

PHASE I and PHASE II ENVIRONMENTAL SITE ASSESSMENT

**Lake Hicpochee
TIITF Property
Sections 19, 20, 29,
and 30 of Township
42S, Range 32E,
Glades County,
Florida**



Lake Hicpochee Hydrologic Enhancement Project

Prepared for:

**South Florida Water Management District
DuPuis Reserve Area Office
23500 SW Kanner Highway
Canal Point, Florida 33438**



May 14, 2013



**Prepared by:
Tetra Tech
759 South Federal Highway
Stuart, FL 34994**

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Table of Contents

EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	1-1
1.1 Purpose	1-1
1.2 Scope of Work.....	1-3
1.2.1 Phase I Environmental Site Assessment	1-3
1.2.2 Phase II Environmental Site Assessment.....	1-3
1.3 Limiting Conditions and Methodology Used.....	1-3
2.0 ENVIRONMENTAL SETTING	2-1
2.1 Lake Hicpochee Hydrologic Enhancement Project	2-1
2.2 Site Topography/Physiography.....	2-1
2.3 Surface Water and Wetlands.....	2-1
2.4 Regional Geologic Setting	2-2
2.4.1 Local Site-Specific Geology.....	2-3
2.5 Regional Hydrogeology	2-3
2.5.1 Site-Specific Hydrogeology.....	2-3
2.6 Soil Survey	2-4
2.7 Radon Gas Potential	2-4
2.8 Oil and Gas Exploration	2-4
3.0 LAKE HICPOCHEE TITF PROPERTY (S19, S20, S29, & S30 T42S, R32E)	3-1
3.1.1 Current Property Conditions	3-1
3.1.2 Adjacent and Surrounding Properties.....	3-1
3.1.3 Aerial Photographs Review.....	3-2
3.1.4 Topographic Map Review	3-3
3.1.5 Interview with Persons Knowledgeable about the Site	3-3
3.1.6 Information Obtained from Local Agencies.....	3-3
3.2 PHASE I SITE RECONNAISSANCE.....	3-4
3.2.1 Hazardous Materials and Solid Wastes.....	3-4
3.2.2 Polychlorinated Biphenyls	3-4
3.2.3 Disposal Sites	3-4
3.2.4 Aboveground and Underground Petroleum Storage Tanks.....	3-4
3.2.5 Abandoned Equipment and Debris	3-4
3.2.6 Asbestos and Lead Paint	3-4
3.2.7 Groundwater Wells	3-5
3.2.8 Livestock.....	3-5
3.2.9 Cattle Dipping Vats	3-5
3.2.10 On-Site Structures.....	3-5

3.2.11	Threatened and Endangered Species	3-5
3.2.12	Burn Areas.....	3-5
3.3	REGULATORY REVIEW	3-5
3.3.1	Regulatory Agency Database Search	3-5
3.4	Phase I ESA Conclusions and Recommendations	3-7
4.0	PHASE II ENVIRONMENTAL SITE ASSESSMENT	4-8
4.1	Constituents of Interest.....	4-8
4.2	Soil, Sediment, Surface Water, and Groundwater Sampling	4-8
4.2.1	Surface Soil and Sediment Sampling.....	4-9
4.2.2	Surface Water	4-9
4.2.3	Groundwater Sampling.....	4-9
4.3	Sample Custody Documentation.....	4-10
4.4	Quality Assurance/ Quality Control Data Collection.....	4-10
4.5	Phase II Data Assessment and Analytical Results.....	4-11
4.5.1	Soil Borings – Surface Soil Samples	4-11
4.5.1.1	Soil Analytical Results	4-12
4.5.2	Groundwater Samples.....	4-12
4.5.2.1	Well Purging Data	4-12
4.5.2.2	Groundwater Sampling and Analytical Results.....	4-13
4.5.3	Surface Water Samples	4-14
4.5.3.3	Surface Water	4-14
4.5.4	Conclusions of the Phase II ESA.....	4-14
5.0	LABORATORY DATA EVALUATION	5-15
5.1	Split and Duplicate Sample Correlation	5-16
6.0	CONCLUSIONS AND RECOMMENDATIONS.....	6-1
6.1	Conclusions of the Phase I Assessment	6-1
6.2	Conclusions of the Phase II Investigation.....	6-1
6.3	Evaluation of Site Restoration Cost	6-1
7.0	REFERENCES.....	7-1

List of Tables

- 1 Summary of Sample Locations**
- 2 Summary of Soil and Sediment Analytical Results**
- 3 Relative Percent Difference for Duplicates & Splits**
- 4 Summary of Surface Water Analytical Results**
- 5 Summary of Groundwater Analytical Results**

List of Figures

- 1 Site Vicinity Map**
- 2 Areas Evaluated Map**
- 3 Sample Location Map**
- 4 Soil and Sediment Analytical Results Map**
- 5 Surface Water Analytical Results Map**
- 6 Groundwater Analytical Results Map**
- 7 Solid Waste Location Map**

Appendices

- A EDR Report**
- B Wetlands Map**
- C Soil Survey Map**
- D Radon Gas Potential Map**
- E Oil & Gas Index Map**
- F Glades County Property Appraiser Site Information**
- G Site Photographs**
- H Laboratory Analytical Reports (CD)**

EXECUTIVE SUMMARY

This report presents the results of the Phase I and Phase II Environmental Site Assessment (ESA) conducted by Tetra Tech (Tt) of the Lake Hicpochee Trustees of the Internal Improvement Trust Fund of the State of Florida (TIITF) Property.¹ This approximately 1,500-acre tract is located approximately 5 miles southwest of the City of Moore Haven, adjacent to and west of the C-19 Canal, and adjacent to and north of the C-43 Canal (Caloosahatchee River) on portions of Sections 19, 20, 29, and 30 of Township 42S, Range 32E, Glades County, Florida. It was prepared for the sole use of the South Florida Water Management District (District) pursuant to Work Order No. 07 under Contract No. 4600002400, and the express limitations provided in Section 1.3 of this document. The subject property is proposed to be utilized as a component of the Lake Hicpochee Hydrologic Enhancement Project.

The Lake Hicpochee TIITF property consists of approximately 270-acres of open pasture and native upland grasslands that are used as cattle pasture. Approximately 120-acres of Dry Prairie exists onsite and consists of transitional areas between the uplands and wetland areas. The approximately 1,100-acres remainder appears to be wetlands with approximately 15-acres of open water (a portion of Lake Hicpochee) at the southeastern corner of the property.

This portion of the TIITF property is approximately 1,500-acres. According to the Glades County Property Appraiser web site this property is identified as Parcels A19-42-32-A00-0020-0000, A20-42-32-A00-0030-0000, A29-42-32-A00-0010-0000, and A30-42-32-A00-0030-0000. The parcels carry the Use Code of State (008700). Figure 1 provides a site vicinity map. Figure 2 provides a map of the area evaluated, and Figure 3 provides a sample location map.

The objective for the Phase I ESA is to identify, to the extent feasible pursuant to the scope of work described herein, recognized environmental conditions (RECs) associated with the subject property.

Recognized environmental conditions are defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into

¹ The Lake Hicpochee TIITF property encompasses the entire former lake bottom area, north and south of the Caloosahatchee River, for an area of approximately 5,380-acres in size. The focus of the this Phase I/II ESA was the northwest quadrant of the former lake bottom, west of the C-19 Canal and north of the Caloosahatchee River.

structures on the property or into the ground, ground water, or surface water of the property (ASTM, 2005).

