



Prepared for:



DRAFT Programmatic Environmental Impact Statement Appendices A-L

Hawaiian Monk Seal Recovery Actions

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Appendix F
Health Screening and
Quarantine Protocols for
Hawaiian Monk Seal
Translocation Between
Subpopulations

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**HEALTH SCREENING AND QUARANTINE PROTOCOLS FOR HAWAIIAN
MONK SEAL TRANSLOCATION BETWEEN
SUBPOPULATIONS BACKGROUND**

These protocols support NMFS' translocation actions. These protocols are intended for any seal translocations between subpopulations (e.g., two-stage translocations or experimental juvenile translocations), as opposed to rapid and short distance translocations (within atolls or within the main Hawaiian Islands, MHI). Separate protocols are included for translocating different age classes of seals and are applicable to any locations in the Hawaiian Archipelago.

These protocols are subject to refinement and change based on experience that will accrue during the next decade, veterinary consultation, emergence of new testing procedures, disease risks, etc. Protocols will be reviewed annually and updated as required to refine protocols and improve implementation.

Weaned Pup Translocations

Steps involved in weaned pup translocations include:

- 1) Selection and capture of seals, healthscreening, and attachment of tracking instruments.
- 2) Recapture and transport to vessel/aircraft.
- 3) Transport to destination site.
- 4) Release of seals at new location.
- 5) Post-release monitoring.

Transport Vessels: A variety of transportation modes will be used including large vessels (NOAA ships, other chartered vessels), airplanes, helicopters, automobiles, and other as appropriate depending on location and available resources.

Specific Protocols:

- 1) *Selection and capture of seals, health screening and attachment of tracking instruments.*

Any weaned pup at the designated source site will be considered a candidate for selection, as long as it exhibits no apparent signs of disease, injury or any other factors that may compromise survival. Relatively recently (i.e., less than a month previous) weaned pups may be favored for selection as they are more likely to remain at the release location longer than those that have weaned earlier (Baker et al. in review). Seals will undergo health screening and a subset will be instrumented with a tracking device approximately 1-4 days prior to transport.

Seals will be captured using standard practices (by hand or using a hoop net). Blood may be collected without sedation or seals will be sedated.

Seals will be evaluated using the current standard health screen. This may be modified as deemed necessary due to specific disease concerns in source and recipient subpopulations, up to date testing procedures and veterinary consultation. Current practice includes:

Blood Analysis

1) Field analysis:

- a. WBC count - Unopette system
- b. RBC count - Unopette system
- c. WBC differentials, platelets - Microscope and archive extra unstained smear
- d. Hematocrit/ PCV - Microhematocrit centrifuge
- e. Hemoglobin
- f. Serum chemistry (Na, K, Cl, BUN, Creat, Ca) - I-Stat kit
- g. Glucose - Glucometer and test strips
- h. BUN - Azostix

2) Lab analysis (frozen 0.5-1.0 mL aliquots of serum, stored in liquid nitrogen dewar in the field)

- a. Serum chemistry - send to IDEXX
- b. Tier 1 testing, which currently includes: heartworm (in MHI), morbillivirus, seal herpes 1, Brucella, Toxoplasma, Chlamydia, Leptospira (multiple serovars), canine adenovirus (in MHI), feline calicivirus (in MHI), parvovirus, and fecal culture.

3) Banked blood samples stored in liquid nitrogen dewar in the field

- a. Remaining serum (or at least 4 aliquots)
- b. 0.1 mL whole blood (Na heparin and EDTA)
- c. EDTA plasma, buffy coat, and RBC
- d. Na heparin plasma, buffy coat, and RBC
- e. Biotoxin card

- f. Blue top tube – invert to mix, decant whole blood into mercury-clean container, and freeze for mercury analyses

Swab processing:

