

Heritage Trail Considerations

Preliminary Heritage Trail Staking for Segment 9

OHM Consultants, under the direction of TART, NPS and MDOT, have been hired to help design the multi-use recreational trail called “The Heritage Trail.” On May 10, 2023, OHM did a preliminary staking of the center line of the trail routing from CR 669 to CR 651, otherwise known as Segment 9. This routing is subject to changes and is not final. The stakes have pink ribbons attached to them. When completed, trail users will be able to bike from Empire to Good Harbor Bay at CR 669, with the exception of an on-road trail along Glen Lake (trail ends at either end of Northwood Drive) and ending before reaching the neighborhoods in Empire and Glen Arbor.

Segment 9 begins at the corner intersection of CR 669 and M-22 and then progresses east along M-22 to Traverse Lake Road (TLR) crossing in front of two private properties. The trail turns north along TLR to the large west curve with the trail being mostly an elevated boardwalk across wetlands adjacent to the road within the right of way traversing two more private properties and also crossing Shalda Creek. The trail then meanders eastward through mature woods (up to 100 ft from the road) until it reaches the old Swanson / Juniper Trail where it begins to be routed closer to the road edge due to the presence of dunes as well as crossing a fifth private property. On the eastern end of TLR, the trail will traverse critical dunes adjacent to the road (retaining walls required) before headed north past the former Bufka farm to reach CR 651. There will be limited access points for TLR residents (via private driveways and two trail intersections).

One can walk the stake line to see the preliminary routing with some portions being located close to the road (staying within 33 ft of road centerline in the road right away across private property) and other portions setback into woods (not extending beyond the wilderness boundary which starts at 100 ft from road). Portions of the trail will include board walk construction across wetlands, a bridge across a creek, retaining wall construction with excavation through critical dune areas, and clearing through forests. Portions of scenic TLR will look different with more extensive tree clearing and retaining wall construction alongside the road edge.

Trail engineering is expected to be completed by end of 2023. After final engineering plans are completed, the following permits will need to be acquired (there is a public comment opportunity as part of the permit approval process): County Road Commission and MDOT approval for right of way use across private property and where trail is closer to road due to dune topography challenges. Critical Dune permit, stream crossing permit, wetlands permit from State of Michigan. TART is undergoing fund raising and planning for trail construction beginning fall 2024 with completion in 2025. Trail costs are expected upwards of \$10.5 Million, and could be more than was spent for the first 22 miles of the Heritage Trail as engineering plans get developed further.

Trail Construction Designs

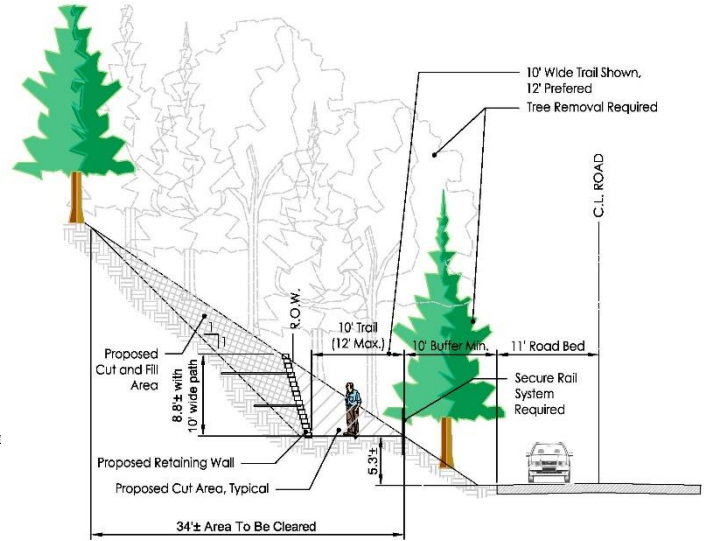
Historical trail construction of the Heritage Trail includes a 25 ft wide vegetative clearing swath before deeper excavation in preparation for 10 ft wide asphalt path with 2 ft gravel shoulders (14 ft in total). Additional excavation may be required for topography considerations where hills and slopes may need to be cut back. For steeper hills, or where soils are unstable (critical sand dunes), retaining walls are constructed and can have one or multiple tiers of retaining walls based on design or large scale excavation and removal of hill material is required.

