TASK 07

PROSPECTIVE STATION LOCATIONS TECHNICAL MEMO

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TheRide MDOT Michigan Department of Transportation

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NORTH SOUTH COMMUTER RAIL

North South Commuter Rail
Feasibility Study

Task 7: Prospective Station Locations
Technical Memo

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1. INTRODUCTION AND SCOPE OF WORK

1.1 Introduction

The North-South Commuter Rail Project, (WALLY), is a proposed 27-mile long commuter rail operation on existing tracks that would provide service between Ann Arbor and Howell, with intermediate stops along the way. It has been embraced by a number of public and private organizations in Washtenaw and Livingston counties as a way to expand commuting options in a rapidly growing part of southeast Michigan along the US 23 corridor. The Ann Arbor Area Transportation Authority (AAATA) has taken on the role as the "designated authority" for studying and developing the concept. This report is one of the deliverables in a feasibility study which will determine in detail the costs of the project and the estimated number of future riders. It will also define the organization needed to build and operate the service, and the prospects for establishing a funding source for the service. It will help drive the community's decision about moving forward with the project.

1.2 Scope of Work

SmithGroupJJR was to develop a methodology to evaluate prospective station locations in the Howell, Genoa Township, Hamburg Township, Whitmore Lake and north of downtown Ann Arbor areas as part of this study. The methodology was to include 1) developing evaluation criteria, 2) data collection/field investigations of previously identified parcels as well as others that had not been considered and 3) engineering and environmental screening of the parcels based on the evaluation criteria.

Under a prior study, SmithGroupJJR evaluated prospective station locations in downtown Ann Arbor resulting in the selection of a site on the south side and within the rail ROW between Washington Street and Liberty Street.

2. METHODOLOGY

2.1 Overview

SmithGroupJJR developed a tiered, three-level approach to evaluating prospective station locations within the study corridor with each level increasing in detail and depth of evaluation. An important item in developing the evaluation criteria was consistency with the National Environmental Protection Act (NEPA) in consideration of a potential future environmental clearance process. The evaluation process incorporated the following elements as part of the corridor review:

- Existing Site Conditions. Existing information related to topography, soils, and utilities was based on available ortho-photography, GIS data, published reports, and railroad maintenance data and augmented by field observations.
- Parcel Data. Existing information related to parcel size, ownership, and zoning. Usable area was estimated and expansion opportunities were taken into consideration.
- Station Elements. Each of the sites were tested for the ability to accommodate typical shelters and platform dimensions, as well as ADA-compliant pedestrian access and automotive, bicycle, and bus transit interfaces. Railroad design criteria relating to location of the station elements was confirmed with MDOT. The availability of utilities such as storm drainage and electrical power was evaluated. Any unusual construction requirements of individual sites were identified for consideration in the comparison.
- Traffic, Access, and Parking. As part of the screening, existing traffic counts and ADT data from sources such as WATS and SEMCOG was collected. This information was utilized, along with site observations, to complete an assessment of the need for adjacent roadway modifications. The anticipated parking space requirements based on the estimated ridership was used to evaluate suitability of the selected and surrounding parcels to meet the projected demand. This analysis will include the potential for shared-use parking with existing facilities in the vicinity. This task did not include traffic signal warrant analyses, traffic operations analyses (modeling), safety (crash) analyses or mainline freeway, freeway ramp or weave analyses.
- Environmental Considerations. Existing data related to wetland, streams, floodplains, and wildlife habitat was collected based on available GIS data and published reports and was augmented by field observations. Potential impacts to these resources will be estimated.
- NEPA/Fatal Flaw Assessment. NEPA considerations are a critical component of the screening process. Potential issues related to environmental clearance were identified and, to the extent possible, quantified in order to estimate significance. Specific elements of focus related to this project include streams, floodplains, wetlands, air quality and noise issues, traffic, environmental justice, cultural resources, hazmat conditions, and potential Section 4(f) issues.
- Federal Agency Requirements. In addition to incorporating the procedural issues associated with NEPA environmental clearance, a summary of Federal agency requirements was used as part of the screening process. Such requirements can relate to expenditure of funds, property acquisition, and facility operations.
- Commuter Rail Operational Requirements. Elements related to operation and maintenance of commuter rail service were evaluated to ensure inclusion within the overall system.
- Railroad Parameters. Specific engineering requirements were evaluated for each of the sites including rail curvature, grade, and location of special trackwork and drainage structures.

2.2 Site Evaluation Process

The following outline summarizes the evaluation methodology utilized to screen property along the project corridor. This tiered process, which gets progressively more detailed, is used to quickly eliminate parcels that are not suitable for station development. This allows a more in-depth review and comparison of suitable sites.

Level 1 Evaluation

The Level 1 analysis started with broad look at all the parcels directly adjacent to the rail corridor. SmithGroupJJR developed a set of criteria that immediately screened for general site development suitability for a commuter rail station. A parcel that did not meet each of the following criteria was eliminated from the additional analysis:

Parcels were eliminated based on:

- Road access – parcel must have one boundary along a road to accommodate vehicle access
- Wetland - parcels with predominance of wetland and inadequate building area were ruled out due to environmental impacts
- Track curvature - no station platform where track curvature exceeds 1°40”as it complicates the platform/track relationship and passenger boarding
- 600’ tangent length – required to accommodate all cars to board and de-board

Data used:

- Geographic Information System (GIS) data
  - Washtenaw County – parcels
  - Livingston County - parcels
  - State of Michigan – rail road, roads, municipality boundaries
  - Michigan Department of Environmental Quality – wetlands
- Aerial Imagery
  - Google

Level 1 Evaluation Summary

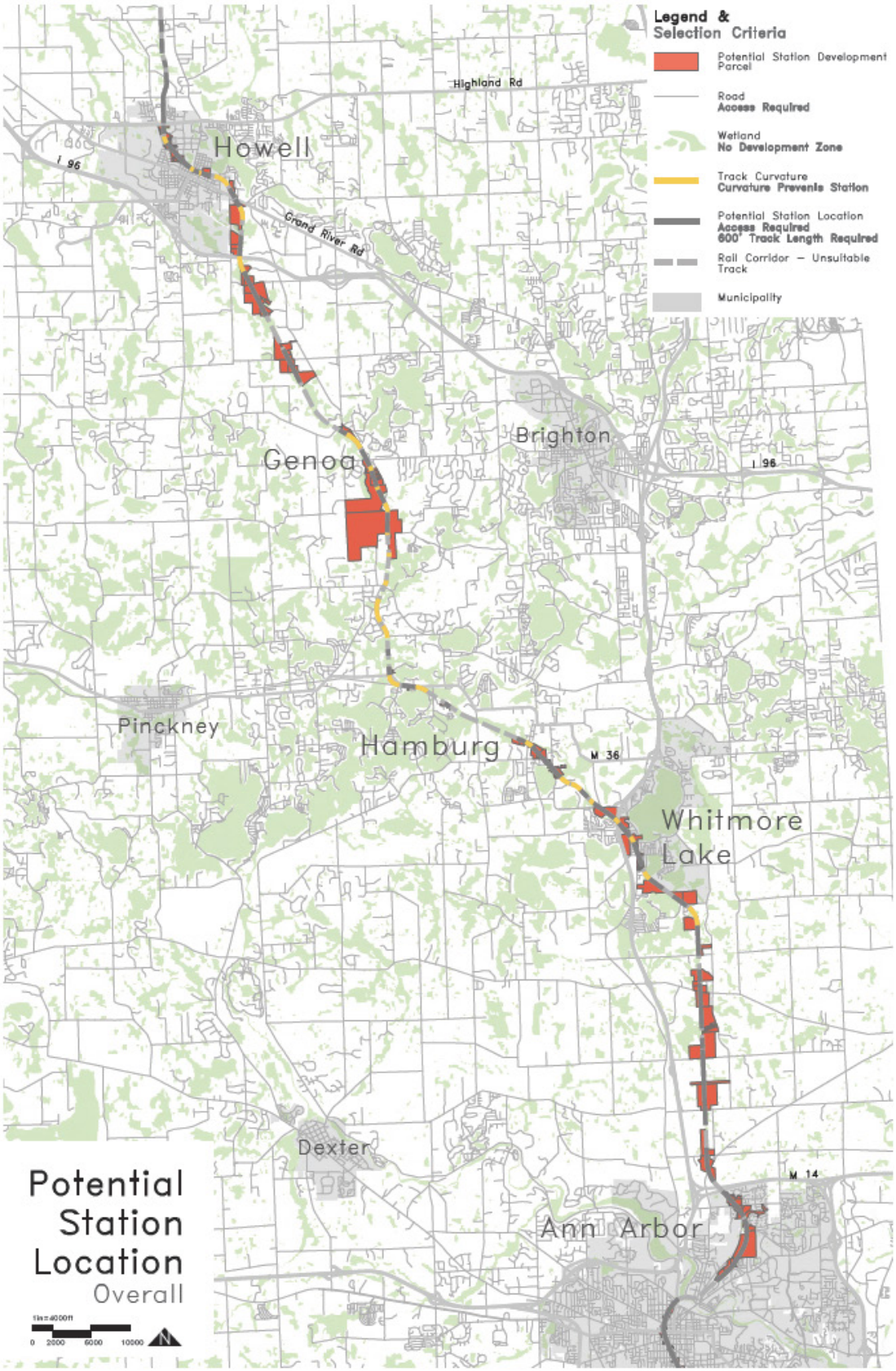
The Level 1 evaluation (Appendix I) ruled out a significant number of parcels and track segments within the project corridor based on road access, wetlands, track curvature and tangent length. Numerous sites remained for additional analysis in the proximity of each of the proposed station locations. The overall mapped results of the Level 1 evaluation can be found on the next page.

Level 2 Evaluation

SmithGroupJJR developed a second set of criteria for the Level 2 analysis to evaluate the remaining parcels for station development suitability. This analysis assessed in greater detail the parcels that passed the Level 1 analysis.

Parcels that passed the Level 1 evaluation were eliminated based on:

- the assumption that those with the following existing land uses were not suitable for acquisition and/or conversion to a commuter rail train station:
  - Business/Industrial/Utility
  - Residential
  - Institutional



Overall Map of Level 1 Evaluation

- Current road classification:
  - Minor arterial or Major Connector road access required
  - Dirt roads not acceptable due to primary location in rural areas or anticipated high improvement costs

Data used:

- Geographic Information System (GIS) data
  - USGS Land cover
  - Washtenaw County – land use
  - Washtenaw County – parcels
  - Livingston County – land use
  - Livingston county – parcels
  - State of MI – rail road, roads, municipality boundaries
  - Michigan Department of Environmental Quality – wetlands
- PDF Maps
  - MDOT Road Classification

Level 2 Evaluation Summary

The Level 2 evaluation (Appendix II) eliminated approximately 50% of the remaining parcels within the project corridor. However, a limited number of sites remained for additional analysis in each of the proposed station locations, with the exception of Genoa Township, including:

- Howell: 3 potential sites
- Genoa: 1 potential sites
- Hamburg: 4 potential sites
- Whitmore Lake: 5 potential sites
- Ann Arbor: 2 potential sites

