

## Rapid Response Plan Following Detection of Dreissenid Mussels in Seminoe Reservoir, Wyoming

Casper Regional Fisheries Management Crew, Wyoming Game and Fish Department, 3030 Energy Lane, Casper, WY 82604

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### SUMMARY

Seminoe Reservoir is a 20,000 acre impoundment on the North Platte River in north-central Carbon County. The reservoir is owned and operated by the United States Bureau of Reclamation as is most of the land surrounding the reservoir. Seminoe State Park is located on the northwest portion of the lake and offers camping, two boat ramps and the majority of recreational access to the reservoir. There is a private boat ramp at the Seminoe Boat Club, and the Wyoming Game and Fish Department provides the only boat ramp on the east side of Seminoe. The peak boating season runs from Memorial Day through Labor Day with highest use during July and lowest use outside of the summer season. The majority of boating use is by Wyoming residents (84% of total boats) and by residents of Colorado (15% of total boats). Outboard fishing boats constitute 64% of all boats, and 4.4% of all watercraft were considered high risk with 2.8% having last boated on an infested water.

If zebra or quagga mussels were detected in Seminoe Reservoir, resources would be directed to minimize the risk of spreading mussels to other waters. During the first six weeks while follow up sampling results are pending, containment efforts would be conducted with existing personnel and equipment. A check station would be established at an existing pullout on Seminoe Road, five miles north of Sinclair. The Medicine Bow boat ramp would be closed. Signs would be placed at all open boat ramps informing boaters of the need to be inspected and direct all boats to exit the reservoir via Sinclair. All personnel from the Regional Fisheries Management Crew would be detailed to Seminoe and requests for additional help would be levied to other personnel. The reservoir should be closed between October 15 and April 1, due to low levels of boating use.

Following the initial six week period, a longer term plan will be put in place. The reservoir should remain closed to watercraft between October 15 and April 1. Signs and personnel will inform users of the requirement to get inspected upon leaving along with directions to the check station and hours of operation (8 AM – 8 PM). One specialist and five technicians would be hired to conduct inspections and decontaminations. Additional equipment would be needed, including decontamination units, office trailer, equipment to haul water to the check station, signs and additional supplies. Costs for the first year response at Suspect or Positive status, including equipment purchase, is \$259,000. Additional year operating budgets would be approximately \$113,000 to \$115,000 per year. If the reservoir proceeds to Infested Status right away, the cost of the response for the first year would be \$850,000, which includes additional equipment and personnel due to the increased number of decontaminations, construction of a larger pullout, drilling a well, and building a crew barracks at Seminoe State Park. The cost to operate an Infested Status response beyond the initial investment in equipment and infrastructure is approximately \$210,000 per year.

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**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 are 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 Seminoe Reservoir and are verified by independent experts and genetic analysis. At that point, the reservoir 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.

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**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

Seminole Reservoir is the uppermost reservoir on the mainstem North Platte River. It lies in North Central Carbon County approximately 27 miles northeast of Rawlins, or 61 miles southwest of Casper (Figure 1). The reservoir is 24 miles long from the dam to the North Platte River inflow and averages 0.8 miles wide. The lake is bifurcated with the Medicine Bow River forming a second major arm that is 12 miles in length from the Medicine Bow River inflow to the main body of the lake. Seminole Reservoir is 20,000 surface acres and impounds 1,017,280 acre-feet at full pool elevation of 6,357 feet. Seminole Dam is a concrete arch structure 530 feet long with a crest height of 295 feet. The resulting reservoir has a maximum depth of 206 feet, mean depth of 50 feet and an approximate shoreline length of 210 miles.

The reservoir was built and is operated by the United States Bureau of Reclamation (BOR) with construction completed in 1939. The reservoir stores irrigation water for the Kendrick Project, which irrigates 22,500 acres of farmland between Alcova Reservoir and Casper, WY. Flows up to 3,000 cfs are released from the reservoir through the Seminole Powerplant where it is used for electrical generation. Flows in excess of 3,000 cfs are released through a controlled spillway tunnel.

Lands around the reservoir are predominantly owned by the BOR. Approximately 1,500 acres on the west shoreline is managed by Wyoming State Parks, Historical Sites and Trails as Seminole State Park (SSP). Approximately 80 acres of the west shoreline is privately held by the Seminole Boat Club. The Wyoming Game and Fish Department manages an access area near the upstream end of the Medicine Bow arm.

While the majority of lands around the reservoir are public, access to those lands is severely restricted. Seminole Reservoir lies in the checkerboard ownership pattern due to its proximity to the Union Pacific Railroad right-of-way. While there are county roads that more or less parallel the reservoir on both sides, there are very few roads that provide legal ingress to the BOR held lands. Outside of any of the aforementioned public access points, access is limited to the north shore of Cole Creek bay which can be accessed from one of several two-track roads originating from the Seminole Road.