A 10 ft safety space must exist between road edge and the trail path to meet American Association of State Highway and Transportation Officials (AASHTO) safety guidelines, meaning tree clearing would be required for the entire road right of way 33 ft from centerline or more.

ILLUSTRATION OF VARIOUS DESIGN CONSIDERATIONS



American Association of State Highway and Transportation Officials (AASHTO)



EXAMPLES OF VARIOUS RETAINING WALL DESIGNS



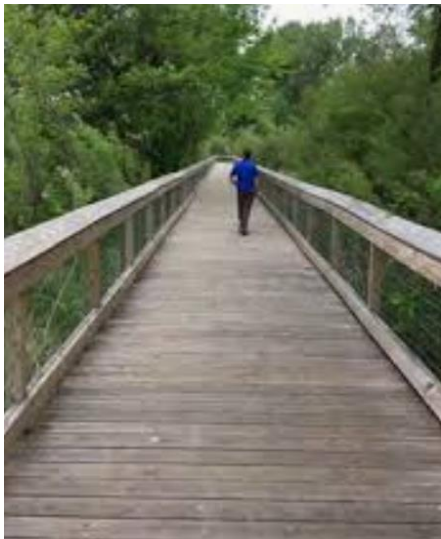
Height and type of retaining wall is dependent on total elevation, degree of slope and how far back the slope needs to be cut to create hillside stability (all factors determining volume of material needed to be removed). Actual design for TLR still to be released to the public.

EXAMPLES OF HERITAGE TRAIL CONSTRUCTION



EXAMPLES OF ELEVATED BOARD WALK TO TRAVERSE WETLANDS

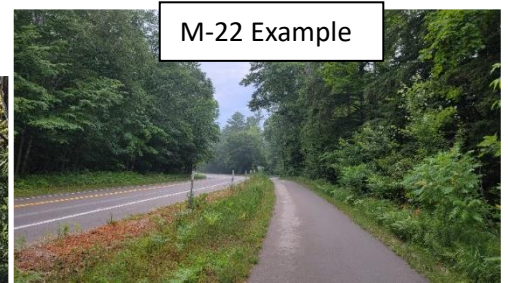
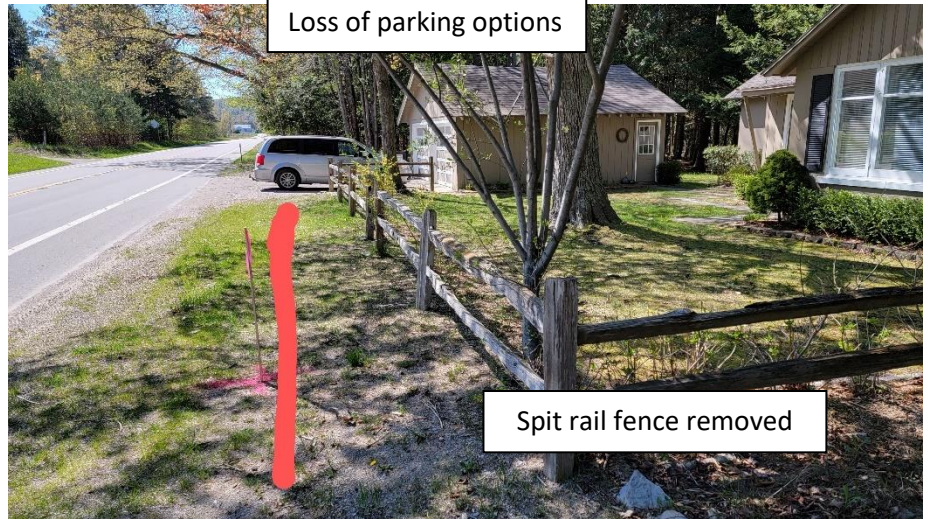
Wetlands are usually traversed with an elevated boardwalk that is 14' wide and usually has side rails unless surface elevated less than 2' from the ground. Elevated board walks will be constructed at the east end of TLR alongside the roadway and for some portions adjacent to the Bufka cedar swamp between TLR and CR 651.



ROUTING ALONG M-22 FROM CR 669 EAST TO TLR



As the trail progress east along M-22, the former house on National Park property will be torn down to create a parking lot for trail users. Then the trail will be routed closer to M-22 roadway as it crosses two private properties before reaching TLR. This will require cutting back trees along the road to facilitate trail construction and will be routed in front of residences. Entre TLR/M-22 intersection is proposed to be moved 10' to the east.



