



## Floerke Site

HWY 181  
San Patricio County, TX

Corpus Christi Regional Economic Development Corp.  
Corpus Christi, TX

Terracon Project No. GR195233  
October 17, 2019



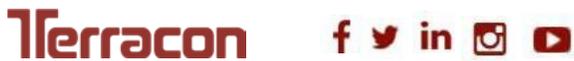
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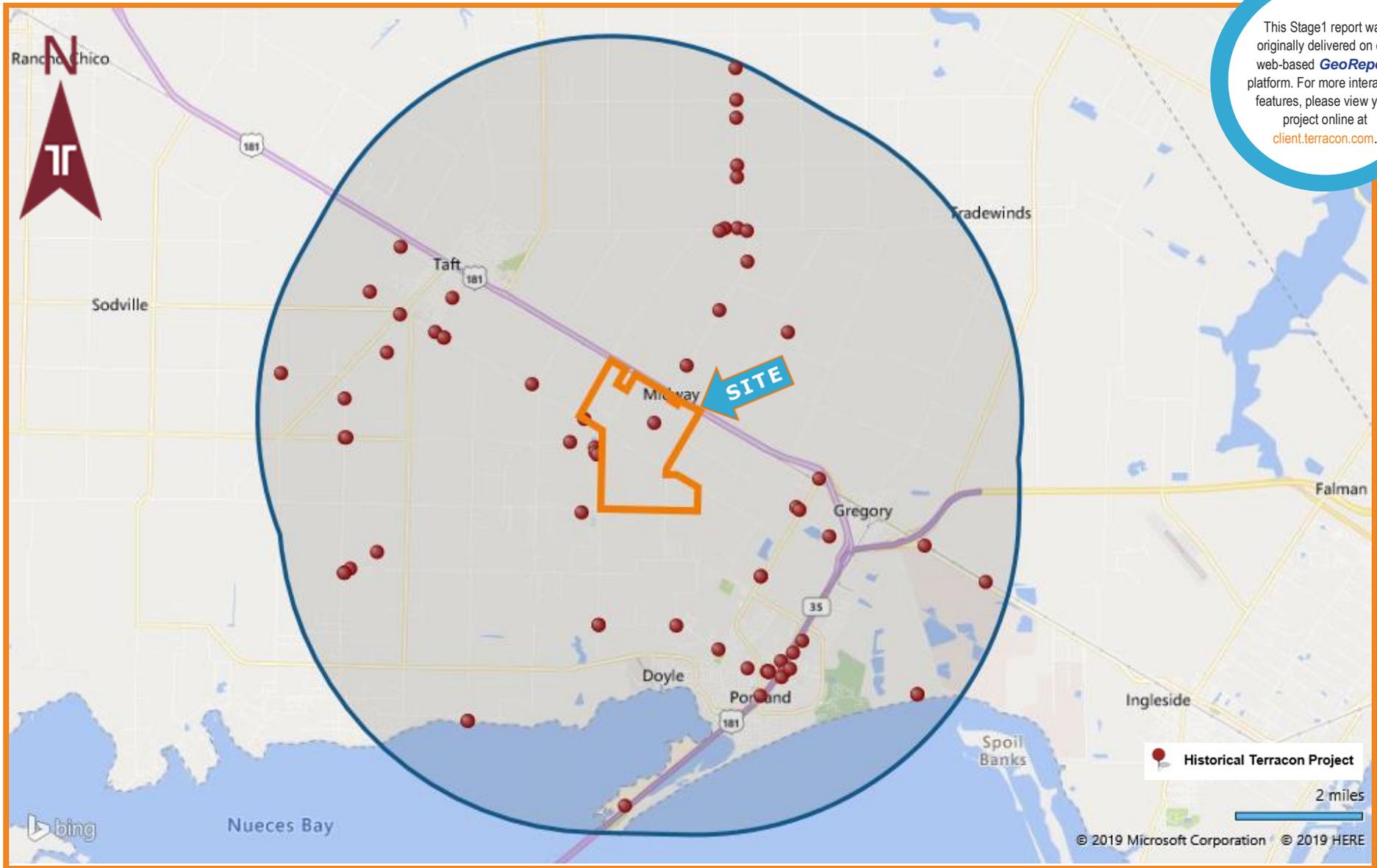
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This document presents a preliminary opinion of geotechnical conditions under the authority of Gregory P. Stieben, License Number 59536, on October 18, 2019. It is not to be used for design or construction purposes.

