Martin State Airport MARC Station Study

July 2010

Maryland Department of Transportation
Office of Planning and Capital Programming

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Final Report

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July 2010

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1. INTRODUCTION

Figure 1: Park along Middle River

1.1 Project Overview

Martin State Airport and its MARC Station have many fine assets: a general aviation airport with the ability to grow as a BWI reliever facility, the beautiful natural environment along the Middle River, excellent regional highway and transit connections, strong cohesive neighborhoods, and a stable population. Redevelopment opportunities abound for both adaptive reuse of existing small- and large-scale structures and construction of new development in close proximity to the MARC Station. One such opportunity – a major living, shopping, working destination at the former Depot property – would serve as a new anchor along the Eastern Boulevard corridor and a locus for mixed use development that would complement and support the relocated and expanded Martin State Airport MARC Station.

For nearly 10 years, Baltimore County has been working toward revitalizing and redeveloping the Middle River area. To set the stage for future investment in the area, the State and County have made significant infrastructure improvements, including construction of an extension of Maryland Route 43 from Interstate 95 in White Marsh to Eastern Boulevard adjacent to Martin State Airport. The road has opened up many suitable acres for development and provides an improved connection between Interstate 95 and the Airport. As part of their Growth and

Investment Strategy, MTA will be investing in relocating the Martin State MARC Station further to the east, increasing its capacity and configuring the new station as a future AMTRAK stop. With the forecasted addition of new military and contractor employment expected at Aberdeen Proving Grounds due to the Base Realignment and Closure (BRAC) process, Baltimore County hopes to attract new offices and base workers to locate in the Middle River area, specifically at the area around the Martin State MARC station.

Approximately one third of the land within a half-mile radius of the Martin State MARC station is undeveloped and it is all located north of the railroad tracks. Completion of MD 43 has provided new vehicular access to hundreds of acres of previously undeveloped land. The land south of the railroad tracks is dominated by the former GSA Depot property, a privately-held, 50-acre site that was formerly an aircraft manufacturing facility for the Glenn L. Martin Company, and by Martin State Airport, a general aviation airport owned by the Maryland Aviation Administration and home to the Maryland Air National Guard.

1.2 Purpose of this Study

This study has two distinct purposes. The first purpose is to evaluate the Martin State MARC Station and adjacent GSA Depot property for feasibility of relocating the platform to the east and expanding MARC operations at the site. This work will focus on the programmatic requirements for the Station, the existing Maintenance Facility, and reconfiguration of the rail tracks to accommodate current MARC and freight use and future additional freight needs.

The second purpose is to explore Transit-oriented Development (TOD) potential of the MARC station area and highlight key issues that either support or constrain future development. This planning process included a Market Overview to estimate the market supply and demand in the area surrounding the station. Further, the new TOD should be complementary to the historic use of the existing Middle River area, including its distinguished aviation heritage, reuse opportunities for the former GSA Depot property, enhanced connections to Martin State Airport and the Maryland Air National Guard facilities, and continued support for County redevelopment initiatives.

1.3 MARC Growth and Investment Plan

Recent growth on all MARC lines has been at over 6% per year from 1997 to 2007. Capacity constraints threaten the ability of the MARC system to meet this demand with acceptable level and quality of service. Investment will need to comprehensively address system capacity needs in multiple areas (parking, trains, spare equipment, tracks, storage, and maintenance shops). The State of Maryland owns rolling stock and some stations, but does not own or control the railroad lines. Service is provided by Amtrak and CSX under contract to MTA.
The benefits of investment in MARC will include better service for current riders, better connectivity, better on-time performance, and a framework for mobility in Central Maryland that currently serves the I-95 and Potomac Valley corridors as well as BRAC-related future travel markets.

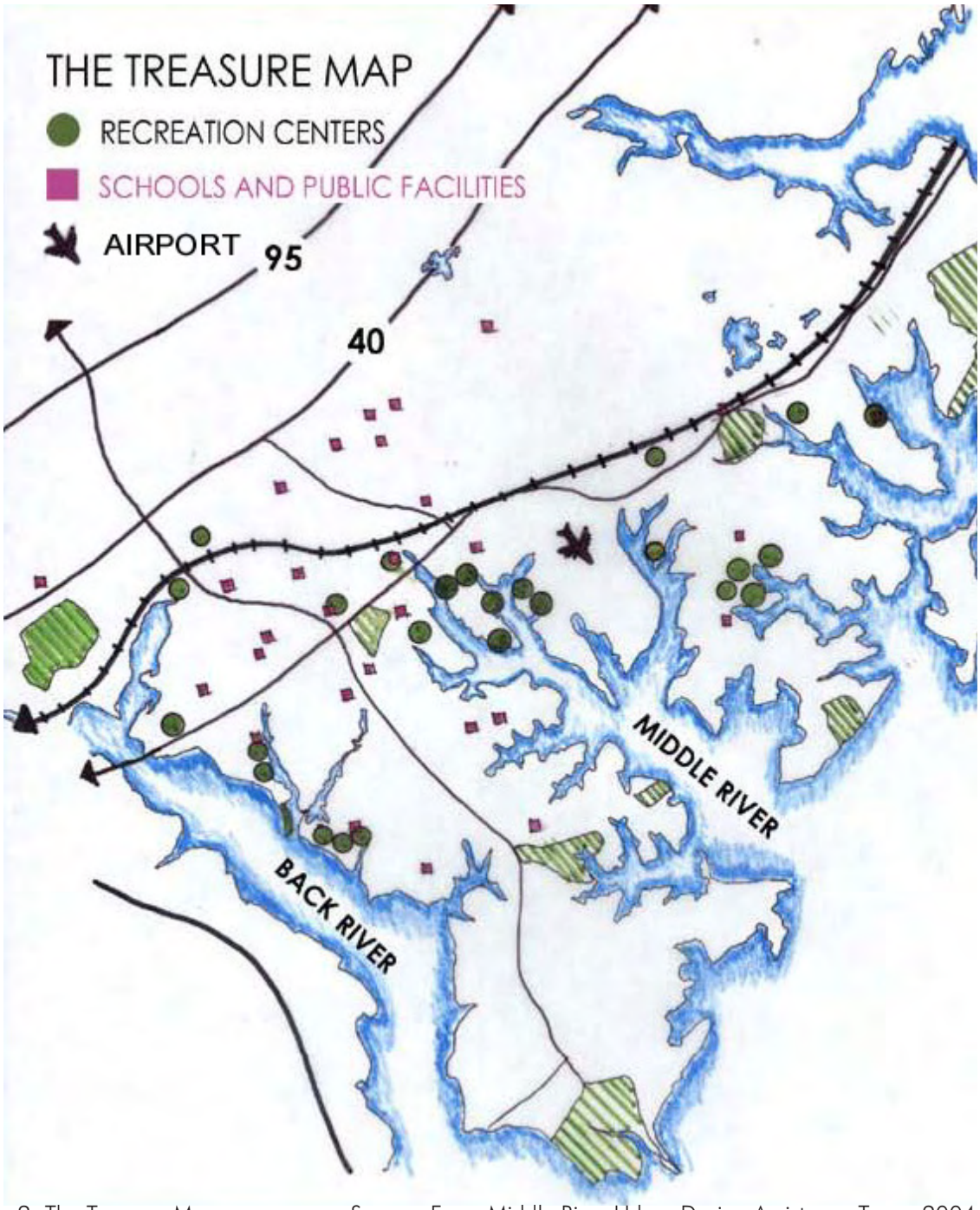

Figure 2: The Treasure Map Source: Essex-Middle River Urban Design Assistance Team, 2004

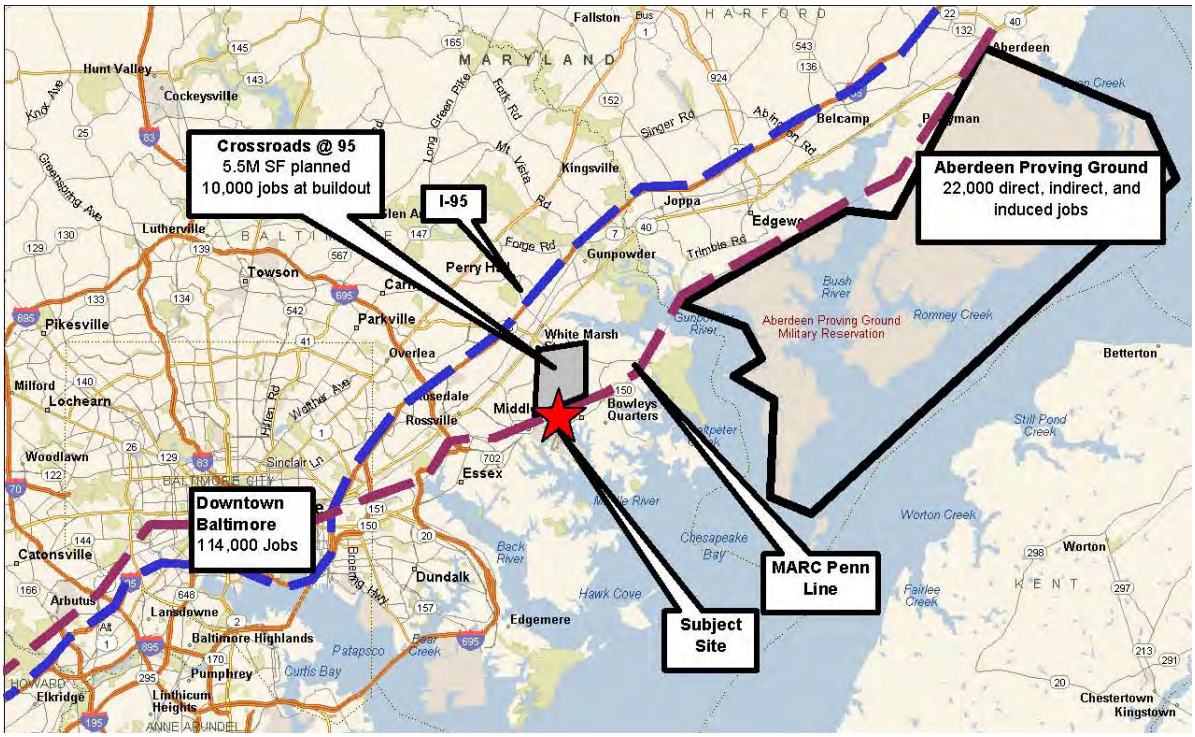

Figure 3: Regional Context

Source: BAE

The objectives for the MARC Plan include:

- Increase passenger-carrying capacity threefold and increase share of trips by MARC during peak travel periods
- Provide infrastructure to support 15-minute peak headways on Penn Line
- Provide express and limited stop service
- Provide mid-day, late evening and weekend service
- Improve reliability to 95% on-time or better

The Plan outlines a number of improvements for the Penn Line over the next twenty-five years. These range from hardware improvements such as adding train sets, to programming improvements such as scheduling changes and customer service initiatives.

