IEc

US Virgin Islands National Park Visitor Use Study

September 30, 2026

INDUSTRIAL ECONOMICS, INCORPORATED

Prepared for:

Friends of Virgin Islands National Park
PO Box 811
St. John, VI 00831

Prepared by:

Eric Horsch, Jane Israel (JLI Solutions LLC), Chris Smith, Alice Antia, and Dr. Christopher Leggett (Independent Expert)

Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140

Table of Contents

Executive Summary i

CHAPTER 1 | Introduction and Study Purpose 1

1.1 Background and Study Purpose 1
1.2 Study Overview 2
1.3 Study Results 4
1.4 Outline of Report 5

CHAPTER 2 | Automated Traffic and Trail Counters 7

2.1 Overview of Automated Counters 7
2.2 Summary Statistics 16

CHAPTER 3 | St. John Traffic Study 20

3.1 Study Overview 20
3.2 Analysis Approach and Results 23

CHAPTER 4 | North Shore Visitor Use and Parking Study 30

4.1 Study Overview 30
4.2 Analysis Approach and Results 32

CHAPTER 5 | Red Hook Visitor Use Study 40

5.1 Study Overview 40
5.2 Analysis Approach and Results 41

CHAPTER 6 | Boating Study 45

6.1 Study Overview 45
6.2 Analysis Approach and Results 49

CHAPTER 7 | Trails Study 56

7.1 Study Overview 56
7.2 Analysis Approach and Results 59

Appendix A | Updated Visitor Use Reporting and Counting Instructions

Appendix B | Automated Counter Download Instructions

Appendix C | Onsite Study Materials

Executive Summary

Friends of Virgin Islands National Park (FVINP), in cooperation with the National Park Service (NPS), conducted a Visitor Use Study in 2026 to measure and characterize visitation to Virgin Islands National Park (VINP) and Virgin Islands Coral Reef National Monument (VICRNM), hereafter called "the Park." The need for the study arose from a shared recognition by NPS and FVINP that the current methodology for estimating visitation to the Park (i.e., Visitor Use Reporting and Counting Instructions) is outdated.[1] The purpose of the Visitor Use Study was to update this methodology and to produce a current estimate of Park visitation. Information from this Visitor Use Study can also be used to support resource management decisions, infrastructure planning, and potential future research at the Park (e.g., visitor profiles, spending effects, and economic contributions).

The study was designed and implemented by Industrial Economics, Incorporated (IEc) and its subcontractors (Jane Israel and Dr. Christopher Leggett), with support from FVINP, NPS, and numerous volunteers. After a series of planning meetings with FVINP and NPS in 2025, the IEc Team conducted a site visit and developed a study plan. The study plan was implemented from late 2025 into 2026, followed by data entry and analysis.

The Visitor Use Study collected valuable information about the public's use of the Park through a comprehensive effort involving data collection on road traffic, beach use, parking, boating, and trail use. Through the deployment of seven permanently installed automated traffic and trail counters, visitation data is now being collected at a limited set of key locations each month. In addition, a series of five onsite studies provided counts and observations about vehicles, boats, and trail users, which were used to develop factors for converting the automated traffic and trail counts into monthly estimates of overall visitation to the Park.

Based on analysis of the collected data, the project team developed the updated methodology for estimating visitation to the Park. Changing the methodology for counting visitors to the Park requires an agreement between the NPS Social Science Program and the Park Superintendent. NPS and the Park are currently reviewing the updated methodology and will determine how and when to implement it.

Applying the updated methodology to information collected to date for 2026, and extrapolating based on Trunk Bay visitation patterns for 2025, we estimate that the Park will receive approximately 1.7 million visits in 2026. This includes approximately 1.4 million recreation visits and 0.3 million non-recreation visits. These estimates represent a substantial increase in visitation relative to the estimates for recent years using the current counting instructions. In 2025, visits totaled 653,049, including 471,074 recreation visits, and in 2024, visits totaled 640,584, including 423,029 recreation visits.[2]

[1] The current and historical methodologies used by the Park to count and report visitation statistics are available online. Select "Visitor Use Counting Procedures" at https://irma.nps.gov/Stats/Reports/Park/VIIS.

[2] Select "Monthly Public Use" at https://irma.nps.gov/Stats/Reports/Park/VIIS for total visitation and "Annual Park Recreation Visits (1957 – Last Calendar Year)" for recreation visitation.

Additional key findings from the Visitor Use Study, which may be useful as the Park considers resource management decisions and infrastructure planning, include:

- For recreation visits to the Park, 78 percent are land-based, while 22 percent are by boat.
- The beach at Trunk Bay receives more visits than any other beach in the Park. Other beaches along the north shore collectively receive approximately 2.5 times the amount of visitation that Trunk Bay Beach receives. Cinnamon Bay Beach and Maho Bay Beach each receive approximately 80 percent of the visitation that Trunk Bay Beach receives.
- The Saltpond Bay Trail receives more visits than any other trail in the Park, followed by the Lower Lind Point Trail and Reef Bay Trail.
- January through July are the busiest months in the Park, while August through December have lower visitation, based on Trunk Bay Beach visitation data for 2025 and automated counter data to date in 2026.
- Use of the Park is relatively stable across the week, although weekdays are generally busier than weekends, and Saturday is the least busy day in the Park.
- During the four-day study in February 2026, approximately 37 percent of vehicles were parked along the north shore in non-designated parking areas.
- Use of the Red Hook NPS area on St. Thomas is low, representing less than one percent of total visitation to the Park.

CHAPTER 1 | Introduction and Study Purpose

Friends of Virgin Islands National Park (FVINP), in cooperation with the National Park Service (NPS), conducted a Visitor Use Study in 2026 to measure and characterize visitation to Virgin Islands National Park (VINP) and Virgin Islands Coral Reef National Monument (VICRNM), hereafter called "the Park."

The purpose of the Visitor Use Study (or simply, "the study") was to provide NPS with an updated methodology that can be used for estimating visitation to the Park and to produce an estimate of Park visitation using the new method. The results of the study are presented in this report. Information from the study can also be used to support resource management decisions, infrastructure planning, and potential future research at the Park (e.g., visitor profiles, spending effects, and economic contributions).

The study was designed and implemented by Industrial Economics, Incorporated (IEc) and its subcontractors (Jane Israel and Dr. Christopher Leggett), with support from FVINP, NPS, and numerous volunteers. IEc sincerely appreciates the hard work and support provided by all members of the project team.

1.1 Background and Study Purpose

Established in 1988, the mission of the Friends of Virgin Islands National Park is to protect and preserve the natural and cultural resources of Virgin Islands National Park while connecting visitors to the park and the park to the community. To fulfill this mission, it is important for FVINP to have a good understanding of the level and patterns of visitation. The Park was established in 1956, and visitation has grown considerably since then. The Park offers numerous world-famous beaches (including the one at Trunk Bay; Figure 1-1), historic ruins, hiking trails, boating opportunities, and more.

Figure 1-1. Trunk Bay



The need for the study arose from a shared recognition by NPS and FVINP that the current methodology for estimating visitation to the Park is outdated, likely affecting the accuracy of visitation statistics. The current and historical methodologies used by the Park to count and report visitation statistics are available online.[3] The current "Visitor Use Reporting and Counting Instructions" (or simply, "the counting instructions") rely on some estimation methods and factors that have not changed in over two decades and reflect some outdated features of the Park (e.g., Caneel Bay Resort was destroyed during Hurricanes Maria and Irma in 2017, but the number of guests at the resort is still part of the counting instructions).

Changing the counting instructions for the Park requires an agreement between the NPS Social Science Program and the Park Superintendent. Accordingly, a series of meetings occurred in the spring and early summer of 2025 between Penelope Del Bene (Superintendent of the Park), Scott Simmons (Deputy Superintendent of the Park), Pam Ziesler (Visitor Use Statistics Lead at the NPS Social Science Program), Tonia Lovejoy and Lisa Price (FVINP), Eric Horsch (IEc), and Jane Israel (JLI Solutions) to discuss a plan for the study and updating the counting instructions. The group agreed that a site visit would occur in July 2025 for the IEc Team to develop an understanding of the sites, access points, and visitation patterns at the Park, which was used to develop a study plan. In the fall of 2025, the proposed study plan was finalized in coordination with NPS and FVINP. The remainder of this report describes the study design, implementation, and results.

1.2 Study Overview

The Visitor Use Study collected valuable information about the public's use of the Park through a comprehensive effort involving data collection on road traffic, beach use, parking, boating, and trail use. Through the deployment of seven permanently installed automated traffic and trail counters, visitation data is now being collected at a limited set of key locations each month. In addition, a series of five onsite studies provided counts and observations about vehicles, boats, and trail users, which were used to develop factors for converting the automated traffic and trail counts into monthly estimates of overall visitation to the Park. Based on analysis of the collected data, the project team developed the updated methodology for estimating visitation to the Park.

The data collection involved a combination of seven automated counters and five onsite studies:

- **Four magnetometer traffic counters and three passive infrared trail counters** were installed in the Park. Six of the seven counters are on St. John, and one counter is on St. Thomas.
    - The traffic counters measure vehicle use at four locations: 1) North Shore Road near Lind Point Road[4], 2) John Head Road at Catherineberg, 3) North Shore Road at Kings Hill, and 4) the unnamed road leading to the NPS Dock in Red Hook (St. Thomas).
    - The passive infrared trail counters measure trail use on 1) Lower Lind Point Trail (behind the Visitor Center), 2) Reef Bay Trail, and 3) Saltpond Bay Trail.

[3] Select "Visitor Use Counting Procedures" at https://irma.nps.gov/Stats/Reports/Park/VIIS.
[4] As described in Chapter 2, the traffic counter is located on North Shore Road opposite the Caneel Bay Overlook, which is a short distance away from Lind Point Road.

- The **St. John Traffic Study** involved counting and recording characteristics of vehicles passing selected locations to construct quantitative factors that relate the automated traffic counts to vehicle visitation at all locations in the Park on St. John (including on North Shore Road, John Head Road, East End, and Lameshur).
- The **North Shore Visitor Use and Parking Study** involved counting visitors to north shore beaches and Annaberg Ruins to construct quantitative factors that relate NPS Trunk Bay fee data to visitation at other north shore sites. The study also involved counting parked vehicles at sites along the north shore to understand parking supply and demand, as well as the extent and location of parking in non-designated areas.[5]
- The **Red Hook Visitor Use Study** involved counting and recording characteristics of vehicles and pedestrians entering the unnamed road leading to the NPS Dock in Red Hook. The data were used to construct quantitative factors that relate the automated traffic counts to vehicle and walk-in visitation at the site.
- The **Boating Study** involved counting and recording characteristics of boats at a range of locations along the north and south shores to construct quantitative factors that relate boating visitation to the automated traffic counts on North Shore Road near Lind Point.
- The **Trails Study** involved counting and recording characteristics of trail users at a range of locations not covered by the other onsite studies. Specifically, visits to trails on North Shore Road between Lind Point and Kings Hill (and up John Head Road to Catherineberg) were already covered in the St. John Traffic Study. This study covered several trails along Centerline Road, around Cruz Bay, around Coral Bay, and the Trail to Reef Bay from Cocoloba Point. The data were used to construct quantitative factors that relate the automated trail counts to the broader set of trails covered by the study.

The onsite studies were implemented following installation of the automated traffic and trail counters, which began in December 2025 and was completed in February 2026. Table 1-1 shows the dates of the onsite studies.

Table 1-1. Onsite Studies Schedule

Study	Implementation Dates
St. John Traffic Study	February 12-15, 2026
North Shore Visitor Use and Parking Study	February 17-18 & 21-22, 2026
Red Hook Visitor Use Study	March 12-15, 2026
Boating Study	March 12-15, 2026
Trails Study	March 24-25 & 28-29, 2026

[5] As described in Chapter 4, the results of this study were not directly relied upon to update the counting instructions, but the information collected provides supporting information for Park management.

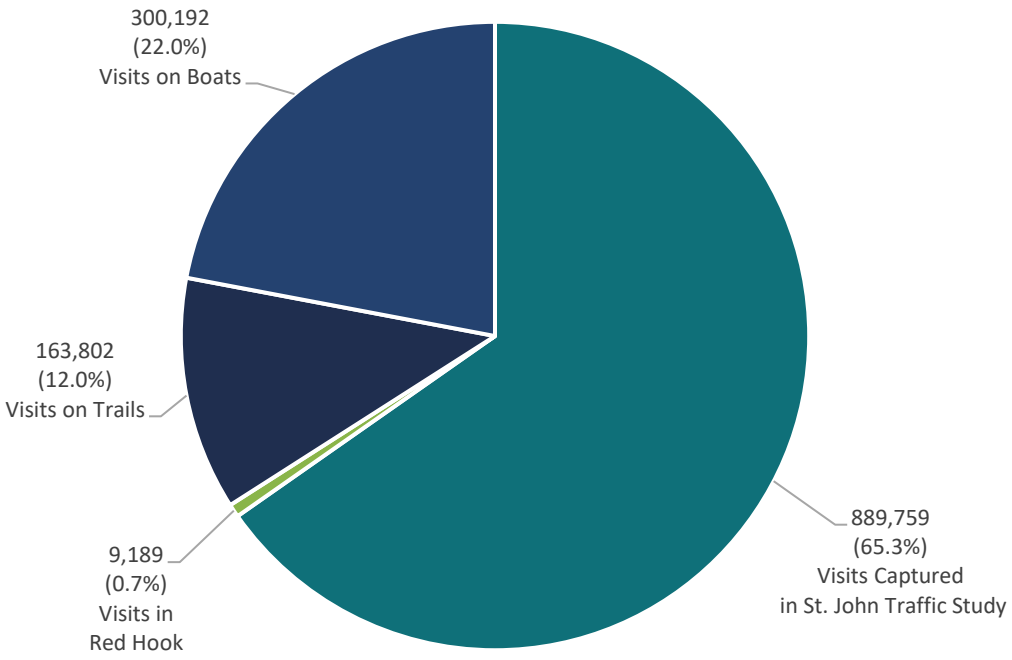
1.3 Study Results

The results of the Visitor Use Study were used to update the Visitor Use Reporting and Counting Instructions for the Park.[6] The updated counting instructions are included as Appendix A.[7] January 2026 represents the first full month of data collection by the automated counters.[8] To estimate visitation to the Park, we applied the updated counting instructions using data collected to date from the automated counters and onsite studies. While we do not have a full year's worth of data, we can extrapolate the January to July statistics to an estimated annual total using the relative monthly distribution of visitation found in 2025 Trunk Bay fee data.[9]

Using this approach, we estimate that the Park will receive approximately 1.7 million visits in 2026. This includes approximately 1.4 million recreation visits and 0.3 million non-recreation visits. As shown in Figure 1-2, these 1.4 million recreation visits include 889,759 visits (65.3 percent) from vehicles captured in the St. John Traffic Study, 9,189 visits (0.7 percent) in Red Hook, 163,802 visits (12.0 percent) on trails, and 300,192 visits (22.0 percent) on boats.[10] The non-recreation visits are primarily vehicles passing through the Park on North Shore Road. These estimates represent a substantial increase in visitation relative to the estimates for recent years using the current counting instructions. In 2024 and 2025, visits totaled 640,584 and 653,049, respectively; recreation visits totaled 423,029 and 471,074, respectively, and the remainders were non-recreation visits.[11]

[6] The current counting instructions are available here: https://irma.nps.gov/Stats/FileDownload/33247.
[7] We defer to NPS on if they choose to adopt and implement the updated counting instructions.
[8] As described in Chapter 2, the Red Hook traffic counter was moved in February 2026 due to data anomalies in the initial data. Further, the Reef Bay trail counter was installed in February 2026 and the batteries unexpectedly failed a few months later, resulting in the loss of data from June 4-18, 2026. As described elsewhere in this report, we are able to estimate visitation starting in January 2026 using reasonable imputation methods to account for missing data.
[9] The Trunk Bay fee data are collected daily at Trunk Bay as visitors enter the site. The data are systematically collected (i.e., reliable) and are likely representative of visitation trends at the Park throughout the year. To note, the Trunk Bay fee data are not utilized in the updated counting instructions because the St. John Traffic Study covers visitation to Trunk Bay along with several other north shore sites. The fee data are only used for extrapolation purposes in this report, though the Park will likely continue to collect them for revenue and management purposes.
[10] Visits to trails on North Shore Road between Lind Point and Kings Hill (and up John Head Road to Catherineberg) are covered with the vehicle visits in the St. John Traffic Study. The estimate of trail visitors here is for all other trails, including several trails along Centerline Road, around Cruz Bay, around Coral Bay, and the Trail to Reef Bay from Cocoloba Point. These other trails are believed to receive the vast majority of trail visitation.
[11] Select "Monthly Public Use" at https://irma.nps.gov/Stats/Reports/Park/VIIS for total visitation and "Annual Park Recreation Visits (1957 – Last Calendar Year)" for recreation visitation.

Figure 1-2. Projected Recreation Visits in 2026



We hope that the updated counting instructions and visitation estimates will help improve future visitor use reporting, resource management decisions, infrastructure planning, and more.

1.4 Outline of Report

The remainder of this report is organized as follows:

Chapter 2 provides an overview of the automated counters, including their locations, when they were installed, and the data they collect. We provide summary statistics from the automated counter data collected to date. Supporting information is provided in Appendix B, namely the instructions for Park personnel to use when downloading data from the counters.

Chapter 3 summarizes the purpose and implementation of the St. John Traffic Study. We describe our analysis approach, present key results, and explain how the study was used to update the counting instructions in Appendix A. The study materials are provided in Appendix C.

Chapter 4 summarizes the purpose and implementation of the North Shore Visitor Use and Parking Study. We provide summary statistics for management purposes, though these data were not directly relied upon to update the counting instructions in Appendix A. The study materials are provided in Appendix C.

Chapter 5 summarizes the purpose and implementation of the Red Hook Visitor Use Study. We describe our analysis approach, present key results, and explain how the study was used to update the counting instructions in Appendix A. The study materials are provided in Appendix C.

Chapter 6 summarizes the purpose and implementation of the Boating Study. We describe our analysis approach, present key results, and explain how the study was used to update the counting instructions in Appendix A. The study materials are provided in Appendix C.

Chapter 7 summarizes the purpose and implementation of the Trails Study. We describe our analysis approach, present key results, and explain how the study was used to update the counting instructions in Appendix A. The study materials are provided in Appendix C.

Appendix A provides the updated Visitor Use Reporting and Counting Instructions for the Park.

Appendix B provides instructions for Park personnel to use when downloading data from the automated traffic and trail counters.

Appendix C provides the onsite study materials for each onsite study.

CHAPTER 2 | Automated Traffic and Trail Counters

2.1 Overview of Automated Counters

The Visitor Use Study combined data from seven permanently installed automated traffic and trail counters with information collected from the five onsite studies. The onsite studies were used to develop factors for converting the automated traffic and trail counts into monthly estimates of overall visitation to the Park. Ultimately, the updated counting instructions in Appendix A rely on monthly counts from five automated counters:

- Automated traffic counter on North Shore Road near Lind Point Road;
- Automated traffic counter on the unnamed road leading to the NPS Dock in Red Hook;
- Automated trail counter on Lower Lind Point Trail (behind the Visitor Center);
- Automated trail counter on Reef Bay Trail; and
- Automated trail counter on Saltpond Bay Trail.

The two additional automated counters not listed above (i.e., the traffic counters located on John Head Road at Catherineberg and North Shore Road at Kings Hill) are not used in the updated counting instructions. The purpose of those counters is to provide redundancy, in case the automated counter near Lind Point ever goes offline unexpectedly. In such a case, the historical data from all three traffic counters will allow NPS to impute (i.e., "fill in") the missing data at Lind Point until the counter is put back online (e.g., by replacing batteries).

Around the beginning of each month, the Park should collect and compile monthly counts from the five automated counters above and apply them in the steps listed in the updated counting instructions (Appendix A). That process will produce estimates of visitation to the Park.[12] Appendix B provides instructions for Park personnel to use for downloading data from the automated counters and troubleshooting issues that may arise, including replacing the batteries.

The automated counters installed in the Park for this study are all latest generation technology counters sold by TRAFx.[13] TRAFx is a company that specializes in developing and selling advanced counting systems, and its products are used by government agencies and research institutions around the world. NPS uses similar TRAFx traffic and trail counters at several other National Parks; the counters are also widely used on many other public lands for monitoring and tracking visitation. During study planning, it was determined that TRAFx counters would be used for this study given NPS' familiarity with them and their proven reliability at other National Parks.

The automated traffic counters use an aerospace-quality magnetometer that detects moving objects with ferrous metal content (e.g., vehicles). When a vehicle passes near the sensor, the ferrous materials in the vehicle chassis (e.g., iron, steel, nickel, cobalt, etc.) induce a change in the

[12] Two additional sources are used in the updated counting instructions in addition to the five automated counters: monthly tallies of visitors to the National Park Visitor Center reported by NPS staff and tallies of overnight visitors reported by concessioner lodging and campgrounds.

[13] The TRAFx manuals for the traffic and trail counters installed in the Park are available online: https://www.trafx.net/products#vehicle-counter and https://www.trafx.net/products#IR-counter.

magnetic field that is detected by the sensor and the vehicle is counted.[14] The counters are compact, measuring 5.5 in x 4.1 in x 2.0 in (see Figure 2-1), and were installed in locked enclosures on the sides of roads in the Park. This is different from some other counter technologies (e.g., inductive loop counters) that involve cutting into the road surface to install them. During installation and testing of the counters for this study, we confirmed that they did not detect other metal objects, such as cell phones or bicycles, unless they were very close to the counter (i.e., within about a foot). Given that all traffic counters for this study were installed a foot or more off the road, the counters are likely not detecting sources of metal other than vehicles. The traffic counters run on three 1.5V alkaline C cell batteries, and the expected battery life is 13-15 months.

Figure 2-1. Automated Traffic Counter



The automated trail counters take advantage of the fact that human beings, with an internal temperature of 98.6 degrees, are typically warmer than their surroundings. Warm objects emit infrared radiation, so by pointing a small infrared scope across a trail, the automated counter tallies a visitor when there is a significant change from the ambient infrared radiation.[15] The trail counters are similarly compact to the traffic counters, measuring 4.3 in x 2.8 in x 1.5 in (see Figure 2-2), and were installed in locked enclosures on the sides of trails in the Park. The trail counters run on three 1.5V alkaline AA cell batteries, and the expected battery life is 9 to 10 years.

[14] The presence of parked vehicles near a counter will not lead to count errors, as the counters automatically adjust to the new background magnetic field. To be safe, all the traffic counters installed for the study were placed at locations where traffic is typically passing by and not used for parking.

[15] The counter cannot distinguish between human beings and animals (e.g., deer), so it would also count a passing animal, though this is not believed to be a significant source of error given field observations during counter setup.

Figure 2-2. Automated Trail Counter





The traffic and trail counter enclosures are electrical junction boxes made of waterproof plastic, which protect the counters from moisture and typical weather. Further, the boxes provide a structure for mounting the counters to a tree or wooden railing, which was achieved using metal straps. Finally, the boxes can be locked with a small padlock, which helps prevent them from being vandalized or stolen. NPS staff have the keys to all the padlocks on the enclosures. As an added deterrent to vandalism and theft, a sticker was placed on the front of each box that says "Property of the National Park Service. Automated counter, not a camera. Please do not touch. Thank you! Questions? Please call 340-776-6201." The contact number was provided by NPS staff at the Park in case anyone has questions.

Figure 2-3 shows the locations of all the traffic and trail counters installed for this study. Based on guidance from the TRAFx manual and confirmed by field observations during installation and testing, the traffic counters were placed in locations where traffic passes by at a steady speed without stopping. Each counter has a user-specified delay that is set to match the typical speed of passing traffic to avoid counting the same vehicle twice or undercounting vehicles passing in quick succession. When vehicles drive at variable speeds or stop and go, there is no delay setting that can accommodate this variation. Due to the speed bump near Lind Point Road at the Park entrance (which causes traffic to slow down and speed up at variable speeds), the traffic counter was placed a short distance to the east, opposite the Caneel Bay Overlook, where traffic flows more freely.[16] Similar considerations informed the placement of the other three traffic counters (i.e., in Red Hook, on John Head Road at Catherineberg, and on North Shore Road at Kings Hill). At Red Hook, the traffic counter was placed a short distance east of the entrance gate to avoid capturing vehicles stopping or turning around near the gate.

[16] Because a vehicle traveling between Lind Point Road and the counter location opposite the Caneel Bay Overlook typically passes both locations while driving in a given direction (i.e., it is unusual for vehicles to turnaround between the two points), the resulting data reflect traffic counts as if the counter were located at the Park entrance near Lind Point Road.

The three trail counters were placed near the entrances to the trails. In the case of Saltpond Bay Trail, the counter was placed a short distance from the parking area at the intersection with the trail leading from the Concordia Resort. This location provides coverage of trail users going between Saltpond Bay and the parking area, as well as users coming from the resort (or the villas and other lodging further up the hill on that trail spur).

Figure 2-3. Locations of Automated Traffic and Trail Counters



Six of the seven counters were installed on December 10th or 11th in 2025, including all except the counter on Reef Bay Trail. Early in 2026, the project team determined that the trail counter on Reef Bay Trail should be installed to collect separate data for that trail. That counter was installed on February 11th in 2026. A day prior, the traffic counter in Red Hook was moved a very short distance from its original location due to anomalous data readings, particularly during the night when visitation was not actually occurring. Moving the counter resolved the anomalous readings, though the exact cause for them was never determined. The Red Hook data prior to February 10th were dropped since they were not reliable.

During the installation of each counter, we specified the following settings and then adjusted them as needed until a counter was recording one count for each passing vehicle (in the case of the traffic counter) or each passing person (in the case of the trail counter):

- The "Period" setting on all counters was set to collect hourly data, as opposed to daily totals or a timestamp for every passing vehicle or trail user. This provides sufficient granularity in the data without overwhelming the memory limitations of the counter.[17]

[17] The counters can only store up to 14,000 data records. If the timestamp setting were used, which creates a record for every passing vehicle or trail user, this maximum could be reached for busy locations (e.g., Lind Point). With the hourly setting, the counters can hold approximately 18 months of data. However, the goal is to read the counters once a month, at which time the counter records get cleared.

- The "Delay" setting tells the counter how long to wait before counting another vehicle or trail user. If set too short, the counter can count the same vehicle or trail user twice. If set too long, it can miss vehicles or trail users passing in quick succession. The final traffic counter settings ranged from one second (North Shore Road near Lind Point Road) to two seconds (John Head Road at Catherineberg, North Shore Road at Kings Hill, and Red Hook) to reflect differences in traffic speed. The trail counter settings ranged from 1.5 seconds (Saltpond Bay Trail and Reef Bay Trail) to two seconds (Lind Point Trail), also to reflect differences in the speed of passing trail traffic.[18]
- The "Threshold" setting, only applicable for the traffic counters, adjusts the counter's detection distance. This setting was adjusted as needed so that all traffic counters detected passing traffic in both directions. The TRAFx manuals do not specify the exact distance associated with each value of this setting (so they are not reported here), but there was variation in the final values across the four counters. All existing settings, "Threshold" and otherwise, can be viewed when accessing the counter data during a data download.
- The "Rate" setting, only applicable for the traffic counters, is set to *slow* if the average vehicle speed is 30 mph or less and *fast* if greater than that. All four of the traffic counters were set to *slow* for this study.

While the counter settings were selected to make the counters as accurate as possible (one count per passing vehicle or trail user), there will always be some unavoidable error. For example, two vehicles going in opposite directions and passing the counter at the same time would likely be undercounted as one vehicle. Also, a large animal walking by a trail counter would likely be recorded as a trail user. Part of the purpose of the onsite studies was to "true up" these small deviations and develop factors that convert the automated counter data to reflect the true amount of visitation.

The final step of counter installation involved giving each counter a unique name to reflect its location (e.g., "Red Hook Vehicle" or "Saltpond Bay Trail"). These names show up in the data download files so it is clear with which counter the data are associated. Table 2-1 summarizes the counter names, serial numbers, models, installation dates (at its final location, in the case of the counter in Red Hook), and locations. Figures 2-4 to 2-10 show pictures of each counter location, with red circles indicating the location.

[18] The Lind Point Trail counter is on a set of stairs rather than a relatively flat trail, which affects the speed of passing people.

Table 2-1. Automated Traffic and Trail Counters Summary

Counter Name	Serial Number	Model	Installation Date	Location (Latitude, Longitude)
Lind Point Vehicle	2449Ag	TRAFx Generation 4 Vehicle Counter	12/10/2025	18.340838, -64.787206
Catherineberg Vehicle	2332Dc	TRAFx Generation 4 Vehicle Counter	12/11/2025	18.343986, -64.761579
Kings Hill Vehicle	2332Cu	TRAFx Generation 4 Vehicle Counter	12/11/2025	18.357295, -64.736958
Red Hook Vehicle	2509Gb	TRAFx Generation 4 Vehicle Counter	2/10/2026	18.322393, -64.853797
Lind Point Trail	2435Wz	TRAFx Generation 4 Infrared Trail Counter	12/10/2025	18.333132, -64.793497
Reef Bay Trail	2435Wa	TRAFx Generation 4 Infrared Trail Counter	2/11/2026	18.347554, -64.742814
Saltpond Bay Trail	2444Qo	TRAFx Generation 4 Infrared Trail Counter	12/10/2025	18.310840, -64.706785

Figure 2-4. Traffic Counter on North Shore Road near Lind Point Road



Figure 2-5. Traffic Counter on John Head Road at Catherineberg



Figure 2-6. Traffic Counter on North Shore Road at Kings Hill



Figure 2-7. Traffic Counter on the Unnamed Road Leading to the NPS Dock in Red Hook



Figure 2-8. Trail Counter on Lower Lind Point Trail



Figure 2-9. Trail Counter on Reef Bay Trail



Figure 2-10. Trail Counter on Saltpond Bay Trail



Since December 10-11, 2025 or February 10-11, 2026, depending on the counter (as shown in Table 2-1), the automated trail and traffic counters have been collecting hourly count data, with one small exception. The trail counter on Reef Bay Trail failed unexpectedly from June 4-18, 2026, due to low battery power. It is not clear why the batteries failed, but after replacing them and bringing the counter back online, it has been collecting data without further issue.

To date, the counter data downloads have been conducted on a monthly basis, usually during the first week of each month. As described in Appendix B, a TRAFx Dock is required to download data from a counter (Figure 2-11). In short, the dock is connected to a counter, the data are downloaded onto the dock, and the dock is removed from the counter causing the counter to relaunch. Once data has been downloaded from all counters using this approach, the dock can be connected to a computer using a set of TRAFx cables and the data can be transferred to an appropriate destination.

Figure 2-11. TRAFx Dock



A data download from multiple counters is compiled into a single "shuttle file," which can be opened as a text file on a computer. For each counter, the text file shows the name and serial number of a counter, the battery voltage (to assess if the batteries should be changed), the start and end dates and times of the data, the counter settings, and the data. The data are simply stacked lines for each hourly record, with the date, hourly period label, and the hourly count for each record. The Lind Point Trail counter was installed before any other counter, and since December 10, 2025, it has collected approximately 5,600 records. The other counters have also collected thousands of records, but the exact number varies based on the date they were installed. Section 2.2 describes how the automated counter data were analyzed and presents key results.

2.2 Summary Statistics

In this section, we present summary statistics using the counter data for the year-to-date period from January through July 2026. The counter data presented here includes all entries and exits, though in the following chapters we describe how these total counts are adjusted to estimate the number of unique visits. For example, an entry and an exit by the same vehicle with 4 people on a given day would be counted, after adjustments, as four unique visits for the day. Further, the counter data presented in this section are for all hours in a day, though as described in Chapter 5, we only use the traffic counter data in Red Hook from 7 am and 4 pm to estimate visitation there because that is when the site is open.

First, in Table 2-2, we present the number of daily counts by counter, as well as the mean, median, minimum, and maximum daily count.