Seminole State Park provides the bulk of public access to Seminole Reservoir and maintains two boat ramps (North and South Red Hills), three campgrounds, and a disconnected day use area adjacent to the boat club. The park is accessed via the Seminole Road (Carbon County 351), either by traveling 32 miles north from Sinclair, WY, or 40 miles south from Alcova, WY. The vast majority of boaters launching at SSP access the reservoir via Sinclair from the South as the Seminole Road is paved to the southern end of the State Park, whereas the

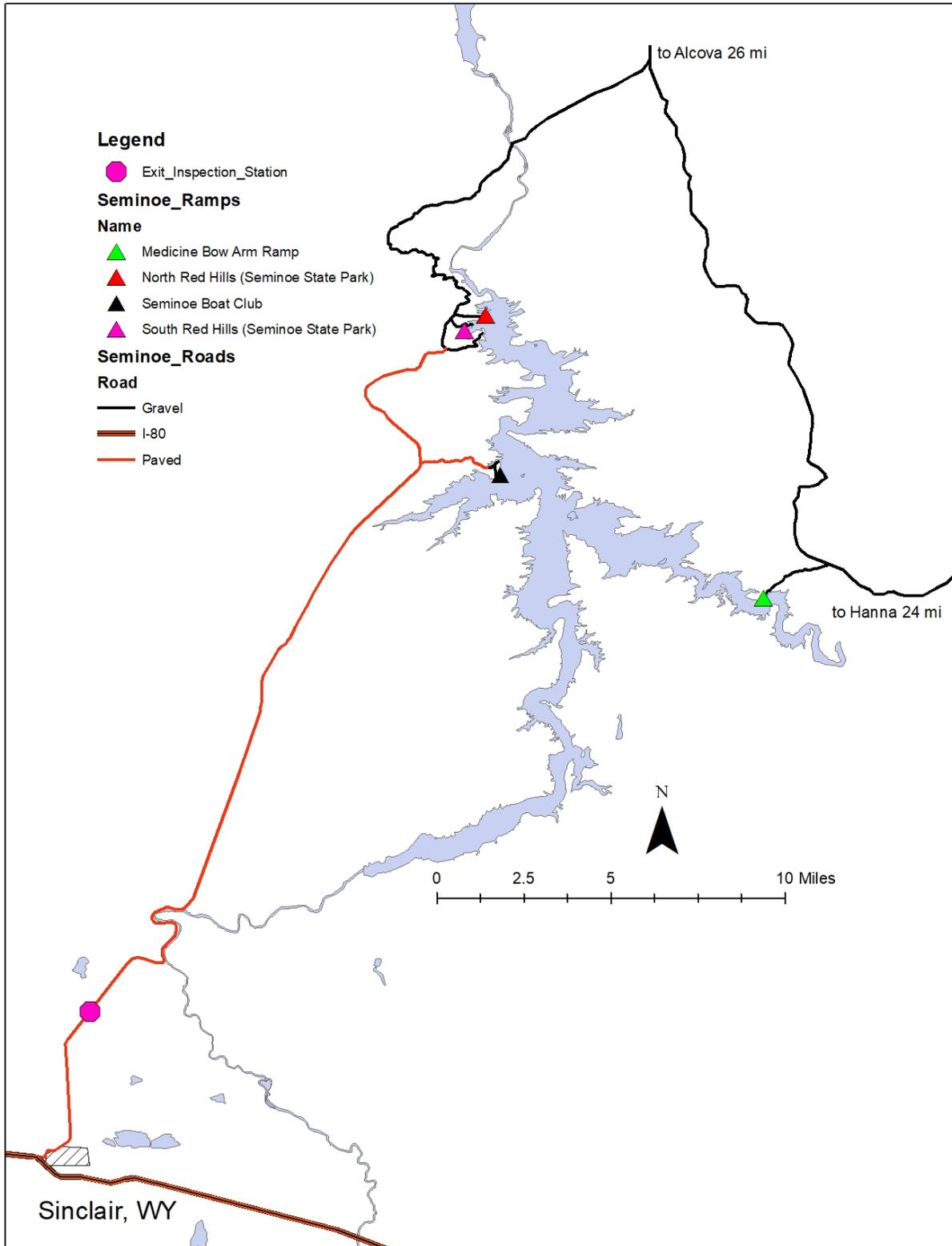


Figure 1. Map of Seminoe Reservoir, boat ramps and access roads.

road from Alcova includes 22 miles of rough gravel road, 10 miles of which traverses a steep mountain pass.

The Seminole Boat Club consists of private lots for recreational homes, a convenience store, café, gas pumps, campground and private boat ramp. While the ramp is private, the public can use the ramp by paying a daily fee at the boat club store. The boat club is accessed off Seminole Road approximately 25 miles north of Sinclair. A paved access road leads from the county road to the boat club and also serves to access a small day use area administered by SSP.

The only legal access to the east side of the reservoir is at the WGFD Medicine Bow Arm Public Access Area located near the upper end of the Medicine Bow arm. The PAA is accessed via the Hanna Leo Road (Carbon County 291) approximately 22 miles north of Hanna, or 43 miles south of Alcova. The WGFD maintains a boat ramp and comfort station at the site. Primitive dispersed camping is available on BOR lands along 1.2 miles of shoreline that can be accessed by vehicle. The boat ramp is not nearly as heavily used as other access points due to the remote nature and lack of paved access roads.

