

PUBLIC UTILITY DISTRICT NO. 1 *of* CHELAN COUNTY
P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

April 1, 2013

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

Subject: Rocky Reach Hydroelectric Project, FERC No. 2145
Article 401 and Appendix A, Section 5.6(2) – Aquatic Invasive Species Monitoring and Control Annual Report for 2012

Dear Secretary Bose and Deputy Secretary Davis:

The Federal Energy Regulatory Commission (Commission or FERC) issued the "Order Modifying and Approving Aquatic Invasive Species Monitoring and Control Plan Pursuant to Article 401 and Condition 5.6(2) on January 14, 2011, which requires Chelan PUD to file the annual monitoring reports with the Commission by April 1 of each year. The report is to include: 1) the previous year's monitoring and control activities; 2) any proposed and needed changes to the monitoring plan to be implemented the following year, based on the previous year's results, any new scientific information, or its coordination with WDOE and the Rocky Reach Fish Forum; and 3) documentation of consultation or comments received from WDOE and the Rocky Reach Fish Forum on the annual report and documentation of their agreement with the proposed monitoring and control measures for the following year.

In accordance with the above License requirements, Chelan PUD hereby files the Aquatic Invasive Species Monitoring and Control Annual Report for 2012.

If you have questions or concerns, please contact me or Waikele Frantz at (509) 661-4627.

Sincerely,

Michelle Smith
Licensing and Compliance Manager
(509) 661-4180
Michelle.smith@chelanpud.org

Attachment: Aquatic Invasive Species Monitoring and Control Annual Report for 2012

cc: Erich Gaedeke, FERC Portland Regional Office
Patricia S. Irle, WDOE Central Regional Office

2012 AQUATIC INVASIVE SPECIES MONITORING AND CONTROL REPORT

FINAL

ROCKY REACH HYDROELECTRIC PROJECT
FERC Project No. 2145

April 1, 2013

Public Utility District No. 1 of Chelan County
Wenatchee, Washington

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SECTION 1: INTRODUCTION

The Public Utility District No. 1 of Chelan County (Chelan PUD) owns and operates the Rocky Reach Hydroelectric Project (Project) on the Columbia River. The Project is operated under the terms and conditions of Federal Energy Regulatory Commission (FERC or Commission) Hydroelectric Project License No. 2145. The Project boundary, which extends approximately 43 miles along the Columbia River, begins at the Project tailrace at river mile 474) and extends upriver to the Wells Dam tailrace at river mile 516.

The Project consists primarily of an 8,235-acre reservoir; a 2,847-foot-long by 130-foot-high concrete gravity dam spanning the river, including a powerhouse and spillway; a juvenile fish bypass system, and recreation and hatchery facilities.

Chelan PUD currently operates the Project through the coordinated operation of the seven-dam system (collectively call the "mid-Columbia dams") and other Columbia Basin entities with current operational agreements with the fishery agencies, tribes and other operators to provide protection and enhancement for a range of fisheries within, and downstream of the Project. These agreements include the Hanford Reach Fall Chinook Protection Plan, the Hourly Coordination Agreement, and the Rocky Reach Habitat Conservation Plan (HCP) (and associated Anadromous Fish Agreement). The Project is also subject to the many provisions of its FERC License (License), the 2006 Rocky Reach Comprehensive Settlement Agreement, and related laws and regulations. Additionally, the Project is subject to the requirements (incorporated by reference in the License) of the Biological Opinion for the Project issued by National Marine Fisheries Service (NMFS) for its effects on anadromous salmon, the Clean Water Act Section 401 Water Quality Certification (401 Certification) issued by the Washington Department of Ecology (Ecology), and the Biological Opinion issued by the U.S. Fish and Wildlife Service regarding the effects of the Project on bull trout.

On April 4, 2006, Ecology issued a Final 401 Certification for the operation of the Rocky Reach Project. On February 19, 2009 the FERC issued its Order on Offer of Settlement and Issuing New License (License) for the Rocky Reach Project. Article 401 of the License Order and the 401 Certification required Chelan PUD to develop and implement an Aquatic Invasive Species Monitoring and Control Plan in consultation with Ecology and the Rocky Reach Fish Forum (RRFF) within one year of the effective date of the new License. Chelan PUD submitted the Monitoring Plan to FERC on February 19, 2010. On January 14, 2011 the Federal Energy Regulatory Commission (FERC) issued its Order Modifying and Approving Aquatic Invasive Species Monitoring and Control Plan Pursuant to Article 401 and 401 Certification Condition 5.6(2).

In accordance with the Monitoring Plan, Chelan PUD is to monitor for the presence of new invasive species at or near Project facilities. The Plan is coordinated with the Washington Department of Ecology's Freshwater Aquatic Weed Control Program. The Monitoring Plan includes the following components:

a) Signage at boat launches and distribution of educational materials and boater questionnaires to voluntary participants at Rocky Reach Reservoir boat launch sites during the peak boating season (May 1-October 30 each year) to increase boater awareness of dangers of spreading AIS, including the methods one can take to decrease the spread of AIS (e.g., clean the weeds off the boat and drain the live well before going to a new water body);
b) Methodology and schedule of prevention, monitoring and control measures regarding the presence and movement of AIS at or near Project facilities; and

c) Submittal of an annual report of monitoring and educational activities conducted each year.

FERC's Order requires Chelan PUD to file annual monitoring reports with the Commission by April 1 of each year. The report shall include: 1) the previous year's monitoring and control activities; 2) any proposed and needed changes to the monitoring plan to be implemented the following year, based on the previous year's results, any new scientific information, or its coordination with Ecology and the RRFF; and 3) documentation of consultation or comments received from Ecology and the RRFF on the annual report and documentation of their agreement with the proposed monitoring and control measures for the following year.

This report contains a summary of monitoring, control, and educational activities conducted under the Monitoring Plan in 2012 and proposed actions to be implemented in 2013.

SECTION 2: 2012 IMPLEMENTATION RESULTS

2.1 Educational Outreach

One component of Chelan PUD's Monitoring Plan is to provide educational opportunities for the public about the risks involved with AIS. In 2012 this included distribution of educational materials at Rocky Reach boat launches consistent with Section 5.6(2)(a) of the 401Water Quality Certification issued by Ecology on April 4, 2006, which requires the following:

> *"Signage at boat launches and distribution of educational materials and boater questionnaires to voluntary participants at Rocky Reach Reservoir boat launch sites during the peak boating season (May 1 – October 30 each year) to increase boater awareness of dangers of spreading AIS, including the methods one can take to decrease the spread of AIS (e..g clean the weeds off the boat and drain the live well before going to a new waterbody)."*

In 2012 Chelan PUD utilized existing kiosks and signage at boat launches within the Project to distribute educational material during the peak of the boating season (May 1–October 30). Boat launch sites where educational material was distributed included Lincoln Rock and Daroga State Parks, Beebe Bridge Park, Entiat Park, and Orondo River Park. Educational materials placed at each site consisted of free pamphlets and signs. The goal of these educational materials is to increase public awareness of the dangers of spreading AIS, as well as how its spread can be reduced and/or prevented.