- 1) In the field place all swabs in the liquid nitrogen dewar after collection
- 2) Lab analysis
 - a. 1 nasal and 1 rectal swab in Avian Influenza transport media (frozen) – send to National Wildlife Health Center in Madison
 - b. 3 fecal swabs in Cary Blair transport medium
 - c. 2 dry swabs from the eyes, nares, mouth, genital orifice, rectum and any external wounds
 - d. 1 swab of any abnormal tissue in viral transport media (if deemed appropriate)

Blubber Biopsies:

Put in liquid nitrogen dewar in the field

- 1) 1 for toxicology (Teflon container)
- 2) 1 for fatty acid analysis (cyrovial)

Other Sampling:

- 1) Fur – put into mercury-clean bag and freeze
- 2) Any other sampling deemed necessary by the PI or attending veterinarian.

External Exam

- 1) Physical Exam
 - a) No obvious injury
 - b) Auscultation of lungs, heart
 - c) Examine eyes, nose, ears etc. (damage, disease, moisture)
- 2) Morphometrics
 - i. Girth
 - ii. Length
 - iii. Weight

Samples not analyzed in the field will be stored, shipped, and analyzed as described in the current monk seal permit.

If, based on veterinarian's physical exam and immediately available test results, seals do not show any signs of injury or illness, some may be instrumented with appropriate telemetry equipment to monitor them after release. This device will assist post-release monitoring until the opportunity to visually survey the seals arises.

If seals do show physical signs of injury or illness, the attending veterinarian will determine whether to sedate for full biomedical sampling or to treat the injury or illness. These animals will be covered under the health assessment portion of the PIFSC research and enhancement permit, or under the MMHSRP permit depending on the treatments required.

After this handling, seals will either be released and allowed to freely range until capture for transport or will be held in a shore pen (approximately 1-4 days). Allowing seals to freely move will minimize any stress seals may experience being held in a captive shore pen. Holding in shore pens allows for better assessment of animals health and reduces effort of relocating seals within the atoll. The decision to use pens or allow seals to free-range prior to transport will depend on conditions at the field site, results of physical examination and transport logistics. If seals are allowed to range freely, prior to the second capture the seals will be visually assessed for any outward signs of injury or illness. If the attending veterinarian determines the animal to be unhealthy, either after physical examination and/or evaluation of blood sample, then the animal will not be translocated.

2) Recapture and transport to vessel/aircraft.

Weaned pups will be captured using standard techniques for the transport of weaners. If transport involves a small boat shuttle to a larger ship, animals will be restrained in a stretcher net by two trained seal biologists and placed on the deck inside the small boat. Seals will then be transported directly to the vessel. Water will be available onboard to cool the seal when needed. The number of seals that may be transported at one time in the small boat will be dependent the specific boat's capacity. There should be adequate area that no seals are piled on top of each other and that there is a reasonable amount of space for researchers to operate to cool and move seals as necessary.

Seals will be taken onto the vessel by lifting the entire small boat by crane up to the mid-ship low railing access on the port side of the vessel (or the safest method depending on the vessel being used). One biologist will remain with the seal during lifting. Seals will be hand lifted from the small boat onto the vessel and brought to their cages.

The distances between cages will be wide enough to allow biologists to move between, prevent spread of urine and feces between cages, and

allow the free flow of air. The cages will be strapped to the deck to prevent sliding if rough seas develop. Seals will be placed on a blue tarp, removed from the stretcher net and lifted manually into the cages. Seals will be held separately. A saltwater hose is located near the cage and ice is available for cooling off seals in the heat of the day. Cage openings will be accessible to allow access to animals if medical care or treatment is needed in transit.

If transport is via automobile to aircraft, similar but more logistically simple procedures will apply. Seals will be captured in the same way. Unless it is not feasible, the seals will be transported in cages (again while being observed and with water for cooling available) in automobiles and likewise aboard aircraft.

3) *Transportation to destination site*

The transportation of seals between subpopulations could be done via boat, plane, car, or other reasonable mode of transportation. Multiple modes of transport can be used at any time. During all transports, the animals will be escorted by a veterinarian and sufficient staff to be able to respond to an emergency.

