

APPENDIX C

Garrison Dam National Fish Hatchery HACCP Plan for Walleye East Pond Unit

Revision Date: March 18, 2003

- 1) Species Description
- 2) Past Stocking History
- 3) Flow Diagram
- 4) Potential Hazards
- 5) Hazard Analysis Worksheet
- 6) HACCP Plan Form
- 7) HACCP Step Summary

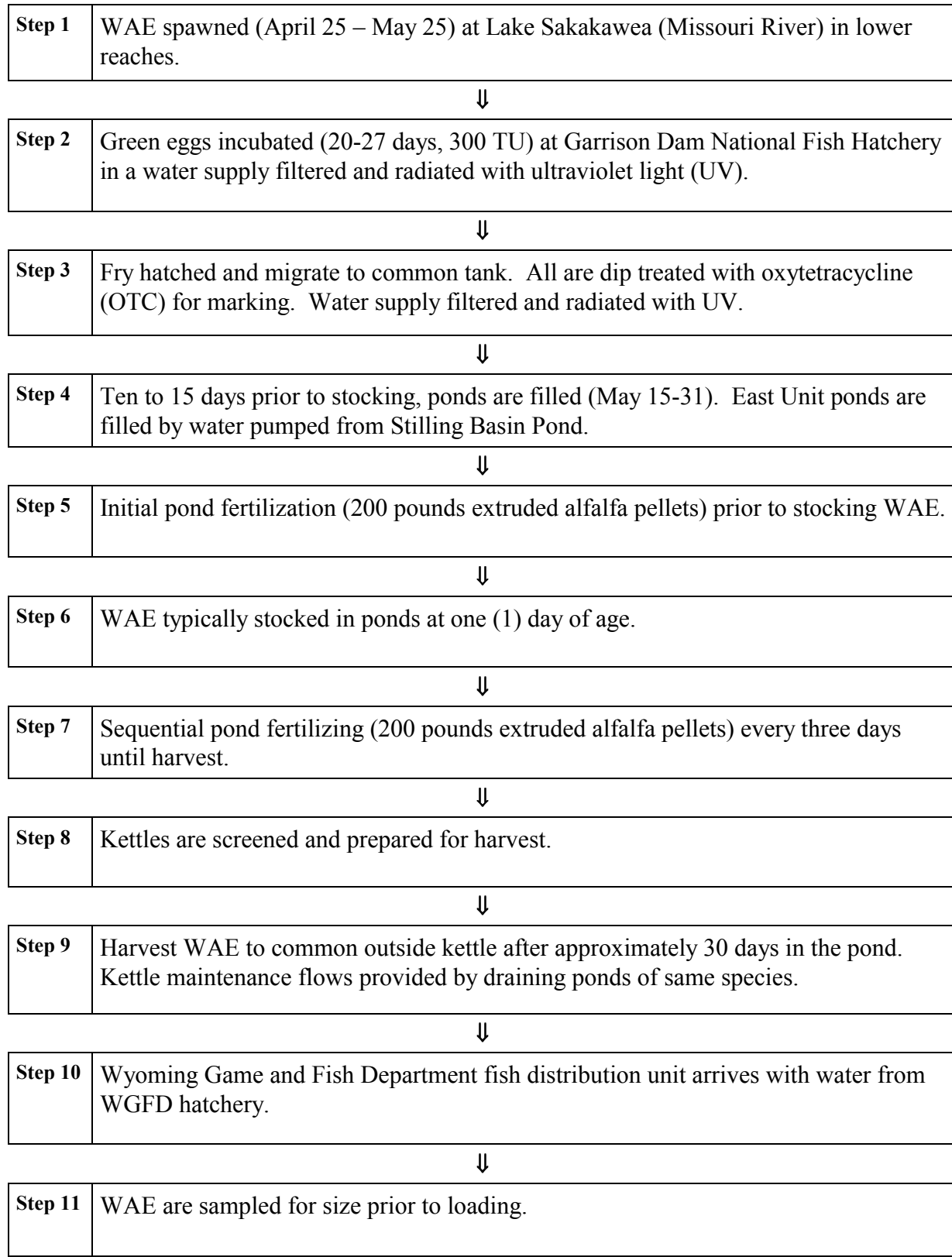
1. Species Description

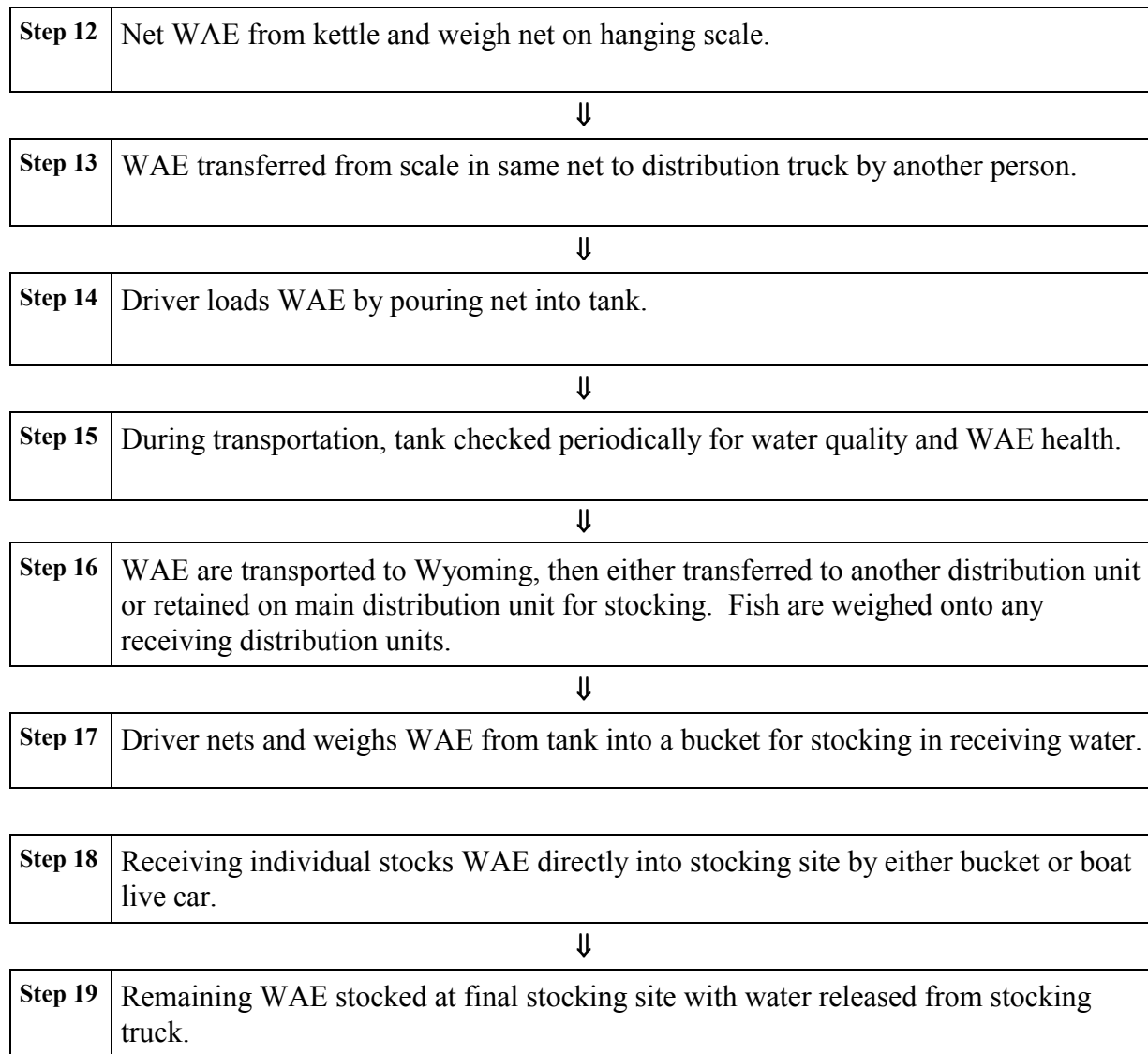
Hatchery Name:	Garrison Dam National Fish Hatchery
Hatchery Address:	Fish Hatchery Road Riverdale, ND 58565
Species of fish imported:	Walleye (<i>Stizostedion vitreum</i>)/ Species Code WAE
Cultured, wild harvested, or both:	Cultured
Harvest method:	Earthen ponds drained to common outside kettle
Method of distribution:	Wyoming Game and Fish Department fish distribution unit
Intended use:	Importation into the state of Wyoming for public fisheries management.
Risk Level Prior to HACCP:	<u>Level 6, Moderate Risk</u> – ANS Present In Drainage, But Not At Source (APPENDIX F).
Risk Level After HACCP:	<u>Level 2 –3, Low Risk</u> – depended if NTS present prior to loading and type of NTS present (APPENDIX F).

