

FISH HATCHERY ANALYSIS



10/27/2014

Vermont Fish and Wildlife Department



Analysis of the Vermont fish culture program on an individual hatchery basis. Information includes locations, background and economics of fish culture, staffing, fish production information, and importance of the specific facilities.

Fish hatchery analysis

VERMONT FISH AND WILDLIFE DEPARTMENT

General Information

The Vermont Fish and Wildlife Department runs five state fish hatcheries. In all, they produce 7 different species and approximately 2 million fish to be stocked in Vermont waters annually. Fish stocked from the fish hatcheries help accomplish two major goals:

1. Stocked fish help restore fish populations.
2. Stocked fish increase angling opportunities.

According to the 2011 United States Fish & Wildlife Service National Survey of Hunting, Fishing, and Wildlife-Associated Recreation coupled with the 2010 Vermont Angler Survey, the Vermont fish hatchery program generates approximately \$31.6 M worth of economic benefit to the State of Vermont. Given that the fish hatchery program runs off of a \$3.3 M budget with a 60% federal match ratio (\$1.98M), the State of Vermont's annual return on investment ratio tops nearly 23:1.

The fish hatcheries are very diverse in terms of age, location, and design, but all work together as an integrated whole. For example, although the Salisbury Fish Hatchery does not directly produce a significant amount of fish to be stocked, they provide eggs to all other fish culture stations which are then grown out to be stocked into State waters. Without the cooperative nature of the fish culture stations, the Department fish culture program would not run nearly as efficiently as it currently does. Three of the five state hatcheries are on the National Historic Register with the oldest hatchery coming into operation in 1891. The hatcheries are a destination site for visitors seeing between 15,000 and 20,000 annually. Additionally, the fish hatchery program supports the Children's Fishing Program; which partners with over 80 organizations annually to provide over 9,000 children, elderly, and challenged individuals an opportunity to experience and learn about fishing.

Making a more efficient fish culture program

Staff at Vermont Fish and Wildlife Department have been working diligently to reduce the operating budget of the fish hatchery program. One specific way staff have done this is through the utilization of the State Resource Management Revolving Fund (SRMRF) loan program. This program provides loan funding for fish culture energy efficiency projects. Subsequently, when the project is completed, the loan is paid off with realized energy savings. Upon full payment of the loan, the Department realizes a significant decrease in operating expenses due to the SRMRF loan project. Just over the last three years, the Department has realized \$80,000 of energy savings in the fish culture program due to the SRMRF loan program. New projects are being investigated and proposed to Buildings and General Services (BGS) to help further decrease the fish culture station's operating budget and energy dependence.

Bald Hill Fish Culture Station



Location / Hours

Bald Hill Fish Culture Station
60 Abbott Hill Road
Newark, VT 05871
Phone: (802) 467-3660

Visitor Hours: 8:00am-3:30pm (7 days/ week)
Visitor Center: No
Public facilities: Yes
National Historic Register: No

Staff

3 permanent staff

Budget

FY14 Personal Services -	\$266,108
FY14 Operating -	\$80,414
FY14 Total Expenditures =	\$346,522

General Information

The Bald Hill Fish Culture Station, located in Vermont's scenic Northeast Kingdom, is one of Vermont's most versatile fish hatcheries. In addition to raising coldwater fish species like trout and salmon the Bald Hill Fish Culture Station also produces walleye, a coolwater fish species. The hatchery is also the home of Vermont's landlocked Atlantic salmon broodstock which are artificially spawned to supply other state and federal hatcheries with eggs.

History / Importance

- Originally opened in 1952 as a trout / salmon fish hatchery
- Today, Bald Hill has also taken on production of walleye for inland stocking (specifically Chittenden Reservoir and Island Pond).
- Only fish hatchery that raises landlocked Atlantic salmon broodstock which are spawned to supply other state and federal hatcheries with eggs.
- Sole producer of walleye for inland stocking due to the isolation of the Ed Weed Fish Hatchery to Lake Champlain stockings for fish health concerns.