Transport via ship:

During transport the deck(s) holding the seals will be off limits to anyone except seal biologist monitoring the animals, the veterinarian and ships safety officers. No physical contact with seals will be made unless a problem arises in which a seal needs to be restrained for examination or treatment (see contingency plan below). If physical contact is made, protocols for handling seals in the wild will be followed as described in the permit application and as written in the Hawaiian monk seal Field Research Manual for safe handling of seals and minimizing risk of disease transmission (e.g., clean coveralls that have been soaked in bleach solution, wash hands, etc). Observers will look for a variety of threats, indications of stress or disease, and ways to mitigate both while observing the animal:

- a) Entrapment/entanglement in cage
- b) Abnormal discharge from body orifices
- c) Abnormal respiration
- d) Abnormal behavior
- e) Modifying ambient temperatures to prevent overheating
- f) Enforce security-preventing disturbance by people on ship

- g) Monitor for ship equipment/supplies posing risk to seals.

Seals will be monitored 24 hrs a day while on the ship by observers working 2-hour shifts. Observers will watch for changes in external behavioral/health parameters. Initially upon be loaded onto the boat the seals will be closely observed for signs of acute stress (e.g. continued high respiration and heart rate, agitated behavior, shaking). Descriptive and medical observations will be collected for each individual seal. The following types of data will be recorded:

- a) Observation form to be annotated every 30 minute
- b) Summary form to be completed at the end of each 2-hour shift
- c) Eye exam form - only if eye issue is observed

Veterinary exam sheet will also be filled out by the attending vet prior to release.

4) *Release of seals.*

The protocols for releasing seals will be dependent on conditions at the selected release site(s).

General Considerations:

- Most releases will be on shore at a beach selected based on suite of criteria including, but not limited to:
 - site where pups have weaned and survived in past
 - ideally where conspecifics of similar age are present or frequent
 - if in MHI, then isolated from human contact
- Immediately after release seals will be monitored on shore for as long as logistically practicable.

If the site is a remote island or beach and landing by small boat is treacherous then this strategy will be considered (this will only be done in rare circumstances):

The vessel will approach the release site and attempt to get as close as possible to minimize distance traveled by small boats. Seals will be removed from their cages and placed on a blue tarp. They will be captured using a stretcher net and brought to the small boat, which will be held by the crane at the portside mid-ship low railing access (or other technique deemed safest and depending on vessel). Seals will be transported on the floor of the small boat and the boat will be lowered into the water for a near-shore release of seals.

The small boat will attempt to get within at least 100 m of shore but closer if conditions allow. This will mean the boat will be in shallow water with

emergent land clearly visible for seals to navigate by. Two biologists will lift the seal over the rail of the safe boat, lowered to the surface of the water and one side of the stretcher net dropped allowing the seal to swim away. Safety lines will be tied to the boat side bar of the stretcher net and connected to the SAFE boat. This will keep the stretcher net from sinking and will cause the net to open releasing the seals if it should be dropped. An additional crewmember will be prepared with snorkel gear to help in the water if something needs to be done in the water.

If the site can be accessed by truck or other vehicle the following should be considered:

- Time of transport should be minimized so animals should be moved be transported during peak traffic times
- Animals will be escorted in the back of the truck by monk seal specialists to monitor the animals' health and welfare during transport
- Water will be available to cool the seal during transport
- A veterinarian and emergency gear will be available should an animal need assistance
- A back up/escort vehicle will be accompany the transport in case a vehicle should breakdown, so the animal(s) can continue to be moved

5) *Post Release Monitoring*

a. *Remote Monitoring*

Movement and diving behavior of seals instrumented with tracking devices data will be compared to data concurrently collected from native seals or to pre-existing data on seals of similar age to determine whether translocated seal behavior is within the normal observed range.

b. *Resighting*

Attempts to resight translocated seals will be made during regular population monitoring effort or intensified observation a the release subpopulation. The level of observation effort will vary largely depending upon the accessibility, logistics and cost of mounting surveys. Subsequently, haulout behavior and survival of translocated versus native seals of the same age will be compared.

