NPS Engineering Evaluation/ Cost Analysis Field Activities Report

Virgin Islands National Park

Caneel Bay Resort Site
St. John, USVI
EDL Number 5SER3346

Prepared by

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List of Abbreviations and Acronyms

ACM	asbestos-containing materials
AST	aboveground storage tank
bgs	below ground surface
CBIA	CBI Acquisitions, LLC (CBIA)
COC	contaminant of concern
DU	decision unit
EE/CA	Engineering Evaluation/Cost Analysis
EHI	EHI Acquisitions, LLC
EMI	electromagnetic induction
ft	foot or feet
GPR	ground penetrating radar
IDW	investigation-derived waste
ISM	Incremental Sampling Methodology
NPS	National Park Service
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCOPC	preliminary contaminant of potential concern
PID	photoionization detector
PPL	Priority Pollutant List
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
UST	underground storage tank
VIIS	Virgin Islands National Park
VOC	volatile organic compound

1 Introduction

This document serves as the Field Activities Report for Engineering Evaluation/Cost Analysis (EE/CA) Addendum field investigation activities at the Caneel Bay Resort Site (Resort), located within the National Park Service (NPS) Virgin Islands National Park (VIIS). This field investigation was conducted in November 2021 to fill data gaps identified in the EE/CA, dated September 16, 2021.

The Resort includes the entire 150 acres currently operated by EHI Acquisitions, LLC (EHI) and CBI Acquisitions, LLC (CBIA) pursuant to a Retained Use Estate Indenture Agreement (RUE). The prior EE/CA investigation focused on approximately 8 acres in three portions of the Resort, designated as:

- Area 1: a storage area on a gravel pad near the wastewater treatment plant
- Area 2: a support area for the Resort, encompassing the engineering, maintenance, landscaping, generator, and fuel facilities, located southwest of Area 1
- Area 3: an un-permitted landfill immediately east of Honeymoon Beach

The Site boundaries, previously defined to include Areas 1, 2, and 3, were expanded since the initial EE/CA investigation, as described in the Sampling and Analysis Plan (SAP) Addendum. The areas added to the Site include:

- building materials and debris located around the Resort that potentially contain asbestos and lead-based paint
- buried asbestos pipes
- Cottage 7
- a reported storage/disposal area near the surface water Catchment Basin on the hillside above the Resort buildings

The preliminary contaminants of potential concern (PCOPCs) for these investigation activities are listed below along with the media of interest.

- Asbestos (building materials, debris from the hurricanes and demolition, and piping)
- Lead (building coatings, subsurface soil and groundwater near ASTs in Area 2 and downgradient of Area 2, subsurface soil near the underground storage tank (UST) at Cottage 7)
- Arsenic (background surface soil, potential clean fill source, and groundwater downgradient of Area 2)
- Barium (groundwater downgradient of Area 2, a deviation from the SAP Addendum – see Section 3)
- Volatile organic compounds (VOCs) (subsurface soil and groundwater near ASTs in Area 2, near possible waste storage in Area 1, and near the UST at Cottage 7)

- Polycyclic aromatic hydrocarbons (PAHs) (subsurface soil and groundwater near ASTs in Area 2, subsurface soil near possible waste storage in Area 1, subsurface soil near the UST at Cottage 7)
- Resource Conservation and Recovery Act (RCRA) 8 and 13 Priority Pollutant List (PPL) Metals (subsurface soil near possible waste storage in Area 1)
- Polychlorinated biphenyls (PCBs) (subsurface soil near possible waste storage in Area 1)
- Organochlorine pesticides (subsurface soil near possible waste storage in Area 1, surface soil in Catchment Basin area, and groundwater downgradient of Area 2, a deviation from the SAP Addendum – see Section 3)

The purpose of this field investigation was to provide sufficient data of adequate quality to complete an EE/CA addendum to decide if response actions are needed to address unacceptable risks at the Site and, if warranted, identify a recommended removal action alternative for the Site. NPS will use data collected during this field investigation to decide if removal actions are needed to address unacceptable risks at the Site. This field investigation was designed to answer the Principal Decision Questions and Estimation Questions enumerated in Section 2, below.

VHB completed the EE/CA addendum field investigation described herein in November of 2021 under contract to NPS (Contract 140P2021D0003; Call Order No. 140P5421F0074). Resampling may be conducted in January because some groundwater samples were delayed during shipping, as detailed in Section 3.

2 Summary of Completed Field Activities

Field work at the Site commenced on November 8, 2021 and was completed on November 19, 2021. The following staff were present for all or part of the field work; a list of activities on each day is provided in Table 1.

- Ben Deede, VHB – Field Manager
- Ben Bliss, VHB – VHB field staff responsible for soil logging and groundwater sampling
- Jason Hooper, VHB – VHB field staff responsible for asbestos and lead paint sampling
- Tom Halter, VHB – VHB field staff responsible for asbestos and lead paint sampling
- Shawn Mulligan, Environmental Compliance and Cleanup Division - NPS Representative
- Stephen Mitchell, Environmental Compliance and Cleanup Division – NPS Representative
- Jeff Lambert – Caneel Bay Resort Representative
- Griffith Henderson – Caneel Bay Resort Representative
- Javier J. Bidot Associates, PSC (Bidot) – Ground penetrating radar (GPR) and utility locating surveyors
- On-Site Environmental (On-Site) – Environmental drillers certified in the USVI and heavy equipment operators

Field work is itemized according to the related Decision and Estimation Questions, by issue, as presented in Table 1 of the Sampling and Analysis Plan. In some cases, field conditions required VHB to deviate from the SAP. Deviations related to each element of the investigation are included in the summary below.

2.1 Uncertain Items

- Estimation Question 1.1: Where is asbestos-containing material present and exposed to the environment?
  - From previously identified asbestos or possible-asbestos pipe locations around the Resort, Bidot used ground penetrating radar (GPR) with visual confirmation, when possible, to map piping to the extent possible.
    - Bidot mapped a network of possible rainwater collection underground piping through Area 2, which included the previously confirmed asbestos pipe. With two exceptions, the network was traced to observable dead ends. In one area, the underground piping continued beneath an active water cistern and could not be traced farther. The network appeared to drain to a partially buried cistern; however, as the cistern was flooded, it was not possible to visually confirm the end of the pipe network. VHB collected samples of some of the accessible piping to confirm its composition.
    - Bidot mapped an aboveground pipe suspected to contain asbestos from Area 3 through a wooded area to where it appeared to go underground and was no longer visible east of Little Caneel Beach. Due to the densely vegetated and rocky terrain, GPR was not possible at the location where the pipe went underground. Bidot and On-Site attempted to locate the pipe by GPR and trenching in the cleared area where it was estimated to be headed. VHB collected a sample of the piping for analysis of asbestos.
    - Bidot and On-Site investigated previously identified suspect asbestos pipe in Areas 1 and 2. These pipes were found to be only short sections not connected to networks of similar piping material. The pipe in Area 2 was being used to protect/identify a subsurface valve and was replaced following the investigation. VHB collected a sample of the piping for analysis of asbestos.
    - VHB and Bidot performed reconnaissance of other Resort Areas, from Turtle Bay to Little Caneel Beach, to identify evidence of other possible asbestos piping. Bidot and On-Site investigated possible asbestos sewer piping observed in a manhole near Scott Beach and were able to trace it north towards Turtle Bay using GPR. The piping could not be traced to the south. VHB collected samples of two different piping materials observed within this network for analysis of asbestos.
    - Bidot and On-Site also investigated suspected asbestos sewer piping observed near Cottage 7. This piping was approximately traced, by lining up

manholes, north towards Scott Beach. As the piping was flooded and at depth (10-12 feet (ft) below ground surface (bgs)), it could not be sampled or traced using GPR. There was no observable evidence to connect the piping at Cottage 7 to the piping at Scott Beach.

  - VHB collected 46 samples of possible asbestos-containing material (ACM) from Estate restaurant, Estate house, Estate event room, Turtle Bay, and Hawksnest. VHB collected another 64 bulk asbestos samples from Caneel Beach, the Main Building, and Cottage Point. VHB collected 65 bulk asbestos samples from Little Caneel Bay and 19 samples from buildings in Area 2, Little Caneel beach, and the Tennis pro shop. Two soil samples were collected from Scott Beach, for a total of 244 asbestos samples collected as a part of this investigation. VHB shipped all ACM samples to EMSL for analysis. Sampling locations are shown on Figure 2.

- Estimation Question 1.2: Where is lead-based paint present and exposed to the environment?
  - Sample paint chips were collected from buildings and debris at the Estate Restaurant, Turtle Bay and Caneel Beach. VHB collected thirteen lead paint chip samples, L-09 through L-21. These were sent to EMSL for lead analysis. Sampling locations are shown on Figure 2.
- Decision Question 1.1: Is a UST present outside Cottage 7?
  - Bidot traced fuels lines previously identified in the basement of Cottage 7 using electromagnetic induction (EMI). An inconsistent signal was traced from the basement leading around the northern and eastern sides of Cottage 7. On-Site excavated periodically along the marked line and discovered a 3-foot diameter, horizontal, steel UST to the east of and beneath the air conditioning units at Cottage 7 and possible remote fill port piping leading the east side of Cottage 7. The top of the tank had rusted out and the tank was empty. As the tank is mostly beneath the concrete pad supporting the air conditioning units, it was not possible to excavate to expose the sides of the UST. Evidence of soil contamination was not observed at the locations excavated.
- Decision Question 1.2: Does the buried item near the Catchment Basin present a threat of release of hazardous substances or petroleum?
  - CBIA staff cleared vegetation from the catchment basin area to provide access for equipment and additional investigation. Bidot returned to the previously identified anomaly and investigated the southern portion of the Catchment Basin area, which was previously inaccessible due to dense vegetation. Bidot did not identify additional anomalies or evidence of buried items. On-Site excavated the anomaly at the lower Catchment Basin area and uncovered unfinished concrete at approximately 1 ft bgs. Based on visual observations, the concrete did not appear to be a constructed feature, and may have been dumped or washed out of trucks as part of the concrete catchment basin placement. The excavation was extended to one side where the edge of concrete met apparent bedrock. VHB did not observe visual, olfactory, or

photoionization detector (PID) evidence of contamination within the excavation or on the concrete's surface.

- Decision Question 1.3: Are the water supply wells present, operational, and accessible for sampling?
  - Based on information provided by Resort staff, VHB located one alleged former water supply well to east of Area 2 and two dug wells to the west of Area 2. The former water supply well had been closed by filling the casing with grout and could therefore not be sampled. Both dug wells were cased with stone, open to the air, and contained water. These wells do not appear to be in current use, but were accessible for sampling.

2.2 Residual AST and UST Contamination

- Estimation Question 2.1: What is the extent of PCOPCs (VOCs and PAHs) in subsurface soil near Cottage 7?
  - Three soil borings, SC-C7-1 through SC-C7-3, were advanced to refusal in the assumed down-gradient direction from the Cottage 7 UST. VHB did not observe visual, olfactory, or PID evidence of petroleum contamination in soil cores or excavations at Cottage 7. VHB collected discrete soil samples from each boring at an interval of 5 ft to 6.6 ft bgs and submitted samples to ALS Middletown for VOC, PAH, and lead analysis.
- Estimation Question 2.2: What is the extent of PCOPCs (VOCs and PAHs) in subsurface soil near the AST and fuel dispenser pump in Area 2?
  - VHB advanced 17 borings, SC-2-06 through SC-2-22, to drill rig refusal near the former aboveground storage tanks (ASTs) and fuel dispenser pump. Based on the Site geology, drill rig refusal occurred at the interface of soil and underlying bedrock. Before drilling started, Bidot located and marked buried utilities in the AST area. Boring locations were chosen to investigate assumed-downgradient directions, possible preferential migration pathways (e.g. utility trenches and concrete pad bedding), and to provide areal coverage. Except for one boring (SC-2-18, located southeast of the former ASTs near the generator building entrance), all borings were in a grid covering approximately 0.25 acre. Olfactory and PID evidence of petroleum contamination was observed at borings advanced in the vicinity and downgradient of the fuel dispenser, along buried fuel piping and utility trenches, adjacent to the generator building floor slab, and adjacent to the AST tank slabs. Evidence of contamination was consistently observed in the soil column above bedrock in borings SC-2-10, SC-2-11, SC-2-12, and SC-2-14, which are adjacent to fuel piping, AST pads, utility trenches, and the generator building (see Figure 1). Observable evidence of contamination was delineated to the northeast and east by borings SC-2-08 and SC-2-18, to the west by SC-2-13 and SC-2-16, and to the northwest, down the roadway utility trench, by SC-2-19 and SC-2-20. VHB collected discrete soil samples from all Area 2 borings and sent the samples packed in coolers with ice to

ALS Middletown to be analyzed for VOCs, PAHs, and lead. The samples are listed in Table 2.

- Decision Question 2.1: Do concentrations of PCOPCs related to the UST at Cottage 7 pose a risk to human health or the environment?
  - See Estimation Question 2.1.
- Decision Question 2.2: Do concentrations of preliminary contaminants of potential concern (PCOPCs) related to the AST and fuel dispenser pump in Area 2 [soil] pose a risk to human health or the environment?
  - See Estimation Question 2.2.

2.3 Arsenic Background and Clean Fill Values

- Estimation Question 3.1: What is a representative background arsenic concentration in Site surface soil?
  - VHB collected two Incremental Sampling Methodology (ISM) reference replicates to estimate a representative Site background arsenic in soil concentrations. Samples IA-REF-03 A, B, and C were collected from an approximately 0.25-acre grassy area between Turtle bay and Scott Beach. Samples IA-Ref-04 A, B, and C were collected from an approximately 0.25-acre wooded and grassy area to the east of Cottage Point. VHB sent the surface soil samples collected from each reference decision unit (DU) to ALS Middletown to be analyzed for arsenic.
- Decision Question 3.1: Are arsenic concentrations in the identified clean fill source less than or equal to Site surface soil background concentrations and acceptable risk-based concentrations?
  - VIIS identified two potential clean fill sources for this investigation: Sleepy's Trucking and Paris Trucking. VHB contacted Sleepy's Trucking, which agreed to allow VHB to sample their clean topsoil. VHB collected surface soil samples by ISM from a soil stockpile at Sleepy's Trucking on St. Thomas, which was within an apparent maintenance yard and was estimated to contain less than 100 cubic yards of soil. Samples were submitted to ALS Middletown for arsenic analysis. The Sleepy's Trucking employees present were unable to answer questions about the soil's source and available volume. VHB also contacted Paris Trucking, but the owner stated that they only supplied crushed quarry rock.

2.4 Possible Migration of Contaminants in Groundwater

- Decision Question 4.1: Is sufficient groundwater present in soil above bedrock to collect samples in the wet season?
  - Cottage 7: On-Site installed a temporary piezometer at SC-C7-01, which was dry when VHB checked it the following day. No monitoring wells were installed at Cottage 7 and no groundwater samples were collected.

  - Area 1: On-Site installed a temporary piezometer at SC-1-01, which was dry when VHB checked it the following day. Drilling refusal, presumably on bedrock was encountered in borings SC-1-02 and SC-2-03 at around 4 ft bgs and no temporary piezometers were installed at these locations as saturated soils were not observed in the soil column. No monitoring wells were installed at Area 1 and no groundwater samples were collected.
  - Area 2: On-Site installed temporary piezometers at soil borings SC-2-06, SC-2-07, and SC-2-09 using 1-inch diameter PVC riser pipe. VHB observed groundwater at all three piezometers the following day and On-Site installed monitoring wells at each boring location (MW-2-06, MW-2-07, and MW-2-09, respectively). Based on the observation of groundwater at Dug Wells 1 and 2 to the west and downgradient of Area 2, On-Site installed monitoring wells MW-2-21 and MW-2-22 in the vicinity of the former gift shop. VHB developed and collected groundwater samples from the five installed wells and Dug Wells 1 and 2. Due to slow recharge at MW-2-06, low-flow sampling could not be performed, and a grab sample was collected from this well after recharge.
  - Area 3: VHB checked the previously installed monitoring well in Area 3, MW-3-01, for groundwater and found it to be dry. Therefore, a groundwater sample was not collected from this location.