- The number of days with counts ranged from 156 days for Reef Bay Trail, which was installed on February 11, 2026 and had a brief period of battery-related downtime in June, to 212 days for the five counters that were installed in mid-December and operated continuously between January and July 2026. In the middle is Red Hook Vehicle with 172 days, which reflects its mid-February installation and continuous operation since then.
- For the four traffic counters, the mean daily counts by counter ranged from 45 for Red Hook Vehicle to 1,715 for Lind Point Vehicle. Similarly, the median daily counts ranged from 38 for Red Hook Vehicle to 1,675 for Lind Point Vehicle. The minimum daily counts ranged from zero for Red Hook Vehicle to 774 for Lind Point Vehicle, while the maximum daily counts ranged from 238 for Red Hook Vehicle to 2,220 for Lind Point Vehicle.
- For the three trail counters, the mean daily counts by counter ranged from 83 for Reef Bay Trail to 533 for Saltpond Bay Trail. Similarly, the median daily counts ranged from 76 for Reef Bay Trail to 492 for Saltpond Bay Trail. The minimum daily counts ranged from zero for Reef Bay Trail to 179 for Saltpond Bay Trail, while the maximum daily counts ranged from 240 for Reef Bay Trail to 1,307 for Saltpond Bay Trail.

Table 2-2: Automated Traffic and Trail Counters - Summary Daily Count Statistics for January-July 2026

Counter Name	Number of Days with Counts	Mean Daily Count	Median Daily Count	Minimum Daily Count	Maximum Daily Count
Lind Point Vehicle	212	1,715	1,675	774	2,220
Catherineberg Vehicle	212	287	290	146	415
Kings Hill Vehicle	212	697	687	360	954
Red Hook Vehicle	172	45	38	0	238
Lind Point Trail	212	299	288	104	609
Reef Bay Trail	156	83	76	0	240
Saltpond Bay Trail	212	533	492	179	1,307

Note: The counts in this table do not represent visits. Visitation estimates are developed using these counts in the following chapters.

Next, we calculated the total monthly count for each counter, as shown in Table 2-3. In cases where a counter operated continuously for the month, the counts represent the sum of the hourly counts across each month. For months where a counter operated during only part of the month or not at all, we estimated the counter's monthly count by extrapolating the partial-month data to account for the missing days, or by imputing based on historical relative relationships between different counters.

- Across all seven counters, from January through July 2026, the total monthly counts were highest in March (137,094), followed by January (124,477), February (119,335), and April (112,023). The total monthly counts were lowest in June (90,807), followed by July (94,631) and May (97,849).

- For the four traffic counters, total monthly counts were highest for Lind Point Vehicle, which ranged from 45,083 to 61,360 per month. This was followed by Kings Hill Vehicle (17,277 to 25,239 per month) and Catherineberg Vehicle (7,574 to 10,220 per month). Total monthly counts were lowest for Red Hook Vehicle, which ranged from 1,009 to 1,799 per month.
- For the three trail counters, total monthly counts were highest for Saltpond Bay Trail, which ranged from 11,491 to 22,185 per month. This was followed by Lind Point Trail, which ranged from 5,806 to 12,812 per month. Total monthly counts were lowest for Reef Bay Trail, which ranged from 1,477 to 3,832 per month.

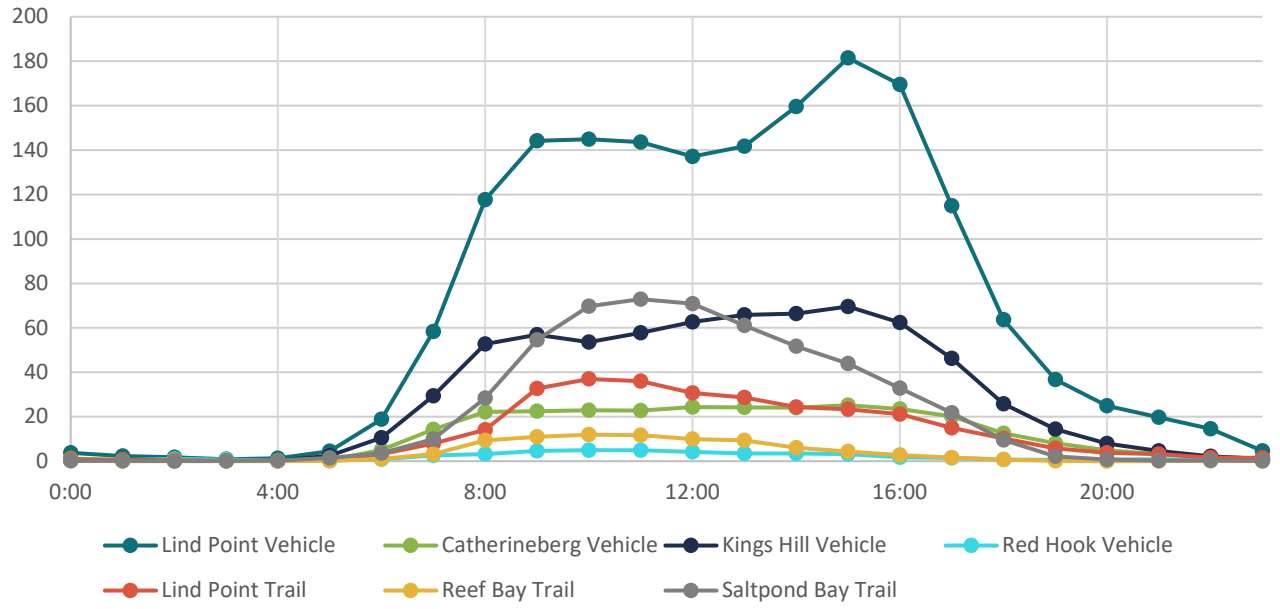
Table 2-3: Automated Traffic and Trail Counters - Total Monthly Count by Counter for January-July 2026

Counter Name	January	February	March	April	May	June	July
Lind Point Vehicle	56,295	52,544	61,360	51,924	49,570	45,083	46,904
Catherineberg Vehicle	9,202	8,530	10,220	9,089	8,151	7,574	8,020
Kings Hill Vehicle	23,853	23,202	25,239	21,420	18,668	17,277	18,030
Red Hook Vehicle	1,565**	1,185*	1,446	1,173	1,009	1,554	1,799
Lind Point Trail	12,053	11,384	12,812	8,831	6,240	6,180	5,806
Reef Bay Trail	3,199**	2,893*	3,832	2,769	2,176	1,648*	1,477
Saltpond Bay Trail	18,310	19,597	22,185	16,817	12,035	11,491	12,595
Total	124,477	119,335	137,094	112,023	97,849	90,807	94,631

Note: The counts in this table do not represent visits. Visitation estimates are developed using these counts in the following chapters.
**These monthly totals were estimated based on extrapolation of partial-month data using the number of missing days in the month.*
***These monthly totals were estimated based on the historical relative relationship between this counter and other counters.*

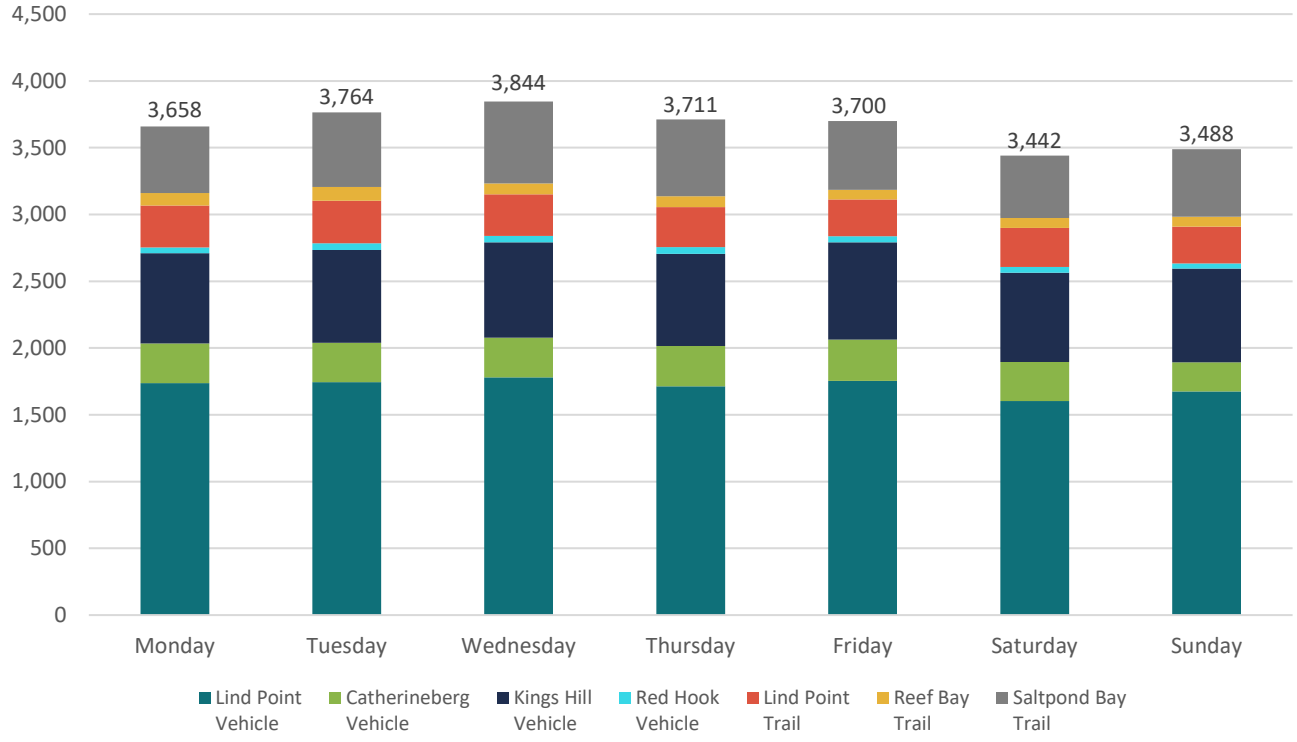
Next, we used the hourly counter data to calculate the average count by hour for each counter. As shown in Figure 2-12, the hourly counts were generally lowest between midnight and 6 AM and then higher between 7 AM and 6 PM, as expected. The counts generally peaked around mid-morning (perhaps as visitors entered a trail or road) and sometimes again in mid-afternoon (perhaps as visitors left), before tailing off during the evening and nighttime hours after 6 PM. Consistent with the tabular summaries above, the average hourly counts for the traffic counters were generally highest for Lind Point Vehicle, followed by Kings Hill Vehicle, then Catherineberg Vehicle, and finally Red Hook Vehicle. For the trail counters, the average hourly counts were generally highest for Saltpond Bay Trail, followed by Lind Point Trail, and then Reef Bay Trail.

Figure 2-12. Automated Traffic and Trail Counters - Average Count by Hour for January-July 2026



Finally, we analyzed daily count patterns by day of the week, as shown in Figure 2-13. Total daily counts were highest during weekdays, which averaged 3,736 per day, and lowest on weekend days, which averaged 3,465 per day.

Figure 2-13. Automated Traffic and Trail Counters - Average Daily Count by Day of the Week for January-July 2026



CHAPTER 3 | St. John Traffic Study

3.1 Study Overview

The St. John Traffic Study was conducted in February 2026 and involved counting and recording characteristics of vehicles passing selected locations to construct quantitative factors that relate the automated traffic counts to vehicle visitation at all locations in the Park on St. John, including on North Shore Road, John Head Road, the East End, and Lameshur.

These locations cover most areas in the Park on St. John that are accessible by vehicle. As described in Chapter 7, the remaining land-based visitation to the Park on St. John was covered by the Trails Study; that study included several trails along Centerline Road (e.g., Water Catchment Trail, Reef Bay Trail), around Cruz Bay (e.g., Lower Lind Point Trail behind the Visitor Center, Lower Caneel Hill Trail located near Mongoose Junction), around Coral Bay (e.g., Johnny Horn Trail), and the Trail to Reef Bay from Cocoloba Point.

The monitoring locations for the St. John Traffic Study included three locations near the three St. John traffic counters, two locations corresponding to the Park boundaries at the East End, and one location near the Park boundary at Lameshur. The six monitoring locations for the St. John Traffic Study are shown in Figure 3-1 and referenced in the Appendix C study materials. They include:

1) North Shore Road near Lind Point Road (North Shore Area);
2) John Head Road at Catherineberg (North Shore Area);
3) North Shore Road at Kings Hill (North Shore Area);
4) Route 10 (East End Road) at NPS Boundary along Borck Creek (East End Area);
5) Route 10 (East End Road) at NPS Boundary along Haulover Bays (East End Area); and
6) Lameshur (End of Route 107) (Lameshur Area).

Figure 3-1. Locations of Automated Traffic Counters and St. John Traffic Study Monitoring Locations



The data collected at the first three locations were used to relate the automated traffic counts on North Shore Road and John Head Road to total vehicle visitation. As explained below in Section 3.2, the onsite data help control for duplicate daily reporting of the same vehicles, including entry and exit, multiple visits on the same day, and passthrough visitation. The data collected at the other three locations (two at the East End and one at Lameshur) were used to incorporate additional *unique* vehicle-based visitation observed at those locations (i.e., that was not covered by the data collected on North Shore Road or John Head Road).

To keep monthly visitor use reporting as simple as possible for the Park, vehicle visitation to all locations covered by the St. John Traffic Study can be estimated using only the automated traffic counts from Lind Point. The details of this estimation are described in Section 3.2. As stated in Chapter 2, the purpose of the automated traffic counters on John Head Road at Catherineberg and North Shore Road at Kings Hill is to provide redundancy in case the automated counter near Lind Point ever goes offline unexpectedly. The historical data from all three traffic counters will allow NPS to impute (i.e., "fill in") the missing data at Lind Point until the counter is put back online (e.g., by replacing batteries).

For each passing vehicle observed at a monitoring location during onsite data collection, field staff recorded the time the vehicle passed, the direction of the vehicle (i.e., in or out of the Park), the license plate, the type of vehicle (i.e., NPS, taxi, work vehicle, or passenger vehicle), and the number of people in the vehicle. The onsite data collection materials are provided in Appendix C (see the Field Study Handbook, Site-Specific Protocols for Onsite Study #1, and the Study #1 count sheet). Collectively, this information was used to understand the traffic patterns at the monitored

locations, including the number of entries and exits by location, the number of visits per day (in the case of multiple visits), the type of visit (i.e., recreation, non-recreation, or non-reportable (i.e., NPS employees)), and the number of people per vehicle (to estimate total number of visitors rather than vehicles). Recording license plates was particularly important for tracking duplicate observations of the same vehicle.

Training for the study occurred on Wednesday, February 11, 2026. The study was conducted from 7 am to 6 pm on Thursday to Sunday, February 12th through 15th. Field staff worked across the six monitoring locations to record information about every passing vehicle. The information was recorded on the Study #1 count sheets and then entered into Excel by FVINP. In total, 13,728 passing vehicles were recorded during the study. Section 3.2 describes how these data were analyzed and presents the results. Figures 3-2 and 3-3 show photographs of field staff collecting data for this study.

Figure 3-2. Field Staff Monitoring the NPS Boundary along Haulover Bays (East End Area)



Figure 3-3. Field Staff Monitoring at Lameshur (End of Route 107)



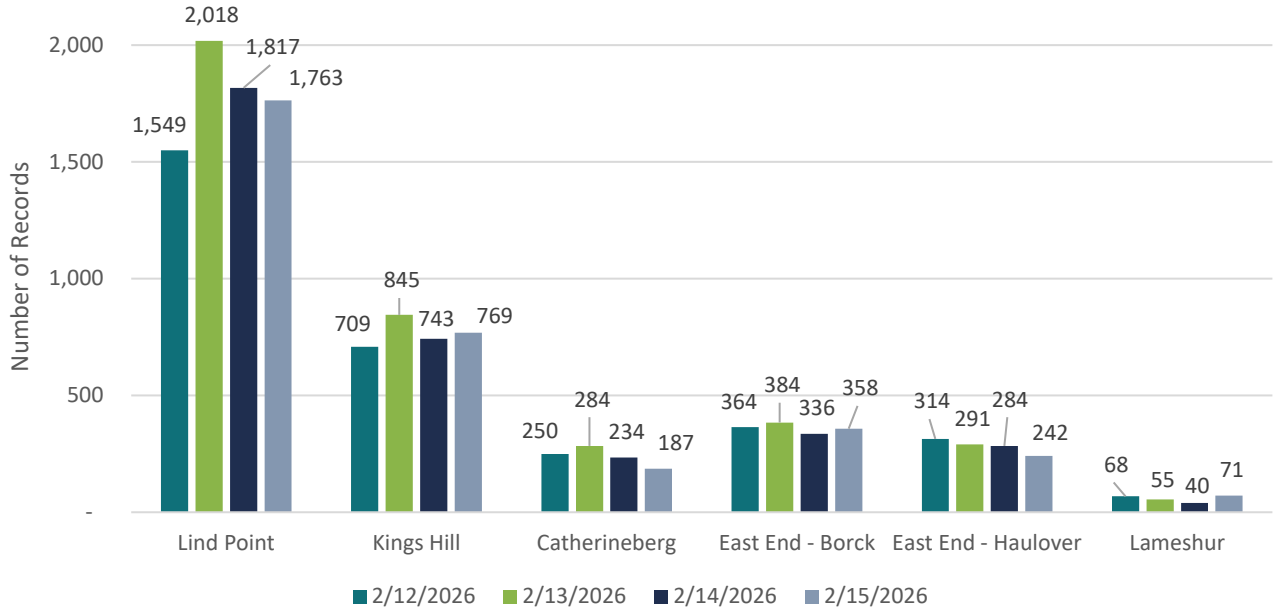
3.2 Analysis Approach and Results

In the bullets below, we describe the analysis approach and results for the St. John Traffic Study. We then describe how those results informed the updated counting instructions in Appendix A for estimating recreation and non-recreation traffic visitation in the Park on St. John.

- As a first step, we separated out the 13,728 records into a summary of vehicles counted by monitoring location and day. This yielded counts at each of the six locations for two weekdays and two weekend days.[19]
- Figure 3-4 provides a bar chart summary of the counts by monitoring location and day. Lind Point was by far the busiest monitoring location with an average of 1,787 records per day. The least busy monitoring location was Lameshur with 59 records observed per day, on average.

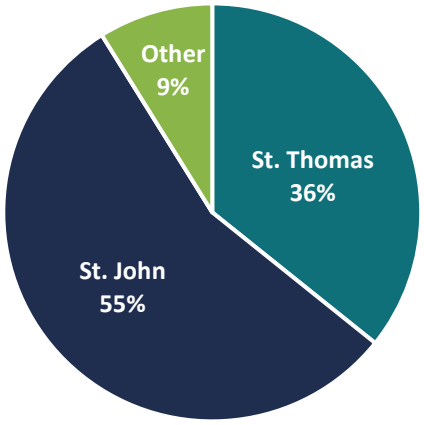
[19] Over the course of the study, the sampling team was unable to collect data during a few shifts, namely the weekday afternoon shift (i.e., 12:30 pm to 7 pm) on Friday, February 13th at Lameshur, as well as the weekend morning shift (i.e., 7 am to 12:30 pm) on Sunday February 15th at the two East End sites and Lameshur. Vehicle counts for these missed shifts were imputed using the average count from the other three shifts for the same sites.

Figure 3-4. Number of Records by Monitoring Location and Day



- Using the recorded license plates, we determined the percentage of vehicles registered on St. John (i.e., those beginning with "J" and all taxis), St. Thomas (i.e., those beginning with "T"), and other places (Figure 3-5). The "other" category likely includes some vehicles registered on St. John or St. Thomas, but it is not clear based on the license plate (e.g., license plates beginning with "FP" are "Friends of the Park," but the registration location is unknown). Most vehicles observed during the study were registered on St. John.

Figure 3-5. Vehicle Registration Locale Indicated by License Plates



- Next, we consolidated records for non-taxi vehicles with the same license plate on a given day into a single vehicle-day record. Each vehicle-day represents a unique visit by a vehicle to the Park for that day. Since taxis transport different passengers throughout a single day,

we treat each taxi round trip as a separate vehicle-day. We consolidated the 13,728 records into 6,633 vehicle-days (simply referred to as "vehicles" for the rest of this section).

- Next, we classified each vehicle according to their visitation purpose: recreation, non-recreation, or non-reportable (i.e., NPS).
    - As part of each record, we have the vehicle type (i.e., NPS, taxi, work vehicle, or passenger vehicle), which was used to classify NPS vehicles as non-reportable, taxis as recreation[20], and work vehicles as non-recreation.
    - Passenger vehicles could not be classified as recreation or non-recreation based on the vehicle type. Instead, we used the amount of time spent within one of the three St. John Traffic Study areas (i.e., the North Shore Area, East End Area, or Lameshur Area; refer to Figure 3-1) to determine the type of visit.
        - A passenger vehicle was classified as recreation if the time between entry and exit for a given area exceeded the amount of time it would take to pass through the area. This indicated that the vehicle dwelled in the area and likely engaged in recreation. The threshold was 30 minutes for the North Shore Area and 10 minutes for the East End Area and Lameshur Area.
        - A passenger vehicle was classified as non-recreation if the time between entry and exit was below these thresholds, indicating they were just passing through (or turning around in the case of Lameshur).
        - If a passenger vehicle was classified as recreation for at least one area on a given day, it was treated as recreation even if it was a passthrough vehicle at another time on the same day (e.g., in a different area).
    - In limited cases, passenger vehicles were observed for the first time on a given day leaving the Park (rather than entering). These vehicles were classified as non-recreation because some people live in the Park, so these vehicles were assumed to be residents.[21]
    - Some passenger vehicles could not be classified due to gaps or errors in the data collection. For example, field staff might have missed recording the license plate for a vehicle if several vehicles passed in quick succession. Additionally, field staff likely made occasional errors in recording a license plate or other data field (e.g., transposing two characters on a license plate).
        - We collectively classified these indeterminate records to reflect the same proportion of recreation and non-recreation vehicles from the cases that could be classified using the rules above.

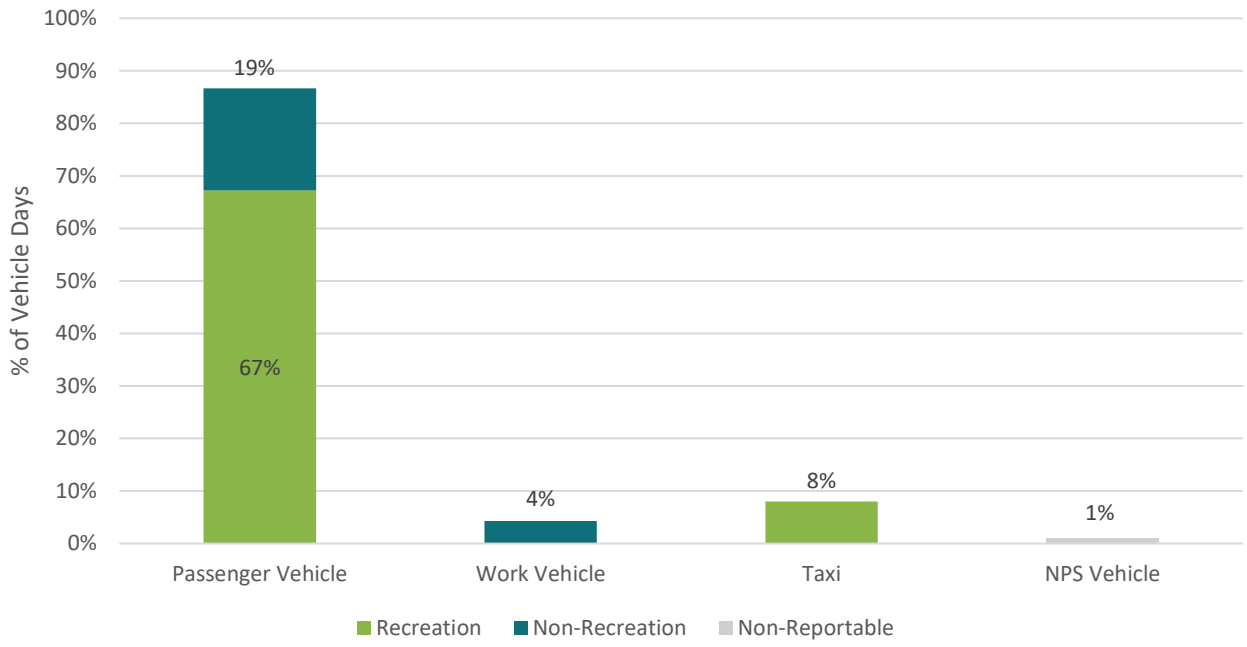
[20] For taxis, the number of recreators in the vehicle is equal to the number of people in the vehicle minus one to account for the driver. The driver is considered a non-recreator. People-per-vehicle calculations are described later in this section.

[21] This is a conservative assumption because some visitors at the Park for recreation can rent lodging in the Park. This is a small source of uncertainty in the estimates of recreation and non-recreation vehicle visitation because only a small percentage of vehicles were observed leaving the Park for the first time on a given day.

- These indeterminate records required one additional consideration. Because these records likely resulted from a gap or error in data collection, they could not be matched with other records for the same vehicle. For example, if a vehicle that went in and out of the Park on a given day was recorded as having two different license plates (i.e., due to a transposition error in one case), there would be two records for this vehicle. However, the two records *should* only represent one unique visit. To account for this, we divided the total number of vehicle days for these indeterminate records by two. This assumes that all unclassified passenger vehicles matched with another unclassified passenger vehicle.[22]

- Figure 3-6 shows the percentage of vehicles that were classified as having a visitation purpose of recreation, non-recreation, and non-reportable by vehicle type.

Figure 3-6. Percentage of Vehicles by Vehicle Type and Visitation Purpose



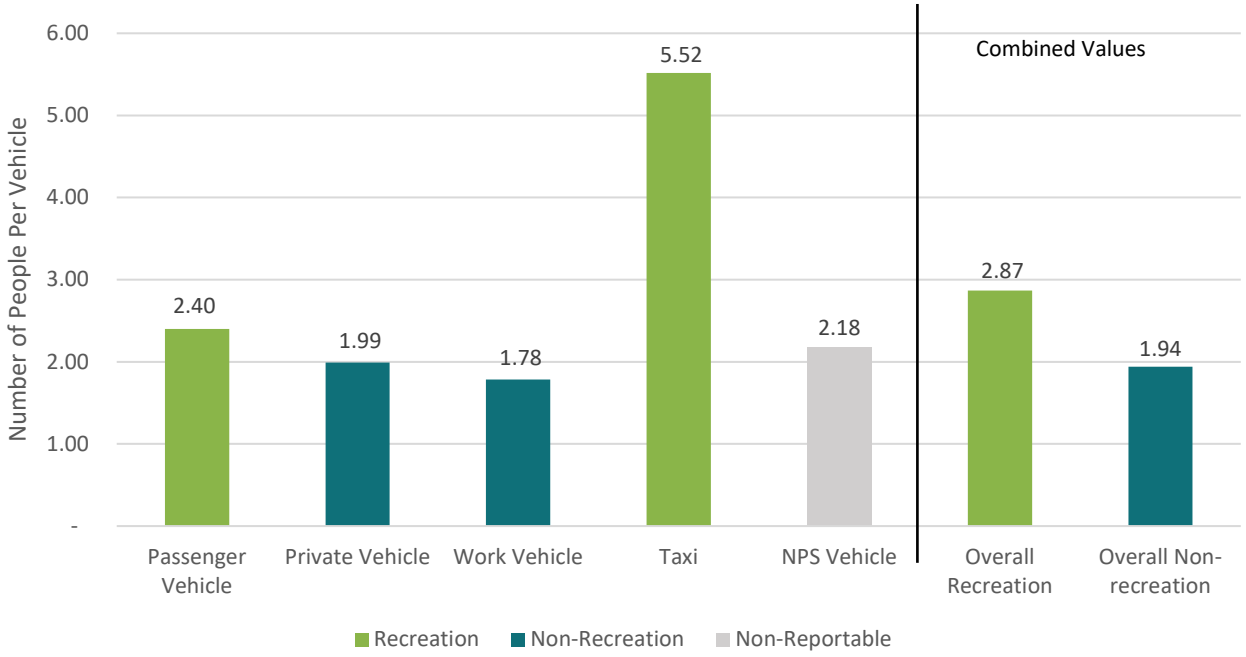
- Next, we applied a weighting approach to convert the total vehicles on each day into a weighted average daily vehicle count. This calculation was done separately for each vehicle type and visitation purpose, a level of resolution needed for the next step where vehicles are converted to the number of visitors.
    - We first averaged results for the two weekday counts to represent a "composite" weekday, and then did the same for results for the two weekend counts to represent

[22] We considered one alternative method for dealing with these indeterminate records and found only a modest difference in the final results. Under this alternative, instead of dividing by two, we deflated the total number of vehicle days for these indeterminate records by the average number of times that unique classified recreation and non-recreation vehicles appeared in the data. The total estimate only changed by four percent using this approach.

a composite weekend day. We then multiplied the composite weekday results by five and the composite weekend day results by two, added those two products together, and divided the sum by seven to calculate the weighted average daily vehicle count.

- To calculate the average number of daily visits, we multiplied each weighted average daily count (i.e., by vehicle type and visitation purpose) by a corresponding estimate of average people per vehicle.
    - We calculated the average number of people per vehicle using the same weighting approach described above; the results for each vehicle type and visitation purpose are shown in Figure 3-7.
    - Overall, the average number of people per recreation vehicle was 2.87. For non-recreation vehicles the average was 1.94.

Figure 3-7. People Per Vehicle by Vehicle Type and Visitation Purpose



- The average daily visit estimates were separated into visits observed at Lind Point, unique visits observed at Catherineberg or Kings Hill (i.e., for vehicles that did not pass through Lind Point), unique visits observed at the East End (i.e., for vehicles that did not pass through the North Shore Area), and unique visits observed at Lameshur (i.e., for vehicles that did not pass through the North Shore or East End Areas). These calculations were based on the license plate information and provided estimates of visitation relative to Lind Point.
    - Of the visits observed at Lind Point, 79.9 percent of vehicles were classified as recreation, 18.6 percent were non-recreation, and 1.5 percent were non-reportable.

- For recreation, we found that relative to Lind Point, an additional 29.6 percent of visits occurred at Catherineberg or Kings Hill but not at Lind Point, an additional 9.2 percent of visits occurred in the East End but not in the North Shore Area, and an additional 2.9 percent of visits occurred only at Lameshur.
- For non-recreation, we found that relative to Lind Point, an additional 45.1 percent of visits occurred at Catherineberg or Kings Hill but not at Lind Point, an additional 47.2 percent of visits occurred in the East End but not in the North Shore Area, and an additional 2.0 percent of visits occurred only at Lameshur.

As described in the bullets below, we used the following information to update the counting instructions for estimating traffic visitation in the Park on St. John: the number of vehicles recorded passing Lind Point during the onsite study, counts from the automated counter near Lind Point, and the analysis results above.

- The first step in the counting instructions is to calculate the number of recreation and non-recreation visits passing Lind Point during daytime hours (i.e., 7 am to 6 pm). Vehicles passing by from 6 pm to 7 am are assumed to be non-recreation visits (as described further below).
  - We compared the number of vehicles passing Lind Point during the onsite study to the counts from the automated traffic counter for the same time (i.e., 7 am to 6 pm). We found that the weighted average daily ratio of the number of vehicles recorded passing the study site to the number of vehicles recorded by the automated counter was 1.11. Further, from the onsite study data, we calculated the average number of times the same vehicle passed Lind Point during a single day, which was 1.85 times. To get the number of unique vehicles from the daytime automated counter data at Lind Point, the count needs to be multiplied by 1.11 and divided by 1.85. This is equivalent to multiplying the traffic count from the automated counter by 0.598, which is the first step in the updated counting instructions.
  - The next step is to multiply the previous result by 79.9 percent and 18.6 percent to estimate the number of recreation and non-recreation vehicles, respectively, passing through Lind Point.[23]
  - Finally, the previous result is multiplied by 2.87 people per recreation vehicle and 1.94 people per non-recreation vehicle to get the number of recreation and non-recreation visits passing through Lind Point.
- The next step in the counting instructions is to apply a series of adjustments that account for recreators and non-recreators who do not pass through Lind Point.
  - To account for additional recreation and non-recreation visits at Catherineberg or Kings Hill, the Lind Point recreation count from above is multiplied by 29.6 percent and the non-recreation count is multiplied by 45.1 percent.

[23] The remaining 1.5 percent of vehicles are non-reportable (i.e., NPS).

