Texas Beach Watch

Texas General Land Office
Dawn Buckingham M.D., Commissioner
1700 N. Congress Avenue
Austin, Texas 78701

Quality Assurance Project Plan

Prepared for

US Environmental Protection Agency, Region 6
Dallas, Texas

Effective
September 2023

This **Quality Assurance Project Plan (QAPP)** is specifically designed for the development and implementation of the ***Texas Beach Watch program***, as required by the Beaches Environmental Assessment and Coastal Health Act of 2000. The QAPP specifies the overall project design and Quality Assurance objectives in sufficient detail to ensure program goals are accomplished in a timely, efficient, and cost-effective manner. The implementation of this QAPP will also ensure the environmental data collected is the appropriate type and quality for its intended use.

By our signatures below, we hereby approve this Quality Assurance Project Plan:

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LIST OF ACRONYMS

BAV	Beach Action Value
Coordinator	Beach Watch Project Manager
COC	Chain of Custody
DQI	Data Quality Indicators
EPA	U.S. Environmental Protection Agency
GLO	Texas General Land Office
GM	Geometric Mean
QA/QC	Quality Assurance/Quality Control
QAO	Quality Assurance Officer
QAP	Quality Assurance Program
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
SSMD	Single Sample Maximum Density
SOP	Standard Operating Procedure
TBW	Texas Beach Watch
TCEQ	Texas Commission on Environmental Quality

A. PROJECT MANAGEMENT

1. PROJECT / TASK ORGANIZATION

The Texas General Land Office (GLO) contracts with local governments, universities, and commercial laboratories (local contractors) to collect and analyze water samples. The results of these water samples will be reported to the GLO and the GLO will notify the local government contacts identified in the QAPP (APPENDIX C) and general public of the results.

The Texas Beach Watch Project Manager (Coordinator) coordinates contracts betweenthe GLO and local contractors, consolidate data submitted, provide program oversight, and maintain the Quality Assurance Project Plan (QAPP). The Texas General Land Office will maintain the Quality Management Plan (QMP) and ensure Quality Assurance/Quality Controls (QA/QC) are in place. An organizational chart of responsible parties is included in APPENDIX A.

2. PROBLEM DEFINITION / BACKGROUND

Growing concerns about the health risks posed by polluted bathing beaches, increased beach closures, and scientific evidence indicating an increase in infectious diseases caused by microbial organisms in recreational waters prompted the EPA to create the National Beaches Environmental Assessment, Closure, and Health (BEACH) Program. The goals of the BEACH Program are to protect public health at the nation's beaches and to ensure the public is notified when the risk for potential illness and disease is present.

Subsequently, on October 10, 2000, the Beaches Environmental Assessment and Coastal Health Act (BEACH Act), was passed to reduce the risk of disease to users of the nation’s recreational waters. The BEACH Act authorizes EPA to award grants to eligible coastal and Great Lake states and tribes for the development and implementation of programs to monitor coastal recreational waters for disease-causing microorganisms, and to notifythe public when monitoring indicates a public health hazard exists. EPA allocated funds in fiscal year 2001 and annually thereafter to help states develop their monitoring programs. To be eligible for implementation grants, states must establish and operate monitoring and notification programs consistent with performance criteria provided in the National Beach Guidance and Required Performance Criteria for Grants, 2014 Edition,(EPA-823-B-14-001, July 31, 2014).

3. PROJECT / TASK DESCRIPTION

This project involves the collection and testing of water quality samples for the presence of Enterococcus bacteria. Local contractors will collect water quality samples using standard collection methods described under Section B, Data Generation and Acquisition, Subsection 2. Sampling Methods, of this QAPP. Local laboratories will analyze the samples and enter results in the Texas Beach Watch (TBW) Program database. The GLO database will be used to compare sample results to an EPA-accepted alternative Beach Action Value (BAV) of 104 colony forming units (cfu)/100 milliliters (mL). When the BAV is exceeded, local government representatives will be notified immediately. Local government representatives may then require signs, warning of elevated bacteria levels, be posted at the affected beaches. In addition, bacteria levels for each sample are posted in near real-time on the TBW program's website site at http://texasbeachwatch.com/ or http://cgis.glo.texas.gov/Beachwatch/.

In September 2003, pilot implementation of the expanded monitoring program commenced in the six counties previously participating in the CMP funded TBW Program (Jefferson, Galveston, Brazoria, Matagorda, Nueces, and Cameron) and continued through the summer of 2004. Currently, the program monitors water quality at 172 sites located at 61 Texas recreational beaches in nine coastal counties. The identification of the counties and all the monitoring stations are included in APPENDIX C.

Between 1999 and 2003, prior to the passage of the BEACH Act and the development of the National Beach Guidance and Required Performance Criteria for Grants, the GLO secured and allocated Texas Coastal Management Program (CMP) funds for water quality monitoring at thirteen of the most heavily used beaches in six counties along the Texas coast.

APPENDIX C – Unique Local Contractor and Government Contact Information contains specific information for each local contractor including maps and GPS coordinates of sampling locations. As new local contractors are added to the program, Appendix C is updated and incorporated into the Work Plan prior to the new local contractor beginning sampling. Appendix C is also updated when sampling stations are added or deleted. A copy of the QAPP and applicable Appendices are included in all contracts between the GLO and contractors.

4. Quality Objectives and Criteria for Measured Data

The goal of this project is to provide the public with information about water quality at recreational beaches. Development and implementation of a water quality monitoring and notification program will meet this goal. Water quality samples will be collected andtested for Enterococcus bacteria and compared to a BAV of 104 cfu/100 mL. Upon receipt of reliable data, advisories will be recommended when sampleresults for Enterococcus exceed the BAV. Data is of acceptable quality when it meets therequirements established in the QAPP under Section B, Data Generation and Acquisition,Subsections 5 through 8 and conducted in accordance with the sampling and analytical methods identified in Section B, Subsections 1 through 4.

5. Special Training / Certification

All samples will be collected under the supervision of licensed sanitarians or qualified environmental scientists under contract with the Texas General Land Office's TBW program, who have been trained to collect samples in accordance with the QAPP and the laboratory's Standard Operating Procedures (SOP). All laboratory analyses will be conducted at contracted laboratories under the direction of the Project Manager identified in Appendix C.

Staff who enter TBW data will receive training on the proper procedures to enter and validate data by the Project Manager or their designee. Training records will be maintained a minimum of three years or longer, depending on the organization's retention schedule requirements.

This QAPP is intended to apply to multiple labs using multiple EPA approved techniques (Method 1600 and IDEXX Enterolert™) on a regular basis and therefore references laboratory and manufacturer QA/QC requirements for equipment and is more general in nature consistent with the EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5) document, specifically 2.4 General Content and Detail Requirements, 2.4.1 General Content and 2.4.2 Level of Detail.

6. Documentation and Records

The contract laboratories will be responsible for maintaining all records related to the collection and analysis of data. These records include Field Observation Forms (APPENDIX B), chain of custody forms, sample analysis forms, individual laboratory QA/QC records,

and any other documentation generated. Hard copies and electronic files containing field and laboratory data will be stored for three years. The GLO will not require the submission of hard copies, unless specifically requested. When a contract laboratory ceases to participate in the TBW program, all records related to the collection and analysisof data will be provided to the GLO for recordkeeping purposes. The data can be in electronic format or hard copy.

The GLO is responsible for maintaining the TBW program database and ensuring sample data is maintained and backed up in an electronic format. In addition, the GLO is responsible for submitting annual data results to EPA on or before January 31.

B. DATA GENERATION / ACQUISITION

1. SAMPLING PROCESS DESIGN

Pursuant to the BEACH Act, Texas determined the number of primary and secondary contact recreation gulf and bay beaches along with the corresponding beach miles. Beaches in each county were ranked as primary or secondary contact recreation beaches based on frequency and density of use. Most of the primary contact recreation beaches are located along the Gulf of Mexico. Select beaches along the Gulf of Mexico are ranked as high priority (Tier 1) and sampling of coastal waters will be conducted as sampling costs and funding allows. The most heavily used beaches are located in Galveston, Nueces, and Cameron counties. These counties contain the most sampling stations and the majority of program funding are expensed in these areas.

Data from sample results are used to recommend contact recreation advisories; therefore, the collection and analysis of water samples are classified as critical measurements. Critical measurements are those required to achieve project objectives or limits on decision errors. The project objective seeks to provide the public with information aboutthe water quality at beaches used for contact recreation. One sample will be collected ateach sampling station. The sample result is compared to the BAV. The BAV that triggersan advisory and notification is equal to or greater than 104 cfu/100 mL. If the BAV is exceeded, an advisory will be recommended by the GLO and a sample will be collected daily until the sample result is below the BAV. Due to re-sampling logistics, samples may not be collected until 24-48 hours after the initial sample was collected at the monitoring station.

The standard operating procedures (SOPs) for field sampling are described in sequential steps. The SOP also includes information pertaining to specific facilities, equipment, materials and methods, and QA/QC procedures. All local contractors will follow the SOPs described in Part 9000 (Microbial Examination) of *Standard Methods for the Examination of Water and Wastewater* (APHA, AWWA, WEF, 22st Edition, 2012 or available online: Standard Methods for the Examination of Water and Wastewater at www.standardmethods.org).

The proper collection, preservation, and storage of beach water samples are necessary to reduce analytical errors. Bacteriological samples will be collected in sterile polypropylene bottles with a volume of at least 125 mL, but no more than 1000 mL, to allow for adequate sample mixing. To avoid contamination, the collection bottles must remainsealed until immediately prior to sample collection. Initial samples will be collected between sunrise and noon. If results exceed the BAV, local contractors are required to collect additional samples as soon as possible, typically within two hours once BAV resultsare available. In

practice, re-sampling occurs 24-48 hours after the initial sample was collected at the sampling location. If results are received late in the day, the additional samples may be collected the following morning.

(a) Sampling Depth

EPA's recommendation for all beaches is that samples be taken at knee depth. States and tribes are encouraged to sample at the same depth for all beaches to ensure consistency and comparability among samples. For example, if beach classification changes over time, the samples would remain comparable because of the consistency in sample depth. At Tier 1 beaches, additional samples may be taken as necessary at a particular beach (e.g., waist depth, ankle). However, according to discussions at the 2004 National Beaches Conference, EPA's recommended sampling depth may not be appropriate for samples collected in the swash zone. The swash zone is defined as water one foot deep or less and is the area of water where children, an at-risk population, spend most of their time. In Texas waters, the swash zone usually contains large amounts of sand and sediment dueto wave action. Therefore, the TBW program will sample at approximately two feet or knee depth. The two-foot standing depth will apply unless:

- The majority of recreational activity occurs at a depth significantly different from two feet. If this occurs, samples may be collected at the location of greatest swimmer activity; or
- The two-foot standing depth occurs more than 50 meters (164 feet) from shore. If the two-foot sampling depth occurs more than 50 meters from the shore, samples may be collected at 50 meters from shore or at the location of greatest swimmer activity. The distance shall be measured from the approximate water line at the time of sampling.

The numbers of microorganisms in marine water samples are susceptible to rapid change due to growth or death after collection. Therefore, to minimize change, samples will be held for the shortest time possible. Standard protocol dictates holding times will be no longer than eight hours, which is six hours to collect and deliver to a lab and two hours to process. Steps for the preservation and transit of collected water samples will be followed precisely or the sample will not be analyzed, and another sample will be collected. Bacteriological samples will be stored in insulated containers and maintained at a temperature of <10° Celsius as described in section 8.1.2 of Method 1600 (https://www.epa.gov/sites/production/files/2015-

08/documents/method_1600_2009.pdf) which states in part that "ice or refrigerate water samples at a temperature of <10° Celsius during transit to the laboratory."

(b) Design Assumptions

When more than one sampling station exists on a beach, the sampling stations will be spaced approximately 500 meters (500 meters = 1640.42 feet). However, due to the variability of Gulf beach public access points, the 500-meter spacing may not be practicable. The majority of recreational beach users congregate around public access points; therefore, samples will be collected near access points.

Sample locations are included as part of the individual appendices for each local contractor. As counties are added to the TBW program, appendices will be added to document sampling locations, contact information, and any other information specific to each county.

Samples will be collected weekly during the beach season (currently May-September) and biweekly during the off-season (October-April). Circumstances may dictate modifications to sampling time and frequency for certain beaches. For example, March sampling activities will be conducted weekly at Tier 1 beaches to account for the increase in the number of tourists visiting during spring break. Other conditions, such as safety concerns, budgetary constraints, data anomalies, and/or unique natural or anthropogenic events may cause alterations to routine sample collection schedules.

Monday is the preferred sample collection day. Tuesday and Wednesday are alternate sample collection days. Re-sampling should occur 24 hours after the original sample collection analysis occurs or at the soonest practicable time, which is typically within a 48-hour time period. This schedule allows time for re-sampling to occur, before the next regular sampling period, when elevated bacteria levels are detected. Depending on the numberof beaches, stations, and travel distance, local contractors may require several days to collect samples.

The local contractor's field personnel document rainfall and tidal information on the Field Observation Form (Appendix B) to explain sample collection difficulties (for example: the current was too strong to enter the water safely). If a sample cannot be collected according to the sampling schedule, field personnel will collect the samples as soon as possible to ensure re-sampling can be conducted, if necessary, prior to the next sampling period. If sampling cannot be conducted during the required period, the local contractor must inform the coordinator during that sampling period. Additionally, contractors should keep a log of all delayed and uncollected samples with date, location, reason for deviation from sampling protocols, and who was notified. Uncollected samples refer to samples that were not collected during the given weekly or bi-weekly timeframe noted in the sampling schedule (Appendix G). Delayed samples refer to moving the sample collection

to a later date within the sampling timeframe. Samples must be processed as soon as possible after collection, so the holding time limitdoes not exceed six hours between collection and initiation of sample analyses.

The TBW program contracted laboratories will be required to analyze samples weekly and notify the Coordinator by entering sample results into the TBW program's database within two hours of receiving results. The database generates detailed email notifications to all interested parties designated by the Coordinator.

2. SAMPLING METHODS

(a) Procedures for Local Contractors

The following procedures for sampling are based upon text taken from Part II, Section A, of the EPA publication "Microbiological Methods for Monitoring the Environment: Water and Wastes" EPA-600/8-78-017, December 1978 (https://nepis.epa.gov/Exe/ZyPDF.cgi/300014TD.PDF?Dockey=300014TD.PDF).

- Identify the sampling site on a chain of custody tag, if required, or on the bottle label and on a field log sheet.
- Enter specific details to identify the sample on a permanent label. Take care in transcribing sampling information to the label. The label should be clean, waterproof, non-smearing, and large enough for the necessary information. The label must be securely attached to the sample bottle but removable when necessary. Preprinting standard information on the label can save time in the field. The marking pen or other device must be non-smearing and maintain a permanent legible mark.
- Field staff will disinfect hands and may wear sterile gloves prior to handling sampling equipment or conducting sample collection. Remove the bottle covering and closure just before obtaining each sample and protect them from contamination. Be careful not to touch the inside of the bottle itself or the inside of the cover. Sample bottles will be obtained from the laboratory conducting the analysis.
- The first sample to be prepared is the trip blank (at least one per sampling day for routine sampling is recommended). Open the sampling bottle and fill it with 100 mL of sterile buffered dilution solution when collecting freshwater, estuarine, or marine water samples. Cap the bottle and place it in a cooler. The trip blank will be used to verify samples have been maintained at the correct temperature for transportation. Sterile buffered solution will be obtained from the laboratory conducting the analysis.
- To collect the water samples, carefully move to the first sampling location.

If wading in the water, try to avoid kicking up bottom material at the sampling station. The sampler should be positioned downstream of any water current to take the sample from the incoming flow. Samples shall be collected in approximately two feet of water. If turbidity is to be measured at the sample site, or if temperature is taken from a sample bottle use two bottles; one for the bacteriological sample which will not be re-opened, and one for field monitoring parameters.

- Open a sampling bottle, grasp it at the base with one hand, and plunge the bottle mouth downward into the water to avoid introducing surface scum. Position the mouth of the bottle into the current away from the hand of the sampler. The sampling depth should be 15 to 30 centimeters (6 to 12 inches) below the water surface, depending on the depth from which the sample must be taken. Samples collected in less than the two-foot standingdepth will collect the sample at the 15-centimeter (six inch) sampling depthto avoid the collection of sedimentation. Allow time for sediment settling prior to collecting the sample. If the water body is static, an artificial currentcan be created by moving the bottle horizontally with the direction of the bottle pointed away from the sampler. Tip the bottle slightly upward to allow air to exit and the bottle to fill.
- Remove the bottle from the water body.
- Due to fine sediment at certain monitoring locations and the potential for fine suspended sediments to be collected during sampling, the use of a sampling (extension) pole (pictured in Appendix F) may be utilized to facilitate collection of water outside of the sediment plume caused by sampling personnel. If employed at these sites, the sterile sample bottle will be attached to the pole using a reusable cable tie or elastic band. Using the extension pole, the bottle will be inverted, and the sample will be collected in the same manner as if collected by hand. The sample pole will be rinsed with ambient water at each site prior to use. Additionally, notes will be made on the sample collection sheet to identify which samples were collected using the pole method.
    - Procedures when using the sampling pole:
        - With the lid and seal still in place, affix the sample bottle to the receiving carriage on the sampling pole using a reusable cable tie or elastic band. Remove the bottle covering and closure just before obtaining each sample and protect them from contamination. Be careful not to touch the inside of the bottle itself or the inside of the cover. Using the pole, invert the sampling bottle and plunge the bottle mouth downward into the water to avoid introducing surface scum. Position the

mouth of the bottle into the current away from the hand of the sampler. The sampling depth should be 15 to 30 centimeters (6 to 12 inches) below the water surface, depending on the depth from which the sample must be taken. Samples collected in less than the two-foot standing depth will collect the sample at the 15- centimeter (six inch) sampling depth to avoid the collection ofsedimentation. Allow time for sediment settling prior tocollecting the sample. If the water body is static, an artificial current can be created by moving the bottle horizontally withthe direction of the bottle pointed away from the sampler. Tipthe bottle slightly upward to allow air to exit and the bottle tofill.

- Pour out a small portion of the sample to allow an air space of 2.5 centimeters (1 to 2 inches) above each sample for proper mixing of the sample before analysis. If the bottle contains any debris or excessive sediment/sand, a new sample and bottle must be used to resample. Discard the original water sample.

- Tightly close the lid and label the bottle. The bottle will not be re-opened for field monitoring parameters.
- Complete a Field Observation Form for each beach to record the full details on sampling and other pertinent remarks, such as flooding, rain, or extreme temperature, that are relevant to interpretation of the results. This record also provides a back-up record of sample identification.
- Place the samples in a suitable container and transport them to the laboratory as soon as possible. Adhering to sample preservation and holding time limits is critical to the production of valid data. Bacteriological samples should be iced or refrigerated at <10°C during transit to the laboratory. Use insulated containers such as plastic or Styrofoam coolers, if possible, to ensure proper maintenance of storage temperature. Insulated containers should be filled with enough ice to cover samples, not icepacks, to ensure samples maintain proper temperature after sample collections and during transportation. Take careto ensure sample bottles are not totally immersed in water during transit orstorage. Process samples as soon as possible after collection. Do not hold samples longer than six hours between collection and initiation of analysis (US Environmental Protection Agency, 2000). Do not analyze samples that exceed holding time limits.

- Collect water samples for analyses of other parameters in separate appropriate containers at the same time and perform analyses as specified in the particular methods.
- After collecting samples from a station, wash hands and arms with alcohol wipes, a disinfectant lotion, or soap and water, and dry to reduce exposure to potentially harmful bacteria or other microorganisms.