Translocation of older seals

The following protocols pertain to the translocation of juvenile or sub-adult Hawaiian monk seals (e.g., involved in the second stage of two-stage translocation). Similar protocols will be apply to translocation of aggressive adult male monk seals. Any seal older than 1 yr, which has been identified for translocation for any of the purposes proposed under the PEIS, may be subject to these protocols. Once identified for translocation, subjects will be considered further if they exhibit no apparent signs of disease, injury or any other factors that may compromise survival¹.

Steps involved in translocation of older seals may include some, but not necessarily all, the following:

- 1) Selection and capture of seals for health screening and attachment of tracking instruments.
- 2) Quarantine
- 3) Transport
- 4) Release of seals at new location.
- 5) Post-release monitoring

Transport Vessels: Same as for weaned pups

Specific Protocols:

- 1) *Selection and capture of seals for instrumentation and health and disease screening.*

Procedures will be as described above for weaned pups with the following exceptions. Older seals will typically be capture with a stretcher or hoop net and transported in cages appropriate to their body size. Because older seals are far more mobile than weaned pups, they will usually be held in shore pens after initial capture until transport to the destination. As with weaned pups, seals which do not pass their health screen will not be translocated. If appropriate, they may be brought in for treatment under the MMHSRP or released on site if deemed appropriate by the attending veterinarian. Further, aggressive adult males deemed inappropriate for translocation may be brought into permanent captivity or euthanized according to the currently existing research and enhancement permit.

¹ Aggressive adult male selected for translocation to mitigate harm to other seals may nevertheless be selected even if compromised in some way.

2) *Quarantine Period*

When transporting seals from the MHI to the NWHI, a period of quarantine may be necessary to reduce the likelihood of transferring a disease between the two regions. Quarantine holding will be done at a facility, on board a ship or in shore pens depending on the situation and facilities availability. The quarantine period should be long enough for the analysis of biomedical samples or longer than the prepatent period for the demonstration of clinical signs for the diseases of greatest concern. Two weeks is the generally accepted period and this period could include the transport period. Specific quarantine protocols are described in greater detail in a subsequent section.

3) *Transportation to release site*

Transportation of seals will follow the protocols established for weaned pups.

4) *Release of seals at new location.*

Release of seals will follow the protocols established for weaned pups.

5) *Post Release Monitoring*

Monitoring will be conducted as described for weaned pups.

Injury/Illness during transport:

If during transport a seal becomes sick or injured it will be cared for in transit by veterinary and husbandry staff, equipped with emergency drugs, antibiotics, intubation equipment, fluids for hydration, and IQF herring if tube feeding is necessary. The compromised seal(s) monitored 24 hours/day until it can be delivered to a captive care facility.

Captive care will be conducted using established protocols refined and developed with recent captive care activities for Hawaiian monk seals and other pinniped under the authority of the MMHSRP permit. Eventual release of the seal will be determined according to standards of the MMHSRP.

Detailed Hawaiian Monk Seal Quarantine Protocol

The following are quarantine protocols that will be followed during the captive holding of Hawaiian monk seals, for example during translocation quarantine periods. Quarantine will typically occur in a captive facility, but these protocols can be adapted for use in a shore pen situation if needed. In such cases, reference to “pools” or “tanks” would apply to separate shore pens.

I. QUARANTINE

A. QUARANTINE DEFINITION AND OBJECTIVES

1. Quarantine refers to any isolation or restriction on travel or passage imposed to keep contagious diseases, insect pests, etc. from spreading.
2. Hawaiian monk seals held in captive care must be maintained under strict quarantine at all times to:
 - a. Minimize transmission of disease from outside sources- i.e. human contact
 - b. Minimize transmission of disease from captive care seals to susceptible animals, including wild seals, humans, etc.
 - c. Minimize transmission of disease among the three holding tanks holding facility.
3. All personnel involved in the feeding, handling, and care of these seals must be properly trained in quarantine procedures by an experienced staff. (Quarantine procedures should always be posted in the food preparation or other high profile area.)

