

## HACCP Step 1 – Activity Description

<b>Activity Description</b>	
Facility: Inks Dam National Fish Hatchery	Site:
Project Coordinator: Marc Jackson	Activity: Rearing and distribution of Northern strain largemouth bass for U.S. Fish and Wildlife Service Tribal Trust Responsibilities
Site Manager: Marc Jackson	
Address: 345 Clay Young Road Burnet, TX 78611	
Phone: 512-793-2474	

<b>Project Description</b> i.e. Who; What; Where; When; How; Why
<p>Fishery Resource Offices requests northern strain largemouth bass a year before production begins at the Inks Dam National Fish Hatchery (NFH). Requests are submitted to the Regional Office for prioritization with other production and fishery needs. After review, a production and stocking request is provided to the hatchery prior to the fish rearing season.</p> <p>The Project Leader and Assistant Project Leader direct the harvest of broodstock from holding ponds in early March to begin the rearing cycle. Broodstock are harvested by draining the holding ponds and moved to flow through raceways. Within two (2) to three (3) weeks, depending on temperature patterns, fish are sorted by sex and forty (40) pairs of the ripest fish are stocked in one spawning pond. The remainder of the broodstock are placed into an additional spawning pond. Most fish will spawn in three (3) days. About seventeen (17) days after brood fish are stocked fry collection begins. Schools of fry are collected with seines at night or during early morning hours, moved in twenty (20) gallon tubs to rearing ponds. Rearing ponds are filled and fertilized prior to fry being stocked. Fry usually are kept in these rearing ponds for three (3) weeks when they are harvested as 1.5 inch fingerlings and moved to indoor holding tanks to be trained on artificial feed. Water supplied to the holding tanks is a mixture of well and lake water. After three (3) weeks of feed training, these fish are moved to rearing ponds where artificial feeds are the main diet throughout the rest of the rearing cycle. Region 2 Fish pathologists perform disease certification on the largemouth bass in July or August of every year. The six (6) to eight (8) inch fish are usually harvested in November. Harvested fish are moved from rearing ponds to raceways in a hauling unit equipped with oxygen and easy loading / unloading access. The phase II fish are graded, sorted, weighed and treated, if needed, before they are loaded for distribution in two (2) or three (3) days. Two (2) days prior to loading for distribution fish are put on well water and treated with salt. The larger (6-8 inch) largemouth bass are easier to separate from non-target species. Requesting Fishery Resource Offices meet the distribution truck, prior to stocking, and perform additional spot checks to further ensure compliance to this HACCP plan.</p>

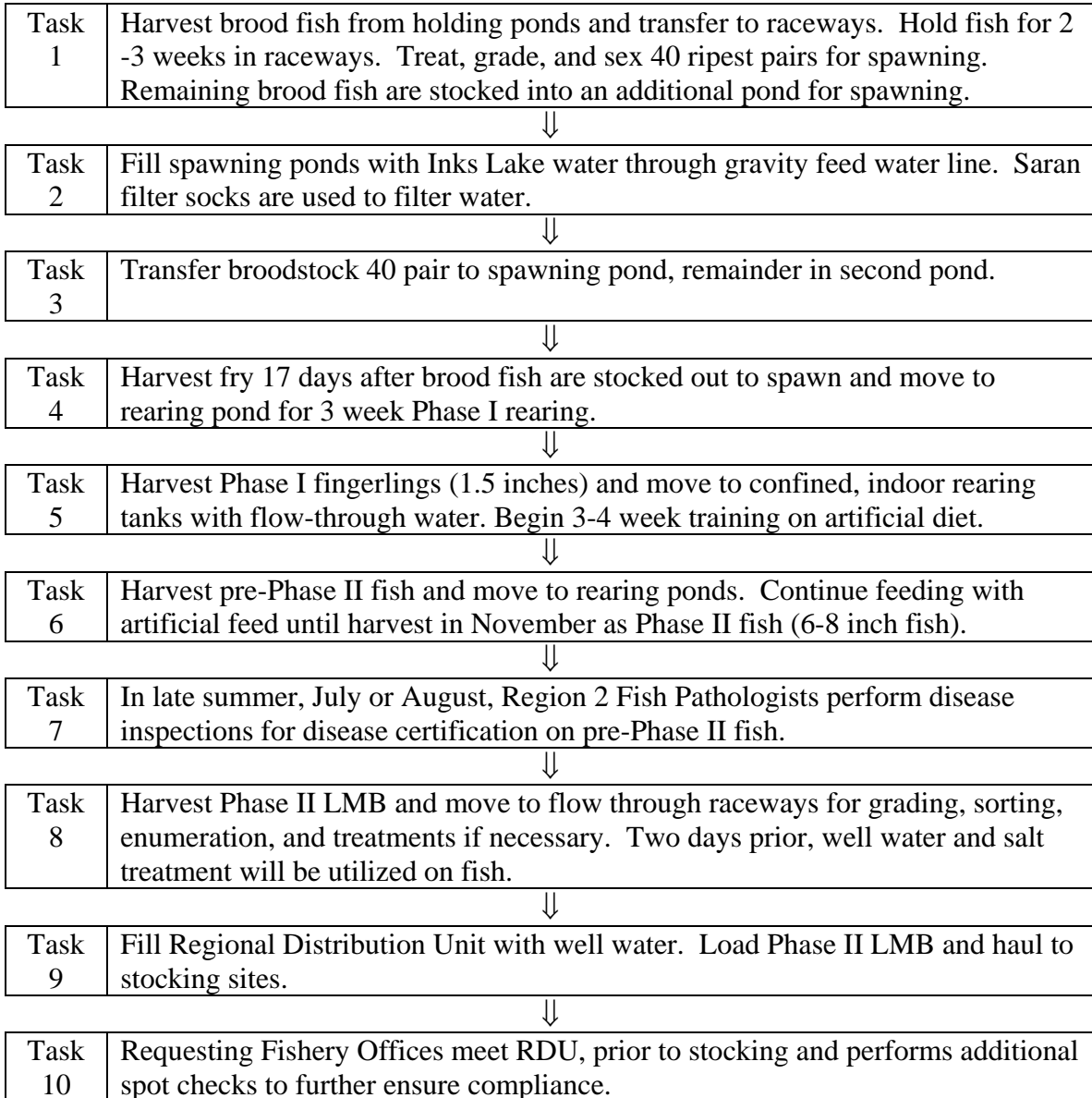
## HACCP Step 2 – Identify Potential Hazards

