Authorizations and Permits for Protected Species (APPS)

File #: 23397
Title: Renew: Lemhi Effectiveness Monitoring

Applicant Information

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City, State, Zip: Salmon, ID 83467
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Project Information

File Number: 23397
Application Status: Submitted
Project Title: Renew: Lemhi Effectiveness Monitoring
Project Status: Renewal
Previous Federal or State Permit/Authorization: 22643
Permit/Authorization Requested: State 4(d) coverage
Where will activities occur? Idaho
State department of fish and game/wildlife: Project will be carried out by IDFG
Research Timeframe:
Start: 01/01/2020
End: 12/31/2020
Sampling Season/Project Duration: Ongoing project

Project Description

Purpose: Monitor the effectiveness of habitat conservation measures that are being implemented in the Lemhi River Sub-basin.

Description: The Lemhi Effectiveness Monitoring project monitors the response of habitat and fish to a suite of conservation measures that are being implemented in the Lemhi Sub-basin. The conservation measures are focused on 3 objectives: 1) improve fish passage, 2) protect and/or enhance riparian vegetation, and 3) improve instream habitat. The effects on fish production and productivity, namely Chinook salmon, steelhead, and bull trout, of the various measures designed to meet these objectives is being evaluated by the Integrated Status and Effectiveness Monitoring Program (ISEMP). The ISEMPS study is being implemented by the National Marine Fisheries Service.
The Intensively Monitored Watershed (IMW) program operates with its own set of objectives, including objectives that are specifically focused to better understand the effects of various habitat alterations and tributary reconnects on fish populations. While these two programs operate in the same system, the IMW project was designed to minimize duplication of effort. The Lemhi weir trap and the Hayden Creek (IMW) trap sample juveniles from different spawning aggregates. However, the IMW program does use information from the Lemhi weir trap. The lower Lemhi (IMW) trap does sample fish tagged at both upstream traps, but its objective is to assess juvenile production in the lower river and to estimate the total number of fish out of the system, which could not be done with either of the other traps alone or in tandem.

The IMW and ISEMP programs work in close collaboration despite having different goals and objectives. The Hayden fish trap is funded through both ISEMP and IMW. All trapping data is shared between IMW and ISEMP to meet specific objectives of each program. Roving fish surveys are also a collaborative effort between IMW and ISEMP. Typically, both ISEMP and IMW field crews collect information on the distribution and abundance of anadromous and resident fish. This joint effort increases overall data collection events, resulting in larger sample sizes and increasing PIT tagging efforts for both programs.

**Supplemental Information**

**Methods:**

Fish may be sampled by backpack electrofishing. Sampled juvenile chinook salmon will be either immediately released after identification and enumerating, or be temporarily anesthetized with Aqui-S 20E or MS-222 then identified, enumerated then released. Juvenile steelhead will be temporarily anesthetized with Aqui-S 20E then identified, enumerated, measured, weighed then released. Adult steelhead in spawning condition may be observed by researcher from the streambank or while wading for the purpose of documenting escapement into small tributaries. The use of Aqui-S has been verified to have minimal effects of sampled fish, as compared to MS-222. The Anadromous Fish Screen Program has been registered as a field trial investigator on U.S. Fish and Wildlife Services's [http://www.aadapinad.com/](http://www.aadapinad.com/).

Several methods will be used to implement the Lemhi Effectiveness Monitoring project. Fish will be captured at numerous sites on the mainstem river and tributaries using seining (sn erding) and/or electrofishing. Captured fish will be anesthetized, PIT tagged, and released at the same location. Fish will also be captured using a screw trap on the mainstem Lemhi River near the mouth and at a location above the Hayden Creek confluence (Lemhi Weir trap site). A rotary screw trap will also operate on lower Hayden Creek and the lower mainstem Lemhi River. Backpack electrofishing gear will be used to capture and PIT tag fish in order to meet sample
Electrofishing gear will be used to capture and PIT tag fish in order to meet sample size objectives prescribed in the ISEMP study design that enables rigorous assessment of changes in fish productivity.

