Rapid Response Plan Following Detection of Dreissenid Mussels in Ocean Lake, Wyoming

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SUMMARY

Aquatic invasive species (AIS) are introduced, non-native organisms that cause significant harm to ecosystems, which can impact municipal water supplies, recreation, agriculture, aquaculture, and other commercial activities. While there are multiple AIS present in Wyoming, the most significant threat is zebra and quagga (dreissenid) mussels based on their proximity and demonstrated impacts in neighboring states. This Rapid Response Plan provides a guide for how to minimize and contain a potential dreissenid mussel infestation at Ocean Lake.

Ocean Lake is a natural sump supplied by water collected from 16 irrigation return drains that flow into the lake. It is 6,100 surface acres with a volume of approximately 54,900 acre-feet at a full pool surface elevation of 5,235 feet. It is located 17 miles northwest of Riverton and is part of the Wyoming Game and Fish Department 11,505 acre Ocean Lake Wildlife Habitat Management Area (WHMA). The Wyoming Game and Fish Department manages the fishery, water, and all lands adjacent to Ocean Lake. The WHMA is surrounded by the Midvale Irrigation District and the Wind River Reservation.

The typical boating season is between April and October, depending on weather and ice conditions. The lake has six developed campgrounds and five boat ramps. The majority of the 16 miles of shoreline is publicly accessible, but some public shore launching of motorized watercraft is known to occur. Resident motorized watercraft are most common and angling is the primary boating activity. Accurate boating information is difficult to estimate since there is no available program creel survey data and AIS inspection sample size is far too small to draw meaningful conclusions. Only 13 AIS inspections have been conducted on watercraft bound for Ocean Lake in 2018-2019. Motorized watercraft were by far the most common at 85% and 62% of those had outboard motors. Only 8% of boats had inboard/outboard motors. These inspections were focused on watercraft coming into Wyoming and certainly inflated the proportion of non-resident boaters at 50%. Surprisingly, three non-resident boats had last been used on an infested water.

In the event that a sample from Ocean Lake is confirmed positive for dreissenid mussels, the lake will be considered Short-term Suspect Status for six weeks while follow-up sampling occurs. During that time, it will be necessary to minimize the risk of spreading mussels to other waters and resources will be put in place to perform exit inspections of all boats leaving the lake. The five boat ramps at Ocean Lake are widely spread out with separate access roads, so three ramps will be closed during the initial Short-term Suspect Status period. Two exit check station locations will be established at the Long Point and Dickenson boat ramps. Both will be staffed daily with 2-3 inspectors from sunrise to sunset. Launching of motorized watercraft from private launch sites and shore launching of non-motorized watercraft would be permitted, but all watercraft would require an exit inspection prior to leaving the lake.

If initial follow-up sampling does not yield a positive result, Ocean Lake would enter Long-term Suspect Status for up to three years. The lake will be considered Positive Status for dreissenid mussels if two or more sampling events meet the minimum criteria for detection. Infested Status would occur if an established, reproducing mussel population is detected. Containment plans are similar for each status described above. Four boat ramps will be closed to boat access as will all motorized watercraft shoreline and night launching. The Long Point boat ramp will remain open for exit inspections and decontaminations. The majority of boating access occurs at this location and focusing inspection efforts here will be most effective while minimizing costs for the Department.

Ocean Lake is unique because it doesn't have a peak boating season. It is not a recreational destination and angler use is fairly consistent during the open water period. The inspection check station should be operated daily between April and October. Inspection station hours of operation will be from 8:00 AM until sunset, requiring 2-3 inspectors each day so 1-2 inspectors are always on site. A total of six inspectors will be needed to cover all shifts each week and a Biologist I will be hired to coordinate program efforts and supervise inspection technicians.

Initial supply and equipment needs will be substantial and infrastructure improvements will be required (e.g., construction of an asphalt inspection pullout area and possibly installation of water and power). Major equipment purchases include two 3/4 ton trucks, two mobile decontamination units, camper and office trailer. Additional equipment needs are water tanks, utility trailers, water pumps, inspection/closure signs, camp groceries and miscellaneous supplies. Supply and equipment needs in following years will likely be considerably lower since most major purchases are planned for the first year.

Anticipated overall costs vary based on status level and year of program implementation. First year expenses are higher due to investments in supplies, equipment and construction and slightly exceed $350,000 for Long-term Suspect and Positive status. However, the budget increases to approximately $530,000 for first year Infested Status due to power and water supply costs. Annual operating costs after the first year will be approximately $185,000 for Suspect or Positive status and $231,000 for Infested Status.

INTRODUCTION

Zebra (*Dreissena polymorpha)* and quagga (*Dreissena bugensis)* mussels are aquatic invasive species (AIS) that have far-reaching negative impacts on natural resources, water infrastructure, recreation, and can be attributed to significant economic loss. Zebra mussels are native to the Black and Caspian seas and were first discovered in the Great Lakes in 1988. Quagga mussels area native to the Dnieper River Drainage in Ukraine and were first found in the Great Lakes in 1989. Since their initial introductions, these species have spread across most of the United States, and have been detected in Wyoming's neighboring states of Nebraska, South Dakota, Montana, Colorado, and Utah. The close proximity of zebra and quagga mussels to Wyoming elevates the threat of introduction and increases the need for plans to contain them if detected.

Currently, Wyoming's AIS program is focused on outreach, watercraft inspection and monitoring, with the overall goal of keeping invasive species such as zebra and quagga mussels out of the state. Wyoming law requires inspection of all watercraft entering the state and the Wyoming Game and Fish Department (WGFD) currently maintains 14 inspection stations (primarily at Department of Transportation Ports of Entry) that intercept incoming watercraft and inspect them for the presence of AIS. The WGFD AIS program also conducts inspections at various waters by roving personnel and at regional offices. Annual monitoring for a variety of AIS, including zebra and quagga mussels, is conducted on priority waters throughout Wyoming and an outreach program is in place to educate the public about the threats of AIS and what they can do to prevent their spread.

