



CITY COUNCIL WORK SESSION AGENDA
SCMaglev Task Force

COUNCIL MEETING WILL BE ONLINE ONLY

Due to the COVID-19 precautions, the Council Meeting will be held online and is planned to be cablecast on Verizon 21, Comcast 71 and 996 and streamed to www.greenbeltmd.gov/municipaltv.

Resident participation:

**<https://us02web.zoom.us/j/82867905325?pwd=TWWh4Wnl6NVZiT1lkUIITdVFjYzZBUT09>
Passcode: 989316**

OR

**Join By phone: (301) 715-8592
Meeting ID: 828 6790 5325
Passcode: 989316**

In advance, the hearing impaired is advised to use Video Relay Services (VRS) at 711 to submit your questions/comments or contact the City Clerk at (301) 474-8000 or email banderson@greenbeltmd.gov.

**Wednesday, February 10, 2021
8:00 PM**

Work Session Packet
Agenda

- *Introduction of Task Force*
- *Update from Jill Grant and Associates*
- *Discussion:*

- *Key issues and scope of review*
- *Technical consultants needed/identified*
- *Next Steps*
- *Questions and Answers*
- *Other Items*

SCMaglev Task Force

Suggested Action:

[2021-02-03 Background for Council.pdf](#)
[2021-02-03 Maglev Issues Outline.pdf](#)
[2021-02-03 List of Expertise Required.pdf](#)
[Maglev Project Overview Slides.pptx](#)

City Council Work Session Agenda Item Report

Meeting Date: February 10, 2021

Submitted by: Holly Simmons

Submitting Department: Planning

Item Type: Work Session Item

Agenda Section: Work Session Packet

Subject:

SCMaglev Task Force

Suggested Action:

Attachments:

[2021-02-03 Background for Council.pdf](#)

[2021-02-03 Maglev Issues Outline.pdf](#)

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[Maglev Project Overview Slides.pptx](#)



Jill Grant & Associates LLC
Attorneys at Law

February 3, 2021

Background Information on DEIS for SCMAGLEV

I. Project Components

[* Indicates facility that would be located in or near Greenbelt]

[◇ Indicates facility likely to be located at BARC, depending on the alternative selected]

*Deep tunnel for underground operations (J1 and J alignment)

*◇ Tunnel portals for transition from tunnel to viaduct

City of Greenbelt - J1 alignment

BARC – J alignment

◇ Elevated (viaduct) guideway

Two terminal stations (Washington, D.C. and Baltimore, MD) and one intermediate station at BWI Marshall Airport

◇ One trainset maintenance facility (TMF)

Two maintenance of way (MOW) facilities

Operation and control center

*◇ Other smaller ancillary facilities, including fresh air and emergency egress (FA/EE) facilities, power substations, SCMAGLEV wayside system facilities, and stormwater management

- Stations and ancillary facilities would have access to passenger and employee parking as needed

II. Agencies Involved in DEIS Process

[Note: Baltimore-Washington Rapid Rail, LLC (BWRR) is the Project Sponsor and would design, construct, and operate the SCMAGLEV system. BWRR also funded a portion of the NEPA study and provided technical input, including its preferred alternative.]

Lead agency: Federal Railroad Administration (FRA), with technical assistance from the Maryland Transit Administration (MTA)

Concurring agencies: U.S. Army Corps of Engineers (ACE), U.S. Fish & Wildlife Service (FWS), U.S. Environmental Protection Agency (EPA), and the Federal Aviation Administration (FAA).

Concurrence required on Purpose and Need (done), selection of alternatives to be studied (done), and preferred alternative.

Cooperating agencies: All the above, plus Federal Transit Administration, National Capital Planning Commission, National Park Service, Surface Transportation Board, BARC, NASA – Goddard, and the NSA. Cooperating agencies regulate or are directly affected by one or more of the impacts involved. These agencies help FRA identify impacts, avoidance and mitigation measures and help prepare required permits. At the request of the lead agency they also can develop information and prepare environmental analyses, including portions of the DEIS and FEIS, and are expected to make staff available to support the development of these documents.

Participating agencies: Various federal, state, county, and local governments/agencies within the Project Study Area, which is bounded by I-95 to the west and the former Washington-Baltimore & Annapolis Electric Railroad alignment to the east, and includes portions of Baltimore City and Baltimore County (to the north), Howard County, Anne Arundel County, Prince George’s County, and Washington, D.C. (to the south). Greenbelt was not selected as a participating agency but has submitted a request to be one. Participating agencies comment on the purpose and need statement, selection of alternatives to be studied, and pre-draft and pre-final DEIS and FEIS documents. Participating agencies also are invited to join coordination meetings and field reviews as appropriate.

Greenbelt is a consulting agency on the NHPA § 106 consultation.

III. Components of DEIS

Purpose and need statement (DEIS Chapter 2)

Proposed alternatives to meet purpose and need, including “no build” alternative (Chapter 3)

- The alternatives were developed 2017-2018
- There are two basic build alternatives, J and J1, both of which follow the Baltimore-Washington Parkway, but there are many variations regarding placement of the ancillary facilities, resulting in 12 build alternatives. Eight alternatives would have the TMF at either the BARC airstrip or BARC West, and four along MD 198.

Existing environmental conditions (Chapter 4)

Likely adverse environmental impacts of the various alternatives (Chapter 4)

Potential mitigation strategies (Chapter 4)

IV. Future Actions

FRA will issue a Final EIS (FEIS) and a Record of Decision (ROD) selecting the final alternative.

- The FEIS will be in a similar format to the DEIS and will include the preferred alternative and a response to comments. 43 C.F.R. § 1502.9; DEIS ES.1.4.
- The ROD will be issued upon completion of the FEIS, per 43 C.F.R. § 1505.2. It must: (a) state what the decision was (the selected alternative); (b) identify all alternatives considered by the agency in reaching its decision; and (c) state whether all practicable means to avoid

or minimize environmental harm from the alternative selected have been adopted; if not, why not; and, if applicable for mitigation, summarize the monitoring and enforcement program that will be adopted.

Legal challenges to the selection (based on the comments submitted) can be made at the DEIS/ROD stage.

Numerous permits and approvals will be required prior to construction under federal, state, and local laws, and public comment and legal challenges will be available for most if not all these actions.

Legislation may be required for nonagricultural use of BARC and impacts to Patuxent Research Reserve, providing additional opportunities for public and City involvement.



Jill Grant & Associates LLC
Attorneys at Law

February 3, 2021

Outline of Issues to Raise in Comments on SCMaglev DEIS

I. Problems with the NEPA Process and Analysis

A. Segmentation Problems

1. The DEIS considers the impacts from only the segment of the project running from D.C. to Baltimore and does not consider impacts from the broader Northeast Corridor Maglev Project which continues on to New York.
2. FRA should have performed a Programmatic EIS to consider the impacts of the D.C. to Baltimore segment within the context of the larger intercity Northeast Corridor Maglev system.

B. Problems with the Purpose and Need Statement

1. The purpose of the project is limited to building and operating an SCMaglev system between Baltimore and Washington, D.C., which eliminates consideration of any other transportation alternatives or combination of alternatives.
2. The stated need for the project (alternative transportation to existing rail, highway, and public transit) is based on inaccurate financial assumptions and inaccurate traffic data.
 - a. The traffic and growth projection data used are outdated.
 - i. Traffic and population data relied on do not incorporate the impact of COVID-19 on existing and future traffic patterns (e.g., the likelihood of former commuters working remotely). The DEIS also bases its conclusion that the roadway network is inadequate on 2015 maps.
 - b. The AMTRAK and MARC capacity data relied upon does not account for improvements planned for both systems.
 - c. We recommend having a traffic expert look into the transportation forecasts and underlying data used to support the need for the project.

