State of California
DEPARTMENT OF FISH AND GAME

Caples Lake Fish Rescue, 2008

A Cooperative Project Between El Dorado Irrigation District Trout Unlimited, California Sport Fishing Protection Alliance, and California Department of Fish and Game

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List of Acronyms

BK	Brook trout (*Salvelinus fontinalis*)
BN	Brown trout (*Salmo trutta*)
CS	Incident Command Staff
CSPA	California Sport Fishing Protection Alliance
e-boats	Electrofishing boats
e-fishers	Backpack electrofishers
EID	El Dorado Irrigation District
FPB	Fisheries Program Branch
GIS	Global Information Systems
GPS	Global Positioning Systems
IAP	Incident Action Plan
ICP	Incident command post
ICS	Incident Command System
LT	Lake trout (*Salvelinus namaycush*)
NCR	North Central Region (Region 2)
R-1	Northern Region (Region 1)
R-3	Bay Delta Region (Region 3)
RT	Rainbow trout (*Oncorhynchus mykiss*)
SA	Staging Area
SSP	Site safety plan
TU	Trout unlimited
WNDR	Wisconsin Department of Natural Resources

1.0 Introduction:

Situated along Highway 89, Caples Lake is a valuable road-side sport fishery in Alpine County. Caples Lake has excellent shoreline access, a boat ramp, and boat rentals, and is also a popular ice fishing destination in winter months. The California Department of Fish and Game (Department) supplements existing wild trout populations with stocked fish under both put and take and put and grow fisheries management strategies. Approximately 15,000 pounds of fish are stocked into Caples Lake annually. The Department stocks catchable size brook trout (BK) *Salvelinus fontinalis*, rainbow trout (RT) *Oncorhynchus mykiss*, brown trout (BN) *Salmo trutta*, as well as fingerling lake trout (LT) *Salvelinus namaycush*. Additionally, Alpine County stocks approximately 500 pounds of catchable and trophy sized RT just before special fishing events at the lake. Non-game fish species in Caples Lake include Tahoe suckers *Catostomus tahoensis*, speckled dace *rhinichthys osculus*, Lahontan redside *Richardsonius egregius*, and Tui chub *Gila bicolor*.

Creel surveys conducted in 2005 show that Caples is a heavily utilized and very successful sport fishery (Rowan, 2008). Of the 400 anglers interviewed in 2005, 93% were satisfied with their fishing experience. The dominant catch in 2005 was rainbow trout comprising 74% of the catch. Caples has also become known as a trophy BN and LT fishery with fish over 10 pounds caught by anglers every year.

On July 1, 2008 the El Dorado Irrigation District (EID) declared the need to conduct emergency repairs to the outlet of the dam on Caples Lake (Appendix A). On July 21 2008, EID began to draw down the reservoir to minimum pool to facilitate repairs to the outlet (Tables 1 and 2). As a result of the draw down, water levels were predicted to be below the pre-dam level of approximately 600 acre-feet. A bathymetric survey showed the remaining pool would have an average depth of 7 feet and a maximum depth of 10-15 feet. The depth would be diminished by as much as 3-4 feet by stream flow releases and winter freeze, raising concerns of impacts to the sport fishery. In particular, the Department and the public were concerned with potential impacts to trophy BN and LT fisheries resources which are both high value and difficult or impossible to readily replace.

After negotiations between the Department, EID, Trout Unlimited (TU), the California Sport Fishing Protection Alliance (CSPA) and many concerned anglers and citizens from California and Nevada, EID agreed to implement a fish restocking program (Appendix B), install a temporary bladder dam to increase storage capacity to 1200 acre-feet and fund the Department to conduct a fish rescue at Caples Lake. The Department agreed to evaluate the potential of an incidental rescue in the dewatered areas between the bladder dam and main dam outlet if necessary.

On August 25, 2008, the initial fish rescue commenced with the goal of removing as many fish as possible, targeting mainly large or “trophy” game fish. The initial rescue operation was led by the Department and funded by EID with volunteer assistance coordinated by TU and CSPA. An incidental fish rescue was conducted on September

22, 2008, as the last of the water was released between the bladder dam and the main dam outlet. The two fish rescues relocated approximately 25,000 fish from Caples Lake to Silver Lake in Amador County and Red Lake in Alpine County.