Water levels in Seminole Reservoir are highly dependent upon the runoff in a given year. Typically, the lowest surface elevation occurs in April, immediately preceding the runoff period. Reservoir levels typically rise rapidly during the runoff and peak around the end of June. Elevations can drop rapidly in July and August depending on irrigation demand and slowly decrease from September through April as slightly more water is released than flows in. Since 2007, minimum surface elevation has varied from a low of 6,289 feet in 2008, to a high of 6,346 feet in 2012. Maximum water elevation has varied from a low of 6,321 feet in 2007 to a high of 6,356 feet in 2010. Average within year fluctuation since 2007 is 21 feet (SD = 14.5).

Of the four boat ramp locations, at least two are useable down to a reservoir elevation of 6,312 feet, at which point only North Red Hills is still functional. The Medicine Bow ramp has the narrowest window of use as the bottom of the ramp is at elevation 6,324 feet. This ramp has been unusable at times during six of the last 12 years and was never in the water during 2007. The bottom of the Boat Club ramp is at elevation 6,314 feet. The reservoir has dropped below this elevation in four of the last 12 years, although the reservoir typically only recedes beyond the end of the ramp outside of normal boating season. The South Red Hills ramp has a bottom elevation of 6,312 feet and was unusable for part of three of the last 12 years. At North Red Hills, there are actually three ramps to provide access across a wide range of reservoir elevations. Collectively, these ramps provide launching down to a reservoir elevation of 6,300 feet. The reservoir dropped below 6,300 feet in two of the last 12 years. However, SSP personnel did install steel landing mat off the end of the ramp, which allowed boats to launch at elevation 6,289 feet (68 feet below full pool) in 2008.

Peak boating season at Seminole Reservoir is Memorial Day through Labor Day. The reservoir is typically ice-free by late March, however, spring weather is characteristically poor with high winds most days through early May. No recent data exists for early season boat use, but anecdotally from fisheries management work, many weekdays in April or early May will have no boats. Weekend days or periods of unusually nice weather will bring out more boats, however, use is typically less than 15 boats per day through early May.

July is the month of highest boat use at Seminole Reservoir. Recreational boats are out in full force, and July typically is the month with the best Walleye fishing. Creel surveys have been conducted during the month of July in 2007 and 2015. Counts of boat trailers at the Boat Club and North and South Red hills have been used to generate pressure estimates. Based on these counts, boat use is highest on weekends and varied from 33 to 105 boats per weekend day in

2015 (mean = 68) and 14 to 48 boats per weekday in 2015 (mean = 28). Reservoir levels were very low in 2007 and likely influenced boat use with mean weekend use = 47 boats and mean weekday use = 19 boats in July 2007.

Boat use remains high through Labor Day and precipitously drops after that. By mid-September, windy days become emblematic of this reservoir (similar to April), with many days seeing no boats. While the reservoir typically does not ice over until mid-December, boating use in October and November is very low. There are a few Pronghorn and Mule Deer hunters that use watercraft to access large tracts of otherwise landlocked public lands in October, and likely some angler use on favorable weather days, but the reservoir is largely devoid of watercraft during the late fall.

Based on roving AIS inspections conducted at Seminoe Reservoir since 2018 (N=340), watercraft users are predominantly Wyoming residents (84%). Motorized watercraft constituted 89% of the inspections conducted. When data from border check stations is included (N = 844 inspections of Seminoe Reservoir-bound boaters), non-residents are primarily from Colorado (92% of non-residents), followed by Nebraska, Iowa, Texas and Kansas. Of the inspected watercraft destined for Seminoe Reservoir, 4.4% were considered high risk and 1.2% required decontamination. Twenty-four watercraft (2.8%) last boated on an infested water. The most common type of motorized watercraft is outboard fishing boats (64%), followed by inboard/outboard (17%), PWC (11%), inboard (6%) and jet (2%).

## **RAPID RESPONSE – SHORT-TERM SUSPECT STATUS**

In the event that a sample from Seminoe Reservoir is confirmed positive for dreissenid mussels, the reservoir 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 Seminoe Reservoir 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 Casper Regional Fisheries Supervisor will begin the regional communication chain to disseminate

information about the detection to internal and external partners and stakeholders (Figure 2). Internal WGFD contacts include Regional Fish Division personnel, the Regional Wildlife Supervisors (Seminoe Reservoir is the boundary between Lander and Laramie Wildlife Regions), the Regional Habitat and Access Supervisors and the Regional I&E Specialists. The Regional Wildlife Supervisors will then contact the Rawlins, Medicine Bow and Elk Mountain 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 Casper Regional Fisheries Supervisor or biologists will also contact key stakeholders, including the BOR and SSP. They will also contact the Seminoe Boat Club. 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.