Species Raised

- | | | |
|-----------------|------------------------------|-------------|
| ➤ Brown Trout | ➤ Landlocked Atlantic Salmon | ➤ Steelhead |
| ➤ Rainbow Trout | | ➤ Walleye |

Photos



"Raceways" hold a number of trout and salmon species that are raised at Bald Hill every year.

Vermont Fish & Wildlife staff hold "broodstock" walleye which will be spawned to provide walleye fry for inland waters.



Bennington Fish Culture Station



Location / Hours

Bennington Fish Culture Station
110 Hatchery Road
Bennington, VT 05201
Phone: (802) 447-2844

Visitor Hours: 8:00am-3:30pm (7 days/ week)
Visitor Center: Yes
Public facilities: Yes
National Historic Register: Yes

Staff

4 permanent staff
1-2 temporary staff

Budget

FY14 Personal Services -	\$336,323
FY14 Operating -	\$214,982
FY14 Total Expenditures =	\$551,305

General Information

The Bennington Fish Culture Station, located only 2 miles outside of downtown Bennington, is Vermont's largest fish hatchery. Built in 1916, the hatchery produces brook, brown, and rainbow trout including some of Vermont's "trophy trout". The facility's interesting and informative activities as well as the visitor center make it an attraction for visitors of all ages. Visitors can interact with the fish and possibly get a glimpse of great blue heron, osprey, otters, or mink.

History / Importance

- Built in 1916, Bennington Fish Hatchery is listed on the National Register of Historic Sites.
- Bennington is Vermont's largest fish hatchery raising the most pounds of fish in the fish culture section.
- The visitor center and fish viewing ponds make the hatchery a major tourist attraction.
- In addition to raising yearling trout, Bennington Fish Hatchery also produces large 2-year old brown and rainbow "trophy trout" which can grow in excess of 15 inches!

Species Raised

- Brook Trout
- Brown Trout
- Rainbow Trout

Photos



The "trophy trout" produced at Bennington Hatchery can grow in excess of 15 inches!

Bennington Fish Hatchery is Vermont's largest fish culture station raising trout for stocking into Vermont waters.



Ed Weed Fish Culture Station at Grand Isle



Location / Hours

Ed Weed Fish Culture Station at Grand Isle
14 Bell Hill Road
Grand Isle, VT 05458
Phone: (802) 372-3171

Visitor Hours: 8:00am-4:00pm (7 days/ week)
Visitor Center: Yes
Public facilities: Yes
National Historic Register: No

Staff

8 permanent staff
1 temporary

Budget

FY14 Personal Services -	\$558,471
FY14 Operating -	\$506,194
FY14 Total Expenditures =	\$1,064,665

General Information

Located in the picturesque island community of Grand Isle, the Ed Weed Fish Culture Station, which began raising fish in 1991, is Vermont's newest state fish hatchery. Using the lake as its water source, the hatchery produces coldwater and coolwater fish solely for Lake Champlain. Complete with a self-guided tour and aquarium-based visitor center, the Ed Weed hatchery is fun for all ages. The hatchery is also the home of the Family Fishing Festival, which is held every summer on Free Fishing Day.

History / Importance

- Named after the Director of Engineering and Construction for the Vermont Department of State Buildings. Ed worked for more than 15 years with legislators, politicians, and state agencies to secure funds, develop, and construct this state of the art facility.
- Began raising fish in 1991 (Vermont's newest fish hatchery).
- Produces six different species of fish to be stocked into Lake Champlain.
- Staff host the Family Fishing Festival on Free Fishing Day every summer at the hatchery which teaches kids (and parents!) how to fish.

Species Raised

- | | |
|---|---|
| <ul style="list-style-type: none"> ➤ Brown Trout ➤ Rainbow Trout ➤ Steelhead | <ul style="list-style-type: none"> ➤ Lake Trout ➤ Landlocked Atlantic Salmon ➤ Walleye |
|---|---|

Photos



Vermont Fish & Wildlife Staff display some of the "feral" Lake Champlain landlocked Atlantic salmon that will be "spawned" to provide future salmon for "the big lake".

Walleye collected from Lake Champlain rivers are "spawned" to provide small walleye fry and fingerlings that will be stocked back into the lake.