The pamphlets and boat launch signs used to educate the public were obtained from the Washington State Department of Fish and Wildlife (WDFW) and the U.S. Fish and Wildlife Service (USFWS) to keep the signage used in the Project consistent with the other AIS signs used throughout Washington State. The educational material clearly presents ways to avoid the spread of AIS (e.g., by removing and disposing of the weeds off the boats and trailers, and draining the live wells prior to moving to another water body).

2.2 AIS Plant Monitoring

2.2.1 Shoreline Monitoring

In 2012, Chelan PUD mapped the perimeter of 46 weed beds (totaling 406 acres) (including the boat launch sites described in Section 2.2.2 below) using a boat and GPS unit. Mapping identified dominant and subdominant species by visual observation while slowly traveling through each weed bed. The mapping was coordinated with dissolved oxygen (DO) and pH monitoring in macrophyte beds of the Rocky Reach reservoir. When weeds could not be identified from the surface, a rake was used to pull the weeds in question into the boat for identification.

Based on visual observations, milfoil and curly leaf pond weed were the dominant species in 28% and 15% of the weed beds sampled, respectively, while other/native species were dominant in 41% of the weed beds sampled. Table 2-1 below provides a summary of dominant and subdominant species in the surveyed weed beds.

Of the 46 sites inspected and mapped during 2012, 23 were also identified in the Aquatic Habitat Mapping Study Report completed for Chelan PUD by Duke Engineering & Services as part of the Rocky Reach

Project relicensing process (DES 2001). Based on visual inspection, the composition of most beds appears to be consistent with the composition noted in DES 2001 report.

Table 2-1. Summary of Dominant and Subdominant Species Composition of the 46 sampled weed beds.

Species	# of weed beds where species was dominant	% of weed beds where species was dominant	# of weed beds where species was subdominant	% of weed beds where species was subdominant
Milfoil (MS)	13	28	16	35
Curly leaf pond weed (PC)	7	15	8	17
Other (OTH)	19	41	11	24
MS/PC Equal	1	2	2	4
MS/OTH Equal	3	6.5	5	11
PC/OTH Equal	3	6.5	3	6.5
MS/PC/OTH Equal	0	0	1	2
Total	46		46	

2.2.2 Boat Launch Monitoring

The following boat launches on the Rocky Reach Reservoir were monitored for the presence of AIS plant species in 2012: Entiat Park, Orondo River Park, Daroga State Park, Chelan Falls Park, and Beebe Bridge Park. As monitoring was coordinated with other water quality studies, the boat launch at Lincoln Rock State Park was not monitored in 2012; however, a weed bed approximately 0.7 miles upstream from the launch at Turtle Rock was monitored and mapped. Boat launch monitoring was conducted by traveling slowly through the weed beds at each launch until visual contact with the macrophytes was lost. This allowed Chelan PUD staff to determine the dominant and subdominant plant species at each launch site. When weeds could not be identified from the surface, a rake was used to pull the weeds in question into the boat for identification. This monitoring included the mapping of the perimeters of each bed as well. Locations of boat launches (or sites in close proximity to launches) monitored in 2012 are depicted in the attached maps with a red star.

2.3 AIS Control/Management Activities

In 2012, Chelan PUD continued to distribute educational brochures at high use swimming areas and provide signs at public boat launches (also described in Section 2.1 above). Additionally, Chelan PUD performed regular maintenance to control Eurasian watermilfoil growth at high-use swimming areas and public boat launches through mechanical harvesting in front of Chelan PUD owned parks and swim beaches.

The harvesting machine (harvester) is a specialized underwater mowing machine specifically designed to cut and collect aquatic plants. Cut plants are immediately removed from the water via a conveyer belt. The cut plants are stored on the machine until they can be off-loaded at an upland site, desiccated, and disposed of properly. Milfoil is harvested while traveling upstream to capture most of the fragments. If a clump breaks away, the operator of the harvester will circle around and capture it. Since milfoil eradication is not an option, as milfoil is well established within the Columbia River, regular harvesting at public areas by trained operators is used by Chelan PUD as a maintenance measure.

Currently, the only known AIS plants established within the Project area are Eurasian water milfoil and curly-leaf pondweed. Terrestrial, wetland, and/or riparian zone AIS plants are currently monitored, managed, and controlled as part of other ongoing Chelan PUD efforts (e.g., parks maintenance, noxious weed control program, wildlife surveys, real estate surveys).

2.4 AIS Animal Monitoring

2.4.1 Fish

In early 2012, Chelan PUD contracted with Washington State Department of Fish and Wildlife (WDFW) to conduct a Rocky Reach Project Resident Fish Study finalized March 28, 2013, that consisted of a Project-wide evaluation of resident fish species, including the evaluation of fish habitat in areas of heavy aquatic vegetation growth, including water quality, the types of vegetation in these areas (emphasizing native vs. non-native). Study results demonstrated that no new AIS fish species were observed during the 2012 study.

2.4.2 Zebra and Quagga Mussels

Horizontal Zooplankton Tow Net Sampling

The Monitoring Plan states that horizontal tow samples will be collected at three locations throughout the Project: Lincoln Rock State Park, Daroga State Park, and Chelan Falls Park. During 2012, Chelan PUD collected samples consistent with the methods detailed in the Monitoring Plan at eight locations over two days (August 15 and August 30). These sites were at or near Chelan Falls Boat Launch, Entiat Park, Entiat Boat Launch, mouth of the Entiat River, Beebe Bridge, and Daroga State Park. Lincoln Rock State Park was not sampled during 2012, but will be included in the 2013 zooplankton tow net sampling.

Sites sampled in 2012 are summarized below:

Chelan Falls Launch – west side of river
Entiat Park Launch – west side of river
In front of Entiat Park – west side of river
Across from Entiat Park boat launch – east side of river
Across from the mouth of the Entiat River – east side of river
1.5 miles downstream of Beebe Bridge – east side of river
Daroga State Park – east side of river
5.5 miles downstream of Beebe Bridge – east side of river

Samples were analyzed by the Center for Lakes and Reservoirs at Portland State University for the presence of zebra and quagga mussels. Neither zebra nor quagga mussel larvae, veligers, were detected in these samples. Bivalve larvae were detected for one introduced species, *Corbicula fluminea* (Asian clam), as well as two native mussels, *Anodonta* spp. (floater mussel) and *Gonidea* spp. (western ridged mussel).