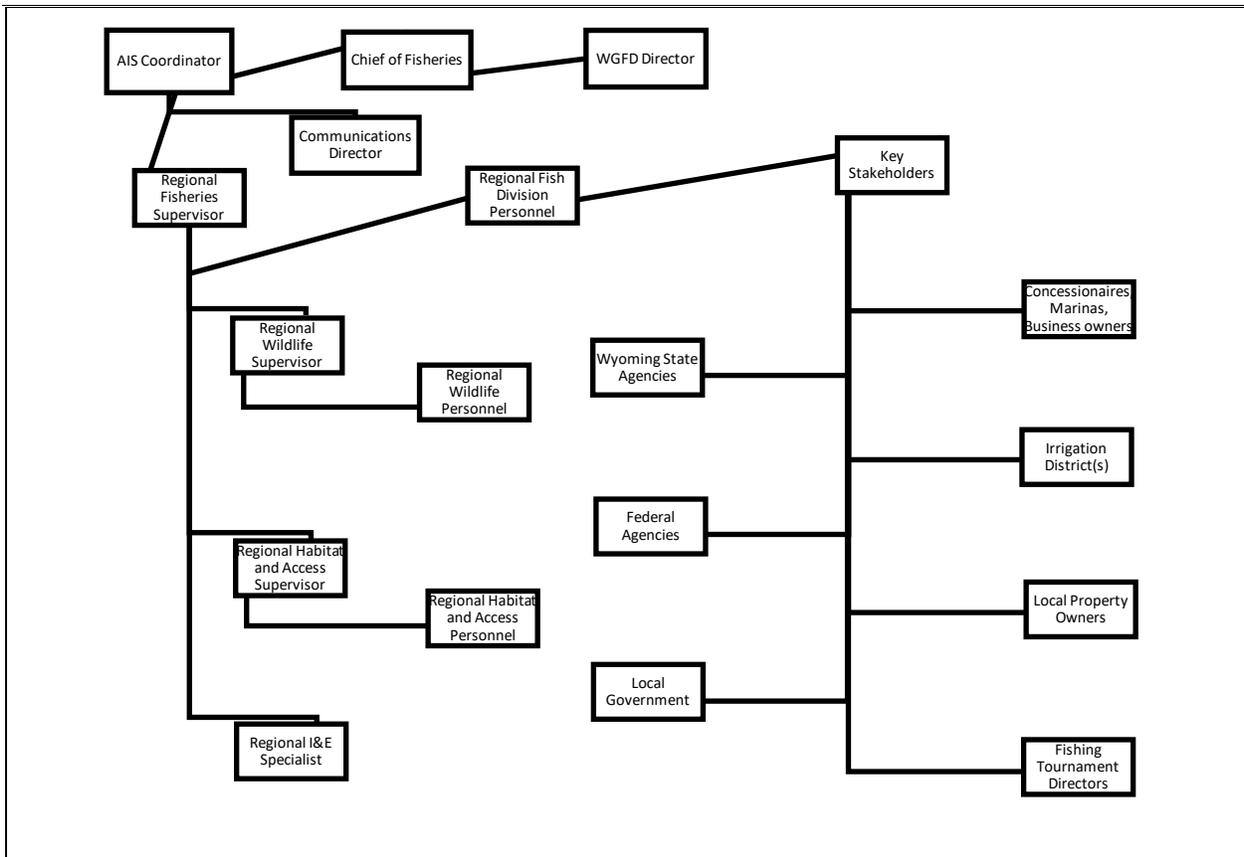


FIGURE 2. Communication chain for dissemination of information on the local and regional level following a dreissenid mussel detection in a Wyoming water.

**Closures**

In order to address the need to contact all boaters with limited resources, the Medicine Bow Arm boat ramp should be closed. All ramps on the west side of the reservoir will remain open. Due to limited fall and winter use, the reservoir should be closed to watercraft from October 15 through April 1. Signs should be placed at all open boat ramps and on the Seminoe Road directing watercraft to exit the reservoir South through the check station near Sinclair. Boats rarely travel north from Seminoe given the road conditions, but it is possible to exit in that direction making it imperative that it be well signed.

**Check Station(s)**

Exit inspections will take place at a single check station located on the Seminoe Road 5 miles North of Sinclair. The site is a paved pullout measuring 230 feet by 60 feet and is used as the inspection station for roving surveys. The site has ample width to establish multiple inspection lanes and can easily accommodate 12 or more vehicles pulling boats at one time. No additional work on the existing pullout will be needed. Hours of operation will be 8 AM through 8 PM May 1 through September 15. Prior to May 1 or after September 15, hours of operation will be 10 AM to 6 PM. Launching and retrieval of boats will not be restricted by time of day,

however, signs at the ramps will indicate that watercraft must be inspected upon leaving the water and inform users of the hours that inspections are available and the location of the inspection station.

### **Staffing Plan**

From May 1 through September 15, three inspectors should be scheduled to work an 8-hour shift each weekday. One person will work 8AM – 4PM, with two people working noon – 8 PM. On weekends, an additional person working noon to 8 PM is advisable. Prior to May 1 or after September 15, a single inspector working an 8 hour shift (10AM – 6 PM) on weekdays is likely sufficient. Two inspectors would be scheduled for weekends.

In the event of a positive result, all CR fish management personnel will be reassigned to the short-term response. Two fish management technicians, both regional biologists, the regional AIS specialist and the regional AIS roving inspector will be assigned to the check station three to four days per week. One or two additional personnel will be needed each week which could be AIS rovers from adjacent regions or regional wildlife personnel. The regional fisheries supervisor will rotate in as needed but will likely be working largely on administrative tasks to prepare for the long-term response.

Given the long travel time from the Casper Regional Office to Seminoe Reservoir, two campers will be stationed at Seminoe State Park to house inspectors detailed to Seminoe. FMCR has one camper and CR AIS has one camper. Inspectors would be provided camp groceries while on assignment.

