Visitor Use Monitoring Field Protocols for Golden Gate National Recreation Area

Images: National Park Service, Golden Gate National Recreation Area

Troy E. Hall, Jesse Engebretson, & Ashley D'Antonio
Oregon State University
Report submitted to the National Park Service
November, 2022

GGNRA Visitor Use Monitoring Daily Protocol

On any day when monitoring will be done, review the master sample schedule to identify which sites are scheduled for monitoring and take copies of the appropriate forms for those sites. The "GGNRA Visitor Use Monitoring Daily Log" form serves as a summary sheet for each data collection day. Only one sheet needs to be filled out per workday per crew. If you are working with anyone else, identify who will be the primary observer (responsible for ensuring accuracy and completion of all data sheets). Complete the header information on the "GGNRA Visitor Use Monitoring Daily Log" form:

a. Date: MM/DD/YYY
b. Data collection day start time: This is the time you left the office to begin field data collection. Enter the time as HH:MM (24-hour format)
c. Primary observer name: Enter the first and last names of the primary observer.
d. Other observer names: Enter the first and last names of any other individuals who will be collecting data.

Upon arrival at the first unit, record the time when monitoring began. Collect data for the specified amount of time using the appropriate monitoring sheets. Upon completion, enter the time monitoring ended. If there was any gap in time when monitoring did not occur at a site, be sure to indicate the duration of that gap (in minutes) on the form.

Write in the number of data sheets completed for each of the measures completed at that site:

- Visitor Density
- Leash Compliance
- Sensitive Habitat Closure
- Excrement Count
- Parking Lot Count
- Dogs Per Group

Record any unusual or important note about conditions you encountered during the day at the bottom of the Daily Log form.

Upon returning to the office, fill in the "Data Collection Day End Time" (the time you returned to the office. Review all data sheets for legibility, completeness and accuracy. Organize them in chronological order of completion, paper clip them together, and store them in the pre-identified safe location in the office.

Field Procedures. Observers will arrive at all monitoring locations at least ten minutes prior to the start of the monitoring period. Some monitoring sites may require a short hike from a trailhead or parking area and the time necessary to access the site should be appropriately planned for.

Each observer should wear street clothing (not uniforms or any article of clothing – including hats – with NPS insignia) that is appropriate for the weather and bring the following materials:

☐ A proper number and type of "Rite in the rain" paper data collection sheets (See Appendix X for list of data sheets needed for each location).

- ☐ An aluminum storage clipboard
- ☐ A pencil or pen
- ☐ A wristwatch
- ☐ A stopwatch (a fully charged smartphone or other electronic device can be used if observer has waterproof case and cover)
- ☐ Laminated maps and images of monitoring zones and observation points
- ☐ Binoculars
- ☐ A plastic bag (to protect belongings in case of rain)
- ☐ A contact information card for the Visitor use monitoring program manager

GGNRA Visitor Use Monitoring Daily Log

<u>Field Log Sheet (fill out one per day per field crew):</u>

Date: _____

Data Collection Day Start Time – Time left office (24-hour; HH:MM): _____

Data Collection Day End Time – time return to office (24-hour; HH:MM): _____

Primary Observer Name: _____

Additional Observer Names (if present): _____

Number of Data Sheets Collected							
Unit	Time (start and end)*	Visitor Density	Leash Compliance	Sensitive Habitat Closure	Excrement Count	Parking Lot Count	Dog Walking
	Start: End: Gap:						
	Start: End: Gap:						
	Start: End: Gap:						
	Start: End: Gap:						
	Start: End: Gap:						

* If there were any gaps in time – i.e., if monitoring did not occur continuously from start to end times – document the duration of the gap in minutes, so that analysis can accurately incorporate the actual amount of time spent monitoring.

Important Field Notes (anything unusual that occurred or anything of note related to data collection such as notable or negative visitor encounters, missed observations, law enforcement presence at location, occurrence of emergency, vandalism, etc.). List by unit:

When data collection for the day is complete, make sure to:

☐ Collect **ALL** data sheets and ensure that all fields are filled out legibly, properly, and completely.
☐ Organize completed data sheets by type and in chronological order of collection.
☐ Ensure this field log sheet is filled out completely and accurately, including filling out the "Data Collection Day End Time" field.
☐ Report anything unusual (noted in the Important Field Notes) to your supervisor in a timely manner.
☐ Deliver completed data sheets to supervisor and/or place in a pre-identified safe location in the office.

Parking Lot Counts

To complete analysis for the data collected in some of the protocols proposing for visitor use monitoring, a way is needed to standardize observations across monitoring days having different use levels. A parking lot count of the total number of vehicles present in a parking area is one such measure. This measure is not an indicator in its own right.

Follow the following steps for data collection:

1) Complete the following information of the **_GGNRA Visitor Use monitoring Daily Log_** form for the scheduled data collection unit:
    a. Unit
    b. Data Collection Day Start Time: HH:MM (24 hour format)

2) Arrive at the predefined starting location for Parking Lot Count data collection presented in the Applicable Sites section (see below).

3) Record the following information on a **_Parking Lot Count_** _Data Sheet_ in the associated fields. If multiple data collection sheets are required for an observation session, complete this information on every sheet. In the list below, the fields are bolded, followed by definitions of the type of information to record.
    a. **Unit:** The park unit in which you are monitoring (e.g., Muir Beach, Rodeo Beach).
    b. **Name:** Your first and last name.
    c. **Date:** The date of your observation, MM/DD/YYYY.
    d. **Sky Cover:** Check one, "Sunny," "P Cloudy" (partly cloudy), or "Overcast" depending on the predominant conditions during the data collection event.
    e. **Precipitation:** Check one, either "present" or "absent" depending on the predominant precipitation conditions during the data collection event.
    f. **Temperature:** Check one (check boxes are provided in 10-degree Fahrenheit increments from 40 degrees to 90+ degrees) that represents your best estimate of the predominant temperature during the data collection event.

4) Record the start time for the parking lot count, the counts of each type of vehicle, and the end time for the parking lot count in the appropriate fields. All vehicles parked in the parking lot should be counted. Vehicles do not have to be parked in a designated space to be counted. Bicycles should not be counted. Vehicles with government plates or with partner decals displayed on the vehicle should be recorded on the log form in the "# Gov" field.
    a. **PL Count Start Time:** The start time (HH:MM, 24-hour clock) of the count.
    b. **# Reg:** the number of non-governmental vehicles present in the parking lot.
    c. **# Gov:** the number of government vehicles in the parking lot.

d. **PL Count End Time:** The end time (HH:MM, 24-hour clock) of the parking lot count.

5) Use the **Comments** field to document any unusual conditions or events.

Applicable sites.

Rodeo Beach.

An observer will follow a set route through the parking lot at Rodeo Beach as illustrated in Figure 1. The red line delineates the parking areas where vehicles will be counted. The Rove will begin at Row 1, and counts will proceed to Rows 2 through 5. Each row should be counted separately – do not attempt to count adjacent rows at the same time.

After finishing Rows 1 through 5, the observer will walk along the west side of the parking area along Mitchell Road (nearest to the beach, away from the road). They will record all parked vehicles, including buses, in the count.

Figure 1. Parking lot count observation route for Rodeo Beach. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Muir Beach.

The Muir Beach parking area contains two loops of parking, an "inside loop" and an "outside loop" (Figure 2). To conduct the parking lot count, the observer will walk the outer loop first, counting all

vehicles. Once that is complete, they will walk the inside loop, recording all vehicles. The totals from the two loop counts should be entered on the data sheet. Observers should not attempt to count adjacent rows at the same time, as this can lead to errors and pose a safety concern.

Observers should record all parked vehicles, including buses, in the counts. Vehicles do not need to be parked in a designated parking space to be counted. Bicycles are not counted.

Figure 2. Parking lot count observation route for Muir Beach. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Parking Lot Count Data Sheet

Unit:

Name (First/Last):	**Date** (MM/DD/YY):
Sky Cover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐90+	

PL Count Start Time	# Reg Vehicles	# Gov Vehicles	PL Count End time	Comments

Visitor Density

The Visitor Density indicator uses observation to count the number of visitors present at one time within specified areas at select locations in the GGNRA. The inclusion of this indicator is motivated by the NPS's national management policy (2006) to facilitate "appropriate use" of park lands, because crowds may interfere with appropriate use for some visitors. This measure will also be used in conjunction with other measures to enable computation of standardized violation rates (e.g., leash compliance).

Indicator measures.

There are three measures associated with the Visitor Density indicator:

1. People at one time (PAOT) counts in park-managed open-space recreational areas
2. Dog at one time (DAOT) counts in park-managed open-space recreational areas
3. Flow counts on park-managed walkways

Statistics:

1. The number of people at one time per predetermined observation zone
2. The number of dogs at one time per predetermined observation zone
3. The number of visitors per minute that cross a predetermined line intercept along a walkway

Data collection procedures.

Field data collection methods.

1) Complete the following information of the *GGNRA Visitor Use Monitoring Daily Log* form for the scheduled data collection unit:
   a. Unit
   b. Data Collection Day Start Time: HH:MM (24 hour format)

2) Record the following information in the header fields on a **Visitor Density** data sheet in the associated fields. If multiple data sheets are required for an observation session, complete this information on every sheet. In the list below, the fields are bolded with definitions for the type of information to record for each field.
   a. **Unit:** The park unit in which you are monitoring (e.g., Fort Funston, Crissy Field)
   b. **Name:** Your first and last name
   c. **Date:** The date of your observation
   d. **Precipitation:** Check one, either "present" or "absent" depending on the predominant precipitation conditions during the data collection event

e. **Sky Cover:** Check one, "Sunny," "P Cloudy (partly cloudy)," or "Overcast" depending on the predominant conditions during the data collection event

f. **Temperature:** Check one (check boxes are provided in 10-degree increments from 40 degrees to 90+ degrees) that represents your best estimate of the predominant temperature during the data collection event.

