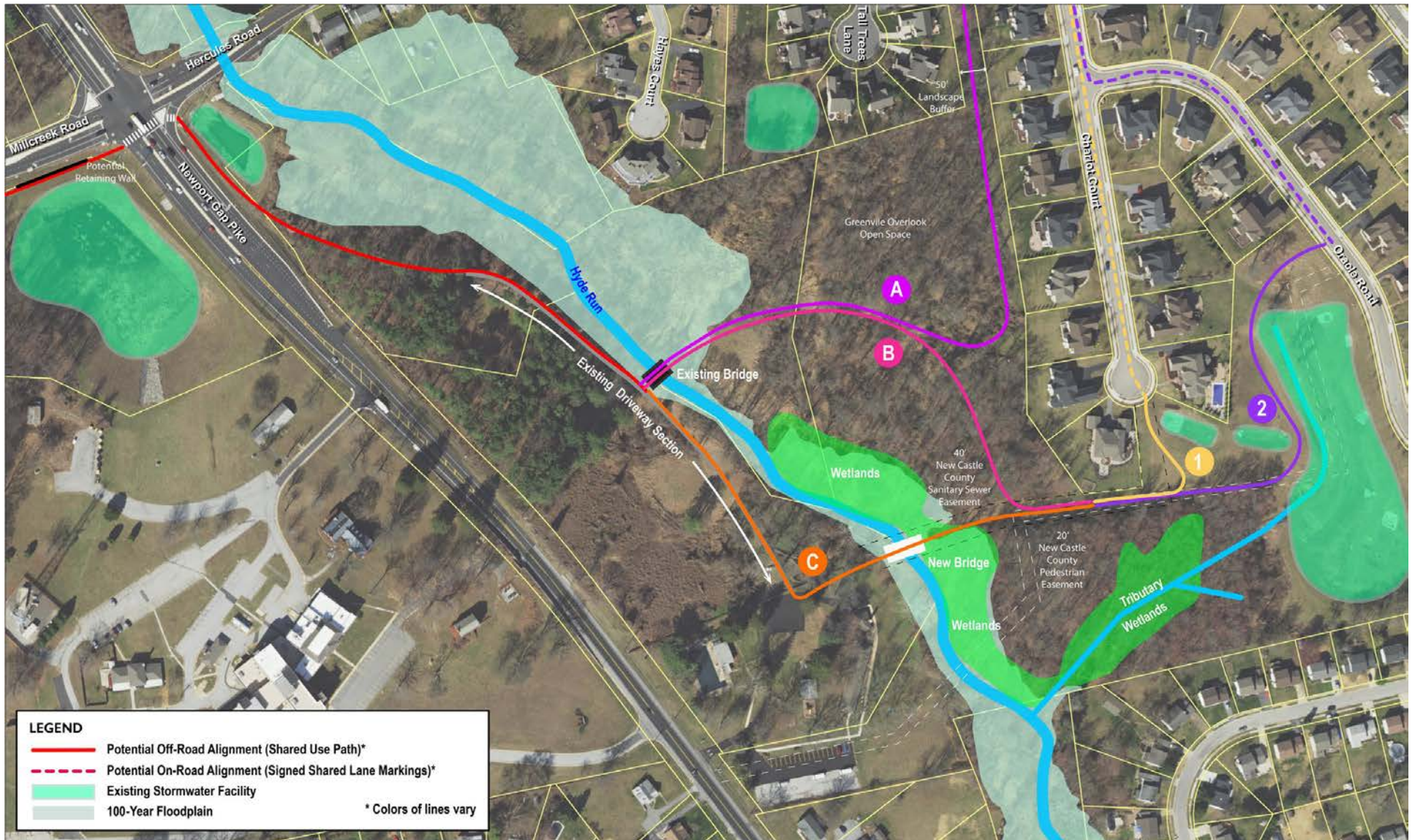


Figure 15: Potential alignments east of Newport Gap Pike to Greenville Overlook. The segment options include A, B1, B2, C1 and C2. See the concept plans in the Appendix for the entire project area.