### **Supplies and Equipment**

The Casper AIS rover decontamination unit will be stationed at Seminoe Reservoir. Up to two additional decontamination units will need to be borrowed from other crews (one extra unit if after Labor Day). Water is not readily available at the exit inspection site. Six pickup truck style water tanks (325 gallon) will be purchased with four staged at the inspection location to have spare water on hand. A gasoline powered pump will be used to transfer water from spare tanks into decontamination units. Two  $\frac{3}{4}$  ton pickups with water tanks will be needed to haul water from SSP to replenish the tanks each day. Casper AIS has only  $\frac{1}{2}$  ton pickups at this time, and would need to trade those with other regions that have  $\frac{3}{4}$  ton pickups.

Two campers will need to be stationed at SSP to house employees while detailed to Seminoe Reservoir. The Casper Fish Management camper is typically stationed at Seminoe to house the AIS rover from mid-May through mid-September. The CR AIS camper could be moved to Seminoe unless it is housing Glendo technicians, which often is the case. The Glendo technicians would be moved into the Glendo bunkhouse and the camper transferred to Seminoe. Additional housing, if needed, is available at the Kortess Cabin, fifteen miles north of SSP.

Several items will need to be purchased that will not be in the standard AIS or fish management budget. Five pickup truck water tanks will need to be purchased to haul and store water. One, 2-inch gas powered water pump will be needed to transfer water from storage tanks to decon units. Inspectors assigned to the rapid response will receive camp groceries. Local fish management and AIS budgets can likely absorb a significant amount of the cost, but at least some funds from outside crew budgets will be needed.

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**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 Casper Regional I&E Specialist to relay information about Short-term Suspect Status at Seminoe Reservoir 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, Seminoe Reservoir 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 Seminoe Reservoir 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 Casper Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the WGFD Casper, Laramie and Lander regions and key stakeholders (Appendix A) of follow-up sampling results.

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**Closures**

All seasonal closures described in Short-term Suspect Status will be continued with exceptions for watercraft enrolled in a local boater program. Those boats enrolled in a local boater program would be the only watercraft allowed to use the Medicine Bow Ramp. Due to a lack of availability of inspection/decontamination locations in Carbon County outside of the described AIS check station, the seasonal boating closure will remain unless boats are enrolled in the local boater program. Signs directing watercraft to the inspection station to the South will remain. An enforcement presence will likely be needed to ensure compliance with inspection requirements and seasonal or ramp closures.

**Check Station**

The check station location and hours of operation as described in Short-term Suspect Status will apply under Long-term Suspect Status. It is not anticipated that hours or seasonal closure will change between year 1 and years 2-3.

A local boater program should be instituted for Seminole Reservoir. Boaters enrolled in the local boater program would be allowed to use the Medicine Bow Ramp and would not be subject to seasonal closures. Given the significant number of resident boats, many of which only or mostly boat on Seminole Reservoir, this would alleviate some of the pressure at the decontamination station and allow for more expedient service for those needing inspection/decontamination while also reducing the amount of staffing needed.

**Staffing Plan**

An AIS Specialist should be hired to supervise inspectors and oversee day to day operation of the check station. That position should be stationed in Rawlins or Sinclair and work from March 1 through October 31. Five AIS inspectors should be hired to conduct inspections and decontaminations. Two inspectors should work April 1 through October 15. One inspector should be hired from May 1 through September 15 and two inspectors should be hired to work May 16 through August 15. Ideally, all inspectors would be based in Rawlins or Sinclair and their duty station would be the Seminole check station. If that is not possible, inspectors would be stationed in Casper and stay in camp trailers at Seminole State Park during their four-day shifts. Inspectors would be scheduled to work four, ten-hour shifts per week. They would be on site at the check station for eight hours, the remaining two hours in each work day would be spent entering data or retrieving water for decontamination units.

The staffing plan during the period of highest use (May 1 through August 15) would be two technicians on duty Monday through Wednesday with overlapping coverage between noon and 4 PM. Thursday through Saturday, three inspectors would be on duty with one present from 8 AM to noon, three present from noon through 4 PM, and two on duty between four PM and 8 PM. Sunday is expected to be the busiest day as that is when the majority of campers leave. On Sundays, five inspectors would be on duty with two on station between 8 AM and noon, five on station from noon to 4 PM and three on station between 4 PM and 8 PM.

This staffing plan will be enacted in year 1 of Long-term Suspect Status. Staffing levels beyond year one will be adaptive based on what is learned during year one. It will be determined after the first year whether five inspectors is inadequate or excessive and staffing levels will be adjusted accordingly for years two and three. For the purposes of this plan and estimated budget

(Appendix B), it is assumed that the staffing levels described above will be maintained through years two and three.

### ***Supplies and Equipment***

Two ¾ ton pickups will be needed for hauling water to the inspection station. Each ¾ ton truck will be outfitted with a 14-foot utility trailer with 10,000 lb rating. Two 500 gallon tanks will be mounted to each trailer to haul 1,000 gallons of water for check station re-supply. Each trailer will have a 2-inch water pump to efficiently transfer water from trailer tanks to decontamination units and extra supply tanks.

The six 350-gallon tanks purchased under Short-term Suspect Status will be used at the check station, two additional 500-gallon tanks will be purchased and staged at the check station to ensure adequate water supply on busy days. The two pumps previously purchased will be used on station to transfer water from holding tanks to decontamination units.

The check station should have a mobile office trailer on-site. This will allow secure storage of check station materials and shelter during poor weather. There is no electricity at the check station, so the mobile unit will be outfitted with two 2,000 Watt generators with parallel kit to run lights, air conditioning units, heater, etc.