2) Arrive at the predefined stationary observation point or starting rove position as described in the Applicable Sites section (see below). In the first column of the data sheet, record the name of the **monitoring location** (e.g., Water Fountain/Trail Junction, Dog Run Area).

3) Identify the **type of observation** (as assigned in the Applicable Sites section):
   a. *Rove*: you will walk a predetermined path as quickly as you can while still being able to observe and count all dogs and people.
   b. *Zone*: you will stand in a predetermined location and scan a polygon to count all dogs and people present at one time.
   c. *Flow*: you will stand at a predetermined location where you can observe and count the number of dogs and people that cross an imaginary line on the path within a 2-minute period. People and dogs traveling in both directions across the threshold will be counted, though each individual person or dog should be counted only once, because the goal is to obtain an estimate of unique individuals.

4) Record the time (or start time of the rove) at which the count is conducted in the "Time" column.

5) Count the number of people and dogs observed, using the following guidance.
   a. For Rove and Zone counts, using one handheld clicker for people and one clicker for dogs, count all people and dogs in the observation area. Following the instructions in the Applicable Sites for the particular observation area, look at each person or dog. Each time you identify a unique person or dog, click the appropriate tally counter.
      i. People and dogs will be moving in and out of the observation area during the count. It is important to conduct the count as quickly as possible to generate an "instantaneous snapshot" of the number of people and dogs in the observation area at one time. This may be done by scanning the area in segments. If you have already observed a portion of the area and a new person or dog enters the area you have already observed and counted, do *not* include the new entry in your count. It is important to conduct the count the same way each time.
      ii. Only count each person or dog one time during your walk through the observation area. Dogs and/or visitors may be running around, and the

observation area may be chaotic. If you think you have accidently counted visitors or dogs more than once or have made any other mistake, make a note in the **Comments** column.

    iii. Do not try to mentally count numbers of people and dogs; this may lead to error. Instead rely on the tally counters to record counts. People and dogs will be moving and that may lead to error.

    iv. At the end of the count, record the numbers reflected on the tally counters into the appropriate log form fields (i.e., **# People** and **# Dogs**).

b. For Flow counts.

    i. Randomly select one of the two flow count locations at Crissy Field by flipping a coin. Begin with that location.

    ii. Observe the predetermined (imaginary) line intercept at the location identified in the Applicable Sites section for your location for precisely 2 minutes. Use handheld clickers to counter visitors and dogs crossing the intercept line (regardless of activity) traveling in both directions. Use one clicker for people and another for dogs. Visitors may be engaging in a variety of activities including walking, jogging, cycling, roller blading, skate boarding, riding a Segway or scooter, or using a stroller. Count all people and dogs that cross the intercept line during the 2-minute period regardless of mode of transportation or activity.

    i. At the end of the count period, record the numbers reflected on the tally counters into the appropriate log form fields (i.e., **# People** and **# Dogs**). Record any uncertainty in the **Comments** column.

Applicable sites.

Crissy Field.

At East Beach, counts of people and dogs will be conducted using the Rove observation type. The counts will be done by walking west from the dune habitat area shown as "Start" in Figure 1 to the creek outflow shown as "End" in Figure 1. Counts should only include people and dogs present on the sandy beach (not the Promenade or in the water).

Figure 1. Route for roving count of people and dogs on East Beach. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Flow counts will be conducted in two *flow count locations* on the Promenade (Figures 2 and 3) by a stationary observer who counts people and dogs that cross an imaginary line. They will count only individuals observed on the Promenade itself, not in adjacent sand or vegetation.

Figure 2. Observation location for flow count of people and dogs on the Promenade near East Beach. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Figure 3. Observation location for flow count of people and dogs on the Promenade near the West Picnic Area. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Fort Funston.

Water Fountain/Trail Junction PAOT and DAOT Location.
At Fort Funston, counts of people and dogs will be made with the zone observation approach. A stationary observer will conduct an instantaneous count of dogs and people in the polygon delineated at the water fountain/trail junction area (Figures 4 through 8). This location is north of the North Parking Area. It is accessed by walking through the Dog Run Area to the main trail and traveling north to the water fountain, where the main trail splits into east and west forks. The observation location is on the west side of the main trail (Figure 4).
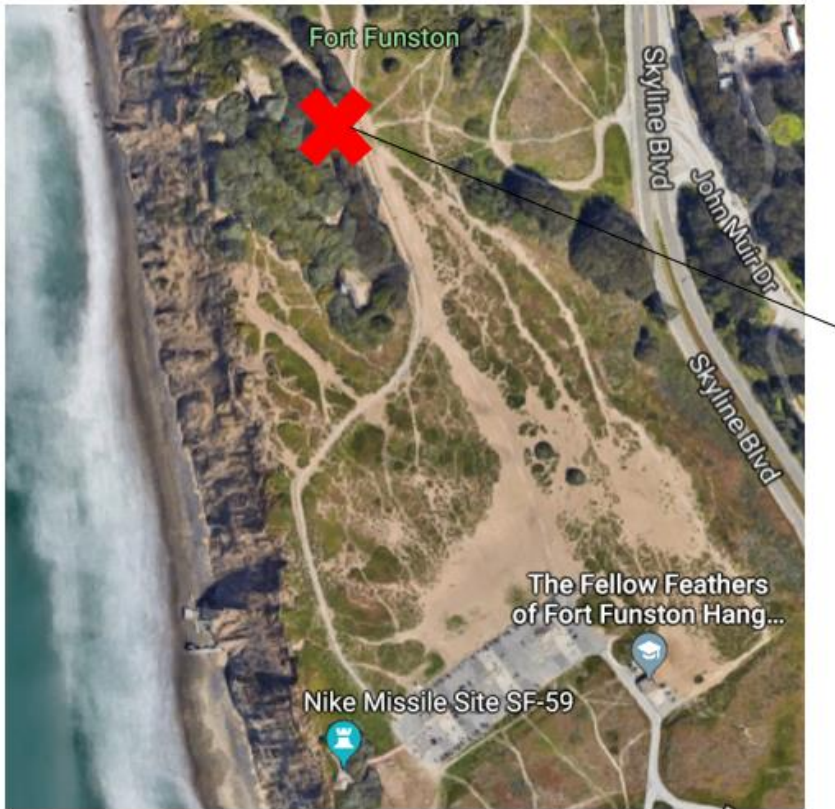
Figure 4. Aerial view of the water fountain/trail junction location for visitor counts at Fort Funston. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Figure 5. Observer location for conducting visitor counts at the water fountain/trail junction location at Fort Funston. *(Source imagery: Photo taken by Susan Sidder, June 2019).*

The north side of the observation zone extends to the trash cans. Anyone using the trash cans is considered within the area.

The observation area ends on the west and east trail forks at the red lines drawn across the trails. These imaginary thresholds should be perpendicular to each trail fork.

Figure 6. North boundaries of observation zone for visitor counts at the water fountain/trail junction area at Fort Funston. *(Source imagery: Photo taken by Susan Sidder, June 2019).*

The south side of the observation zone begins at the first fence post (observer standing at the fence post in photo). Any visitor to the north of the fence post is considered within the observation zone.

The red line across the main trail establishes the boundary for being in or out of the zone.

Figure 7. South boundary for the PAOT and DAOT area at the water fountain/trail junction area. *(Source imagery: Photo taken by Susan Sidder, June 2019).*

Visitors who are accessing the water fountain by walking up the hill from an east access trail must cross the fence threshold (red line) to be considered inside the zone and eligible for counting.

Figure 8. View from the observer's location for conducting visitor counts at the water fountain/trail junction area at Fort Funston. *(Source imagery: Photo taken by Susan Sidder, June 2019).*

Dog Run Rove Count.

A roving observer will walk through the 'dog run' area (Figure 9). The observer will begin the roam on the east side of the Dog Run area at the interpretative/direction sign. The observer will look north and count all dogs and people directly in the observer's field of vision who are south of the cement blocks marking the end of the Dog Run area and the beginning of the main trail headed north. After counting these visitors, the observer will turn west and walk the southern perimeter of the Dog Run Area, counting all dogs and people in their field of view (180-degree arc in front of them) while walking along the southern perimeter. The Dog Run area zone ends once the observer reaches the paved/asphalt trail near the portable restroom. The rove should be done systematically, in the same way, each time. The rove should be completed as quickly as possible, while recording an accurate count, to achieve a near-instantaneous count of people and dogs in the Dog Run Area.
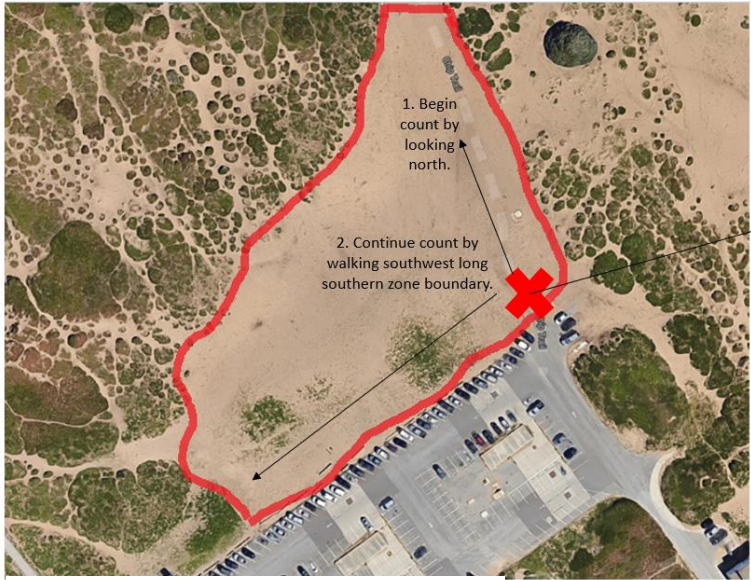
Figure 9. Observer route and zone boundaries for visitor counts at the Fort Funston Dog Run area. *(Source imagery: Aerial image publicly available from Google Maps (left photo), Susan Sidder, June 2019 (Right photos)).*

Visitor Density (PAOT/DAOT) Data Sheet

Unit:	**Monitoring Location:**
Name (First/Last):	**Date** (MM/DD/YY):
Sky Cover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐90+	

Count Time (HH:MM)	# People	# Dogs	Comments

Dogs Per Group

The dogs per group indicator uses observation to determine the extent of compliance with regulations regarding the number of dogs permitted per handler in GGNRA. This measure tracks the number of people and dogs in groups that visit with at least one dog. (Groups without dogs are not included.) This protocol also includes fields to record information about whether handlers appear to be commercial dog walkers; however, at present those data are not considered reliable enough to serve as formal measures. Commercial dog walkers may walk up to 6 dogs at one time (per handler).

