APPENDIX E: ENVIRONEMENTAL ASSESSMENT

PHASE I ENVIRONMENTAL SITE ASSESSMENT

La Loma Trail
Four Trail Routes: Vicinity of Prock Lane and Sara Drive
Austin, Texas 78721

Prepared for:
City of Austin
Public Works, Quality Management Division
105 W. Riverside Drive, Suite 100
Austin, Texas 78704

Prepared by:
Aptim Environmental & Infrastructure, Inc.
1250 Capital of Texas Highway South, Suite 400
Austin, Texas 78746

Project No. 631229717
April 25, 2018
FINAL

Phase I Environmental Site Assessment

City of Austin – La Loma Trail
Four Trail Routes: Vicinity of Prock Lane and Sara Drive
Austin, Texas 78721

April 25, 2018

In accordance with ASTM International Practice E1527-13, §12.13, APTIM provides the following statements:

"We declare that, to the best of our professional knowledge and belief, we meet the definition of environmental professional as defined in §312.10 of 40 C.F.R. Part 312 and

"We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312."

Lindsey Luetge — April 25, 2018
Lindsey Luetge
Environmental Scientist
Site Assessor/ Primary Author

Michael Doolin — April 25, 2018
Michael Doolin
Project Manager
Site Assessor / Author

Patricia Frost — April 25, 2018
Patricia Frost, P.G.
Project Manager
Reviewer

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Acronyms and Abbreviations

AAI Rule	*Standards and Practices for All Appropriate Inquiries, Final Rule*
ACM	asbestos-containing material
AST	aboveground storage tank
ASTM	American Society for Testing and Materials International
AUL	Activity and Use Limitation
C.F.R.	Code of Federal Regulations
APTIM	Aptim Environmental & Infrastructure, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CREC	controlled recognized environmental condition
EDR®	Environmental Data Resources, Inc.®
EP	Environmental Professional
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FOIA	Freedom of Information Act
HREC	historical recognized environmental condition
LBP	lead-based paint
LPST	leaking petroleum storage tank
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
PCB	polychlorinated biphenyl
REC	recognized environmental condition
SEMS	Superfund Enterprise Management System
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
UST	underground storage tank
TCEQ	Texas Commission on Environmental Quality
TPH	total petroleum hydrocarbons
VEC	vapor encroachment condition
VOC	volatile organic compounds

EXECUTIVE SUMMARY

Aptim Environmental & Infrastructure, Inc. (APTIM) has completed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM International (ASTM) Designation E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Practice E1527) of the below listed properties (the Property). The scope of services, findings, opinions, and conclusions completed and presented by APTIM in this Phase I ESA report (this Report) have been developed and expressed for the sole and exclusive use of the City of Austin (the City).

Cited below is an overview of the project, including a summary of APTIM's significant findings:

Property Location and Legal Description		
Name/Address	Tax Key Parcel	Brief Legal/Deed Description/Comments
La Loma Trail Four Trail Routes: Vicinity of Prock Lane and Sara Drive Austin, Texas 78721	N/A	'Eleanor Street Connection' - Runs between Eleanor Street and Lot Avenue for approximate 0.08 miles (438 feet) in length. Contains all or portions of the below listed Properties: Lot 25, Block 3, Green Valley No 1 Title Cancelled to Real Estate Lot 8, Block 4, Green Valley No 1 Abs 22, Survey 29, Tannehill J C, 1.67 Acre 'Alternative 1' - Runs northwest from the existing Southern Walnut Creek Trail, crosses the commuter railroad track and ends approximately 275 feet north of Prock Lane, for a total distance of 0.45 miles (2,350 feet). Contains all or portions of the below listed properties: Abs 22, Survey 29, Tannehill J C, 25.87 Acres Abs 22, Survey 29, Tannehill J C, 3.51 Acres Abs 22, Survey 29, Tannehill J C, 13.224 Acres 'Alternative 2' - Runs north from Shady Lane, crosses the commuter railroad track and ends at the end of Brookswood Avenue, for a total distance of 0.1 mile (500 feet). Contains all or portions of the below listed properties: 0.5 Acre of Lot 12-21 Block 14 OLT 2 Division-O Lot 20 Brookswood 'Alternative 3' - Runs northwest from the Southern Walnut Creek Trail, crosses the commuter railroad track and ends at the end of Prock Lane, for a total distance of 0.34 miles (1,800 feet). Contains all or portions of the below listed properties: Abs 22, Survey 29, Tannehill J C, 2.98 Acres Abs 22, Survey 29, Tannehill J C, 47.750 Acres Abs 22, Survey 29, Tannehill J C 4.924 Acres Abs 22, Survey 29, Tannehill J C, 74.13 Acres

User of this Report:	City of Austin
Reason for Requesting the Phase I ESA:	Pre-construction Due Diligence
Date Project Authorized:	September 27, 2017
Date of Site Reconnaissance:	October 25, 2017

Property General Characteristics	
	Comments
Acreage, Structure(s), and General Improvements:	The "Eleanor Street Connection" is an approximate 0.08 mile (438 feet) trail segment, oriented approximately east-west, that crosses Fort Branch Creek between 1124 Eleanor Street and 1125 Lott Avenue to include the Right-of-Way (ROW) and 25 foot construction corridor along the proposed trail center line. 1124 Eleanor Street and 1125 Lott Avenue are currently bordered by single-family residential developments and separated by Fort Branch Creek. 1124 Eleanor Street consists of various vegetation and concrete construction debris. 1125 Lott Avenue is developed with concrete pads for anchoring a mobile home and native vegetation. The "Alternative 1" is an approximate 0.45 mile (2,350 feet) trail segment, oriented approximately northwest-southeast, that begins at the existing Southern Walnut Creek Trail, crosses the commuter railroad track to the north and ends approximately 275 feet north of Prock Lane along Sara Drive, to include the ROW and 25 foot construction corridor along the proposed trail center line. The construction corridor is extended to include the over-grade bridge and vicinity for the rail line over Tannehill Branch Creek. The northernmost portion of the segment includes a concrete sidewalk corresponding to Sara Drive and includes portions of the Tannehill Branch Creek concrete drainage ditch. The remainder of the segment consists of native vegetation and various dirt paths. The "Alternative 2" is an approximate 0.1 mile (500 feet) trail segment, oriented approximately northeast-southeast, that runs north from Shady Lane, crosses the railroad track and ends at Brookswood Avenue, to include the ROW, Brookswood Avenue cul-de-sac and a 25 foot construction corridor along the proposed trail center line to encompass the railroad bridge and portions of 5600 Jain Lane along the proposed trail center line. Brookswood Avenue is a residential street consisting of two (2) asphalt lanes terminating in a cul-de-sac. Shady Lane is a street consisting of two (2) lanes and a gravel turn-in point at the southernmost portion of the segment. The remainder of the segment consists of native vegetation, dirt paths and railroad track corresponding to the commuter rail line. The "Alternative 3" is an approximate 0.34 mile (1,800 feet) trail segment, oriented approximately northwest-southeast that runs northwest from the existing Southern Walnut Creek Trail, crosses under the commuter railroad track and ends at Prock Lane, to include the Right-of-Way (ROW) and 25 foot construction corridor along the proposed trail center line. The segment includes the above and below grade portions of the railroad track at the proposed trail crossing. The remainder of the segment consists of native vegetation, dirt paths, power line easement and railroad tracks corresponding to the commuter rail line

Property General Characteristics	
	Comments
Status or General Operations:	'Eleanor Connection' - 1124 Eleanor Street is not currently occupied by tenants or residents. 1125 Lott Avenue is currently owned and managed by the resident of 1127 Lott Avenue, but has no structures. Both parcels are located in east Austin, Texas. 'Alternative 1' - The northernmost portion of the segment functions as a residential sidewalk, residential street and drainage ditch for Tannehill Branch Creek, located in east Austin, Texas. 'Alternative 2' - The Property is a residential cul-de-sac at the northern portion and an urban road on the southern portion, located in east Austin, Texas. 'Alternative 3' - The northern portion of the Property is a residential street located in east Austin, Texas.

'Eleanor Connection'

Summary of Property History and Occupancy (approximate dates)	
Dates	Property Use
1940 - 1951	The Property is undeveloped land with Fort Branch Creek crossing the central portion.
1954 - Present	The Property is bordered by Lott Avenue and Eleanor Street on the western and eastern boundaries, respectively and developed to its current condition.

'Alternative 1'

Summary of Property History and Occupancy (approximate dates)	
Dates	Property Use
1940 -1967	The Property is undeveloped land with a railroad track crossing the central portion.
1967 - Present	The Property is developed to its current condition with residential structures and road infrastructure on the northern portion of the Property.

Alternative 2'

Summary of Property History and Occupancy (approximate dates)	
Dates	Property Use
1940 - 1967	The Property is undeveloped land with a railroad track crossing the central portion.
1973 - Present	The Property is developed to its current condition with residential structures and road infrastructure on the northern portion of the Property.

'Alternative 3'

Summary of Property History and Occupancy (approximate dates)	
Dates	Property Use
1940 - 1967	The Property is undeveloped land with a railroad track crossing the central portion.
1973 - Present	The Property is developed to its current condition with residential structures and road infrastructure on the northern portion of the Property.

Conclusions

In accordance with ASTM Practice E1527-13, §12.8, APTIM provides the following statement:

"We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of the four La Loma trail routes as shown on Figure 1 and previously described in the vicinity of Prock Lane and Sarah Drive, Austin, Texas (the Property). Any exceptions to, or deletions from, this practice are described in Section 7.2 of this Report."

Recognized Environmental Conditions

This assessment has revealed no evidence of recognized environmental conditions (RECs) in connection with the Property.

Controlled Recognized Environmental Condition

This assessment has revealed no evidence of controlled RECs in connection with the Property.

Historical Recognized Environmental Condition

Based on the findings of this Report, it is APTIM's opinion that the Phase I ESA has revealed the following historical RECs in connection with the Property:

- Various businesses and operators in the vicinity of Jain Lane and Shady Lane (Alternative 2), 1150 Jain Lane and 5600 Jain Lane were identified as part of a former 90 acre tank farm with multiple spills and releases that have been remediated. The Texas Commission on Environmental Quality (TCEQ) has determined no further action is necessary. The Sites are located approximately cross-gradient or up-gradient from the Property and are maintained with institutional controls for contaminated groundwater. While contamination is present, a review of regulatory information indicates that it is confined to the groundwater of the associated properties, and ranges between 13 and 17 feet-below ground surface (ft-bgs). In addition, the groundwater gradient generally trends toward the south away from or cross gradient to the Subject Property. Considering the depth to groundwater and gradient; and as the scope of work for La Loma Trail is limited to the first two (2) to three (3) feet of subsurface soil and there is no known clear exposure route to contaminants that exists, the contamination is considered to present a negligible risk to human health.

Vapor Encroachment Screening Opinions

This assessment has revealed evidence of vapor encroachment conditions (VECs) in connection with the Property.

- The vapor encroachment screening was completed in general compliance with ASTM Designation E2600-10: *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions* (ASTM Guide E2600-10) using Tier 1 Screening procedures. In addition, based on the inferred or known groundwater gradient as specified within this Report, APTIM adopted and implemented a reduced radius area of concern distance as calculated, suggested, and published by Buonicore, A. J., *A Smaller Intrusion*, Pollution Engineering, pp. 26-31, May 2009. Based on proximity to 'Alternative 2', history of release events and products contained within the historical tanks, the former Coastal Austin Terminal Site at 5600 Jain Lane is considered a VEC. However, since the projected construction is surficial (top two (2) to three (3) feet) in nature), hydrocarbon vapors are not likely to impact construction activities.

De Minimis Environmental Conditions and Opinions

Based on the findings of this Report, it is APTIM's opinion that the Phase I ESA has revealed the following *de minimis* conditions in connection with the Property:

- A large quantity of railroad ties and multiple dilapidated bridges were observed in 'Alternatives' 1, 2 and 3' in relation to the development and improvement of the railroad crossing the central portions of the Properties. Historically, railroad ties and bridge materials have been treated with creosote to preserve the wood over time. Despite the pressurization process associated with the application of creosote, the substance can possibly leach out after prolonged exposure to weathering events such as rain and wind into the surrounding soil. While this does present a REC to the property, it is considered a *de minimus* condition, as the possibility of adverse health effects or negative environmental impacts are low.
- Multiple piles of excess soil (fill) material were observed, primarily to the south of the railroad tracks. The majority of these piles measured approximately five (5) foot by four (4) foot area and were between two (2) and three (3) feet tall. The origin of the fill is unknown. A review of historical imagery indicates the land use has been agricultural or forested, however the soil piles are likely excess fill resulting from improvement of the dirt path along the central and southern portion of the Property. Therefore, this is considered a *de minimus* condition, as the small quantity of fill, if contaminated, is unlikely to contribute to the possibility of adverse health effects or negative environmental impacts.
- Miscellaneous solid waste was observed on all Properties during site reconnaissance. Materials included municipal waste, automobile parts, tires, furniture and other various trash.

- An out-of-service pipeline currently owned by Sunoco running east and west crosses Alternative 1 and 3 just north of the railroad tracks. Per the March 24, 2017 Kingsbery Report, the easement in the area of Alternative 3 was sampled and the results indicate that all laboratory analytical samples were non-detect and do not indicate soil impacts from the pipeline. For this reason, the pipeline is considered a *de minimus* condition within the context of this report. It should be noted however, that per the Kingsbery report, the burial depth in the area of Alternative 3 is shallow (less than 4 ft-bgs), and may pose a risk to construction activities.

1.0 INTRODUCTION

1.1 Purpose

The City of Austin (the City) retained Aptim Environmental & Infrastructure, Inc. (APTIM) to conduct a Phase I Environmental Site Assessment (ESA) on the Property as described in Section 2.1 of this Report.

The purpose of the Phase I ESA was to identify, to the extent feasible, recognized environmental conditions (RECs) in connection with the Property relative to pedestrian trail construction due diligence.

ASTM International (ASTM), a not-for-profit writing organization and developer of voluntary consensus standards, has promulgated the industry standard for content and conducting a Phase I ESA as set forth in ASTM Designation E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Practice E1527-13). In accordance with the U.S. Environmental Protection Agency (USEPA) *Standards and Practices for All Appropriate Inquiries, Final Rule* (AAI Rule) and by direct reference in 40 Code of Federal Regulations (C.F.R.) Section 312.11(a), the procedures of ASTM Practice E1527-05 may be used to comply with the requirements set forth in the AAI Rule. As of November 1, 2013, ASTM Practice E1527-13 supersedes ASTM Practice E1527-05 and is substantially similar to ASTM Practice E1527-05 with additional clarifications and term designations. An amendment to 40 C.F.R., §312.11(a) directly referencing and codifying the November 2013 revised standard of ASTM Practice E1527 is pending. ASTM Practice E1527-13, §3.2, defines the following related terms:

> The term *recognized environmental condition* (REC) means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment, (2) under conditions indicative of a release to the environment, or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not RECs.
>
> The term *controlled recognized environmental condition* (CREC) is an REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations [AULs], institutional controls, or engineering controls).
>
> The term *historical recognized environmental condition* (HREC) means a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions,

AULs, institutional controls, or engineering controls). Before calling the past release an HREC, the environmental professional (EP) must determine whether the past release is an REC at the time the Phase I ESA is conducted (for example, if there has been a change in the regulatory criteria). If the EP considers the past release to be an REC at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as an REC.

The term *de minimis condition* means a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* conditions are neither RECs nor CRECs.

The term *material threat* means a physically observable or obvious threat which is reasonably likely to lead to a release that, in the opinion of the EP, is threatening and might result in impact to public health or the environment. An example might include an aboveground storage tank (AST) system that contains a hazardous substance and which shows evidence of damage. The damage would represent a material threat if it is deemed serious enough that it may cause or contribute to tank integrity failure with a release of contents to the environment.

The term *hazardous substance* is a substance defined as hazardous pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 United States Code (U.S.C.) §9601(14), as interpreted by USEPA regulations and the courts.

The term *petroleum products* is defined as those substances included within the meaning of the petroleum exclusion to CERCLA 42 U.S.C. §9601(14), as interpreted by the courts and USEPA, that is: petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of CERCLA 42 U.S.C. §9601(14), natural gas, natural gas liquids, liquefied natural gas, and synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

The term *vapor encroachment condition* (VEC) is defined as the presence or likely presence of chemicals of concern vapors (ASTM Guide E2600-10, Table X6.1) in the subsurface of the target property caused by the release of vapors from contaminated soil or groundwater or both, either on or near the target property as identified by ASTM Designation E2600-10: *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*. (The presence of a VEC combined with additional information may be determined [at the discretion of the EP] to be associated with an REC in connection with the Property.)

APTIM's performance of the Phase I ESA utilizing practices that constitute all appropriate inquiry into the previous ownership and uses of the Property, consistent with good commercial and customary practice, may allow the City to satisfy one (1) of the requirements to qualify for the innocent landowner defense, contiguous property owner, or bona fide prospective purchaser liability limitations as stated in CERCLA (42 U.S.C. §9601[35], §9607[b][3], §9607[q], and §9607[r]).

1.2 Scope of Services

The Phase I ESA was performed and completed in general accordance with ASTM Practice E1527-13 and APTIM's proposal to the City of Austin dated August 29, 2017. APTIM's proposal was accepted and work was authorized by the City of Austin on September 27, 2017 (the "Notice to Proceed").

The scope of services for the Phase I ESA and the format of this Report generally follow the recommended table of contents as set forth in ASTM Practice E1527-13, Appendix X4.

The Phase I ESA was conducted and reviewed by qualified EPs meeting the education, training, and experience requirements as set forth in 40 C.F.R., §312.10(b). The services performed by APTIM for the Phase I ESA consisted of the following tasks:

1.2.1 Task 1 - Records Review

This task consisted of the acquisition and review of reasonably ascertainable records in the evaluation of potential RECs during the existing and prior use, ownership, and occupancy of the Property. Specifically, this task included the following elements:

- A review of federal, state, tribal, or local environmental databases (i.e., Environmental Data Resources, Inc.® [EDR®] environmental database radius search report or equivalent);
- A review of topographic, geologic, hydrogeologic, and aerial photographic maps to evaluate the physical setting and site characteristics;
- A review of street/city directories, aerial photographs, topographic maps, historical maps, and fire insurance maps (i.e., Sanborn® maps) to provide information relative to the use, ownership, or occupancy of the Property from the present back to the Property's first developed use, or back to 1940, whichever is earlier;
- A review of available environmental reports and documentation prepared and provided by others, where applicable and reasonably ascertainable (i.e., user provided documentation);
- A review of available documents from county, tribal, or state environmental regulatory agencies, where applicable and reasonably ascertainable (i.e., regulatory agency file review);
- A review of available documents and records from the local regulatory units and agencies of government, where applicable and reasonably ascertainable, including but not limited to the following:
  - Local Fire Department
  - Local Building Permit/Inspection Department
  - Local Department of Health/Environmental Services
  - Local Tax Assessor

- Local/Regional Pollution Control Agency
- Local/Regional Water Quality Agency

1.2.2 Task 2 - Vapor Encroachment Screening - Tier 1

This task consisted of the review of known or likely contaminated sites and an evaluation of the sites for a potential vapor-phase contaminant migration condition to exist in, on, or at the Property. The screening evaluation associated with this task was completed in general compliance with ASTM Designation E2600-10: *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions* (ASTM Guide E2600-10) using Tier 1 Screening procedures or other scientific or industry standard methodologies.

1.2.3 Task 3 - Site Reconnaissance

This task consisted of a visual and physical site reconnaissance to evaluate the potential for RECs in, on, or at the Property. A visual or physical evaluation of properties in the general vicinity of the Property was also conducted from the Property or adjacent public thoroughfares during the site reconnaissance.

1.2.4 Task 4 - Interviews

This task consisted of conducting or making reasonable attempts to conduct interviews with available current or former owners, operators, property managers, facility managers, or occupants of the Property and to obtain information regarding the historical uses, occupancy, and ownership of the Property. This task, where applicable, also consisted of interviews with representatives of federal, state, tribal, or local units and agencies of government.

1.2.5 Task 5 - Teleconference

This task consisted of maintaining communications between APTIM and the City regarding the schedule and outcome of the records review and site reconnaissance, and also any identified RECs in connection with the Property. APTIM also inquired and obtained information relative to the City's business environmental risk tolerance or risk aversion and obtained direction from the City relative to the inclusion of potential business environmental risk issues within this Report, if any.

1.2.6 Task 6 - Report

Following completion of Tasks 1 through 5 as identified above, APTIM prepared this Report. The format of this Report generally follows the recommended table of contents as set forth in ASTM Practice E1527-13, Appendix X4.

This Report includes documentation to support the analysis, findings, opinions, and conclusions developed by APTIM. All sources, including those that revealed no findings, are

sufficiently documented to facilitate reconstruction of the research at a later date. Deletions, deviations, and additions from the ASTM Practice E1527-13 standard, if any, are listed in detail.

1.3 Significant Assumptions

In performing the Phase I ESA and preparing this Report, APTIM made the following assumptions:

- Actual knowledge and information supplied by others is complete and accurate and has been provided in good faith.
- Information provided by local public record sources is complete and accurate.
- Information provided by the selected environmental records database vendor is complete and accurate.
- Uses of the Property, as evidenced by historical records, remained substantially unchanged during periods for which no records are available.
- Release incidents listed on USEPA or state environmental registries as having a "closed" status do not represent a direct environmental cleanup liability to the current owner or operator of the Property at this time. The identification of continuing obligations and compliance therewith, if any, is beyond the purpose and scope of the Phase I ESA.

1.4 Limitations and Exceptions

No ESA or vapor encroachment screening can wholly eliminate uncertainty regarding the potential for RECs in connection with the Property. Performing a Phase I ESA in conformance with ASTM Practice E1527-13 and a vapor encroachment screening in conformance with ASTM Guide E2600-10 is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs and VECs to exist in connection with the Property, while recognizing reasonable limits of time and cost.

The information contained in this Report, including the opinions and conclusions of APTIM, is based on the information made available to APTIM during the time period of the Phase I ESA. Because this Report is based upon information that was made available to APTIM, some of the conclusions could be different if the information upon which it is based is determined to be false, inaccurate, or contradicted by additional information.

APTIM performed services, obtained findings, and developed opinions and conclusions in accordance with generally and currently accepted professional practices and standards governing recognized firms in the area engaged in similar work.

APTIM makes no representation concerning the legal significance of the findings or the value of the Property investigation. APTIM has no contractual liability to any third party for the information or opinions in this Report.

Site- and project-specific physical limitations and exceptions relative to User- or Client-provided information, records reviews, interviews, or site reconnaissance activities are discussed in detail within respective sections of this Report.