- Decision Question 4.2: Are concentrations of PCOPCs (metals, PCBs, and pesticides) present in Site groundwater at the landfill at concentrations that pose an unacceptable potential for risk to human and/or ecological receptors?
  - As stated in Decision Question 4.1, MW-3-01 was dry and VHB was unable to collect samples to assess groundwater quality in Area 3 groundwater.
- Decision Question 4.3: Are concentrations of PCOPCs (VOCs, PAHs, and metals) present in Site groundwater downgradient of the Cottage 7 UST and Area 2 AST and fuel dispenser pump at concentrations that pose an unacceptable potential for risk to human and/or ecological receptors?
  - Cottage 7: As stated in Decision Question 4.1, groundwater was not present above refusal at Cottage 7.
  - Area 2: VHB observed evidence of contamination in soil cores above and below the water table at boring locations immediately downgradient of the Area 2 ASTs. VHB submitted the groundwater samples from MW-2-06, MW-2-07, and MW-2-09 to ALS Middletown to be analyzed for the AST release PCOPCs (lead, VOCs, PAHs). Evidence of contamination was not noted in soil borings installed farther downgradient of Area 2, MW-2-21 and MW-2-22.

    Additional wells, MW-2-21 and MW-2-22 were installed downgradient of Area 2. VHB sampled these wells and Dug Wells 1 and 2. Groundwater samples were shipped to ALS Middletown to be analyzed for the Area 2 contaminants of concern (COCs) and PCOPCs (VOCs, PAHs, lead, pesticides, arsenic, and barium).

As detailed in Section 3, all groundwater samples were delayed during shipping and all of the samples exceeded standard hold times for all analytes except metals.

- Decision Question 4.4: Are concentrations of PCOPCs (VOCs, PAHs, metals, and pesticides) present in water supply groundwater at concentrations that pose an unacceptable potential for risk to human and/or ecological receptors?
  - VHB a deep water supply well identified by CBIA, but the well was filled with grout and not operational. Although VHB collected samples from the two dug wells near the former gift shop, it does not appear these wells are used regularly or as the emergency backup for the reverse osmosis plant.
- Decision Question 4.5: Are concentrations of PCOPCs (VOCs, PAHs, PCBs, metals, and pesticides) present in Site groundwater downgradient of the waste storage at Area 1 at concentrations that pose an unacceptable potential for risk to human and/or ecological receptors?
  - As stated in Decision Question 4.1, groundwater was not present above refusal at Area 1.
- Estimation Question 4.1: What is the extent of PCOPCs (VOCs, PAHs, and metals) present in Site groundwater downgradient of the Area 2 AST and fuel dispenser pump?
  - Samples collected to answer this question are listed in Decision Question 4.3.

2.5 Possible Waste Storage at the Catchment Basin and Area 1

- Decision Question 5.1: Do concentrations of pesticides present in surface soil near the Catchment Basin exceed Site Removal Goals established by the EE/CA?
  - VHB mapped out the ISM DUs in the lower Catchment basin area, splitting the area into a northern DU and a southern DU. VHB collected three surface soil ISM replicates from each DU and sent samples to ALS Middletown for organochlorine pesticide analysis.
- Decision Question 5.2: If there is evidence of contamination at the catchment basin buried item, are concentrations of PCOPCs (VOCs, PAHs, PCBs, metals, and pesticides) present in subsurface soil at concentrations that pose an unacceptable potential for risk to human and/or ecological receptors?
  - VHB did not observe visual, olfactory, or PID evidence of contamination, a release, or the potential for a release in the soil surrounding the buried concrete (described in the discussion for Decision Question 1.2).
- Decision Question 5.3: Are concentrations of PCOPCs (VOCs, PAHs, PCBs, metals, and pesticides) present in subsurface soil downgradient of the waste storage at Area 1 at

concentrations that pose an unacceptable potential for risk to human and/or ecological receptors?

– On-Site advanced three soil borings to the west and below the gravel pad to refusal in Area 1. SC-1-01 was refused at 17 ft, while SC-1-02 and SC-1-03 were refused on bedrock at around 4 ft bgs. VHB did not observe visual, olfactory or PID evidence of contamination in the three soil cores. Discrete soil samples were collected from each core and shipped to ALS Middletown for VOC, PAHs, metals, pesticides, and PCBs analysis.

The locations of discrete soil samples, the ISM decision units, and the monitoring wells are presented on Figure 1.

VHB sent all samples by Federal Express to the analytical laboratories. Asbestos and lead paint samples were shipped to EMSL of Cinnaminson, New Jersey. ISM soil and discrete soil, groundwater, and investigation-derived waste (IDW) samples were shipped to ALS Middletown. All groundwater samples, as well as the clean fill source ISM samples, and the IDW samples were delayed at customs.

Table 2 includes a list of the samples collected and submitted for laboratory analysis. Validated analytical data are expected in early 2022.

The contents of the appendices to this report are as follows:

- Appendix 1: completed field forms and notes
- Appendix 2: daily reports generated during field activities
- Appendix 3: field instrument calibration sheets

3 Documenting Deviations from the SAP

Two significant deviations from the SAP occurred during and after the field investigation.

3.1 Additional Groundwater Samples Downgradient of Area 2

Identification of the two dug wells during the field work indicated potential year-round groundwater at the Site. These wells are to the west of and appear to be downgradient of all of Area. Although the dug wells contained groundwater, the wells are cased with stone and open to the air and are therefore potentially subject to attenuation processes and contamination by surface runoff and atmospheric deposition. Therefore, contaminant concentrations within the wells may not be representative of the surrounding groundwater. Because these wells are downgradient of Area 2 and could provide information relevant to Decision Questions 4.3 (related to groundwater downgradient of Area 2 AST and fuel dispenser) and 4.4 (related to groundwater at water supply wells), VHB installed and developed two monitoring wells, MW-2-21 and MW-2-22, near the dug wells. VHB collected groundwater samples from Dug Well 1, Dug Well 2, MW-2-21, and MW-2-22. Because the wells also appear to be downgradient of Area 2, where COCs included pesticides, arsenic, and barium, NPS expanded the groundwater analyte

list to include these COCs. Groundwater samples were sent to ALS Middletown to be analyzed for all of the Area 2 COCs and PCOPCs: VOCs, lead, PAHs, barium, arsenic, and pesticides.

3.2 Analytical Changes Caused by Shipping Delay

A shipping and customs delay affected all groundwater samples, as well as the IDW samples and the clean fill ISM sample. These samples were shipped in six coolers on November 19, 2021. Although two of the coolers arrived on November 23, the laboratory did not begin logging the samples because they were waiting for the shipment to be complete. Federal Express reported that the other coolers were delayed by Customs. Two coolers were delivered on December 7, and two coolers were delivered on December 9, 2021. As identified in Table 8 of the SAP, the holding times for the affected samples are:

- VOCs in groundwater: 14 days
- PAHs in groundwater: 7 days
- Pesticides in groundwater: 7 days
- Metals in groundwater: 180 days
- TCLP VOCs: 14 days
- TCLP Metals and Pesticides: None
- Metals in soil: 180 days

NPS anticipates that groundwater will be present in Dug Wells 1 and 2, and in the nearby monitoring wells MW-2-21 and MW-2-22, throughout the year. Therefore, resampling these wells in the dry season is likely to be possible. During the initial EE/CA investigation in February of 2021 (in the dry season), no evidence of groundwater was observed near the AST release area, and it is possible that new wells MW-2-06, MW-2-07, and MW-2-09 may not yield enough water for a sample. Therefore, NPS chose to proceed with analysis of the following groundwater samples, with the understanding that some of the data may be flagged as estimated because holding times and some of the SAP's temperature limits were exceeded:

- MW-2-06, MW-2-07, and MW-2-09: VOCs, PAHs, and lead
- MW-2-21, MW-2-22, Dug Well 1, and Dug Well 2: lead, arsenic, and barium

NPS is considering resampling groundwater to collect data that will meet the quality control parameters established in the SAP.

NPS will analyze the IDW-Soil and IDW-Water TCLP samples because the waste has been stored outside in drums, and the analytical results will be representative of the stored waste even if holding times have been exceeded.

NPS will analyze the delayed surface soil ISM sample (IA-Ref-05) because the only analyte is arsenic, and the hold time for metals was not exceeded.

4 Status of IDW Storage and Disposition

VHB and On-Site Environmental collected IDW generated during field activities in 55-gallon steel drums. Two water drums and five soil drums were staged in the maintenance area. The

drums were labeled, and VHB collected IDW water and IDW soil samples, which were composites of the two water drums and five soil drums respectively. VHB submitted IDW soil and water samples to ALS Middletown for waste characterization. On-Site will dispose of the IDW at an appropriate facility upon receipt of the analytical results.

On November 16, 2021 a hydraulic line on On-Site's drill rig failed. On-Site found a replacement hose repaired the rig. Soil stained by hydraulic oil was removed and containerized for disposal by On-Site.

Figures

0 125 250 500 Feet

- Building (approximate)
- Monitoring Well
- Dug Well
- Soil Boring
- Revised ISM DUs

Caneel Bay Resort Site | VIIS, St. John, USVI

Source Info:
Base map from ESRI/World Imagery (2017)

November 2021 Soil and Groundwater Samples

AR 004714

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0 150 300 600 Feet

Building (approximate)
Asbestos Sample
Lead Sample

Caneel Bay Resort Site | VIIS, St. John, USVI

Source Info:
Base map from ESRI/World Imagery (2017)

November Lead and Asbestos Sample Locations

Tables

Table 1. Field Activities Summary

Date	VHB	NPS	CBIA	Javier J. Bidot Assoc.	On-Site Environmental
11/8/21	General Site recon including Area 3, Area 2, Area 1, Cottage 7, Catchment Basin, wastewater treatment plant, and dug wells.	Shawn Mulligan	Jeff Lambert, Griffith Henderson	Located/marked utilities in AST area within Area 2 for drilling activities.	The AST area was cleared by CBIA and On-Site Environmental.
11/9/21	Inspected former supply well, collected discrete soil samples from Area 2 borings, installed temporary piezometer in boring SC-2-06.	Shawn Mulligan	Jeff Lambert, Griffith Henderson,	Located utilities in Area 1 and near Cottage 7 for drilling activities. Attempted scan for a possible UST near exposed steel piping	Cleared drilling areas in Area 1 and gravel pad for GPR. Attempted to uncover the line at one location but could not identify it. Completed boring SC-2-06 in Area 2. CBIA began clearing a way to the catchment basin and eastern supply well.
11/10/21	Examined piezometers and collected discrete samples from borings in Area 2, Investigated UST at Cottage 7	None	Jeff Lambert, Griffith Henderson	Located utilities in Area, scanned for buried items and observed none. Began tracing asbestos pipe in Area 2 with On-Site and CBIA. Search limited by flooded vaults to the west.	Dug along marked out fuel line at Cottage 7, located 3 ft diameter UST. CBIA cleared Catchment Basin area.

Date	VHB	NPS	CBIA	Javier J. Bidot Assoc.	On-Site Environmental
11/11/21	Collected discrete soil samples from boring in Area 2. Measured groundwater depth to water at designated borings. Inspected soil cores and possible asbestos pipe.	Shawn Mulligan	Griffith Henderson	Began surveying for asbestos pipes in Area 3.	(With Bidot) Investigated and uncovered two possible asbestos pipes in Area 1. Continued clearing and tracing in Area 2. Discovered exposed asbestos pipe, replaced it on the valve, and reburied it.
11/12/21	Collected discrete soil samples from Area 2 and Cottage 7. Asbestos pipe recon of Turtle Bay, Hawksnest, and Scott Beach. Mapped out ISM DUs at the lower Catchment Basin. Shipped 4 coolers to ALS Middletown.	None	Griffith Henderson	Continued tracing underground asbestos pipe network in Area 2. Traced aboveground asbestos pipe in Area 3 to east of Little Caneel Beach.	Advanced borings SC-C7-01 – SC-C7-03 and installed a temporary piezometer in SC-C7-01. Continued tracing asbestos pipe in Area 2. Advanced SC-2-19 and SC-2-20 in Area 2.
11/13/21	Completed ISM surface soil sampling for pesticides at the Catchment Basin. A ¼ acre area between Turtle bay and Scott Beach was collected using ISM as reference (Arsenic). Measured groundwater at wells in Area 2 and dug wells.	None	Griffith Henderson	Marked out GPR anomaly for excavation and further scanned the lower catchment basin. Completed tracing of asbestos pipes in Area 2. Surveyed wells, borings, and tanks in Cottage 7 and Area 2.	None

Date	VHB	NPS	CBIA	Javier J. Bidot Assoc.	On-Site Environmental
11/14/21	None	None	None	None	None
11/15/21	Collected possible asbestos pipe material from Scott Beach manhole for asbestos analysis. Collected three discrete soil samples in Area 1. Collected IA-REF-04 from a unit defined as a grassy wooded area between Cottage 7 and Caneel Beach. Collected 4 lead paint samples from Estate restaurant and Turtle Bay. Collected 46 asbestos samples from Estate restaurant, Estate house, Estate event room, Turtle Bay, and Hawksnest.	Stephen Mitchell	Griffith Henderson	Scanned Areas 2 and 3 for asbestos pipe and excavated a trench along the trace (no pipe found). Traced possible asbestos sewer pipe from Scott Beach manhole.	Attempted to locate asbestos pipe in Areas 2 and 3 with GPR. Advanced three borings blow the gravel pad in Area 1. Installed temporary piezometer in boring SC-1-01.
11/16/21	Checked piezometer in SC-1-01. Collected 44 more asbestos samples from Scott Beach and Cottage point. Collected a lead paint sample from Cottage Point. Developed monitoring wells MW-2-06, MW-2-07, and MW-2-09.	Stephen Mitchell	Griffith Henderson	Searched for ACM pipes at Scott Beach. Located utilities in the area north of the former gift shop.	Repaired rig, advanced soil boring SC-2-21 and SC-2-22. Installed MW-2-22.
11/17/21	Contacted potential clean fill sources. Developed monitoring wells MW-2-21 and MW-2-22. Abandoned MW-1 per USVI regulations. Collected groundwater samples from MW 2-09, MW-2-07, and the two dug wells in Area 2.	Stephen Mitchell	Griffith Henderson	Recon of buildings/areas south of Cottage 7 for asbestos pipes. Identified manholes connected to Scott	Excavated the GPR anomaly at the lower Catchment Basin.

Date	VHB	NPS	CBIA	Javier J. Bidot Assoc.	On-Site Environmental
	Collected 3 lead paint samples from Caneel Beach. Collected 64 ACM samples from Caneel Beach, Main Building, and Cottage Point. Shipped 5 sample coolers to ALS Middletown.			Beach pipes at Cottage 7.	
11/18/21	Met with Nigel Fields to discuss work status and findings. Reviewed site plan. Collected groundwater samples from MW-2-06, MW-2-21, and MW-2-22. Collected three additional lead paint samples. Collected 65 asbestos bulk samples from Little Caneel Bay, dive shop/pump building, Sugar Mill restaurant, and 2 asbestos soil samples in Area 1. Collected IDW soil and water samples.	Stephen Mitchell	NA	Identified a manhole near the tennis courts which may be connected to the network. Reviewed available utility plans in the former engineering office. A full review was not possible due to time constraints.	Backfilled the GPR anomaly excavation. Exposed cementitious pipe near the tennis court manhole for inspection. Abandoned temporary piezometers and closed remaining boreholes.
11/19/2021	Demobilized from the site. Shipped 6 coolers to ALS Middletown. Collected ISM samples from Sleepy's Trucking on St. Thomas to evaluate for clean fill. 19 Bulk asbestos samples collected within Area 2. Collected two additional lead paint samples.	None	None	None	Moved final soil ISM drum to the staging area. On-Site will manage disposal once IDW results are available. Will remove drill rig from site next week.

