

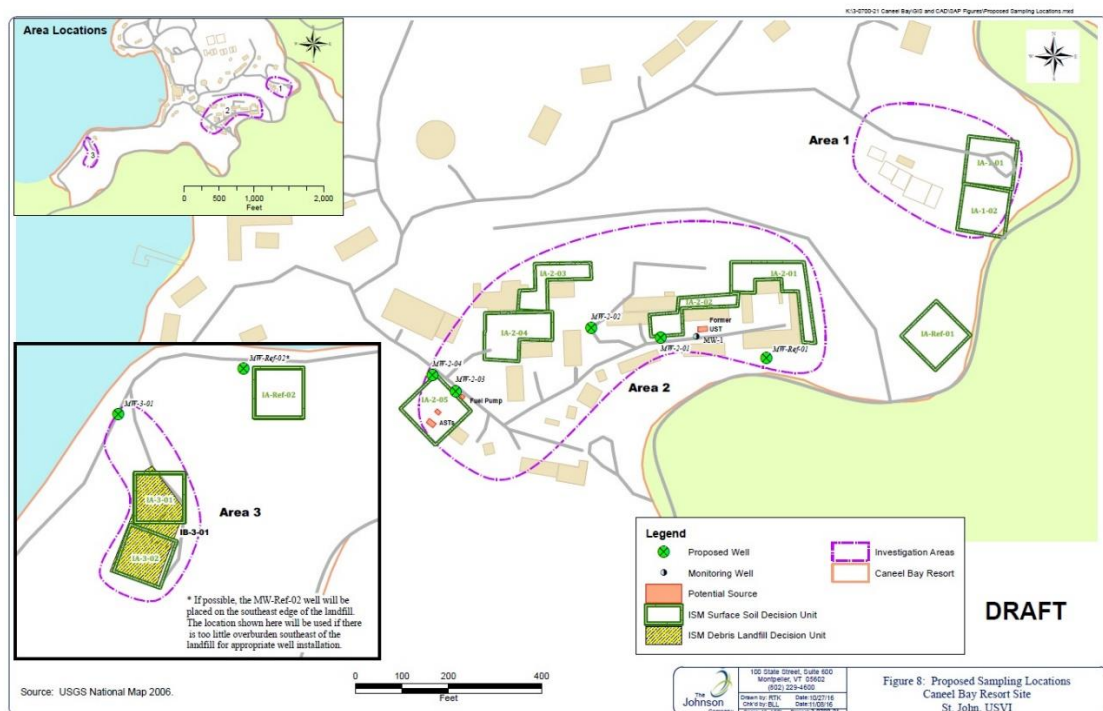


REPORT ON SPECIAL PURPOSE FIELD SURVEY

Report Date 2/19/2021	Survey Date Feb 13, 2021	Type of Survey Subsurface Utility Survey	Project Name/JEBA # JEB-3465	Project Location Caneel Bay Resort Site, National Park Service, St. John, USVI
CLIENT	On-Site Environmental, Inc			
CLIENT POC (phone/email)	Ricardo N. Alvarez, PE- President ralvarez@onsitepr.com			
SURVEY OBJECTIVE	Quality Level B (ASCE Spec-3802) Subsurface Survey			

SURVEY CREW	Luis Rivera- Utility Operator Javier Font- Survey Helper
EQUIPMENT	<ul style="list-style-type: none">➤ Location Equipment Subsite Ditch Witch 970T Transmitter & 910R Receiver➤ Ground Penetrating Radar MALA Easy locator➤ GPS Equipment and RTK applications (Trimble R10)➤ Ford SUV

SURVEY LIMITS





TYPE OF PROSPECTING

Type of prospecting

- ASCE Spec 3802 Quality Level B
- Prospecting with Ditch Witch utility locator and US Radar GPR methods.

MARKINGS SURVEYED ☒ **Yes** ☐ **No**

HORIZONTAL TOLERANCE TO EDGE OF ASSET: +/- 2 ft.