Other Federal, State, or Local Environmental Laws

The Phase I ESA was completed in conformance with ASTM Practice E1527-13 and does not address any other requirements by state-specific or local environmental laws, if any, or any federal laws other than the all appropriate inquiry provisions and limited liability protections of the AAI Rule, 40 C.F.R., Part 312.

1.5 Special Terms and Conditions

The Phase I ESA has been completed in accordance with the APTIM proposal and requested scope of services outlined and specified in Section 1.2 of this Report and is subject to reasonable time and cost constraints and the terms, conditions, and limitations declared in the Agreement.

The scope of the Phase I ESA and this Report was mutually developed by APTIM and The City. No activity, including sampling, investigation, or evaluation of any material or substance may be assumed to be included in the Phase I ESA, unless such activity was expressly considered and referenced in the Agreement and this Report. Maps and drawings in this Report are included only to aid the reader and should not be considered surveys or engineering studies.

The observations, findings, and opinions of APTIM in this Report are based on APTIM's professional judgment concerning the significance of the data gathered during the course of the Phase I ESA. Specifically, APTIM does not and cannot represent that the Property contains hazardous or toxic substances or other latent conditions beyond those observed and evaluated by APTIM during the Phase I ESA. The findings of the assessment are based on the professional judgment of APTIM, based in part on the information directly or indirectly provided by third parties as specified in this Report. APTIM does not warrant the accuracy or completeness of information and independent opinions, conclusions, and recommendations provided by others, and assumes no responsibility for documenting conditions detectable with methods or techniques not specified in the Agreement. As previously noted, if conditions change or additional data become available, the opinions, findings, and conclusions presented in this Report may require modification.

1.6 User Reliance

The scope of services, findings, opinions, and conclusions completed and presented by APTIM in this Report have been developed and expressed for the sole and exclusive use of the User. Reliance by any third party on the facts, opinions, or conclusions in this Report is not contemplated. The scope of services for the Phase I ESA may not be appropriate for the needs of others, and the use or re-use of this Report and the findings, opinions, or conclusions expressed and presented herein by any third party is at their sole risk.

Third Party Reliance and Reliance Letters

In the event that third party reliance is requested by the City, a reliance letter may be issued under separate cover. Third parties may only rely on this Report subject to the same terms and conditions of APTIM's general terms and conditions.

Continued Viability

The viability of this Report is subject to the time limitations as set forth in ASTM Practice E1527-13, §4.6. This Report is presumed valid and may be used for the sole and exclusive use of the City, if the date of the Property acquisition or the date of the intended transaction is within 180 days of the completion date of the search for environmental liens, interviews, environmental database search, or site reconnaissance, whichever is earlier (in general, the date of this Report).

If the date of acquisition or the date of the intended transaction is beyond 180 days yet within one year of the completion date of this Report, the Report is presumed valid and may be used provided that the following components are updated:

- Interviews with owners, operators, and occupants;
- Searches for recorded environmental cleanup liens;
- Reviews of federal, tribal, state, and local government records;
- Reconnaissance of the Property and adjoining properties; and
- A declaration by the EP responsible for the assessment or update.

2.0 PROPERTY DESCRIPTION

2.1 Location and Legal Description

Figure 1 (Site Location Map) provided in Appendix A illustrates the general location of the proposed trails (Property).

Location and Legal Description		
Name/Address	Tax Key Parcel	Brief Legal/Deed Description/Comments
La Loma Trail Four Trail Routes: Vicinity of Prock Lane and Sara Drive Austin, Texas 78721	N/A	'Eleanor Street Connection' - Runs between Eleanor Street and Lot Avenue for approximate 0.08 miles (438 feet) in length. Contains all or portions of the below listed Properties: Lot 25, Block 3, Green Valley No 1 Title Cancelled to Real Estate Lot 8, Block 4, Green Valley No 1 Abs 22, Survey 29, Tannehill J C, 1.67 Acre 'Alternative 1' - Runs northwest from the existing Southern Walnut Creek Trail, crosses the commuter railroad track and ends approximately 275 feet north of Prock Lane, for a total distance of 0.45 miles (2,350 feet). Contains all or portions of the below listed properties: Abs 22, Survey 29, Tannehill J C, 25.87 Acres Abs 22, Survey 29, Tannehill J C, 3.51 Acres Abs 22, Survey 29, Tannehill J C, 13.224 Acres 'Alternative 2' - Runs north from Shady Lane, crosses the commuter railroad track and ends at the end of Brookswood Avenue, for a total distance of 0.1 mile (500 feet). Contains all or portions of the below listed properties: 0.5 Acre of Lot 12-21 Block 14 OLT 2 Division-O Lot 20 Brookswood 'Alternative 3' - Runs northwest from the Southern Walnut Creek Trail, crosses the commuter railroad track and ends at the end of Prock Lane, for a total distance of 0.34 miles (1,800 feet). Contains all or portions of the below listed properties: Abs 22, Survey 29, Tannehill J C, 2.98 Acres Abs 22, Survey 29, Tannehill J C, 47.750 Acres Abs 22, Survey 29, Tannehill J C 4.924 Acres Abs 22, Survey 29, Tannehill J C, 74.13 Acres

Source: Travis County Appraisal District - http://www.traviscad.org

2.2 Property and Vicinity General Characteristics

Figures 2A, 2B, and 2C (General Land Use Maps) provided in Appendix A illustrate the general land uses in the vicinity of the Property. Photographs of the Property and adjacent properties are provided in Appendix B.

Property General Characteristics	
Issue	Comments
Acreage, Structure(s), and General Improvements:	The "Eleanor Street Connection" is an approximate 0.08 mile (438 feet) trail segment, oriented approximately east-west, that crosses Fort Branch Creek between 1124 Eleanor Street and 1125 Lott Avenue to include the ROW and 25 foot construction corridor along the proposed trail center line. 1124 Eleanor Street and 1125 Lott Avenue are currently bordered by single-family residential developments and separated by Fort Branch Creek. 1124 Eleanor Street consists of various vegetation and concrete construction debris. 1125 Lott Avenue is developed with concrete pads for anchoring a mobile home and native vegetation. The "Alternative 1" is an approximate 0.45 mile (2,350 feet) trail segment, oriented approximately northwest-southeast, that begins at the existing Southern Walnut Creek Trail, crosses the railroad track and ends approximately 275 feet north of Prock Lane along Sara Drive, to include the ROW and 25 foot construction corridor along the proposed trail center line. The construction corridor is extended to include the over-grade bridge and vicinity for the commuter rail line over Tannehill Branch Creek. The northernmost portion of the segment includes a concrete sidewalk corresponding to Sara Drive and includes portions of the Tannehill Branch Creek concrete drainage ditch. The remainder of the segment consists of native vegetation and various dirt paths. The "Alternative 2" is an approximate 0.1 mile (500 feet) trail segment, oriented approximately northeast-southeast, that runs north from Shady Lane, crosses the railroad track and ends at Brookswood Avenue, to include the ROW of Brookswood Avenue cul-de-sac and 25 foot construction corridor along the proposed trail center line to encompass the railroad bridge and portions of 5600 Jain Lane. Brookswood Avenue is a residential street consisting of two (2) asphalt lanes terminating in a cul-de-sac. Shady Lane is a street consisting of two (2) lanes and a gravel turn-in point at the southernmost portion of the segment. The remainder of the segment consists of native vegetation, dirt paths and railroad track corresponding to the rail line. The "Alternative 3" is an approximate 0.34 mile (1,800 feet) trail segment, oriented approximately northwest-southeast that runs northwest from the existing Southern Walnut Creek Trail, crosses under the railroad track and ends at Prock Lane, to include the ROW and 25 foot construction corridor along the proposed trail center line. The segment includes the above and below grade portions of the commuter railroad track at the proposed trail crossing. The remainder of the segment consists of native vegetation, dirt paths, power line easement and railroad tracks corresponding to the rail line
Status or General Operations:	'Eleanor Connection' - 1124 Eleanor Street is not currently occupied by tenants or residents. 1125 Lott Avenue is currently owned and managed by the resident of 1127 Lott Avenue, but has no structures. Both parcels are located in east Austin, Texas. 'Alternative 1' - The northernmost portion of the segment functions as a residential sidewalk, residential street and drainage ditch for Tannehill Branch Creek, located in east Austin, Texas. 'Alternative 2' - The Property is a residential cul-de-sac at the northern portion and an urban road on the southern portion, located in east Austin, Texas. 'Alternative 3' - The northern portion of the Property is a residential street located in east Austin, Texas.

Vicinity General Characteristics	
Issue	Comments
General Setting and Age of Developments	'Eleanor Connection' - The area is comprised primarily of single-family residential developments with associated paved roads, schools and sporadic commercial facilities. The area was first developed in the 1950's, with increased development occurring in the 1960's and slowing in the 1980's.

Vicinity General Characteristics	
Issue	Comments
	'Alternative 1' - The northernmost portion of the segment functions as a residential sidewalk, residential street and drainage ditch for Tannehill Branch Creek, located in east Austin, Texas. The central portion of the Property is an undeveloped wooded area bordered by a solar-power generation field and electrical substation crossed by a railroad track. The southern portion of the Property is surrounded by single-family residences and schools on the west and the East Boggy Creek Greenbelt on the east. The area was first developed in the 1950's, with increased development occurring in the 1960's and slowing in the 1980's. 'Alternative 2' - The northern portion of the Property is a residential cul-de-sac and the southern portion of the Property is an urban road, located in east Austin, Texas. A railroad track crosses the central portion of the Property. The area was first developed in the 1950's, with increased development occurring in the 1960's and slowing in the 1980's. 'Alternative 3' - The northern boundary of the Property is a residential street located in east Austin, Texas. The southern portion of the Property is the East Boggy Creek Greenbelt, bisected by utility easements, railroad tracks and surrounded by Fort Branch Creek, residential homes and commercial facilities. The area was first developed in the 1950's, with increased development occurring in the 1960's and slowing in the 1980's.

2.3 Current Use of the Property

Current Use of Property	
Issue	Comments
Special/Unique Operations:	'Eleanor Connection' - No special or unique agricultural, industrial or commercial operations or processes involving petroleum substances, hazardous substances or waste streams are present on the Property. 'Alternative 1' - No special or unique agricultural, industrial or commercial operations or processes involving petroleum substances, hazardous substances or waste streams are present on the Property. 'Alternative 2' - No special or unique agricultural, industrial or commercial operations or processes involving petroleum substances, hazardous substances or waste streams are present on the Property. 'Alternative 3' No special or unique agricultural, industrial or commercial operations or processes involving petroleum substances, hazardous substances or waste streams are present on the Property.
Approximate Year of Existing Operations or Development(s):	'Eleanor Connection' - Lott Avenue and Eleanor Street have been present as depicted on maps as early as 1940. 'Alternative 1' - The railroad depicted crossing the central portion of the Property has been in place since at least 1896. The southernmost portion of Sara Drive was depicted since at least 1951. 'Alternative 2' - The railroad depicted crossing the central portion of the Property has been in place since at least 1896. The northernmost street, Brookswood Avenue, has been depicted on maps as early as 1973. Custer Road/Jain Lane has been depicted on maps as early as 1951.

Current Use of Property	
Issue	Comments
	'Alternative 3' - The railroad depicted crossing the central portion of the Property has been in place since at least 1896. Prock Lane has been depicted on maps as early as 1967.
Hazardous Substances Present:	None identified.
Petroleum Products Present:	None identified.

2.4 Description of Structures, Roads, and Other Improvements

Photographs of the Property and adjacent properties are provided in Appendix B.

Description of Structures, Roads and Other Improvements	
Issue	Comments
Building/Footprint Square Footage:	'Eleanor Connection' - No buildings present on the Property. 'Alternative 1' - No buildings present on the Property. 'Alternative 2' - No buildings present on the Property. 'Alternative 3' - No buildings present on the Property.
Number of Stories:	'Eleanor Connection' - Not applicable. 'Alternative 1' - Not Applicable. 'Alternative 2' - Not Applicable. 'Alternative 3': Not Applicable.
Basement:	'Eleanor Connection' - Not applicable. 'Alternative 1' - Not Applicable. 'Alternative 2' - Not Applicable. 'Alternative 3' - Not Applicable.
General Construction Materials:	'Eleanor Connection' - Road is constructed of pavement and asphalt. There are multiple concrete pads for anchoring mobile homes on eastern 'Eleanor Street' portion of Property. 'Alternative 1' - Road is constructed of pavement and asphalt. 'Alternative 2' - Roads are constructed of pavement and asphalt. 'Alternative 3' - Road is constructed of pavement and asphalt.

Description of Structures, Roads and Other Improvements			
Issue	Issue		
Energy Source(s) for Heating:	'Eleanor Connection' - Unknown source for heating. 'Alternative 1' - Unknown source for heating. 'Alternative 2' - Unknown source for heating. 'Alternative 3' - Unknown source for heating.		
Ingress/Egress: (roads, railroads, etc.)	'Eleanor Connection'	North	Eleanor Street and Lott Avenue
		East	Eleanor Street
		West	Lott Avenue
		South	Eleanor Street and Lott Avenue
	'Alternative 1'	North	Sara Drive
		East	Prock Lane, Railroad Tracks and Southern Walnut Creek Trail
		West	Railroad Tracks
		South	Southern Walnut Creek Trail
	'Alternative 2'	North	Brookswood Avenue
		East	Brookswood Avenue and Railroad Tracks
		West	Custer Road and Railroad Tracks
		South	Jain Lane
	'Alternative 3'	North	Prock Lane
		East	Southern Walnut Creek Trail and Railroad Tracks
		West	Prock Lane and Railroad Tracks
		South	Southern Walnut Creek Trail
Estimated Percentage of Property Covered by Buildings and Pavement:	'Eleanor Connection' - 10% 'Alternative 1' - 10% 'Alternative 2' - 30% 'Alternative 3' - 5%		

Description of Structures, Roads and Other Improvements	
Issue	Issue
Other Improvements: (vaults, lifts, elevators, truck docks, etc.)	'Eleanor Connection' - Multiple concrete pads for anchoring mobile homes on eastern 'Eleanor Street' portion of Property. 'Alternative 1' - Railroad tracks and associated bridges cross the central portion of the Property, oriented approximately southeast-west. 'Alternative 2' - Railroad tracks and associated bridges cross the central portion of the Property, oriented approximately southeast-west. 'Alternative 3' - Railroad tracks and associated bridges cross the central portion of the Property, oriented approximately southeast-west.

The Property or structures are serviced by the following private or municipal utility companies:

Description of Utilities		
Utility	Utility Provider	Comments
Sewerage	'Eleanor Connection' - City of Austin. 'Alternative 1' - City of Austin. 'Alternative 2' - City of Austin. 'Alternative 3' - City of Austin.	
Potable Water Source	'Eleanor Connection' - City of Austin. 'Alternative 1' - City of Austin. 'Alternative 2' - City of Austin. 'Alternative 3' - City of Austin.	
Natural Gas	'Eleanor Connection' - Texas Gas Service. 'Alternative 1' - Texas Gas Service. 'Alternative 2' - Texas Gas Service. 'Alternative 3' - Texas Gas Service.	
Electric:	'Eleanor Connection' - Austin Energy. 'Alternative 1' - None. 'Alternative 2' - None. 'Alternative 3' - None.	
Emergency Power	'Eleanor Connection' - None. 'Alternative 1' - None. 'Alternative 2' - None. 'Alternative 3' - None.	

2.5 Current Use of Adjoining Properties

Figures 2A-2C illustrate the general land use of adjoining properties. Photographs of adjoining properties are provided in Appendix B.

Current Use of Adjoining Properties			
'Eleanor Connection'			
Direction	Right-of-Way/Facility Name/Address	Comments	*Gradient from the Property
North	Single-family residences	No significant adverse environmental conditions observed.	Upgradient
West:	Lott Avenue, single-family residences	No significant adverse environmental conditions observed.	Cross-gradient
South:	Single-family residences	No significant adverse environmental conditions observed.	Downgradient
East	Eleanor Street, single-family residences	No significant adverse environmental conditions observed.	Cross-gradient

Current Use of Adjoining Properties

'Alternative 1'

Direction	Right-of-Way/Facility Name/Address	Comments	*Gradient from the Property
North	Sara Drive, Prock Lane Single-family residences	No significant adverse environmental conditions observed.	Upgradient
West:	Tannehill Branch Creek Drainage Ditch, Kingsbury Electrical Substation, Railroad Tracks, Single-family residences	No significant adverse environmental conditions observed.	Cross-gradient to upgradient
South:	South Walnut Creek Trail, Single-family residences, East Boggy Creek Greenbelt, Schools	No significant adverse environmental conditions observed.	Downgradient
East	Solar Power Generation Field, Railroad Tracks, East Boggy Creek Greenbelt	No significant adverse environmental conditions observed.	Cross-gradient to upgradient

'Alternative 2'

Direction	Right-of-Way/Facility Name/Address	Comments	*Gradient from the Property
North	Brookswood Drive, Single-family residences	No significant adverse environmental conditions observed.	Upgradient
West:	Railroad Tracks, Single-family residences	No significant adverse environmental conditions observed.	Cross-gradient
South:	Custer Road, Jain Lane	No significant adverse environmental conditions observed.	Cross-gradient
East	Railroad Tracks, Single-family residences	No significant adverse environmental conditions observed.	Cross-gradient

'Alternative 3'

Direction	Right-of-Way/Facility Name/Address	Comments	*Gradient from the Property
North	Prock Lane, Single-family residences	No significant adverse environmental conditions observed.	Downgradient
West:	Prock Lane, Railroad Tracks, East Boggy Creek Greenbelt	No significant adverse environmental conditions observed.	Upgradient
South:	South Walnut Creek Trail	No significant adverse environmental conditions observed.	Downgradient
East	High Tension Electrical Line easement, Railroad Tracks, East Boggy Creek Greenbelt	No significant adverse environmental conditions observed.	Upgradient

**Hydraulic gradient based on reported groundwater data or inferred based on physical setting sources.*

3.0 USER PROVIDED INFORMATION

In accordance with ASTM Practice E1527-13, §6, the User of a Phase I ESA Report has specific obligations for performing tasks during the assessment process that will help identify the possibility of RECs in connection with the Property. These tasks (e.g., chain-of-title, environmental lien and AUL research, fair market valuations) do not require the technical expertise of an EP and are generally not performed by the EP unless explicitly added by a change in the Phase I ESA scope of work. Furthermore, these tasks may not be material to the identification of RECs in connection with the Property.

The Property contact information, known history, and environmental information are obtained by the administration of the APTIM *User Questionnaire*, derived in part from ASTM Practice E1527-13, Appendix X3 and ASTM Guide E2600-10, Appendix X3. A completed APTIM *User Questionnaire* was provided along with a March 24, 2017 report titled: *Pipeline Due Diligence Soil Sampling Project at Kingsbery Substation* (Kingsbery Report).

User Provided Information	
Issue	Comments
Title Records	No recorded land title records were provided to APTIM for review by the User. APTIM did not perform a review or evaluation of land title records as part of this Phase I ESA.
Environmental Liens	No environmental liens associated with the Property were provided to APTIM for review by the User. However, APTIM acquired an environmental lien and AUL report as part of the Phase I ESA. (No environmental liens or AULs are described in the APTIM acquired EDR® report.)
AULs	With the exception of general municipal zoning and associated land use limitations, no environmental related activity and land use limitations associated with the Property were provided to APTIM for review by the User; however, APTIM acquired an environmental lien and AUL report for several parcels as part of the Phase I ESA. (No environmental liens or AULs are described in the APTIM acquired EDR® report.)
Judicial Records	No judicial records containing environmental liens or AULs associated with the Property were provided to APTIM for review by the User.
Specialized Knowledge or Experience	No specialized knowledge or experience was noted for the Property.
Commonly Known or Reasonably Ascertainable Information	No commonly known or reasonably ascertainable information was provided to APTIM by the User.
Valuation Reduction for Environmental Issues	The Property is not known to be subject to a valuation reduction for any known environmental conditions. APTIM did not perform a review or evaluation of Property assessment or valuation records as part of the Phase I ESA.

User Provided Information	
Issue	Comments
Owner/Property Manager/Occupant Information	'Eleanor Connection' - Dottie Lee, City of Austin 'Alternative 1' - City of Austin 'Alternative 2' - City of Austin 'Alternative 3' - City of Austin
Reason for Performing the Phase I ESA	'Eleanor Connection' - Pre-construction trail improvement due diligence. 'Alternative 1' - Pre-construction trail improvement due diligence. 'Alternative 2' - Pre-construction trail improvement due diligence. 'Alternative 3' - Pre-construction trail improvement due diligence.
Environmental Litigation, Administrative Proceedings or Regulatory Issued Violations	'Eleanor Connection' - No pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the Property are known or were provided to APTIM. 'Alternative 1' - No pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the Property are known or were provided. 'Alternative 2' - No pending, threatened, or past notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products in, on, or from the Property are known or were provided. 'Alternative 3' - No pending, threatened, or past notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products in, on, or from the Property are known or were provided.
Property plans/site layouts/descriptions	'Eleanor Connection' - The City of Austin provided a Site map detailing the boundaries of the Property. 'Alternative 1' - The City of Austin provided a Site map detailing the boundaries of the Property. 'Alternative 2' - The City of Austin provided a Site map detailing the boundaries of the Property. 'Alternative 3' - The City of Austin provided a Site map detailing the boundaries of the Property.
Previous Environmental Reports – Property	'Eleanor Connection' - No previous environmental reports were provided to APTIM for review by the User. 'Alternative 1' – A report prepared by INTERA, Inc. (INTERA) titled "Pipeline Due Diligence Soil Sampling Project at Kingsbery Substation" and dated March 24, 2017 was provided for APTIM's review. 'Alternative 2' - No previous environmental reports were provided to APTIM for review by the User. 'Alternative 3' - A report prepared by INTERA, Inc. titled "Pipeline Due Diligence Soil Sampling Project at Kingsbery Substation" and dated March 24, 2017 was provided for APTIM's review.