1.4 Study Goals

To achieve the two basic purposes of the study – exploring the relocation of the station and potential TOD opportunities) the following goals were established.

- To provide a technical analysis and the related activities associated with making the station improvements including relocating elements of the station and the corresponding track work.
- To understand the feasibility of improvements to the Martin State MARC Station area that would enhance the proposed development at the former GSA Depot site adjacent to the station, as well as the new development in place and proposed for the Middle River area.
- To provide a conceptual vision o Transit Oriented development of the MARC station, the proposed GSA Depot development and surrounding area that enhances the State and

local investments in MD 43, Martin State Airport, and Baltimore County's Crossroads development.

- To partner with Baltimore County and the Middle River Community to engage in the planning of the GSA Depot site and the Martin State MARC Station and preserve the historically significant Depot site while creating a sense of place and economic opportunity as the central focal point for the Middle River community.

1.5 Study Process

The planning effort was conducted with the close involvement of "key stakeholder groups" who provided feedback on study process and products as they were developed. After refining the scope and gathering background information, a kick-off meeting was convened with the stakeholders. The key agency stakeholders included representatives from the Maryland Department of Transportation, Maryland Transit Administration, State Highway Administration, the Maryland Aviation Authority, and selected Baltimore County staff. Input from this group was supplemented with interviews with a broader array of stakeholders, including the owner/developer of the Depot property, AMTRAK, the Maryland Aviation Museum, the Air National Guard, and other local development actors.

After initial consultation with the key stakeholders, the study team documented existing conditions in the area and assessed potential market opportunities. Work during this task documented the study area demographics, land use, zoning, access, development dynamics, the station context, railroad track location and use characteristics, existing train station and MARC's maintenance facility. The team developed an overview of the potential for new development in the market area by analyzing the demand profile for the three general market sectors (residential, office and retail), and conducting cursory research of the existing and anticipated supply of space.

Upon completion of the Existing Condition and Market Assessment task, the study team divided its focus between the two key elements of the project: (1) determining the feasibility of platform relocation, and (2) highlighting the key issues related to TOD in the station area. The platform relocation explored the new location for the platform east of the MD 43 overpass, alignment alternatives for the tracks in the vicinity, and phasing requirements necessitated by longer term service needs. The exploration of TOD alternatives highlighted key issues/choices surrounding station area development and illustrated the physical implications of the various choices.

Finally, products from the two components were reviewed by the client and stakeholders, their comments were collected and incorporated into the draft report, and then this final report was completed.

2. EXISTING CONDITIONS AND MARKET ANALYSIS

Figure 4: Current MARC Station and Park & Ride lot.

2.1 Station Overview

For almost ten years, Baltimore County has focused on improving the economic vitality of the Middle River area through new economic development initiatives. The area has long been home to industrial areas, workforce housing, waterfront recreation, a State airport that is also the State's only Air National Guard base and a crossroads of transportation. The area is also of significant local/state/national historical significance as it was home to the Glenn L. Martin Aviation Company. Martin Aircraft built airplanes of their own design as well as war production of a variety of aircraft designed by other manufacturers, which helped the nation succeed in WWII and then shaped the future of passenger aviation after the war. This was the binding purpose and sense of pride that brought so many people to this portion of the Baltimore region for work and that continues to play a role in their community and family histories. Since its heyday, this area has been in decline, the excitement once felt many years ago has begun to return, as a result of Baltimore County's redevelopment initiatives and the State's major infrastructure investments, which have created a focal point and crossroads at the GSA Depot and Martin State MARC Station.

Figure 5: Former GSA Depot Facility (Glenn L. Martin Aircraft Factory)

In order to help the area revitalize, the County formed the Middle River Renaissance, along with business owners, the Maryland Air National Guard, Martin State Airport and local citizens. This group works to implement a vision for redevelopment of the area, tying several neighborhoods together with the existing industrial areas and new projects, such as the Crossroads office, industrial, institutional, commercial and residential area. The Martin State MARC Station and the adjacent GSA Depot are at the center of these efforts, and the Depot represents an important piece of the area's history. As part of the overall vision, the Middle River Renaissance group and the County hope to see the GSA Depot and the Martin MARC Station become a transit-oriented development (TOD) that serves the community by providing a mix of land uses, enhancing the historical Depot buildings, and creating a central focal point for Middle River's redevelopment. The County sees great potential for this site, as it could house a number of commercial amenities, entertainment outlets such as a new Glenn L. Martin Aviation Museum, and multi-family housing options.

2.1.1 Strategic Location

The Martin State MARC Station and the GSA Depot property are strategically located in the heart of an area that has been experiencing phenomenal residential and commercial growth, at the intersection of Maryland Route 43 (White Marsh Boulevard) and Eastern Boulevard in eastern Baltimore County. The station provides direct rail access to downtown Baltimore and Washington, DC and also will provide convenient rail access to the two locations in Maryland where new military and associated employment will be concentrated – the Aberdeen Proving Ground and Fort Meade. The Station is adjacent to the GSA Depot property, Martin State Airport, and two major employers: Lockheed Martin and Middle River Aircraft Systems. The property is within walking distance of a tributary of the Chesapeake Bay, with a shoreline dotted with parks, marinas

and waterfront homes.

2.1.2 GSA Depot

The GSA Depot property, shown in Figures 5 and 6, is 50.35 acres and the building is an open expanse of 1.9 million square feet. During the 1940's, Martin B-26 Marauders were manufactured by the Glenn L. Martin Company. The final assembly area of the bomber was in the upper level of the two-story warehouse, which still has 120,000 square feet of unobstructed space, lending itself to many adaptive reuses. This historic structure was designed by the noted architectural firm of Albert Kahn Associated Architects and Engineers, Inc. The use of steel trusses to achieve clear spans and the introduction of natural light through roof monitors and saw tooth clearstories still distinguish its appeal today.

2.1.3 Martin State MARC Station

The Martin State MARC Station sits on 4.76 acres of land in Baltimore County at the intersection of Route 43 and Eastern Avenue across from the end of the runway of Martin State Airport. It currently has 173 parking spaces and has a high level of usage, mostly by commuters to Washington, DC coming from nearby White Marsh, Perry Hall, Chase and the Middle River area. The station is on the Penn Line of the MARC system. It is included in the Maryland Transit Administration's "MARC Growth and Investment Plan" for expansion, which is one reason why the County is interested in identifying the feasibility of a slight relocation to better fit a TOD development involving the GSA Depot. Current MARC service focused on weekday rush hours, with four trains operating towards Washington in the morning and four

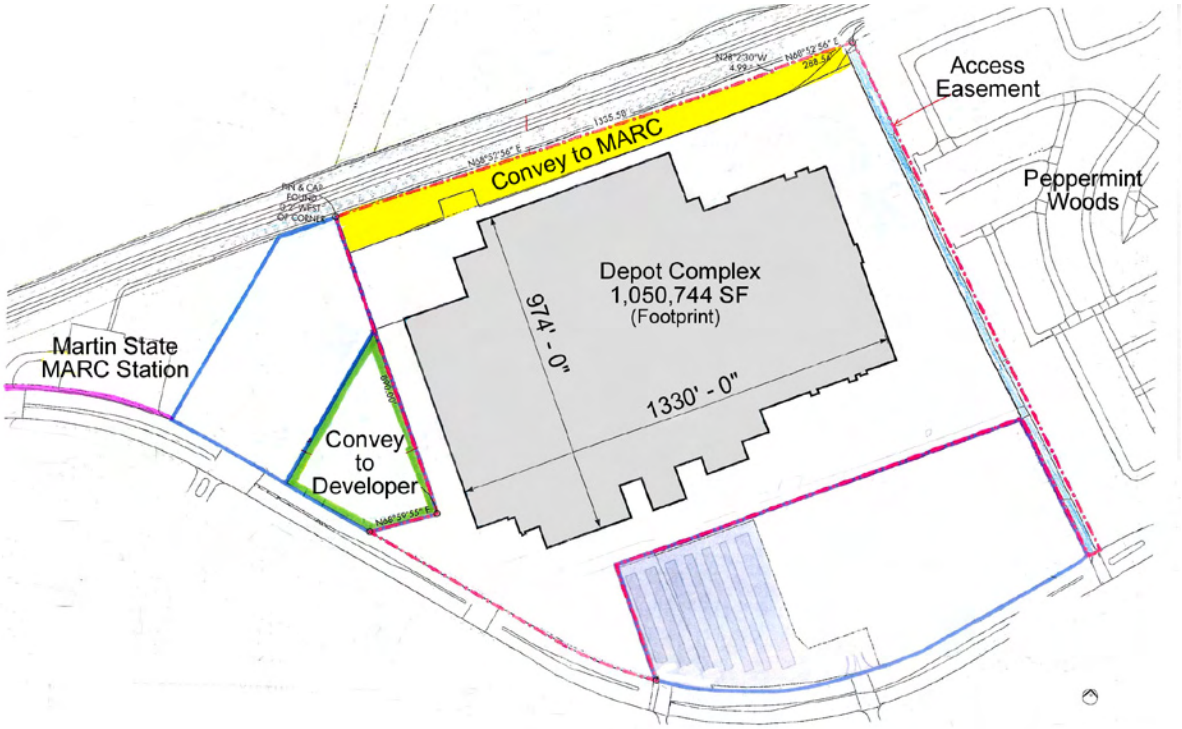

Figure 6: Dimensioned Drawing of Middle River Depot Buildings (Land Swap- MARC and Developer)

trains returning from Washington and operating towards Perryville, MD in the evening, with one additional train in both directions in the early afternoon. When the Growth and Investment Plan is implemented, the level of service will improve dramatically, with trains operating in both directions all day long, including on weekends.

The railroad right-of-way is owned by Amtrak and is part of the Northeast Corridor, which stretches from Washington, DC to Boston, and on which Amtrak operates high-speed, regional and long-distance intercity trains. Though no Amtrak trains currently stop at the Martin Station, the location of the station is potentially appealing to Amtrak as a station for regional trains serving the northern suburbs of Baltimore, and Amtrak has included it in its 2030 Master Plan as a potential station.