General Notes

- Reported information refers to utility owner record information. Records may include: previous construction plans in area, conduit maps, direct buried cable records, distribution and transmission maps, service record cards, "As-builts" and record drawings, field notes, county, city, utility owner or other geographic information system, circuit diagrams and verbal report.(CI/ASCE 38-02 5.1.2)
- Minimal intrusive (non-destructive) excavation method is a method of excavation that minimizes the potential damage to the structure being uncovered. Factors such as utility material and conditions may influence specific techniques. Typical techniques for utility exposures include air-entrainment/vacuum-extraction systems, water-jet/vacuum-extraction systems, and careful hand tool usage.(CI/ASCE 38-02 3.0)
- Designating is the process of using a surface geophysical method or methods to interpret the presence of a subsurface utility and to mark its approximate horizontal position (its designation) on the ground surface. (Note: Utility owners and contractors sometimes call this process "locating.") (CI/ASCE 38-02 3.0)
- All sampling location or proposed excavations shall be established away from the vicinity of confirmed and reported utilities.
- Client shall discuss the results of this survey with owner/owner representative, contractors and sub-contractors.
- Reported coordinates and elevations correspond to the above ground markings and at the actual underground assets unless specifically indicated. Nondestructive excavation methods shall be employed to determined actual depth of such utilities.
- Excavator shall work in compliance with Law 267 September 11, 1998 as amend "Ley del Centro de Coordinación de Excavaciones y Demoliciones de Puerto Rico".
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Notes reference: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data CI/ASCE 38-02 Abridged Version

DELIVERABLES

- ☐ **Field Report**
- ☒ **Field Report, CAD & Media**



UTILITY ASSET OPERATORS NOTIFIED (See table attached below):

- ☒ **NONE**
- ☐ **PREPA**
- ☐ **PRASA**
- ☐ **CLARO**
- ☐ **AT&T**
- ☐ **SAN JUAN GAS**
- ☐ **MUNICIPALITY OF SAN JUAN**
- ☐ **PIPELINES OF PR**
- ☐ **PR LIBERTY**
- ☐ **OTHER:**

Table: Notified entities and response

Utility operators were not notified under the present task.



INTRODUCTION

Javier E. Bidot & Associates, PSC, (JEBA) has been retained by On-Site Environmental, Inc for the underground utility clearance to specification ASCE 3802 QL-B standards and methodology for 24 proposed monitoring wells to be installed within Caneel Bay Resort Site. Please refer to the above figure for proposed survey limits and project areas.

PERIOD OF PERFORMANCE

Mobilization and field survey was performed in coordination with client from February 10, 2021 through February 13, 2021 with a project submittal on February 19, 2021. Once on site a health and safety meeting was held by NPS representatives on February 10, 2021.

METHODOLOGY

Subsurface assets were identified using Mala GPR, Ditch Witch 970t, 950r electronic utility locators and magnetometer. SUS/SUE activities rely on the interpretation of an instrument generated signal in order to designate an asset. Signals are affected by soil type, humidity, buried contamination and by the proximity of other assets to the subject and location with the effect of degrading the accuracy of the asset position and designation. Continuity of signal is required for most utility location methods if the utility is broken, change from conductive material to non-conductive, open circuits or if registries are sealed will impair the instrument capacity to locate. Unknown lines can be but are not limited to power, telecommunication, water, sanitary or storm pipes, combustible lines utilities or on some occasions buried rubble.

SUBSURFACE UTILITY FINDINGS

The utility survey crew worked in coordination with Ricardo Alvarez from On-Site and Bob Osborne from VHB. Utilities were designated upon the implementation of the following prospecting techniques and technologies; active induction, direct connection, passive inspection and GPR (Ground Penetrating Radar). Utilities such as water, storm sewer, telecommunications and underground power were found near proposed location of monitoring wells MW-REF-02, MW-REF-02B, MW-03-01, MW-02-03, MW-02-04, MW-02-02, MW-02-01, A3-08 and A3-03. Few unknown lines were found while applying GPR. These may correspond to abandoned infrastructure, buried debris and/or any other potential asset not disclosed on the present subsurface utility designation. All designated assets were clearly marked on ground with spray paint and pin flags. Findings were discussed with client on site and are herein reported on the present submittal.

RECOMMENDATIONS AND CONCLUSIONS

The subsurface utility survey services have been historically proven to provide a benefit to cost ratio better than 11 to 1. This benefit is solely based on the successful avoidance of the assets designated and informed on the survey report. It is our opinion that the drawings and report herein show the detectable subsurface utilities and assets on the project up to the quality level methodology employed. It is not a guarantee, however, that all possible underground assets were located so caution should be exercise especially around designated assets.



If higher accuracy location and confirmation of subsurface utility assets is desired, quality level A is required. Quality A utility designation will achieve precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive (non-destructive) excavation equipment is typically used to minimize the potential for utility damage.

Non-destructive excavation is recommended for all sites therefore, client shall perform its excavation with workmanlike methods and extreme care in the vicinity of survey marks, and assume any contingency, direct and indirect liabilities as owner of the excavation.

Tolerance is referred to the edge of asset, utility marks are referred to signal peak. Pipes diameter and duct bank widths are necessary to determine tolerance zone.

GPR anomaly areas may indicate but are not limited to buried tanks, metal caps, high humidity soil or aquifer, excavations, high density soil, building foundations, presence of utilities or buried rubble.