Based upon our Phase I ESA findings, the following areas of potential concern were further evaluated during the Phase II ESA:

- The current Pasture in the western portion of property was formerly cultivated in the 1960s and 1970s; the potential concern is residual agricultural chemicals.
- Wetlands in the eastern portion of property could have received residual agricultural chemicals via run-off.
- Small piles of solid waste disposal (trash piles on the C-43 levee).

The objective of this Phase II ESA was to further evaluate RECs that may be associated with present or past land use by collecting limited environmental samples for laboratory analyses. The Phase II ESA was conducted in conjunction with the Phase I to expedite completion of the assessment. During the Phase II ESA, samples were collected from each of the areas listed above and were analyzed based on the historical, present, and future land use and potential RECs that may have impacted the site. The results of the Phase II ESA indicated that the Lake Hicpochee TIITF property is suitable for the District's future intended land use as a hydrologic restoration project. In addition, the Phase II ESA findings indicate that there is no evidence of environmental impairment from residual agricultural chemicals on the property, and there are only a very small areas of solid waste that will require removal. A summary of the Phase II ESA findings is provided in Section 4.5 of this report.

It is recommended to perform a limited solid waste removal to render the entire subject site suitable for the District's future intended land use.

- Removal of approximately 80 tons of solid waste for a cost of approximately \$6,000. The majority of the tonnage is from an estimated 60 cubic yard pile of asphalt debris along the C-43 Levee, located approximately 3,100 ft west of the C-19 Canal. The remaining solid wastes are located in small 1 or 2 cubic yard piles along the C-43 Levee.

The following table summarizes the costs associated with the recommended actions:

Recommended Corrective Action Cost	
Solid Waste Removal	\$6,000
Total	\$6,000

1.0 INTRODUCTION

This report presents the results of the Phase I and Phase II Environmental Site Assessment (ESA) conducted by Tetra Tech of the approximately 1,500-acre on the northwest portion Lake Hicpochee TIITF Property. This tract is located approximately 5 miles southwest of the City of Moore Haven, adjacent to and west of the C-19 Canal and adjacent to and north of the c-43 Canal or the Caloosahatchee River in Sections 19, 20, 29, and 30, Township 42 South, Range 32 East in Glades County, Florida. It was prepared for the sole use of the South Florida Water Management District (District) pursuant to Work Order No. 07 under Contract No. 4600002400, and the express limitations provided in Section 1.3 of this document. The subject property is proposed to be utilized as a component of the Lake Hicpochee Hydrologic Enhancement Project.

This portion of the Lake Hicpochee TIITF property is accessed at the south end of Bronson Road, Moore Haven, FL 33471. The Lake Hicpochee TIITF property consists of approximately 270-acres of open pasture and native upland grasslands that are used as cattle pasture. Approximately 120-acres of Dry Prairie exists onsite and consists of transitional areas between the uplands and wetland areas. The approximately 1,100-acres remainder appears to be wetlands with approximately 15-acres of open water (a portion of Lake Hicpochee) at the southeastern corner of the property.

This report was prepared at the request of the District following our site reconnaissance visit conducted on March 19, 2013, and subsequent sampling visits in April 2013. The purpose of the site reconnaissance visits was to gain sufficient information regarding the current and historical property land use(s) to develop a Phase I and Phase II ESA Scope of Work for the District. A copy of the aerial photograph for this property is included as Figure 2.

1.1 Purpose

The objective for the Phase I ESA was to identify, to the extent feasible pursuant to the scope of work described herein, recognized environmental conditions associated with the subject property.

Recognized environmental conditions are defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property (ASTM, 2005).

The objective of the Phase II ESA is to further evaluate RECs that may be associated with present or past land use by collecting limited environmental samples for laboratory analyses. The Phase II ESA was conducted in conjunction with the Phase I to expedite completion of the assessment. Phase II activities included the collection of environmental media samples including soil, sediment, surface water, and groundwater from selected locations for laboratory analyses of the constituents of interest associated with the area of potential concern, and to evaluate potential environmental impairments associated with the RECs identified under the Phase I scope of work.

The ESA report organization includes the following sections:

- **Section 1 Introduction** – Provides the report background and a brief description of the property.
- **Section 2 Environmental Setting** – Describes the physical characteristics of the property and the surrounding area.
- **Section 3 Phase II Environmental Site Assessment** – Describes the Phase II sampling methodology and laboratory analytical methods.
- **Section 4 Lake Hicpochee TITF Property** – Presents the various details relating to this property, including:
 - *Section 4.1 Site Description and History*: Presents a brief site history based upon the records search and information from other government agencies.
 - *Section 4.2 Phase I Site Reconnaissance*: Presents a description of the areas investigated and potential RECs identified during the Phase I ESA.
 - *Section 4.3 Regulatory Review*: Provides a summary of the Environmental Data Resources, Inc. (EDR) database review.
 - *Section 4.4 Phase I ESA Conclusions and Recommendations*: Provides a summary of the potential areas of concern that warranted further evaluation.
 - *Section 4.5 Phase II Data Assessment and Analytical Results*: Presents the results and a discussion of the Phase II observations and sampling results.
 - *Section 4.6 Evaluation of Site Restoration Costs*: Itemizes the estimated costs associated with the restoration of environmental impairments at the site.
- **Section 5 Laboratory Data Evaluation** – Summarizes the evaluation of the data quality and usability.
- **Section 6 Conclusions and Recommendations** – Summarizes the conclusions of the Phase I and II ESA and Tt's recommendations for the site.

- **Section 7 References** – Provides a list of references that were used for the preparation of this report.

1.2 Scope of Work

The following subsections provide a brief summary of the scope of work for the Phase I and Phase II ESA.

1.2.1 Phase I Environmental Site Assessment

The Phase I ESA consisted of the following activities:

- Conducted a site reconnaissance of the property and prepared notes including an inventory of potential RECs;
- Assessed historical aerial photographs and topographic maps of the site to determine historical land use activities and to identify areas where RECs may be found;
- Performed a database and environmental lien search through Environmental Data Resources, Inc. (EDR);
- Conducted a review of regulatory files; and
- Conducted an interview with Glades County officials that may have knowledge of past and present land use.

1.2.2 Phase II Environmental Site Assessment

The Phase II ESA consisted of the following activities:

- Preparation of a site specific Health and Safety Plan;
- Determination of the presence or absence of RECs by the evaluation of environmental media samples collected from selected site locations. Phase II sampling activities included:
 - Collection of surface soil and groundwater samples from the Pasture Areas on the Property;
 - Collection of surface soil, sediment, and surface water samples from the wetland areas observed in the central and eastern portions of the Property;
 - Collection of Quality Assurance / Quality Control (QA / QC) samples; and
 - Laboratory analysis of collected samples from environmental media;
- Data review, analysis, and interpretation, and
- Preparation of the Phase I/II ESA Report.

1.3 Limiting Conditions and Methodology Used

It's scope of services for this project was limited to the following tasks:

- Review of historical land use and aerial photographs and topographic maps based upon readily available records and documents;

- Regulatory agency database search;
- Site reconnaissance and select interviews;
- Limited Phase II investigation; and
- Data analysis and report preparation.