An adult weir will estimate abundance and migration timing of fluvial bull trout in upper Hayden and Bear Valley creeks. A protocol is attached to address NOAA's guidelines for operating a weir in waters containing salmonids listed under the ESA. The location of the weirs are upstream of Chinook spawning habitat in Hayden Creek and no Chinook salmon have only been observed during the highest adult spawner abundance years in Bear Valley Creek.

We will use NOAA Fisheries minimum size PIT tagging guidelines of tagging all fish 60 to 69 mm with 9mm PIT tags and fish 70mm or greater with 12 mm PIT tags.

**Intentional Lethal Take:** Not Applicable

**Anticipated Effects on Animals:**

Backpack electrofishing methodologies have been demonstrated to occasionally be injurious or lethal to fish, even when following recommended protocol to minimize injury and death. Subjecting fish to handling for identification, measuring and enumeration has also been demonstrated to occasionally be injurious or lethal to fish. Fish will be temporarily displaced from their habitat during electrofishing activities. Fish will be temporarily subjected to stress while being observed during snorkeling activities or during spawning ground surveys. The use of Aqui-S has been verified to have minimal effects of sampled fish, as compared to MS-222. The Anadromous Fish Screen Program has been registered as a field trial investigator on U.S. Fish and Wildlife Services's [http://www.aadapinad.com/](http://www.aadapinad.com/).

Potential migration delay and any post PIT tagging effects.

**Measures to Minimize Effects:**

In all cases, staff will minimize impacts to listed fish. All electrofishing follows guidelines established by NOAA Fisheries for sampling (minimum settings required to safely sample fish) and handling is minimized to reduce stress, abrasion and injury. Juvenile steelhead will be anesthetized to minimize stress while handling to acquire length and weight information. Electrofishing efforts are suspended when water temperatures reach 18 degrees C. Observations of fish while snorkeling and during spawning surveys will avoid disturbance as much as possible. When using Screw traps, all personnel PIT tagging fish will be trained by experienced department staff and will follow written tagging protocols. Fish will be processed once per day during morning hours when water temperatures are cooler. To minimize collection stress, all fish collection, handling, and tagging activity will be curtailed when water temperatures reach 17º C, as recommended by PTAGIS, or when any other occurrence suggests fish are being stressed. Prior to electrofishing, water conductivity will be measured and equipment will be adjusted as necessary (intensity, frequency, pulse width) to reduce affects to fish. Electrofishing will be carried out in water no greater than one meter in depth. When fish exhibit galvanonarcosis, power will be discontinued and fish will be netted and placed in a bucket. No more than 50 fish will be placed per bucket, and water will be replaced...
regularly. All fish will be collected using soft mesh nets and will be held temporarily to recover from anesthetic.

**Disposition of Tissues:** Tissue samples will be collected from a sub-sample of Snake River steelhead and spring/summer chinook salmon for genetic analysis. Tissue samples from juveniles will be 1 mm x 1mm. Adult samples may be from opercle punches with standard size paper punch. These will be stored and analyzed at the IDFG Eagle Genetics laboratory or at other regional laboratories, depending on availability.

**Federal Information**

No Federal funds, personnel or permits will be used.

**Location/Take Information**

**Freshwater Location**

**Research Area:** Pacific Ocean  **State:** ID  
**Sub Basin (4th Field HUC):** Lemhi  
**Waterbody Name:** Lemhi River and Tributaries  
**Location Description:** Fish surveys (using a backpack electrofisher) will be conducted in the mainstem Lemhi River and tributaries of the Lemhi River.

**Take Information**

* **Line Number:** 1  
  **Species:** Salmon, Chinook  
  **Listing Unit/Stock:** Snake River spring/summer-run (NMFS Threatened)  
  **Production/Origin:** Natural  
  **Lifestage:** Juvenile  
  **Sex:** Unknown  
  **Expected Take:** 2000  
  **Indirect Mortality:** 25  
  **Takes Per Animal:**  
  **Take Action:** Capture/Handle/Release Fish  
  **Observe/Collect Method:** Electrofishing, Backpack  
  **Procedure:** Anesthetize  
  **Run:** Spring/Summer  
  **Transport:** N/A  
  **Begin Date:** 01/01/2020  
  **End Date:** 12/31/2020