2.2 Station Context

2.2.1 Existing Conditions

The station site is located across Eastern Boulevard from Martin State Airport, which occupies 747 acres and includes a 7,000 foot runway, several hangars, and administrative offices. To the east of the station site and the GSA Depot is the Peppermint Woods subdivision, a modular home neighborhood. Across the railroad tracks to the north of the station is the Crossroads@95 development, a planned 5 million square foot mixed use development including office, research and development,

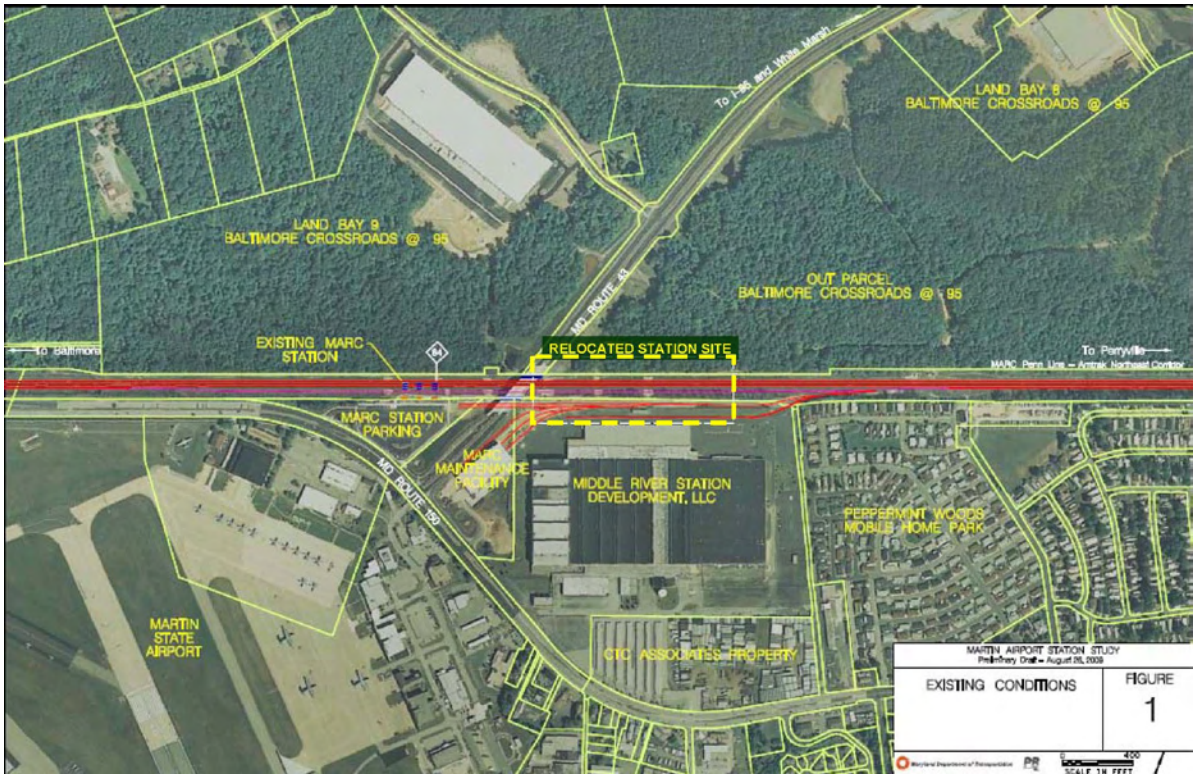

Figure 7: Parcelization and Key Uses

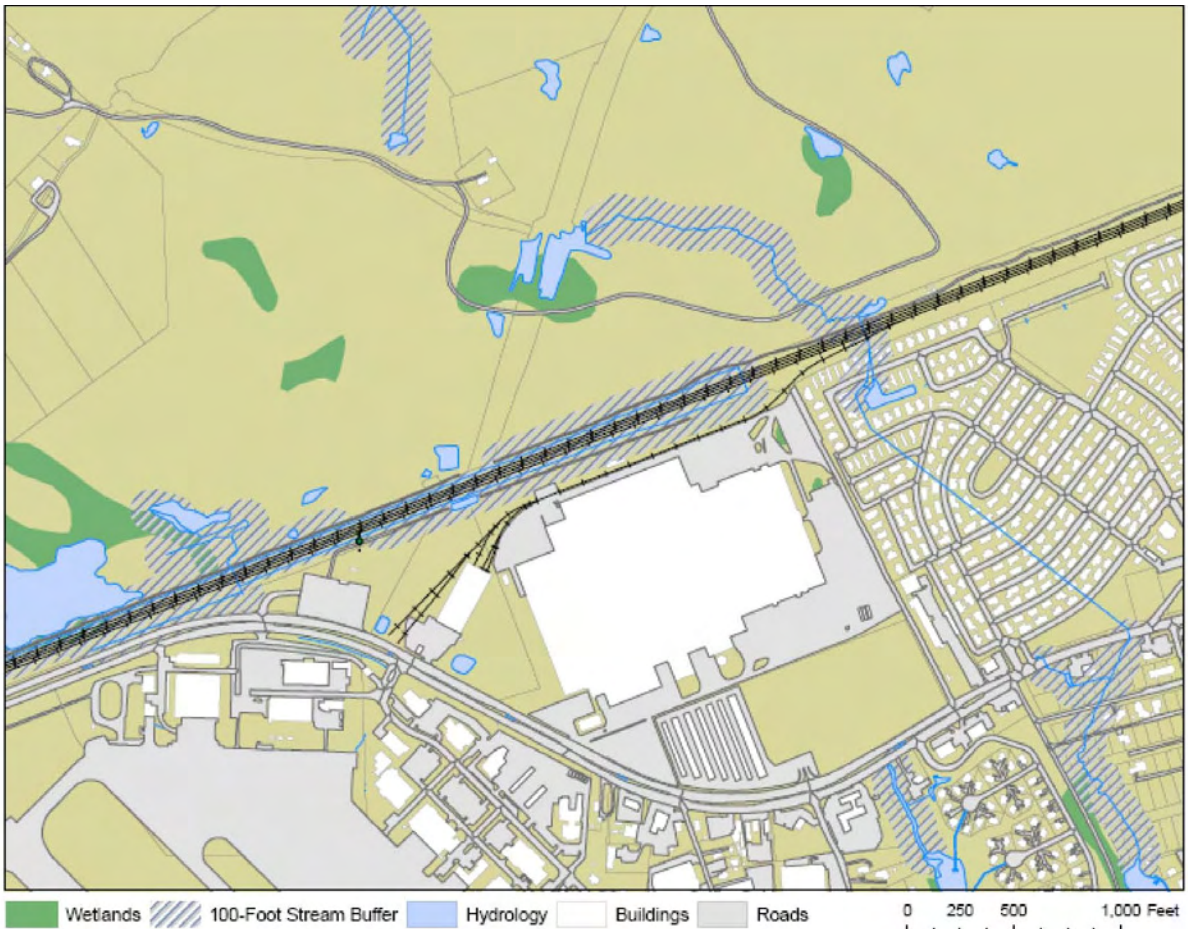

Figure 8: Environmental Constraints

warehouse, and industrial space, along with approximately 400,000 square feet of retail space, two hotels, and luxury multi-family residences. See Figure 7 for existing parcels and key uses.

The station site is within an area of significant environmental features, as shown in Figure 8. There is a significant topographical change directly north of the railroad tracks, with as much as a 30-foot vertical difference in elevation within 300 feet of the railroad tracks. There are also wetlands in that area, shown in green, and significant water features. Because of these environmental issues, the parcel north of the station site was set aside during the development of Crossroads @ 95 as a Forest Conservation Easement.

As shown in Figure 9, the station site and most of the surrounding area is zoned for heavy manufacturing. The Peppermint Woods neighborhood is zoned for light manufacturing, and the neighborhoods along Stevens Road are zoned for medium and high-density residential uses. Much of the land to the east of the station site along Eastern Boulevard is zoned for local and roadside businesses.

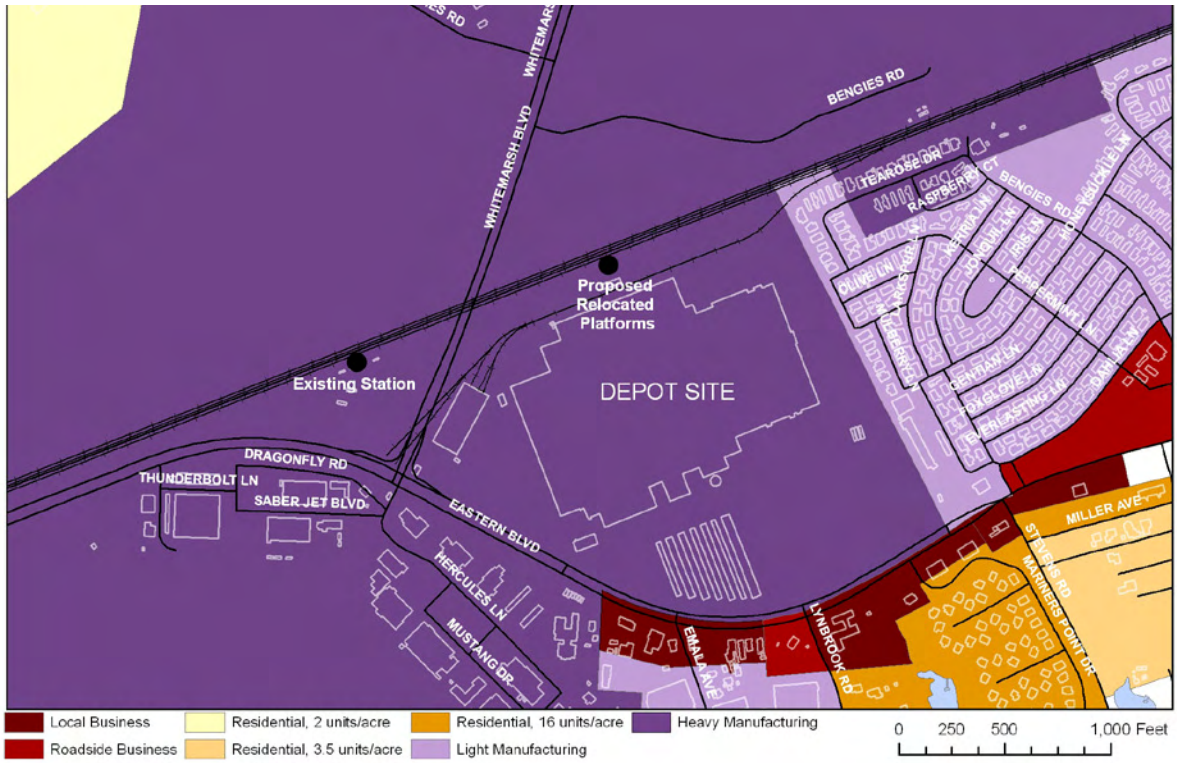

Figure 9: Existing Zoning

Figure10: Crossroads @ 95 Development

2.2.2 Development Context

Over $800 million in private, state and county investment in infrastructure upgrades, streetscape improvements, new parks and housing will serve to encourage employment intensive development. Obsolete World War II-era apartments have been purchased by Baltimore County and razed to make way for modern housing, new parks and open space. More than 5,000 new single family, townhomes, workforce affordable rentals and senior housing units are have been built and or proposed in the area.