Table 2. Summary of Environmental Samples

SAMPLE ID	MATRIX	DEPTH (bgs)	TYPE	RCRA 8 and 13 PPL Metals	VOCs	Waste Char.	PCBs	PAHs	Pesticides	pH (All Samples are Discrete)
Soil- ISM										
IA-CB-01	Surface soil	0-0.5 ft	ISM (Reps A to C), MS/MSD	-	-	-	-	-	11/13/21	-
IA-CB-02	Surface soil	0-0.5 ft	ISM (Reps A to C)	-	-	-	-	-	11/13/21	-
IA-REF-03	Surface soil	0-0.5 ft	ISM (Reps A to C)	11/13/21	-	-	-	-	-	-
IA-REF-04	Surface soil	0-0.5 ft	ISM (Reps A to C)	11/15/21	-	-	-	-	-	-
IA-REF-05	Surface soil	0-0.5 ft	ISM (Reps A to C)	11/19/21	-	-	-	-	-	-

SAMPLE ID	MATRIX	DEPTH (bgs)	TYPE	RCRA 8 and 13 PPL Metals	VOCs	Waste Char.*	PCBs	PAHs	Pesticides	pH (all samples are Discrete)	Asbestos
Soil- Discrete											
SC-2-06-7	Discrete soil	ft	Discrete	-	11/9/21	-	-	11/9/21	-	-	-
SC-2-06-18	Discrete soil	ft	Discrete	-	11/9/21	-	-	11/9/21	-	-	-
SC-2-06	Discrete soil	ft	Discrete	-	11/9/21	-	-	11/9/21	-	-	-
SC-2-07	Discrete soil	8.5-12.5 ft	Discrete	-	11/10/21	-	-	11/10/21	-	-	-

SAMPLE ID	MATRIX	DEPTH (bgs)	TYPE	RCRA 8 and 13 PPL Metals	VOCs	Waste Char.*	PCBs	PAHs	Pesticides	pH (all samples are Discrete)	Asbestos
SC-2-08	Discrete soil	15 ft	Discrete, duplicate of SC-2-101	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-09	Discrete soil	5-13.5 ft	Discrete	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-10	Discrete soil	13-17 ft	Discrete	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-11	Discrete soil	8 ft	Discrete, duplicate of SC-2-102	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-11	Discrete soil	10 ft	Discrete MS/MSD	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-12	Discrete soil	8 ft	Discrete	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-13	Discrete soil	6.5 ft	Discrete	-	11/10/21	-	-	11/10/21	-	-	-
SC-2-14	Discrete soil	7.3 ft	Discrete	-	11/11/21	-	-	11/11/21	-	-	-
SC-2-15	Discrete soil	2.8 ft	Discrete	-	11/11/21	-	-	11/11/21	-	-	-
SC-2-16	Discrete soil	2.4 ft	Discrete	-	11/11/21	-	-	11/11/21	-	-	-
SC-2-17	Discrete soil	9.5-20 ft	Discrete	-	11/11/21	-	-	11/11/21	-	-	-
SC-2-18	Discrete soil	6.7 ft	Discrete	-	11/11/21	-	-	11/11/21	-	-	-
SC-2-19	Discrete soil	20 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-
SC-2-20	Discrete soil	15 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-

SAMPLE ID	MATRIX	DEPTH (bgs)	TYPE	RCRA 8 and 13 PPL Metals	VOCs	Waste Char.*	PCBs	PAHs	Pesticides	pH (all samples are Discrete)	Asbestos
SC-2-21	Discrete soil	15 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-
SC-2-22	Discrete soil	18 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-
SC-C7-01	Discrete soil	5 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-
SC-C7-02	Discrete soil	5 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-
SC-C7-03	Discrete soil	6.6 ft	Discrete	-	11/12/21	-	-	11/12/21	-	-	-
SC-1-01	Discrete soil	0.5-17 ft	MS/MSD, Discrete	-	11/15/21	-	-	11/15/21	-	-	-
SC-1-02	Discrete soil	0.5-4.3 ft	Discrete, duplicate	-	11/15/21	-	-	11/15/21	-	-	-
SC-1-03	Discrete soil	0.5-4 ft	Discrete	-	11/15/21	-	-	11/15/21	-	-	-
L-09	Lead Paint	N/A	Discrete	11/15/21	-	-	-	-	-	-	-
L-10	Lead Paint	N/A	Discrete	11/15/21	-	-	-	-	-	-	-
L-11	Lead Paint	N/A	Discrete	11/15/21	-	-	-	-	-	-	-
L-12	Lead Paint	N/A	Discrete	11/15/21	-	-	-	-	-	-	-
L-13	Lead Paint	N/A	Discrete	11/16/21	-	-	-	-	-	-	-
L-14	Lead Paint	N/A	Discrete	11/17/21	-	-	-	-	-	-	-
L-15	Lead Paint	N/A	Discrete	11/17/21	-	-	-	-	-	-	-

SAMPLE ID	MATRIX	DEPTH (bgs)	TYPE	RCRA 8 and 13 PPL Metals	VOCs	Waste Char.*	PCBs	PAHs	Pesticides	pH (all samples are Discrete)	Asbestos
L-16	Lead Paint	N/A	Discrete	11/17/21	-	-	-	-	-	-	-
L-17	Lead Paint	N/A	Discrete	11/18/21	-	-	-	-	-	-	-
L-18	Lead Paint	N/A	Discrete	11/18/21	-	-	-	-	-	-	-
L-19	Lead Paint	N/A	Discrete	11/18/21	-	-	-	-	-	-	-
L-20	Lead Paint	N/A	Discrete	11/19/21	-	-	-	-	-	-	-
L-21	Lead Paint	N/A	Discrete	11/19/21	-	-	-	-	-	-	-
ACM-1 - ACM-46	ACM	N/A	Discrete	-	-	-	-	-	-	-	11/15/21
ACM-47 – ACM-91	ACM	N/A	Discrete	-	-	-	-	-	-	-	11/16/21
ACM-92 – ACM-156	ACM	N/A	Discrete	-	-	-	-	-	-	-	11/17/21
ACM-157 – ACM-222	ACM	N/A	Discrete	-	-	-	-	-	-	-	11/18/21
ACM-225 – ACM-244	ACM	N/A	Discrete	-	-	-	-	-	-	-	11/19/21
MW-2-09	Groundwater		Discrete	11/17/21	11/17/21	-	-	11/17/21	11/17/21	-	-
MW-2-07	Groundwater		Discrete	11/17/21	11/17/21	-	-	11/17/21	11/17/21	-	-
Dug Well 1	Groundwater		Discrete	11/17/21	11/17/21	-	-	11/17/21	11/17/21	-	-
Dug Well 2	Groundwater		Discrete	11/17/21	11/17/21	-	-	11/17/21	11/17/21	-	-

SAMPLE ID	MATRIX	DEPTH (bgs)	TYPE	RCRA 8 and 13 PPL Metals	VOCs	Waste Char.*	PCBs	PAHs	Pesticides	pH (all samples are Discrete)	Asbestos
MW-2-06	Groundwater		Discrete	11/18/21	11/18/21	-	-	11/18/21	11/18/21	-	-
MW-2-21	Groundwater		Discrete	11/18/21	11/18/21	-	-	11/18/21	11/18/21	-	-
MW-2-22	Groundwater		Discrete	11/18/21	11/18/21	-	-	11/18/21	11/18/21	-	-
IDW-Soil	Waste soil	Drum	Discrete	-	-	11/18/21	-	-	-	-	-
IDW-Water	Waste water	Drum	Discrete	-	-	11/18/21	-	-	-	-	-

Notes:
ft = Foot or feet
in = Inch
MS/MSD = Matrix spike/matrix spike duplicate

Appendix 1 – Field Forms and Notes

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Montpelier, VT 05602

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Fax: (802) 229-5876
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Incremental Sampling Methodology (ISM) Sample Collection Record

Sample Decision Unit ID: TA-CB-01 **Sample Medium:** Dry silty sand some gravel

Project Name: Caneel Bay - NPS Project #: 58345.21

Site Location: St John, USVI Date: 11/13/21

Weather Conditions: Partly Cloudy, 80°F Time On-Site: 1000

Sampler: BND / BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of decision unit location: Northern Portion of lower catchment

Dimensions of decision unit: see tab 1 Coordinate system: see tab 1

Planned GPS coordinates: see tab 1

Increment collection method: Auger / Spoon Sample depth range: 0-6"

Approximate increment spacing: 10 ft Total number of increments collected: 40

2. SAMPLE INFORMATION:

Analysis Methods	Field or fixed lab analysis	Type of container	Sample notes, observations, comments
Pesticides	Fixed	1 x 1 gallon Ziploc, No preservatives 1 gallon HDPE Jar	BND 11/13

Original Name/Time: TA-CB-01 A @ 1230 1015 pH Sample Name/Time: NA

Duplicate Name/Time: TA-CB-01 B @ 1230 BND 11/13

Triplicate Name/Time: TA-CB-01 C @ 1245

General comments / notes: Co-packed soil + shallow rock refusal above 6" @ most increments

Lab Designation: TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720 (330)497-9396

Chain of Custody #: NA Shipper Tracking #: Fedex

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Incremental Sampling Methodology (ISM) Sample Collection Record

Sample Decision Unit ID: IA-CB-07 **Sample Medium:** Dry, silt, sand small gravel, some organics

Project Name: Caneel Bay - NPS Project #: 58345.21

Site Location: St John, USVI Date: 11/13/21

Weather Conditions: Partly Cloudy, 80°F Time On-Site: 1100

Sampler: BRB/BWD

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of decision unit location: Southern Portion of Lower Catchment.

Dimensions of decision unit: See table Coordinate system: See table

Planned GPS coordinates: See table

Increment collection method: Auger/spoon Sample depth range: 0-6'

Approximate increment spacing: 10 ft Total number of increments collected: 40

2. SAMPLE INFORMATION:

Analysis Methods	Field or fixed lab analysis	Type of container	Sample notes, observations, comments
Pesticides	Fixed	1 x 1 gallon Ziploc, No preservatives 1-gal NDPE Jug	BWD 11/13/21

Original Name/Time: IA-CB-01 A @ 1115 pH Sample Name/Time: NA

Duplicate Name/Time: IA-CB-02 B @ 1130

Triplicate Name/Time: IA-CB-03 C @ 1145

General comments / notes: Composited soil along road. Removed approx 6" @ many locations

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Incremental Sampling Methodology (ISM) Sample Collection Record

Sample Decision Unit ID: ~~IA-CT~~ Ref-03 (BRB 11/13) **Sample Medium:** Moist silt, sand, organics

Project Name: Caneel Bay - NPS Project #: 58345.21

Site Location: St John, USVI Date: 11/13/21

Weather Conditions: Partly Cloudy, passing showers 80°F Time On-Site: 1430

Sampler: BWD / BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of decision unit location: Open area between Turtle Bay • Scott Beach

Dimensions of decision unit: 178' x 80' (grassy) Coordinate system: See table

Planned GPS coordinates: See table

Increment collection method: auger / spoon Sample depth range: 0-6"

Approximate increment spacing: 16' Total number of increments collected: 40

2. SAMPLE INFORMATION:

Analysis Methods	Field or fixed lab analysis	Type of container	Sample notes, observations, comments
Arsenic	Fixed	~~1 x 1 gallon Ziploc, No preservatives~~ (BRB 11/13/21) 1-gal HDPE jar	

Original Name/Time: IA-Ref-03A @ ~~1415~~ 1415 (BRB 11/13/21) pH Sample Name/Time: NA

Duplicate Name/Time: IA-Ref-03B @ 1430

Triplicate Name/Time: IA-Ref-03C @ 1445

General comments / notes: MS/MSD on B replicate

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Incremental Sampling Methodology (ISM) Sample Collection Record

Sample Decision Unit ID: TA-RES-04 A/B/C **Sample Medium:** Most silty sand, trace gravel

Project Name: Caneel Bay - NPS Project #: 58345.21

Site Location: St John, USVI Date: 11/15/21

Weather Conditions: Partly Cloudy, breezy, 85°F Time On-Site: 0900

Sampler: BND/BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of decision unit location: Grassy/wooded area between Cottage 7 + Caneel Beach

Dimensions of decision unit: 160' x 64' Coordinate system: See table

Planned GPS coordinates: See table

Increment collection method: 4 oz. Spoon Sample depth range: 0-6"

Approximate increment spacing: 16 SI Total number of increments collected: 40

2. SAMPLE INFORMATION:

Analysis Methods	Field or fixed lab analysis	Type of container	Sample notes, observations, comments
Arsenic	Fixed	1 x 1 gallon Ziploc, No preservatives 1-gal HDPE Jar	BND 11/15/21

Original Name/Time: TA-RES-04A @0930 pH Sample Name/Time: NA

Duplicate Name/Time: TA-RES-04 B @0945

Triplicate Name/Time: TA-RES-04 C @1030

General comments / notes:

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Incremental Sampling Methodology (ISM) Sample Collection Record

Sample Decision Unit ID: TA-RES-05 A/B/C **Sample Medium:** Stockpiled Topsoil

Project Name: Caneel Bay Resort Project #: 58345.21 Medium Brown silty Sand

Site Location: St. John, USVI * Date: 11/19/21

Weather Conditions: 80F, sunny Time On-Site: 0930

Sampler: BND/BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of decision unit location: Stockpiled Topsoil (Sleepy's Trucking / St. Thomas, USVI

Dimensions of decision unit: ~10'x25' Coordinate system: see below

Planned GPS coordinates: see below for center location

Increment collection method: Auger/spoon Sample depth range: 0-12"

Approximate increment spacing: 2' Total number of increments collected: 40

2. SAMPLE INFORMATION:

Analysis Methods	Field or fixed lab analysis	Type of container	Sample notes, observations, comments
Arsenic	Fixed	1 x 1 gallon Ziploc, No preservatives 1-gal HDPE Jug BND 11/19	

Original Name/Time: TA-RES-05 A pH Sample Name/Time: NA

Duplicate Name/Time: TA-RES-05 B

Triplicate Name/Time: TA-RES-05 C

General comments / notes: ~10'x25'x6' Stockpile <100 BCY

Lab Designation: TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720 (330)497-9396

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-06 (7', 18')

Project Name: Cancel Bay Resort

Project #: 58345.21

Site Location: St John, USVI

Date: 11/9/21

Weather Conditions: 80°F, partly cloudy

Time on Site: 1600

Sampler: RND / BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: N of Soil Dispersal Area 2

GPS coordinates of sampling location: See tablet Coordinate system: —

Sample collection method: geoprobe Macrocore

Sample depth range (ft): 1 bgs, 18' bgs

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
7	PAH, lead, VOCs	jar / vials	1630	Elevated PID, petroleum odor
18	"	"	1645	slight petroleum odor

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-07 (8.5, 12.5)

Project Name: Cancel Bay Resort

Project #: 58345.21

Site Location: St John, USVI

Date: 11/10/21

Weather Conditions: 80 - 85° F, Sunny

Time on Site: 0900

Sampler: BND, BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: Area 2

GPS coordinates of sampling location: See tablet Coordinate system: —

Sample collection method: geoprobe, Macrocore

Sample depth range (ft): 8.5' bgs, 12.5' bgs

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
8.5	PAH, Lead, VOC	Jar/vials	9:25	elevated PID, strong odor
12.5	" "	"	9:35	

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-08 (15')

Project Name: Caneel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/10/21

Weather Conditions: 80-85° F, Sunny

Time on Site: 9:40

Sampler: BND, BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system:

Sample collection method: geoprobe, macro core

Sample depth range (ft): 15'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
15'	PAH, Lead, VOC	jars/vials	1010	no elevated PID

General comments / notes: Dup collected (SC-2-101) @ 15', 0700

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-09 (5',13.5')

Project Name: Cancel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/10/21

Weather Conditions: Sunny 85° F

Time on Site:

Sampler: ~~BNB~~ BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: See tablet Coordinate system: —

Sample collection method: geoprobe, macro core

Sample depth range (ft): 5', 13.5'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
5	PAH, Lead, VOC	Vials, jars	11:30	elevated PID
13.5	"	"	11:35	below impacts

General comments / notes:

Lab Designation:

Chain of Custody #: pA Shipper Tracking #: Fedex

Reviewed by: TRO, MBM
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Soil Sample Collection Record

Soil Sample Location ID: SC-2-10 (13', 17')

Project Name: Cancel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/10/21

Weather Conditions: 85° Sunny

Time on Site:

Sampler: BND, BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: See tablet Coordinate system: —

Sample collection method: geoprobe, macro core

Sample depth range (ft): 13', 17'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
13'	PAH, Lead, VOC	jars, vials	1340	elevated PID
17'	"	"	1320	elevated PID

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-11 (8', 10')

Project Name: Caneel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/10/21

Weather Conditions: Sunny, 85°F

Time on Site: 2:45 pm

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, macrocore (drilled w/ a geoprobe DP)

Sample depth range (ft): 8' and 10'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
8'	PAH, Lead, VOC	Jars, vials	3:20 pm	SC-2-11-8, +MS & MSD
10'	"	"	3:25 pm	SC-2-11-10
8'	"	"	0800	SC-2-102 (Dup)

> elevated PID

General comments / notes:

Lab Designation:

Chain of Custody #: PL Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-12 (8')

Project Name: Caneel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/10/21

Weather Conditions: Sunny, 85°F

Time on Site: 15:45

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, macrocore (drilled w/ geoprobe DP)