- i. As there is no real precedent for a project like this, it seems likely that ridership estimates are questionable.
 - ii. The DEIS relies on forecasts submitted by the Project Sponsor and does not independently verify the ridership data.
 - iii. Given projection of displacing other public transit riders, the DEIS should have considered the possibility that those methods would adjust; for example, MARC could run fewer trains or not implement improvements, causing non-Maglev riders to suffer.
 - iv. Note that a traffic expert also could review the proposed traffic control plans for areas within the City and BARC, estimate the impacts on the City and BARC of increased truck traffic, and identify other traffic impacts from the construction.
3. The proposed alternatives do not meet certain other need criteria.
 - a. It is unclear if the alternatives can meet the “revenue-producing” criteria.
 - b. It is unclear whether the alternatives can meet safety standards as these standards have not yet been established.
 - c. The project would transfer ridership from existing rail transport systems.

C. Failure to Consider All Reasonable Alternatives

1. The DEIS fails to consider other Magnetic Levitation rail technologies, including the Chinese Maglev technology which operates at similar speeds to the proposed technology.
2. The DEIS fails to sufficiently consider Amtrak and MARC alternatives.
 - a. The NEC FUTURE plan has already reviewed and recommended planning and investment approaches to address current and future rail demand through planned upgrades to Amtrak and MARC.
3. The DEIS fails to consider alternative routes that would run completely underground, thereby significantly reducing certain environmental impacts.

D. Failure to Address All Water Quality Impacts

1. Stormwater Impacts
 - a. The DEIS fails to examine how increased stormwater will affect receiving waterways located in the City and BARC.
 - b. The analysis of stormwater management needs, stormwater avoidance and mitigation options is incomplete or missing and lacks supporting data.
 - c. The DEIS fails to account for MS4 permitting requirements.

2. Impacts of tunnel construction and operation on waterways, groundwater, and floodplains
 - a. The DEIS fails to sufficiently examine potential losses to groundwater recharge to nearby supply wells including wellhead protection areas located near the proposed BARC TMF West option.
 - b. The DEIS fails to sufficiently examine how tunnel construction and operation may impact the Patapsco Aquifer.
 - c. The DEIS fails to conduct groundwater modeling to identify how tunnel construction and operation would impact hydrology.
 - d. The DEIS fails to examine the risk of frac-out and how any frac-out events could impact waterways and groundwater.
Note: “Frac-out” is a term used to describe when drilling fluid penetrates fractured bedrock or seeps into the rock and inadvertently release fluids to the surface.
 - e. The DEIS fails to sufficiently analyze how new impervious surfaces and the associated increase of stormwater runoff would impact floodplains and flood risks.
 - f. The DEIS fails to analyze how deep tunnels may impact wetlands. FRA acknowledges that it did not include non-permitted impacts to wetlands in its impact calculations.
3. The DEIS relies on future compliance with Clean Water Act § 404 and Rivers and Harbors Act § 10 and § 14 permitting and approval requirements to meet its NEPA requirements. However, these permit applications and supporting analyses are not included in the DEIS.
4. The DEIS fails to consider all reasonable alternatives that would avoid or minimize adverse impacts to City and BARC waterways, wetlands, floodplains, and other natural resources.
5. The DEIS fails to sufficiently analyze impacts to Chesapeake Bay Critical Areas located predominantly in Baltimore Harbor, Gwynns Falls, and Middle Branch Patapsco River. It is not clear whether FRA has reached out to the Critical Area Commission to begin consultation on potential impacts to these areas.

E. Problems with the Analysis of Impacts on Various Species and Habitats

1. Aquatic Species, Habitat, and Fisheries
 - a. We recommend having someone review whether all impacts to aquatic species, aquatic habitat, and fisheries located within or near the City and BARC (which are located within the Anacostia River watershed) are identified.
 - b. The DEIS states that the Project Sponsor will mitigate impacts to aquatic species, habitat, and fisheries but puts off providing detailed mitigation plans until the final design and construction planning phase.

2. Federal and state rare, threatened, or endangered species and habitat known to exist within City and BARC lands.
 - a. We recommend having someone review whether all these species and habitat are identified.
3. The mitigation considerations for species that are identified are inadequate.
4. The DEIS fails to adequately analyze impacts to Forest Interior Dwelling Species and habitat located within City's forests and BARC forests.
5. The DEIS fails to adequately analyze impacts to the City's forests.
6. The DEIS fails to address impacts to the Greenbelt Forest Preserve. The DEIS estimates that 40 acres of City forest habitat would be adversely impacted if any of the J1 alternatives is built, but the DEIS fails to consider how impacts to the City's forests can be mitigated if one of these alternatives is selected.
7. The DEIS does not analyze how removal of these 40 acres would impact the local ecology and environment.

F. Failure to Adequately Analyze Impacts from Hazardous Waste and Construction Spoils

1. Although the DEIS describes sites that would be disturbed by some of the alternatives, such as BARC, that have contamination, the DEIS leaves further investigation and understanding of the risks to later discussions. These discussions would not occur until after important decisions are made.
2. Similarly, the DEIS recognizes that some waste generated during construction will pose a risk to human health and the environment but puts off further evaluation until final design.
3. The DEIS does not consider the impacts from disposal of excavated soil from construction.

G. Failure to Address All Air Quality Impacts

1. The DEIS explains that all the alternatives would consume significant quantities of energy, during both construction (6 trillion Btus) and operation (4 trillion Btus per year). The amount for operations would account for nearly 40% of the region's total transportation energy consumption per year, compared to .1% and 1% for bus and rail travel, respectively. The DEIS glosses over that the project would be significantly less energy efficient than bus and rail travel, and likely less efficient than cars as well when not assuming maximum ridership, and it fails to analyze the additional air quality emissions resulting from the increased power generation that the project would require. These emissions would impact the region, which is already suffering from high ozone, SO₂, CO, and PM_{2.5}.
2. The DEIS relies on a now-rescinded Council on Environmental Quality Draft Guidance to ignore greenhouse gas emissions from the increased energy consumption required by the project. FRA claims they cannot be

practicably estimated, although FRA has done so before for other projects, using emission factors.

3. The DEIS does not address PM_{2.5} or dust emissions from construction. FRA estimates that tunnel boring, worker transportation, and construction trucking will consume 6 trillion Btus. BWRR has stated that it plans to meet this demand with temporary standby generation facilities, which will most likely be diesel-powered, but FRA does not estimate the emissions caused by this energy demand. The assertion in the DEIS that a hot spot analysis is not required because construction-related activities are short term (less than 5 years) is likely incorrect for at least some sites, like the stations and the trainset maintenance facilities. For example, construction of the potential Camden Yards station would require the demolition of 4 buildings and partial demolition of the convention center. Moreover, it does not change FRA's obligation under NEPA to consider construction emissions.
4. The DEIS does not address concerns about emissions from ventilation structures, such as radon emissions and emissions from emergency venting, such as smoke in the event of a fire.

H. Failure to Evaluate Impacts to Public and Private Property in Greenbelt

1. The DEIS mentions potential increases in property values near stations but fails to discuss potential decreases in property values from noise, vibration, and adverse visual impacts.
2. Some alternatives would begin the transition from tunnel to viaduct only 75 feet from Greenbriar Condominiums community in Greenbelt. Residents would experience impacts due to vibration, as well as changes in visual quality with views of the portal and viaduct. In addition, property acquisition from the community would remove portions of a community garden and open space.
3. Some alternatives would have moderate or high visual impacts to Greenbelt Observatory and Northway Field/James N. Wolfe Field. Lighting associated with the SCMAGLEV system would impede operation of the astronomical observatory.
4. Some alternatives would eliminate most of the natural habitat and buffer between residential areas and the Baltimore Washington Parkway.
5. Noise and vibration from both temporary construction activities and long-term operations exceed FRA criteria at several receptors in the Project Study Area. Although FRA identifies noise and vibration control measures that could reduce potential impacts, the DEIS's general statements do not explain if and where these will be implemented and what their effects would be. FRA should have evaluated these control measures as part of the DEIS and should not have used the unique nature of the SCMaglev technology as an excuse. The DEIS appears to leave consideration and implementation of these controls up to the Project Sponsor (BWRR).

