

ZQM Prevention Process Assessment / Recommendation (Standley Lake - Trailered Boats)

An efficiency review of 2018 Zebra Quagga Mussel prevention procedures at Standley Lake Park and recommendations to assure proper risk prevention.

Prepared For:

- Westminster City Council
- Don Tripp – City Manager; Westminster, CO
- Jason Genck – Parks, Recreation and Libraries Director; Westminster, CO
- Wayne East – Vice Chair; Parks, Recreation, Libraries, and Open Space Advisory Board; Westminster, CO
- Max Kirschbaum – Director, Public Works and Utilities; Westminster, CO
- Standley Lake Boating Taskforce
- All 2018 Standley Lake Power Boat Permit Holders and 2019 Applicants

Prepared By:

- Friends Of Standley Lake

Introduction

The purpose of this document is to review the 2018 and prior Standley Lake ZQM mitigation procedures, provide the findings of current fault and attack points, and recommend robust controls to prevent contamination.

Standley Lake implemented a ZQM mitigation system in 2007. The monitoring process of boats coming and going is to attach each trailered boat to its trailer with a method referred to as 'tagging'. The boats are tagged when leaving the lake, and the tag is removed when returning to the lake. The intention of tagging is that the boat cannot leave the trailer without the tag being removed. Furthermore, boats that have been elsewhere go through a decontamination process followed by a quarantine period; this quarantine has since increased to 35 days.

The primary purpose for ZQM mitigation at Standley Lake results from being the drinking water source for over 300,000 residents in Northglenn, Thornton, and Westminster. While Standley Lake had, and claimed, the most robust ZQM system in the State, they simply had the longest quarantine period. While by early standards Standley Lake's mitigation system was robust, the current threat level of ZQM and more modern mitigation standards available now require a fresh look at the problem and the most effective solutions.

The findings in this document reveal that the City of Westminster, along with the staff at Standley Lake, were not proactive in maintaining the best ZQM prevention policies. This action has not only put the residents that pay for drinking water at risk, but also penalized the majority of rule abiding power boat passholders for the violations of a few non-ethical individuals.

This document places the safety of residents, the safety of Park Staff, and the quality of water at the forefront of all research and recommendations provided. The proposed actions will add several layers of prevention, making it nearly impossible to circumvent.

Note: this document speaks specifically to trailered boats on Standley Lake, the prevention measures that were in place, the methods of circumvention, and the proper procedures to prevent circumvention. This does not address the risk of non-trailered watercraft which have fewer controls in place, a high number of violations (most not caught), no tracking system, and several access points of circumvention to the water throughout the entire year.

Definition of Terms Used in Document

ANS	- Aquatic Nuisance Species, any species not desired or native to a body of water.
Decontamination	- The process of using hot water to clean every orifice in the trailered boat that could come in contact with water, and thus be at risk of transferring ANS. https://cpw.state.co.us/thingstodo/Pages/BoatInspection.aspx
Key Control	- A control that addresses a high risk. Must operate effectively to provide reasonable assurance that the risk of material errors will be prevented or detected timely. https://misti.com/internal-audit-insights/soxhub-testing-key-controls
Multi-State Database	- The Western States Aquatic Invasive Species Network; a collaboration to track and prevent the spread of ANS. https://www.westernais.org/
Proper Tagging Location	- A location that utilizes the hull of the boat to eliminate tampering. Location should be identified by a trained professional and labeled unique to each boat.
Quarantine	- The time period between decontamination and launching the boat
Tagging System	- Cable and lock nut that attaches boat to trailer, required to be removed in order to launch boat.
ZQM	- Zebra and Quagga Mussels, a type of Aquatic Nuisance Species https://cisr.ucr.edu/quagga_zebra_mussels.html

Background

In 2018, out of 483 powerboat and 48 fishing boat pass holders (for a total of 531 Standley lake boat pass holders) there were 24 members that entered other bodies of water without following proper Standley Lake decontamination protocol; discovered after the 2018 boating season ended. The total launches outside of Standley Lake are estimated to be 72 and there are a documented 6,745 launches on Standley Lake in 2018.

This gives the 2018 Standley Lake process less than a 98% success rate based on known launches and less than 96% success rate based on number of permit holders.