TRAVERSING WETLANDS ON WEST END OF TLR

The trail then turns north, traversing wetlands with an elevated board walk being construction along TLR as it crosses two more private properties. The trail will also cross Shalda Creek with the construction of a new bridge with a concrete box culvert design. It is not know what impact it will have on lake levels and will require further engineering scrutiny to make sure it does not adversely lower existing lake levels.



TLR WEST CURVE EASTWARD

After the trail crosses the fourth private property at the west end of TLR, it is routed into the woods outside of the road ROW up to 100 ft from the trail (wilderness boundary) until it reaches the old Swanson / Juniper Trail where the critical dunes begin. The trail would be cut through the woods similar to other parts of the Heritage Trail where a 25 ft path has been cleared to accommodate trail construction. Hundreds of trees will be removed to construct the 5+ mile trail from CR 669 to CR 651. A botanical survey to determine the actual number of trees to be removed has not been conducted by MDOT, NPS or TART.



SWANSON / JUNIPER TRAIL EASTWARD TOWARDS DUNES

As the trail continues eastward from the Swanson / Juniper Trail, the route is closer to the road due to the presence of dunes and crossing in the road right of way across the fifth private property and residence. Where the trail is in closer proximity to the road, additional tree clearing along the road way will take place for the trail (usually a vegetative-clear width 33 feet from center line).



Example of tree clearing along road for trail



Scenic Residential Road



TLR CRITICAL DUNE AREA



The trail will traverse about 700 ft of State designated and State protected Critical Dunes along TLR. These dunes are high and steep, with slopes often greater than 1:3. Extensive cutting back of the dunes will be required along with construction of large retaining walls along this section of the trail.



BUFKA FARM TRAIL

Once reaching the east big curve of TLR, the trail continues northward alongside the wilderness area between dune hills and a cedar swamp, passes west of and below Bufka Farm, and then ends at the top of CR 651 near the M-22 intersection with shared road access to parking lot. This section will have some wetland board walk construction and several hill excavations north of Bufka Farm due to the rolling topography west of M-22. It also newly dissects a significant wildlife habitat between TLR and Bufka Farm that is adjacent to the Wilderness Area.

TRAIL ROUTING ALTERNATIVES

LTLPOA has historically supported recreational trails but has raised concerns over the impact of the Heritage Trail as well as proposed alternative solutions. This will be the greatest change for the scenic character of TLR since it was first paved decades before the formation of the Sleeping Bear National Lakeshore. The alternatives include constructing a trail along CR 669 to access Good Harbor Bay with existing parking and facilities, stopping trail at TLR like has been done at Northwood Drive, Empire and Glen Arbor, creating an on-road trail with a lower speed limit, or suggesting a study to determine the feasibility of adding 5 ft road shoulders. Cleveland Township has insisted the CR 669 spur be part of the Heritage Trail plan. TART has indicated willingness to raise funds for the CR 669 spur. NPS has indicated support for an off road trail along CR 669 but has stated NPS will not consider until after Segment 9 is completed.



- ✓ Access to Good Harbor Bay
- ✓ Trail head with parking
- ✓ Consistent with NPS Master Plan
- ✓ Consistent with Township Plan
- ✓ Access to Lake Michigan Drive
- ✓ No private property
- ✓ No tree clearing needed
- ✓ No wetlands
- ✓ No critical dune area
- ✓ No impact to wildlife area
- ✓ Millions of dollars lower cost



For more information on design guidelines, a benchmark resource is the “Guide for the Development of Bicycle Facilities” published by the American Association of State Highway and Transportation Officials (AASHTO).

TRAVERSE LAKE ROAD DESIGNS

NPS originally proposed in 2007 a shared road usage for Segment 9 of the Heritage Trail and TART in the past has supported the concept as well. LCRC has safety concerns of utilizing TLR “AS IS” for mixed uses. There has been no in depth feasibility study completed to look at options for TLR traffic improvements, including the feasibility of adding 5’ shoulders, innovative traffic designs being utilized by other communities, or combination of road design alternatives. Leelanau County Road Commission’s efforts have been focused on resurfacing the current road with its “AS IS” design (a three year project with phase 1 resurfacing to be completed September 2023).