6. We recommend having a consultant review the geotechnical aspects of the DEIS in more detail, including how the proposed tunnel and aboveground viaduct would impact the natural and built environment, including residences and public property.
7. The City should have been invited to be a Participating Agency in the NEPA process, which would have provided more opportunities for consultation with the City (although it would not give the City any additional rights), and it would have improved coordination on the various City permits and approvals that would be required, such as construction permits and variances and the ordinance needed to authorize impacts to Greenbelt Forest Preserve.

I. Failure to Adequately Evaluate Indirect and Cumulative Impacts

1. The DEIS claims that the project would reduce potential cumulative adverse effects on air quality at the regional level by diverting roadway traffic to train travel, but it ignores impacts from increased emissions caused by construction and the substantial amounts of electricity needed to operate the system, described in Section I.G.1 above. In addition, the DEIS does not address how this increased energy use would be consistent with Maryland's commitment to reduce GHG emissions under the Greenhouse Gas Reduction Act. Although the DEIS claims there is available existing capacity through the grid power pool in the region, the DEIS does not evaluate other potential impacts of this increased electricity demand.
2. The DEIS does not address reasonably foreseeable future expansion of the project to New York.

J. Failure to Adequately Consider Environmental Justice Implications

1. The DEIS finds the vast majority of the impacts would occur in EJ population areas but FRA has not shown a substantial need for the project or described the necessary steps to avoid these impacts. For example, over 99% of the impacted noise receptors and 100% of the severe vibration impacts would be located in EJ population areas.
2. The DEIS claims the project will result in decreased travel times, but this benefit is unlikely for EJ communities due to cost and also would not be available to those along the route rather than near the stations.
3. Note that the DEIS acknowledges that the project could intensify gentrification and displacement pressures.
4. The DEIS says FRA will continue to refine its EJ analysis, complete a disproportionality analysis, and develop mitigation in the FEIS. These steps should have been completed already to allow for public comment.
5. The DEIS improperly relies on census block group data, which does not take into account pockets of EJ communities.

II. Compliance Issues with Land and Water Conservation Fund Requirements

The Land and Water Conservation Fund of 1965 (LWCF), Section 6(f), requires the National Park Service (NPS) to approve any conversion of lands purchased with LWCF assistance. According to the Greenbelt Forest Preserve Advisory Board's January 25, 2018 memo on legal projections for the Greenbelt Forest Preserve, Parcel 1 of the Greenbelt Forest Preserve was purchased in part by LWCF funds, through Maryland's Program Open Space. NPS will consider conversion of an LWCF property only if certain requirements are met. Prerequisites for conversion approval include, but are not limited to, NPS determining that all practical alternatives to the conversion have been evaluated and that the proposed replacement property is of equal usefulness. Although replacement properties do not have to be adjacent to or close by to the converted site, generally the property should serve the same community and it may be difficult for a replacement site to do so given the lack of nearby private greenspace that could meet the same use as Parcel 1.

III. Safety Issues

A. Transportation-Related Safety Issues

1. The DEIS relies on incomplete data when identifying transportation operational hazards and should consider risks specific to SCMaglev technology.
2. The DEIS fails to provide passenger safety data.
3. The DEIS does not indicate whether FRA will issue a Rule of Particular Applicability or Rule of General Applicability to impose safety requirements or conditions on the SCMaglev system. This would be the first SCMaglev project to operate in the United States and there are currently no specific rail operation standards in place for this technology.

B. Radiation Concerns

1. The DEIS does not include electromagnetic field (EMF) or electromagnetic interference (EMI) calculations or simulations for the SCMaglev system.
2. The DEIS provides no information to support its finding that EMI exposure at Eleanor Roosevelt High School is not a concern.
 - a. The City should provide information indicating any concerns related to EMF and EMI exposure at the school and other community or residential buildings.
 - b. The City may also want to provide information, or determine if other entities will provide information, discussing the EMF and EMI impacts to BARC properties, NASA Goddard Space Flight Center, the Goddard Geophysical and Astronomical Observatory, and USS Rowley Training Center.
3. The DEIS fails to sufficiently identify EMF and EMI mitigation strategies.
4. The DEIS relies upon data provided by the Project Sponsor to determine whether the project meets International Commission on Non-Ionizing

Radiation Protection guidelines for limiting exposure to EMF. We recommend the City have someone with expertise in this area review this information.

IV. Compliance Issues with National Historic Preservation Act (NHPA) §§ 106 and 110(f) Requirements

A. Issues with the Programmatic Agreement (PA)

1. The Area of Potential Effects identified for the Greenbelt Historic District may be too narrow to fully account for all impacts.
2. The PA does not provide any avoidance or minimization measures specifically designed for the Greenbelt Historic District. Although these are not required, such plans are included for the BW parkway.

B. Cultural Resources Identified in the DEIS

1. The following resources in the Project Study Area are covered by the NHPA:
 - a. Martins Woods (National Register of Historic Places (NRHP) eligible)
 - b. Greenbelt Historic District (NRHP listed and a National Historic Landmark (NHL))
 - i. The North Woods and Hamilton Woods tracts of the Greenbelt Forest Preserve are contributing resources to the Greenbelt Historic District, which the DEIS fails to identify.
 - ii. The Area of Potential Effects considered for this area may be too narrow.
 - c. BARC (NRHP eligible)
 - d. Baltimore-Washington Parkway (NRHP listed)
2. The City should identify any City and BARC historical and archaeological resources not identified in the DEIS.

C. The DEIS fails to take into account reducing impacts to BARC and BW Parkway when evaluating alternatives.

1. NHPA 106. FRA has not completed its “adverse effect” determination for NHLs. The DEIS therefore does not identify ways to avoid, minimize, and mitigate harm to City and BARC historical resources. The DEIS states that additional information regarding the adverse effect assessment will be included in the FEIS. This delay prevents meaningful public comment.
2. NHPA § 110(f). FRA has not undertaken all possible planning to minimize harm to NHLs. NHPA § 110(f) requires federal agencies to apply heightened scrutiny to resolve adverse effects on the Greenbelt Historic District, an NHL. A Draft PA says FRA has notified the NPS NHL Program in the National Capital Area, which has jurisdiction pursuant to § 110(f), and invited them to participate in the consultation for the PA and sign the

PA as an Invited Signatory. The DEIS says FRA will consult with ACHP and DOI to minimize harm to the maximum extent possible.

V. Inadequacies in the Department of Transportation Act § 4(f) Analysis

A. Issues with the Least Harm Analysis

1. FRA delayed completing a least harm analysis until the Final EIS and final § 4(f) evaluation, after refinement of the design of the alternatives by the Project Sponsor (BWRR) and further coordination with the owners and administrators of potentially affected properties. This delay prevents meaningful public comment.

B. Issues with the Draft Alternative Analysis

1. The draft 4(f) alternative analysis is based on the DEIS Purpose and Need, so the arguments in Section I.B above also apply here.
2. The draft 4(f) alternative analysis did not consider an alternative that would have gone completely underground or underground significantly longer than the alternatives that were considered.

C. Impacts on Local Sites

1. Five local § 4(f) sites of importance would be impacted by the project: Greenbelt Forest Preserve, BW Parkway, Greenbelt Historic District, Goddard Space Flight Center, and BARC.
2. FRA says the final Section 4(f) Evaluation will report the outcome of coordination with the City of Greenbelt on the Greenbelt Forest Preserve.