On March 18, 2019 Standley Lake sent an email to all 2019 pass applicants after payment was collected, stating the season would be closed to trailered boats given 24 passholders had violated the ZQM system by entering other bodies of water and then circumventing the decontamination/quarantine system when returning to Standley Lake. A follow-up meeting was held on April 2, 2019 at which time several items were addressed and several City employees stated their opinions. It was at this meeting that Westminster City Manager, Don Tripp, agreed to forming a task force in an effort to get boats back on the water as long as there would be assurance that boats could not violate the quarantine protocol.

Within two weeks of the March 18th announcement, a document was provided to Westminster City Council with solutions on mitigation. However, with proper research, several of these solutions are found non-viable and it was decided a proper risk assessment with feasible recommendations should be performed.

All solutions covered in this document HAD to meet the following criteria before being recommended:

- Must not create a safety concern for Standley Lake staff
- Must provide access to both clean water and recreation of all manners
- Must mitigate, at minimum, the risk exposure in 2018
- Must be as close to *one-size-fits-all* as possible
- Must not add an excessive amount of time or cost compared to the 2018 process
- Must not discriminate against any type of boat from having equal access to the lake

As a result of the findings and proposed solutions, Standley Lake would not only meet all the above requirements, but would have the most robust solutions of any known recreational body of water in Colorado.

2018 ZQM Procedure Shortfalls

Protecting the water quality for Northglenn, Thornton, and Westminster will require more than a one layer safeguard followed by a post-season comparison of launch data; yet this weak control is all the City of Westminster relied upon. While the 35 day quarantine is the most robust in Colorado, and needed, this motivated unethical individuals to circumvent the process given the ease of circumvention combined with proper defenses not in place to mitigate this risk. None of the 24 violations in 2018 were caught proactively yet prevention was available.

Listed below are the three current failures within the 2018 controls.

Non-Integration With Multi State Database



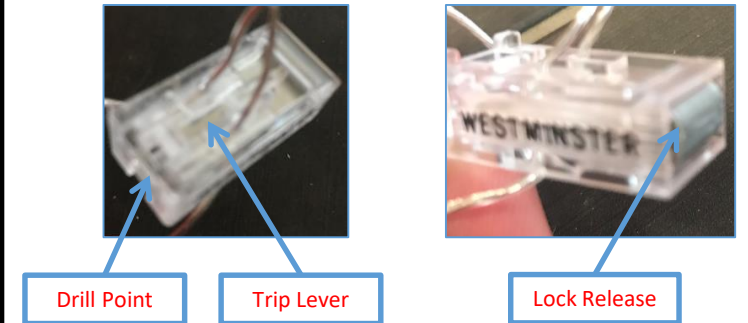
Although access to the database shared amongst 17 States was available, Standley Lake did not integrate and instead checked launch data after the season ended. This action contributed risk in lieu of preventing risk as all 24 violators in 2018 would have been caught during the boating season. At minimum, should data have been cross-referenced throughout the season, violators would have been detected earlier on and reputation management would have assisted in preventing further violations.

Attaching Tags To Removable Locations Only



The universal tagging location of the front D-Ring (point of boat that straps to trailer) is easily defeated. All boaters with a crescent wrench are able to bypass this system should they desire to violate ZQM protocol. Removing the D-Ring allows the boat owner to launch on another body of water without cutting the cable and is the weakest mechanical point in prevention.

Using Only One Locking Mechanism and Not Inspecting For Tampering



The 2018 methods also exposed risk with the tag itself. A simple web search will lead to videos of how to circumvent this tag, yet most tampering can be detected with proper training. It is unknown to the public if any nuts were tampered with, but the 2018 process did not include an inspection of the nut prior to removal. This tampering method is less ideal as there is more risk of leaving evidence if not performed perfectly. Lastly, the removal of this tag was entrusted to seasonal employees that are the lowest paid and least trained of the park staff.

Recommended Enhancements For 2019

There are relatively simple, and efficient, modifications to the current process that can provide complete assurance a trailered boat has not launched at another body of water in between visits to Standley Lake. Each boat owner would be required to implement the below recommendations and these controls can be put in place for the 2019 season.