Segment 4: Newport Gap Pike to existing bridge

After crossing Newport Gap Pike at a signalized intersection with existing crosswalks and pedestrian signals, the path will run south along the existing stormwater management facility. An approximately 15' wide area exists between the toe of slope from the roadway and the edge of the existing stormwater basin. The 10' wide shared use path with necessary grading should be able to fit in this space. The path continues south and turns away from the roadway towards an existing driveway to avoid steep slopes and utility poles, and to utilize an existing asphalt driveway as the path. The existing driveway continues south to an existing bridge over Hyde Run. At this point in the route, there are five potential alignment options, see Segment 5, for the path to continue into Greenville Overlook.

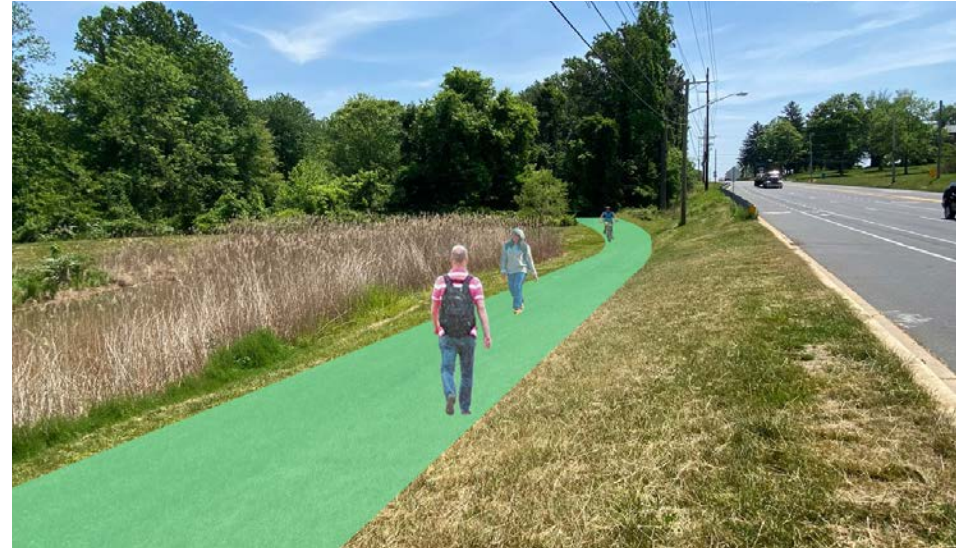


Figure 16: Photo sketch showing shared use path adjacent to the existing stormwater management facility east of Newport Gap Pike

Segment 5: Bridge over Hyde Run to Greenville Overlook entrance at Hercules Road

East of the existing driveway bridge over Hyde Run, the path has five potential alignments it can follow. Each alignment follows a different route but starts and ends at the same location. Each alignment starts at the existing driveway bridge location and ends at the Greenville Overlook development entrance at Hercules Road.

The five alignments are labeled as follows: A, B1, B2, C1, C2. Three potential alignments, A, B1 and B2, use the new driveway bridge location over Hyde Run. Two potential alignments, C1 and C2, call for a new bridge over Hyde Run south of the existing driveway bridge. See the graphic on page 32 for a summary of the different alignments for this segment.

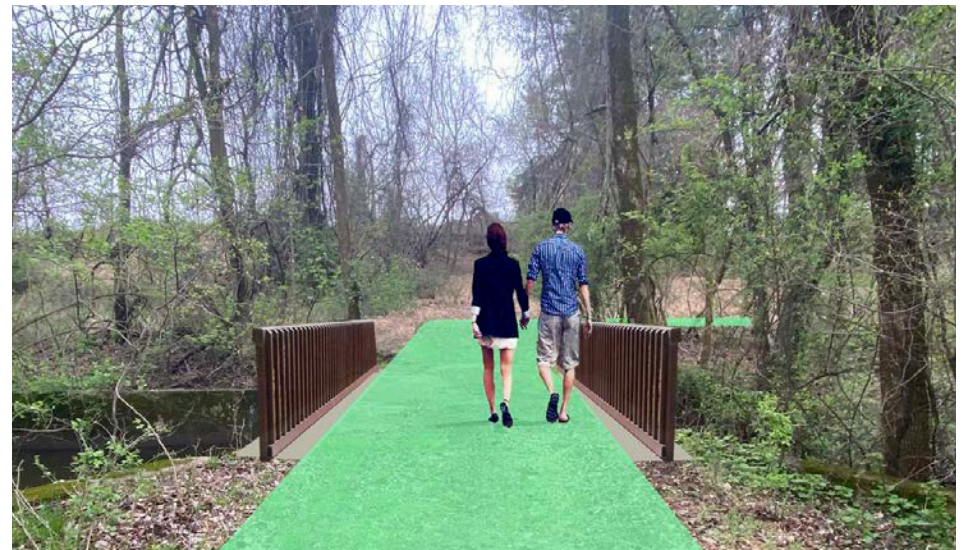


Figure 17: Photo sketch showing improvements to the existing bridge over Hyde Run to include a shared use path and railing for alignments A, B1 and B2