Indicator measures.

There are two measures associated with the dogs per group indicator:
1. For groups with dogs, the number of people per visitor group (a group is defined as one or more people traveling together).
2. The number of dogs per visitor group.

Statistics.
1. The number of dogs per person per party (# dogs in a group/# people in the group).
2. The percentage of groups with dogs that have more than 6 dogs per handler.

Data collection procedures.

Field data collection methods.
1) Arrive at the scheduled data collection unit (e.g. Alta Trail, Fort Funston). Complete the following information of the ***GGNRA Visitor Use Monitoring Daily Log*** form for the scheduled data collection unit:
    a. Unit
    b. Data Collection Day Start Time: HH:MM (24 hour format)

2) Arrive at the predefined stationary observation point (**for Alta Trail and Fort Funston**) or starting roam position (**for Crissy Field East Beach**) presented in the Applicable Sites section (see section below).

3) Record the following information on a ***Dogs Per Group*** data sheet in the associated fields. If multiple data collection sheets are required for an observation session, fill this information out on every sheet. In the list below, the fields are bolded with definitions for the type of information to record for each field:

a. **Unit:** The park unit in which you are monitoring (e.g., Alta, Fort Funston, Crissy Field)

b. **Monitoring Location:** The monitoring location from which you are recording (e.g., North Parking Area, South Parking Area). A new data sheet should be used for monitoring each location within Fort Funston.

c. **Name:** Your first and last name.

d. **Date:** The date of your observation.

e. **Sky Cover:** Check one, "Sunny," "P Cloudy" (partly cloudy), or "Overcast," depending on the predominant conditions during the data collection event.

f. **Precipitation:** Check one, either "present" or "absent" depending on the predominant precipitation conditions during the data collection event.

g. **Temperature:** Check one (check boxes are provided in 10-degree Fahrenheit increments from 40 degrees to 90+ degrees) that represents your best estimate of the predominant temperature during the data collection event.

4) You will be recording information on groups with dogs that are either (a) present within a zone or (b) cross a threshold (from the parking lot into an area). Be sure to refer to the individual site descriptions below to determine which groups to count. For each group entering the pre-identified area during the observation period, record the following information. Fields are labeled as they appear on the data collection sheet. The field title is bolded and followed by its definition.

a. **Session #:** A session is a continuous period of observation, with the duration set for specific locations (see Applicable Sites); there may be multiple sessions at a location during a single day. Record the session number for each group observed. This number should start at 1 at the beginning of each day of data collection and increase throughout the day until the workday is completed.

b. **Start/End Time:** Record the start time (hh:mm) for the session in the first row for that session. Record the end time (hh:mm) in the last row for that session. *Do not record the time that each group is observed within a session*. Complete each session before taking any breaks. Session lengths vary by site, so be sure to look at the "applicable sites" section for guidance.

c. **Grp #:** Each group that has one or more dogs should be recorded on a separate line of the data sheet. A group is one or more people who appear to be visiting together. Number groups observed within a session continuously; start at 1 each time a new session begins. Do not record groups that do not have dogs.

d. **# People:** Record the number of people observed for each group containing dogs. If you are uncertain of the exact number, record the number you are able to confidently observe and associate with the group and put a (+) sign next to the number to indicate there may be more people associated with the group (e.g., 3+). In the "Other Comments" field, make notes about what led to an estimation rather than exact count.

e. **# Dogs:** Record the observed number of dogs for each group containing dogs. If you are uncertain of the exact number, record the number you are able to confidently observe and associate with the group and put a (+) sign next to the number to indicate there may be more dogs associated with the group. In the "Other Comments" field, make notes about what led to an estimation rather than exact estimate.

f. **CDW Evidence:** Does any member of the group have visible evidence of being a commercial dog walker? Circle "yes," "no," or "can't tell," depending on whether or not you see visual evidence (e.g., a visible CWD permit, a vehicle with a CWD logo, a shirt or hat with a CWD logo).

g. **Other Comments:** Record any other events or items of note for a particular observation or that occur during the observation session

5) At the conclusion of the session, document any uncertainty or items of note that occurred in writing below the last row completed for that session. If you are unsure of how to classify an event seen, make sure to provide detailed notes about what happened for that observation period. If you are interrupted during your observation period and are unsure if you captured all events, make sure to note that as well.

6) At the end of the data collection at each unit, complete the relevant fields on the ***Daily Log:*** record the end time for data collection at the unit and number of ***Dogs Per Group*** data collection sheets completed.

Applicable Sites.

Alta Trail.
A stationary observer will be positioned near Alta Trail at the Donahue Street trailhead to observe groups with dogs entering the trail (Figure 1). The observer should collect data for at least one hour per visit, with one visit per day.
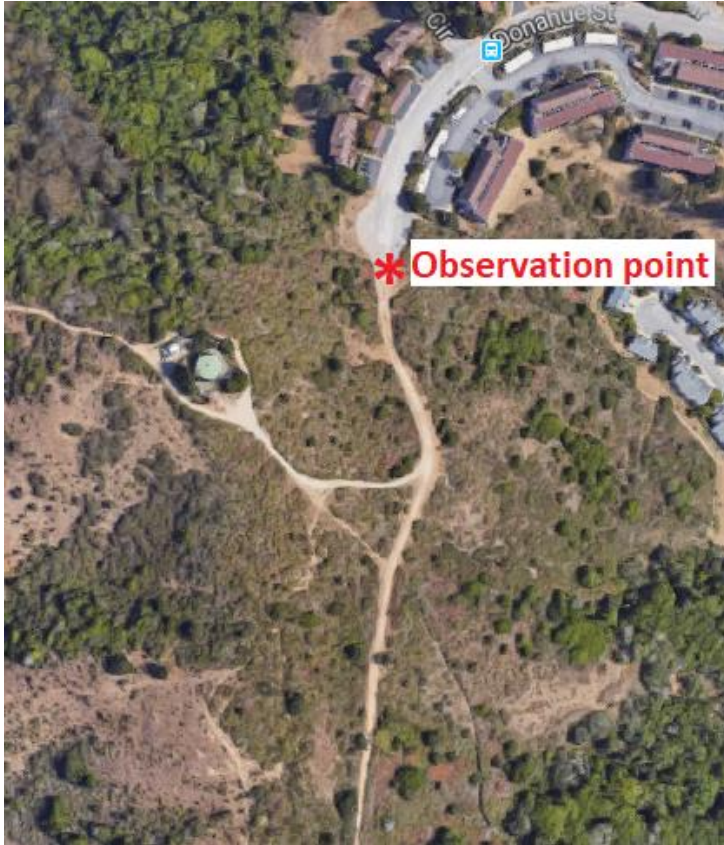
Figure 1. Dogs per group observation point at Alta Trail (Source imagery: Aerial imagery publicly available from Google Maps)

Crissy Field East Beach.

A roaming observer will walk along a predefined path within and around the parking lot immediately south of the beach (Figure 2). The observer will only document visitors seen in the parking area.

Figure 2. Dogs per group walking roaming route at Crissy Field East Beach (Source imagery: Aerial imagery publicly available from Google Maps)

Fort Funston.

An observer will record observations from three stationary points in the Fort Funston parking areas (Figures 3 through 5). Each observation session will last 10 minutes. The observer will rotate between the three points once in the morning and once in the afternoon during a monitoring day (a total of 60 minutes of observation). The observer will document groups with dogs seen entering the Fort Funston trail system and/or dog run area, depending on the location of the observation.

Dogs per Group Protocol

Observation Location 1: North Parking Area/Dog Run Entries

Observer will record all entries of groups with dogs into the dog run area from the North Parking Lot from the location marked with the red X. Red arrows indicate direction of group movement for an "entry."

Figure 3. Fort Funston dogs per group observation location, North Parking Area. (Source imagery: Aerial imagery publicly available from Google Maps).

Dogs per Group Protocol

Observation Location 2: East Parking Area

Observer will record all entries of groups with dogs entering the Fort Funston trail system from the East Parking Area from the location marked with the red X. Red arrows indicate direction of group movement for an "entry."

Figure 4. Fort Funston dogs per group observation location, East Parking Area. (Source imagery: Aerial imagery publicly available from Google Maps).

Dogs per Group Protocol

Observation Location 3: South Parking Area

Observer will record all entries of groups with dogs entering the Fort Funston trail system from the South Parking Area from the location marked with the red X. Red arrows indicate direction of group movement for an "entry."

Figure 5. Fort Funston dogs per group observation location, South Parking Area. (Source imagery: Aerial imagery publicly available from Google Maps).