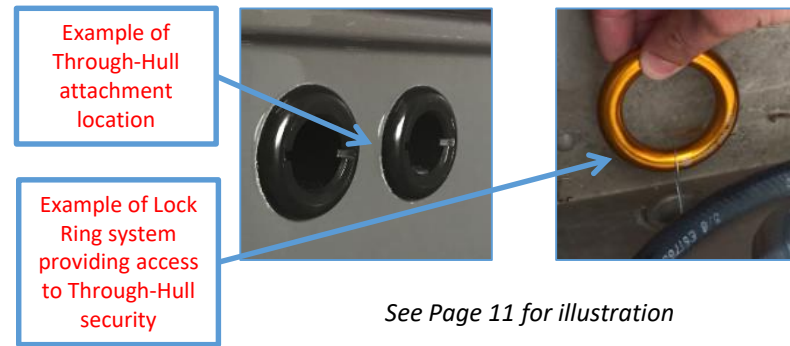
Use of these controls makes trailered boats the lowest risk of any craft that touches the water, given they have only one launch point as opposed to kayaks, paddle boards, and canoes which are continually launched illegally at other lake access points.

Integrate With Multi State Database



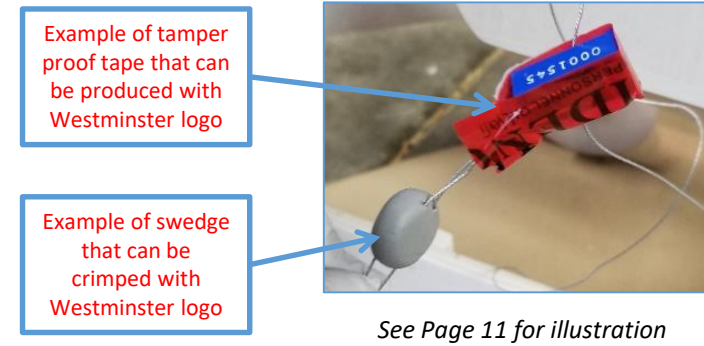
Simply put, no known violations would have occurred in 2018 had this system been in place. Integration will allow for detection prior to launching at Standley, as opposed to after the season ends. While not all lakes report to this database, the majority of public bodies of water within 100 miles of Standley Lake do. Standley Lake is now live and integrated, allowing for immediate use in 2019.

Install All Tags On Boats Using The Integrity Of The Hull



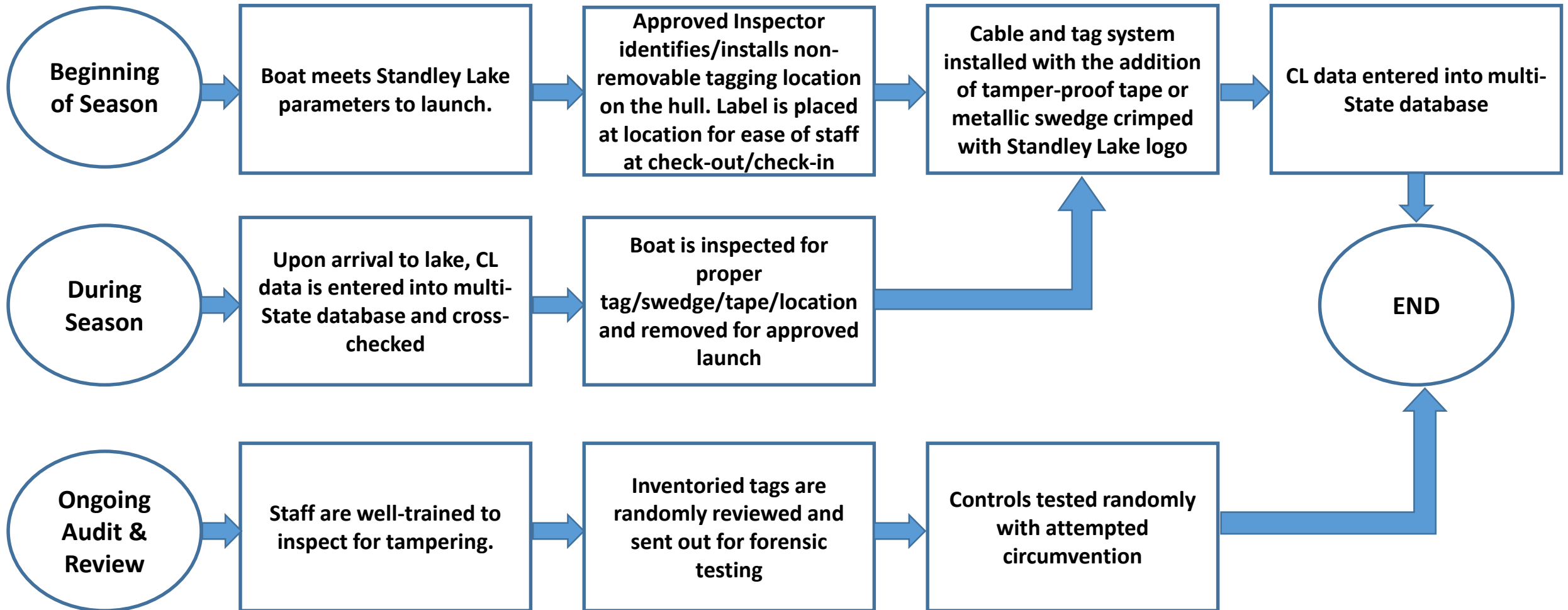
The hull of the boat is equivalent to the frame of a vehicle, and damaging the hull reduces structural integrity. All tagging cables should utilize the hull for integrity, not a removable part of the boat. Short of cutting the fiberglass or aluminum, a cable could not be removed. It is recommended that each boat have an identifiable 'proper tagging location' labeled for ease of installing tags at the boat ramp exit. All boats have this ability with little to no modification required.