Option A - Driveway bridge to 50' Greenville Overlook landscape buffer

Alignment A is the shortest and most direct of the five potential alignments. This alignment uses the new driveway bridge over Hyde Run and avoids the steepest slopes in the area as it continues towards a 50' wide landscape buffer along the west side of the Greenville Overlook development. The buffer is located between the Greenville Overlook and Tall Trees. The main drawback of this route is the steep climb from the stream crossing to the landscape buffer that may require a significant amount of grading for the shared use path to maintain an ADA compliant running slope of 5% or less. Initial review of elevation data shows that an ADA-compliant path is feasible, but switchbacks may be needed in some areas to minimize the amount of cut and fill required. An additional drawback is the mature plantings in the landscape buffer. Drainage features and existing development entrance signage and plantings may be a constraint as this route follows along Hercules Road after the landscape buffer. This alignment is the only option out of the five potential alignments for Segment 5 that would be entirely a shared use path.



Figure 18: Photo sketch of path in open space area with wetlands on right after crossing the new driveway bridge over Hyde Run for Options A, B1, and B2



Figure 19: Photo sketch of path along Hercules Road west of Greenville Overlook entrance showing boardwalk section over drainage feature

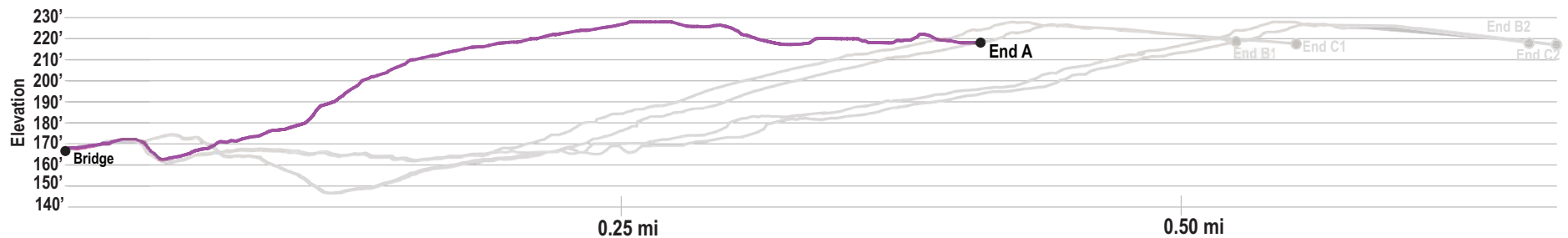


Figure 20: Elevation changes and distance of Alignment A from the new driveway bridge over Hyde Run to the entrance of Greenville Overlook compared to the other potential alignments. Available GIS data was used to determine the elevations. Survey of area was not performed as part of this study.

Options B1 and B2 - Driveway bridge to 20' pedestrian easement to Chariot Court or Oracle Road

Alignment B1 is somewhat indirect, but is not the longest of the five potential alignments. This alignment uses the new driveway bridge over Hyde Run and continues southeast towards the Greenville Overlook 20' pedestrian easement near existing stormwater management facilities. The slope from the stream crossing to the pedestrian easement is a more gradual climb than Alignment A. As this route passes behind a residential property it heads north toward Chariot Court. The shared use path becomes a shared lane markings and existing sidewalks along Chariot Court to the Greenville Overlook entrance at Hercules Road.

Alignment B2 follows the same route past the residential property adjacent to the 20' pedestrian easement but continues along the pedestrian easement through the stormwater management area until it meets Oracle Road. The shared use path becomes shared lane markings and existing sidewalks along Oracle Road to the Greenville Overlook entrance at Hercules Road. Alignment B2 is indirect and longer than Alignment B1.