VI. Project Funding and Cost Issues/Economic Impacts Assessment

A. Analysis of Funding and Costs Needed

1. The proposed project would cost between \$13.8 billion and \$16.8 billion, depending on the alternative. The expected average fare would be \$60 for a one-way trip but could vary between \$27 and \$80 per trip (in 2018 dollars). MARC one-way trip is \$8, Amtrak NEC is \$15, and Amtrak Acela is \$46.
 - a. The DEIS contains funding and operation cost analyses, which we recommend should be reviewed by someone with expertise.
 - b. The analysis should include any information that indicates the project would not meet the “revenue-producing” criteria in the purpose and need statement.
 - c. It is unclear whether the Project Sponsor can sustain operation of the D.C. to Baltimore segment of the project without public subsidies.
2. If a review is undertaken, we would draft comments accordingly.

VII. Maryland Environmental Policy Act

Any appropriation from the Maryland legislature to fund or subsidize the project would require the state to prepare an environmental effects report under the Maryland Environmental

February 3, 2021

Page 10 of 10

Policy Act. If after further review of the financial analysis it appears that a subsidy or other appropriation from Maryland may be needed, this issue should be raised in the comments.



February 3, 2021

Expertise Required for Comments

Transportation analysis, including impacts on traffic congestion, comparison to other modes of transportation (see Section I.B.2 of Outline of Issues)

Biology and forestry expertise (Section I.E)

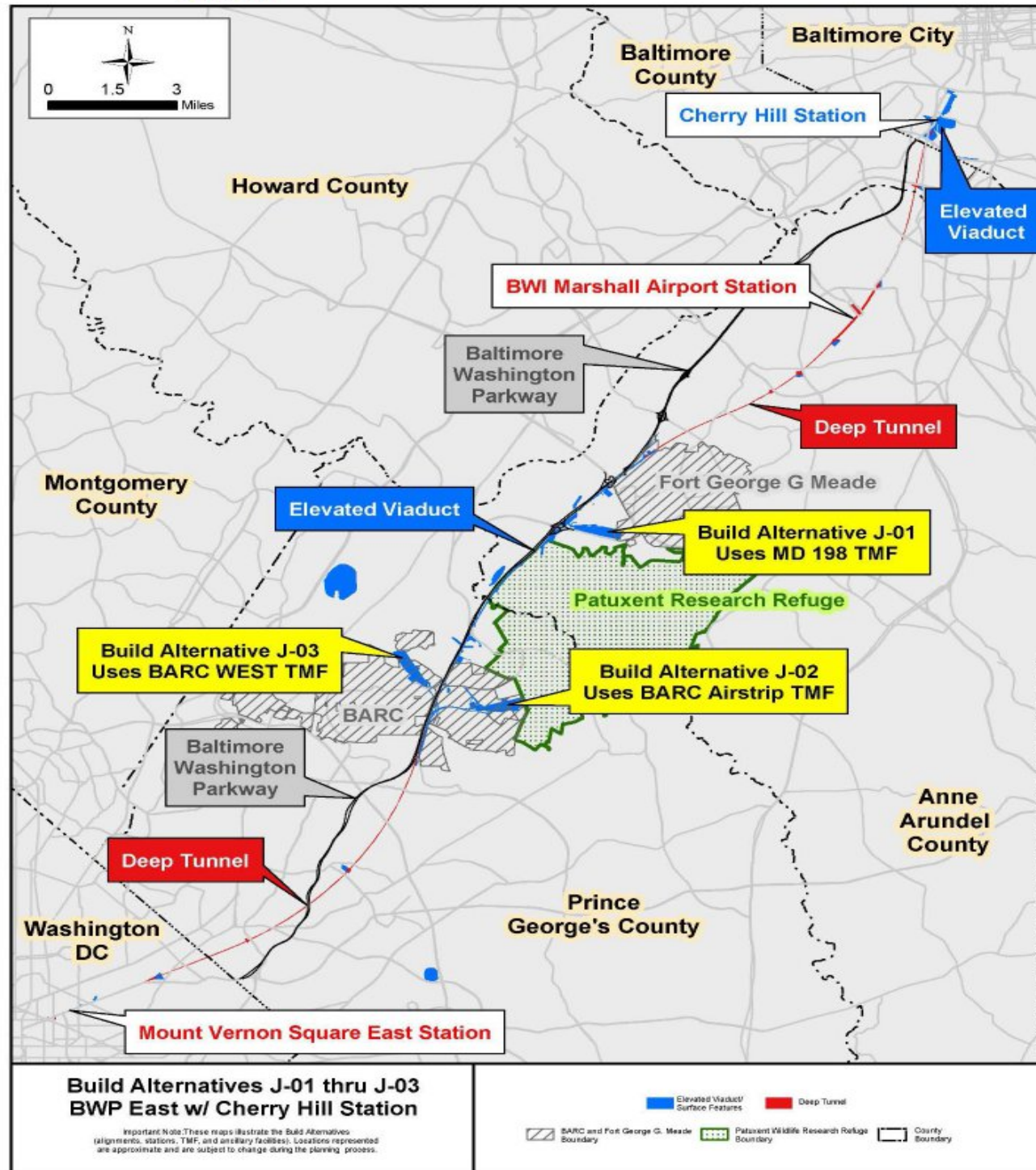
Geotechnical expertise regarding tunneling and how the proposed tunnel and aboveground viaduct would impact the natural and built environment, including residences and public property (Section I.H)

Economic analysis pertaining to project funding, construction and operation costs and viability (Section VI)

Expertise on EMF/EMI Radiation (Section III.B)

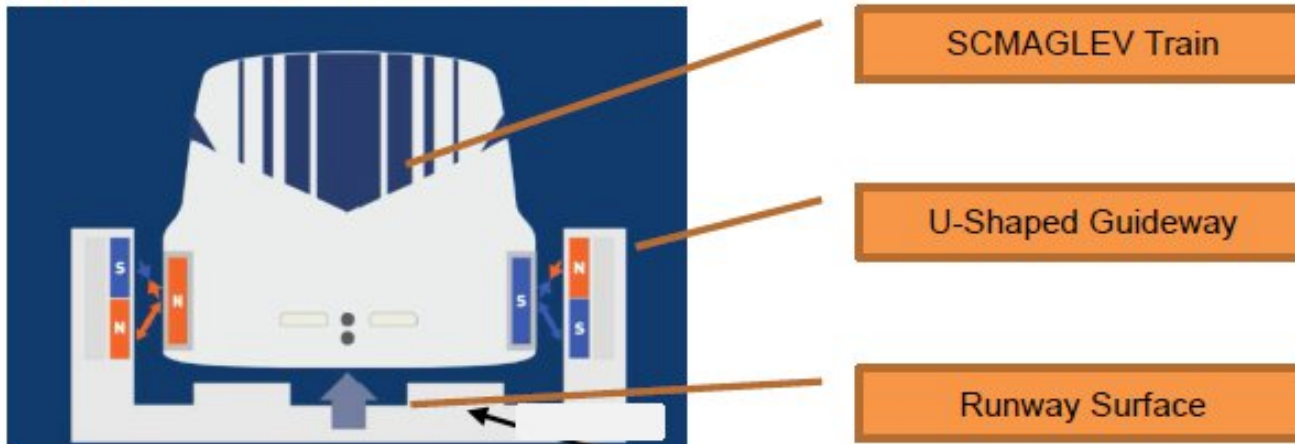
Air Quality Expertise (Section I.G) – The need for this expertise will depend on the level of detail desired in the comments on air quality and GHG issues, as well as whether these issues can be adequately covered by the traffic or geotechnical expert.