Adjacent to Maryland Route 43 and shown in Figure 10, Baltimore Crossroads @ 95 and Windlass Run Business Park comprise one of the Mid Atlantic's largest new business communities. Construction of spec buildings began in summer 2005 on more than 1,000 acres designed for corporate campus, office, high value manufacturing and distribution.

The existing and planned density of this type of development is not conducive to high transit mode shares. The County's original and current plans for this area have not been oriented towards the train station and have not been at a scale and density or in a configuration sufficient to attract significant trips to transit. The existing commercial core of Crossroads @ 95 is remote from the train station and accessible only by car. Continuing to build more of the same type of development will not constitute a successful TOD, and greater density in close proximity to the train station will be necessary to take full advantage of the regional accessibility provided by the MARC station.

Projections call for the business park to attract more than 10,000 new jobs within a decade. With the Base Realignment and Closure (BRAC) additions to Aberdeen Proving Ground (APG), the County hopes to attract contractors and base workers to the area to locate at the business park and residential areas. They hope to designate the GSA Depot and Station area as their BRAC Zone when they are closer to implementing a TOD at the site.

2.3 Market Overview

An analytical overview of the local real estate market was conducted to evaluate the recent and current market dynamics and estimate the overall development potential for the land in the vicinity of the Martin State MARC station and the Middle River Depot site. This effort combined analysis of economic and demographic trends with current residential and commercial market conditions to arrive at a preliminary assessment of general future development opportunity within the market area (shown in Figure 11). The analysis evaluated the current competitive development framework for the area surrounding the site and detailed information on socio-economic trends, market dynamics in residential (for sale and rental), office, and retail land uses, and potentially competitive projects that are planned, proposed, or under construction.

The full market assessment is presented in its entirety in the Appendix of this report. In general, the potential of the market sector was characterized as follows:

- **Residential**: The residential market is evolving with numerous planned and proposed projects, but the station area has strong potential to compete successfully with other areas, primarily due to its proximity to rail transit. As is generally the case in the current economic downturn, the rental residential market is healthy, but with a potential undersupply of Class A units. The assessment forecasts that the market will absorb new residential development at a rate of approximately 250 new units per year.
- **Office:** The surrounding area is emerging as office market, although there is an oversupply of office space currently. As a result, the station area will face very strong competition for new office space from a number of planned large scale projects. Market area net absorption potential is estimated to be between 200,000 GSF to 250,000 GSF per year, although currently planned and approved developments will be able to account for much more new office space that this rate implies. While access to transit that connects to forecasted BRAC-related growth at Aberdeen Proving Grounds, as well as to BWI Airport, makes the site a superior location for new office development, a deep pool of existing and proposed competition will likely dampen rents. However, convenient access to executive aviation at Martin State Airport and the potential for future Amtrak regional service are distinguishing factors for this area.
- **Retail**: The retail market is weak and is oversupplied; indeed, the local market is experiencing net negative absorption. However, niche opportunities could exist, especially if a strong, unique anchor retailer decided to move into the area. However, in general, only store categories that have smaller spaces would represent a good fit for this TOD location. Presumably, there would be a market for convenience retail associated with a train station with significant passenger volumes and a short walk from significant numbers of jobs. These would be in the smaller-footprint category but could form a viable retail nucleus at the train station, as has been the case at other successful TOD sites.

The proposal for the Middle River Depot site calls for a major redevelopment of the structure with a hotel and conference facility, specialty retail, a component of new housing, and office space on a mezzanine to take advantage of the unique building dimensions. The property could also have the potential for some form of destination entertainment-oriented retail. Some examples of adaptive reuse of large-scale federal structures throughout the country are informative. Some reuse projects have continued industrial/manufacturing

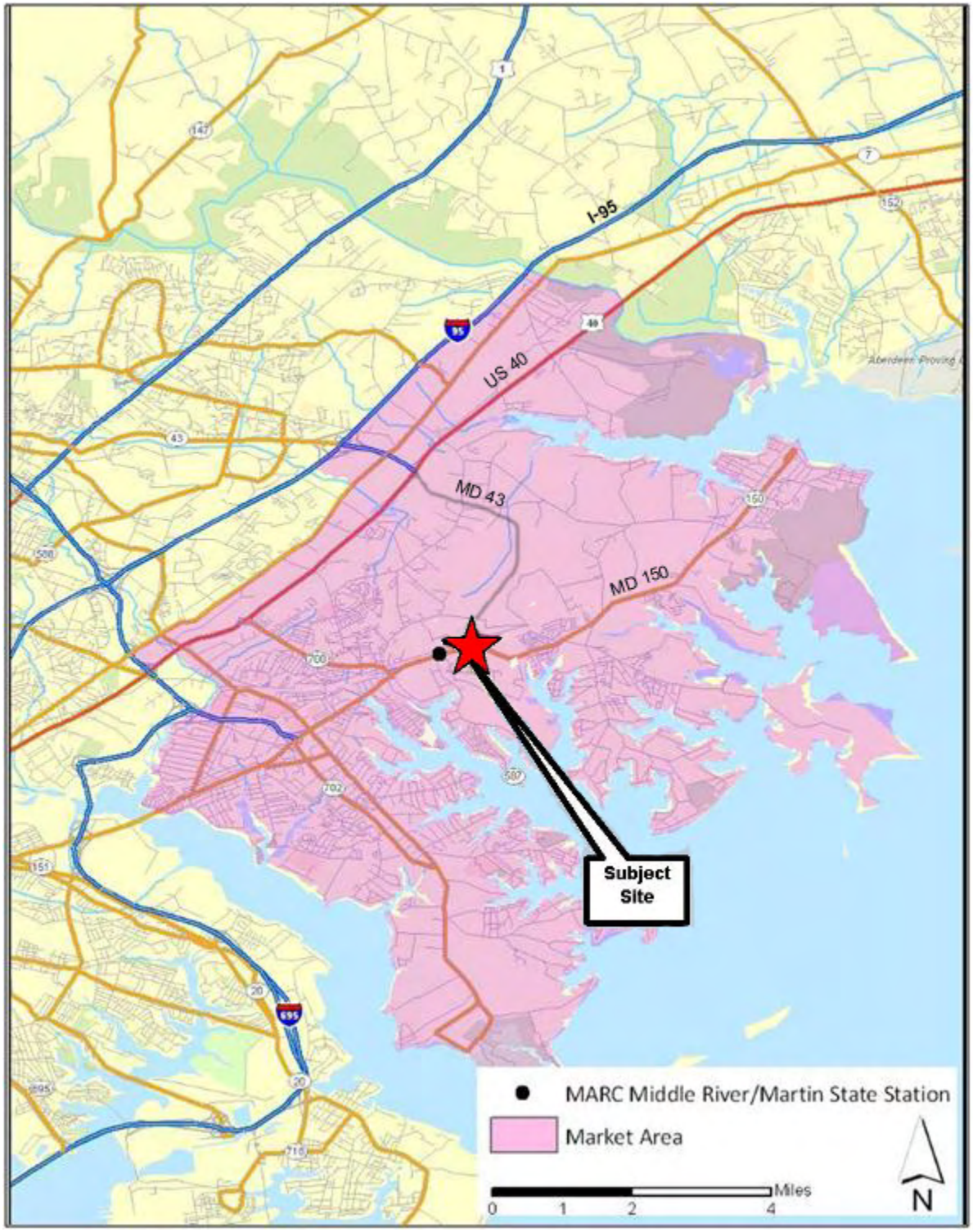

Figure 11: Market Area

uses, strategically targeted economic development sectors (e.g., green/"clean tech" oriented products). In other cases, big box retailers could be drawn to the structure. Also, less conventional, entertainment-oriented uses such as indoor water parks, skating rinks, or indoor soccer fields could be considered. Artists, particularly creators of large-scale artwork such as sculptures, may be drawn to the site as a gallery/workshop space as well.

3. STATION ELEMENT FEASIBILITY STUDY

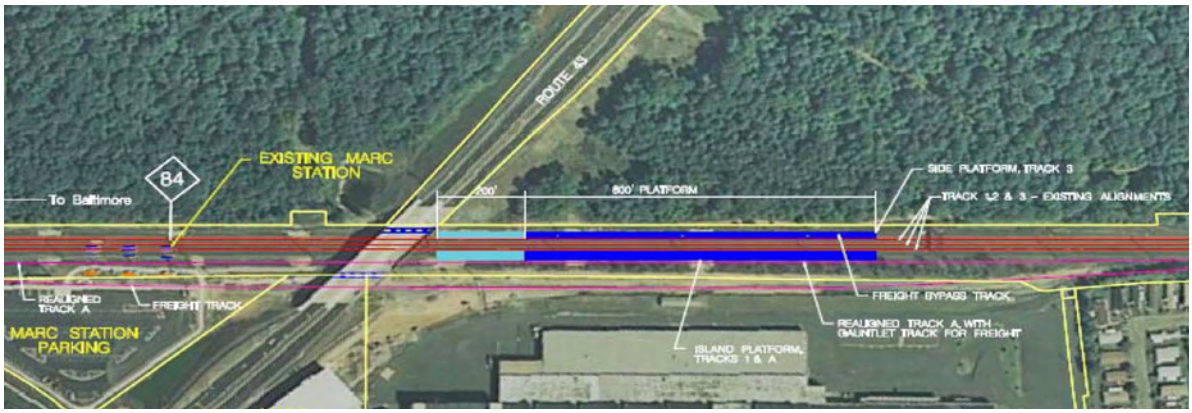

Figure 12: Diagram of Potential Relocation of Station

3.1 Objectives and Scope of Analysis

The station element of the study was intended to confirm the feasibility of relocating the MARC Martin State Airport station to a location on the east side of the MD 43 bridge adjacent to the Depot site, determine the required configuration of tracks, station platforms and other station facilities, and identify the railroad infrastructure elements that would be required. The analysis was undertaken accounting for the projected future growth in intercity passenger, commuter and rail freight traffic by all three railroads that operate trains through the station area: Amtrak, MARC and Norfolk Southern.