2.0 Rescue Planning:

2.1 ICS

The Incident Command System (ICS) was utilized for the rescue efforts and a command staff flow chart (Figure 1) was developed. The ICS is a nationally standardized, on-scene incident management concept that allows for standardized communication and a top down modular organizational structure (FEMA https://www.fema.gov/incident-command-system-resources

2.2 Draft Options

The Department drafted a list of four rescue options (Appendix C) that could accomplish the goal of saving as many fish as possible, particularly trophy BN and LT, and still be cost effective for the Department and EID. The list of draft rescue options discussed within the Department and EID ranged from a single day effort with singular capture methods and a few volunteers, to a heavily staffed multi-day operation with multiple capture methods.

2.3 Rescue Incident Action Plan

EID elected to fund option number four of the draft rescue options, a heavily staffed multi-day operation with multiple capture methods. To facilitate the rescue, an Incident Action Plan (IAP) (Appendix D) and a Site Safety Plan (SSP) (Appendix E) were developed. The IAP covered five days and three nights of staff time with day one being set aside for travel and mobilization of the Staging Area (SA) and Incident Command Post (ICP), and day five allotted for demobilization and travel. On-the-water fish rescue operations were scheduled to start on the morning of day two and proceed continuously for 72 hours until the morning of day five. The IAP was devised with the understanding that adaptation would be necessary as the project progressed and the most effective means of capture would be augmented if possible while the least effective would be eliminated. As part of the original negotiations with EID, CSPA and TU it was agreed that a second one day fish rescue to remove fish trapped between the bladder dam and the dam outlet would remain an option and be evaluated by the Department based on the results of the first rescue. The second rescue would be coordinated with EID, TU and CSPA for access and volunteers, and would be funded and staffed by the Department.

2.4 Costs

A reimbursable contract with EID (Appendix F) was developed to cover Department expenses and personnel time spent on the initial fish rescue. The Department was reimbursed $95,438.01 (Appendix G) for expenses and personnel time spent on the initial rescue. In addition to the amount reimbursed to the department, EID funded all lodging and per diem for staff and volunteers at a cost of approximately $45,000.

A significant amount of personnel time and resources were used preparing for the rescue prior to the contract being finalized with EID. Because these actions occurred prior to

having a signed contract in place the Department could not seek reimbursement for approximately $50,000 in personnel costs.

The second rescue was funded solely by the Department at a cost of approximately $15,000 in staff and operating expenses. In addition, the expense of replacing approximately $5,000 in lost or damaged equipment was not reimbursed. The total cost for both rescue efforts was approximately $210,438.00 of which approximately $70,000 was borne by the Department.

2.5 Staging Area and ICP

The IAP required a staging area (SA) for the significant amount of equipment necessary for the rescue. The primary site selected for the SA was a large gravel bar on the eastside of the lake near the old PG&E lake-tenders cabin (Figure 3). This site had good access for vehicles and boats and deep enough water to bring the net pens into shore. The access road from highway 89 to the SA was located between two blind corners so EID contracted a flagging crew to control highway traffic while vehicles entered and exited the SA.

The Caples Lake Resort parking lot (Figure 3) was selected as the primary ICP. The Caples Lake Resort is located far enough away from the SA not to interfere with the rescue operation, yet close enough to maintain radio contact with the operations staff, has an area to locate a travel trailer with a consistent power supply, and has a parking area for staff and volunteers to use while checking in and out as required by ICS.

The second rescue operation was conducted at the main dam area and did not require a formal ICP. The previous SA was utilized; however, the water was much lower so vehicles were able to access the bladder dam area using a road created by EID. Hatchery trucks for fish transfer utilized the access road to the main dam. There was a significant climb up the dam for individuals transferring fish from the water to the hatchery trucks, but it was the best available option.

2.6 Timing

The bladder dam was installed on August 20, 2008 and releases were approximately 150 CFS. The first rescue was scheduled to begin on August 25, 2008 when the lake level would be at approximately 9,000 acre feet. It was estimated that the newly exposed shoreline would still be solid enough to get equipment in and out of the SA at that water level. Waiting any later would increase the risk of soft sediments being exposed preventing launching and retrieval of boats. Prior to the planned rescue date, repeated visits were made to the SA to check the site for suitability and determine if additional equipment was needed to insure boat and hatchery truck access.