Figure 3.4-1: Build Alternatives J-01 through J-03 – BWP East with Cherry Hill Station



Maglev Technology

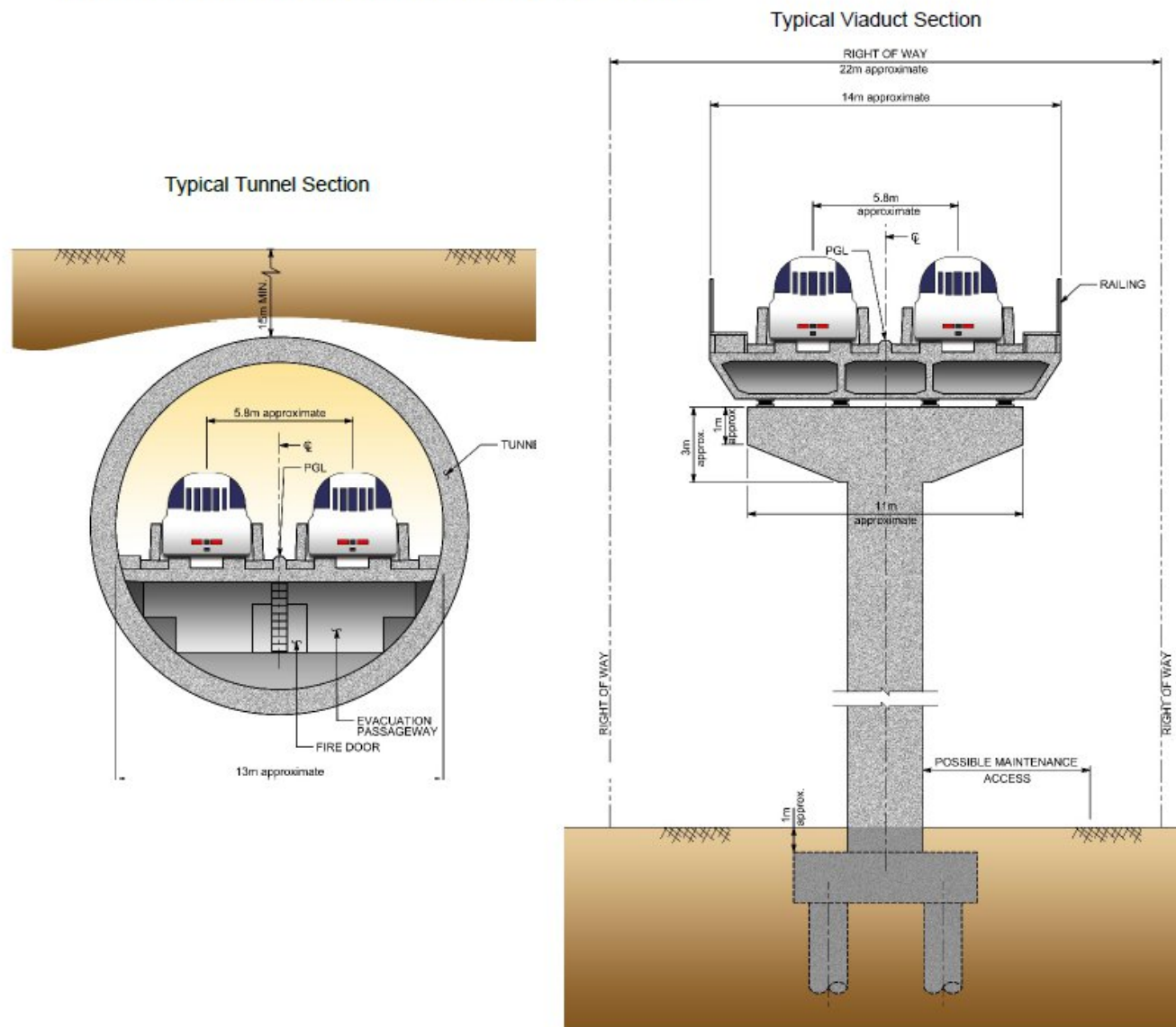
Figure 3.1-1: SCMAGLEV Guideway



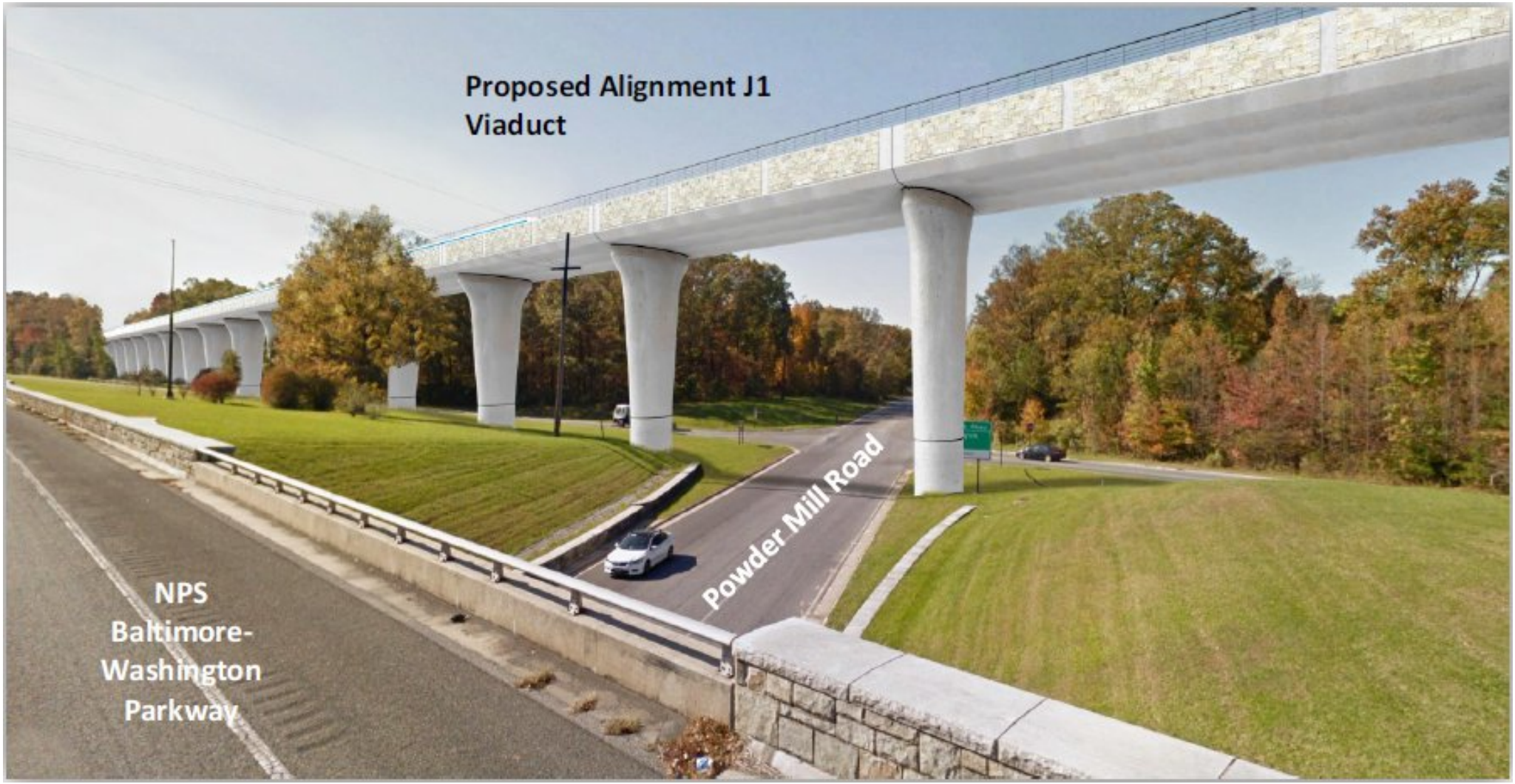
Source: BWRR 2020

Tunnel and Viaduct Structures