Sheet _____ of _____

Dogs per Group Data Sheet

Unit:	Monitoring Location:
Name (First/Last):	**Date** (MM/DD/YY):
Sky cover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐90+	

Session #	Start/End Time	Grp #	# People	# Dogs	CDW Evidence	Other Comments
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	
					yes no can't tell	

Dog Excrement Count

The *dog excrement* indicator uses observation to document compliance with regulations about dog excrement removal (36 CFR § 2.15 (a)(5)). According to the Superintendent's Compendium (2017), "pet excrement shall be removed immediately from the park or deposited in a refuse container by the person(s) controlling the pet(s)" (p. 26).

For this protocol, technicians will count instances of dog excrement left behind by dog guardians along one or more transects at the monitoring sites. An instance of dog excrement can be a pile of excrement or individual pieces of feces (from the same dog) and may be bagged or unbagged. For each counted instance of dog excrement, the technician will document whether the excrement was bagged or not bagged. Technicians will pick-up the dog excrement as they count to ensure the transect is "clean" after each data collection session.

Because the time that elapses between observations is likely to be correlated with the amount of waste present, this protocol requires technicians to clean each transect upon arrival at a site in the morning by walking the transect and removing all feces. The counts will later be conducted as the last activity of the day, and the elapsed time between cleaning the transect and collecting data will be recorded, so that counts can be standardized by elapsed time. Data will also be recorded for the **Dogs at One Time** indicator to facilitate interpretation of excrement data.

Indicator measure.

There are four measures associated with the *dog excrement* indicator:

1. Number of observed instances of excrement where the excrement was bagged and left on site.
2. Number of observed piles of excrement not in bags (i.e., left on site).
3. Total number of observed excrements instances where excrement was not removed (the two previous measures combined).
4. Periodic Dogs at One Time (DAOT) counts.

Statistics.

1. Average and standard deviation of number of observed excrement instances bagged and left on site.
2. Average and standard deviation of number of piles of excrement that were not bagged and were left on site.
3. Average and standard deviation of total number of observed excrement instances.

Definitions relevant to protocol.

Excrement instance: the presence of dog excrement (regardless of size or amount) that was left on site by a dog guardian. All instances are counted, regardless of whether the excrement is bagged or not bagged. The excrement may be an individual piece of feces or an individual pile of multiple pieces of feces that were clearly from one dog at one time (one defecation event).

Data collection procedures.

Field data collection methods:
1) Arrive at the scheduled data collection unit (e.g., Alta Trail, Fort Funston). Complete the following information of the ***GGNRA Visitor Use Monitoring Daily Log*** form for the scheduled data collection unit:
   a. Unit
   b. Data Collection Day Start Time: HH:MM (24 hour format)

1) Arrive at the predefined beginning of the transect as described in the Applicable Sites section (see below).

2) Record the following information on an *Excrement Count Data Sheet*. This information will be recorded on every data collection sheet. If multiple data collection sheets are required for an observation session, complete this information on every sheet. In the list below, the fields are bolded, followed by definitions of the type of information to record.
   a. **Unit:** The park unit in which you are monitoring (e.g., Muir Beach).
   b. **Name:** Your first and last name.
   c. **Date:** The date of your observation.
   d. **Sky Cover:** Check one, "Sunny," "P Cloudy" (partly cloudy), or "Overcast," depending on the predominant conditions during the data collection day.
   e. **Precipitation:** Check one, either "present" or "absent" depending on the predominant precipitation during the data collection event.
   f. **Temperature:** Check one (check boxes are provided in 10-degree Fahrenheit increments from 40 degrees to 90+ degrees) that represents your best estimate of the predominant temperature during the data collection event.
   g. **Excrement Bag Dispenser Present:** Check either "yes" or "no" depending on whether or not there is a bag dispenser present at the unit.
   h. **Bag Dispenser Has Bags:** If a bag dispenser is present, check "yes" or "no" depending on whether the dispenser has bags (i.e., a person could use a provided bag and comply by picking up their dog's excrement); if there is no bag dispenser, check "n/a".

3) Depending on the number of transects for the given park unit, for each data block below the header, enter the **transect location** and **time the transect was cleaned** of pet waste.

4) **When starting an excrement count,** begin by noting the time you started your transect walk and enter the time in "**Transect Walk Start Time**" field.

5) **When conducting an excrement count**, slowly walk along the transect scanning to your right and left (a 180-degree arc) for instances (piles or individual pieces) of excrement. Look as far to your left and right as you can reasonably see and detect excrement. At Muir Beach you will only be looking along the vegetated edge of the transect.
   a. You may leave the transect line to confirm if what you see is excrement. If you do leave the transect for confirmation, remember where you left off and return to this exact location along the transect to continue your count. Only count instances that are visible from the transect (that is, if you see new feces when you leave the transect to investigate an observation, do not count the new material).
   b. For each instance of excrement that you locate along the transect categorize the observation as "**Not bagged**" or "**Bagged**" by making a tally mark in the appropriate box on the data sheet. An instance should be considered fecal material clearly from a single dog.
   c. For each instance of excrement located, pick up the excrement and dispose of it properly after you have completed your transect.

6) When ending an excrement count, once you have reached the end of the transect, record the time in the "**Transect Walk End Time**" field. Add up the number of "Not bagged" and "Bagged" instances along that transect and enter these total counts in the respective "**Total**" fields.

7) Record any uncertainty or items of note that occurred during your observation period in the **comments** field. If you are unsure of how to classify an event seen, make sure to provide notes about what happened in the comments section.

8) At the end of the data collection at each unit, complete the relevant fields on the *Daily Log:* record the end time for data collection at the unit and number of *Excrement Count Data Sheets* completed.

Applicable sites.

Muir Beach.
At Muir Beach, during each visit, monitoring will be done for Leash Compliance, Sensitive Habitat Incursions, and parking lot counts, in addition to Excrement Counts. The first activity upon arriving at Muir Beach is to clean pet waste from the two transects, which are on each side of the path from the end of the bridge between the Muir Beach parking lot and the Muir Beach trail system (Figure 1).

Counts will be made as the last activity of the day, ideally at least 3 hours after the transects have been cleaned. At the start of the West transect the observer will walk the dirt foot path from the end of the bridge to the beach, scanning the west side of the trail and vegetation adjacent to the trail (i.e., to the observer's right only) for excrement that has not been picked up. The observer will count instances of excrement following the detailed field collection methods and pick up all excrement located along the West transect. The West transect ends at the junction of the trail and the beach.

The East transect follows the east side of the same foot path, returning from the junction of the trail and the beach back to the end of the bridge. The observer will walk the dirt foot path from the beach to the end of the bridge, scanning the east side of the trail and vegetation adjacent to the trail (i.e., to the observer's right only) for excrement that has not been picked up. The observer will count following the detailed field collection methods and pick up all excrement located along the East transect.

Figure 1. West transect (in black) and East transect (in pink) at the Muir Beach monitoring site. (Source imagery: Aerial imagery publicly available from Google Maps).

Crissy Field (East Beach).
At Crissy Field's East Beach, counts will be made along an established transect at the upper edge of the beach (Figures 2-4). As early in the day as possible, the observer should clean the transect of pet waste and write the time this was done on the data sheet. Actual counts should be made at least three hours later, on the same day.
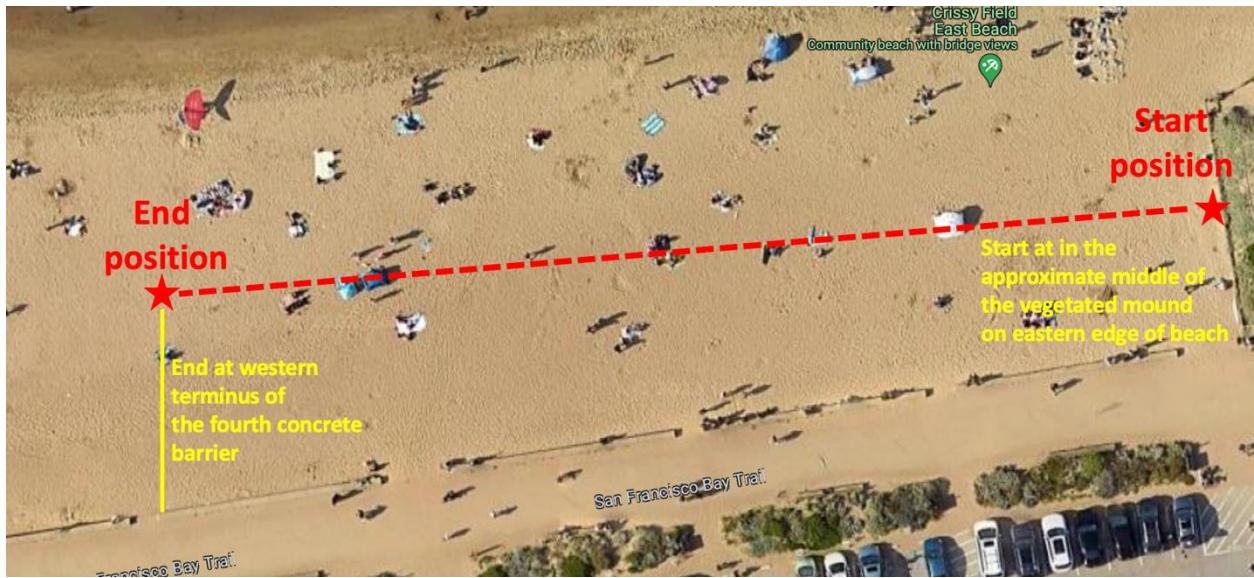
Figure 2. Crissy Field (East Beach). Aerial map of transect.

**Figure 3. Crissy Field (East Beach). Start position of transect.**

Figure 4. Crissy Field (East Beach). End position of transect.

Fort Funston.