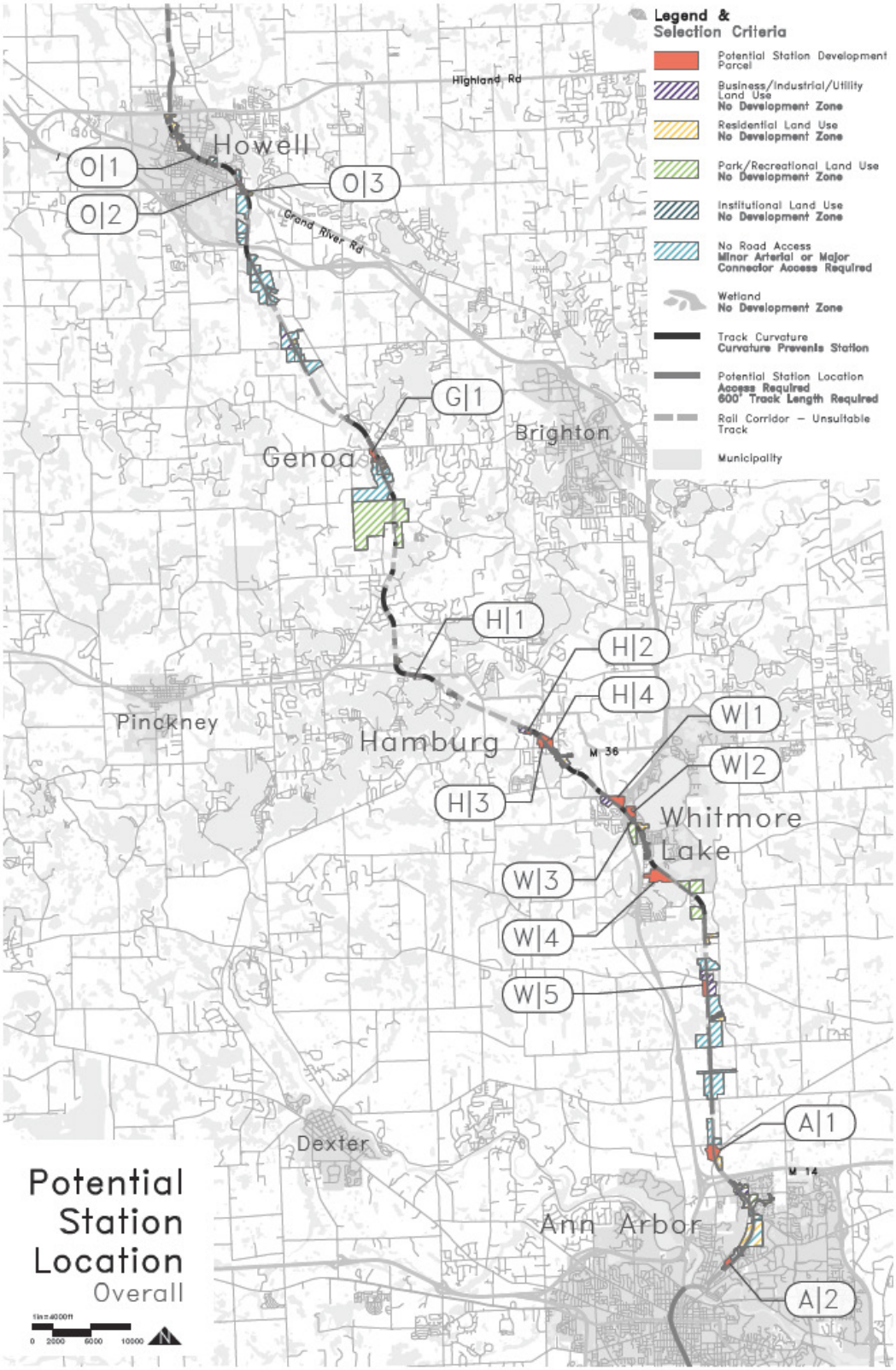
The overall mapped results of the Level 2 evaluation can be found on the next page.

Level 3 Evaluation

The Level 3 evaluation scored the remaining parcels on a set of criteria that were specifically developed to screen the feasibility of each potential station site taking into consideration items related to environmental, land use & land, transportation, rail operations and site development. Each criterion was weighted and scored by the project team to assist with the feasibility analysis. Criteria with a greater impact on feasibility were given a higher weight. The end result was a weighted average score for each parcel which allows for comparison of the potential station sites at each of the proposed station locations. The following is an overview of the Level 3 evaluation topics and associated criteria (higher score = more suitable, higher weight = higher impact on feasibility):

Environmental

- Woodlands - evergreen forest or deciduous forest as classified by land cover maps
  Weight: 1
  - 3 = No impact
  - 2 = impact less than 1 acre
  - 1 = impact more than 1 acre



Overall Map of Level 2 Evaluation

- Floodplain – amount of site within FEMA 1% annual chance floodplain
  Weight: 2
  - 3 = No floodplain impact
  - 2 = less than 0.1 acre
  - 1 = more than 0.1 acre
- Potential for Threatened & Endangered (T&E) species - on-site evaluation of existing habitat, no flora/fauna surveys were completed
  Weight: 2
  - 3 = No T&E habitat observed
  - 2 = Potential T&E habitat observed – partial site
  - 1 = Potential T&E habitat observed- entire site

Land Use & Land

- Number of parcels required - the number of parcels to acquire in order to build the station and facilities
  Weight: 1
  - 3 = one parcel
  - 2 = two parcels
  - 3 = more than three parcels
- Parcel ownership
  Weight: 4
  - 3 = Public ownership
  - 2 = Rail ownership
  - 1 = Private ownership
- Adjacent land use - on-site evaluation of the site relative to adjacent land use
  Weight: 2
  - 3 = commercial
  - 2 = industrial/agriculture
  - 1 = residential
- Transit Oriented Development potential - opportunity to connect to or catalyze future development
  Weight: 4
  - 3 = Considered in community master plan
  - 2 = Existing development provides opportunity
  - 1 = No opportunity due to lack of density or remoteness
- Zoning - review of current zoning plans: residential, agriculture, commercial, industrial
  Weight: 2
  - 3 = Business/commercial, village center/service
  - 2 = industrial
  - 1 = residential/agriculture

Transportation

- Traffic/Road Capacity - ability of surrounding roads to accommodate anticipated traffic volumes
  Weight: 4
  - 3 = Surrounding roads have adequate capacity
  - 2 = Surrounding roads require minimal improvements

  - 1 = Surrounding roads will require major improvements
- Distance to population – proximity to population centers
  Weight: 2
  - 3 = within ½ mile of population center
  - 2 = within 1 mile
  - 1 = greater than 1 mile
- Distance to existing/planned non-motorized network
  Weight: 2
  - 3 = Proximate to an existing non-motorized trail
  - 2 = Proximate to a planned non-motorized trail
  - 1 = Not proximate to an existing/planned non-motorized trail
- Rail operations - Conflicts with rail operations
  Weight: 4
  - 3 = no major conflicts with rail operations
  - 2 = some track reconfiguration required
  - 1 = major conflicts

Site Development

- Site access (motorized) – road classification from National Functional Classification Map
  Weight: 4
  - 3 = principal/minor arterial
  - 2 = Collector
  - 1 = Local
- Site access (visual) - visual access into the site for way finding
  Weight: 1
  - 3 = Station can be seen from surrounding roads
  - 2 = Site signage can be seen from surrounding roads
  - 1 = Site is obscured from surrounding roads
- Site development - cost of building the necessary site elements (platform, parking lot, access drives) based on required earthwork, demolition, permanence of existing use
  Weight: 4
  - 3 = Typical site development costs
  - 2 = Moderate additional costs due to site issues
  - 1 = Major additional costs due to site issues
- Potential for expansion - expansion on site to accommodate additional ridership
  Weight: 2
  - 3 = space to accommodate 2040 park and ride numbers and 800-1200 sq. ft. building
  - 2 = space to accommodate 2040 park and ride numbers
  - 1 = Limited expansion opportunities

Data Used:

- GIS data
  - USGS Land cover
  - Washtenaw County – parcels
  - Washtenaw County – land use
  - Livingston County – parcels

  - Livingston County – land use
  - State of Michigan – rail road, roads, municipality boundaries
  - Michigan Department of Environmental Quality – wetlands
- Aerial imagery
  - Google earth
- Site Visits
  - 1 visit per site

Level 3 Evaluation Summary

The Level 3 evaluation included an in-depth analysis of the 15 sites that passed the Level 2 evaluation. Additional detail on each of these sites is found in section 3 of this technical memo. The Level 3 Site Evaluation Criteria & Scoring matrices can be found in Appendix III.

2.3 Evaluation of a Potential Station at the Ann Arbor Railroad/Michigan Central Line

Throughout this study, there was interest in the potential for a passenger rail station at the location where the Ann Arbor Railroad crosses over the Michigan Central Line and the adjacent North Main Street (BR-94). Presumably, such a location could be expected to improve the interconnectivity between the two proposed commuter lines and intercity service on the Michigan Central Line. SGJJR and Quandel Consultants evaluated the potential issues related to construction of a passenger rail station at this location (Appendix IV). The following is a summary of the relevant items:

- Track conditions – Curved track is found on both rail lines in this location. A station on a curved track can create a safety issue due to a potential unacceptable gap between the platform and the rigid rail car. Superelevation (outside track on a curve higher than inside track) can also create problems with boarding. Both of these issues would require additional consideration with respect to station construction.
- Engineering – An estimate of engineering costs is beyond the scope of this memo but could vary wildly depending on the complexity of the proposed project. At a minimum, the engineering of a multi-level station located on two curved tracks will be a very expensive proposition. If additional bridge and/or track work is required, cost could rise exponentially.
- Land acquisition – Development of a commuter rail station in this location would require acquisition of private property currently in an office use. No estimate of acquisition cost is made but this would add to the overall project cost.
- Railroad operations – Both rail lines currently run freight traffic. The Michigan Central Line also serves Amtrak intercity passenger service and is identified as a high speed rail corridor. Coordination among these stakeholders to implement a new station in this location would be a time-consumptive task requiring a dedicated team. If additional bridge and/or track work is required, consideration of alternative, temporary routing could add considerably to the cost of implementation.
- Jurisdictional approvals – There has been no discussion with the City of Ann Arbor or MDOT regarding consideration of a passenger rail station in this location. Existing site dimensional constraints along with high peak hour traffic volumes on North Main Street (BR-94) would require serious evaluation from both entities.
- Environmental – The subject site contains portions of the Allen Creek floodway and floodplain. Floodways have greater restrictions than floodplains but both are regulated

under state law. The City of Ann Arbor is not allowing new construction in the floodway and discouraging floodplain construction.

- Community acceptance – At first glance, the concept of a passenger rail station in this location makes sense with respect to improving commuter rail interconnectivity and access to intercity rail. However, a through cost/benefit analysis will be required to ensure the expenditure would be in the community's best interest.

Obviously, any decision to advance the concept of locating a station in this location should be made in coordination with property owners and stakeholders including Watco Companies, Ann Arbor Railroad, MDOT, the City of Ann Arbor and AMTRAK among others.

3. PROSPECTIVE STATION LOCATION SUMMARY

3.1 Prospective Station Locations

The following provides a summary of each of the 15 station locations that were scored through the Level 3 evaluation process. A location and general condition of each site is provided along with an indication of the weighted average score and high scoring criteria related to the respective site.

Howell (3 sites)

O|1: West of Old Station on Wetmore St.
(128 Wetmore St, Howell, MI 48843)
Weighted Average Score: 2.71
This site on Wetmore St is a vacant parcel west of and adjacent to the historic train station in downtown Howell and can be accessed by Center St or Walnut St. The historic train station currently houses the Howell Area Historical Society and would not be affected. This site is designated as part of the City Center in the Howell Master Plan. It is two blocks from the downtown core and a well know location that has been considered in previous studies as a future commuter rail station site. It scored high for lack of environmental issues, ownership, site access and potential for transit oriented development. The city has master plans for this area showing higher density mixed use developments.

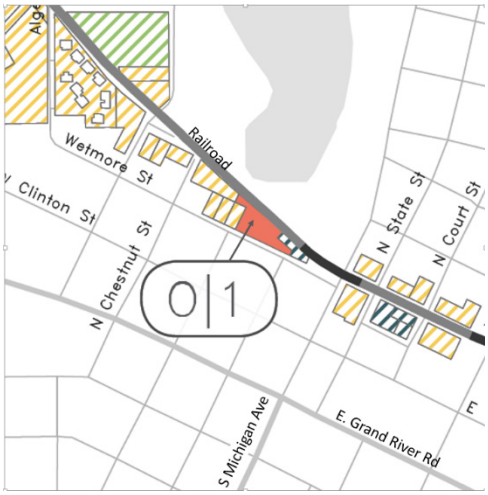


Figure 1: Howell Site O|1

O|2: Northeast corner of Grand River Ave. & Catrell Dr.
(~1305 E Grand River Ave., Howell, MI 48843)
Weighted Average Score: 2.56
Site 0|2 is a vacant parcel on the corner of E. Grand River Ave. and Catrell Dr. It is on the west side of the railroad tracks approximately 4,500 feet east of the downtown core but is within walking distance of commercial areas. This site scored well for potential for transit oriented development, capacity of adjacent roads, site access and ease of site development.

