6.0 DESIGN FEATURES OF THE PREFERRED ALTERNATIVE

6.1 Engineering Details of the Preferred Alternative

Conceptual plans for the Preferred Alternative for the Ludlam Trail are provided in **Appendix D**. Generally, the bike and pedestrian paths will run along the center of the trail ROW. The Ludlam Trail will provide access to activity centers (i.e., schools, parks, and transit centers) via 10-foot-wide multi-use paths that can accommodate bicyclists and pedestrians. Connections to neighborhoods, parking facilities, and cross street sidewalks will be also be provided via 10-foot wide multi-use paths.

6.1.1 Typical Sections

The Ludlam Trail will provide separate areas for bicycle and pedestrian modes of travel. There will be two general configurations: one with buffered separation between the two modes and one with no separation between the two modes. A total of four proposed typical sections will be used along the corridor:

Typical Section 1 – Buffered Separation (refer back to Figure 4-1):

The trail consists of a 12-foot-wide bike trail and an 8-foot-wide pedestrian trail separated by a landscape buffer that varies in width from 4 to 14 feet, with a 2-foot-wide soft natural surface path adjacent to the pedestrian trail.

Typical Section 2 – No Separation (refer back to Figure 4-2):

The trail consists of a 12-foot-wide bike trail and a 5.5- to 8-foot-wide pedestrian trail immediately adjacent to one another with pavement markings, with up to a 2-foot-wide soft natural surface path adjacent to the pedestrian trail.

Typical Section 3 – Development Zones (in limited applications, shown in Figure 6-1):

The trail consists of a 10-foot- to 12-foot-wide bike trail and a 5.5-foot-wide pedestrian trail immediately adjacent to one another with pavement markings.

Typical Section 4 – With Landscaped Divider (in limited applications, shown in Figure 6-2):

The trail consists of a 12-foot-wide bike trail and an 8-foot- to 10-foot-wide pedestrian trail that will be separated by a 4-foot-wide curbed landscaped divider buffer, with up to a 2-foot-wide soft natural surface path adjacent to the pedestrian trail.





Figure 6-1 Proposed Typical Cross Section for Ludlam Trail (Development Zones)



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DRAF



Figure 6-2 Proposed Typical Cross Section for Ludlam Trail (With Landscaped Divider)



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6.1.2 Bridges and Structures

Four overpass bridges and two canal crossing bridges are proposed along the Ludlam Trail corridor:

- Over SR 976/Bird Road/SW 40th Street
- Over Coral Gables (C-3) Canal
- Over Coral Way/SW 24th Street
- Over US 41/SR 90/Tamiami Trail/SW 8th Street/Calle Ocho
- Over SR 968/W Flagler Street
- Over Tamiami (C-4) Canal

Refer to **Figure 6-3** for the proposed typical cross section details for the bridges. The three proposed bridges located within Development Zones will be constrained to fit within the 18-foot-wide perpetual easements for MDPROS at those locations (SR 976/Bird Road/SW 40th Street, Coral Way/SW 24th Street, and US 41/SR 90/Tamiami Trail/SW 8th Street/Calle Ocho). A general description of the bridge typical cross sections is provided below:

Bridge Typical Cross Section – In Development Zones:

The trail across these bridges will consist of a 10-foot-wide bike trail and a 5.5-foot-wide pedestrian trail immediately adjacent to one another with a 6-inch pavement marking stripe separating the travel modes; the outside bridge width is 17-feet-7-inches.

Bridge Typical Cross Section – Not in Development Zones:

The trail across these bridges will consist of a 12-foot-wide bike trail and an 8-foot-wide pedestrian trail immediately adjacent to one another with an 18-inch pavement marking stripe separating the travel modes; the outside bridge width is 23-feet-1-inch.





 ** This detail applies to bridges not in Development Zones

Figure 6-3 Proposed Bridge Typical Cross Section Details



6.1.3 Right-of-Way and Relocations

No additional ROW is required to construct the Preferred Alternative and no relocations will be required for the project. ROW information is provided in **Appendix D**.