Artificial Substrate Monitoring

Artificial substrates were deployed in 2012, but not at the locations originally planned (boat launch docks and buoys) due to concerns regarding site security. Instead, artificial substrates were deployed at four locations at least one meter above the bottom of the river bed (depicted with a black star on the attached

maps) that were determined to be secure, but yet accessible by Chelan PUD staff. The substrates were deployed for approximately eight weeks between mid-August and mid-October. No zebra or quagga mussels or New Zealand mud snails were observed.

SECTION 3: 2013 ACTION PLAN

Table 3-1 provides the proposed implementation schedule related to tasks to be completed under the monitoring and management of AIS in the Project in 2013.

Table 3-1. 2013 Planned Actions

Task	Action	Schedule
Place signage, educational materials, and self-surveys at Project boat launches. (See Section 3.1 Educational Outreach)	Maintain signs at boat launches, update pamphlets, and replenish surveys as needed.	Prior to May 1
Monitor for new/spreading aquatic invasive plants and animals. (See Section 3.2 AIS Plant Monitoring)	Monitor Project boat launches annually	Between July and September
Monitor for zebra and quagga mussels. (See Section 4.2 AIS Animal Monitoring)	Monitor for the presence of veligers for a total of four days, two in August and two in September.	August-Sept
Stay current on rapid response methods and technology.	Monitor developing response methods and technologies. Participation and coordination with Pacific States Marine Fisheries Commission (Stephen Phillips)	Ongoing
Report to Ecology and RRFF on AIS program.	Summarize monitoring efforts	February 19
Participate in regional forums.	Attend in person or via conference-call meetings of regional forums addressing AIS. Participation and coordination with Pacific States Marine Fisheries Commission (Stephen Phillips)	Ongoing

3.1 Educational Outreach

Chelan PUD will continue the distribution of educational materials initiated in 2011, using the same sites and materials.

Boater surveys modeled after the survey forms created by the 100th Meridian Initiative were developed during 2012. Surveys will be stocked at those sites where educational pamphlets are distributed during 2013. The purpose of the survey will be explained on the form and the boaters will be asked to complete the form and place it in a return box located on site or return it via mail to Chelan PUD. This boater self-survey

requests information from the boater including home residence; number of times the boat was launched last year; other lakes/river where the boat has been recently launched; the destination of the boat; if the boater cleans the boat, bait well, and fishing gear between each launch; storage methods for the boat, and if the boater is aware of the threat of AIS.

3.2 AIS Plant Monitoring

3.2.1 Shoreline Monitoring

Chelan PUD completed shoreline monitoring in 2012. Chelan PUD plans to conduct shoreline monitoring again in 2014, consistent with the Monitoring Plan which states shoreline monitoring will be conducted every other year.

3.2.2 Boat Launch Monitoring

Monitoring for AIS plant species will be conducted between July and September at the same locations as those monitored in 2012.

3.3 AIS Management/Control Activities

As required by the Rocky Reach Project License and Department of Ecology's 401 Water Quality Certification, during 2013 Chelan PUD will continue to focus its control/management of Eurasian watermilfoil at or near project facilities through monitoring, education and public awareness. Additionally, Chelan PUD will perform regular maintenance to control Eurasian watermilfoil growth at high-use swimming areas and public boat launches through mechanical harvesting in front of Chelan PUD owned parks and swim beaches.

If public feedback from survey responses during 2013 indicates more aggressive control of milfoil beds is needed at Project boat launches, Chelan PUD will consider additional alternatives for control at the boat launches. These additional alternatives will be discussed within the 2013 annual report after consultation with the Washington State Department of Ecology and the Rocky Reach Fish Forum. Current possible alternatives include the use of herbicides, but those (and any other new technologies) will need to be further evaluated based on monitoring results, potential impacts to other aquatic species, water quality, habitat, recreation, etc.

3.4 AIS Animal Monitoring

3.4.1 Fish

Chelan PUD is not planning to conduct resident fish monitoring in 2013. Future resident fish surveys as required by the License will be directed by the Rocky Reach Fish Forum. However, any new AIS fish species encountered during other Chelan PUD activities will be documented and reported as necessary.

3.4.2 Zebra and Quagga Mussels

Chelan PUD will monitor for the presence of Zebra and Quagga mussels using the two methods described below.

Horizontal Zooplankton Tow Net Sampling

Chelan PUD will conduct horizontal zooplankton tow net samples at three locations within the Project (Lincoln Rock and Daroga State Parks and Chelan Falls Park). The samples will be collected a total of four days, two in August and two in September. Sampling will be conducted consistent with the approved Monitoring Plan.

Chelan PUD will request data sheets for this sampling from WDFW and will scan and email completed data sheets to WDFW within one week of completion in order for WDFW to keep a nearly real time monitoring data base.

Artificial Substrate Monitoring

During 2013, Chelan PUD plans to deploy artificial substrates at Project boat launch docks and or/buoys. Boat launches anticipated for monitoring include Lincoln Rock and Daroga State Parks, Beebe Bridge Park, Chelan Falls Park, and Entiat Park. Substrate placement at each site will be dependent upon a secure location upon which to mount the substrate; therefore it is possible that not all proposed sites will be used for substrate monitoring. Chelan PUD will follow the artificial substrate monitoring protocols as provided by WDFW. One substrate will be deployed at each site and will be kept at least one meter above the bottom. Substrates will be examined monthly, to the extent feasible, from June through September. Chelan PUD will implement response actions as described in Section 4 if zebra or quagga mussels are detected or suspected.

Substrate Monitoring at Rocky Reach Dam

As per the Monitoring Plan, Chelan PUD will continue monitoring for presence of adult zebra and quagga mussels that may have become attached on fishways, intake screens, cooling units, and other equipment at Rocky Reach Dam. Equipment that is regularly taken out of operation for maintenance will be inspected by Chelan PUD staff. Chelan PUD will implement response actions as described in Section 4 if zebra or quagga mussels are detected or suspected.

3.4.3 New Zealand Mudsnail

As per the Monitoring Plan, Chelan PUD will monitor for New Zealand mudsnails while conducting the boat launch monitoring studies. Additionally, the artificial substrates to be installed for zebra and quagga mussel monitoring may also serve as colonization samplers for New Zealand mudsnails.

SECTION 4: RESPONSE AND COORDINATION

Early detection and rapid response to an infestation of AIS is essential to the control and potential containment of AIS. Per the Monitoring Plan, Chelan PUD will implement monitoring programs that will help detect new AIS infestations as soon as possible. In the event of positive identification of new AIS within the Project area, Chelan PUD will conduct the following response activities:

- Immediate notification to Ecology (for plants) or WDFW (for animals) of positive or suspected AIS species identified during monitoring and/or boat inspections. Digital photographs will be taken and sent to Ecology and/or WDFW for assistance in identification. Table 4-1 provides contact information for AIS personal to be contracted in event of new AIS identification.
- If the AIS is a zebra or quagga mussel, Chelan PUD will also notify upstream and downstream dam operators (Douglas PUD and Grant PUD) and the Columbia River Basin Team. Chelan PUD will then assist the Columbia River Basin Team in rapid response implementation as applicable to the Project. Table 4-1 provides contact information for AIS personnel to be contacted in the event of new AIS identifications.
- Chelan PUD will assist in the coordination of agency site visits to assist in confirming the presence and extent of AIS infestation and determination of immediate or long-term control/eradication needs.