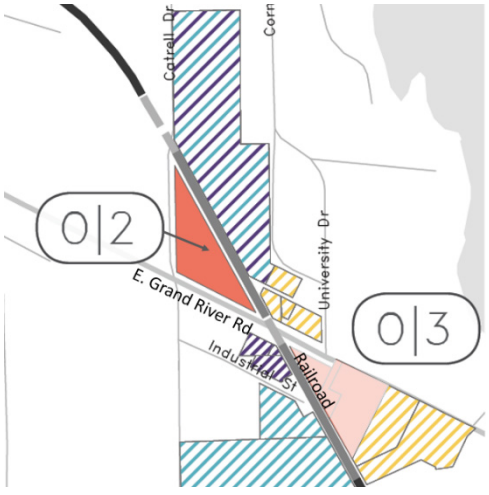


Figure 2: Howell Site O\2

O|3: South of Grand River Ave.
(~2156 E Grand River Ave., Howell, MI 48843)
Weighted Average Score: 2.10
This site is a vacant parcel on the east side of the railroad tracks south of E. Grand River Ave. It scored well for capacity of adjacent roads and ease of site development with some potential for transit oriented development

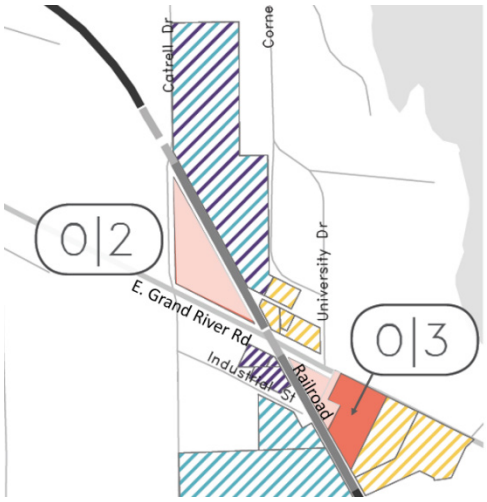


Figure 3: Howell Site O|3

Genoa (1 site)

G|1: Adjacent to Chilson Hills Baptist Church on Brighton Rd.
(4440 Brighton Rd., Howell, MI 48843)
Weighted Average Score: 2.05
This is the only site that passed the level 1 and 2 screening in the Genoa Township portion of the project corridor. This site is located adjacent to the Chilson Hills Baptist Church on the west side of the railroad tracks south of Brighton Road approximately 500 feet west of Chilson Road. This site was identified in previous studies as a potential Genoa Township commuter rail station. It scored well for the capacity of existing roads, access and ease of site development. This last criterion relates to the potential for shared parking between weekday commuter use and weekend church use. The church also operates a daycare. At the time of writing, the church was open to discussing the potential for shared use with a commuter rail station in more detail.

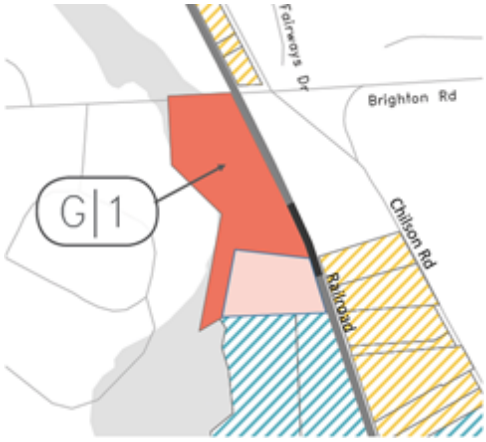


Figure 4: Genoa Township Site G|1

Hamburg (4 sites)

H|1: M-36 & Girard Dr. (Zukey Lake area)
(~5200 Girard Dr., Pinckney, MI 48169)
Weighted Average Score: 2.37
This site is located on the south of M-36 on the south side of the railroad tracks adjacent to parking for the Zukey Lake Tavern. It scored well for site access, M-36 is the main east-west route through Hamburg, and ease of site development. This last criteria relates to the potential for shared use parking. Subsequent to this evaluation, it was determined that the Zukey Lake Tavern was not able to accommodate shared use parking. Consequently, this site has been eliminated from further consideration.

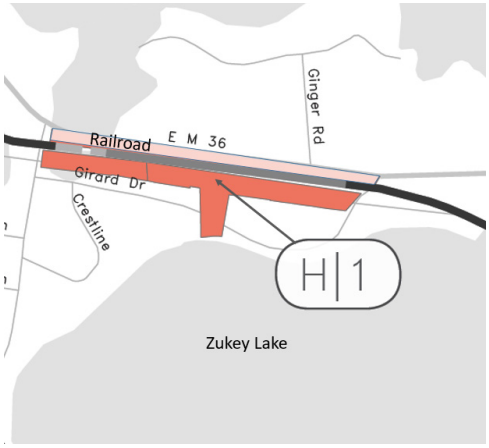


Figure 5: Hamburg Site H|1

The following three sites H|2, H|3 and H|4 are in an area identified in previous studies as a location for a future commuter rail station. All three sites are encompassed in Hamburg Township's Village Center Plan as a TOD overlay district. The potential to combine parcels has not been considered but there may be an opportunity to develop all or portions of this area as a TOD.

H|2: Featherly Dr. west of Hamburg Rd.
(~10800 Featherly Dr., Hamburg, MI 48139)
Weighted Average Score: 2.56
Site H|2 is located west of Hamburg Road, north of Featherly Dr. and south of the railroad tracks approximately 0.1 miles south of downtown Hamburg. Hamburg Road is an arterial and the site is approximately 2,100 feet south of M-36, the main east-west route through Hamburg Township. This site scored well for ease of site development and the potential for Transit Oriented Development.

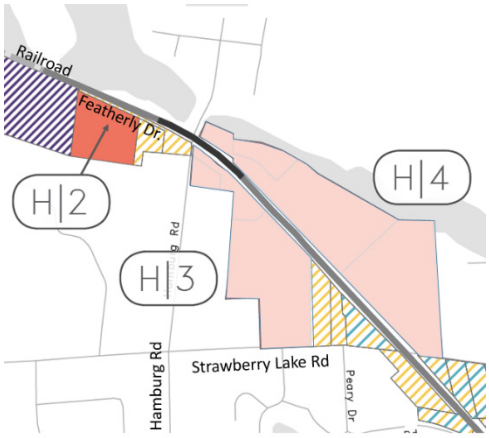


Figure 6: Hamburg Site H|2

H|3: East of Hamburg Rd (south of the tracks)
(~10811 Hamburg Rd., Hamburg, MI 48139)
Weighted Average Score: 2.41
This site is located east of Hamburg Road and north of Strawberry Lake Rd. on the south of the railroad tracks approximately 0.1 miles south of downtown Hamburg. The entrance is off of Strawberry Lake Rd., a local collector approximately 5,000 feet south of M-36, the main east-west route through the Township. Entry off of Hamburg Rd would be more attractive and closer to M-36 but would require access through an existing use. This site scored well for ease of site development and the potential for Transit Oriented Development.

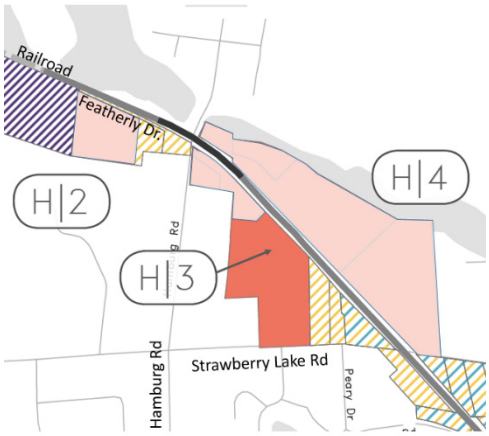


Figure 7: Hamburg Site H|3

H|4: East of Hamburg Rd. (north of the tracks)
(~10737 Hamburg Rd., Hamburg, MI 48139)
Weighted Average Score: 2.22
H|4 is located east of Hamburg Road and north of the railroad tracks slightly closer to downtown Hamburg and sites H|2 and H|3. The entrance is off of Strawberry Lake Rd., a local collector approximately 5,000 feet south of M-36, the main east-west route through the Township. Entry off of Hamburg Rd. would be more attractive and closer to M-36 but would require access through an existing use. This site scored well for ease of site development and the potential for Transit Oriented Development.

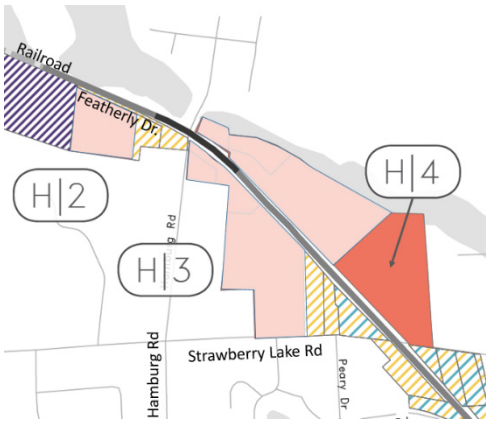


Figure 8: Hamburg Site H|4

Whitmore Lake (5 sites)

W|1: 8 Mile Rd. (west of US-23)
(435 W. 8 Mile Rd.)
Weighted Average Score: 2.61
This site is located east of the railroad tracks and west of US-23 with easy access at the 8 Mile Rd interchange. It scored high for existing road capacity, motorized access, ease of site development and potential for Transit Oriented Development. It is a large single parcel identified in the Northfield Township master plan as a future "Mixed Use Village Center". A plan know as Whitmore Station has been put forth by the property owner to develop the parcel as such but no action has taken place as of this report. This site was identified in previous studies as a location for a future commuter rail station and is being considered by MDOT as a future park & ride facility.

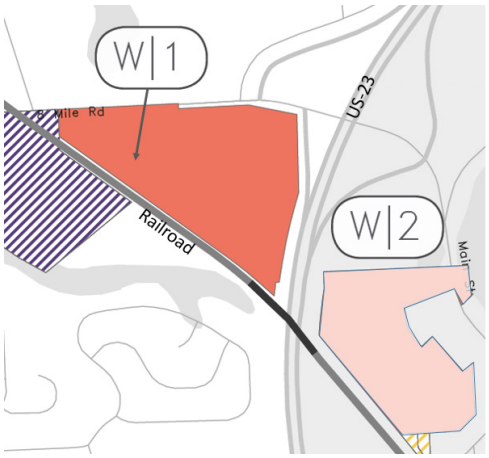


Figure 9: Whitmore Lake Site W|1

W|2: Main St. (east of US-23)
(~9725 Main St., Whitmore Lake, MI 48189)
Weighted Average Score: 2.61
Site W|2 is located east of the railroad tracks and east of US-23 with easy access at the 8 Mile Rd interchange. It scored high for motorized access, ease of site development and potential for Transit Oriented Development. It is a large single parcel identified in the Northfield Township master plan as a future "Mixed Use Village Center". This site is closer to the Whitmore Lake downtown district that site W|1

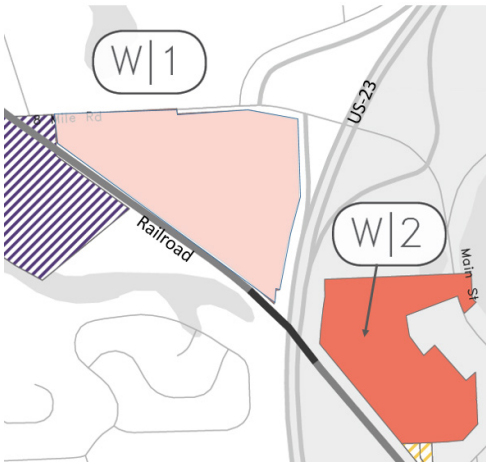


Figure 10: Whitmore Lake Site W|2

W|3: Barker Rd.
(~175 Barker Rd., Whitmore Lake, MI 48189)
Weighted Average Score: 2.41
Site W|3 is located west of the railroad tracks and south of Barker Rd. This site scored high for east of motorized access and site development and is located in the Whitmore Lake downtown district. It is located in the area identified in the Northfield Township master plan as a future "Mixed Use Village Center" but does not have the capacity for Transit Oriented Development that sites H|1 and H|2 have.