6.1.4 Access Management

No changes to existing access management along cross streets within the project limits are being proposed.

6.1.5 Intersection and Interchange Concepts

Details of the intersections can be found in the 15% concept plans in **Appendix D.** There are no interchanges within the project limits.

The concept plans include typical sections, details of the proposed trail configurations, and plans of the alignment and profiles for the proposed Ludlam Trail throughout the project corridor. The proposed atgrade crossings, as well as the overpass bridge locations, including conceptual proposed improvements at each intersection, are shown in the plans. The trail plans, with more refined intersection design details, such as signing, striping, signals/push buttons, sidewalks, ramps, curbs, and drainage, will be further developed and refined in the final design phase of the project.

Both SR 986 / SW 72nd Street / Sunset Drive and US 41 / SR 90 / SW 8th Street / Calle Ocho / Tamiami Trail have portions of each roadway which are designated as "historic highways" under the Laws of the State of Florida. Where SR 986 / SW 72nd Street / Sunset Drive intersects the proposed Ludlam Trail, it is not within the limits covered under *State Law 83-365 Sunset Drive State Historic Highway*. However, where the Ludlam Trail Corridor crosses US 41 / SR 90 / SW 8th Street / Calle Ocho / Tamiami Trail falls within the limits of *State Law 86-308 Calle Ocho State Historic Highway*. A SHH Technical Memorandum, a companion document in this PD&E Study, has been developed, documenting the proposed project's compliance with the SHH Law.



6.1.6 Drainage and Stormwater Management Facilities

The proposed project improvements will introduce new impervious areas which will increase the stormwater runoff volume and reduce the storage of runoff available from the existing ground surface due to the configuration of the proposed trail. In order to accommodate this increase of runoff and decrease of surface storage, the proposed Ludlam Trail Corridor improvements will be designed to retain the required water quality treatment volume, retain the increase of stormwater runoff due to the increase of impervious area, and account for any lost ground surface storage of stormwater runoff. The required stormwater retention volume will be addressed during the final design phase of the project. This will ensure that adjacent property owners will not be adversely affected by the proposed Ludlam Trail Corridor improvements. Refer to **Appendix J** for the preliminary drainage analysis and calculations report.

The stormwater management facilities for the proposed improvements will meet FDOT drainage criteria as well as SFWMD and DRER permit criteria. The improvements will have no negative drainage impacts to the surrounding areas and the proposed stormwater management facilities will have the capacity to adequately treat and attenuate roadway runoff within the project limits. The Ludlam Trail Project stormwater runoff will be treated through a system of stormwater conveyance/collection swales, thereby maintaining overall water quality and providing adequate flood protection within the existing ROW and adjacent properties. The proposed drainage systems will be designed to be able to meet SFWMD and DRER water quality standards, as well as SFWMD and FDOT Pre-Post attenuation discharge standards. Therefore, water quality impacts to downstream receiving waters are not anticipated to occur.

The project limits lie within the boundaries of the Biscayne Sole Source Aquifer (Biscayne SSA). In accordance with the SSA Program, authorized by Section 1424(e) of the Safe Drinking Water Act of 1974, MDPROS on behalf of FDOT is requesting the EPA's concurrence that no adverse impacts to the Biscayne Aquifer are anticipated as a result of the proposed project.

6.2 Summary of Environmental Impacts of the Preferred Alternative

A Type 2 Categorical Exclusion National Environmental Policy Act (NEPA) environmental document has been prepared as a companion report in this Ludlam Trail PD&E Study. It summarizes the analyses of potential impacts on the social, economic, cultural, natural, and physical resources in the project study area. The following sections summarize the environmental impacts of the Preferred Alternative.