Figure 3.2-1: Typical Tunnel and Viaduct Sections







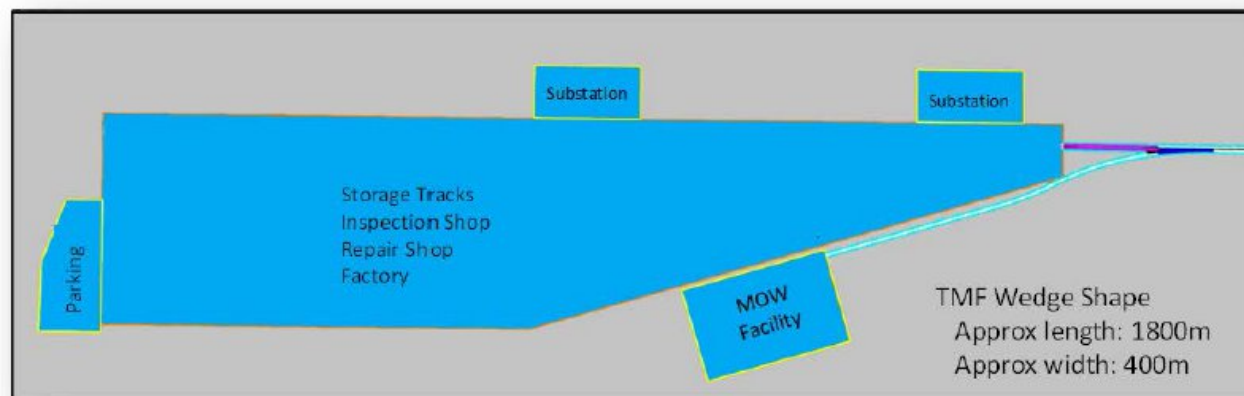
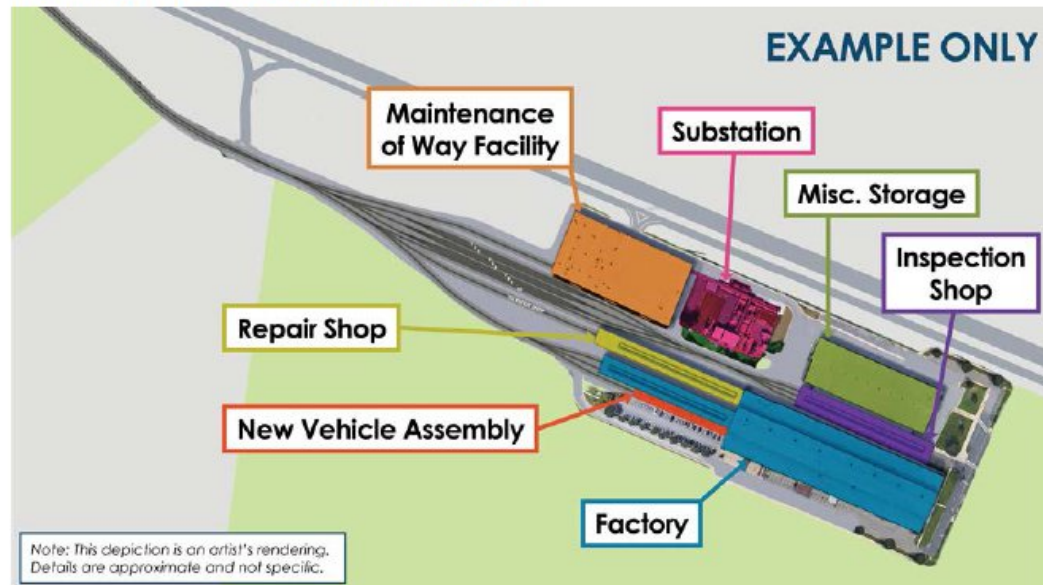
Proposed Alignment J1
Viaduct

Powder Mill Road

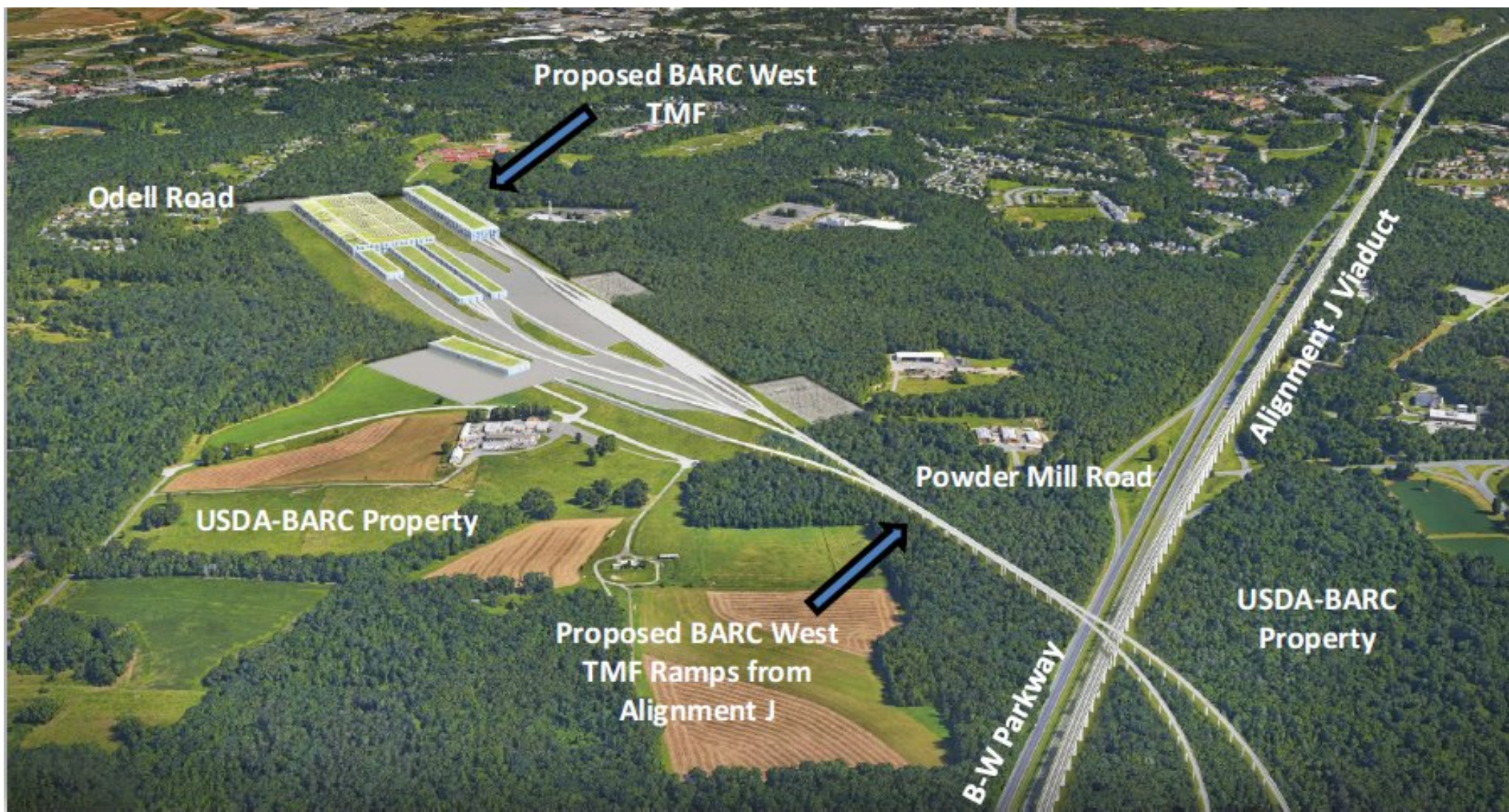
NPS
Baltimore-
Washington
Parkway

Trainset Maintenance Facility (TMF)