4.0 RECORDS REVIEW

4.1 Previous Environmental Reports and Documentation

Title records:	None provided.
Environmental liens:	None provided.
Activity and use limitations (deed restrictions, etc.):	None provided.
Knowledge of Property price reductions (devaluation) below fair market value due to environmental considerations:	None provided.
Are you aware of any pending, threatened or past litigation relevant to hazardous substances or petroleum products in, on, or from the Property; administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the Property; or notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?	No information provided.
Property plans and/or descriptions:	Aerial photographs with trail routes shown.
Previous environmental reports:	A report prepared by INTERA titled "Pipeline Due Diligence Soil Sampling Project at Kingsbery Substation", dated March 24, 2017 was provided for APTIM's review. The INTERA report is relevant to 'Alternative 1' and 'Alternative 3'. The report details soil sampling activities along an out-of-service pipeline owned by Sunoco that crosses 'Alternative 1' and 'Alternative 3' just north of the railroad tracks. The pipeline easement is 30 feet wide running under the Kingsbery Substation trending east-northeast, passes under Alternative 1 just east of Tannehill Branch Creek and under Alternative 3 approximately 100 feet east of the terminus of Prock Lane. The Sunoco representative onsite at the time of the borings indicated that the pipeline was installed in the 1940's. Depth to the bottom of the pipeline was documented to range from 8.67 feet adjacent to the Kingsbery Station to 2.17 feet south of Loft Avenue. The sampling plan separated the easement into two portions, an east and west area with Tannehill Branch Creek dividing the two areas. A total of 24 soil borings were installed, and twenty-seven laboratory soil samples were collected and submitted for analysis by United States Environmental Protection Agency (EPA) Method 8021B for benzene, toluene, ethylbenzene and xylenes, and by Texas Commission on Environmental Quality (TCEQ) Method TX1005 for total petroleum

	hydrocarbons. A review of the laboratory analysis report indicated that all results were below the laboratory detection limit for BTEX and TPH. The INTERA report concluded for the area sampled that *"overall the sampling results do not indicate soil impacts from the pipeline."*
Actual, commonly known, or reasonably ascertainable information or other knowledge that may be material to RECs (describe):	None provided.

4.2 Standard Environmental Record Sources

APTIM completed an EDR® environmental regulatory database search for the Property and properties within respective ASTM approximate minimum search distances. The *EDR® Radius Map with GeoCheck Report®* (Radius Report), including the date the report was prepared, the date the information was last updated, and the definition of databases searched, is provided in Appendix D.

Regulatory Database Assessment Criteria - Methodology and Limiting Conditions

In accordance with ASTM Practice E1527-13, §8.2.2, if the Property or adjoining properties are identified within standard environmental record sources (i.e., regulatory database search), pertinent and associated regulatory agency files or records should be reviewed. If, in the EP's opinion, such a review is not warranted, the EP must explain the justification for not conducting the file or records review. As an alternative, the EP may review files or records from an alternative source (for example, on-site records, User-provided records, records from local government agencies, interviews with regulatory officials or other individuals knowledgeable about the environmental conditions that resulted in the standard environmental record source listing, etc.).

APTIM reviewed the environmental database records identified in the Radius Report and evaluated each reported site with respect to the setting (residential, commercial, or industrial), the density (urban, rural, suburban), the distance that contaminants are likely to migrate based on local geological and hydrological conditions, and other reasonable factors.

Terms and database designations may differ from actual federal, state, tribal, or local environmental registry names. Where deemed necessary or applicable, supplemental database records were reviewed and file reviews or conversations with regulatory agency representatives were completed.

Vapor Encroachment Screening - Tier 1 - Methodology and Limiting Conditions

APTIM reviewed the environmental database records identified in the Radius Report and evaluated each reported site relative to a VEC, respective of the chemicals of concern, the

distance that contaminants are likely to migrate based on local geological and hydrological conditions, sub-grade utility corridors and preferential pathways, structural components, mitigation devices, and other reasonable factors.

The vapor encroachment screening was completed in general compliance with ASTM Designation E2600-10: *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions* (ASTM Guide E2600-10) using Tier 1 Screening procedures. In addition, based on the inferred or known groundwater gradient as specified within this Report, APTIM adopted and implemented a reduced radius area of concern distance as calculated, suggested, and published by Buonicore, A. J., *A Smaller Intrusion*, Pollution Engineering, pp. 26-31, May 2009. Based on proximity to 'Alternative 2', history of release events and products contained within the historical tanks, the former Coastal Austin Terminal Site at 5600 Jain Lane is considered a REC. However, since the projected construction is surficial in nature, hydrocarbon vapors are not likely to impact construction activities.

4.2.1 On-Site Environmental Regulatory Listings

The Radius Report identifies various federal, state, tribal, and/or local sites within respective ASTM minimum search distances. The Property is defined as twelve properties in the vicinity of Sara Drive and Prock Lane. Therefore, there are no listings in the Radius Report located directly on the Property. All listings are considered adjacent or surrounding properties.

4.2.2 Off-Site Environmental Regulatory Listings

Listed below are environmental regulatory listings for adjacent or surrounding properties which were deemed by the EP to warrant additional environmental discussion and evaluation:

'Eleanor Connection'	Off-Site Environmental Regulatory Listing	
	Facility Name/Address	Ideal Cars 1142 Eleanor Street
	Regulatory Listing	Historical Automotive Repair Shops
	Distance/Direction	400 Feet North
	Elevation/Gradient(1)	Up-Gradient
	Federal/State ID	None
	Regulatory Status	None
	APTIM Opinion	Not a REC to the Property
	Discussion:	Ideal Cars has been classified by EDR as a 'Historical Auto Repair Shop' from approximately 1997 through 2003. Aerial imagery indicates that Ideal Cars has been in operation since at least 1981. On-Site reconnaissance indicated the location is an active an automobile dealership, but the status of a potential repair shop was not determined. An in depth search of this address within other regulatory databases did not reveal any records of releases or non-compliance. This business was not found in the city directories or in any further review of regulatory databases. Therefore, this listing is not considered an REC.
'Alternative 1'	No significant findings.	

'Alternative 2'

Off-Site Environmental Regulatory Listing	
Facility Name/Address	Think East Development Site Jain Lane and Shady Lane
Regulatory Listing	Innocent Operators Program
Distance/Direction	Adjacent to the southern portion of the Property
Elevation/Gradient(1)	Cross-gradient
Federal/State ID	IOP ID 1042
Regulatory Status	Completed/ Inactive
APTIM Opinion	Historical REC to the property
Discussion:	The property is undeveloped and Think East Apartments was not found in the city directories. The earliest date of contamination reported was 11/1/2016 and the Texas Commission on Environmental Quality (TCEQ) reports that the groundwater is contaminated with total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs). Think East Apartments filed for the Innocent Operators Certificate (IOC) on 10/05/2016 and an IOC was obtained on 06/02/2017. Since the presence of contamination has been confirmed, this listing is considered an REC. A review of regulatory information indicates that contamination is confined to the groundwater on the property. As the groundwater ranges between 13 and 17 ft-bgs, the gradient generally trends toward the south away from the Subject Property, the scope of work for La Loma Trail is limited to the first two (2) to three (3) feet of subsurface soil and there is no known clear exposure route to contaminants that exists, the contamination is considered to present a negligible risk to human health. An in depth search of this address within regulatory databases did not reveal any other records of historical releases or non-compliance.

Off-Site Environmental Regulatory Listing	
Facility Name/Address	Coastal States Austin Term / Valero Pipeline Company 1150 Jain Lane
Regulatory Listing	RCRA NonGen/NLR, FINDS, ECHO
Distance/Direction	Adjacent to the southern portion of the Property
Elevation/Gradient(1)	Cross-gradient
Federal/State ID	TXD000838706
Regulatory Status	Inactive
APTIM Opinion	Historical REC to the property
Discussion:	Coastal States Crude Gathering Company is listed as the owner/operator of the Property at 1150 Jain Lane. It is listed as a handler of hazardous waste to include D001 (Ignitable Waste), D018 (Benzene) and K052 (Tank Bottoms, Leaded, from the Petroleum refining industry). The company is currently listed as having had several air emissions inventory permits, Industrial Hazardous Wastes Cleanups and Solid Wastes Registrations. Groundwater contamination was reported through quarterly monitoring from approximately 2002 through 2008 as a result of activities associated with the former petroleum product tanks. No further regulatory information is known and the business was not found in city directories. While contamination is indicated, a review of regulatory information indicates that it is confined to the

Alternative 2' (continued)

	groundwater of the Property, which is approximately 13-17 ft-bgs, and down gradient from the Subject Property; therefore, the contamination is considered to present a negligible risk to human health. In addition, the scope of work for La Loma trail is limited to the first two (2) to three (3) feet of subsurface soil and no known clear exposure route to contaminants exists.

Off-Site Environmental Regulatory Listing

Facility Name/Address	Fusebox and/or Cesar Chavez Foundation 5600 Jain Lane
Regulatory Listing	US Brownfields
Distance/Direction	450 feet West
Elevation/Gradient(1)	Cross-gradient
Federal/State ID	Cooperative Agreement Number 00F91001
Regulatory Status	Completed/ Inactive
APTIM Opinion	Historical REC to the property
Discussion:	Fusebox and/or the Cesar Chavez Foundation is listed as the owner/operator of the Property at 5600 Jain Lane. According to EDR, the property was formerly part of a 90 acre tank farm, which was owned by six (6) separate oil companies and had many releases over several decades. The residents and schools nearby were concerned for their health and an environmental movement was started in Austin to combat these previous oil companies. 30 years later, the property has been cleaned up, with institutional controls for contaminated groundwater in place. The property has been subdivided and sold several times (linked to the above regulatory listings). No further regulatory information is known and the business was not found in city directories. While contamination is indicated, a review of regulatory information indicates that it is confined to the groundwater of the Property, which is approximately 13-17 ft-bgs, and down gradient from the Subject Property; therefore, the contamination is considered to present a negligible risk to human health. In addition, the scope of work for La Loma trail is limited to the first two (2) to three (3) feet of subsurface soil and no known clear exposure route to contaminants exists.

Off-Site Environmental Regulatory Listing

Facility Name/Address	East Austin Tank Farm Govallle Park / Valero Pipeline Company 1023 Springdale Road
Regulatory Listing	VCP / IHW Corrective Action TCEQ
Distance/Direction	Approximately 400 feet north and northwest of the Property
Elevation/Gradient(1)	Up-gradient
Federal/State ID	TCEQ VCP S109028553; TCEQ CAP 52113
Regulatory Status	Inactive
APTIM Opinion	Historical REC to the property
Discussion:	Cerco Development, Inc is listed as the owner/operator of the Property at 1023 Springdale Road. Historically, the 9.5 acre property operated as a bulk tank farm facility owned by Valero Pipeline Company from the 1950's through 1988. Based on aerial photo review, sometime between 1988 and 1995, the

Alternative 2' (continued)		tank farm ceased operations and the ASTs were removed. The southern-most AST associated with the tank farm, visible in the 1988 aerial photo, is located approximately 400 feet north and northwest of the northernmost portion of Alternative 2 Property. In addition, the creek that runs adjacent to the west of the Alternative 2 Property runs immediately along the southern boundary of the former tank farm prior to crossing under Airport Boulevard approximately 2000 feet upstream of the Alternative 2 Property. The EDR Radius Report lists the site as inactive within the TCEQ Voluntary Cleanup Program (VCP). Additional investigation within the TCEQ Central Registry indicates that the site has an extensive history in the TCEQ Industrial and Hazardous Waste Corrective Action Program (CAP). The earliest correspondence indicated is a Technical Letter dated 8/20/1998, followed by a Groundwater Monitoring Report dated 9/30/1998. The first documented assessment report was dated 11/20/2000 and the first documented response (remedial) action plan was dated 12/11/2003. In March 2006, a Deed Notice for a Plume Management Zone (for groundwater) was submitted. In 2008, the new owner, Cerco Development, Inc. requested the site be moved into the VCP. The TCEQ Central Registry indicates that as of March 2008, the soils chemicals of concern were metals, TPH and VOCs. In 2011, Cerco Development, Inc. withdrew their request for the VCP and the site was reinstated in the CAP. In 2014, the site was approved for Deed Restriction Closure and a Deed Notice was provided. With respect to surface water impact associated with the creek that flows downstream from the tank farm and immediately adjacent to the west of the Alternative 2 Property, it is noted that Surface Water Quality Criteria was reviewed in 2001. Also noted is that the CAP Correspondence History also encompasses the "Shady Lane Location". It is believed that this tank farm was included in the aforementioned Shady Lane and Jane Lane Properties, which are described as a 90 acres site. It should also be noted that the City of Austin is listed as reviewer of multiple technical correspondences from 1998 to 2003. No further regulatory information is known or provided by the City for review. While historical soil impact is indicated, the site has received closure with Institutional Controls for a Plume Management Zone (PMZ). Institutional Controls for a the scope of work for La Loma trail is limited to the first two (2) to three (3) feet of subsurface soil and no known clear exposure route to contaminants exists also indicates that the groundwater may still be impacted. The groundwater is 13-17 ft-bgs and the scope of work for La Loma trail is limited to the first two (2) to three (3) feet of subsurface soil. As the site has closure, and the surface water has been addressed, and without additional review of the reports at the TCEQ Central Records office, at this time the East Austin Tank Farm Govallle Park would be considered a Historical REC and presents a negligible risk to human health. All TCEQ Central Registry information can be found in Appendix E.
'Alternative 3'	No significant findings.	

It is the opinion of APTIM that the remaining sites listed within the Radius Report are of such distance, controlled remediation, or closed cases that they do not have a potential to adversely impact the soil, soil vapor, groundwater, or surface water of the Property.

The Radius Report identifies various additional federal, state, tribal, or local sites within respective ASTM minimum search distances. A complete listing of databases, distances, the

definition of databases searched, and reported sites within respective ASTM search distances is provided in Appendix D.

4.2.3 Orphan/Non-Locatable Site Listings

The Radius Report identified one (1) site for which a geographic location could not be pinpointed because of insufficient information on the address (the "Orphan/Non-Locatable Sites"). This listing was reviewed to determine the location and applicability to the ESA. At this time, the Orphan/Non-Locatable site is not considered representative of an REC in connection with the Property.

4.3 Additional Environmental Record Sources

The Radius Report identifies numerous additional and supplemental federal, state, tribal, or local databases which are beyond the standard environmental record sources required by ASTM Practice E1527-13, §8.2.1. A complete listing of additional and supplemental databases, distances, the definition of databases searched, and reported sites within respective ASTM approximate minimum search distances is provided in Appendix D.

4.4 Physical Setting and Sources

Standard Physical Setting Source	
Issue	Comments
Topography: (see Figure 1)	'Eleanor Connection' The Property is approximately 475 feet above mean sea level with topographic slope towards Fort Branch Creek at the center of the Property. 'Alternative 1' The Property is approximately 460 feet above mean sea level with topographic slope towards the west and Tannehill Branch Creek. 'Alternative 2' The Property is approximately 455 feet above mean sea level with topographic slope to the southwest. 'Alternative 3' The Property is approximately 455 feet above mean sea level with topographic slope towards the southeast and Fort Branch Creek

Sources: EDR® Radius Map™ with GeoCheck®; EDR® Historical Topographic Map Report.

In accordance with ASTM Practice E1527-13, §8.2.4, one (1) or more additional physical setting sources may be obtained at the discretion of the EP; however, additional physical setting sources are required to be obtained and reviewed when: 1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to the Property or from or within the Property into the groundwater or soil and 2) more information is generally obtained, pursuant to local good commercial and customary practices in initial

ESAs in the type of commercial real estate transaction involved, in order to assess the impact of such migration of RECs in connection with the Property.

Discretionary and Non-Standard Physical Setting Sources			
Issue	Comments		
Geology/Bedrock Description:	The geologic rock unit for the area of the Property is listed as being located in an area developed during the Pleistocene epoch of the Holocene, named the Terrace Deposits. The Terrace Deposits consists mainly of sand, silt, clay and gravel in various proportions.		
Soil Description and Permeability: (http://websoilsurvey.nrcs.usda.gov)	'Eleanor Connection'	Soil Component Name:	Tinn Clay Houston Black Soils and Urban Land
		Soil Texture:	Stony Clay, Clay, Silty Clay
		Soil Permeability/ Hydrologic Group:	Class D- Very Slow permeability Class D- Very Slow permeability
		Soil Drainage:	Moderate Moderate
		Corrosion Potential - Uncoated Steel:	N/A N/A
		Other Information	
	'Alternative 1'	Soil Component Name:	Bergstrom Soils and Urban Land Houston Black Soils and Urban Land
		Soil Texture:	Silt Loam, Silty Clay Loam or Clay Loam Clay, Silty Clay
		Soil Permeability/ Hydrologic Group:	Moderate Permeability Class D – Very slow infiltration rates.
		Soil Drainage:	Moderate
		Corrosion Potential - Uncoated Steel:	N/A N/A
		Other Information	
	'Alternative 2'	Soil Component Name:	Houston Black Soils and Urban Land
		Soil Texture:	Clay, Silty Clay
		Soil Permeability/ Hydrologic Group:	Class D – Very slow infiltration rates.
		Soil Drainage:	Moderate
		Corrosion Potential - Uncoated Steel:	N/A
		Other Information	
	'Alternative 3'	Soil Component Name:	Houston Black Soils and Urban Land Urban Land and Ferris soils
		Soil Texture:	Clay, Silty Clay
		Soil Permeability/ Hydrologic Group:	Class D- Very Slow infiltration rates Very Slow Permeability
		Soil Drainage:	Moderate Well
		Corrosion Potential - Uncoated Steel:	N/A
		Other Information	

Discretionary and Non-Standard Physical Setting Sources	
Issue	Comments
Hydrogeology: (http://www.twdb.texas.gov/groundwater/data/drillersdb.asp)	'Eleanor Connection' No specific information on groundwater conditions, groundwater depths, or flow direction on or in the immediate area of the Property was identified during this assessment. APTIM reviewed the Texas Water Development Board Driller's Reports for the Property, but could not locate well reports for the area that contained depth to groundwater or groundwater gradient data. Considering the generalized physical setting, the general groundwater gradient is likely towards the southern portion of the Site. Fort Branch Creek crosses the central portion of the Property. Fort Branch Creek is at an elevation of approximately 460 feet above mean sea level. 'Alternative 1' No specific information on groundwater conditions, groundwater depths, or flow direction on or in the immediate area of the Property was identified during this assessment. APTIM reviewed the Texas Water Development Board Driller's Reports for the Property, but could not locate well reports for the area that contained depth to groundwater or groundwater gradient data. Considering the generalized physical setting, the general groundwater gradient is likely towards the south. The Tannehill Branch Creek drainage ditch runs parallel along the western boundary of the Property. Tannehill Branch Creek is at an elevation of approximately 450 feet above mean sea level. 'Alternative 2' A review of the Texas Water Development Board Driller's Reports for the Property indicates nearby depth to water to be between 13 and 17 ft-bgs. Taking into consideration the generalized physical setting of the Site, the general groundwater gradient likely trends towards the south. 'Alternative 3' No specific information on groundwater conditions, groundwater depths, or flow direction on or in the immediate area of the Property was identified during this assessment. APTIM reviewed the Texas Water Development Board Driller's Reports for the Property, but could not locate well reports for the area that contained depth to groundwater or groundwater gradient data. Considering the generalized physical setting, the general groundwater gradient is likely towards the south-southeast of the Site. Fort Branch Creek runs parallel along the eastern boundary of the southern end of the Property. Fort Branch Creek is at an elevation of approximately 445 feet above mean sea level.

Sources: EDR® Radius Map™ with GeoCheck® and/or respective on-site or surrounding environmental investigation reports.

4.5 Standard Historical Sources

The objective of consulting historical sources is to develop a history of previous uses of the Property and surrounding area in order to identify conditions material to the identification of RECs in connection with the Property, if any. In accordance with ASTM Practice E1527-13, §8.3.2, all obvious uses of the Property are required to be identified from the present back to the Property's first developed use (developed use includes agricultural) or back to 1940, whichever is earlier. The review of respective historical sources requires reviewing only as many of the standard historical sources (pursuant to ASTM Practice E1527-13, §8.3.4 which includes aerial photographs, fire insurance maps, property tax files, recorded land title records, topographic maps, local street directories, building department records, zoning/land use records) as necessary and both reasonably ascertainable and likely to be useful. A summary of relevant information obtained from historical use sources is presented below.

4.5.1 Chain-of-Title

Based on the request of the User, APTIM did not complete a search of recorded land title records as part of this Report. No chain-of-title was provided for review.

4.5.2 Environmental Lien and Activity Use Limitations

A search of environmental liens, AULs, or other environmental encumbering instruments was conducted by EDR at the request of APTIM as part of the Phase I ESA. No environmental liens, AULs, or other environmental encumbering instruments were identified for the Property.

4.5.3 Aerial Photography

EDR® completed searches of aerial photographic maps for the Property. The *EDR® Aerial Photo Decade Package,* which includes the respective map, date, scale, and source, is provided in Appendix D. Due to the scale and resolution of select aerial photographs provided by EDR®, specific site features may be difficult to discern.

'Eleanor Connection'

Aerial Photography Review	
Year(s)	1940
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is undeveloped agricultural land crossed by Fort Branch Creek.
Surrounding Area Description	The surrounding area consists of undeveloped forested and agricultural land and various creeks with two (2) parallel sets of railroad tracks running east and west.

Year(s)	1951
Source	EDR® Aerial Photo Decade Package
Property Description	Modern day Lott Avenue and Eleanor Street have been constructed with residential development on the eastern and western Property boundaries.
Surrounding Area Description	Some road building and residential development has taken place in all surrounding area directions.

'Eleanor Connection' (continued)

Aerial Photography Review

Year(s)	1967 and 1973
Source	EDR® Aerial Photo Decade Package
Property Description	Relatively unchanged from previous aerial photographs. Mobile home on eastern Property boundary can be seen in 1973 aerial photograph.
Surrounding Area Description	Extensive road building and commercial and residential development in all surrounding area directions.

Year(s)	1981, 1988, 1995 and 2005
Source	EDR® Aerial Photo Decade Package
Property Description	The mobile home has been removed on the eastern side of the Property in the 1981 aerial photograph, leaving what appears to be tie-downs. Increased tree canopy begins to cover the western side of the Property. No other visible changes can be identified.
Surrounding Area Description	Continued commercial and residential development in all directions to current conditions. The northern railroad tracks to the south of Property appears abandoned/removed.

Year(s)	2008, 2010 and 2012
Source	EDR® Aerial Photo Decade Package
Property Description	The residence on the western side of the Property is no longer present and the tree canopy has been reduced in the 2008 photograph. No other visible changes can be identified.
Surrounding Area Description	Relatively unchanged from previous aerial photograph.

'Alternative 1'

Aerial Photography Review	
Year(s)	1940
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is undeveloped agricultural and forested land with Tannehill Branch Creek on adjacent Property to the west and two parallel sets of railroad tracks crossing the central portion of the Property.
Surrounding Area Description	The surrounding area consists of undeveloped agricultural and forested land and various creeks with a two (2) parallel sets of railroad tracks running east and west.