3. Past Stocking History*

* Refer to APPENDIX B for all WAE “Past Stocking History” from Garrison NFH. Past stocking history summarizes all WAE stocked from Garrison Dam NFH, West or East Pond Units not specifically identified under past stocking records.

3. Flow Diagram





5. Potential Hazards (List relevant species)

- A. Aquatic Nuisance Species (ANS) Plants. Curly-leaf pondweed (*Potamogeton crispus*)** found in Lake Sakakawea and Stilling Basin Pond, but not observed in production units. The plant may be present in the East Unit ponds since initial filling water is provided from the Stilling Basin Pond. Steps will be implemented to identify and remove any plant form from process (CONTACT FREQUENCY –VERY LOW).
- B. Aquatic Nuisance Species (ANS) Fish and Other Vertebrates.** None identified in immediate drainage (CONTACT FREQUENCY – NONE).
- C. Aquatic Nuisance Species (ANS) Invertebrates.** None identified in immediate drainage (CONTACT FREQUENCY – NONE)

D. Non-Target Species (NTS) Plants. Filamentous algae, not an issue (CONTACT FREQUENCY – VERY LOW).

E. Non-Target Species (NTS) Fish. **Yellow perch fingerling** may be present from initial pond filling for walleye production in the East Pond Unit. Presence is sporadic or non-existent, dependent on pond filling and spawning timetable of yellow perch in Stilling Basin Pond. Ponds filled during this period are easily identified and isolated from other production if YEP are present (CONTACT FREQUENCY – LOW).

F.

G. Non-Target Species (NTS) Amphibians. **Northern Leopard Frog** (*Rana pipiens*) and **Plains Spadefoot Toad** (*Scaphiopus bombifrons*) are only adult amphibians present by the East Pond Unit. Tadpoles are seldom observed during WAE harvest, but Northern Leopard Frog tadpoles may be present (CONTACT FREQUENCY – VERY LOW).

H. Non-Target Species (NTS) Invertebrates. No NTS invertebrates are present in the East Pond Units (CONTACT FREQUENCY –NONE).

H. Specific Pathogen of Concern and/or Other Health Concerns: No parasites are identified or noted on WAE fingerlings in the East Pond Unit (CONTACT FREQUENCY – EXTREMELY LOW).

4. Hazard Analysis Worksheet

A. ANS Hazard Analysis Worksheet

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential ANS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
All Steps	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant <u>Curly-leaf pondweed</u>	No	Curly-leaf pondweed in Stilling Basin, but not yet seen in production ponds	Examine Kettle and Nets for Macrophytes. Remove from Effluent Screen, Kettle, or Nets. <u>Refer to NTS Steps</u>	No