Roxbury Fish Culture Station



Location / Hours

Roxbury Fish Culture Station
3696 Roxbury Road
Roxbury, VT 05669
Phone: (802) 485-7568

Visitor Center: No
Public facilities: Yes
Visitor Hours: Closed to visitation pending
rebuild
National Historic Register: Yes

Staff

3 permanent staff

Budget

FY14 Personal Services -	\$197,926
<u>FY14 Operating -</u>	<u>\$56,282</u>
FY14 Total Expenditures =	\$254,208

General Information

Located 8 miles south of Northfield, Vermont, the Roxbury Fish Culture Station is Vermont's oldest fish hatchery and is on the National Register of Historic Sites. Prior to flooding from Tropical Storm Irene the Roxbury hatchery produced brook and rainbow trout for stocking across all of Vermont. Nestled in the valley of the Third Branch of the White River, the hatchery is a perfect setting for tourists, picnickers, bicyclists, and families.

History / Importance

- Vermont's oldest fish hatchery (began operation in 1891).
- Listed on the National Register of Historic Sites.
- Home to the 2-year old "trophy" brook trout which can grow in excess of 12 inches!
- Produce over 5,000 fish for the Children's Fishing Program.

Species Raised

- Brook Trout

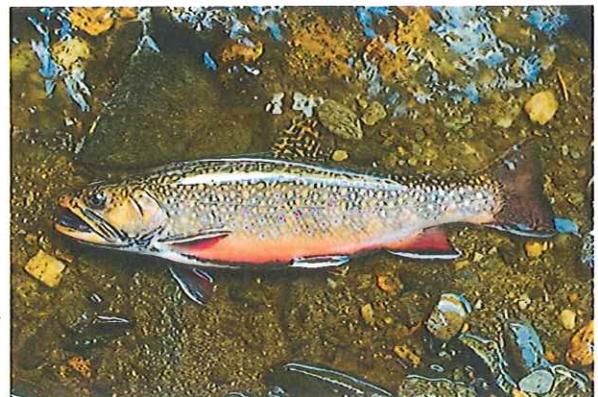
- Rainbow Trout

Photos



In olden times, fish from the Roxbury Fish Culture Station were transported by horse and wagon in milk cans to be stocked into Vermont waters.

The Roxbury hatchery was one of the main producers of brook trout which were stocked into Vermont waters.



Salisbury Fish Culture Station



Location / Hours

Salisbury Fish Culture Station
646 Lake Dunmore Road
Salisbury, VT 05769
Phone: (802) 352-4371

Visitor Hours: 8:00am-3:00pm (7 days/ week)
Visitor Center: No
Public facilities: Yes
National Historic Register: Yes

Staff

4 permanent staff

Budget

FY14 Personal Services -	\$323,138
FY14 Operating -	\$137,228
FY14 Total Expenditures =	\$460,366

General Information

Tucked 7 miles south of Middlebury, VT on Route 53, the Salisbury Fish Culture Station is Vermont's broodstock station, mating male and female fish to produce approximately 5 million trout eggs annually for other state fish hatcheries. In order for the other hatcheries to grow fish to a larger size, the Salisbury hatchery can use a light-controlled room to make the fish spawn earlier in the year than normal. By providing other hatcheries with eggs earlier in the year, the young fish in turn have more time to grow; thus allowing the fish culture stations to grow larger fish. Salisbury has the largest fish of the hatcheries so if you want to see big fish, this is the place to go!

History / Importance

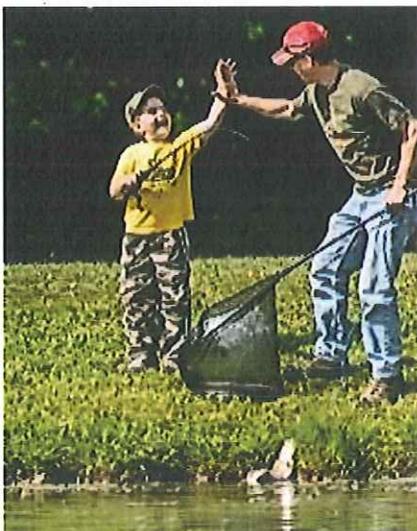
- One of Vermont's historic hatcheries listed on the National Register of Historic Sites (coming into operation in 1931).
- Vermont's "broodstock station", producing approximately 5 million trout eggs annually to other fish hatcheries.
- Raises and spawns 5 different types of salmon and trout for Vermont state waters.
- Has the largest fish of all of the hatcheries. If you want to see big fish, Salisbury is the spot!