'Alternative 1' (continued)

Aerial Photography Review

Year(s)	1951 and 1967
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is mostly unchanged from the 1940 aerial photograph. Sara Drive has been constructed on the northern boundary of the Property.
Surrounding Area Description	Extensive commercial and residential development has taken place to the north, south and western directions. The east direction generally reflects a transformation from agricultural use to forested land. ASTs appear south of railroad tracks just west of Property in the 1967 aerial photograph.

Year(s)	1973
Source	EDR® Aerial Photo Decade Package
Property Description	The southern half of the property indicates transformation from agricultural to forested land. An overhead power line easement transects the middle of the Property, just north of the railroad tracks.
Surrounding Area Description	Continued commercial and residential development has taken place in the north, south and western directions. An electrical substation appears immediately across Tannehill Branch Creek from the property. An additional AST appears south of railroad tracks just west of Property. The eastern direction indicates continued forested growth.

Year(s)	1981
Source	EDR® Aerial Photo Decade Package
Property Description	The southern end of the Property continues transformation to forested land, otherwise the Property is unchanged from the 1973 aerial photograph.
Surrounding Area Description	Continued commercial and residential development has taken place in the north, south and western directions.

Year(s)	1988 and 1995
Source	EDR® Aerial Photo Decade Package
Property Description	The northern and southern ends of the Property continue transformation to forested land. The northern railroad tracks appear abandoned/removed. Otherwise the Property is relatively unchanged from the 1973 aerial photograph.
Surrounding Area Description	Continued commercial and residential development has taken place in the north, south and western directions. The northern railroad tracks to the east and west appears abandoned/removed. Extensive clearing has taken place along Boggy Creek.

'Alternative 1' (continued)

Aerial Photography Review

Year(s)	2005, 2008, 2010 and 2012
Source	EDR® Aerial Photo Decade Package
Property Description	The Property indicates continued forested growth to current conditions. The Walnut Creek Trial appears at southern tip of Property.
Surrounding Area Description	Continued commercial and residential development has taken place in the north, south and western directions to current conditions. Walnut Creek Trail appears in the 2005 aerial photograph.

'Alternative 2'

Aerial Photography Review	
Year(s)	1940
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is undeveloped agricultural and forested land with two (2) parallel railroad tracks crossing the central portion.
Surrounding Area Description	Custer Road/Shady/Jain Lanes appear in place to south with scattered residences. An additional agricultural related residence appears immediately to northwest. The remaining surrounding area consists of undeveloped agricultural and forested land and various creeks with two (2) parallel railroad tracks running east and west.

Year(s)	1951 and 1967
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is unchanged from the 1940 aerial photograph.
Surrounding Area Description	Extensive residential and commercial development has taken place in all surrounding area directions. Petroleum product storage tanks appear northwest and southwest of the Property in the 1951 aerial photograph, and immediately to the east of the Property in the 1967 aerial photograph.

Year(s)	1973
Source	EDR® Aerial Photo Decade Package
Property Description	Brookswood Avenue appears at north end of Property.
Surrounding Area Description	Continued residential and commercial development has taken place in all surrounding area directions. An electrical substation appears northeast of Property.

'Alternative 2' (continued)

Aerial Photography Review

Year(s)	1981
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is unchanged from the 1973 aerial photograph.
Surrounding Area Description	Continued commercial and residential development has taken place in all surrounding area directions. The properties to the south across Custer Road appears to transform from agricultural to heavy tree canopy.

Year(s)	1988 and 1995
Source	EDR® Aerial Photo Decade Package
Property Description	The northern railroad tracks appear abandoned/removed.
Surrounding Area Description	Continued commercial and residential development has taken place in all surrounding area directions. The properties to the south across Custer Road continue to transform from agricultural to heavy tree canopy. ASTs located to the northwest increased in number in the 1988 aerial photograph; however the ASTs to the northwest and southwest appear removed in the 1995 aerial photograph.

Year(s)	2005
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is unchanged from the 1995 aerial photograph.
Surrounding Area Description	Continued commercial and residential development has taken place in all surrounding area directions. The properties to the south across Custer Road continue to transform from agricultural to heavy tree canopy. ASTs located immediately to the east have been removed.

Year(s)	2008, 2010 and 2012
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is unchanged from the 1995 aerial photograph.
Surrounding Area Description	Some continued commercial and residential development has taken place in all surrounding area directions to current conditions.

'Alternative 3'

Aerial Photography Review	
Year(s)	1940
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is undeveloped agricultural and forested land with Fort Branch Creek on adjacent Property to the east at the southern end of Property, and two (2) parallel sets of railroad tracks crossing the south-central portion of the Property. Note that far eastern and southern end of Property not shown on aerial photograph.
Surrounding Area Description	The surrounding area consists of undeveloped agricultural and forested land and various creeks with a two (2) parallel sets of railroad tracks running east and west.

Year(s)	1951
Source	EDR® Aerial Photo Decade Package
Property Description	The Property is unchanged from the 1940 aerial photograph.
Surrounding Area Description	Some residential development has taken place in all surrounding area directions. Omega Avenue appears to northwest of Property.

Year(s)	1967
Source	EDR® Aerial Photo Decade Package
Property Description	Prock Lane has been constructed on the western Property boundary. Large portion of Property transforming from agricultural to forested land.
Surrounding Area Description	Extensive commercial and residential development has taken place to the north and far south of Property. Immediately along Property boundaries transforming from agricultural to forested land.

Year(s)	1973
Source	EDR® Aerial Photo Decade Package
Property Description	Property and immediate boundaries on west, south and east continue transformation to forested land. An overhead power line easement transects the middle of the Property, just north of the railroad tracks.
Surrounding Area Description	Continued commercial and residential development has taken place to the north and far south of Property. Immediately along Property boundaries continue transformation from agricultural to forested land. Development of a municipal fleet services facility to east can be seen.

'Alternative 3' (continued)

Aerial Photography Review	
Year(s)	1981
Source	EDR® Aerial Photo Decade Package
Property Description	Property and immediate boundaries on west, south and east continue transformation to forested land. The northern railroad tracks appear abandoned/removed.
Surrounding Area Description	Continued commercial and residential development has taken place to the north and far south of Property. Immediately along Property boundaries continue transformation from agricultural to forested land. The northern railroad tracks to west of Property appear abandoned/removed.

Year(s)	1988 and 1995
Source	EDR® Aerial Photo Decade Package
Property Description	Property and immediate boundaries on west, south and east continue transformation to forested land.
Surrounding Area Description	Continued commercial and residential development has taken place to the north and far south of Property. Immediately along Property boundaries continue transformation from agricultural to forested land. Additional development of municipal facility to east can be seen. Extensive clearing has taken place along Boggy Creek. The northern railroad tracks to east of Property appear abandoned/removed as of 1988 aerial photograph.

Year(s)	2005, 2008, 2010 and 2012
Source	EDR® Aerial Photo Decade Package
Property Description	Property and immediate boundaries on west, south and east continue transformation to forested land to current conditions. Walnut Creek Trail is visible at far southern Property boundary.
Surrounding Area Description	Continued commercial and residential development has taken place to the north and far south of Property. Immediately along Property boundaries continue transformation from agricultural to forested land to current status. Walnut Creek Trail appears in the 2005 aerial photograph. Additional development of municipal facility to east can be seen to current conditions from 2005-2012.

4.5.4 Fire Insurance Maps

EDR® completed a search of fire insurance maps for the Property. EDR® identifies this as an unmapped area.

4.5.5 Topographic and Historical Maps

EDR® completed a search of public and private topographic and historical maps for the Property. The *EDR® Historical Topographic Map Report* including respective map names and dates is provided in Appendix D. A portion of the pertinent U.S. Geological Survey 7.5-minute

series (topographic) map is provided as Figure 1 (Appendix A). The following observations are noted:

'Eleanor Connection'

Topographic and Historical Map Review	
Year(s)	1896, 1897 and 1910
Source	EDR® Historical Topographic Map Report
Property Description	The Property is depicted as undeveloped land with Fort Creek Branch crossing central portion of Property.
Surrounding Area Description	The surrounding area is undeveloped with some roads, creeks, and small structures depicted in outlying areas. Boggy Creek is labeled to the south and a railroad is depicted to the south.

Year(s)	1954, 1955 and 1966
Source	EDR® Historical Topographic Map Report
Property Description	The Property is depicted as residential properties with Lott Avenue and Eleanor Street, respectively on the western and eastern Property boundaries.
Surrounding Area Description	Increased development of road infrastructure and structures are shown in all surrounding areas directions.

Year(s)	1973, 1988 and 2013
Source	EDR® Historical Topographic Map Report
Property Description	The Property is depicted as residential properties, with residential building on west Property boundary having been removed.
Surrounding Area Description	An increase in regional residential and commercial development is depicted in all surrounding area directions.

'Alternative 1'

Topographic and Historical Map Review	
Year(s)	1896, 1897 and 1910
Source	EDR® Historical Topographic Map Report
Property Description	The Property is depicted as undeveloped land with Tannehill Branch Creek near the western Property boundary. A railroad is depicted crossing the central portion of the Property.
Surrounding Area Description	The surrounding area is undeveloped with some roads, creeks, and small structures depicted in outlying areas. Boggy Creek is labeled to the south and a railroad is depicted extending east and west from the center of Property.

'Alternative 1' (continued)

Topographic and Historical Map Review	
Year(s)	1954, 1955, 1966 and 1973
Source	EDR® Historical Topographic Map Report
Property Description	Sara Drive and Prock Lane has been constructed on the northern boundary of the Property.
Surrounding Area Description	Increased commercial and residential development is depicted in all surrounding area directions. Gasoline tanks to the west were identified in the 1954 and 1955 topographic maps. ASTs appear in property across Tannehill Branch south of railroad tracks starting on 1966 topographic map.

Year(s)	1988 and 2013
Source	EDR® Historical Topographic Map Report
Property Description	Overhead power transmission lines are indicated as crossing middle of property north of railroad tracks in 1988 topographic map.
Surrounding Area Description	Increased commercial and residential development is depicted in all surrounding area directions. An electrical substation is identified directly across Tannehill Branch north of railroad tracks. Overhead power transmission lines are identified running east from substation across Property. Of note: the 2013 topo indicates that railroad tracks terminate to west of Property.

'Alternative 2'

Topographic and Historical Map Review	
Year(s)	1896, 1897 and 1910
Source	EDR® Historical Topographic Map Report
Property Description	The Property is depicted as undeveloped land with railroad tracks running through central portion of Property.
Surrounding Area Description	The surrounding area is undeveloped with some roads, creeks, and small structures depicted in outlying areas. Boggy Creek is labeled to the south and a railroad is depicted to the south.

Year(s)	1954, 1955 and 1966
Source	EDR® Historical Topographic Map Report
Property Description	Custer Road/Shady/Jain Lane can be seen on southern portion of property.
Surrounding Area Description	Increased commercial and residential development is depicted in all directions. Gasoline tanks are identified to the northwest and southwest of the Property. The 1966 topographic map also indicates two (2) ASTs immediately to east of Property, and identifies Govalle Park to the south.

Year(s)	1973
Source	EDR® Historical Topographic Map Report
Property Description	Brookswood Avenue has been constructed on the northern boundary of the Property.
Surrounding Area Description	Increased commercial and residential development is depicted in all surrounding area directions. Additional ASTs are indicated to the northwest and immediately east of the Property.

'Alternative 2' (continued)

Topographic and Historical Map Review	
Year(s)	1988 and 2013
Source	EDR® Historical Topographic Map Report
Property Description	The Property indicates no identifiable changes.
Surrounding Area Description	Increased commercial and residential development is depicted in all surrounding area directions. An electrical substation is identified to the northeast, and Govalle Park is identified to the south.

'Alternative 3'

Topographic and Historical Map Review	
Year(s)	1896, 1897 and 1910
Source	EDR® Historical Topographic Map Report
Property Description	The Property is depicted as undeveloped land with railroad tracks running through south-central portion of Property.
Surrounding Area Description	The surrounding area is undeveloped with some roads, creeks, and small structures depicted in outlying areas. Boggy Creek is labeled to the south and a railroad is depicted extending east and west from the Property

Year(s)	1954 and 1955
Source	EDR® Historical Topographic Map Report
Property Description	Property appears unchanged from previous topographic maps.
Surrounding Area Description	Increased commercial and residential development is depicted in north direction. Prock Lane and Omega Avenue have been constructed north of the Property.

Year(s)	1966 and 1973
Source	EDR® Historical Topographic Map Report
Property Description	Prock Lane has been extended to the northern boundary of the Property.
Surrounding Area Description	Increased commercial and residential development is depicted north, east and south directions.

Year(s)	1988 and 2013
Source	EDR® Historical Topographic Map Report
Property Description	An overhead power transmission line is indicated as crossing south-central portion of Property in the 1988 topographic map.
Surrounding Area Description	Increased commercial and residential development is depicted north, east and south directions. An overhead power transmission line is indicated as crossing south-central portion of Property and running east and west in the 1988 topographic map.

4.5.6 Street/City Directories

EDR® completed searches of business directories including city, cross-reference, and telephone directories for the Property and adjacent properties. The *EDR® City Directory Abstract,* including the respective addresses, dates, and sources, is provided in Appendix D. The Property consists of residential roads and undeveloped land, therefore, all addresses identified in the City Directory search are considered adjacent/surrounding properties.

No environmentally suspect businesses were identified in the area.

4.5.7 Local Government Agency Record Sources

APTIM made reasonable attempts to obtain and review local records and information within the scope and time constraints of the Phase I ESA; however, in some instances, records or information requested may not have been received from the source at the time of this Report's publication.

As set forth in ASTM Practice E1527-13, §8.1.4, records and information that are reasonably ascertainable means information that is publicly available, that is obtained from its source within reasonable time and costs constraints, and that is practically reviewable. Reasonable time and costs are further defined as information being provided (either for in-person review, electronic review, or photocopies) by the source within 20 calendar days of receiving a written, electronic mail, telephone, or in-person request (i.e., Freedom of Information Act [FOIA] request) at no more than a nominal cost intended to cover the source's cost of retrieving and duplicating the information.

Listings in **bold** identify an environmentally suspect characteristic or usage associated with the Property, which combined with additional information may be determined (at the discretion of the EP) to be associated with an REC in connection with the Property.

Building Permit Records	
Agency Name/Address/Number	Description of Records/Comments
EDR® Building Permit Report Sourced from: City of Austin Building Regulations Supporting documents provided in Appendix D.	APTIM obtained a copy of the EDR® Building Permit Report for the Property and surrounding properties. The report lists building permits obtained for the Property and surrounding properties from the year's 1977 to 2017. No records were identified as an environmental concern.

Property Tax Records and Maps/Assessor Department Records	
Agency Name/Address/Number	Description of Records/Comments
Travis County Appraisal District traviscad.org	No properties within or adjacent to the Property were identified as having an environmentally suspect characteristic or usage.

Zoning Records	
Agency Name/Address/Number	Description of Records/Comments
City of Austin Development Web Map http://www.austintexas.gov/GIS/DevelopmentWebMap/Viewer.aspx Supporting documents provided in Appendix E.	'Eleanor Connection': The Property is zoned Single Family (SF). 'Alternative 1': The Property is zoned SF and Public (P). 'Alternative 2': The Property is zoned SF and Planned Unit Development (PUD). 'Alternative 3': The Property is zoned SF and P.

In accordance with ASTM Practice E1527-13, §8.2.3 and §11.5, to enhance and supplement the standard environmental record sources, additional environmental record sources shall be checked when, in the judgment of the EP, such additional records are: 1) reasonably ascertainable; 2) sufficiently useful, accurate, and complete in light of the objective of the records review; and 3) generally obtained, pursuant to local good commercial and customary practice in initial ESAs in the type of commercial real estate transaction involved. APTIM obtained or reviewed the following additional environmental records:

City of Austin Environmental Violations Records	
Agency Name/Address/Number	Description of Records
City of Austin Code Department P.O. Box 1088 Austin, TX 78767 Supporting documents provided in Appendix E.	An environmental violations records request was submitted to the City of Austin for records of environmental violations on the Property. No environmental violations were reported for the Property.
City of Austin Public Health P.O. Box 1088 Austin, TX 78767 Supporting documents provided in Appendix E.	An environmental violations records request was submitted to the City of Austin for records of environmental violations on the Property. No environmental violations were reported for the Property.
City of Austin Water Utility 625 E. 10th Street Austin, TX 78701 Supporting documents provided in Appendix E.	An environmental violations records request was submitted to the City of Austin for records of environmental violations on the Property. No environmental violations were reported for the Property.
City of Austin Watershed Protection Department 505 Barton Springs Road Austin, TX 78704 Supporting documents provided in Appendix E.	An environmental violations records request was submitted to the City of Austin for records of environmental violations on the Property. No environmental violations were reported for the Property.

City of Austin Environmental Violations Records	
Agency Name/Address/Number	Description of Records
City of Austin Fire Department P.O. Box 1088 Austin, TX 78767 512-974-0149 pirtsfire@austintexas.gov Supporting documents provided in Appendix E.	An environmental violations records request was submitted to the City of Austin for records of environmental violations on the Property. No environmental violations were reported for the Property.

Texas Water Development Board (TWDB) Records	
Agency Name/Address/Number	Description of Records
Texas Water Development Board (TWDB) Drillers Reports Database http://www.twdb.texas.gov/groundwater/data/drillersdb.asp Supporting documents provided in Appendix E.	'Eleanor Connection': A well report search was performed for the Property and adjacent properties. No wells were identified on adjacent properties. 'Alternative 1': A well report search was performed for the Property and adjacent properties. Six (6) environmental soil borings were identified adjacent to the Property. Well Tracking numbers #442097, 442098, 442099, 422100, 442108 and 44209 were all drilled on January 17, 2017. 'Alternative 2': A well report search was performed for the Property and adjacent properties. One (1) monitoring well (well tracking number 198536), was installed on October 28, 2009, and five (5) environmental soil borings (well tracking numbers 447905, 447914, 447915,447907 and 447903) were drilled on April 18, 2017. 'Alternative 3': A well report search was performed for the Property and adjacent properties. No wells were identified on adjacent properties.

U.S. Environmental Protection Agency	
Agency Name/Address/Number	Description of Records/Comments
USEPA Region 3 https://www3.epa.gov/enviro/html/fii/myproperty/index.html	APTIM searched USEPA's facility database. No records for the Property were identified.

4.5.8 Other Records and Historical Sources

No other historical sources such as community organizations, historical societies, local libraries, newspaper archives, internet sites, miscellaneous maps, etc. were reasonably ascertainable and/or as determined by the EP, provided material information relative to RECs in connection with the Property. In accordance with ASTM Practice E1527-13, §8.3.2, the review of other records and historical sources is not a requirement.

4.5.9 Data Failure

Data failure occurs when all of the standard historical sources as set forth in ASTM Practice E1527-13, §8.3.1 through §8.3.2.2, that are reasonably ascertainable and likely to be useful have been reviewed by APTIM, yet all obvious uses of the Property from the present back to the Property's first developed use, or back to 1940, whichever is earlier, have not been identified or delineated.

APTIM reviewed standard historical sources as determined by ASTM that were reasonably ascertainable and likely to be useful.

It is the opinion of APTIM that the history of previous uses of the Property and surrounding areas have been identified, and the historical records in concert with the site reconnaissance and interviews have sufficiently evaluated the potential of the past uses to be associated with the Property.

5.0 SITE RECONNAISSANCE

Site Assessment(s)		
Date	Environmental Professional(s)	Company Name/Address/Number
October 25, 2017	Lindsey Luetge Michael Doolin	APTIM 1250 Capital Highway South Building 3, Suite 400 Austin, Texas 78746
Weather Conditions:	Sunny, 53 degrees ° F	
Ground Surface Conditions:	Exterior surfaces – concrete, asphalt, forested areas, vegetated hillsides and creek beds.	

Representative(s) Escorting the Site Assessor		
Name/Title	Company Name/Address/Number	Years Associated with Property
None	Not Applicable	Not Applicable

5.1 Methodology and Limiting Conditions

APTIM used the following methodology to observe the Property during the site reconnaissance:

- Confirmed the definition of the Property boundaries, if available and delineated;
- Traversed the outer Property boundary, if delineated and discernible;
- Traversed transects across the Property; and
- Traversed the periphery of all structures and features on the Property, if any.

As there were no structures on the Property, APTIM did not enter any structures or access areas that may have presented unique health and safety concerns.

5.2 General Site Setting

The Property and surrounding property characteristics have been discussed in detail within Section 2.0 of this Report.

5.3 Storage Tanks/Other Features

APTIM made the following observations during the site reconnaissance:

Storage Tanks/Features	
Issue	Comments
Existing USTs	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative : None identified. 'Alternative 3': None identified.
Former USTs	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Existing ASTs	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Former ASTs	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Other Features (i.e., oil/water separators, reservoirs, hydraulic lifts or vaults)	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.

NOTE: APTIM's assessment of ASTs and USTs included interviews and visually apparent observations including repairs to pavement, vent pipes, ancillary equipment, and fill ports as well as a review of reasonably ascertainable local and state records relating to current and historical operations and heating fuel sources.

5.4 Exterior Observations

APTIM made the following exterior observations during the site reconnaissance:

Exterior Observations	
Issue	Comments
Septic System	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.

Exterior Observations	
Issue	Comments
Hazardous Substances	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Hazardous Waste	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Petroleum Products	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': Multiple empty 5-gallon gasoline storage containers were observed near the northern portion of the Property. Additionally, natural gas pipeline markers were observed near the central and northern portions of the Property. Refer to Figure 2D for location.
Other Drums or Containers	'Eleanor Connection': None identified. 'Alternative 1': Two (2) empty 5-gallon plastic buckets were observed on top of and in the vicinity of a sanitary sewer manhole cover in association with a solar power facility under construction. Labels indicated the buckets contained 'Power Drive' Hydraulic Fluid. Refer to Figure 2B for location. 'Alternative 2': None identified. 'Alternative 3': None identified.
Solid Waste	'Eleanor Connection': Various dumping and municipal waste was observed on the eastern and western portions of the Property. Refer to Figure 2A for locations. 'Alternative 1': Various construction debris, municipal dumping, residential trash and multiple piles of railroad ties were located along the path, most notably at the northernmost boundary and directly adjacent to the solar panel field currently under construction (Refer to Figure 2A for locations). The railroad ties were located approximately 20 to 100 feet from the current railroad crossing the central portion of the Property and have historically been treated with creosote to preserve the wood over time. Despite the pressurization process associated with the application of creosote, the substance can possibly leach out after prolonged exposure to weathering events such as rain and wind into the surrounding soil. No distressed vegetation that would be indicative of environmental contamination was observed in the vicinity of the railroad ties. While this does present a REC to the property, it is considered a *de minimus* condition, as the possibility of adverse health effects or negative environmental impacts are low. Additionally, multiple piles of excess soil (fill) material were observed, primarily to the south of the railroad tracks. The majority of these piles measured approximately five (5) foot by four (4) foot area and were between two (2) and three (3) feet tall. The origin of the fill is unknown. A review of historical imagery indicates the land use has been agricultural or forested, however the soil piles are likely excess fill resulting from improvement of the dirt path along the central and southern portion of the Property. No distressed vegetation that would be indicative of environmental contamination was observed in the vicinity of the fill.