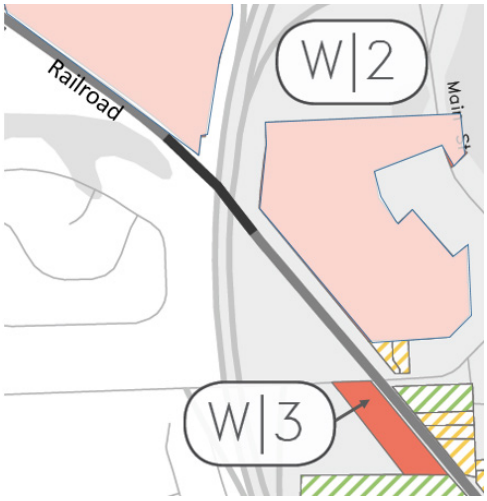


Figure 11: Whitmore Lake Site W|3

W|4: 7 Mile Rd.
(~8351 Main St., Whitmore Lake, MI 48189)
Weighted Average Score: 1.88
This site is located east of Main St. at 7 Mile Rd. in Whitmore Lake. It scored high for ease of access however it is relatively unconnected from the population center. Northfield Township had plans at one time to connect 7 Mile Rd from Main St east to a residential part of the township which would make this site more attractive but those plans have not been realized.

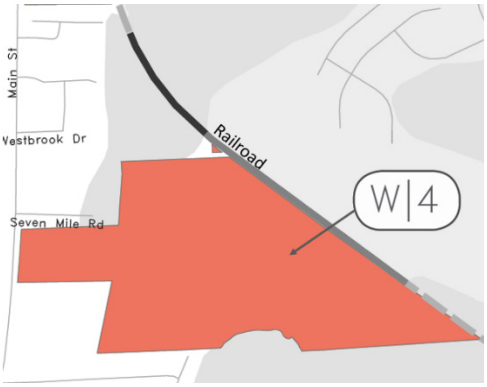


Figure 12: Whitmore Lake Site W|4

W|5: North Territorial Rd.
(~1222 E. North Territorial Rd, Whitmore Lake, MI 48189)
Weighted Average Score: 82.0
Site W|5 is located approximately one mile east of US-23 south of N. Territorial Rd. on the west side of the railroad tracks. It scored high for ease of access and site development but is remote and unconnected with local population centers as reflected in the low score.

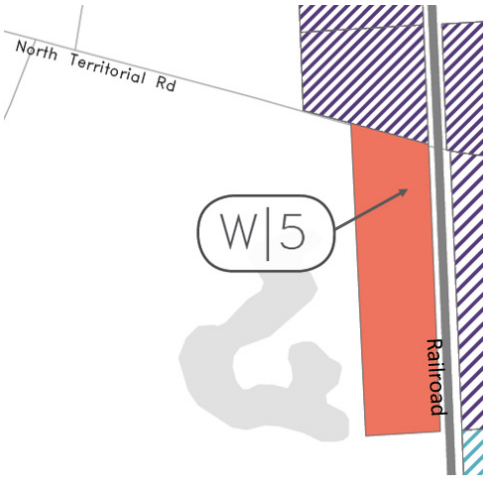


Figure 13: Whitmore Lake Site W|5

Ann Arbor (2 sites)

A|1: Warren Rd.
(~858 Warren Rd., Ann Arbor, MI 48105)
Weighted Average Score: 1.93
This site is located west of Pontiac Trail, south of Warren Rd. and on the east or west of the railroad tracks. The Osmer interchange is immediately north of this site. It scored high for ease of access and site development but the relatively low score reflects the sites remote location.

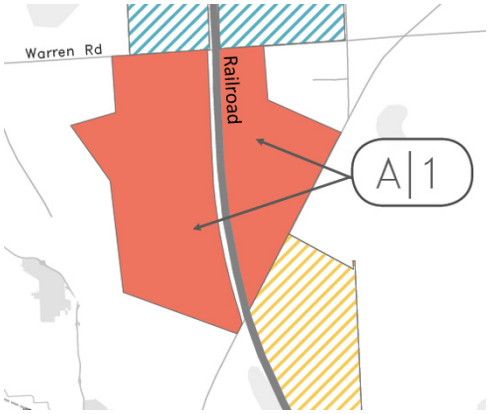


Figure 14: Ann Arbor Site A|1

A|2: Barton Dr.
(~1611 Plymouth Rd., Ann Arbor, MI 48105)
Weighted Average Score: 2.22
Site A|2 is located west of Plymouth Rd., north of Barton Dr. The station is proposed within the rail right-of-way on the west side of the tracks. This site scored high for ease of access and parcel ownership, as no property is required. It has been considered in previous studies as a location for a future Ann Arbor commuter rail station.

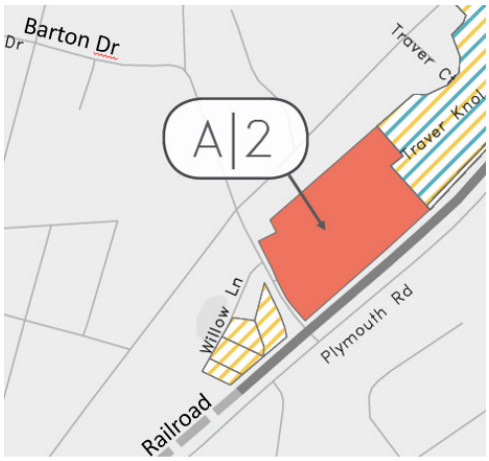


Figure 15: Ann Arbor Site A|2

3.2 Summary

A three-tiered evaluation process was used to evaluate potential commuter rail stations locations along the entire ~27 mile corridor between Howell and Ann Arbor. The process used a set of basic criteria focusing on road access, wetlands, track curvature and available track tangent length to eliminate many portions of the corridor. This was followed by a secondary look to eliminate specific existing land uses and minor roads resulting in a final set of potential sites for further evaluation. The number of sites by proposed station location included:

- Howell: 3 potential sites
- Genoa: 1 potential site
- Hamburg: 4 potential site
- Whitmore Lake: 5 potential sites
- Ann Arbor: 2 potential sites

Each of these sites was scored through a detailed set of evaluation criteria that focused on environmental issues, land & land use, transportation, rail operations and site development resulting in the following summary of scores:

STATION SITE	WEIGHTED SCORE
Howell	
O|1	**2.71**
O|2	2.56
O|3	2.10
Genoa Township	
G|1	**2.05**
Hamburg Township	
H|1	Eliminated
H|2	**2.56**
H|3	2.41
H|4	2.22

STATION SITE	WEIGHTED SCORE
Whitmore Lake	
W|1	**2.61**
W|2	2.54
W|3	2.41
W|4	1.88
W|5	2.00
Ann Arbor	
A|1	1.93
A|2	**2.22**

The highest scoring site at each of the proposed station locations, shown in bold, was in line with the previous recommendations. However, with the exception of Genoa Township, there are alternative sites that may warrant additional investigation should any of the higher scoring sites become unavailable. Should the Genoa Township site become unavailable, it is recommended the Level 1 criteria be redefined for sites in that general station location.

APPENDIX I: Level 1 Evaluation Summary

Prepared by SmithGroupJJR
May 5, 2017

LEVEL 1
Legend &
Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Potential Station Location
Overall

1in=4000ft

0 2000 6000 10000

Howell
Highland Rd
I 96
Grand River Rd
Genoa
Brighton
I 96
Pinckney
Hamburg
M 36
Whitmore Lake
Dexter
M 14
Ann Arbor

LEVEL 1

Legend & Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Area 1

Potential Station Location

Area 1

1in=400ft

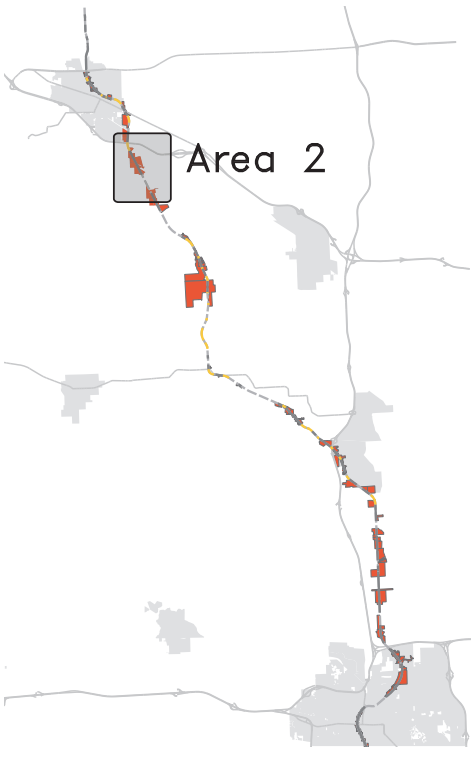
0 200 600 1000

LEVEL 1

Legend & Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Lucy St
Chilson Mdws
W I 96
Pipe Line Road Easement
Oak Mdws
Chilson Rd
Kings Way Ct
Muscat Dr
Crooked Lake Rd



Potential Station Location

Area 2

1in=400ft

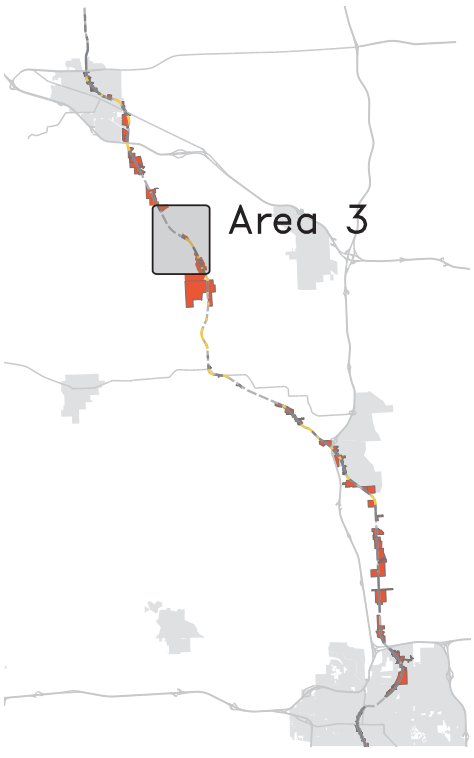
0 200 600 1000

LEVEL 1

Legend & Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Nixon Rd
Saint Andrews St
Homestead
Pinehurst Dr
E Coon Lake Rd
Chilson Rd
Pointe Blvd
Case
Dana
Long
Fairways Dr
Brighton Rd
King Rd



Potential Station Location

Area 3

1in=400ft

0 200 600 1000

LEVEL 1

Legend &

Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Chilson Rd

Bishop Lake Rd

Swarthout Rd

Pettysville Rd

Thunder Bay Dr

Trinity Ln

Caroga Dr

Precipice Ct

Hidale Dr

Travis Pt

Brittany Ln

Ridge Dr

Old Mill Rd

Mercer Rd

Area 4

Potential Station Location

Area 4

1in=400ft

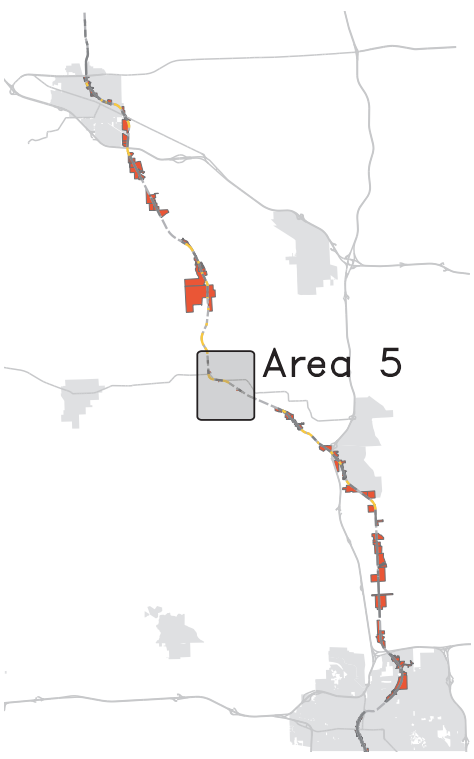
0 200 600 1000

LEVEL 1

Legend & Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Mercer Rd
Schlenker St
Island Shr
E M 36
Girard Dr
Ginger Rd
Crestline
Maryann
Joan Ln
Lori Ln
Kress Rd
Beverly Ct
Beverly Dr
Redding
Pettys Dr
Riverview Rd
Zukey Dr