Table 4-1. Contact List for AIS Response.

Contact	Name	Phone Number	E-Mail Address
Ecology	Nathan Lubliner or Lizbeth Seebacher	360-407-6563 360-407-6938	nlub461@ecy.wa.gov lsee461@ecy.wa.gov
	Jenifer Parsons	509-457-7136	jenp461@ecy.wa.gov
	Pat Irle	509-454-7864	pirl461@ecy.wa.gov
WDFW	Allen Pleus	360-902-2724	allen.pleaus@dfw.wa.gov
	Jesse Schultz	360-902-2184	jesse.schultz@dfw.wa.gov
	Sgt. Carl Klein	360-902-2426	carl.klein@dfw.wa.gov
Invasive Species Council	Wendy Brown	360-902-3088	wendy.brown@invasive species.wa.gov
Douglas PUD	Andrew Gingerich	509-881-2323	andrewg@dcpud.org
Grant PUD	Carson Keeler	509-754-5088 ext 2687	ckeeler@gcpud.org

LITERATURE CITED

Duke Engineering & Services, Inc. 2001. Aquatic Habitat Mapping Study Report. June, 2001. Prepared for Public Utility District No. 1 of Chelan County.

Federal Energy Regulatory Commission, Order on Offer of Settlement and Issuing New License for Public Utility District No. 1 of Chelan County, Docket Number 2145-060 (February 19, 2009).

APPENDIX A: AIS MONITOIRNG AND CONTROL PLAN

The AIS Monitoring and Control Plan can be found at:

http://www.chelanpud.org/departments/licensingCompliance/rr_implementation/ResourceDocuments/33938.pdf

APPENDIX B: EDUCATIONAL MATERIALS

STOP

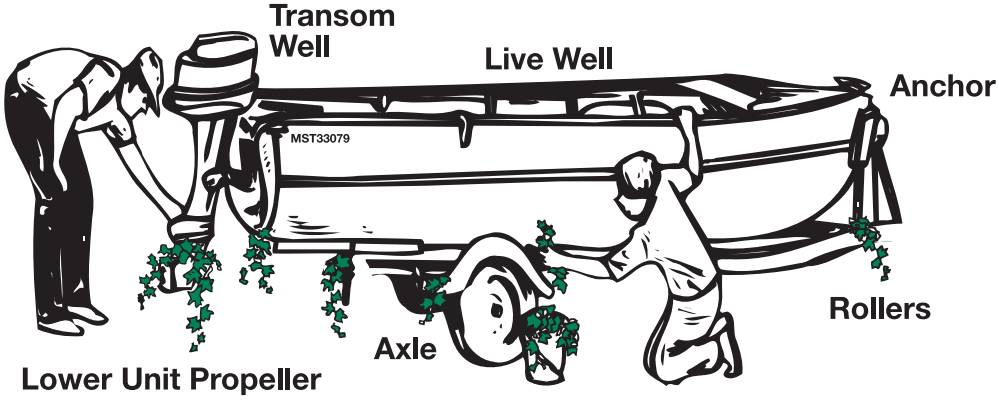
Milfoil

Zebra Mussel

It is *ILLEGAL* to transport or spread Aquatic Invasive Species!

Before Launching & **Before Leaving**

You Must Remove ALL
Plants & Animals from Watercraft, Trailer and Gear.
You Must Drain ALL
Water from Fish/Live Wells, Holds and Bilges.



Unlawful to Transport Aquatic Plants - R.C.W. 77.15.290
Unlawful Use of Prohibited Aquatic Animal Species - R.C.W. 77.15.253
Unlawful Release of Fish, Shellfish or Wildlife - R.C.W. 77.15.250

To obtain information on free boat inspections, Report a sighting or Find out more about Aquatic Invasive Species:
Call 1-888-WDFW-AIS (933-9247) or go to www.WDFW.WA.GOV

Washington Department of FISH and WILDLIFE

STOP AQUATIC HITCHHIKERS!
Prevent the transport of nuisance species.
Clean all recreational equipment.
www.ProtectYourWaters.net

25128-87870

VOSS SIGNS, LLC. MANLIUS, NY 13104-0553 1-800-473-0698 www.vosssigns.com

STOP AQUATIC HITCHHIKERS!™

www.ProtectYourWaters.net

Follow these simple steps:

☑ Clean

Remove all plants, animals, mud and thoroughly wash everything, especially all crevices and other hidden areas.

☑ Drain

Eliminate all water before leaving the area, including wells, ballast, and engine cooling water.

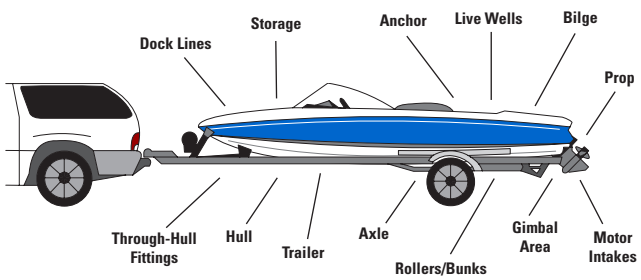
☑ Dry

Allow sufficient time for your boat to completely dry before launching in other waters.

If your boat has been in infested waters for an extended period of time, or if you cannot perform the required steps above, you should have your boat *professionally* cleaned with high-pressure scalding hot water (>140 °F) before transporting to any body of water.

Before launching and before leaving...

Inspect everything!



Quagga mussels encrusting a boat motor

Zebra and quagga mussels are a nuisance for anglers and boaters. They can ruin your equipment, clog motor cooling systems, foul hulls, and jam the centerboard wells under sailboats.

For more information, please visit...

www.100thMeridian.org
www.ProtectYourWaters.net
nas.er.usgs.gov

U.S. FISH & WILDLIFE SERVICE

P.U.D. CHELAN COUNTY
www.chelanpud.org

100th Meridian Initiative

Image Credits: *Zebra Mussels on a Fishing Lure* by Marc Murrell, Kansas Department of Wildlife and Parks • *Zebra Mussels*, *Zebra Mussels on a Beer Can*, *Zebra Mussels on a Native Mussel*, *Bait Bucket*, *Quagga Mussels*, *Zebra/Quagga Mussel Distribution January 2009* by David Britton, U.S. Fish & Wildlife Service • *Zebra Mussels in a Cut-Away Pipe* by Don Schlosser, Great Lakes Science Center • *Zebra Mussels in a Pipe* by Craig Czarnecki, Michigan Sea Grant • *Quagga Mussels Encrusting a Boat Motor* by Matt Watson, The University of Texas at Arlington • The distribution map is based on data compiled by the U.S. Geological Survey's Nonindigenous Aquatic Species Program (http://nas.er.usgs.gov).