  - To account for additional recreation and non-recreation visits at the East End, the Lind Point recreation count from above is multiplied by 9.2 percent and the non-recreation count is multiplied by 47.2 percent.
  - To account for additional recreation and non-recreation visits at Lameshur, the Lind Point recreation count from above is multiplied by 2.9 percent and the non-recreation count is multiplied by 2.0 percent.

- Finally, it is assumed that all traffic passing by Lind Point between 6 pm and 7 am is non-recreation visitation. To get an estimate of these non-recreation visits overnight, the traffic count from the automated counter between 6 pm and 7 am is multiplied by 1.94 (i.e., the number of people per non-recreation vehicle from above).

CHAPTER 4 | North Shore Visitor Use and Parking Study

4.1 Study Overview

The North Shore Visitor Use and Parking Study was conducted in February 2026 and involved counting visitors to north shore beaches and Annaberg Ruins to construct quantitative factors that relate NPS Trunk Bay fee data to visitation at other north shore sites. The study also involved counting parked vehicles at sites along the north shore to understand parking supply and demand, as well as the extent and location of parking in non-designated areas.

The north shore beaches and ruins included in this study are shown in Figure 4-1 and referenced in the Appendix C study materials. They include (from west to east):

1) Salomon Beach;
2) Honeymoon Beach;
3) Caneel Bay Beach;
4) Hawksnest Beach;
5) Trunk Bay Beach;
6) Cinnamon Bay Beach;
7) Maho Bay Beach;
8) Francis Bay Beach; and
9) Annaberg Ruins.

The north shore parking areas included in this study are also shown in Figure 4-1 and referenced in the Appendix C study materials. They include (from west to east):

1) Lind Point;
2) Caneel Bay Beach;
3) Hawksnest Beach;
4) Peace Hill;
5) Jumbie Beach;
6) Trunk Bay Beach;
7) Cinnamon Bay Beach;
8) Maho Bay Beach;
9) Francis Bay Beach; and
10) Annaberg Ruins.

Figure 4-1. Locations of North Shore Beaches/Ruins and Parking Study Sites



The counts at north shore beaches and Annaberg Ruins were conducted simultaneously on a given day by nine different field staff. At each beach site, a field staff member would walk the length of the beach at the prescribed start time and count all recreators on the beach and in the water who were not on a boat.[24] For sites with additional interior areas where recreators might also be present (e.g., the beach equipment rental area, food trucks, and restaurant at Cinnamon Bay Beach), the field staff member walked through the interior areas to conduct an additional count. At Annaberg Ruins, the field staff member walked the trail loop around the site to count visitors. By conducting the counts concurrently at nine sites, the data from a given day reveal the relative intensity of visitation across the sites. As explained below in Section 4.2, because comprehensive visitation data are collected daily at Trunk Bay (through the collection of fees for each visitor), these relative use estimates can be applied to the daily Trunk Bay fee data to estimate visitation at the other north shore sites.

The counts at the north shore parking areas were conducted by two staff members immediately after the beach/ruins counts. One person drove the vehicle and the other person rode along and conducted the counts. Specifically, the driver would drive through or by each lot (and surrounding areas where vehicles were known to park) and the counter would record the number of vehicles parked in designated spots and the number of vehicles parked in non-designated spots.

The onsite data collection materials for both parts of the study are provided in Appendix C (see the Field Study Handbook, Site-Specific Protocols for Onsite Study #2, and the Study #2 count sheets).

[24] Boat-based visitation was captured separately in the Boating Study.

The protocols include maps showing the boundaries of the count areas at beaches, Annaberg Ruins, and designated parking lots and adjacent areas.

It is important to note that the results of this study were not directly relied upon to update the counting instructions in Appendix A. However, the information collected provides supporting information for Park management, including for understanding use at all north shore beaches and Annaberg Ruins relative to Trunk Bay, as well as for managing the longstanding (and growing) issue of parking in non-designated areas.

Training for the study occurred on Wednesday, February 11, 2026. The counts at north shore beaches and Annaberg Ruins (with parking counts during the following few hours) were conducted at 10 am on Tuesday, February 17th; 1 pm on Wednesday, February 18th; 10 am on Saturday, February 21st; and 1 pm on Sunday, February 22nd. The beach/ruins and parking counts were recorded on the Study #2 count sheets and then entered into Excel by the IEc Team. In total, 36 counts were conducted at the beaches/ruins (9 sites x 4 days) and 80 parking counts were conducted (10 counts of designated parking areas per day + 10 counts of non-designated parking areas per day and 4 days of counts). Section 4.2 describes how these data were analyzed and presents key results.

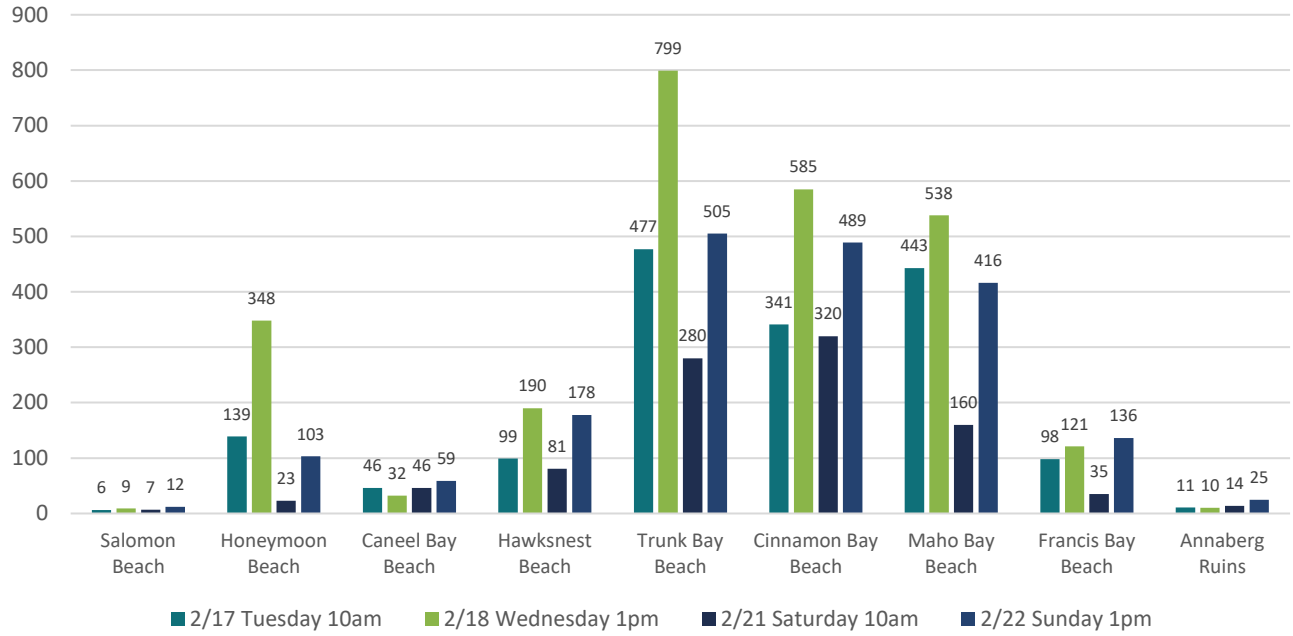
4.2 Analysis Approach and Results

In the bullets below, we outline our analysis approach and results for the North Shore Visitor Use and Parking Study. We begin by describing our analysis and results for the beach/ruins counts, and then discuss our analysis and results for the parking counts.

- For the beach/ruins counts, as a first step, we separated out the 36 records covering 7,181 people into a summary of people counted by beach/ruins and day. This yielded counts at each beach/ruins for one weekday morning shift (i.e., 10 am), one weekday afternoon shift (i.e., 1 pm), one weekend morning shift, and one weekend afternoon shift.[25]
- Figure 4-2 provides a bar chart summary of the counts by beach/ruins and shift.
    - The counts ranged from a low of six people at Salomon Beach during the weekday morning shift on Tuesday, February 17th to 799 people at Trunk Bay Beach during the weekday afternoon shift on Wednesday, February 18th.
    - Across all nine beach/ruins, the total count ranged from 966 people during the weekend morning shift on Saturday, February 21st to 2,632 people during the weekday afternoon shift on Wednesday, February 18th.

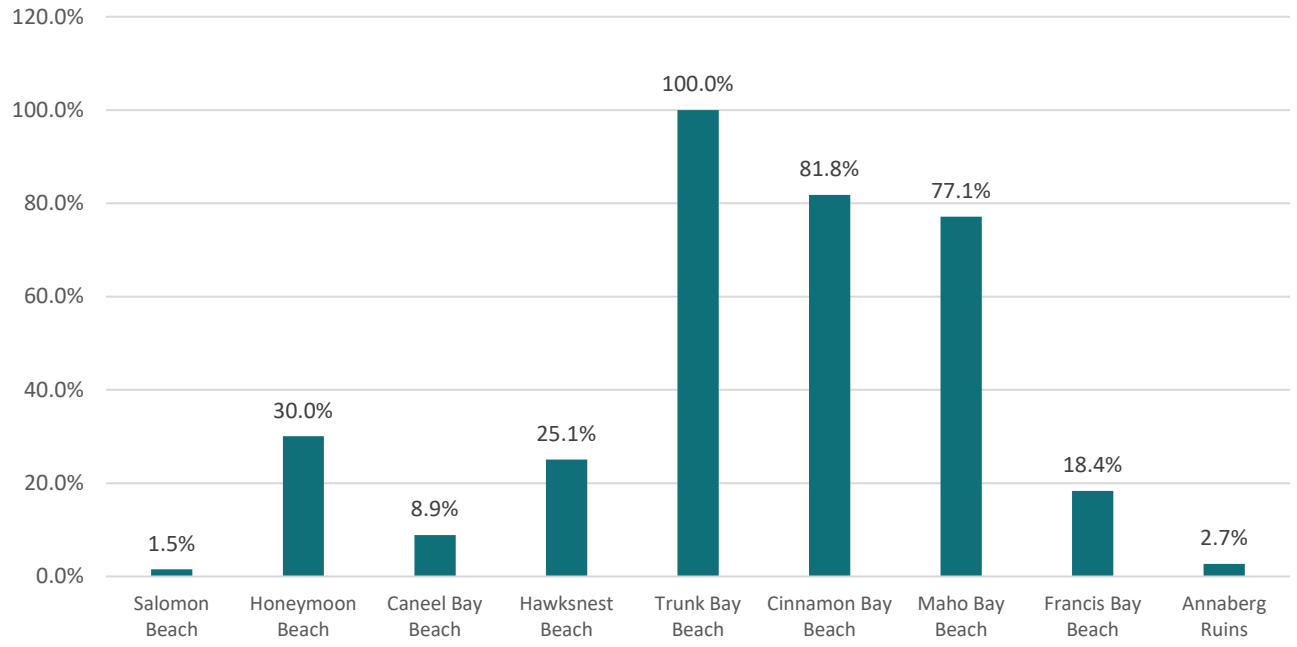
[25] For Maho Bay Beach, the sampling team was unable to conduct a count of the interior area on the weekend morning shift on Saturday, February 21st. We imputed a count for this missing data point by taking the weekend afternoon count for this site's interior area (i.e., 76), and scaling it by the relative ratio of the weekday morning and afternoon counts for the same area (i.e., 28/113), which yielded an estimated weekend morning count of 18.8 people. We added this result to the 141 people counted on the beach for a total estimated count of 159.8 people on Maho Bay Beach during the weekend morning shift of Saturday, February 21st.

Figure 4-2. Counts by Beach/Ruins and Shift



- Next, we applied a weighting approach to calculate the average relative visitation at each beach/ruins relative to Trunk Bay Beach.
    - We first calculated the count for each beach/ruins relative to Trunk Bay Beach for each type of shift (i.e., weekday morning, weekday afternoon, weekend morning, and weekend afternoon), which yielded relative factors by beach/ruins and shift.
    - We then averaged the relative ratios of the weekday morning and afternoon counts to represent a "composite" weekday relative factor, and then did the same using the two weekend shifts to represent a composite weekend relative factor. We then multiplied each beach/ruin's composite weekday relative factor by five and each beach/ruin's composite weekend relative factor by two, added those two products together, and divided the sum by seven to calculate the weighted average relative factor for each beach/ruins relative to Trunk Bay Beach.
- Using the weighted average relative factors for each beach/ruins, Figure 4-3 provides a summary of visitation relative to Trunk Bay Beach, which is set to 100 percent.
    - Visitation at the other beach/ruins ranged from a low of 1.5 percent for Salomon Beach to a high of 81.8 percent for Cinnamon Bay Beach.
    - Across all nine beach/ruins, total visitation relative to Trunk Bay Beach was 345.6 percent, indicating that use at the eight beach/ruins other than Trunk Bay Beach is approximately equal to an additional 2.5 times that of Trunk Bay Beach.

Figure 4-3: Beach/Ruins Visitation Relative to Trunk Bay Beach



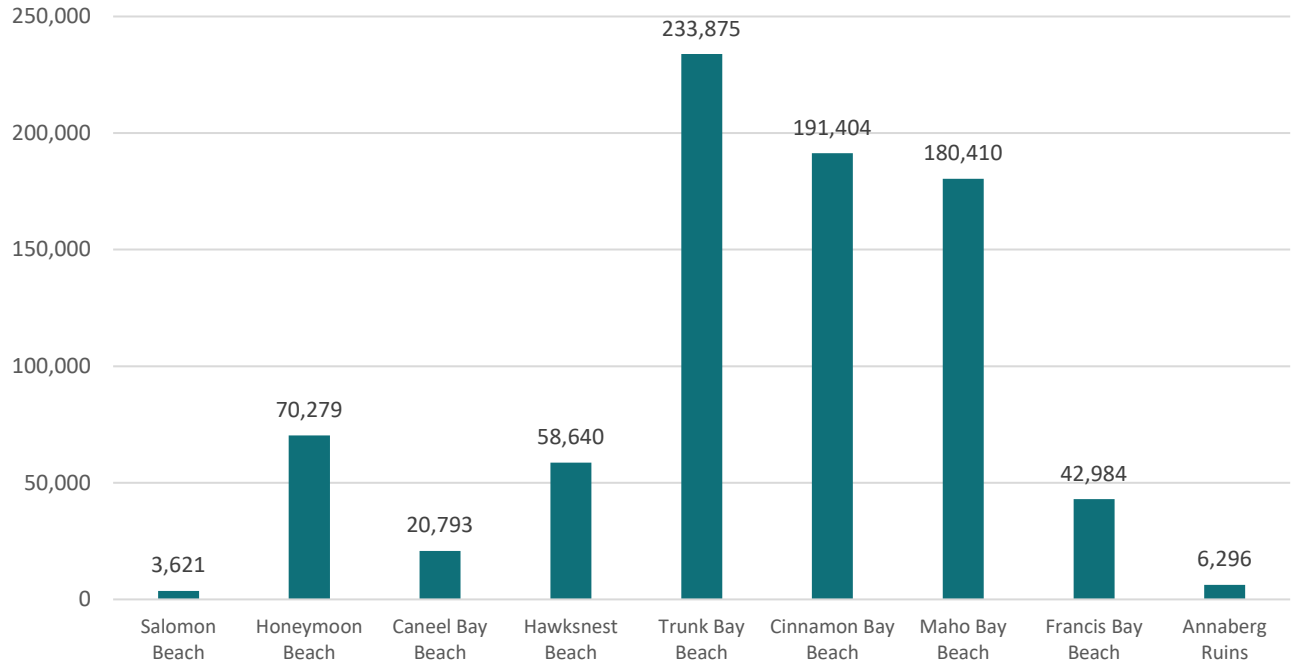
- Finally, we applied these relative factors to the number of visits recorded in Trunk Bay Beach fee data for 2025 in order to estimate total annual beach use for the other eight beaches/ruins. These estimates provide new data for the Park to consider, as daily visitation data are currently collected only at Trunk Bay Beach.
- Figure 4-4 provides a summary of the estimated number of annual visits by beach/ruins in 2025.
    - There were 233,875 visits recorded at Trunk Bay Beach in 2025, which are estimated directly using the existing fee data.[26]
    - The number of visits at the other beach/ruins in 2025 are estimated using the relative factors from Figure 4.3. The estimates ranged from a low of 3,621 at Salomon Beach (i.e., 1.5 percent of Trunk Bay Beach) to a high of 191,404 at Cinnamon Bay (i.e., 81.8 percent of Trunk Bay Beach).[27]
    - Across all nine beach/ruins, the estimated total number of visits in 2025 is 808,301 (i.e., approximately 3.5 times the number of visits recorded at Trunk Bay Beach alone). This is consistent with the estimate of 889,759 visits from vehicles captured in the St. John Traffic Study visits, as presented in Chapter 1.3 of this report. That estimate included the North Shore Road area, as well as the East End and Lameshur

[26] The Trunk Bay Beach data provided by the Park covered January 1 through December 21, 2025. In order to annualize these data over the full year, we estimated the number of visits at this site for the remainder of 2025 (i.e., December 22-31) by applying the daily average count for the preceding week (i.e., December 15-21). This amounted to approximately 630.1 visits per day.

[27] There is some uncertainty in these estimates at the individual beach level due to the small sample sizes from the data collection. However, the estimate across all eight non-Trunk Bay Beach sites relative to Trunk Bay is more certain given the larger combined sample size. Still, these estimates by beach provide a sense for relative use across sites.

areas, so it makes sense that it is a bit bigger than the estimate for just North Shore beaches/ruins.

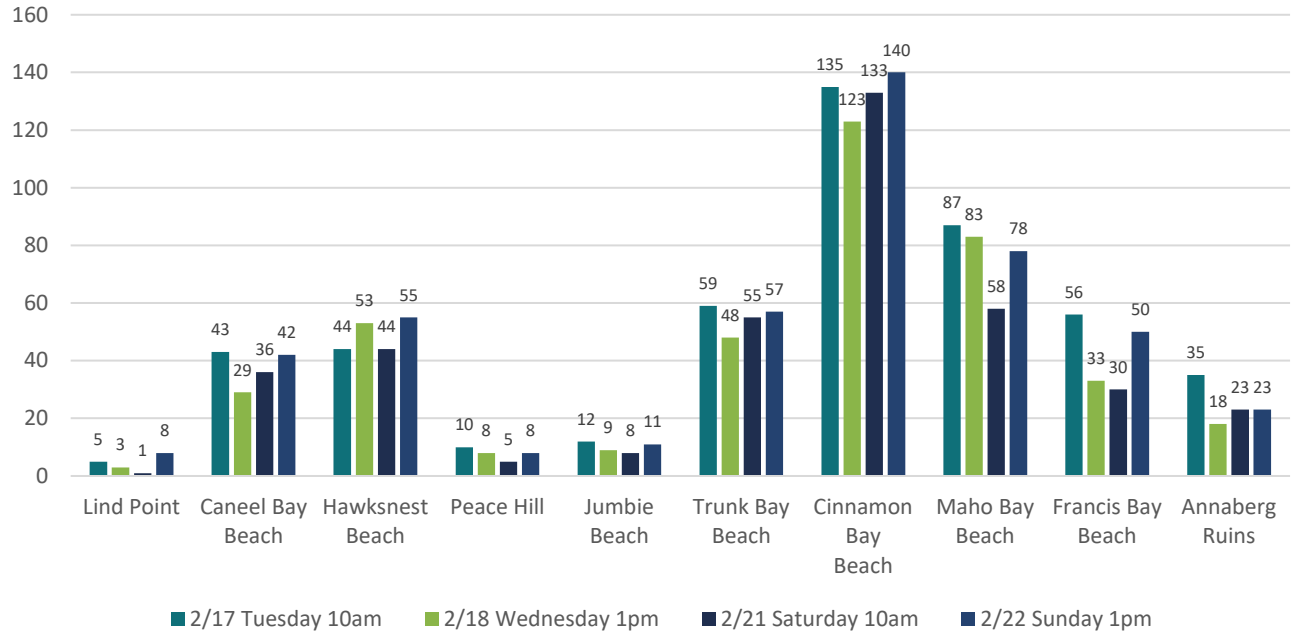
Figure 4-4: Estimated Number of Annual Visits by Beach/Ruins in 2025



We now describe our analysis and results for the parking study.

- As a first step, we separated out the 80 records associated with parking counts in designated and non-designated spots, which covered a total of 1,758 parked vehicles, into a summary of total parking counts by parking area and day. This yielded parking counts at each parking area (simply referred to as a "site" for the rest of this section) for one weekday morning shift (i.e., 10 am), one weekday afternoon shift (i.e., 1 pm), one weekend morning shift, and one weekend afternoon shift.
- Figure 4-5 provides a bar chart summary of the total parking counts by site and shift.
    - The parking counts ranged from a low of one vehicle at Lind Point during the weekend morning count on Saturday, February 21st to a high of 140 vehicles at Cinnamon Bay Beach during the weekend afternoon count on Sunday, February 22nd.
    - Across all ten sites, the total parking count ranged from 393 vehicles during the weekend morning count on Saturday, February 21st to 472 vehicles during the weekend afternoon count on Sunday, February 22nd.

Figure 4-5: Parking Counts by Site and Shift

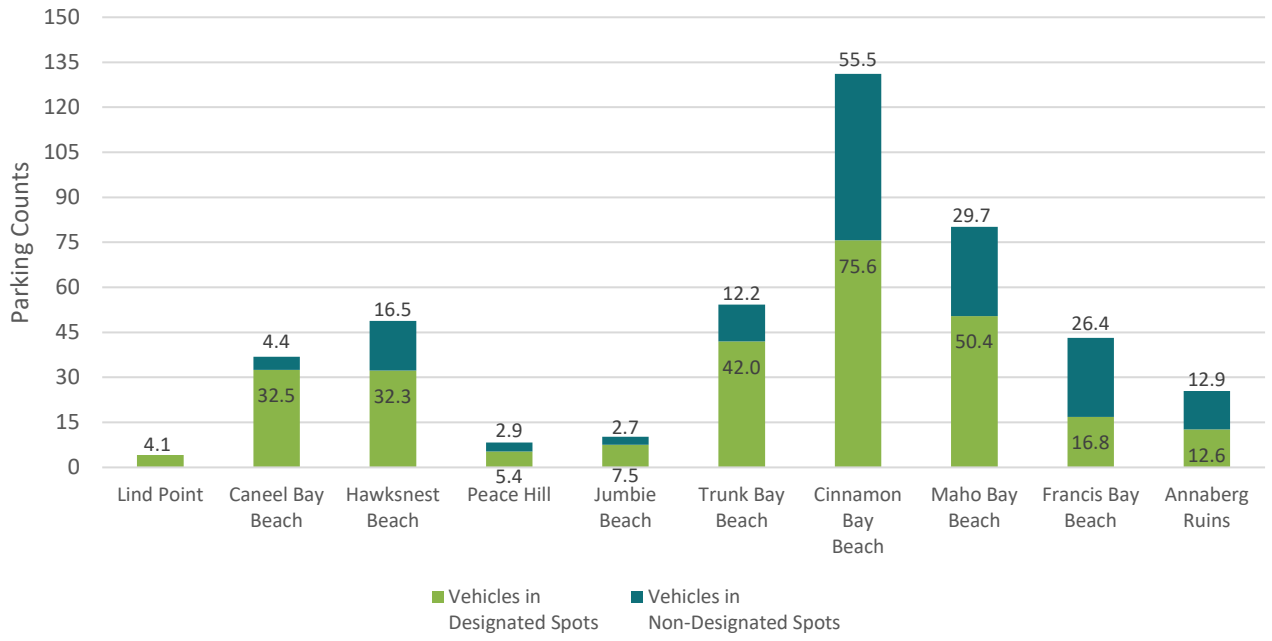


- Next, we analyzed the parking counts separately for designated and non-designated spots. We applied the same weighting approach described above to convert the shift-specific parking counts into weighted average parking counts for designated spots, non-designated spots, and total spots, by site.
- Table 4-1 and Figure 4-6 provide a tabular and bar chart summary of the weighted average parking counts in designated and non-designated spots by site.
    - The average total parking count by site ranged from a low of 4.1 at Lind Point to a high of 131.1 at Cinnamon Bay Beach.
    - The average percentage of total parking in designated spots ranged from a low of 39 percent at Francis Bay Beach (16.8 out of 43.2 total) to a high of 100 percent at Lind Point (4.1 out of 4.1 total).

Table 4-1: Weighted Average Parking Counts by Site

Site	Parking Counts in Designated Spots	Parking Counts in Non-Designated Spots	Total Parking Counts	Percentage in Designated Spots
Lind Point	4.1	0.0	4.1	100%
Caneel Bay Beach	32.5	4.4	36.9	88%
Hawksnest Beach	32.3	16.5	48.8	66%
Peace Hill	5.4	2.9	8.3	65%
Jumbie Beach	7.5	2.7	10.2	73%
Trunk Bay Beach	42.0	12.2	54.2	77%
Cinnamon Bay Beach	75.6	55.5	131.1	58%
Maho Bay Beach	50.4	29.7	80.1	63%
Francis Bay Beach	16.8	26.4	43.2	39%
Annaberg Ruins	12.6	12.9	25.5	50%
Total	279.3	163.2	442.5	63%

Figure 4-6: Weighted Average Parking Counts by Site



The results of the parking study will hopefully be useful to the Park, particularly for managing and reducing parking in non-designated areas (see Figures 4-7 through 4-9 for examples), which can cause damage to sensitive habitats or ruins, present safety issues, and cause traffic delays.

Figure 4-7. Vehicle Parked Too Close to North Shore Road at Trunk Bay with Parking Citation



Figure 4-8. Vehicle Over the Curb at Annaberg Ruins



Figure 4-9. Vehicle Parked Partially on North Shore Road



CHAPTER 5 | Red Hook Visitor Use Study

5.1 Study Overview

The Red Hook Visitor Use Study was conducted in March 2026 and involved counting and recording characteristics of vehicles and pedestrians entering the unnamed road leading to the NPS Dock in Red Hook on St. Thomas. The data were used to construct quantitative factors that relate the automated traffic counts to vehicle and walk-in visitation at the site. The monitoring location for this study was at the base of the unnamed road at the Park entrance (Figure 5-1). The entrance gates are open daily from 7 am to 4 pm.

Figure 5-1. Field Staff Monitoring Location in Red Hook (St. Thomas)



For each vehicle or group of pedestrians (also called a "party") entering the site during onsite data collection, field staff recorded the arrival time, the type of vehicle (i.e., NPS, taxi, work vehicle, or passenger vehicle) or pedestrian party (i.e., non-recreation or recreation), and the number of people in the vehicle or pedestrian party. Field staff also made a note next to any vehicles that parked near the base of the road and did not pass by the traffic counter.[28] Collectively, this information was used to understand the visitation patterns at the site and estimate vehicle and pedestrian use. The onsite data collection materials are provided in Appendix C (see the Field Study Handbook, Site-Specific Protocols for Onsite Study #3, and the Study #3 count sheets).

Training for the study occurred on Wednesday, March 11, 2026. The study was conducted from 12 pm to 4 pm on Thursday, March 12th; 7 am to 12 pm on Friday, March 13th; 12 pm to 4 pm on Saturday, March 14th; and 7 am to 12 pm on Sunday, March 15th. One field staff member worked at the site to record information about every vehicle and party of pedestrians entering the site. The information was recorded on the Study #3 count sheets and then entered into Excel by the IEc Team. In total, 49 vehicles and 12 people across seven pedestrian parties were observed entering

[28] These notes were used in the analysis to account for vehicles not captured by the automated traffic counter (see Section 5.2).

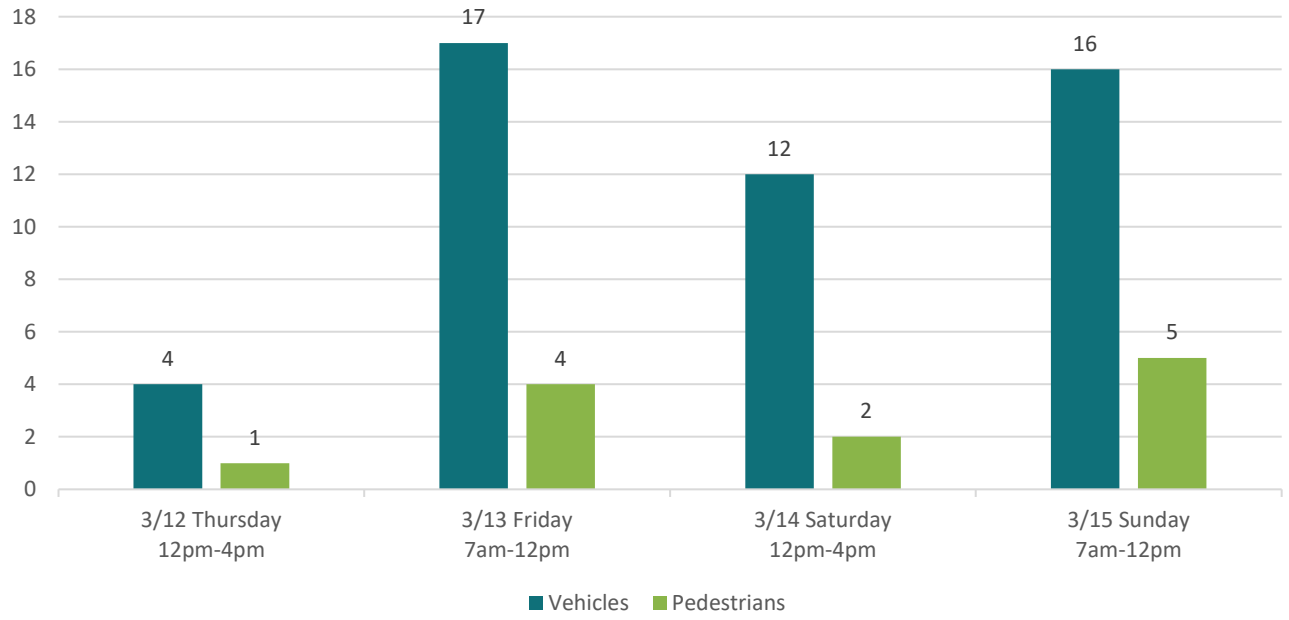
the site during the study. Section 5.2 below describes how these data were analyzed and presents the results.

5.2 Analysis Approach and Results

In the bullets below, we describe our analysis approach and results for the Red Hook Visitor Use Study. We then describe how those results informed the updated counting instructions in Appendix A for estimating recreation and non-recreation visitation at the site.

- First, we separated out the counts of vehicles and pedestrians by shift. Figure 5-2 provides a bar chart summary of the counts.
    - The vehicle counts ranged from a low of four vehicles on Thursday, March 12th to a high of 17 vehicles on Friday, March 13th. The pedestrian counts ranged from a low of one person on Thursday, March 12th to a high of five people on Sunday, March 15th.

Figure 5-2. Counts of Vehicles and Pedestrians by Shift



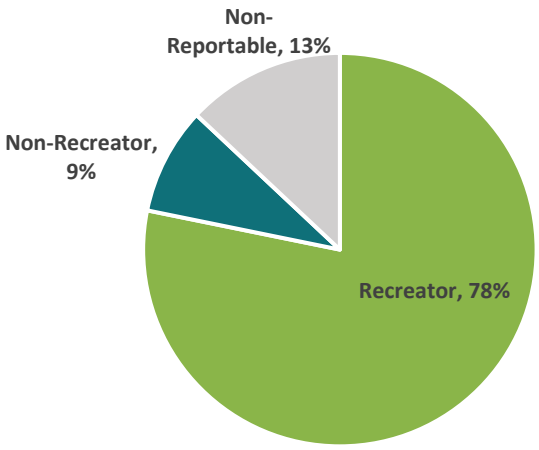
- Next, we classified each vehicle and pedestrian party according to their visitation purpose: recreation, non-recreation, or non-reportable (i.e., NPS). We used the recorded vehicle type to classify NPS vehicles as non-reportable, taxis as recreation[29], work vehicles as non-

[29] For taxis, the number of recreators in the vehicle is equal to the number of people in the vehicle minus one to account for the driver. We treat the driver as one non-recreator. People-per-vehicle calculations are described later in this section.

recreation, and passenger vehicles as recreation.[30] We used the recorded pedestrian party type to classify pedestrians as recreation or non-recreation.