(to be transferred to column 2 of HACCP Step 4 – Hazard Analysis Worksheet)

<b>Hazards: Species Which May Potentially Be Moved/Introduced</b>
<p>Vertebrates: Guadalupe bass (<i>Micropterus treculi</i>), Logperch (<i>Percina caprodes</i>), Gizzard shad (<i>Dorosoma cepedianum</i>), White bass (<i>Morone chrysops</i>), Bluegill (<i>Lepomis Macrochrius</i>), warmouth (<i>Lepomis gulosus</i>), Green sunfish (<i>Lepomis cyanellus</i>), common carp (<i>Cyprinus carpio</i>), smallmouth buffalo (<i>Ictiobus bubalus</i>), redbreast sunfish (<i>Lepomis auritus</i>), bullfrogs (<i>Rana catesbeiana</i>), leopard frog (<i>Rana chricahuensis</i>), red-ear turtles (<i>Trachemys scripta elegans</i>), various tadpoles and aquatic snakes</p>
<p>Invertebrates: Miscellaneous aquatic insects, Asian clam (<i>corbicula sp.</i>), crawfish</p>
<p>Plants: Potamogenton (<i>Potamogenton distinctus</i>), water star grass (<i>Schollera graminea</i>), brushy pond weed (<i>najas flexilis</i>), various algae (<i>chava</i>, <i>pithophora</i>, <i>hydrodicton</i>)</p>
<p>Other Biologics (e.g. disease, pathogen, parasite): Largemouth bass virus</p>
<p>Others (e.g. construction materials, etc.): None</p>

### HACCP Step 3 – Flow Diagram

Flow Diagram Outlining Sequential Tasks to Complete Activity/Project  
 Described in HACCP Step 1 – Activity Description  
 (to be transferred to column 1 of the HACCP Step 4 – Hazard Analysis Worksheet)



### HACCP Step 4 - Hazard Analysis Worksheet

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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<b>Task 1</b> Harvest brood fish from holding ponds and transfer to raceways. Treat, grade, and sex if necessary.	Vertebrates Other fish species, reptiles, amphibians	No	Adult fish handled individually and easily separated from ANS		No
	Invertebrates Aquatic insects (spp.), Asian clam, crawfish	No	Adult fish handled individually and held in well water for up to three weeks		No
	Plants Aquatic macrophytes, various algae (spp.)	No	Adult fish handled individually and held in flow through raceway with well water		No
	Others LMB virus	Yes	LMB from Inks Lake could be infected with the LMB virus.	Yearly inspections by Region 2 fish pathologists	No

<b>Task 2</b> Spawning ponds are filled with Inks Lake water through gravity feed water lines. Saran filter socks filter this water.	Vertebrates Other fish species, reptile, amphibians	Yes	ANS species could travel with intake water into ponds	Filters need to be utilized	Yes
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish.	Yes	Insects, clam and other nuisance species could travel into ponds with intake water	Filters need to be utilized	Yes
	Plants Aquatic macrophytes, various algae (spp.)	Yes	Aquatic plant and algae could travel into ponds with intake water	Filters need to be utilized	Yes
	Others LMB virus	Yes	LMB from Inks Lake could be infected with virus	Yearly inspections by Region 2 fish pathologists	No