6.2.1 Socio-Cultural Effects

An SCE Evaluation has been prepared as part of the Ludlam Trail PD&E Study, assuring that community values, quality of life, and socioeconomic impacts are adequately considered and addressed in the project development process. Potential social, economic, land use, mobility, aesthetic, and relocation impacts that may result from the project have been identified and evaluated. The Ludlam Trail Corridor improvements will have no long-term negative impacts on the project area, and upon completion, are projected to increase the quality of life through enhancing overall accessibility to schools, parks, transit stations, and bus stops, as well as provide a safe, dedicated, and direct means of non-motorized transportation to and from areas of residences, work, schools, parks, and activity centers. The potential effects of the proposed project on the six key topic areas are detailed in **Table 6-1** below.

Issue	Impact	Degree of Effect	
Social	Temporary disruptions during construction		
	Long-term quality of life improvements	Enhanced	
	Enhanced mobility options		
	Enhanced non-motorized transportation accommodations		
	No neighborhood division or social isolation		
	Enhance community cohesion		
	Reduced congestion		
	Improving opportunities for physical activity		
Economic	Temporary disruptions during construction		
	Stimulates the economic vitality of the area	Enhanced	
	Property values will increase within walkable area		
	Nodes of responsible development will generate additional property and sales tax revenue		
Land Use Changes	Consistent with the existing and future land use vision for the project area	Minimal	
Mobility	Temporary disruption to traffic patterns		
	Provides transportation options for transportation disadvantaged		
	Improved mobility, connectivity, and accessibility	Enhanced	
	Safe crossings at intersections		
	Regionally significant trail		
Aesthetic Effects	Noise and vibration concerns during construction	Enhanced	
	Loss of some existing vegetation		
	Enhanced landscaping and hardscape		
	Replacement of an abandoned railroad corridor with an active, well- maintained and aesthetically pleasing trail		
Relocation Potential	No relocations	None	

Table 6-1 Project Effects Overview Summary



6.2.2 Future Land Use

Figure 6-4, provides the future land use map of the study corridor area. This project is consistent with the community's vision and will improve the quality of life of those living in the SCE Study Area, as well as visitors to the trail. In 2004, MDC voters approved the issuance of general obligation bonds to construct and improve neighborhood and regional parks and other recreational facilities; among the projects approved by the voters was the Ludlam Trail Corridor project. In addition, the proposed project is consistent with the community land use and development goals and objectives. In 2017, there was an MDC CDMP change to establish the "Ludlam Trail Corridor District" and in 2019 zoning changes provided for the three nodes for mixed use private development along the corridor.

Growth Trends and Issues (Past and Present)

MDC experienced 10.2 percent increase in population from April 2010 to July 1, 2017, from 2,498,018 to 2,751,796. During that same period, the City of Miami population grew by 16.0 percent, and the City of South Miami grew by 5.2 percent. According to Bureau of Economic and Business Research (BEBR), the population of MDC is expected to increase by over 30 percent from 2010 to 2040. Employment is expected to increase by 40 percent during the same time period. Consequently, growth in population and employment will increase the transportation demand on the system, which will contribute to increased congestion and delay for residents and visitors to South Florida. The proposed project is anticipated to enhance long-term mobility options within and adjacent to the SCE Study Area that will help to serve current traffic volumes, as well as population and employment growth estimated in the future.





Figure 6-4 Future Land Use



6.2.3 Section 4(f) Analysis

As discussed in the SCE Evaluation Technical Memorandum, there are three parks that have been determined to be a significant recreational resource within the meaning of Section 4(f) of the USDOT Act of 1966. These resources are A.D. "Doug" Barnes Park, Robert King High Park, and Palmer Park. It has been determined that the Ludlam Trail project will have no adverse effect or use of Palmer Park, including constructive use or proximity impacts. For both A.D. "Doug" Barnes Park and Robert King High Park, new access points will be provided, connecting each park to the proposed Ludlam Trail, thereby enhancing the recreational use of both the trail and the parks. Section 4(f) Exception/Exemption Forms were completed for A.D. "Doug" Barnes Park and Robert King High Park, and a Section 4(f) No Use Form was completed for Palmer Park. On April 19, 2021, the FDOT's Office of Environmental Management (OEM) approved these determinations in the Section 4(f) module of FDOT's State-Wide Environmental Project Tracker (SWEPT) system.