(b) Labeling the Samples

Each sample bottle shall be labeled with the following information:

- Date and time of sample collection
- Sampler's name
- Sample letters and station number (If more than one sample is collected at a station, identify the first sample with the letter "A" after the station number, the second sample with the letter "B" and so forth).
    - Information will be labeled prior to sample collection.

Samples must be processed as soon as possible after collection, so the holding time limit does not exceed six hours between collection and initiation of sample analyses. Samples will only be delivered to TBW program contracted laboratories.

3. Sample Handling and Custody Requirements

Chain of Custody (COC) procedures will be followed when samples are collected, transferred, stored, and analyzed. The local contractor's staff will follow sampling protocol and deliver samples directly to a TBW program contracted laboratory for analysis.

When samples are delivered to the laboratory, the local contractor and laboratory staff will complete COC records required by the laboratory.

4. Analytical Methods Requirements

Local contractors will analyze the samples for Enterococci bacteria using Method 1600: Enterococci in Water by Membrane Filtration Using membrane Enterococcus Indoxyl-$-D-Glucoside Agar (mEI), September 2014, (EPA-821-R-14-011) (https://www.epa.gov/sites/default/files/2018-06/documents/method_1600_sept-2014.pdf or the IDEXX Enterolert™ system. Any contractors using the IDEXX Enterolert™ system are required to use the Quanti-Tray/2000. The specific

method for each local contractor is addressed by County in Appendix C, Unique Local Contractor Information.

5. QUALITY CONTROL REQUIREMENTS

Local contractors monitor coastal beach water quality. It is the responsibility of the local contractor's Project Manager to ensure field staff are properly trained and routinely monitored for compliance with established protocols. The Project Manager will also be responsible for periodically verifying the completeness of field sampling records prior to data entry.

The field technician will be responsible for sample handling and custody requirements for each sample collected and transferred to the laboratory.

The TBW program database was developed to meet requirements of the BEACH Act. The database and Web-based data entry form were designed to minimize the possibility of data entry errors. The Coordinator will periodically review and evaluate results entered into the database.

The TBW program will conduct an annual review of at least one local contractors' records and field sampling techniques to evaluate training methods and documentation procedures. This review may be conducted as a "desktop" review; via email, conference calls, or an on-site field review. The review will include an assessment of the local contractor's adherence to the criteria contained in the QAPP. Informal reviews of any laboratory may be conducted during the year.

(a) Specifying Measurement Performance Criteria

Performance criteria or Data Quality Indicators (DQIs) are qualitative and quantitative descriptors used to interpret the degree of acceptability, or utility of the data. The principal DQIs include precision, bias, representativeness, comparability, and completeness. Precision and bias are quantitative measures. Representativeness and comparability are qualitative measures, and completeness constitutes both a quantitative and qualitative measure.

Precision is the measure of agreement among replicate measurements of the same property, under prescribed similar conditions. Local contractors will estimate field precision through the sequential collection and measurement of two samples, 5% of the time. For every 20 stations sampled, a second sample will be collected for comparison to the first sample. The two samples will be used to calculate the relative percent difference described below. When collected, the second sample will be entered into the database

and used to calculate the station average. Field personnel will assess precision on a regular basis to determine sampling performance. The 5% precision criteria requirement is considered to be an annual average.

The precision of laboratory analyses is estimated by analyzing two or more aliquots (duplicates) of the same water sample. The precision analysis procedures used by a laboratory are included in each local contractor's QA/QC plan. QA/QC is assessed in the laboratory on a regular basis and the laboratory shall maintain records of the assessment.

The precision DQI is obtained from two duplicate samples by calculating the relative percent difference (RPD) as follows:

$$RPD = ((|C1-C2|)/ ((C1+C2)/2)) * 100\%$$

C1 is the first of the two values and C2 is the second value. A RPD of less than or equalto 60 percent between field duplicates microbiological analyses could be considered acceptable because of the heterogeneity of bacteria populations in surface waters. When laboratory duplicates are analyzed, precision of the test will be expressed in terms of standard deviation and the ability to detect the target organism. Analysts shouldduplicate bacterial colony counts on the same membrane within five percent, and other analysts' counts within ten percent; otherwise, procedures should be reviewed, and corrective action implemented.

Bias - is the systematic or persistent distortion of a measurement process that causes errors in one direction (USEPA 2002a). Bias assessments for environmental measurements are typically based on analysis of spiked samples, which is not feasible for microbiological samples. It is assumed bias will be minimized in this study by close adherence to SOPs and QA plans.

Accuracy - is the degree of agreement between an observed value and an accepted reference or true value. Accuracy is a combination of random error (precision) and systematic error (bias), both of which are due to sampling and analytical operations (USEPA 2002a). Accuracy is estimated by comparing the measured value to its "true" value. Because microbiological analysis measures constantly changing living populations,the true values cannot be known.

Accordingly, accuracy, like bias, is difficult to assess for microbiological analyses. However, because indicator organism density estimates are assumed to have minimum bias, accuracy equates to precision, which will be rigorously assessed.

Representativeness, comparability, and completeness are of particular concern to field sampling staff. Representativeness is the degree to which data accurately and precisely represents the characteristics of a population. One method for ensuring representativeness includes the evaluation of the sampling design to determine whether the sampled area is typical and representative of each area of concern. The TBW program ensures representativeness by sampling coastal waters near beaches used for public recreation.

Comparability is the qualitative term that expresses the confidence two data sets contribute to a common analysis and interpolation. Comparability must be evaluated carefully to establish whether two data sets can be considered equivalent with regard to the measurement of a specific variable or groups of variables. In laboratory analyses, the term comparability focuses on method type comparison, holding times, stability issues, and aspects of overall analytical quantitation. Sampling based on similar geographic and seasonal characteristics; adequate training of field sampling and laboratory personnel and the use of standardized sampling and analysis methods ensure comparability.

Completeness is a measure of the amount of valid data obtained from a measurement system. Completeness is expressed as a percent of the number of valid measurements that should have been collected (i.e., measurements planned for collection). Every effortis made to avoid sample and/or data loss through accidents.

Percent completeness (%C) for measurement parameters is defined as follows:

$$\%C = v/T \text{ X } 100$$

Where, v = the number of measurements judged valid and T = the total number of measurements. To recommend an advisory, the TBW program requires one sample be collected at a given site. The result is compared to the standard criteria to determine if an advisory is warranted. The sample collected at the site must be deemed valid prior toan advisory being recommended. The completeness goal for valid decisions at each siteis 100%. The TBW program database includes measures to prevent the omission of data necessary to ensure the completeness measure.

6. Instrument Testing, Inspection, Maintenance, Calibration and Frequency

Testing, inspection, maintenance, and calibration of laboratory equipment will be conducted according to laboratory QA/QC manuals, and as specified by the equipment manufacturer. A log of testing, inspection, maintenance, and calibration is required to be kept for all laboratory equipment used during sampling and processing of the samples.

Local contractors employing the IDEXX Enterolert™ system for enumerating *Enterococcus* may require special equipment including the IDEXX Quanti-Tray® Sealer with insert along with the required supplies.

7. Inspection/Acceptance of Supplies/Consumables

Project Managers will be responsible for ensuring all supplies and consumables are appropriate and acceptable. The TBW program requires all samples to be collected in sterilized polypropylene bottles with a volume of at least 125 mL, but no morethan 1000 mL. In addition, laboratories will not accept collection containers if the individual containers or the delivery container are not properly closed or sealed.

Laboratories that re-use sample bottles should make sure the decontamination procedures are readily available at the lab and consistent with the practices identified in "EPA Method 1600, Appendix A"; thoroughly clean with detergent and hot water, hot water rinse conducted to remove all trace amounts of detergent, and triple rinse with laboratory pure water.

8. Data Management

(a) Data Recording

Water quality results are entered into the TBW program database via the internet. The TBWprogram will assess the data for completeness and errors on a periodic basis. The Coordinator will be notified of discrepancies by email as soon as practicable. The nature of the data and the subsequent analyses must be consistent to allow data sets to be compared.

(b) Data Validation

Data will be validated and verified based on the following factors:

- Completeness of data;
- Adherence to proper sample preservation, transport, and handling protocols;
- Proper sample collection procedures;
- Proper quality control criteria;
- Documentation of all data (including QC data);

- Ability to reconstruct field sampling procedures through documentation and records;
- Ability to trace data to specific sampling sites, dates, and times; and
- Appropriateness of the data based on specific data quality objectives / indicators.

Laboratory verification procedures will be outlined for each laboratory in their QA/QC manual, guidance, or procedural documentation. Validation confirms that requirements for specific intended uses have been fulfilled and that data is systematically examined to determine technical usability with respect to planned objectives. Project Managers or their designees are responsible for reviewing field-sampling reports before data is enteredin the system.

C. ASSESSMENT/OVERSIGHT

1. ASSESSMENT AND RESPONSE ACTIONS

(a) Assessment Activities and Project Planning

The Coordinator is responsible for the preliminary assessment and oversight of the program, including contract management procedures for the allocation of BEACH Act funds to local contractors. Additionally, the Coordinator will periodically review data submitted to the TBW program database to identify possible trends and to ensure QAPP requirements are met. QA assessment results, to include RPD calculations of replicate samples, will be reported to EPA on an annual basis (in every other semiannual report) as required by the cooperative agreement between EPA and the GLO.

GLO will perform at least one annual review of a local contractor's laboratory to ensure their protocols are consistent with the QAPP. This review may be conducted as a "desktop" review; via email, conference calls, or an on-site field review. If the review finds a local contractor not adhering to the QAPP, these deviations will be documented in the review summary. The local contractor will be required to take corrective action to address the deficiency, including written correspondence documenting plans to prevent future deviations from this QAPP. Failure to do so will result in possible financial penalties (withholding of payment until corrected) or termination of contract.

2. DOCUMENTATION OF ASSESSMENTS AND REPORTS TO MANAGEMENT

Data quality will be assessed as part of an annual review to ensure adherence to this QAPP. The Contractor and Data Review template (Appendix E) will be completed by the Quality

Assurance Officer or Coordinator to document the results of the review. Deviations documented in the review will require the local contractor to implement and document corrective actions, which will be saved in the local contractor's data file. This information will be included in semiannual reports to EPA. Supplemental reports will be submitted as warranted.

D. DATA VALIDATION AND USABILITY

1. DATA REVIEW, VALIDATION, AND VERIFICATION REQUIREMENTS

(a) Sampling Design

Changes to sampling location and/or frequency of sampling will occur on a yearly basis or as needed and will be documented in Appendix C. In addition, as new local contractors are added to the TBW program, Appendix C will be updated to include new site locations, in order of importance, frequency of sampling, number of stations per beach, site maps of all beaches and stations, contact information and other relevant information.

(b) Sample Collection Procedures

Samples must be collected according to the protocol described in Section B, Data Generation and Acquisition, Subsection 2, Sampling Methods, of the QAPP. If sampling protocol is not followed, the samples will not be analyzed, and replacement samples will be collected according to protocol.

(c) Equipment and Supplies

Sample bottles used in the collection of samples will be collected in bottles containing sodium thiosulfate as required in both Method 1600 and in the Enterolert™ method.

(d) Sample Handling

Project Managers will routinely check storage containers to ensure samples are stored and transported under conditions that will not adversely affect sample quality. Chain of custody documentation will be conducted according to each local contractor's QA/QC procedures. If samples are not handled properly, laboratories shall refuse the samples and collection of replacement samples will be required.

(e) Analytical Procedures

TBW program contracted laboratories must have the capability to analyze samples weekly. Laboratory staff must be qualified to use the required instruments and must be familiar with techniques necessary to analyze water quality samples. Laboratory SOPs related to

COC, instrumentation, and technique are provided in laboratory QA/QC manuals.

Laboratory personnel will utilize EPA Method 1600[1] or the IDEXX Enterolert™ for the detection of *Enterococci.* Laboratory supervisors may request copies from the EPA's National Service Center for Environmental Publications (http://www.epa.gov/ncep). The Method 1600 document is also available at Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-B-D-Glucoside Agar (mEI) (epa.gov). Information pertaining to Enterolert™ may be found at http://www.idexx.com/en/water

(f) Quality Control

Sampling quality control measures will be applied as discussed in Section B, Data Generation and Acquisition, Subsection 5, Quality Control Requirements, while laboratory quality control activities will be conducted according to the laboratory's QA/QC manual.

(g) Calibration

Instruments will be calibrated according to the laboratory's QA/QC manual and as recommended by the manufacturer. Data not conforming to sampling protocols or laboratory handling and analysis protocols will not be used. Laboratory analysis protocols include the calibration and verification of instruments to manufacturer and/or method specifications.

(h) Data Reduction and Processing

Loss of detail in data will be avoided by periodically reviewing the data entered and by following procedures for data reduction and processing activities described in the laboratory's QA/QC manual.

2. Validation and Verification Methods

Validation and verification activities will be performed during annual reviews of a local contractor and as described in Section B, Data Generation and Acquisition, Subsection 8, Data Management, and the laboratory's QA/QC manual. The local contractor maintains and reviews sampling and analytical data as the data is generated.

The GLO will assess and review the online data submitted on a monthly basis. The assessment activities will include the continual or frequent monitoring of the status of a project and the analysis of records to ensure specified requirements are being fulfilled.

[1]USEPA. September 2014. Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar (mEI). U.S. Environmental Protection Agency, Office of Water, Washington, DC EPA-821-R-14-011.

Key project personnel (Project Managers) are responsible for surveillance of the program under their control; however, the TBW Coordinator monitors data entry through the various queries that generate Summary Reports in EPA's Monitoring and Notification Databases. These Summary Reports in addition to Summary Reports generated for billing comparisons will be used for validation and verification of data entered by the Contractors. Any corrective action taken to remedy deficiencies will be documented.

3. Reconciliation with User Objectives

The TBW program is designed to support the intended use of results through the compilation of water quality data. The TBW program will analyze data for correlation between environmental factors and water quality results to determine the feasibility of predictive models.

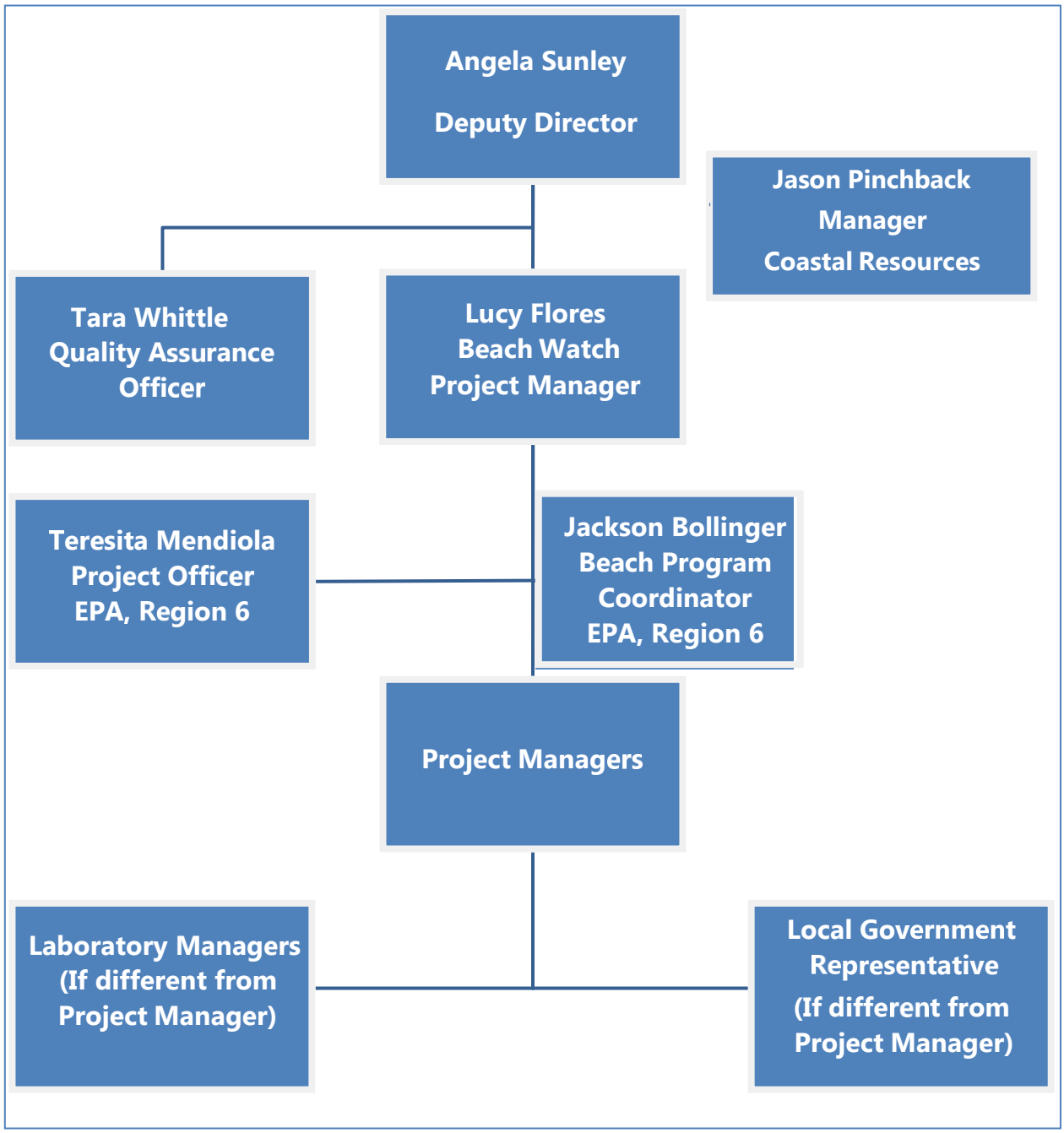
If serious deficiencies are noted in data quality, the data may be reported to EPA with an appropriate data qualifier or not reported with an explanation. The data qualifier will be identified in the Monitoring Database, Activity table comments field. The appropriate action will be performed in consultation with EPA Region 6 personnel.

If serious discrepancies are noted, appropriate action may include the cessation of advisories until the deficiency is resolved. The resolution will consist of written communication to address and identify a solution and implement correction action. A follow up lab visit may be conducted.