B. NTS Hazard Analysis Worksheet

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 1. WAE spawned (April 25 – May 25) at Lake Sakakawea (Missouri River) in lower reaches.)	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 2. Green eggs incubated (20-27 days, 300 TU) at Garrison Dam National Fish Hatchery in a water supply filtered and radiated with ultraviolet light (UV).	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 3. Fry hatched and migrate to common tank. All are dip treated with oxytetracycline (OTC) for marking. Water supply filtered and radiated with UV.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 4. Ten to 15 days prior to stocking, ponds are filled (May 15-31). West Unit ponds are filled from either penstock supply or pumped from common effluent collection below salmonid rearing.	Fish/Other Vertebrate <u>Salmonids</u>	No	Remote Possibility of Introduction	Possible Hazard Controlled at Subsequent Step	No
	Invertebrate	No	None Present		
	Plant	No	Very Remote Possibility of Introduction	Possible Hazard Controlled at Subsequent Step	No
	Parasites and Pathogens	No	None Present		
Step 5. Initial pond fertilization (200 pounds extruded alfalfa pellets) prior to stocking WAE.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 6. WAE typically stocked in ponds at one (1) day of age.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 7. Sequential pond fertilizing (200 pounds extruded alfalfa pellets) every three days until harvest.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		

B. NTS Hazard Analysis Worksheet (Continued)

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 8. Kettles are screened and prepared for harvest	Fish/Other Vertebrate	No	Fish May Migrate From Ditch to Kettle	Check and Clear Kettle Before Screening	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 9. Harvest WAE to common outside kettle after approximately 30 days in the pond. Kettle maintenance flows provided by draining ponds of same species.	Fish/Other Vertebrate	No	NTS Fish May Be Present in Kettle	Visual Inspection of Fish in Kettle	No
	Invertebrate	No	None Present		
	Plant	No	Algal Forms/Macrophyte May Be in Kettle	Remove from Effluent Screen or Kettle	No
	Parasites and Pathogens	No	None Present		
Step 10. Wyoming Game and Fish Department (WGFD) fish distribution unit arrives with water on truck from WGFD hatchery.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 11. WAE are sampled for size prior to loading.	Fish/Other Vertebrate	No	NTS Fish May Be Present in Kettle	Visual Inspection of Sampled Fish	Yes
	Invertebrate	No	None Present		
	Plant	No	Algal Forms/Macrophyte May Be in Kettle	Remove from Effluent Screen or Kettle	Yes
	Parasites and Pathogens	No	None Present		
Step 12. Net WAE from kettle and weigh net on hanging scale.	Fish/Other Vertebrate	No	NTS Fish May Be Present in Net	ID & Remove any NTS Vertebrates	No
	Invertebrate	No	None Present		
	Plant	No	Plant Form May be Present in Net	Remove any Plants from Net	No
	Parasites and Pathogens	No	None Present		
Step 13. WAE transferred from scale in same net to distribution truck by another person.	Fish/Other Vertebrate	No	NTS Fish May Be Present in Net	ID & remove any NTS Vertebrates before Unloading	No
	Invertebrate	No	None Present		
	Plant	No	Plant Form May be Present in Net	Remove any Plants before Unloading	No
	Parasites and Pathogens	No	None Present		

B. NTS Hazard Analysis Worksheet (Continued)

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 14. Driver unloads WAE by pouring net into tank.	Fish/Other Vertebrate	Yes	NTS Fish May Be Present in Net	If NTS of Concern present, run Each Net Over Sort Board before Loading into Unit	Yes
	Invertebrate	No	None Present		
	Plant	Yes	Plant Form May be Present in Net	Remove any Plant from Net before Unloading	Yes
	Parasites and Pathogens	No	None Present		
Step 15. During transportation, WAE are checked periodically for water quality and health.	Fish/Other Vertebrate	No	NTS Fish May Be in Tank	Remove any NTS Vertebrates from Tank if Possible	No
	Invertebrate	No	None Present		
	Plant	No	Plant Form May be Present in Tank	Remove any NTS Plants from Tank if Possible	No
	Parasites and Pathogens	No	None Present		
Step 16. WAE are transported to Wyoming and transferred to another distribution unit or retained on main distribution for stocking. Fish are weighed onto any receiving distribution units.	Fish/Other Vertebrate	No	NTS Fish May Be Present in Net	Visual Inspection of Sampled Fish. Sort Board Fish if NTS Identified	No
	Invertebrate	No	None Present		
	Plant	No	Plant Form May be Present in Tank	Remove any Plants from Net before Unloading	No
	Parasites and Pathogens	No	None Present		
Step 17. Driver nets and weighs WAE from tank into a bucket for stocking in receiving water.	Fish/Other Vertebrate	Yes	NTS Fish May Be Present in Net	Visual Inspection of Sampled Fish. Sort if NTS of Concern is Identified	Yes
	Invertebrate	No	None Present		
	Plant	Yes	Plant Form May be Present in Tank	Remove any Plants from Net before Unloading	Yes
	Parasites and Pathogens	No	None Present		