Sample depth range (ft): 8'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
8'	PAH, Lead, VOC	vials jars	16:15	SC-2-12-8; elevated PID

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-13 (6')

Project Name: Caneel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/10/21

Weather Conditions: Sunny, 85°F

Time on Site: 16:15

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, macrocore, drilled w/ geoprobe DP

Sample depth range (ft): 6' - 6.5'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
6'	PAH, Lead, VOC	Vials, jars	1630	SC-2-13-6; bottom of core, no identified impacts

General comments / notes:

Lab Designation:

Chain of Custody #: DA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-14 (7.3')

Project Name: Cancel Bay Resort

Project #: 583485.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/11/21

Weather Conditions: overcast, 80° F

Time on Site: 0800

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, macrocore, geoprobe DP drill rig

Sample depth range (ft): 7.3'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
7.3'	PAH, Lead, VOC	jar/vials	0830	SC-2-14-7.3, petroleum odors

General comments / notes: PID malfunctioning; impacts identified via olfactory and visual cues

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-15 (2.8')

Project Name: Caneel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/11/21

Weather Conditions: overcast, 80° F

Time on Site: 0830

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, macrocore, geoprobe DP Drill Rig

Sample depth range (ft): 2.8'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
2.8'	PAH, Lead, VOC	Vials/jars	0900	SC-2-15-2.8; collected from bottom of core

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

Reviewed by: TRO, MBM
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Soil Sample Collection Record

Soil Sample Location ID: SC-2-16 (2.4')

Project Name: Cancel Bay Resort

Project #: S8345.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/11/21

Weather Conditions: overcast, 80°s

Time on Site: 0900

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, macrocore, geoprobe DP drill Rig

Sample depth range (ft): 2.4'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
2.4'	PAH, Lead, VOC	jars/vials	0936	SC-2-16-2.4; bottom of core

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fed

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-17 (9.5', 20')

Project Name: Caneel Bay — Project #: 58345.21

Site Location: St John, USVI, Area 2 (AST) — Date: 11/11/21

Weather Conditions: overcast, 95°F — Time on Site: _____

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: _____

GPS coordinates of sampling location: see tablet — Coordinate system: —

Sample collection method: geoprobe, macrocore, grab sample

Sample depth range (ft): 9.5, 20

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
9.5	PAH, Lead, VOC	Vials, jars	1350	SC-2-17-9.5
20	"	"	1355	SC-2-17-20

General comments / notes: _____

Lab Designation: _____

Chain of Custody #: PA — Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-18 (6.7')

Project Name: Caneel Bay

Project #: 58345.21

Site Location: St John, Virgin Islands, Area 2 (AST)

Date: 11/11/21

Weather Conditions: overcast, 85° F

Time on Site: 1406

Sampler: BRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location:

GPS coordinates of sampling location: see tablet

Coordinate system: —

Sample collection method: grab, geoprobe, macrocore

Sample depth range (ft): 6.7'

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
6.7'	PAH, Lead, VOC	vials, jars	1445	SC-2-18-6.7

General comments / notes:

Lab Designation:

Chain of Custody #: NA

Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-2-19 (20'), & SC-2-20 (15')

Project Name: Cancel Bay Resort

Project #: 58435.21

Site Location: St John, USVI, Area 2 (AST)

Date: 11/12/21

Weather Conditions: Sunny, 80°F

Time on Site: 0800

Sampler: Ben Bliss (BRB)

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: see comments/notes

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, geoprobe

Sample depth range (ft): 20' & 15', respectively

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
20	PAH, Lead, VOC	jars, vials	0845	SC-2-19-20
15	"	"	1050	SC-2-20-15

General comments / notes: these borings are on the same log b/c we ran out of these logs. These two borings meant to follow trench to determine if the impacts are migrating to the West along the trench

Lab Designation:

Chain of Custody #: pA Shipper Tracking #: Fedex

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Soil Sample Collection Record

Soil Sample Location ID: SC-C7-01, SC-C7-02, SC-C7-03

Project Name: Cancel Bay Resort

Project #: 58345.21

Site Location: St John, USVI, cottage 7

Date: 11/12/21

Weather Conditions: Sunny, 85°F

Time on Site: 1100

Sampler: DRB

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: by AC Units near cottage 7, near UST

GPS coordinates of sampling location: see tablet Coordinate system: —

Sample collection method: grab, geoprobe

Sample depth range (ft): 01 (5'), 02 (5'), 03 (6.6')

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Type of container	Collection time	Sample notes, observations, comments
5	PAH, Pb, VOC	Jars, vials	1150	SC-C7-01
5	"	"	1330	SC-C7-02 +MS/MSD
6.6	"	"	1430	SC-C7-03 +Dup → see below
6.6	"	"	1200	SC-C7-101 (from 03)

General comments / notes:

Lab Designation:

Chain of Custody #: NA Shipper Tracking #: Fedex

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Water Level Measurement Record

Project Name: Caneel Bay Resort Site Project #: 58345.21

Site Location: Virgin Islands National Park (VIIS) Date: 11/18/21

Weather Conditions: Sunny, some rain Time on Site: 1600

Personnel: BRB, BVD

Location	Time	Depth to Water (ft. btoc)	total depth (btoc) Observations
MW-1			
MW-2-06	0715	10.02	17.09 WL was 10.49 ftbtoc @ 1600 on 11/19
MW-2-07	1600	5.78	17.43
MW-2-09	1605	8.44	19.22
MW-2-21	0930	4.05	15.43
MW-2-22	0845	2.09	18.28
Dug well 1	1610	~ 4.65	~12.5
Dug well 2	1615	~ 4.80	~ 9.8

Project Name: CBR Site Project #: 58345.21 Initials: BRB Date: 11/18/21

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-07

Project Name: Cancel Bay Resort Site Project #: 58345.21 Date: 11/17/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: overcast Time on site: 0900

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) top of casing (west) Depth to water below MP (ft): 8.50

Total well depth (ft): 20.19 Well diameter (in): 2" Length of water column in well (ft): 11.69

Gallons per foot[1]: 0.16 Well volume (gal): 1.87 PID Headspace (ppmV): ____

2. PURGING DATA: Method: peri pump Stabilized intake depth: 17'

Purge Volume @ ____ well volume: ____ (gal) Purge Rate: 150 (gpm)

Parameter equipment: YSI, turbidimeter

Time	Depth (ft)	Volume Removed ~~(gal)~~ L	Flow Rate ~~(mL/min)~~	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
0953	8.5	0	0	Start	----	----	----	----	----
0958	10.36	0.75	150	31.54	45.71	0.42	6.84	51.8	7.42
1003	10.35	1.5	150	31.55	45.70	0.33	6.83	34.2	4.16
1008	10.35	2.25	150	31.33	45.71	0.21	6.80	15.8	2.91
1013	10.31	3.00	150	31.35	45.79	0.21	6.77	10.0	3.05
1018	10.35	3.75	150	31.46	45.92	0.20	6.76	0.7	2.72
1023	10.35	4.5	150	31.55	46.06	0.18	6.76	0.2	3.30
Sampled at		1030							

Purge Water Disposal Method Drum Comments (e.g. color / odor): —

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-07 **Date:** 11/17/21

3. SAMPLE COLLECTION: Method: peri pump **Sample Time:** 1030

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory
3	40mL	HCL	VOC	
1	125mL	HNO3	Lead	
2	1L	—	PAH	

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: 11/16/21 Personnel: BND

Pumping Rate: 600 mL/min Volume removed: ~8 gal

General drawdown/ well pumped dry? dry

Comments: Sample ID = MW-2-07 for VOC, PAH, lead, ~~Barium, arsenic,~~ ~~PCB/pesticides~~

Time off site: 1100

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-09

Project Name: Caneel Bay Resort Site Project #: 58345.21 Date: 11/17/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: Sunny, 85° F Time on site: 10:30

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) top of casing (marked) Depth to water below MP (ft): 9.47

Total well depth (ft): 20.22 Well diameter (in): 2" Length of water column in well (ft): 10.75

Gallons per foot[1]: ~~0.75~~ 0.16 Well volume (gal): 1.72 PID Headspace (ppmV): _____

2. PURGING DATA: Method: peri pump Stabilized intake depth: 17'

Purge Volume @ _____ well volume: _____ (gal) Purge Rate: 150 (gpm)

Parameter equipment: _____

Time	Depth (ft)	Volume Removed (L)	Flow Rate (mL/m)	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
~~1050~~ 1057	9.47	0	0	Start	----	----	----	----	----
~~1055~~ 1102	10.83	0.75	150	32.10	37.64	1.18	7.03	110.7	34.2
1107	11.40	1.5	150	32.14	37.38	1.06	7.02	101.4	33.2
1112	11.96	2.25	150	31.94	32.13	1.18	7.00	96.9	25.5
1117	12.19	3.00	150	32.02	37.24	1.21	6.99	97.3	20.8
1122	12.42	3.75	150	31.56	37.45	1.22	7.00	101.7	18.2
1127	12.45	4.50	150	31.41	37.63	1.22	7.02	103.7	15.7
1132	12.45	5.25	150	31.46	37.72	1.22	7.03	105.4	14.9
1137	12.45	6.00	150	31.35	37.75	1.14	7.03	107.3	15.6
Sampled at 1145									

Purge Water Disposal Method Drum Comments (e.g. color / odor): -

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-09 **Date:** 11/17/21

3. SAMPLE COLLECTION: Method: peri pump Sample Time: 1145

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory
3	40mL	HCL	VOC	
1	125 mL	HNO3	Lead	
2	1L	—	PAH	

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: 11/16/21 Personnel: BND

Pumping Rate: 600 mL/min Volume removed: 7 gal

General drawdown/ well pumped dry? dry

Comments: Sample ID = MW-2-09

for VOC, PAH, lead, ~~Barium, arsenic~~, PCB, ~~pests~~

Time off site: 1200

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Ground Water Monitoring Well Sample Collection Record

Well ID: Dug Well 1

Project Name: Cancel Bay Resort Site Project #: 58345.21 Date: 11/17/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: Sunny, 82°F Time on site: 1310

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) side of well well Depth to water below MP (ft): 4.61 *

Total well depth (ft): ~12.5 Well diameter (in): Length of water column in well (ft):

Gallons per foot[1]: Well volume (gal): PID Headspace (ppmV):

2. PURGING DATA: Method: peri pump Stabilized intake depth: 7'

Purge Volume @ well volume: (gal) Purge Rate: (gpm)

Parameter equipment: YSI, turbidimeter

Time	Depth (ft)	Volume Removed (L)	Flow Rate (mL/min)	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
1315	4.61	0	0	Start	----	----	----	----	----
1320	4.61	1	200	28.51	43.92	0.25	6.73	135.9	7.83
1325	4.61	2	200	28.47	43.93	0.24	6.71	129.1	3.61
1330	4.61	3	200	28.67	43.96	0.23	6.70	125.5	4.08
1335	4.61	4	200	28.39	43.98	0.21	6.70	120.0	1.60
Sampled at 1340									

Purge Water Disposal Method Drum Comments (e.g. color / odor): —

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Ground Water Monitoring Well Sample Collection Record

Well ID: Dug well 1 **Date:** 11/17/21

3. SAMPLE COLLECTION: Method: peri pump **Sample Time:** 1340

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory
3	40 mL	HCL	VOC	
1	125 mL	HNO3	Lead, Barium, arsenic	
2	1L	—	PAH	
2	1L	—	PCB/pest	

3SP 11:18

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: Not developed Personnel: _____

Pumping Rate: _____ Volume removed: _____

General drawdown/ well pumped dry? _____

Comments: Sample ID = Dug well 1
for VOC, PAH, Lead, boron, arsenic, PCB/pests

Time off site: 1400

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Ground Water Monitoring Well Sample Collection Record

Well ID: Dug well 2

Project Name: Caneel Bay Resort Site Project #: 58345.21 Date: 11/17/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: Sunny/overcast, 85°F Time on site: 1430

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) side of well wall Depth to water below MP (ft): 5.02 * see comments

Total well depth (ft): ~9.80 Well diameter (in): Length of water column in well (ft):

Gallons per foot[1]: Well volume (gal): PID Headspace (ppmV):

2. PURGING DATA: Method: Stabilized intake depth: 7'

Purge Volume @ well volume: (gal) Purge Rate: (gpm)

Parameter equipment: YSI, turbidimeter

Time	Depth (ft)	Volume Removed (L)	Flow Rate (~~mL/min~~)	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
1455	5.02	0	0	Start	----	----	----	----	----
1500	5.02	1	200	27.62	10.59	1.76	6.92	-75.5	19.1
1505	5.02	2	200	27.65	10.59	0.64	6.89	-74.9	20.1
1510	5.02	3	200	27.68	10.58	0.25	6.88	-74.9	19.8
Sampled at		1520							

Purge Water Disposal Method Drum Comments (e.g. color / odor): —

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Ground Water Monitoring Well Sample Collection Record

Well ID: Dog well 2 **Date:** 11/17/21

3. SAMPLE COLLECTION: Method: peri pump **Sample Time:** 1520

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory
3	40 mL	HCL	VOC	
1	125 mL	HNO3	Lead, Barium, arsenic	
2	1L	—	PAH	
2	1L	—	PCB/pest	

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: not developed Personnel: _____

Pumping Rate: _____ Volume removed: _____

General drawdown/ well pumped dry? _____

Comments: Sample ID =

* the water level tape is at a consistent angle due to a step-down in the well. So, the depth-to-water is not accurate, but it is precise

Time off site: 1540

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-06

Project Name: Cancel Bay Resort Site Project #: 58345.21 Date: 11/18/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: Sunny, 78°F Time on site: 7:15

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) top of casing (cut) Depth to water below MP (ft): 10.02

Total well depth (ft): _____ Well diameter (in): 2" Length of water column in well (ft): _____

Gallons per foot[1]: 0.16 Well volume (gal): _____ PID Headspace (ppmV): _____

2. PURGING DATA: Method: peri pump Stabilized intake depth: _____

Purge Volume @ _____ well volume: _____ (gal) Purge Rate: _____ (gpm)

Parameter equipment: none here

Time	Depth (ft)	Volume Removed ( )	Flow Rate ( )	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
		0	0	Start	----	----	----	----	----
* sampled at 07:40									
* this well recharges very slowly so this well was not purged. A grab sample was collected here.									
* flow rate of ~100 ml/min									

Purge Water Disposal Method Drum Comments (e.g. color / odor): —

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-06 **Date:** 11/18/21

3. SAMPLE COLLECTION: Method: peri pump Sample Time: 0740

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory
3	40 mL	HCL	VOC	
2	1L	–	PAH	
1	125 mL	HNO3	Lead	

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: 11/16/21 Personnel: BND

Pumping Rate: 600 mL/min Volume removed: 1.25

General drawdown/ well pumped dry? dry

Comments: Sample ID = MW-2-06

Time off site: 0800

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-21

Project Name: Caneel Bay Resort Site Project #: 58345.21 Date: 11/18/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: Raining, 80°F Time on site: 0845

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) top of casing (cut) Depth to water below MP (ft): 4.05

Total well depth (ft): ____ Well diameter (in): 2" Length of water column in well (ft): ____

Gallons per foot[1]: 0.16 Well volume (gal): ____ PID Headspace (ppmV): ____

2. PURGING DATA: Method: peri pump Stabilized intake depth: ~~16.0~~ 13.5

Purge Volume @ ____ well volume: ____ (gal) Purge Rate: ____ (gpm)

Parameter equipment: YSI, turbidimeter

Time	Depth (ft)	Volume Removed ( )	Flow Rate (mL/min)	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
0905	4.05	0	0	Start	----	----	----	----	----
0910	6.99	1	200	28.46	6.638	0.54	6.89	-143.9	122
0915	11.54	2	200	28.64	6.571	0.30	6.93	-158.5	33.7
0920	11.55	3	200	28.56	6.573	0.27	6.95	-173.2	31.7
0925	13.41	4	200	21.58	6.572	0.34	6.97	-174.2	98.7
0929	14.21	5	200						
	↳ ran dry, will let recharge and then take a grab sample								

Purge Water Disposal Method Drum Comments (e.g. color / odor): —

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Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.vhb.com

Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-21 **Date:** 4/18/21

3. SAMPLE COLLECTION: Method: peri pump **Sample Time:** 11:30

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory
3	40mL	HCL	VOC	
x3	1L	–	PAH + ?	
1	125 mL	HNO3	Lead, Barium, arsenic	