Species Raised

- Brook Trout
- Brown Trout
- Rainbow Trout
- Steelhead
- Lake Trout

Photos

Salisbury fish hatchery produces approximately 5 million trout eggs annually for other state hatcheries!



The Salisbury fish hatchery is a family fun hot spot where kids and parents can tour the facility and help feed the fish!

Roxbury Fish Hatchery Rebuild



Anticipated Project Cost: Approx. \$5,000,000

Anticipated FEMA funding: \$350,000 to ???

Design Status: Complete

Construction Status: Awaiting Funding Route

Anticipated Construction Timeline: 1 full year

General Information:

- Roxbury Fish Hatchery was destroyed by Tropical Storm Irene in August, 2011.
- The facility is valuable for both its historical significance, and the high quality trout it produced up to 2011.
- The annual economic impact of the fish produced at the Roxbury Fish Hatchery is conservatively estimated to be \$2.4 M (according to the 2006 US Fish & Wildlife Service Survey of Hunting, Fishing, and Wildlife-Associated Recreation and the 2010 Vermont Angler Survey). This economic value is a primary economic benefit and does not include a ripple effect (i.e. jobs created).
- In May, 2012, FEMA originally agreed to fund a more modern design for the hatchery to meet water quality discharge "Codes & Standards" as administered through the US EPA Clean Water Act and the Vermont Water Quality Standards.
- On March 17, 2014, FEMA reversed their decision to fund necessary upgrades to the facility through the Clean Water Act and Vermont Water Quality Standards citing that the upgrades were not eligible according to FEMA criteria. The State has appealed this decision to FEMA Region 1 and plans to appeal Region 1's appeal denial to FEMA National Headquarters before November 10, 2014 for the full rebuild cost.

Why Rebuild?

- Roxbury is Vermont's oldest fish hatchery (began operating in 1891).
- Since the facility's destruction, VTFWD has realized a 30% production shortage of yearling trout necessary for fish stocking.
- Roxbury was the only VTFWD hatchery to produce "Trophy" brook trout. These fish are large brook trout highly sought after by anglers.
- The facility was an ecotourism destination hosting over 2,000 visitors annually.
- The hatchery produced approximately over 5,000 trout for the Children's Fishing Program. This program partners with local outdoor interest clubs to promote and introduce children to fishing.
- According to the original deed of the hatchery property, if the Department would cease raising fish at Roxbury, then the property would revert back to the original heirs of the estate. Given that the VTFWD District Office is located on the property, losing the hatchery would also mean losing the district office.