Potential Station Location

Area 5

1in=400ft

0 200 600 1000

LEVEL 1
Legend &
Selection Criteria

Potential Station Development Parcel

Road
Access Required

Wetland
No Development Zone

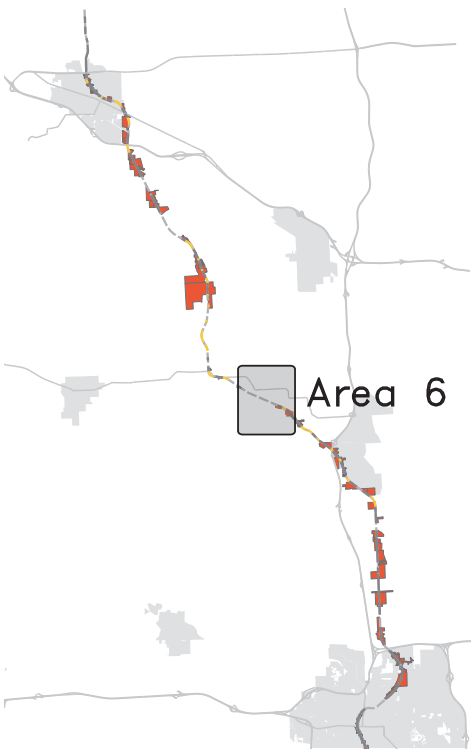
Track Curvature
Curvature Prevents Station

Potential Station Location
Access Required
600' Track Length Required

Rail Corridor – Unsuitable Track

Municipality

Nagel St
E M 36
Merrill Rd
Wind Crest Cir
M 36
Hall Rd
Hamburg Rd
Strawberry Lake Rd
Peary Dr
Norene Rd
Old Hamburg Rd



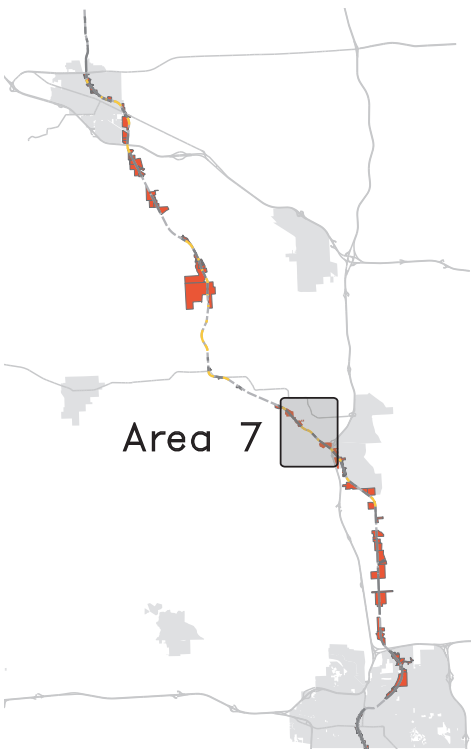
Potential Station Location
Area 6

1in=400ft
0 200 600 1000

LEVEL 1
Legend &
Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Hall Rd
Strawberry Lake Rd
Norene Rd
Tharp Dr
M 36
Lemen Rd
Fair Oak Dr
8 Mile Rd
Whitmore Lake
Main St
Barker Rd
Jennings Rd
US 23



Potential Station Location

Area 7

1in=400ft

0 200 600 1000

N

LEVEL 1
Legend &
Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Whitmore Lake

Barker Rd
West St
Harbor Cove Cir
E Shore Dr
7 Mile Rd
Hillcrest Rd
Brookside Dr
Pine Dr
Tillman Ct
Jennings Rd
Ash Dr
Lincoln
Birch Dr
US 23
Main St
Westbrook Dr
Seven Mile Rd
Schrum Dr
6 Mile Rd
Lakeshore Rd
Turnberry Dr
Nollar Rd

Area 8

Potential Station Location

Area 8

1in=400ft

0 200 600 1000

LEVEL 1
Legend &
Selection Criteria

- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

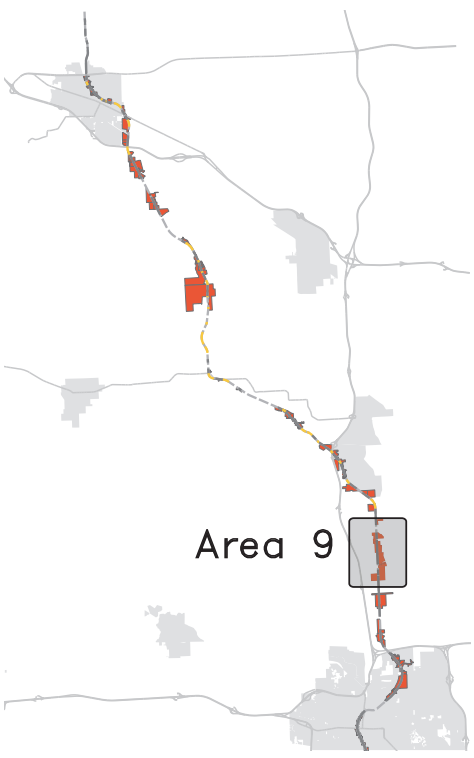
5 Mile Rd

Nollar Rd

North Territorial Rd

N Arbor Pkwy

E Northfield Church Rd



Potential Station Location

Area 9

1in=400ft

0 200 600 1000

LEVEL 1
Legend &
Selection Criteria

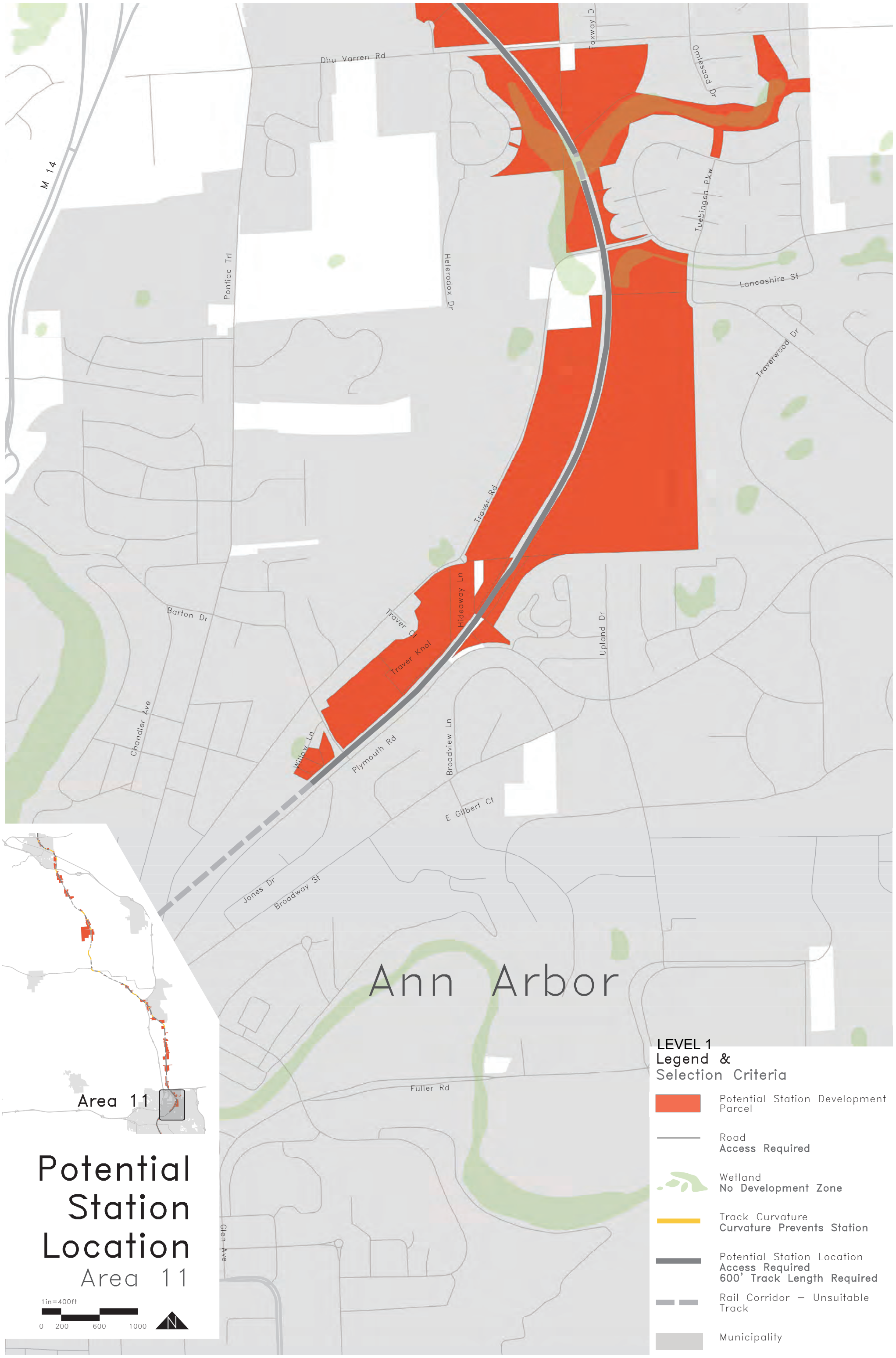
- Potential Station Development Parcel
- Road
  Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Nollar Rd
Joy Rd
Gleaner Hall Rd
Pontiac Trl
Warren Rd
US 23
Birchwood Dr
Indian Creek Cir
Hickory Point Dr
Dhu Varren Rd
Park Cir
Ann Arbor

Area 10

Potential Station Location
Area 10

1in=400ft
0 200 600 1000


M 14
Dhu Varren Rd
Foxway D
Omlesaad Dr
Tuebingen Pkw
Lancashire St
Traverwood Dr
Pontiac Trl
Heterodox Dr
Traver Rd
Hideaway Ln
Traver Ct
Traver Knol
Upland Dr
Barton Dr
Chandler Ave
Willow Ln
Plymouth Rd
Broadview Ln
E Gilbert Ct
Jones Dr
Broadway St
Ann Arbor
Fuller Rd
Glen Ave
Area 11
Potential Station Location
Area 11
1in=400ft
0 200 600 1000
LEVEL 1
Legend &
Selection Criteria
Potential Station Development Parcel
Road
Access Required
Wetland
No Development Zone
Track Curvature
Curvature Prevents Station
Potential Station Location
Access Required
600' Track Length Required
Rail Corridor – Unsuitable Track
Municipality

APPENDIX II: Level 2 Evaluation Summary

Prepared by SmithGroupJJR
May 5, 2017

Potential Station Location
Overall

1in=4000ft

0 2000 6000 10000

N

LEVEL 2
Legend & Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Howell
Highland Rd
O|1
O|2
O|3
Grand River Rd
G|1
Genoa
Brighton
H|1
H|2
H|4
H|3
Pinckney
Hamburg
M 36
W|1
W|2
Whitmore Lake
W|3
W|4
W|5
A|1
M 14
Dexter
Ann Arbor
A|2

LEVEL 2
Legend & Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Howell

0|1

0|2

0|3

Area 1

Potential Station Location
Area 1

1in=400ft

0 200 600 1000

LEVEL 2
Legend &
Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Lucy St
Chilson Mdws
W I 96
Pipe Line Road Easement
Oak Mdws
Chilson Rd
Kings Way Ct
Crooked Lake Rd
Muscat Dr

Area 2

Potential Station Location

Area 2

1in=400ft

0 200 600 1000

LEVEL 2
Legend &
Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Nixon Rd
Saint Andrews St
Pinehurst Dr
E Coon Lake Rd
Chilson Rd
Pointe Blvd
Casa Dana Loop
Fairways Dr
Brighton Rd
King Rd
G|1
Area 3

Potential Station Location
Area 3

1in=400ft
0 200 600 1000

LEVEL 2
Legend & Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Area 4

Potential Station Location
Area 4

1in=400ft

0 200 600 1000

N

LEVEL 2
Legend &
Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Schlenker St
Island Shr
E M 36
Girard Dr
Ginger Rd
Crestline
Joan Ln
Maryann
Lori Ln
H|1
Kress Rd
Beverly Ct
Beverly Dr
Redding
Pettys Dr
Riverview Rd
Zukey Dr