If zebra or quagga mussels are detected in a Wyoming water, immediate action will be necessary to prevent their spread to other waters. This rapid response plan is a water-specific plan that outlines the steps needed to quickly mobilize personnel and equipment to provide exit inspections and, if necessary, decontaminations of all boats leaving the affected water. This plan will be initiated when zebra or quagga mussel veligers (larvae) or adults are detected in a sample from Fremont Lake and are verified by independent experts and genetic analysis. At that point, the lake will enter Short-term Suspect Status. This coincides with the period of time necessary to conduct additional sampling and testing necessary to verify whether zebra or quagga mussels are present (up to six weeks). If follow-up sampling does not detect zebra or quagga mussels, the water will enter Long-term Suspect Status and monthly monitoring will be initiated. If zebra or quagga mussels are not detected for three years, the water will once again be considered negative. Conversely, if two sampling events within a 12-month period detect zebra or quagga mussels, the water will enter Positive Status and will not be considered negative again unless mussels are not detected in monthly monitoring for five years. Finally, a water will enter Infested Status when evidence shows a recruiting and reproducing population of zebra or quagga mussels is established. At this point, eradication of mussels is highly unlikely and containment efforts will be necessary for the foreseeable future.

This plan provides guidance for the initial response to detection of dreissenid mussels at each of these four status levels and is intended to be implemented quickly and act as the guiding document for initial decision making following detection. It is not intended as a long-term containment plan, but will outline the action necessary to provide short-term containment while a long-term containment and monitoring plan is developed.

CONFIRMATION OF DREISSENID MUSSELS

Sampling of Wyoming waters is conducted annually in accordance with the "Wyoming Game and Fish Department Aquatic Invasive Species Sampling and Monitoring Manual" (WGFD 2019). High priority waters are sampled twice per season (June or July, and September or October), and lower priority waters are sampled once per season in September or October. To determine whether Wyoming waters contain evidence of AIS, specimens of adult or juvenile crayfish, snails, mollusks, plants, etc. are collected during routine sampling and any specimen suspected of being AIS must be positively identified by at least two independent experts. Only samples collected by the WGFD may be used to change the classification of a water. Samples collected by a third party will be used as a notification of a possible detection which must be confirmed by a WGFD sample.

To meet the minimum criteria for detection of dreissenid mussels, an adult or juvenile specimen must be verified by two independent experts and confirmed by DNA, or a veliger (larval form) must be identified and verified using cross-polarized light microscopy by two independent experts and confirmed by DNA analysis (PCR and gene sequencing).

Based on sampling results, waters are given certain classifications related to their dreissenid mussel status:

A water body that has not been sampled for aquatic invasive species is classified as *Unknown/Not Tested*. A water body at which sampling is ongoing and nothing has been detected (or nothing has been detected within the time frames for de-listing) is classified as *Negative*. Currently, all waters in Wyoming are classified as either *Unknown/Not Tested*, or *Negative*.

A water body classified as *Inconclusive* has not met the minimum criteria for detection but evidence of dreissenids has been documented. For example, evidence of a mussel veliger is detected via microscopy but cannot be confirmed by DNA analysis. This is a temporary classification and additional sampling of this water will be conducted to determine whether the water body is classified as negative (no detections in subsequent sample) or suspect (verified detection in subsequent sample).

A water body classified as *Suspect* indicates a water at which one sample has been verified by visual confirmation (visual identification of adult or microscopy identification of veliger) and this sample was confirmed as dreissenid by DNA analysis (PCR and gene sequencing). In this scenario, additional sampling will be conducted to determine whether another sample taken within 12 months detects evidence of dreissenids. If a subsequent sample does detect dreissenids, this water will then be classified as *Positive*.

A water body classified as *Positive* indicates a water at which two or more sampling events within a 12-month period meet the minimum criteria for detection. For example, samples from two different sampling events are verified by both visual identification (including microscopy) and DNA confirmation (PCR and gene sequencing).

In many cases, a water classified as *Positive* will ultimately become *Infested* which is a water body with an established (recruiting and reproducing) population of dreissenid mussels. For example, lakes Mead and Powell are considered infested waters as they have large populations of reproducing dreissenids and mussels are readily evident on the shoreline and submerged materials such as docks, buoys, etc.

In some instances, the classification of a water body can be downgraded over time. The exact reasons why dreissenids are detected at a water once, then not again in subsequent

sampling, or are detected in a water classified as *Positive* but never establish a population, remains largely unknown.

A water body initially classified as *Inconclusive* can be de-listed to *Negative* status after one year of negative testing results including at least one sample taken in the same month of subsequent year as the initial positive sample (to account for seasonal environment variability)**.** The time frame for de-listing a water body extends from there with a water body initially classified as *Suspect* requiring three years of negative testing to re-classify to *Negative*, a *Positive* water body requiring five years of negative testing to re-classify to *Negative*, and an *Infested* water body requiring a successful eradication or extirpation event and a minimum of five years of negative testing results post-eradication event to re-classify to *Negative*.

WATER DESCRIPTION

Ocean Lake is located in central Wyoming and is part of the Wyoming Game and Fish Department's 11,505 acre Ocean Lake Wildlife Habitat Management Area (WHMA). It lies 17 miles northwest of Riverton and is surrounded by the Midvale Irrigation District and the Wind River Reservation. Access to the lake from the south is via U.S. Highway 26 and from the north on State Highway 134. State Highway 133 parallels the west side of the lake while access on the east side is off of County Road 385. The Wyoming Game and Fish Department manages the fishery, water, and all lands adjacent to Ocean Lake. Key stakeholders are the Wind River Reservation, U.S. Fish and Wildlife Service, Bureau of Reclamation and Midvale Irrigation District. Additional key stakeholders are the towns of Riverton, Pavillion and Kinnear, as well as downstream agriculture water users in the Wind River Basin.

Ocean Lake is a natural sump that is approximately 4 miles wide in most directions. The lake has 16 miles of shoreline and spans 6,100 acres with a volume of around 54,900 acre-feet. Maximum depth is only 31 feet while average depth is approximately 9-10 feet. Water surface elevation when full is 5,235 feet. The surrounding landscape is primarily wetlands, upland sagebrush, and cottonwood and Russian olive trees. The main non-boating use is waterfowl hunting and collection of irrigation return water from the 16 irrigation return drains that flow into the lake. Camping and shoreline recreation are popular as well.

The typical boating season is from early April to late October, depending on weather. General boating numbers are difficult to estimate because there is no current program creel survey data. Almost all of the 16 miles of shoreline is publicly accessible, with exception of a few private inholdings. The lake has six developed campgrounds and five boat ramps, which include Long Point, South Cove, Dickenson, Goose Knob, and Stultz (Figure 3). No shore launching is known to occur. There are six main entrances around Ocean Lake and many secondary dirt roads access the WHMA. The access roads are widely spread out with virtually no pinch points.