100th Meridian Initiative

ZAP THE ZEBRA

www.100thMeridian.org

Please report any sighting by calling our National Hotline:

1-877-STOP-ANS

1-877-786-7267

Invasive Mussels: Expensive Damage!

When zebra and/or quagga mussels invade our local waters they clog power-plant and public-water intakes and pipes. Routine treatment is necessary and very expensive. This leads to increased utility bills. If you use water and electricity, you do not want these mussels.

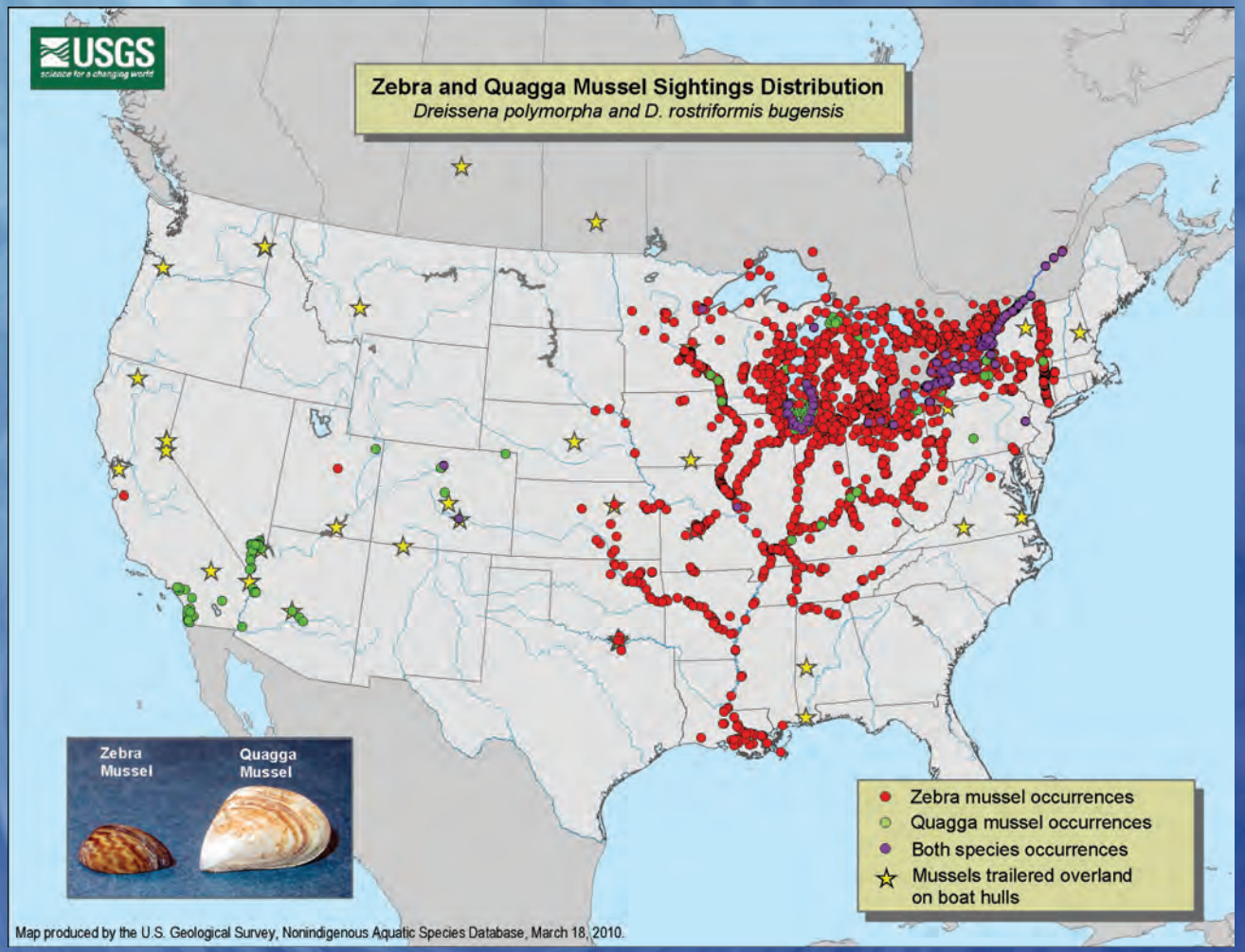
Zebra mussels in a cut-away pipe

Zebra mussels blocking a pipe

Zebra/Quagga Mussels May Use Your Boat to Invade Additional Waters!

Once a boat has been in infested waters, it could carry invasive mussels. These mussels can spread to new habitats on boats trailered by commercial haulers or the public. Zebra and quagga mussels attach to boats and aquatic plants carried by boats. These mussels also commonly attach to bait buckets and other aquatic recreational equipment. An adult female zebra mussel can release up to a million eggs in a year. Please take precautions outlined in this brochure to help reduce the chance that zebra or quagga mussels will spread from your boat or equipment to uninfested areas.

Before zebra mussels | *After zebra mussels*



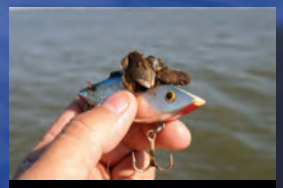
Zebra/Quagga Mussels Harm Native Aquatic Life

Zebra mussels on a crayfish

Zebra mussels on a native mussel

Zebra/Quagga Mussels Encrust Any Hard Surface

Zebra mussels on a beer can



Zebra mussels on a fishing lure

Zebra Mussels / Quagga Mussels

What are they?

Both are closely related, invasive, freshwater bivalve (mollusk) species that encrust hard surfaces.

Where do they come from?

These species came from the Black and Caspian Sea Drainages in Eurasia.

What size are they?

Larvae are microscopic and adults may be up to two inches long. They are usually found in clusters.