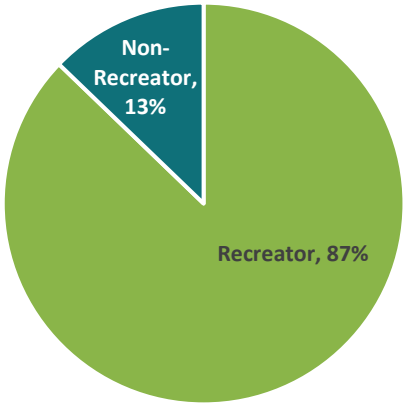
- Then, we applied a weighting approach to convert the shift-specific vehicle counts into a weighted average daily vehicle count. This calculation was done separately for each vehicle type and visitation purpose, a level of resolution needed for the next step where vehicles are converted to the number of visitors. The same weighting approach was applied to calculate the average daily pedestrian count.
    - We first added the weekday morning and afternoon counts together to represent a "composite" weekday, and then did the same using the two weekend day shifts to represent a composite weekend day. We then multiplied the composite weekday count by five and the composite weekend day count by two, added those two products together, and divided the sum by seven to calculate the weighted average daily vehicle count and pedestrian count.
- Based on the above calculations, Figures 5-3 and 5-4 present the distribution of people in vehicles and pedestrians by their visitation purpose.

Figure 5-3. People in Vehicles by Visitation Purpose



[30] Some passenger vehicles parked at the site to walk to Red Hook for work. In these cases, the field staff recorded the vehicle as a work vehicle. All other passenger vehicles were observed to be for recreation. For a few cases where the vehicle type was not recorded, we collectively assigned these records to match the proportion of recreation, non-recreation, and non-reportable vehicles in the records where vehicle type was recorded.

Figure 5-4. Pedestrians by Visitation Purpose



- We also divided the average daily pedestrian count by the average daily vehicle count to calculate that pedestrian visitation is 12.8 percent of vehicle-based visitation.

- Because the number of people per vehicle was similar across recreation and non-recreation vehicles and there were very few non-recreation vehicles, we calculated a single average number of people per vehicle using the same weighting approach described above. The result was 1.84 people per vehicle.
- Finally, because the automated traffic counter was placed a short distance east of the entrance gate to avoid capturing vehicles stopping or turning around near the gate, some vehicles entering Red Hook during the onsite study parked near the entrance but did not pass the automated counter. Using the same weighting approach described above, we calculated an adjustment factor of 1.06 to apply to the automated traffic count and account for these vehicles.

As described in the bullets below, we used the following information to update the counting instructions for estimating traffic and pedestrian visitation on the unnamed road leading to the NPS Dock in Red Hook: the shift-specific counts of vehicles passing the automated traffic counter from the onsite study, counts from the automated counter at Red Hook, and the analysis results above.

- First, we compared the shift-specific counts of vehicles passing the automated traffic counter to the counts from the automated counter for the same times. We found very close agreement, meaning the automated traffic counts captured each vehicle twice, once as it passed the counter while entering the site and once while exiting. Accordingly, the first step in the updated counting instructions is to multiply the automated counts from the traffic counter by 0.5 to account for entry and exit. Further, the counting instructions specify only to use the traffic counter data between 7 am and 4 pm because that is when the site is open.
- Second, the previous result is multiplied by 1.06 to account for vehicles that do not pass the automated counter.

- Third, the previous result is multiplied by 78.2 percent and 8.8 percent to estimate the number of recreation and non-recreation vehicles, respectively.[31]
- The next step is to multiply the previous results by 1.84 people per vehicle to get the number of recreation and non-recreation visits (i.e., people) from vehicles.
- Finally, to calculate pedestrian, or walk-in, visitation, the unadjusted automated traffic count between 7 am and 4 pm is multiplied by 12.8 percent. Recreation and non-recreation visitors amongst walk-in users are estimated by applying weights of 87.2 percent and 12.8 percent, respectively.

[31] The remainder is non-reportable (NPS).

CHAPTER 6 | Boating Study

6.1 Study Overview

The Boating Study was conducted in March 2026 and involved counting and recording characteristics of boats at a range of locations along the north and south shores. The purpose of the study was to construct quantitative factors that relate boating visitation to the automated traffic counts on North Shore Road at Lind Point. Given the limited resources of the Park to monitor boat-based visitation on an ongoing basis, the results from this study will allow for the Park to estimate boating use based on the automated traffic counts, which is assumed to be generally correlated with land-based visitation.[32] The details of this estimation are described below in Section 6.2.

The study covered 11 boating locations, which are shown in Figure 6-1 and referenced in the Appendix C study materials. They include (from west to east on the north shore and continuing around to the south shore):

1) NPS Dock next to the Visitor Center ("NPS Dock");
2) Salomon and Caneel Bays;
3) Hawksnest Bay;
4) Trunk Bay;
5) Cinnamon Bay;
6) Maho and Francis Bays;
7) Leinster Bay;
8) Hurricane Hole (Borck Creek, Princess Bay, Otter Creek, and Water Creek);
9) Saltpond Bay;
10) Great Lameshur Bay; and
11) Little Lameshur Bay.

[32] This assumption was confirmed by the data collected for this study, as presented in Section 6.2. Also, this type of approach is used at other National Parks (e.g., Gulf Islands National Seashore). Because boating use in the Park is a significant source of visitation, a more detailed boating study might be useful in the future that incorporates surveys through onsite intercepts (i.e., to understand which areas/sites boats visit on a given day, how many people are aboard, etc.).

Figure 6-1. Boating Study Monitoring Locations



During study planning, it was determined that boating visitation to other locations in the Park was likely to be small, so data collection was limited to the locations above. A small adjustment is incorporated into the updated counting instructions in Appendix A to account for visitation to other locations.

Further, it was determined based on input from NPS and preliminary field observations that the NPS Dock, Salomon and Caneel Bays, and Maho and Francis Bays likely supported the most boating visitation. To make data collection effort most efficient, sampling effort was mostly focused on these three "primary" sites, while effort at the remaining "secondary" sites was more limited. Specifically, on a given day of the study, data collection occurred from 7 am to 6 pm at the three primary sites, but for only three hours in either the morning or the afternoon at half of the secondary sites.[33] The concurrent three-hour counts were used to estimate the relative boating use between the primary and secondary sites. This relative use was added to the full-day use estimates provided by the 7 am to 6 pm counts at the primary sites to estimate use at all sites (as described in further detail in Section 6.2).

The data collection protocols called for counting and recording information about boats departing from the NPS Dock or arriving to one of the bays. The decision to count departures from the NPS Dock, rather than arrivals, was a logistical decision, but the data and analysis would have been equivalent had field staff counted arrivals at that location. The logistical consideration was that field

[33] Hawksnest Bay, Trunk Bay, Cinnamon Bay, and Leinster Bay were monitored from 9 am to 12 pm on the first study day and from 12 pm to 3 pm on the third day. Hurricane Hole, Saltpond Bay, Great Lameshur Bay, and Little Lameshur Bay were monitored from 12 pm to 3 pm on the second study day and from 9 am to 12 pm on the fourth day.

staff could fill out some of the information about a boat as it was getting ready to depart (e.g., the name), rather than scrambling to write all the information as a boat arrived.

For each boat departing the NPS Dock or arriving to one of the bays during onsite data collection, field staff recorded the departure/arrival time, the boat name (and boat registration number, if visible), the boat type (i.e., tour, enforcement/rescue (including NPS), powerboat, monohull sailboat, catamaran sailboat, or dinghy), and the number of people on or associated with the boat.[34] Field staff made observations for each boat by looking through binoculars from a distance. In some cases, they could not see the boat name or the number of people onboard. In these cases, they were instructed to leave the corresponding fields blank. Finally, the number of boats moored in Salomon & Caneel Bays and Francis & Maho Bays were recorded at the start and end of the day (i.e., 6 am and 7 pm). These data were used to estimate overnight visitation, as explained in Section 6.2. The onsite data collection materials are provided in Appendix C (see the Field Study Handbook, Site-Specific Protocols for Onsite Study #4 & #5, and the Study #4 & #5 count sheet).[35]

Training for the study occurred on Wednesday, March 11, 2026. The study was conducted from 7 am to 6 pm on March 12th through 15th (i.e., Thursday through Sunday). Field staff worked across the 11 monitoring locations to record information about every boat departing the NPS Dock or arriving to one of the bays. The information was recorded on the Study #4 & #5 count sheet and then entered into Excel by FVINP. In total, 1,160 boats were counted over the course of the study. Section 6.2 describes how these data were analyzed and presents the results. Figures 6-2 and 6-3 show photographs of field staff collecting data for this study.

[34] The boat definitions and detailed protocols for recording these datapoints are provided in the Field Study Handbook in Appendix C.

[35] Originally, Onsite Studies #4 & #5 were separate studies, one for the north shore and one for the south shore. After a few months of study planning and design, they were combined into a single study. Several drafts of study materials and supporting study documents had already been circulated amongst members of the study team, which led to an established familiarity with the separate study numbers. For this reason, we retained the convention of referring to the single boating study as "Onsite Studies #4 and #5" in the onsite data collection materials.

Figure 6-2. Field Staff Monitoring at Cinnamon Bay

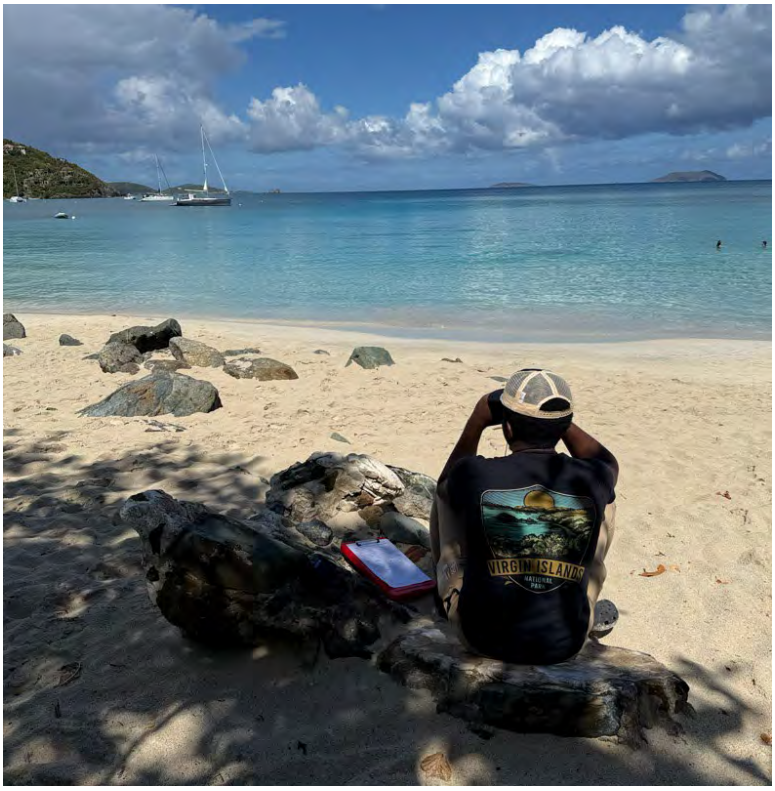


Figure 6-3. Field Staff Monitoring at Leinster Bay



6.2 Analysis Approach and Results

In the bullets below, we describe our analysis approach and results for the Boating Study. We then describe how those results informed the updated counting instructions in Appendix A for estimating recreation and non-recreation boating visitation in the Park, as well as overnight boating.

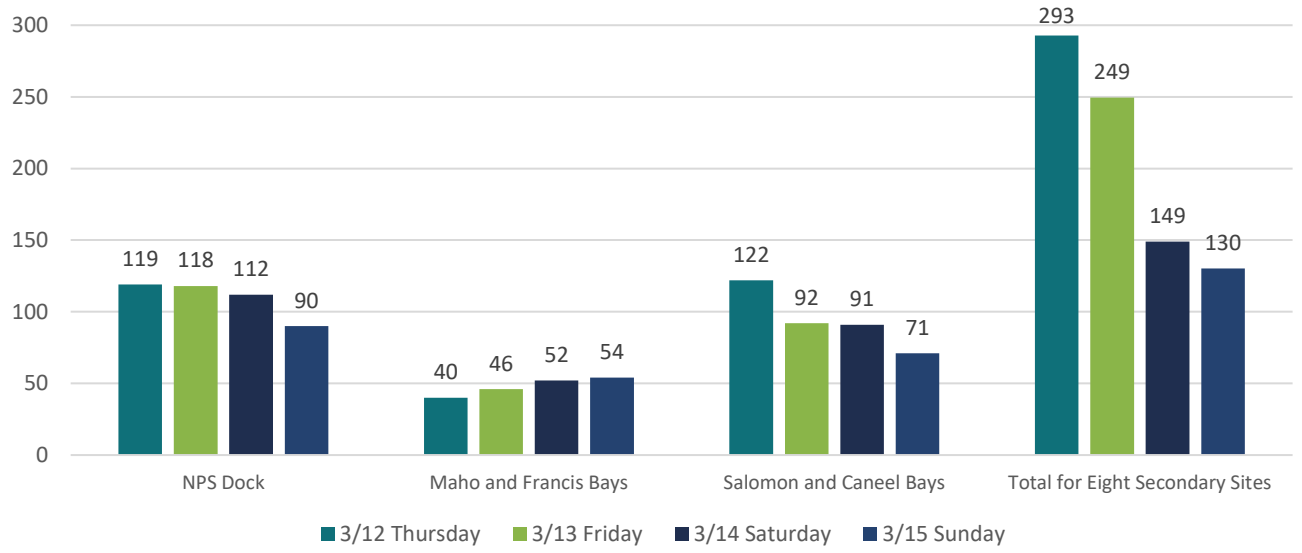
- As a first step, we separated out the 1,160 records into a summary of boats counted by site and day.
    - For the three primary sites (i.e., NPS Dock, Maho and Francis Bays, and Salomon and Caneel Bays), this yielded full-day counts (i.e., 7 am to 6 pm) at each site for two weekday shifts (i.e., Thursday and Friday, March 12-13) and for two weekend shifts (i.e., Saturday and Sunday, March 14-15). The full-day counts ranged from a low of 40 boats at Maho and Francis Bays during Thursday, March 12th to a high of 122 boats at Salomon and Caneel Bays on that same day.
    - For the eight secondary sites (in alphabetical order: Cinnamon Bay, Great Lameshur Bay, Hawksnest Bay, Hurricane Hole, Leinster Bay, Little Lameshur Bay, Saltpond Bay, and Trunk Bay), this yielded partial-day counts (i.e., 9 am to 12 pm or 12 pm to 3 pm) for one weekday (either the morning of Thursday, March 12th or the afternoon of Friday, March 13th) and one weekend day (either the afternoon of Saturday, March 14th or the morning of Sunday, March 15th).[36] The partial-day counts ranged from a low of one boat during the morning of Sunday, March 15th at Great Lameshur Bay and at Little Lameshur Bay, to a high of 24 boats on the morning of Thursday, March 12th at Leinster Bay.
- Next, for each three-hour morning or afternoon shift at the secondary sites, we compared the concurrent boat counts for the two primary bay sites (i.e., Maho & Francis Bays and Salomon & Caneel Bays) with the secondary sites.
    - For the three-hour weekday shifts, the two primary bay sites averaged 54.5 boats in total, while the eight secondary bay sites averaged 98.5 boats in total, for a weekday relative ratio of 180.8 percent for secondary sites to primary sites (i.e., 98.5 / 54.5 = 180.8 percent).
    - For the three-hour weekend shifts, the two primary bay sites averaged 54.0 boats in total, while the eight secondary bay sites averaged 56.3 boats in total, for a weekend relative ratio of 104.2 percent for secondary sites to primary sites (i.e., 56.3 / 54.0 = 104.2 percent).

[36] For Great Lameshur Bay and Little Lameshur Bay, the sampling team was unable to conduct counts for the weekend morning shift on Sunday, March 15th. We imputed boat counts for these missing data points by taking the weekday afternoon boat count for these sites (i.e., 4 boats each), and scaling them by the relative ratio of the weekend afternoon and weekday morning for the other two secondary sites that were sampled on Friday and Sunday (i.e., Hurricane Hole and Saltpond Bay, with a combined ratio of 4/25). This yielded estimated weekend morning counts of 0.6 boats at both sites (i.e., 4 times 4/25).

- These weekday and weekend relative ratios were applied to the 7 am to 6 pm boat counts on each day for the two primary bay sites to estimate full-day total boat counts across the eight secondary sites.

- Figure 6-4 provides a summary of the estimated full-day boat counts for each primary site and for the estimated total across the eight secondary sites.
  - For the eight secondary sites, the estimated full-day boat counts ranged from 130.3 boats on Sunday, March 15th to 292.9 boats on Thursday, March 12th.
  - Across all eleven sites, the estimated full-day boat counts ranged from a total of 345.3 boats on Sunday, March 15th to a total of 573.9 boats on Thursday, March 12th.

Figure 6-4. Full-Day Boat Counts by Primary Site and for All Eight Secondary Sites



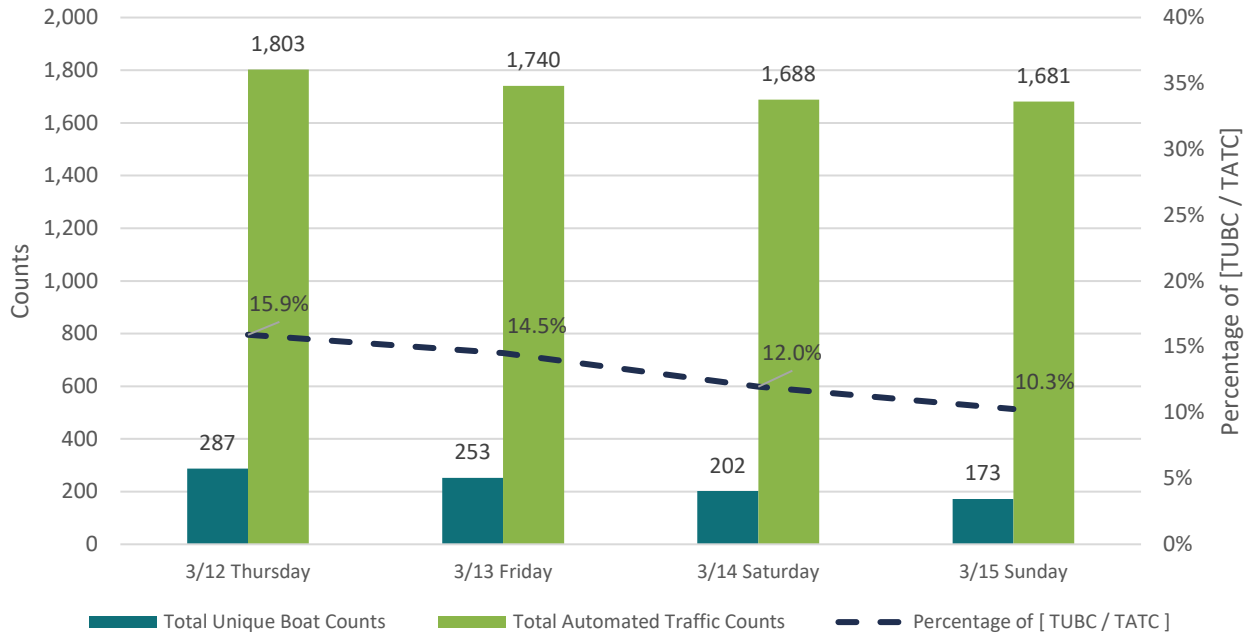
- Next, to calculate total unique boats by day, we developed and applied two adjustment factors to correct for potential double counting across sites.
  - First, based on a qualitative review of the raw boat count data, we estimated that boats visiting the 10 bay sites visited approximately 2.0 bay sites per day, on average.[37] We therefore divided the total full-day counts for these ten sites by a factor of 2.0.

[37] The raw boat count data had limited information with which to analyze the overlap of boats across multiple sites. Boat registration numbers were captured for less than 10 percent of the counted boats, and many of the named boats (e.g., Catzilla, Island Roots Charters, Sunshine Daydreams) have multiple boats in their fleet, which complicated the tracking of individual boats. Further, some tour boat observations captured varying numbers of people for the same boat in the same day, suggesting that midday turnover could further complicate the tracking of unique or duplicate boat counts (i.e., we would not want to treat an afternoon boat tour as a duplicate count of a morning tour if the same boat had different groups for the two timed tours). Based on our best interpretation of the limited available data, we developed the assumption of "2.0 bay sites per day, on average".

- Second, also based on a qualitative review of the raw boat count data, we estimated that half the boats visiting the NPS Dock also visit a bay site, on average.[38] We therefore multiplied the total full-day count for the NPS Dock site by a factor of 50 percent.

- By applying these adjustment factors, we converted the full-day boat counts for the primary and collective secondary sites into total full-day counts of unique boats in the Park for the four sampling days. We then compared these full-day unique boat counts with the automated traffic counts from the traffic counter on North Shore Road near Lind Point Road for the concurrent 11-hour period (i.e., 7 am to 6 pm). Figure 6-5 provides a summary of the two data points by day.
  - The full-day counts of total unique boats ranged from 172.6 boats on Sunday, March 15th to 286.9 boats on Thursday, March 12th.
  - The concurrent automated vehicle counts for this same period ranged from 1,681 vehicles on Sunday, March 15th to 1,803 vehicles on Thursday, March 12th.
  - Total unique boat counts as a percentage of total automated vehicle counts ranged from 10.3 percent on Sunday, March 15th to 15.9 percent on Thursday, March 12th, as shown in Figure 6-5.

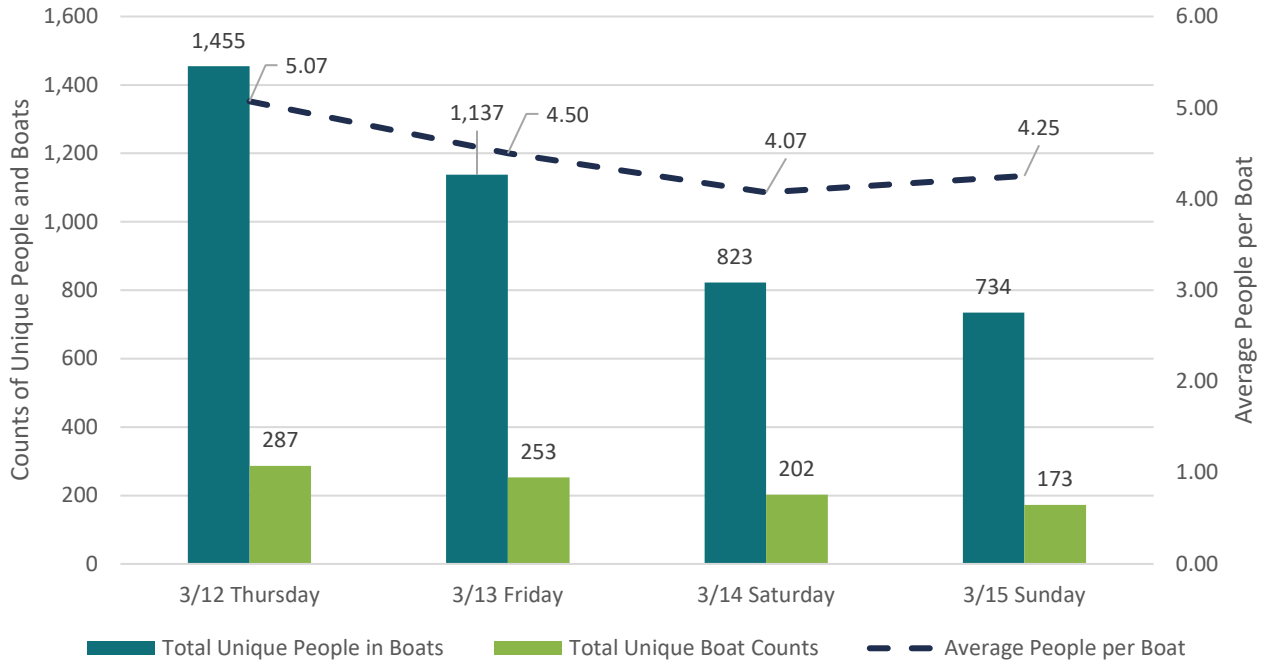
Figure 6-5. Comparison of Total Unique Boat Counts ("TUBC") to Total Automated Traffic Counts ("TATC") from the Counter on North Shore Road near Lind Point Road



[38] This adjustment factor tracks with the assumption that boats from the NPS Dock generally have two potential destinations: sites in the British Virgin Islands or the U.S. Virgin Islands. The ten bay sites are expected to capture most of the boating visitation in the U.S. Virgin Islands.

- Next, we analyzed the number of people in the boats to convert the estimates of boats into estimates of visitors.
    - First, for any boats with missing observations for the number of people, we imputed an estimate using the average number of people for the same boat type.
    - Next, we applied the same step-wise analysis described above for the boat counts. In other words, we first calculated total people counts by shift and by site. We then compared concurrent three-hour people counts for the two primary bay sites and the eight secondary sites to calculate weekday and weekend relative ratios. We then applied those relative ratios to calculate total full-day people counts for the eight secondary sites, which we added to the total full-day people counts for the three primary sites. Then we converted the full-day people counts by site into unique people counts by dividing the counts at the 10 bay sites by a factor of 2.0 (for visits to multiple bays) and multiplying the counts for the NPS Dock by a factor of 50 percent (assuming half also went to a study bay).
    - This yielded estimates of unique people in boats ranging from 734 on Sunday, March 15th to 1,455 on Thursday, March 12th.
    - For each day, we divided the number of unique people by the number of unique boats to calculate the average people per boat . These estimates ranged from 4.07 on Saturday, March 14th (i.e., 823 unique people / 202 unique boats) to 5.07 on Thursday, March 12th (i.e., 1,455 unique people / 286.9 unique boats), as summarized in Figure 6-6.

Figure 6-6. Total Unique People in Boats, Total Unique Boats, and Average People Per Boat, By Day



- Finally, we applied a weighting approach to convert the estimated full-day counts into weighted average daily counts.
    - We first averaged results for the two weekday counts to represent a "composite" weekday, and then did the same for results for the two weekend counts to represent a composite weekend day. We then multiplied the composite weekday results by five and the composite weekend day results by two, added those two products together, and divided the sum by seven to calculate weighted average daily results for total unique boats, total automated traffic counts, and total unique people in boats.
- Based on the weighting calculations, we arrived at the following results for boating visitation in the Park:
    - A weighted average daily count of 246.3 total unique boats.
    - A weighted average daily count of 1,746.6 total automated traffic counts.
    - A weighted average ratio of 0.141 unique boats per automated traffic count (i.e., 246.3 / 1,746.6).
    - A weighted average of 4.66 people per boat.
- In addition to analyzing daily boating use, we also used the boating study data to estimate overnight boating use in the Park.[39] For this analysis, we relied on the start- and end-of-day counts of moored boats at the two primary bay sites (i.e., Maho & Francis Bays and Salomon & Caneel Bays) from each day of the study (i.e., March 12-15).[40]
    - The start-of-day counts ranged from 21 moored boats at Maho & Francis Bays on Friday, March 13th, to 29 moored boats at Salomon & Caneel Bays that same day. The end-of-day counts ranged from 23 moored boats at Maho & Francis Bays on both Thursday and Friday, March 12th and 13th, to 42 moored boats at this same site on Sunday, March 15th.
    - We began by converting the start- and end-of-day counts into weighted average counts by site, using the weighting approach previously described. This yielded a weighted average start- and end-of-day count for each site. Due to the modest variation in the counts, we took the average of the results to estimate the daily average number of overnight boats at each site (24.8 at Maho & Francis Bays and 27.8 at Salomon & Caneel Bays).
    - We then reviewed the NPS Virgin Islands Mariners Guide to determine the number of overnight moorings for all bays in the Park. The number of available overnight

[39] Through discussion with the Park, we understand there is limited information currently available regarding overnight boating use. While the moorings appear to be in high use, compliance with the payment systems is believed to be low, and ranger observations are sporadic. A detailed overnight-focused boating study that would have provided additional information was beyond the scope of this study, but could be useful in the future.

[40] We also considered boat counts at Maho Bay provided by the FVINP Sea Turtle Program. However, these counts did not fit our analytic needs because they were mostly conducted during mid to late morning, after overnight boats might have left the Maho Bay moorings or new boats that did not stay overnight arrived.

moorings in the guide ranged from a low of zero at Hurricane Hole to a high of 64 at Maho & Francis Bays.

- Next, we divided the weighted daily average counts of overnight boats at the two primary bay sites by the number of available overnight moorings at these two sites to calculate a weighted average ratio of 0.446 overnight boats per available overnight mooring, as summarized in Table 6-1.
- We then applied this weighted average ratio to the number of available moorings at the other bays in the Park to calculate a total of 85.5 overnight boats per night at all boating sites.
- By comparing this calculated nightly total (85.5) to the calculated weighted average daily count of total unique boats across all boating sites (246.3), we calculated a ratio of 0.347 (i.e., 85.5 / 246.3) for overnight boating use relative to daily boating use.

Table 6-1: Summary of Overnight Boating Analysis

Site	Weighted Average Number of Overnight Boats (A)	Available Number of Overnight Moorings (B)	Ratio (A / B)	Estimated Number of Overnight Boats Moored
Primary Bay Sites				
Maho & Francis Bays	24.8	64	0.387	24.8
Salomon & Caneel Bays	27.8	54	0.515	27.8
Subtotal	52.6	118	0.446	52.6
Secondary Sites				
Cinnamon Bay	NA	9	0.446	4.0
Great Lameshur Bay	NA	14	0.446	6.2
Hawksnest Bay	NA	14	0.446	6.2
Hurricane Hole	NA	0	0.446	0.0
Leinster Bay	NA	22	0.446	9.8
Little Lameshur Bay	NA	5	0.446	2.2
Saltpond Bay	NA	6	0.446	2.7
Trunk Bay	NA	4	0.446	1.8
Subtotal	NA	74	0.446	33.0
Total				85.5

Note: The 85.5 total does not equal the sum of the subtotals (i.e., 52.6 + 33.0) due to rounding.

As described in the bullets below, we used the analysis results for daily and overnight boating use above to update the counting instructions for estimating boat visitation in the Park.

- The first step in the counting instructions is to estimate the number of boats visiting the NPS Dock, bays along the north shore, and bays along the south shore. The unadjusted traffic count between 7 am and 6 pm from the counter on North Shore Road near Lind Point is multiplied by 0.141.

- Second, to estimate the number of people in boats, the result from the previous step is multiplied by 4.66 people per boat.
- Third, to account for additional boating use in the Park (e.g., in offshore areas), the result from the previous step is multiplied by 1.05, which is based on professional judgment.
- Fourth, boat visitors are apportioned into recreation and non-recreation. To do this, the result from the previous step is multiplied by 95 percent and 5 percent, respectively.[41]
- The final step in the counting instructions is to calculate the number of overnight stays associated with boating.
    - For recreation overnight stays, the calculated number of day-use boat-based recreation visits is multiplied by 0.347.
    - For non-recreation overnight stays, the calculated number of boat-based non-recreation visits is multiplied by a factor of 0.100, which is based on input from the Park.

[41] Observations from the boating study were insufficient to determine recreation vs. non-recreation boats. Instead, these estimates are based on discussions with Park staff and a qualitative review of the boating study data.

CHAPTER 7 | Trails Study

7.1 Study Overview

The Trails Study was conducted in March 2026 and involved counting and recording characteristics of trail users at a range of locations not covered by the other onsite studies. Specifically, visits to trails on North Shore Road between Lind Point and Kings Hill (and up John Head Road to Catherineberg) were already covered in the St. John Traffic Study. The Trails Study covered 12 trails along Centerline Road, around Cruz Bay, around Coral Bay, and the Trail to Reef Bay from Cocoloba Point. The 12 trails covered in this study are shown in Figure 7-1 and referenced in the Appendix C study materials. They include (in alphabetical order):

1) Cinnamon Bay Trail (Centerline Road);
2) Cocoloba Point Trail (to Reef Bay);
3) Johnny Horn Trail (near Coral Bay);
4) L'Esperance Trail (Centerline Road);
5) Lower Caneel Hill Trail (near Cruz Bay);
6) Lower Lind Point Trail (near Cruz Bay);
7) Maria Hope Trail (Centerline Road);
8) Reef Bay Trail (Centerline Road);
9) Saltpond Bay Trail (near Coral Bay);
10) Upper Caneel Hill Trail (near Cruz Bay);
11) Upper Lind Point Trail (near Cruz Bay); and
12) Water Catchment Trail (Centerline Road).

Figure 7-1. Locations of Automated Trail Counters and Trails Study Monitoring Locations



The data collected at Lower Lind Point Trail, Reef Bay Trail, and Saltpond Bay Trail during the onsite study were used to relate the automated trail counts to total trail visitation at those sites. The data collected at the other nine trails were used to estimate additional visitation relative to the three trails with automated trail counters. To keep monthly visitor use reporting simple for the Park, trail visitation to all locations covered by the Trails Study can be estimated using only the automated trail counts from the three trails with automated trail counters. The details of this estimation are described below in Section 7.2.

The purpose of having automated trail counters at three locations instead of one or two is because FVINP and NPS requested separate data for each of the three trails during study planning (for management purposes). Further, having multiple counters provides redundancy in case one of the counters ever goes offline unexpectedly. The historical data from all three trail counters will allow NPS to impute (i.e., "fill in") missing data at the location with the offline counter until the counter is put back online (e.g., by replacing batteries).

For each group (or "party") of trail users entering a trail together during onsite data collection, field staff recorded the time the party entered the trail, the party type (i.e., NPS, non-recreation, or recreation), and the number of people in the party. The onsite data collection materials are provided in Appendix C (see the Field Study Handbook, Site-Specific Protocols for Onsite Study #6, and the Study #6 count sheet).

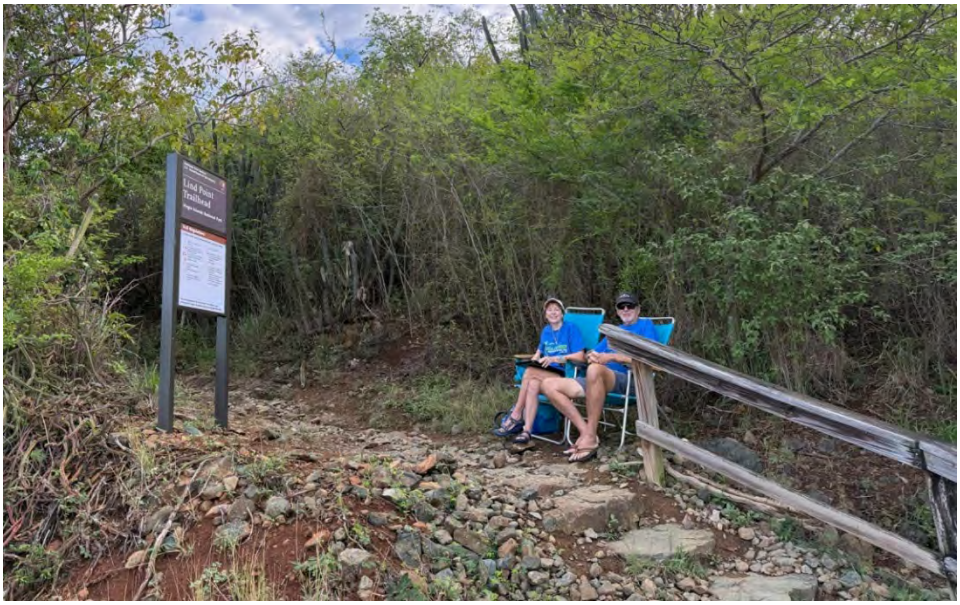
Training for the study occurred on Wednesday, March 11, 2026. The study was conducted from 7 am to 12 pm on Tuesday, March 24th; 12 pm to 4 pm on Wednesday, March 25th; 7 am to 12 pm on Saturday, March 28th; and 12 pm to 4 pm on Sunday, March 29th. Field staff worked across the 12

trails to record information about every party entering a trail. The information was recorded on the Study #6 count sheets and then entered into Excel by FVINP. In total, 1,365 people were observed entering the trails across 513 parties. An additional nine records accounted for cases where no parties entered a trail during a shift, yielding a total of 522 records. Section 7.2 describes how these data were analyzed and presents the results. Figures 7-2 and 7-3 show photographs of field staff collecting data for this study.

Figure 7-2. Field Staff Monitoring at Lower Caneel Hill Trail



Figure 7-3. Field Staff Monitoring at Lower Lind Point Trail



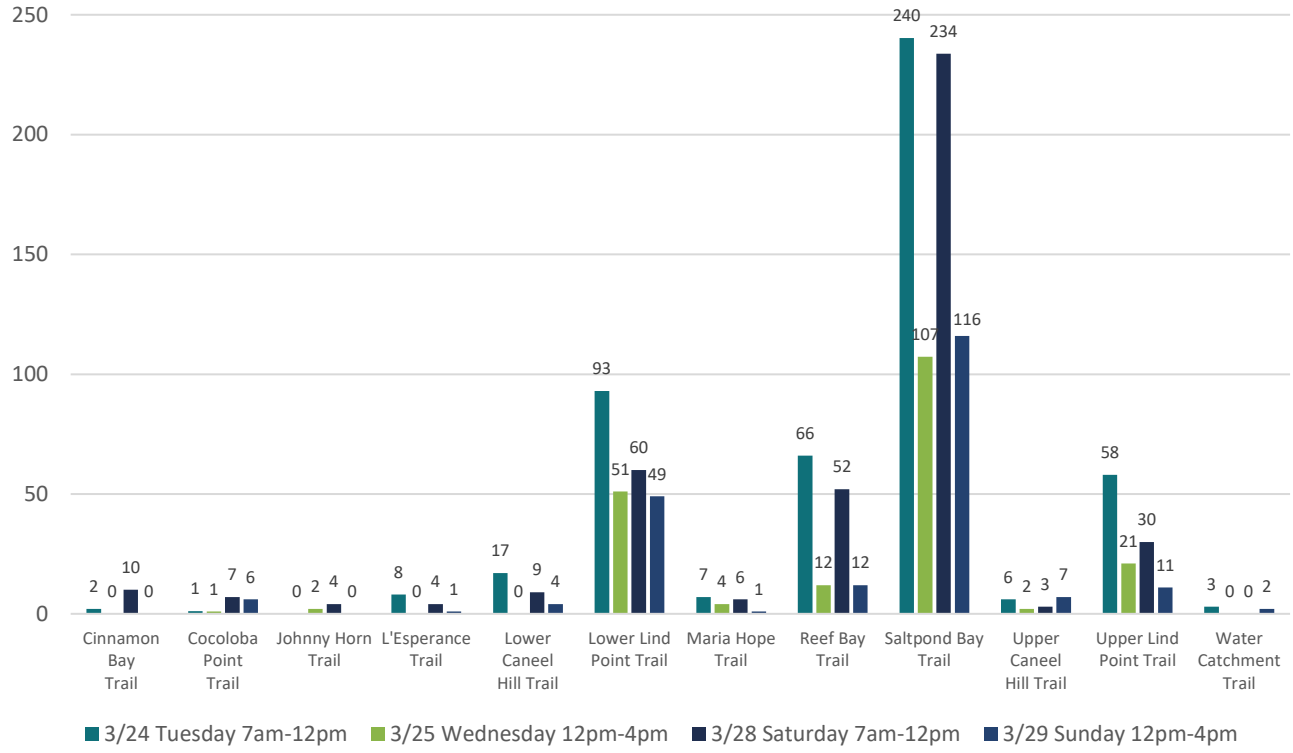
7.2 Analysis Approach and Results

In the bullets below, we describe our analysis approach and results for the Trails Study. We then describe how those results informed the updated counting instructions in Appendix A for estimating recreation and non-recreation trail visitation in the Park.

- As a first step, we separated out the 522 records covering 1,365 people into a summary of people counted by trail and day. This yielded counts at each trail for one weekday morning shift (i.e., 7 am to 4 pm), one weekday afternoon shift (i.e., 12 pm to 4 pm), one weekend morning shift, and one weekend afternoon shift.[42]
- For Saltpond Bay Trail, we applied a 95 percent adjustment factor when calculating our summary counts in order to account for re-entries by some people. This was based on observations by field staff who collected data there. This was the only trail where a non-trivial number of re-entries was observed.
- Figure 7-4 provides a bar chart summary of the counts by trail and shift.
    - The counts ranged from a low of zero people at some sites (e.g., Cinnamon Bay Trail during the weekday afternoon shift on Wednesday, March 25th) to a high of 240 people at Saltpond Bay Trail during the weekday morning shift on Tuesday, March 24th.
    - Across all 12 trails, the total count ranged from 200 people during the weekday afternoon shift on Wednesday, March 25th to 502 people during the weekday morning shift on Tuesday, March 24th.

[42] For Cocoloba Point Trail, the sampling team was unable to conduct counts for the weekday morning shift on Tuesday, March 24th. We imputed a count for this missing data point by taking the weekday afternoon count for this site (i.e., 1), and scaling it by the relative ratio of the weekend morning and afternoon counts for this site (i.e., 7/6), which yielded an estimated weekday morning count of 1.2 people.

Figure 7-4. Counts by Trail and Shift

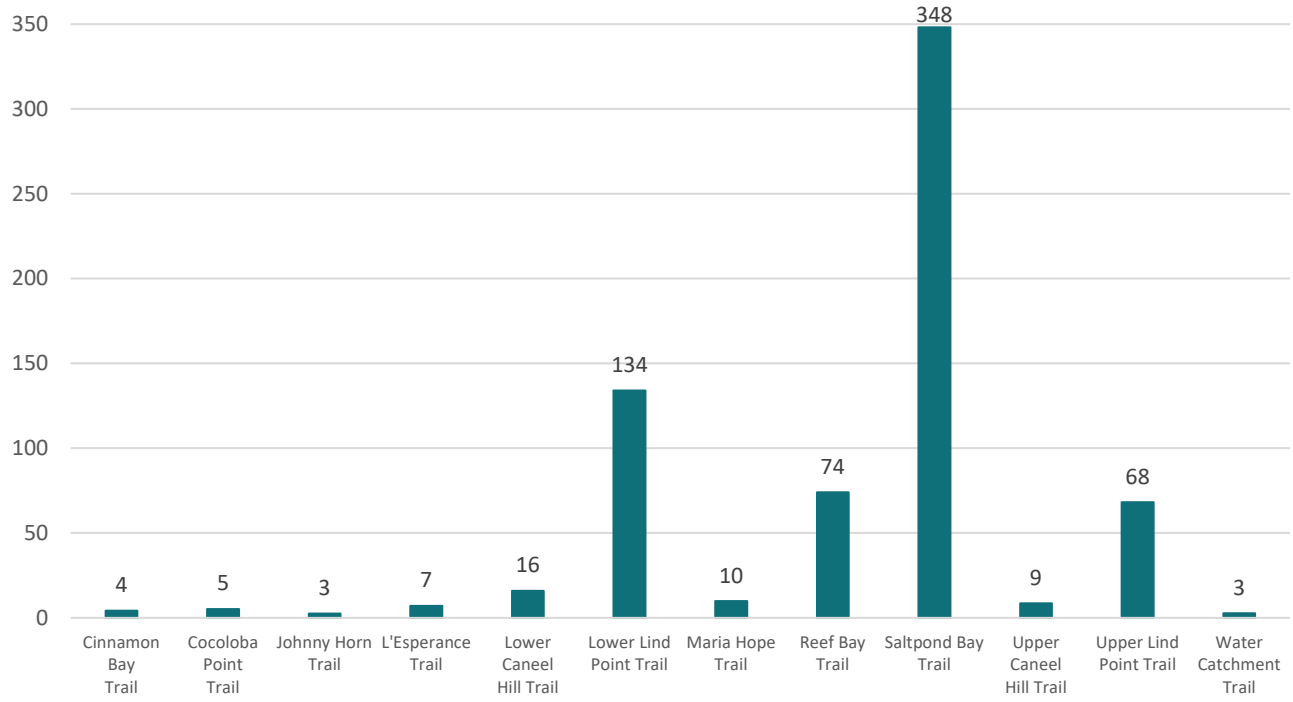


- Next, we applied a weighting approach to convert the shift-specific counts into weighted average daily counts for each trail.
    - We first added the weekday morning and afternoon counts together to represent a full "composite" weekday, and then did the same using the two weekend day shifts to represent a full composite weekend day. We then multiplied each trail's composite weekday count by five and composite weekend day count by two, added those two products together, and divided the sum by seven to calculate the weighted average daily count for each trail.
- Figure 7-5 provides a summary of the weighted average daily counts by trail.
    - The counts ranged from a low of three on the Johnny Horn and Water Catchment Trails, to a high of 348 on Saltpond Bay Trail.
    - Across all 12 trails, the total weighted average daily count was 681.
    - The total weighted average daily count for the three trails with automated counters (i.e., Lower Lind Point Trail, Reef Bay Trail, and Saltpond Bay Trail) was 556.
    - For the nine trails without an automated counter (i.e., Cinnamon Bay Trail, Cocoloba Point Trail, Johnny Horn Trail, L'Esperance Trail, Lower Caneel Hill Trail, Maria Hope

Trail, Upper Caneel Hill Trail, Upper Lind Point Trail, and Water Catchment Trail), the total weighted average daily count was 124.[43]

- Therefore, the nine trails without an automated counter collectively receive 22.4 percent of the visitation that the three trails with an automated counter receive.[44]

Figure 7-5: Weighted Average Daily Counts by Trail



- Finally, we repeated the steps above to calculate the weighted average daily counts across recreation visitors, non-recreation visitors, and NPS employees. We found that recreation visitors accounted for approximately 99.5 percent of all trail use, non-recreation visitors represented 0.4 percent, and non-reportable visitors (i.e., NPS employees) represented 0.1 percent.

As described in the bullets below, we used the following information to update the counting instructions for estimating trail visitation in the Park: the shift-specific counts for the three trails with automated counters, the counts from the automated counters for the same three trails, and the analysis results above.

- First, we compared the shift-specific counts for the three trails with automated counters to the counts from the automated counters for the same times. We found that the automated trail counts were, on average, approximately twice as high as the shift counts of people entering the trails. This makes logical sense given that the automated trail counts capture people both entering and exiting the trails, while the shift counts only captured people entering the trails. Accordingly, the first step in the updated counting instructions is to

[43] The sum of the subtotals (i.e., 556 and 124) does not equal 681 due to rounding.
[44] The exact calculation is 124.4 / 556.2=22.4 percent.

multiply the automated counts from the three trails with automated counters by 0.5 to account for entry and exit.

- Second, and only for Saltpond Bay Trail, the 95 percent adjustment factor described above is applied to account for re-entries by some visitors.
- Next, trail visitors are apportioned into recreation and non-recreation. To do this, the results for each trail from the previous steps are multiplied by 99.5 percent and 0.4 percent, respectively.[45]
- Finally, to account for additional trail use at the nine trails without an automated counter, the last step in the updated counting instructions is to apply our finding on the relative use between trails with and without automated counters. A factor of 22.4 percent is applied to the sum of trail visitors at the three sites with automated counters to estimate the additional trail visitation in the Park.

[45] The remainder is non-reportable (NPS).

Appendix A | Updated Visitor Use Reporting and Counting Instructions

VIRGIN ISLANDS NATIONAL PARK

VISITOR USE REPORTING AND COUNTING INSTRUCTIONS

Following are detailed instructions for collecting data and estimating visitor use statistics for **Virgin Islands National Park**. These instructions are effective the date of issuance and will continue in effect unless changed by agreement between the NPS Social Science Program and the Park Superintendent.

Recreation Visits

1. The Lind Point magnetometer traffic counter is located on North Shore Road opposite the Caneel Bay Overlook to monitor traffic in both directions. The monthly traffic count from 7 am to 6 pm (approximately dawn to dusk) is multiplied by 0.598 to account for duplicate daily reporting at this location, including entry & exit, multiple visits on the same day, and passthrough visitation. The adjusted traffic count is multiplied by 0.799 to estimate the number of recreation vehicles and eliminate non-recreation and non-reportable (NPS) vehicles. The final adjusted traffic count is multiplied by 2.869 persons per vehicle.

2. The count of people from item 1 above is multiplied by 0.296 to account for additional recreation visitors arriving via North Shore Road at Kings Hill or John Head Road at Catherineberg.

3. The count of people from item 1 above is multiplied by 0.092 to account for additional recreation visitors arriving into the Park via Route 10 (East End Road) at the NPS boundary along Borck Creek or the NPS boundary along Haulover Bays.

4. The count of people from item 1 above is multiplied by 0.029 to account for additional recreation visitors arriving into the Park via the end of Route 107 to Lameshur.

5. A magnetometer traffic counter is located on the unnamed road leading to the NPS Dock in Red Hook (St. Thomas). The monthly traffic count from 7 am to 4 pm (when the site is open) is multiplied by 0.5 to account for entry and exit. The adjusted traffic count is multiplied by 1.059 to account for vehicles that do not pass the traffic counter, and by 0.782 to estimate the number of recreation vehicles and eliminate non-recreation and non-reportable (NPS) vehicles. The final adjusted traffic count is multiplied by 1.839 persons per vehicle.

6. The unadjusted monthly traffic count from item 5 above is multiplied by 0.128 to estimate round trip pedestrian (i.e., walk-in) use in Red Hook. The pedestrian count is multiplied by 0.872 to estimate the number of recreation walk-in users and eliminate non-recreation and non-reportable (NPS) users.

7. A passive infrared trail counter is located on Lower Lind Point Trail (behind the Visitor Center). The monthly trail count is multiplied by 0.5 to account for entry and exit. The adjusted trail count is multiplied by 0.995 to estimate the number of recreation trail users and eliminate non-recreation and non-reportable (NPS) users.

8. A passive infrared trail counter is located on Reef Bay Trail. The monthly trail count is multiplied by 0.5 to account for entry and exit. The adjusted trail count is multiplied by 0.995 to estimate the number of recreation trail users and eliminate non-recreation and non-reportable (NPS) users.

9. A passive infrared trail counter is located on Saltpond Bay Trail. The monthly trail count is multiplied by 0.5 to account for entry and exit. The adjusted count is multiplied by 0.95 to account for re-entries by some visitors. The final adjusted trail count is multiplied by 0.995 to estimate the number of recreation trail users and eliminate non-recreation and non-reportable (NPS) users.

10. The count of recreation trail users from items 7, 8, and 9 above is multiplied by 0.224 to account for additional recreation trail visitation in the Park.

11. The number of boats visiting NPS Dock, bays along the north shore, and bays along the south shore is estimated by multiplying the unadjusted monthly traffic count (i.e., vehicles) from 7 am to 6 pm in item 1 above by 0.141. The boat count is multiplied by 0.95 to estimate the number of recreation boats and eliminate non-recreation and non-reportable (NPS) boats. The adjusted boat count is multiplied by 4.663 persons per boat. The final adjusted count is multiplied by 1.05 to account for additional recreation boating visitation in the Park.

12. The number of visitors at the National Park Visitor Center is multiplied by 0.25 to account for duplicate reporting at other locations within the Park.

Non-Recreation Visits

1. Non-recreation use at Lind Point is estimated using the monthly traffic count from 7 am to 6 pm (approximately dawn to dusk) and multiplying by 0.598 to account for duplicate daily reporting at this location, including entry & exit, multiple visits on the same day, and passthrough visitation. The adjusted traffic count is multiplied by 0.186 to estimate the number of non-recreation vehicles. The final adjusted traffic count is multiplied by 1.941 persons per vehicle.

2. The count of people from item 1 above is multiplied by 0.451 to account for additional non-recreation visitors arriving into the Park via North Shore Road at Kings Hill or John Head Road at Catherineberg.

3. The count of people from item 1 above is multiplied by 0.472 to account for additional non-recreation visitors arriving into the Park via Route 10 (East End Road) at the NPS boundary along Borck Creek or the NPS boundary along Haulover Bays.

4. The count of people from item 1 above is multiplied by 0.020 to account for additional non-recreation visitors arriving into the Park via the end of Route 107 to Lameshur.

5. The monthly traffic count at Lind Point from 6 pm to 7 am accounts for additional non-recreation passthrough visitation overnight. This overnight count is multiplied by 1.941 persons per vehicle.

6. Non-recreation use on the unnamed road leading to the NPS Dock in Red Hook (St. Thomas) is estimated using the monthly traffic count from 7 am to 4 pm (when the site is open) and multiplying by 0.5 to account for entry and exit. The adjusted traffic count is multiplied by 1.059 to account for vehicles that do not pass the traffic counter, and by 0.088 to estimate the number of non-recreation vehicles. The final adjusted traffic count is multiplied by 1.839 persons per vehicle.

7. The unadjusted monthly traffic count from item 6 above is multiplied by 0.128 to estimate round trip walk-in use in Red Hook. The pedestrian count is multiplied by 0.128 to estimate the number of non-recreation walk-in users.

8. Non-recreation use on trails is estimated using the sum of items 7, 8, 9, and 10 from the Recreation Visits section, and multiplying by 0.004.

9. Non-recreation boating use is estimated by multiplying item 11 from the Recreation Visits section by 0.05.

Recreation Visitor Hours

The total number of recreation visitors is multiplied by 6.15 hours.

Non-Recreation Visitor Hours

1. Land-based non-recreation use is multiplied by fifteen minutes.

2. The north shore and south shore non-recreation boat use is multiplied by six hours.

Overnight Stays

Concessioner Lodging and Campgrounds

The number of visitors staying overnight as reported by the concessioner.

Boat campers

The number of overnight stays by boat campers at bays along the north shore and south shore is estimated by multiplying item 11 from the Recreation Visits section by 0.347.

Non-recreation Overnight Stays

The number of non-recreation overnight stays is estimated by multiplying item 9 from the Non-Recreation Visits section (i.e., the non-recreation boat use at north shore and south shore) by 0.10.

DRAFT

Appendix B | Automated Counter Download Instructions

Instructions for Downloading Counter Data

I. Counter Names and Locations:

1. Lind Point Vehicle (18.340838, -64.787206)
2. Catherineberg Vehicle (18.343986, -64.761579)
3. Kings Hill Vehicle (18.357295, -64.736958)
4. Red Hook Vehicle (18.322393, -64.853797)
5. Lind Point Trail (18.333132, -64.793497)
6. Reef Bay Trail (18.347554, -64.742814)
7. Saltpond Bay Trail (18.310840, -64.706785)

II. Before Going into the Field, Confirm the Dock Settings:

1. Turn the dock on and confirm it is in **Shuttle Mode**
2. Then connect PC → Cables → Dock
3. Open the TRAFx Communicator program on your PC and click the GO! button
4. Type "C" to configure the dock's date and time (yy-mm-dd and 24hr time)
5. Press "Enter" key to set the dock's date and time to the PC's date and time
6. Confirm the dock's battery voltage is 3.4V or higher
    a. If not, replace the dock's three alkaline "AAA" batteries and reconfigure the dock's time (i.e., repeat steps 1-5)
7. Confirm the dock's old data is erased

III. Go into the Field and Download Data from Each Counter:

1. Take a key matching the counter's location and unlock the box with the counter
2. Turn the dock on and confirm it is in **Shuttle Mode**
3. Connect to a counter; the "Downloading" light should blink
    a. If the "Replace Counter's Batteries" light blinks on the dock when it is connected to a counter, then disconnect from the counter, replace the counter's batteries, and then reconnect to the counter
        i. A traffic counter uses three 1.5V alkaline "C" batteries
        ii. A trail counter uses three 1.5V alkaline "AA" batteries
        iii. Rechargeable batteries are not recommended
4. Disconnect the dock from the counter when the "Finished" light blinks
5. After disconnecting, the counter's **red Status LIGHT** should be blinking rapidly; this confirms a successful launch - **if not, disconnect and repeat steps 3 and 4**
6. Put a fresh desiccant pack inside the counter's case (remove old one) and close it
7. Close the box and lock it back up; the dock will automatically turn off
8. Go to the next counter; repeat steps 1 to 7 above

IV. Transfer Data from Dock to PC:

1. Turn the dock on and confirm it is in **Shuttle Mode**
2. Then connect PC → Cables → Dock
3. Open the TRAFx Communicator program on your PC and click the GO! button
4. Click Download+ to save the Shuttle file; save it to your PC's desktop
5. Find the Shuttle file on your PC; double click it to open it; confirm data look correct
6. **ONLY** after confirming data are downloaded and look correct, type "E" to erase dock
7. Disconnect the dock from the PC; the dock will automatically turn off

V. Confirm Counter Battery Levels:

1. Open the saved Shuttle file on your PC
2. In the Shuttle file output, confirm each counter's "Batt. Voltage" is 3.2V or higher
    a. If not, go back into the field and replace batteries for any counter with <3.2V
        i. A traffic counter uses three 1.5V alkaline "C" batteries
        ii. A trail counter uses three 1.5V alkaline "AA" batteries
        iii. Rechargeable batteries are not recommended
    b. After replacing the batteries for a counter, follow the steps in Section III above to relaunch the counter and confirm it is successfully launched

Appendix C | Onsite Study Materials

IEc

US Virgin Islands National Park Visitation Study

Field Staff Handbook

March 11, 2026

prepared by:

Industrial Economics, Incorporated

2067 Massachusetts Avenue

Cambridge, MA 02140

617/354-0074

INTRODUCTION

Friends of Virgin Islands National Park (FVINP), in cooperation with the National Park Service (NPS), is conducting a Visitor Use Study in 2026 to measure and characterize visitation to Virgin Islands National Park (VINP) and Virgin Islands Coral Reef National Monument (VICRNM), hereafter called "the Park".

FVINP will be assisted by Industrial Economics, Incorporated (IEc) in managing the effort. The purpose of the Visitor Use Study is to collect valuable information for NPS about the public's use of this Park. Specifically, it will involve conducting counts and making observations about vehicles, boats, and trail users. The results will be used to provide NPS with an updated methodology for conducting monthly counts of visitation.

The Visitor Use study involves seven automated counters and six onsite studies with the following components:

- Four magnetometer traffic counters and three passive infrared trail counters have been installed at the Park.
    - The traffic counters are measuring vehicle use on 1) North Shore Road near the intersection with Lind Point Road, 2) John Head Road near Catherineberg, 3) North Shore Road at Kings Hill, and 4) Red Hook Road on St. Thomas (the NPS road leading to the old dock location in Red Hook).
    - The passive infrared trail counters are measuring trail use on 1) Lind Point Trail (behind the Visitor's Center), 2) Reef Bay Trail, and 3) Salt Pond Bay Trail.
- Onsite Study #1 involves counting and recording characteristics about vehicles at a range of locations. The data will be used to construct quantitative factors that will allow NPS to relate the automated traffic counts to vehicle visitation at all locations in the Park on St. John, including on North Shore Road, the East End, and Lameshur.
- Onsite Study #2 involves counting visitors to Northshore beaches and Annaberg Ruins. The data will be used to construct quantitative factors that will allow NPS to relate their fee data at Trunk Bay to visitation at other Northshore sites. The study also involves counting parked vehicles at sites along North Shore Road to understand parking supply and demand, as well as the extent and location of parking in non-designated areas.
- Onsite Study #3 involves counting and recording characteristics about vehicles and pedestrians at Red Hook Road. The data will be used to construct quantitative factors that will allow NPS to relate the automated traffic count there to vehicle and walk-in visitation at the site.
- Onsite Studies #4 & #5 involve counting and recording characteristics about boats at a range of locations along the Northshore and Southshore. The data will be used to construct quantitative factors that will allow NPS to relate Northshore

and Southshore boating visitation to the automated traffic count on North Shore Road.

- Onsite Study #6 involves counting and recording characteristics about trail users at a range of locations. The data will be used to construct quantitative factors that will allow NPS to relate the automated trail counts to a broader set of trails in the Park.

The six onsite studies will take place according to the schedule shown in Exhibit 1. FVINP will separately provide field staff with their specific data collection schedules.

EXHIBIT 1. STUDY SCHEDULE

STUDY EVENT	DATES
Training for Studies #1 & #2	February 11, 2026
Study #1 St John Traffic Study	February 12 - 15, 2026
Study #2 Northshore Visitation and Parking Study	February 17, 18, 21, & 22, 2026
Training for Studies #3 to #6	March 11, 2026
Study #3 Red Hook Visitation Study	March 12 - 15, 2026
Studies #4 & #5. Northshore and Southshore Boating Use Study	March 12 - 15, 2026
Study #6. Trail Use Study	March 24, 25, 28, & 29, 2026

Data collection will occur at about 40 sites in total. You will be provided with a one-page site-specific protocol for each site, which includes site coordinates and a detailed map for each location.

STAFF RESPONSIBILITIES

OVERVIEW

Thank you for agreeing to volunteer your time for this important study!

Field staff have two primary responsibilities: 1) staying safe and 2) collecting high quality data in accordance with the schedule and protocols. All field staff must have a vehicle (or transportation provided by FVINP) and smartphone. Please arrive on time to each scheduled shift that you are assigned with a sufficient supply of all required study materials (see equipment checklist in Attachment A). You will be working outside, so please dress appropriately for the weather. You should wear the FVINP volunteer t-shirt provided to you to identify yourself as a data collector.

SCHEDULE

A data collection shift will last up to 5.5 hours, depending on the study. FVINP will provide you with your exact schedule in advance of your shifts, including the site(s) where you will collect data, as well as the start and end time for each site.

REPORTING FOR YOUR SHIFT

To report for a shift, field staff should first share their location on their phone with the FVINP Coordinator (Jennifer Stone) and the IEc study managers (Jane Israel and Eric Horsch). Ask any of them if you do not know how to do this. Second, send a text to the Coordinator to let them know you are entering the field. This is important because you may not have service once you arrive to your assigned site. Finally, staff should drive to their assigned site (i.e., monitoring location) and park in a designated lot or on a nearby road with all four tires off the pavement. Try to arrive at least ten minutes early to prepare for data collection. If parking is likely to be full, FVINP will shuttle you to and from the site or arrange for a taxi to take you.

At the end of your shift, text the Coordinator to let them know you are leaving the field and stop sharing your location. Contact the Coordinator or an IEc study manager as needed during your shift for support.

FIELD MANAGEMENT

The Coordinator will ensure field staff understand their schedule, confirm field staff have sufficient supplies/equipment/count sheets, periodically check in on field staff during data collection, ensure safety and data collection protocols are upheld, collect completed data forms from you (described later in this document), and complete other related tasks.

IEc study managers will also periodically check in on field staff during the study, record count readings on the automated traffic and trail counters, and provide other oversight. Field staff should be available via phone, as needed, for intermittent check-ins with the Coordinator or IEc study managers.

RESPONSIBILITIES

When you arrive to a site, review the site-specific protocol to determine how to collect data. This includes the objective at the site (i.e., what or who to count), the area to monitor and the boundaries, and the method (i.e., how to conduct the count and what information to record). Each of the six onsite studies has a count sheet specific to the study (or two count sheets in the case of Onsite Studies #2 and #3). The sections below describe how to complete the count sheet(s) at a site for each onsite study.