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: 11/17/21 Personnel: BRB

Pumping Rate: 600 mL/min Volume removed: 2.25

General drawdown/ well pumped dry? dry

Comments: Sample ID = _____

Time off site: _____

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-22

Project Name: Caneel Bay Resort Site Project #: 58345.21 Date: 11/18/21

Site Location: Virgin Islands National Park Sampler: BRB

Weather Conditions: Sunny w/some Rain, 82°F Time on site: 0930

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP): top of casing (cut) Depth to water below MP (ft): 2.90

Total well depth (ft): ____ Well diameter (in): 2" Length of water column in well (ft): ____

Gallons per foot[1]: 0.16 Well volume (gal): ____ PID Headspace (ppmV): ____

2. PURGING DATA: Method: peri pump Stabilized intake depth: ____

Purge Volume @ ____ well volume: ____ (gal) Purge Rate: ____ (gpm)

Parameter equipment: YSI, turbidimeter

Time	Depth (ft)	Volume Removed (L)	Flow Rate (mL/min)	Temp (deg C)	Spec Cond (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Turb. (NTU)
0940	2.90	0	0	Start	----	----	----	----	----
0945	4.47	1	200	28.43	13.79	0.22	6.81	-141.5	97.4
0950	4.83	2	200	28.36	13.81	0.13	6.77	-142.7	29.6
0955	4.73	3	200	28.44	13.79	0.10	6.77	~~-139.9~~ -138.1	19.6
1000	4.78	4	200	28.46	13.70	0.09	6.77	-139.9	14.8
1005	5.00	5	200	28.34	13.64	0.07	6.78	-135.8	~~10.6~~ 9.06
1010	5.00	6	200	28.36	13.36	0.06	6.78	-136.5	7.76
1015		7	200	28.34	13.25	0.07	6.78	-136.1	7.14
Sampled at 11:45									

Purge Water Disposal Method: Drum Comments (e.g. color / odor): -

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Ground Water Monitoring Well Sample Collection Record

Well ID: MW-2-22 **Date:** 11/19/21

3. SAMPLE COLLECTION: Method: peri-pump Sample Time: 11:45

Quantity	Container Type	Preservation	Analytical Method / Laboratory	Laboratory

Chain-of-Custody #: _____ **Shipper ID #:** _____

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

1 Gallon = 3.785 Liters

4. DEVELOPMENT INFORMATION:

Date developed: 11/17/21 Personnel: BRB

Pumping Rate: 600 ml/min Volume removed: 16

General drawdown/ well pumped dry? dry

Comments: Sample ID = MW-2-22 @ 11:45

MW-2-MS @ 11:45

MW-2-MSD @ 11:45

MW-104 @ 1200

Time off site: _____

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Ground Water Sampler Development Record

Location ID: MW-7-09

Project Name: Caneel Bay Resort Site Project #: 58345.21 BWD-11/16/21

Site Location: Virgin Islands National Park (VIIS) Personnel: BWD Date: 11/16/21

Weather Conditions: Sunny 82° F Time on Site: 1403

1. WATER LEVEL DATA:

Description of measuring point (MP): Top of casing (mw) Depth to water below MP (ft): 9.35

Total well depth (ft): 20.22' Well Dia.(in): 2" ✱ Length of water column in well (ft): 10.87'

Gallons per foot[1]: 0.09 / 0.16 Well volume (gal): 1.3 Screen Interval (ft): 15'-20'

2. PURGING DATA: Method: Bailer Development Depth Range: 15'-20'

Purge Volume @ _____ well volumes: _____ (L) (3.785 L/gal) Purge Rate: _____ (L/min)

Parameter equipment: Hach 2100

Time	Water Depth (ft.)	volume removed ( )	Flow Rate ( )	Turb. (NTU)	Notes: (depth to bottom, color, odor, pump setting, etc.)
1415	9.35	0	NA	NM	TD=20.22'
1423	19.31	3 gal	NA	Above range	light tan/milky no sheen.
	Purged 1 dry				slight petroleum odor
1605	9.77		—		
1610	12.0	3.5	600 ml/m	197	
1612	13.98			145	
1622	16.90	6 gal	600	over range	
1625		purged	dry		clear/turbid no sheen
11/17/21 0747	9.39				slight petroleum odor

[1] well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

2" screen / 1.5" CWA 0047623 BWD 11/16/21

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Ground Water Sampler Development Record

Location ID: MW-2-0807

Project Name: Caneel Bay Resort Site Project #: 58345.21

Site Location: Virgin Islands National Park (VIIS) Personnel: BMD Date: 11/16/21

Weather Conditions: sunny, 82°F Time on Site: 1440

1. WATER LEVEL DATA:

Description of measuring point (MP) Top of casing (unc'd) Depth to water below MP (ft): 8.33'

Total well depth (ft): 20.19 Well Dia.(in): 2" Length of water column in well (ft): ~~15-20~~ 11.86'

Gallons per foot[1]: 0.16 / 0.09 Well volume (gal): 1.4 Screen Interval (ft): 15-20' 3.00 11/16/21

2. PURGING DATA: Method: peri pump Development Depth Range: 15-20'

Purge Volume @ ____ well volumes: ____ (L) (3.785 L/gal) Purge Rate: ____ (L/min)

Parameter equipment: Horiba U-50

Time	Water Depth (ft.)	volume removed ( )	Flow Rate ( )	Turb. (NTU)	Notes: (depth to bottom, color, odor, pump setting, etc.)
1440	8.33	0	—	—	TD = 20.19
	NM	1gal	500	over range	light brown/turbid/
1510	NM	1.5 gal	500	11	no sheen/petroleum odor
1511	15.01				
1516	15.95	3 gal	500	over rng	
1523	16.25	3.5 gal	500	11	
1630	8.55	-	-	-	
1632			600		
1638	13.7	4.5	600	40	clear, no sheen, petroleum
1648	15.15		600	40	odor
1654	16.0	7 gal	650	90	
1700		purged	dry		
11/17/21 0744	~~9.50~~ 8.5				
	8.5 8.00 11/17/21				

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

2" screen, 1.5" r. 5.00

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Ground Water Sampler Development Record

Location ID: MW-7-06

Project Name: Caneel Bay Resort Site Project #: 58345.21

Site Location: Virgin Islands National Park (VIIS) Personnel: BRD Date: 11/16/21

Weather Conditions: 82°F Sunny Time on Site: 1530

1. WATER LEVEL DATA:

Description of measuring point (MP) _____ Depth to water below MP (ft): 12.51

Total well depth (ft): 20.2 Well Dia.(in): 2"/1.5"* Length of water column in well (ft): 7.69

Gallons per foot[1]: 0.16/0.09 Well volume (gal): 1.04 Screen Interval (ft): 15'-20'

2. PURGING DATA: Method: pre: pump Development Depth Range: _____

Purge Volume @ _____ well volumes: _____ (L) (3.785 L/gal) Purge Rate: _____ (L/min)

Parameter equipment: Horiba U-52

Time	Water Depth (ft.)	volume removed ( )	Flow Rate ( )	Turb. (NTU)	Notes: (depth to bottom, color, odor, pump setting, etc.)
1533	12.51	0	—	—	
1538	19.4	1 gal	600 -	over range	Med brown, silty, turbid
	Purged dry				no sheen, petroleum odor
1703	18.03	1.25	300	NM	turbid
11/17/21 0739	13.88	—	—	—	

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

* 2" screen / 1.5" r.

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4

Ground Water Sampler Development Record

Location ID: MW-2-21

Project Name: Caneel Bay Resort Site Project #: 58345.21

Site Location: Virgin Islands National Park (VIIS) Personnel: BRB Date: 11/17/21

Weather Conditions: Sunny, 82°F Time on Site: 1545

1. WATER LEVEL DATA:

Description of measuring point (MP) Top of casing Depth to water below MP (ft): 2.82

Total well depth (ft): 15.43 Well Dia.(in): 2" Length of water column in well (ft): 12.61

Gallons per foot[1]: 0.16 Well volume (gal): 2.0176 Screen Interval (ft): 10-15'

2. PURGING DATA: Method: peri pump Development Depth Range: 10-15

Purge Volume @ ____ well volumes: ____ (L) (3.785 L/gal) Purge Rate: ~~350~~ ~~600~~ 0.6 (L/min)

Parameter equipment: ____

Time	Water Depth (ft.)	volume removed (L)	Flow Rate (mL/min)	Turb. (NTU)	Notes: (depth to bottom, color, odor, pump setting, etc.)
1600	2.82	0	600	—	— turbid
1605	11.7	3	600	over read	
1608	—	2.0176 gal			dry
1641	12.91	2.	600		
1651	dry	2.25			dry

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

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Ground Water Sampler Development Record

Location ID: MW-2-22

Project Name: Caneel Bay Resort Site Project #: 58345.21

Site Location: Virgin Islands National Park (VIIS) Personnel: BRB Date: 11/17/21

Weather Conditions: overcast Time on Site: 16:15

1. WATER LEVEL DATA:

Description of measuring point (MP) top of casing Depth to water below MP (ft): 2.78

Total well depth (ft): 18.28 Well Dia.(in): 2" Length of water column in well (ft): 15.5

Gallons per foot[1]: 0.16 Well volume (gal): 2.48 Screen Interval (ft): 18'-8'

2. PURGING DATA: Method: peristaltic Development Depth Range: 18'-8'

Purge Volume @ ____ well volumes: ____ (L) (3.785 L/gal) Purge Rate: 0.6 (L/min)

Parameter equipment: ____

Time	Water Depth (ft.)	volume removed (L)	Flow Rate (mL/min)	Turb. (NTU)	Notes: (depth to bottom, color, odor, pump setting, etc.)
1620	2.74	0	600	–	turbid
1625	7.80	~~3~~	600	–	turbid
1630	11.10	6	600	–	turbid
1635	13.01	9	600	–	" "
1693	16.80				" "
1646					dry
1700	4.82		600		
1715	~~16~~ 14.68		600		
1727	14.72	16			dry

[1]well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

2/24/21 cont.   58345.21

Equipment blank collected off Ism Auger

E8-SOIL-20210224 @ 1730

2/25/21
0745 on site @ NPS maintenance to pack sample coolers for shipping. Drop @ VS.

- Drive to storage unit at Caneel Bay Resort to clean up and pack equipment for shipping. Drop equipment off at VS for Friday pick up by Fed Ex.

11/8/21   Caneel Bay Resort

0800 Ben Deede + Ben Bliss of VHB meet Shawn Mulligan of NPS + travel to site
GPR/Surveyor crew onsite
Meet w/ Jeff + Griffith Hernandez
Griffith will assist w/ clearing
Start GPR crew @ AST area
~1000 Ricardo of On-site onsite w/ excavator
1238 FW-3-01 - Dry @ 16.52 / tip wet
~1000 Ben Deede / Ben Bliss meet w/ Nigel + pick up shipments

Griffith shows us to 2 dug wells
- both are open - water
- potential drilled well near "lot" will require clearing
1530 On site offsite
~1630 VHB + surveyors offsite

0700 BND, BRB, Shawn Mulligan onsite. Bidot onsite
Bidot finished in AST area. Walk WWTP Area - needs clearing. Walk Cottage 7 area. Bidot needs pry bar - to hardware store
Return to AST area: Excavator crew continues clearing
- On-site finishes work @ AST area
start CBIA & On-site at WWTP
start Bidot at Cottage 7
~11 move On-site Cottage 7
- trace fuel line around N + E of cottage 7. Locate vertical steel pipe. Attempt clear for GPR
⇒ poor data due to roots
⇒ hand-dig by AC to 1.5' - did not find lines at 1'
~1400 On-site drill rig onsite tailgate meeting
~1530 Begin drilling at SC-Z-03
~1600 On-Site off site
~1700 VHB offsite

0700 BND, BRB onsite
Measure water at PZ-SC-Z-06
DTW ~ 12.82 ft bgs ~ trace product + petroleum odor
TD 14.9 ft bgs
0700 Bidot Assoc. on-site - clear WWTP
0800 On-site on site Begin @ SC-Z-07
~1000 Bidot move to g+L asbestos pipe location begin trenching
~1030 CBIA finish clearing at Catchment + move to g+L pipe location
~1100 On-site locate fuel line at (expose) Cottage 7
- Dig along walkout, uncover ~1.5" steel pipe under Cottage 7 porch (possibly fill)
- Dig between sidewalk + AC units expose tank/pipe
No odors or stained soil along pipe or tank
headspace ~12 ppm. Depth/Dia ~3' - horizontal round tank
⇒ asbestos pipe locating limited to the W due to flooded vaults
well installed at SC-Z-07 partially
~1640 VHB offsite

AR 004768

0700 VHB - Shawn Milligan onsite
B.Dot onsite, continue asbestos pipe layout / expand utility markout at SSJ
0730 On-site on site, begin drilling at SC-2-14 through SC-2-16.

0855 DTW @ SC-2-09 = 9.31 ~trace LNAPL odor on tip
0857 DTW @ SC-2-07 = 5.8 - trace LNAPL odor / visible slick
0900 DTW @ SC-2-06 = 10.7 ~trace LNAPL odor / visible slick

1000 On-site begin installing well at SC-2-06 = MW-2-06
finish install @ SC-2-07 = MW-2-07
1000 On-site / B.Dot uncover poss. asbestos pipe near Engineering area
short section of pipe is covering a valve in a steel pipe
Equipment Blank collected off scoop:
EB-SOIL-20211111 @ 1530
Trip Blank - TB-20211111 @ -

~~1600~~ 1700 off site
11/11/21
BWD

0800 VHB / B.Dot onsite
- Begin 2/ surveying borings + wells
- wells surveyed to top of toc + gs

0850 SC-C7-01 piezo DTW = ~~[illegible]~~ 11.51

	TOC Elev (ST)	DTW (ft btoc)
SC-2-06	25.019	12.30
SC-2-07	22.066	~~8.94~~ 8.61
SC-2-09	18.414	9.27
Dug Well 1	9.659	4.90
Dug Well 2	6.415	4.60

- VHB collected ISM samples at lower catchment
- B.Dot scans previously unscanned area
  - no new anomalies
  - possible trench between anomaly + utility
- B.Dot continues scanning Area 2 pipes
  - pipe below active water system cistern
- B.Dot back to Area 1 to scan newly cleared areas - nothing of note
Equipment Blank off auger
EB-SOIL-20211113 @ 1530
- for pesticides + As
1615 VHB offsite

Coral Bay Resort (Page skipped BWD 11/13/21)

11/12/21

0700 VHB/B.dol/On-site on-site

- BWD 11/12/21 B.dol clears access rd at ASTs for drilling. Identifies concrete box crossing
- On-site advances SC-2-19 and SC-2-20 along utility trench - no evidence of petroleum cont.
- On-site move to Cottage 7 - advance SC-C7-01 - SC-C7-03 - no evidence of petroleum contamination - BWD 11/12/21 install temp piezo @ SC-C7-01
- CBIA/B.dol/On-site continue work in Area 2 on Asbestos pipe
  ⇒ uncover 1 valvebox (water?) ⇒ PVC
- B.dol trace aboveground pipe to where it goes underground
  — ~60' fr/ road - in-line w/ concrete box located earlier

Asbestos Pipe recon of other areas

Turtle Bay - visible storm piping is PVC/iron

Hawksnest - visible water piping is PVC

Scott Beach - Possible asbestos sewer pipe identified BWD 11/12/21

1600 off-site

0700 BWD/BRB of VHB on-site

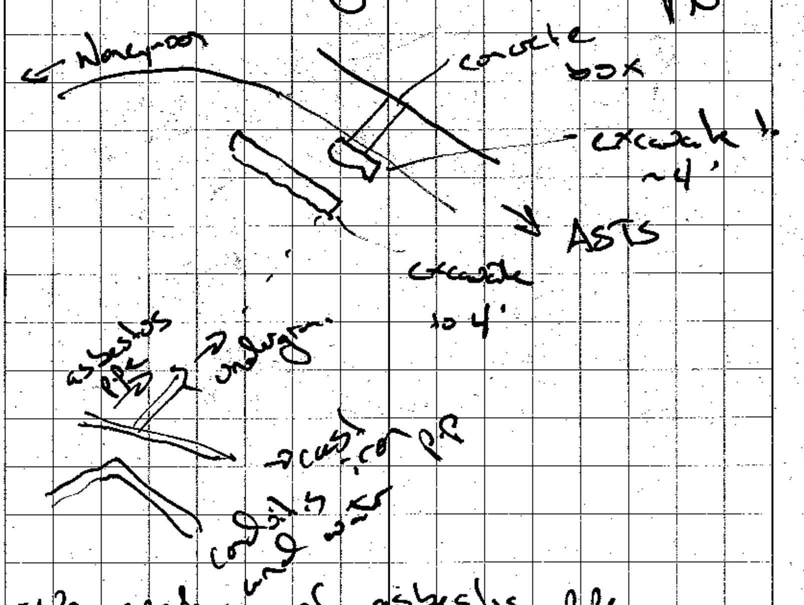
B.dol on-site

0715 On-site excavation crew onsite

B.dol & On-site attempt to locate asbestos pipe at access road "near" box". No evidence of pipe to 4' no evidence on GPR

VHB began ISM sampling @ IA-Ref-01

- Scan surrounding area w/ GPR



- No evidence of asbestos pipe

1215 On-site drill crew onsite
On-site began drilling work at UWP.
shallow refusal (~4') on rock
in southern 2 borings. Norther
boring to ~17' bgs but dry.
Will install piezometer

~1100 Bidot began work @ Scott Beach -
starting at manhole
Connecting pipe is traced to the
North
- Difficulty locating pipe to the
south
- VHB samples pipe at
original manhole + next
manhole to the north.