There are four transects located at Fort Funston (Figures 5-9): one in the large, main sand area adjacent to the large, main parking lot (see black transect line in Figure 6), one along the sand covered chute to the paved path (see black transect line in Figure 7), one adjacent to the smaller north parking lot (see black transect line in Figure 8), and one adjacent to the more southern parking lot (see black transect line in Figure 9). The observer will walk each of these transects to remove pet waste as the first activity upon arriving at the site, documenting the time the transects were cleaned. They will later walk the transects as the last activity of the day and count instances of excrement following the detailed field collection methods described above.
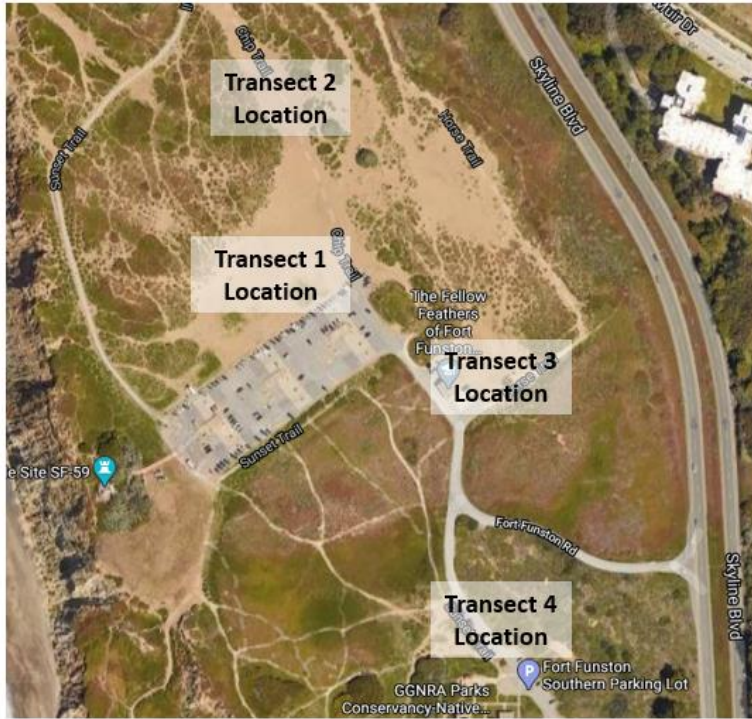
Figure 5. Aerial view of Fort Funston excrement count transect locations. Refer to Figures 5 - 8 for the specific location of the transect within in location. (Source imagery: Aerial imagery publicly available from Google Maps).

Figure 6. Large sand area north of main parking lot at Fort Funston. Red area outlines DAOT observation zone. Black line depicts transect for excrement count. (Source imagery: Aerial imagery publicly available from Google Maps).

Figure 7. Sand path area leading from large sand area to paved pathway at Fort Funston. Red outline indicates DAOT observation area. Black line depicts transect for excrement count. (Source imagery: Aerial imagery publicly available from Google Maps).

Figure 8. Smaller, north parking lot area at Fort Funston. Red outline indicates DAOT observation area. Black line depicts transect for excrement count. (Source imagery: Aerial imagery publicly available from Google Maps).

Figure 9. Smaller, south parking lot area at Fort Funston. Red outline indicates DAOT observation area. Black line depicts transect for excrement count. (Source imagery: Aerial imagery publicly available from Google Maps).

Excrement Count Data Sheet

Unit:	
Name (First/Last):	**Date** (MM/DD/YY):
Sky Cover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐ 90+	
Excrement Bag Dispenser Present: ☐ yes ☐ no	**Bag Dispenser Has Bags:** ☐ yes ☐ no ☐ n/a

Transect Location:	**Time Transect was Cleaned:**
Transect Walk Start Time:	**Transect Walk End Time:**
Not Bagged	Bagged
Total:	Total:
Comments:	

Transect Location:	**Time Transect was Cleaned:**
Transect Walk Start Time:	**Transect Walk End Time:**
Not Bagged	Bagged
Total:	Total:
Comments:	

Transect Location:	**Time Transect was Cleaned:**
Transect Walk Start Time:	**Transect Walk End Time:**
Not Bagged	Bagged
Total:	Total:
Comments:	

Leash Compliance

The *leash compliance* measure uses observation to determine the extent of visitors' compliance with regulations requiring dogs to be leashed where they are in effect. The inclusion of this indicator is motivated by regulations articulated in the *Superintendent's Compendium* (2017), the GGNRA Pet Policy (USDI, 1979), and 36 CFR § 2.15(a)(2). This measure relies on a stationary or roving observer to document instances of dogs on and off leash.

Indicator measure.
There is one measure associated with the *leash compliance* indicator.

1. The number of dog-containing parties that do and do not comply with on-leash regulations in applicable areas (i.e., trails, beaches, picnic areas and parking lots where it is required that dogs be on-leash).

Statistics.

1. The proportion of dog-containing groups that have at least one dog out of compliance with on-leash regulations.

Definitions relevant to protocol.

Dog-containing party: any group of one or more people visiting with one or more dogs.

Leash: is a chain, rope, cord, or strap with a clip or snap that attaches to a choke chain, collar, or harness that is attached to a dog for the purpose of controlling and walking the dog. Dogs at GGNRA are required to be on a leash that is no more than six feet in length; however, for the purposes of this protocol, a dog attached to a leash of any length is considered to be on-leash.

Off-leash includes both dogs without leashes and dogs on a leash not held or restrained by the guardian (i.e., running free with a leash attached).

Stationary group: in picnic areas, you will observe groups using picnic tables and any other groups that are "parked" in the area (e.g., picnicking on blankets or sitting on chairs in the grass). These are considered stationary groups. You will not count groups traversing through the area.

Data collection procedures.

Follow the following steps for data collection:

1) Complete the following information of the **GGNRA Visitor Use Monitoring Daily Log** form for the scheduled data collection unit:
   a. Unit
   b. Data Collection Day Start Time: HH:MM (24 hour format)

2. Arrive at a predefined stationary observation point (Muir Beach) or first picnic table (Crissy Field, Baker Beach, Stinson Beach) as described in the Applicable Sites section (see below).

3. Record the following information in the associated fields on a ***Leash Compliance Data Sheet – Threshold*** data sheet or a ***Leash Compliance Data Sheet – Picnic Areas***, depending on the unit. If multiple data collection sheets are required for an observation session, complete this information on every sheet. In the list below, the fields are bolded, followed by definitions of the type of information to record:
   a. **Unit:** The park unit in which you are monitoring (e.g., Baker Beach, Crissy Field).
   b. **Monitoring Location:** The monitoring location you are observing (e.g., Bridge Threshold, East Beach Picnic Area, West Bluff Picnic Area). Some units will have more than one monitoring location.
   c. **Name:** Your first and last name.
   d. **Date:** The date of your observation.
   e. **Sky Cover:** Check one, "Sunny," "P Cloudy" (partly cloudy), or "Overcast," depending on the predominant conditions during the data collection event.
   f. **Precipitation:** Check one, either "present" or "absent," depending on the predominant precipitation during the data collection event.
   g. **Temperature:** Check one (check boxes are provided in 10-degree Fahrenheit increments from 40 degrees to 90+ degrees) that represents your best estimate of the predominant temperature during the data collection event.

For Observations at Thresholds (Muir Beach)

1. This approach documents entries of groups into a predefined space (i.e., groups that cross a threshold into the observation area). Multiple observation sessions will occur during a single monitoring day. Each observation session will last 10 minutes and have its own start and end time. Data will be recorded continuously during this time. To begin an observation, record the **start time** in the "**Observation Start Time**" field on the data sheet. When an observation session has ended, record the end time in the "**End Time**" field on the data sheet.
2. Observe each group that crosses the threshold and enters the observation area (i.e., at Muir Beach, this includes only groups headed toward the beach from the parking area, not groups returning to the parking area). Tally the number of groups within each category of visitor as explained below. Do your best to distinguish between groups (people visiting together); sometimes a group may have members spread out in a site. If you cannot tell for certain if people are in the same group, consider them to be separate groups. Count each group only once (e.g., if a group enters the zone, returns to their car, and then reenters the zone, record them only once).
   a. For groups without dogs, record a tally in the "**Groups w/o dog**" field. (A single tally represents a single group, regardless of the number of people in the group.)

b. For groups with one or more dogs, observe all dogs to determine whether any dog is off-leash.

    i. If *all* dogs in the group are on-leash, record a tally in the "**Groups w/ Leashed Dog(s)**" field. (Record one tally per group, not the number of dogs leashed.)

    ii. If at least one dog is off-leash, record a tally in the "**Groups w/ 1+ Unleashed Dog(s)**" field. (Record one tally per group, not the number of dogs leashed.)

        1. Example: If a group of three people crosses the observation threshold with 5 dogs on leash and one dog off leash, the group would be counted as one "Group w/ 1+ Unleashed Dogs."

c. Continue tallying groups, by group type, until the observation session is over.

d. At the end of the observation session, total the number of groups in each category. Record the value in the "**Total**" cell under each category.

e. Record any relevant comments about the observation session in the "**Comments**" block on the data collection form. This should include references to any problems (blocked view, distractions, inability to see dogs, etc.).

3. Once the 10-minute observation session has ended, take a 2-minute break and then begin another 10-minute observation session.