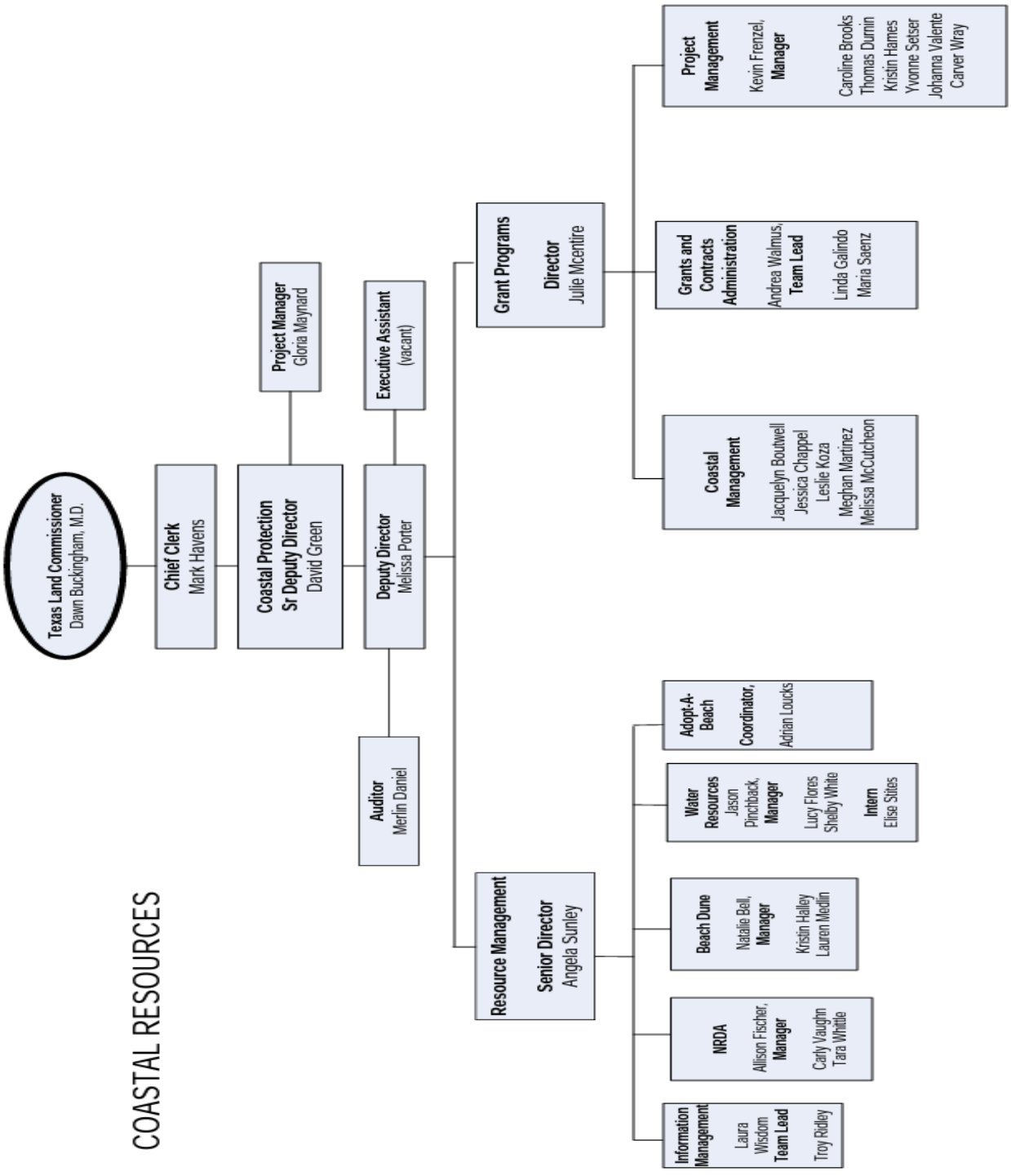
APPENDIX A

ORGANIZATIONAL CHARTS

TEXAS BEACH WATCH

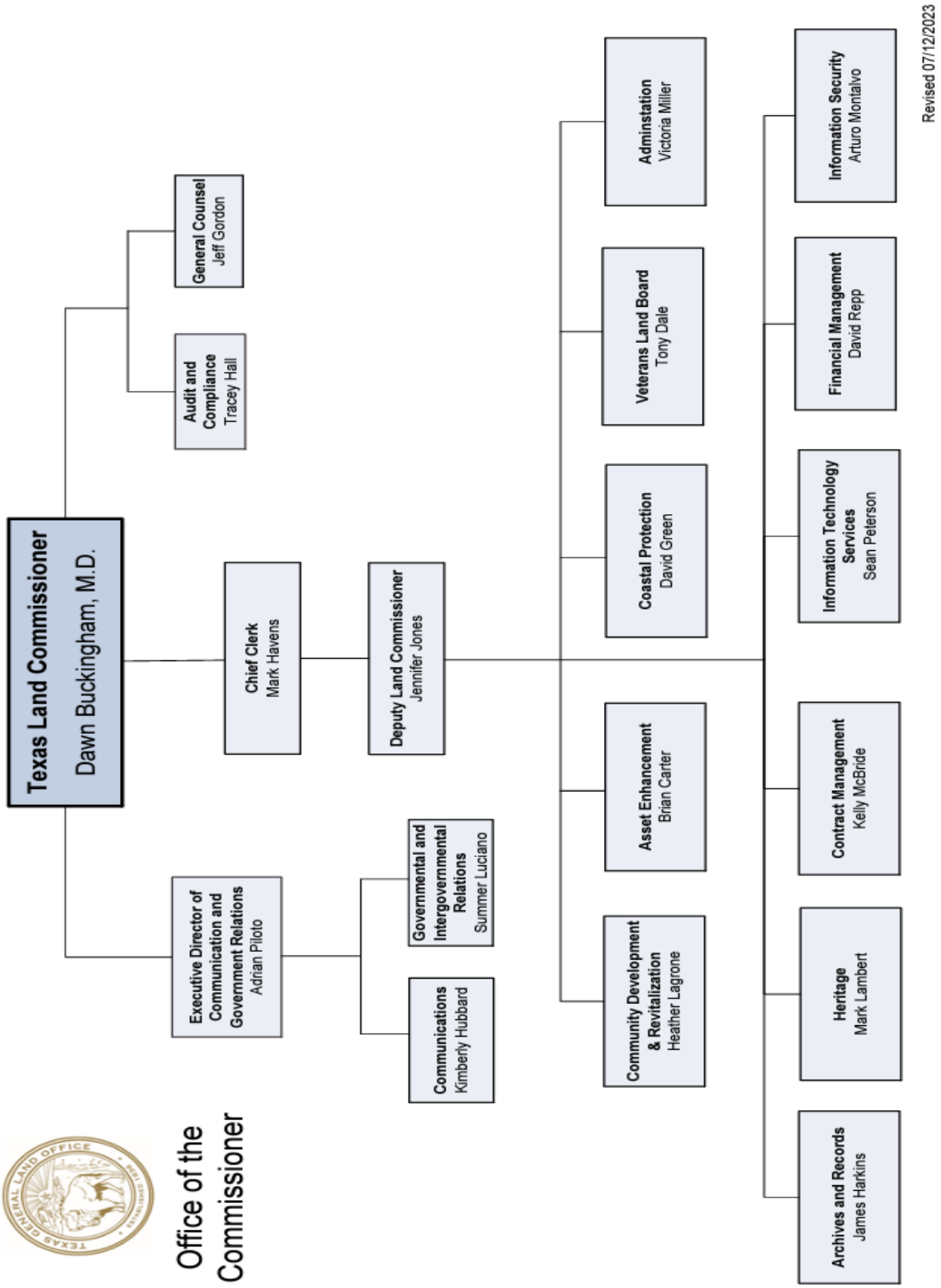


COASTAL RESOURCES DIVISION



6/1/2023

TEXAS GENERAL LAND OFFICE and VETERANS LAND BOARD



APPENDIX B

FIELD OBSERVATION FORM

Texas BEACH WATCH .com TEXAS GENERAL LAND OFFICE

FIELD OBSERVATION FORM

Date: ____/____/____

Field Technician: _____

Laboratory Recipient: _____

Start Time		Time Delivered	
End Time		Delivery Temperature	

KEY

Water Surface: **1**-Calm **2**-Ripples **3**-Chop **4**-Swells **5**-Other

Clarity: **1**-Clear **2**-Cloudy **3**-Turbid

Water Color: **1**-Md. Brown **2**-Dk Brown **3**-Red Brown **4**-Green Brown **5**-Yellow Brown **6**-Blue Green **7**-Blue

Tide: **1**-High **2**-Low **3**-Ebb **4**-Flood **5**-Other

Trash: **1**-Light **2**-Medium **3**-Heavy **0**-None

Smell: **1**-Sewage **2**-Oily **3**-Fishy **4**-Rotten Egg **5**-Other **0**-None

Debris: **1**- Shells **2**-Dead Fish **3**-Dead Crabs **4**-Other(See Comments) **0**-None

Sargassum: **1**-Light **2**-Medium **3**-Heavy **0**-None

Algae/Seaweed: **1**-Light **2**-Medium **3**-Heavy **0**-None

Rip Current: **1**-Advisory **0**- No Advisory (See Lifeguard Flags)

Field Observation Form

KEY

Water Surface: ❶ Calm ❷ Ripples ❸ Chop ❹ Swells ❺ Other
Clarity: ❶ Clear ❷ Cloudy ❸ Turbid
Water Color: ❶ Md. Brown ❷ D. Brown ❸ Red Brown ❹ Green Brown ❺ Yellow Brown ❻ Blue Green 7. Other
Tide: ❶ High ❷ Low ❸ Ebb ❹ Flood ❺ Other
Trash: ❶ Light ❷ Medium ❸ Heavy ❼ None

Smell: ❶ Sewage ❷ Oily ❸ Fishy ❹ Rotten Egg ❺ Other ❼ None
Debris: ❶ Shells ❷ Dead Fish ❸ Dead Crabs ❹ Other (See comments) ❼ None
Sargassum: ❶ Light ❷ Medium ❸ Heavy ❼ None
Rip Current: ❶ Advisory ❼ No Advisory (See Life guard flags)
Algae/Seaweed: ❶ Light ❷ Medium ❸ Heavy ❼ None

SAMPLE SITE | BEACH SEGMENT ID
TIME COLLECTED | COLLECTION DEPTH
START TIME | ENTERO RESULTS (cfu / 100mL)
END TIME
☐ ReSample ☐ DUP

OBSERVATIONS

SIGNAGE PRESENT ☐ NO ☐ YES | SIGNAGE CORRECT ☐ NO ☐ YES

BEACH DEBRIS	#	PEOPLE	#	WEATHER		WATER TEMP	°F
ALG/SWD	#	DOGS	#	AIR TEMP	°F	SALINITY	ppt
SARGASSUM	#	BIRDS	#	WIND DIR		TURBIDITY	NTU
CRAB	#	JELLYFISH	#	WIND SPD		**RAINFALL**	
FISH	#	SMELL	#	WATER SURF		24 HRS	
TRASH	#	RIP CUR	#	TIDE		3 DAYS	
				WATER COLOR		7 DAYS	
				CLARITY			

COMMENTS

SAMPLE SITE | BEACH SEGMENT ID
TIME COLLECTED | COLLECTION DEPTH
START TIME | ENTERO RESULTS (cfu / 100mL)
END TIME
☐ ReSample ☐ DUP

OBSERVATIONS

SIGNAGE PRESENT ☐ NO ☐ YES | SIGNAGE CORRECT ☐ NO ☐ YES

BEACH DEBRIS	#	PEOPLE	#	WEATHER		WATER TEMP	°F
ALG/SWD	#	DOGS	#	AIR TEMP	°F	SALINITY	ppt
SARGASSUM	#	BIRDS	#	WIND DIR		TURBIDITY	NTU
CRAB	#	JELLYFISH	#	WIND SPD		RAINFALL	
FISH	#	SMELL	#	WATER SURF		24 HRS	
TRASH	#	RIP CUR	#	TIDE		3 DAYS	
				WATER COLOR		7 DAYS	
				CLARITY			

COMMENTS

SAMPLE SITE | BEACH SEGMENT ID
TIME COLLECTED | COLLECTION DEPTH
START TIME | ENTERO RESULTS (cfu / 100mL)
END TIME
☐ ReSample ☐ DUP

OBSERVATIONS

SIGNAGE PRESENT ☐ NO ☐ YES | SIGNAGE CORRECT ☐ NO ☐ YES

BEACH DEBRIS	#	PEOPLE	#	WEATHER		WATER TEMP	°F
ALG/SWD	#	DOGS	#	AIR TEMP	°F	SALINITY	ppt
SARGASSUM	#	BIRDS	#	WIND DIR		TURBIDITY	NTU
CRAB	#	JELLYFISH	#	WIND SPD		RAINFALL	
FISH	#	SMELL	#	WATER SURF		24 HRS	
TRASH	#	RIP CUR	#	TIDE		3 DAYS	
				WATER COLOR		7 DAYS	
				CLARITY			

COMMENTS

APPENDIX C

UNIQUE LOCAL CONTRACTOR AND GOVERNMENT CONTACT INFORMATION

Local Entity/Contractor
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
http://www.cctexas.com/government/health-district/index

Project Manager
Laboratory Manager
Protection Division
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
(361) 826-7218
(361) 826-7217 - Fax

Laboratory
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
http://www.cctexas.com/government/health-district/index

Analysis Method
Enterolert™

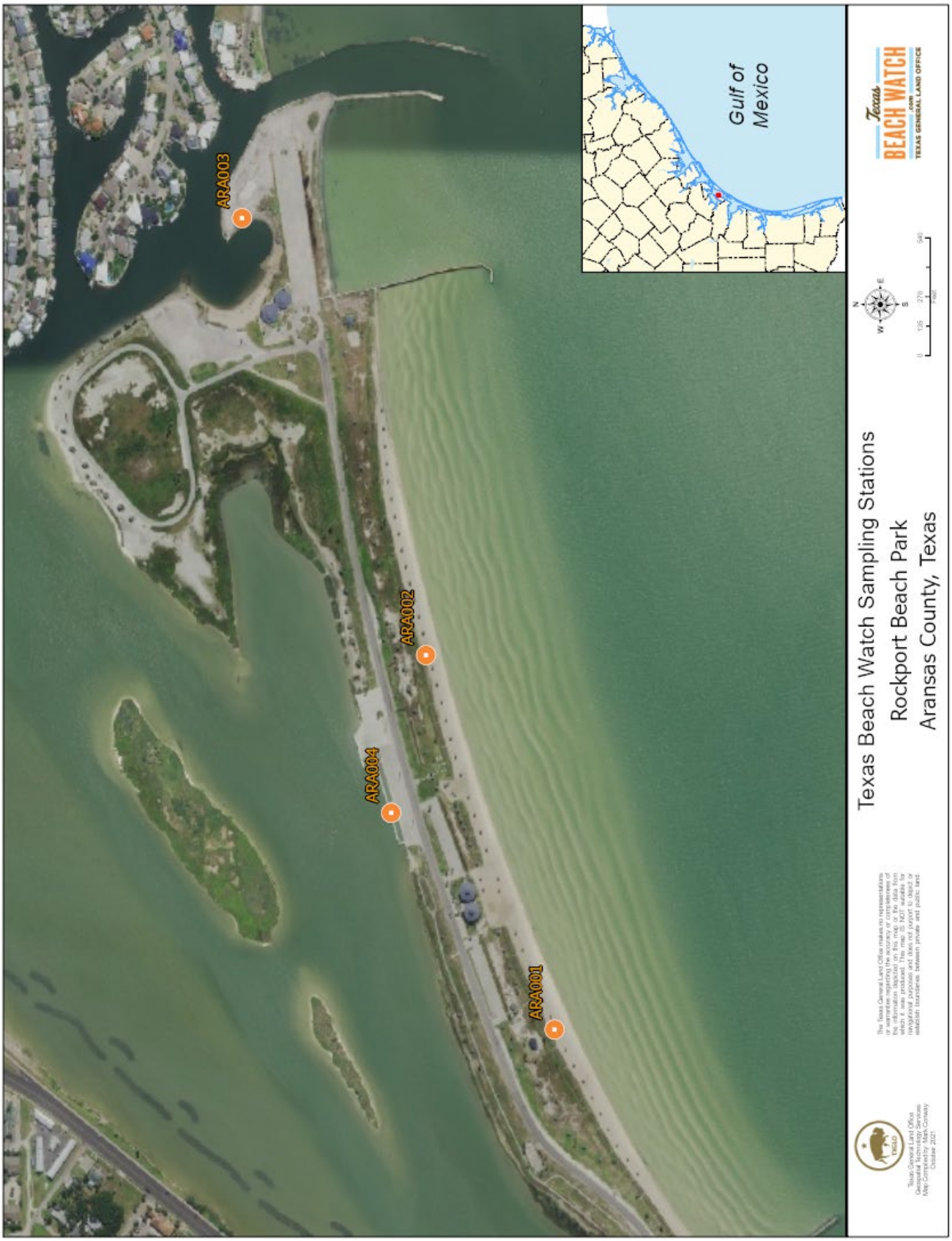
Local Government Contacts
Dr. Srikanth Ramachandruni, MD
Local Health Authority
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
(361) 826-7203
annetter@cctexas.com

Dr. Emilie Prot, DO MPH Regional Medical Director
Texas Department of State Health Services, Region 11
601 West Sesame Drive
Harlingen, Texas 78550,
(956) 423-0130
(956) 444-3298 - Fax
(956) 444-3202
emilie.prot@dshs.state.tx.us

Keith Barrett, Harbor Master
Aransas County Navigation District
(361) 729-6661
aransasnav1@yahoo.com

Aransas County's most popular beach is the Rockport Beach Park in the City of Rockport. The Beach Watch program samples at four locations at this one beach.

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
ARA001	Rockport Beach Park South	Rockport Beach Park	TX748844	28.02859	-97.04233
ARA002	Rockport Beach Park North	Rockport Beach Park	TX748844	28.0302	-97.03763
ARA003	Rockport Saltwater Pool	Rockport Beach Park	TX748844	28.03251	-97.03215
ARA004	Little Bay Ski Basin	Rockport Beach Park	TX748844	28.03064	-97.03961



Local Entity/Contractor
Eastex Environmental Labs, Inc.
35 Eastex Lane
Coldspring, TX 77331
(936) 653-3249
www.eastexlabs.com

Project Manager
Daniel Bowen, Operations Manager
Eastex Environmental Labs, Inc.
35 Eastex Lane
Coldspring, TX 77331
(936) 653-3249
dbowen@eastexlabs.com

Laboratory
Eastex Environmental Labs, Inc.
35 Eastex Lane
Coldspring, TX 77331
(936) 653-3249
Eastexlab@eastex.net

Analysis Method
Enterolert™

Local Government Contacts

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Health Services Director
Brazoria County Health Department
432 E. Mulberry
Angleton, TX 77515-4736
(979) 864-1484
(979) 864-1456 - Fax
cathys@brazoria-county.com

Jodie Vice, Director
Brazoria County Environmental Health Department
111 E Locust Bldg A-29 Suite 270
Angleton, TX 77515
(979) 864-1686 (979)864-1708
jodiev@brazoriacountytx.gov

Bryan Frazier, Director
Brazoria County Parks Department
313 W. Mulberry
Angleton, TX 77515
(979) 235-9927
bryanf@brazoria-county.com

Tammi Cimiotta, City Secretary
Town of Quintana
814 N. Lamar
Quintana, TX 77541
(979) 233-0848
quintanaisland@sbcglobal.net
http://www.quintanatx.org/

Lydia Ortiz, Park Planning & Development Specialist
Brazoria County Parks Department
313 W. Mulberry
Angleton, TX 77515
(979) 864-1541 (979)864-1149
lydiao@brazoriacountytx.gov

Gregg Bisso , Mayor
Village of Surfside Beach
1304 Monument Dr.
Surfside Beach, TX 77541
(979) 233-1531
(979) 373-0699 - Fax
gbisso@aol.com
www.surfsidetx.org