Exterior Observations	
Issue	Comments
Solid Waste	Therefore, this is considered a *de minimus* condition, as the small quantity of fill, if contaminated, is unlikely to contribute to the possibility of adverse health effects or negative environmental impacts. 'Alternative 2': Various dumping, municipal waste, railroad ties and a dilapidated railroad bridge were observed on the Property. The railroad ties and dilapidated bridge were located approximately 20 feet from the current railroad crossing the central portion of the Property and have historically been treated with creosote to preserve the wood over time. Despite the pressurization process associated with the application of creosote, the substance can possibly leach out after prolonged exposure to weathering events such as rain and wind into the surrounding soil. While this does present a REC to the property, it is considered a *de minimus* condition, as the possibility of adverse health effects or negative environmental impacts are low. Refer to Figure 2A for locations. 'Alternative 3': Various dumping, municipal waste, railroad ties and a dilapidated railroad bridge were observed on the Property. The railroad ties and dilapidated bridge were located approximately 20 to 100 feet from the current railroad crossing the central portion of the Property and have historically been treated with creosote to preserve the wood over time. Despite the pressurization process associated with the application of creosote, the substance can possibly leach out after prolonged exposure to weathering events such as rain and wind into the surrounding soil. While this does present a REC to the property, it is considered a *de minimus* condition, as the possibility of adverse health effects or negative environmental impacts are low. The municipal dumping was widespread for the first 800 feet of the Property, going south, including a large quantity of car tires, empty gasoline canisters, household trash and large household goods such as furniture and car parts. Refer to Figure 2A for locations.
Wells	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Wastewater	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': Sewer line identified on north end of Property running parallel (on the south side of Trail easement) from northwest to southeast, eventually crossing the Property as the Property turns south.
Storm Water	'Eleanor Connection': Storm water runoff would flow centrally into the Fort Branch Creek crossing the central portion of the Property. 'Alternative 1': Adjacent to the Property on the west is the drainage ditch for Tannehill Branch Creek. North of the railroad tracks, the drainage ditch is concrete, until a few hundred feet south of the railroad tracks, where it reverts to a natural creek bed. 'Alternative 2': The cul-de-sac associated with Brookswood drive had concrete stormwater drains built into the residential street. 'Alternative 3': None identified. Stormwater would flow into the adjacent Fort Branch Creek to the east and southeast.

<table>
<tr><th colspan="3">Exterior Observations</th></tr>
<tr><th>Issue</th><th colspan="2">Comments</th></tr>
<tr><td>Drains or Sumps</td><td colspan="2">‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
<tr><td>Odors</td><td colspan="2">‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
<tr><td>Polychlorinated Biphenyl (PCB)-Containing Equipment</td><td colspan="2"><table>
<tr><th>Type</th><th>Comments/Age/Ownership</th></tr>
<tr><td>Transformers/Electrical Equipment (fluid-containing)</td><td>‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
<tr><td>Hydraulic Equipment</td><td>‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
<tr><td>Other</td><td>‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
</table></td></tr>
<tr><td>Pools of Liquid</td><td colspan="2">‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
<tr><td>Pits, Ponds or Lagoons; the Property</td><td colspan="2">‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
<tr><td>Pits, Ponds or Lagoons; Adjoining Properties</td><td colspan="2">‘Eleanor Connection’: None identified.
‘Alternative 1’: None identified.
‘Alternative 2’: None identified.
‘Alternative 3’: None identified.</td></tr>
</table>

Exterior Observations	
Issue	Comments
Stained Soil or Pavement	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
Stressed Vegetation	'Eleanor Connection': None identified. 'Alternative 1': None identified. 'Alternative 2': None identified. 'Alternative 3': None identified.
General Exterior Housekeeping	Moderate to Good.

5.5 Interior Observations

APTIM did not enter any structures. No buildings were observed within the ROW.

6.0 INTERVIEWS

The objective of interviews is to obtain information indicative of or material to the identification of RECs. In accordance with ASTM Practice E1527-13, §10.7.2, if the environmental representative conducting the interview(s) asks questions of a person other than the User but does not receive answers or receives partial answers, the Phase I ESA shall not thereby be deemed incomplete, provided that: 1) the questions have been asked (or attempted to be asked) in person, by electronic mail, or by telephone, and written records have been kept of the person whom the questions were addressed and the response; or 2) the questions have been asked in writing sent by first class mail or by private, commercial carrier and no answer or incomplete answers have been obtained and at least one (1) follow-up (telephone or written request) was made again asking for responses.

The Property information, known history, and environmental information is obtained by the administration of the *Owner/Occupant Questionnaire*, derived in part from ASTM Designation E1528: *Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process*.

The Property is described as mostly undeveloped land with some residential developments in the area since at least 1940. A completed APTIM *User Questionnaire* and the March 24, 2017 Kingsbery Report was provided by the User and reviewed by APTIM. However, based on the information provided in the *User Questionnaire* and the results of the Kingsbery Report, it was deemed that no interviews with past/present owners, site managers, or occupants would be necessary. In addition, no interviews with adjacent land owners were deemed necessary based on the historical records review.

Review of both present and historical regulatory listings did not identify any additional environmental conditions, therefore, did not warrant additional research or interviews with state or local government officials.

7.0 EVALUATION

7.1 Findings and Opinions

It is understood that the City intends to conduct trail improvements to the Property. It is APTIM's understanding that no change in Property zoning or use are known or planned at this time. As such, APTIM has developed the following opinions relating to the known environmental conditions in connection with the Property.

7.1.1 On-Site Environmental Conditions and Opinions

On-Site Environmental Conditions and Opinions	
Location	Issue/Concern/Comments
General Property	APTIM's assessment activities have identified no on-site environmental conditions or information material to the identification of RECs. The Property, consisting of four (4) trails in the vicinity of Sara Drive and Prock Lane, where construction activities are to take place, is not included within any hazardous substance or petroleum product related environmental release databases or registries. Multiple railroad ties were located approximately 20 to 100 feet from the current railroads crossing the central portion of the 'Alternative 1', 'Alternative 2' and 'Alternative 3' Properties and have historically been treated with creosote to preserve the wood over time. Despite the pressurization process associated with the application of creosote, the substance can possibly leach out after prolonged exposure to weathering events such as rain and wind into the surrounding soil. While this could present a REC to the property, it is considered a *de minimus* condition, as the possibility of adverse health effects or negative environmental impacts are low. Multiple piles of excess soil (fill) material were observed, primarily to the south of the railroad tracks. The majority of these piles measured approximately five (5) foot by four (4) foot area and were between two (2) and three (3) feet tall. The origin of the fill is unknown. A review of historical imagery indicates the land use has been agricultural or forested, however the soil piles are likely excess fill resulting from improvement of the dirt path along the central and southern portion of the Property. Therefore, this is considered a *de minimus* condition, as the small quantity of fill, if contaminated, is unlikely to contribute to the possibility of adverse health effects or negative environmental impacts. A March 24, 2017 assessment report, the Kingsbery Report, was provided by the User which documented soil sampling along the easement of an out-of-service pipeline that crosses Alternative 1. The results of the report indicate that all laboratory analytical samples were non-detect and do not indicate soil impacts from the pipeline, specifically where it crosses Alternative 3. As the pipeline is not active, and soil sampling indicates no impact, the pipeline is considered a *de minimus* condition within the context of this report. It should be noted, however, that per the Kingsbery Report, the burial depth of the pipeline is shallow (less than four ft-bgs), and thus may cause a risk to construction activities. Given the above findings and the fact that only *de minimis* findings were observed during the site walk, this assessment has revealed no evidence of RECs in connection with the Property. Natural gas service lines are present and could be a potential source of exposure of hydrocarbon vapors to the construction workers.

7.1.2 Off-Site Environmental Conditions and Opinions

Off-Site Environmental Conditions and Opinions	
Location	Issue/Concern/Comments
General Surrounding Area	APTIM's assessment activities have identified no off-site environmental conditions or information material to the identification of RECs. Documented historic petroleum storage tanks and associated releases at adjacent properties were documented and either received closure from the State, or impact is confined to the groundwater at the specific location. While there is a possibility that hydrocarbon impacted soils might be detected on the former petroleum storage tank sites; however, there was no documented soil impact identified. The probability of encountering petroleum impacted soils on the Property or ROW is low to negligible. Therefore, it is the opinion of APTIM that the sites are indicative of HRECs.

7.2 Deviations and Data Gaps

7.2.1 Deviations and Opinions

Deviation from ASTM Practice E1527-13 included:

- A chain-of-title review was not conducted in accordance with ASTM Practice 1527-13, §6.2 as part of the Phase I ESA.
- A review of Property appraisal or valuation records to determine a valuation reduction for any known environmental conditions, if any, was not conducted in accordance with ASTM Practice E1527-13, §6.5 as part of the Phase I ESA.
- Interview with current and/or former owners, operators, property managers, facility managers or occupants of the Property were not conducted in accordance with ASTM Practice E1527-13, §10.7.2

It is APTIM's opinion that the above-mentioned deviations do not significantly affect the conclusions of this Report.

7.2.2 Data Gaps and Opinions

Data failure associated with the review of reasonably ascertainable standard historical sources to determine the previous uses of the Property from the present to the first obvious developed use, or back to 1940, whichever is earlier, is one type of data gap. Other types of data gaps may include the lack of or inability to complete or obtain required information such as a site reconnaissance, standard historical sources, or interviews.

A data gap is only significant if: 1) upon review of various information sources, inconsistent and incongruous information is revealed, and 2) in the opinion of the EP, the inconsistent/ incongruous information warrants or raises reasonable concern.

It is the determination of the EP that there are no significant data gaps in the context of this report.

8.0 CONCLUSIONS

In accordance with ASTM Practice E1527-13, §12.8, APTIM provides the following statement:

"We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of an area defined as Four Trail Routes: Vicinity of Prock Lane and Sara Drive, Austin, Texas 78721 (the Property). Any exceptions to, or deletions from, this practice are described in Section 7.2 of this Report"

8.1 Recognized Environmental Conditions

This assessment revealed no evidence of RECs in connection with the Property.

8.2 Controlled Recognized Environmental Conditions

This assessment has revealed no evidence of CRECs in connection with the Property.

8.3 Historical Recognized Environmental Conditions and Opinions

Based on the findings of this Report, it is APTIM's opinion that the Phase I ESA has revealed the following historical RECs in connection with the Property:

- Various businesses and operators in the vicinity of Jain Lane and Shady Lane, 1150 Jain Lane and 5600 Jain Lane were identified as part of a former 90 acre tank farm with multiple spills and releases that have been remediated. The Sites are located approximately cross-gradient from the Property and are maintained with institutional controls for contaminated groundwater. While contamination is present, a review of regulatory information indicates that it is confined to the groundwater of the associated properties, which ranges between 13 and 17 ft-bgs. In addition, the groundwater gradient generally trends toward the south away from or cross gradient to the Subject Property. Considering the depth to groundwater and gradient; and as the scope of work for La Loma Trail is limited to the first two (2) to three (3) feet of subsurface soil and there is no known clear exposure route to contaminants that exists, the contamination is considered to present a negligible risk to human health.

8.4 Vapor Encroachment Screening Opinions

This assessment has revealed no evidence of VECs in connection with the Property.

8.5 *De Minimis* Environmental Conditions and Opinions

Based on the findings of this Report, it is APTIM's opinion that the Phase I ESA has revealed the following *de minimis* conditions in connection with the Property.

- A large quantity of railroad ties and a former bridge were observed on Alternatives 1, 2 and '3 in relation to the development and improvement of the railroad crossing the central portions of the Properties. Historically, railroad ties and bridge materials have been treated with creosote to preserve the wood over time. Despite the pressurization process associated with the application of creosote, the substance can possibly leach out after prolonged exposure to weathering events such as rain and wind into the surrounding soil. While this does present a REC to the property, it is considered a *de minimus* condition, as the possibility of adverse health effects or negative environmental impacts are low.
- Multiple piles of excess soil (fill) material were observed, primarily to the south of the railroad tracks. The majority of these piles measured approximately five (5) foot by four (4) foot area and were between two (2) and three (3) feet tall. The origin of the fill is unknown. A review of historical imagery indicates the land use has been agricultural or forested, however the soil piles are likely excess fill resulting from improvement of the dirt path along the central and southern portion of the Property. Therefore, this is considered a *de minimus* condition, as the small quantity of fill, if contaminated, is unlikely to contribute to the possibility of adverse health effects or negative environmental impacts.
- Miscellaneous solid waste was observed on all Properties during site reconnaissance. Materials included municipal waste, automobile parts, tires, furniture and other various dumping.
- An out-of-service pipeline currently owned by Sunoco running east and west crosses Alternative 1 and Alternative 3 just north of the railroad tracks. Per the March 24, 2017 Kingsbery Report, the easement in the area of Alternative 3 was sampled and the results indicate that all laboratory analytical samples were non-detect and do not indicate soil impacts from the pipeline. For this reason, the pipeline is considered a *de minimus* condition within the context of this report. It should be noted however, that per the Kingsbery report, the burial depth in the area of Alternative 3 is shallow (less than 4 ft-bgs), and may pose a risk to construction activities.

9.0 NON-SCOPE/ADDITIONAL SERVICES/OTHER ENVIRONMENTAL CONSIDERATIONS

No additional services beyond the ASTM Practice E1527-13 standard scope of services was requested or completed as part of the Phase I ESA.

10.0 REFERENCES

Reports, documents, and materials (i.e., previous environmental reports; environmental database records; aerial photographs; city directories; fire insurance maps; topographic maps; historical maps; federal, state, and local agencies of government; and interviews) pertinent to the Phase I ESA have been individually identified and referenced within respective sections of this Report.

ASTM Designation E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM International, West Conshohocken, PA. November 2005, www.astm.org.

ASTM Designation E2600-10, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, ASTM International, West Conshohocken, PA. June 2010, www.astm.org.

Buonicore, A. J., *A Smaller Intrusion*, Pollution Engineering, pp. 26-31, May 2009.

TECHNICAL REPORT

Evaluation of Environmental Constraints and Project Alternatives
City of Austin La Loma Trail

December 2017

HICKS & COMPANY

ENVIRONMENTAL
ARCHEOLOGICAL
AND PLANNING
CONSULTANTS

TECHNICAL REPORT

EVALUATION OF ENVIRONMENTAL CONSTRAINTS AND PROJECT ALTERNATIVES

LA LOMA TRAIL
AUSTIN, TEXAS

Prepared for:

City of Austin
Public Works Department
505 Barton Springs Road
Austin, Texas 78704

Prepared by:

Hicks & Company
1504 West Fifth Street
Austin, Texas 78703

and

APTIM
Environmental Consulting
1250 Capital of Texas Highway South
Building 3, Suite 400
Austin, TX 78746

December 2017

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1.0 Introduction

This Technical Report documents the findings of an environmental constraints evaluation conducted for the proposed La Loma Trail including one primary segment and an additional segment involving four alternatives (Alternatives 1, 1A, 2, and 3). The project is located in east Austin, Travis County, Texas (**Attachment A, Figure 1**).

The environmental constraints evaluation includes: 1) identification of the occurrence of any waters of the U.S. (WOTUS) including wetlands, potentially regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act; 2) investigation of the potential occurrence of federally and state-listed endangered species; 3) investigation of the potential for impacts to any archeological resources; and 4) evaluation and comparison of alternative trail segment impacts. This report provides a description of the existing conditions at the project site, including the presence of any critical environmental features as defined by the City of Austin (COA); results of an evaluation to delineate waters of the U.S., including wetlands, subject to regulation by the USACE; and results of endangered species and archeological resource investigations.

2.0 Project Description

This project has been identified by the City of Austin (COA) as:

La Loma Trail Phase 1, CLMP 150
2014 Environmental Services Rotation List
Ref # DO 6100 17092716801-1

The project involves the design and construction of a concrete, 12-foot-wide, handicap-accessible hike and bike trail in east Austin, Travis County, Texas. The primary trail segment connects Eleanor Street with Lott Ave after crossing Fort Branch Creek (**Attachment A**, **Figure 1**). This trail connection is approximately 436 feet (0.08 mile) in length. An additional trail segment will involve the selection and subsequent construction of Alternative 1, 2, or 3. Each of these alternatives would include a crossing over or under existing railroad tracks to allow safe, unimpeded pedestrian or bicycle travel to and from the Eastside Memorial Early College High School (Eastside Memorial High School), while also allowing for a connection with the existing Southern Walnut Creek Trail within the East Boggy Creek Greenbelt, that runs along the north bank of Boggy Creek. Total length of the proposed new trails would vary from 898 feet [Eleanor St Connect (436 feet) + Alternative 2 (462 feet)] to 2,590 feet (Eleanor St Connect (436 ft) + Alternative 1A (2,154 feet)] depending on the alternative selected. The disturbance width of the trail would be approximately 22 feet, including the 12-foot concrete trail and a 5-foot construction zone along each side of the trail.

The proposed trail would address the need to connect neighborhoods north of the existing railroad tracks to the Eastside Memorial High School and Govalle Neighborhood Park located south of the railroad tracks, as well as provide enhanced access for single-family homes and apartment complexes within the immediate areas.

3.0 Description of Alternatives

3.1 No Action

The No Action Alternative maintains the existing status quo without any direct or indirect actions to improve any part of existing pathways or trails or provide a safe connection between neighborhoods north of the existing railroad tracks to Eastside Memorial High School and Govalle Neighborhood Park located south of the railroad tracks. There are existing paved and unpaved trail segments within the project area and along Boggy Creek including the Southern Walnut Creek Trail that can accommodate pedestrian and bicycle traffic; however, these segments are not connected to any contiguous trail system serving the surrounding communities and there is presently no safe pedestrian or bicycle crossing at the railroad tracks. Under the No Action Alternative, these disconnected trail segments would continue to provide limited utility to pedestrians and cyclists and no measures would be implemented to improve accessibility to the city facilities or provide increased pedestrian and bicycle safety.

3.2 Evaluated Build Alternatives

The preferred trail segment currently involves construction of a concrete, 12-foot-wide, handicap-accessible bike lane/trail that would extent west from Eleanor Street, crossing Fort Branch Creek to Lott Avenue, a distance of about 436 feet (0.08 mile) (**Attachment A, Figure 1**). This preferred trail segment lies between residential properties (**Attachment B, Photos 1 and 2**).

An additional trail segment will be selected among four alternatives: Alternative 1A, Alternative 1B, Alternative 2, and Alternative 3 (**Attachment A, Figure 1**).

Alternative 1 (**Attachment B, Photo 3**) runs northwest from its intersection with the existing Southern Walnut Creek Trail to the intersection of Sara Drive and Prock Lane and has two alternative railroad crossing locations. Alternative 1A, approximately 2,154 feet (0.41 mile) in length, includes a potential railroad crossing near and/or adjacent to a concrete-lined channel that conveys flow from Tannehill Branch Creek (**Attachment B, Photo 4**). Alternative 1B, approximately 2,125 feet (0.40 mile) in length, varies slightly from Alternative 1 due to an easterly alignment shift at the railroad crossing away from the concrete-lined channel (**Attachment B, Photo 5**). Alternative 2 provides a short connection (approximately 462 feet [0.09 mile]) from Brookswood Avenue to Jain Lane by including an at-grade railroad crossing (**Attachment B, Photos 6 and 7**). Alternative 3 provides a trail connecting the eastern terminus of Prock Lane with the Southern Walnut Creek Trail to the southeast, a distance of approximately 1,799 feet (0.34 mile) (**Attachment B, Photos 8 and 9**).

4.0 Description of the Affected Environment

This section contains current baseline descriptions of the various elements of the affected project environment including hydrology, vegetation, wildlife, and other environmental features. Information used in this section was gathered from existing public databases and on-site field surveys and evaluations.

4.1 Physiography

This section addresses regional and site-specific topography, geology, soils, drainage patterns, and groundwater. In assessing the geologic conditions of the site, information was gained from previous geologic studies conducted in the area including reports, aerial photography, and geologic and topographic maps. In addition, a pedestrian survey of the study area was conducted on November 1, 2017, in order to locate and identify any environmentally sensitive features that may be present within the proposed construction areas.

4.1.1. Topography

The project area is situated within a transitional zone of three distinct physiographic regions: the Edwards Plateau, the Blackland Prairies, and the Balcones fault zone. The Balcones fault zone separates the Edwards Plateau, which lies west of the Balcones fault zone, from the Blackland Prairies, which begins at the eastern boundary of the Balcones fault zone. These regions are delineated, for the most part, on the basis of topographic expression. However, each region contains characteristic vegetation and soils due primarily to specific geologic formations that outcrop in each physiographic region.

The project area is located east of the Balcones fault zone along the western edge of the Blackland Prairies. Elevations within the project area range from approximately 456 to 470 feet above mean sea level (msl) for the Eleanor Street Connect; 440-456 feet msl for Alternative 1; 448 to456 feet msl for Alternative 2; and 438-456 feet msl for Alternative 3.

4.1.2 Geology

The entirety of Alternatives 1A and 1B are within an area mapped as Alluvium (Qal) (**Attachment A, Figure 2**). Alternative 2 and Alternative 3 are underlain by the Lower Colorado River formation (Qlcr) and Alluvium, while the Eleanor Street trail segment overlays the Alluvium and the Taylor formation (Kta). The Alluvium and Lower Colorado River formations are relatively recent deposits, dating to the Quaternary period. The Taylor formation is an older geological deposit, dating to the Cretaceous period (USGS 2017).

4.1.3 Soils

According to the United States Department of Agriculture's (USDA's) Web Soil Survey for Travis County accessed on November 30, 2017, five soil series are mapped as occurring within the vicinity of the alternative trail segments (**Attachment A, Figure 3**). These series include: Bergstrom soils and urban land, 0 to 2 percent slopes; Heaton soils and urban land, 0 to 2 percent slopes; Houston Black soils and urban land, 0 to 8 percent slopes; Tinn clay, 0 to 1 percent slopes, frequently flooded; and urban land and Ferris soils, 10 to 15 percent slopes. Bergstrom soils consist of very deep, well drained, moderately permeable soils that formed in calcareous silty alluvial sediments located on nearly level to very gently sloping bottomlands and terraces of major streams. The Ferris series consists of well drained, very slowly permeable soils that formed in clayey residuum weathered from calcareous mudstone. These soils occur on the backslopes of ridges on dissected plains. Heaton soils consist of well drained, moderately permeable soils that formed in loamy alluvium and eolian sediments located on gently sloping to undulating stream terraces. Formed in alkaline clays and chalk of the Blackland Prairies, the Houston series consists of moderately well drained, slowly permeable soils. Located on floodplains of dissected plains that drain the Blackland Prairies, the Tinn series consists of very deep

permeable soils that formed in calcareous clayey alluvium. Urban land soils have been disturbed and/or mixed by human activity to the point where they have lost their defining characteristics.