Three decontamination units should be purchased to perform decontaminations. This would allow three units to be run simultaneously during busy times and two units to be run during normal times with a backup decontamination unit in case of breakdown of one machine.

Other miscellaneous supplies needed such as signs, fuel cans, decontamination unit repair parts and fittings, sunscreen, water coolers, etc., are listed as miscellaneous 200 series in the attached budget. There are no bathroom facilities at the check station, so contracting with a portable toilet company will be needed to provide two units from April 1 through October 15.

### ***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 Casper Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Long-term Suspect Status on Seminoe Reservoir.

## **RAPID RESPONSE – POSITIVE STATUS**

Seminoe Reservoir 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). Seminoe Reservoir 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.

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 Seminoe Reservoir to Infested Status. All watercraft leaving Seminoe Reservoir 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 Casper Region internal communication chain outlined in the Short-term Suspect Status section (above) will be used to inform the WGFD Casper, Laramie and Lander regions, and key stakeholders of changes in status level.

### ***Closures***

All closures described above in Long-term Suspect Status will be continued under Positive Status. Emphasis will be placed on enrolling qualified watercraft into the local boater program. The Medicine Bow Arm boat ramp will remain open only to local boaters. Seasonal closures will remain for all watercraft except those enrolled in the local boater program.

### ***Check Station***

The check station location, hours of operation and dates will be the same as described under Long-term Suspect Status described above. It will likely be necessary to heighten enforcement presence to ensure compliance with the exit inspection and decontamination requirement.

### ***Staffing Plan***

The staffing plan under Positive status will be as described in Long-term Suspect Status year 1. Similar to years 2-3 for Long-term Suspect Status, staffing levels will be adaptive and adjusted in subsequent years based on inspection demand and workload.

### ***Supplies and Equipment***

Supplies and equipment needed will be the same as described under Long-term Suspect Status above. If transitioning to Positive Status from Long-term Suspect Status, the needed equipment will have already been procured. If transitioning straight from Short-term Suspect Status, the equipment will need to be requisitioned and purchased.

### ***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 Casper Regional

I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with a Positive Status on Seminoe Reservoir.

## **RAPID RESPONSE – INFESTED STATUS**

Seminoe Reservoir will be considered Infested if an established (recruiting or reproducing) population of dreissenid mussels is identified. Seminoe Reservoir 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 Seminoe Reservoir would remain in 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 Seminoe Reservoir 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 Casper Region internal communication chain outlined in the Short-term Suspect Status section (above) will continue to be utilized to inform the WGFD Casper, Laramie and Lander regions, and key stakeholders of changes in status level.

### ***Closures***

All closures described in Long-term Suspect and Positive status levels would continue under Infested Status if transitioning from Long-term Suspect or Positive status to Infested. If transitioning from Negative or Short-term Suspect Status to Infested Status, the reservoir should be closed for a six week period to allow time to purchase equipment and hire staff. If the transition from Negative or Short-term Suspect status happens after July 31, the reservoir should be closed for the remainder of the year. The Medicine Bow boat ramp will remain closed to all vessels not enrolled in the local boater program under Infested Status. Local boater program participants will be allowed to use the reservoir during the October 15 – April 1 seasonal closure.

### ***Check Station***

Given the permanency of Infested Status, it would be desirable to construct a dedicated check station pullout on the Seminoe Road closer to the State Park which would reduce travel time for technicians. The check station should be located south of Boat Club Road in order to intercept all boats exiting the reservoir. A paved pullout of approximately 300 feet by 45 feet would be sufficient to handle high volume traffic days. Two potential locations are in T24N, R85W, sections 22 (BLM) or 14 (BoR) which would place the check station approximately 10 miles South of State Park Headquarters. There is a powerline paralleling the road in these locations so power hookup should be possible. A water well should be installed if possible at the site given the expected permanency of Infested Status.

The check station would operate from April 1 through October 15. Hours of operation would be 8 AM to 8 PM during the peak season (May 1 through September 15). During April and after September 15, the check station hours would be 10 AM through 6 PM. Extensive public outreach coupled with signage at the ramps would inform boaters of the legal requirement to get decontaminated upon exiting the water. Vessels enrolled in the local boater program could exit the reservoir after 8 PM and boat outside of the dates of operation.

### **Staffing Plan**

Given the additional workload and time spent per boat with full decontamination, staffing requirements will be higher than estimated under Long-term Suspect or Positive status. An AIS Specialist should be hired to oversee technicians and day to day operation of the check station. That position would run March 1 through October 31. Four technicians with contract dates to run April 1 through October 15 will be needed to cover the check station outside the peak boating season. An additional five technicians will be needed from May 1 through September 15 for a total of nine technicians. This will allow for two people to be on site at all times during the shoulder seasons and up to six people at any time during busy weekends and holidays. Scheduling will be adaptive during the season as patterns in use and demand for decontaminations becomes evident. Similarly, staffing levels from year to year will be adaptive as patterns in use and volume of boat traffic become more evident. The budget table in Appendix B reflects what would be expected in the first year of Infested Status and would be adjusted going forward as needed.