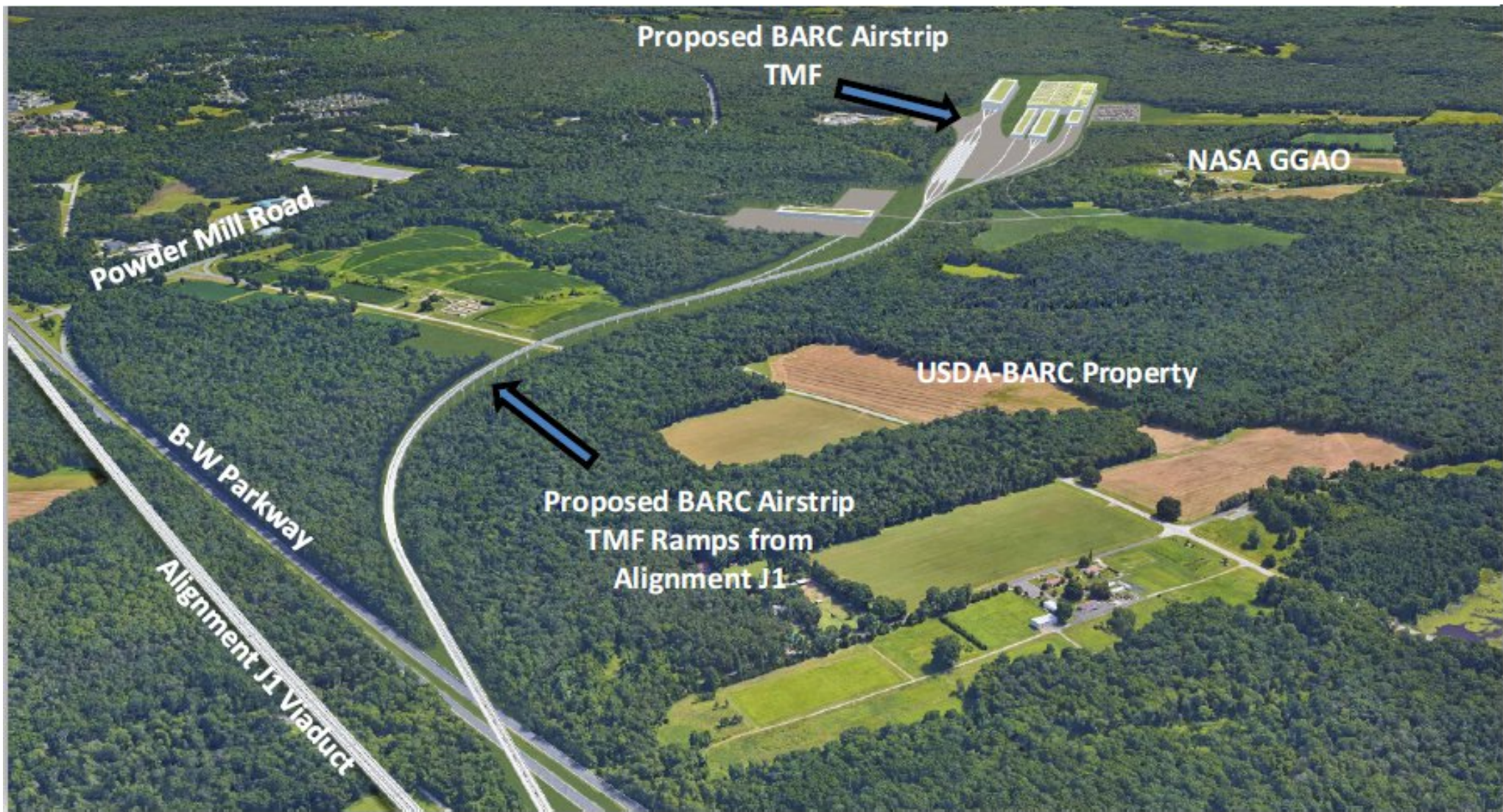
Figure 3.4-5: Conceptual TMF Layout











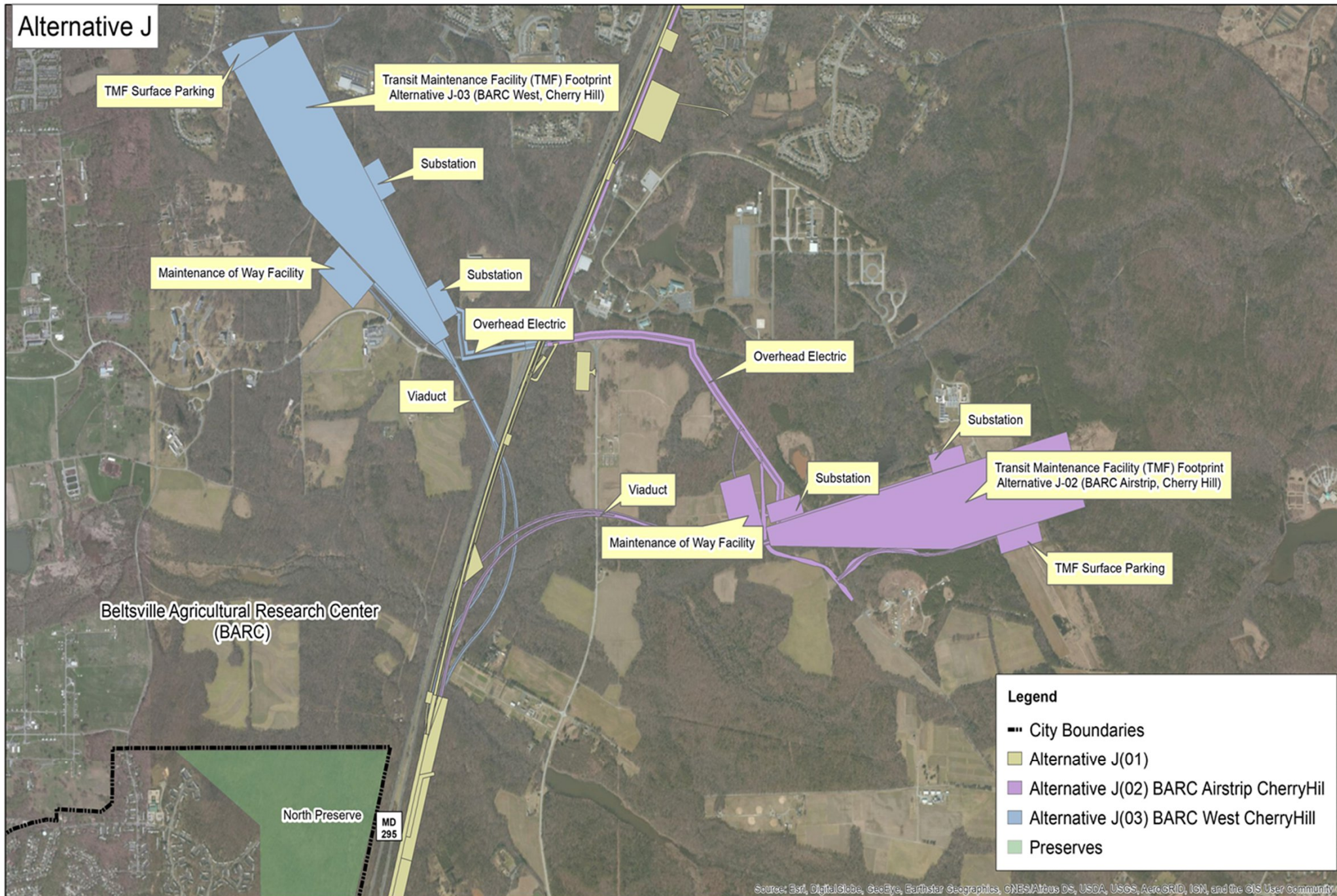
Alternative J



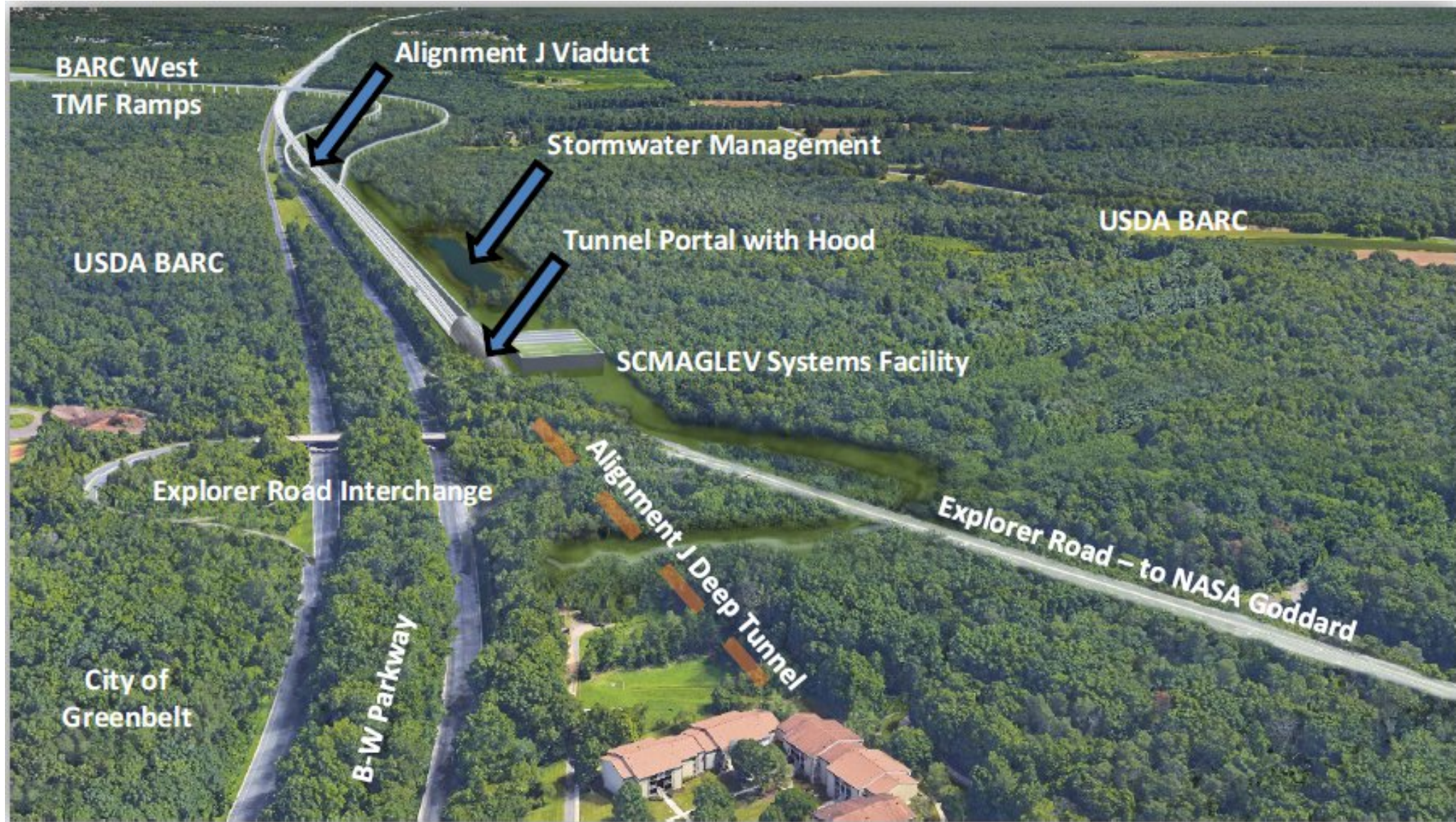
Alternative J