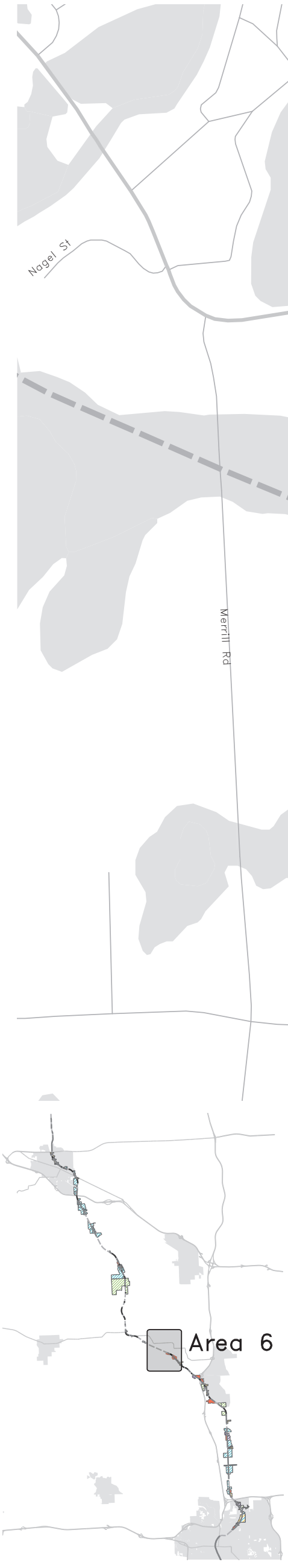
Area 5

Potential Station Location
Area 5

1in=400ft
0 200 600 1000

LEVEL 2
Legend & Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality



Nagel St
E M 36
Merrill Rd
H|2
H|3
H|4
Strawberry Lake Rd
Peary Dr
Norene Rd
Old Hamburg Rd

Potential Station Location
Area 6

1in=400ft

0 200 600 1000

LEVEL 2
Legend &
Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Hall Rd
Strawberry Lake Rd
Norene Rd
Linare Dr
M 36
Lemen Rd
Fair Oak Dr
W|1
8 Mile Rd
W|2
Main St
Whitmore Lake
Barker Rd
W|3
Jennings Rd
US 23

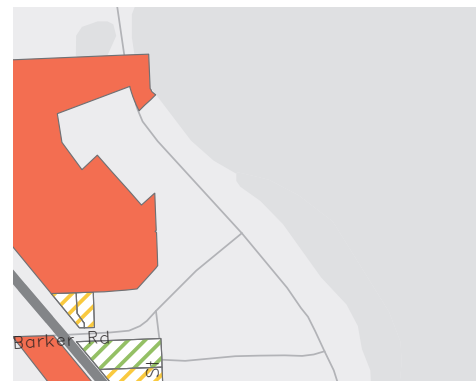
Area 7

Potential Station Location

Area 7

1in=400ft
0 200 600 1000

Potential Station Location
Area 8



1in=400ft

0 200 600 1000

LEVEL 2
Legend & Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Whitmore Lake

W|4

Barker Rd
West St
Harbor Cove Cir
E Shore Dr
7 Mile Rd
Hillcrest Rd
Brookside Dr
Pine Dr
Tillman Ct
Jennings Rd
Ash Dr
Lincoln
Birch Dr
US 23
Main St
Westbrook Dr
Seven Mile Rd
Schrum Dr
Lakeshore Rd
6 Mile Rd
Turnberry Dr
Nollar Rd

LEVEL 2
Legend &
Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

5 Mile Rd
Nollar Rd
North Territorial Rd
W|5
N Arbor Pkwy
E Northfield Church Rd
Area 9

Potential Station Location
Area 9

1in=400ft
0 200 600 1000

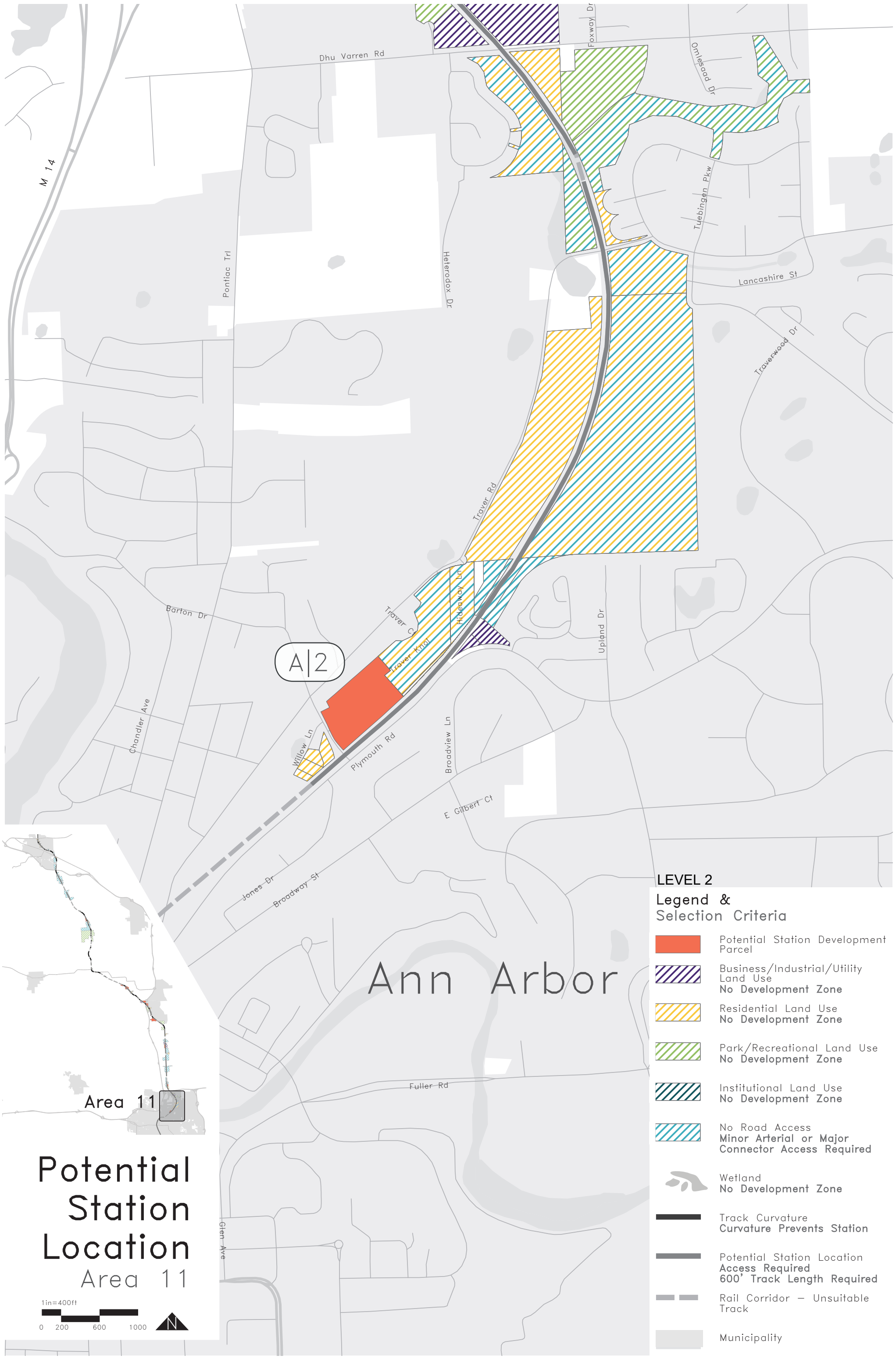
LEVEL 2
Legend &
Selection Criteria

- Potential Station Development Parcel
- Business/Industrial/Utility Land Use
  No Development Zone
- Residential Land Use
  No Development Zone
- Park/Recreational Land Use
  No Development Zone
- Institutional Land Use
  No Development Zone
- No Road Access
  Minor Arterial or Major Connector Access Required
- Wetland
  No Development Zone
- Track Curvature
  Curvature Prevents Station
- Potential Station Location
  Access Required
  600' Track Length Required
- Rail Corridor – Unsuitable Track
- Municipality

Nollar Rd
Joy Rd
Gleaner Hall Rd
Pontiac Trl
Warren Rd
A|1
US 23
Birchwood Dr
Indian Creek Cir
Hickory Point Dr
Ann Arbor
Dhu Varren Rd
Area 10

Potential Station Location
Area 10

1in=400ft
0 200 600 1000


M 14
Dhu Varren Rd
Foxway Dr
Onlesaad Dr
Tuebingen Pkw
Lancashire St
Traverwood Dr
Pontiac Trl
Heterodox Dr
Traver Rd
Barton Dr
Traver Ct
Traver Knol
Hideaway Ln
Upland Dr
A|2
Chandler Ave
Willow Ln
Plymouth Rd
Broadview Ln
E Gilbert Ct
Jones Dr
Broadway St
Fuller Rd
Glen Ave
Ann Arbor
Area 11
Potential Station Location
Area 11
1in=400ft
0 200 600 1000
LEVEL 2
Legend & Selection Criteria
Potential Station Development Parcel
Business/Industrial/Utility Land Use
No Development Zone
Residential Land Use
No Development Zone
Park/Recreational Land Use
No Development Zone
Institutional Land Use
No Development Zone
No Road Access
Minor Arterial or Major Connector Access Required
Wetland
No Development Zone
Track Curvature
Curvature Prevents Station
Potential Station Location
Access Required
600’ Track Length Required
Rail Corridor – Unsuitable Track
Municipality

APPENDIX III: Level 3 Evaluation Summary

Prepared by SmithGroupJJR
May 5, 2017

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

O|1 - Howell west of Old Station on Wetmore Street — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	3.0	12.0	Public=3, Rail=2, Private=1	Public owned. -- ?? Is this true??
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent commercial and residential.
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness=1	Designated as "City Center" on Howell Master Plan.
2.5	Zoning	2.0	2.0	4.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Light Industrial (I - 1)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	2.0	4.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	2.0	4.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Proposed main routing of Crosstown Trail connects to site.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	Room for second track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of Wetmore Street.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	High visibility off of Wetmore, Center, and Walnut Streets.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Flat and cleared site has the potential for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 800 sqft building.
Total Score			43.0	111.0		
Weighted Average		**41.0**		2.71		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

O|2 - Howell at northeast corner of Grand River Avenue and Cartell Drive — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Privately owned.
2.3	Adjacent Land Use	2.0	3.0	6.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent commercial.
2.4	Transit Oriented Development Potential	4.0	2.0	8.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness=1	Opportunity to strenghten existing surrounding development.
2.5	Zoning	2.0	3.0	6.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Business (B - 2)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	3.0	6.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	2.0	4.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Proposed main routing of Crosstown Trail on the edge of the site along Grand River Drive.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	Room for second track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Grand River Road and Cartell Drive.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Topography prevents direct visual access from one direction along Grand River Drive. Opportunity for signage.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Flat and cleared site has the potential for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 800 sqft building.
Total Score			43.0	105.0		
Weighted Average		**41.0**		2.56		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

O|3 - Howell south of Grand River Avenue 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	1.0	1.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One full partial and two partial parcels required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	3.0	6.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent commercial land use.
2.4	Transit Oriented Development Potential	4.0	2.0	8.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness=1	Surrounding commmercial land use provides opportunity to strengthen businesses.
2.5	Zoning	2.0	3.0	6.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Business (B - 2)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	3.0	12.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	3.0	6.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	2.0	4.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Proposed main routing of Crosstown Trail on the edge of the site along Grand River Drive.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	2.0	8.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	May require room for 2nd track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	1.0	4.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Difficult to access off of Grand River Avenue due to topography change and proximity to rail bridge.
5.2	Site Access - Visual	1.0	2.0	2.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Topography prevents direct visual access to the station. Opportunity for signage.
5.3	Site Development	4.0	2.0	8.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Topography has the potential for moderate additional site development costs.
5.4	Potential for Expansion	2.0	1.0	2.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 800 sqft building.
Total Score			35.0	86.0		
Weighted Average		**41.0**		2.10		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