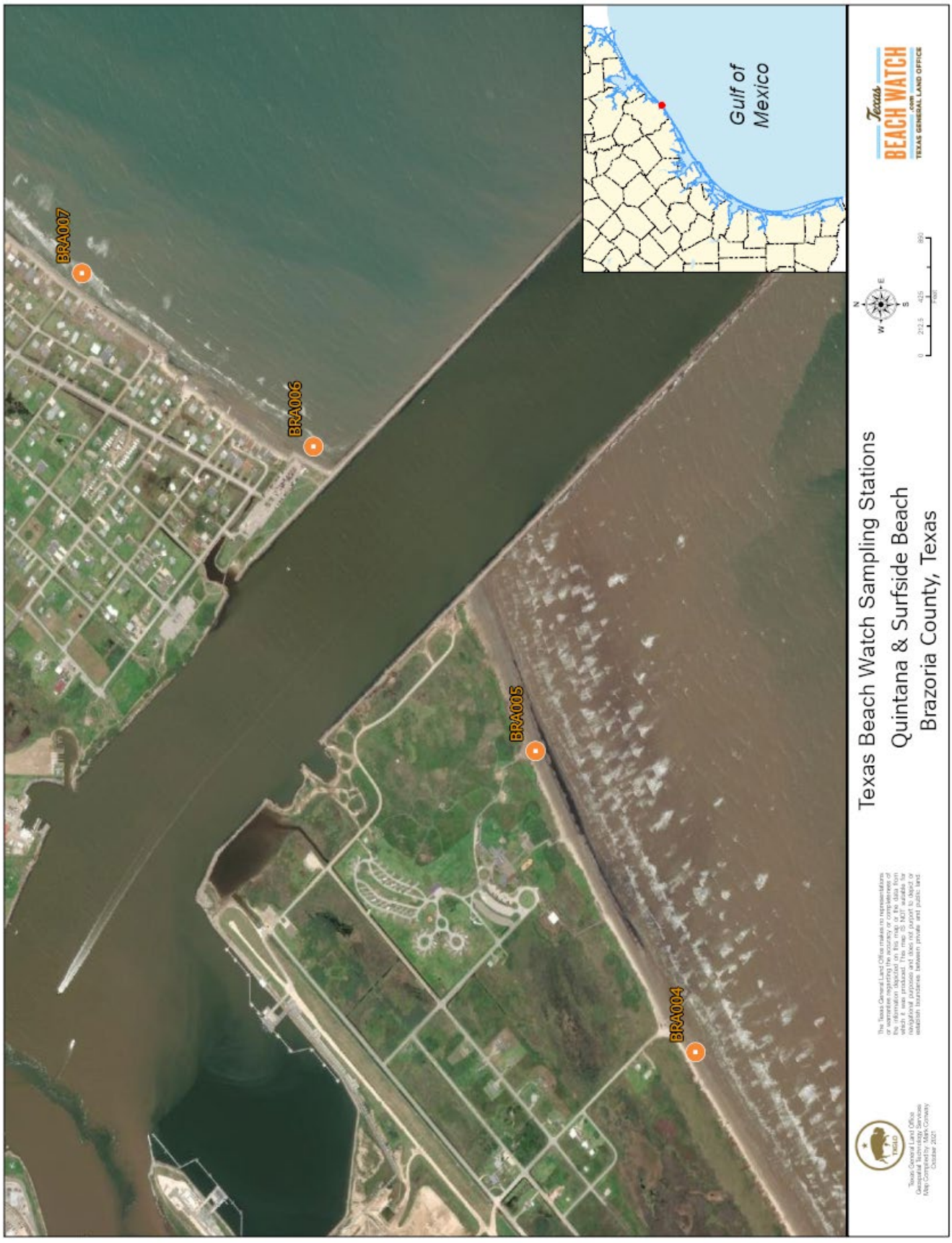
Local Government Contacts

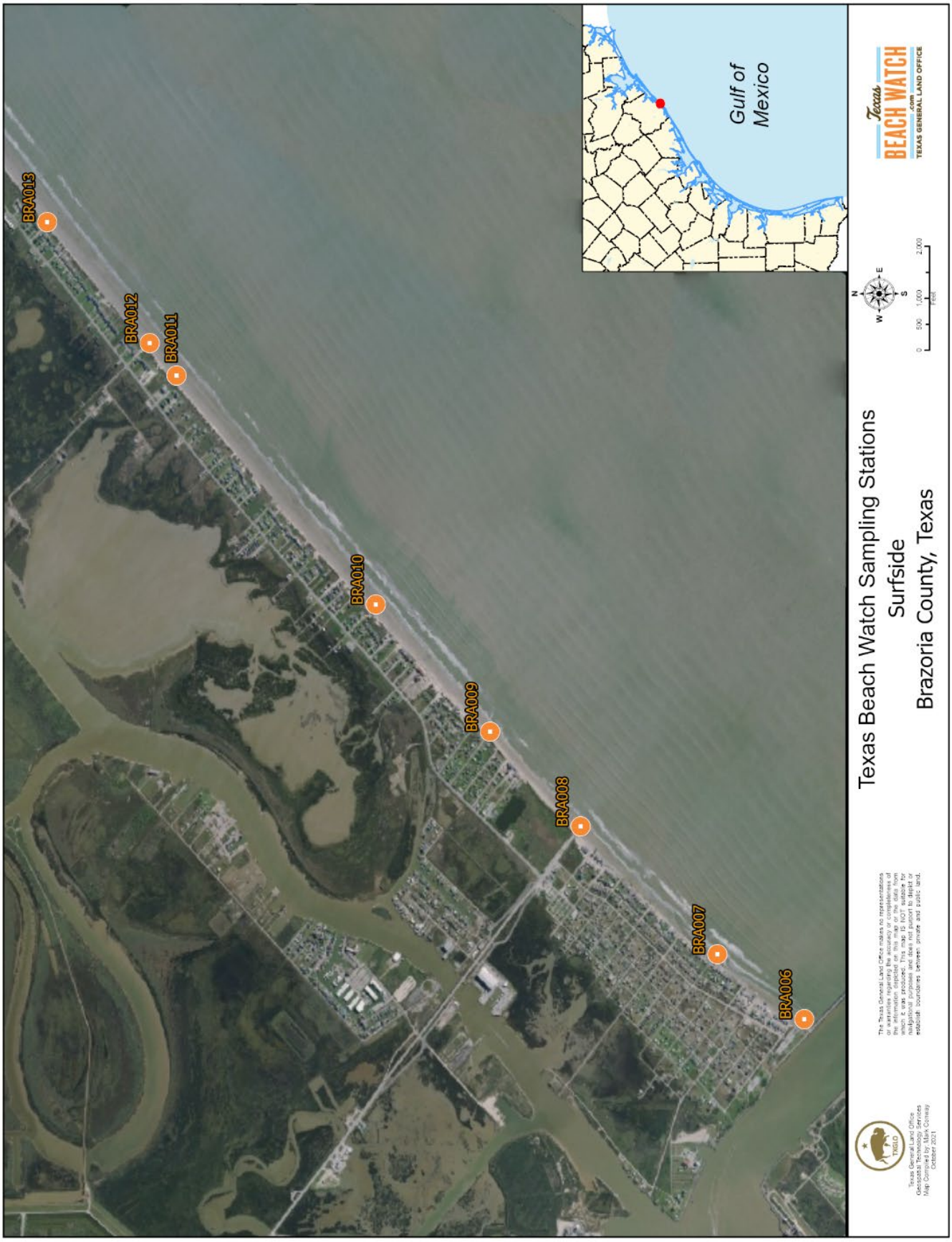
Patty Brinkmeyer, Park Manager
Quintana Beach County Park
330 5th Street
Quintana, TX 77541
979-233-1461
800-872-7578
quintana@brazoria-county.com
pattyb@brazoria-county.com

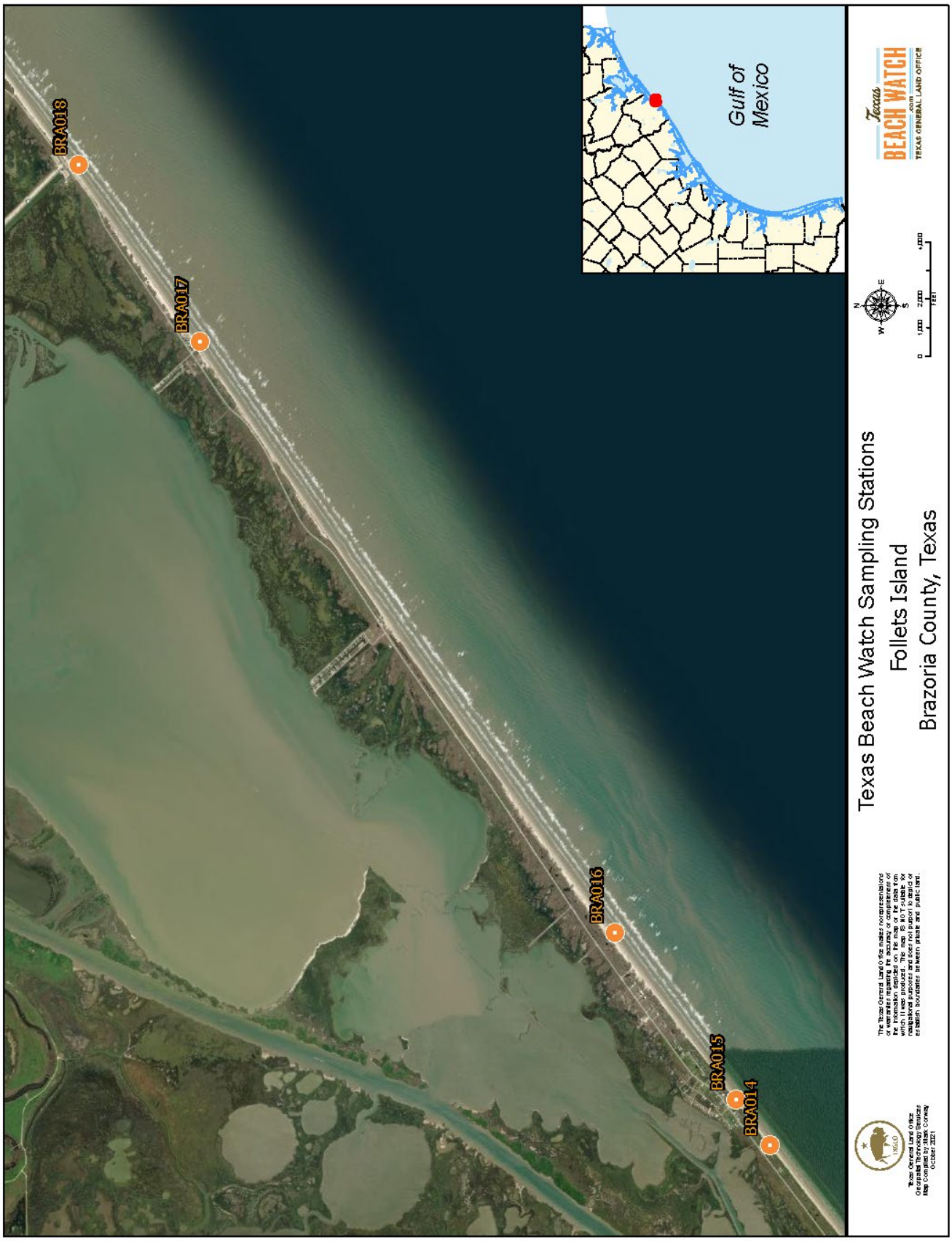
Brazoria County has four beaches with 16 stations that are sampled. The beaches are southwest of the Freeport ship channel (near the Town of Quintana), the Village of Surfside Beach, and the beaches northeast of Surfside Beach. These 16 stations cover the most heavily used portions of the beaches while providing sufficient coverage to be indicative of the water quality of the beaches.

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
BRA002	CR750	Bryan Beach	TX384318	28.91181	-95.33507
BRA004	8th Street	Quintana	TX728060	28.93033	-95.30697
BRA005	Quintana Beach County Park	Quintana	TX728060	28.93349	-95.30103
BRA006	Surfside Jetty County Park	Surfside	TX647885	28.93787	-95.29501
BRA007	Surfside - 9th Street	Surfside	TX647885	28.94245	-95.29159
BRA008	Beach Drive	Surfside	TX647885	28.94966	-95.28485
BRA009	Surfside - 2nd Drive	Surfside	TX647885	28.95444	-95.27985
BRA010	Surfside Beach Recreational Area	Surfside	TX647885	28.96047	-95.27314
BRA011	Stahlman Park	Surfside	TX647885	28.97099	-95.26106
BRA012	Bay St.	Surfside	TX647885	28.97241	-95.25935
BRA013	Stanek Dr.	Surfside	TX647885	28.97781	-95.25297
BRA014	CR 257A-S	Follets Island	TX646145	28.98987	-95.23758
BRA015	County Road 257A+	County Road 257F	TX646145	28.99308	-95.23327
BRA016	County Road 257K	County Road 257F	TX646145	29.00465	-95.21726
BRA017	County Road 257S	County Road 257F	TX646145	29.04439	-95.16064
BRA018	County Road 257	County Road 257F	TX646145	29.05603	-95.14367


BRA002
Gulf of Mexico
Texas Beach Watch Sampling Stations
Bryan Beach
Brazoria County, Texas
Texas BEACH WATCH
TEXAS GENERAL LAND OFFICE







Local Entity/Contractor
The University of Texas – Rio Grande Valley
Coastal Studies Lab
33363 Marine Lab Drive South
Padre Island, TX 78597
(956) 761-2644
http://www.utrgv.edu/csl

Analysis Method
Enterolert™

Laboratory/Field Technician
Eberto Presas
The University of Texas – Rio Grande Valley
Coastal Studies Laboratory
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Local Government Contacts
Joe E. Vega, Director
Cameron County Parks Department
33174 Park Road 100-South
South Padre Island, TX 78597-2106
(956) 761-3700
JEVega@co.cameron.tx.us
http://www.co.cameron.tx.us/parks/index.htm

Dr. Emilie Prot DO, MPH Regional Medical Director
Texas Department of State Health Services, Region 11
601 West Sesame Drive
Harlingen, Texas 78550,
(956) 423-0130
(956) 444-3298 - Fax
(956) 444-3202
emilie.prot@dshs.state.tx.us

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Health and Human Services
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78586(956) 247-3685
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EGuajardo@co.cameron.tx.us
http://www.co.cameron.tx.us/health/index.html

Project Manager
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Quality Assurance Manager
Victoria Salinas The University of Texas Rio Grande ValleyCoastal Studies Laboratory
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(956)761-2644
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Kristina Boburka,
Coastal Resource ManagerCity of South Padre Island 4601 Padre Blvd.
South Padre Island, TX 78597(956)-761-3837
Fax (956) 761-3898
kboburka@myspi.org www.myspi.org

Randy Smith, City Manager
City of South Padre Island
4501 Padre Blvd.
South Padre Island, TX 78597
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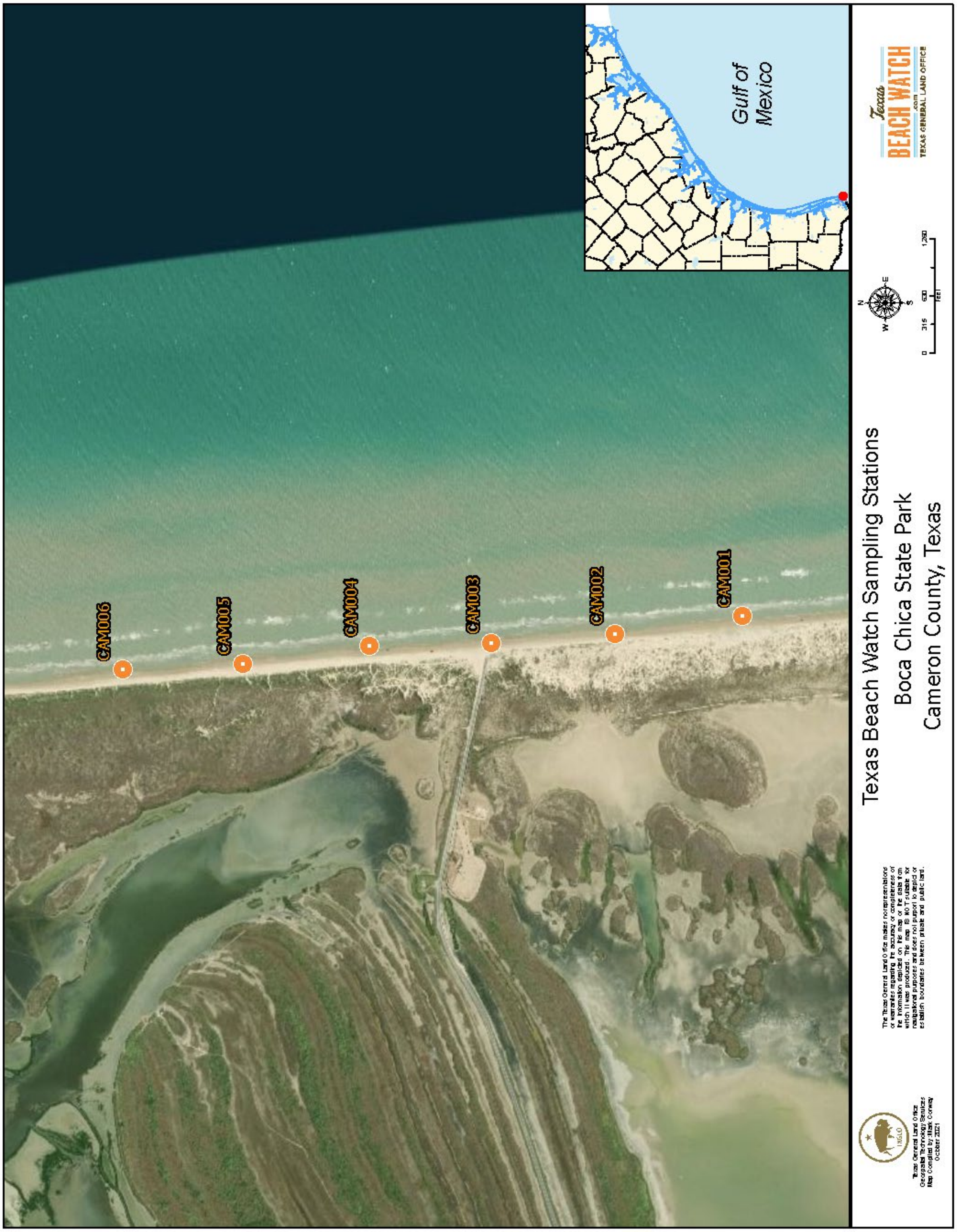
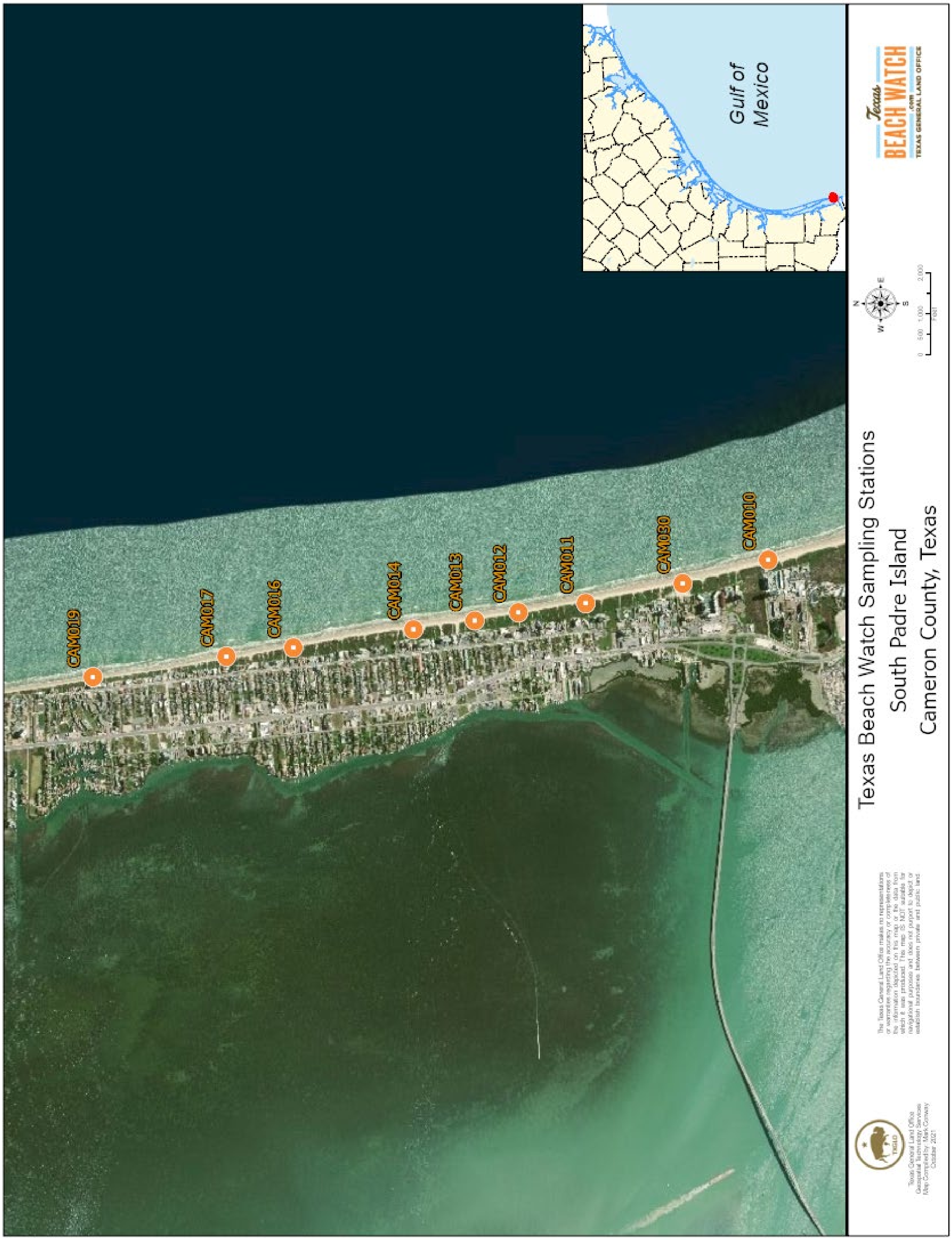
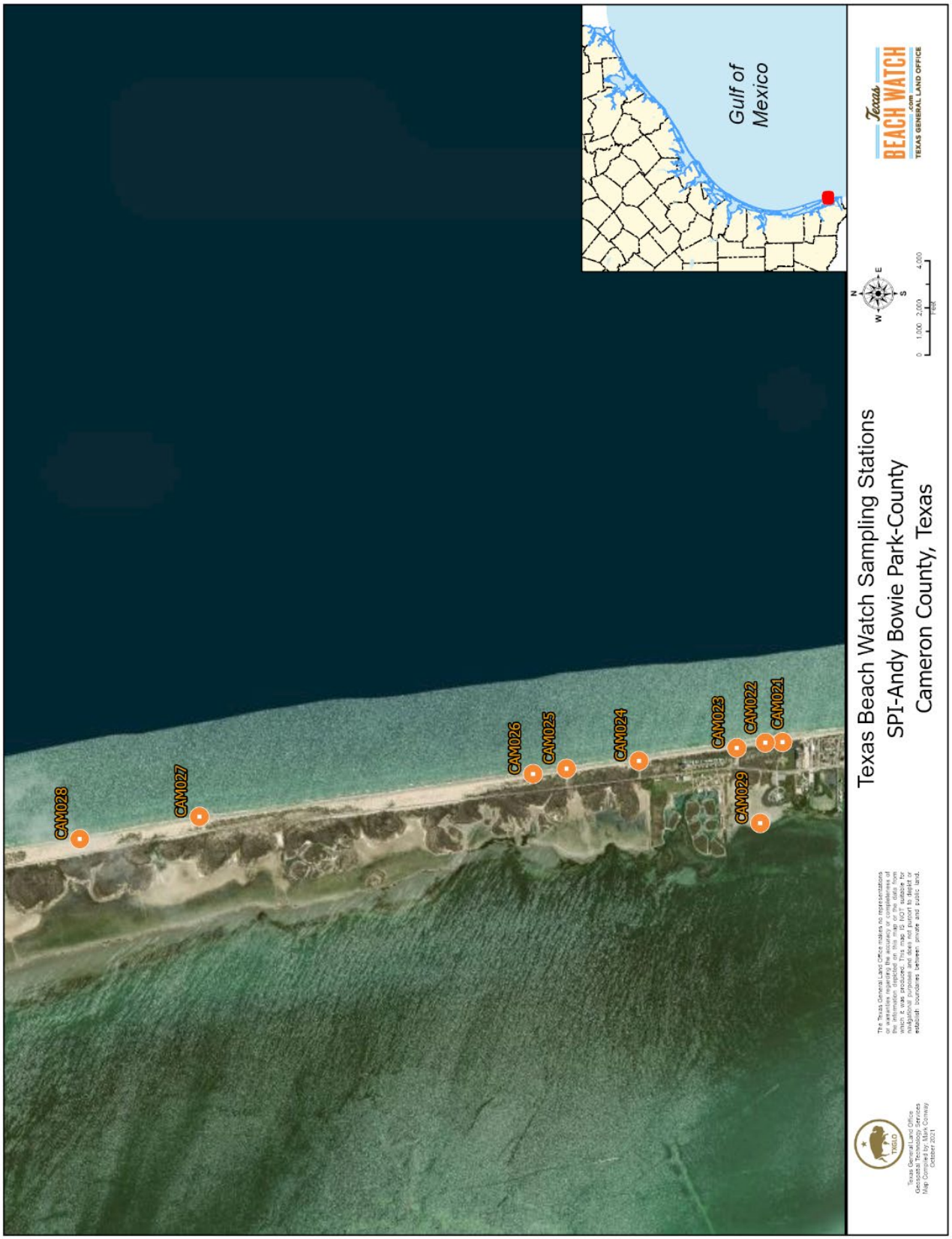
(956) 761-3888 - Fax
RSmith@MySPI.org