* **Line Number:** 2  
  **Species:** Salmon, Chinook  
  **Listing Unit/Stock:** Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 2250
Indirect Mortality: 25
Takes Per Animal:
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Electrofishing, Backpack
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 4
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 3500
Indirect Mortality: 80
Takes Per Animal:
Take Action: Capture/Handle/Release Fish
Observe/Collect Method: Electrofishing, Backpack
Procedure: Anesthetize
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 5
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 3500
Indirect Mortality: 35
Takes Per Animal:
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Electrofishing, Backpack
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

Freshwater Location

Research Area: Pacific Ocean  State: ID
Sub Basin (4th Field HUC): Lemhi
Waterbody Name: Lemhi River
Location Description: Screw trap is located approximately 3 miles upstream of the confluence with the Salmon River.

Take Information
* Line Number: 1
  Species: Salmon, Chinook
  Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
  Production/Origin: Natural
  Lifestage: Juvenile
  Sex: Unknown
  Expected Take: 12150
  Indirect Mortality: 117
  Takes Per Animal: Capture/Handle/Release Fish

Take Action: Capture/Handle/Release Fish
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 2
  Species: Salmon, Chinook
  Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
  Production/Origin: Natural
  Lifestage: Juvenile
  Sex: Unknown
  Expected Take: 12175
Indirect Mortality: 116
Takes Per Animal:
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

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* Line Number: 5
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Spawned Adult/ Carcass
Sex: Unknown
Expected Take: 10
Indirect Mortality: 0
Takes Per Animal:
Take Action: Observe/Sample Tissue Dead Animal
Observe/Collect Method: Trap, Screw
Procedure: Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

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* Line Number: 6
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 1550
Indirect Mortality: 15
Takes Per Animal:
Take Action: Capture/Handle/Release Fish
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 7
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 4100
Indirect Mortality: 41
Takes Per Animal: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 10
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Spawned Adult/ Carcass
Sex: Unknown
Expected Take: 200
Indirect Mortality: 0
Takes Per Animal: Observe/Sample Tissue Dead Animal
Observe/Collect Method: Spawning surveys
Procedure: Tissue Sample Fin or Opercle
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020
Freshwater Location

Research Area: Pacific Ocean    State: ID
Sub Basin (4th Field HUC): Lemhi
Waterbody Name: Lemhi River
Location Description: Screw trap is located just upstream of Hayden Creek.

Take Information
* Line Number: 1
  Species: Salmon, Chinook
  Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
  Production/Origin: Natural
  Lifestage: Juvenile
  Sex: Unknown
  Expected Take: 11000
  Indirect Mortality: 110
  Takes Per Animal:
  Take Action: Capture/Handle/Release Fish
  Observe/Collect Method: Trap, Screw
  Procedure: Anesthetize
  Run: Spring/Summer
  Transport: N/A
  Begin Date: 01/01/2020
  End Date: 12/31/2020

* Line Number: 2
  Species: Salmon, Chinook
  Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
  Production/Origin: Natural
  Lifestage: Juvenile
  Sex: Unknown
  Expected Take: 6000
  Indirect Mortality: 60
  Takes Per Animal:
  Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
  Observe/Collect Method: Trap, Screw
  Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
  Run: Spring/Summer
  Transport: N/A
  Begin Date: 01/01/2020
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<thead>
<tr>
<th>Line Number</th>
<th>Species</th>
<th>Listing Unit/Stock</th>
<th>Production/Origin</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Expected Take</th>
<th>Indirect Mortality</th>
<th>Takes Per Animal</th>
<th>Take Action</th>
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<tbody>
<tr>
<td>5</td>
<td>Salmon, Chinook</td>
<td>Snake River spring/summer-run (NMFS Threatened)</td>
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<td>Juvenile</td>
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<td>Capture/Mark, Tag, Sample Tissue/Release Live Animal</td>
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<td>Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle</td>
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<td>Run: Spring/Summer</td>
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<td>Steelhead</td>
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Lifestage: Juvenile
Sex: Unknown
Expected Take: 2000
Indirect Mortality: 20
Takes Per Animal:
Take Action: Capture/Handle/Release Fish
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 8
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 5000
Indirect Mortality: 50
Takes Per Animal:
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

Freshwater Location
Research Area: Pacific Ocean  State: ID
Sub Basin (4th Field HUC): Lemhi
Waterbody Name: Hayden Creek and Bear Valley Creek
Location Description: Hayden Creek weir is located in the Boundary Flat area of Hayden Creek. The Bear Valley Creek weir is located 400 meters upstream of the confluence with Hayden Creek.