Alternative J







Alternative J1

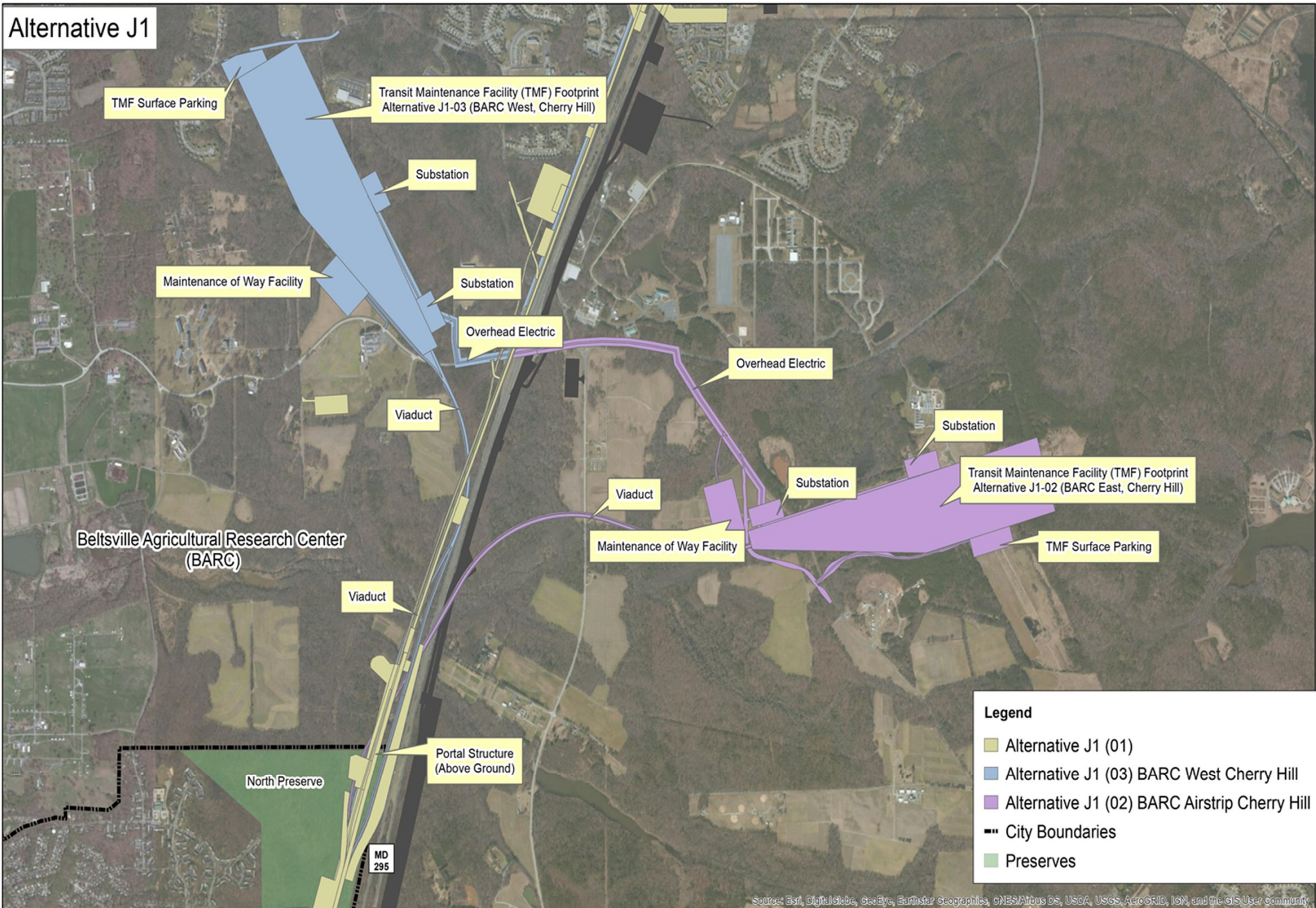
Alternative J1



Alternative J1



Alternative J1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User community