For Observations at Picnic Areas (Baker Beach, Stinson Beach, and Crissy Field)

1. At picnic areas, you will observe use of picnic tables and groups who are set up on blankets/chairs in the grass, but not groups walking through or past the area. Data for these observations are essentially an instantaneous observation of all groups using the picnic area at one time. During a session, observe each picnic table and stationary group, either from a stationary point or by walking around the site if required to see whether dogs are present.

a. At the beginning of an observation period, record the time (HH:MM) in the "**Time**" column. This only has to be recorded once on the data sheet for each observation period, not for each group observed.

b. Using a hard copy aerial image of the site, walk through the site and assign a number to each picnic table (whether occupied or not) and each stationary group using the area. (You will use the same numbers for multiple observation sessions on any given day, but numbering does not need to be the same between days.)

    i. Number the tables according to the diagrams provided, beginning with Table #1.

    ii. If additional picnic tables are present, they should be numbered beginning after the highest previously numbered table. The location of each additional table should be described in the comments and marked on the paper diagram.

    iii. Picnic tables should be numbered first, before documenting groups who are set up on the ground, but away from tables. If groups are picnicking

on the ground and not at a table, they should be given a letter, starting with "A" and marked on the diagram.

c. Using the diagram, observe the picnic tables and stationary groups, beginning with Table #1. Record information on one row for each table occupied and each other stationary group (**Table #/Grp Letter**).

    i. Occasionally a single group will occupy two tables. In this case all table numbers should be recorded on the same line, and the comments should indicate that the two tables are being used by a single group.

d. Circle "Y" for yes or "N" for no for the following fields:

    i. **New Group:** Did the group occupying the table arrive since the last observation period (i.e., are they "new" since the previous observation session)? Note: During the first observation session each day, all groups will be "new groups," so circle "Y" for every table during that session. For subsequent sessions, only circle "Y" if the previous group left and a new group with different people is now occupying the table. To assist in remembering which groups have been seen before, record helpful identifying information in the "**Comments**" column (for example, "Group of 5 people, 3 dogs, woman wearing red baseball cap").

    ii. **For New Groups only:**

        1. **Any Dogs Present:** Does the group occupying the table have one or more dogs? If one of more dogs are present, circle "Y" on the data sheet. If no dogs are present, circle "N".

        2. **All Dogs Leashed:** Are *all* dogs associated with people at the table leashed? If one or more dogs in unleashed, circle "N"; if all dogs are leashed, circled "Y".

e. Record any relevant comments about the observation session in the "**Comments**" block on the data collection form. This should include references to any problems (blocked view, distractions, inability to see dogs, etc.).

Applicable sites.

Muir Beach.

A stationary observer will be positioned on the parking lot side of the bridge sitting on the nearby picnic tables (if available) looking toward the bridge (Figures 1 and 2).

Figure 1. Leash compliance observation location at entry to Muir Beach boardwalk. *(Source imagery left image: Aerial imagery publicly available from Google Maps; Source imagery right image: Photo taken by Susan Sidder (OSU), June 2019).*

Figure 2. Picnic table and bench observation locations near threshold at Muir Beach. *(Source imagery: Photo taken by Susan Sidder (OSU), June 2019).*

Stinson Beach.

An observer will walk through the two main picnic areas (north and central) near the park entrance (Figures 3 and 4). The observer will begin numbering tables/groups and recording data from the starting point shown in figures 3 and 4. On any given sampling day, tables should be numbered just once, and the same numbers should be used for each observation session. However, because visitors often move tables or bring their own tables, tents, blankets, the numbering cannot be specified ahead of time, nor will it be consistent between sampling days. The two picnic areas will be recorded as separate areas but they will be monitored contiguously.

Figure 3. Leash compliance observation areas at Stinson Beach. *(Source imagery: Aerial imagery publicly available from Google Maps).*

Leash Compliance Protocol

A roving observer will begin recording data starting in-line with the northern-most restroom and walking south (Figure 4). They will continue walking the path and begin recording data for the central picnic area, moving from north to south (Figure 5).

For each table, the observer will record whether or not the table is occupied, if the group has one or more dogs, and if one or more dogs is off leash.

For each subsequent rove, the observer will record the same information, noting if each group is new or was present during a prior rove.

Figure 4. Northern picnic area roving pattern at Stinson Beach. *(Source imagery: Aerial imagery publicly available from Google Maps).*
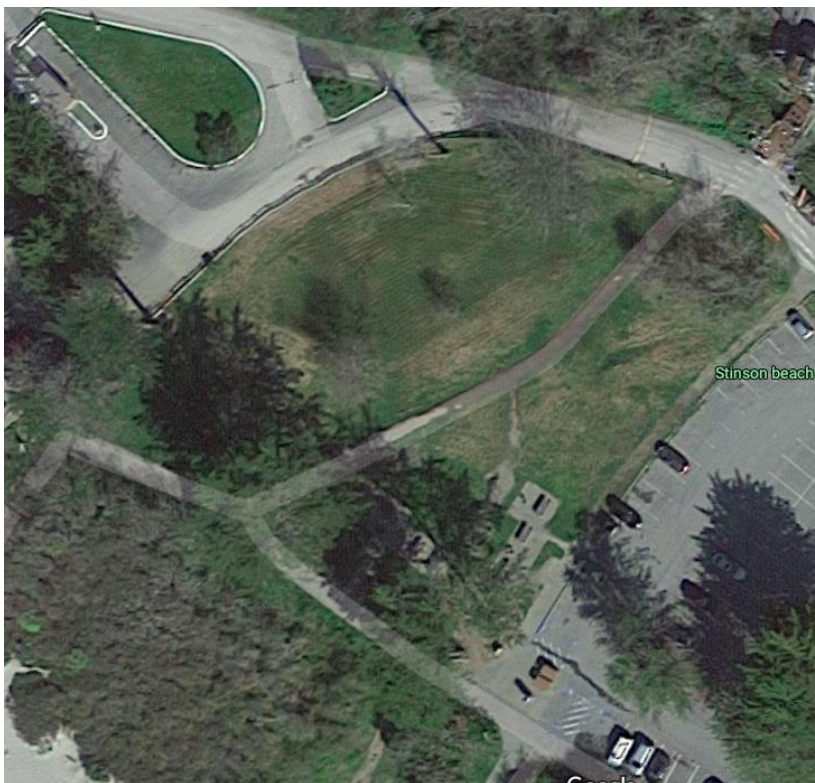
Figure 5. Central picnic area roving pattern at Stinson Beach. *(Source imagery: Aerial imagery publicly available from Google Maps)*.

Baker Beach.

An observer will begin recording data from the fire access road to the south of the restroom and walk through the area moving north (Figures 6 and 7).

Leash Compliance Protocol

A roving observer will walk through the picnic area, observing each picnic table (Figures 6 and 7).

For each table, the observer will record whether or not the table is occupied, if the group has one or more dogs, and if one or more dogs is off leash.

For each subsequent rove, the observer will record the same information, noting if each group is new or was present during a prior rove.
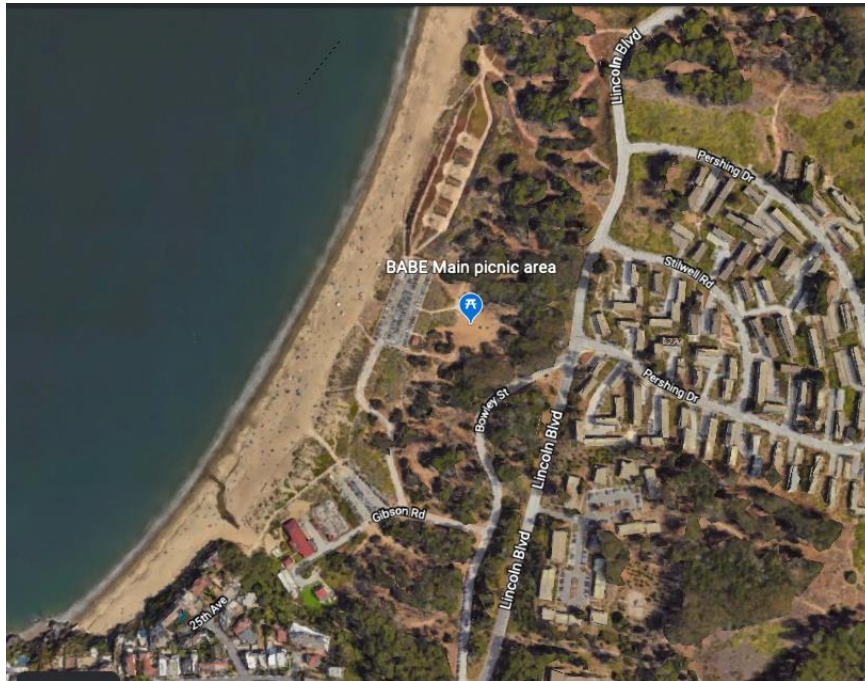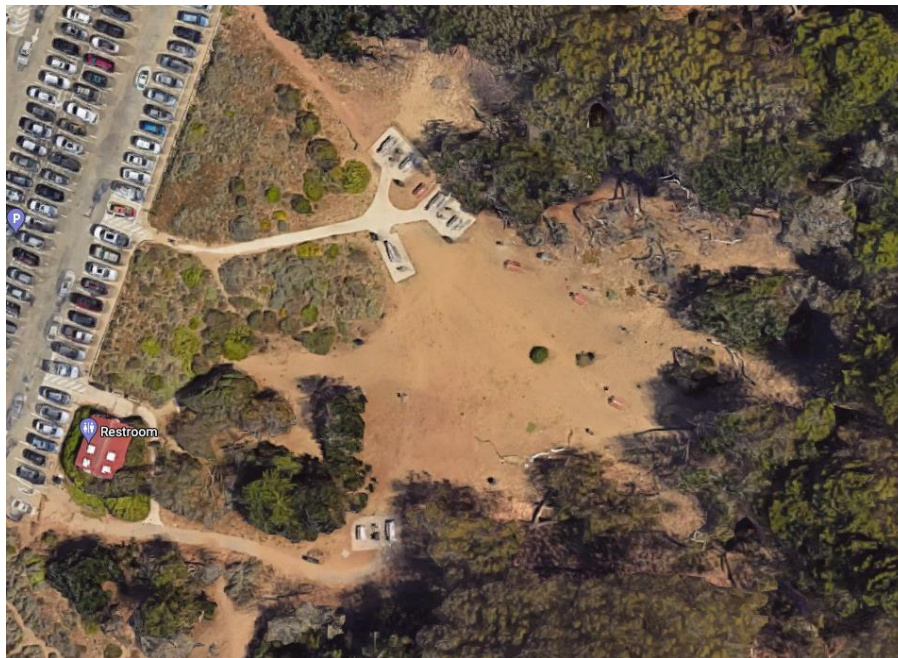
Figure 6. *Leash compliance observation area at Baker Beach.* *(Source imagery: Aerial imagery publicly available from Google Maps).*

Figure 7. Baker Beach picnic area showing tables for observation. *(Source imagery left image: Aerial imagery publicly available from Google Maps; accessed September 2019).*

Crissy Field: West Bluff and East Beach Picnic Areas.
At the West Bluff Picnic area, an observer will walk through the picnic area, observing groups at each picnic table (Figure 8). At East Beach, there are two sets of picnic tables, and the observer will walk through both (Figures 9 and 10).