Add An Additional Layer Of Protection To Prevent Tampering With Lock Nut



Simple methods can prevent tampering, including the use of tamper-proof, unique logo tape (used on aircraft); or the use of metal rivets on either side of the lock nut with a unique-logo impression. It is recommended that one of the above safeguards be installed to prevent tampering.

Proposed Process Flow



Secondary Preventative Measures

Enhanced Training – all staff that check boats in and out of Standley Lake should be trained on inspecting for tampering as well as how to install tags properly. Several instances occurred where boat owners would ask staff to ‘re-tag’ the boat or add a second tag given the poor installation by staff.

Boat Co-Owners – allowing multiple individuals to share one pass opens up the risk of split responsibility. This rule needs to be revisited to ensure that all responsibility falls solely on the boat owner.

Ballast Tank Filtration - all boats with ballast tanks should be required to have filtration systems.

Photo of Passholder – should be placed on the member card, or at minimum, saved on the screen when checking in. Only those individuals with a pass should be allowed to bring a boat into the park.

Lake/Boat Ban – a trespassing ticket combined with losing the ability to boat on the lake for the year is not a sufficient penalty. A lifetime ban on Standley should be considered. Furthermore, Standley Lake has the opportunity to become a leader in ZQM prevention should they report violators to the multi-State tracking system. With the risk at hand, violators should face penalties closer to that of hunters when they poach illegal game. To prevent a violator that is caught from simply transferring the boat to a friend or relative, it is recommended any attempted violators have the boat banned from the lake until proof of buy/sell occurs.

Ongoing Audits – to randomly inspect tags that have been removed (inventoried by boat) and send to tag manufacturer for forensics tests. Part of ongoing audits would also include feedback from Taskforce, feedback from Park Staff, and attempted breaking of the system by test vessels.

Summary

Standley Lake had essentially one preventative measure (decontamination/quarantine), one ineffective key control (tagging system), and one follow-up audit process (comparing end of season data with Multi-State database).

The proposed solution provides the same preventative measure (35 day decontamination/quarantine), a multi-level tagging system that makes this key control effective (through-hull and tamper proof lock nut), a real-time additional key control (Integration with Multi State database), and several additional mitigating controls implemented throughout the season. The act of simply *'removing/slipping a tag and reinstalling'*, placing an important source of water at risk, is no longer feasible. This solution adds little cost and time to the existing process, simply turning the old process into one that is measurably viable.

“The Standley Lake boating community has largely been a terrific partner in helping protect these waters,” said Jason Genck, director of Westminster Parks, Recreation and Libraries – the department that manages Standley Lake recreation facilities and permits. “Until we can determine if there’s a way to ensure these types of boats won’t pose a substantial risk at the lake, we need to put these activities on hold immediately and indefinitely.”