The engineering opinion included with this signature, dated October 17, 2019, is our recommended exploration plan only. Opinions of the expected conditions and foundation or construction considerations, and **any related opinions are preliminary and cannot be considered an engineer's work product until confirmed by the TERRACON EXPLORATION PLAN.**

# SITE CHARACTERISTICS

## NEARBY TERRACON GEOTECHNICAL DATA



See [INFORMATION SOURCES](#) for a detailed list of sources used to generate this figure.

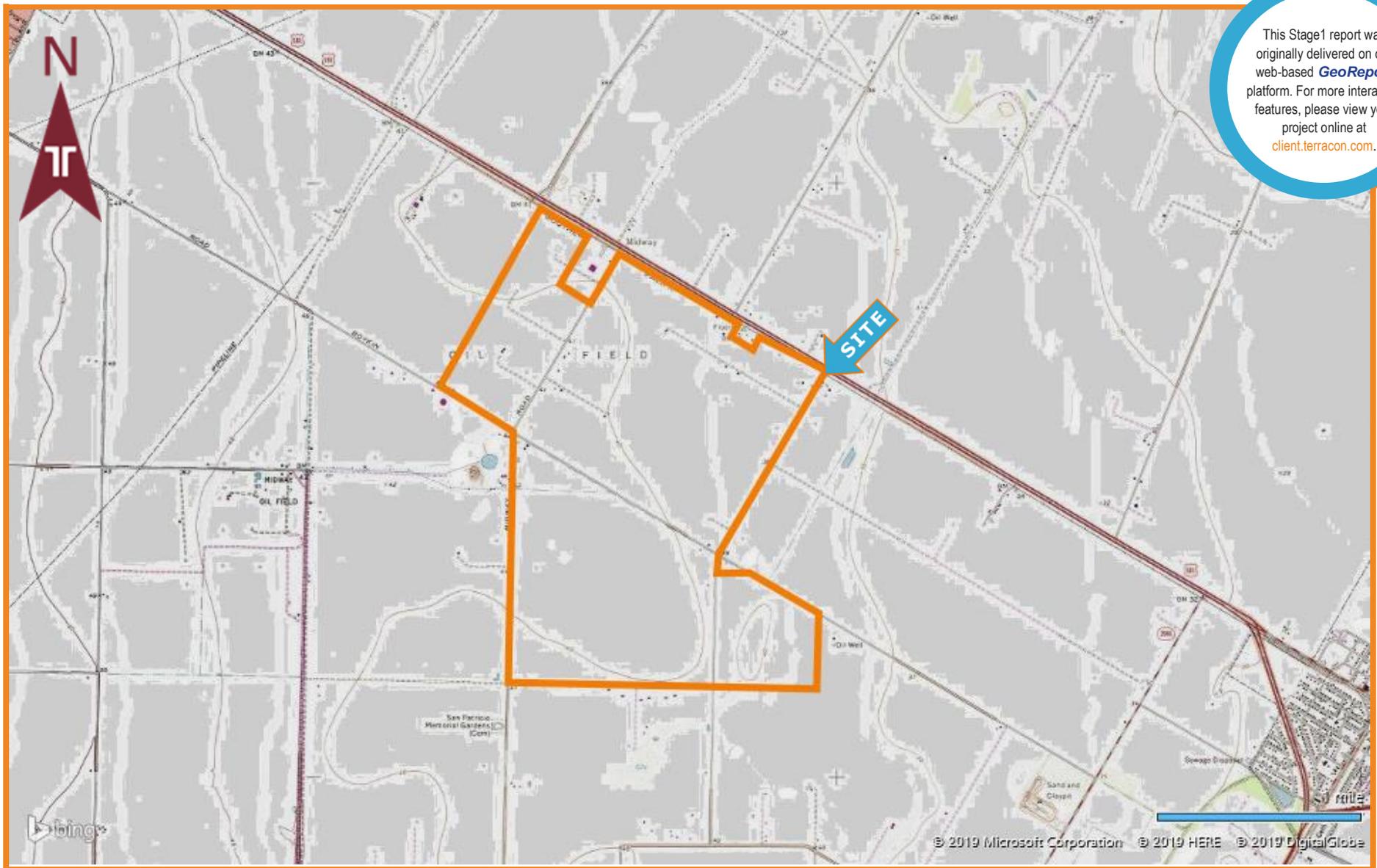
SITE AERIAL



Your Client Service Manager is ready to address any questions or comments you might have. Begin collaborating with them at [client.terracon.com](http://client.terracon.com).

See INFORMATION SOURCES for a detailed list of sources used to generate this figure.

### SITE TOPOGRAPHY



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See **INFORMATION SOURCES** for a detailed list of sources used to generate this figure.

### SITE GEOLOGY



See [INFORMATION SOURCES](#) for a detailed list of sources used to generate this figure.

## PLANNED CONSTRUCTION

### INFORMATION PROVIDED

- Site location furnished to us via emails from Corpus Christi Regional Economic Development Corp.

### PROJECT DESCRIPTION

- The project is located along Highway 181, San Patricio County, TX. Coordinates of the approximate center of the site are Latitude 27.9375° N 97.3520° W.