G|1 - Genoa at Chilson Hills Baptist Church on Brighton Road — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	Easement from one parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Church on the property to remain, and surrounding agriculutre land use.
2.4	Transit Oriented Development Potential	4.0	1.0	4.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness=1	Remore site has little potential for a transit oriented development.
2.5	Zoning	2.0	1.0	2.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Suburban Residential
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	1.0	2.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	1.0	2.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	No proximate existing/planned trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	Room for second track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	2.0	8.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Shared parking lot and drive with church provides moderate ease of access.
5.2	Site Access - Visual	1.0	2.0	2.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Mature pine trees limit visibility from Brighton Road. Opportunity for signage.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Sharing and expanding the existing parking lot creates the potential for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 800 sqft building.
Total Score			34.0	84.0		
Weighted Average		**41.0**		2.05		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

H|1 - Hamburg at M-36 and Girard Drive (Zukey Lake area) 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	3.0	6.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Commercial
2.4	Transit Oriented Development Potential	4.0	2.0	8.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Surrounding development provides opportunity for strenghtening existing businesses.
2.5	Zoning	2.0	3.0	6.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Neighborhood Service (NS)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	1.0	2.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	3.0	6.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Lakelands Trail runs adjacent to the tracks.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	2.0	8.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	Requires room for second track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of MI 36.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	High visibility off of MI 36.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Cleared site has the potential for typical development costs.
5.4	Potential for Expansion	2.0	2.0	4.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1000 sqft building.
Total Score			40.0	97.0		
Weighted Average		**41.0**		2.37		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

H|2 - Hamburg at Featherly Drive west of Hamburg Road — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	1.0	2.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Residential adjacent to parcel.
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Hamburg's Village Center Plan identifies site as potential TOD.
2.5	Zoning	2.0	2.0	4.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Industrial (GI)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	3.0	6.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	3.0	6.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Less than 5 minute walk from Lakelands Trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of Hamburg Road
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Clear visual access from Hamburg Road.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Existing industrial use proivdes opportunity for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1000 sqft building.
Total Score			42.0	105.0		
Weighted Average		**41.0**		2.56		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

H|3 - Hamburg east of Hamburg Road (south of tracks) 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent use is agricultural.
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Hamburg's Village Center Plan identifies site as potential TOD.
2.5	Zoning	2.0	2.0	4.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Industrial (GI)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	1.0	4.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	Strawberry Lake Rd is a collector road.
3.2	Distance to Population	2.0	2.0	4.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	3.0	6.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	In vicinity of Lakelands Trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of Strawberry Lake Rd.
5.2	Site Access - Visual	1.0	1.0	1.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Obscured visual access off of Strawberry Lake Rd
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Existing developed site has the potential for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1000 sqft building.
Total Score			39.0	99.0		
Weighted Average		**41.0**		2.41		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

H|4 - Hamburg east of Hamburg Road (north of tracks) 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	1.0	1.0	None=3, less than 1 acre=2, more than 1 acre=1.	More than 1 acre of woodland.
1.2	Floodplain	2.0	2.0	4.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	Less that 0.1 acre of parcel is within the floodplain.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Agriculture adjacent land use.
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Hamburg's Village Center Plan identifies site as potential TOD.
2.5	Zoning	2.0	2.0	4.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Industrial (GI)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	1.0	4.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	Strawberry Lake Rd is a collector road.
3.2	Distance to Population	2.0	3.0	6.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	2.0	4.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	In vicinity of Lakelands Trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of Strawberry Lake Rd.
5.2	Site Access - Visual	1.0	1.0	1.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Obscured visual access off of Strawberry Lake Rd
5.3	Site Development	4.0	2.0	8.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Topography and woodlands have potential for moderate additional development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1000 sqft building.
Total Score			35.0	91.0		
Weighted Average		**41.0**		2.22		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

W|1 - Whitmore Lake at 8 Mile Road (west of US-23) 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Surrounding uses include: agriculture and a highway
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Current plan for a development adjacent to the station. Northfiled Township Masterplan identifies site as future "Mixed Use Village Center"
2.5	Zoning	2.0	3.0	6.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Commercial (GC)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	3.0	12.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	2.0	4.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	1.0	2.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	No proximate existing/planned trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access to site from Eight Mile Road.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	High visibility from Eight Mile Road.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Cleared site provides opportunity for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1200 sqft building.
Total Score			42.0	107.0		
Weighted Average		**41.0**		2.61		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

W|2 - Whitmore Lake at Main Street (east of US-23) 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	3.0	6.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent land uses include: post office, restaurants, commercial uses.
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Northfiled Township Masterplan identifies site as future "Mixed Use Village Center"
2.5	Zoning	2.0	3.0	6.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Whitmore Lake North Village (WLD-NV)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	2.0	4.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	1.0	2.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	No proximate existing/planned trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	3.0	12.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of Main Street.
5.2	Site Access - Visual	1.0	2.0	2.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Distance from road to tracks limits visibility to station from Main Street. Potential for signage along Main Street.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Flat and mostly cleared site allows for typical development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1200 sqft building.
Total Score			41.0	104.0		
Weighted Average		**41.0**		2.54		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

W|3 - Whitmore Lake at Barker Road — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	No potential, site is currently an abandoned business.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	3.0	6.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent land uses include: library, commercial, and restaurants.
2.4	Transit Oriented Development Potential	4.0	3.0	12.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Northfiled Township Masterplan identifies site as future "Mixed Use Village Center"
2.5	Zoning	2.0	3.0	6.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Commercial (GC)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	1.0	4.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	3.0	6.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	3.0	6.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Non-motorized trail borders site.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	2.0	8.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of Barker Road.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	High visibility from Barker Road.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Majority of site is paved allowing for easy development.
5.4	Potential for Expansion	2.0	1.0	2.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel size prevents expansion of parking to accommodate 2040 ridership and a 1200 sqft building.
Total Score			41.0	99.0		
Weighted Average		**41.0**		2.41		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

W|4 - Whitmore Lake at 7 Mile Road — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	2.0	2.0	None=3, less than 1 acre=2, more than 1 acre=1.	Less than 1 acre of woodlands.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	Part of the parcel is in the floodplain, however the station and parking can fit outside of the flood zone.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	Current site is cleared for agriculture.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private owner.
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Adjacent land use is a mix of residential, businesses, institutional, and agricultural.
2.4	Transit Oriented Development Potential	4.0	2.0	8.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Potential for development to extend existing business corridor along Main Street.
2.5	Zoning	2.0	1.0	2.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Agriculture (AR)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	1.0	4.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	2.0	4.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	1.0	2.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	No connection to existing/planned trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	2.0	8.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	May require 2nd track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Main Street and 7 Mile Road provide easy access to the site.
5.2	Site Access - Visual	1.0	2.0	2.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Visual access to signage is a possibility, however the site will be hidden from view from the road due to topography and distance.
5.3	Site Development	4.0	1.0	4.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Topography and the distance from the surrounding roads to the track may cause high development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1200 sqft building.
Total Score			32.0	77.0		
Weighted Average		**41.0**		1.88		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

W|5 - Whitmore Lake at North Territorial Road — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	2.0	2.0	None=3, less than 1 acre=2, more than 1 acre=1.	Less than 1 acre of woodland.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	None.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private owners.
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Site is adjacent to a farm and industrial use.
2.4	Transit Oriented Development Potential	4.0	1.0	4.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Site is located in a rural area, low potential for a transit oriented development.
2.5	Zoning	2.0	2.0	4.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Limited Industrial (LI)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	1.0	4.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	1.0	2.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	1.0	2.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	No proximate existing or planned trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	2.0	8.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	May require 2nd track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access off of North Territorial Road.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Highly visible from North Territorial Road.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Flat and mostly cleared site create the potential for typical site development costs.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Parcel allows for expansion of parking to accommodate 2040 ridership and a 1200 sqft building.
Total Score			34.0	82.0		
Weighted Average		**41.0**		2.00		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

A|1 - Ann Arbor at Warren Rd. 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	Floodplain does not impact potential to develop site.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	One parcel required.
2.2	Parcel Ownership	4.0	1.0	4.0	Public=3, Rail=2, Private=1	Private ownership.
2.3	Adjacent Land Use	2.0	2.0	4.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Surrounding use includes agricultural and residential.
2.4	Transit Oriented Development Potential	4.0	1.0	4.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	Remoteness does not create the opportunity for a TOD.
2.5	Zoning	2.0	1.0	2.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	General Agriculture (A - 1)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	1.0	4.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	1.0	2.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	2.0	4.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Proposed bike lanes along Pontiac Trail.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	1.0	4.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	May require 2nd track
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access from Pontiac Trail and Warren Drive.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Highly visible from Pontiac Trail.
5.3	Site Development	4.0	3.0	12.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Easy site development due to flat site.
5.4	Potential for Expansion	2.0	3.0	6.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Opportunity for expansion due to large parcel size.
Total Score			34.0	79.0		
Weighted Average		**41.0**		1.93		

Evaluation of Potential North-South Commuter Rail Station Sites

LEVEL 3 Site Evaluation Criteria/Scoring

A|2 - Ann Arbor at Barton Drive — 5/2/2017

		Weight (1, 2, 4)	Score (1-3)	Weighted Score	Scoring Criteria	Notes
1	**Environmental**					
1.1	Woodlands	1.0	3.0	3.0	None=3, less than 1 acre=2, more than 1 acre=1.	None.
1.2	Floodplain	2.0	3.0	6.0	None=3, less than 0.1 acre=2, more than 0.1 acre=1.	Not in floodplain.
1.3	Potential for T&E Species	2.0	3.0	6.0	None=3, Potential habitat observed-partial site=2, Potential habitat observed-entire site=1	None.
2	**Land & Land Use**					
2.1	Number of Parcels Required	1.0	3.0	3.0	One Parcel=3, Two Parcels=2, More than Three Parcels=3	No parcel required, station fits within rail R.O.W.
2.2	Parcel Ownership	4.0	3.0	12.0	Public=3, Rail=2, Private=1	No parcel required, station fits within rail R.O.W.
2.3	Adjacent Land Use	2.0	1.0	2.0	Commercial=3, Industrial/Agriculture=2, Residential=1	Residential apartments.
2.4	Transit Oriented Development Potential	4.0	1.0	4.0	Considered opportunity in master plan=3, existing development provides opportunity=2, no opportunity due to lack of density/remoteness	No opportunity due to existing residential development surrounding site.
2.5	Zoning	2.0	1.0	2.0	Business/commercial, village center/service=3, industrial=2, residential, agriculture=1	Multiple Family Dwelling (R4A)
3	**Transportation**					
3.1	Traffic - Road Capacity	4.0	2.0	8.0	Surrounding Roads: adequate capacity=3, minimal improvements=2, major improvement=1	
3.2	Distance to Population	2.0	3.0	6.0	Within 1/2 mile of population center=3; within 1 mile =2; greater than 1 mile=1	
3.3	Distance to Existing/Planned Non-Motorized Network	2.0	3.0	6.0	Proximate to existing non-motorized trail=3, proximate to a planned trail=2, no proximate existing/planned trail=1	Adjacent to shared-use path and planned future bike lanes.
4	**Rail Operations**					
4.1	Conflicts with rail operations	4.0	2.0	8.0	No major conflicts with rail operations=3; some track reconfiguration required=2; major conflicts=1	May require 2nd track.
5	**Site Development**					
5.1	Site Access - Motorized	4.0	3.0	12.0	Easy access off of surrounding roads=3, moderate ease of access from surrounding roads=2, difficult to access from surrounding roads=1	Easy access from Barton Drive and Plymouth Road.
5.2	Site Access - Visual	1.0	3.0	3.0	Visible from surrounding roads=3, site signage visibile from surround roads=2, site obscured from surrounding roads=1	Highly visible from Barton Drive and Plymouth Road.
5.3	Site Development	4.0	2.0	8.0	Typical site development costs=3, Moderate additional costs due to site issues=2, Major additional costs due to site issues=1	Moderate amount of grading required, including multiple retaining walls.
5.4	Potential for Expansion	2.0	1.0	2.0	Space to accommodate 2040 park and ride numbers and 800-1200 sqft building=3, Space to accommodate 2040 park and ride numbers=2, Limited expansion opportunities=1	Surrounding buildings and roads limit expansion opportunities.
Total Score			37.0	91.0		
Weighted Average		**41.0**		2.22		

APPENDIX IV: Photographic Inventory of Prospective Station Locations

Prepared by SmithGroupJJR
May 5, 2017

HOWELL O|1

Looking northwest from Wetmore St.