Among the five soils occurring within the vicinity of the trail segments, only two (Houston Black/Urban land and Tinn clay soils) actually occur within the trail footprint areas. **Table 1** below notes the percentage of coverage of these soils.

Table 1 Percentage of Soil Series Underlying the Preferred and Alternative Trail Segments

	Bergstrom soils/urban land	Heaton soils	Houston Black/urban land	Tinn clay soils	Urban land and Ferris soils
Preferred ELEANOR ST. Segment	0%	0%	44.27%	55.73%	0%
ALT 1A	0%	0%	41.72%	58.28%	0%
ALT 1B	0%	0%	56.56%	43.44%	0%
ALT 2	0%	0%	100%	0%	0%
ALT 3	0%	0%	81.17%	18.83%	0%

4.1.4 Groundwater

The project area lies over the down-dip of the Edwards Aquifer which is found at depths ranging from 545 to about 900 feet below land surface (Baker et al. 1986). Maximum thickness of the Trinity Aquifer, which lies below the Edwards Aquifer, is approximately 1,000 feet. The project site is outside of the Edwards Aquifer Recharge and Transition Zones. The streambeds of Boggy, Tannehill Branch, and Fort Branch Creeks may help recharge the water table in upper most permeable soil layers within or near the associated floodplains.

4.1.5 Springs

Springs and seeps are commonly associated with faults, fractures and/or solution features. Springs and seeps are commonly found along drainage paths that have dissected the underlying strata and have exposed the faults, fractures and/or solution features. Flow is usually seasonally related to rainfall and ranges from very low (seeps) to high. They can also be intermittent along slopes of hills or drainages under saturated soil conditions within sand, gravel, or other permeable strata. No springs and/or seeps have been documented within the general area of the trail corridors (Brune 2002; COA 2017a) and none were observed within the corridors during the November 2017 field evaluations.

4.1.6 Drainage Patterns

Boggy Creek is shown by the U.S. Geological Survey (USGS) 7.5 minute Quadrangle Map (USGS Austin East Quad) as a tributary of the Colorado River. The Tannehill Branch Creek and Fort Branch Creek watersheds are classified by the COA Land Development Code § 25-8-2 as suburban watersheds that drain into Boggy Creek. The three creeks drain a combined watershed area of approximately 13 square miles (COA 2017b). Pre-project drainage patterns including the existing channels of Boggy, Tannehill Branch and Fort Branch Creeks and other drainages found on the COA GIS Database are portrayed on **Attachment A, Figure 4**. The COA has developed an Environmental Integrity Index (EII) for 49 watersheds within the Austin municipal limits and extraterritorial

jurisdiction (ETJ). The total watershed score is an average of the scores for six categories: Water Quality, Sediment, Contact Recreation, Non-contact Recreation, Physical Integrity, and Aquatic Life. The 2013 EII scores (based on a scale of 0-100) for Fort Branch Creek was 50 (fair); Tannehill Branch Creek, 61(fair); and Boggy Creek, 59 (Fair) (COA 2017a). According to Clamann et al. (2015), these creeks exhibit the following historic (2000-2012) environmental integrity score rankings (lowest to highest quality) among the 49 watersheds: Fort Branch (5); Boggy (12); and Tannehill Branch (20).

4.2 Vegetation

This section provides a regional overview of the types of vegetation typically found in this portion of Central Texas, including a discussion of the major plant communities and important species and habitats that occur within this area. A project-area specific description of the actual vegetation follows the regional overview, and includes a discussion of sensitive or otherwise important species or community types.

4.2.1 Regional Overview

The project area occurs along the western boundary of the Texas Blackland Prairies vegetation region as originally described by Gould (1975) and Hatch et al. (1990) and later modified by the U.S. Environmental Protection Agency (USEPA) (2003) and Griffith et al. (2004).

The Texas Blackland Prairies vegetational area results from deep, clay soils occurring on nearly level to gently rolling topography. This area covers approximately 12.6 million acres (Hatch et al. 1990) and extends from Grayson and Red River Counties in northeast Texas to Bexar County in the south-central region of the state, where it merges with the brushland of the South Texas Plains. Annual precipitation averages 30 inches on the west to 45 inches on the east, and elevations range from 250 to 700 feet above sea level. Blackland soils that occur in the region are so named due to the uniform dark-colored calcareous clay component. These soils are interspersed with gray acid sandy loams. This highly fertile region has been widely used for cultivated agriculture, although use of the land for ranching and recreation has become increasingly popular (Gould 1975; Schuster and Hatch 1990).

Approximately 98 percent of the Blackland Prairies has been cultivated, with very few areas of native vegetation remaining (Hatch et al. 1990). Isolated, dense groves of deciduous trees and shrubs, including hackberry (*Celtis* spp.), eastern red cedar (*Juniperus virginiana*), oak (*Quercus* spp.), and elm (*Ulmus* spp.) are present on hills and ridges, with pecan (*Carya illinoinensis*), elm, and eastern cottonwood (*Populus deltoides*) occurring in bottomlands. Non-native species such as coastal bermudagrass (*Cynodon dactylon*) and King Ranch bluestem (*Bothriochloa ischaemum*) have invaded substantially and are dominant grasses in many locations as a consequence of increased grazing pressure, cultivation, and human disturbance. Many sites have also seen the spread of various woody species, including mesquite (*Prosopis glandulosa*), huisache (*Vachellia farnesiana*), elm, oak, and hackberry.

Wooded areas along riparian strips in the Blackland Prairies include such species as black willow (*Salix nigra*), oaks, pecan, osage orange (*Maclura pomifera*), elms, and eastern cottonwood (Hatch et al. 1990). Woody invasive species that are commonly found in the vegetational area include post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), and cedar elm (*Ulmus crassifolia*) in the north, with honey mesquite being a common invader in the southern portion of the region (Gould 1975).

Previous land use practices involving intensive grazing, cultivation, and real estate speculation with associated abandonment of any ongoing vegetation management have resulted in a vegetation community dominated mostly by scrub mesquite, cedar elm, and juniper with an understory of mixed native and non-native grasses. Common species occurring within the river and creek drainages include pecan, elm, hackberry, cottonwood, and sycamore (*Platanus occidentalis*). Invasion by mesquite, false willow (*Baccharis* spp.) and particularly non-native large leaf privet species (*Ligustrum lucidum, L. japonicum, and L. vulgare*) as well as small leaf privet species (*Ligustrum quihoui* and *L. sinense*) is also evident. Characteristic understory shrubs and vines include saw greenbriar (*Smilax bona-nox*), yaupon, (*Ilex vomitoria*), bumelia (*Bumelia lanuginosa*), grape (*Vitis* spp.) poison ivy (*Toxicodendron radicans*) and poison oak (*Toxicodendron pubescens*).

4.2.2 Vegetation within the Trail Corridors

A field evaluation of existing vegetation within the preferred segment and alternative segment corridors was conducted on November 1, 2017. Plant species observed during these evaluations are listed in **Table 2**, below.

Table 2 Plants Observed During Field Evaluation

Trees	Shrubs/Vines	Grasses/Forbs/Herbaceous
Cedar elm *Ulmus crassifolia*	Dewberry *Rubus trivialis*	Bermudagrass *Cynodon dactylon*
Live oak *Quercus virginiana*	Poison ivy *Toxicodendron radicans*	Johnsongrass *Sorghum halepense*
Green ash *Fraxinus pennsylvanica*	Poison oak *Toxicodendron pubescens*	St. Augustine grass *Stenotaphrum secundatum*
Huisache *Vachellia farnesiana*	Greenbriar *Smilax bona-nox*	Prostrate lawnflower *Calyptocarpus vialis*
Hackberry *Celtis laevigata*	Mustang grape *Vitis mustangensis*	Inland seaoats *Chasmanthium latifolium*
Texas oak *Quercus buckleyi*	Privet *Ligustrum sinense*	Switchgrass *Panicum virgatum*
Chinaberry *Melia azedarach*	Wax leaf ligustrum *Ligustrum japonicum*	Fall aster *Symphyotrichum oblongifolium*
Russian mulberry *Morus alba*		Giant ragweed *Ambrosia trifida*
American elm *Ulmus americana*		Prairie coneflower *Ratibida columnifera*
Box elder *Acer negundo*		Goldenrod *Solidago* spp.
Eastern red cedar *Juniperus virginiana*		Giant Cane *Arundo donax*
Mesquite *Prosopis glandulosa*		Golden bamboo *Phyllostachys aurea*
Soapberry *Sapindus saponaria*		
Pecan *Carya illinoinensis*		
Cottonwood *Populus deltoides*		
Redbud *Cercis canadensis* var. *texensis*		
Dogwood *Cornus florida*		
Bumelia *Bumelia lanuginosa*		
Osage orange *Maclura pomifera*		

The project lies within an area that has been developed as urban residential with associated schools and other institutional facilities. Vegetation communities include a mosaic or mixture of woods, forests, and parks associated with the creek corridors and mixed grasses and forbs, shrubs and trees associated with landscaped yards of residential homes and some greenbelts along the margin of the creek floodplain. Riparian trees and

shrubs tend to be more extensive and diverse along Alternative 3. Stem diameter of some mature and old growth trees exceed 30 inches, while overall height exceeds 50 feet. Vegetation within the selected segment connecting Eleanor Street with Lott Avenue as well as the other Alternatives 1, 2, and 3 has been heavily influenced by previous land use practices and heavy human disturbance. A high volume of household trash and other debris was evident along portions of Alternative 3. Portions of the trail corridor were also being used by homeless transients.

4.2.3 Parklands and Greenbelt

Portions of Alternatives 1 and 3 lie within the East Boggy Creek Greenbelt (**Attachment A, Figure 4**). This tract is approximately 70 acres in size, and lies between Jain Lane and Ed Bluestein (U.S. 183), with an address listed as 5609 Stuart Circle, Austin, TX 78721. It connects to the Govalle Neighborhood Park. Boggy Creek runs through the southern portion of this greenbelt for a distance of approximately 3,492 feet (0.6 mile). The Southern Walnut Creek Trail also runs along the southern portion of this greenbelt for approximately 4,270 feet (0.8 mile). The greenbelt exhibits mature upland woods vegetation and a mature/old growth riparian woods/forest within the floodplains associated with Tannehill Branch, Fort Branch, and Boggy Creeks. Upon completion of the proposed project, the hike and bike trail under either Alternatives 1 or 3 would connect with the Southern Walnut Creek Trail, thus enlarging the existing trail system.

4.2.4 Sensitive Areas Including Protected Riparian Areas

In order to address development encroachment into sensitive areas within the floodplains, the COA Environmental Criteria Manual (ECM) Section 1.7.0, establishes guidelines for modifications to the 100-year floodplain. Development must be in accordance with 25-8-364 of the LDC, and 25-8-261(Critical Water Quality Zone Development). According to COA ECM § 1.7.3 (C), "Development within the Critical Water Quality Zone shall be designed to protect the natural hydrologic function, long-term channel stability, and ecological function of the floodplain. These modifications do not need to comply with the restoration or mitigation ratios outlined in Sections 1.7.5 and 1.7.6. Any disturbed areas will need to comply with the vegetative stabilization requirements of 1.4.0 (Erosion and Sedimentation Control Criteria)."

"Protected Riparian Areas" as defined by the COA ECM Glossary include: 1) floodplain woodlands; 2) wetlands (other than springs) as defined in Section 25-8-1 of the Land Development Code; and 3) permanent natural pools in perennial or intermittent waterways. Floodplain woodlands are further described as being associated with a waterway segment which contributes to the natural and traditional character of the waterway, as follows: 1) has a minimum canopy cover of ½ acre; 2) voids in the canopy cover comprise less than 30 percent of the total woodland area; and 3) at least 50 percent of all trees with a dbh of 8 inches or greater must include three or more of the following species: pecan, American elm (*Ulmus americana*), Arizona walnut (*Juglans major*), bald cypress (*Taxodium distichum*), black walnut (*Juglans nigra*), bur oak (*Quercus macrocarpa*), cedar elm, little walnut , green ash (*Fraxinus pennsylvanica*), Texas sugarberry (*Celtis laevigata*), sycamore, eastern cottonwood, and black willow. The field investigation conducted on November 1, 2017, indicated the criteria for Protected Riparian Areas could be met within portions of Alternative 3. Confirmation of this category would require more-detailed vegetation surveys.

4.2.5 Wildlife Resources

A high diversity of fish and wildlife is known to exist in central Texas and Travis County. According to county records maintained by Texas A&M University (2007), amphibians and reptiles are represented by 5 species of

salamanders, 21 species of frogs and toads, 8 species of turtles, 11 different kinds of skinks and lizards, 27 different snakes, and the American alligator.

Davis and Schmidly (2008) documented at least 60 species of mammals in this region. Commonly occurring mammal species that would be expected in the project area include but are not limited to: the Virginia opossum (*Didelphis virginiana*), fox squirrel (*Sciurus niger*), hispid cotton rat (*Sigmodon hispidus*), eastern cottontail (*Sylvilagus floridanus*), and raccoon (*Procyon lotor*).

Common reptile species include the green anole (*Anolis carolinensis*), Mediterranean gecko (*Hemidactylus turcicus*), checkered garter snake (*Thamnophis marcianus*), Texas rat snake (*Elaphe obsoleta lindheimerii*), and water snake (*Nerodia* spp.).

Commonly occurring bird species include Northern Mockingbird (*Mimus polyglottos*), Northern Cardinal (*Cardinalis cardinalis*), Blue Jay (*Cyanocitta cristata*), House Sparrow (*Passer domesticus*), House Finch (*Carpodacus mexicanus*), White-winged Dove (*Zenaida asiatica*), Mourning Dove (*Zenaida macroura*), Common Grackle (*Quiscalus quiscula*), and Great-tailed Grackle (*Quiscalus mexicanus*).

4.3 Utilities (water and Wastewater) Element

This project does not include the construction or augmentation of any water or wastewater features and does not include any wastewater drain fields or wastewater irrigation areas. The preferred build segment connecting Eleanor Street with Lott Avenue would not cross any known water or waste water lines (**Table 6**). Alternative 1B and Alternative 2 would each intersect one water line crossing. No wastewater disposal systems or on-site collection and treatment systems are included with this project. A comparison of the number of water and wastewater line crossings by each segment alternative is provided in **Table 6**.

4.4 Critical Environmental Feature Elements

Pursuant to the COA ECM Section 1.10.3, CEFs include such features as springs, bluffs, canyon rimrock, caves, sinkholes, other recharge features, and wetlands. No construction is allowed within a 150-foot buffer around a CEF (with exceptions). The natural vegetative cover is to be retained and wastewater disposal and irrigation are prohibited. Variances may be granted but only after determining that the development proposed with the variance meets the objective of the requirement for which the variance is requested (ECM Section 1.10.4).

4.4.1 Springs

Springs have been previously described in **Section 4.1.5**. No springs and/or seeps have been documented within the project area (Brune 2002; COA 2017a) and none were observed during field evaluations conducted in November 2017.

4.4.2 Bluffs

A bluff, as defined by the COA LDC and ECM Section 1.10.3, is an abrupt vertical change in topography of more than 40 feet with an average slope of 4 feet of rise for 1 foot of horizontal travel or greater. No bluffs will be impacted by the project.

4.4.3 Canyon Rim Rocks

Canyon rim rock is defined as a horizontal outcrop and vertical face of hard limestone paralleling the side of a canyon or surrounding a canyon head. Rim rock is further delimited by the presence of a steep rock substrate (greater than 60 percent slope) which has a vertical extent of a least four feet, and which has a recognizable horizontal continuity of at least 50 feet. These features are common on the west side of Austin especially along the major drainage paths that have dissected the underlying strata. No canyon rim rock will be impacted by the proposed trail.

4.4.4 Point Recharge Features

Point recharge features involve several types of natural openings and topographic depressions formed by the dissolution of limestone that lies over the Edwards Aquifer recharge zone and may transmit a significant amount of surface water into the subsurface. Recharge features could include caves, fractures, faults, joints, sinkholes, and other natural features. Significance is determined by following evaluation protocol in ECM Section 1.10.3(C). The standard setback is a 150- to 300-foot radius around the surveyed delineation of the feature measured from the first break in the slope. No aquifer recharge features including sinkholes, faults, solution cavities, enlarged fractures or any other voids were observed on or immediately adjacent to the project alignment alternatives.

Abandoned and unused water wells, if not properly protected, can serve as an avenue for recharge to underlying aquifers and therefore become a CEF. No documented active or abandoned water wells were observed on or immediately adjacent to the project alignment alternatives.

4.4.5 Wetlands

Wetlands are defined by the COA ECM Section 1.10.3(E) as lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. An area shall be classified as a wetland if it meets the U.S. Army Corps of Engineers (USACE) three-parameter technical criteria associated with soils, hydrology, and vegetation as outlined in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) (Section D – Routine Determinations).

The trail alignments were investigated for the presence of waters of the U.S. including wetlands in November, 2017 following the protocol outlined in the *Field Guide for Wetland Delineation – 1987 Corps of Engineers Manual* (Wetland Training Institute, Inc., 1991) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region.*

According to the COA ECM 1.10.3(E) wetland hydrology and hydric soils can be assumed if an area under examination is dominated (over 50 percent vegetative cover) by facultative-wet and/or obligate plant species as listed in the USACE/USFWS/USDA National List, Region 6, and an abrupt boundary is evident between the facultative/wet plant communities and the upland plant communities. If the area is dominated by facultative plant species, the hydric soil and hydrology parameters cannot be assumed; therefore, soil profile evaluation pits are also required for the wetland determination.

No wetlands subject to regulation by the USACE or fitting the definition applied by the COA would be impacted by any of the preferred trail segments. However, the preferred Eleanor Street Connection, and Alternatives 1A and 1B cross Waters of the U.S. (WOTUS) (Fort Branch and Tannehill Branch Creeks, respectively) that are subject to regulation by the USACE under Section 404 of the Clean Water Act (**Attachment A, Figure 4**).

Depending on the level of impacts to these streams by trail development, Section 404 permitting may be required.

4.5 Critical Water Quality Zones

The Eleanor Street Connection and all of the trail alignment alternatives are partially located within the critical water quality zones (CWQZ) of Boggy, Fort Branch, and Tannehill Branch Creeks (**Attachment A, Figure 4**). Development limitations for CWQZs are described in ECM Section 1.5.3 (B). Hard-surfaced trails are allowed within the CWQZ provided conditions established in ECM Section 1.5.3(B) are met. Project alignment alternatives that intersect the Critical Water Quality Zone are shown on **Attachment A, Figure 4**. The footprint area of each of the trail segments within the CWQZ is listed in **Table 6**.

5.0 Additional Land Development Code Requirements

5.1 Spoil Disposal Locations

No spoil disposal locations will be required for this project.

5.2 Integrated Pest Management Plan

The COA often includes the removal of invasive plant species for trail projects along creeks. Both the Watershed Protection Department and Parks and Recreation Department have developed approved Integrated Pest Management Plans that would guide the control of noxious species.

5.3 Methods to Provide Overland Flow and Need for Enclosed Storm Sewers

The project does not include any measures to change or alter current overland flow. No enclosed storm sewers are included in this project.

5.4 Pollution Abatement Plan

Because the project does not lie over the Edwards Aquifer Recharge or Transition Zones, it is not subject to the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer protection regulations. Therefore, an Edwards Aquifer Water Pollution Abatement Plan (WPAP) is not required. However, for projects impacting more than one acre of land, a Texas Pollutant Discharge Elimination System (TPDES) permit involving a storm water pollution prevention plan (see **Section 6.2** below) is required.

5.5 Potential Variances to the Land Development Code

Since no critical environmental features were identified that would be impacted by the proposed alignments, no variances to the Land Development Code would be needed for the proposed project.

6.0 Other State or Federal Permitting Requirements

6.1 Permitting Requirements Pursuant to Section 404 of the Clean Water Act

Under Section 404, Subsection 330.5(a) (21) of the Clean Water Act, activities that involve discharges of dredged or fill materials into waters of the U.S. (WOTUS) including wetlands are subject to permitting under the jurisdiction of the USACE. Tannehill Branch Creek, Fort Branch Creek, and Boggy Creek are jurisdictional waterways according to USACE criteria, by exhibiting a floodplain, bed and bank, and a defined channel with ordinary high water marks (OHWM). Tributaries to these streams may also be jurisdictional. A summary of trail segment crossings into waters of the U.S. is shown in **Table 3** below, with locations shown on **Attachment A**, **Figure 4)**.

Table 3 Waters of the U.S. Potentially Impacted by the Proposed Trail Alternatives (see Figure 4)

Crossing	Type of Waters of the U.S.
Stream Crossing 1	Fort Branch Creek
Stream Crossing 2	Tributary to Tannehill Branch Creek
Stream Crossing 3	Tributary to Tannehill Branch Creek

The proposed design plan for the trail crossings at these stream locations has not been developed; consequently, the extent of impacts and associated USACE permitting requirements is not known. If the crossings involve pedestrian bridges that completely span the streambeds and banks, then no impacts and resulting permitting requirements would be expected.

6.2 National Pollutant Discharge Elimination System Permit

The TCEQ has primary responsibility for implementing the TPDES program. Under the existing Construction General Permit TXR 150000 issued by the TCEQ February 19, 2013 (TCEQ 2017), construction activities from which runoff goes into or adjacent to any surface water in the state are regulated according to the area of land disturbed. These categories are described below.

- Large construction activities which disturb 5 or more acres, or are part of a larger common plan of development that will disturb 5 or more acres, are regulated under this general permit.
- Small construction activities which disturb at least 1 but less than 5 acres, or are part of a larger common plan of development that will disturb at least 1 but less than 5 acres, are also regulated under this general permit.
- Construction activities that disturb less than 1 acre, and are not part of a larger common plan of development that would disturb 1 or more acres, are not required to obtain coverage under this general permit.

As this project may disturb between 0.45 and 1.3 acres, depending on the trail alternative selected, the project will require compliance with TPDES Permit Number TXR150000, if the disturbance footprint is one acre or more. Compliance with this permit includes the development of a storm water pollution prevention plan and a signed copy of the construction site notice must be posted and available for viewing by the general public.