Traffic Patterns of TLR

TLR is a non-connector local road used predominantly by local residents. The LCRC conducted a traffic count study on TLR the last week in September, 2018. Here is the summary of those counts:

<p>Total average daily vehicular trips: 85 (less than 100)</p> <p>Highest number of vehicular trips in one hour: 18</p> <p>8 hourly periods had 10-18 vehicular trips per hour</p> <p>18 hourly periods had 6-9 vehicular trips per hour</p> <p>The remaining hourly periods over 4 days had 5 or less</p>	<p>Vehicles with speed 35 mph or less: 76.6%</p> <p>Vehicles with speed 36-40 mph: 16.0%</p> <p>Vehicles with speed 41-45 mph: 6.2%</p> <p>Vehicles with speed 46-50 mph: 1.2%</p> <p style="text-align: center;">85th speed percentile: 37 mph</p>
--	---

Speed limits are set by the Michigan State Police based on the speed of which 85% of the people drive. Exceptions sometimes can be made to lower the speed limit 5 mph below the 85th percentile based on certain pedestrian or bicycle considerations. Based on this traffic count, 92.6% of the drivers normally drive at 40 mph below (not a “high” speed road comparatively to other county roads) with an 85th percentile of 37 mph. Thus, the current 40 mph speed limit would likely not be lowered based on this data alone. This data also indicates that TLR is a very low volume road, both based on daily vehicular trips (with less than 100 per day) as well as hourly vehicular trips (with less than 18 per hour).

Traffic Calming Features

Some communities have incorporated traffic calming devices such as incorporating speed tables (not to be confused with speed bumps which are not truck, snowplow or boat trailer friendly and harder to maintain) that reduce traffic speeds (US-FHA studies show a 30% reduction in speeds – 37 mph becomes 27 mph). Another option is establishing various check points that also can reduce overall speed. Signage is also very helpful.



Examples of Speed Tables



Examples of Check Points



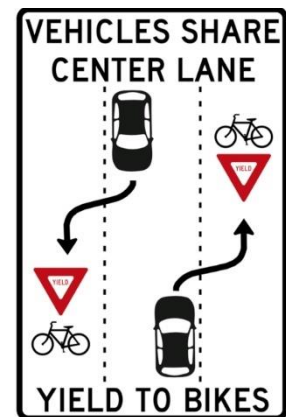
Alternative Traffic Designs

Many communities have been adopting traffic designs that naturally reduce vehicular speeds and also increase safety for non-motorized use. One of these designs is called “Edge Lane Roads” or “Advisory Bike Lanes” that are suitable for rural roads up to 3,000 vehicular trips per day or for urban roads with up to 6,000 vehicular trips per day. These ELR and ABL can be designed to function as a version of a shared road that meets and exceeds all safety design requirements. These ERL or ABL designs have worked well in Europe since 1970 and are used in 11 countries. As of mid-2023, over 80 installations are known in the United States and Canada since they were first introduced to North America in 2011. Rural ERL/ABL designs have been used as trail connectors and all users have quickly adjusted and adapted new road behaviors.

While some quickly react and initially think the design is dangerous, the opposite is true. Data that has been collected have shown vehicular speeds are reduced (without always a speed limit change) and accidents have been reduced by as much as 44%. The concept will be included in the updated AASHTO safety design standards for non-vehicular users. Perhaps this innovative design should be explored further for creating a safe multi-use road. The experience elsewhere merits a deeper look and more should be learned.

The ELR or ABL Design Concept

The design concept supports two-way vehicular traffic within a single center lane and non-motorized users in the edge lanes on either side. There is no centerline. The center lane is separated from the edge lanes with broken line markings. Broken line markings indicate to motorists their ability to merge into the edge lanes to pass an approaching motor vehicle and allows non-motorized users to move into the center lane when necessary. Motor vehicles may use the edge lanes only after yielding to any non-motorized users there. Drivers naturally pay more attention, slow their speed and give grace, space and safety to other road users. Because motor vehicles use the center lane, they create even more space as they give wide berth to non-motorized users as compared to a two lane road where drivers are on the same side as pedestrians. All available research to date has shown this design treatment to be safe in the US.