Cameron County has eight beaches that are sampled. These areas are Boca Chica State Park near Brownsville, Isla Blanca County Park south of the town limits of the City of South Padre Island, the town itself, the beaches north of the town limits and a beach located on the bay side of the island. Twenty-six stations will be monitored. These 26 stations cover the most heavily used portions of the beaches while providing sufficient coverage to be indicative of the water quality of the beaches.

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
CAM001	Boca Chica State Park #1	Boca Chica State Park	TX714667	25.98919	-97.14941
CAM002	Boca Chica State Park #2	Boca Chica State Park	TX714667	25.993	-97.14995
CAM003	Boca Chica State Park #3	Boca Chica State Park	TX714667	25.9967	-97.15021
CAM004	Boca Chica State Park #4	Boca Chica State Park	TX714667	26.00035	-97.1503
CAM005	Boca Chica State Park #5	Boca Chica State Park	TX714667	26.00414	-97.15086
CAM006	Boca Chica State Park #6	Boca Chica State Park	TX714667	26.00774	-97.15103
CAM007	Isla Blanca Park	Isla Blanca Park	TX137781	26.06953	-97.15501
CAM008	Isla Blanca Park	Isla Blanca Park	TX137781	26.07558	-97.15745
CAM010	SPI – Pearl South Padre Hotel	South Padre Island	TX868582	26.08298	-97.15905
CAM011	SPI - Harbor	South Padre Island	TX868582	26.09518	-97.16194
CAM012	SPI - Beach Circle	South Padre Island	TX868582	26.09968	-97.16254
CAM013	SPI - Seaside	South Padre Island	TX868582	26.10261	-97.16311
CAM014	SPI - Blue Water	South Padre Island	TX868582	26.10672	-97.16369
CAM016	SPI - Bougainvillea	South Padre Island	TX868582	26.11475	-97.16492
CAM017	SPI - Starlight	South Padre Island	TX868582	26.11924	-97.16551
CAM019	SPI - Fantasy	South Padre Island	TX868582	26.12817	-97.16688
CAM021	Andy Bowie Park - South Pavilion	Andy Bowie Park	TX967170	26.14019	-97.16885
CAM022	Andy Bowie Park - North Pavilion	Andy Bowie Park	TX967170	26.14221	-97.16892
CAM023	Access Point #3	South Padre Island	TX147297	26.14553	-97.16955
CAM024	Access Point #4	South Padre Island	TX282282	26.15687	-97.17103
CAM025	Atwood Park	South Padre Island	TX841900	26.16531	-97.17195
CAM026	Atwood Park	South Padre Island	TX841900	26.16918	-97.17256
CAM027	Access Pt. #6 Entrance	South Padre Island	TX810590	26.20793	-97.17754
CAM028	Access Pt. #6 North	South Padre Island	TX810590	26.22183	-97.18013
CAM029	Bay Access #2	South Padre Island	TX229010	26.14279	-97.17829
CAM030	SPI – Isla Grand Beach Resort	South Padre Island	TX868582	26.0887	-97.16062
CAM031	Children's Beach	Isla Blanca Park	TX812731	29.06873	-97.16321






CAM028
CAM027
CAM026
CAM025
CAM024
CAM023
CAM022
CAM021
CAM029
Gulf of Mexico
Texas Beach Watch Sampling Stations
SPI-Andy Bowie Park-County
Cameron County, Texas
Texas BEACH WATCH
TEXAS GENERAL LAND OFFICE
0 1,000 2,000 4,000
Feet
N
W
E
S
TxGLO
Texas General Land Office
Coastal Resources Division
Map Compiled by Mark Conway
October 2021

Local Entity/Contractor
Galveston County Health District
Mailing Address
PO Box 939
La Marque, Texas 77568
Physical Address
9850-D Emmett F. Lowry Expressway
Texas City, Texas 77591
(409) 938-2251
http://www.gchd.org/pollution/BeachAdvisory.htm

Project Manager
Katie Wilson
Water Program Manager
Office of Environmental Health Programs
Galveston County Health District
(409) 938-2310
(409) 938-2271 (Fax)
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Laboratory
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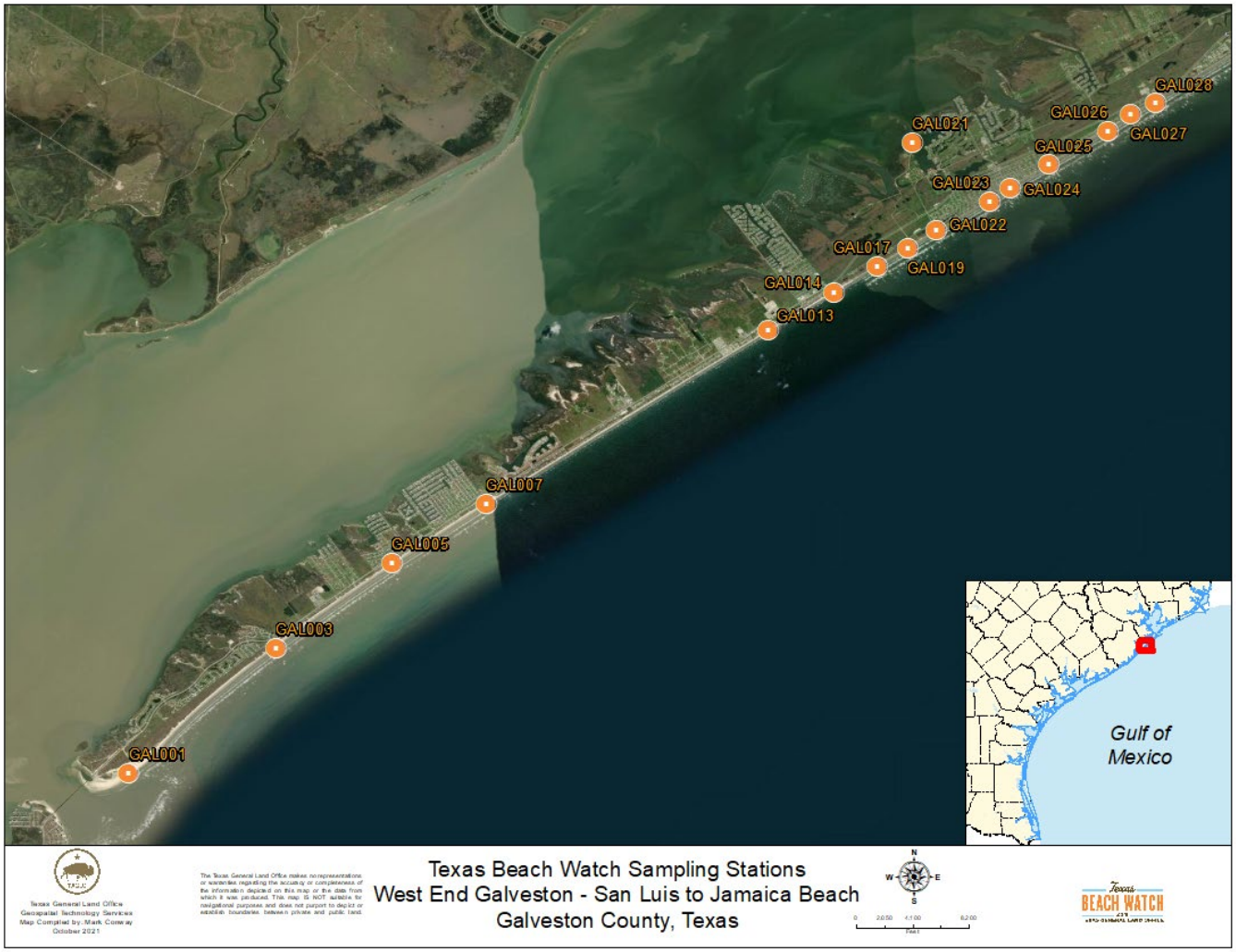
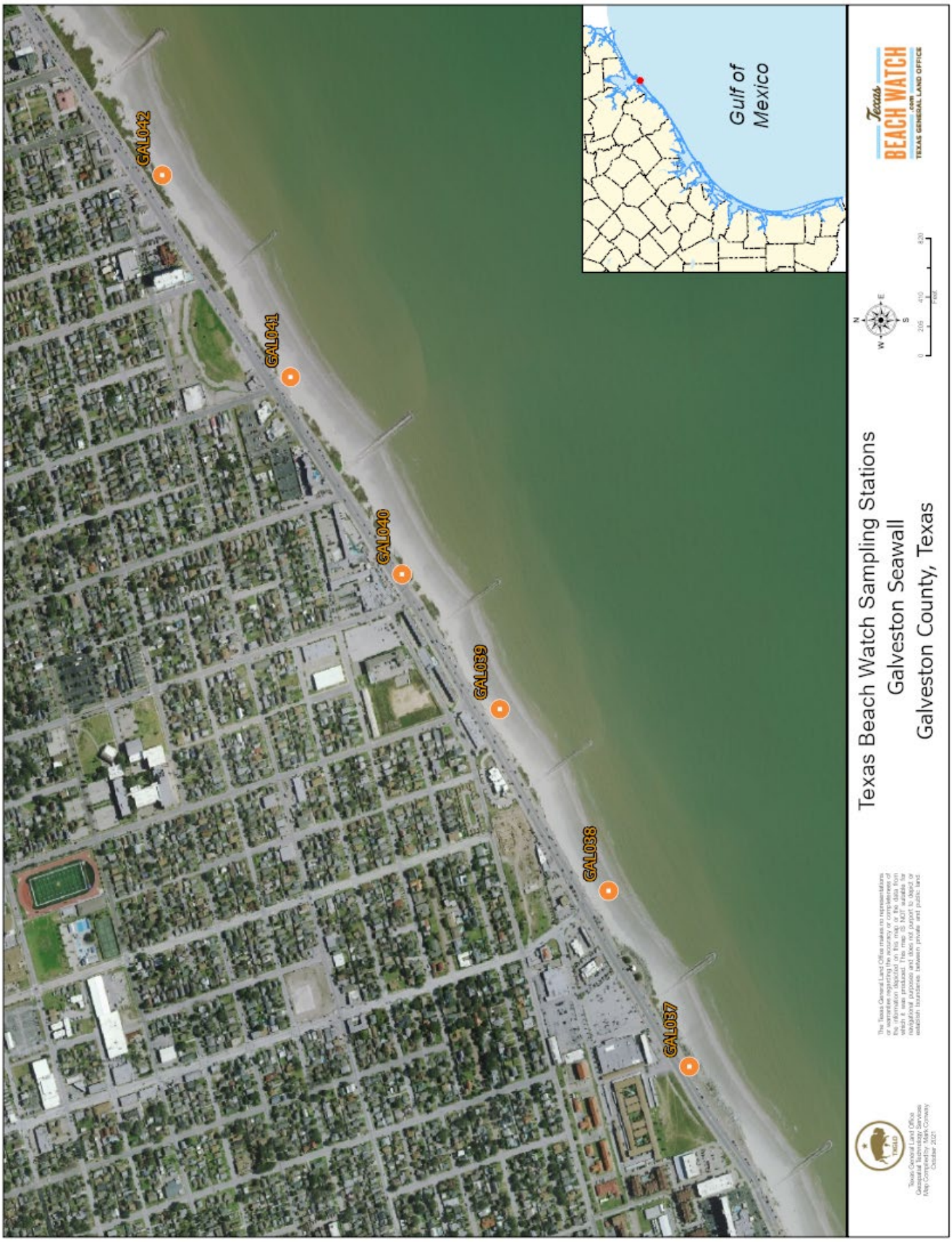
Galveston County has approximately 56 miles of gulf coast shoreline, of which 53 miles is accessible as a primary contact recreational beach. Fifty-two stations will be sampled. One of these beaches is on the mainland at the Texas City Dike, which is the only site on the mainland where significant contact recreation occurs.