6.3 Compliance with the Antiquities Code of Texas (ACT)

This project falls under the purview of the ACT because it may involve archeological sites located "on land owned or controlled by the State of Texas or any city, county, or local municipality thereof." Because the project will involve lands belonging to or controlled by the COA, a local municipality, impacts to any potentially occurring archeological resources are monitored by the Texas Historical Commission (THC) under provisions of the ACT. The ACT allows for all such properties to be considered as State Antiquities Landmarks (SAL) and requires that each be examined in terms of their possible "significance." Significance standards are clearly outlined under Chapter 26 of the THC's Rules of Practice and Procedure for ACT. If any of the trail segment stream crossings involve impacts to WOTUS requiring a USACE Nationwide Permit 14 for Linear Transportation Projects (**Section 6.1**), Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, will apply which requires the Federal government by its action to take cultural resources into account that could be affected by those actions (in this instance permit issuance).

According to the THC's Online Sites Atlas accessed on December 12, 2017, there are three archeological sites (41TV225, 41TV383, and 41TV2506) and three cemeteries (Bethany, Plummer, and Travis County International) that contain burials dating to the historic period, located within one kilometer (0.62 mile) of at least one of the proposed alternatives. All of these resources are far enough away that construction of any of the alternatives would not have an adverse effect on these properties. A number of archeological surveys have been conducted within one kilometer of the alignments. Two of these surveys (one conducted by Environmental Communications Corporation in 2011 and one by Prewitt & Associates in 2015) overlap segments of three of the alternatives (**See Section 7.0, below and Summary Table 6**). For unsurveyed segments of any of the alternatives, it is anticipated that the THC will require archeological survey prior to construction. Where impacts will exceed three feet in depth, backhoe trenching may be required as a component of survey.

6.4 Endangered Species

This section addresses the habitat suitability and known occurrences of federal and state threatened and endangered species of potential occurrence in Travis County and the likelihood of any occurrences within the vicinity of the proposed project.

Federal – U.S. Fish and Wildlife Service Regulatory Oversight

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority to list and monitor the status of species whose populations are considered to be imperiled. This federal authority for the protection of vulnerable species was established by the Endangered Species Act (ESA) of 1973 and its subsequent amendments. Regulations supporting this act are codified and regularly updated in Sections 17.11 and 17.12 of Title 50 of the Code of Federal Regulations (CFR). Petitions for federal protection of species receive an initial review, and if the USFWS finds that listing may be warranted, the species undergoes a thorough status review. After the status review is complete, vulnerable species that qualify are either listed as threatened (T) or endangered (E) or categorized as candidates (C). Candidate species have been deferred from listing while the USFWS investigates listing proposals for other species they determine are at greater risk. Vulnerability is determined based on many factors affecting the species within its range and is always linked to the best scientific data available to the USFWS. Fish and wildlife species listed as endangered or threatened by the USFWS are provided full protection. This protection includes a prohibition on direct take of the listed species in addition to

indirect take such as destruction of habitat. Federal prohibition of take of listed plants is limited to federal lands; however, federal law federalizes state law prohibitions on the taking of plants. The ESA and accompanying regulations provide the necessary authority and incentive for the individual states to establish their own regulatory vehicle for the management and protection of threatened and endangered species.

State – Texas Parks and Wildlife Department Regulatory Oversight

The Texas Parks and Wildlife Department (TPWD) oversees endangered resources through the Wildlife Diversity Program. This program is responsible for maintaining county occurrence records of federally and state-listed threatened and endangered species. The program also maintains a Texas Natural Diversity Database (TxNDD) that provides specific site data and tracking information on occurrences of listed or rare animal and plant species, including unique or declining vegetation communities of concern. State-listed endangered species have limited regulatory protection. While these species cannot be taken, collected, held, or possessed without a permit, their habitat is afforded no regulatory protection, except on tracts managed by state, federal, or private interests for conservation purposes.

Potential Occurrence of Endangered Species

The evaluation included researching existing endangered species databases maintained by TPWD and USFWS. In addition, substantial ancillary information was compiled from technical reports, published papers, species surveys, and investigations for other projects in the vicinity, along with field investigations performed for this environmental constraints evaluaton. This section contains summary information (habitat assessments) from those efforts in both tabular and text formats. A summary of federally and state-listed endangered and threatened species, as well as candidate species, that could potentially occur in Travis County are included in **Table 4**. A description of these species' habitats with assessment of impacts is also included.

A total of 12 species that are federally listed as endangered or threatened could potentially occur in Travis County, including four arachnids (Bone Cave harvestman [*Texella reyesi*], Bee Creek Cave harvestman/Reddell harvestman [*Texella reddelli*], Tooth Cave pseudoscorpion [*Tartarocreagris texana*], and Tooth Cave spider [*Neoleptoneta myopica*]), two insects (Kretschmarr Cave mold beetle [*Texamaurops reddelli*] and Tooth Cave ground beetle [*Rhadine persephone*]), three amphibians (Barton Springs salamander [*Eurycea sosorum*], Austin blind salamander [*Eurycea waterlooensis*], and Jollyville Plateau salamander [*Eurycea tonkawae*]), and three birds (Black-capped Vireo [*Vireo atricapilla*], Golden-cheeked Warbler [*Setophaga chrysoparia*], and Whooping Crane [*Grus americana*]). Six additional species are candidates for federal listing, including one flowering plant (bracted twistflower [*Streptanthus bracteatus*]), and five mollusks (golden orb [*Quadrula aurea*], Texas pimpleback [*Quadrula petrina*], smooth pimpleback [*Quadrula houstonenisis*], and Texas fatmucket [*Lampsilis bracteata*], and Texas fawnsfoot [*Truncilla macrodon*].

A total of 12 species are state-listed as endangered or threatened, including 5 mollusks (false spike mussel, Texas fatmucket, Texas fawnsfoot, Texas pimpleback, and smooth pimpleback [*Quadrula houstonensis*]), 1 amphibian (Barton Springs salamander), 1 reptile (Texas horned lizard [*Phrynosoma cornutum*]), and 5 birds (American Peregrine Falcon [*Falco peregrines*], Bald Eagle [*Haliaeetus leucocephalus*], Black-capped Vireo, Golden-cheeked Warbler, and Whooping Crane). **Table 4** lists and describes each of these species and their listing status, indicates whether habitat occurs in the project area, and provides a statement of potential project effects. As indicated by **Table 4**, no potential habitat for federal or state-listed species would be impacted by the project.

Table 4 Federally and State-Listed Endangered and Threatened Species of Potential Occurrence in Travis County With Anticipated Impacts			
SPECIES	**SPECIES/HABITAT DESCRIPTION**	**HABITAT PRESENT?**	**EFFECTS**
FLOWERING PLANTS			
Bracted twistflower *Streptanthus bracteatus* FC	Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid-April late May, fruit matures and foliage withers by early summer	No	None
MOLLUSKS			
False spike *Quadrula mitchelli* ST	Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site	No	None
Golden orb *Quadrula aurea* FC, ST	Sand, gravel substrates, and occasional muddy substrates in lentic and lotic regimes in Guadalupe, San Antonio, Lower San Marcos, and Nueces watersheds. (Listed as occurring by FWS IPAC but not FWS or TPWD County Occurrence Record)	No	None
Texas fatmucket *Lampsilis bracteata* FC, ST	Streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and course gravel or sand in moderately flowing water	No	None
Texas pimpleback *Quadrula petrina* FC, ST	Mud, gravel and sand substrates, generally in areas with slow flow rates	No	None
Smooth pimpleback *Quadrula houstonenisis* FC, ST	Small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins	No	None
Texas fawnsfoot *Truncilla macrodon* FC, ST	Possibly rivers and larger streams, intolerant of impoundments; flowing rice canals and possibly sand and gravel bottoms, and perhaps sandy mud bottoms in moderate flows (Listed as potentially occurring by FWS IPAC but not FWS or TPWD County Occurrence Record)	No	None
ARACHNIDS			
Bone Cave harvestman *Texella reyesi* FE	Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson Counties	No	None
Bee Creek Cave harvestman *Texella reddelli* FE	Small, blind, cave-adapted harvestman endemic to a few caves in Travis County	No	None
Tooth Cave pseudoscorpion *Tartarocreagris texana* FE	Small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau	No	None

Table 4 Federally and State-Listed Endangered and Threatened Species of Potential Occurrence in Travis County With Anticipated Impacts			
SPECIES	**SPECIES/HABITAT DESCRIPTION**	**HABITAT PRESENT?**	**EFFECTS**
Tooth Cave spider *Neoleptoneta myopica* FE	Very small, cave-adapted sedentary spider	No	None
INSECTS			
Kretschmarr Cave mold beetle *Texamaurops reddelli* FE	Small, cave-adapted beetle found under rocks buried in silt; small, Edwards limestone caves in the Jollyville Plateau	No	None
Tooth Cave ground beetle *Rhadine persephone* FE	Resident, small cave-adapted beetle found in small Edwards limestone caves in Travis and Williamson Counties	No	None
AMPHIBIANS			
Jollyville Plateau salamander *Eurycea tonkawae* FT	A small, lungless salamander with external gills known only from springs and waters of some caves north of the Colorado River	No	None
Austin blind salamander *Eurycea waterlooensis* FE	Mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton springs segment of the Edwards Aquifer; only known from the outlets of Barton springs (Sunken Gardens [old Mill] Spring, Eliza Spring, and Parthenia [Main] Spring, which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of aquatic invertebrates	No	None
Barton Springs salamander *Eurycea sosorum* FE, SE	Dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton springs; spring dweller, but ranges into subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods	No	None
REPTILES			
Texas horned lizard *Phrynosoma cornutum* ST	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows in soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	No	None
BIRDS			
American Peregrine Falcon *Falco peregrinus anatum* ST	Occupies a wide range of habitats during migration including urban, concentrations along the coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands	No	None

Table 4 Federally and State-Listed Endangered and Threatened Species of Potential Occurrence in Travis County With Anticipated Impacts

SPECIES	SPECIES/HABITAT DESCRIPTION	HABITAT PRESENT?	EFFECTS
Bald Eagle *Haliaeetus leucocephalus* ST	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	No	None
Black-capped Vireo *Vireo atricapilla* FE, SE	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; returns to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nests mid-April to late summer.	No	None
Golden-cheeked Warbler *Setophaga chrysoparia* FE, SE	Juniper-oak woodlands; dependent on Ashe juniper for long, fine bark strips, only available from mature trees, used in nest construction; nests placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nests late March to early summer	No	None
Whooping Crane *Grus americana* FE, SE	Potential migrant; breeds in the wetlands of Wood Buffalo National Park, Northwest Territory, Canada, and winters in the coastal wetlands of the Aransas National Wildlife Refuge in Aransas, Calhoun, and Refugio Counties, Texas; only remaining natural breeding population of this species	No	None

Note: The listing status and/or location occurrence for some federally listed species may not be consistent between state and federal databases. Where this situation occurs, U.S. Fish and Wildlife Service database information will take precedence.
Sources: Texas Parks and Wildlife Department, Wildlife Diversity, Diversity and Habitat Assessment Programs. County Lists of Texas' Special Species. Travis County. Revised 5-16-2016. http://tpwd.texas.gov/gis/rtest/ Accessed 11-16-2017.
U.S. Fish and Wildlife Service. 2017. https://www.fws.gov/endangered/ Accessed 11-16-2017.
United States Fish and Wildlife Service. 2017. https://ecos.fws.gov/ipac/ Accessed 11-16-17.
FE Endangered (in danger of extinction throughout all or a significant portion of its range)
FT Threatened (any species which is likely to become an endangered species within the foreseeable future)
FC Candidate for listing; information on threats and biological vulnerability supports listing
Texas Parks and Wildlife Department Status:
SE Listed as Endangered in the State of Texas
ST Listed as Threatened in the State of Texas

The American Peregrine Falcon, Arctic Peregrine Falcon, and Whooping Crane are potential migrants through the proposed project area. The Bald Eagle could infrequently occur as a temporary transient. However, it is not anticipated that construction of any of the trail segments would affect these species. It is not anticipated that there would be any effects on the threatened or endangered species dependent upon the Edwards Aquifer, juniper-oak woodlands, or open arid regions. The proposed project area lies outside the portion of Travis County that lies over the Edwards Aquifer Recharge Zone or over karst zones portrayed on maps produced by Veni (1992); therefore, it is not anticipated that the proposed project would affect any of the listed threatened or endangered species occurring in karst (subterranean) formations.

The seasonal, intermittent flow of Fort Branch Creek and Tannehill Branch Creek, and the distance between these water bodies and the Colorado River, would not appear to support habitat suitability for any of the listed mollusks.

Results of a search of TPWD's TxNDD were received on October 25, 2017. The data search indicated that no occurrences of threatened or endangered species have been documented within or adjacent to the project

area. Although this does not conclusively support the absence of listed species, the information does corroborate habitat evaluations indicating that suitable habitat does not occur in the project area for any of the listed species that could potentially occur in Travis County.

In summary, no anticipated adverse impacts to any endangered or threatened species would be expected from the project.

Potential Occurrence of Sensitive, Non-listed Species

An additional 42 species considered rare or sensitive by TPWD (but currently not listed as endangered or threatened by that agency or the USFWS) could occur in Travis County (**Table 5**). Among this total, nine species including seven plants could occur in the vicinity of the trail alignments. Habitat requirements are summarized in **Table 5.** Confirmation of the occurrence of sensitive plants would require site-specific species surveys conducted by an experienced botanist during the period when the plants are in bloom.

The Texas garter snake (*Thamnophis sirtalis annectens*), designated as rare but not listed as endangered or threatened by TPWD, could occur within the project area. Additionally, the plains spotted skunk (*Spilogale putorius interrupta*) (also designated as rare), may occur in the project area. However, neither of these species was observed during field evaluations. Direct injury or harm to these animals can be avoided by allowing escape if encountered. Impacts to habitat would be minor, as disturbed areas would be revegetated following construction, and would not be expected to affect overall population numbers or distribution.

Table 5 Species of Potential Occurrence in Travis County Considered Rare or Sensitive by TPWD With Anticipated Impacts

SPECIES	SPECIES/HABITAT DESCRIPTION	HABITAT PRESENT?	EFFECTS
VASCULAR PLANTS			
Arrowleaf milkvine *Matelea sagittifolia*	Typically occurs in thornscrub in south Texas	No	None
Basin bellflower *Campanula reverchonii*	Texas endemic; among scattered vegetation on loose gravel, gravelly sand, and rock outcrops on open slopes with exposures of igneous and metamorphic rocks; may also occur on sandbars and other alluvial deposits along major rivers; flowering May-July	No	None
Boerne bean *Phaseolus texensis*	Narrowly endemic to rocky canyons in eastern and southern Edwards Plateau, occurring on limestone soils in mixed woodlands, on limestone cliffs and outcrops; frequently along creeks	No	None
Buckley tridens *Tridents buckleyanus*	Occurs in juniper-oak woodlands on rocky limestone slopes	No	None
Correll's false dragon-head *Physostegia correllii*	Wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September	No	None
Glass Mountains coral-root *Hexalectris nitida*	Rare in mixed woodlands in canyons in the mountains of Brewster County, but encountered with regularity under Ashe juniper in woodlands over limestone in the Edwards Plateau.	No	None
Gravelbar brickellbush *Brickellia dentata*	Frequently scoured gravelly alluvial beds in creek and river bottoms	Possible	Possible

Table 5 Species of Potential Occurrence in Travis County Considered Rare or Sensitive by TPWD With Anticipated Impacts			
SPECIES	**SPECIES/HABITAT DESCRIPTION**	**HABITAT PRESENT?**	**EFFECTS**
Heller's marbleseed *Onosmodium helleri*	Occurs in loamy calcareous soils in oak-juniper woodlands on rocky limestone slopes, often in more mesic portions of canyons	No	None
Low spurge *Euphorbia peplidion*	Occurs in a variety of vernally-moist situations in a number of natural regions	Possible	Possible
Narrowleaf brickellbush *Brickellia eupatorioides var. gracillima*	Moist to dry gravelly alluvial soils along riverbanks, but also on limestone slopes	Possible	Possible
Net-leaf bundleflower *Desmanthus reticulatus*	Mostly on clay prairies of the coastal plain of central and south Texas	Possible	Possible
Plateau loosestrife *Lythrum ovalifolium*	Banks and gravelly beds of perennial (or strongly intermitten) streams on the Edwards Plateau, Llano Uplift, and Lampasas Cutplain	No	None
Plateau milkvine *Matelea edwardsensis*	Various types of juniper-oak and oak-juniper woodlands	No	None
Rock grape *Vitis rupestris*	Occurs on rocky limestone slopes and in streambeds	Possible	Possible
Scarlet leather-flower *Clematis texensis*	Usually in oak-juniper woodlands in mesic rocky limestone canyons or along perennial streams	No	None
Stanfield's beebalm *Monarda punctata var. stanfieldii*	Largely confined to granite sands along the middle course of the Colorado River and its tributaries	No	None
Sycamore-leaf snowbell *Styrax platanifolius spp. platanifolius*	Rare throughout range; usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from reliable source of moisture	No	None
Texabama croton *Croton alabamensis* var. *texensis*	Texas endemic; in duff-covered loamy clay soils on rocky slopes in forested, mesic limestone canyons; locally abundant on deeper soils on small terraces in canyon bottoms, often forming large colonies and dominating the shrub layer; scattered individuals are occasionally on sunny margins of such forests; also found in contrasting habitat of deep, friable soils of limestone uplands, mostly in the shade of evergreen woodland mottes; flowering late February-March; fruit maturing and dehiscing by early June	No	None
Texas almond *Prunus minutiflora*	Occurs in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone, but occasionally in sandier neutral soils underlain by granite	No	None
Texas amorpha *Amorpha roemeriana*	Juniper oak woodlands or shrublands on rocky limestone slopes, sometimes on dry shelves above creeks	No	None
Texas barberry *Berberis swaseyi*	Shallow, calcareous stony clay of upland grasslands/shrublands over limestone as well as in loamier soils in openly wooded canyons and on creek terraces	No	None
Texas fescue *Festuca versuta*	Mesic woodlands on limestone-derived soils on stream terraces and canyon slopes	No	None
Texas milkvetch *Astragalus reflexus*	Grasslands, prairies, and roadsides on calcareous and clay substrates	Possible	Possible
Texas seymeria *Seymeria texana*	Grassy openings in juniper-oak woodlands on dry rocky slopes, but sometimes on rock outcrops in shaded canyons	No	None
Tree dodder *Cuscuta exaltata*	Parasitic on various oak, walnut, sumac, grape, elm, and persimmon species, as well as guajillo.	Possible	Possible

Table 5 Species of Potential Occurrence in Travis County Considered Rare or Sensitive by TPWD With Anticipated Impacts			
SPECIES	**SPECIES/HABITAT DESCRIPTION**	**HABITAT PRESENT?**	**EFFECTS**
Warnock's coral-root *Hexalectris warnockii*	In leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creek beds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under *Quercus fusiformis* mottes on terraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years	No	None
MOLLUSKS			
Creeper (squawfoot) *Strophitus undulatus*	Small to large streams, prefers gravel or gravel and mud in flowing water; Colorado, Guadalupe, San Antonio, Neches (historic), and Trinity (historic river basins)	No	None
CRUSTACEANS			
An amphipod *Stygobromus russelli*	Subterranean waters, usually in caves and limestone aquifers; resident of numerous caves in about 10 counties of the Edwards Plateau	No	None
Bifurcated cave amphipod *Stygobromus bifurcaus*	Found in pools within caves	No	None
Balcones Cave amphipod *Stygobromus balconis*	Found in pools within caves	No	None
ARACHNIDS			
Bandit Cave spider *Cicurina bandida*	A very small, subterrestrial, subterranean obligate	No	None
Wharton's cave meshweaver *Cicurina wartoni*	Very small, cave-adapted spider	No	None
INSECTS			
Tooth Cave blind rove beetle *Cylindropsis* sp.	Only one specimen collected from Tooth Cave; only known North American collection of this genus	No	None
FISHES			
Guadalupe bass *Micropterus treculii*	Endemic to perennial streams of the Edwards Plateau region; introduced in the Nueces River system	No	None
AMPHIBIANS			
Pedernales River springs salamander *Eurycea sp 6*	Endemic; known only from vicinity of Pedernales Springs	No	None
REPTILES			
Spot-tailed earless lizard *Holbrookia lacerata*	Central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground	No	None
Texas garter snake	Wet or moist microhabitats, but not necessarily restricted to them; hibernates	Yes	Impacts

Table 5 Species of Potential Occurrence in Travis County Considered Rare or Sensitive by TPWD With Anticipated Impacts			
SPECIES	**SPECIES/HABITAT DESCRIPTION**	**HABITAT PRESENT?**	**EFFECTS**
Thamnophis sirtalis annectens	underground or in or under surface cover; breeds March-August		possible
BIRDS			
Arctic Peregrine Falcon *Falco peregrinus tundrius*	Migrant throughout state; winters along coast, occupies wide range of habitats during migration; stopovers at leading landscape edges such as lake shores and islands	No	None
Western Burrowing Owl *Athene cunicularia hypugaea*	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows	No	None
Sprague's Pipit *Anthus spragueii*	Occurs in Texas only during migration and winter; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west.	No	None
MAMMALS			
Cave myotis bat *Myotis velifer*	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and in abandoned cliff swallow nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of the Edwards Plateau and gypsum caves of the Texas panhandle region during winter; opportunistic insectivore	No	None
Plains spotted skunk *Spilogale putorius interrupta*	Found in open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie	Yes	Impacts possible

Source: Texas Parks and Wildlife Department, Wildlife Diversity, Diversity and Habitat Assessment Programs. County Lists of Texas' Special Species. Travis County. Revised 5-16-2016. http://tpwd.texas.gov/gis/rtest/ Accessed 11-16-2017.

6.5 Federal Emergency Management Agency Coordination

The Federal Emergency Management Agency (FEMA) requires that potential changes to mapped floodplains of waters of the U.S. are evaluated before construction. The current effective 100-year floodplains affected by this project are shown by **Attachment A, Figure 4**. Presently, no channel modifications have been identified for this trail project. However, because portions of the project would lie within the 100-year floodplain, the design plan should be coordinated with the COA Floodplain Administrator.

7.0 Alternatives Analysis

This section addresses potential environmental impacts of the evaluated alignment alternatives described in **Section 2.0**, including the No Action and Build Alignment Alternatives.

7.1 No Action

Under the No Action Alternative, there would be no pedestrian trail improvements. Access limitations and safety issues created by the railroad tracks and other existing paths and walkways would remain with no other feasible solutions. Because there would be no project, there would be no impacts to natural and/or cultural resources within the project area.