1615 VHB off-site

0700 VHB onsite / Bidot onsite
VHB measures gw at SC-1-01
dry @ 10' moisture on tip.
- Bidot to continue work @
Scott Beach
Collect soil equipment blank
off spoon for all analytes
EB-soil-20211116 @ 0800
Trip Blank TB-20211116

~800 CBIA clears area to N of
former gift shop

~1200 Bidot clears utilities
~1400 On-site attempts to install SC-1-01
deeper - achieves ~12 ft bgs piezo
reinstalled
Hydraulic line rupture on rig.
On-site manages to find replacement
hose on St. John + repairs rig
- Stained soil removed + containerized
~1400 On-site moves to gift shop
to install borings/wells there
VHB develops SC-02-06/07/09

 11/17/21 Coral Bay BND

0700 VHB/Steve Mitchell/ B.dot onsite
B.dot to start search areas
for other signs of asbestos pipe
will start and cottage 7 + work S
. VHB begins gw sampling
in Area 2
. Ship out 5 coolers to ALS w/
soil samples

0800 On-site onsite finish drilling
wells at former visitor center
then proceed to well completions

~1200 BND 11/17
- B.dot locates manholes between Scott
Beach + Cottage 7. Most are flooded so
can't be traced but appear to be
in line w/ Scott Beach Asbestos Pipe

~1200 BND 11/17 · B.dot recons S to Terrace Rest.
Does not identify evidence of Asbestos
pipe

~1200 B.dot/Onsite to Caneel
begin excavating trench
- concrete @ around 1' bgs
→ appears to be unfinished/natural
rounded at one end. Extends beyond
GPR markout extents.

0700 VHB/Steve Mitchell onsite
Bdol onsite
Bdol surveys finished utils
continues & recon of Terrace Rest.
S to Little Coral Beach
VHB continues gw sampling
0800 On-site on site (excavator)
⇒ backfill catchment basin
excavation + return excavator
to main site

B.dol locates manhole to W of
tennis courts. two cementitious
pipes BWD joint are uncovered by
On-site
~1000 On-site (Arthur) on site
begin final drumming and closing
piezometers + boreholes
pack up drill rig
~1000 Discuss availability of utility plans
w/ Jeff Lambert ⇒ he says ok to
look in Engineering office. Others
docs in Burlington, MA (says most have been
moved) Asks about summary ⇒ respond that
likely can't come from us.
1715 off site
Purchase ice for samples

0700 BWD/BRB onsite @ NPS
Maintenance to pack coolers + equipment
BWD to site to remove equipment from
engineering office
0830 to St Thomas to sample top
soil source
~0930 Arrive at Sleeping Trucking
shown topsoil stockpile w/in larger
junk/maintenance yard
sampled pile by ISM for Arsenic
-IA-ReS-05 A/B/C

⇒ leave for Fedex to ship off coolers
+ equipment
6 coolers to ALS
2 boxes to Pine
1 box to VHB

~1430 return to NPS Maintenance yard
to return equipment
⇒ return to site
On-Site has moved drum

1530 offsite

Appendix 2 – Daily Reports

CANEEL BAY EE/CA INVESTIGATION *DAILY PROGRESS REPORT*					
Date:	10/5/2021				
VHB Reporter:	Jason Hooper	**Time on-site:**	830	**Time Off-site:**	1700
Weather:	**Morning**			**Afternoon**	
	70-90 deg F			70-90 deg F	
	Mostly sunny			Mostly sunny	
	n/a				

Other On-Site Personnel	
National Park Service (NPS):	David P. Horner
VHB:	n/a
Subcontractors:	On-Site Environmental
Caneel Bay Representative:	Jeff Lambert

Activities		
Groundwater	*Sampled:*	
	Notes:	n/a
Borings	*In-progress:*	
	Completed:	
	Discrete Samples:	
	Notes:	
ISM Samples	*Sampled:*	
	Notes:	
Lead-based paint soil samples	*Sampled:*	
	Notes:	
Asbestos Survey	*Notes:*	Inspected building debris areas A1 through A7, and collected 18 bulk samples and 6 paint chips.
GPR and EMI Survey	*Notes:*	
IDW	*Sampled:*	
	Notes:	
Safety Briefing Performed?		

Other Reportable Activities, Problems/Deviations, Required Follow-Up	
Much of the site is severly overgrown. The area around the suspected UST at Cottage 7 was recently cleared by CBIA. Future surveys and building inspections will require targeted clearing.	
Shipping	
Cooler destinations, COC numbers	n/a
Photographs	
No photographs were taken today	

CANEEL BAY EE/CA INVESTIGATION *DAILY PROGRESS REPORT*					
Date:	10/6/2021				
VHB Reporter:	Jason Hooper	**Time on-site:**	840	**Time Off-site:**	1715
Weather:	**Morning**			**Afternoon**	
	70-90 deg F			>90 deg F	
	Mostly sunny			Mostly sunny	
	n/a				

Other On-Site Personnel	
National Park Service (NPS):	David P. Horner
VHB:	n/a
Subcontractors:	n/a
Caneel Bay Representative:	Jeff Lambert

Activities		
Groundwater	*Sampled:*	
	Notes:	Located MW-3-01 and collected rough measurements: 16.5 ft depth, 1-2 inches of water present
Borings	*In-progress:*	
	Completed:	
	Discrete Samples:	
	Notes:	
ISM Samples	*Sampled:*	
	Notes:	
Lead-based paint soil samples	*Sampled:*	
	Notes:	
Asbestos Survey	*Notes:*	Inspected building debris areas A8-A27. Collected 15 bulk samples and 3 paint chips.
GPR and EMI Survey	*Notes:*	
IDW	*Sampled:*	
	Notes:	
Safety Briefing Performed?		

Other Reportable Activities, Problems/Deviations, Required Follow-Up	
By CBIA description and site observations, areas visible to public, such as A12, A13, and A19, have been cleared of some debris. Debris was observable in less-accessible overgrowth.	
Shipping	
Cooler destinations, COC numbers	Will ship 33 bulk samples for asbestos and 9 paint chip samples for lead to EMSL.
Photographs	
	
1. MW-3-01 well in landfill located. Difficult to find in long grass.	

CANEEL BAY RESORT
ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION
DAILY PROGRESS REPORT

Date:	November 8, 2021	**Time On-Site:**	08:10	**Time Off-Site:**	16:45
Weather:	Morning: 70-90 deg F, Calm, clear, humid ; Afternoon: 70-90 deg F, Clear, breezy				
Safety Briefing Performed:	Yes				
Samples Shipped:	None				
Delays:	None				
Other Reportable Items:	VHB and Shawn Mulligan met with Jeff (last name unknown) and Griffith Hendrickson of CBIA to discuss work coordination. VHB and Shawn Mulligan met with Nigel Fields to discuss work kickoff.				
Personnel Onsite					
National Park Service (NPS)		**Representatives:**	Shawn Mulligan		
CBIA		**Representatives:**	Jeff ?, Griffith Hendrickson		
Contractor: VHB		**Reporter:**	Ben Deede		
Other VHB Personnel:	Ben Bliss				
Subcontractor(s):	On Site Environmental, Bidot Associates				
Uncertain Items					
Areas/Items Searched:	General Site recon including Area 3, Area 2, Area 1, Cottage 7, Catchment Basin, wastewater treatment plant, and dug wells.				
Search Details:	VHB performed recon of work areas and informed CBIA representatives of areas to be cleared. 1. Water supply wells: VHB located dug wells with assistance from CBIA; wells are open and contain water. The dug wells are thought to date to the plantation era. These are not the drilled wells reported to be on-site. A CBIA employee reported that the one of the drilled wells had been filled with concrete. Locating and clearing the alleged drilled well near the engineering buildings is underway by CBIA. VHB prepared sampling supplies and equipment. 2. Bidot Associates located/marked utilities in AST area within Area 2 for drilling activities. The AST area was cleared by CBIA and On-Site.				
Groundwater Sampling					
Groundwater Samples Collected:	No				
Monitoring Wells In-Progress:	NA				
Monitoring Wells Completed:	NA				

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Monitoring Wells Developed:	NA
Monitoring Wells Abandoned:	NA
Sample Names:	NA
Groundwater Notes:	Water level measurement taken at MW-3-01. Well was dry at 16.52 ft below top of casing. No water sample will be collected from this location.
Discrete Soil Sampling	
Discrete Soil Samples Collected:	No
Borings In-progress:	NA
Borings Completed:	NA
Borings Sampled:	NA
Boring Notes:	NA
ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	No
Lead Notes:	NA
Asbestos Sampling	
Asbestos Samples Collected:	No
Asbestos Notes:	NA
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	NA
IDW Notes:	NA

Photographs

Area 2 AST area following clearing and utility markout.

View of northern dug well

View of southern dug well. Water was visible below pallets.

View of leaking transformer excavation soil piles from February 2021 near wastewater treatment plant. Tarps are deteriorated.

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION ***DAILY PROGRESS REPORT***					
Date:	November 9, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	17:15
Weather:	Morning: 70-90 deg F, Calm, party cloudy ; Afternoon: 70-90 deg F, Partly cloudy, passing showers				
Safety Briefing Performed:	Yes				
Samples Shipped:	None				
Delays:	The drilling crew/drill rig did not arrive on site until 2 pm due to trucking delays				
Other Reportable Items:	None				
Personnel Onsite					
National Park Service (NPS)		**Representatives:**	Shawn Mulligan		
CBIA		**Representatives:**	Jeff, Griffith Hendrickson		
Contractor: VHB		**Reporter:**	Ben Deede		
Other VHB Personnel:	Ben Bliss				
Subcontractor(s):	On Site Environmental, Bidot Associates				
Uncertain Items					
Areas/Items Searched:	1. Area 1 2. Cottage 7 3. Catchment Basin 4. Historical water supply well				
Search Details:	1. CBIA and On-Site cleared drilling areas below the gravel pad in Area 1 and the gravel pad for GPR scanning. Bidot began locating utilities in the Area 1 drilling area. 2. Bidot Associates located utilities and possible fuel lines at Cottage 7. The fuel line signal was traced around the northern and eastern sides of Cottage 7; however, the signal was inconsistent. Bidot attempted to scan a possible UST area where a vertical steel pipe was observed at the ground surface with GPR; reliable data were not produced due to extensive root networks. On Site attempted to uncover the line at one location but could not identify it. On-Site will continue to try to uncover the line/possible UST tomorrow. 3. CBIA began clearing below the Catchment Basin. 4. CBIA located and cut a path to an alleged drilled well to the east of the engineering and maintenance buildings. VHB inspected the former well; it appears to have been filled with grout and closed.				

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Groundwater Sampling	
Groundwater Samples Collected:	No
Monitoring Wells In-Progress:	NA
Monitoring Wells Completed:	NA
Monitoring Wells Developed:	NA
Monitoring Wells Abandoned:	NA
Sample Names:	NA
Groundwater Notes:	A temporary piezometer was installed at boring SC-2-06 in Area 2. The piezometer will be checked for groundwater tomorrow.
Discrete Soil Sampling	
Discrete Soil Samples Collected:	Yes
Borings In-progress:	NA
Borings Completed:	SC-2-06, to the north of the fuel dispenser, across a utility trench, in Area 2.
Borings Sampled:	SC-2-06-7, SC-2-06-18
Boring Notes:	Clearing was completed in the Area 2 AST area; drilling was initiated by On-Site. At SC-2-06, evidence of petroleum contamination was observed from approximately 3 ft bgs to refusal at 18 ft bgs with the strongest PID response at 3 and 7 ft bgs.
ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	No
Lead Notes:	NA
Asbestos Sampling	
Asbestos Samples Collected:	No
Asbestos Notes:	NA

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	
IDW Notes:	NA

Photographs

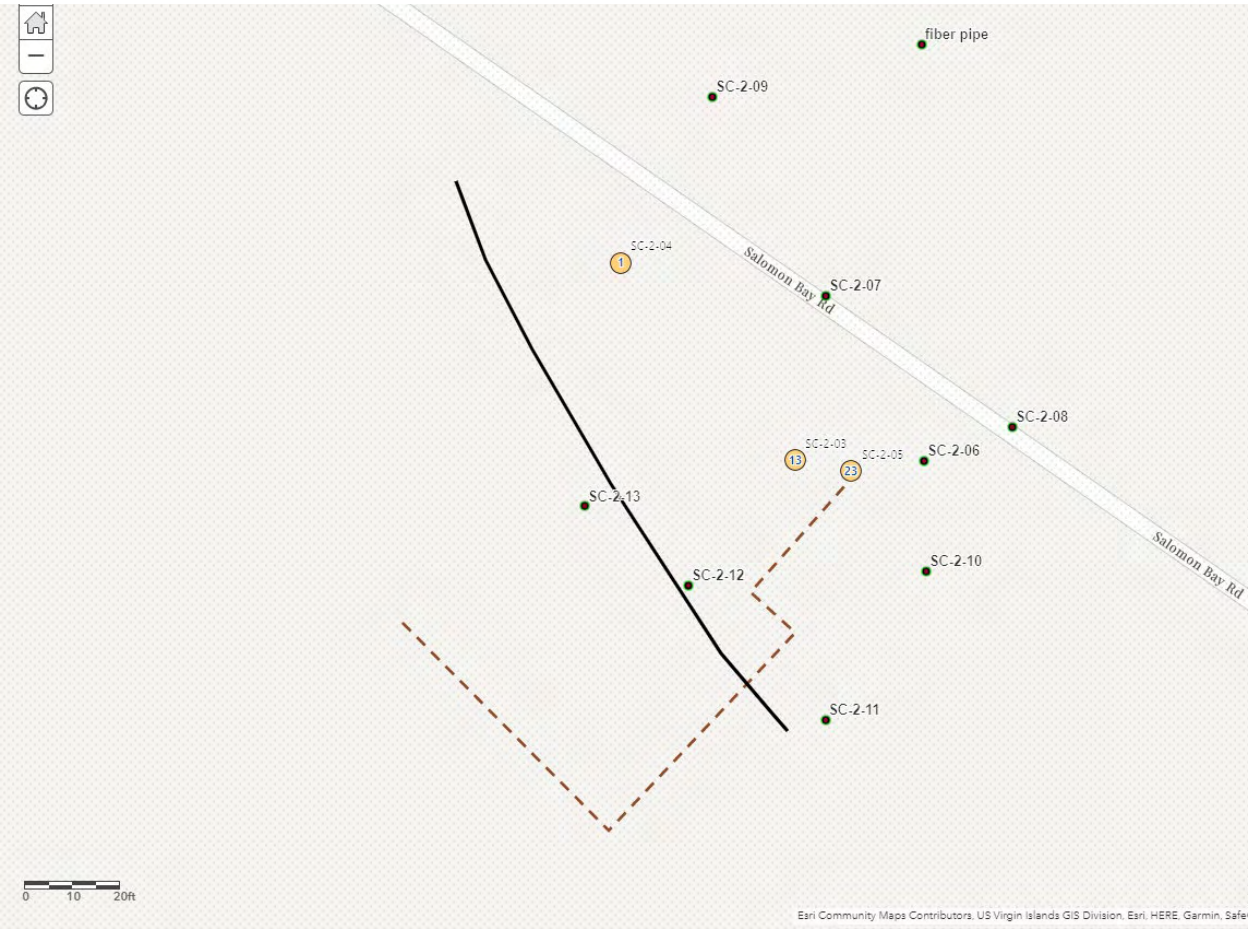
View of SC-2-06 boring location with temporary piezometer installed. Note utility trench markout between boring and fuel dispenser.