<https://www.cityofwestminster.us/Boating>

The boating community has enhanced their partnership in protecting the waters and we request that this document be used as a guide for the taskforce to implement secure safeguards. The items of concern voiced by Westminster have been thoroughly addressed, ensuring these types of boats do not pose a risk and allowing for boating to resume as quickly as implemented.

The City of Westminster has a perfect opportunity to display innovative risk prevention while still accommodating all recreational purposes that have long been enjoyed in the park. This resolution achieves a common goal of clean water while simultaneously enjoying one of the most beautiful assets in Metro Denver.

We welcome any feedback of the proposed solutions, and we gladly volunteer our time, effort, and resources to assisting in implementation. Solution examples are available for Subject Matter Experts to review and provide substantiated criticism.

Backup



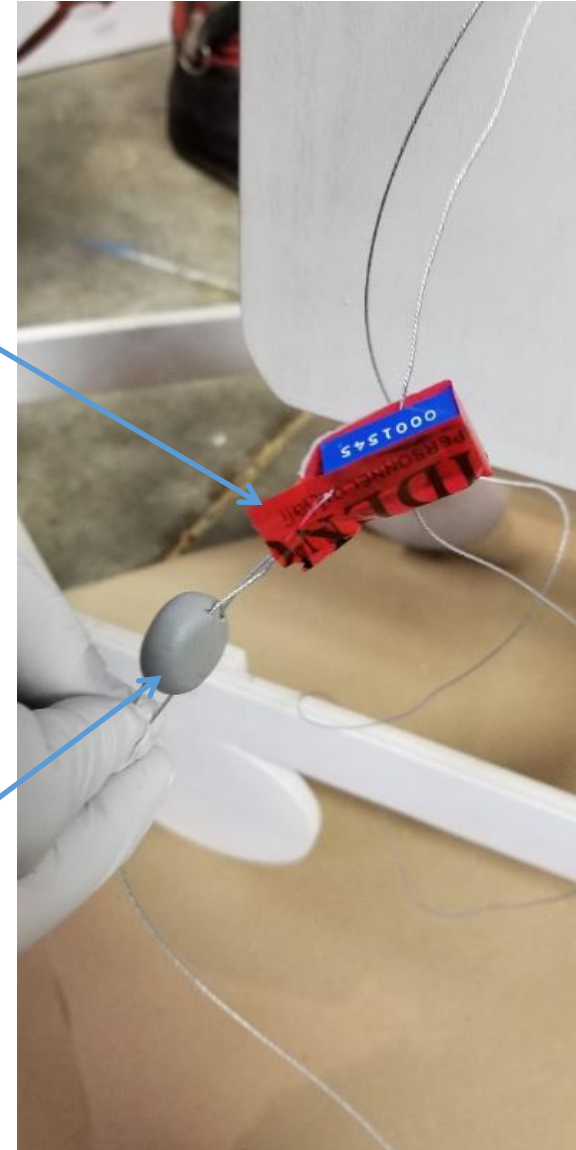
Ring allows wire to be mounted through the hull, avoiding removable locations

Tamper-proof tape covers the access points needed to break open tag and would show evidence if attempted

Cable routed through both the hull and trailer

Wire Cannot be pulled through tag with swedge in place

American Castings, manufacturer of the tags, also produces the tamper-proof tape. This tape is available customized and unique to only the City of Westminster if desired and can have serial numbers coinciding with the tag number.



Backup

March 19, 2019

Dear Standley Lake Boater:

It is with sincere regret that the City of Westminster announces the immediate and indefinite closure of Standley Lake to trailered boats. We have concluded that the threat of water quality contamination from zebra and quagga mussels is simply too great.

If you have already purchased a permit for the 2019 boating season, you will receive a full refund by March 31, 2019. The credit card that was utilized to purchase the permit will be the credit card that is refunded. An email notification confirming the refund will be sent to the email address you provided at the time of purchase.

As you may be aware, Standley Lake is the drinking water supply for nearly 300,000 people in Westminster, Northglenn and Thornton. The potential for a mussel infestation and the damage it can cause is of increasing concern.