The logistics for a second rescue continued to be evaluated as the first operation proceeded. EID and the Department coordinated closely up until the instillation of the bladder dam and the final release of water and crews from both agencies were prepared to get to the site to relocate any stranded fish in a timely manner. Based on this monitoring

it was agreed that the best date for the final release of water and the second fish rescue was September 22, 2008.

3.0 Resource Identification:

3.1 Equipment Acquisition

Because of the large scope of the rescue operation and the relatively short time for implementation, it was necessary to begin gathering equipment and supplies before the final IAP was approved and the contract with EID finalized. The scale of the operation required the Department to mobilize resources from multiple off-site locations statewide. All boats and other equipment were staged at the North Central Region (NCR) office in Rancho Cordova for inventory, inspection and repair as necessary (Appendix G). Pontoons from rotary screw traps and netting were gathered to create floating net pens to hold captured fish.

Four boats assigned to be used on netting operations and one back up boat were fitted with live wells from non-operational electrofishing boats and plumbed to work with an external pump to circulate water. Two additional boats were secured to move net pens from shore to their deep-water location.

Gill nets were gathered from several different locations and tagged with unique identification numbers, mesh size, total length and height. Two Trammel nets were borrowed from the United States Fish and Wildlife Service office in Reno, NV, and approximately 20 hoop nets were brought from the Lake Davis Pike Eradication Project.

Small items like lifejackets, battery chargers, gas cans etc. were gathered in the one location and inventoried. Once the final inventory of equipment and supplies was completed, shortfalls were identified and eliminated.

A list of additional electrofishing boats (e-boats) and back up equipment was also created. Once the project was started and it was found that electrofishing was the most successful means of fish collection, three additional e-boats were dispatched from the Bay Delta Region (R-3) and one from the Northern Region (R-1). An additional boat to be used in net operations was also brought to the site from R-3.

Equipment for the second rescue included multiple seines of different length and mesh size, backpack electrofishers (e-fishers) and batteries, trashcans to be used as live cars, dip nets, and waders for the crews. As with the first rescue the majority of the equipment was procured by borrowing from existing inventories, and in some cases personal gear was used.

3.2 Personnel

The acquisition and inventory of equipment and supplies in the two weeks leading up to the rescue at Caples Lake consumed the time of twelve Scientific Aids, two Environmental Scientists, and three Fisheries Biologists. Each worked at least 40 hours per week, several worked extended overtime hours for a total of approximately 1500

person hours. The projects that assisted with the preparation were Sport Fish Restoration Act Reservoir Research, Lake Davis Pike Eradication Project, Wild and Heritage Trout, Invasive Species, Knights Landing and American River Salmon projects, and district fisheries biologists funded by General Funds.

The IAP for the first rescue called for approximately 70 Department personnel working in two 12 hour shifts, a day and night shift. Enforcement, Biologists, Environmental Scientists and Scientific Aides from Regions 1, 2, 3, 4, Fisheries Programs Branch (FPB), Fish and Wildlife Technicians from Feather River, Nimbus, American River, and Mokelumne River Hatcheries, and the Yolo Fish Habitat Shop as well as Administrative Staff from NCR were used in the planning and implementation of the rescue operation. Personnel were selected based on their experience with equipment and techniques used in the rescue operation, their availability on the days scheduled, and attempting to minimize impacts to critical programs.

Nine Wardens and three Lieutenants were assigned to oversee all enforcement activities which included securing the SA, keeping the working areas clear, and patrolling the project area.

Fisheries personnel were assigned the on-the-water portions of the operations which included construction of the net pens, fish collection and fish transport. Hatchery truck drivers and other hatchery personnel were assigned by the Hatchery Managers based on availability and experience with equipment such as nets and boat operation. Two global information systems (GIS) specialists transferred data from global positioning systems (GPS) devices, managed data sheets, checked out equipment and collected daily activity reports.

Yolo Fish Habitat shop personnel were in charge of all shore operations including clearing and preparing the SA, getting boats in and out of the water, and repairs to equipment as needed. Administrative staff initiated the contract with EID, organized the check-in check-out procedures for Department personnel and volunteers, and assisted with logistics. A list of approximately 10 back up personnel and their skills were identified in case there was a need for additional personnel as the rescue progressed and adapted.