Clearing to the east of Cottage 7 to allow for GPR scan of possible fuel line signal. Vertical steel pipe identified to the east of Cottage 7 and adjacent to the signal.

Alleged historical drilled well to the east of engineering and maintenance complex. Appears to be a 6-inch PVC casing filled with grout.

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*					
Date:	November 10, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	16:50
Weather:	Morning: 70-90 deg F, Partly cloudy, calm Afternoon: 70-90 deg F, Partly cloudy, passing showers				
Safety Briefing Performed:	Yes				
Samples Shipped:	None				
Delays:	None				
Other Reportable Items:	None				
Personnel Onsite					
National Park Service (NPS)		**Representatives:**	None		
CBIA		**Representatives:**	Jeff Lambert, Griffith Hendrickson		
Contractor: VHB		**Reporter:**	Ben Deede		
Other VHB Personnel:	Ben Bliss				
Subcontractor(s):	On-Site, Bidot				
Uncertain Items					
Areas/Items Searched:	1. Cottage 7 2. Area 1 3. Area 2 asbestos pipe 4. Catchment Basin				
Search Details:	1. Cottage 7: On-Site dug along marked out fuel line. A horizontal, round, 3-ft diameter steel tank was discovered beneath and to the east of the air conditioning (AC) units. The tank is empty and rusted out on top at the fill port. Possible remote fill port piping extends around Cottage 7. Evidence of a release was not observed in soil around piping and tank. The AC units would need to be removed to remove the tank, and they also block access for drilling except on one side. 2. Area 1: Bidot located utilities within the drilling area. Bidot scanned the gravel pad for anomalies; clear evidence of buried items was not observed. 3. Area 2 asbestos pipe: Bidot, On-Site, and CBIA began tracing asbestos pipe in the G&L area. The search was limited to the west by flooded vaults. 4. Catchment: CBIA cleared area.				

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Groundwater Sampling	
Groundwater Samples Collected:	No
Monitoring Wells In-Progress:	MW-2-06, MW-2-07
Monitoring Wells Completed:	None
Monitoring Wells Developed:	None
Monitoring Wells Abandoned:	None
Sample Names:	None
Groundwater Notes:	Groundwater observed at ~13 ft bgs in temporary piezometer at SC-2-06. A well will be installed here. Evidence of water was present at SC-2-07 and SC-2-09, and wells will be installed.
Discrete Soil Sampling	
Discrete Soil Samples Collected:	Yes
Borings In-progress:	None
Borings Completed:	SC-2-07 through SC-2-13 (7 borings), see map on next page
Borings Sampled:	SC-2-07 at 8.5' and 12.5' SC-2-08 at 15', dup SC-2-101 SC-2-09 at 5' and 13.5' SC-2-10 at 13' and 17' SC-2-11 at 8', dup SC-2-102, MS/MSD SC-2-11 at 10' SC-2-12 at 8' SC-2-13 at 6.5'
Boring Notes:	Area 2 ASTs: On-Site advanced borings SC-2-07 through SC-2-13. Evidence of contamination was observed at all but two locations. Near the tanks, contamination was observed to refusal. Evidence of petroleum contamination was observed at all but two locations. Near the tanks, contamination was observed to refusal, at around 8 ft bgs. At downgradient locations, contamination was observed above and around the assumed water table.



Draft map of Area 2 AST borings. SC-2-06 through SC-2-13 were installed yesterday and today. The dashed line is the approximate AST piping, the black line is a suspected buried electrical line. The fuel pump is near SC-2-06.

ISM Soil Sampling	
ISM Samples Collected:	
Lead Paint Samples Collected:	
Asbestos Samples Collected:	

IDW Samples Collected:	

Photographs

UST uncovered to east and beneath AC units at Cottage 7. Hole at fill port circled on photo.

View inside cottage 7 UST.

Bidot tracing underground asbestos pipe in the grounds and landscaping area.

Drilling at SC-2-12 in Area 2.

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*					
Date:		**Time On-Site:**		**Time Off-Site:**	
Weather:	Morning: ; Afternoon:				
Safety Briefing Performed:					
Samples Shipped:					
Delays:					
Other Reportable Items:					
National Park Service (NPS)		**Representatives:**			
CBIA		**Representatives:**			
Contractor: VHB		**Reporter:**			
Other VHB Personnel:					
Subcontractor(s):					
Groundwater Samples Collected:					

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Monitoring Wells Completed:	MW-2-06 MW-2-07 MW-2-09
Monitoring Wells Developed:	NA
Monitoring Wells Abandoned:	NA
Sample Names:	NA
Groundwater Notes:	Groundwater measured at borings: SC-2-09: dtw = 9.31 ft bgs, possible trace LNAPL, petroleum odor SC-2-07: dtw = 5.9 ft bgs, possible trace LNAPL, petroleum odor SC-2-06: dtw = 10.7 ft bgs, visible LNAPL film, petroleum odor
Discrete Soil Sampling	
Discrete Soil Samples Collected:	No
Borings In-progress:	NA
Borings Completed:	SC-2-14 through SC-2-18 (5 borings)
Borings Sampled:	SC-2-14 at 7.3' SC-2-15 at 2.8' SC-2-16-at 2.4' SC-2-17 at 9.5' and 20' SC-2-18 at 6.7'
Boring Notes:	Evidence of petroleum contamination observed to refusal on rock on eastern side of upper ASTs. No evidence of contamination observed at western location SC-2-16. Evidence of petroleum contamination delineated to east along generator buildings at SC-2-18. Evidence of petroleum contamination observed from 5 ft bgs to refusal at 20 ft bgs adjacent to downslope (western) end of utility trench at edge of proposed drilling area.

ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	No
Lead Notes:	Na
Asbestos Sampling	
Asbestos Samples Collected:	No
Asbestos Notes:	Na
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	Na
IDW Notes:	Na

Photographs

Exposed possible asbestos pipe to NE of engineering and maintenance buildings. A short section of possible asbestos pipe was protecting a valve on a steel pipe.

Short sections of possible asbestos pipe uncovered in Area 1. Pipes were not connected to networks.

CANEEL BAY RESORT
ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION
DAILY PROGRESS REPORT

Date:	November 12, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	16:00
Weather:	Morning: 70-90 deg F, Sunny, breezy Afternoon: 70-90 deg F, Sunny and breezy				
Safety Briefing Performed:	Yes				
Samples Shipped:	4 coolers were shipped to ALS Global in Middletown, PA.				
Delays:	NA				
Other Reportable Items:	VHB discussed the use of the ASTs with Griffith Hendrickson. According to Griffith, the ASTs were used for a short period following the 2017 hurricanes but the gasoline and smaller diesel AST have since been emptied. The larger diesel AST still contains fuel but there are plans to empty it. VHB observed oil/fuel within the secondary containment of the smaller diesel tank. Amanda Crawford (DOI) conveyed a request from CBIA that no interviews be conducted without CBIA attorneys present.				
Personnel Onsite					
National Park Service (NPS)		**Representatives:**	None		
CBIA		**Representatives:**	Griffith Hendrickson		
Contractor: VHB		**Reporter:**	Ben Deede		
Other VHB Personnel:	Ben Bliss				
Subcontractor(s):	On-Site, Bidot				
Uncertain Items					
Areas/Items Searched:	1. Cottage 7 2. Area 2 asbestos pipe 3. Area 3 asbestos pipe 4. Catchment Basin 5. Other Resort Areas				
Search Details:	1. Cottage 7: On-Site advanced borings SC-C7-01 - SC-C7-03 to the north and downslope of the UST. Evidence of petroleum contamination was not observed. A temporary piezometer was installed at SC-C7-01. 2. Area 2 asbestos pipe: Bidot, On-Site, and CBIA continued tracing the underground asbestos storm water pipe network in Area 2 to its extents, except where prevented by flooded vaults. 3. Area 3 asbestos pipe: Bidot traced the Area 3 aboveground asbestos pipe to where it went underground to the east of Little Caneel Beach.				

	4. Other Areas: VHB performed recon. of the Turtle Bay, Hawksnest, and Scott Beach areas for evidence of asbestos pipe. Possible asbestos sewer pipe was observed near Scott Beach. 5. Catchment Basin: VHB mapped out ISM DUs at the lower Catchment Basin.
Groundwater Sampling	
Groundwater Samples Collected:	No
Monitoring Wells In-Progress:	Surface completions for MW-2-06, MW-2-07, and MW-2-09 are planned for Monday.
Monitoring Wells Completed:	NA
Monitoring Wells Developed:	NA
Monitoring Wells Abandoned:	NA
Sample Names:	NA
Groundwater Notes:	NA
Discrete Soil Sampling	
Discrete Soil Samples Collected:	Yes
Borings In-progress:	NA
Borings Completed:	SC-2-19 SC-2-20 SC-C7-01 SC-C7-02 SC-C7-03
Borings Sampled:	SC-2-19 at 20' SC-2-20 at 15' SC-C7-01 at 5' SC-C7-02 at 5' SC-C7-03 at 6.6'
Boring Notes:	Area 2 AST: On-Site advanced borings SC-2-19 and SC-2-20 along and adjacent to the utility trench that extends to the west and down the road from the AST area. Evidence of petroleum contamination was not observed at either boring. Evidence of petroleum contamination was not observed near the Cottage 7 UST.

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	No
Lead Notes:	NA
Asbestos Sampling	
Asbestos Samples Collected:	No
Asbestos Notes:	NA
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	NA
IDW Notes:	4 drums of IDW soil onsite, 1 drum of IDW water.

Photographs

Example of apparent stormwater vault in Area 2 with connecting asbestos piping. Vault had been covered and filled with debris.

Sewer manhole near Scott Beach with possible asbestos piping.

CANEEL BAY RESORT
ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION
DAILY PROGRESS REPORT

Date:	November 13, 2021	**Time On-Site:**	08:00	**Time Off-Site:**	16:15
Weather:	Morning: 70-90 deg F, Partly Cloudy, humid, showers Afternoon: 70-90 deg F, Partly cloudy, humid, showers				
Safety Briefing Performed:	Yes				
Samples Shipped:	None				
Delays:	NA				
Other Reportable Items:	NA				
Personnel Onsite					
National Park Service (NPS)		**Representatives:**	None		
CBIA		**Representatives:**	Griffith Hendrickson		
Contractor: VHB		**Reporter:**	Ben Deede		
Other VHB Personnel:	Ben Bliss				
Subcontractor(s):	Bidot				
Uncertain Items					
Areas/Items Searched:	1. Catchment Basin 2. Area 2 asbestos pipe				
Search Details:	1. Catchment Basin: VHB completed ISM surface soil sampling for pesticides at the Catchment Basin. Bidot marked out the GPR anomaly for excavation and scanned the previously unchecked areas of the lower Catchment Basin. No additional anomalies were identified. 2. Area 2 asbestos pipe: Bidot completed tracing the known asbestos pipe in Area 2. The pipes appear to drain to a partially below ground cistern. One pipe was traced to beneath the active water system cistern and could not be followed further.				
Groundwater Sampling					
Groundwater Samples Collected:	No				
Monitoring Wells In-Progress:	Same as Friday; drillers were not on site.				
Monitoring Wells Completed:	NA				
Monitoring Wells Developed:	NA				

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Monitoring Wells Abandoned:	VHB measured groundwater at SC-C7-01; the piezometer was dry at ~11 ft bgs. This boring will be grouted.
Sample Names:	NA
Groundwater Notes:	Bidot surveyed completed borings and wells, including the dug wells. VHB measured groundwater at all wells. VHB measured groundwater at the Area 2 wells and dug wells.
Discrete Soil Sampling	
Discrete Soil Samples Collected:	No
Borings In-progress:	NA
Borings Completed:	NA
Borings Sampled:	NA
Boring Notes:	Cottage 7: Bidot surveyed completed borings and the UST location.
ISM Soil Sampling	
ISM Samples Collected:	Yes
Sample Names:	IA-CB-01 A/B/C (+MS/MSD) IA-CB-02 A/B/C IA-Ref-03 A/B/C
ISM Notes:	The perimeter of the lower Catchment Basin area was previously mapped out and the area was broken into a northern and a southern DU. A 1/4-acre area between Turtle Bay and Scott Beach was selected for IA-Ref-03 (arsenic). The area is only a mostly grassy south-facing hillside away from buildings.
Lead Paint Sampling	
Lead Paint Samples Collected:	No
Lead Notes:	NA
Asbestos Sampling	
Asbestos Samples Collected:	No
Asbestos Notes:	NA
IDW Sampling	
IDW Samples Collected:	No

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Sample Names:	NA
IDW Notes:	NA

Photographs

View of the partially below-ground cistern into which the Area 2 stormwater pipes appear to drain.

View of Area 2 stormwater vault and active water system cistern, behind. Asbestos piping was traced beneath the cistern and could not be followed further.

View of IA-Ref-03, situated on a grassy hillside between Turtle Bay and Scott Beach.

Arsenic reference decision unit location.

CANEEL BAY RESORT
ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION
DAILY PROGRESS REPORT

Date:	November 15, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	16:15
Weather:	Morning: 70-90 deg F, Sunny, humid Afternoon: 70-90 deg F, Partly cloudy, passing showers				
Safety Briefing Performed:	Yes				
Samples Shipped:	NA				
Delays:	FedEx deliveries of groundwater sampling supplies and bottles were delayed. Delivery is scheduled for Tuesday. On-Site's drilling crew was delayed in arriving at the Site in the morning and had to leave early, limiting drilling work that could be completed.				
Other Reportable Items:	NA				
Personnel Onsite					
National Park Service (NPS)		**Representatives:**	Steve Mitchell		
CBIA		**Representatives:**	Griffith Hendrickson		
Contractor: VHB		**Reporter:**	Ben Deede		
Other VHB Personnel:		Ben Bliss, Jason Hooper, Tom Halter			
Subcontractor(s):		Bidot, On-Site			
Uncertain Items					
Areas/Items Searched:	Area 2 & 3 asbestos pipe Area 1 Other Resort Areas Surface Soil reference areas				
Search Details:	Area 2 & 3 asbestos pipe: Bidot and On-Site attempted to locate the asbestos pipe traced from Area 3 to near Area 2. The area was scanned by GPR and a trench was excavated adjacent to a road cut that appeared to be in line with the pipe. The asbestos pipe was not located. Other Resort Areas: Bidot traced a possible asbestos sewer pipe from the previously identified manhole near Scott Beach. VHB collected samples of the pipe material for asbestos analysis. Work will continue here on Tuesday.				
Groundwater Sampling					
Groundwater Samples Collected:	No				
Monitoring Wells In-Progress:	Area 1: SC-1-01 was the deepest boring, but appeared dry. A temporary piezometer was installed and will be checked for water on Tuesday.				
Monitoring Wells Completed:	NA				

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Monitoring Wells Developed:	NA
Monitoring Wells Abandoned:	NA
Sample Names:	NA
Groundwater Notes:	NA
Discrete Soil Sampling	
Discrete Soil Samples Collected:	Yes
Borings In-progress:	NA
Borings Completed:	SC-1-01 through SC-1-03
Borings Sampled:	SC-1-01 at 0.5′ (+MS/MSD) and 17′ SC-1-02 at 0.5′ and 4.3′ (+ duplicate) SC-1-03 at 0.5′ and 4′
Boring Notes:	Area 1: On-Site advanced three borings below the gravel pad, adjacent to the wastewater treatment plant. The northern boring (SC-1-01) was advanced to 17 ft bgs. The two southern borings (SC-1-02 and SC-1-03) were refused on rock at about 4 ft bgs. No evidence of contamination was observed in soil cores. 
ISM Soil Sampling	
ISM Samples Collected:	Yes

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Sample Names:	IA-REF-04
ISM Notes:	IA-REF-04 was collected in a grassy/wooded area between Cottage 7 and Caneel Beach. 
Lead Paint Sampling	
Lead Paint Samples Collected:	Yes
Lead Notes:	4 samples collected (L-09 through L-12) from Estate restaurant and Turtle Bay
Asbestos Sampling	
Asbestos Samples Collected:	Yes
Asbestos Notes:	46 samples collected (1 through 46) from Estate restaurant, Estate house, Estate event room, Turtle Bay, and Hawksnest
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	NA
IDW Notes:	NA

Photographs

VHB sampling the possible asbestos sewer pipe near Scott Beach.