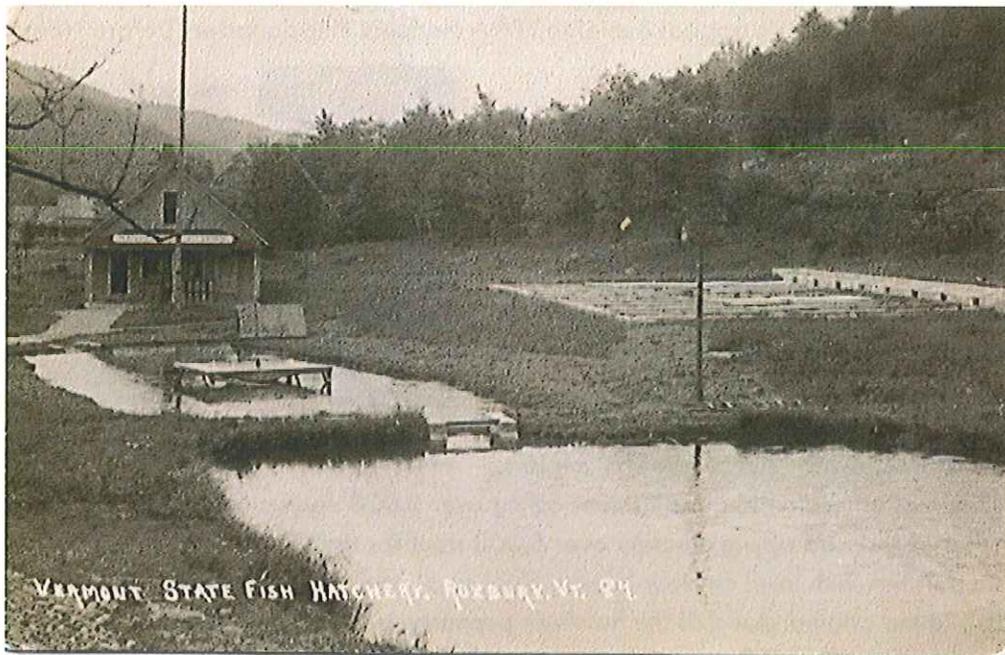
Methods Already Being Employed

Increasing production at other Vermont-owned fish culture stations

As a result of the loss of the Roxbury Fish Hatchery, other Vermont-owned fish culture stations have expanded fish production to partially compensate for the loss. For example, the Bennington Fish Culture Station, currently Vermont's largest production hatchery, has been producing more pounds of fish on an annual basis than it ever has in the past. Given Vermont's limited groundwater supply, which is a necessity for adequate fish culture, other Vermont fish culture stations have taken on a dangerous production level to supplement Roxbury's production. Further expanding production capacity at the other Vermont fish culture stations is therefore not an adequate, feasible alternative to rebuilding the Roxbury Fish Hatchery.

Work with other partner agencies (i.e. US Fish & Wildlife Service fish culture stations) to regain hatchery production numbers.

In response to inland fish production shortages, VTFWD entered into a cooperative agreement with the US Fish & Wildlife Service in August, 2012 to increase production for Vermont inland waters. Currently, the Eisenhower National Fish Hatchery located in Pittsford, VT is producing approximately 18,000 pounds of brook trout to stock into Vermont waters. Moreover, one important aspect that the State of Vermont has evaluated when viewing specific federal partner options (i.e. possible ownership of White River National Fish Hatchery) is the operational cost of facilities. One of the specific advantages of the Roxbury Fish Hatchery is that the facility is inexpensive to operate due primarily to its gravity flow water source (which doesn't require pumping) and the temperature of its water (which does not require heating or chilling). As such, increased operational costs from assuming ownership of another facility can quickly outweigh the capital construction costs of rebuilding a much less expensive fish hatchery like Roxbury.