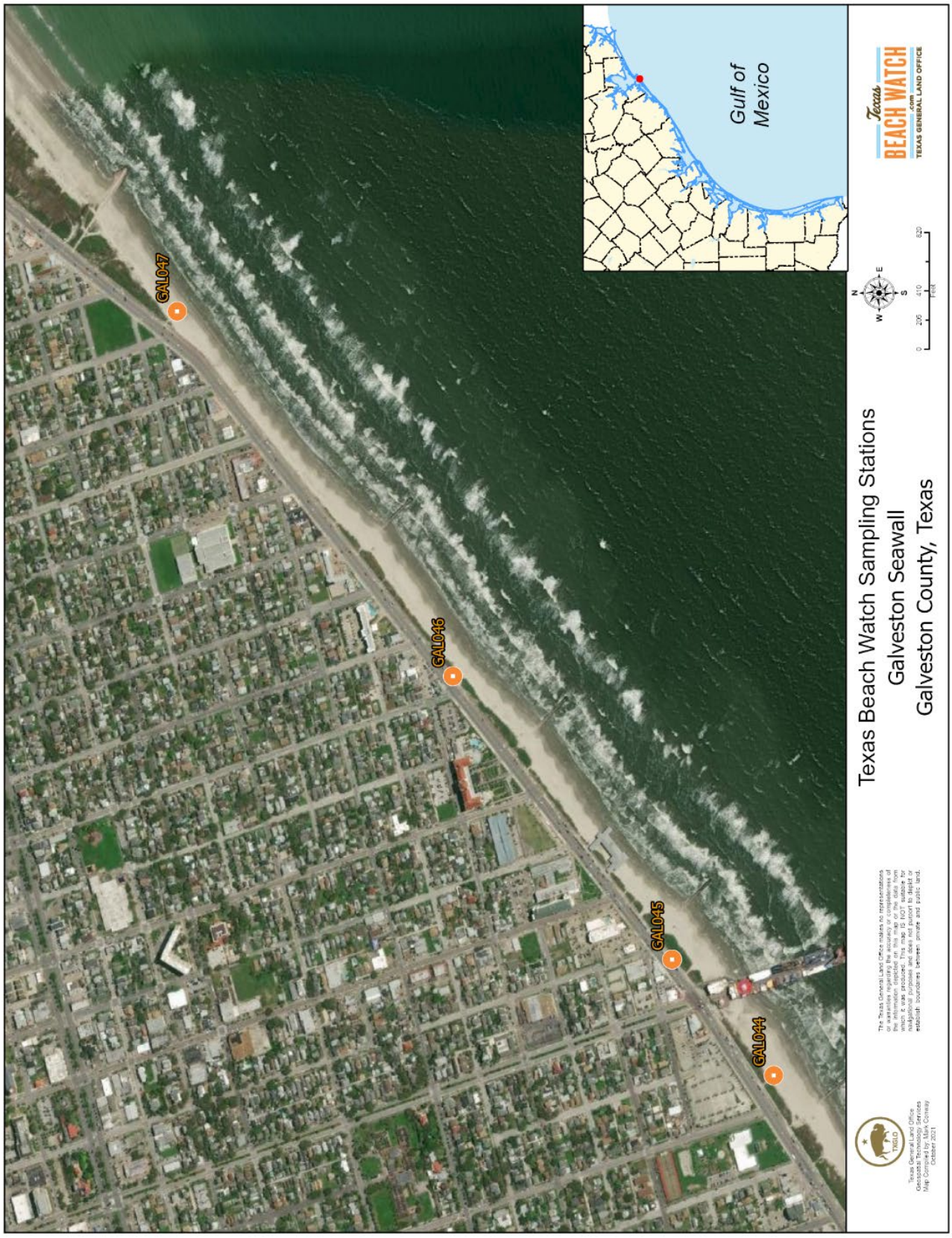
Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
GAL001	San Luis Pass Toll Bridge	West End Galveston	TX822495	29.08627	-95.1112
GAL003	West Beach	West End Galveston	TX822495	29.11716	-95.07509
GAL005	Terramar Beach	West End Galveston	TX767833	29.12855	-95.05833
GAL007	Sea Isle South	West End Galveston	TX767833	29.1405	-95.03942

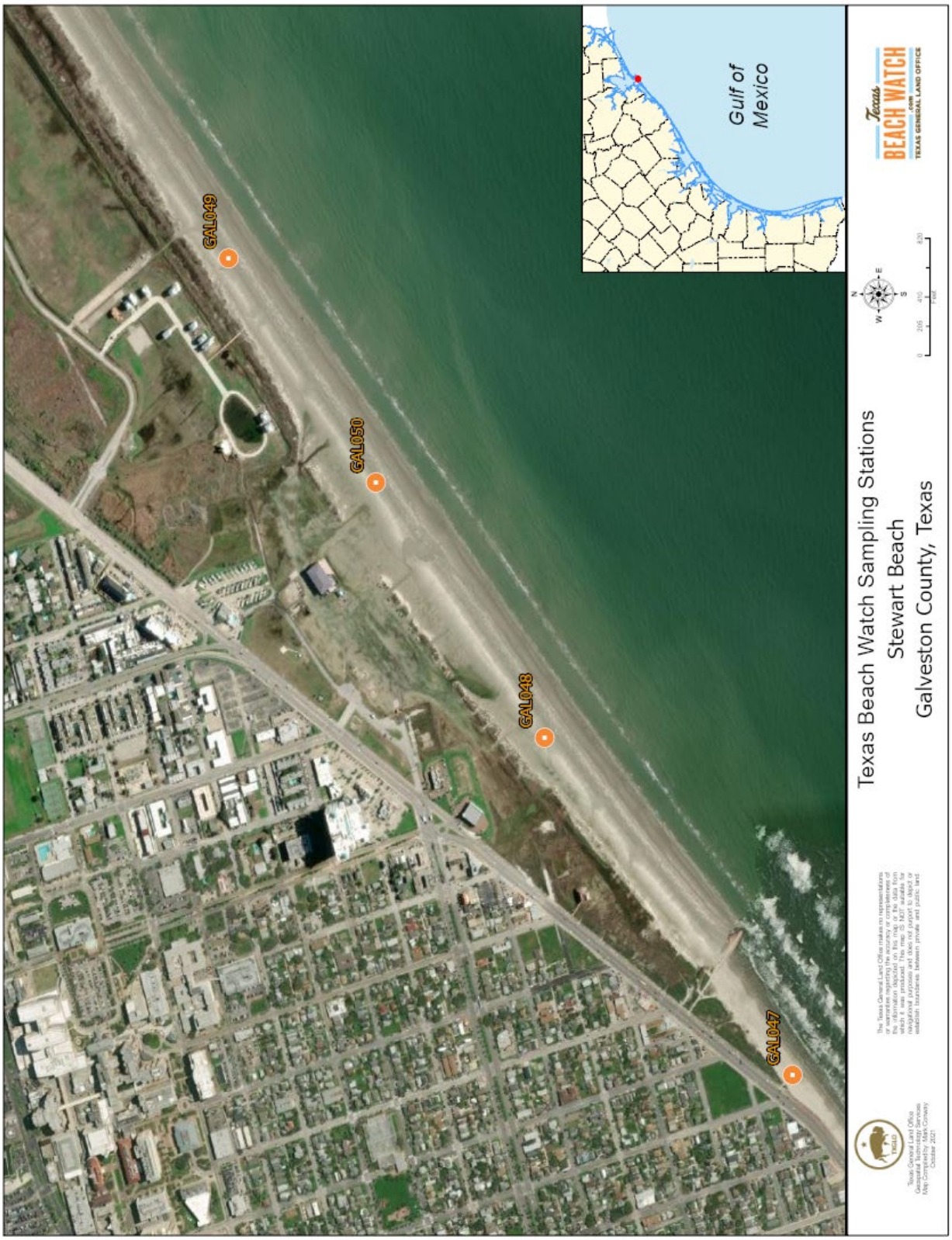
Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
GAL013	16 Mile Rd.	West End Galveston	TX239942	29.17529	-94.98273
GAL014	Jamaica Beach South	West End Galveston	TX974690	29.18171	-94.97177
GAL017	GISP #2	West End Galveston	TX334226	29.18816	-94.96087
GAL019	GISP #4	West End Galveston	TX334226	29.19193	-94.95468
GAL021	GISP #6 - Bayside	West End Galveston	TX226514	29.21313	-94.95367
GAL022	13 Mile Rd.	West End Galveston	TX751320	29.19537	-94.9488
GAL023	Pirates Drive	West End Galveston	TX751320	29.20126	-94.93818
GAL024	Bucanneer Blvd.	West End Galveston	TX751320	29.20388	-94.93399
GAL025	11 Mile Rd.	West End Galveston	TX751320	29.20865	-94.92628
GAL026	Pabst Rd.	West End Galveston	TX163187	29.21545	-94.91443
GAL027	Spanish Grant Blvd.	West End Galveston	TX163187	29.21878	-94.90981
GAL028	Hershey Beach	West End Galveston	TX163187	29.22095	-94.9048
GAL030	8 Mile Rd.	West End Galveston	TX393353	29.23476	-94.88272
GAL032	7 Mile Rd.	West End Galveston	TX393353	29.24066	-94.87286
GAL034	60th St.	Galveston Seawall	TX486021	29.26696	-94.82532
GAL035	57th St.	Galveston Seawall	TX486021	29.26888	-94.82221
GAL036	San Luis Resort	Galveston Seawall	TX486021	29.27126	-94.81735
GAL037	Fort Crockett Seawall Park West	Galveston Seawall	TX214299	29.27365	-94.8137
GAL038	Fort Crockett Seawall Park	Galveston Seawall	TX214299	29.27519	-94.81034
GAL039	Beach Plaza Shopping Center	Galveston Seawall	TX214299	29.27728	-94.80686
GAL040	39th St.	Galveston Seawall	TX214299	29.27915	-94.80427
GAL041	35th St.	Galveston Seawall	TX214299	29.28128	-94.8005
GAL042	Between 31st and 32nd St	Galveston Seawall	TX214299	29.28374	-94.79664
GAL044	Flagship Hotel/27th St.	Galveston Seawall	TX710697	29.28679	-94.7919
GAL045	East of Flagship Fishing Pier	Galveston Seawall	TX710697	29.28874	-94.78967
GAL046	18th/19th Streets	Galveston Seawall	TX710697	29.29295	-94.78423
GAL047	14th/15th Streets	Galveston Seawall	TX710697	29.2964	-94.77982
GAL048	Stewart Beach #1	Stewart Beach	TX451421	29.30384	-94.77123
GAL049	Stewart Beach #2	Stewart Beach	TX451421	29.30501	-94.76959
GAL050	Stewart Beach #3	Stewart Beach	TX451421	29.30622	-94.7679
GAL053	East Beach/Apffel Park #2	Apffel Park	TX327206	29.32732	-94.7342
GAL055	East Beach/Apffel Park #4	Apffel Park	TX327206	29.33056	-94.72905
GAL058	Retilon Road	Port Bolivar	TX832087	29.38242	-94.72333
GAL059	Magnolia Lane	Crystal Beach	TX426780	29.4091	-94.702
GAL061	Helen Blvd.	Crystal Beach	TX426780	29.42238	-94.68474
GAL062	O'Neil Rd.	Crystal Beach	TX669225	29.43652	-94.66178
GAL064	Crystal Beach Road	Crystal Beach	TX860495	29.4507	-94.63347
GAL065	Gulf Shores Drive	Crystal Beach	TX860495	29.45336	-94.62802
GAL066	Alberdie Road - Emerald Beach #2	Crystal Beach	TX392019	29.45588	-94.62285
GAL067	Barbados Rd	Crystal Beach	TX392019	29.45846	-94.61719

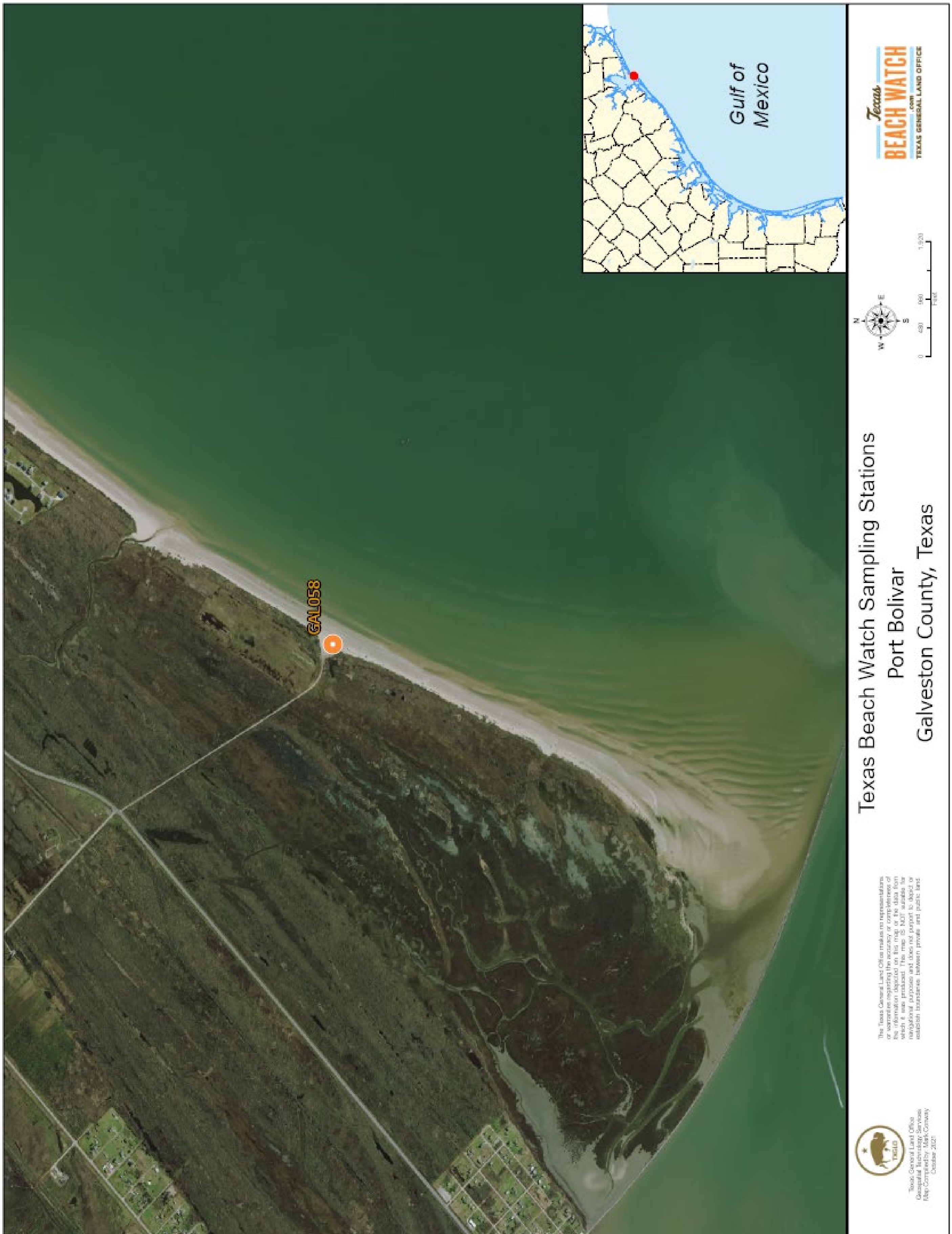
Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
GAL068	Gilmore Street Access	Crystal Beach	TX392019	29.46156	-94.61034
GAL069	Center Road	Crystal Beach	TX392019	29.46341	-94.60601
GAL070	Driftwood	Crystal Beach	TX236175	29.46722	-94.59805
GAL074	Deens Street	Rollover Pass	TX341767	29.50659	-94.50093
GAL075	Church street	Rollover Pass	TX284256	29.50775	-94.4972
GAL076	Gayle Street	Rollover Pass	TX284256	29.50925	-94.49357
GAL077	Beaumont Ave.	Rollover Pass	TX284256	29.51066	-94.4902
GAL082	Texas City Dike	Texas City Dike	TX164090	29.3695	-94.82283
GAL083	Princeton Street	Galveston Seawall	TX486021	29.25306	-94.84992
GAL084	81st Street	Galveston Seawall	TX486021	29.25586	-94.84511
GAL085	69th Street	Galveston Seawall	TX486021	29.26224	-94.83383

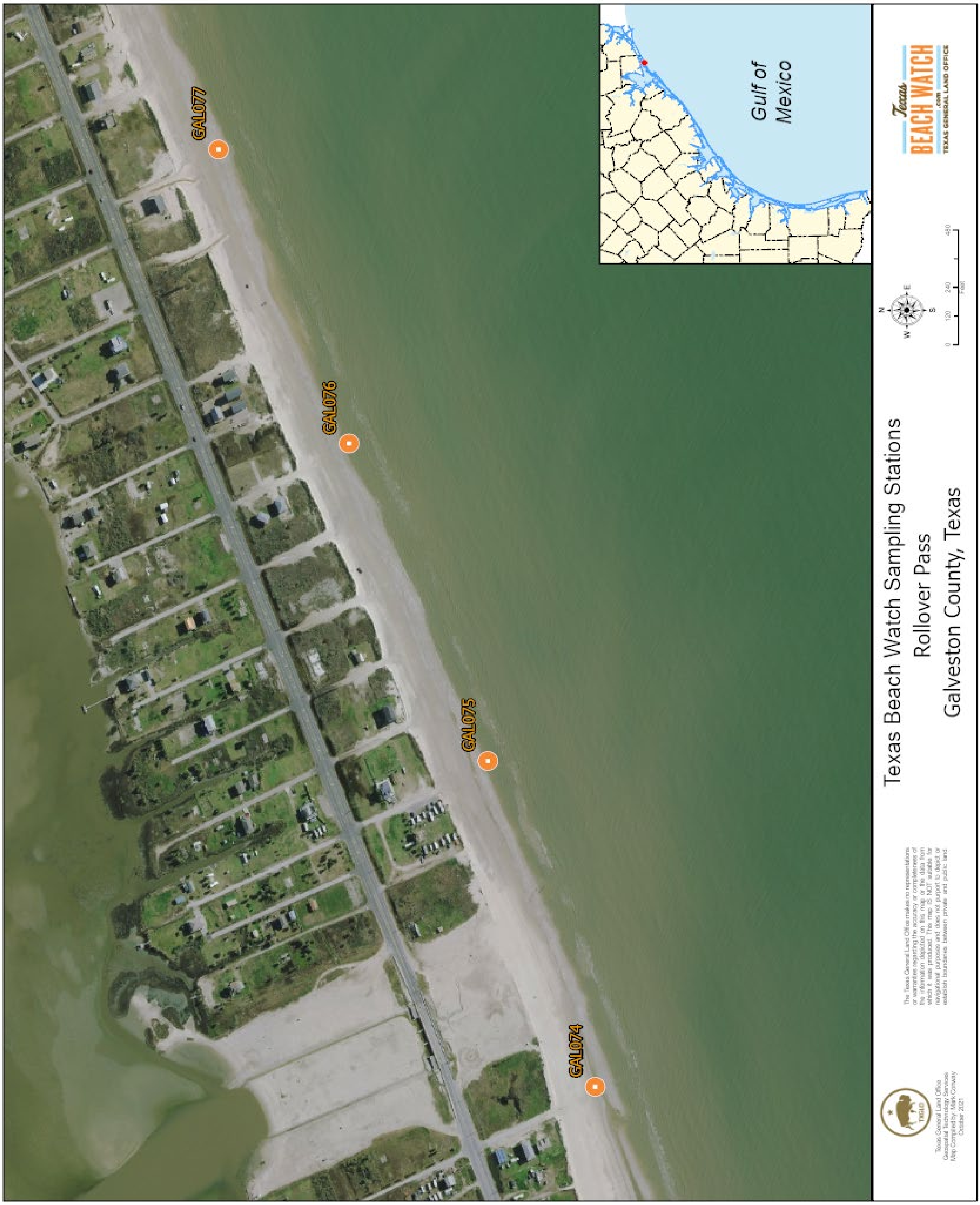













GAL082
Gulf of Mexico
Texas Beach Watch Sampling Stations
Texas City Dike
Galveston County, Texas
Texas BEACH WATCH
TEXAS GENERAL LAND OFFICE

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Harris County has one recreational beach area that is sampled. Sylvan Beach, on Galveston Bay, is a county park located in the City of LaPorte, Texas. Two stations are monitored.