### **Supplies and Equipment**

A total of five decontamination units should be stationed at the Seminole check station at Infested Status. If transitioning from Long-term Suspect or Positive status, two additional decontamination units should be purchased. Depending on the viability and flow rate of a well, water tanks and trailers should be purchased if they haven't already been purchased to allow for storage of water on site, and the ability to haul water from Seminole State Park if the well lacks sufficient capacity, power outage, pump failure etc.

Given the remoteness of Seminole Reservoir and the expected difficulty of recruiting and retaining inspectors in that location, it would be desirable to construct a shop/crew quarters facility at Seminole State Park, similar to the Game and Fish Department facility at Glendo State Park. This would provide shop space for decontamination unit service and repair, as well as off-season secure storage of equipment and materials. The housing portion of the building should be constructed similar to the Glendo facility in that it can house inspectors while assigned to the check station. The AIS Specialist would be assigned there full time. The inspectors would likely be hired with Casper as their duty station and cycled in and out on four day shifts with camp groceries provided. This would likely alleviate some of the expected difficulties hiring and retaining a suitable number of inspectors in that location, as well as allow for exchange of technicians among Seminole and other regional AIS check stations to provide some job diversity.

If not already purchased, the inspection station should have an office trailer on site to provide shelter and indoor work space for data entry. The proposed new check station location is adjacent to a power line so power hookup would be possible to allow for heat, AC, lights and the potential to run electric decontamination units. Given the expected permanency of Infested

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Status, a single stall comfort station should be constructed adjacent to the check station in lieu of monthly rental.

### **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 Casper Regional I&E Specialist to keep the local boating public aware of the threats and responsibilities associated with Infested Status on Seminoe Reservoir.

### **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**

		<b>Phone</b>	<b>Email</b>
<b><u>Wyoming Game &amp; Fish Department</u></b>			
	Aquatic Invasive Species Coord.		
	Casper Region Fisheries Supervisor		
	Lander Region Wildlife Supervisor		
	Laramie Region Wildlife Supervisor		
	Casper Region AIS Specialist		
	Casper Region Fisheries Biologist		
	Casper Region Fisheries Biologist		
	East Rawlins Game Warden		
	Medicine Bow Game Warden		
	Information & Education Specialist		
<b><u>Bureau of Reclamation</u></b>			
	Land Management Branch		
<b><u>Seminole State Park</u></b>			
	Superintendent		
<b><u>Bureau of Land Management</u></b>			
	Field Manager		
<b><u>Carbon County Commission</u></b>			
	Commissioner		
<b><u>Seminole Boat Club</u></b>			

**APPENDIX B: ANNUAL BUDGETS ASSOCIATED WITH EACH STATUS LEVEL****SHORT-TERM SUSPECT STATUS**

<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Camp Groceries (person days)	180	\$24	\$4,320
	<b>Subtotal</b>			<b>\$4,320</b>
<b>Supplies</b>	<b>Description</b>	<b># of units</b>	<b>Cost/unit</b>	<b>Total Cost</b>
	Pickup bed water tanks	6	\$349	\$2,094
	2-inch gas powered water pump	2	\$300	\$600
	Check station signs	4	\$600	\$2,400
	<b>Subtotal</b>			<b>\$5,094</b>
	<b>Total</b>			<b>\$9,414</b>

**LONG-TERM SUSPECT STATUS YEAR 1**

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 8 months	8	\$4,543	\$36,344
	Technician 1, 6.5 months	6.5	\$2,863	\$18,610
	Technician 2, 6.5 months	6.5	\$2,863	\$18,610
	Technician 3, 4.5 months	4.5	\$2,863	\$12,884
	Technician 4, 3 months	3	\$2,863	\$8,589
	Technician 5, 3 months	3	\$2,863	\$8,589
	<b>Subtotal</b>			<b>\$103,625</b>
<b>Vehicle</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Purchase 3/4 ton single cab pickup	1	\$33,000	\$33,000
	Purchase 3/4 ton single cab pickup	1	\$33,000	\$33,000
	<b>Subtotal</b>			<b>\$66,000</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Per Diem for outside help	30	\$157	\$4,710
	<b>Subtotal</b>			<b>\$4,710</b>
<b>Supplies</b>	<b>Description</b>	<b># of Units</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
	16-foot utility trailer, 10,000lb rating	2	\$4,000	\$8,000
	550 gal plastic ag tank	6	\$500	\$3,000
	2-inch trash pump	2	\$300	\$600
	Office Trailer	1	\$20,000	\$20,000
	Generator 2-pack with parallel	1	\$1,900	\$1,900
	Decon Unit with attachments	3	\$12,500	\$37,500
	Bathroom rent (2x6.5 mo)	13	\$150	\$1,950
	Misc supplies 231 - 239 series			\$5,000
	Signs	10	\$650	\$6,500
	<b>Subtotal</b>			<b>\$84,450</b>
	<b>Total</b>			<b>\$258,785</b>