We've constantly been alert to preventing zebra and quagga mussels in Standley Lake. That led to our boat decontamination procedures of power spraying every surface of boats and trailers and imposing a quarantine period. However, new reports indicate that spraying cannot fully prevent the possible introduction through ballast tanks or the inside of trailer frames. In reviewing 2018 boat launch data, we've also discovered multiple instances of boaters circumventing the quarantine process. Boat owners launched the boat on other lakes, in some cases multiple times, and then launched on Standley Lake only days later.

Westminster has shared its decision with the cities of Thornton and Northglenn, along with the Colorado Department of Natural Resources. Public Works Department officials with those cities have indicated support for the decision. The Westminster City Council has been advised of this policy decision by city staff.

The Standley Lake boating community has largely been a terrific partner in helping protect these waters. Until we can determine if there is a way to ensure these types of boats won't pose a substantial risk at the lake, we need to put these activities on hold indefinitely. We will be advising boating retailers and marine associations of this decision as well.

I would like to invite you to attend a community meeting on Tuesday, April 2, from 6-7:30 p.m. at in the Community Room at City Park Recreation Center, 10455 Sheridan Blvd. I encourage you to attend if you have further questions or want to learn more about this decision. You can also find more information at www.cityofwestminster.us/boating.

We know this may affect your summer recreation plans, and we apologize for the inconvenience it creates.

Sincerely,

Donald M. Tripp
City Manager
City of Westminster

cc:
Jason Genck
Director, Parks, Recreation and Libraries
City of Westminster Max Kirschbaum
Director, Public Works and Utilities
City of Westminster

HOW LONG HAS THE CITY KNOWN ABOUT THIS POTENTIAL PROBLEM, AND WHY IS IT MAKING THE ANNOUNCEMENT NOW, WHEN PERMITS HAVE ALREADY BEEN SOLD?

Since 2007 when ZQM were identified as a threat to Colorado waters, Westminster has been a leader in developing a protection plan to substantially reduce the threat of these species entering Standley Lake. As more information about the survivability of ZQM has become available, the requirements of the protection plan have become stricter. As many as 24 instances of boaters deliberately skirting the city's tag and quarantine system were discovered this winter.

GIVEN THE RISKS OF ZQM, WHY HAS WESTMINSTER CONTINUED TO ALLOW BOATING AT STANDLEY LAKE?

Standley Lake Regional Park and Wildlife Refuge is a valued recreation destination for thousands of local residents. Since ZQM was first identified as a threat to Colorado waters in 2007, Westminster has had a ZQM protection plan in place for the lake. This protection plan was the first of its kind in Colorado, and Westminster has been a leader in its approach. However, as more information has become available over the years, and key information came to light over the winter about ZQM, staff has identified that even this robust program is not capable of being fully protective of the lake. The risk is too large to accept.

DID THE CITY DECLINE TO USE THE STATE'S SYSTEM/DATABASE WHICH WOULD HAVE PREVENTED BOATERS FROM CIRCUMVENTING THE SYSTEM?

All full-time staff at the lake hold state certifications as Stage II Inspectors and Decontaminators and have been certified annually since the inception of the state program (2008). Being a certified WID (watercraft inspection and decontamination) site provides access to the state's mobile WID application. This application has been utilized by Standley Lake staff for the last four years to verify other agency tags that were placed on a boat previous to coming to Standley Lake. This allowed boats entering Standley Lake to bypass the decontamination and quarantine requirements because staff was able to verify that the boat had not launched on another water body since the previous season (staff would not allow the bypass of the quarantine and decontamination if the boat had launched on any water body after the winter season had ended). Staff did not utilize the WID application at the boat ramp because the application did not provide data in "real-time" when logging the information into the application.

Based on conversations with the state over the past two months, staff was notified by the state that the application was recently updated and would now be able to deliver search results in "real-time" as the boat information was logged. Standley Lake staff was already committed to utilizing the State WID mobile application at the boat ramp for the 2019 season.

**While not available in real-time on mobile devices, the system allowed for daily cross-reference throughout the season. The City of Westminster performed few random references on boats stored at Standley Lake and did not check all boats until the season closed. Furthermore, the full time certified staff were not responsible for checking in/out boats as this was left to seasonal employees not trained to inspect for tampering.*