Only 13 AIS inspections were conducted on watercraft bound for Ocean Lake from January 1, 2018 through November 11, 2019. These inspection were focused on watercraft coming into Wyoming, and may artificially inflate the proportion of non-resident boaters. According to this inspection data (n = 13), 50% of boaters bound for Ocean Lake are Wyoming residents and 50% are non-residents. Surprisingly, three boats had last been used on an infested water. Motorized watercraft are by far the most common at 85% and 62% of those were outboard motors which typically are easy to drain and do not have ballast tanks. Only 8% of boats had inboard/outboard motors. This limited AIS inspection data is the only information

available for boater use of Ocean Lake, but the sample size is far too small to draw meaningful conclusions.

RAPID RESPONSE – SHORT-TERM SUSPECT STATUS

In the event that a sample from Ocean Lake is confirmed positive for dreissenid mussels, the lake will be considered Short-term Suspect (defined above). After the initial detection, follow-up sampling will occur and results will take approximately six weeks to be reported. During that time, it will be necessary to minimize the risk of spreading mussels to other waters. Within one week, resources will need to be in place to perform required clean, drain, dry exit inspections of all boats leaving the reservoir and decontamination of undrainable areas, such as ballast tanks and motors. All watercraft leaving Ocean Lake will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

At Short-term Suspect Status, there will not be time to hire personnel or purchase equipment. Therefore, the initial response will rely on existing personnel and equipment. Immediately after initial detection, job announcements and requisitions will be prepared so personnel can be hired and equipment can be purchased as quickly as possible once follow-up results are available.

Communication Plan

Upon the initial detection of dreissenid mussels, WGFD's AIS Coordinator will begin the administrative communication chain outlined in the WGFD AIS Administrative Rapid Response Plan (WGFD 2020). Initial contacts in the administrative communication chain include the AIS Coordinator contacting the Communications Director, the Regional Fisheries Supervisor, and the Fish Division Chief, who contacts the WGFD Director. On the regional level, the Lander Regional Fisheries Supervisor will begin the regional communication chain to disseminate information about the detection to internal and external partners and stakeholders (Figure 1). Internal WGFD contacts include Regional Fish Division personnel, the Regional Wildlife Supervisor, the Regional Habitat and Access Supervisor and the Regional I&E Specialist. The Regional Wildlife Supervisor will then contact the Riverton and Lander Game Wardens as well as local Wildlife and Terrestrial Habitat biologists. The Regional Habitat and Access Supervisor will contact appropriate Habitat and Access biologists.

The Lander Regional Fisheries Supervisor or biologists will also contact key stakeholders, including the Wind River Inter-tribal Counsel, U.S. Fish and Wildlife Service, Bureau of Reclamation and Midvale Irrigation District. They will also contact the communities of Riverton, Pavillion and Kinnear, as well as local business owners Rocky Mountain Discount Sports and Kinnear General Store. Boater contacts made through the Wyoming AIS inspection stations will be used as a primary notification and education outlet during this time period. The AIS Coordinator will also contact and coordinate with WGFD communication personnel, including Regional I&E (see Public Outreach, below), and regional stakeholders (Western Regional Panel, federal partners, etc.).

Key information to convey to internal and external partners and stakeholders should include the name of the affected water, which species was collected, who collected the sample,

where the sample was collected, which agency/expert analyzed the sample, any relevant information about the sample, who to contact for more information, a brief description of containment protocols that will be put in place, and any critical changes for the public. Every effort should be made to quickly contact all partners and stakeholders prior to beginning public outreach efforts. The regional fisheries supervisor will attempt to make all contacts within 24 hours of detection and will contact the Communications Director once enough contacts have been made to initiate outreach efforts.

Contact information for key individuals can be found in Appendix A.

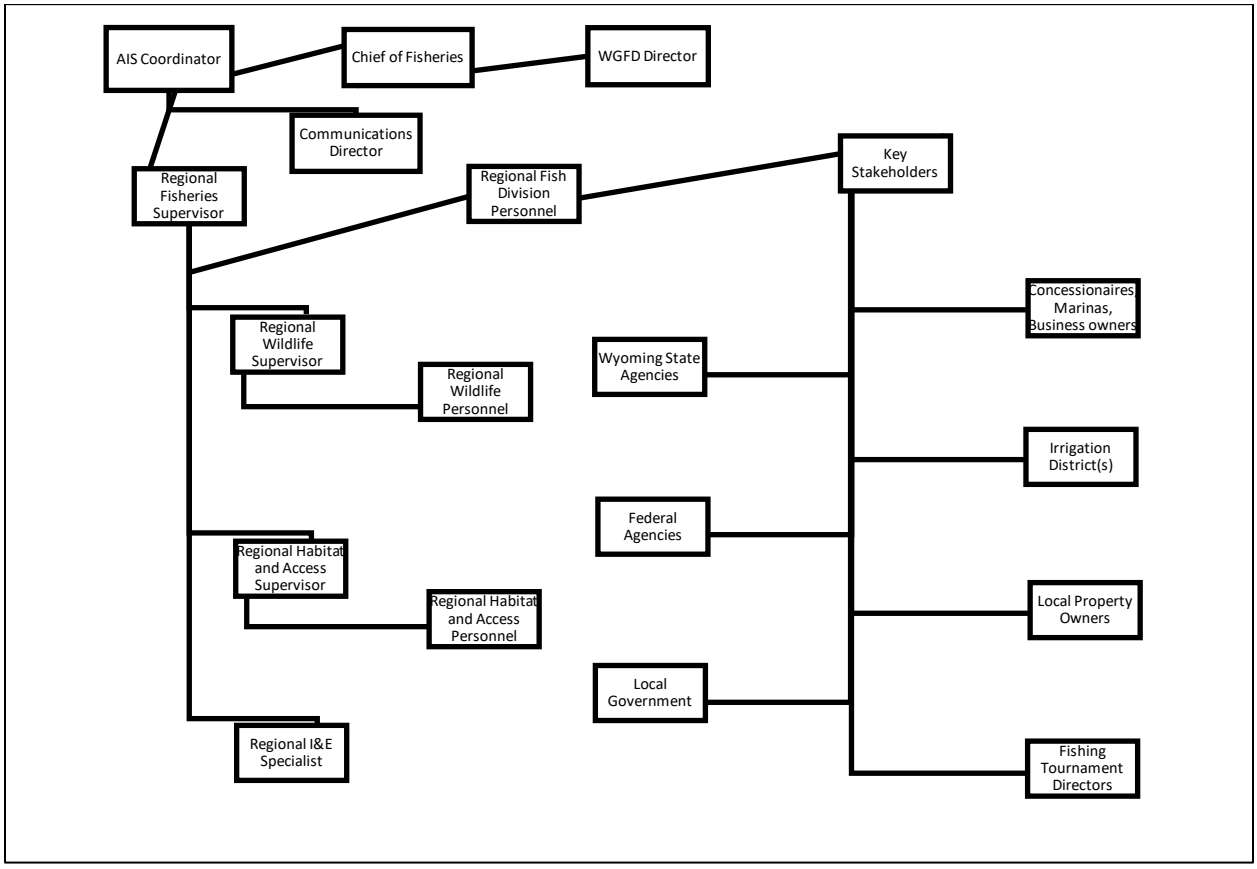

FIGURE 1. Communication chain for dissemination of information on the local and regional level following a dreissenid mussel detection in a Wyoming water.