The second rescue involved 21 Department personnel from NCR fisheries, Yolo Screen shop and the Nimbus and Mokelumne Fish Hatcheries. All persons were assigned to e-fishers, netting, sorting or hauling fish.

3.3 Volunteers

Volunteer assistance was organized by TU, CSPA and EID through a Department liaison. TU and CSPA took the lead on signing up and screening volunteers and worked directly with EID on accommodations and organization of meals, drinks, etc. Criteria used to screen volunteers included; their ability to commit to working complete shifts, physically fit to perform the tasks requested of them, and experience with the field techniques being used. Because of the need to adapt the rescue plan as the operation progressed it was

difficult to estimate the number of volunteers that would be needed and what rolls they could safely play. The number of volunteers needed was overestimated to ensure that enough persons would be available should the need arise. All volunteers signed both a Department and EID liability waiver (Appendix H) and were given a volunteer badge at the ICP before being allowed to proceed to the SA. Once at the SA they were required to participate in a general project and safety briefing before the start of their shift. As an added safety measure, additional training briefings were performed by the vessel operator before any boats left shore with a new crew.

Approximately 90 volunteers assisted with the first rescue operation and ten assisted with second. Most volunteers worked on electrofishing or gill net boats as netters or data takers, sorted fish, or helped in the "net brigade" transporting fish from the net pens or tubs to the waiting hatchery.

4.0 Logistics:

Lodging, meals, water and general supplies were coordinated by EID through the Department Logistics Chief. At check in, all personnel were given food vouchers to be used for meals. Breakfast and dinner were provided by the Caples Lake Resort and Kirkwood Inn. Lunches were bagged and available for pick up at breakfast or brought to the staging area by EID. Since the IAP called for both day and night operations special considerations were made for night crew meals. Several staff had special food needs because of allergies or diet restrictions and brought their own provisions; they were reimbursed through the travel claim process. Water, drinks, and snacks along with sunscreen and lip balm were brought to the SA and ICS by EID.

Lodging for all personnel was at the Caples Lake Resort or at Kirkwood Resort. Since the night crews would be sleeping during the day and it was likely to be hot, suitable daytime sleeping conditions including air conditioning and dark curtains on the windows were necessary. The number of rooms available was limited therefore it was necessary for some personnel to share rooms. Where room sharing was necessary, rooms were shared by no more than two people of the same sex working opposite shifts. All shared rooms had two beds to ensure that every person had their own bed.

The incidental rescue was a one day operation. Meals and lodging were not provided. Several staff had to travel from a significant distance to get to Caples Lake and required an overnight stay. Those individuals claimed per diem where appropriate and were reimbursed through travel expense claims.

5.0 Biological Considerations:

There were several issues with moving fish from Caples Lake to another reservoir that were considered before the project began. The receiving water had to be close to Caples to reduce holding times and stress on rescued fish and needed to have good access for the hatchery trucks. In addition, the species of fish present in both Caples Lake and the receiving water had to be determined so that no unwanted new fish introductions occurred, and Department pathology staff needed to approve the receiving water. The receiving reservoirs selected for both rescues were Silver Lake in Amador County, and

Red Lake in Alpine County. Together these waters fit all the criteria listed in that they are close to Caples, had very good access for the hatchery trucks, are currently stocked by Department hatcheries, and there are no known diseases present in any of the three waters. The main receiving water selected for rescued fish was Silver Lake; however, Silver Lake does not have an established BK population so all BK were separated and taken to Red Lake.

6.0 Project Goals and Objectives:

The main goal of the initial fish rescue was to remove as many fish as possible from Caples Lake and release them unharmed into another suitable reservoir. Because Caples Lake is classified by many anglers as a "trophy" fishery, and the majority of the concerns voiced by the angling public were directed toward larger LT and BN, they were targeted as the most desired fish for relocation. Even though large LT and BN were the main target, any and all fish captured were relocated with the assumption that an overall reduction in biomass in the reservoir could help to ease overcrowding and biological oxygen demand issues allowing any fish left in the lake a better chance at surviving the winter.