The above tasks were accomplished in accordance with the procedures described in our technical proposal, dated March 22, 2013. It reviewed information that was reasonably obtainable and practically reviewable, as described herein. This report is prepared for the sole use of the District pursuant to Work Order No. 07 under Contract No. 4600002400. The scope of work and the findings should not be considered suitable for other potential users and any use by other parties shall be at their sole risk.

The scope of this ESA was limited to visual observations made during the March 19, 2013, site reconnaissance, select interviews with knowledgeable public agency personnel, and reviews of readily available reports, literature and listings. Additional site information, which was not available at the time of this report, may result in modification of the information presented herein. Additionally, our SOW for this ESA did not include a complete title/deed or past ownership searches, formal wetlands evaluation.

This report was prepared in general accordance with the current Environmental Risk Assessment Protocol developed in conjunction with the US Fish and Wildlife Service (USFWS), and approved by the Florida Department of Environmental Protection (FDEP), *Protocol for Assessment, Remediation, and Post-Remediation Monitoring for Environmental Contamination on Everglades Restoration Projects (March 2008)* for a Phase I ESA and ASTM E-1527-05, which require review into the presence or potential presence of hazardous materials on the subject property. Such a review cannot be expected to reveal all hazardous materials or environmental conditions that might be present at the site. It is therefore recognized that the possibility exists that some hazardous materials exist or waste disposal has occurred on the site that may not have been detected, because it is beyond the scope of the study.

In order to conduct the ESAs for this report, It relied upon the readily available information, as discussed in the report and unless explicitly included in our scope of work included no verification of the accuracy or completeness of documentation or data or possible withholding of information by the interviewees, agencies, or other parties. (Please also refer to the Environmental Data Resources, Inc. disclaimer, Appendix A).

2.0 ENVIRONMENTAL SETTING

This section presents a summary of the environmental setting where the Lake Hicpochee TITF Property is located.

2.1 Lake Hicpochee Hydrologic Enhancement Project

The Coastal Watershed Program promotes a watershed approach to protecting Lake Okeechobee and the Caloosahatchee and St. Lucie Rivers and Estuaries. Protection plans include a combination of both water quality and water storage initiatives.

The Lake Hicpochee Hydrologic Enhancement Project will provide shallow water storage with incidental habitat restoration and water quality treatment on the northern portion of Lake Hicpochee. To restore the lake closer to historical conditions, the project will redirect or capture excess surface waters from the C-19 Canal, which discharges directly into the Caloosahatchee River, and divert it as sheetflow onto the northern portion of Lake Hicpochee.

2.2 Site Topography/Physiography

The 1971 United States Geological Survey (USGS), 7.5 minutes series, Lake Hicpochee, Fla topographic quadrangle map of the TITF property generally shows elevations of less than 15 feet above mean sea level (msl) and 16 ft above msl on the levee adjacent to the Caloosahatchee River. The elevations are referenced to the National Geodetic Vertical Datum of 1927 (NGVD).

This property lies in southern Glades County, approximately 5 miles west of Lake Okeechobee. According to Brooks, this area of Glades County is in the Southwestern Flatwoods District, which is a province of Miocene and Pliocene sedimentary rocks and sediments. The Quaternary deposits are thin or nonexistent. Brooks further described the area as the “Caloosahatchee Valley” an ancient river valley backfilled with sand and shell deposits of Plio-Pleistocene age. The terraced land is largely covered by wet prairie and flatwoods (Brooks, 1981).

2.3 Surface Water and Wetlands

An approximately 15-acre remnant portion of Lake Hicpochee on the TITF property contains surface water. Surrounding surface water bodies also include the C-19 Canal, the Caloosahatchee River, and an unnamed drainage canal which runs along the east side of Bronson Road discharging into the Caloosahatchee River.

A wetland map produced from the interactive mapping tool on the U.S. Fish and Wildlife Service’s website (<http://www.fws.gov/wetlands/Data/Mapper.html>) indicates

that the eastern portion of the Lake Hicpochee TIITF Property is considered freshwater forested/shrub wetlands. Whereas, the central portion of the property is considered freshwater emergent wetlands and the northwest corner of the property is not shown as a wetland. Classifications of surrounding properties to the east and south included freshwater forested/shrub wetlands, freshwater emergent wetlands, freshwater ponds, lakes, and riverine environments. The wetland map for the TIITF Property is presented in Appendix B.

2.4 Regional Geologic Setting

The USGS lists three surface geologic units for Glades County: Holocene sediments covering 0.4% of the county; undifferentiated sediments (Pleistocene/Holocene age) with 29% county coverage; and shelly sediments of Plio-Pleistocene age covering 70% of the county at the surface. Since the site is adjacent to an active shell rock mine it is assumed that the site falls in the later unit.

The following is quoted verbatim from the *USGS, Geologic units in Glades County, Florida, 2012*. "Molluskbearing sediments of southern Florida contain some of the most abundant and diverse fossil faunas in the world. The origin of these accumulations of fossil mollusks is imprecisely known (Allmon, 1992). The shell beds have attracted much attention due to the abundance and preservation of the fossils but the biostratigraphy and lithostratigraphy of the units has not been well defined (Scott, 1992). Scott and Wingard (1995) discussed the problems associated with biostratigraphy and lithostratigraphy of the Plio-Pleistocene in southern Florida. These "formations" are biostratigraphic units. The "formations" previously recognized within the latest Tertiary-Quaternary section of southern Florida include the latest Pliocene - early Pleistocene Caloosahatchee Formation, the early Pleistocene Bermont formation (informal) and the late Pleistocene Fort Thompson Formation. This section consists of fossiliferous sands and carbonates. The identification of these units is problematic unless the significant molluscan species are recognized. Often exposures are not extensive enough to facilitate the collection of representative faunal samples to properly discern the biostratigraphic identification of the formation. In an attempt to alleviate the inherent problems in the biostratigraphic recognition of lithostratigraphic units, Scott (1992) suggested grouping the latest Pliocene through late Pleistocene Caloosahatchee, Bermont and Fort Thompson Formations into a single lithostratigraphic entity, the Okeechobee formation (informal). In mapping the shelly sands and carbonates, a generalized grouping as Tertiary-Quaternary shell units (TQsu) was utilized. This is equivalent to the informal Okeechobee formation. The distribution of the Caloosahatchee and Fort Thompson Formation are shown on previous geologic

maps by Cooke (1945), Vernon and Puri (1964) and Brooks (1982). The Nashua Formation occurs within the Pliocene - Pleistocene in northern Florida. However, it crops out or is near the surface in an area too small to be shown on a map of this scale. Lithologically these sediments are complex, varying from unconsolidated, variably calcareous and fossiliferous quartz sands to well indurated, sandy, fossiliferous limestones (both marine and freshwater). Clayey sands and sandy clays are present. These sediments form part of the surficial aquifer system.”

2.4.1 Local Site-Specific Geology

Three temporary groundwater monitoring wells were installed in the pasture area of the site via the direct push drilling method, to a maximum depth of 10 feet while performing the Phase II ESA. The upper two feet of the near surface geology consisted of fine grained sand. At two feet below land surface (bls) cemented shells were encountered to the ten feet bls.

2.5 Regional Hydrogeology

Regionally, this area is underlain by two principle aquifers; the surficial aquifer system or water table and the Floridan aquifer system. In addition, an intermediate aquifer is also present in some parts of this region, which is found within the Hawthorn Group of formations.