### Hazard Analysis Worksheet (continued)

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Task 3 Transfer broodstock from flow through raceways to spawning ponds.	Vertebrates Reptiles, amphibians, other fish species	No	Adult fish individually hand fed and easily separated from non-target species.		No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	No	Adult fish individually handled with large mesh nets.		No
	Plants Aquatic macrophytes, various algae (spp.)	No	Plant material algae will be flushed out by flow through raceway.		No
	Others LMB virus	Yes	LMB From Inks Lake could be infected with LMB virus	Yearly inspections by Region 2 fish pathologists.	No

Task 4 Harvest fry from spawn ponds in approximately 17 days and move to fertilized rearing ponds	Vertebrates Reptiles, amphibians, other fish species	Yes	ANS species could have entered pond and collected with fry in seine.	Use filter socks and visually examine seined species. Remove by hand.	No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	Yes	Species could be collected during seining procedure	Use filter socks and visually examine seined species. Remove by hand.	No
	Plants Aquatic macrophytes, various algae (spp.)	Yes	Plant material could be captured by seine.	Visually examine seine and transfer tubs and remove any by hand.	No
	Others LMB virus	Yes	LMB from Inks Lake could be infected with LMB virus.	Yearly inspections by Region 2 fish pathologists	No

### Hazard Analysis Worksheet (continued)

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Task 5 Harvest Phase I fingerlings (1.5 inches) and move to confined, indoor rearing tanks with flow-through water. Begin 3-4 week training on artificial diet.	Vertebrates Reptiles, amphibians, other fish species	Yes	ANS impossible to separate at harvest	Visually remove larger vertebrates once in confined indoor holding tanks	No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	Yes	ANS impossible to separate at harvest	Visually remove insects once in confined indoor holding tanks	No
	Plants Aquatic macrophytes, various algae (spp.)	Yes	Aquatic vegetation impossible to separate at harvest	Visually remove plant fragments. Algae (spp.) are washed out of holding tanks with flow through water.	No
	Others LMB virus	Yes	LMB from Inks Lake could be infected with LMB virus.	Yearly inspections by Region 2 fish pathologists	No

Task 6 Harvest pre-Phase II fish and move to rearing ponds. Continue feeding with artificial feed until harvest in November as Phase II fish (6-8 inch fish).	Vertebrates Reptiles, amphibians, other fish species	No	Species removed during confinement in indoor holding tanks		No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	No	Removed by fingerlings feeding in rearing tanks		No
	Plants Aquatic macrophytes, various algae (spp.)	No	Removed by water flow		No
	Others LMB virus	Yes	LMB from Inks Lake could be infected with LMB virus.	Yearly inspections by Region 2 fish pathologists	No

### Hazard Analysis Worksheet (continued)

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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<b>Task 7</b> In late summer, July or August, Region 2 Fish Pathologists perform disease inspections for disease certification on pre-Phase II fish.	Vertebrates Reptiles, amphibians, other fish species	No	LMB fingerlings feed on any fry entering ponds		No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	No	LMB fingerlings feed on invertebrates		No
	Plants Aquatic macrophytes, various algae (spp.)	No	Removed by water flow		No
	Others LMB virus	Yes	LMB from Inks Lake could be infected with LMB virus.	Yearly inspections by Region 2 fish pathologists	Yes

<b>Task 8</b> Harvest Phase II LMB and move to flow through raceways for grading, sorting, enumeration, and treatments if necessary.	Vertebrates Reptiles, amphibians, other fish species	No	Fish harvested with large mesh nets and ANS will be separated		No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	No	Fish harvested with large mesh nets and invertebrates would pass through mesh		No
	Plants Aquatic macrophytes, various algae (spp.)	Yes	Plant fragments removed by hand and rinsed through net mesh	Water flow in raceways will remove plant fragments and algae (spp.) after 24 hours	Yes
	Others LMB virus	Yes	LMB from Inks Lake could be infected with LMB virus.	Yearly inspections by Region 2 fish pathologists	No

### Hazard Analysis Worksheet (continued)

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Task 9 Fill Regional Distribution Unit with well water. Load Phase II LMB and haul to stocking sites.	Vertebrates Reptiles, amphibians, other fish species	No	Well water is used to fill RDU and LMB loaded with large mesh nets. Visual inspections performed.		No
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	No	Well water is used to fill RDU and LMB loaded with large mesh nets. Visual inspections performed		No
	Plants Aquatic macrophytes, various algae (spp.)	No	Well water is used to fill RDU and LMB loaded with large mesh nets. Visual inspections performed		No
	Others LMB virus	No	Yearly inspections completed and certified by harvest time.		No