The team developed and evaluated the feasible alternatives for relocating the MARC Martin Airport station. Specific work elements included:

- Developed planning guidelines for the track and platform configuration and station facilities at Martin Station Airport, based on projected future growth in MARC passenger traffic and applicable station design standards, and meeting future requirements for the operation of Amtrak, MARC and Norfolk Southern trains through the station area.
- Identified limits of right-of-way within which the MARC station can be feasibly relocated.
- Identified specific site opportunities for relocating the MARC station to the east of the MD 43 bridge, adjacent to the Depot property.
- Identified options for both surface parking and structured parking for a relocated station in concert with the Depot facility (see Section 4: Transit-oriented Development Analysis).
- Evaluated platform and station access in the context of either retaining the MARC Maintenance

property in the near term, or relocating the MARC maintenance functions to another site, as planned by MTA. Developed a phased implementation plan that would incorporate the maintenance facility in the interim and allow for re-use of all or a portion of the property once the maintenance activities are relocated.

- Enumerated the advantages and disadvantages of the alternative locations and configurations, including the current location, in terms of possible synergies with potential development at the Depot site (see Section 4: Transit-oriented Development Analysis).

3.2 Existing Station Configuration and Train Operations

The railroad at the site has four main line tracks; these are labeled Tracks A, 1, 2 and 3 from south to north (see Figure 12). Track A is used primarily by Norfolk Southern freight trains, which use the Northeast Corridor to travel to and from the Port of Baltimore. Track 1 is used by MARC during rush hours, by Norfolk Southern during the overnight period, and occasionally by Amtrak long-distance trains. Tracks 2 and 3 are the tracks on which Amtrak's high-speed Acela trains operate (northbound and southbound respectively).

The existing Martin Airport station does not have a traditional platform. Instead, it has three shelters similar to bus shelters set back from the right-of-way, and three walkways serving short wooden platforms adjacent to Track A and wooden planks across Track A to allow passengers to reach a train on Track 1 (the track normally used by MARC) or Track 2. To ensure passenger safety when a MARC train is making a station stop on either Track 1 or 2, the Amtrak train dispatcher makes sure that no trains can operate on the tracks in between the platform and where the train is stopped. Even though the operation is safe, it is cumbersome for the passengers. The platform arrangement requires MARC passengers to walk across the rails of Track A (if their train is positioned on Track 1) and step up into the train, and it allows passengers to access only three consecutive door positions on a train that could have eight cars or more. As a result, train dwell times at the station are longer than they need to be, and access to the train for passengers in wheelchairs or with limited mobility is awkward and difficult.

Directly to the south of the existing four main tracks is a service pathway for Amtrak track maintenance access. On the south side of the maintenance pathway is a swath of right-of-way owned by Maryland MTA, which has two tracks that lead westward into a small storage yard and maintenance shop for MARC rail cars. The shop building is the former paint shop of the Martin aircraft facility and is located in between the Depot and MD 43. The two tracks connect to main line Track A to the east of the Depot property. MTA has plans to relocate its equipment maintenance activities to a new, larger

site, but full funding has not yet been obtained, studies are ongoing, and the timing of the project is uncertain.

3.3 Future Station Configuration and Train Operations

The existing MARC platform configuration at Martin Airport does not meet current MARC or Amtrak standards for a passenger station on the Northeast Corridor main line, although it has been marginally acceptable for the relatively low level of MARC service currently operating at the station. In the future, as traffic grows, this configuration will no longer be acceptable, and the station will need to be rebuilt to modern standards, providing better access for passengers to and from the platform(s), meeting the accessibility requirements of the Americans with Disabilities Act (ADA), and providing train dispatchers with greater flexibility over where they position trains at the station.

A schematic representation of the proposed future station track and platform configuration at Martin Airport is shown in Figure 12. In the future, Amtrak Acela and Regional trains are expected to continue to use Track 2 northbound and Track 3 southbound. Some Washington-bound MARC trains are expected to use Track 3 during the weekday morning peak period, so a side platform on Track would be required to allow these trains to stop at the Martin Airport station. Track A is projected to be upgraded to allow it to be used by passenger trains. Bi-directional MARC service during the day and in the evening peak is projected to use both Tracks 1 and A, so an island platform between these two tracks would be a practical way to provide passenger access to MARC trains operating on these tracks. Track 2 would be kept clear of any platforms, in order to provide a route through the station area for wide-load freight trains that are too wide to be able to use tracks adjacent to platforms. Freight trains would continue to use Tracks 1 and A. It is expected that a gauntlet track would be provided on Track A to provide a second route through the station for wide-load trains.

A station configuration with one island and one side platform provides ample capacity for MARC to increase the quantity of service at the station, including making Martin Airport the last stop for an extension of the hourly Penn Line service that now runs between Washington Union Station and Baltimore Penn Station on weekdays. Amtrak trains also would be able to serve the station, if Amtrak decides at some point that a regional station for the northern Baltimore suburbs makes sense.

The relocation of the station platforms to the northeast of the MD 43 bridge is feasible. Both the Track 3 side platform and the island platform can occupy the 1,000 foot section immediately northeast of the MD 43 bridge. An island platform could shift southward as necessary but cannot shift northward due to the narrowing of the right-of-way in front of the

Peppermint Woods development.

The relocated Martin Airport station must preserve access to the existing MARC maintenance facility. The station plan should accommodate the maintenance facility remaining in place and also should allow for the possibility that MTA relocates maintenance activities to a new location. At such time as the MARC maintenance facility is relocated, it would be possible to construct a dedicated bypass track for freight trains using the right-of-way now occupied by the tracks leading to the MARC maintenance facility. At the time of the writing of this report, Amtrak and Norfolk Southern had not yet agreed upon the required track configuration through station areas such as Martin Airport to accommodate freight traffic. Therefore, this study preserves the future opportunity to construct a freight bypass track. Should such a track prove to be unnecessary, the property currently occupied by the MARC maintenance facility tracks could be used to expand station facilities, parking or transit-oriented development.

3.4 Station Design Standards and Program Requirements

The existing MARC station at Martin Airport provides minimal facilities and customer amenities. Any relocation or significant construction at the station will trigger development of new facilities that meet appropriate industry and MTA standards for a commuter rail station.

Both MARC and Amtrak have specific design standards for stations. The following design standards must be met at any relocated platform(s):

- Platform height must be 48 inches above the top of the rail.
- The platform must be 800 feet long to meet MARC 8-car train standards, and must be able to be extended to 850 feet long to meet Amtrak's Northeast Corridor Regional minimum standard, or 1,000 feet long to accommodate MARC or Amtrak ten-car trains.
- The platform must conform to minimum width standards to accommodate passenger loads and ensure safety. For an island platform, a 30 foot width is desirable, and 24 feet is the minimum width without columns (26 feet is the minimum with columns). For a side platform, 14 foot width is the minimum and 16 feet is desirable.
- To meet ADA requirements, there must be level boarding at each car of the train (i.e., passengers must not have to step up or down), and the gap between the car door and platform edge must be no greater than 3 inches. This requires that the platforms edges are tangent (e.g., perfectly straight), which means that tracks through the station should have no horizontal curvature. It also means that the platform tracks cannot have any vertical curvature. Station tracks can be located on an even grade, up to 1%, but level platforms are desirable.

A pedestrian bridge or tunnel to provide access from either side of the right-of-way to the platforms would be necessary in a new station. There is also the potential to locate station facilities at either the bridge or tunnel level. While a tunnel raises significant issues with respect to drainage, lighting, and the perception of patron safety, it would likely be less costly than a bridge. A bridge, on the other hand, would provide high visibility access to the platforms, offering better perceived security than a tunnel. The design requirements for a future bridge are as follows:

- 15 foot width desired (12 foot minimum, according to Amtrak standards)
- The bridge must be located approximately 30 feet vertically above the platform, in order to clear above the system of overhead catenary wires that delivers electric traction power to the trains.

A tunnel typically has lower construction costs than for an overhead bridge. A tunnel would have to provide adequate drainage and should offer good sightlines and a feeling of spaciousness. The design requirements for a tunnel are as follows:

- 20 foot width desired (15 foot minimum, according to Amtrak)
- The tunnel must be located approximately 20 feet vertically below the platform.

No matter which method of vertical circulation is chosen, the location of the bridge/tunnel on the platform is important. The ideal location from a pedestrian circulation standpoint is close to the center of the platform, for even distribution of passenger loads and queues. The NFPA 130 life safety standard calls for platform egress points at 600-foot intervals, so that no passenger has to walk more than 300 feet to reach a point of egress from the platform. If fenced reservoir areas are provided at both ends of the island platform, a single or double access point tied to the vertical circulation element in the central portion of the platform is sufficient, as shown in Figure 13.

The station building location has several options. For MARC service, the highest level of boarding traffic would be southbound (using Track 3 side platform for the early morning peak, and the island platform at other times). For potential Amtrak service,

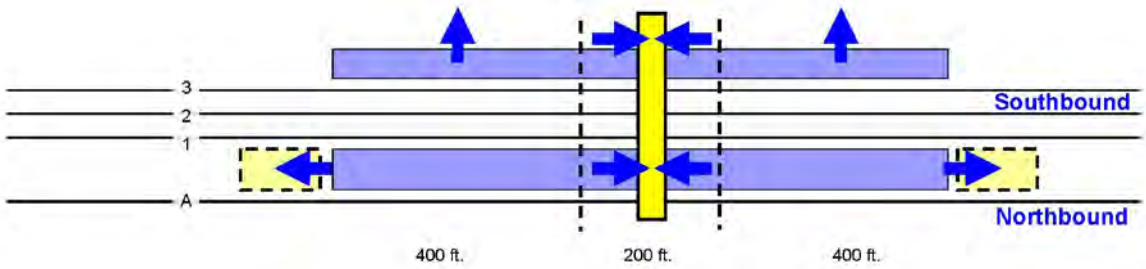

Figure 13: Vertical Circulation Diagram

the highest level of boarding traffic likely would be northbound, towards Philadelphia and New York, using the island platform. Transit-oriented development will exist on the Track A side in either scenario, and may exist on Track 3 side. The three options for the station building are: Track 3 side (adjacent to side platform), Track A side (with no direct platform correspondence), or at bridge level above the tracks (providing direct access to both platforms, but with the highest capital cost).