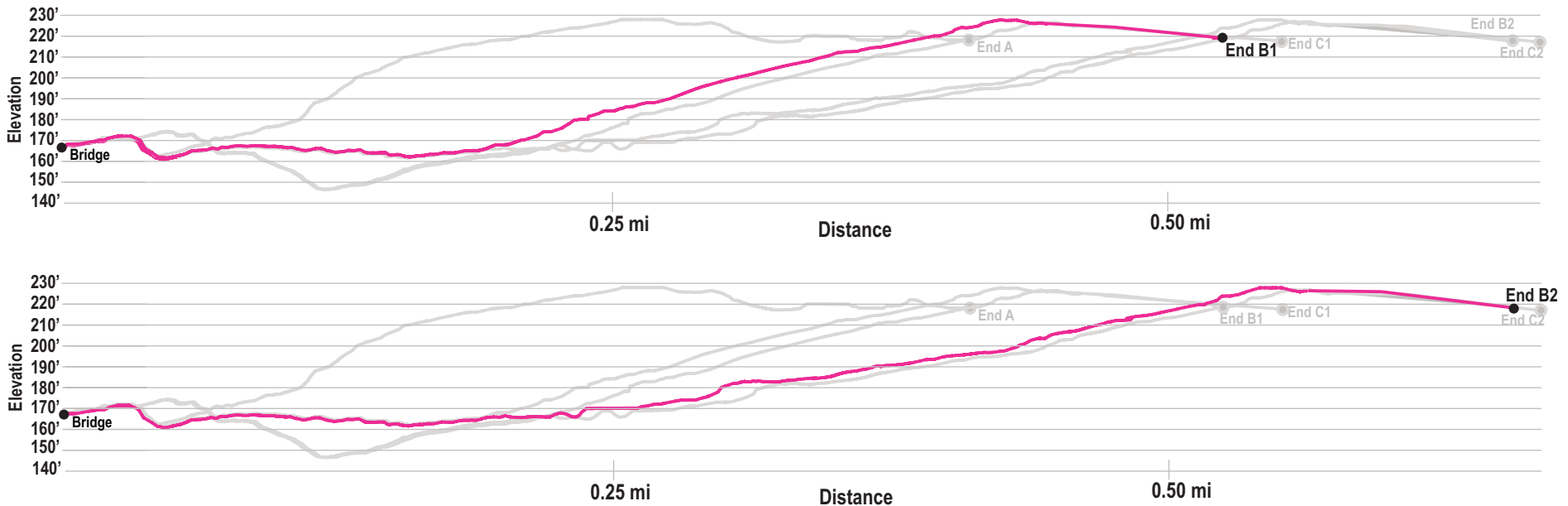


Figure 21: Elevation changes and distances of Alignments C1 and C2 from the new driveway bridge over Hyde Run to the entrance of Greenville Overlook compared to the other potential alignments. Available GIS data was used to determine the elevations. Survey of area was not performed as part of this study.

Options C1 and C2 - New southern bridge to 20' pedestrian easement to Chariot Court or Oracle Road

Alignment C1 and C2 follow the existing driveway south on the west side of Hyde Run south of the existing bridge used by Options A, B1, and B2. These two routes are the least direct, with C2 being the longest. The main drawback of these two alignments is the need for a new bridge over Hyde Run that would require additional environmental permitting. The new bridge location was selected to minimize stream, wetlands and floodplain impacts. This route would also use an existing clearing through the wooded area on the east side of Hyde Run along the Greenville Overlook pedestrian easement and a county sewer easement. Although these alignments are the least direct to the end point of this study, the options do provide a connection to the Delaware Association for the Blind property and the path is closer to any future connection to points south including Brandywine Springs Park. Like the B alignments, C1 would follow Chariot Court and C2 would follow Oracle Road.