Task 10 Requesting Fishery Offices meet RDU, prior to stocking and performs additional spot checks to further ensure compliance.	Vertebrates Reptiles, amphibians, other fish species	Yes	ANS could have passed through other control points.	Visual inspections using random samples.	Yes
	Invertebrates Aquatic insect (spp.), Asian clam, crawfish	Yes	ANS could have passed through other control points.	Visual inspections using random samples.	Yes
	Plants Aquatic macrophytes, various algae (spp.)	Yes	ANS could have passed through other control points.	Visual inspections using random samples.	Yes
	Others LMB virus	No	Yearly inspections by Region 2 fish pathologists		No

**HACCP Step 5 – HACCP Plan Form**

**HACCP Plan Form**

(all CCP's or "yes's" from column 6 of HACCP Step 4 – Hazard Analysis Worksheet)

Critical Control Point (CCP)	Significant Hazard(s)	Limits for each Control Measure	Monitoring				Evaluation & Corrective Action(s) (if needed)	Supporting Documentation (if any)
			What	How	Frequency	Who		
<b>Task 2</b> Fill spawning ponds with Inks Lake water through gravity feed water line.	Plants, vertebrates and invertebrates could enter pond.	Saran filter socks are used on all intakes	That filters are working	Visually inspect.	Twice daily.	Staff	Ponds will be marked for alternative use if filter fails.	

<b>Facility:</b>	<b>Activity:</b>
<b>Address:</b>	
<b>Signature:</b>	<b>Date:</b>
<b>HACCP Plan was followed.</b>	

### HACCP Step 5 – HACCP Plan Form

<b>HACCP Plan Form</b>								
(all CCP's or "yes's" from column 6 of HACCP Step 4 – Hazard Analysis Worksheet)								
<b>Critical Control Point (CCP)</b>	<b>Significant Hazard(s)</b>	<b>Limits for each Control Measure</b>	<b>Monitoring</b>				<b>Evaluation &amp; Corrective Action(s) (if needed)</b>	<b>Supporting Documentation (if any)</b>
			<b>What</b>	<b>How</b>	<b>Frequency</b>	<b>Who</b>		
<b>Task 7</b> Region 2 Fish Pathologists perform health certification	LMB virus or other virulent bass diseases.	Yearly inspections for various fish diseases performed by Region 2 Fish Pathologists.	Fish health inspections	Performed by Region 2 Fish Pathologists	Annually	Region 2 Fish Pathologists	Alternative use for infected fish or they are destroyed as per directive from Regional Office.	Fish health certification

<b>Facility:</b>	<b>Activity:</b>
<b>Address:</b>	
<b>Signature:</b>	<b>Date:</b>
<b>HACCP Plan was followed.</b>	

**HACCP Step 5 – HACCP Plan Form**

<b>HACCP Plan Form</b>								
(all CCP's or "yes's" from column 6 of HACCP Step 4 – Hazard Analysis Worksheet)								
<b>Critical Control Point (CCP)</b>	<b>Significant Hazard(s)</b>	<b>Limits for each Control Measure</b>	<b>Monitoring</b>				<b>Evaluation &amp; Corrective Action(s) (if needed)</b>	<b>Supporting Documentation (if any)</b>
			<b>What</b>	<b>How</b>	<b>Frequency</b>	<b>Who</b>		
<b>Task 8</b> LMB moved to raceways	Plants could be collected and removed	Water flows fast enough to move plants through raceway	Water flow rates	Visually inspect	Twice daily	Staff	Increase flow if plants have not been removed. Retain fish until all plants are removed.	

<b>Facility:</b>	<b>Activity:</b>
<b>Address:</b>	
<b>Signature:</b>	<b>Date:</b>
<b>HACCP Plan was followed.</b>	

**HACCP Step 5 – HACCP Plan Form**

<b>HACCP Plan Form</b>								
(all CCP's or "yes's" from column 6 of HACCP Step 4 – Hazard Analysis Worksheet)								
<b>Critical Control Point (CCP)</b>	<b>Significant Hazard(s)</b>	<b>Limits for each Control Measure</b>	<b>Monitoring</b>				<b>Evaluation &amp; Corrective Action(s) (if needed)</b>	<b>Supporting Documentation (if any)</b>
			<b>What</b>	<b>How</b>	<b>Frequency</b>	<b>Who</b>		
<b>Task 10</b> Distribution truck meets management biologist for stocking	ANS could have passed through control points	Statistically valid samples will be used for each tank of LMB	Ensure samples are performed to established methods	Observation and participation	At each stocking site	Onsite management biologist	Management alternatives for loads with ANS found in RDU	

<b>Facility:</b>	<b>Activity:</b>
<b>Address:</b>	
<b>Signature:</b>	<b>Date:</b>
<b>HACCP Plan was followed.</b>	