Additional details of the three parks in the vicinity of the Ludlam Trail corridor are provided below.





A.D. "Doug" Barnes Park, 3401 SW 72nd Avenue, Miami, FL is a 60.9-acre park, owned and maintained by MDPROS, located adjacent and to the west of the proposed Ludlam Trail Corridor. The park is open to the public seven days a week from dawn to dusk, 7:00 AM to 7:00 PM. A.D. "Doug" Barnes Park supports a range of activities, including walking/jogging, biking, fitness zones, fishing pier, camping, basketball, picnic shelter/pavilion, playground, swimming pools (year-round), splash playground, and a visitor and nature center. In addition, park programs include: Adults with Developmental Disabilities; EcoAdventures[™]; Learn-to-Swim; Leisure Access Program; Spring Camp; and Summer Camp. The Leisure Access Camp is fully accessible for persons with disabilities and is surrounded by ten acres of pineland and tropical hardwoods. It features two cottages equipped with showers, a lodge, and a dining hall with full kitchen.





Robert King High Park, **7025 W Flagler Street**, **Miami**, **FL** is a 16.5-acre park, owned and maintained by the City of Miami, located adjacent and to the west of the proposed Ludlam Trail Corridor. The park is open to the public seven days a week from dawn to dusk, 7:00 AM to 7:00 PM. Robert King High Park supports a range of activities, including walking/jogging, biking, basketball, baseball, soccer, tennis, picnicking, computer lab, and playground with shelter area. In addition, park programs include after school care, summer camp, winter camp, spring break camp, youth football, youth basketball, and tennis lessons. A very active park, it contains multiple areas for both indoor and outdoor activities. It features multiple sports arenas for a variety of activities. Both the park and the campground offer picnic shelters and hiking trails. A special domino pavilion attracts many different types of visitors.





Palmer Park, 6100 SW 67th Avenue, Miami, FL is an 8.5-acre park, owned and maintained by the City of South Miami, located in the vicinity and to the east of the proposed Ludlam Trail Corridor. Palmer Park is not located adjacent to the proposed Ludlam Trail and is separated by the South Miami K-8 Center (school). The park is open to the public after school hours of the South Miami K-8 Center, Monday through Friday, 3:30 PM to 7:00 PM, and Saturday and Sunday, dawn to dusk. When school is out of session, the park is open to the public Monday through Friday, sunrise to 7:00 PM, and Saturday and Sunday, sunrise to sunset. Palmer Park supports a range of activities, including athletic playing fields, batting cage, concession stand, one football/soccer field, outdoor field lights, picnic tables, playground area with tot lot, and six baseball fields. In addition, sports programming includes adult softball leagues, youth baseball leagues, softball tournaments, youth tackle football, cheerleading, soccer (adult and youth), and adult kickball. Palmer Park is also home to the city's annual 4th of July Celebration and National Night Out event.



6.2.4 Cultural Resources

An assessment of cultural resources was conducted as part of the Ludlam Trail PD&E Study and is summarized in the CRAS document which received State Historic Preservation Officer (SHPO) concurrence in August 2020. An archaeological and historical literature and background information search pertinent to the project Area of Potential Effect (APE) was conducted to determine the types, chronological placement, and location patterning of cultural resources within the project APE. A review of Florida Master Site File (FMSF) data, previous surveys, property appraiser records, and historical research material was conducted to determine the potential for cultural resources within the project APE that are listed, eligible, or considered eligible for listing in the National Register, or that have potential or confirmed human remains. The pedestrian survey of the entire corridor was conducted.

Archaeological Survey Findings

A total of nine shovel tests were excavated along the APE between 2016 and 2019. Six shovel tests were excavated within the southern 4.4-mile segment of the APE in 2016. Archaeological testing along the northern 1.21-mile segment of the APE took place in 2019 after the railway corridor was formally abandoned. Three shovel tests were excavated during this period.