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
HAR001	Sylvan Beach - North	Sylvan Beach Park	TX412536	29.655058	-95.007969
HAR002	Sylvan Beach - South	Sylvan Beach Park	TX412536	29.652436	-95.009461


Texas Beach Watch Sampling Stations
Sylvan Beach Park
Harris County, Texas
HAR001
HAR002
Gulf of Mexico
Texas BEACH WATCH .com
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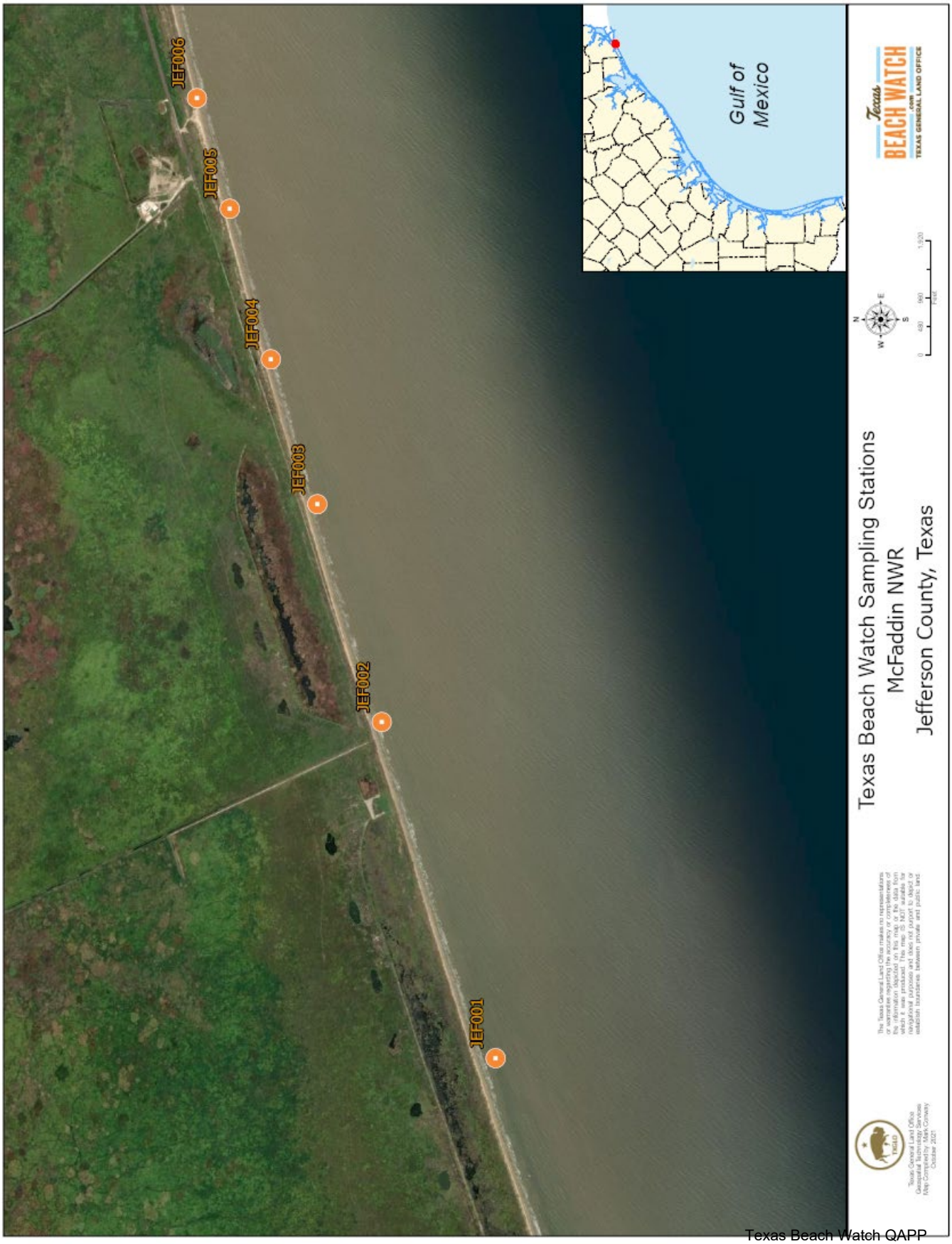
Jefferson County has approximately 33 miles of gulf coast shoreline, of which 24.2 miles is accessible as a primary contact recreational beach. The public most heavily uses two beach areas. These are Sea Rim State Park with seven locations and McFaddin National Wildlife Refuge with six locations. Although federal lands are not required to be monitored by the state, in this case, the refuge ends at the line of vegetation, with the County controlling the beach area.

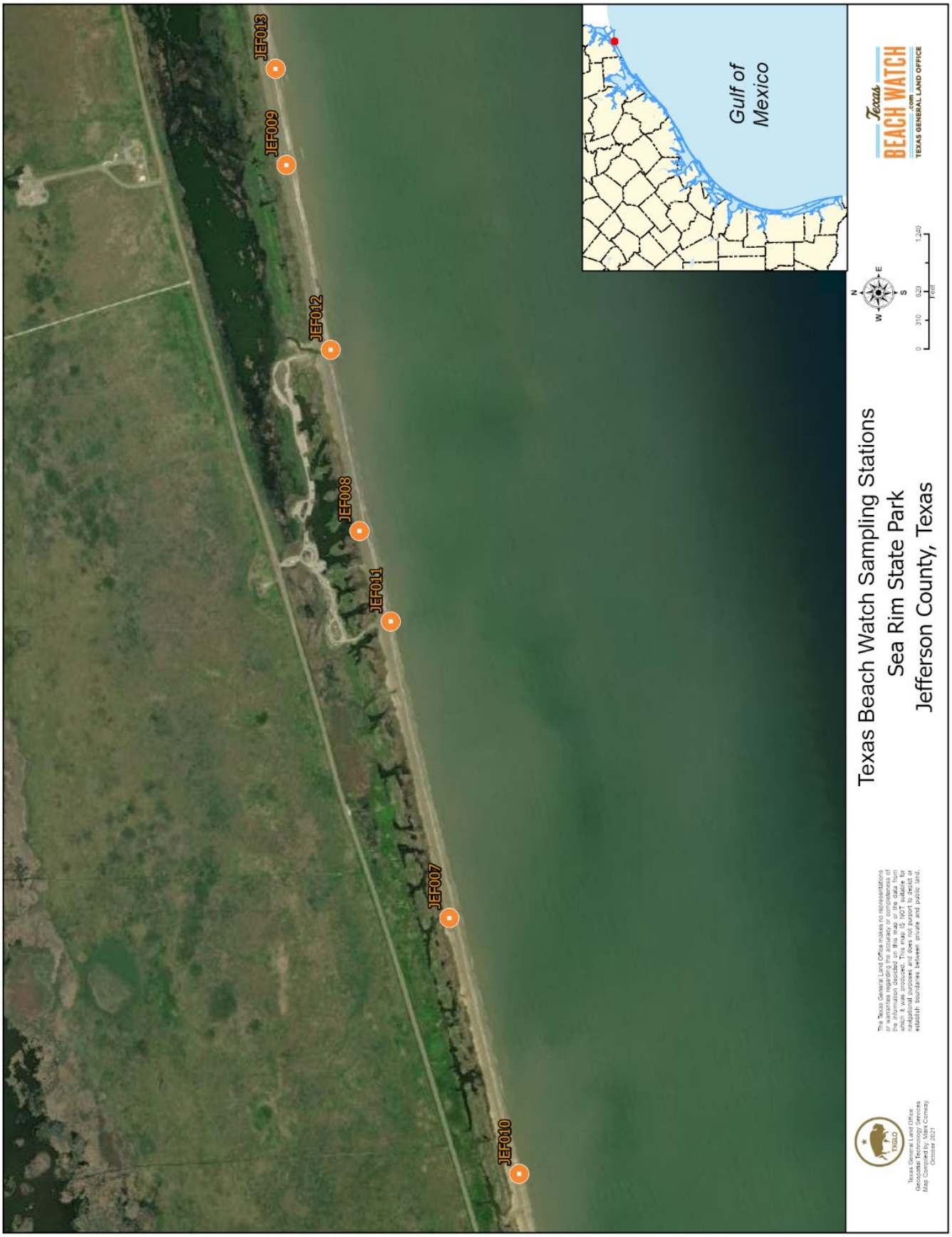
Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
JEF001*	McFaddin NWR #1	McFaddin NWR	TX831676	29.65395	-94.11387
JEF002*	McFaddin NWR #2	McFaddin NWR	TX831676	29.65917	-94.09843
JEF003*	McFaddin NWR #3	McFaddin NWR	TX831676	29.66214	-94.08842
JEF004*	McFaddin NWR #4	McFaddin NWR	TX831676	29.66428	-94.08175
JEF005*	McFaddin NWR #5	McFaddin NWR	TX831676	29.66617	-94.07483
JEF006	McFaddin NWR #6	McFaddin NWR	TX831676	29.66766	-94.06975
JEF007	Sea Rim State Park-West	Sea Rim State Park	TX095025	29.67153	-94.05448
JEF008	Sea Rim State Park-Middle	Sea Rim State Park	TX095025	29.67418	-94.04306
JEF009	Sea Rim State Park-East	Sea Rim State Park	TX095025	29.67634	-94.03225
JEF010	Sea Rim State Park – West End	Sea Rim State Park	TX095025	29.66947	-94.06204
JEF011	Sea Rim State Park – Camp 1	Sea Rim State Park	TX095025	29.67326	-94.04573
JEF012	Sea Rim State Park – Park 1	Sea Rim State Park	TX095025	29.67504	-9403771
JEF013	Sea Rim State Park – East End	Sea Rim State Park	TX095025	29.67666	-94.02941

* Sites received dormant status due to ongoing beach renourishment project

JEFFERSON COUNTY



JEFFERSON COUNTY



MATAGORDA COUNTY

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Matagorda County has three beach areas that will be sampled. The beaches are Sargent Beach, Matagorda

Jetty Park, and Palacios Pavilion. Nine stations will be monitored at these beaches.

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
MAT001	Palacios Pavilion West	Palacios	TX784742	28.698570	-96.218026
MAT002	Palacios Pavilion East	Palacios	TX784742	28.698337	-96.214689
MAT003	Jetty Park #1	East Matagorda Peninsula	TX756029	28.597222	-95.976111
MAT004	Jetty Park #2	East Matagorda Peninsula	TX756029	28.599167	-95.971389
MAT005	Jetty Park #3	East Matagorda Peninsula	TX756029	28.601389	-95.965833
MAT006	Jetty Park #4	East Matagorda Peninsula	TX756029	28.603611	-95.960556
MAT007	Sargent Beach West	Sargent Beach	TX455545	28.765278	-95.623333
MAT008	Sargent Beach	Sargent Beach	TX455545	28.769167	-95.615556
MAT009	Sargent Co Park	Sargent Beach	TX455545	28.786389	-95.581389

MATAGORDA COUNTY

MATAGORDA COUNTY

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Analysis Method
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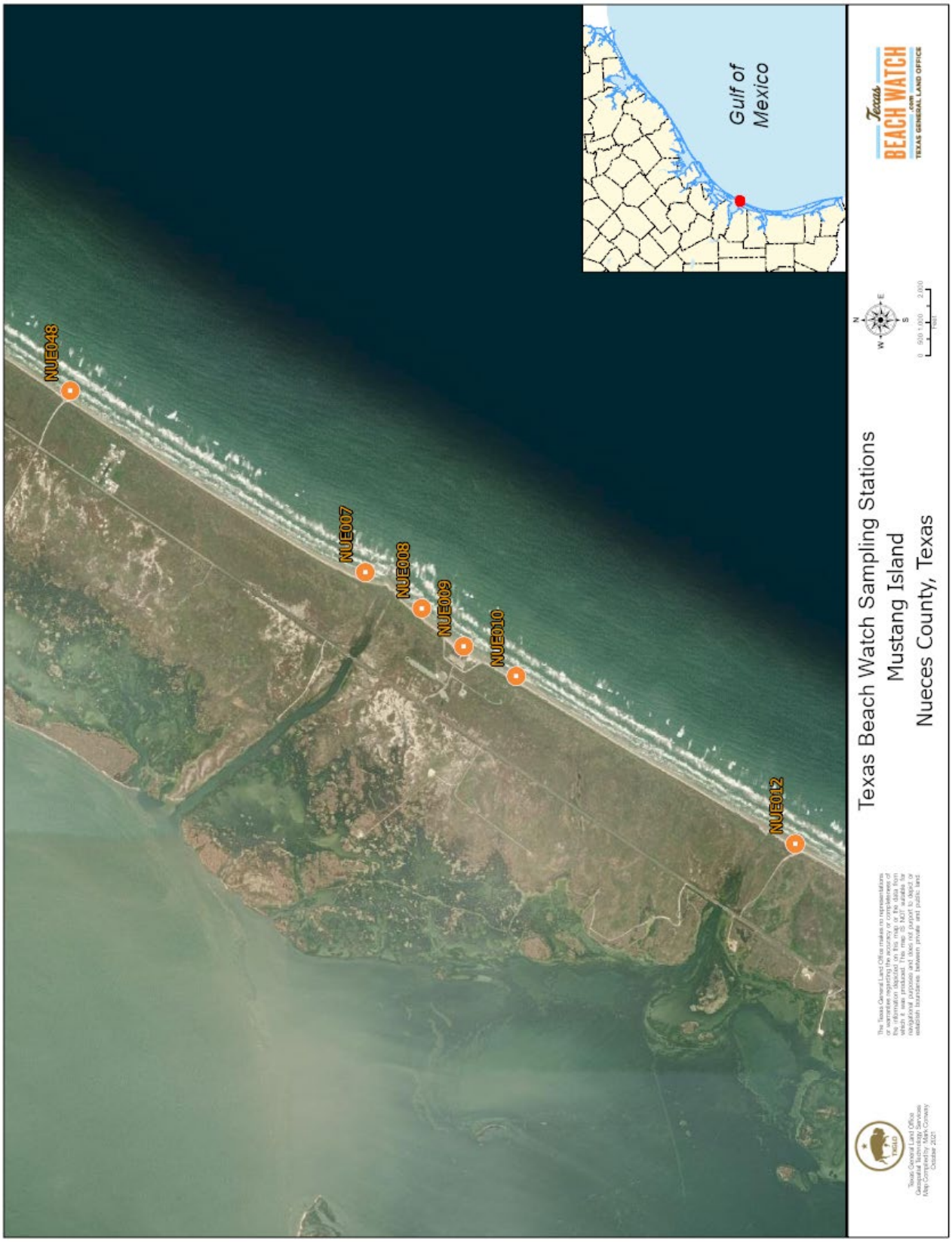
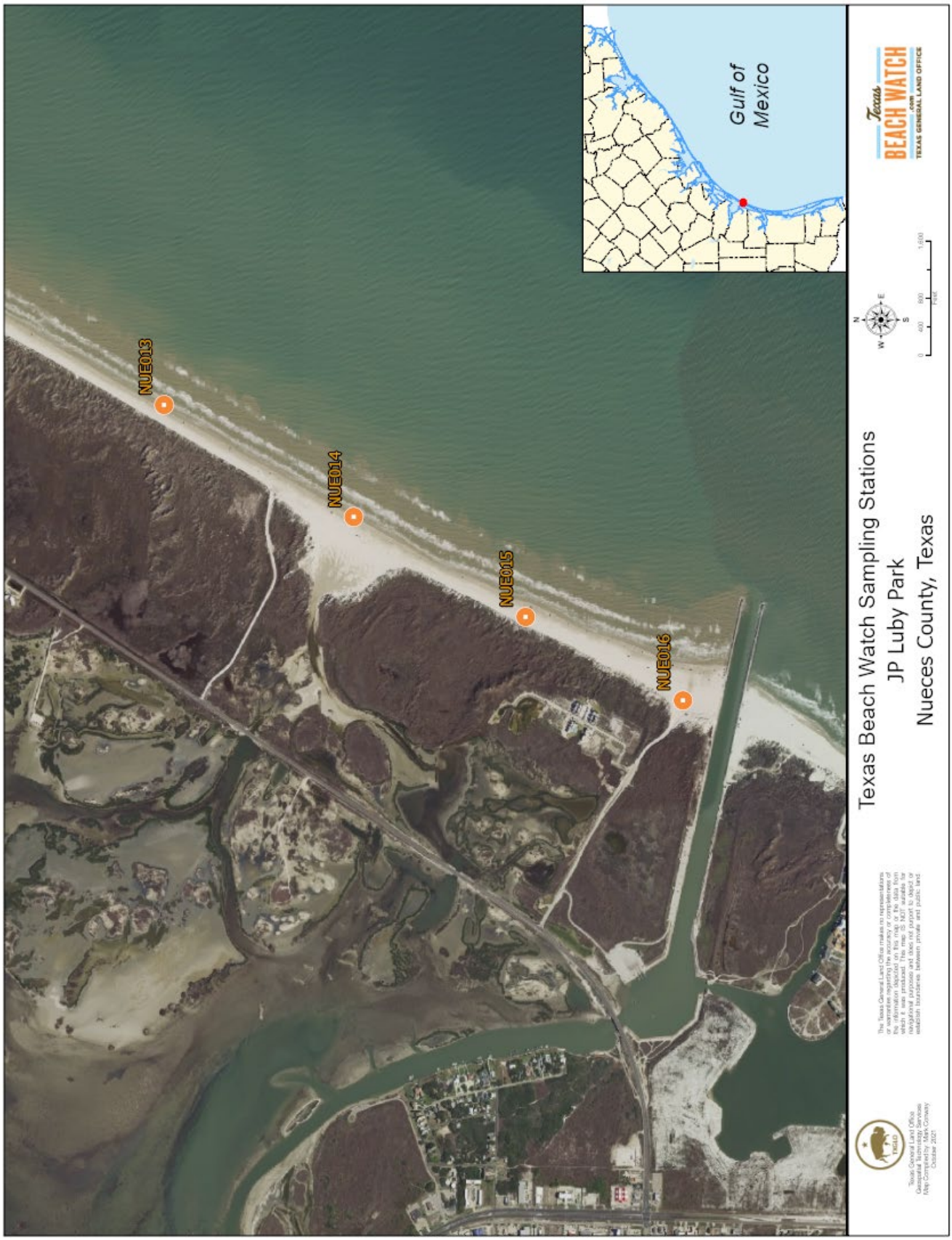
Nueces County has a very extensive beach area both along the Gulf of Mexico and within Corpus Christi Bay. Twenty-four stations on the Gulf and twenty-two stations on the Bay will be sampled.