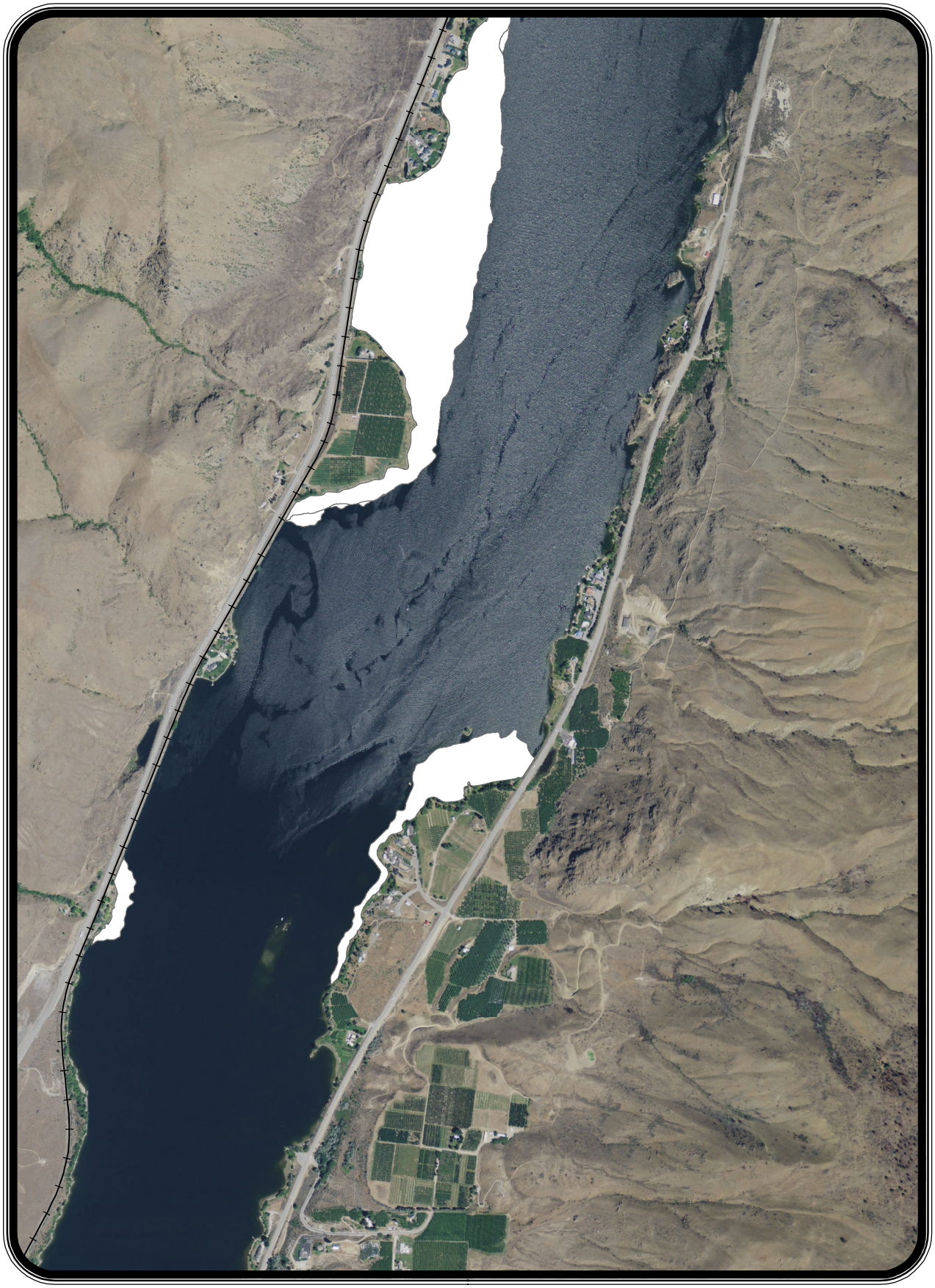
Why “Zebra” mussels?

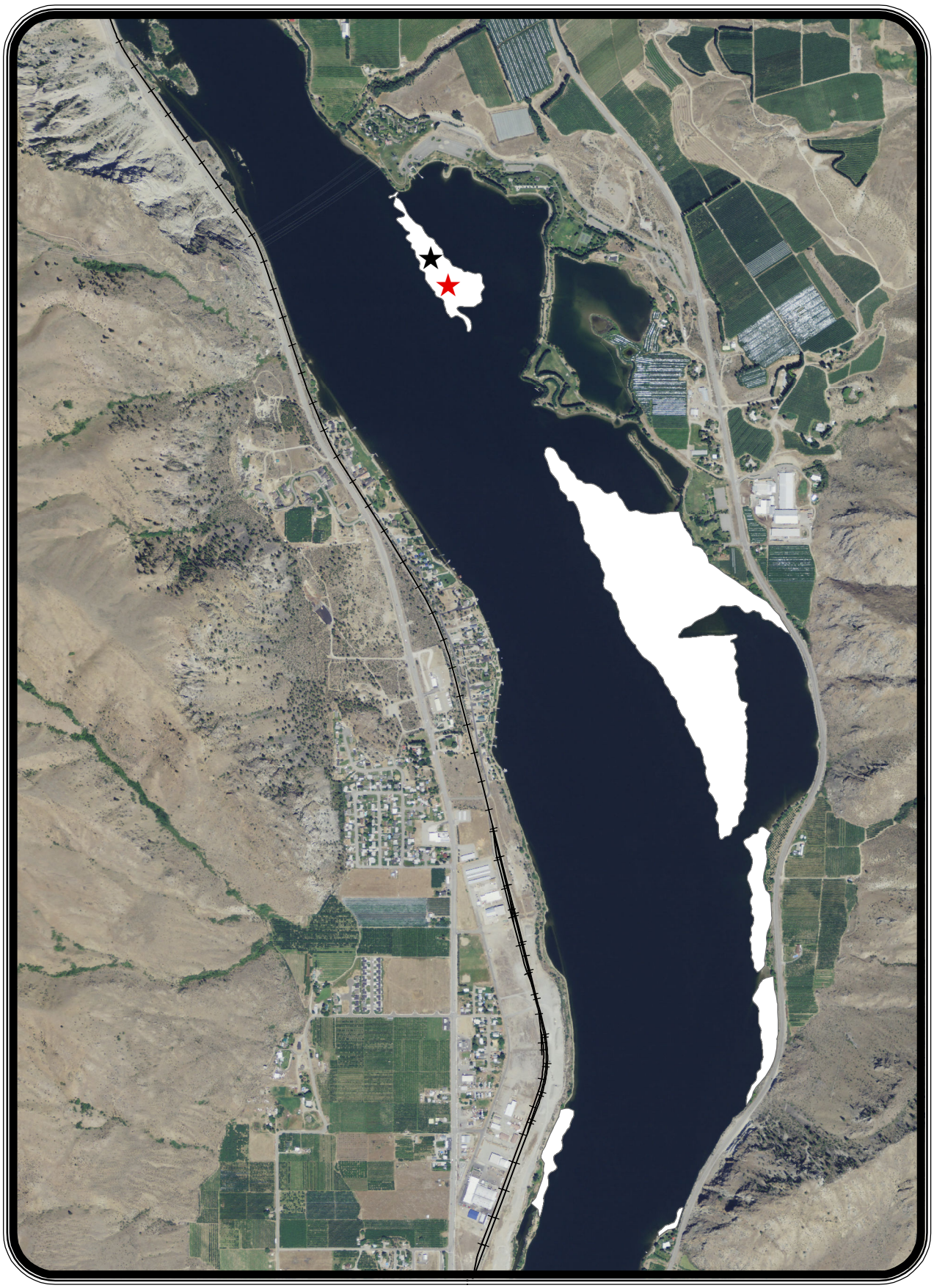
Both species are sometimes referred to as “zebra” mussels because they both have light and dark alternating stripes. Quagga mussels are actually a distinct (but similar) species named after an extinct animal related to zebras.