B. NMFS QUARANTINE POLICY

Quarantine from Outside Sources

1. All equipment used in the quarantine facility, including feeding, handling, and medical supplies **MUST** be:
 - a. Labeled “MONK SEAL QUARANTINE”
 - b. Used exclusively for quarantined seals
 - c. Kept monk seal equipment separate from that used for other animals
 - d. Properly sanitized before and after entering the quarantine enclosures
2. **NO VISITORS** are allowed in monk seal quarantine area unless previous approval is granted by the on-site supervisor. Non-authorized personnel may be able to view the seals from an approved viewing platform outside the quarantine area.
3. Avoid direct contact with domestic or other captive or wild animals before and after entering Hawaiian monk seal quarantine enclosure. Shower

and change clothes before and after going to another animal care facility if entering the seal enclosures on the same day.

4. No street shoes are to be worn into the enclosures, including the walkway leading to tanks. Wear rubber boots/shoes designated for “monk seal quarantine” use in the enclosures at all times. Minimize wearing quarantined boots/shoes around premises.
5. Dip soles of boots/shoes in dilute Nolvasan footbath upon entering AND leaving all the enclosures.
6. Immediately upon entering the enclosure to tanks wash hands with antibacterial soap. Also wash hands before and after fish preparation, feeding, or handling seals. Always wash hands immediately after leaving a separate tank enclosure.
7. Any person that will potentially come in direct contact with quarantined seals for any procedure must wear sanitary protective clothing (i.e. coveralls, handling gloves, shoes) designated for quarantine monk seal use only. This clothing should be kept clean and in a designated area away from potential sources of contamination.
8. Protective clothing worn during procedures should be immediately washed in the washer with soap and dilute bleach solution following handling events.
9. Any new equipment or tools brought into the quarantine area must first be sanitized with a dilute bleach or Nolvasan solution.

Quarantine Between Pools

1. Separate equipment will be used to care for seals in each of the pools. This includes cleaning and feeding supplies (brooms, hoses, buckets, etc.) and handling gear (coveralls, booties, gloves). Keep this equipment separate.
2. A dilute Nolvasan footbath will be placed outside of each tank to be stepped before and after leaving the enclosure. A freshwater bath will be placed as a final rinse before entering the pen.
3. Personnel must change protective clothing when caring for seals housed in different pools. However, personnel caring for isolated seals (sick) are prohibited from entering the “healthy” seal area (the stairs, walkway, fish house, and other pools).
4. Seals housed in separate enclosures will not be mixed unless deemed necessary by the veterinary staff.

II. OBSERVATIONS AND CONDUCT AROUND SEALS

A. OBSERVATIONS OF THE SEALS

1. In the morning and prior to each feed, conduct a thorough inspection of the seals and pens before proceeding with further activity. Following each feed or handling event, monitor the seals' behavior closely. Perform a final inspection before leaving for the day.
2. Throughout the day monitor and record the behavior of each seal. Observe the condition and activity level of the seals and presence of feces, urine, spew, and harmful debris in or around pens. When possible, note ID of seal that produced scat, spew, etc. Note the color, consistency, and amount of scat, urine, and spew.
3. Note anything unusual in a seal's normal appearance (eyes, nasal discharge, bite wounds, etc.) and behavior (lethargic, unresponsive, etc.). Notify attending veterinarian and animal care manager immediately of any abnormal changes in a seal's health.
4. Succinctly record any observations on the "Observation" form in each seal's chart, including the time and observer's initials. Frequently used acronyms: BAR = bright, alert, and responsive; QAR = quiet, alert, and responsive.