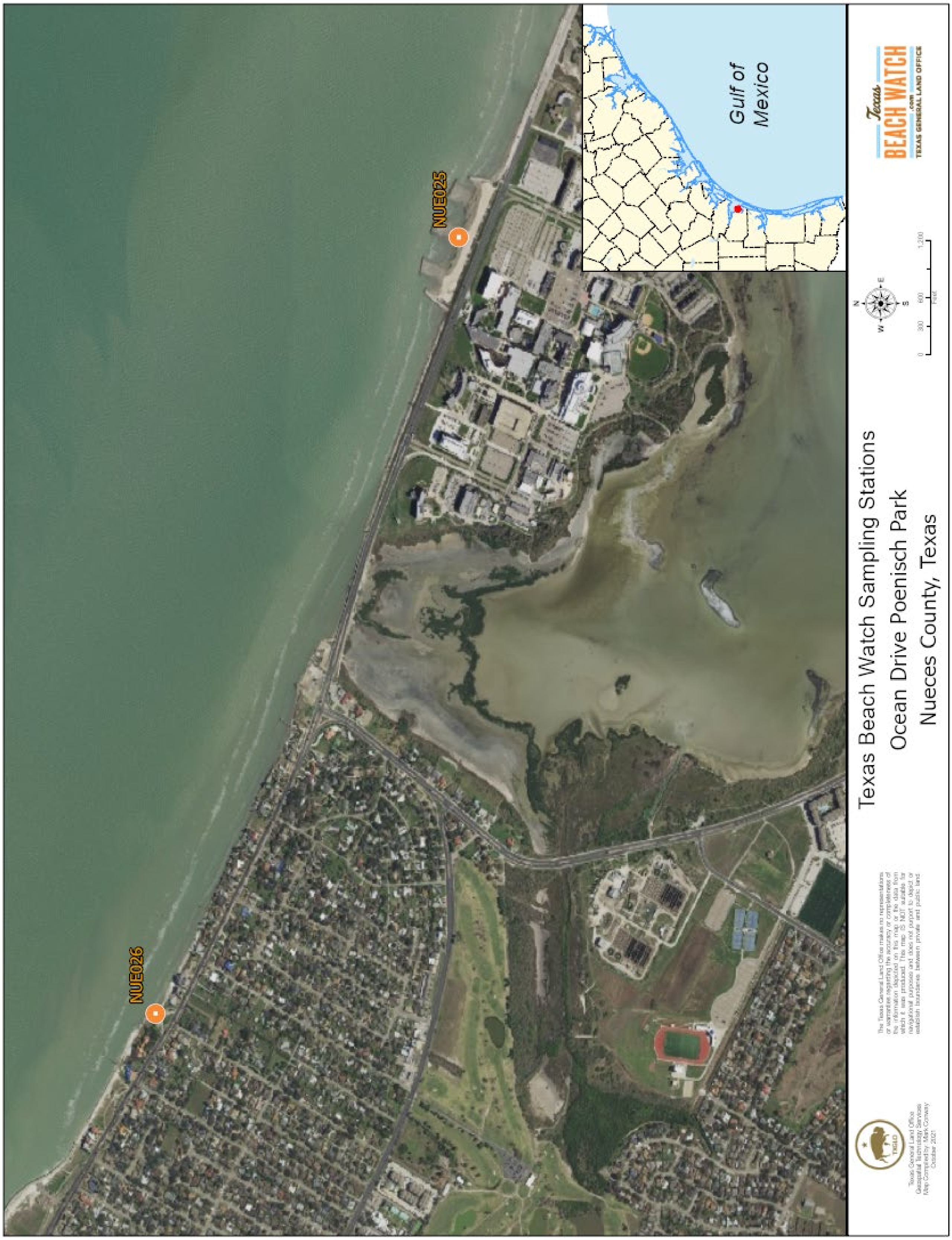
Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
NUE001	Port Aransas #1	Port Aransas	TX722300	27.83317	-97.04689
NUE002	Port Aransas #2	Port Aransas	TX722300	27.83144	-97.04943
NUE003	Port Aransas #3	Port Aransas	TX722300	27.82847	-97.05243
NUE004	Port Aransas #4	Port Aransas	TX722300	27.82637	-97.05472
NUE005	Port Aransas #5	Port Aransas	TX315916	27.82207	-97.05867
NUE006	Port Aransas #6	Port Aransas	TX315916	27.8154	-97.06501
NUE007	Mustang Island SP #1	Mustang Island	TX551380	27.67892	-97.1647
NUE008	Mustang Island SP #2	Mustang Island	TX551380	27.67422	-97.16769
NUE009	Mustang Island SP #3	Mustang Island	TX551380	27.67079	-97.17082
NUE010	Mustang Island SP #4	Mustang Island	TX551380	27.66642	-97.17331
NUE012	Mustang Island SP #6	Mustang Island	TX551380	27.64334	-97.18714
NUE013	J.P. Luby Park #1	JP Luby Park	TX607336	27.63635	-97.19066
NUE014	J.P. Luby Park #2	JP Luby Park	TX607336	27.62909	-97.19497
NUE015	J.P. Luby Park #3	JP Luby Park	TX607336	27.62252	-97.19879
NUE016	J.P. Luby Park #4	JP Luby Park	TX607336	27.61649	-97.20199
NUE017	Seawall #1	Seawall	TX314643	27.60959	-97.20562
NUE018	Seawall #2	Seawall	TX314643	27.6047	-97.20822
NUE019	Seawall #3	Seawall	TX314643	27.59873	-97.21126
NUE020	Bob Hall Pier	Padre Balli Park	TX314643	27.59484	-97.21354
NUE021	Bob Hall Pier	Padre Balli Park	TX314643	27.58956	-97.21601

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
NUE022	Bob Hall Pier	Padre Balli Park	TX314643	27.58575	-97.21811
NUE023	Bob Hall Pier	Padre Balli Park	TX314643	27.58271	-97.21966
NUE024	Bob Hall Pier	Padre Balli Park	TX314643	27.57988	-97.22107
NUE025	University Beach	Ocean Drive	TX149569	27.71535	-97.32116
NUE026	Poenisch Park	Poenisch Park	TX682648	27.72406	-97.34344
NUE028	Ropes Park #2	Ropes Park	TX821303	27.75279	-97.37587
NUE029	Ropes Park #3	Ropes Park	TX821303	27.75477	-97.37623
NUE031	Cole Park#2	Cole Park	TX259473	27.76762	-97.3845
NUE032	Cole Park#3	Cole Park	TX259473	27.76991	-97.38717
NUE033	Cole Park#4	Cole Park	TX259473	27.77135	-97.38848
NUE035	Cole Park#6	Cole Park	TX259473	27.77629	-97.39144
NUE036	McGee Beach #1	McGee Beach	TX536781	27.78406	-97.39376
NUE037	McGee Beach #2	McGee Beach	TX536781	27.78589	-97.39332
NUE038	North Beach - Coastal	North Beach	TX546628	27.81751	-97.38943
NUE039	North Beach - Breakers	North Beach	TX546628	27.82167	-97.38636
NUE040	North Beach - Gulfspray	North Beach	TX546628	27.82666	-97.38307
NUE041	North Beach - Gulden	North Beach	TX546628	27.83105	-97.37972
NUE042	JFK-A	JFK Causeway	TX442541	27.65808	-97.26189
NUE044*	Park Road 22	Packery Channel Park	TX227625	27.63041	-97.22514
NUE045	Corpus Christi Marina - South	Corpus Christi Marina	TX305317	27.79056	-97.39167
NUE046	Corpus Christi Marina - Center	Corpus Christi Marina	TX305317	27.79333	-97.39056
NUE047	Corpus Christi Marina - North	Corpus Christi Marina	TX305317	27.79667	-97.38778
NUE048	Mustang Island	Mustang Island	TX396020	27.70333	-97.14972
NUE049	Lighthouse Lake	Lighthouse Lakes Kayak Trail	TX538780	27.860833	-97.082778
NUE050	Emerald Beach	Emerald Beach	TX199413	27.781611	-97.393444

* Sites received dormant status until further notice


NUE048
NUE007
NUE008
NUE009
NUE010
NUE012
Gulf of Mexico
Texas Beach Watch Sampling Stations
Mustang Island
Nueces County, Texas
Texas BEACH WATCH
TEXAS GENERAL LAND OFFICE






NUE037
NUE036
NUE050
Gulf of Mexico
Texas Beach Watch Sampling Stations
McGee Beach & Emerald Beach
Nueces County, Texas
Texas General Land Office
Geospatial Technology Services
Map Compiled by: Mark Conway
October 2021
The Texas General Land Office makes no representations or warranties regarding the accuracy or completeness of the information depicted on this map or the data from which it was produced. This map IS NOT suitable for navigational purposes and does not purport to depict or establish boundaries between private and public land.
N
W
E
S
0
80
160
320
Feet
Texas
BEACH WATCH
TEXAS GENERAL LAND OFFICE


NUE047
NUE046
NUE045
Gulf of Mexico
Texas Beach Watch Sampling Stations
Corpus Christi Marina
Nueces County, Texas
Texas General Land Office
Geospatial Technology Services
Map Compiled by: Mark Conway
October 2021
The Texas General Land Office makes no representations or warranties regarding the accuracy or completeness of the information depicted on this map or the data from which it was produced. This map IS NOT suitable for navigational purposes and does not purport to depict or establish boundaries between private and public land.
N
W
E
S
0
110
220
440
Feet
Texas
BEACH WATCH
TEXAS GENERAL LAND OFFICE

Local Entity/Contractor
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
http://www.cctexas.com/government/health-district/index

Project Manager
Laboratory Manager
Protection Division
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
(361) 826-7218
(361) 826-7217 - Fax
angelaf@cctexas.com

Laboratory
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
http://www.cctexas.com/government/health- district/index

Analysis Method
Enterolert™

Local Government Contacts
Judge David Krebs
400 W. Sinton, Rm. 109
Sinton, TX 78387
(361) 364-9301
(361) 364-6118 - Fax
http://www.co.san-patricio.tx.us

Emilie Prot, DO, MPH Regional Medical Director
Texas Department of State Health Services, Region 11
601 West Sesame Drive
Harlingen, Texas 78550,
(956) 423-0130
(956) 444-3298 - Fax
emilie.prot@dshs.state.tx.us

Dr. Fauzia Khan , Director
Corpus Christi-Nueces County Public Health District
1702 Horne Road
Corpus Christi, Texas 78416
(361)826-7202
fauziak@cctexas.com

San Patricio County has one station at a recreational beach that is being sampled. The location is primarily utilized for wade fishing and a kayak launch.

Station ID	Station Name	Beach Name	Beach ID	Latitude	Longitude
SAN001	Nueces Bay Causeway #3	Highway 35 - Nueces Bay Causeway	TX139394	27.854111	-97.358056

APPENDIX D

PROJECT MANAGER SIGNATURE PAGE

PROJECT MANAGER SIGNATURE PAGE

By my signature below, I attest that I have read and understand the Quality Assurance Project Plan for_____County.

_____

Project Manager

_____

Project Manager (Print Name)

_____

Date

APPENDIX E

CONTRACTOR AND DATA REVIEW TEMPLATE

The following review was conducted on [insert date] by (insert name), Quality Assurance Officer, Texas Beach Watch program during the normal sampling conducted by [insert lab tech name], [insert name of laboratory], at various sampling points in [insert county name] County. Sample processing was observed at the laboratory. [Insert lab tech name] performed the sample processing.

Questions/Documentation	Yes No	Comments
Local Program Management		
Does the sub recipient have a training manual for new hires on procedures, protocol, etc.? Hasa copy been provided to the Beach Watch Program?		
Are both hard copies and electronic files containing field and laboratory data will be stored for three years?		
Is the Beach Watch Coordinator contacted if there are sampling difficulties?		
Field Sampling Procedures		
Does sample collection follow the schedule as outlined in the work plan? The required collection period is on Monday with Tuesday and Wednesday as alternate days (Multiple days may be needed to collect all of the samples).		
Sample Collection Containers		
Are samples collected in sterilized polypropylene bottles with a volume of at least 125 mL, but no more than 1000 mL?		
Are collection bottles kept sealed until immediately prior to taking the sample?		
Sample Collection Depth and Location		
Are the samples being collected at the appropriate standing depth? (Knee depth (~2 ft), this may change if the majority of the recreational activity occurs in a significantly different depth or if the distance to achieve a sampling depth is greater than 50 meters from the water line.)		
Are samples collected as near as possible to the access points of a beach?		
Sample Handling and Labeling		
Is each sample bottle properly labeled with the following information: date and time of collection, sampler's name, sample letters, and station number?		
Are sample-holding times (of no longer than six hours from collection to delivery) being met?		
Are samples being maintained at a temperature of <10º Celsius (C) and stored in insulated containers during transit to the laboratory?		

Questions/Documentation	Yes No	Comments
Sample Collection Times and Frequency		
Is one sample being collected per station?		
Is sample collection occurring between sunrise and noon?		
Are field replicates being collected and analyzed by field personnel at the appropriate frequency?		
Exceedances		
Is re-sampling being conducted on a daily basis when the result value exceeds the recommended standard?		
Does re-sampling occur within two hours of a count that exceeds standards (when possible)?		
Recording and Chain of Custody		
Do field personnel document rainfall and tidal information to explain sample collection difficulties?		
Are Chain of Custody (COC) procedures followed whenever samples are collected, transferred, stored, and analyzed?		
Were missed sampling events (completeness <100%) explained and documented?		
Laboratory Review		
Are the samples analyzed using either EPA's Method 1600: 24-hour Membrane Filter Test or IDEXX's Enterolert™ system?		
Does the laboratory have NELAC accreditation for Enterococci in non-potable water?		
Laboratory Quality Control		
Are duplicate lab samples being conducted in the lab to verify precision? Is it being conducted for 5% of the samples?		
Is the sub recipient documenting that sterilization of lab autoclaves occurs?		
Is documentation being maintained on daily incubation temperatures?		
Is documentation being maintained on calibration of lab equipment used?		
Are testing, inspection, maintenance, and calibration of laboratory equipment being conducted as prescribed by laboratory QA manuals and as specified by each equipment manufacturer's owner's manual?		
Are both hard copies and electronic files containing laboratory data will be stored for three years?		

Questions/Documentation	Yes No	Comments
Reporting		
Are the sample results being entered into the Beach Watch Database, through the web, within two hours of receiving them?		
Does the project manager periodically verify the completeness of field sampling records prior to data entry?		

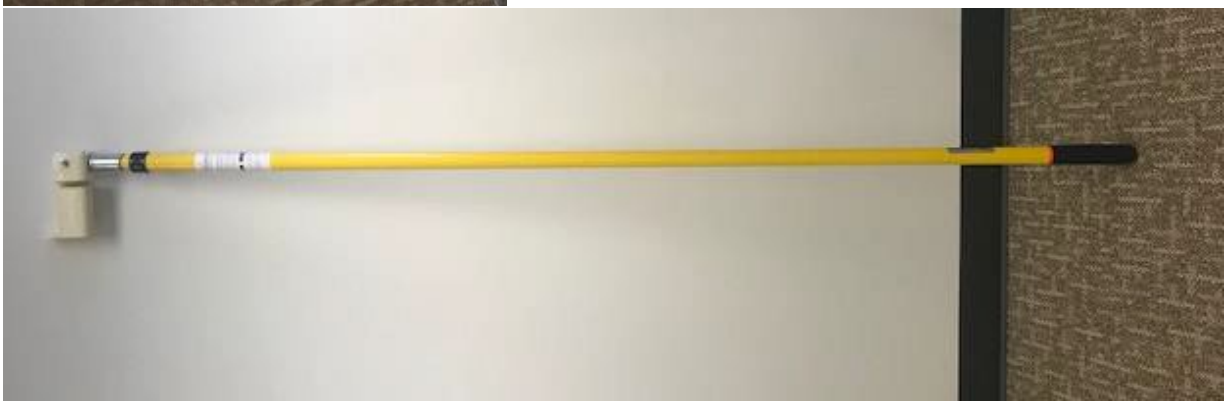
*Upon review of the laboratory, the following corrective actions are recommended:

[Insert Name] Date
Texas Beach Watch Quality Assurance Officer

[Insert Name] Date
Texas Beach Watch Program Coordinator

APPENDIX F

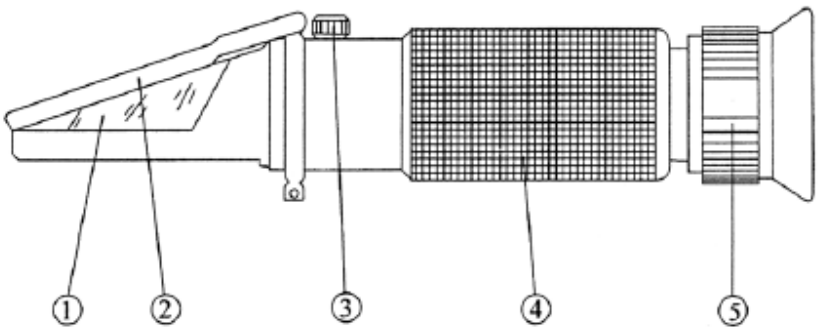
SAMPLING EQUIPMENT



Sample (extension) pole carriage where sample bottle could be affixed using reusable cable ties or elastic bands.

Salinity – Fisher brand Analog Salinity Refractometer

1. Before using the refractometer follow the calibration instructions included with the kit. (Place photo of kit and labeled description of equipment side by side)



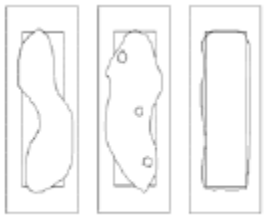
Description

1) Prism
2) Cover plate
3) Calibration screw
4) Mirror tube
5) Eyepiece (adjusting ring of diopter)

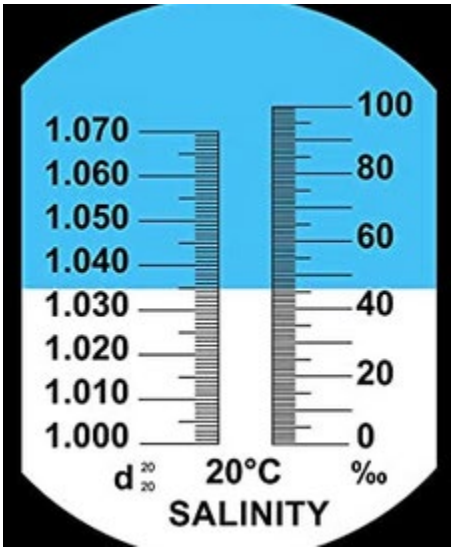
Accessories (not shown)

Eyeshade
Suction tube
Screwdriver

2. If measurement prism is wet or has smudges clean with an eyeglasses cloth. Do not use your shirt or paper towel since it could scratch the prism.
3. Place a few drops of water using the provided pipet on the measurement prism. Close the cover plate making the surface is completely and absent of air bubbles.



4. Let sample settle under cover slide for 30 seconds
5. Hold the refractometer with the cover slide facing a light source. You may have to adjust the focus with the eye piece to see the results clearly.
6. Record the results in ‰ (parts per thousand). This will be the measurement on the right-hand side of the instrument that ranges from 0-100‰.



7. Dry and rinse the measurement prism, pipet and cover slide with DI water between samples.
8. Store refractometer in carrying case to minimize wear and tear.

Turbidity – Sper Scientific Turbidity Meter

1. Before using the turbidity meter for the first time, you may need a small screwdriver to insert the 6 AAA batteries that power the device. Also before each use, confirm that all calibration instructions have been followed (instructions and calibration solutions have been provided with the kit). Please keep a log of calibration activities (dates and results) as they are subject to review at any time.

2. If outside wall of cell gets wet, wipe off the cell with cloth in the kit, do not use your shirt or a paper towel since it could scratch the cell.
3. Push the POWER button to turn the meter on.
4. The meter screen should read “0.0 NTU”. If it does not press ZERO until the correct reading is showing. Insert picture of blank reading
5. Insert sample cell with making sure the white notch on the bottle aligns with the white dot inside the meter. Insert photo of notched area
6. Close lid.
7. Press TEST/CAL.

8. Record value displayed after screen has stopped blinking. Should you receive an error when using this instrument please do not record the data. Contact the Coordinator to alert them of the issue and manufacturer for troubleshooting the instrument.

9. Push the POWER button to turn of the instrument.
10. Empty cell. Rinse cell with DI water and discard into a nontoxic waste container. Store in case with cap off to allow cell to air dry.
11. Return cloth to its plastic bag to keep it clean.

APPENDIX G

SAMPLING SCHEDULE

Sampling Schedule

September 1, 2023 through August 31, 2024

Sample Week	Sample	Event #		Sample Week	Sample	Event #
09/04/2023	Yes	1		03/04/2024	Yes	17
09/11/2023	Yes	2		03/112024	Yes	18
09/18/2023	Yes	3		03/18/2024	Yes	19
09/25/2023	Yes	4		03/25/2024	Yes	20
10/02/2023	Yes	5		04/01/2024	No	
10/09/2023	Yes	6		04/08/2024	Yes	21
10/16/2023	No			04/15/2024	No	
10/23/2023	Yes	7		04/22/2024	Yes	22
10/30/2023	No			04/29/2024	Yes	23
11/06/2023	Yes	8		05/06/2024	Yes	24
11/13/2023	N0			05/13/2024	Yes	25
11/20/2023	Yes	9		05/20/2024	Yes	26
11/27/2023	No			05/27/2024	Yes	27
12/04/2023	Yes	10		06/00/2024	Yes	28
12/11/2023	No			06/10/2024	Yes	29
12/20/2023	Yes	11		06/17/2024	Yes	30
12/25/2023	No			06/24/2024	Yes	31
01/01/2024	Yes	12		07/01/2024	Yes	32
01/08/2024	No			07/08/2024	Yes	33
01/15/2024	Yes	13		07/15/2024	Yes	34
01/22/2024	No			07/222024	Yes	35
01/29/2024	Yes	14		07/29/2024	Yes	36
02/05/2024	No			08/05/2024	Yes	37
02/12/2024	Yes	15		08/12/2024	Yes	38
02/19/2024	No			08/19/2024	Yes	39
02/26/2024	Yes	16		08/26/2024	Yes	40