Figure 8. *Leash compliance observation areas at Crissy Field Picnic Areas.* *(Source imagery: Aerial imagery publicly available from Google Maps).*

Leash Compliance Protocol

A roving observer will walk through the picnic areas at the West Bluff and East Beach picnic areas, observing each picnic table (Figures 9 and 10), as well as any stationary groups occupying space on the grass.

For each table, the observer will record whether or not the table is occupied; for tables and stationary groups, they will record if the group has one or more dogs, and if one or more dogs is off leash.

For each subsequent rove, the observer will record the same information, noting if each group is new or was present during a prior rove.
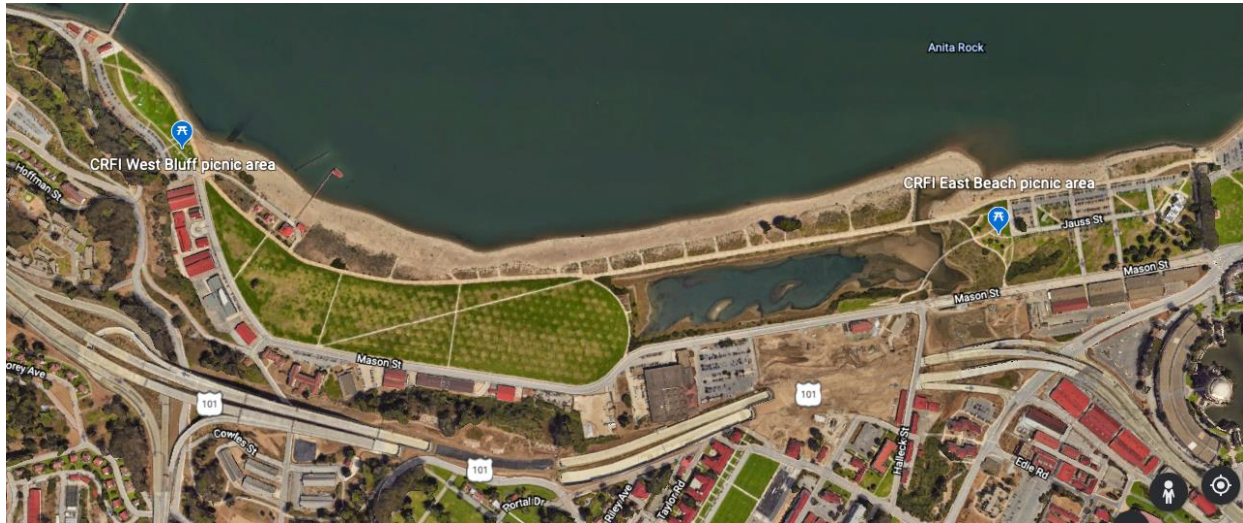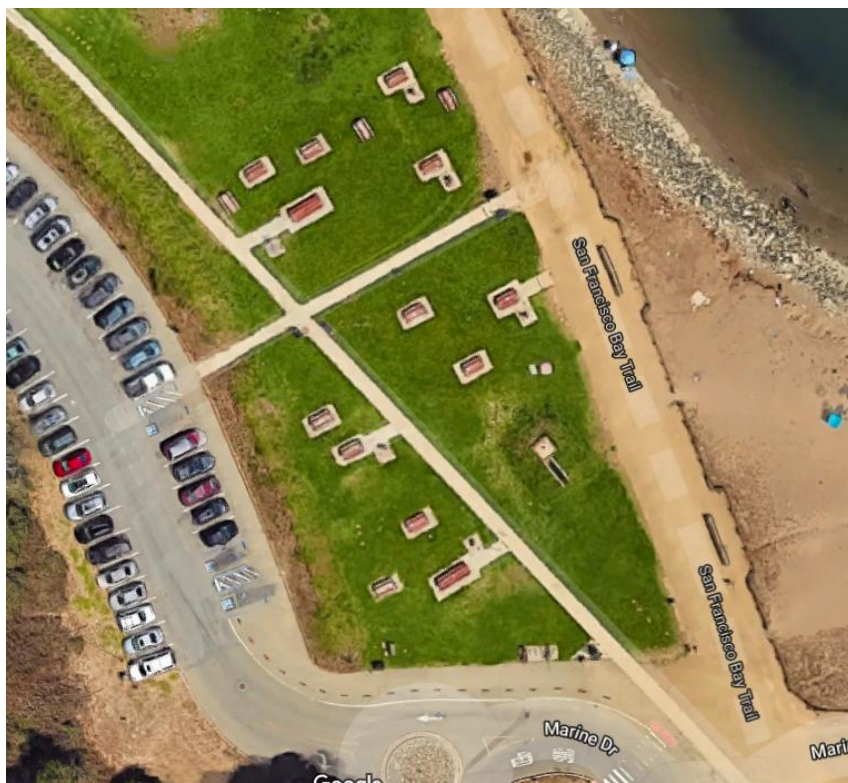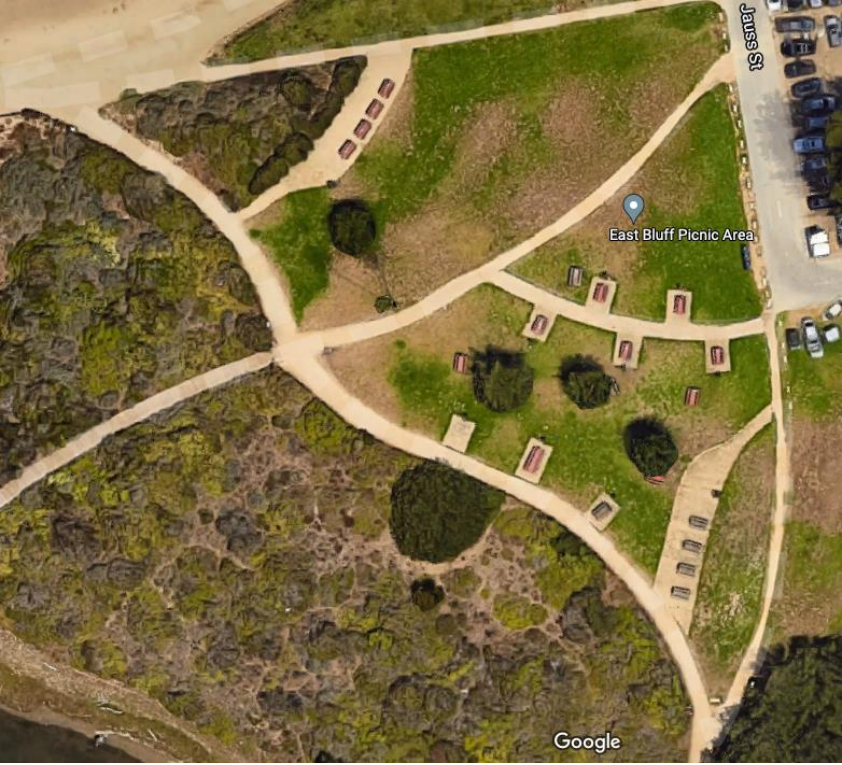
Figure 9. *Leash compliance observation area Crissy Field West Bluff Picnic Area.* *(Source imagery: Aerial imagery publicly available from Google Maps).*

Figure 10. *Leash compliance observation area at eastern picnic tables at Crissy Field East Beach Picnic Area.* *(Source imagery: Aerial imagery publicly available from Google Maps).*

Leash Compliance Data Sheet – Picnic Area

Unit:	Monitoring Location:
Name (First/Last):	**Date** (MM/DD/YY):
Sky Cover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐ 90+	

Time	Table #/ Grp letter	Occupied		New Group		Any Dogs Present (new grp only)		All Dogs Leashed (new grp only)		Comments
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	
		Y	N	Y	N	Y	N	Y	N	

Leash Compliance Data Sheet - Threshold

Unit:	**Monitoring Location:**
Name (First/Last):	**Date** (MM/DD/YY):
Sky Cover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐90+	

Observation Start Time: **End Time:**

Groups w/o Dog(s)	Groups w/ All Dogs Leashed	Groups w/ 1+ Unleashed Dog(s)
Total:	Total:	Total:

Comments:

Observation Start Time: **End Time:**

Groups w/o Dog(s)	Groups w/ Leashed Dog(s)	Groups w/ 1+ Unleashed Dog(s)
Total:	Total:	Total:

Comments:

Observation Start Time: **End Time:**

Groups w/o Dog(s)	Groups w/ Leashed Dog(s)	Groups w/ 1+ Unleashed Dog(s)
Total:	Total:	Total:

Comments:

Observation Start Time: **End Time:**

Groups w/o Dog(s)	Groups w/ Leashed Dog(s)	Groups w/ 1+ Unleashed Dog(s)
Total:	Total:	Total:

Comments:

Entry into Sensitive Habitat Closures

The sensitive habitat closures indicator uses observation to determine the extent of compliance with park-mandated closures of ecologically sensitive areas. It was developed and tested specifically for intrusions into lagoons at Muir Beach and Rodeo Beach. (It can be adapted for other types of areas closed for any reason but would need to be tailored to the specific contexts). The location, type, and spatial extent of closure areas are unique to each park unit and monitoring location, which are described in the next section. The inclusion of this indicator is motivated by regulations articulated in site-specific guidance found in the *Superintendent's Compendium* (2017) and general rules codified in 36 CFR § 1.5(a).