B. CONDUCT AROUND THE SEALS AT ALL TIMES

Every possible effort should be made to minimize the habituation of the seals by reducing human-seal interactions.

1. When in enclosures, **DO NOT MAKE PHYSICAL CONTACT WITH SEALS** unless necessary for procedures requiring handling. Minimize going into the enclosure and the amount of time you spend in the enclosure as much as possible.
2. If seals are resting or sleeping, do not make loud noises or startling gestures, and move slowly when in close proximity to them to minimize stress.
3. Minimize talking when working with or near the seals and the enclosure.
4. Whenever possible, observers should remain as inconspicuous and unobtrusive as possible to observe seals' normal behaviors in captivity and minimize their stress in captivity.
5. Each person entering an enclosure with the seal should be carrying a herding board, which should be within arms-reach at all times.

6. Outside of feeding sessions seals may display undesirable behaviors which include: a) approaching too closely or too rapidly; b) mouthing hoses, brooms, or boots; and c) stereotypic behaviors which include repetitive splashing or slapping at the walls of the enclosure. If seals approach too closely or too rapidly use a herding board to keep the seal away. The mouthing of brooms, hoses, and boots should be discouraged by preventing opportunities for seals to bite at these objects in the first place. Stereotypic behaviors are a sign of boredom and may be reduced by providing seals with their approved environmental enrichment devices (EEDs).

III. CLEANING THE QUARANTINE AREA

A. DISHES

1. Wash all dishes used for feeding and handling with dish soap and water. Rinse thoroughly.
2. Soak all metal and rubber equipment (bolus syringes, knives, tongs, etc.) in dilute Nolvasan for at least 10 minutes.
3. Soak all plastic equipment (cutting boards, buckets, cooler, etc.) in dilute bleach for at least 10 minutes.
4. Rinse all dishes thoroughly to remove the dilute bleach or Nolvasan.
5. Allow all dishes to air-dry.
6. Stomach tubes should be washed with soap and water, rinsed thoroughly, and then boiled for 10 minutes. Be sure to scrub the inside of the feeding tubes. Keep sanitized stomach tubes wrapped in a clean towel.
7. Bolus Syringe Care: after the syringes have been washed and dried as described above, lubricate the O-ring with mineral oil and put the syringes back together for safe storage. Be careful when handling the syringes as they are fragile and can crack easily.

B. DAILY CLEANING AND MAINTENANCE

Seal Enclosure Cleaning

Do not allow seals to mouth or bite brooms or fresh water hoses. If the hose enters the pool remove it immediately. Never allow the broom, hose, or any equipment to remain unattended in a seal enclosure. Return all equipment to its storage area after use (i.e. coil and hang hose). Always keep the enclosure doors securely bolted because the seals are very adept at exiting the enclosures through a door left ajar. When cleaning, take the opportunity to inspect urine for color and feces for consistency and parasites. Always record feces and urine in the observations form in the seal's chart and make special note of any unusual findings.

1. After the morning feed, the entire pen enclosure should be checked for any scat, urine, fish parts, and wind-blown debris. If necessary, use a broom and fresh water hose to clean the seal enclosure. Thoroughly rinse all fish scales, blood, and debris from the decks, walls, and ledge of the

enclosure and walkway with the fresh water hose after each feed. Special care should be taken to clean scales from doors, door handles, and bolts.

2. Before leaving in the evening, the deck and pool walls and floor should be hosed down and any spattered blood, scales, scat, or other debris should be scrubbed away.

Miscellaneous Cleaning

1. Rinse off the walkway and stairs leading to the seal enclosure at least once a day. Scrub the walkway with broom and water as needed.
2. Refill footbaths 1-2 times a day or as needed with dilute Nolvasan (usually once first thing in the morning is fine). Add 3 oz Nolvasan to 1 gallon water. Be sure to have a final water rinse before the pen entrance. Old dilute Nolvasan should be poured onto the pavement next to and at the base of the stairs (don't dump it down the stairs).