The goals at the outset of the second rescue were to rescue as many fish as possible from the receding water, while preventing, as much as possible, the entrainment of fish downstream into Caples Creek. As the day progressed and the reality of how many fish, particularly non game fish, were still in the area being dewatered, the objective changed and efforts were focused on capturing and moving game fish only.

7.0 Fish Capture Method Evaluation:

For both rescues, a combination of active and passive methods were researched and utilized. Active capture techniques use moving gear to capture fish, whereas passive capture methods rely on fish movement into stationary sampling gear. GIS and GPS played a key role in the first rescue and were used to deploy crews and boats with precision to designated work areas.

The sole active sampling technique used in the first rescue was boat electrofishing. Other active sampling methods such as beach seining, or towing trawl nets behind boats, were evaluated; however the bottom of Caples Lake has many stumps, rock outcroppings, and historic anthropogenic relics such as submerged bridges, etc. left over from before the reservoir was created. It was deemed that these methods presented too high of a risk of entanglement with bottom structure and would most likely result in the loss of nets and any fish captured in them. In addition, the use of trawl nets in the Sacramento-San Joaquin Delta normally yields few large fish (E. Larson personal communication). Hook and line was also evaluated as a capture method, however it was deemed to be too inefficient to be practical.

The first rescue operation was scheduled to take place in late August when daytime temperatures were still high. The larger BN and LT were likely to be in the deeper portions of the lake and capturing these larger "trophy" fish with electrofishing boats would be very unlikely even at night. In order to capture these larger fish, passive

techniques that could reach deeper into the lake were necessary. The passive capture techniques evaluated and used for the first rescue were gill nets, trammel nets, and hoop nets.

The incidental rescue presented an entirely different situation that called for a different approach to capturing fish. With the water levels as low as they were it was more like a stream environment with several large pools. The capture methods for the second rescue included seining, block nets, backpack electrofishing and netting fish with dip nets.

7.1 GIS and GPS

ArcView GIS software was used to overlay a map of Caples Lake with a ¼ mile numbered grid with smaller 200 meter sub grids (Figure 2). All boats were equipped with a GPS device with the map and grid downloaded to the device. The tracking feature was enabled on the e-boats to track the distance fished each day (Figures 3, 4, 5, and 6). Net boats marked a waypoint for each net set (Figure 7). If a net was returned to the same location after being set it was not marked again.

This grid system enabled the Incident Command Staff (CS) to easily divide and assign work locations to crews. It also allowed the crews to quickly track and relay locations of nets and boats back to the CS. Using the data collected, CS and crews were able to determine successful and unsuccessful net and e-fish locations to maximize success.

7.2 Boat Electrofishing

Electrofishing by boat is one of the most effective sampling techniques used in reservoir management. Boat electrofishing uses high voltage, low amperage, direct current to temporarily stun fish in an electrical field. The target areas reachable by boat electrofishing are shallow water, normally down to about six to eight feet deep depending on the conductivity of the water and the power of the electrofisher. Most often, boat electrofishing is done at night when fish take advantage of the cover of darkness to move in to shallower water to feed. Boat electrofishing typically has low mortality rates as long as the fish are allowed to recover in highly oxygenated, cool water.

7.3 Gill and Trammel Nets

Gill nets and trammel nets are a passive type of sampling gear that use vertical mesh panels that fish swim into and get tangled by its body, gills, fins, teeth, etc. Trammel nets are similar to a gill net in that they are entanglement gear; however, a trammel net has two panels with larger mesh on each side of the main net. "A fish swimming into the net from either side passes through one of the large mesh outer panels and hits the small mesh inner panel; the fish then pushes the small mesh panel through one of the large openings of the facing large mesh outer panel…creating a pocket in which the fish is entangled" (Murphy, B. 1996). In certain circumstances trammel nets can cause less harm to fish than gill nets. Typically, entanglement type nets such as gill nets and trammel nets are used in fisheries management with the understanding that there will be high mortality. Entanglement type nets are not normally used for capture and release type studies, however the Department has used closely monitored gill nets in the Steelhead Research and Monitoring Program on the Noyo River in Mendocino County