ONE COMPANY
Many SolutionsSM

SUMMARY

RECONSTRUCTION AND IMPROVEMENTS
ROXBURY FISH CULTURE STATION
100% SUBMITTAL

Date : March 11, 2013

HDR#186734

OPINIONS OF PROBABLE COST

TOTAL CONSTRUCTION BASE BID BUDGET \$4,033,000

BASE BID

A. GENERAL SITEWORK				\$1,183,865
<i>Civil</i>		Subtotal:		\$425,599
<i>Structural and Architectural</i>		Subtotal:		\$0
<i>Plumbing</i>		Subtotal:		\$523,513
<i>Heat & Vent</i>		Subtotal:		\$17,886
<i>Electrical</i>		Subtotal:		\$216,868
B. INFLUENT TREATMENT BUILDING				\$349,013
<i>Civil</i>		Subtotal:		\$0
<i>Structural and Architectural</i>		Subtotal:		\$80,953
<i>Plumbing</i>		Subtotal:		\$204,523
<i>Heat & Vent</i>		Subtotal:		\$13,919
<i>Electrical</i>		Subtotal:		\$49,618
C. UPPER & LOWER TANK PAVILIONS				\$1,223,512
<i>Civil</i>		Subtotal:		\$0
<i>Structural and Architectural</i>		Subtotal:		\$769,637
<i>Plumbing</i>		Subtotal:		\$403,072
<i>Heat & Vent</i>		Subtotal:		\$0
<i>Electrical</i>		Subtotal:		\$50,803
D. EFFLUENT TREATMENT				\$888,878
<i>Civil</i>		Subtotal:		\$16,052
<i>Structural and Architectural</i>		Subtotal:		\$438,879
<i>Plumbing</i>		Subtotal:		\$375,201
<i>Heat & Vent</i>		Subtotal:		\$13,415
<i>Electrical</i>		Subtotal:		\$45,331
E. ADA COMPLIANCE				\$176,829
<i>Civil</i>		Subtotal:		\$140,359
<i>Structural and Architectural</i>		Subtotal:		\$36,470
<i>Plumbing</i>		Subtotal:		\$0
<i>Heat & Vent</i>		Subtotal:		\$0
<i>Electrical</i>		Subtotal:		\$0
Base Bid Subtotal				\$3,822,096
Estimating Contingency, 2% (Unforeseen Rock)				\$76,442
Mobilization, 1.5%				\$57,331
Insurance & Bonds, 2%				\$76,442
Construction Base Bid Total				\$4,032,312
Bidding & Construction Contingency, 10%				\$403,231
Total Base Project Budget				\$4,435,543

4% construction inflation rate (as per engineer)

2018 cost - \$5.6M

Roxbury Hatchery Reconstructio

Burke, Jim

Sent: Monday, January 28, 2013 2:49 PM

To: Miller, Adam; Whalen, Jeremy

Hi Adam and Jeremy- I haven't got any hard proposal numbers from anyone yet. Meg Armstrong suggested using 20 hr/wk and \$70/hr. I think more like 24 hr/wk. I would estimate that the project as shown on the plans would take about 50 weeks to build out completely. I would estimate Facilities Engineering Involvement at 8 hr for pre-bid, 8 hr for pre-construction, 24 hr/wk for the first 3 weeks, 8 hr/wk for 46 weeks and 24 hours for the last week, a total of 464 hours. Using these assumptions I come up with the following cost estimate:

Construction Review Services

24 hr/wk x 50 wks x \$70/hr =	\$84,000
Expenses and Testing	= <u>\$16,000</u>
Total Contract Costs	= \$100,000

Facilities Engineering Services

464 hr x \$70/hr =	\$32,480
Expenses/Misc. =	<u>\$7,520</u>
Total FED Costs =	\$40,000

Total Construction Engineering/Review Services = \$100,000 + \$40,000 = \$140,000

This is my first go round. I will tighten up as I get more information. It does appear to be in the right ball park.

-Jim

State of Vermont
Agency of Natural Resources
Department of Environmental Conservation
Facilities Engineering Division
Agency Facilities Section

James J. Burke, P.E., Chief Facilities Engineer
1 National Life Drive, Main 1
Montpelier, VT 05620-3510