B. NTS Hazard Analysis Worksheet (Continued)

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 18. Receiving individual stocks bucket directly into reservoir.	Fish/Other Vertebrate	Yes	NTS Fish May Be Present in Bucket	If NTS ID'd At Step 12 & 17, Visual Review Of Bucket	No
	Invertebrate	No	None Present		
	Plant	No	Plant Form May be Present in Tank	Remove Any Plants From Fish Before Stocking	No
	Parasites and Pathogens	No	None Present		
Step 19. Remaining WAE stocked at final stocking site with water released from stocking truck.	Fish/Other Vertebrate	Yes	NTS Fish May Still Be Present in Distribution Tank	If NTS ID'd At Step 16 Or 17, Empty Tank Into Net And Run Remaining WAE Over Sort Board If NTS Is Of Concern	Yes
	Invertebrate	No	None Present		
	Plant	Yes	Plant Form May be Present in Tank	Remove Any Plants From Tank Before Unloading	Yes
	Parasites and Pathogens	No	None Present		

6. ANS-HACCP Plan Form – Preventative Measures

(1) Critical Control Point: Step 11. WAE are sampled for size prior to loading.	
(2) Significant Hazard(s): First opportunity to examine WAE for NTS vertebrates or possible presence of curly-leaf pondweed. If no NTS or aquatic plant present, risk level is reduced significantly and remainder of HACCP is for confirmation only.	
(3) Limits for Each Control Measure: Identify any NTS vertebrate or curly-leaf pondweed present. WGFD representatives informed of NTS prior to their arrival for loading.	
Monitoring	(4) What: If NTS or aquatic plant identified, further operations require focused HACCP due to increased risk level. Identified NTS vertebrate may be acceptable for destination and lower risk level after review of WGFD NTS Acceptance List (APPENDIX E, “Stocking Guide for Non-Target Species Management”).
	(5) How: If NTS vertebrate or ANS plant is identified in sampling WAE and a concern, additional examination of kettle required to determine extent of NTS or curly-leaf pondweed presence. Sorting and removal may be required if NTS not acceptable for destination, if curly-leaf pondweed is present; or kettle not accepted for importation.

7. HACCP Step Summary

Yellow perch fingerlings are the primary NTS fish identified in East Unit ponds. Introduction of yellow perch fry during the pond filling is sporadic or non-existent, dependent on pond filling and spawning timetable of the yellow perch in the stilling basin pond. Ponds filled during this period are easily identified and isolated from other production. Yellow perch fingerlings are easily identified, providing the option to reserve YEP kettles for stocking sites where the species is not a NTS of a concern (Appendix E) if no other NTS free kettles are available. Dependent on the individual stocking site numbers, any NTS in the truck load can be identified and removed during several control points and fully removed under three critical control points (Steps 14, 17 & 19) if species present are a issue and load is considered a high benefit for the fisheries.

Curly-leaf pondweed has yet to be seen in any rearing units at Garrison NFH. Typically, the short time frame (approximately 45 days) the ponds are filled is not conducive for development of any aquatic macrophyte. Critical control points outlining procedures for curly-leaf pondweed are preventative measures throughout the HACCP to further prevent introduction of any macrophyte.

ANS/NTS introduction with WAE from Garrison Dam National Fish Hatchery's East Pond Unit is considered a "low" concern due to the location and culture of the species. HACCP controls are only provided as preventative measures to be followed by FWS and WGFD personnel if ANS/NTS are encountered.