Food Prep Area Cleaning

1. Freezers and refrigerators must remain clean and neat at all times. All feeders are responsible for maintaining freezer cleanliness on a daily basis. Keep freezers free of ice buildup as much as possible.
2. Wipe down all counter and table surfaces after each feeding. Be especially mindfully of cleaning any fish scales and spattered blood from the all surfaces after each feeding.
3. Mop the fish prep area floor floor with a dilute bleach solution (1 part bleach to 30 parts water) after the morning feeding.
4. Empty the garbage and take it to the outside dumpster at the end of each day (or every other day).
5. All damaged or unused fish and fish parts including the scales should be put in the "Fish Waste" bag in the chest freezer and should NOT be thrown away in the regular trash. The "Fish Waste" bag should be taken to the facility dumpster every Wednesday before 0800 for immediate pick-up.

Coverall Cleaning

1. Wash all coveralls, kneepads, gloves, and booties following each use with dilute bleach and laundry detergent in the washing machine at the end of each day. Do not set quarantine items down outside the quarantine area.
2. Dry all items in the dryer except the booties with rubber soles. The booties should be air-dried on the floor in the fish house.
3. In between handling events on the same day, hang the coveralls in the sun to dry.
4. Store clean, dry coveralls, etc. in appropriate area labeled "Clean Handling Equipment" (in the cabinet).

C. WEEKLY CLEANING

Cleaning Seal Enclosure

The monk seal pools and enclosures should be drained and cleaned once a week. A minimum of 3 people should conduct the weekly cleaning. A dilute bleach solution should be used. When using bleach solutions always direct the rinse

water away from seals because the bleach solution is a skin and eye irritant. Use the large, soft-bristled brushes for all cleaning.

1. Empty all Nolvasan footbaths except for one at the base of the stairs. Once the footbaths are emptied, minimize leaving and reentering the quarantine area as much as possible.
2. Spray the walkway with the dilute bleach mixture. Be sure to spray the walls, ledge, and doors. Direct the bleach spray away from the seal enclosure. Scrub the walkway deck and ledge. Let the bleach stand for 10 minutes.
3. Hose off the dilute bleach thoroughly – perform at least 2 washes of all surfaces.
4. When you are convinced that all the bleach has been rinsed away, move the seals into the holding area. Be sure to keep the seals cool with running water while cleaning the enclosure and monitor the seal's affect and behavior regularly.
5. Once the seals are secure in the holding area, begin draining the pool and start bleaching the deck. Spray the entire deck and up to the fiberglass line on the walls. Be careful to avoid sending bleach (from the sprayer or wind) into the seals' holding area. Spray the cages, any enrichment tools, and drain covers. Scrub the deck floor and allow the bleach to stand for 10 minutes.
6. As the pool continues to drain, thoroughly rinse the bleach from the deck area. Perform at least 2 rinses of all surfaces.
7. When the pool is drained, scrub the walls and floor of the pool to remove all scales and spattered blood. Using the hand-held brushes works well for scrubbing the walls.
8. Spray the pool walls and floor with dilute bleach and scrub all surfaces again. Let the bleach stand for 10 minutes.
9. Rinse the bleach from the pool walls (at least twice) while simultaneously turning on the water inflow. Leave the bottom drain open, with the drain cover in place, for several minutes to thoroughly rinse all the bleach down the drain. When you feel confident that all the bleach has been washed away, close the bottom drain, and begin filling the pool.
10. Flush the deck for several minutes to remove any bleach remnants. Remove all cleaning equipment then bring the water level with the deck and re-introduce the seals to the enclosure.
11. After all the tanks and walkways have been cleaned, thoroughly rinse the bleach solution from the brooms and all cleaning equipment. Separate cleaning supplies are used in each of the tanks. Replace the Nolvasan solution (3 oz/1 gal) in all footbaths.
12. Record the seals' behavior, the duration spent in the holding area, and any other relevant information from the cleaning event (scat, spew, urine, etc.) on the observations form in each seal's chart.