If interested in more information, begin by visiting www.advisorybikelanes.com which is a great resource containing concept descriptions, videos, educational presentations, photo gallery and many white papers discussing various aspects of design considerations and safety determinations. (Illustrations from that website)



Location: Morton Rd
Yarmouth, ME
Speed: 25 MPH
ADT: 400
Photo: BikeMaine



Granger St
Ann Arbor, MI



Location: Bridge Street
 Yarmouth, ME
 Speed: 25 MPH
 ADT: 400
 Photo: BikeMaine

SAFETY PERFORMANCE – U.S. & INTERNATIONAL

For conversions of standard two lane roads:

- **Denmark!**
 ELRs + traffic calming = 32% crash rate reduction
 ELRs + speed limit reduction = 47% crash rate reduction
 ELRs have no impact on crashes caused by snow/ice, alcohol, darkness
- **Netherlands***
 ELRs + speed limit reduction = 24% crash rate reduction
- **U.S.®**
 ELRs = 44% crash rate reduction (a CMF of .56)
 (11 ELRs and >60 million MV trips studied over eight years)

¹ "Traffiksikkerhedsanalyse af 2-l' vej", Belinda MourLund, Traftec December 9, 2015.
² The effects of 60 km/h zone enforcement, R. et al, Accident Analysis and Prevention, vol. 43, pp15308
[®] "Safety Performance of Edge Lane Roads", Michael Williams et al, TRB, January, 2021.

Vail, CO has installed an ELR on 20-22' wide Vail Valley Drive. This street functions as an on-street connector for the Gore Valley Trail.



Heritage Trail User Counts

The Friends of Sleeping Bear utilize counters to monitor trail usage along the Heritage Trail. The 2016 data can be found on their website www.friendsofsleepingbear.org and they are in the process of updating the trail usage data. Usage is lower further away from Glen Arbor. The Port Oneida – CR 669 area has an average of less than 100 persons per day or an average of 8 per hour with a maximum of 12 users per hour. There are times during the day with greater usage (view . Utilizing the data presented from the busiest time of the year, June 1, 2016 – September 10, 2016, trail counts for the number of users were:

Section	Daily Average <i>(Number of Users)</i>	Hourly Average <i>(Daily Avg/12 hours)</i>	Maximum Hourly <i>(Number of Users)</i>
Dune Climb	349.2	29.1	55.7
Forest Haven	475.9	39.6	74.4
Homestead	92.4	7.7	13.2
Kelderhouse	70.9	5.9	9.2
Port Oneida	97.0	8.1	11.5
Voice Road	82.8	6.9	13.9

Application to Leelanau County

TLR is a feasible candidate being a non-connector road with a very low volume of vehicular traffic and the potential to have speeds 35 mph or lower. The concept would need to be tailored specifically to TLR's unique characteristics with other design considerations such as widen the road width where possible, increase sight distance, incorporate additional traffic calming features such as speed tables or check points, address design around sharp curves, as well as instituting a lower speed limit based on the new design and lower speeds. Sight distance requirements are directly related to speed so incorporating traffic calming features can also help in addressing sight distance.

The significant benefits of adopting an ELR or ABL design are significantly lower infrastructure costs (saving millions as compared to building an off road trail), increased safety on a local non-connecting residential road, avoidance of private property impacts, and zero environmental impacts (no tree removal, no dune excavation) while preserving the scenic natural beauty of a wilderness area road and residential neighborhood. Keep in mind, there are 22 miles of off-road trail segments in the Sleeping Bear National Lakeshore for people to choose to utilize if that is what they prefer.

Other suitable candidates besides TLR might include Lacore Road between the southern end of the Heritage Trail and the village of Empire, perhaps Northwood Drive along the northern side of Glen Lake, along Lake Michigan Drive parallel to Good Harbor Bay (CR 669 access) and or even CR 669 itself (off road trail along CR 669 would be nice to connect to off road trail back to Empire using the less populated 669 parking facilities as a Good Harbor bicycle trail head). The design could also be adapted to Sugar Bay Lane along the north side of Lime Lake as another possible example of usage within Leelanau County (not connected to Heritage Trail usage).

Community adoption of ELR or ABL are becoming more widespread and common, similar to the adoption of two way center turn lanes decades ago or roundabouts today. While at first considered experimental, they quickly became common design practices. Communities in Maine and Colorado have successfully used ELR and ABL as connectors for other trail segments. Currently, a *national* NPS workgroup (national, not Sleeping Bear) is exploring how to use this design on NPS roads with suggested criteria.