Take Information
* Line Number: 1
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Adult
Sex: Unknown
Expected Take: 5
Indirect Mortality: 1
Takes Per Animal: 
Take Action: Capture/Handle/Release Fish
Observe/Collect Method: Weir (only if associated with fish handling)
Procedure:
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 2
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 20
Indirect Mortality: 1
Takes Per Animal: 
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Weir (only if associated with fish handling)
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 3
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Listed Hatchery Adipose Clip
Lifestage: Adult
Sex: Unknown
Expected Take: 2
Indirect Mortality: 0
Take Information

* Line Number: 1
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 10000
Indirect Mortality: 100
Takes Per Animal: Capture/Handle/Release Fish
Take Action: Capture/Handle/Release Fish
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

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* Line Number: 2
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 3500
Indirect Mortality: 50
Takes Per Animal:
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Trap, Screw
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

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* Line Number: 3
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 500
Indirect Mortality: 5
Takes Per Animal:
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Seine, Beach
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

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* Line Number: 6
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Spawned Adult/ Carcass
Sex: Unknown
Expected Take: 100
Indirect Mortality: 0
Takes Per Animal:
Take Action: Observe/Sample Tissue Dead Animal
Observe/Collect Method: Spawning surveys
Procedure: Tissue Sample Fin or Opercle
Run: Spring/Summer
* Line Number: 7
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Spawned Adult/ Carcass
Sex: Unknown
Expected Take: 25
Indirect Mortality: 0
Takes Per Animal: 0
Take Action: Observe/Sample Tissue Dead Animal
Observe/Collect Method: Spawning surveys
Procedure:
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 10
Species: Steelhead
Listing Unit/Stock: Snake River Basin (NMFS Threatened)
Production/Origin: Natural
Lifestage: Juvenile
Sex: Unknown
Expected Take: 500
Indirect Mortality: 5
Takes Per Animal: 0
Take Action: Capture/Mark, Tag, Sample Tissue/Release Live Animal
Observe/Collect Method: Seine, Beach
Procedure: Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 11
Species: Steelhead

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<th>Sex</th>
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<th>Observe/Collect Method</th>
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<td>12</td>
<td>Steelhead</td>
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<td>Natural</td>
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<td>12/31/2020</td>
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<td>Steelhead</td>
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<td>01/01/2020</td>
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</table>
Takes Per Animal:
Take Action: Observe/Sample Tissue Dead Animal
Observe/Collect Method: Trap, Screw
Procedure: Tissue Sample Fin or Opercle
Run: Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

* Line Number: 14
Species: Salmon, Chinook
Listing Unit/Stock: Snake River spring/summer-run (NMFS Threatened)
Production/Origin: Natural
Lifestage: Spawned Adult/ Carcass
Sex: Unknown
Expected Take: 10
Indirect Mortality: 0
Takes Per Animal:
Take Action: Observe/Sample Tissue Dead Animal
Observe/Collect Method: Trap, Screw
Procedure: Tissue Sample Fin or Opercle
Run: Spring/Summer
Transport: N/A
Begin Date: 01/01/2020
End Date: 12/31/2020

Project Contacts
Responsibility Party: Stacey Feeken
Primary Contact: Stacey Feeken
Principal Investigator: Jeff DiLuccia

Other Personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>Role(s)</th>
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<tbody>
<tr>
<td>Jeff DiLuccia</td>
<td>Co-Investigator</td>
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<td>Paddy Murphy</td>
<td>Co-Investigator</td>
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</table>

Collector Comments: Staff of IDFG and Pacific States Marine Fisheries Commission

Attachments
Status

Application Status: Submitted
Date Submitted: November 1, 2019
Last Date Archived: November 1, 2019

• State 4(d) coverage
  
  Current Status: N/A  Status Date:
  Expire Date:

Analyst Information:
Rob  Phone: (503)231-2314
Clapp Fax: (503)230-5441
Email: robert.clapp@noaa.gov

Modification Requests
This section is currently empty.

Reports
This section is currently empty.