The surficial aquifer system is unconfined and found in the recent sand, shell, and silt deposits above the Hawthorn group. It may include deposits that are part of the Ft. Thompson, Caloosahatchee, and Tamiami Formations. These units extend to a depth of nearly 100 feet. Below the surficial aquifer system an intermediate aquifer may be present. This aquifer appears to include units in both the Peace River Formation and the Arcadia Formation, which compose the Hawthorn Group in Glades County. Regionally, the Hawthorn Group acts as a confining unit that separates the surficial and intermediate aquifer systems from the lower artesian zones within the Floridan aquifer system. The Floridan aquifer system includes the entire limestone sequence including the Suwannee, Ocala, and Avon Park Limestones. Generally in this area the Floridan aquifer system provides water of poorer, non-potable quality.

2.5.1 Site-Specific Hydrogeology

It installed three shallow temporary monitor wells to collect groundwater samples. These wells indicated that the water table was present at a depth of approximately one to two feet bls at the western pasture area of the Lake Hicpochee TITF Property during April 2013.

2.6 Soil Survey

The United States Department of Agriculture (USDA), Soil Conservation Service Survey of Glades County, Florida indicates that the majority of the soil on the Lake Hicpochee TIITF property is mapped as Okeelanta and Dania soils, depressional, (approximately 46%), Floridana fine sand, depressional (13%), and Felda fine sand (11%) in the upland northwest corner of the site. The soil survey map for the TIITF Property is presented in Appendix C.

Okeelanta and Dania soils, depressional – These very poorly drained soils are in swamps, marshes, and other depressional areas. This map unit is ponded for much of the year. The composition of the soils in the mapped areas varies, but the mapping was sufficiently controlled to evaluate the soils for the expected uses. Some areas consists mainly of the Okeelanta soil, some mainly of the Dania soil, and some contain both soils in variable proportions. Individual areas are irregular in shape. They range from 10 to more than 100 acres in size. Slopes are smooth and concave. They are 0 to 1 percent.

Floridana fine sand, depressional – This very poorly drained soil is in wet depressions. It is ponded for much of the year. Individual areas generally are circular or elongated in shape. They range from 3 to 40 acres in size. Slopes are smooth and concave. They are 0 to 1 percent.

Felda fine sand – This poorly drained soil is on broad, low flats and in large drainageways in areas of flatwoods. Individual areas are irregular in shape. They range from 20 to more than 100 acres in size. Slopes are smooth and are slightly convex or concave. They are 0 to 1 percent (USDA, 2000).

2.7 Radon Gas Potential

According to the United States Environmental Protection Agency's (USEPA's) website (<http://www.epa.gov/radon/zonemap/florida.htm>), this site is located in a Zone 3 area, which indicates that a Less Potential (less than 2 pCi/L) for radon gas exists. The Radon Gas Potential Map for this site is presented in Appendix D.

2.8 Oil and Gas Exploration

According to the Florida Geological Survey Oil & Gas Index Map Oil for Glades County, three Oil & Gas exploration wells are present in the county although considered dry holes; however, none were reported within the immediate vicinity of the subject site (FGS, 1988). The Oil & Gas Index Maps for the site is presented in Appendix E.

3.0 LAKE HICPOCHEE TIITF PROPERTY (S19, S20, S29, & S30 T42S, R32E)

The Lake Hicpochee TIITF Property consists of approximately 1,500 acres located approximately 5 miles southwest of the City of Moore Haven, Glades County, Florida. The subject tract is located 3 miles west of the intersection of U.S. Highway 27 and State Road 78 and 2 miles south of U.S. 27/SR 78 on Bronson Road (unpaved). According to the Glades County Property Appraiser's web site, the property is owned by TIITF/State of Florida and is identified as PCNs A19-42-32-A00-0020-0000, A20-42-32-A00-0030-0000, A29-42-32-A00-0010-0000, and A30-42-32-A00-0030-0000. Copies of the property information obtained from Glades County Property Appraiser are provided in Appendix F.

3.1.1 Current Property Conditions

The Lake Hicpochee TIITF property consists of approximately 270-acres of open pasture and native upland grasslands that are used as cattle pasture. Approximately 120-acres of Dry Prairie exists onsite and consists of transitional areas between the uplands and wetland areas. The approximately 1,100-acres remainder appears to be freshwater forested/shrub wetlands with approximately 15-acres of open water (a portion of Lake Hicpochee) at the southeastern corner of the property. Sawgrass is also present near the open water area. During the Phase I site reconnaissances on March 19, 2013, the following features were observed:

- The current Pasture in the western portion of property was formerly cultivated in the 1960s and 1970s; the potential concern is residual agricultural chemicals.
- Wetlands in the eastern portion of property could have received residual agricultural chemicals via run-off.
- Small piles of solid waste disposal in trash piles on the C-43 levee.

Figures 2 and 7 depicts the location of each these features. Site photographs are provided in Appendix G.

3.1.2 Adjacent and Surrounding Properties

The subject tract is located approximately 5 miles southwest of Moore Haven, and 2 miles south of U.S. 27/SR 78. Currently, the adjacent properties are rural and are primarily natural to the east and south and agricultural/grazing to the north and west. At the time of the Phase I ESA, the area east of the subject tract is the C-19 Canal and Lake Hicpochee, which consists of freshwater wetlands and areas of open water. To the south of the site is the Caloosahatchee River and additional Lake Hicpochee TIITF lake bottom wetlands. North of the site is agricultural and grazing lands with one ranch

residence. To the west are agricultural/grazing lands, three ranch residences, and an active shell rock mine (Ridgill & Sons, Inc. 2958 Bronson Road, Moore Haven, FL 33471).

Information relating to the properties north and west of the subject tract was obtained from the Glades County Property Appraiser's web site. TIITF/State of Florida lands are to the east and south. Immediately north of the site, and north of an old levee, is approximately 415-acres of property owned by the Tommy Bronson Trust. North of this is approximately 3,000-acres owned by Duda & Sons, Inc. Northeast of the site, across the C-19 Canal are properties owned by the C Perry Family, LLC. Roger and Susann Williams own a parcel west of the site. Northwest of the site is pasture land owned by SBW Cattle, LLC and west of this property is the shell rock mine owned by Alico, Inc.

3.1.3 Aerial Photographs Review

It obtained historical aerial photographs through EDR for the following years: 1949, 1957, 1968, 1974, 1983, 1999, 2005, 2006, 2007, and 2010. The following paragraphs describe site conditions as observed on the aforementioned photographs:

1949 Aerials – In these photographs,² the entire area appears to be undeveloped land. The Caloosahatchee River and levee are evident along with the small meandering levee that forms the northern border of the site. The unnamed drainage ditch on the western border is present, and there are five drainage ditches entering the site from the north. Oxbow lakes from the pre-channelization of the Caloosahatchee River are seen along the southern portion of the property. To the east and south are wetlands, Lake Hicpochee, and the Caloosahatchee River. The homestead north of the northwest corner of the property is visible on the photograph and it appears that the property north of the site is pasture.

1957 Aerial – The site and the surrounding area appear largely the same as in 1949. The subject parcel and the land to the east and south still appear as wetlands. It appears that the construction of the C-19 Canal has started, but it does not extend to the C-43 Canal (Caloosahatchee River). East-west drainage ditches are evident on the land north of the site.