7.2 Preferred Action (Connection of Eleanor Street with Lott Avenue)

There would be no impacts from the preferred action to topography, geology, endangered species, CEFs, recharge features, drainage patterns, and protected riparian areas. Adverse impacts to soils would be negligible. Impacts would occur through grade excavation, temporary above ground soil storage, and subsequent backfilling; however, construction would not cause discernible alteration to surficial and shallow geologic layers. Alteration to soils would be so slight that it would not affect the soils' ability to sustain biota, water quality, and hydrology. A pedestrian bridge across Fort Branch Creek would be required, but if the bridge spanned the creek channel and adjacent banks, no major impacts to the creek and associated riparian vegetation would be expected. No previous archeological surveys have been conducted within this segment. A field survey may be required by the THC.

If Trail Crossing 1, (**Attachment A, Figure 4**) completely spans Fort Branch Creek, then no aquatic impacts are expected.

7.3 Alternative 1 (Trail Connection from Southern Walnut Creek Trail to Near the intersection of Sara Drive and Prock Lane)

This segment represents the longest segment among all trail segments evaluated. Impacts to topography, geology, soils, endangered species, and drainage patterns would be similar to the connection of Eleanor Street with Lott Avenue. Some woodland tree species would be impacted along this segment from limited clearing and grubbing. However, impacts to existing vegetation along the trail north of the railroad tracks would be minimized through use of areas previously disturbed from a solar power generation area currently under construction. The alternative 1A crossing appears less feasible than the 1B crossing due to the existing obstacle of a steep-sided concrete channel that conveys the flow of Tannehill Branch Creek under the railroad tracks. Modification of this concrete channel to allow a trail crossing would likely result in more tree clearing and vegetation disturbance than would be needed at the 1B crossing to the east.

Archeological resources have been investigated within 38.2 percent of footprint of Alternative 1A, and 38.6 percent of the footprint for Alternative 1B. No archeological sites were discovered within these areas. Additional field survey may be required by the THC.

Because Trail Crossings 1 and 2 involve ephemeral or intermittent water flow, there would be no or negligible impacts to aquatic resources.

7.4 Alternative 2 (Trail Connection from Brookswood Avenue to Jain Lane)

This trail segment is very short. Impacts to topography, geology, soils, endangered species, and drainage patterns would be similar to the other alternatives. Impacts to woodland trees and shrubs would be minor. None of the impact footprint of this alternative has been surveyed for archeological resources. Additional field survey may be required by the THC. No aquatic resources would be impacted by this alternative.

7.5 Alternative 3 (Trail Connection from Prock Lane to Southern Walnut Creek Trail)

Impacts to topography, geology, soils, endangered species, and drainage patterns would be similar to the other alternatives. However, impacts to upland woodlands and riparian forests from this trail segment would

be the highest among the other trail segments. Protected riparian areas (floodplain woodlands) may also be affected. As a result of some required woodland clearing, some wildlife species could be adversely impacted. No CEFs defined by the COA ECM Section 1.10.3 would be impacted by any of the preferred alternative trail segments. Only 2.9 percent of the footprint was previously investigated for archeological resources, with no sites discovered; however additional survey may be required by the THC. No impacts to aquatic resources are expected from this alternative.

8.0 Summary of Impacts

This section summarizes the potential adverse impacts of each of the project trail segment alternatives. Adverse impacts in comparison to the No Action Alternative were evaluated for each build alternative by assigning a symbol and numerical value according to four impact categories: No impact (–); Negligible impact (1); Moderate Impact (2); and Severe Impact (3). Impacts for the No Action and Build Alternative Segments are summarized in **Table 6**.

Table 6 Environmental Impact Assessment Matrix

	No Action	Build Alternatives				
Quantitative Impacts:						
		Alignment Segments				
		Eleanor St to Lott Ave	1A	1B	2	3
Total Length of Alignment (feet)	0	435.75	2,154.06	2,124.94	461.97	1,798.7
Total Disturbance Footprint (acres)[1]	0	0.22	1.08	1.07	0.23	0.91
Number of Stream Crossings	0	1	2	2	0	0
Footprint acreage within 100' yr floodplain	0	0.14	0.16	0.08	0.01	0.21
Footprint acreage within CWQZ	0	0.14	0.22	0.13	0.02	0.21
Footprint acreage within Forested /Shrub Wetland (PF01A)[2]	0	0	0	0	0	0.06
Riverine (R4SBC)[2]	0	0.01	0	0	0	0
Critical Environmental Features	0	0	0	0	0	0
Endangered Species	0	0	0	0	0	0
Stormwater Outfall Crossings	0	0	0	0	0	0
Water Main Crossings	0	0	0	1	1	0
Wastewater Main Crossings	0	0	4	4	3	1
Wells within 150' of trail segments[3]	0	0	1	1	1	0
Parklands/Greenbelt	0	0	1	1	0	1
Percent of Footprint Covered by Previous Archeological Investigations with no sites discovered	N/A	0	38.19	38.58	0	2.91
Qualitative Impacts:	**– = No impacts; 1 = Negligible Impacts; 2 = Moderate Impacts; 3 = Severe Impacts**					

Table 6 Environmental Impact Assessment Matrix						
	No Action	**Build Alternatives**				
Topography	–	–	–	–	–	–
Geology	–	–	–	–	–	–
Soils	–	1	1	1	1	1
Vegetation	–	1	1	1	1	2
Critical Water Quality Zone	–	–	1	1	1	1
Endangered Species	–	–	–	–	–	–
Critical Environmental Features	–	–	–	–	–	–
Recharge Features	–	–	–	–	–	–
Drainage Patterns	–	–	–	–	–	–
Protected Riparian Areas[4]	–	–	–	–	–	1
Wildlife Habitat	–	1	1	1	1	2
Aquatic Resources	–	–	–	–	–	–
Cultural Resources *	–	*	*	*	*	*

[1] Footprint acreage calculated from 22-foot trail disturbance width.

[2] Acreage was calculated from National Wetland Inventory Map (NWI) classifications developed for planning purposes by the U.S. Fish & Wildlife Service. Although wetland was indicated, no wetlands meeting USACE or COA criteria were identified.

[3] Based on Texas Water Development Board GIS data; includes soil borings and monitoring wells.

[4] Confirmation of the existence of floodplain woodlands meeting COA criteria would require additional field surveys; however, if occurring, impacts would not be widespread and therefore considered negligible.

* No sites have been discovered from previous archeological surveys; however, conclusions of potential impact are will be determined based on selection of alternative segment(s) and further coordination with the THC on the need for additional archeological surveys

8.1 Geology and Soils

Construction impacts would not cause discernible alteration to surficial or shallow geologic layers. Alteration to soil would have negligible effects on its ability to sustain biota, water quality, and hydrology, such that reclamation could be achievable within 2 years.

8.2 Vegetation and Wildlife

All trail segments except Alternative 3 would have negligible effects on vegetation. Alternative 3 would have moderate impacts on vegetation and wildlife habitat due to the required clearing of a dense canopy of established mature and old growth trees and shrubs.

8.3 Water Quality

Adverse effects to water quality are not expected from any of the trail alternatives. To ensure compliance with TCEQ TPDES, construction activities will require installation of temporary erosion and sedimentation controls before any work begins, and these controls must be maintained throughout the construction process. Post-construction total suspended solids (TSS) controls would also be necessary. Controls would not be removed until vegetation is established and the exposed soil in the construction area is stabilized.

8.4 Endangered Species

No threatened or endangered species or their habitats were identified along any of the alternative alignments; therefore, no adverse impacts are expected.

8.5 Aquatic Species

Adverse impacts to any occurring streams are not expected from any of the trail crossings, provided the crossings are spanned. Similarly, no adverse impacts to aquatic species are anticipated.

8.6 Critical Environmental Features

No critical environmental features were identified within the Eleanor Street trail segment or any of the alternative trail segments; consequently no impacts are expected.

8.7 Cultural Resources

Only portions of Alternative Trail Segments 1A, 1B, and Alternative 3 have been previously surveyed for archeological resources, with no sites found within the areas surveyed. Neither the Eleanor Street Segment nor Alternative 2 have been previously investigated. Conclusion of impacts would be determined later based on coordination with the THC to determine the need for further field surveys.

8.0 Conclusions

The need for the proposed La Loma Trail project has been identified to allow enhanced connectivity of the trail system and to provide neighborhoods north of the existing railroad tracks enhanced connectivity to areas south of the railroad tracks including the Eastside Memorial High School and Govalle Neighborhood Park.

Ecological, archeological, and CEF investigations were performed within the trail segment corridors. These investigations were conducted using recorded database information sources, and by conducting a field investigation in November, 2017.

The trail segments are within watersheds of Fort Branch, Tannehill Branch, and Boggy Creeks that drain to the Colorado River. Portions of the project area lie within the 100-year floodplain, and a CWQZ as defined by the COA ECM 1.5.0.

None of the trail segments are located within the Edwards Aquifer Contributing or Recharge Zones.

No occurrences of federally or state-listed endangered or threatened species or their habitats have been recorded or observed in the proposed project area and no adverse impacts to these species or their habitats are expected.

Among the five trail segments, only Alternative 3 would have moderate impacts to vegetation and wildlife habitat.

Fort Branch, Tannehill Branch, and Boggy Creeks West are identified as WOTUS regulated by the USACE. Depending on the type and location of construction of the trail crossings required by the Eleanor Street segment, and Alternatives 1A or 1B, impacts of the construction may trigger USACE permitting under Section 404 of the Clean Water Act. If the creek crossings are completely spanned by trail bridges, no impacts to WOTUS are expected and Section 404 permitting would not be required.

No CEFs defined by COA ECM Section 1.10.3 were observed within the construction limits of the preferred alternative segments.

No archeological sites were found in those portions of alternative segments where previous investigations were conducted. However, additional investigations may be needed depending upon the outcome of future coordination with the THC.

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Attachment A
Project Figures

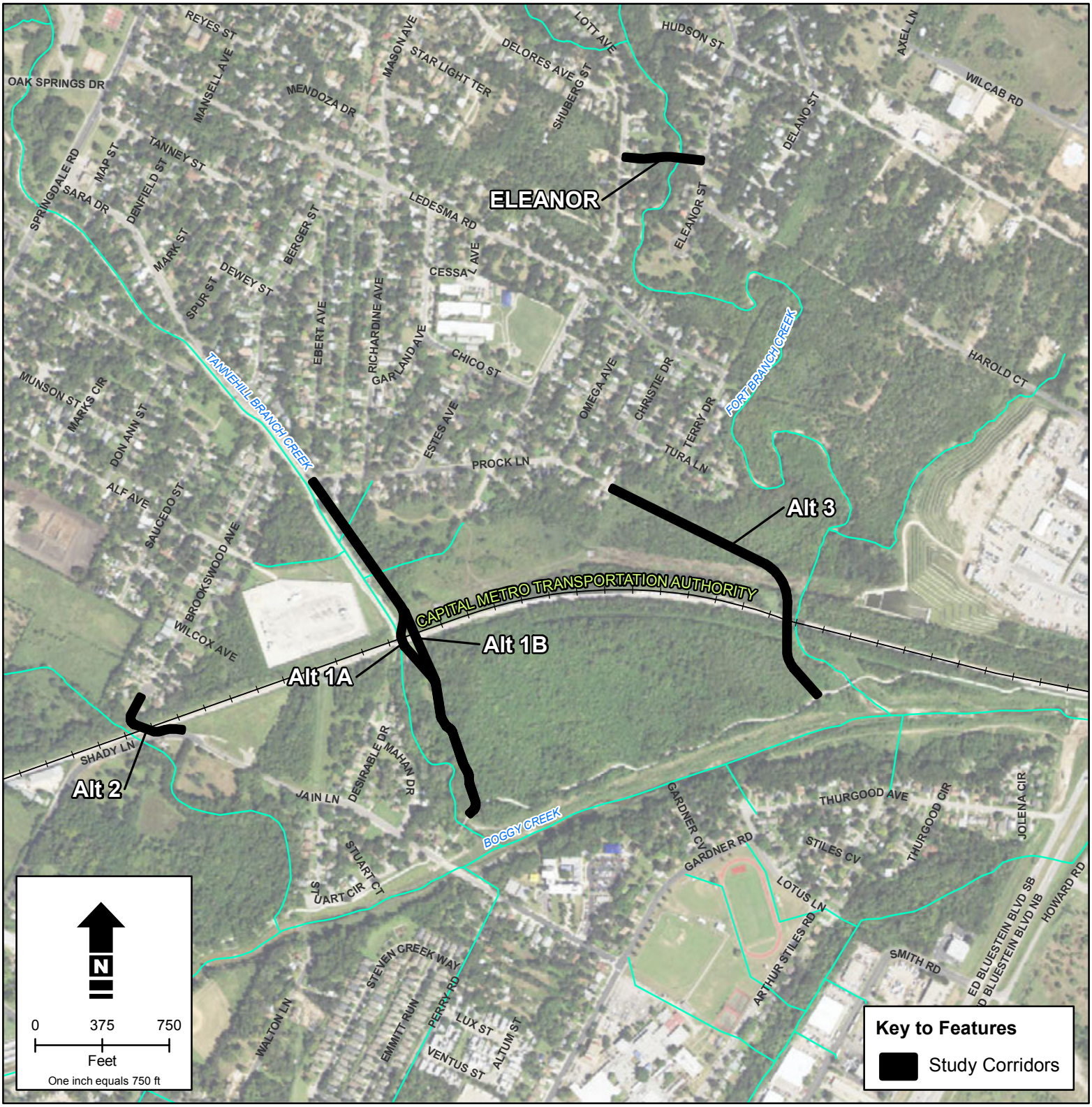
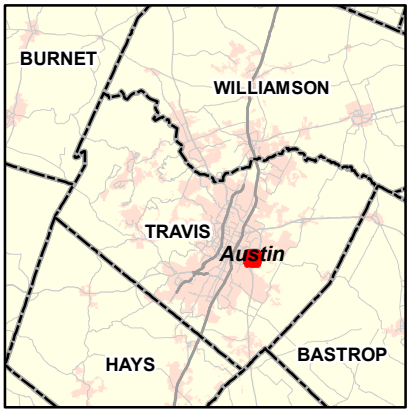
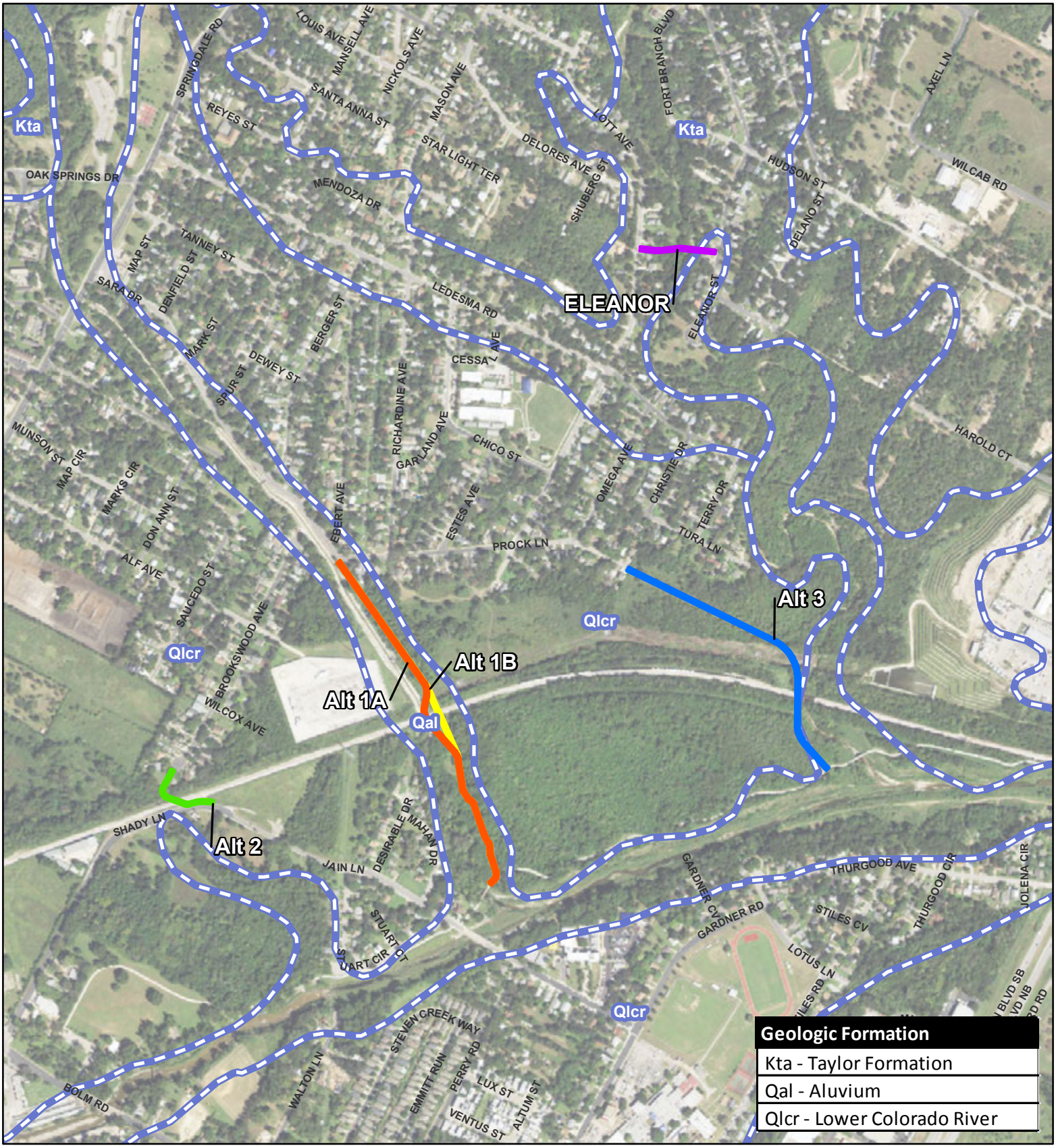


Figure 1
Project Location

City of Austin
La Loma Trail





N

0 375 750

Feet

One inch equals 750 ft

Figure 2

City of Austin
La Loma Trail

Geology

Key to Features

- Eleanor Trail Corridor
- Alternative 1A Trail Corridor
- Alternative 1B Trail Corridor
- Alternative 2 Trail Corridor
- Alternative 3 Trail Corridor
- Geologic Formation

N

0 375 750

Feet

One inch equals 750 ft

Figure 3

City of Austin
La Loma Trail

Soils

Key to Features

- Eleanor Trail Corridor
- Alternative 1A Trail Corridor
- Alternative 1B Trail Corridor
- Alternative 2 Trail Corridor
- Alternative 3 Trail Corridor
- Soil Series

City of Austin
La Loma Trail

Environmental Constraints

Key to Features

- TWDB Wells
- Streams
- Eleanor Trail Corridor
- Alternative Trail Corridors
- COA Fully Developed Floodplains
- Critical Water Quality Zone
- NWI Wetlands
- COA Parks

Source: City of Austin, 2017 ; USGS , 2015

N

0 200 400
Feet
1 inch = 400 feet

Figure 4

Attachment B
Photographs

Photo 1. Looking east from Lott Avenue along preferred trail segment connecting to Eleanor Street.

Photo 2. Preferred trail crossing at Fort Branch Creek between Eleanor Street and Lott Avenue

Photo 3. Alternative 1 trail segment running north from the existing Southern Walnut Creek Trail

Photo 4. Looking north along Alternative 1A trail segment toward railroad crossing over Tannehill Branch Creek.

Photo 5. Looking north along Alternative 1B trail segment toward railroad track.

Photo 6. Looking north along Alternative 2 trail segment toward Brookswood Avenue from railroad crossing.

Photo 7. Alternative 2 trail segment at railroad crossing near Jain Lane.

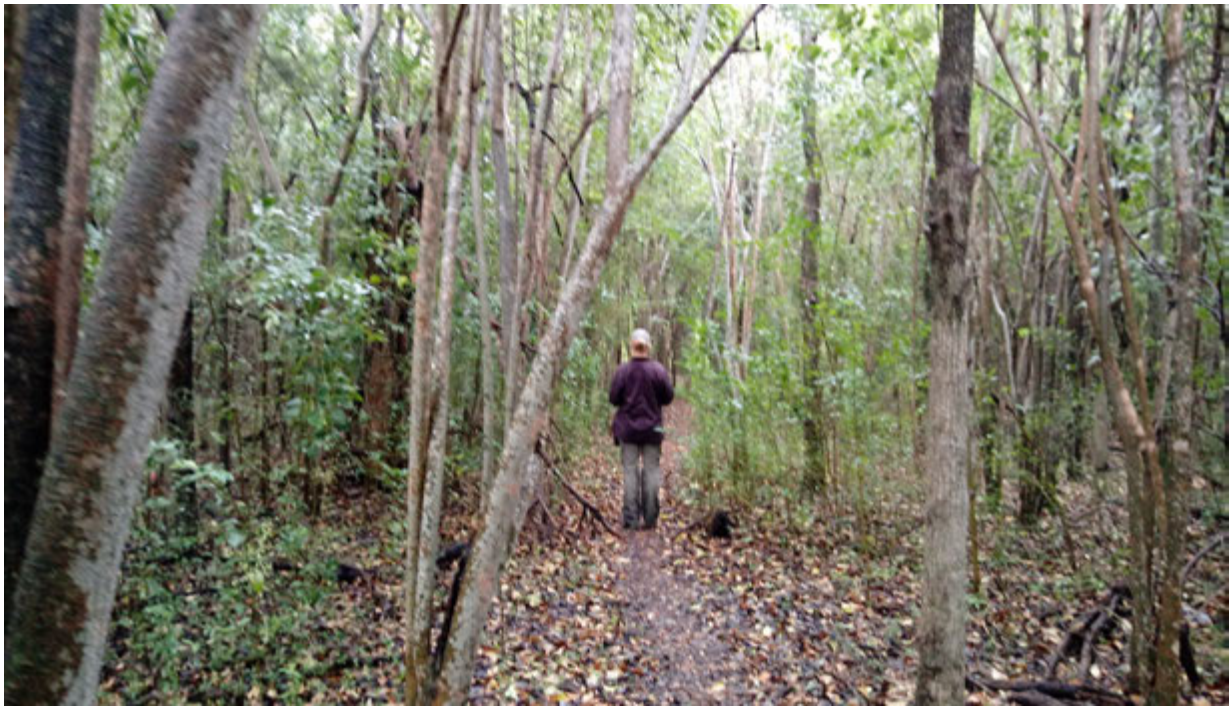


Photo 8. Looking southeast along Alternative 3 trail segment.

Photo 9. Alternative 3 trail segment near Fort Branch Creek showing high quality mature/old growth woodlands.