ONSITE STUDY #1 – ST JOHN TRAFFIC STUDY

1. When you arrive at a site, fill out the information at the top of your *Study #1: St John Traffic Study* count sheet: your *Name*, the *Date*, and your assigned *Monitoring Location* (circle to match your assigned site).
2. Do not begin collecting data before your assigned start time for the site. Fill in the *Datasheet Monitoring Start Time* to reflect the actual time you begin collecting data, ideally at the scheduled start time or as soon as possible thereafter. Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.
3. Depending on the location, one to three people will monitor traffic.
    a. At *Lind Point*, one person will monitor inbound traffic (as indicated by the "IN" arrow on the site-specific protocol) and another person will monitor outbound traffic (as indicated by the "OUT" arrow on the site-specific protocol). A roving third person will help monitor the busier direction of traffic, likely inbound in the morning and outbound in the afternoon. This person will assist by calling out the information about all vehicles heading in the busier direction of traffic, and the person assigned to that side of the road will focus on recording all the information being called out. Note, only one person records data on the count sheet for a given direction of traffic at Lind Point.
    b. At *Kings Hill*, one person will monitor inbound traffic and another person will monitor outbound traffic.
    c. At the other locations, one person will monitor both inbound and outbound traffic.
4. For each vehicle that passes you (in the direction of traffic you are monitoring), you will record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the Park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle.
    a. Record the time a vehicle passes you in the direction of traffic you are monitoring. Use 12-hour time and circle "am" or "pm".
        i. Wear a watch rather than using your phone to make it easier to read the time and then record it.

b. Circle the direction that the vehicle is traveling, either "IN" for into the Park or "OUT" for out of the Park. The site-specific protocol indicates the direction of inbound and outbound traffic.

c. Record the six-character license plate. Unless the vehicle has an NPS marking, is a taxi or work truck, this is THE most important characteristic to record about a vehicle (i.e., more important than vehicle type and people in the vehicle). **Please do your best to record an accurate license plate for every vehicle**. This information is key for us to understand the pattern of traffic passing through the Park.

   i. Use capital "L" instead of a lower case "l" to avoid confusion with the number one ("1").

   ii. Put a diagonal line thru any zero you record ("Ø") to clearly distinguish it from the letter "O". The letter "O" will appear wider than the number "0" on a license plate.

d. Circle the vehicle type, using either "N" for NPS/Enforcement, "T" for Taxi, "W" for work vehicle, or "PV" for passenger vehicle.

   i. NPS or other similar enforcement vehicles (e.g., Virgin Islands police) will be clearly marked as such.

   ii. Taxis include safari taxis (most common), but also any other types you might see, including vans, cars, etc.

   iii. A work vehicle includes labeled work trucks, vans, or similar vehicles that are clearly driving past for work, not recreation.

   iv. Passenger vehicles include jeeps, cars, trucks (not labeled as a work truck), SUVs, vans, motorcycles, and similar. These are vehicles that do not appear to be heading into the park for work.

e. Record the number of people (all adults and children) observed in the vehicle. If you cannot see into the vehicle due to tinted windows or otherwise cannot get an accurate count of people, leave this item blank. Only record this item if you can get an accurate count of the people in the vehicle. It's OK to leave this blank for some vehicles.

   i. When recording the number of people in a taxi, include the driver in the count as well. You will include everyone in the vehicle for all vehicles.

5. A vehicle will be recorded on the datasheet each time it travels in or out of the Park, and it may be counted multiple times. **It is important that we record these vehicles every time they pass by!**

6. When you run out of empty rows on a count sheet, begin a new sheet. You do not need to record the *Datasheet Monitoring End Time* on your previous sheet. On your new sheet, prioritize recording information about each passing vehicle.

When you have a moment, fill in your *Name*, the *Date*, your assigned *Monitoring Location* (circle to match your assigned site), and the *Datasheet Monitoring Start Time*.

7. Do not collect data after your assigned end time for the site. Fill in the *Datasheet Monitoring End Time* on your final count sheet to reflect the actual time you stop collecting data, ideally at the scheduled end time. Use 12-hour time and circle "am" or "pm".
8. At the end of your shift, review your datasheets to be sure everything is filled in correctly and clearly written. Staple all of your sheets together in the order they were filled out (i.e., first sheet on top and last sheet on bottom). Put the completed count sheets in your plastic folder. Give your completed sheets to the Coordinator by the end of the day. They will review your data and give you feedback for your next shift.
9. If you ever make a mistake when recording information for a passing vehicle, put a line through the text you want to correct and write the corrected text next to the text you have lined out. If there is not enough space to do this, put a line through the entire row and use the next row to record the information you intended to record.
10. Your shifts are designed so that ideally you do not miss any monitoring time. However, if you have to use the bathroom or stop monitoring for any reason, first try to call the Coordinator or an IEc Study Manager to see if someone can cover data collection for you (e.g., at Lind Point and Kings Hill, it may be feasible for one person to monitor traffic in both directions for a brief period of time, or to use the extra person at Lind Point so that there are two people monitoring one way of traffic each). If you must stop collecting data, use the next available line on your count sheet to write a note about the missed monitoring time (e.g., "Missed 4:10 to 4:15).
11. An IEc Study Manager will be responsible for recording the automated vehicle counter reading at Lind Point at 7 am (when data collection begins for the day) and 6 pm (when data collection ends for the day). They may record it themselves or ask a field staff member to read the LCD screen and text the count to them.
    a. An IEc Study Manager will use separate instructions to download the hourly data from all the St John vehicle counters after the study is complete.

ONSITE STUDY #2 – NORTHSHORE BEACHES AND ANNABERG RUINS VISITATION

Nine people will conduct counts at Northshore beaches and Annaberg Ruins. After that, two of those people will conduct counts of parked vehicles at Northshore sites in designated lots, along access roads, and along North Shore Road.

Counts at Northshore Beaches and Annaberg Ruins

1. When you arrive at a site, fill out the information at the top of your *Study #2: Northshore Beaches and Annaberg Ruins Recreation* count sheet: your *Name*, the *Date*, and your assigned *Monitoring Location* (circle to match your assigned site).
2. You will count the number of beach and water recreators OR recreators/visitors at Annaberg Ruins, as described on the site-specific protocol. At some sites, you will conduct an additional count of recreators in interior areas of the site, as described on the site-specific protocol.
    a. A recreator is someone engaged in an activity for fun at the site or visiting the ruins. Do not count people that are clearly *not* recreating, such as NPS staff, lifeguards, concessionaires, or other people working.
3. Do not begin conducting the beach/water/ruins count before your assigned start time for the site. If conducting a count at a Northshore beach, fill in the *Beach and Water Count Start Time* under *NORTHSHORE BEACHES* to reflect the actual time you begin the count, ideally at the scheduled start time or as soon as possible thereafter. If you are conducting a count at Annaberg Ruins, fill in the *Count Start Time* under *ANNABERG RUINS.* Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.
4. At beach sites, walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. The site-specific protocols provide a detailed description of the count area. The sites may be very busy, so look sideways as you walk along the beach and toward the water and count people as you pass them. Do not try to keep count in your head. Instead, use your hand tally counter to increase your count as you walk past recreators.
5. At Annaberg Ruins, walk the trail loop around the site, checking for visitors throughout the site. Do not try to keep count in your head. Instead, use your hand tally counter to increase your count as you walk past recreators.
6. When you reach the opposite boundary from where you started and complete your count, look at the total on your hand tally counter and record it on your count sheet under *Count of Beach and Water Recreators* for a Northshore beach OR under *Count of Recreators/Visitors* for Annaberg Ruins.
7. If the site-specific protocol includes an interior area, you will next conduct a count of recreators in the interior area. The site-specific protocols provide a detailed description of the count area. Conduct the count as soon as practical after completing the beach and water recreators count. When you are ready to begin the count, fill in the *Interior Area Count Start Time* to reflect the actual time you begin conducting the count. Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.

8. Walk throughout the interior area and count the number of recreators within the boundaries using your hand tally counter. Record the final tally on your count sheet under *Count of Interior Area Recreators*.
9. At the end of your shift, review your datasheet to be sure everything is filled in correctly and clearly written. Put the completed count sheet in your plastic folder. Give your completed sheets to the Coordinator by the end of the day. They will review your data and give you feedback for your next shift.
10. If you ever make a mistake when recording information on your count sheet, put a line through the text you want to correct and write the corrected text next to the text you have lined out.

Counts of Parked Vehicles at Northshore Beaches and Annaberg Ruins

1. The parking counts will be conducted by a team of two people. One person will drive the vehicle and the other person will ride along and conduct the counts.
2. You will begin the parking counts as soon as practical after the beach/water/ruin counts are completed. You will conduct the counts from Lind Point to Annaberg Ruins OR from Annaberg Ruins to Lind Point as determined by your assignment for the day.
    a. For example, if you are assigned to conduct parking counts from Annaberg Ruins to Lind Point, you will first conduct counts at Annaberg Ruins, then Francis Bay Beach, Maho Bay Beach, Cinnamon Bay Beach, Trunk Bay Beach, Jumbie Bay Beach, Peace Hill Trail, Hawksnest Bay Beach, Caneel Bay Beach, and finally at Lind Point.
    b. Once you are finished with the counts at one site, you will head to the next and conduct parking counts there, repeating this process until you have conducted parking counts at all the sites.
    c. You will fill out a count sheet for each site in the sequence for a total of ten count sheets.
3. When you arrive at a site, fill out the information at the top of your *Study #2: Northshore Parking Study* count sheet: your *Name*, the *Date*, and the *Monitoring Location* (circle to match the site).
4. The driver will drive through the designated lot(s) and other parking areas near the site, as described on the site-specific protocol, while the second team member counts vehicles by type of parking (i.e., designated spots, non-designated spots).
    a. Each vehicle parked in a designated lot will be included in the total tally on the count sheet under *Count of Vehicles Parked in Designated Spots*.
    b. Each vehicle parked in a non-designated spot will be included in the total tally on the count sheet under *Count of Vehicles Parked in Non-Designated Spots*.
    c. Do not count taxis or NPS vehicles.

5. Fill in the *Parking Count Start Time* to reflect the actual time you begin conducting the count. Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.
6. As you drive through the designated lot(s) and other parking areas near the site, tally vehicles by type of parking on the count sheet using one tally mark for each vehicle. When you have completed the counts, write the total of the tally marks for each type of parking on the count sheet in the corresponding boxes and circle each total count.
7. If there are vehicles parked in non-designated spots, record description(s) of their locations in the box below the counts: *Description of Location(s) of Vehicles Parked in Non-Designated Spots*. Use descriptors like the side of the road where vehicles are observed, the direction from the site, and anything else that clarifies where vehicles are observed (as described on the site-specific protocol).
    a. If there are vehicles parked illegally (i.e., not all four tires are off the pavement), are parked in a way that disturbs the environment (e.g., in the bushes/trees), or similar, take some limited illustrative pictures and send them to the Coordinator.
8. After you complete the last parking count, review your datasheets to be sure everything is filled in correctly and clearly written. Staple all of your sheets together in the order they were filled out (i.e., first sheet on top and last sheet on bottom). Put the completed count sheets in your plastic folder. Give your completed sheets to the Coordinator by the end of the day. They will review your data and give you feedback for your next shift.
9. If you ever make a mistake when recording information on a count sheet, put a line through the text you want to correct and write the corrected text next to the text you have lined out.

ONSITE STUDY #3 – RED HOOK VISITATION

1. When you and your partner arrive at the site, decide who will monitor arriving vehicles to Red Hook Road and who will monitor arriving pedestrians.
2. Fill out the information at the top of your *Study #3: Red Hook Visitation Study - Vehicles* (or *Pedestrians*) count sheet: your *Name* and the *Date.*
3. Do not begin collecting data before your assigned start time for the site. Fill in the *Datasheet Monitoring Start Time* to reflect the actual time you begin collecting data, ideally at the scheduled start time or as soon as possible thereafter. Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.
4. If you are monitoring arriving vehicles, for each vehicle that passes you as it enters Red Hook Road (as indicated by the "IN" arrow on the site-specific protocol), you will record the time the vehicle arrives, the vehicle type (see count sheet for categories), and the number of people in the vehicle.

a. Record the time a vehicle arrives to the Park. Use 12-hour time and circle "am" or "pm".
    i. Wear a watch rather than using your phone to make it easier to read the time and then record it.
b. Circle the vehicle type, using either "N" for NPS or enforcement, "T" for taxi, "W" for work vehicle, or "PV" for passenger vehicle.
    i. NPS or other similar enforcement vehicles (e.g., Virgin Islands police) will be clearly marked as such.
    ii. Taxis include safari taxis and any other types you might see, including vans, cars, etc.
    iii. A work vehicle includes labeled work trucks, vans, or similar vehicles that are clearly driving past for work, not recreation.
    iv. Passenger vehicles include jeeps, cars, trucks (not labeled as a work truck), SUVs, vans, motorcycles, and similar. These are vehicles that do not appear to be heading into the park for work.
c. Record the number of people (all adults and children) observed in the vehicle. If you cannot see into the vehicle due to tinted windows or otherwise cannot get an accurate count of people, leave this item blank. Only record this item if you can get an accurate count of the people in the vehicle. It's OK to leave this blank for some vehicles.
    i. When recording the number of people in a taxi, include the driver in the count as well. You will include everyone in the vehicle for all vehicles.

5. If you are monitoring arriving pedestrians, for each party of pedestrians arriving together (e.g., people in the same group arriving by foot or on bikes), you will record the time the party arrives, the party type (see count sheet for categories), and the number of people in the party.
    a. Record the time a party arrives to the Park. Use 12-hour time and circle "am" or "pm".
    b. Circle the pedestrian party type, using either "NR" for non-recreation or "R" for recreation.
        i. Someone is engaged in recreation if they are doing an activity for fun at the site. Non-recreation visitors include people working or similar.
    c. Record the number of people observed in the party.
6. Do not record information for vehicles or pedestrians *departing* from Red Hook Road. You will only record information for arrivals. In the unlikely event of a vehicle or pedestrian entering the site multiple times during your shift, do not

record any re-entries (i.e., only record the first entry). If you are not sure if a vehicle or pedestrian is entering for an additional time, treat them as a first-time arrival and record the information.

7. When you run out of empty rows on a count sheet, begin a new sheet. You do not need to record the *Datasheet Monitoring End Time* on your previous sheet. On your new sheet, prioritize recording information about each arriving vehicle or pedestrian party. When you have a moment, fill in your *Name*, the *Date*, and the *Datasheet Monitoring Start Time*.
8. Do not collect data after your assigned end time for the site. Fill in the *Datasheet Monitoring End Time* on your final count sheet to reflect the actual time you stop collecting data, ideally at the scheduled end time. Use 12-hour time and circle "am" or "pm".
9. At the end of your shift, review your datasheets to be sure everything is filled in correctly and clearly written. Staple all of your sheets together in the order they were filled out (i.e., first sheet on top and last sheet on bottom). Put the completed count sheets in your plastic folder. Give your completed sheets to the Coordinator by the end of the day. They will review your data and give you feedback for your next shift.
10. If you ever make a mistake when recording information for an arriving vehicle or pedestrian, put a line through the text you want to correct and write the corrected text next to the text you have lined out. If there is not enough space to do this, put a line through the entire row and use the next row to record the information you intended to record.
11. Your shifts are designed so that ideally you do not miss any monitoring time. However, if you have to use the bathroom or stop monitoring for any reason, first see if your partner can cover your data collection. If not, and you must stop collecting data, use the next available line on your count sheet to write a note about the missed monitoring time (e.g., "Missed 4:10 to 4:15).
12. An IEc Study Manager will be responsible for recording the automated vehicle counter reading at Red Hook Road at the start and end of the shift. They may record it themselves or ask a field staff member to read the LCD screen and text the count to them.
    a. An IEc Study Manager will use separate instructions to download the hourly data from the Red Hook Road vehicle counter after the study is complete.

ONSITE STUDY #4 & #5 – NORTHSHORE AND SOUTHSHORE BOATING USE

1. When you arrive at a site, fill out the information at the top of your *Study #4 & #5: North and Southshore Boating Use Study* count sheet: your *Name*, the *Date*, and your assigned *Monitoring Location* (circle to match your assigned site).

2. Do not begin collecting data before your assigned start time for the site. Fill in the *Datasheet Monitoring Start Time* to reflect the actual time you begin collecting data, ideally at the scheduled start time or as soon as possible thereafter. Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.
    a. Data collection times vary by site. There are three "primary" sites where data collection will occur from 7 am to 6 pm on all four days of the study. These include Cruz Bay Dock, Salomon/Caneel Bays, and Maho/Francis Bays. There are eight "secondary" sites, which include Hawksnest Bay, Trunk Bay, Cinnamon Bay, Leinster/Waterlemon Bay, Hurricane Hole, Salt Pond Bay, Great Lameshur Bay, and Little Lameshur Bay. Data collection will occur at four of these eight sites on a given day, either from 9 am to 12 pm or 12 pm to 3 pm.
3. For each boat departing from the NPS Dock at Cruz Bay or arriving to a bay, you will record the time the boat departs the NPS dock or arrives to the bay, the boat name, the boat type (see count sheet for categories), and the number of people on the boat.
    a. A boat departs the NPS Dock when it moves away from the dock and leaves the area.
    b. A boat arrives to a bay when it crosses the red line enclosing the bay on the site-specific protocol and then stops in the bay. Do not count boats passing through a bay that do not stop.
    c. Do not count boats that are already in a bay when you begin collecting data.
    d. Record the time the boat departs the NPS dock or arrives to a bay. Use 12-hour time and circle "am" or "pm".
    e. Record the boat/vessel name if it is visible, otherwise leave this item blank. The name may appear on the stern (back) or on the side of the boat. It may be difficult to see the name, but use your binoculars and do your best.
    f. Circle the boat type, using either "T" for tour, "ER" for enforcement/rescue, "P" for powerboat, or "M" for monohull sailboat, "C" for catamaran sailboat, or "D" for dinghy. In some cases, a boat may fall into multiple categories (e.g., a catamaran may also be a tour boat). When this occurs, select the category that comes first on the list.
        i. A tour boat includes snorkel tours, sunset cruises, or similar types of vessels. These boats are operated by a tour company.
        ii. An enforcement/rescue boat is a non-recreation boat.
        iii. A powerboat is larger than a dinghy, up to and including super yachts, and they do not have a mast.

iv. A monohull sailboat has a mast and a single hull. The boat might be privately owned or chartered. While these boats usually have a motor, they are distinguished from a Powerboat by having a mast.

v. A catamaran sailboat has a mast and two hulls. The boat might be privately owned or chartered. While these boats usually have a motor, they are distinguished from a Powerboat by having a mast.

vi. A dinghy is a small vessel that often has a motor and is towed or carried by a larger vessel. A dinghy should only be counted if it is not attached to or associated with another boat also departing the NPS Dock or arriving to the bay. If a dinghy is attached to/associated with a larger vessel departing the NPS dock or arriving to a bay, only count the larger boat and ignore the dinghy.

g. Record the number of people observed on the boat. If people disembark (e.g., to snorkel) while you are counting the people on the boat, include all people associated with the boat, even if they are not currently onboard. If you cannot see exactly how many people are on the boat, but you can reasonably approximate the number of people, record your best estimate. Otherwise leave this item blank.

4. A boat will be recorded on the datasheet each time it departs from the NPS Dock or arrives to a bay, and may be counted multiple times.

5. When you run out of empty rows on a count sheet, begin a new sheet. You do not need to record the *Datasheet Monitoring End Time* on your previous sheet. On your new sheet, prioritize recording information about each boat. When you have a moment, fill in your *Name*, the *Date*, your assigned *Monitoring Location* (circle to match your assigned site), and the *Datasheet Monitoring Start Time*.

6. Do not collect data after your assigned end time for the site. Fill in the *Datasheet Monitoring End Time* on your final count sheet to reflect the actual time you stop collecting data, ideally at the scheduled end time. Use 12-hour time and circle "am" or "pm".

7. At Salomon/Caneel Bays and Maho/Francis Bays, you will conduct a count of boats stationary in the bays at 6 pm, and record the tally next to *Count of Boats Stationary in Bay at 6 pm* on your count sheet. Note, the boats you count may include boats on your count sheet(s) that arrived during your shift.

    a. At Salomon/Caneel Bays, first count all the stationary boats in the bays that you can see from the monitoring location on Honeymoon Beach. Use your phone to take a picture of the boats you can see in the direction of Caneel Bay. Record your partial count on the back of your count sheet. Next, drive to Caneel Bay and walk out to the beach where the bay is in

view. Referencing the picture of the boats you could see from Honeymoon Beach, count the *additional* boats stationary in Caneel Bay that you could not see from Honeymoon Beach. Add up the two partial counts and record the total tally next to *Count of Boats Stationary in Bay at 6 pm* on your count sheet.

b. At Maho/FrancisBays, first count all the stationary boats in the bays that you can see from the monitoring location on Maho Beach. Use your phone to take a picture of the boats you can see in the direction of Francis Bay. Record your partial count on the back of your count sheet. Next, drive to Francis Bay and walk out to the beach where the bay is in view. Referencing the picture of the boats you could see from Maho Beach, count the *additional* boats stationary in Francis Bay that you could not see from Maho Beach. Add up the two partial counts and record the total tally next to *Count of Boats Stationary in Bay at 6 pm* on your count sheet.

8. At the end of your shift, review your datasheets to be sure everything is filled in correctly and clearly written. Staple all of your sheets together in the order they were filled out (i.e., first sheet on top and last sheet on bottom). Put the completed count sheets in your plastic folder. Give your completed sheets to the Coordinator by the end of the day. They will review your data and give you feedback for your next shift.
9. If you ever make a mistake when recording information about a boat, put a line through the text you want to correct and write the corrected text next to the text you have lined out. If there is not enough space to do this, put a line through the entire row and use the next row to record the information you intended to record.
10. Your shifts are designed so that ideally you do not miss any monitoring time. However, if you have to use the bathroom or stop monitoring for any reason, first try to call the Coordinator or an IEc Study Manager to see if someone can cover data collection for you. If you must stop collecting data, use the next available line on your count sheet to write a note about the missed monitoring time (e.g., “Missed 4:10 to 4:15).
11. An IEc Study Manager will be responsible for recording the automated vehicle counter reading at Lind Point at 7 am (when data collection begins for the day) and 6 pm (when data collection ends for the day). They may record it themselves or ask a field staff member to read the LCD screen and text the count to them.

    a. An IEc Study Manager will use separate instructions to download the hourly data from the Lind Point vehicle counter after the study is complete.

ONSITE STUDY #6 – TRAIL USE

1. When you arrive at a site, fill out the information at the top of your *Study #6: Trail Use Study* count sheet: your *Name*, the *Date*, and your assigned *Monitoring Location* (circle to match your assigned site).
2. Do not begin collecting data before your assigned start time for the site. Fill in the *Datasheet Monitoring Start Time* to reflect the actual time you begin collecting data, ideally at the scheduled start time or as soon as possible thereafter. Use 12-hour time and circle "am" or "pm" rather than using 24-hour military time.
3. For each party of trail users entering the trail together (as indicated by the "IN" arrow on the site-specific protocol), you will record the time the party enters the trail, the party type (see count sheet for categories), and the number of people in the party.
    a. Record the time a party enters the trail. Use 12-hour time and circle "am" or "pm".
    b. Circle the trail use party type, using either "NPS" for NPS, "NR" for non-recreation, or "R" for recreation.
        i. Someone is engaged in recreation if they are hiking for fun at the site. Non-recreation visitors include people working or similar. NPS personnel should be recorded separately from non-recreation.
    c. Record the number of people observed in the party.
4. If you are monitoring trail use at Upper Lind Point/Upper Caneel Hill Trails OR Maria Hope and Reef Bay Trails, you will monitor two trails but fill out a separate count sheet for each site.
5. Do not record information for people *departing* the trail. You will only record information for people entering the trail. In the unlikely event of a person entering the trail multiple times during your shift, do not record any re-entries (i.e., only record the first entry). If you are not sure if a person is entering for an additional time, treat them as a first-time entry and record the information.
6. When you run out of empty rows on a count sheet, begin a new sheet. You do not need to record the *Datasheet Monitoring End Time* on your previous sheet. On your new sheet, prioritize recording information about people entering the trail. When you have a moment, fill in your *Name*, the *Date*, and the *Datasheet Monitoring Start Time.*
7. Do not collect data after your assigned end time for the site. Fill in the *Datasheet Monitoring End Time* on your final count sheet to reflect the actual time you stop collecting data, ideally at the scheduled end time. Use 12-hour time and circle "am" or "pm".

8. At the end of your shift, review your datasheets to be sure everything is filled in correctly and clearly written. Staple all of your sheets together in the order they were filled out (i.e., first sheet on top and last sheet on bottom). Put the completed count sheets in your plastic folder. Give your completed sheets to the Coordinator by the end of the day. They will review your data and give you feedback for your next shift.
9. If you ever make a mistake when recording information about people entering the trail, put a line through the text you want to correct and write the corrected text next to the text you have lined out. If there is not enough space to do this, put a line through the entire row and use the next row to record the information you intended to record.
10. Your shifts are designed so that ideally you do not miss any monitoring time. However, if you have to use the bathroom or stop monitoring for any reason, first try to call the Coordinator or an IEc Study Manager to see if someone can cover data collection for you. If you must stop collecting data, use the next available line on your count sheet to write a note about the missed monitoring time (e.g., "Missed 4:10 to 4:15).
11. An IEc Study Manager will be responsible for recording the automated trail counter readings at Lind Point, Reef Bay, and Salt Pond Bay Trails at the start and end of the shift. They may record it themselves or ask a field staff member to read the LCD screens and text the counts to them.
    a. An IEc Study Manager will use separate instructions to download the hourly data from all the trail counters after the study is complete.

AT THE END OF THE STUDY

Keep all equipment and supplies for the duration of the study. You will return them to the Coordinator at the end of the study or whenever you work your last shift.

FVINP will enter the data you collect into Microsoft Excel and it will be used by IEc to estimate visitation to the Park and develop a range of quantitative factors mentioned earlier in this document. If you are interested, we can share the study results with you once they are ready.

DRESS

You will be working outside, so you should dress appropriately for the weather. You should wear the FVINP volunteer t-shirt provided to you to identify yourself as a data collector. The Safety Plan (Attachment B) provides additional details.

PROFESSIONAL CONDUCT

Please behave in a professional and courteous manner throughout the study. Please arrive to each site on time and perform all assigned responsibilities to the standards required.

INCLEMENT WEATHER

The study will take place rain or shine. In the case of particularly bad weather, we may cancel one or more shifts. If you believe that weather is impeding your ability to complete your shift, please call the Coordinator to discuss. The Coordinator will notify you if your shift is cancelled due to weather after consulting with an IEc study manager. Any cancelled shifts will likely be rescheduled.

PERSONAL SAFETY

Your safety is our top priority. If you ever perceive an unsafe condition, you should take immediate action to avoid or mitigate the condition. If there is an emergency or you feel threatened, call 9-1-1 or a Law Enforcement ranger at 866-995-8467. You may also call the Coordinator or an IEc study manager who will assist you in any way possible. If you are unable to complete your assigned duties due to safety concerns, you should contact the Coordinator.

Cell phone service may be spotty in some areas of the Park, so you may need to drive to get service in an emergency. The Coordinator and/or an IEc study manager will check in on you periodically during shift for an added safety check.

See the Safety Plan (Attachment B) for detailed personal safety information.

QUESTIONS FROM THE PUBLIC

Since this study is being conducted at outdoor sites, your work will be visible to the public. The public may ask you questions to learn more about the study and how the results will be used.

Attachment C has a list of some common questions that you may encounter and responses to each. If you are asked a question that you do not know the answer to or feel uncomfortable answering, please direct them to the FVINP contact listed in Attachment C. If someone approaches you during your work in a threatening way, you do not need to answer their questions. Simply move away, leaving the site as needed, to ensure your safety.

EQUIPMENT / SUPPLIES

Attachment A has a checklist of equipment and supplies that you should bring with you to each shift. Please follow up with the Coordinator if you need additional equipment or supplies during the study. They are responsible for printing datasheets and distributing them to field staff. If other equipment needs to be replaced, they will confer with IEc study managers to make a plan for replacing it.

ATTACHMENT A: EQUIPMENT CHECKLIST

You are required to have your own vehicle (or transportation provided by FVINP) and smartphone.

You will be provided with the following materials, and should have all of these with you during every shift:

- ☐ Ample number of count sheets for each onsite study
- ☐ Field Staff Handbook with safety plan (this document)
- ☐ Site-specific protocols for all sites
- ☐ Plastic folder for completed data forms
- ☐ Clipboard and several pens
- ☐ Hand tally counter (Study #2 only)
- ☐ Binoculars (Studies #4 & #5 only)
- ☐ First aid kit
- ☐ Traffic/safety vest
- ☐ FVINP t-shirt
- ☐ Stapler

We recommend that you bring the following:

- ☐ Watch (especially for Studies #1 & #3)
- ☐ Sunblock
- ☐ Bug spray
- ☐ Chair
- ☐ Umbrella
- ☐ Water
- ☐ Snacks

REMEMBER: You will be working outside, so be sure to dress appropriately for the weather. Bring outerwear suitable for a range of temperatures and precipitation.

VIRGIN ISLANDS NATIONAL PARK
VISITATION STUDY SAFETY PLAN

If there is an emergency or you feel threatened, call 9-1-1
or a Law Enforcement ranger at 866-995-8467

FVINP Coordinator

Jennifer Stone
(###) ###-####

IEc Study Managers:

Eric Horsch
(###) ###-####

Jane Israel
(###) ###-####

Local Hospitals:

Myrah Keating Smith
Community Health Center
86RG+C62, Susannaberg
St John 00830
(340) 693-8900

Schneider Regional
Medical Center
9048 Alton Adams Sr Dr
St Thomas 00802
(340) 776-8311

- Your safety is our top priority. If you ever perceive an unsafe condition, you should take immediate action to avoid or mitigate the condition. If there is an emergency or you feel threatened, call 9-1-1. You may also call the Coordinator or an IEc study manager who will assist you in any way possible.
- Please familiarize yourself with the nearest hospitals to your sites prior to your first shift.
- Remain aware of your surroundings and avoid any unsafe situations. If you are uncomfortable with your site assignment due to safety concerns, contact the Coordinator to discuss.

- Field staff need to notify the Coordinator with a text stating when they are entering the field for the day and again when they are leaving the field for the day. They also need to share their location with the Coordinator while in the field.

- When driving to and from sites, you should obey all traffic laws and drive safely. These include:
    - Wear your seatbelt at all times;
    - Obey all posted traffic signs, speed limits, and local rules of vehicle operation;
    - Use of alcohol, non-prescription/illegal drugs, or a cellular telephone (including both texting and talking, hand-held or hands-free) is prohibited while operating a motor vehicle;
    - Do not operate a motor vehicle if excessively drowsy or sleepy; and
    - Always park vehicles in designated parking areas or on a nearby road with all four tires off the pavement.
- You will be working outside, so be sure to dress appropriately for the weather. You should wear closed-toe footwear, such as tennis shoes. An umbrella or raincoat is recommended if rain looks likely. Apply sunscreen and wear a hat, as needed, to protect yourself from sun exposure.
- Unless the weather is particularly bad, data collection will take place rain or shine. If you believe that weather is impeding your ability to safely complete your shift, please call the Coordinator to discuss.
- Bring water and a first aid kit to the site. Make sure to bring enough water for your entire shift.
- If you feel overheated, find shade, drink water, and cool down until you feel ready to continue your shift. Notify a team member if aid and assistance is needed.
- If fatigue or exhaustion begins, rest and hydrate in the shade and notify a team member of your condition so aid may be provided.
- Keep a safe distance from all wildlife.
- Field staff must stay in publicly accessible areas at all times. Do not cross boundaries to enter areas that are closed to the public.

ATTACHMENT C: RESPONSES TO FREQUENTLY ASKED QUESTIONS

Who's conducting the study?

The study is being conducted by Friends of Virgin Islands National Park in cooperation with the National Park Service.

What are you doing? What is this study for? How will the results be used?

I'm collecting information about the public's use of this site and other areas in Virgin Islands National Park and Virgin Islands Coral Reef National Monument (VICRNM). My work includes conducting counts and making observations about vehicles, boats, and trail users. The results will be used to measure and characterize visitation to the Park.

Where is the study being conducted?

In addition to this site, the study is being conducted at other locations in the national park on St John and St Thomas.

How can I get more information about the study? Where will the results be made available?

You can find out more about the study by contacting Tonia Lovejoy with Friends of Virgin Islands National Park. Her email is tlovejoy@friendsvinp.org.

St. John Traffic Study (Onsite Study #1) Site-Specific Protocols

North Shore Rd at Lind Point

18.336487, -64.793198

Objective: Count and record information for every vehicle traveling in or out of the park. One person will monitor inbound traffic and another person will monitor outbound traffic. A third person will help monitor the busier direction of traffic, likely inbound in the morning and outbound in the afternoon.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is adjacent to the speed bump at the "Virgin Islands National Park" sign.

Method: For each vehicle, record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle. A vehicle is recorded on the datasheet each time it travels in or out of the park, and may be counted multiple times.