1968 Aerial – In this photograph, the western portion of the site is under agricultural activity. The C-19 Canal is completed to the Caloosahatchee River. Agricultural activity is visible on the property west of the site.

² Due to the photograph's scale there are generally two aerial photographs per year; divided east - west.

1974 Aerial – The property and the surrounding area appear largely the same as in the 1968 aerial photographs. The agricultural activity in the western portion of the site appears more pronounced.

1983 Aerial – The property and the surrounding area appear largely the same as in the 1974 aerial photographs with the exception of the area of agriculture in the western portion of the property that now appears as pasture.

1999 through 2010 Aerial – These aerial photographs are of the central portion of the property and they appear largely the same as in the 1983 aerial photographs.

3.1.4 Topographic Map Review

Tt obtained and reviewed the 1971 topographic map from EDR of the subject site. A more recent topographic map of the site was not available. A copy of the topographic map obtained from EDR is provided in Appendix A.

1971 Topographic Map, Lake Hicpochee, Series 7.5', Scale 1:24,000 – The 1971 topographic map shows approximately 80 percent of the site as wetlands. Two drainage ditches are shown north of the site leading into the site. The C-19 Canal is visible with a 21 ft bench mark on the canal's east levee. There is a 16 ft bench mark on the C-43 level in the southwest corner of the property. The entire property is within the 15 ft contour line as shown on the 1971 topographic map.

3.1.5 Interview with Persons Knowledgeable about the Site

Tt spoke with Ms. Susan Williams, the real property owner to the west of the site. Ms. Williams provided the lock combination that allowed site access from the Bronson property near the northwest corner of the site. Reportedly, Ms. Kathryn Bronson lived in the homestead north of the northeast corner of the site. Reportedly, Ms. Kathryn Bronson passed away on February 7, 2013.

3.1.6 Information Obtained from Local Agencies

Tt made contact with, or spoke to the individual listed below. This individual is listed with the agency that he represents with his corresponding phone number. The information provided by this individual is summarized briefly in the following paragraph.

Tt spoke to Mr. Regan Mathis (863.946.6025) a field appraiser with the Glades County Property Appraiser's office and he stated that he is very familiar with the property and he does not have concerns on file or to his knowledge that would be significant to the site.

3.2 PHASE I SITE RECONNAISSANCE

On March 19, 2013, Tt visited the subject site to obtain information with regard to the likelihood of identifying RECs, if any, associated with the property. In addition, during the field sampling from April 11 through 22, 2013, the field team was observant to site conditions with regard to the likelihood of identifying RECs. This section summarizes the Phase I site reconnaissance performed by Tt for the Lake Hicpochee TIITF Property.

3.2.1 Hazardous Materials and Solid Wastes

During the Phase I ESA, Tt observed solid waste in the form of small piles of household debris (mainly metal) along the C-43 levee. Items included an abandoned BBQ grill, chain link fencing, wooden pallets, dishwasher, refrigerator, tarp, tires, plastic lattice, hoses, wooden poles, plastic cooler, beach chairs, cattle feeder, etc. In addition, an estimated 60 cubic yard (cy) pile of asphalt debris was also found on the C-43 levee.

Hazardous materials were not observed.

3.2.2 Polychlorinated Biphenyls

Tt did not observe any materials that were suspected of containing polychlorinated biphenyls (PCBs) on-site during Phase I ESA activities.

3.2.3 Disposal Sites

Tt did observe dumping at the subject site during the Phase I ESA, which included small areas of solid waste (see above) along the C-43 levee.

3.2.4 Aboveground and Underground Petroleum Storage Tanks

No aboveground storage tanks (ASTs) and no indication of the presence of underground storage tanks (USTs) were observed.

3.2.5 Abandoned Equipment and Debris

During the site reconnaissance, Tt did observe abandoned equipment or debris, as stated above on the subject property.

3.2.6 Asbestos and Lead Paint

Asbestos and lead paint surveys were not part of the scope of this Work Order. However, there are no on-site structures present.

3.2.7 Groundwater Wells

During the Phase I site reconnaissance, Tt did not observe or note groundwater wells on the subject property.

3.2.8 Livestock

Tt did observe livestock (cattle) on the subject site during the Phase I ESA.

3.2.9 Cattle Dipping Vats

No Cattle Dipping Vats (CDVs) were observed by Tt on the subject site. Tt also reviewed information on known or recorded CDVs in Glades County from the FDEP's website and there are no known CDVs listed under Lake Hicpochee or Bronson.

(http://www.dep.state.fl.us/waste/quick_topics/publications/wc/cattlevats.pdf)

3.2.10 On-Site Structures

Tt observed no structures (i.e., buildings, residences, pole barns, maintenance areas, etc.) on the subject property during Phase I ESA activities. However, there are two old concrete (shells were used in the concrete as aggregates) 20-inch wide wing-wall water control structures in the northeast portion of the site at proposed Inflow Point #3.

3.2.11 Threatened and Endangered Species

Please note that a Threatened and Endangered (T&E) Species survey was not part of our scope under the Work Order. However, Tt did observe T&E wildlife species on this property during the Phase I ESA, such as sand hill cranes, crested caracara, alligators, and a manatee was observed in Lake Hicpochee.

3.2.12 Burn Areas

No burn areas were observed during the site reconnaissances.

3.3 REGULATORY REVIEW

3.3.1 Regulatory Agency Database Search

This section of the report provides a compilation of the information found in Federal, State, and Local databases that were searched by EDR. Information contained in these reports is current as of the date the agency database was last updated (as noted in their report). However, due to the dynamic nature of environmental laws and data reporting, this information may change over time. A search of available environmental records

was performed by EDR, and a final report was issued to Tt on April 10, 2013. Tt did not participate in the research or compilation of the records report.

The report provided to Tt by EDR includes a complete compilation of the database records that were searched and the date of the last update to each database searched by EDR. The Federal ASTM standard record search included a review of the following databases: NPL, Proposed NPL, Delisted NPL, CERCLIS, CERCLIS-NFRAP, CORRACTS, RCRA-TSDF, RCRA-LQG, RCRA-SQG, ERNS, HMIRS, US ENG CONTROLS, US INST CONTROL, DOD, FUDS, US BROWNFIELDS, CONSENT, ROD, UMTRA, ODI, TRIS, TSCA, FTTS, SSTS, LUCIS, DOT OPS, ICIS, HIST FTTS, US CDL, RADINFO, LIENS 2, PADS, MLTS, MINES, FINDS, and RAATS. The following State or Local databases were reviewed: SHWS, SWF / LF, LUST, UST, AST, FL Sites, SPILLS, ENG CONTROLS, INST CONTROL, VCP, DRY CLEANERS, PRIORITY CLEANERS, DEDB, BROWNSFIELDS, WASTEWATER, AIRS, TIER 2, and FL CDVs. The following Tribal records were searched: INDIAN RESERV, INDIAN LUST, and INDIAN UST. EDR proprietary records were searched for Manufactured Gas Plants. EDR also searched for Sanborn Fire Insurance Maps and City Directory listings for the subject site and the results indicated no coverage for this property.