The focus of this plan is on containing invasive mussels through inspection and decontamination of exiting watercraft. Consideration should be given to other potential vectors that could spread invasive mussels (e.g., aircraft used to combat wildfires, commercial water hauling equipment) and communication and coordination should occur with these entities to ensure containment. Current information on preventing the spread of aquatic invasive species in firefighting and water hauling equipment can be found on the WGFD website at https://wgfd.wyo.gov/Fishing-and-Boating/Aquatic-Invasive-Species-Prevention/AIS-Construction-and-Fire.

Closures

The five boat ramps at Ocean Lake (Figure 2) are widely spread out with separate access roads and virtually no pinch points. Due to this situation, closures will be necessary even during the initial Short-term Suspect period. Three boat ramp closures should be implemented at the South Cove, Goose Knob and Stultz locations. These ramps see very little use and are not planned as inspection stations. Boat ramp closures would involve having Habitat and Access personnel post signs and place large boulders to serve as physical barriers to the ramps.

Public shore launching and night launching of motorized watercraft will also be prohibited. However, launching of motorized watercraft from private launch sites and shore launching of non-motorized watercraft would be permitted. All watercraft must receive an exit inspection and decontamination before leaving Ocean Lake.

Check Stations

We anticipate two exit inspection locations at Long Point and Dickenson boat ramps (Figures 3-4). Both locations have sufficient pullout space to intercept and conduct exit inspections of boaters leaving the water. Essentially, the only traffic in these areas is boater traffic to and from the water so there is no concern about disrupting the flow of non-boater traffic. Check stations will be open anytime between early April and late October (depending on when the Short-term Suspect period occurs) and will be staffed daily from sunrise to sunset. No improvements are anticipated during this initial six weeks.

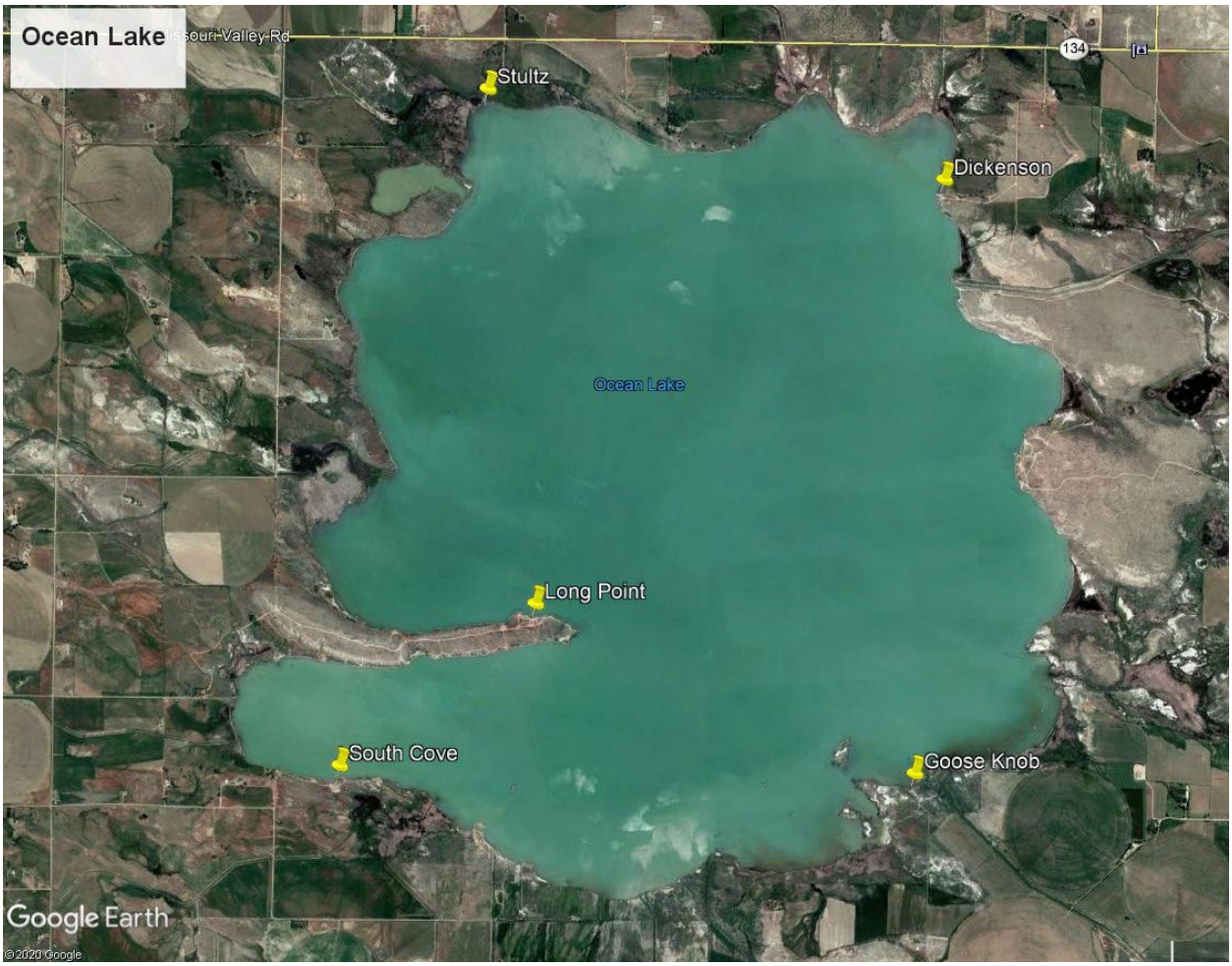

FIGURE 2. The five boat ramp locations at Ocean Lake.

FIGURE 3. The Long Point AIS exit inspection location at Ocean Lake.

FIGURE 4. The Dickenson AIS exit inspection location at Ocean Lake.

Staffing Plan

The Long Point boat ramp will require one inspector in the morning and two in the afternoon while Dickenson will require only one inspector be present at all hours. At least three inspectors will be needed to fully staff both locations between 8:00 AM and sunset. This will require a minimum of six inspectors per week. Lander regional personnel, with assistance from roving AIS technicians will be used to staff exit inspection stations over the six week Short-term Suspect Status period.

Supplies and Equipment

Three mobile decontamination units (2 primary and 1 backup) will be needed to provide exit inspection coverage at the two checkpoints. If a decontamination unit happens to break down and a backup is unavailable, the boater will be sent to the other inspection location. The Lander Region currently has one decontamination unit, but it is not a mobile unit and will need to be mounted on a pickup or trailer with an associated water tank. Two additional units would need to be rented or borrowed from other regions. Utilities and water are not present at any of the locations so generators will need to be borrowed and water tanks purchased. Water pumps

will be needed to transfer water from tanks to decontamination units and can likely be borrowed from the Regional Habitat and Access Crew until new pumps are purchased. Existing Department ¾ ton pickups will be used to haul water in 350 gallon tanks. Six large boat inspection signs would be needed for the two exit inspection locations and additional signs will be needed to indicate closures of the South Cove, Goose Knob and Stultz boat ramps. Two campers will be borrowed for shelter and work space at the check stations, and camp groceries will be provided each day during the six week period. See Appendix B for the Short-term Suspect Status budget.

Public Outreach

The AIS Administrative Rapid Response Plan outlines the general public outreach plan for suspect, positive or infested determinations for Wyoming waters (WGFD 2020). Following an initial sample testing positive for dreissenid mussels, the AIS Coordinator will contact the Communication Director at WGFD Cheyenne Headquarters. Prior to initiating the public outreach plan, key partners and stakeholders should be contacted according to the Communication Plan (above). The regional fisheries supervisor will attempt to make all contacts within 24 hours of detection and will contact the Communications Director once enough contacts have been made. The Communications Director will then initiate the Communications Plan. A statewide press release will be sent out and information will be posted on the AIS website and any necessary social media. The AIS Coordinator, Regional Fisheries Supervisor and Regional AIS Specialist will collaborate with the Lander Regional I&E Specialist to relay information about Short-term Suspect Status at Ocean Lake through media outlets (newspapers, radio, etc.). Regional Information and Education personnel will coordinate all communications efforts with the Communications Director.

RAPID RESPONSE – LONG-TERM SUSPECT STATUS

If initial follow-up sampling does not yield a positive result, Ocean Lake would enter Long-term Suspect Status (defined above) and remain at this level for up to three years if no additional positive samples are found. The goal during this period is still to minimize the risk of spreading mussels to other waters. During the first year (from initial detection through the following boating season), we will need to provide capacity for all boaters coming off the water to efficiently obtain a required clean, drain, dry exit inspection, motor flush, and decontamination of ballast tanks and other undrainable areas. All watercraft leaving Ocean Lake will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

If there is no confirmation of dreissenid mussel presence after the first full boating season, efforts will switch in years two and three to a lower level response, with a goal of contacting a significant number of boaters, but placing more responsibility on boaters to obtain an exit inspection. Inspectors will still conduct clean, drain, dry exit inspections on boats leaving the water and decontaminate ballast tanks and other undrainable areas. If feasible, they will continue to flush all motors. If not, they will drain outboards motors and only flush inboard/outboard and inboard motors as these motor types are difficult to drain completely.

Public outreach will increase via multiple outlets to highlight the potential threat at the suspect water.

Communication Plan

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Lander Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the Lander Region and key stakeholders (Appendix A) of follow-up sampling results.

Closures

As stated in the Short-term Suspect Status section, the five boat ramps at Ocean Lake (Figure 2) are widely spread out with separate access roads and virtually no pinch points to consolidate traffic. Due to this situation, closures will be necessary during the entire Long-term Suspect period. The three boat ramp closures implemented during the Short-term Status period should remain in place at the South Cove, Goose Knob and Stultz boat ramps. These ramps see very little use and are not planned as inspection locations. The Dickenson boat ramp should also be closed during the Long-term Suspect Status period. It is estimated that 80-90% of boating access occurs at Long Point and closing all other boat ramps will focus inspection efforts and lower costs for the Department. Boat ramp closures would involve having Habitat and Access personnel place large boulders to serve as physical barriers to the ramps.

Public shore launching and night launching of motorized watercraft will also be prohibited. However, launching of motorized watercraft from private launch sites and shore launching of non-motorized watercraft would be permitted. All watercraft must receive an exit inspection and decontamination before leaving Ocean Lake.

Check Stations

During Long-term Suspect Status, Long Point will be the only open boat ramp and exit inspection location (Figure 3). Long Point has sufficient pullout space to intercept boaters leaving the water and conduct exit inspections. Essentially the only traffic in this area is boater and recreation traffic to and from the water so there is no concern about disrupting the flow of vehicle traffic. An asphalt pullout will need to be constructed along the Long Point access road. The inspection check station should be operated daily between April and October. Inspection station hours of operation will likely be from 8:00 AM until sunset. Hours of operation may be reduced in years 2 and 3.

Local Boater Program

Boating use is moderate at Ocean Lake between April and October but inspectors might not be able to handle decontamination of all boats. In addition, the primary boater use at Ocean Lake is from local residents. Therefore, a local boater program should be implemented to provide an ability to expedite inspections for boats that only use Ocean Lake. Details and implementation plan for local boater programs can be found in the Administrative Rapid Response Plan (WGFD 2020).

Staffing Plan

Ocean Lake is unique because it doesn't really have a peak boating season. It is not a recreational destination and angler use is fairly consistent during the open water period. During the boating season (April - October), the inspection station will need to be staffed from 8:00 AM to sunset. On a typical day, 2-3 inspectors will work overlapping shifts so 1-2 inspectors are always on site (Table 1). This will require a total of six inspectors to cover all shifts. A Biologist I will be hired from March - November to coordinate the efforts and supervise inspection technicians. Reduced inspector staffing and operation hours in years 2 and 3 of Long-term Suspect Status may be considered, but that should be determined following the first boating season since year 1 staffing is minimal. See Appendix B for personnel budget information.

TABLE 1. Number of inspectors needed to staff Long-term Suspect Status AIS exit inspection stations at Ocean Lake. Hours worked each shift are based on the longest day length during the watercraft season: open (8:00 AM to 6:00 PM), mid (9:00 AM to 7:00 PM) and close (12:00 PM to 10:00 PM). Total shifts per week are calculated by multiplying the number of days in the period (3 for Mon-Wed; 4 for Thu-Sun) by the number of inspectors per shift.

	Monday thru Wednesday			Thursday thru Sunday			
Locations	Open shift	Mid shift	Close shift	Open shift	Mid shift	Close shift	Shifts
Long Point	1	0	1	1	1	1	2-3/Day
Dickenson	Closed	Closed	Closed	Closed	Closed	Closed	0
South Cove	Closed	Closed	Closed	Closed	Closed	Closed	0
Stultz	Closed	Closed	Closed	Closed	Closed	Closed	0
Goose Knob	Closed	Closed	Closed	Closed	Closed	Closed	0
Total	3	0	3	4	4	4	18/Week

Supplies and Equipment

Supply and equipment needs in year 1 include infrastructure improvements at check stations (e.g., paving, gravel), and the purchase of major items such as decontamination units, a camper and office trailer. Supply and equipment needs in years 2 and 3 will likely be considerably lower than year 1 since many major purchases were made in the first year.

Two mobile decontamination units will need to be purchased to conduct decontaminations and ensure a backup unit is always onsite. The Lander Region's current decontamination unit will be housed at the Lander Regional Office and will be used as a secondary backup if necessary. Water is not available at the inspection location. Therefore, we plan on purchasing two 10,000 lb capacity trailers capable of hauling 1,000 gal each in 500 gal tanks, with water pumps to transfer water from trailer tanks to decontamination units. Two ¾ ton pickups will be purchased to pull water trailers. Water is available to fill the tanks at the Ocean Lake WHMA Headquarters.

An office trailer and camper trailer will be purchased for the check station as well as two generators to provide power since electricity is not available. Funds were included to purchase additional boat inspection and ramp closure signs, and miscellaneous supplies such as gasoline for generators. The budget also includes camp groceries for inspectors while staying on site.

An asphalt pullout will need to be constructed. The pullout will be a minimum of 120x40 feet, consisting of gravel road base covered by recycled asphalt. Recycled asphalt material would cost approximately $10.00 per ton if WGFD does the hauling. A minimum of 42 tons of recycled asphalt is needed to cover a 4-inch thick 1,200 square foot pullout area. Refer to Appendix B for budget information pertaining to supplies and equipment.

Public Outreach

At Long-term Suspect Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Lander Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Long-term Suspect Status on Ocean Lake through media outlets (newspapers, radio, social media, etc.) and a public meeting will be held in Riverton. Prior to initiating the public outreach plan, key partners and stakeholders should be contacted according to the Communication Plan (above).

RAPID RESPONSE – POSITIVE STATUS

Ocean Lake will be considered positive for dreissenid mussels if two or more sampling events within a 12-month period meet the minimum criteria for detection (defined above). The lake will remain at Positive Status for five consecutive years of negative sample results, at which time it will be downgraded to Negative Status. Alternatively, if an established population of mussels is detected during that five years, it will be upgraded to Infested Status (defined below).

The goal during Positive Status is still to minimize the risk of spreading mussels to other waters. We will need to provide capacity for all boaters coming off the water to efficiently obtain a required clean, drain, dry inspection, motor flush, and decontamination of ballast tanks and other undrainable areas. If live mussels are found on any boats during exit inspections, they will be fully decontaminated and consideration will be given to upgrading Ocean Lake to Infested Status. All watercraft leaving Ocean Lake will receive a seal and seal receipt to verify the watercraft received an exit inspection. Seals will be red in color to designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

Communication Plan

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Lander Region internal communication chain outlined in the Short-term Suspect Status section (above) will be used to inform the Lander Region and key stakeholders of changes in status level.

Closures

The five boat ramps at Ocean Lake (Figure 2) are widely spread out with separate access roads and virtually no pinch points to consolidate traffic. Therefore, boat ramp closures are necessary during the entire Positive Status period. Four of the five boat ramps see little use and

are not planned as inspection locations (see Long-term Suspect Status section). The vast majority of boating access occurs at Long Point and closing all other ramps will focus inspection efforts and lower costs for the Department. Boat ramp closures would involve having Habitat and Access personnel place large boulders in front of boat ramps to serve as physical barriers. The Dickenson or Shultz ramp should be barricaded with a locking gate to allow administrative access on the north side of the lake.

Public shore launching and night launching of motorized watercraft will also be prohibited. However, launching of motorized watercraft from private launch sites and shore launching of non-motorized watercraft would be permitted. All watercraft must receive an exit inspection and decontamination before leaving Ocean Lake.

Check Station

Long Point will be the only open boat ramp and exit inspection location (Figure 3) during the Positive Status period. Long Point has sufficient pullout space to intercept boaters leaving the water. However, an asphalt pullout may need to be constructed along the Long Point access road if one doesn't already exist from implementation of the Long-term Suspect Status plan. The inspection check station should be operated daily between April and October. Inspection station hours of operation will likely be from 8:00 AM until sunset during the first year, but open hours may be adjusted in years 2-5 to coincide with use patterns.

Local Boater Program

Boating use is moderate at Ocean Lake between April and October but inspectors might not be able to handle decontamination of all boats. In addition, the primary boater use at Ocean Lake is from local residents. Therefore, a local boater program should be implemented to provide an ability to expedite inspections for boats that only use Ocean Lake. Details and implementation plan for local boater programs can be found in the Administrative Rapid Response Plan (WGFD 2020).

Staffing Plan

The staffing plan will be the same as described for the first year of Long-term Suspect Status. Inspection stations will be operated from 8:00 AM to sunset between April and October. On a typical day, 2-3 inspectors will work overlapping shifts so 1-2 inspectors are always on site (Table 1). This will require a total of six inspectors to cover all shifts. A Biologist I will be hired from March - November to coordinate the efforts and supervise inspection technicians. Reduced inspector staffing and hours of operation in years 2-5 may be considered, but that should be determined following the first boating season. See Appendix B for personnel budget information.

Supplies and Equipment

Positive Status supply and equipment needs will be similar to those for years 2 and 3 of Long-term Suspect Status. If Ocean Lake changes from Short-term Status directly to Positive Status, year 1 will require infrastructure improvements at the Long Point check station and the purchase of major equipment items outlined for year 1 in the Long-term Suspect Status section.

Supply and equipment costs will be considerably lower in subsequent years since most major purchases won't be required. However, development of a power source and water well will be considered if generators and water tanks are not sufficient for exit inspection decontaminations. Refer to Appendix B for budget information pertaining to supplies and equipment.

Public Outreach

At Positive Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Lander Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Positive Status on Ocean Lake.

RAPID RESPONSE – INFESTED STATUS

Ocean Lake will be considered Infested if an established (recruiting or reproducing) population of dreissenid mussels is identified. Ocean Lake will remain at Infested Status until methods for complete eradication are discovered and implemented. Based on the best available technology and science at the time of this publication, it is expected that Ocean Lake would remain at Infested Status in perpetuity.

The goal during Infested Status is still to minimize the risk of spreading mussels to other waters. We will need to provide the capacity to contact all boaters coming off the water, conduct exit inspections, and ensure all boats leaving have undergone a full decontamination. All watercraft leaving Ocean Lake will receive a red seal and seal receipt to verify the watercraft received an exit inspection. Red seals will designate use on a suspect, positive or infested water versus the brown seal currently used after a Wyoming AIS inspection.

Communication Plan

The administrative communication chain will continue to be utilized to inform all parties on follow-up sampling results and water status (see WGFD AIS Administrative Rapid Response Plan; WGFD 2020). In addition, the Lander Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the Lander Region and key stakeholders of changes in status level.

Closures

The five boat ramps at Ocean Lake (Figure 2) are widely spread out with separate access roads and virtually no pinch points to consolidate traffic. Therefore, boat ramp closures are necessary. Long Point (Figure 3) will be the only boat ramp to remain open while the other four are permanently closed under Infested Status. Details for boat ramp and other closures can be found in the Long-term Suspect and Positive status sections.

Check Station

Long Point will remain the only open boat ramp and exit inspection location (Figure 3) at Ocean Lake under Infested Status. The inspection check station will be operated daily between

April and October. Inspection station hours of operation will likely be from 8:00 AM until sunset during the first year, but daily hour restrictions may be implemented and open hours reduced in future years. If deemed necessary, a water well and power supply will be added to the inspection station at Infested Status. See supplies and equipment (below) for more information. Further check station details are described in the Long-term Suspect and Positive status sections.

Local Boater Program

Boating use is moderate at Ocean Lake, but inspectors might not be able to handle decontamination of all boats. In addition, the primary boater use at Ocean Lake is from local residents. Therefore, a local boater program should be implemented to provide an ability to expedite inspections for boats that only use Ocean Lake. Details and implementation plan for local boater programs can be found in the Administrative Rapid Response Plan (WGFD 2020).

Staffing Plan

The staffing plan will be similar to the first year of Positive Status with an additional technician each day to assist with full boat decontaminations. During the boating season (April - October), inspection stations will be staffed from 8:00 AM to sunset. On a typical day, 3-4 inspectors will work overlapping shifts so 1-3 inspectors are always on site (Table 2). This will require a total of eight inspectors to cover all shifts. A Biologist I will be hired from March - November to coordinate the efforts and supervise inspection technicians. Daily hour access restrictions may be implemented and inspector staffing reduced in future years. See Appendix B for personnel budget information.

TABLE 2. Number of inspectors needed to staff Infested Status AIS exit inspection stations at Ocean Lake. Hours worked each shift are based on the longest day length during the watercraft season: open (8:00 AM to 6:00 PM), mid (9:00 AM to 7:00 PM) and close (12:00 PM to 10:00 PM). Total shifts per week are calculated by multiplying the number of days in the period (3 for Mon-Wed; 4 for Thu-Sun) by the number of inspectors per shift.

	Monday thru Wednesday			Thursday thru Sunday			
Location	Open shift	Mid shift	Close shift	Open shift	Mid shift	Close shift	Shifts
Long Point	1	1	1	1	2	1	3-4/Day
Total	3	3	3	4	8	4	25/Week

Supplies and Equipment

Infested Status supplies and equipment needs will be similar to those described in the Long-term Suspect and Positive status sections. If Ocean Lake is designated as Infested at the outset or changes from Short-term Status directly to Infested Status, year 1 will require infrastructure improvements at the Long Point check station and the purchase of major equipment items outlined for year 1 in the Long-term Suspect Status section. Supply and equipment costs will be considerably lower in subsequent years since most major purchases won't be required. However, development of a power source ($2,000 to install and $200-$300 per month for utilities) and water well ($50,000-$75,000 depending on depth) should be pursued even if

generator power and water hauling is sufficient for exit inspection decontaminations. An electric power source and water well will be the most cost effective option considering that Infested Status will likely last in perpetuity and will greatly reduce hours expended hauling water. Refer to Appendix B for budget information pertaining to supplies and equipment.

Public Outreach

At Infested Status, statewide public outreach efforts will continue to follow the process outlined in the Administrative Rapid Response Plan (WGFD 2020). The Regional Fisheries Supervisor and Regional AIS Specialist will continue to collaborate with the Lander Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with an Infested Status on Ocean Lake, and the need to close boat ramps and limit access to minimize the potential spread of mussels to other waters.

REFERENCES

WGFD. 2019. Wyoming Game and Fish Department Aquatic Invasive Species Sampling and Monitoring Manual. Wyoming Game and Fish Department, Cheyenne, WY.

WGFD. 2020. Wyoming Game and Fish Department Administrative Dreissenid Mussel Rapid Response Plan. Wyoming Game and Fish Department, Cheyenne, WY.

APPENDIX A: KEY CONTACTS

		Phone	Email
Wyoming Game & Fish Department			
Josh Leonard	AIS Coordinator	307-721-1373	Joshua.Leonard@wyo.gov
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Jon Desonier	N. Riverton Game Warden	307-850-5224	Jon.Desonier@wyo.gov
Mitch Renteria	S. Riverton Game Warden	307-856-9005	Mitch.Renteria@wyo.gov
Brady Frude	Lander Game Warden	307-330-6345	Brady.Frude@wyo.gov
Wind River Reservation			
Art Lawson	Director, Tribal Fish and Game	307-332-7207	lawson@windriverfishandgame.com
	Inter-tribal Council	307-332-3532	
U.S Fish and Wildlife Service			
Pat Hnilicka	Lander Area Office Supervisor	307-332-2159	Pat_Hnilicka@fws.gov
Midvale Irrigation District			
Steve Lynn Garrett Klein	District Manager District 2 Commissioner	307-850-5441 307-851-2757	 gklein@wyoming.com
U.S. Bureau of Reclamation			
Mahonri Williams	Natural Resources Specialist	307-261-5671	mlwilliams@usbr.gov
Concessionaires/Marinas			
Kinnear General Store		307-856-0277	
Rocky Mountain Sports		307-265-6974	
Other Stakeholders			
City of Riverton		307-856-2227	
Town of Pavillion		307-584-3850	
Town of Kinnear			

APPENDIX B: ANNUAL BUDGETS ASSOCIATED WITH EACH STATUS LEVEL

SHORT-TERM SUSPECT STATUS

Travel	Description	# of Days	Cost/Day	Total Cost
	Camp Groceries (person days)	$84	$24	$2,016
	Subtotal			**$2,016**
Supplies	**Description**	**# of units**	**Cost/unit**	**Total Cost**
	Mobile decon unit rental (if necessary)	2	$8,400	$16,800
	Decon unit shipping	1	$1,200	$1,200
	Pickup bed water tanks	2	$349	$698
	2-inch gas powered water pump	2	$300	$600
	Check station signs	5	$600	$3,000
	Subtotal			**$22,298**
	Total			**$24,314**

LONG-TERM SUSPECT STATUS YEAR 1

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months	9	$4,543	$40,887
	Technician; 6 @ 7 months	42	$2,863	$120,246
	Subtotal			**$161,133**
Vehicle	**Description**	**# of Months**	**Cost/Month**	**Total Cost**
	Purchase 3/4 ton trucks	2	$33,000	$66,000
	State Motor Pool Sedan 1	7	$500	$3,500
	State Motor Pool Sedan 2	7	$500	$3,500
	Subtotal			**$73,000**
Travel	**Description**	**# of Days**	**Cost/Day**	**Total Cost**
	Camp Groceries (person days)	500	$24	$12,000
	Subtotal			**$12,000**
Supplies	**Description**	**# of Units**	**Cost/Unit**	**Total Cost**
	Gravel road base for pullout	1	$15,000	$15,000
	Recycled asphalt for pullout	1	$500	$500
	Mobile decontamination units	2	$12,500	$25,000
	16-foot utility trailer, 10,000lb rating	2	$4,000	$8,000
	550 gal plastic ag tank	4	$500	$2,000
	2-inch trash pump	2	$300	$600
	Office Trailer	1	$20,000	$20,000
	Generator 2-pack with parallel	2	$1,900	$3,800
	Camp Trailer	1	$20,000	$20,000
	Misc supplies 231 - 239 series			$5,000
	Check Station and closure signs	12	$650	$7,800
	Subtotal			**$107,700**
	Total			**$353,833**

LONG TERM SUSPECT STATUS YEARS 2-3

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months	9	$4,543	$40,887
	Technicians; 6 @ 7 months	42	$2,863	$120,246
	Subtotal			**$161,133**
Vehicle	**Description**	**# of Months**	**Cost/Month**	**Total Cost**
	State Motor Pool Sedan 1	7	$500	$3,500
	State Motor Pool Sedan 2	7	$500	$3,500
	Subtotal			**$7,000**
Travel	**Description**	**# of Days**	**Cost/Day**	**Total Cost**
	Camp Groceries (person days)	500	$24	$12,000
	Subtotal			**$12,000**
Supplies	**Description**	**# of units**	**Cost/unit**	**Total Cost**
	misc supplies 231-239			$2,500
	Subtotal			**$2,500**
	TOTAL			**$182,633**

POSITIVE STATUS

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months	9	$4,543	$40,887
	Technician; 6 @ 7 months	42	$2,863	$120,246
	Subtotal			**$161,133**
Vehicle	**Description**	**# of Months**	**Cost/Month**	**Total Cost**
	Purchase 3/4 ton trucks[a]	2	$33,000	$66,000
	State Motor Pool Sedan 1	7	$500	$3,500
	State Motor Pool Sedan 2	7	$500	$3,500
	Subtotal			**$73,000**
Travel	**Description**	**# of Days**	**Cost/Day**	**Total Cost**
	Camp Groceries (person days)	500	$24	$12,000
	Subtotal			**$12,000**
Supplies	**Description**	**# of Units**	**Cost/Unit**	**Total Cost**
	Gravel road base for pullout[a]	1	$15,000	$15,000
	Recycled asphault for pullout[a]	1	$500	$500
	Mobile decontamination units[a]	2	$12,500	$25,000
	16-foot utility trailer, 10,000lb rating[a]	2	$4,000	$8,000
	550 gal plastic ag tank[a]	4	$500	$2,000
	2-inch trash pump[a]	2	$300	$600
	Office Trailer[a]	1	$20,000	$20,000
	Generator 2-pack with parallel[a]	2	$1,900	$3,800
	Camp Trailer[a]	1	$20,000	$20,000
	Misc supplies 231 - 239 series			$5,000
	Check Station and closure signs[a]	12	$650	$7,800
	Subtotal			**$107,700**
	Total			**$353,833**

[a] These items will not need to be purchased if transitioning from Long-term Suspect Status.

INFESTED STATUS

Personnel	Description	# of Months	Cost/Month	Total Cost
	Biologist I, 9 months	9	$4,543	$40,887
	Technicians; 8 @ 7 months	56	$2,863	$160,328
	Subtotal			**$201,215**
Vehicle	**Description**	**# of Months**	**Cost/Month**	**Total Cost**
	Purchase 3/4 ton truck[a]	2	$33,000	$66,000
	State Motor Pool Sedan 1	7	$500	$3,500
	State Motor Pool Sedan 2	7	$500	$3,500
	Subtotal			**$73,000**
Travel	**Description**	**# of Days**	**Cost/Day**	**Total Cost**
	Camp groceries (person days)	600	$24	$14,400
	Subtotal			**$14,400**
Supplies	**Description**	**# of Units**	**Cost/Unit**	**Total Cost**
	Gravel for pullouts[a]	1	$15,000	$15,000
	Recycled asphalt for pullout[a]	1	68,000	$68,000
	Office trailer[a]	1	$20,000	$20,000
	Decon Unit with attachments[a]	2	$12,500	$25,000
	Camp trailer[a]	1	$20,000	$20,000
	Misc supplies 231 - 239 series			$5,000
	Check station and closure signs[a]	12	$650	$7,800
	Water well	1	$75,000	$75,000
	Subtotal			**$235,800**
Utilities	**Description**	**# of Units**	**Cost/Unit**	**Total Cost**
	Electric power installation	1	$2,000	$2,000
	Power monthly cost	12	$300	$3,600
	Subtotal			**$5,600**
	Total			**$530,015**

[a] Will not need to be purchased if transitioning from Long-term Suspect or Positive status.