**LONG TERM SUSPECT STATUS YEARS 2-3**

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 8 months	8	\$4,543	\$36,344
	Technician 1, 6.5 months	6.5	\$2,863	\$18,610
	Technician 2, 6.5 months	6.5	\$2,863	\$18,610
	Technician 3, 4.5 months	4.5	\$2,863	\$12,884
	Technician 4, 3 months	3	\$2,863	\$8,589
	Technician 5, 3 months	3	\$2,863	\$8,589
	<b>Subtotal</b>			<b>\$103,625</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Per Diem	30	\$157	\$4,710
	<b>Subtotal</b>			<b>\$4,710</b>
<b>Supplies</b>	<b>Description</b>	<b># of units</b>	<b>Cost/unit</b>	<b>Total Cost</b>
	Bathroom rent (2x6.5 mo)	13	\$150	\$1,950
	misc supplies 231-239			\$2,500
	<b>Subtotal</b>			<b>\$4,450</b>
	<b>TOTAL</b>			<b>\$112,785</b>

**POSITIVE STATUS**

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 8 months	8	\$4,543	\$36,344
	Technician 1, 6.5 months	6.5	\$2,863	\$18,610
	Technician 2, 6.5 months	6.5	\$2,863	\$18,610
	Technician 3, 4.5 months	4.5	\$2,863	\$12,884
	Technician 4, 3 months	3	\$2,863	\$8,589
	Technician 5, 3 months	3	\$2,863	\$8,589
	<b>Subtotal</b>			<b>\$103,625</b>
<b>Vehicle</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Purchase 3/4 ton single cab pickup <sup>a</sup>	1	\$33,000	\$33,000
	Purchase 3/4 ton single cab pickup <sup>a</sup>	1	\$33,000	\$33,000
	<b>Subtotal</b>			<b>\$66,000</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Per Diem for outside help	30	\$157	\$4,710
	<b>Subtotal</b>			<b>\$4,710</b>
<b>Supplies</b>	<b>Description</b>	<b># of Units</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
	16-foot utility trailer, 10,000lb rating <sup>a</sup>	2	\$4,000	\$8,000
	550 gal plastic ag tank <sup>a</sup>	6	\$450	\$2,700
	2-inch trash pump <sup>a</sup>	2	\$300	\$600
	Office Trailer <sup>a</sup>	1	\$20,000	\$20,000
	Generator 2-pack with parallel <sup>a</sup>	1	\$1,900	\$1,900
	Decon unit with attachments <sup>a</sup>	3	\$12,500	\$37,500
	Bathroom rent (2x6.5 mo.)	13	\$150	\$1,950
	Misc supplies 231 - 239 series			\$5,000
	Signs <sup>a</sup>	10	\$650	\$6,500
	<b>Subtotal</b>			<b>\$84,150</b>
	<b>Total</b>			<b>\$258,485</b>

<sup>a</sup> These items will not need to be purchased if transitioning from Long-term Suspect Status.

**INFESTED STATUS**

<b>Personnel</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Biologist I, 8 months	8	\$4,543	\$36,344
	Technician, 6.5 months x 4	26	\$2,863	\$74,438
	Technician, 4.5 months x 5	22.5	\$2,863	\$64,418
	<b>Subtotal</b>			<b>\$175,200</b>
<b>Vehicle</b>	<b>Description</b>	<b># of Months</b>	<b>Cost/Month</b>	<b>Total Cost</b>
	Purchase 3/4 ton single cab pickup <sup>a,c</sup>	1	\$33,000	\$33,000
	Purchase 3/4 ton single cab pickup <sup>a,c</sup>	1	\$33,000	\$33,000
	State Motor Pool Sedan 4 x 6.5 months	26	\$500	\$13,000
	<b>Subtotal</b>			<b>\$79,000</b>
<b>Travel</b>	<b>Description</b>	<b># of Days</b>	<b>Cost/Day</b>	<b>Total Cost</b>
	Camp Groceries	632	\$24	\$15,168
	<b>Subtotal</b>			<b>\$15,168</b>
<b>Supplies</b>	<b>Description</b>	<b># of Units</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
	Gravel for pullout <sup>c</sup>	1	\$35,000	\$35,000
	Paving of pullout <sup>c</sup>	1	\$68,000	\$68,000
	Water well <sup>c</sup>	1	\$50,000	\$50,000
	Single stall comfort station <sup>c</sup>	1	\$12,000	\$12,000
	16-foot utility trailer, 10,000 lb rating <sup>a,c</sup>	2	\$4,000	\$8,000
	550-gallon ag tank <sup>b,c</sup>	6	\$500	\$3,000
	Office Trailer <sup>a,c</sup>	1	\$20,000	\$20,000
	generator 2-pack with parallel <sup>a,c</sup>	1	\$1,900	\$1,900
	Decon Unit with attachments <sup>b,c</sup>	5	\$12,500	\$62,500
	Shop/housing building at State Park <sup>c</sup>	1	\$300,000	\$300,000
	Misc supplies 231 - 239 series			\$5,000
	Check Station signs <sup>a,c</sup>	10	\$650	\$6,500
	<b>Subtotal</b>			<b>\$571,900</b>
<b>Utilities</b>	<b>Description</b>	<b># of Units</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
	Electrical Hookup <sup>c</sup>	1	\$4,000	\$4,000
	Monthly electrical service	8	\$200	\$1,600
	<b>Subtotal</b>			<b>\$5,600</b>
	<b>Total</b>			<b>\$846,868</b>

<sup>a</sup> Will not need to be purchased if transitioning from Suspect or Positive status.

<sup>b</sup> Only two units will need to be purchased if transitioning from Suspect or Positive status.

<sup>c</sup> Expenditures in first year only.