- The proposed site covers approximately 1,700 acres; and the future construction is unknown.

## PREVIOUS SITE USAGE

### HISTORICAL AERIAL IMAGES

Terracon reviewed the following readily available historical aerial images available from Google Earth Pro™ to develop a limited history of previous site usage.

- Aerial Images: 20 images from 1950 to 2017 were reviewed.

### HISTORICAL AERIAL IMAGES SUMMARY

The site is currently undeveloped with several structures on site. It appears that previous buildings occupied the middle part of the site until 1995. In 2014 a structure was placed on the eastern side of the site. In 1950 there was some small structures on the southern part of the site and by 1961 it appears that they were removed. In 2011 Windmills were installed on the southern part of the site. From 2006- 2014 a graded pad in the southern part of the site that was used for storage and fill piles were observed. In 2017, a small structure was built on the southwestern part of the site.

### HISTORICAL AERIAL IMAGERY USAGE

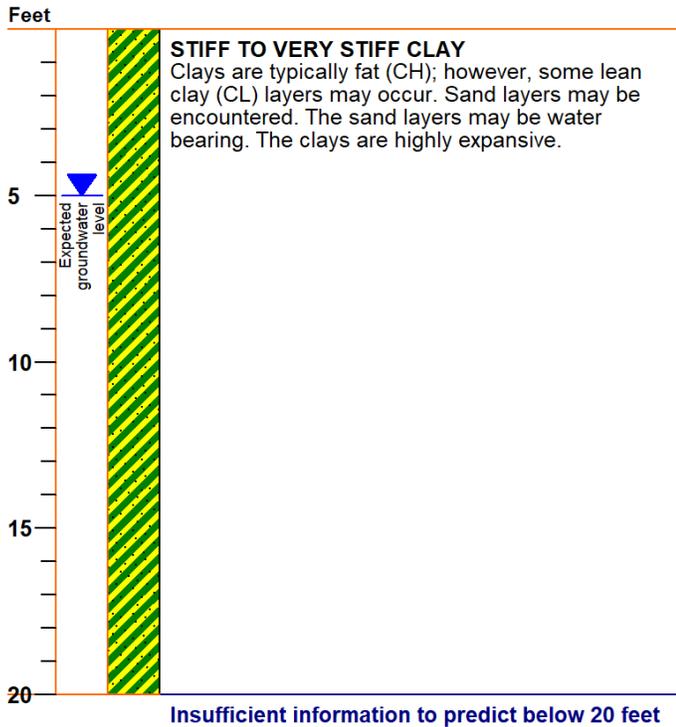
The use of these readily available aerial imagery resources, while helpful to understand previous site usage, should not be considered suitable for detecting any prior site usage that may have affected the site subsurface conditions. These images are widely spaced in time, and a more comprehensive review of aerial imagery and/or site interviews would be required to better understand previous site usage.