The purpose of the measure is to document all visitors and dogs that enter a closed area during pre-defined monitoring periods. The protocol also collects data on the number of people and dogs in the vicinity of the closed areas (as well as parking lot counts under a separate protocol) to permit standardization across days and computation of the rate of non-compliance.

Indicator measures.
There are five measures associated with the *compliance* with sensitive habitat closures indicator:
- Number of human entries into habitat closure areas
- Number of dog entries into habitat closure areas
- Number of dogs in the vicinity of the closed areas
- Number of people in the vicinity of the closed areas
- Number of vehicles parked in parking lots (refer to the *Parking Lot Count* protocol)

Statistics.
- Number of human visitors entering habitat closure areas per 2-minute period
- Number of dogs entering habitat closure areas per 2-minute period
- Ratio of the number of visitors who enter closed area to the number of people in the vicinity (within 25' of the shoreline)
- Ratio of the number of dogs that enter a closed area to the number of dogs in the vicinity (within 25' of the shoreline).

Definitions Relevant to Protocol.

Lagoon entry: an entry occurs if any portion of a person or dog (e.g., a foot, hand, paw) breaks the surface of the lagoon water (Figure 1).

Figure 1. Examples of lagoon entries (target behavior for measurement) at Muir Beach (left) and Rodeo Beach (right). *(Source imagery: Oregon State University).*

Data collection procedures.

1) Complete the following information of the ***GGNRA Visitor Use Monitoring Daily Log*** form for the scheduled data collection unit:
   a. Unit
   b. Data Collection Day Start Time: HH:MM (24 hour format)

2) Arrive at the predefined observation point for Sensitive Habitat Closure data collection presented in the Applicable Sites section (see below).

3) Record the following information on a ***Sensitive Habitat Closure*** *Data Sheet* in the associated fields on the log. If multiple data collection sheets are required for an observation session, complete this information on every sheet. In the list below, the fields are bolded, followed by definitions of the information to record.
   a. **Unit:** The park unit in which you are monitoring (e.g., Muir Beach, Rodeo Beach).
   b. **Name:** Your first and last name.
   c. **Date:** The date of your observation, MM/DD/YYYY.
   d. **Sky Cover:** Check one, "Sunny," "P Cloudy" (partly cloudy), or "Overcast" depending on the predominant conditions during the data collection event.
   e. **Precipitation:** Check one, either "present" or "absent" depending on the predominant precipitation conditions during the data collection event.
   f. **Temperature:** Check one (check boxes are provided in 10-degree Fahrenheit increments from 40 degrees to 90+ degrees) that represents your best estimate of the predominant temperature during the data collection event.

4) **Conduct the observation of sensitive habitat closure entries.** Begin the observation at the observer location identified in the Applicable Sites section.

    a. **Location.** Circle the applicable location. Refer to the figures to be sure the specific extent of the observation area is known and the entire area is visible from the selected location. Familiarize yourself with estimating distances by pacing a line 25' perpendicular to the lagoon shore.

    b. **Obs. Start Time**: enter the time the 2-minute observation session begins.

    c. **Entries into Water during Observation Period.** At 10-minute intervals, conduct a 2-minute observation session, in which you will tally the number of people (**# People**) and dog (**# Dogs**) observed to enter the lagoon within the observation zone. Each person and dog should be counted *only once* during each 2-minute period, even if they enter the water multiple times. At the end of the 2-minute period, add up the tallies of people and dogs entering the water and enter those numbers in the "**total entries**" fields.

    d. **Instantaneous At One Time Counts at End of Observation Period.** At the end of the 2-minute observation period, count all of the people and dogs in the following two zones: 1) within 5' of the lagoon's shore and 2) 5-25' from the lagoon shore. (Note that the specific location of the lagoon shore will likely change from day-to-day, depending on water levels.) If a person or dog moves during the time you are conducting the count, attribute them only to the first zone where you saw them (do not count them more than once).

    e. **Comments.** If other entries, outside of dogs and people, occur during the observation session, record these entries in the "comment" column and provide a description of what happened/who entered (e.g., a Frisbee was thrown into the lagoon).

    f. Record any uncertainty or items of note that occur during your observation period in the **comments** field. If you are unsure of how to classify an event seen, provide detailed notes about what happened in the comments section for that observation period. If you are interrupted during your observation period and are unsure if you captured all events, make sure to note that in the comments section.

5) Wait 10 minutes and then conduct another 2-minute observation session, completing the second block of data fields on the datasheet. If working at Muir Beach, move to the second observation location for the second session.

6) Wait 10 minutes after the second observation session, and conduct one more 2-minute observation session, completing the fields in the third block of data fields on the datasheet. If working at Muir Beach, move to the third observation location for this session.

Applicable sites.

Muir Beach.
An observer will observe the lagoon at Muir Beach, collecting data as described above. There are three locations from which stationary observations will be made (Figures 2 to 4). The observer will stand at a point where the entire shore of the selected segment is visible, but where they are inconspicuous to visitors. One set of thee 2-minute observations should be made early in the monitoring day at Muir Beach (2 minutes per observation zone, separated by 10 minutes between observations). A second set of three 2-minute observations should be made at the end of the day before leaving Muir Beach on any given monitoring day.

Figure 2. View of Muir Beach segment 1 (MB1) and observation location for segment 1 counts.

Figure 3. View of Muir Beach segment 2 (MB2) and observation location for segment 2 counts.

Figure 4. View of Muir Beach segment 3 (MB3) and observation location for segment 3 counts.

Rodeo Beach.

A stationary observer will be positioned on the southern-most bench located on the west side of the road and the east side of the beach (Figure 5). The observer will look northwest to observe the unfenced area of the lagoon located between the road and the beach. The area of observation will include all waters of the lagoon to an imaginary line extending across the lagoon toward the road from the last fence post across the water in the lagoon (Figure 5). The lagoon water levels will shift, and the extent of the observation area is the water itself rather than a static shoreline boundary. Observations should be made at 10-minute intervals for ~75 minutes on each monitoring day: two sets of three 2-minute observation sessions separated by 10 minutes, with at least an hour between sessions.

Observation location is at the southern most bench (if available) or standing near the bench.

Red line begins at last fence post

Area under observation for entries is only the lagoon water itself, no other areas.

Figure 5. Rodeo Beach sensitive habitat monitoring area and observation location. (Source imagery: Oregon State University).

Sensitive Habitat Closure Data Sheet

Unit:

Name (First/Last):	**Date** (MM/DD/YY):
Skycover: ☐ Sunny ☐ P Cloudy ☐ Overcast	**Precipitation:** ☐ Present ☐ Absent
Temperature: ☐ 40-49 ☐ 50-59 ☐ 60-69 ☐ 70-79 ☐ 80-89 ☐ 90+	

Location: MB1 MB2 MB3 RB	**Obs. Start Time:**	**Obs. End Time:**

Entries into Water During Observation Period

# People	**# Dogs**
Total Entries:	**Total Entries:**

Instantaneous At-One-Time Count at End of Observation Period

Within 5' of Shore		**5 – 25' from Shore**	
# People:	**# Dogs:**	**# People:**	**# Dogs:**

Comments:

Location: MB1 MB2 MB3 RB	**Obs. Start Time:**	**Obs. End Time:**

Entries into Water During Observation Period

# People	**# Dogs**
Total Entries:	**Total Entries:**

Instantaneous At-One-Time Count at End of Observation Period

Within 5' of Shore		**5 – 25' from Shore**	
# People:	**# Dogs:**	**# People:**	**# Dogs:**

Comments:

Location: MB1 MB2 MB3 RB	**Obs. Start Time:**	**Obs. End Time:**

Entries into Water During Observation Period

# People	**# Dogs**
Total Entries:	**Total Entries:**

Instantaneous At-One-Time Count at End of Observation Period

Within 5' of Shore		**5 – 25' from Shore**	
# People:	**# Dogs:**	**# People:**	**# Dogs:**

Comments:

Location: MB1 MB2 MB3 RB	Obs. Start Time:	Obs. End Time:

Entries into Water During Observation Period

# People	# Dogs

Total Entries:	Total Entries:

Instantaneous At-One-Time Count at End of Observation Period

Within 5' of Shore		5 – 25' from Shore	
# People:	# Dogs:	# People:	# Dogs:

Comments:

Location: MB1 MB2 MB3 RB	Obs. Start Time:	Obs. End Time:

Entries into Water During Observation Period

# People	# Dogs

Total Entries:	Total Entries:

Instantaneous At-One-Time Count at End of Observation Period

Within 5' of Shore		5 – 25' from Shore	
# People:	# Dogs:	# People:	# Dogs:

Comments:

Location: MB1 MB2 MB3 RB	Obs. Start Time:	Obs. End Time:

Entries into Water During Observation Period

# People	# Dogs

Total Entries:	Total Entries:

Instantaneous At-One-Time Count at End of Observation Period

Within 5' of Shore		5 – 25' from Shore	
# People:	# Dogs:	# People:	# Dogs:

Comments: