

Table of Contents

Introduction	i-1
Project Overview	i-2
Issues to Be Resolved and Next Steps	i-4
Organization of This SEA	i-4
Document Availability	i-5
Public Review and Comment Period	i-5
Informational Contacts	i-6
Acronyms	i-7
 Chapter I – Purpose and Need	 I-1
Introduction	I-1
Purpose of This SEA	I-1
Project Background and History	I-3
Corridor Setting	I-4
Planning Context	I-4
Programmed Transportation Improvements	I-5
Purpose and Need of the Project – An Overview	I-7
Project Goals	I-7
Need for Transportation Improvements	I-8
Regional Population and Employment Growth Update	I-8
Traffic Growth Update	I-9
Transit Demand Update	I-9
Current Transit Services	I-10
Current and Future Transit Market	I-11
Transit Market Share by District	I-12
Transit Trip Growth by District	I-15
Reverse Commuting	I-16
Intermodal Connectivity and Land Use	I-17
Transit Connectivity	I-17
Pedestrian/Bicycle Connectivity	I-17
Transit-Supportive Land Use	I-18
 Chapter II – Alternatives Considered	 II-1
Introduction	II-1
History of Alternative Development	II-1
Overview of the 2009 Alignment Alternatives Feasibility Study	II-3
Alignment Modifications	II-6
Alignment S1: Crown Farm	II-6

<i>Alignments S2 and S2c: Life Sciences Center</i>	II-10
<i>Alignment S3: Kentlands</i>	II-10
Stations and Other Facilities	II-12
<i>Stations</i>	II-12
<i>Operations and Maintenance (O&M) Facility Locations</i>	II-12

Chapter III – Transportation System Performance and Effects..... III-1

Existing Transit Service Conditions	III-1
--	-------

Proposed CCT Transit Operations	III-2
--	-------

<i>Travel Time</i>	III-3
--------------------------	-------

<i>Feeder Bus Service</i>	III-3
---------------------------------	-------

<i>Premium Bus Service</i>	III-3
----------------------------------	-------

Transportation Performance	III-4
---	-------

<i>Travel Demand Methodology</i>	III-4
--	-------

<i>Round 7.1 to 7.2a Land Use</i>	III-5
---	-------

Modeled CCT Alternatives Using the Modified Alignments	III-8
---	-------

<i>Alternative Transit TSM with S1 and S2: Service to Crown Farm and Life Sciences Center</i> ...	III-8
---	-------

<i>LRT with S1 and S2: Service to Crown Farm and Life Sciences Center</i>	III-8
---	-------

<i>BRT with S1 and S2: Service to Crown Farm and Life Sciences Center</i>	III-8
---	-------

<i>LRT with S1, S2 and S3: Service to Crown Farm, Life Sciences Center and Kentlands</i>	III-9
--	-------

<i>BRT with S1, S2 and S3: Service to Crown Farm, Life Sciences Center and Kentlands</i>	III-9
--	-------

Transit Service and Ridership Implications of the Modified Alignments in the Gaithersburg Area	III-9
---	-------

Cost Analysis of CCT Alignment Modifications	III-10
---	--------

<i>Capital Cost Estimates</i>	III-10
-------------------------------------	--------

<i>Operating and Maintenance Cost Estimates</i>	III-12
---	--------

<i>Cost-Effectiveness</i>	III-13
---------------------------------	--------

Roadway Network Effects of a Realigned CCT	III-15
---	--------

<i>Analysis Methodology</i>	III-15
-----------------------------------	--------

<i>Signalized Crossings</i>	III-15
-----------------------------------	--------

CCT O&M Site Impact Analysis	III-17
---	--------

<i>O&M Site at Metropolitan Grove (LRT or BRT)</i>	III-17
--	--------

<i>O&M Site at Observation Drive (BRT Only)</i>	III-18
---	--------

Chapter IV – Affected Environment and Environmental ConsequencesIV-1

Overview	IV-1
-----------------------	------

Land Use, Zoning and Future Development	IV-1
--	------

Existing Land Use	IV-1
--------------------------------	------

<i>Farm Uses</i>	IV-2
------------------------	------

Future Land Use	IV-2
------------------------------	------

<i>Montgomery County</i>	IV-5
<i>City of Gaithersburg</i>	IV-7
<i>O&M Sites</i>	IV-9
Existing and Future Zoning	IV-9
<i>Montgomery County</i>	IV-9
<i>City of Gaithersburg</i>	IV-10
<i>Observation Drive O&M Site</i>	IV-10
<i>Metropolitan Grove O&M Site</i>	IV-10
Planned and Programmed Developments	IV-10
Compliance with Smart Growth Initiatives	IV-13
Project Effects on Land Use	IV-15
<i>Alignment Modifications</i>	IV-15
<i>O&M Facilities</i>	IV-16
Consistency with Area Master Plans	IV-16
<i>Alignment Modifications</i>	IV-16
<i>O&M Facilities</i>	IV-16
Social Environment	IV-16
Population and Households	IV-17
<i>Metropolitan Washington Region</i>	IV-17
<i>Montgomery County</i>	IV-17
Neighborhoods and Communities	IV-21
<i>Existing Conditions</i>	IV-21
<i>Impacts</i>	IV-22
Community Facilities and Services	IV-25
<i>Existing Conditions</i>	IV-25
<i>Impacts</i>	IV-26
Parks and Recreational Facilities	IV-26
<i>Existing Conditions</i>	IV-26
<i>Impacts</i>	IV-26
<i>Avoidance, Minimization and Mitigation</i>	IV-26
Displacements and Relocations	IV-26
<i>Relocation Process</i>	IV-29
<i>Title VI Statement</i>	IV-30
Environmental Justice	IV-30
<i>Method for Identifying EJ Populations</i>	IV-30
<i>EJ Populations</i>	IV-31
<i>Method for Assessing EJ Impacts</i>	IV-32
<i>EJ Impacts and Mitigation</i>	IV-35
<i>Conclusion</i>	IV-37
<i>Public Involvement</i>	IV-37
Economic Environment	IV-38

Existing Conditions	IV-38
Economic Impacts.....	IV-38
<i>Impacts of Alignment Modifications</i>	<i>IV-38</i>
<i>Impacts of O&M Site Locations.....</i>	<i>IV-39</i>
<i>Avoidance, Minimization and Mitigation</i>	<i>IV-39</i>
Cultural Resources	IV-39
Existing Conditions	IV-39
Impacts	IV-39
Natural Environment.....	IV-39
Topography, Geology and Soils.....	IV-39
<i>Existing Conditions – Topography.....</i>	<i>IV-39</i>
<i>Existing Conditions – Geology.....</i>	<i>IV-39</i>
<i>Existing Conditions – Soils</i>	<i>IV-39</i>
<i>Existing Conditions – Prime Farmland Soils and Farmland of Statewide or Local Importance</i>	<i>IV-40</i>
<i>Impacts – Topography</i>	<i>IV-40</i>
<i>Impacts – Geology.....</i>	<i>IV-43</i>
<i>Impacts – Soils.....</i>	<i>IV-43</i>
<i>Impacts – Prime Farmland Soils and Farmland of Statewide or Local Importance</i>	<i>IV-43</i>
<i>Avoidance and Minimization</i>	<i>IV-44</i>
Groundwater.....	IV-44
<i>Existing Conditions.....</i>	<i>IV-44</i>
<i>Impacts.....</i>	<i>IV-44</i>
<i>Avoidance, Minimization and Mitigation</i>	<i>IV-47</i>
Surface Waters.....	IV-47
<i>Existing Conditions</i>	<i>IV-47</i>
<i>Impacts.....</i>	<i>IV-47</i>
<i>Avoidance and Minimization</i>	<i>IV-49</i>
Scenic and Wild Rivers	IV-49
<i>Existing Conditions</i>	<i>IV-49</i>
<i>Impacts and Avoidance/Mitigation.....</i>	<i>IV-49</i>
Waters of the US Including Wetlands	IV-49
<i>Existing Conditions</i>	<i>IV-49</i>
<i>Impacts.....</i>	<i>IV-51</i>
<i>Avoidance and Minimization</i>	<i>IV-52</i>
Non-Tidal Wetlands of Special State Concern	IV-53
Floodplains.....	IV-53
<i>Existing Conditions</i>	<i>IV-53</i>
<i>Impacts.....</i>	<i>IV-53</i>
<i>Avoidance and Minimization</i>	<i>IV-54</i>

Terrestrial Vegetation	IV-54
<i>Existing Conditions</i>	<i>IV-54</i>
<i>Impacts.....</i>	<i>IV-54</i>
Terrestrial Wildlife.....	IV-55
<i>Existing Conditions</i>	<i>IV-55</i>
<i>Impacts.....</i>	<i>IV-57</i>
<i>Avoidance and Minimization</i>	<i>IV-57</i>
Aquatic Habitat/Species	IV-57
<i>Existing Conditions</i>	<i>IV-57</i>
<i>Impacts.....</i>	<i>IV-60</i>
<i>Avoidance and Minimization</i>	<i>IV-61</i>
Rare, Threatened, and Endangered Species.....	IV-61
<i>Existing Conditions</i>	<i>IV-61</i>
<i>Impacts/Mitigation.....</i>	<i>IV-61</i>
Hazardous Materials.....	IV-61
<i>Existing Conditions</i>	<i>IV-61</i>
<i>Results and Recommendations</i>	<i>IV-61</i>
<i>Mitigation</i>	<i>IV-62</i>
Air Quality.....	IV-62
<i>Existing Conditions</i>	<i>IV-62</i>
<i>Impacts</i>	<i>IV-62</i>
Noise and Vibration	IV-62
<i>Noise.....</i>	<i>IV-62</i>
<i>Sound Descriptors.....</i>	<i>IV-62</i>
<i>Human Perception to Changes in Noise Levels</i>	<i>IV-63</i>
<i>FTA Noise Criteria for Transit Projects.....</i>	<i>IV-63</i>
<i>Existing Noise.....</i>	<i>IV-63</i>
<i>FTA Impact Definitions</i>	<i>IV-64</i>
<i>Future Transit Noise Exposure Methodology and Findings.....</i>	<i>IV-64</i>
<i>Mitigation Measures.....</i>	<i>IV-73</i>
<i>Train Horn Noise Mitigation Measures</i>	<i>IV-74</i>
<i>Vibration Analysis</i>	<i>IV-74</i>
<i>Existing Vibration Levels and Vibration Prediction Methodology</i>	<i>IV-74</i>
<i>Vibration Impact Assessment and Mitigation Measures</i>	<i>IV-75</i>
<i>Mitigation.....</i>	<i>IV-75</i>
Visual Quality.....	IV-75
<i>Existing Conditions</i>	<i>IV-75</i>
<i>Visual Impacts.....</i>	<i>IV-75</i>
<i>Mitigation</i>	<i>IV-76</i>
Construction and Operational Issues	IV-76