The EDR report stated that there were no listings for the subject site/target property in any of the EDR's search of available ("reasonably ascertainable") government records either on the target property (EDR, 2012). However, under "surrounding properties" one listing appeared. The listing was identified as Bronson Ranch. The listing was for an leaking underground storage tank (LUST), an underground storage tank (UST), and an aboveground storage tank (AST). According to EDR the UST was removed in 1990 and the facility's status is considered closed. In addition, EDR reported that the 1990 discharge cleanup status is considered no further action (NFA) complete.

In addition, there were unmappable (orphan) sites that were not considered in the report analysis because of poor or inadequate address information. The orphan sites are summarized in the following paragraph.

Orphan Site Summary - The sites listed in this category were unmappable (orphan) because of poor or inadequate address information. According to the EDR Report, 20 sites were reported in the orphan category. After reviewing their address information these 20 sites are located beyond the ASTM search distance from the subject property, and therefore are not expected to have any impacts on the Property.

Environmental Liens – EDR conducted an environmental lien and activity and use limitations (AUL) search on the subject property and neither were found on the subject

Property. A copy of the EDR Environmental Lien and AUL Search Report is provided in Appendix B.

3.4 Phase I ESA Conclusions and Recommendations

The purpose of the Phase I ESA was to evaluate whether historical or current activities have resulted in RECs on or near the subject tract that warrant further evaluation under the Phase II ESA. Based upon our observations and the results of the regulatory database search, the following areas were further evaluated during the Phase II ESA:

- The current Pasture in the western portion of property was formerly cultivated in the 1960s and 1970s; the potential concern is residual agricultural chemicals.
- Wetlands in the eastern portion of property could have received residual agricultural chemicals via run-off.
- Small piles of solid waste disposal (trash piles on the C-43 levee, and potentially other areas of the property to be determined during the Phase I portion of the ESA).

4.0 PHASE II ENVIRONMENTAL SITE ASSESSMENT

The section outlines the constituents of interest identified with the Lake Hicpochee TITF Property, the media that were evaluated, and the sample collection methodology. The plan was developed based upon our discussions with District personnel and with consideration of the historical and current land use of the subject property.

4.1 Constituents of Interest

The constituents of interest (COIs) that are commonly associated with properties found in rural, agricultural areas similar to the area where this tract is located include agrochemicals (i.e., pesticides, herbicides, carbamates) and metals (e.g., arsenic, copper, selenium, etc.).

During the Phase II ESA, the samples collected from the property were analyzed based on the historical, present, and future land use and potential RECs that may have impacted the site. Additionally the COIs that were evaluated for the property, and their corresponding analytical method that are listed in Section 3.2.

4.2 Soil, Sediment, Surface Water, and Groundwater Sampling

Soil and sediment samples were collected from the property to evaluate the potential for impacts from historical (agriculture) or current activities (cattle ranching), or to establish baseline conditions for future land use. Groundwater and surface water samples were also collected from this property. The following subsections describe the overall rationale for each investigation technique.

Ecological guidance values were used as a basis for comparison of soil, sediment, surface water, and/or groundwater samples collected from the tract assessed. This distinction was made based on the fact that the intended future land use can be habitat for ecological receptors (e.g., shallow water storage). As such, soil and sediment samples were collected for comparison to the 2003 Sediment Quality Assessment Guidelines (SQAGs) for Florida Inland Waters as developed by MacDonald Environmental Sciences Ltd. for the FDEP. In addition, the Soil Cleanup Target Levels (SCTLs) as established in Chapter 62-777, F.A.C. were also used as comparison. These SCTLs were developed to protect human health by considering both direct human contact (i.e., direct exposure) and soil acting as a source for groundwater and/or surface water contamination (i.e., leachability). Similarly, groundwater and surface water samples were collected for comparison to Groundwater and Surface Water Cleanup Target Levels (GCTLs and SWCTLs) and Natural Attenuation Default Criteria (NADCs) also established under Chapter 62-777, F.A.C. by FDEP.

4.2.1 Surface Soil and Sediment Sampling

Surface soil samples were collected from the Lake Hicpochee TITF Property at the following locations:

- Pasture Area Western Portion of the Property (former cultivated area)
- Wetland Areas Eastern Portion of the Property (potential residual agricultural chemicals via run-off)

Surface soil samples were collected at depths between 0 and 0.5 feet bgs. Prior to soil sample collection the area was cleared of debris and loose organic matter using a clean, decontaminated stainless steel spoon or stainless steel hand auger. The samples were collected using either a decontaminated stainless steel spoon or a decontaminated stainless steel hand auger. The collected soils were then placed into a decontaminated stainless steel bowl where they were thoroughly mixed (composited) using a clean, stainless steel spoon. Once the sample was placed in the bowl any remaining foreign material (e.g., leaves, rocks, debris, etc.) were removed. After mixing, the soil was placed into pre-cleaned glass or plastic sample jars provided by the laboratory. Once the sample jars were filled they were immediately placed in a sample-shipping cooler with wet ice until they were delivered to the laboratory for analysis. Table 1 lists the location coordinates for each of the soil samples collected.

For copper, one discrete sample per 5-acre subgrid was maintained separately (i.e., not composited) and analyzed individually.

4.2.2 Surface Water

Surface water was collected from the Lake Hicpochee TITF Property. Two of the surface water samples were collected from a boat. The surface water samples were collected by placing the glassware inverted to 0.5 meters below the water's surface and then rotating the glassware to collect the sample. The third surface water sample was collected from a small stream that enters the property from the north. Table 1 lists the location coordinates for each of the surface water sample collected. Figure 3 provides a sample location map.

4.2.3 Groundwater Sampling

Groundwater samples were collected from each of three temporary monitor wells installed in the upland pasture area at the Lake Hicpochee TITF Property. The temporary wells were installed using a direct push drill rig. Each temporary well consisted of a 5-foot section of PVC screen. The well screen was inserted into the drilled boring and the annulus was backfilled with clean 20/30 filter sand to land surface. Each

well was then developed by over-pumping the well with a peristaltic pump to remove fines and sediment from the well.

Following well development, each well was allowed to equilibrate for 24-hours before groundwater sampling was performed. The well screen was purged with a low flow peristaltic pump and a new section of polyethylene tubing. Field measurements (i.e., pH, conductivity, dissolved oxygen, specific conductance, temperature, and turbidity) were collected at timed intervals during purging to ensure that the water being produced had stabilized. Purge volumes and flow rates were recorded during purging. After stabilization of the field parameter measurement data, and in accordance with FDEP protocols, the sample was collected for analyses. The groundwater sample locations are listed on Table 1 and shown on Figure 3.

4.3 Sample Custody Documentation

Chain of custody documentation was prepared and maintained throughout the sample collection and analytical process. This process consisted of assigning each sample a unique sample identifier, and documenting each sample with the name of the sampler, the date and time collected, and other pertinent data on a multi-part chain of custody (COC) form. This form stays with the sample from the time of collection through completion of the analyses and is then transferred to the analytical report. Each time the sample is transferred from one person or organization to another this transfer of control is documented on the sample custody form. The sample identifiers are traceable to the field logbooks, which provide additional details regarding the sample collection process, location and circumstances (such as the purpose for its collection). This process is designed to mirror the legal evidentiary process and is implemented to ensure the quality and integrity of the sample results.