Looking west along tracks

HOWELL O|2

Looking northeast from Grand River Ave.

Looking west along tracks

Looking southwest from Grand River Ave.

Looking southeast along tracks

GENOA TOWNSHIP G|1

Chilson Hills Baptist Church

Looking south along tracks

HAMBURG H|1

Looking east from south of tracks; Lakeland Trail to the right

Looking east from north of tracks; M-36 to the left

HAMBURG H|2

Looking west along entry drive; site is on the left

Looking west along tracks

HAMBURG H|3

Looking north from Strawberry Lake Rd.; tracks are along hedgerow in distance

Potential access from Hamburg Rd.; south side of tracks

HAMBURG H|4

Looking north from Strawberry Lake Rd; site is on the right side of tracks

Potential access from Hamburg Rd.; north side of tracks

WHITMORE LAKE W|1

Looking south from Eight Mile Rd

Looking northwest along tracks

WHITMORE LAKE W|2

Looking west from Eight Mile Rd.; tracks are in the hedgerow in the background

Looking southeast along tracks

WHITMORE LAKE W|3

Looking south from Baker Rd.

Looking southeast along tracks

WHITMORE LAKE W|4

Looking west along Seven Mile Rd.; the tracks are in the hedgerow in the background

WHITMORE LAKE W|5

Looking south along tracks; site is on the right

ANN ARBOR A|1

Looking south along tracks; site is on either side of the tracks

Looking north to the Osmer freight interchange

ANN ARBOR A|2

Looking northeast along tracks; site is on the left, Plymouth Rd. is on the right

APPENDIX IV: Analysis of a Commuter Rail Station where the Ann Arbor Railroad crosses over the Michigan Central Line

Prepared by SmithGroupJJR
May 5, 2017

Analysis of a Commuter Rail Station where the Ann Arbor Railroad crosses over the Michigan Central Line	August 12, 2015	20404.000
SUBJECT	DATE	PROJECT NO.

TO	COMPANY
Michael Benham	AAATA
Kris Foondle	MDOT
FROM	
Neal Billetdeaux	SmithGroupJJR
Bob Moore	Quandel Consultants

SGJJR and Quandel Consultants have documented our understanding of current rail and passenger station operations and potential issues related to construction of a passenger rail station at the location where the Ann Arbor Railroad crosses over the Michigan Central Line and the adjacent North Main Street (BR-94). Presumably, such a location could be expected to improve the interconnectivity between the two proposed commuter lines and intercity service on the Michigan Central Line.

Passenger Station Design Criteria

Ann Arbor Railroad

Typical passenger station design criteria recognize that station platforms constructed on curved track create operational difficulties due to the fact that the rolling stock carbodies are rigid rectangular prisms, while the track and station platform edges can be curved to follow historic geometric constraints. Metra's station design criteria recommends that station platforms not be located on curves exceeding 1 degree 40 minutes. However, there are no regulations that preclude locating platforms on curves where the curvature is greater. Multiple examples exist of commuter rail systems that have constructed station platforms on curved tracks where other factors outweigh the difficulties imposed by curvature. We are not aware of cases where the curvature exceeds 2 degrees 30 minutes. Based on the available aerial photography, we have determined that that the curvature value on the Ann Arbor Railroad in the subject location is between 3.9 and 4.0 degrees.

The standard Metra bi-level coach is approximately 85' in length and 10.4' in width. The car is constructed with 59.5' truck centers and 12.75' end overhang. On a tangent track with a 5'-7" track centerline to platform edge spacing the carbody edge will be located roughly 5" from the edge of the platform.

On a curved track, the car will chord the curve such that the carbody longitudinal centerline shifts toward the inside of the curve as the truck assemblies follow the curved track. This will cause the carbody to be closer to a platform on the inside of a curve and further away from a platform on the outside of a curve. The end corners of the carbody are shifted in the opposite direction, such that they are closer to a platform on the outside of a curve and further away from a platform on the inside of a curve.

A platform on a curve is generally configured to follow the track curvature at a distance which ensures that the carbody does not extend over the platform surface while the train moves through the station. We have somewhat arbitrarily selected a 5' 7" track centerline to platform edge spacing. Our calculations show that a door located at the center of a car will be approximately 1" from the platform edge on the inside of the 4 degree curve. Similarly, it can be shown that a center door will be located approximately

9" from the platform edge on the outside of the curve. This value is fairly large and may pose a hazard to boarding safely.

There are other factors that may also come into play when locating a platform on a curve. Track superelevation will tilt the carbody toward the inside of the curve, causing it to lean and making the steps more difficult to negotiate. However, superelevation should not create much problem at this site, as the current value is just 0.5" (commensurate with the slow speed operation), which will have little effect on negotiating the stairway. The superelevation will cause the top of the car to extend approximately 1.5" toward the inside of the curve, possibly requiring a similar increase in the track center to platform edge spacing.

One operational factor that should not be overlooked is the difficulty in observing the doorways with platforms on the outside of a curve. A conductor cannot easily ensure that the doorways are clear when operating the doors from his normal position within one of the doorways under this condition which presents a potential safety concern.

Michigan Central Line

It should be noted that constructing a platform on the Michigan Central line at this site will prove more problematic, as the curve is more abrupt at 4.3 degrees and includes 4" of superelevation. The superelevation alone will make boarding very difficult. In addition, the current mix of passenger equipment with center and end doors will make it impossible to achieve a consistent platform to door threshold gap. Also, the frequency of train operation essentially mandates the use of two platforms, one on the inside and one on the outside of the curve. As noted above, platforms on the outside of a curve will serve to increase the gap at the midcar doors. An alternative to a platform in this location is one on the tangent track to the east, generally in the vicinity of the current station.

Freight Operations

Required clearances between a station platform and freight equipment in use in the corridor must be taken into consideration. This is particularly important, as Watco may operate or wish to preserve the right to operate dimensional loads (large wheelbase and large width equipment) such as autoracks on the Ann Arbor Railroad line. A track center to platform edge spacing of 6' 0" with standard low level platforms should prove acceptable for all freight equipment that can be interchanged. Such track center to platform spacing with a platform on the inside of the curve would also be acceptable for the defined commuter operation. However, FRA's recent requirement for "level boarding" at 15" above track elevation (49 CFR 37.42) creates a conflict with large wheelbase and large width equipment. This was resolved at the recently completed Dearborn Intermodal Station with the design of a manually-operated flip up platform to provide the necessary width for dimensional loads. An alternate solution would be application of Amtrak's Accessible Boarding Technologies (ABT) Program which is currently being tested at the Ann Arbor Amtrak station. The prototype provides accessible ramps to the level boarding elevation and a modular platform that extends to the passenger train after it has stopped. At issue would be the additional cost for construction and operation of either of these devices. While the ABT prototype could be replicated at grade on the Michigan Central line, it would be more complex and expensive to engineer such a facility at the elevation of the Ann Arbor Railroad.

Bridge Clearance

State law for clearance over a railroad is 22' and it is understood that the American Railway Engineering and Maintenance-of-Way Association (AREMA) now calls for 23'. AREMA is responsible for development of recommended practices pertaining to the design, construction and maintenance of railway infrastructure. Although it has not been surveyed, the clearance between the bottom of the Ann Arbor Railroad bridge girder and the Michigan Central top of rail is estimated at ~21.3 feet.

The relevance of this is that it will most likely require federal funds to implement a station in this location. As such, improving the clearance to state and/or federal limits may be a requirement of the funding. At

this point, this is only speculation as the clearance has not been confirmed and this issue has not been discussed with federal authorities. However, it is typical of federally-funded projects that they comply with current codes and regulations. Meeting current clearance limits would require either replacing the Ann Arbor Railroad bridges over the Huron River and North Main Street or lowering the Michigan Central tracks. Freight traffic on the Ann Arbor Railroad line would either have to be halted or rerouted during a bridge reconstruction scenario. A temporary track would have to be constructed to accommodate freight traffic and Amtrak on the Michigan Central line in a track lowering scenario. Either option would be extremely expensive and could potentially cause considerable service disruption.

Zoning and Site Planning

The area adjacent to the location where the Ann Arbor Railroad crosses over the Michigan Central line is zoned C1B – Community Convenience Center immediately south of the Ann Arbor Railroad and west of Michigan Central and C3 – Fringe Commercial further south on the corner of North Main Street (BR-94) and Depot Street. The area immediately north of the Ann Arbor Railroad and west of Michigan Central is zoned M1A – Limited Light Industrial. The area south of the Ann Arbor Railroad and east of Michigan Central is zoned M1 – Limited Industrial. While none of these zoning districts expressly identify a commuter rail passenger station as a permitted principle or accessory use, it is assumed that this type of use could be approved in this location.

A complicating factor in the development of a car/transit accessed facility in this location is the constrained site dimensions associated with all of these properties and existing office buildings south of the Ann Arbor Railroad and west of Michigan Central. At best, the parcel south of the Ann Arbor Railroad could accommodate limited temporary parking and/or limited transit access through use of the existing parking lot (~44 spaces which are currently dedicated to the office building further south). Use of this site would require purchase and potential demolition of the existing office building adjacent to and south of the Ann Arbor Railroad. This area is further constrained by high peak hour traffic volumes on North Main Street (BL-94) that would make ingress/egress difficult especially for southbound movements. This could be a contentious issue associated with site plan review. Due to the fact the North Main Street is under MDOT jurisdiction, they may also be a party to any approvals. An elevated station in this location would require an elevator for accessibility adding additional expense.

An option to a car/transit accessed facility would be a north-south pedestrian only station where the two rail lines cross. This would require passengers from either the north-south or east-west commuter rail stations to disembark and walk to the other station, a distance of ~1,400'. Ann Arbor is currently evaluating potential locations for a new train station and this option would assume that the existing station remains in place.

Environmental

The subject site contains portions of the Allen Creek floodplain and floodway. Floodways have greater restrictions than floodplains but both are regulated under state law. While this does not preclude development, it is an additional consideration with respect to construction of structures within these regulated zones. If impacts are proposed, permitting would most likely be required from both the Washtenaw County Water Resources Commissioner and the Michigan Department of Environmental Quality.

Summary

In summary, more accurate information may alter the clearances noted in this memo, but one may conclude that locating a station platform on the inside of a 4 degree curve on a single track railroad with Metra style bi-level cars is feasible. However, a determination of prudence would need to be made by the involved parties based on the following items:

- Track conditions – Curved track is found on both rail lines in this location. A station on a curved track can create a safety issue due to a potential unacceptable gap between the platform and the rigid rail car. Superelevation can also create problems with boarding.
- Engineering – An estimate of engineering costs is beyond the scope of this memo but could vary wildly depending on the complexity of the proposed project. At a minimum, the engineering of a multi-level station located on two curved tracks will be a very expensive proposition. If additional bridge and/or track work is required, cost could rise exponentially.
- Land acquisition – Development of a commuter rail station in this location would require acquisition of private property currently in an office use. No estimate of acquisition cost is made but this would add to the overall project cost.
- Railroad operations – Both rail lines currently run freight traffic. The Michigan Central Line also serves Amtrak intercity passenger service and is identified as a high speed rail corridor. Coordination among these stakeholders to implement a new station in this location would be a time-consumptive task requiring a dedicated team. If additional bridge and/or track work is required, consideration of alternative, temporary routing could add considerably to the cost of implementation.
- Jurisdictional approvals – There has been no discussion with the City of Ann Arbor or MDOT regarding consideration of a passenger rail station in this location. Existing site dimensional constraints along with high peak hour traffic volumes on North Main Street (BR-94) would require serious evaluation from both entities.
- Environmental – The subject site contains portions of the Allen Creek floodway and floodplain. Floodways have greater restrictions than floodplains but both are regulated under state law. The City of Ann Arbor is not allowing new construction in the floodway and discouraging floodplain construction.
- Community acceptance – At first glance, the concept of a passenger rail station in this location makes sense with respect to improving commuter rail interconnectivity and access to intercity rail. However, a through cost/benefit analysis will be required to ensure the expenditure would be in the community's best interest.

Obviously, any decision to advance the concept of locating a platform in this location should be taken in coordination with the property owners, Watco Companies, who owns the Ann Arbor Railroad, MDOT, the City of Ann Arbor and AMTRAK among other stakeholders.