## CONCEPTUAL GEOTECHNICAL MODEL

The following opinion of expected geotechnical conditions must be validated with a geotechnical engineering evaluation, fieldwork, and testing. See **LIMITATIONS** for additional information. This discussion is preliminary in nature and not for design purposes. In no case should the information or opinions provided in this report be utilized for final design.

**AREA REPRESENTED:** Entire site

### EXPECTED LITHOLOGY



### CONFIDENCE

The project geotechnical engineer has assigned confidence estimates for the datasets below. For information regarding the confidence levels below, see **CONFIDENCE ESTIMATE**.

**LOCAL EXPERIENCE:** Local practitioner has 38 years of experience in the vicinity of the site.  
**HIGH**

**PUBLIC DATA:** Sufficient data exists for this site.  
**HIGH**

**HISTORICAL DATA:** 3 exploration projects were reviewed within 2-miles of the site.  
**MODERATE**

**OVERALL CONFIDENCE:** **HIGH**

### FOUNDATION DESIGN CONCEPTS

- Shallow foundation support is typical for loads up to 100 kips or 3 klf.
- For heavier structures and column loads greater than 100 kips, deep foundations will likely be appropriate. Deep foundations may consist of conventional drilled piers, driven piles, or auger-cast-in-place piles (ACIPs). Auger cast displacement piles may also be considered to reduce cuttings returned to the surface.
- Expansive soils are commonly encountered in this area. These soils are prone to volume change with variations in moisture content resulting in floor slab movements, cracked slabs and walls, and roof leaks. The presence of expansive soils will likely require over-excavation or chemical treatment to mitigate possible swell potential.
- This area is usually in a Seismic Site Class zone: D.

## SITE AND CONSTRUCTION CONSIDERATIONS

- The site is not located in a frost zone.
- Soluble sulfates may be present within the site soils. The material should be tested to evaluate if it is suitable for lime treatment. Also, sulfate resistant concrete may be necessary with high sulfate concentrations.
- Shallow groundwater may be present at the site, particularly within the sand layers. If encountered, shallow groundwater could inhibit or increase the costs associated with construction of below grade structures. Based on surrounding projects, groundwater depths of 5 to 6 feet below grade are possible. Dewatering may be necessary if below grade structures are planned.

## TERRACON EXPLORATION PLAN

To characterize the subsurface conditions, we recommend exploratory borings and Cone Penetration Tests (CPT) soundings. Exploratory borings should include sampling of clay soils using Shelby Tube sampling. Split spoon samples should be obtained in sandy soils at similar intervals. The exploratory borings will provide the necessary sampling and testing to provide design parameter recommendations while CPT soundings reduce the potential number of necessary exploratory borings. Additionally, the CPT soundings can be used to fine tune the design parameters and provide more refined stratigraphic information. If the exploration is done during wet weather, it should be anticipated that all-terrain vehicle (ATV) equipment may be required.

- CPT soundings to depths ranging from 70 to 80 feet.
- Building borings to depths ranging from 20 to 100 feet or auger refusal, depending on the column loads.
- Pavement borings to a depth of 6 feet.
- Possible electrical resistivity testing, thermal conductivity testing, and seismic shear testing (MASW) to evaluate seismic site class.
- Anticipated laboratory tests include: Moisture content, Atterberg Limits, Minus 200 Sieve, Unconfined Compression Test, Dry Unit Weight, swell tests, consolidation, corrosion suite (pH, electrical resistivity, soluble sulfate and sulfide content, chloride content, Redox), and CBR.

## INFORMATION SOURCES

### TERRACON HISTORICAL PROJECTS

Terracon has approximately 70 geotechnical projects within 2-miles of your project site. Of those, the local practitioner reviewed select exploration projects to gain a better understanding of potential subsurface conditions. The geotechnical project locations are illustrated on the [GeoReport](#) platform, and on the **SITE LOCATION MAP**.