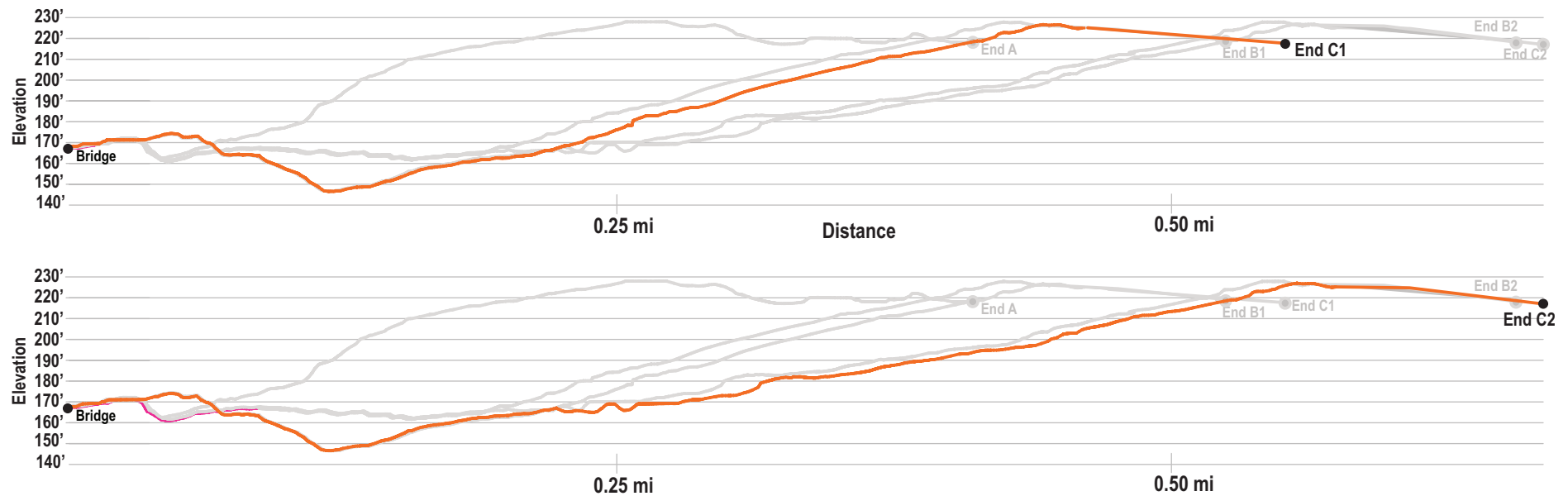


Figure 22: Elevation changes and distances of Alignments C1 and C2 from the existing bridge over Hyde Run to the entrance of Greenville Overlook compared to the other potential alignments. Available GIS data was used to determine the elevations. Survey of area was not performed as part of this study.



Figure 23: Photo sketch of path in 20' pedestrian easement on east side of new bridge for alignments C1 and C2



Figure 25: Photo sketch of signed shared lane markings on Chariot Road with existing sidewalks in Greenville Overlook development for alignments B1 and C1



Figure 24: Photo sketch of path alignment in 20' pedestrian easement facing towards the connection to Chariot Court



Figure 26: Photo sketch of path towards Oracle Road along existing stormwater management facilities in the development for alignments

Figure 27: Summary of the potential alignments for Segment 5: Bridge over Hyde Run to Greenville Overlook entrance at Hercules Road

	Option A	Options B1 & B2	Options C1 & C2
Typology	Shared Use Path	Shared Use Path & Shared Lane Markings /Sidewalk	Shared Use Path & Shared Lane Markings /Sidewalk
Length	0.42 miles	B1: 0.54 miles B2: 0.66 miles	C1: 0.58 miles C2: 0.70 miles
Bridge	New at Existing	New at Existing	New
Stream and Wetlands Impacts	Minimal	Minimal	Moderate to High
Floodplain Impacts	Minimal	Minimal	Moderate
Tree Impacts	Moderate to High	Moderate	Minimal
Slope	Moderate to Steep	Moderate	Moderate
Route	Most Direct	Indirect	Indirect
Potential Cost Range	\$1,700,000 - \$1,900,000	\$1,300,000 - \$1,500,000	\$1,350,000 - \$1,550,000

Segment 6: Greenville Overlook entrance at Hercules Road to Ashland entrance

After Segment 5, the path leaves the Greenville Overlook development and turns northeast along Hercules Road. There is space behind the curb to accommodate the shared use path but the path will impact the existing stormwater management facilities and landscaping. Planning-level cost estimates in this study include replacing impacted landscaping within Greenville Overlook open space, working with the community to ensure that the quality of this landscape matches what currently exists. For this study, the path ends at the Ashland entrance on Hercules Road. Beyond the scope of this project, the path is to continue toward Lancaster Pike via a shared use path that is to be constructed as part of a development.