4.4 Quality Assurance/ Quality Control Data Collection

Throughout the field sampling activities additional samples were collected for quality control purposes. Quality control samples included: sample equipment blanks, sample duplicates, and split samples. Equipment blanks were prepared by running de-ionized and distilled water over or through decontaminated field equipment and collecting the rinseate for analyses. These samples provide a measure of the equipment decontamination process and are collected to ensure that cross-contamination is not affecting the sample results. Sample duplicates were collected by preparing an equivalent split from the original sample volume and sending it to the same laboratory for analyses. These samples provide a means of measuring the reproducibility of the laboratory results. Split samples were collected by preparing an equivalent split from the

original sample volume and sending it to an independent (third-party) laboratory for analyses. These samples provide a means of evaluating the reliability of the entire sample collection process.

It subcontracted to Jupiter Environmental Laboratories, Inc. (NELAC Certification # E86546) located in Jupiter, FL for the analyses of the primary samples including blanks and duplicates. Split samples were sent to an independent third-party laboratory, Millennium Laboratories, Inc. (NELAC Certification # E84899) in Tampa, FL, for analysis.

4.5 Phase II Data Assessment and Analytical Results

This section presents the results of the samples that were collected for field and laboratory evaluation. Complete copies of the laboratory analytical reports summarized in this section are provided on a compact disk, which is attached as Appendix H.

4.5.1 Soil Borings – Surface Soil Samples

The following is a summary of the number of surface soil samples (0 to 0.5 ft bls) collected from each area and the analytical methods for each sample. Figure 4 shows the soil sample locations on the Lake Hicpochee TIITF Property.

- **Pasture Area Western Portion of the Property (Former Cultivated Area)** - The discrete soil samples were collected at random across each 50-acre grid in the pasture area. The coordinates of each grid and sample location were collected using a hand held GPS. The 10 composited soil samples were sent for analysis for the following constituents: Organochlorine Pesticides (Method 8081), Organophosphorus Pesticides (Method 8141), Chlorinated Herbicides (Method 8151), Carbamates (Method 8318), the Eight Resource Conservation and Recovery Act (RCRA) Metals, and Total Organic Carbon. For copper, one discrete sample per grid was maintained separately (i.e., not composited) and analyzed individually.
- **Wetland Areas Eastern Portion of the Property** - It collected five composited surface soil/sediment samples from the wetland areas identified on the site. The five surface soil/sediment samples were sent for analysis by Organochlorine Pesticides (Method 8081), Organophosphorus Pesticides (Method 8141), Chlorinated Herbicides (Method 8151), Carbamates (Method 8318), the Eight RCRA Metals, Copper, and Total Organic Carbon. For copper,

one discrete sample per grid was maintained separately (i.e., not composited) and analyzed individually.

4.5.1.1 Soil Analytical Results

Seventeen surface soil and sediment samples (including duplicates and split samples) were collected from the Lake Hicpochee TIITF Property and analyzed for pesticides, herbicides, the eight RCRA Metals and copper.

- No exceedances of metal SCTLs or SQAGs were found in the soil/sediment samples.
- Organochlorine Pesticides were not detected in the soil/sediment samples.
- Organophosphorus Pesticides were not detected in the soil/sediment samples.
- Chlorinated Herbicides were not detected in the soil/sediment samples.
- Carbamates were not detected in the soil/sediment samples.

Table 2 presents a summary of the positive results for the surface soil and sediment samples. Figure 4 depicts the locations and the results.

The Phase II ESA findings indicate that there is no evidence of environmental impairment from residual agricultural chemicals in soils on the property. An optional Screening Level Ecological Risk Assessment (SLERA) was included in the scope of work. However, the absence of detections of residual agricultural chemicals across the property and metal concentrations below SQAGs did not warrant the SLERA.

4.5.2 Groundwater Samples

Groundwater samples were collected for analyses from three temporary monitor wells installed within the Lake Hicpochee TIITF Property. Figure 6 shows the sample locations on the Property. Temporary well points on this property were generally installed to a depth of 10 feet bgs. Depth to water ranged from 1.02 feet bls in TW-2 to 1.73 feet bls in TW-1.

4.5.2.1 Well Purging Data

Prior to conducting groundwater sampling on April 22, 2013, each well was gauged to determine its total depth, the depth to water, and the well volume was calculated. Each well was then purged using an approved low-flow sampling technique, a peristaltic pump. The purging and sampling was performed in accordance with the FDEP standard operating procedures (SOPs) (FDEP, 2008). The well purging data is presented in the table on the following page. In general the wells met the FDEP's criteria for stabilization prior to sample collection.

Lake Hicpochee TIITF Property Summary of Temporary Well Purging Data								
Sample ID	Time	Temp. (°C)	Sp. Cond. (µS/cm)	DO (mg/l)	pH (SUs)	ORP (mV)	Turbidity (NTUs)	Odor/Color
TW-1	1015	22.88	678	1.64	7.16	-105	18.3	None/Clear
	1018	22.88	678	1.61	7.16	-109	17.6	None/Clear
	1021	22.88	678	1.62	7.16	-109	14.9	None/Clear
TW-2	1105	22.30	765	0.84	7.31	-186	442	Lt. Organic/ Slightly Cloudy
	1108	22.30	765	0.83	7.31	-187	212	Lt. Organic/ Slightly Cloudy
	1111	22.30	763	0.81	7.31	-187	163	Lt. Organic/ Slightly Cloudy
TW-3	1205	22.13	696	1.18	7.11	-141	121	Lt. Organic/ Slightly Cloudy
	1208	22.11	694	1.11	7.11	-141	136	Lt. Organic/ Slightly Cloudy
	1211	22.12	694	1.10	7.11	-138	92	Lt. Organic/ Slightly Cloudy

4.5.2.2 Groundwater Sampling and Analytical Results

Three temporary well points were installed and groundwater samples were collected from the Lake Hicpochee TIITF Property. The groundwater samples were analyzed for Organochlorine Pesticides (Method 8081), Organophosphorus Pesticides (Method 8141), Chlorinated Herbicides (Method 8151), Carbamates (Method 8318), the Eight RCRA Metals, and Copper.

The sample results reported positive detections for three metals (arsenic, barium, and chromium). The detections were well below their respective GCTLs, except for one groundwater sample from temporary monitor well TW-3, which had a reported arsenic concentration in groundwater of 14 ug/L. The 14 ug/L concentration of arsenic in groundwater is slightly above the 10 ug/L Primary Drinking Water Maximum Contaminant Concentration (MCL), but below the Fresh Water Surface Water criteria of 50 ug/L as provided in Chapter 62-302, F.A.C. The groundwater samples were non-

detect for Organochlorine Pesticides, Organophosphorus Pesticides, Chlorinated Herbicides, and Carbamates. Table 5 presents a summary of the positive results for the groundwater samples and Figure 6 depicts the locations and the results.

4.5.3 Surface Water Samples

Surface water samples were collected for analyses from the Lake Hicpochee TIITF Property. Figure 5 shows the sample locations on the Property.

4.5.3.3 Surface Water

The three surface water samples were analyzed for Organochlorine Pesticides (Method 8081), Organophosphorus Pesticides (Method 8141), Chlorinated Herbicides (Method 8151), Carbamates (Method 8318), the Eight RCRA Metals, and Copper. The other two samples were analyzed for Organochlorine Pesticides (Method 8081), the Eight RCRA Metals, and Copper.