### PUBLIC DATA SOURCES



TOPOGRAPHY  
GEOLOGY



*Soil Survey Geographic U.S. Database*

DEPTH TO BEDROCK  
DEPTH TO WATER  
FLOOD FREQUENCY  
SOIL HYDRO GROUP  
SOIL PARENT MATERIAL

**OTHER**  
BING MAPS  
GOOGLE MAPS  
GOOGLE EARTH PRO™ (Historical Aerial Images)

## METHOD

The **CONCEPTUAL GEOTECHNICAL MODEL** developed for the subject site provides expected subsurface (lithology and groundwater) conditions as well as site preparation and foundation options based upon the expected subsurface conditions and our understanding of the planned construction.

It is based upon Terracon's review of information from selected sources within the public domain, historical subsurface exploration and testing data in the vicinity of the project site and the experience of Terracon's local practitioners.

If sufficient site development plans are available, a work plan required to confirm the Conceptual Geotechnical Model is included. The work plan is intended to be executed by Terracon to confirm our Conceptual Geotechnical Model. The work plan may not be sufficient in scope for other geotechnical engineers.

## CONFIDENCE ESTIMATE

Terracon has assigned confidence estimates for the datasets based on upon the engineer's local practice in the vicinity of your site. The engineer assigned a subjective confidence opinion of low, moderate, or high for each of the following categories:

- Local Experience
- Public Data
- Historical Project Data

Using a weighted averaging approach, we derived an overall confidence interval for all the combined information sources. Low confidence implies that the level of available data and/or consistency is such that little confidence can be placed in the Conceptual Geotechnical Model. Conversely, a high confidence ranking implies that sufficient data and consistency exists to derive a high confidence in the statement of expected conditions.

Regardless of the confidence ranking, actual conditions may vary significantly from the predicted conditions, and the expected conditions must be confirmed with site-specific exploration data, and significant variations from the expected conditions are possible.

The **CONCEPTUAL GEOTECHNICAL MODEL** is preliminary in nature and not for design purposes. Any opinions regarding the subsurface conditions for this project may not represent actual conditions encountered during project exploration, or construction. In no case should the information or opinions provided in this Stage1 be utilized for final design.

## LIMITATIONS

The sources of publicly available information as provided in this Stage1 are identified in the Project Map Viewer and referenced in **INFORMATION SOURCES**. Terracon makes no warranty as to accuracy of any public information, as displayed in the viewer.

Confirmation of opinions stated in this document is essential. Confirmation should include performing a site-specific geotechnical evaluation consisting of exploratory soil borings and/or related exploration methods consistent with the guidelines set forth in the **TERRACON EXPLORATION PLAN**.

This Stage1 **GeoReport** addresses a preliminary, unverified opinion of geotechnical conditions only. The report does not include either specifically, or by implication, any environmental assessment of the site or identification or prevention of pollutants, hazardous materials, or conditions.

Furthermore, given the limitations described above, and based on the preliminary nature of this report, all parties are advised that any decisions or actions taken by any party based on the information contained herein, including decisions with financial implications are done solely at the risk of that party. By providing this information in this preliminary form, Terracon expressly disclaims any duties or obligations associated with the usage of this information for decision-making purposes.

In the event that changes to the nature, design, or location of the project as outlined in this report are planned, the preliminary conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing. In the event the project moves into the design phase, Terracon should be retained to develop and complete a scope of work that includes site specific explorations to confirm or to modify this preliminary report.

Terracon and Corpus Christi Regional Economic Development Corp. recognize that we have entered into an agreement that may contain certain confidential or non-disclosure obligations relating to our services. Corpus Christi Regional Economic Development Corp. recognizes, however, that while Terracon will not violate any such obligations, none of these create an exclusivity obligation to Terracon relating to the service or data in question. Terracon has the unfettered ability to provide similar services to any other party and use any public or previously available data for the service of others, even if included as part of this report.

The review of historical aerial imagery is limited to the images available from Google Earth Pro™. Terracon does not represent the imagery reviewed to be a complete historical record of previous site usage.