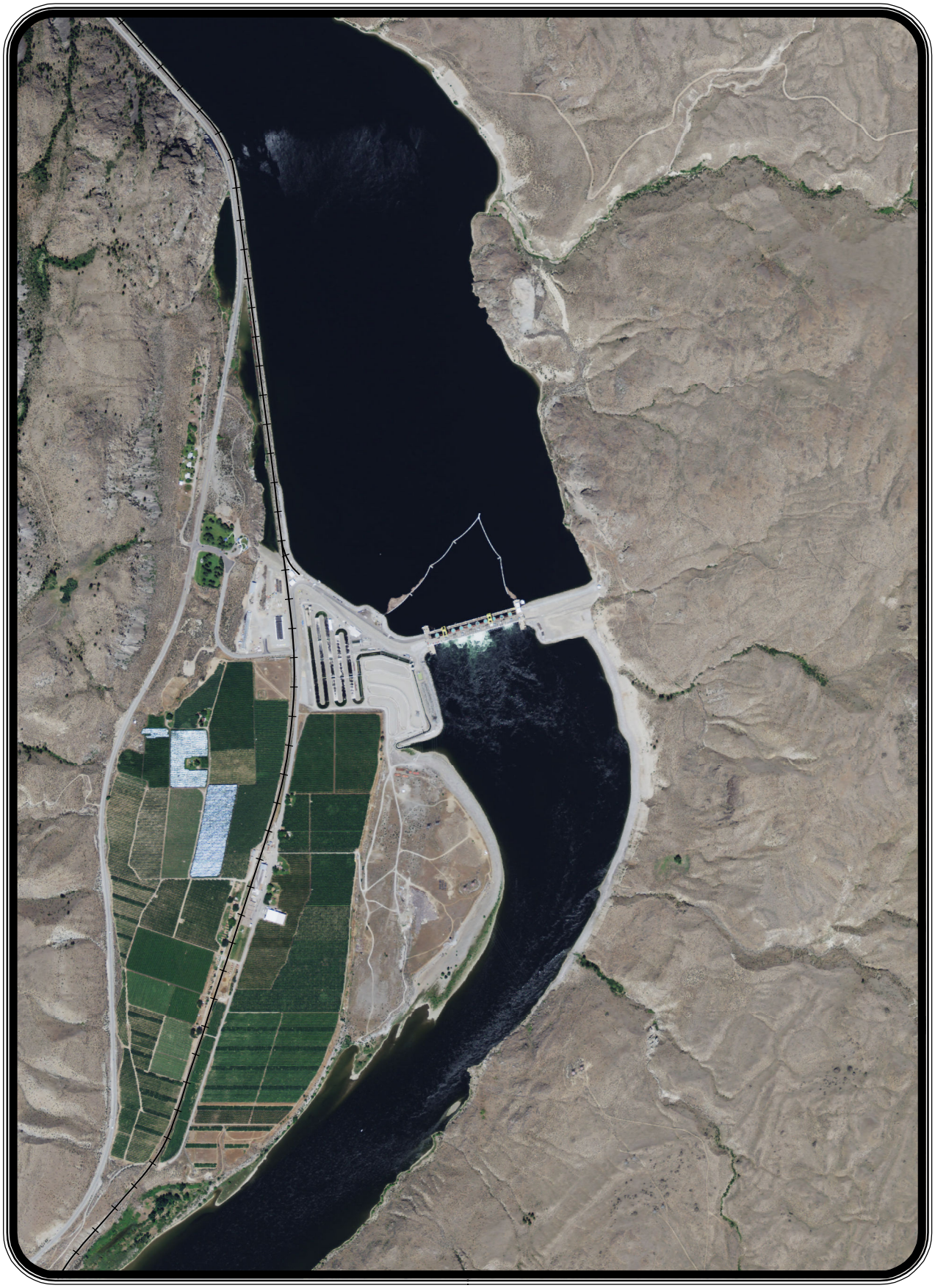
APPENDIX C: LOCATIONS OF WEED BEDS SAMPLED AND MAPPED

LEGEND

- Mapped Weed Beds
- ★ Adult Substrate Locations
- ★ Boat Launch Proximity AIS Plant Monitoring Sites







APPENDIX D: CONSULTATION RECORD

As per FERC's Order Modifying and Approving Aquatic Invasive Species Monitoring and Control Plan Pursuant to Article 401 and Condition 5.6(2) (January 14, 2011) Chelan consulted with Washington State Department of Ecology and the Rocky Reach Fish Forum on the draft AIS Report. The following individuals were sent draft copies for review on February 22, 2013:

NAME	***AGENCY***
Bob Huber	ALCOA
Bob Rose	Confederated Tribes and Bands of the Yakama Indian Nation
Patrick Verhey	Washington Department of Fish and Wildlife (WDFW)
Jerry Marco	Confederated Tribe of the Colville Reservation
Keith Vradenburg	City of Entiat
Pat Irle	Washington Department of Ecology (Ecology)
Reed Glesne	National Park Service
Steve Lewis	US Fish and Wildlife Service

Comments were received from WDFW and Ecology during the 30-day comment period. A table of those comments and Chelan PUD's responses follows.