TLR is currently a 20-22 ft wide asphalt path that people currently like to walk, push strollers, run, bike and drive on due to it's tree canopy and natural scenic beauty adjacent to a protected wilderness area designated in NPS's master plan as low use impact area. How can that be improved upon? Perhaps a consultation with a professional traffic engineer with national experience would be merited to conduct a feasibility study and propose design aspects tailored to the characteristics of TLR.

Perhaps the unique partnership of NPS, TART, LCRC, Cleveland Township and local residents could create a national showcase based on adopting an innovative win-win design concept that saves millions in construction costs and is environmentally friendly while facilitating safe recreational opportunities. Communities in Maine and Colorado have successfully used ELR and ABL as connectors for other trail segments. More creativity is needed in providing greater recreational opportunities when Rail-Trail conversions have been exhausted and when bulldozing new pathways become environmentally challenging and stewardship of financial resources is important. Just need to be humble to explore options, be open to new ideas, and to work with all stakeholders.

- ✓ TLR fits the criteria for use
- ✓ Meets safety guidelines
- ✓ Tailor design to road needs
- ✓ Solves local traffic issues
- ✓ No wetland boardwalks
- ✓ No stream crossing
- ✓ No forest clearing
- ✓ No dune excavation
- ✓ No property impacts
- ✓ Preserves scenic road
- ✓ Saves millions in cost
- ✓ Serves as trail connector

Might be worth exploring what a modern day "Trail-Road" could look like!

APPENDIX – HISTORICAL ASPECTS FOR THOSE NOT FAMILIAR

LTLPOA Historical Efforts

LTLPOA's historical position has been to (1) be supportive of trail opportunities, (2) raise awareness of concerns related to proposed trail construction, and (3) present alternative win-win opportunities. There have been numerous presentations and communications with various stakeholders over the years, including submitting public comments (initially in 2007 and during the 2018 public comment period) and various petitions that included 70% of TLR residents. Much of the historical past efforts can be found at www.alongtheshore.info

Environmental Impact Study

NPS completed issued a Finding Of Non Significant Impact (FONSI) for the overall Heritage Trail project. However, the environmental assessment specifics were inaccurate for Segment 9. In the revised winter 2008 trail report that included an off-road trail route, NPS estimated the projected cost at \$38,000 and assessed the impacts of the TLR route as follows:

Table 17 – Segment 9 Impact to the Environment on a score of 1-3 (with 3 being the most impact)

<u>Criteria (actual features present not reflected in NPS score)</u>	<u>NPS score</u>
Topography (steep slopes on north side of road)	0
Wetlands (boardwalk required west end of Traverse Lake Rd)	0
Streams and Creeks (Creek Crossing)	0
Soils (wetland/dune slopes)	0
Wildlife (wetland)	0
Vegetation (trees/wetland)	0
Land Use (Twp. Park/Lake access/Priv.Land)	2
Cultural Resource (borders wilderness area)	2
Viewshed (clearing scenic road r.o.w.)	0

An independent third party evaluation of the NPS environmental assessment was completed by engineering firm Mansfield & Associates (a copy can be found at www.littletraverselake.org). According to this report, Segment 9 would have the greatest overall environmental impact of the entire Heritage Trail, not the lowest.

No tree species survey or count was conducted and no survey for threatened or endangered species was conducted. Designs were unknown (and still were 15 years later) and thus impact to State designated and State protected Critical Dune Areas could not really be assessed accurately.

Understanding Lawsuit Scope and Ruling

After exhausting all remedies to communicate concerns, a federal lawsuit was filed and specifically made these two requests as a course of action: (1) complete an accurate and in depth Environmental Assessment for the proposed Segment 9 off-road trail, and (2) consider all alternatives and compare impacts – both of which are required under the National Environmental Protection Act (NEPA), including for phased project segments.

The court never fully evaluated or made a ruling on whether an accurate environmental assessment was completed or whether all alternatives were exhausted or superior. Instead, the district court ruled that plaintiffs did not have sufficient standing since no public comments were received (either pro or con) during the winter 2008 public comment period, even though plaintiffs did submit comments during the fall 2007 public comment period. The lower court ruling on standing was upheld by the appellate court. Thus, the matter of an accurate environmental assessment or alternatives was never decided by the courts due to the technicality of WHEN public comments were submitted to the NPS (2007 public comments did express concerns over environmental impacts of a trail along TLR). Plaintiffs must have commented during the last public comment period held.

APPENDIX – Segment 9 Heritage Trail NPS/MDOT Map