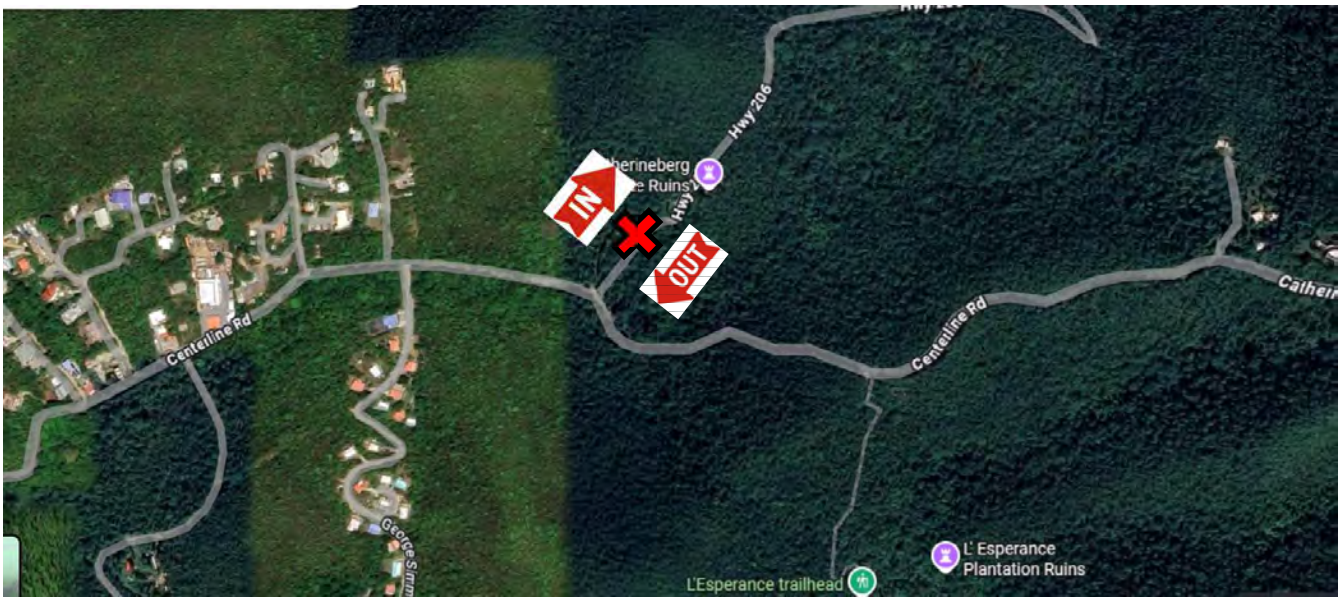
John Head Rd Near Catherineberg

18.343986, -64.761579

Objective: Count and record information for every vehicle traveling in or out of the park. One person will monitor traffic in both directions.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is between the "Virgin Islands National Park" sign on Centerline Road and the Catherineberg Ruins.

Method: For each vehicle, record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle. A vehicle is recorded on the datasheet each time it travels in or out of the park, and may be counted multiple times.





North Shore Rd near Kings Hill

18.357795, -64.736742

Objective: Count and record information for every vehicle traveling in or out of the park. One person will monitor traffic in each direction for a total of two people at the monitoring location.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the sharp turn near the bottom of the hill on North Shore Rd near the one-way loop.

Method: For each vehicle, record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle. A vehicle is recorded on the datasheet each time it travels in or out of the park, and may be counted multiple times.





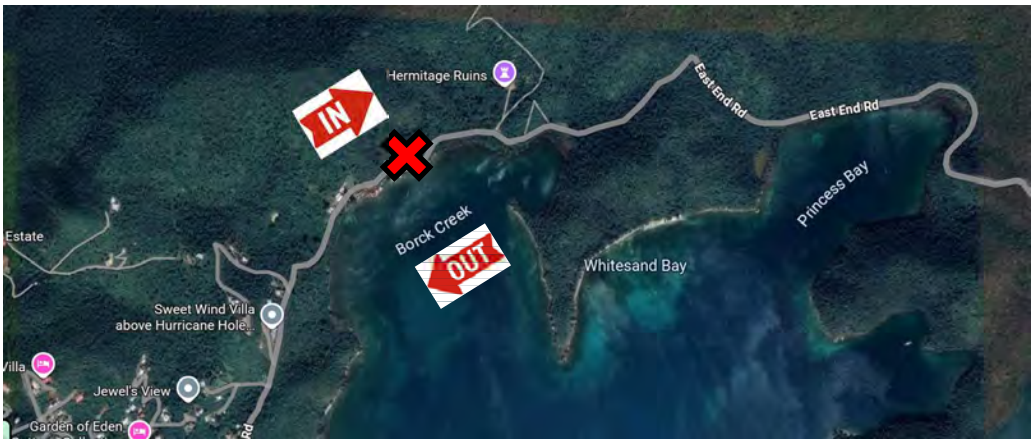
Route 10 (East End Road) at the NPS Boundary Along Borck Creek

18.354998, -64.702771

Objective: Count and record information for every vehicle traveling in or out of the park. One person will monitor traffic in both directions.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is near the "Entering Virgin Islands National Park" sign.

Method: For each vehicle, record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle. A vehicle is recorded on the datasheet each time it travels in or out of the park, and may be counted multiple times.





Route 10 (East End Road) at the NPS Boundary Along Haulover Bays

18.346475, -64.679673

Objective: Count and record information for every vehicle traveling in or out of the park. One person will monitor traffic in both directions.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the "Leaving Virgin Islands National Park" sign.

Method: For each vehicle, record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle. A vehicle is recorded on the datasheet each time it travels in or out of the park, and may be counted multiple times.





Lameshur (End of Route 107)

18.315407, -64.713782

Objective: Count and record information for every vehicle traveling in or out of the park. One person will monitor traffic in both directions.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is where the road turns to dirt near mile marker 4.6.

Method: For each vehicle, record the time the vehicle passes, the direction of the vehicle ("IN" or "OUT" of the park), the license plate, the vehicle type (see count sheet for categories), and the number of people in the vehicle. A vehicle is recorded on the datasheet each time it travels in or out of the park, and may be counted multiple times.







US Virgin Islands NP
Visitation Study

Study #1: St John Traffic Study

Name: _____ Date (mm/dd/yy): _____

Monitoring Location (Circle One): Lind Point John Head/Catherineberg Kings Hill

East End – Borck Creek East End – Haulover Lameshur

Datasheet Monitoring Start Time: _____ am/pm Datasheet Monitoring End Time: _____ am/pm

---

Time Vehicle Passes	Direction of Vehicle (Circle "IN" to the park OR "OUT" of the park)	License Plate (Record License Plate)	Vehicle Type (Circle One) NPS - "N", Taxi - "T", Work Vehicle - "W", or Passenger Vehicle – "PV"	People in Vehicle (Record # Observed or Leave Blank if Not Observed)
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	
am / pm	IN OUT		N T W PV	

IEc

North Shore Visitor Use and Parking Study (Onsite Study #2) Site-Specific Protocols: Beaches/Ruins

Salomon Bay Beach

18.338907, -64.793525

***NPS will allow field staff access to this site via Salomon Bay Rd through Caneel Bay.

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form.



Honeymoon Beach

18.340336, -64.791161

***NPS will allow field staff access to this site via Salomon Bay Rd through Caneel Bay.

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water. The site boundaries for the interior area count are indicated by the area outlined in green as shown on the map below.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form. Walk through the interior area of the site and count all recreators, including near the picnic tables and snack bar. Record the start time of the count and your final tally on the data form.



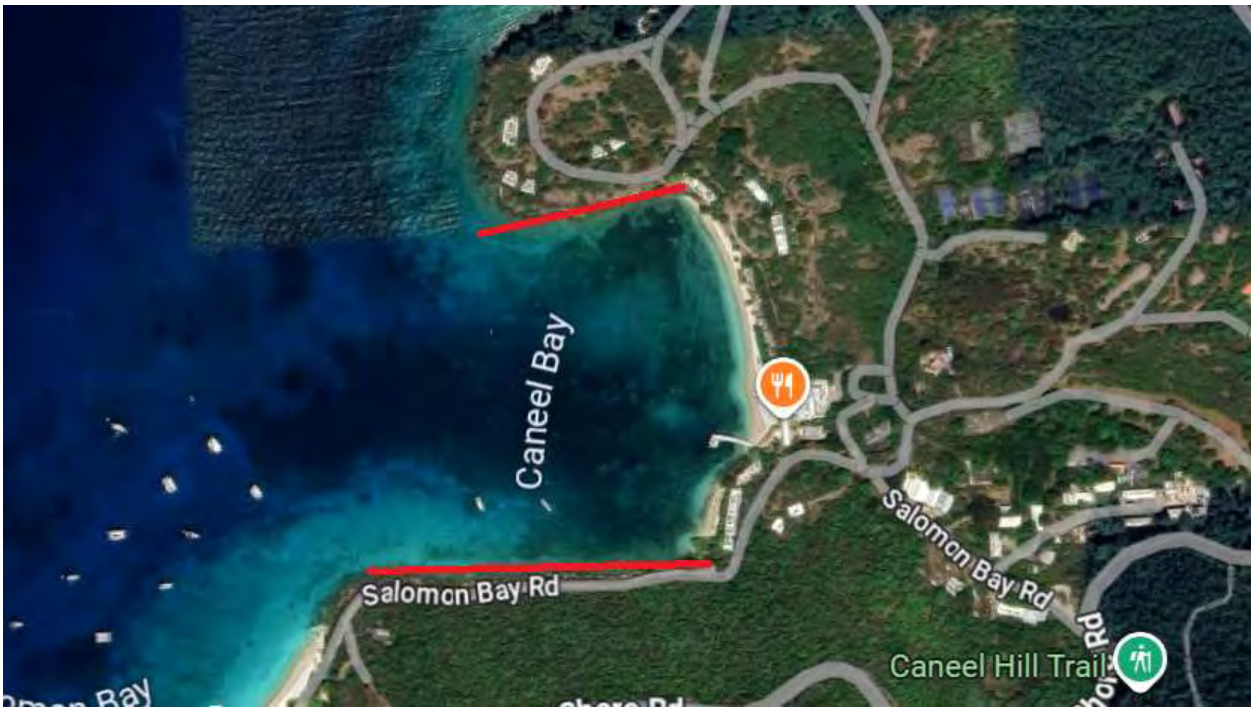
Caneel Bay Beach

18.343506, -64.786805

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form.



Hawksnest Beach

18.346095, -64.781174

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form.



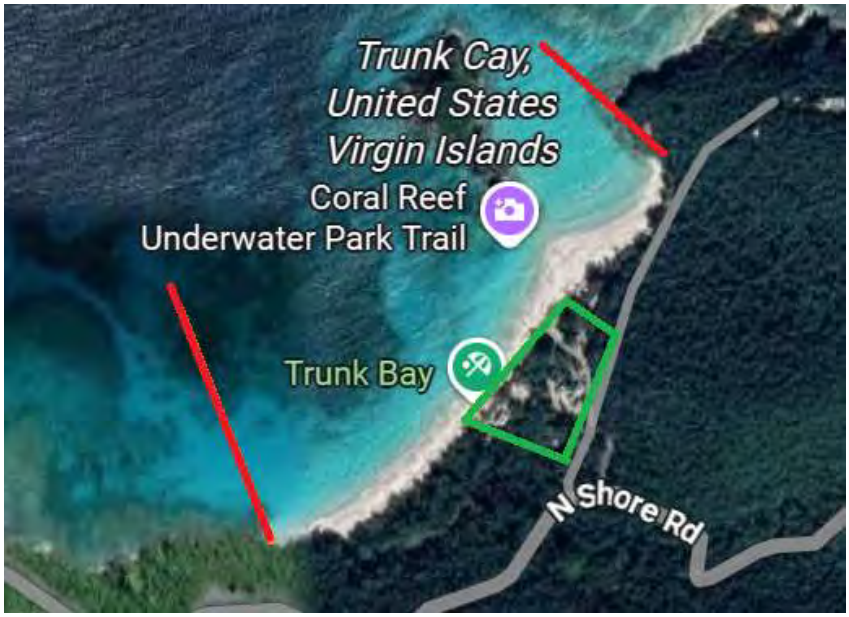
Trunk Bay Beach

18.353188, -64.768329

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water. The site boundaries for the interior area count are indicated by the area outlined in green as shown on the map below.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form. Walk through the interior area of the site and count all recreators, including near the pavilions, snorkel rental, snack bar, and exterior area of the public showers/rinse area. Record the start time of the count and your final tally on the data form.



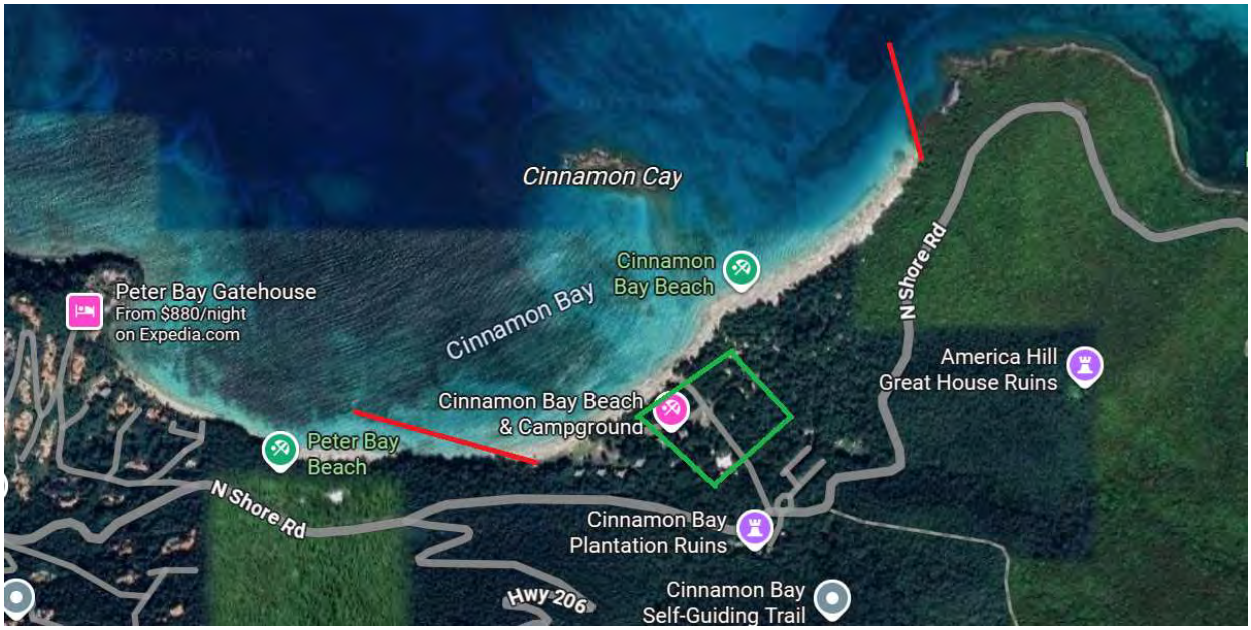
Cinnamon Bay Beach

18.353683, -64.755442

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water. The site boundaries for the interior area count are indicated by the area outlined in green as shown on the map below.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form. Walk through the interior area of the site and count all recreators, including near the beach equipment rental, food trucks, exterior area of the public showers/rinse area, and restaurant. Do not include the nearby areas with camping sites and cottages. Record the start time of the count and your final tally on the data form.



Maho Bay Beach

18.356201, -64.745909

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water, shade structures, and picnic areas on the beach side of the road. The site boundaries for the interior area count are indicated by the area outlined in green as shown on the map below.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach, in the water who are not on a boat, and under the shade structures and in picnic areas on the beach side of the road. Record the start time of the count and your final tally on the data form. Walk through the interior area of the site and count all recreators, including near the pavilions and the areas around the food trucks. Record the start time of your final tally and the count on the data form.



Francis Bay Beach

18.364568, -64.743506

Objective: Count beach and water recreators between the site boundaries.

Site Boundaries: The site boundaries for the beach and water count are indicated by the red lines as shown on the map below. The count area includes the beach and adjacent water.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk along the back of the beach from one boundary to the other boundary and count all recreators on the beach and in the water who are not on a boat. Record the start time of the count and your final tally on the data form.



Annaberg Ruins

18.363020, -64.730359

Objective: Count recreators/visitors at the ruins between the site boundaries.

Site Boundaries: The site boundaries for the count are indicated by the red lines as shown on the map below. The count area includes the trails through the ruins.

Method: Start your count at the time designated for today's date (there is a different start time every day). Walk from one boundary to the other boundary and count all recreators/visitors within the ruins and on the trails (within the boundaries). Record the start time of the count and your final tally on the data form.



Study #2: Northshore Beaches and Annaberg Ruins Recreation

Name: _____ Date (mm/dd/yy): _____

Monitoring Location (Circle One): Salomon Bay Beach Honeymoon Beach Caneel Bay Beach
Hawksnest Bay Beach Trunk Bay Beach Cinnamon Bay Beach
Maho Bay Beach Francis Bay Beach Annaberg Ruins

NORTHSHORE BEACHES

Beach and Water Count Start Time	Count of Beach and Water Recreators
am/pm	

Interior Area Count Start Time (If Applicable)	Count of Interior Area Recreators (If Applicable)
am/pm	

OR

ANNABERG RUINS

Count Start Time	Count of Recreators/Visitors
am/pm	

IEc

North Shore Visitor Use and Parking Study (Onsite Study #2) Site-Specific Protocols: Parking

Lind Point Parking

18.336487, -64.793198

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along North Shore Road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site).

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Caneel Bay Beach Parking

18.343506, -64.786805

Objective: Count vehicles parked in designated site parking lots and vehicles parked in non-designated spots near the site (e.g., along the access roads or North Shore Road).

Site Boundaries: Designated parking lots are indicated by the areas outlined in yellow as shown on the map below. Other parking areas at the site include along the access roads and stretches of North Shore Road that are closest to the site (as opposed to another site).

Method: Two people will ride in the same car and drive through the designated parking lots and other parking areas near the site. One person will drive, and the other person will count vehicles by type of parking (i.e., designated spots, non-designated spots). Do not separate the counts by parking area (i.e., A, B, C, and Shuttle). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Hawksnest Bay Beach Parking

18.346095, -64.781174

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along North Shore Road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site).

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



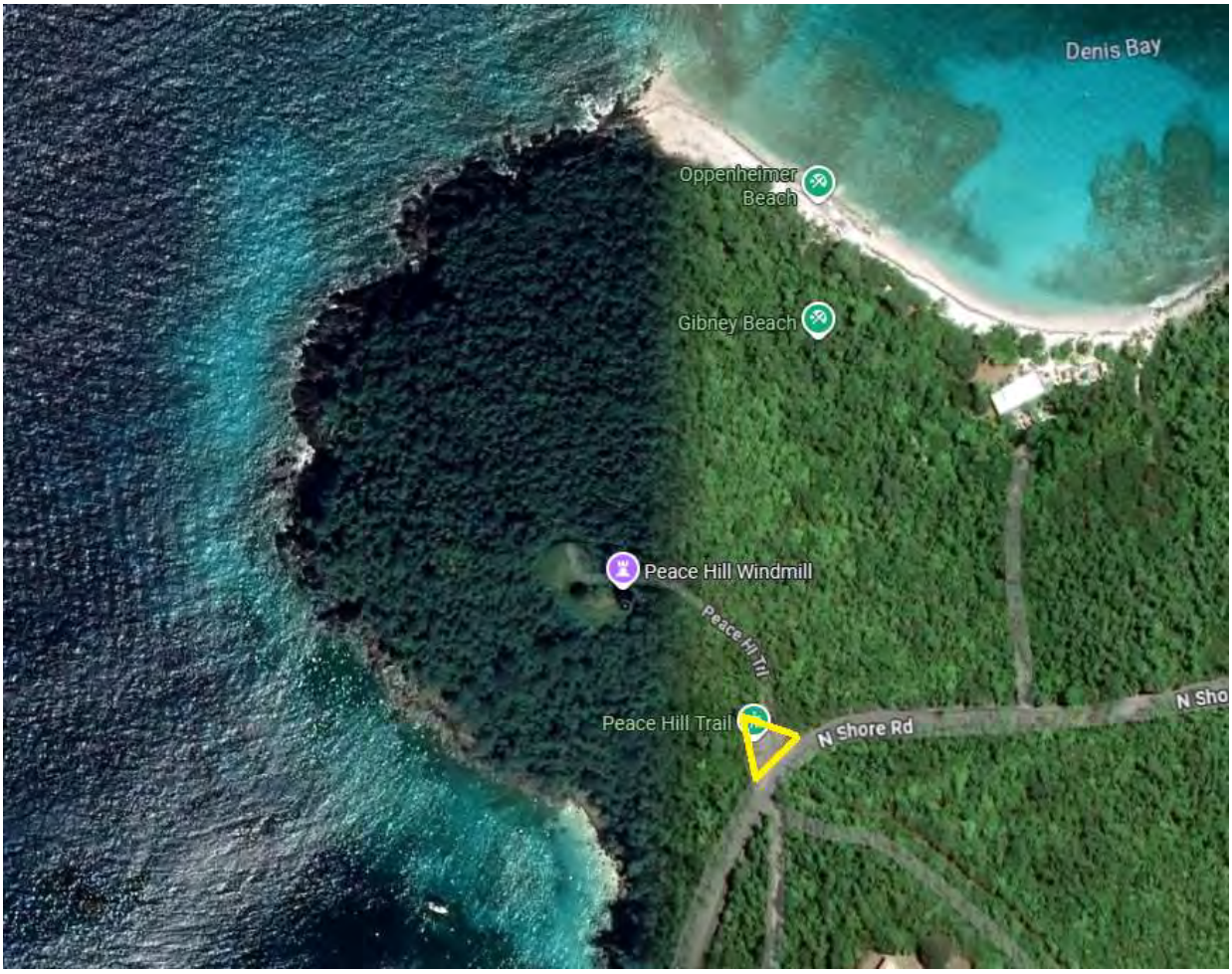
Peace Hill Trail Parking

18.350904, -64.776828

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along North Shore Road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site).

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Jumbie Bay Beach Parking

18.351043, -64.774587

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along North Shore Road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site).

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Trunk Bay Beach Parking

18.353188, -64.768329

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along North Shore Road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site). Do not count taxis or vehicles past the entrance station where NPS and concessionaire employees can park.

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



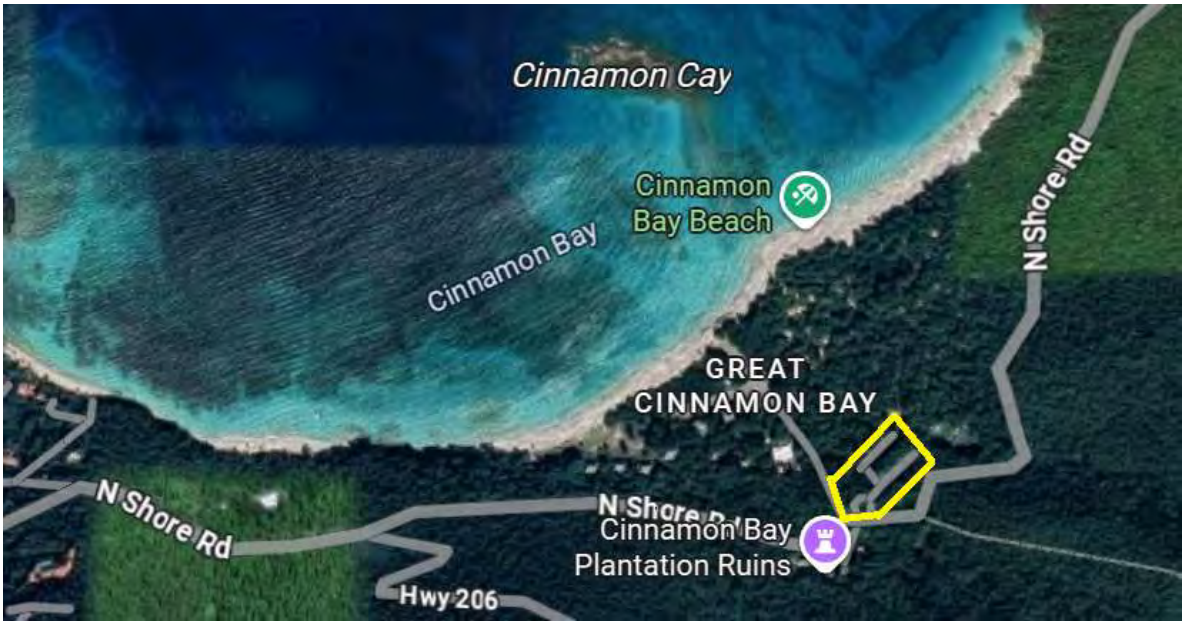
Cinnamon Bay Beach Parking

18.353683, -64.755442

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along North Shore Road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site). Do not count taxis or vehicles past The General Store where NPS and concessionaire employees can park.

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Maho Bay Beach Parking

18.356201, -64.745909

Objective: Count vehicles parked in designated site parking lots and vehicles parked in non-designated spots near the site (e.g., along North Shore Road, around the food trucks on the landward side of North Shore Road).

Site Boundaries: Designated parking lots are indicated by the areas outlined in yellow as shown on the map below. Other parking areas near the site include stretches of North Shore Road that are closest to the site (as opposed to another site) and around the food trucks on the landward side of North Shore Road. Do not count taxis.

Method: Two people will ride in the same car and drive through the designated parking lots and other parking areas near the site. One person will drive, and the other person will count vehicles by type of parking (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward), the direction from the site (e.g., toward Cruz Bay or away from Cruz Bay), and anything else that clarifies where vehicles are observed (e.g. around food trucks). Take illustrative pictures and send them to the Coordinator.



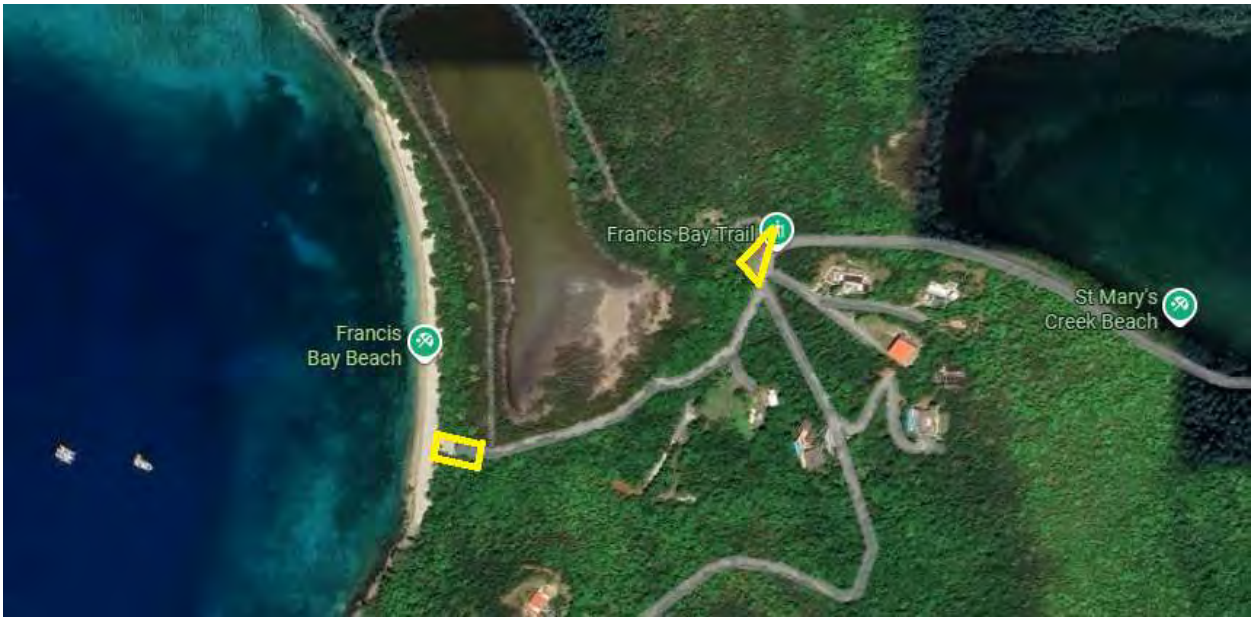
Francis Bay Beach Parking

18.364568, -64.743506

Objective: Count vehicles parked in designated site parking lots and vehicles parked in non-designated spots near the site (e.g., along the access road).

Site Boundaries: Designated parking lots are indicated by the areas outlined in yellow as shown on the map below. Other parking areas near the site include the access road leading to the beach.

Method: Two people will ride in the same car and drive through the designated parking lots and other parking areas near the site. One person will drive, and the other person will count vehicles by type of parking (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., toward Francis Bay Trail or away from Francis Bay Trail) and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Annaberg Ruins Parking

18.363020, -64.730359

Objective: Count vehicles parked in the designated site parking lot and vehicles parked in non-designated spots near the site (e.g., along the access road).

Site Boundaries: The designated parking lot is indicated by the area outlined in yellow as shown on the map below. Other parking areas near the site include the access road leading to the ruins.

Method: Two people will ride in the same car and drive through the designated parking lot and other parking areas near the site. One person will drive, and the other person will conduct the count of vehicles by category (i.e., designated spots, non-designated spots). Record the start time of the counts and the counts on the data form. If there are vehicles parked in non-designated spots, record description(s) of their locations. Use descriptors like the side of the road where vehicles are observed (e.g., beachward or landward) and anything else that clarifies where vehicles are observed. Take illustrative pictures and send them to the Coordinator.



Study #2: Northshore Parking Study

Name: _____ Date (mm/dd/yy): _____

Parking Location (Circle One):

Lind Point	Caneel Bay Beach	Hawksnest Bay Beach
Peace Hill Trail	Jumbie Bay Beach	Trunk Bay Beach
Cinnamon Bay Beach	Maho Bay Beach	
Francis Bay Beach	Annaberg Ruins	

Parking Count Start Time	Count of Vehicles Parked in Designated Spots	Count of Vehicles Parked in Non-Designated Spots
am/pm		

Description of Location(s) of Vehicles Parked in Non-Designated Spots. Take Limited Pictures and Send to Coordinator.

Red Hook Visitor Use Study (Onsite Study #3) Site-Specific Protocols

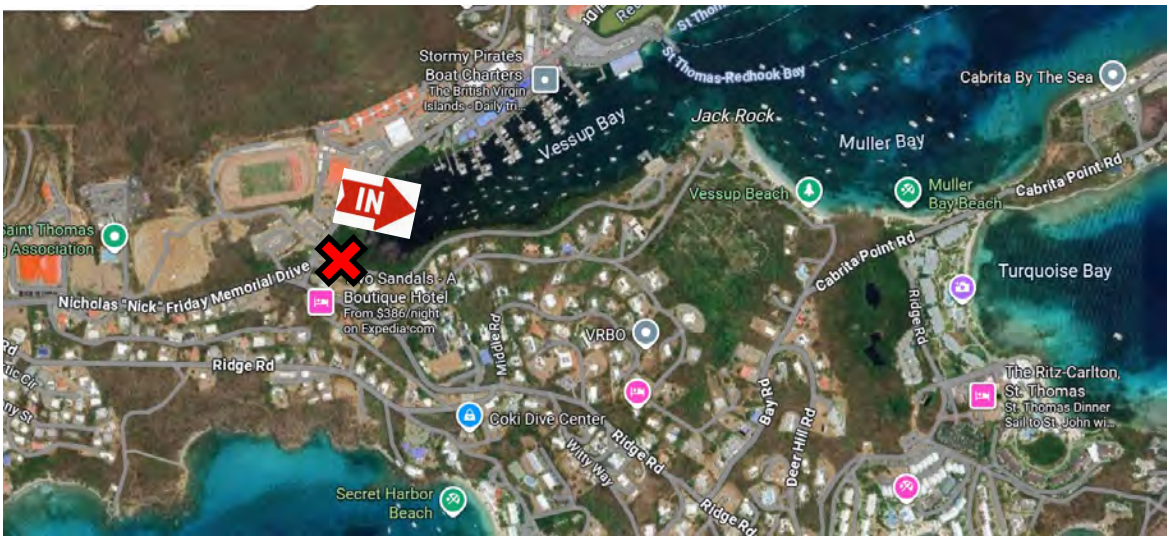
Red Hook Road

18.322503, -64.855362

Objective: Count and record information for every vehicle and party of pedestrians arriving to the park. One person will monitor arriving vehicles and another person will monitor arriving pedestrians for a total of two people at the monitoring location.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the base of Red Hook Road. The "IN" arrow indicates the direction of arriving vehicles and pedestrians.

Method: For each arriving vehicle (including motorcycles), record the arrival time, the vehicle type (see count sheet for categories), and the number of people in the vehicle. For each arriving party of pedestrians (including visitors on bicycles), record the arrival time, the pedestrian party type (non-recreation or recreation), and the number of people in the party.