Commenting Agency	Agency Comment	Chelan PUD Response
WDFW	Section 2.1 discusses educational outreach material. Including examples of the educational materials Chelan PUD distributes to the public would be helpful. Although the education materials are mentioned in the Aquatic Invasive Species Monitoring and Control Plan (AIS), no examples where provided there either. If you need additional education materials Jesse Schultz (jesse.schultz@dfw.wa.gov) with WDFW is a good contact person.	Chelan PUD has added photos of the education materials and signs used at PUD parks and boat launches as an appendix to this document.
WDFW	Last paragraph of Section 2.2 a discussion of boat launch monitoring occurs. Please provide an explanation for why all boat launches were not monitored as of the writing of the annual report. WDFW is concerned with potential data gaps in years that could prove to be useful in future discussion and analysis.	Chelan PUD agrees. This section has been changed to more clearly explain the boat launches monitored during 2012.
WDFW	Section 2.3 second paragraph- What types of education/ public awareness activities did Chelan PUD rely upon?	To help reduce the spread of aquatic invasive weeds during 2012, Chelan PUD continued its control and management of Eurasian watermilfoil through the distribution of educational public brochures and signs at public boat launches, mechanical harvesting in front of Chelan PUD owned parks and swim beaches. This has been added to clarify Section 2.3.
WDFW	Section 2.3 second paragraph- What actions are taken to prevent the spread of Eurasian watermilfoil due to fragmentation by mechanical harvesters? Does the mechanical harvester capture 100% of the milfoil it pulls to prevent spreading it by fragmentation?	The harvesting machine (harvester) is a specialized underwater mowing machines specifically designed to cut and collect aquatic plants. Cut plants are immediately removed from the water via a conveyer belt. The cut plants are stored on the machine until they can be off-loaded and disposed of properly. Milfoil is harvested while traveling upstream to capture most of the fragments. If a clump breaks away, the operator of the harvester will circle around and capture it. Since milfoil eradication is not an option, as milfoil is well established within the Columbia River, regular harvesting at public areas by trained operators is used by Chelan PUD as a maintenance measure. This explanation has been added to Section 2.3.

WDFW	Section 2.4 first paragraph- We appreciate Chelan PUD sampling additional sites for zebra and quagga mussels; however, the AIS specifically notes Lincoln Rock State Park is to be sampled. This state park is one of the highest risk sites. WDFW recommends sample this site in the future.	Chelan PUD agrees. Sampling was coordinated with other water quality efforts and Lincoln Rock State Park was not monitored during 2012. This will be corrected and Lincoln Rock State Park will be monitored in 2013.
WDFW	Section 2.4.2 first paragraph- WDFW recommends sample for a total of four days, two days in August and two days in September.	Chelan PUD will plan to sample as recommended in the future. Table 3-1 has been revised to reflect WDFW's recommendation.
WDFW	Section 2.4.2, Artificial substrate- Site security, no matter how well the substrates are hidden, some theft/vandalism is going to occur. WDFW has around a 15% absent rate for substrates. The substrates are very inexpensive. WDFW suggests the cost of the potential loss of sampling substrate is worth the data the substrate can provide.	Chelan PUD will make every effort to deploy adult substrates as detailed in the AIS Plan.
WDFW	Section 2.4.2, Artificial substrate-WDFW recommends and the AIS states substrate monitoring is to occur June through September, not mid-August through mid-October. Since it is most probable to observe zebra and quagga mussel veliger during the June through September time period, WDFW recommends following the AIS in regards to substrate sampling.	Chelan PUD will complete sampling as per the June through September timeframe outlined in the Monitoring Plan.
WDFW	WDFW recommend analyzing zooplankton samples soon as possible because high acidity will dissolve the shells of the veligers very quickly. We recommend adding baking soda (NaHCO3) to the samples to buffer the solution (Jesse Schultz).	Comment noted. Samples will be sent to the lab sooner after collection in the future.
WDFW	Table 3-1- WDFW recommend including monitoring of zebra and quagga mussels for post-settled adults and adults using substrates as well.	This monitoring is not contained in the Monitoring Plan. However, Chelan PUD will follow-up with WDFW to discuss this recommendation.
WDFW	Table 3-1- WDFW recommend reviewing the reference section to the AIS. We were unable to find section 3.4.2 in the AIS.	Chelan PUD corrected this oversight. The reference in the table has been corrected to read "4.2"
WDFW	Section 3.4.2- WDFW (Jesse Schultz) can provide the datasheets for horizontal/vertical plankton sampling and a reasonable amount of artificial substrates.	Thank you for this information. Chelan PUD will be in touch with Jesse to obtain this information. Language has been added to the section to address this comment.
WDFW	Section 3.4.2- WDFW request the data sheets be scanned and e-mailed to WDFW immediately upon completion in order for WDFW to keep a real time monitoring database.	Comment noted. Language has been added to the 3.4.2 to address this request, with one small change. Rather than saying the data sheets will be emailed "immediately", Chelan PUD has stated they will be emailed "within one week" of completion.
WDFW	Section 4- WDFW recommend deleting "as needed" from the following sentence, "Digital photographs will be taken and sent to Ecology or WDFW for assistance in identification, as needed."	Recommended deletion made.

WDFW	Table 4-1- WDFW recommends updating the table. Kathy Hamel is retired. Pam Meecham is retired. The new WDFW contact is Jesse Schultz, 360 902-2426. Sgt Eric Anderson has moved on. The new contact is Sgt. Carl Kline 360 902-2426, Carl.Klein@dfw.wa.gov. We believe Carson Keeler is the Grant PUD contact, not Ross Hendrick.	Table updated.
Ecology	Section 2.1 – were any questionnaires returned, if so, what were the results?	Questionnaires (surveys) were developed in 2012 and will be distributed during 2013. Section 3.1 reflects this clarification.
Ecology	Section 2.2 - The methods should be described more fully. Large plant beds are outlined on the maps, how was plant dominance determined? From one location in the bed or from multiple locations? Were the plant beds mapped this time, or were outlines used from the Duke survey?	Language has been added to Section 2.2 to address comment.
Ecology	Table 1 is confusing. Milfoil is abbreviated as MC but lower down seems to be MS. Would be helpful to include a total column.	Milfoil abbreviation has been corrected. A total column will be discussed with Ecology to determine if applicable for future reports.
Ecology	By the looks of it, neither Eurasian milfoil nor curly leaf pondweed are dominant in most of the plant beds, so were they dominated by native plants?	Yes, most weed beds appeared to be dominated by native species, based on visual observation from the boat, as detailed in revised Section 2.2.
Ecology	Chelan County Noxious Weeds has developed a plan for herbicide trials in a 2 mile reach at Entiat, is Chelan PUD aware/involved?	Yes, Chelan PUD is aware of and has participated in some meetings related to this effort. The County has provided Chelan PUD with an Integrated Aquatic Vegetation Management Plan, dated November 2012. Chelan PUD plans to review and provide this plan to the Rocky Reach license forums and HCP committee for review in relation to the Project License.
Ecology	Boat launch monitoring. What was done if what was supposed to be done wasn't? The red stars on the maps indicated locations of plankton tows according to the legend that was sent (not boat launches as in the document).	Language has been added to address this comment.
Ecology	Table 4.1 – Kathy Hamel has retired, should be changed to Nathan Lubliner 360-407-6563 nlub461@ecy.wa.gov or Lizbeth Seebacher 360-407-6938 lsee461@ecy.wa.gov	Table has been updated.
Ecology	This table should also have WDFW people updated (Pam Meacham is retired, Jesse Schultz would be the likely new contact).	Table has been updated.
Ecology	The Table should also include the Invasive Species Council, Wendy Brown, 360-902-3088, wendy.brown@invasivespecies.wa.gov	Table has been updated.