As a result of surveys conducted from 2016 to 2019, no archaeological resources were identified within the entire project corridor.

Historical Survey Findings

The 1.21-mile northern segment of the Little River Spur of the FEC Railway (8DA11416) that was extant during the 2016 survey was evaluated as National Register—eligible along with the FEC Railroad Bridge at Tamiami Canal (8DA14821). The SHPO concurred with the findings of the survey report on a letter dated August 4, 2016. The SHPO additionally determined in the same August 4, 2016 letter that the proposed project would have an adverse effect on these two resources. As a result, a Memorandum of Agreement (MOA) was developed and executed by the Surface Transportation Board, the SHPO, and FEC Railway, LLC in October 2018. The MOA included mitigation stipulations that required the Historic American Engineering Record (HAER) documentation of the railroad and the bridge and placement of State Historical Markers. The HAER documentation was completed and accepted by the National Park Service as complete and sufficient on April 19, 2019. The markers were installed on January 9, 2020, at the locations that were outlined in the application and approved by the State Historic Marker Committee. The



portion of the Little River Spur of the FEC Railway (8DA11416) has since been removed and no historic materials remain. Based on the removal of the railroad tracks, the FEC Railroad Bridge at Tamiami Canal (8DA14821) has been reevaluated and is no longer considered eligible as a contributing resource to the railroad due to the loss of associations and context.

The segment of the Seaboard Air Line (CSX) Railroad (8DA10753) within the 2016 APE was evaluated by the SHPO as National Register–eligible. As no features associated with this resource would be affected by the proposed railroad abandonment, no adverse effect to the resource would result from the project. The segment of the Tamiami Canal (8DA6453) within the 2016 APE was evaluated by the SHPO as National Register–ineligible and non-contributing to the larger National Register–eligible resource.

As a result of the 2018 survey, the remaining 4.4-mile southern segment of the Little River Spur of the FEC Railway (8DA11416) within the APE, as well as the FEC Railway Bridge at C-3 Canal (8DA15696), and the Coral Gables (C-3) Canal (8DA15697) were evaluated as National Register—ineligible.

6.2.5 Wetlands

6.2.5.1 Individual Surface Waters

A total of two "other surface waters" were identified in the NRE for the Preferred Alternative for Ludlam Trail. Both consist of upland-cut flood-control conveyances. Both canals are named SFWMD facilities (C-3/Coral Gables Canal and C-4/Tamiami Canal), which flow east through the project study area. Neither canal is hardened along the shoreline. The two canals, which collectively total 0.25 acre within the study area, are classified by FLUCFCS code and USFWS designation in **Table 6-2**. Brief descriptions of each surface water are provided below.

Table 6-2 Summary of Individual Surface Waters

SW ID	FLUCFCS Description	FLUCFCS Code	USFWS Wetland Classification	Acres in Project Area
SW-1	Upland-Cut Canal	514	R2UB2Hx	0.10
SW-2	Upland-Cut Canal	514	R2UB2Hx	0.15
	0.25			

USFWS Wetland Classification Descriptions: R2UB2Hx: Reverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated



Surface Water 1 (SW-1)

FLUCFCS 514

USFWS: R2UB2Hx (Riverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated)

SW-1 is an upland-cut canal that flows through the project study area near the center of the corridor, approximately 0.5 mile north of SW 4th Street. This canal is part of a larger network of flood control conveyances owned and operated by the SFWMD. While not tidally influenced at the location of the proposed trail crossing, SW-1 flows into Biscayne Bay approximately five miles southeast of the project study area. Within the vicinity of the proposed trail crossing, both banks contain dense Brazilian pepper (*Schinus terebinthifolius*) and the only aquatic vegetation observed was duckweed (*Lemna minor*). No wildlife or signs or wildlife utilization of the canal was identified during the August 2018 field review. Due to its designation as Critical Habitat for the West Indian manatee within the project study area, this surface water is both federally and state jurisdictional.