Study #3: Red Hook Visitation Study - Vehicles

Name: _____ Date (mm/dd/yy): _____

Datasheet Monitoring Start Time: _____ am/pm Datasheet Monitoring End Time: _____ am/pm

---

Time Vehicle Arrives Into Park	Vehicle Type (Circle One) NPS - "N", Taxi - "T", Work Vehicle - "W", or Passenger Vehicle - "PV"				People in Vehicle (Record # Observed or Leave Blank if Not Observed)
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	
am / pm	N	T	W	PV	

Study #3: Red Hook Visitation Study – Pedestrians

Name: _____ Date (mm/dd/yy): _____

Datasheet Monitoring Start Time: _____ am/pm Datasheet Monitoring End Time: _____ am/pm

---

Time Pedestrian Party Arrives Into Park	Pedestrian Party Type (Circle One) Non-Recreation - "NR" or Recreation - "R"		People in Party (Record # Observed)
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	
am / pm	NR	R	

Boating Study (Onsite Study #4 & #5) Site-Specific Protocols

Cruz Bay Dock

18.332768, -64.793508

Objective: Count and record information for every boat departing the NPS Dock and adjacent area, which is outlined in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is next to the Visitors Center.

Method: For each departing boat, record the departure time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.





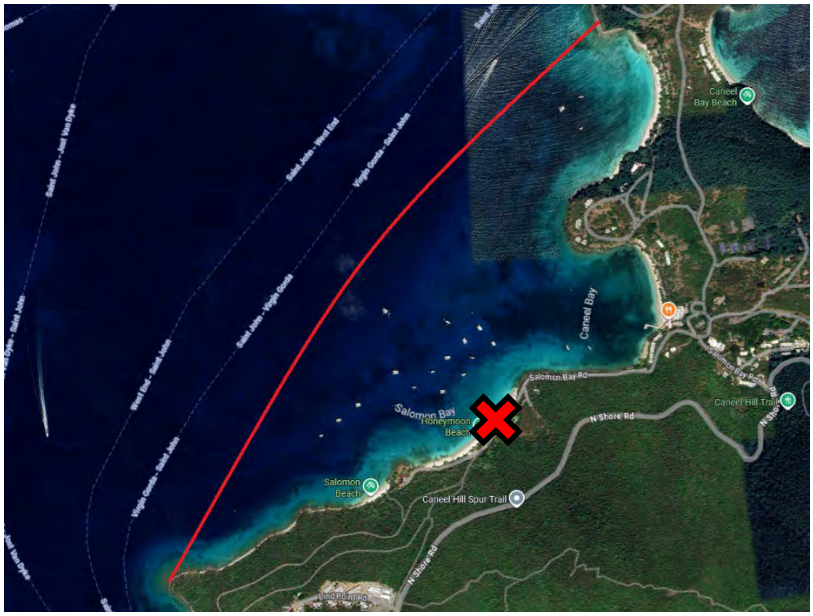
Salomon and Caneel Bays

18.340777, -64.790655

Objective: Count and record information for every boat arriving to the bays through the boundary marked in red in the photo below. Count the number of boats that are stationary in the bay at 6 pm.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on Honeymoon Beach. Although some boats may be distant or out of view after they arrive, you should be able to see them arriving through the boundary marked in red from the monitoring location.

Method: Do not count any boats that were already in the bays when you arrived. A boat arrives to the bays if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat. At 6 pm, count and record the number of boats that are stationary in the bays. First count stationary boats at Salomon Bay and then conduct the count at Caneel Bay.







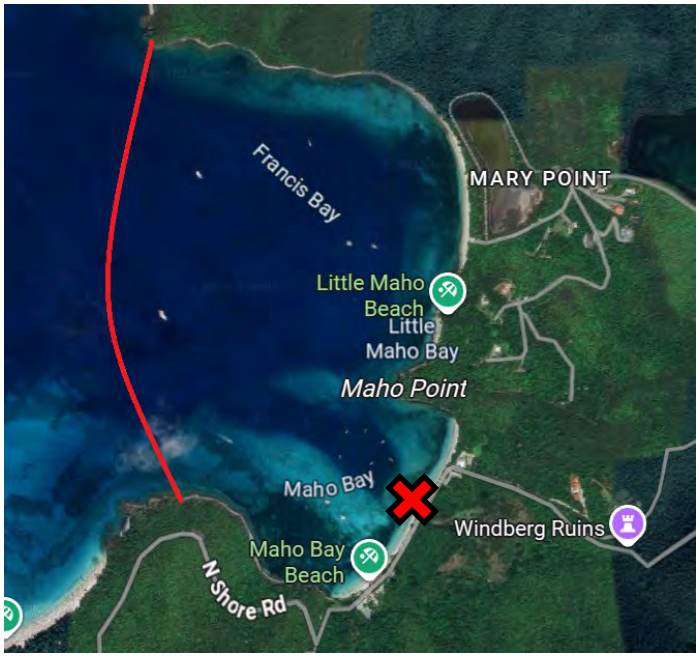
Maho and Francis Bays

18.357564, -64.744853

Objective: Count and record information for every boat arriving to the bays through the boundary marked in red in the photo below. Count the number of boats that are stationary in the bay at 6 pm.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on Maho Beach. Although some boats may be distant or out of view after they arrive, you should be able to see them arriving through the boundary marked in red from the monitoring location.

Method: Do not count any boats that were already in the bays when you arrived. A boat arrives to the bays if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat. At 6 pm, count and record the number of boats that are stationary in the bays. First count stationary boats at Maho Bay and then conduct the count at Francis Bay.







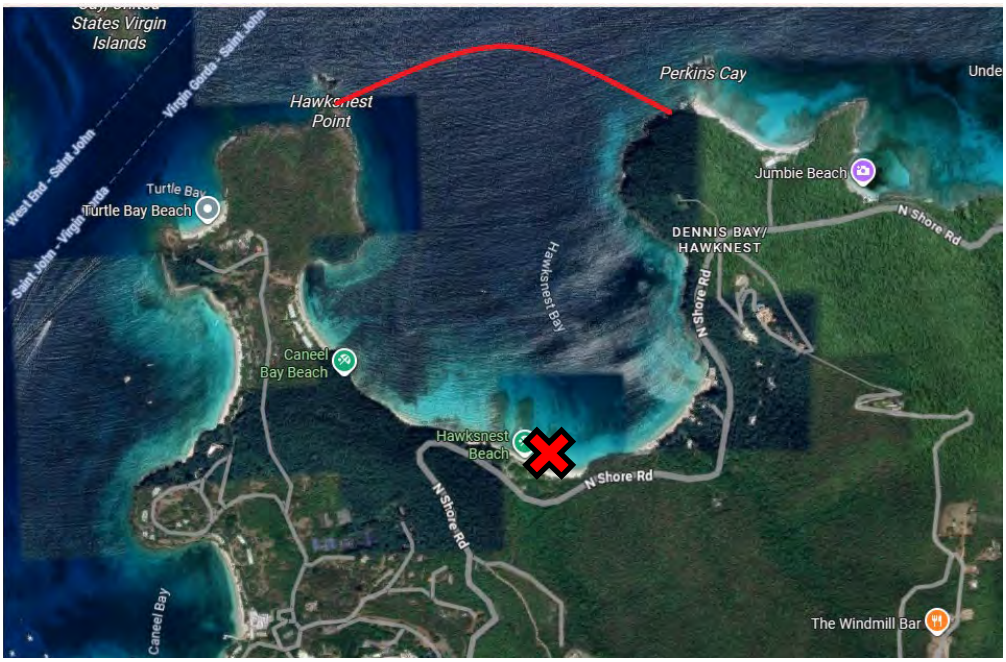
Hawksnest Bay

18.346095, -64.781174

Objective: Count and record information for every boat arriving to the bay through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach.

Method: Do not count any boats that were already in the bay when you arrived. A boat arrives to the bay if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.







Trunk Bay

18.353176, -64.768346

Objective: Count and record information for every boat arriving to the bay through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach.

Method: Do not count any boats that were already in the bay when you arrived. A boat arrives to the bay if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.







Cinnamon Bay

18.353683, -64.755442

Objective: Count and record information for every boat arriving to the bay through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach.

Method: Do not count any boats that were already in the bay when you arrived. A boat arrives to the bay if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.







Leinster/Waterlemon Bays

18.3644891, -64.7270207

Objective: Count and record information for every boat arriving to the bays through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach trail.

Method: Do not count any boats that were already in the bays when you arrived. A boat arrives to the bays if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.







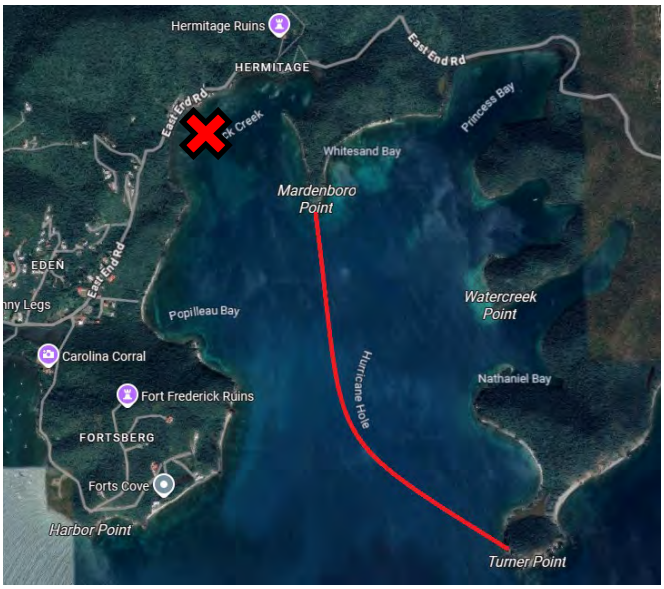
Hurricane Hole (Princess Bay, Otter Creek, and Water Creek)

18.354917, -64.703157

Objective: Count and record information for every boat arriving to the bay and creeks through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the opposite side of the road from the "Entering Virgin Islands National Park" sign. The opening to Princess Bay, Otter Creek, and Water Creek between Mardenboro and Turner Points is visible from the monitoring location.

Method: Do not count any boats that were already in Hurricane Hole when you arrived. A boat arrives to Hurricane Hole if it enters the monitoring location and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.





Saltpond Bay

18.309157, -64.705447

Objective: Count and record information for every boat arriving to the bay through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach.

Method: Do not count any boats that were already in the bay when you arrived. A boat arrives to the bay if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.





Great Lameshur Bay

18.318674, -64.720766

Objective: Count and record information for every boat arriving to the bay through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach.

Method: Do not count any boats that were already in the bay when you arrived. A boat arrives to the bay if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.







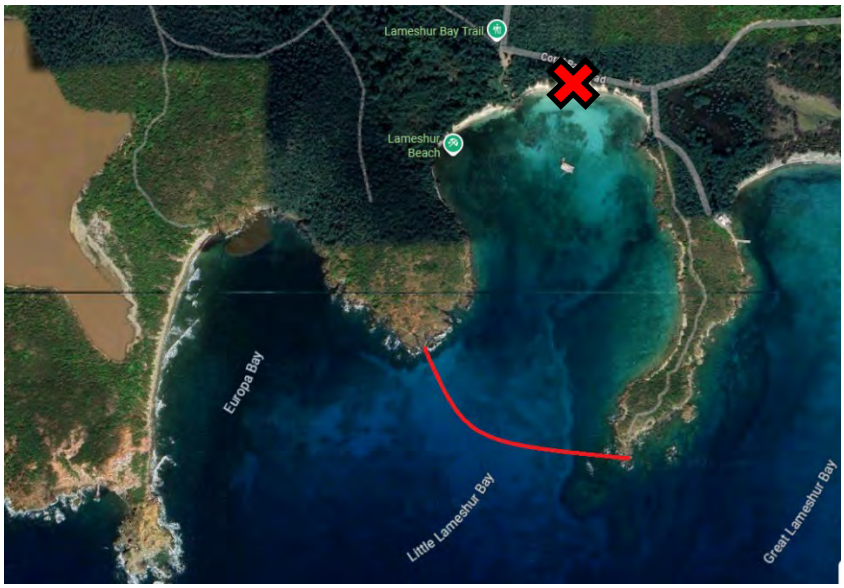
Little Lameshur Bay

18.320216, -64.726539

Objective: Count and record information for every boat arriving to the bay through the boundary marked in red in the photo below.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is on the beach.

Method: Do not count any boats that were already in the bay when you arrived. A boat arrives to the bay if it enters the area enclosed by the red line and stops (i.e., does not just pass through). For each arriving boat, record the arrival time, the boat name, the boat type (see count sheet for categories), and the number of people in the boat.





Study #4 & #5: North and Southshore Boating Use Study

Name: _____ Date (mm/dd/yy): _____

Monitoring Location (Circle One): Cruz Bay Dock | Salomon/Caneel Bays | Maho/Francis Bays | Hawksnest Bay | Trunk Bay | Cinnamon Bay | Leinster/Waterlemon Bays | Hurricane Hole | Salt Pond Bay | Great Lameshur Bay | Little Lameshur Bay

Datasheet Monitoring Start Time: _____ am/pm Datasheet Monitoring End Time: _____ am/pm

Count of Boats Stationary in Bay at 6 pm: _____ (Only Applies for Salomon/Caneel and Maho/Francis Bays)

Time Boat Departs (NPS Dock) or Arrives (Bays)	Boat Name (Record Vessel Name)	Boat Type (Circle One) Tour - "T", Enforcement/Rescue - ER, Powerboat - "P", Monohull Sailboat - "M", Catamaran Sailboat - "C", or Dinghy - "D"	People in Boat (Record # Observed or Leave Blank if Not Observed)
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	
am/pm		T ER P M C D	

Trails Study (Onsite Study #6) Site-Specific Protocols

Lower Lind Point Trail

18.333486, -64.793980

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the Lower Lind Point trailhead, up the stairs behind the NPS Visitors Center. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





Upper Lind Point/Caneel Hill Trails

18.336571, -64.793237

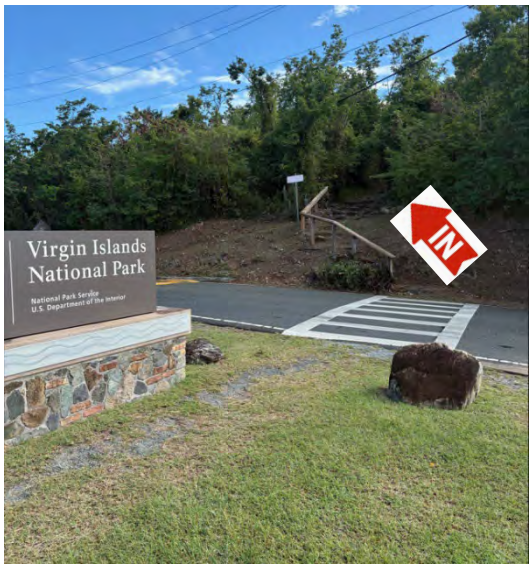
Objective: Count and record information for every party of trail users entering either trail. You will fill out a separate count sheet for each trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is near the Upper Lind Point and Upper Caneel Hill trailheads by the "Virgin Islands National Park" sign. The "IN" arrows indicate the direction of parties entering the trails.

Method: For each party of trail users entering either trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party. You will fill out a separate count sheet for each trail.







Lower Caneel Hill Trail

18.333428, -64.791689

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the Lower Caneel Hill trailhead along North Shore Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





Water Catchment Trail

18.339392, -64.777459

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the Water Catchment trailhead along Centerline Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





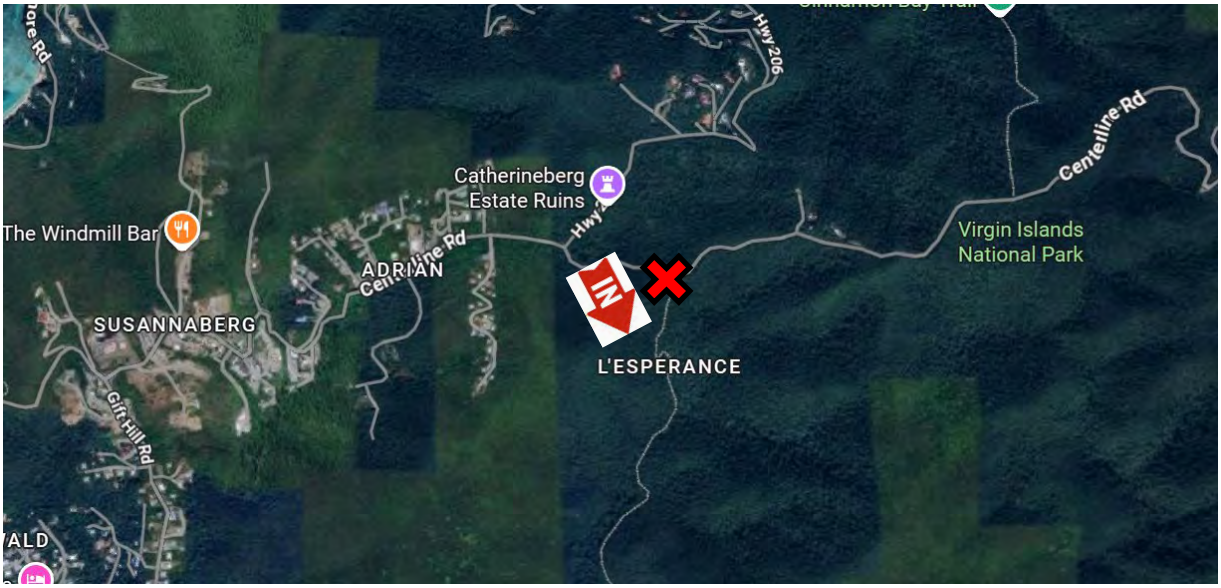
L'Esperance Trail

18.342599, -64.759406

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the L'Esperance trailhead along Centerline Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





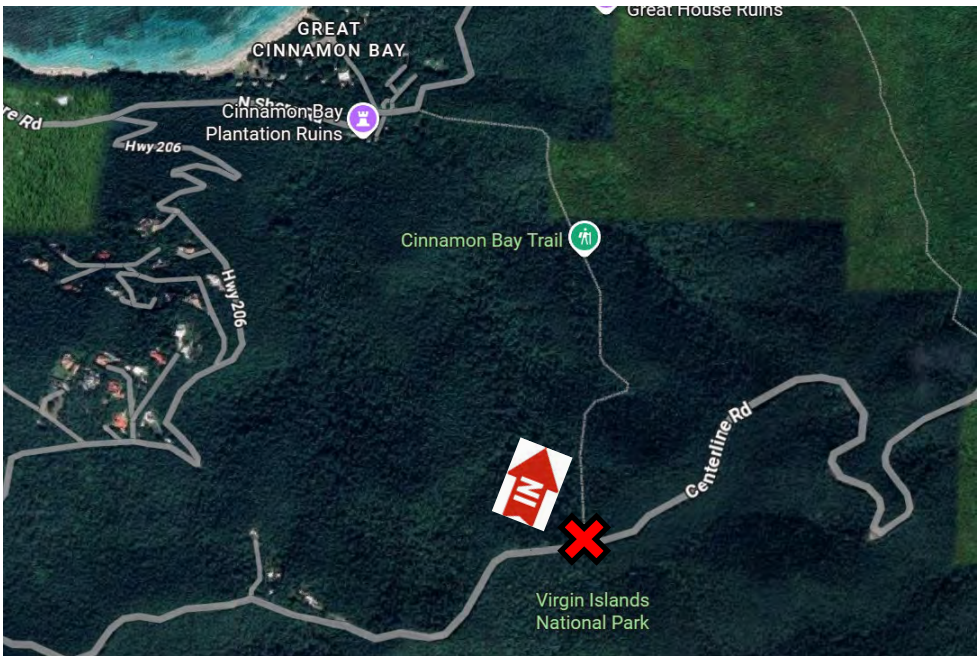
Cinnamon Bay Trail

18.344621, -64.750223

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the Cinnamon Bay trailhead along Centerline Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





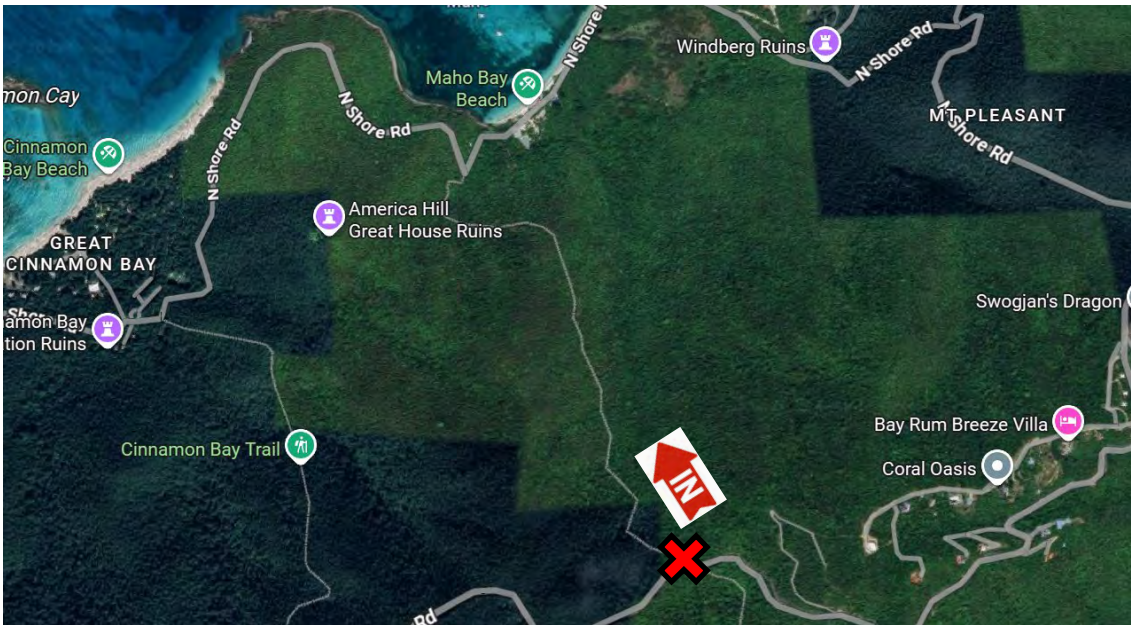
Maria Hope Trail

18.347628, -64.742621

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the Maria Hope trailhead along Centerline Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





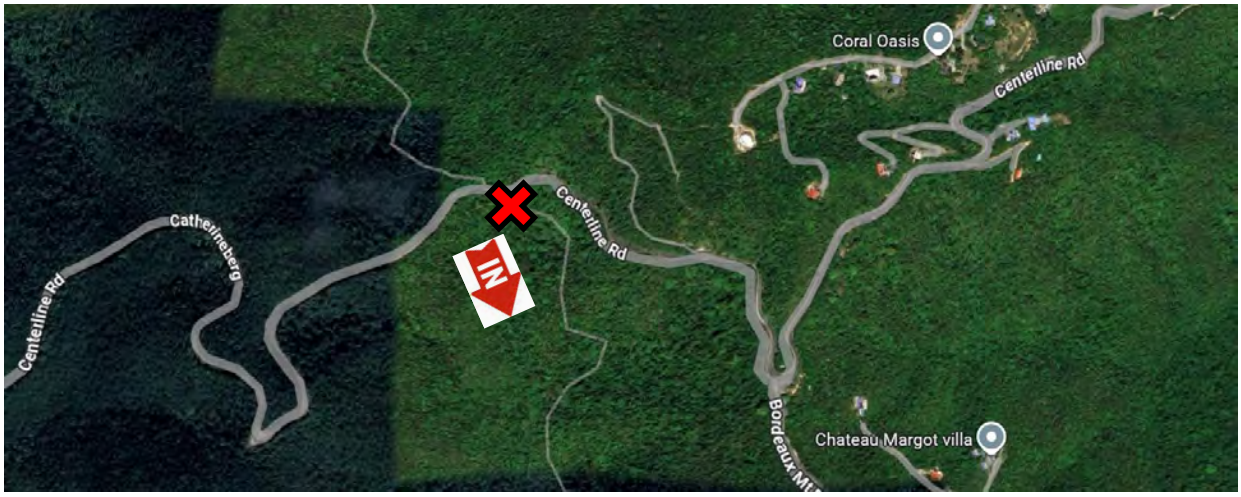
Reef Bay Trail

18.347554, -64.742814

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the Reef Bay trailhead along Centerline Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





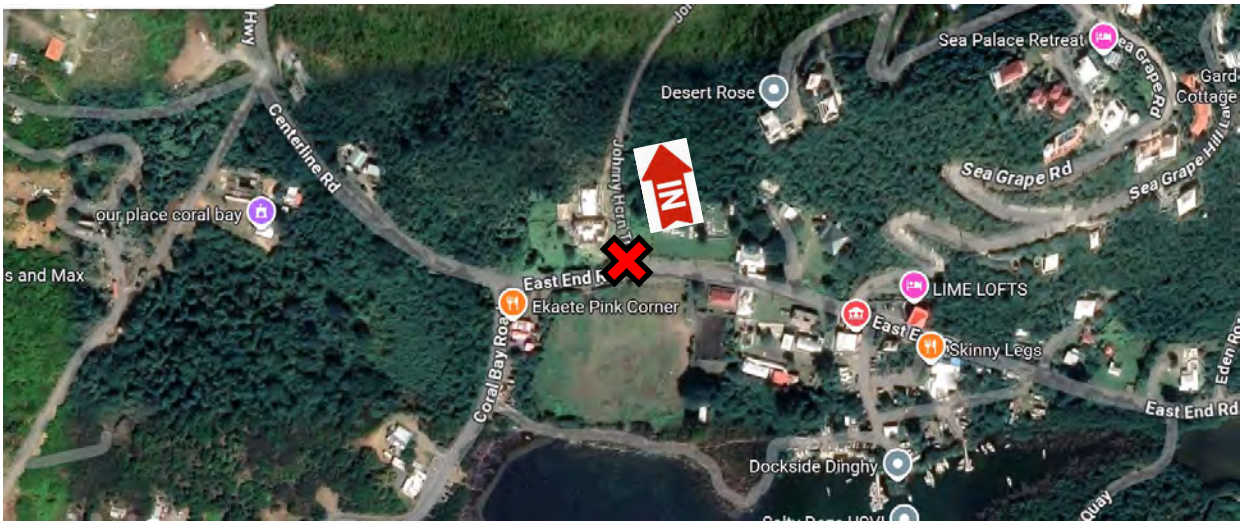
Johnny Horn Trail

18.348334, -64.713389

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the base of the road leading up to the Johnny Horn trailhead along Route 10 (East End Road). The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party. Do not count vehicles driving to the few properties up the road; only count pedestrians walking up the road to hike.





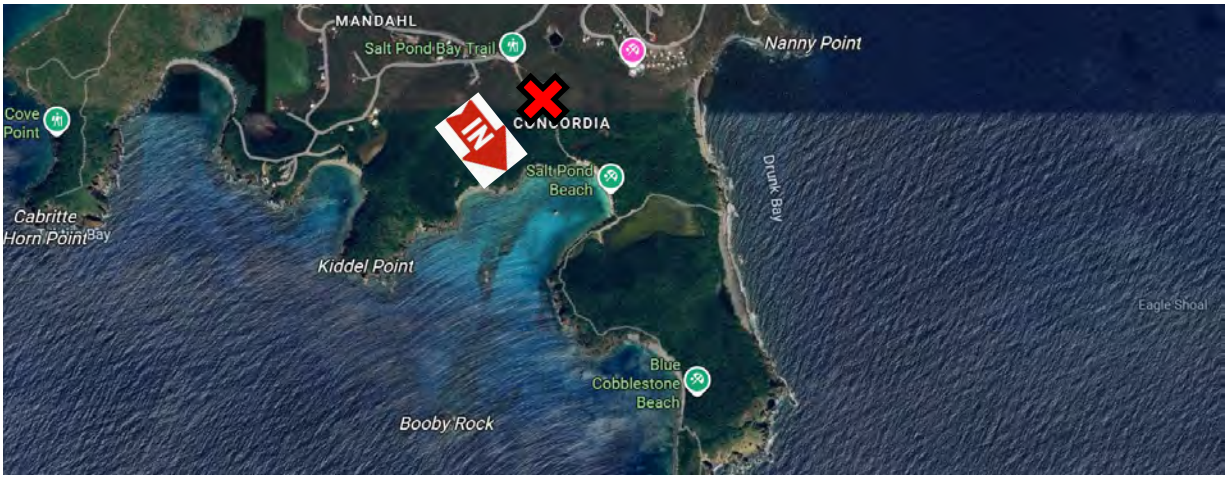
Salt Pond Bay Trail

18.310762, -64.706844

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the intersection of the Salt Pond Bay Trail and the trail leading from the Concordia Plantation Ruins. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





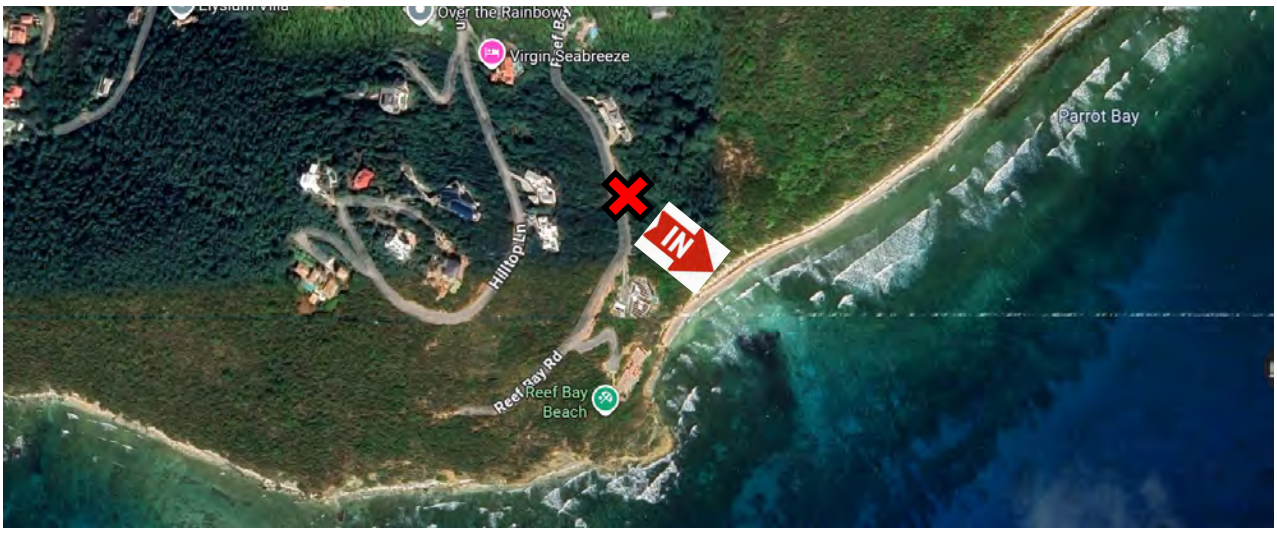
Trail to Reef Bay from Cocoloba Point

18.318366, -64.756658

Objective: Count and record information for every party of trail users entering the trail.

Monitoring Location: The monitoring location is indicated by the "X" in the photo below, which is at the trailhead at Cocoloba Point along Reef Bay Road. The "IN" arrow indicates the direction of parties entering the trail.

Method: For each party of trail users entering the trail, record the time they enter the trail, the party type (NPS, non-recreation, or recreation), and number of people in the party.





Study #6: Trail Use Study

Name: _____ Date (mm/dd/yy): _____

Monitoring Location (Circle One): Lower Lind Point Trail Upper Lind Point Trail Upper Caneel Hill Trail
Lower Caneel Hill Trail Water Catchment Trail L'Esperance Trail
Cinnamon Bay Trail Maria Hope Trail Reef Bay Trail
Johnny Horn Trail Salt Pond Trail Cocoloba Point Trail

Datasheet Monitoring Start Time: _____ am/pm Datasheet Monitoring End Time: _____ am/pm

---

Time Trail Use Party Enters Trail	Trail Use Party Type (Circle One) NPS - "NPS", Non-Recreation - "NR", or Recreation - "R"			People in Party (Record # Observed or Leave Blank if Not Observed)
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	
am / pm	NPS	NR	R	