3.5 Required Station Elements

The Martin State Airport station should be considered an Intermediate Class station in the MARC station classification system, for planning purposes. This classification includes the following design elements:

- Platform canopy: 400 foot minimum, full length of platform optional
- Platform shelters or windbreaks with seating
- Vertical circulation: stairs, ADA access provided by ramps or elevators, and allowance for future escalators
- Station building with ticket office and waiting area (optional, depending on local conditions)
- Ticket vending machines
- Passenger information: variable signage and public address
- Security systems (e.g. CCTV)
- Passenger pick-up and drop-off facilities, bus bays
- Bicycle storage
- Pedestrian access and landscaping

In order to make the Martin State Airport station compliant with the higher standards of Amtrak's Medium Class (50k-400k annual passengers), the following standards are required:

- High level platforms – full train length
- Waiting room/ rest rooms
- Ticket office
- Quik-Trak ticket vending machines
- Auto/taxi pick-up and drop-off lanes
- Bicycle racks
- Platform canopy
- Passenger boarding assistance
- Passenger information display system (PIDS)
- Security on-call/ systems
- News stand/ vending machines

Some Amtrak stations in this classification offer Red Cap service (porters, who assist passengers with their luggage) and checked-baggage handling for long-distance travelers. The need for these facilities is assessed on a case-by-case basis, and they are not likely to be required at Martin State Airport. Finally, the station can interact with transit-oriented development through the following station elements:

- Station building as neighborhood focal point
- Retail concessions within or adjacent to station building
- Public walkway above or below tracks linking potential development on both sides of the

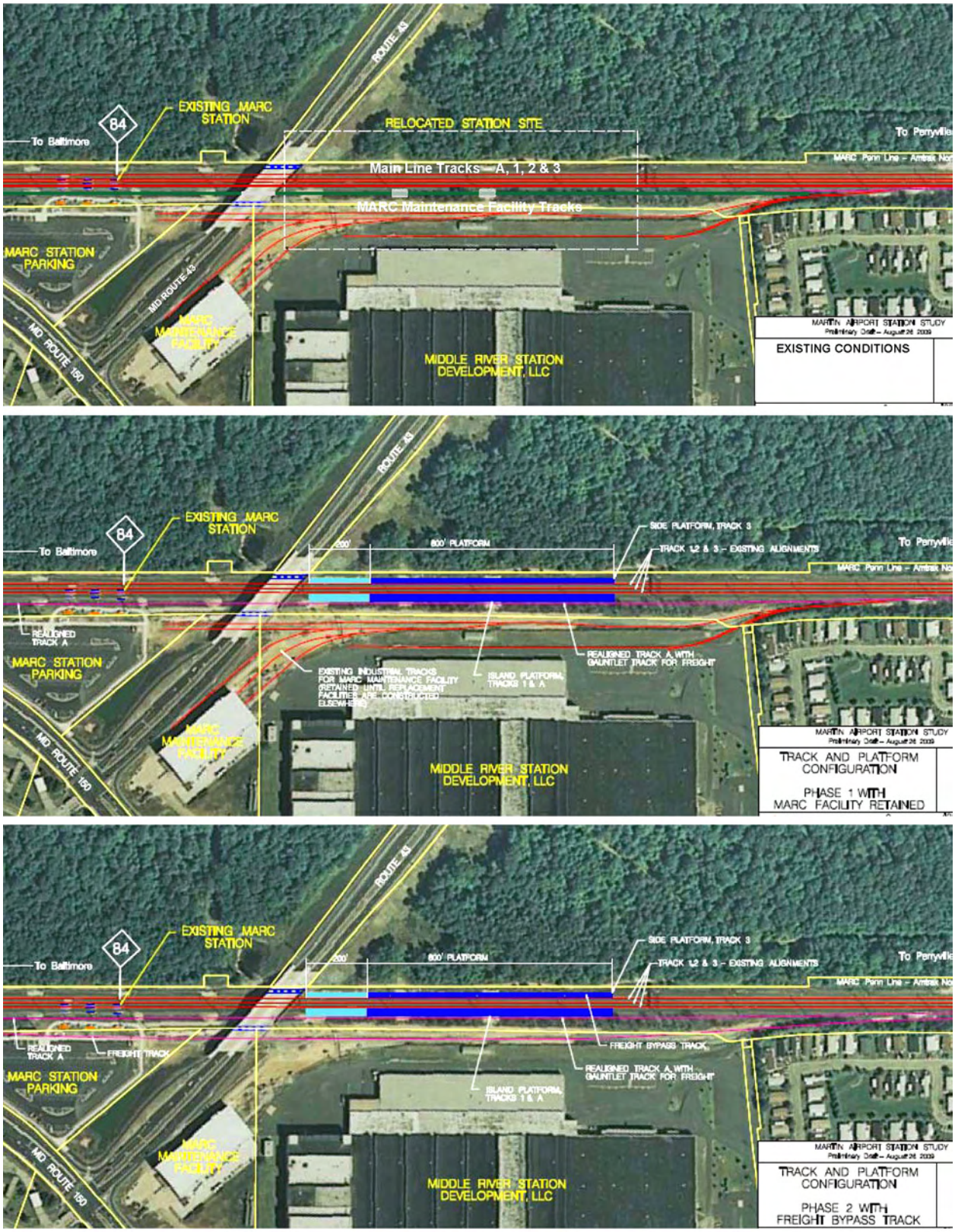

Figure 14: Track and Platform Configurations -- Aerials

right-of-way
- Structured parking

Key issues in determining the station's relationship with TOD are the location and configuration of TOD development, and the location of station parking and access.

3.6 MARC Maintenance Facility Program and Access Requirements

The team evaluated station platform configurations and accessed options in light of the existing MARC maintenance property and the future potential for all or a portion of this facility to be relocated to another site. The team interviewed MTA-MARC staff to confirm current and planned uses for the maintenance facility, status of plans to construct new maintenance facilities to serve the Penn Line, expected timing of implementation of new facilities, potential for relocation of all or some functions from the Martin facility to other locations, requirements for track access to support current functions, planned functions and potential interim use prior to relocation to a new facility.

The station concept plans allow the Martin Airport station to be relocated while the MARC maintenance facility remains in operation at its existing location, either permanently or on an interim basis. Long-term options were developed and analyzed that either retained the maintenance facility or assumed its relocation away from the Martin Airport site. The work identified:

- The boundary between MARC passenger station facilities and MARC maintenance facility,
- Property limits and track access alignment/configuration for future permanent maintenance facility at existing site,
- Property limits and track access alignment/configuration for future interim maintenance facility prior to relocation to new site, and
- Relocation staging options.

3.7 Station Siting and Configuration Alternatives

A number of alternative station platform and track configurations were identified and analyzed. The most logical and flexible option would relocate the station facilities to the northeast side of the MD 43 bridge and provide for a side platform on Track 3 and an island platform in between Tracks 1 and A. To create space for the island platform, the alignment of Track A would be shifted to the southeast. Adequate space exists beneath the MD 43 bridge and along the right-of-way to accommodate this track shift with no modifications to the bridge structure and no acquisition of property. Several existing catenary poles, which support the overhead traction power system, along the southeast edge of the alignment would have to be relocated to accommodate the track shift. The switch providing access to the MARC maintenance facility from Track A also would need to be rebuilt in a slightly different location. On the whole, however, the required modifications

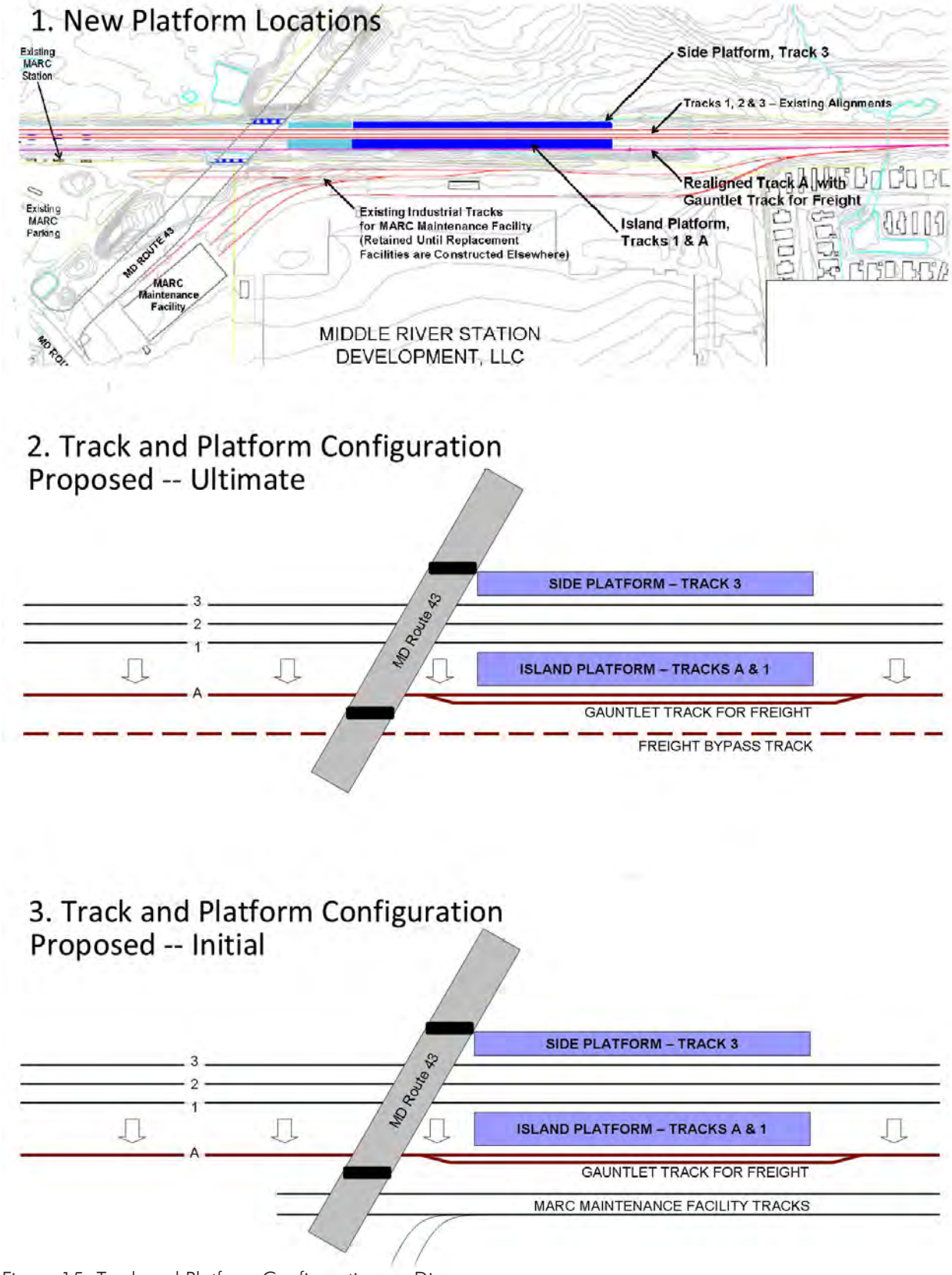

Figure 15: Track and Platform Configurations -- Diagrams

to the existing railroad infrastructure to accommodate moving the station to this location would be minimal.