IV. WATER SAMPLING SEAL TANK

Sampling should occur regularly each week at least a couple of days after the weekly enclosure cleaning. We collect one sample from the pool and one from

the inflow in addition to a temperature control sample collected from the pool. These samples will be sent for fecal coliform testing.

1. Try to be as sterile as possible: wear gloves, do not open lid to bottle until immediately before collection, do not contaminate inside of lid or bottle, don't set the lid down, etc.
2. Collect the inflow sample by removing the lid and holding the bottle under the water inflow to fill it. Decant any excess water being careful not to touch the lip of the bottle or the lid.
3. Sample the pool (pool and temp control sample) 180° from the water inlet. With the lid still in place, submerge the bottle about 1 foot deep. Unscrew the lid underwater with the bottle positioned counter-current to fill the bottle. Replace the lid underwater. Remove the bottle from the water and decant the excess water being careful not to contaminate the bottle or lid.
4. Immediately place the samples in the small red cooler with blue ice (provided by HF&WTL) for transport to the lab. If transport is not immediate, place the samples in the refrigerator (sampling fridge, not fish storage fridge). Store sample bottles in the cooler and ice pack in freezer until next sampling.
5. Complete all the necessary paperwork and be sure to label each bottle (pool, inflow, temp control).
6. These counts should not exceed 1000 MF/100ml. If fecal coliform counts exceed 1000 MF/100ml, sampling must be repeated within 24 hours. Promptly notify the veterinary staff if counts are above 1000 MF/100ml. Enter the date, time, coliform count, and any pertinent comments in the HMS Water Testing spreadsheet.

V. SEAL ILLNESS/EMERGENCY CARE

1. In case of an emergency or suspected illness, refer to the phone list and call the attending veterinarian or veterinary technician immediately to relate symptoms or circumstances of emergency or illness. Follow the emergency chain-of-command protocol.
2. A veterinarian or trained veterinary staff will perform any needed blood sampling.
3. A crash kit and emergency drugs are kept in the fish kitchen. All other medical supplies for blood sampling, fluid and antibiotic administration, monk seal medications, and additional medical supplies are kept within each facility.

EXAMPLE

Physical Examination Form

Circle as appropriate

Body outline: Swelling, Wound, Change from previous day

If yes, describe: _____

Flippers: Normal use of all 4 flippers with full-range of motion, Favoring one flipper (describe _____), Lacerations, Swelling, Ulcers/sores, Signs of pain or discomfort

Discharges: Ears, Nares, Eyes, Umbilicus, Rectum, Vagina, Other

If yes, describe amount: _____ mL, Color: _____,

Consistency: _____

Feces: Describe amount: _____ mL, Color: _____,

Consistency: _____

Urine: Color: _____

Eyes:

Right: Discharge: Clear tears, Crustiness around eyes, Purulent discharge
Redness or congestion of conjunctiva, Swelling of conjunctiva, Prominence of third eyelid, Corneal opacity/ cloudiness, Corneal ulcer, Lacerations, Swelling of eyelids, Squinting or photosensitivity, Any obvious loss of vision

Left: Discharge: Clear tears, Crustiness around eyes, Purulent discharge
Redness or congestion of conjunctiva, Swelling of conjunctiva, Prominence of third eyelid, Corneal opacity/ cloudiness, Corneal ulcer, Lacerations, Swelling of eyelids, Squinting or photosensitivity, Any obvious loss of vision

Mouth: Color of mucous membranes: Pink, Red, Pale pink/White

Teeth: Broken, Erupting. List

site: _____

Behavior: Alert, Bright, Lethargic, Depressed, Active, Inactive, Stereotypic behavior, Disorientation, Vocalizations, Other abnormal behavior for each individual seal, Any marked change from previous days

Describe: _____

—

Other comments (environmental conditions, respiration rate, heart rate, etc.):

Animal ID: _____ **Date:** _____ **Name of Observer:** _____
Time: _____