Surface Water 2 (SW-2)

FLUCFCS 514

USFWS: R2UB2Hx (Riverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated)

SW-2 is an upland-cut canal that flows through the project study area approximately 0.5 mile south of the north terminus. While not tidally influenced at the location of the proposed trail crossing, this canal flows into Biscayne Bay approximately eight miles east of the project study area. Within the vicinity of the proposed trail crossing, the canal banks are dominated by Brazilian pepper, Australian pine (*Casuarina equisetifolia*), dog fennel (*Eupatorium capillifolium*), beggar tick (*Bidens alba*), and air potato (*Dioscorea bulbifera*). No wetland vegetation or signs or wildlife utilization was identified within or adjacent to the canal during the August 2018 field review. Due to its designation as Critical Habitat for the West Indian manatee within the project study area, this surface water is both federally and state jurisdictional.

See Figure 6-5 for an aerial location map of the surface waters.





Figure 6-5 Surface Water Location Map (1 of 2)





Figure 6-5 Surface Water Location Map (2 of 2)



6.2.5.2 Wetland and Other Surface Water Impacts

As noted in the NRE for the Ludlam Trail PD&E Study, no permanent wetland or "other surface water" impacts will result from the Preferred Alternative, as the two canal crossings will consist of single-span bridges with no in-water pilings proposed. However, temporary construction impacts may result from removal of existing in-water pilings. Any temporary construction impacts will be temporary and minor in nature and are not expected to adversely affect the water quality within the two canals, as best management practices will be utilized during construction. Minimization measures will include measures from FDOT's Standard Specifications for Road and Bridge Construction (e.g., temporary turf, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers).

6.2.5.3 Wetlands Findings

The Preferred Alternative was evaluated for impacts to wetlands in accordance with EO 11990. No jurisdictional wetlands were found within the project corridor. Based on the type and location of project impacts, MDPROS has determined that there is no practicable alternative to the proposed construction in other surface waters; however, no permanent surface water impacts will be expected to occur from the proposed project. Furthermore, the project will have no significant short-term or long-term adverse impacts to wetlands or surface waters. As such, a wetland functional assessment was not conducted as part of the NRE for the project.

6.2.6 Protected Species and Habitat

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 as amended, as well as other applicable federal and state laws protecting wildlife and habitat, an NRE was completed for the proposed improvements associated with the Preferred Alternative. The NRE documents the potential for occurrence of federal or state listed protected species and/or federally designated critical habitat. The NRE details the federally and state-listed animal and plant species with potential to occur within the limits of the study area, along with their corresponding effect determinations. A discussion of potential impacts for each species is included in the NRE. The discussion includes characterizations of each species and potential impacts resulting from the Preferred Alternative. The resulting effect determinations as well as conservation and/or minimization of impacts measures are also included in the NRE.



As documented in the NRE, the project study area was evaluated for the presence of federally designated Critical Habitat (as defined in 50 CFR 17). Based on this evaluation, it was determined that the project study area occurs within federally designated Critical Habitat for the West Indian manatee. However, the proposed project will not result in the "destruction or adverse modification of critical habitat."

An informal meeting was held on February 16, 2021 with John Wrublik (USFWS) to discuss the potential occurrence and effect determinations for each species per the USFWS guidelines. As the resulting effect determinations for all of the protected species having a potential to occur within the project limits is "No Effect" (with the exception of the West Indian manatee which was determined to "may affect, not likely to adversely affect" per the Programmatic Key), submittal of the NRE to the USFWS for concurrence is not warranted.

6.2.7 Essential Fish Habitat

The proposed project will not directly impact any Essential Fish Habitat (EFH) because the project is located west of salinity control structures and there is no EFH located within or adjacent to the project study area. In addition, comments provided by National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) during the ETDM Process concludes that EFH would not be impacted by the proposed project and that this project will not require an EFH Assessment.

6.2.8 Trail Traffic Noise

Per 23 CFR 772 and Section 335.17, FS, Ludlam Trail is a Type III project, which does not require noise assessment. Properties adjoining the project corridor may experience intermittent vibration and noise impacts from construction activities. The vibration and noise impacts from construction activities are considered to be an unavoidable short-term consequence of the project. The proposed project is not expected to result in any substantial noise increases that would warrant noise abatement. Construction noise and vibration impacts to these adjoining sites will be minimized by adherence to the controls listed in the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*.

6.2.9 Air Quality

An AQTM for the Ludlam Trail PD&E Study was developed. It concluded that this project is not expected to create adverse impacts on air quality as the project area is in attainment for all National Ambient Air Quality Standards (NAAQS).



6.2.10 Contamination

In accordance with Part 2, Chapter 20 (dated July 1, 2020) of the FDOT PD&E Manual, potential contamination impacts in the area surrounding the project corridor were identified in a CSER for this PD&E Study.

After a review of all available data, such as agency file reviews at FDEP, Miami-Dade DERM, the EDR database report, Ludlam Trail Corridor Phase I and Phase II reports, aerial photography, and confirmed by site reconnaissance, contamination of soil and groundwater has been documented in the vicinity and within the project corridor. A total of 15 sites of potential environmental concern were identified within the applicable buffers of project corridor; of these, two sites, including the proposed trail corridor, are rated as High risk, five sites are rated as Medium risk, and eight sites are rated as Low risk. The status of the sites will be updated accordingly at each future design phase.

A Phase II Report was completed by MDC in 2018, including soil and groundwater sampling. The FDOT District VI Planning and Environmental Management Office (PLEMO) will utilize the information contained in the CSER to determine the need for additional investigation during the design phase of the project. An additional Level II Contamination Assessment Investigation may be conducted prior to or during the design phase, should it become necessary. Based on the findings of an updated future review and Level II investigation, the design engineers may be instructed to avoid the areas of concern or to include special provisions in the plans to require that the construction activities performed in the areas of concern be performed or supervised by a contamination assessment and remediation contractor specified by the FDOT.

It must be recognized that the possibility exists that some contaminated substances, petroleum products, or environmental contamination not identified during this assessment may exist on or in the immediate vicinity of the project. This is because regulatory agency records are not always complete; not all leaks, spills, and discharges are reported; not all USTs and ASTs are registered. It is unknown if any registered substances were illegally dumped or were deposited during past construction activities.

If construction dewatering will be necessary during construction, dewatering permits may need to be obtained prior to conducting any dewatering operations. The permits required include but are not limited to a Water Use Permit from SFWMD and a Class V Dewatering Permit from DERM. The contractor will be



held responsible for ensuring compliance with any necessary dewatering permit(s). The dewatering plan will need to consider the radius of influence of any dewatering activity on nearby contamination plumes to avoid potential contamination plume exacerbation. The soil and groundwater assessments conducted within the Ludlam corridor in 2017 indicated presence of arsenic and BaPE in the top two feet at the site. An Engineering Control Plan (ECP) was recommended to address this contamination. The ECP recommended using the hard surface (pavement, pavers, etc.) of trail and two feet of clean fill cap or one foot of clean fill with high-visibility, puncture resistant fabric as effective engineering controls. In response, DERM acknowledged that an ECP is appropriate, but additional boundary assessments would be required to delineate the contamination. Subsequently, additional assessment was conducted in 2018 and 2019 to delineate the contamination at the site. In response to the reports submitted in 2018 and 2019, DERM requested a Remedial Action Plan to address the documented groundwater contamination and potential leachable soils in support of No Further Action with Conditions, in addition to the documented soil contamination discussed above.

The existing groundwater contamination will be taken into consideration during drainage design phase for the subject project. The drainage design will be finalized during the design phase. Previously unidentified areas of contamination in construction will be addressed through adherence of FDOT Standard Specifications for Road and Bridge Construction subsection 120.1.2.