Figure 14 shows the existing track configuration and a possible two-phase implementation of the station and related track work. These two phases are shown schematically on the diagrams in Figure 15. Phase 1 would retain the MARC maintenance facility, shift Track A and construct the MARC station with an island and side platform on the order of 800 ft. long. In a possible second phase of development, if the MARC maintenance facility is relocated, a freight bypass track could be constructed in the right-of-way currently occupied by the maintenance facility lead tracks. Alternatively, if the freight bypass track is not required, the thin strip of MTA-owned land could be used to expand station parking and access or for transit-oriented development uses.

The team prepared a PowerPoint presentation on existing conditions, programmatic requirements, station relocation opportunities, and platform/track configurations. This presentation was given to the Stakeholders and is included in the Appendix.

Figure 16: Site of island platform and shifted Track A, adjacent to Depot complex on right.

4. TRANSIT ORIENTED DEVELOPMENT ANALYSIS

Figure 17: Maryland Aviation Museum Static Display Aircraft

4.1 Stakeholder Goals

One key to a successful plan is a clear understanding of stakeholders' goals, interests, and perceived challenges for study area. This information heavily influenced the TOD concept alternatives that are presented in this section. Stakeholder goals were determined in two ways: (1) from reviewing plans and proposals from Baltimore County, private developers, Martin State Airport, and the MTA and (2) through interviews with key representatives of the stakeholder organizations.

Based on existing plans and interviews, several themes emerged as described below.

4.1.1 Overall Area

Three main issues were presented that

concerned the overall Middle River/ Martin State area.

1. Take advantage of transportation infrastructure. Optimize the new MD-43 link between Interstate 95 and the airport/station area. Plan for the airport and vicinity to continue to evolve into a major transportation and development destination.
2. Capitalize on Martin State Airport. Continue to promote the general aviation facility as a unique, but underutilized, transportation asset. Support having the facility realize its potential.
3. Recognize historical context. Celebrate the local and Maryland aviation heritage in the station area.

4.1.2 Martin State Airport Station

Stakeholders had consistent desires to improve capacity and access at the Martin State Airport MARC Station.

4. Improve capacity at the station so that it can serve as a major north-side park-and-ride destination. Relocate the station so that the platforms can be extended to accommodate longer trains. Increase the amount of MARC service at the station, by reducing peak headways in the direction of Baltimore and Washington, adding peak service in the direction of Harford and Cecil Counties, and expanding service during off-peak hours and on weekends. Increase long term public parking at the station. Finally, have Amtrak stop at the station regularly.
5. Enhance the functionality of the new station. Improve the environment for passengers at the station and make the station compliant with the requirements of the Americans with Disabilities Act (ADA). Explore having a pedestrian tunnel to access the future island platform. Provide wide platforms to accommodate escalators/elevators comfortably. Encourage bicycle and pedestrian access to the station, and enhance pedestrian safety between new station and airport. Encourage mixed-use development near station. Develop sense of place while enhancing the Park & Ride function at the station. Maintain existing level of service for vehicular traffic on Eastern Boulevard.

4.1.3 TOD Planning

The following general concepts were heard during discussions of potential transit-oriented development at the station.

6. Continue to focus on the Middle River Depot as the major development anchor. Explore the implications of the historical significance of its many component structures. Create a focal heritage attraction on the Depot parcel at the intersection of MD-43 and Eastern Boulevard.

   Explore solutions that will mitigate the potential impacts of new development on adjacent residential neighborhood. Explore how to best accommodate long term park-and-ride parking on the site. Explore possibilities of capitalizing on the historic property

and identity and protect the identity of existing neighborhoods adjacent to the station.

Improve pedestrian and vehicular access throughout the site. Explore how to pull the existing MARC commuter lot into new development. Address the museum's needs. Encourage Park & Ride access from Eastern Boulevard and Route 43.

7. Explore the development potential of the parcels that is immediately north of the relocated platforms on the west side of the MD 43 bridge. In particular, explore the "Forest Conservation Easement" on the northern-most parcel that will be adjacent to the relocated platforms. Can this designation be swapped with another parcel that doesn't have such significant development potential? Explore having the long-term park-and-ride parking on the northern-most parcel.

4.2 Opportunities and Constraints

Based on the stakeholder goals and work in earlier tasks, the team conducted a strategic assessment of TOD opportunities and constraints at the study area. With a number of constraints, potential strategies to overcome or alleviate them were identified and incorporated into the conceptual alternatives. The assessment included physical and environmental considerations, regulatory issues, site access, station capacity, and growth related opportunities and constraints. Stakeholders reviewed and commented on this description of opportunities and constraints. Following is a summary of key opportunities and constraints.

Figure 18: Upper Level of Depot Building

Figure 19: F-105 Thunderchief being positioned for display at Martin State Airport terminal

4.2.1 Opportunities

1. **Location.** The location and potential strategic importance of the Middle River Depot site are obvious assets in development. The close access to I-95, the outstanding regional road access (providing excellent links to Baltimore and Washington DC), and the station's location on the lucrative Amtrak Northeast Corridor are all outstanding opportunities.
2. **Airport.** The Martin State Airport provides a strategic opportunity for development. The airport has landside expansion potential, and has the possibility of serving as a reliever airport for BWI Thurgood Marshall Airport.
3. **History.** There is a distinguished history to the area, and a compelling theme of Maryland Aviation that can guide marketing efforts.
4. **Station Context.** The station is surrounded by a stable neighborhood that has the potential to support future retail and restaurants in the area. The environmental setting is also highly attractive, with waterfront access and biking trails in the area.

4.2.2 Constraints

1. **Size.** The sheer size of the Middle River Depot is a constraint, as filling such a large space with a development program presents a challenge. However, demolition of any part of the Depot presents additional challenges because of historic designations and protections.
2. **Land Use Context.** The existing surrounding land use, which includes significant industrial development, is not conducive to walkable TOD.
3. **Environmental Constraints.**

The restriction of the Forest Conservation Easement on the parcel north of the relocated station is a constraint that would limit north-side development at the station site.

4. **Railroad Infrastructure.** The extremely wide right-of-way at the relocated station constrains the ability to provide convenient pedestrian access to the station and across the right of way and makes integration of development on both sides the railroad difficult to accomplish. This right-of-way includes the four mainline tracks, as well as the pair of tracks leading to the MARC maintenance facility and a service roadway used by railroad maintenance workers. A pedestrian bridge or tunnel across this right-of-way would be long, relative to those that exist elsewhere at successful TOD sites. The railroad ownership of the station property and the need to protect the future interests of intercity passenger and rail freight service in addition to those of commuters also poses a constraint on development above or immediately adjacent to the railroad.
5. **Economy.** The current economic climate and uncertainty over the pace of the recovery will likely push back any development scenario several years.

4.3 TOD Concept Alternatives

Based on information gathered in an earlier tasks, stakeholder input, and analysis of opportunities and constraints, two TOD concept alternatives were developed for the station area. The alternatives illustrated station access options, potential development scenarios for sites on both sides of the rail Right-of-way, programmatic options, site organization concepts, and conceptual use models. Once the draft concept alternatives were reviewed by the client and stakeholders, they were refined and illustrated in "plan diagrams." At the conclusion of the alternatives task, both concepts alternatives were advanced, rather than choosing one or blending both. Finally, an outline of advantages and disadvantages of each alternative was summarized and presented at the end of this section.

The concept alternatives were created and organized around a list of key issues and each alternative illustrates a set of choices as to how to resolve these issues. As a result, each alternative illustrates a fundamentally different approach to development around the station. One alternative accepts the existing regulations and constraints, while the other represents how regulatory initiative could have a significant effect on the form, size, and character of future development. Following is a description of the Key/Issues and Choices, and alternative ways to resolve them.

4.3.1 Key Issues/Choices

1. **Organization of new development at the relocated station**. Ostensibly, the Forest Conservation Easement (see page 16) would restrict development on

the parcel north of the relocated station. However, if the restriction on that parcel can be "swapped" with another parcel, it would be possible to develop it. Therefore, the two choices are:

a. Development on the south-side only, on the Middle River Depot site.
b. Development on both the north- and south-sides of the relocated station.

2. **Location of the "Park & Ride" public parking.** Referencing the previous issue, if development can only occur on the south-side of the relocated station, then replacement public parking would need to be on the south-side as well. However, if the conservation easement can be swapped with another parcel, then replacement parking could be on both sides of new station. Therefore, the two choices are:
   a. Construct public parking garage on the south-side on the new station, as part of the Middle River Depot development.
   b. Construct public parking on both sides of the new station, as part of the lower floors of the development to the north and on the existing Park & Ride lot on the south.
3. **Configuration of pedestrian connection to the new station.** The two fundamental configurations for gaining access to the relocated station platforms created either a bridge or a tunnel. These options could be organized as follows.
   a. On the alternative that has development on the south-side only, a tunnel could be constructed that would link the Depot site to the island platform.
   b. On the alternative that has development on both sides of the new station, a bridge could be constructed that would link both sides, as well as provide access to the island platform.
4. **Utilization of the Middle River Depot.** The issue here is whether there are portions of the Depot that can be demolished, creating more room on the site with better vehicular and pedestrian circulation. The existing structure is approximately 2 million GSF; removing the non-contributing structures would yield approximately 1 million GSF remaining. Therefore, the two choices are:
   a. Retaining the entire Depot structure for development and parking
   b. Demolishing the non-contributing structures and outbuildings, and concentrating new development and parking in the smaller (1 million GSF) structure.
5. **Siting of the Aviation Museum and its large static display.** There are two highly visible sites that could accommodate the Museum and outdoor display, one on each side of the intersection of Route 43 and Eastern Boulevard, and they represent discrete locational choices:
   a. Locate Museum and display area on the existing station's Park & Ride lot.
   b. Locate Museum on the western

Figure 20: Alternative 1

edge of the Depot structure with the large static display on the southwestern-most portion of that parcel (in the vicinity of the maintenance structure) on the part of the parcel defined by the Depot structure, Route 43, and Eastern Boulevard.