Lake Hicpochee TIITF Property Summary of Surface Water Field Parameters							
Sample ID	Date	Time	Temp. (°C)	Sp. Cond. (µS/cm)	DO (mg/l)	pH (SUs)	ORP (mV)
SW-1	4/17/13	1330	28.22	698	3.87	7.34	115
SW-2	4/18/13	1130	27.00	491	5.78	7.47	-7
SW-3	4/18/13	1250	26.42	518	3.93	7.00	0

The sample results reported positive detections for four metals (arsenic, barium, chromium, and lead). The detections were well below their respective Fresh Water Surface Water Criteria of Chapter 62-302, F.A.C. The surface water samples were non-detect for Organochlorine Pesticides, Organophosphorus Pesticides, Chlorinated Herbicides, and Carbamates. Table 4 presents a summary of the positive results for the surface water samples and Figure 5 depicts the locations and the results.

4.5.4 Conclusions of the Phase II ESA

Tetra Tech conducted a Phase II ESA of the Lake Hicpochee TIITF Property in Glades County on behalf of the District. This assessment included sampling portions of the Property and was conducted to evaluate the suitability of the property for future use by the District.

The results of the Phase II ESA indicated that the Lake Hicpochee TITF property is suitable for the District's future intended land use as a hydrologic restoration project of this property. In addition, the Phase II ESA findings indicate that there is no evidence of environmental impairment from residual agricultural chemicals on the property, and there are only very small areas of solid waste on the C-43 levee that will require corrective action (solid waste removal).

It is recommended to remove the solid waste (estimated 60 cy of asphalt debris, an abandoned BBQ grill, chain link fencing, wooden pallets, dishwasher, refrigerator, tarp, tires, plastic lattice, hoses, wooden poles, plastic cooler, beach chairs, cattle feeder, etc.) for future use.

5.0 LABORATORY DATA EVALUATION

The laboratory analytical reports consisted of packages prepared by the prime contract laboratory that performed the sample analysis, Jupiter Environmental Laboratories, Inc. (Jupiter) and data reports prepared by the laboratory that performed the split sample analysis, Millennium Laboratories, Inc. (Millennium). Both laboratories relied upon subcontractor laboratories to complete portions of their analyses. Jupiter and Millennium subcontracted portions of their work to other third-party laboratories, SunLabs, Inc. (NELAC certification #84809) located in Tampa, FL.

In general the packages prepared by Jupiter and Millennium included the results of method blanks, laboratory control spike results, matrix spike/matrix spike duplicates and other QA/QC results with each analytical report. Jupiter and Millennium also provided case narratives summarizing their QA/QC results, which are provided in Appendix I.

The method blanks and equipment blank results were below the laboratory reporting limits for each analyte. The surrogate recoveries in general were within the recommended limits. Occasionally there was a surrogate recovery outside the laboratory's defined limits, but other surrogates associated with the analyses were within the limits. That is the reason that multiple surrogates are required by the method. The laboratory control spikes, laboratory control spike duplicates, matrix spikes, and matrix spike duplicates were generally within the required criteria in this dataset for spike values, percent recovery, and relative percent difference. The following data flags were used on detected analytes:

- The "I" data qualifier was used for samples with a reported value between the laboratory's method detection limit and the laboratory's practical quantitation limit.

- The “U” data qualifier was used to indicate that the compound was analyzed for, but not detected. The value presented was the laboratory’s practical quantitation limit.

Taken as a whole, Tt concluded that the analytical data reports from the laboratories were of good quality and in compliance with the project objectives. Therefore, Tt concluded that the analytical results presented in these data packages met the objectives of this project. In addition, ADaPT files were also generated by the laboratories for electronic submittal to the District.

5.1 Split and Duplicate Sample Correlation

As discussed previously, the duplicate samples consisted of aliquots from the same sample source analyzed by the same laboratory. The comparison of these sample results to one another measures the reproducibility and precision of the analytical laboratory. The split samples consisted of indistinguishable, sample aliquots from the same source that were analyzed independently by two different analytical laboratories. These samples measure the accuracy of the analytical results.

Relative percent differences (RPDs) were calculated where positive results were exhibited by sample pairs (including both duplicates and splits). In 100% of the calculations, the RPD values were less than 50%, indicating good sample correlation. These instances were for metals analyzed via Method 6020. Table 3 presents the RPD calculations for the positive results detected in duplicate or split samples.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions of the Phase I Assessment

The purpose of the Phase I ESA was to evaluate whether historical or current activities have resulted in RECs on or near the subject tract that warrant further evaluation under the Phase II ESA.

Based upon our observations the following areas were further evaluated during the Phase II ESA:

Lake Hicpochee TITF Property

- The current Pasture in the western portion of property was formerly cultivated in the 1960s and 1970s; the potential concern was residual agricultural chemicals.
- Wetlands in the eastern portion of property could have received residual agricultural chemicals via run-off.
- Small piles of solid waste disposal (trash piles on the C-43 levee).

6.2 Conclusions of the Phase II Investigation

Samples of relevant environmental media were collected to evaluate the potential RECs identified in the Phase I ESA during the Phase II ESA. The Lake Hicpochee TITF property revealed no evidence of contamination in need of corrective action. In addition, Tt is not aware of other environmental impairments that would restrict the District from using the subject tract as part of the Lake Hicpochee Hydrologic Enhancement Project.

It is recommended to perform a limited solid waste removal to render the entire subject site suitable for the District's future intended land use.

6.3 Evaluation of Site Restoration Cost

This section provides a summary of the cost for corrective action, which in the professional opinion of Tt, is necessary in order for the District to use the subject Lake Hicpochee TITF property without reservation.

Removal of approximately 80 tons of solid waste for a cost estimate of approximately \$6,000. The majority of the tonnage is from an estimated 60 cubic yard pile of asphalt debris along the C-43 Levee, located approximately 3,100 ft west of the C-19 Canal. The remaining solid wastes are located in small 1 or 2 cubic yard piles along the C-43 Levee. Figure 7 provides the locations of the solid waste piles.

The following table summarizes the costs associated with the recommended actions:

Recommended Corrective Action Cost	
Solid Waste Removal	\$6,000
Total	\$6,000

7.0 REFERENCES

- ASTM, 2005, Designation E1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania, 19428.
- FDEP, 2008. Standard Operating Procedures. Florida Department of Environmental Protection, Tallahassee, FL. 2008.
- FGS, 1988. Florida Geological Survey, Regional Oil & Gas Well Location Maps. Map Series 6, Sheet 11 and 12 of 26. Tallahassee, Florida. 1988.
- USDA (United States Department of Agriculture). 2000. Soil Survey of Glades County, Florida. 2000.
- USEPA's website (<http://www.epa.gov/radon/zonemap/florida.htm>), Radon Gas Potential Website, October 2007.
- USGS website (<http://tin.er.usgs.gov/geology/state/fips-unit.php?code=f12043>) Geologic units in Glades County, Florida website. May 2012.
- U.S. Fish and Wildlife Service's website (<http://www.fws.gov/wetlands/Data/Mapper.html>), National Wetlands Mapping Website. June 2011.

TABLES

FIGURES

Appendix A
EDR Report

Appendix B
Wetlands Map

Appendix C
Soil Survey Map

Appendix D
Radon Gas Potential Map

Appendix E
Oil & Gas Index Map

Appendix F
Glades County Property Appraiser Site Information

Appendix G
Site Photographs

Appendix H
Laboratory Analytical Reports (CD)