CONCLUSION

A path connection from the intersection of McKennans Church Road and Duncan Road to the Ashland entrance on Hercules Road appears technically feasible. In some areas multiple routes are viable options. A preferred alignment for Segments 2 and 5 was not selected as part of this study because this early stage of the study did not yet include the necessary stakeholder involvement and feedback from the community. The next chapter goes into more detail about next steps for this project and selecting a preferred alternative.



Figure 28: Photo sketch of signed shared lane markings on Oracle Road with existing sidewalks in Greenville Overlook development for alignments B2 and C2



Figure 29: Photo sketch of shared use path along Hercules Road to Ashland entrance east of Greenville Overlook entrance

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NEXT STEPS



IMPLEMENTATION

To implement this pathway, the project will first need to proceed to the conceptual design stage. During conceptual design, the different alignment options would be vetted through stakeholder involvement. Once a preferred alignment is selected, the project would proceed into final engineering documentation, environmental coordination and permitting, and construction. Once constructed, the improvements will require a long-term maintenance plan. A project of this complexity and size would be constructed in phases. Funding has not yet been identified for any of these subsequent project development steps.

Stakeholder Involvement

The majority of this project passes along and through residential developments and impacts a wide range of properties. Stakeholder involvement is a key component for a successful public project. The budget for this feasibility study did not include a public involvement effort, but the consultant team did meet with representatives from DeIDOT, New Castle County and members of a local interest group, Millcreek Neighbors for Safer Pathways, to conduct a walkthrough of the study area and discuss the project. It is important that the next step of project should identify and include all stakeholders for this project. Stakeholders include but are not limited to local residents, DeIDOT, New Castle County, environmental agencies, non-profits, members of the bicycling community and property owners.

Cost Estimate

The planning-level cost estimate is a general guideline for the purpose of preliminary estimation for design, engineering and construction costs of the pathway. More detailed cost estimation would be performed at the later stages in the implementation process, particularly during the process of selecting a preferred alignment, the design and engineering phases, and prior to bidding for construction. The cost estimate is broken out by segments highlighted in this report and it is likely this project would be created in phases. In addition, two of the segments have multiple options for routing and treatments. A cost estimate has been provided for each of those options.

Phasing

As noted above, a project of this size and scope will need to be designed and built in phases. The Millcreek Neighbors suggested initially proceeding with Segment 3, continuing westward through Segments 2 and 1 to Delcastle. The Crossgates community should be directly involved to determine which option is most desirable for Segment 2. The Millcreek Neighbors should also work with the State of Delaware as soon as possible to ensure that redevelopment of the Emily Bissell Hospital property does not preclude the development of Segment 4. As the final phase of the project, the Greenville Overlook community should be directly involved to determine the desired option for Segment 5 as well as implementation of Segment 6.

Millcreek Pathway Planning Cost Estimate

Design, Engineering and Construction

Path Segment

Segment 1 - McKennans Church Road from Duncan Road to Millcreek Road (0.11 - 0.17 miles)	\$750,000
Segment 2 - Millcreek Road to Cross Gate Park (0.30 - 0.32 miles)	\$150,000 - \$900,000
Segment 3 - Cross Gate Park to Newport Gap Pike (0.14 miles)	\$550,000
Segment 4 - Newport Gap Pike to Existing Bridge (0.20 miles)	\$450,000
Segment 5 - Existing Bridge to Greenville Overlook entrance (0.42 - 0.70 miles)	\$1,300,000 - \$1,800,000
Segment 6 - Greenville Overlook entrance to Ashland entrance (0.13 miles)	\$550,000

Total Cost

\$3,750,000 - \$5,000,000

Route Options

Segment 2 - Crossgates Road to Cross Gate Park

Option 1 - Shared Use Path along County Open Space	\$800,000
Option 2 - Shared Use Path along Millcreek Road	\$900,000
Option 3 - Shared Lane Markings along Crossgates Road	\$150,000

Segment 5 - East of Newport Gap Pike to Existing Bridge

Option A - Shared Use Path along 50' Landscape Buffer	\$1,800,000
Option B1 - Shared Use Path and On-street Route on Chariot Court	\$1,300,000
Option B2 - Shared Use Path and On-street Route on Oracle Road	\$1,500,000
Option C1 - New Bridge, Shared Use Path and On-street Route on Chariot Court	\$1,350,000
Option C2 - New Bridge, Shared Use Path and On-street Route on Oracle Road	\$1,550,000

Figure 30: Planning-level cost estimate for the design, engineering and construction of the project