Bidot tracing the possible asbestos pie near Scott Beach.

View of possible asbestos pipe traced from Area 3 as it goes underground. Additional pipes and conduits follow and/or cross the pipe.

CANEEL BAY RESORT
ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION
DAILY PROGRESS REPORT

Date:	November 16, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	17:20
Weather:	Morning: 70-90 deg F, Sunny, breezy Afternoon: 70-90 deg F, Sunny, breezy				
Safety Briefing Performed:	Yes				
Samples Shipped:	None				
Delays:	A hydraulic line on On-Site's drill rig failed while moving from the wastewater treatment plant. On-Site found a replacement hose on St. John and repaired the rig. However, the rig was down for several hours, limiting productivity. Soil stained by hydraulic oil was removed and containerized for disposal.				
Other Reportable Items:	NA				
Personnel Onsite					
National Park Service (NPS)	**Representatives:**	Steve Mitchell			
CBIA	**Representatives:**	Griffith Hendrickson			
Contractor: VHB	**Reporter:**	Ben Deede			
Other VHB Personnel:	Ben Bliss, Jason Hooper, Tom Halter				
Subcontractor(s):	On-Site, Bidot				
Uncertain Items					
Areas/Items Searched:	1. Area 1 2. Other Resort Areas				
Search Details:	1. Area 1: VHB checked the piezometer at SC-1-01 for groundwater and found it to be dry. On-Site attempted to drill deeper at that location but were only able to advance an additional 2 feet. VHB will check the piezometer again on Wednesday. 2. Other Resort Areas: Bidot and On-Site attempted to continue to attempt to locate suspected asbestos pipes at Scott Beach (such as the one in the photograph). The pipe has been located to the north towards Turtle Bay, but efforts have been unsuccessful to the south, along Scott Beach.				
Groundwater Sampling					
Groundwater Samples Collected:	No				
Monitoring Wells In-Progress:	Surface completions have not been finished for any well due to delays.				

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
	MW-2-21 will be installed on Wednesday.
Monitoring Wells Completed:	MW-2-22 was installed to the north of the former gift shop
Monitoring Wells Developed:	MW-2-06 (slow to recharge, low-flow sampling may not be possible at this location) MW-2-07 (recharged fully) MW-2-09 (recharged fully)
Monitoring Wells Abandoned:	NA
Sample Names:	None
Groundwater Notes:	
Discrete Soil Sampling	
Discrete Soil Samples Collected:	Yes
Borings In-progress:	NA
Borings Completed:	SC-2-21 SC-2-22
Borings Sampled:	SC-2-21 at 15' SC-2-22 at 18'
Boring Notes:	CBIA cleared the area to the north of the former gift shop. Bidot located utilities in the same area.
ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	Yes
Lead Notes:	1 sample (L-13) from Cottage Point
Asbestos Sampling	
Asbestos Samples Collected:	Yes
Asbestos Notes:	44 samples (47 through 91) from Scott Beach and Cottage Point

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	NA
IDW Notes:	NA

Photographs

Suspected asbestos pipe in a manhole near Scott Beach. Pipe was sampled.

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*					
Date:	November 17, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	17:30
Weather:	Morning: 70-90 deg F, Sunny, breezy Afternoon: 70-90 deg F, Mostly sunny, passing showers				
Safety Briefing Performed:	No				
Samples Shipped:	5 sample coolers were shipped to ALS Global in Middletown, PA				
Delays:	NA				
Other Reportable Items:					
Personnel Onsite					
National Park Service (NPS)	**Representatives:**	Steve Mitchell			
CBIA	**Representatives:**	Griffith Hendrickson			
Contractor: VHB	**Reporter:**	Ben Deede			
Other VHB Personnel:	Ben Bliss, Jason Hooper, Tom Halter				
Subcontractor(s):	On-Site, Bidot				
Uncertain Items					
Areas/Items Searched:	1. Asbestos pipe survey 2. Catchment Basin 3. Clean fill source				
Search Details:	1. Other Resort Areas: Bidot performed recon of buildings/areas from Cottage 7 south to the Terrace Restaurant to search for evidence of possible asbestos pipe. Bidot identified manholes at Cottage 7 that appear to be in line with those at Scott Beach. Due to flooding, the pipes could not be inspected. Piping appears to be at 10-12 ft bgs, below the excavator limits. 2. Catchment Basin: On-Site excavated the GPR anomaly at the lower Catchment Basin and uncovered uneven/unfinished concrete at around 1 ft bgs. Concrete appears to have been dumped/washout, possibly from the Catchment Basin concrete placement, and not a built feature. Excavating below the concrete was not possible with the available equipment. Excavating extended to one side where the edge of concrete met rock. Evidence of a release (staining, odor, PID) was not observed within the excavation extents. 3. Clean fill source: VIIS identified potential clean fill sources. VHB contacted Sleepy Trucking, which is based on St John. The contact stated that they have clean topsoil in a stockpile at their yard on St. John that they will allow VHB to sample. VHB will arrange to collect				

	the sample this week. VHB also contacted Paris Trucking, but the owner stated that they only supply crushed quarry rock, which is not a similar material to on-site soil.
Groundwater Sampling	
Groundwater Samples Collected:	Yes
Monitoring Wells In-Progress:	NA
Monitoring Wells Completed:	MW-2-21, finished surface completions at all Area 2 wells
Monitoring Wells Developed:	MW-2-22 MW-2-21
Monitoring Wells Abandoned:	MW-1
Sample Names:	MW-2-09 MW-2-07 Dug Well 1 Dug Well 2
Groundwater Notes:	MW-2-07, MW-2-09, and the Dug Wells were sampled for: VOCs, lead, and PAHs, as planned, as well as Area 2 COCs barium, arsenic, and pesticides
Discrete Soil Sampling	
Discrete Soil Samples Collected:	No
Borings In-progress:	NA
Borings Completed:	NA
Borings Sampled:	NA
Boring Notes:	NA
ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	Yes
Lead Notes:	3 samples collected (L14 to L16) from Caneel Beach

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Asbestos Sampling	
Asbestos Samples Collected:	Yes
Asbestos Notes:	64 samples collected (92 through 156) from Caneel Beach, Main Building, and Cottage Point
IDW Sampling	
IDW Samples Collected:	No
Sample Names:	NA
IDW Notes:	NA

Photographs

VHB groundwater sampling at MW-2-09.

Bidot rescanning the excavated anomaly at the lower Catchment Basin with GPR.

Monitoring Well MW-1 abandoned in-place.

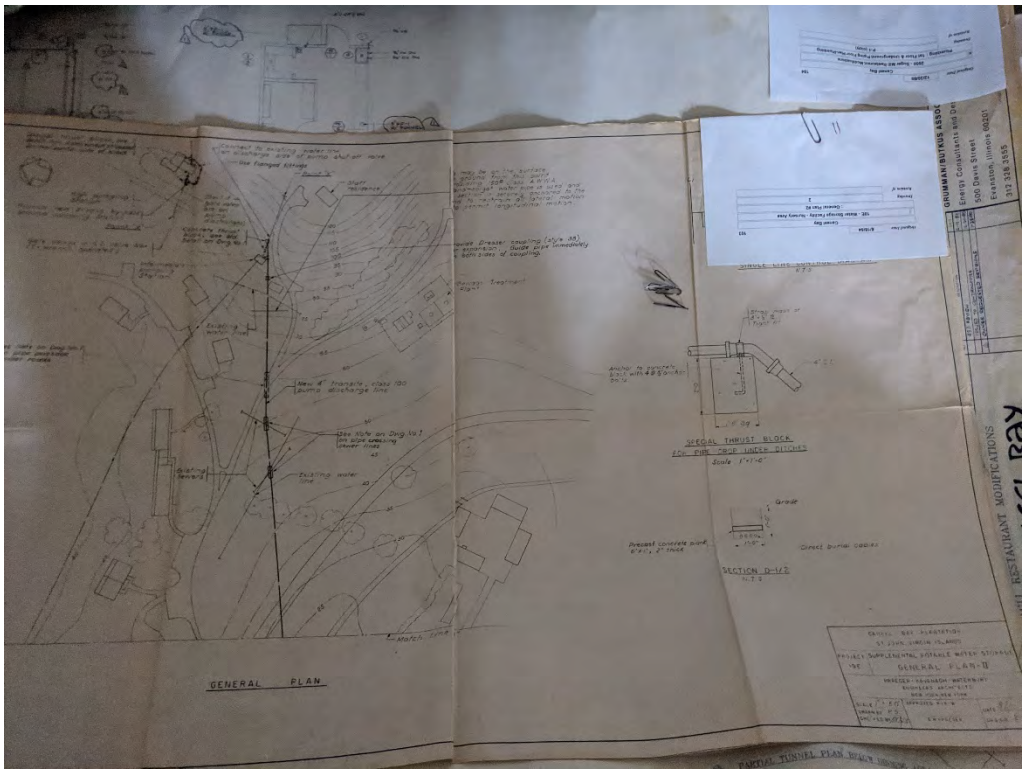
CANEEL BAY RESORT
ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION
DAILY PROGRESS REPORT

Date:	November 18, 2021	**Time On-Site:**	07:00	**Time Off-Site:**	17:15
Weather:	Morning: 70-90 deg F, Breezy, mostly cloudy, showers Afternoon: 70-90 deg F, Partly cloudy, humid, showers				
Safety Briefing Performed:	No				
Samples Shipped:	NA				
Delays:	Na				
Other Reportable Items:	1. VHB and Steve Mitchell met with Nigel Fields to discuss the status of the work and preliminary findings. Bidot inquired about utility plans for the Site. VHB asked Jeff Lambert if there were utility plans in the former engineering office and whether they could be reviewed. Jeff indicated that VHB/Bidot could review the plans but mentioned that most of them had been moved to an office in Burlington, MA. 2. Jeff Lambert asked if VHB could provide a summary of the work performed, including level-of-effort, labor hours, etc. VHB responded that a summary could not come through VHB, but that we would pass the request along. 3. NPS identified a broken backhoe, apparently related to CBIA's operations, near the grounds and landscaping buildings in Area 2. NPS observed evidence of petroleum release to the soil from the backhoe.				
Personnel Onsite					
National Park Service (NPS)	**Representatives:**	Steve Mitchell			
CBIA	**Representatives:**	NA			
Contractor: VHB	**Reporter:**	Ben Deede			
Other VHB Personnel:	Ben Bliss, Tom Halter, Jason Hooper				
Subcontractor(s):	On-Site, Bidot				
Uncertain Items					
Areas/Items Searched:	1. Catchment Basin 2. Asbestos piping survey				
Search Details:	1. Catchment Basin: On-Site backfilled the GPR anomaly excavation. 2. Other Resort Areas: Bidot performed recon of buildings from the Terrace restaurant south to Little Caneel Beach for evidence of asbestos pipes but did not identify any in those areas. Bidot identified a manhole to the west of the tennis courts, possibly connected to the earlier investigated network. On-Site exposed cementitious pipe on either side of the manhole for inspection.				

	Bidot/VHB reviewed available utility plans in the former engineering office. A 1964 plan indicated proposed transite (asbestos-containing) water pipe running north-south through the Site. A full review of the files was not possible due to time constraints.
Groundwater Sampling	
Groundwater Samples Collected:	Yes
Monitoring Wells In-Progress:	NA
Monitoring Wells Completed:	NA
Monitoring Wells Developed:	NA
Monitoring Wells Abandoned:	On-Site abandoned temporary piezometers and closed remaining boreholes.
Sample Names:	MW-2-06 MW-2-21 MW-2-22
Groundwater Notes:	Groundwater elevation measurements were taken at Area 2 monitoring wells and dug wells.
Discrete Soil Sampling	
Discrete Soil Samples Collected:	No
Borings In-progress:	NA
Borings Completed:	NA
Borings Sampled:	NA
Boring Notes:	NA
ISM Soil Sampling	
ISM Samples Collected:	No
Sample Names:	NA
ISM Notes:	NA
Lead Paint Sampling	
Lead Paint Samples Collected:	Yes
Lead Notes:	Collected 3 samples (L17 to L19)

CANEEL BAY RESORT ENGINEERING EVALUATION/ COST ANALYSIS SITE INVESTIGATION *DAILY PROGRESS REPORT*	
Asbestos Sampling	
Asbestos Samples Collected:	Yes
Asbestos Notes:	Collected 65 asbestos bulk samples (157 through 222) from Little Caneel Bay, dive shop/pump building, Sugar Mill Restaurant, Garden View) and 2 asbestos in soil samples (As-01 and As-02) from Area 1
IDW Sampling	
IDW Samples Collected:	Yes
Sample Names:	IDW-Water: composite of two purge/decon water drums IDW-Soil: composite of five soil drums
IDW Notes:	Four soil drums and one water drum are staged in maintenance area. One drum remains to be moved to the staging area. Drums are labeled and were sampled.

Photographs



1964 Site Plan indicating a proposed transite (asbestos-containing) water line running north-south through the site. Active water lines observed during the course of work have been PVC.

Cementitious pipe exposed at a manhole to the west of the tennis courts. Pipe is potentially connected to the previously investigated network.

A broken backhoe in the grounds and landscaping area in Area 2 has leaked petroleum fluids to the soil.

Appendix 3 – Calibration Sheets

VHB
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.vhb.com

PID CALIBRATION SHEET				
Job Name: Caneel Bay Resort Site			Job #:58345.21	
Equipment ID: Pinc 11163		Serial # 592-000305		Lamp: 10.6eV
Brand of Standard Pinc				
Lot # 113843				
Expiration Date Aug 2024				
Date	Time	Initials	100 ppm Isobutylene Value (ppm)	Site Background Value (ppm)
11/9/21	0800	BND	100.0	0.0
11/10/21	0730	BND	100.0	0.0
11/11/21	0745	BRB	99.9	0.0
11/12/21	0740	BRB	99.9	0.0
11/15/21	1300	BRB	99.9	0.0
11/16/21	1330	BRB	100.0	0.0

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VHB
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600

www.VHB.com

YSI CALIBRATION SHEET

Job Name:	Caneel Bay Resort			Job # :				YSI #:				Serial #:	15D100572	
Brand of Standard			-----------	YSI	Oakton	Oakton	Oakton	Oakton	Oakton	YSI	YSI	YSI		Oakton
Lot #			-----------		16H998	16H998	16F003	16E539	16E974	16F945				
Expiration Date			-----------		Aug-22	AUG-22	Jun-23	May-23	May-23	03-22				
	Date	Time	Initials	YSI Temp. - °C	Specific Cond. 1.413 ms/cm	Specific Cond. ms/cm	pH 7.00	pH 4.01	pH 10.00	ORP-Zobell Solution (200-275mV)	Barometric Pressure (mmHg)	100% D.O. (%)	100% D.O. (mg/L)	Zero O_2 Solution (mg/L)
Calibration	11/17/21	0800	BRB	27.97	1.413	—	7.00	4.01	10.00	~~231.~~ 240.0	787.2	102.5	NR	NA
End of Day Check														
Calibration	11/18/21	0716	BND	27.78	1.413	-	7.00	4.01	10.00	240.0	785.8			
End of Day Check														
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NR = Not recorded

NIST Certified Thermometer Check (Date/Results): ______________________ (must be completed at least once per year)

P:\STANDARD\JCO Forms\YSI calibration sheet 021016.doc

Notes: Calibration order is left to right on chart. The optimum pH mV range for pH7 is -70 to +70 after calibration.

VHB
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Montpelier, VT 05602

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Fax: (802) 229-5876
www.vhb.com

TURBIDITY METER CALIBRATION SHEET

Job Name: Caneel Bay Resort Site						Job #: 58345.21	
Equipment ID: 44493 Hach 2100 Q Pine						Serial #: 18090C069371	
Brand of Standard Hach							
Lot # 18090C069371			A1062	A1042	A1032	A1063	Comments
Expiration Date:			Jun-22	May-22	May-22	Jun-22	
Date	Time	Initials	10 ~~15~~ NTU Value	20 ~~100~~ NTU Value	100 ~~750~~ NTU Value	800 NTU Value	
11/17/21	0830	BRB	9.79	20.3	100	810	
11/18/21	0720	BRB	9.93	19.9	101	795	
11/16/21	1400	BRD	9.95	~~9~~ 21.2 (BRD 11/18)	99.7	804	Transcribed fr/ other form 11/18 BRD

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