6. **Treatment of the edge between the Depot property and the neighborhood adjacent to it on the east** (the modular housing community).
   a. One option would be to create a buffer, both visual and acoustic, between the neighborhood and the Depot property.
   b. The other option would be to extend the neighborhood to the west, "into" the Depot property, with construction of new multifamily residences on the eastern edge of the property.

The choices outlined above were used to organize the alternatives. All of the "a" responses organized **Alternative 1: As of Right**, while all of the "b" responses organized **Alternative 2: Regulatory Initiative**. Arraying these issues, the two alternatives were created as follows:

4.3.2 Alternative 1: As of Right

New development would only be on the south-side on the new relocated station, on the Depot site only. Public parking would be constructed on the

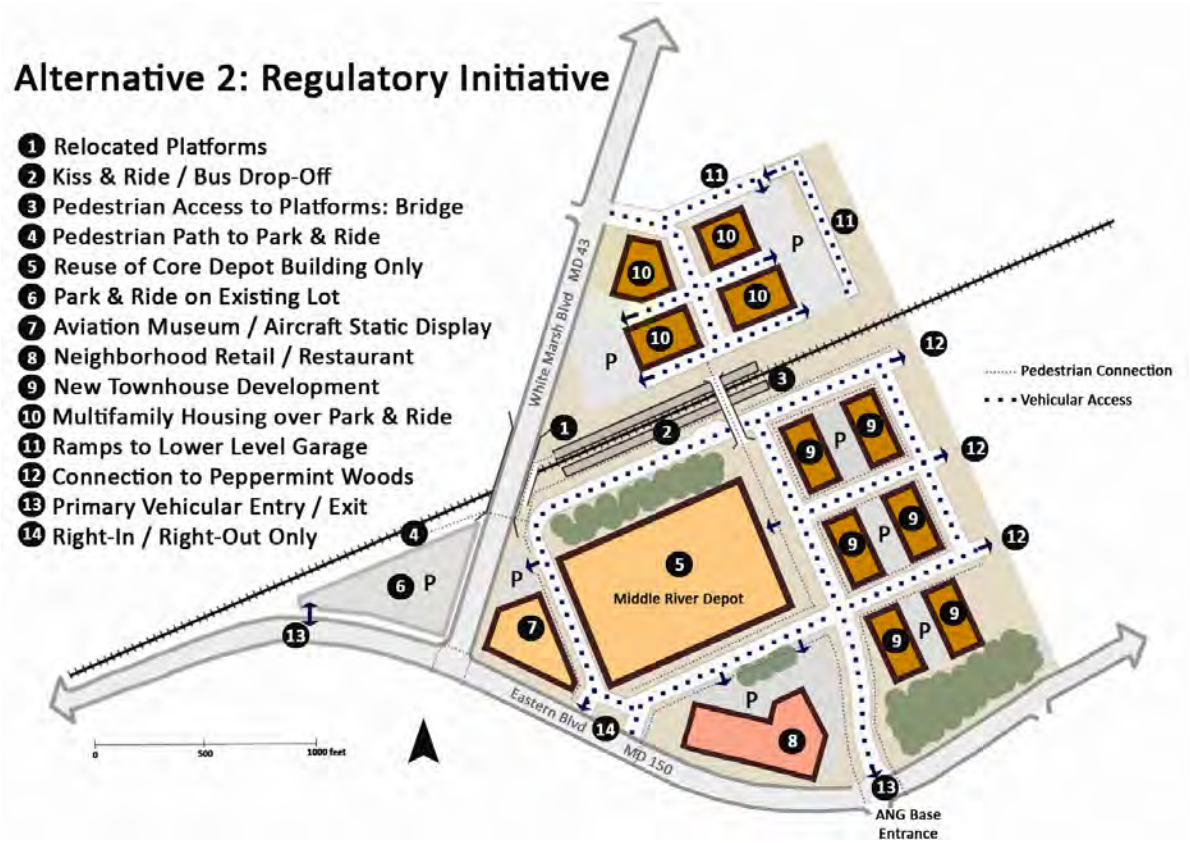

Figure 21: Alternative 2

south-side also, within the Depot development. Pedestrian access to the island platform at the new station would be via an underpass below the tracks, extending from the Depot property to beneath the island platform. The Depot structure itself would remain intact, with the 2 million square feet utilized as a mixed use center, public parking, and development parking. The Aviation Museum and static display would be located on the existing Park & Ride lot. The boundary between the Depot property and adjacent neighborhood would be buffered with a berm and generous landscaping.

4.3.3 Alternative 2: Regulatory Initiative

New development would be on both the north-side and south-side on the new relocated station; the existing Forest Conservation easement would be swapped with another parcel. Public parking would be constructed on both the north-side and south-side also, on the lower floors of the private development on the north-side of the station, and in a new structure on the existing Park and Ride lot. Pedestrian access across the tracks and to the island platform at the new station would be via a bridge at each end of the platforms, connecting into the public parking on the north-side, and stair towers on the south-side. The

station proper, including ticketing, waiting areas, and shelters, could be either at grade or on the bridge itself. Fare collection would be at grade on the south-side and bridge-level on the north-side.

The non-contributing portions (in the historic designation) of the Depot structure would be demolished and the remaining 1 million square feet utilized as a mixed use center and development parking. The Aviation Museum and static display would be located on the western edge of the Depot structure with the large static display on the southwestern most portion of that parcel (in the vicinity of the maintenance structure) on the part of the parcel defined by the Depot structure, Route 43, and Eastern Boulevard. Multi-family residential would be constructed on the eastern edge of the Depot property, providing a transition between the commercial development and the adjacent neighborhood.

4.4 Evaluation of the Alternatives

Alternative 1: As of Right

Advantages

1. Does not require any regulatory initiatives. Implementation would be very straightforward.
2. Including Park & Ride within the Depot structure could lead to cost savings.

Disadvantages

1. Development on only one side of the station; limits the "critical mass" of residential development in the station area.
2. Would require very long tunnel, with areas of "daylighting," to provide pedestrian access to the relocated platforms.
3. Development does not integrate with abutting properties. For example, the Depot redevelopment would be kept separate from Peppermint Woods, limiting access to pedestrians only.

Figure 22: Proposed Residential community at Tustin Legacy, the reuse of Tustin Marine Corps Air Station in Tustin, California with similar redevelopment issues to the former GSA Depot property.

4. While development can have a mix of uses, it would likely focus more on commercial reuse, as in hospitality, office, and retail, with less opportunity for new residential uses.
5. Having all of the Park & Ride capacity on one parcel on the south side of the station will concentrate traffic impacts on intersection between onsite roadways and Eastern Boulevard.

4.4.2 Alternative 2: Regulatory Initiative

Advantages

1. Allows for development on both sides of the relocated station, creating the opportunity for significant new residential projects. New development would have a balanced mix of hospitality, office, retail, and residential uses.
2. Pedestrian access to station platforms via a bridge makes good use of the elevation differences between the parcels on the north and south sides of the relocated station. Very wide right of way poses less significant problems for a bridge than for a tunnel.
3. Removing the non-historic structures and outbuildings from the Depot building complex will create a much more open site that can accommodate additional circulation and development.
4. Creates a more "porous" edge between the Depot redevelopment and Peppermint Woods, allowing both vehicular and pedestrian connects to the neighborhood.
5. Maintaining the parking use (or even a new parking structure in the future) on the current MDOT-owned Kiss & Ride lot simplifies ownership and "ease of development" issues.
6. Incorporating public parking in the development on the north side of the relocated station will reduce traffic impacts on the intersection of Route 43 and Eastern Boulevard. By having the Park & Ride facilities on the north side of the station and on existing lot - and separate from the Depot property - will further spread the potential traffic impacts.

Disadvantages

1. There is an opportunity cost associated with demolishing about 1 million GSF of buildings in the Depot Complex. It's not clear that new on-side development could throw off enough profit to pay for the demolition costs.
2. Difficulty of achieving regulatory change, and risk of not achieving the necessary change.

5. NEXT STEPS

Figure 23: Tracks at new platform location

Upon completion of this report, the stakeholders will continue forward with several initiatives to better define the future for the Martin State MARC station area.

- **Transferability of the Forest Conservation Easement** – During the study this easement on the "Crossroads @ 95" outparcel immediately to the north of the relocated platforms was identified as an impediment to creating a "two-sided" station area around the new station. The follow-on initiative would be to transfer this easement, if possible, to another parcel within the Crossroads holdings, freeing the parcel adjacent to the new platforms for a mixed use development that is connected directly to the new station. While it poses a challenge, transferring the easement to another parcel can be explored in next steps.
- **Determination of differential historic significance of the Depot structures** – as noted by county planners and the owner of the parcel, the various structures on the Depot property range in historic significance from High (core structure with sawtooth monitors) to Low (assorted expansions and outbuildings). Once confirmed, an economic analysis can explore the feasibility of demolishing those low significance structures and determining how that work would be funded.
- **Potential for relocating the Maryland Aviation Museum and**

its aircraft to the "front-of-the-house" on Eastern Boulevard – Moving the Museum and its aircraft into the public realm on Eastern Boulevard would create a strong, distinctive thematic focus in the district, building on the several static display aircraft currently visible from the road (including the A-10 and Albatross seaplane). Of the locations that were discussed, the most popular among the key stakeholders was locating the Museum within the western edge of the Depot structure, with the Museum's aircraft display on the western-most part of the Depot property. There was only a preliminary discussion with the museum for this analysis; however, the idea was to give the museum a better space and more visibility, which they have indicated an interest in having.

- **Pedestrian and/or vehicular access to the Depot property through the eastern edge of the property** – The work would explore how "porous" the edge between Peppermint Woods and the Depot should be. Should it only allow for pedestrian access? Can a street pattern connect the existing Peppermint Woods roads to new roads on the Depot property?
- **Conceptual Engineering and Operational Studies for the Rail Station** – Develop more definitive plans and estimated capital costs for the station relocation project. Work with Amtrak and Norfolk Southern to define future infrastructure requirements for accommodating rail freight through the station area. Work by MTA to finalize its plans and timing for relocation of the MARC maintenance facilities to another site, and development of concepts for re-use of the land at the station area that may be made available. Exploration of options for reducing the width of the railroad right-of-way to enable improved pedestrian access and better-integrated TOD.