Indirect and Cumulative Effects (ICE) Analysis.....	IV-76
2002 Analysis.....	IV-77
Impacts.....	IV-77
Energy	IV-77
Existing Conditions	IV-77
Impacts.....	IV-77
Measures to Minimize Harm.....	IV-78
 Chapter V – Section 4(f) Evaluation Summary and Update.....	 V-1
Overview of Section 4(f) Regulations.....	V-1
Background.....	V-1
Section 4(f) Resources Associated with the Alignment Modifications and O&M sites.	V-2
Public Park and Recreation Areas.....	V-2
Muddy Branch Stream Valley Park	V-2
Historical Resources	V-2
Belward Farm (Maryland Inventory of Historic Places #M: 20-21).....	V-2
England/Crown Farm (Maryland Inventory of Historic Places #M: 20-17).....	V-2
Section 4(f) Use from Alignment Modifications and O&M Sites on the Above-Listed Resources	V-3
Muddy Branch Stream Valley Park.....	V-3
Crown Farm.....	V-3
Belward Farm.....	V-3
Description of the Avoidance Alternatives	V-4
S1a – Crown Farm Full Avoidance Alignment	V-4
S2a – Belward Farm Minimization Alignment (East) Skirting the Historic Property	V-4
S2b – Belward Farm Full Avoidance Using Belward Campus Drive	V-7
S2d – Belward Farm Minimization Alignment (East) via Medical Center Drive Skirting the Historic Property.....	V-7
S2e – Belward Farm Avoidance Alternative via Medical Center Drive Using Belward Campus Drive	V-7
S2f– Belward Farm Minimization Alignment (West) Skirting the Historic Property	V-8
S2g – Belward Farm Minimization Alignment (West) via Medical Center Drive Skirting the Historic Property Using Belward Campus Drive.....	V-8
Section 4(f) Use of Avoidance Alignments on Crown and Belward Farms	V-8
Section 4(f) Use of Avoidance Alignments on Other Resources.....	V-8
Land Use, Zoning and Future Development.....	V-9
Effects on Land Use	V-9
Consistency with Area Master Plans	V-9
Social Environment	V-9
Neighborhoods and Communities.....	V-9

<i>Community Facilities and Services</i>	V-9
<i>Parks and Recreational Facilities</i>	V-10
<i>Displacements and Relocations</i>	V-10
<i>Environmental Justice</i>	V-10
Economic Environment	V-10
Cultural Resources	V-10
Natural Environment	V-10
<i>Topography, Geology and Soils</i>	V-10
<i>Prime Farmland Soils and Farmland of Statewide or Local Importance</i>	V-11
<i>Groundwater</i>	V-12
<i>Surface Waters</i>	V-13
<i>Scenic and Wild Rivers</i>	V-13
<i>Waters of the US Including Wetlands</i>	V-13
<i>Non-Tidal Wetlands of Special State Concern</i>	V-14
<i>Floodplains</i>	V-14
<i>Terrestrial Vegetation</i>	V-15
<i>Terrestrial Wildlife</i>	V-16
<i>Aquatic Habitat/Species</i>	V-16
<i>Rare, Threatened, and Endangered Species</i>	V-16
Hazardous Materials	V-16
Air Quality	V-16
Noise and Vibration	V-16
<i>Noise</i>	V-16
<i>Vibration</i>	V-17
Visual Quality	V-17
Construction and Operational Issues	V-17
Indirect and Cumulative Effects (ICE) Analysis	V-17
Energy	V-17
 Chapter VI – Comments and Coordination	 VI-1
Overview	VI-1
Background	VI-1
Summary of June 2009 Public Hearings on the Alternatives Analysis/Environmental Assessment	VI-1
<i>Government Agency Transit-Related Comments</i>	VI-32
Summary of Additional Public Involvement	VI-33
General Public and Community Briefings	VI-33
Project Newsletters and Media Outreach	VI-37
Agency Coordination	VI-37
<i>Interagency Coordination Meeting</i>	VI-37
Coordination with Local Agencies & Elected Officials	VI-38

Appendices	
Appendix A: Plan Sheets.....	A-A-1
Appendix B: Wetland Summary Table	A-B-1
Appendix C: Agency Correspondence	A-C-1
Appendix D: List of References Used in Preparing the Supplemental Environmental Assessment).....	A-D-1
Appendix E: List of Contributors	A-E-1