Phone: (802) 777-3396

Program	Project category	Location	Project Description	Estimated Cost	Prior Funding	Balance needed	Comments	FY16	FY17
Hatcheries FY16-17	Project category	Location	Project Description	Estimated Cost	Prior Funding	Balance needed	Comments		
Hatcheries	Maintenance	SA	Replace original FCS windows with energy efficient, SHPO approved windows In some cases windows are rotted and are also a safety concern for staff and visitors.	\$67,500.00	\$90,000.00	\$67,500.00	Partially completed - 45 windows left at \$1,500/window minimum (low bid/high quantity)	\$67,500.00	
Hatcheries	Trou/Salmon	BN	Anchor Ice Line - Anchor ice building up in the stream intake during cold weather events is a persistant problem at BNFCS. Build up of anchor ice restricts water flow and if not manually removed will result in the loss of water flow to fish species. A request of capital funds to install a well water line to the intake will eliminate the need for continued manual removal of ice on a 24/7 basis and eliminate human error of complications involving anchor ice.	\$30,000.00	\$0.00	\$30,000.00		\$30,000.00	
Hatcheries	Maintenance	BH	Replace Hatchery Building Roof - Main hatchery building roof is leaking / rusting through. Also the current design of the roof does not allow for snow shedding or the excessive snow load that BHFCs sees. A placeholder of \$100,000 put in; however, bidding / actual prices will come by the end of December	\$100,000.00	\$0.00	\$100,000.00		\$100,000.00	
Hatcheries	Infrastructure	RX	Roof replacement on shop building, replace with standing seam green metal roof - The shop roof at Roxbury is a metal roof and has rusted to the point that the sub-roof is showing signs of rot and leaking.	\$15,000.00	\$0.00	\$15,000.00		\$15,000.00	
Hatcheries	Biosecurity	EW	UV disinfection at Ed Weed FCS. Current system is working, but the potential of major catastrophic system failure is real based on the current conditions of the units. UV upgrade is essential. Electronic monitoring is non existent; there is no monitored breaker protection which could lead to bank, multiple banks and/or unit failure. There is no electronic bulb/ballast protection. This is a potential fire hazard. This assessment was confirmed by John Tracy of Sun Ray Technologies who worked for Ideal Horizons and worked on building the existing units. John came out to the hatchery on a sight visit for supplying UV ballasts and quartz tubes. He indicated that to rebuild electronics would be cost prohibitive and retrofits with new technologies into the antiquated systems would be incompatible.	\$350,000.00	\$0.00	\$350,000.00		\$350,000.00	
Hatcheries	Trou/Salmon	BH	Early trout/salmon rearing system - Overall the need of the fish culture section is increased early rearing space. Expanding BHFCs's early rearing potential will allow for less transfer of fish and more egg transport.	\$40,000.00	\$0.00	\$40,000.00			\$40,000.00
Hatcheries	Maintenance	SA	Quonset Building for storage - The need for storage space at Salisbury is of the utmost importance.	\$10,000.00	\$0.00	\$10,000.00			\$10,000.00
Hatcheries	Maintenance	SA	Remodel / Expansion of FCS Bathroom - Current bathroom is old and in desperate need of renovation	\$20,000.00	\$0.00	\$20,000.00			\$20,000.00
Hatcheries	Maintenance	EW	Separate breaker for pumps. Pumps # 1 and # 3 currently share the same breaker which can potentially compromise both pumps in any failure situation.	\$75,000.00	\$0.00	\$75,000.00			\$75,000.00
Hatcheries	Outreach	EW	Upgrade facility Visitors Center. The visitors center is need of modern displays that more accurately represent the facility operations, programs and mission. Upgrades would include touch screens monitors, digital displays, aquarium refurbishing	\$25,000.00	\$0.00	\$25,000.00			\$25,000.00
Hatcheries	Maintenance	EW	Concrete Epoxy 2,400 sq. ft. per raceway 20 raceways- Treatment of eroding surfaces and preventative of future structural damage.	\$170,000.00	\$0.00	\$170,000.00	Waiting for new cost estimate from CA Reed.		\$170,000.00
Hatcheries	Maintenance	EW	Dredging of Polishing Pond. Has not been done since facility began operation. Monitored sludge/silt depths warrant this action.	\$65,000.00		\$65,000.00	Waiting for a new cost estimate from AE Diving		\$65,000.00
Hatcheries	Maintenance	SA	Hatchery Pond Repairs - Bank erosion of the hatchery discharge pond is becoming more and more evident. Remediation work would include dredging and rip rap installation as well as possible bird netting in the future.	\$10,000.00	\$0.00	\$10,000.00			\$10,000.00
Hatcheries	Maintenance	SA	Modifications to Feed Storage Area - Modifications would include a loading dock and knocking out walls and doorways to to allow ease of access for loading fish food	\$20,000.00	\$0.00	\$20,000.00			\$20,000.00
			Subtotal	\$997,500.00	\$90,000.00	\$997,500.00			
Special FY16-17	Project category	Location	Project Description	Estimated Cost	Prior Funding	Balance needed	Comments		
Special	Discharge	SA	Discharge improvement Renovations	\$11,200,000.00	\$0.00	\$11,200,000.00	Not included in Grand Total		
			Subtotal	\$11,200,000.00	\$0.00	\$11,200,000.00	Not included in Grand Total		