for mark recapture studies, and internet searches revealed several tagging studies using gill nets with short set times to capture adult LT on the Great Lakes and Swan Lake, Montana. Calls were placed to the Wisconsin Department of Natural Resources (WDNR) and Montana Fish, Wildlife and Parks to determine techniques, net length, mesh size, set duration, and any other pertinent information that could lead to successful live capture of LT and BN from deep water. The tagging programs in the Great Lakes normally sample adult LT in the late fall when water temperatures reach around 45 degrees Fahrenheit and the fish have grouped up and moved to spawning shelves. Nets typically have 3.5-4 inch mesh, 100 to 500 feet lengths, and are set on the bottom for times ranging from 30 minutes to one hour. Survival rates are typically around 50% (S. Filbert, WDNR personal communication). While 50% is a relatively low survival rate for a fish rescue operation, it was concluded that this level of loss was acceptable under these circumstances. Any fish that was not relocated through the rescue operation was not likely to survive through the winter, and as shown in the Great Lakes, gill and trammel entanglement type nets are the most effective deep-water capture method for large LT (Mattes, 2004).

7.4 Hoop Nets

The third passive capture method deployed was hoop nets. Hoop nets are a cylindrical entrapment type net where a fish swims into a set of progressively smaller funnel shaped cones into a cod end where the fish will remain unharmed until it can be removed. Hoop nets are typically used in streams or current type environments; however, they have been used successfully in reservoir environments (Murphy, B. 1996). Hoop nets were deployed in both deep and shallow water at Caples Lake.

7.5 Seines and Block Nets

Beach seines are normally walked out to deeper water perpendicular to shore then pulled parallel and brought to shore forming a "belly" in the middle of the net to trap fish. In this rescue operation the seines were used as block nets to section parts of the exposed stream channel and prevent fish from moving back into areas that had already been cleared. Beach seines were also used to herd fish into shallower areas where they could be collected by crews using backpack e-fishers and dip nets.

Seines were also used in an attempt to block fish from being sucked through the outlet of the dam. The effectiveness of this method was limited as the seines would quickly clog with debris and small fish making the nets impossible to hold in front of the outlet even at very low release flows.

7.6 Backpack Electrofishers

Backpack electrofishers are primarily used in stream environments to capture fish and are very effective in water approximately waist deep or less. Six backpack electrofishers and twelve to fifteen netters were used to remove fish between the bladder dam and the main dam as the water level was slowly lowered.

8.0 Fish Relocation:

As fish were captured from Caples Lake, fish holding and recovery areas were necessary until crews and volunteers were ready to move them. Once fish were adequately recovered and crews and volunteers were ready, captured fish were transferred to hatchery trucks, and transported for release to either Silver or Red Lake. Protocols were implemented at each stage to reduce stress as much as possible.

8.1 Fish Holding and Recovery

During the first rescue net pens were used to hold captured fish. The net pens provided a cool, well-oxygenated place for the fish to recover from the stress of capture until being transferred to the receiving waters. Three net pens were constructed using 16 foot-long aluminum pontoons sourced from rotary screw traps, 8 foot-long wooden 2x4s, 1/8 inch mesh netting, sand bags and rope. Pontoons were held apart by the 2x4s then the 1/8 inch mesh netting was draped over the pontoons and given slack until there was a ten foot deep bag in the middle. Sand bags were filled with gravel and rocks and suspended ten feet deep by ropes from the inside corners and sides of the pontoons to keep the bag open. Final dimensions of the net pens were approximately 16ft. x 8ft. x 10ft. for a volume of approximately 1280 cubic feet. The net pens were towed out to water approximately 18 feet deep near the SA and anchored in place using several large anchors. A float and quick release were attached to the top of the anchor lines so that the net pen could be easily released and reattached to the anchor as it was transported to and from shore to remove fish. One net pen was designated specifically for BK while the other two were used for all other fish species captured. All four corners of each net pen were marked with glow sticks at night to increase visibility and the location of each pen was marked on the GPS units. In the morning, once all day shift crews were deployed, two boats brought the net pens to shore to transfer fish.

During the second rescue, captured fish were placed into large plastic trash cans that had holes drilled in them to function as live cars. The live cars were carried partially submerged behind a team of e-fishers and netters. Use of these live cars provided a place to store the captured fish and a place for fish to recover from the initial stress of electrofishing capture.

8.2 Net Brigade

A net brigade of 25-30 volunteers, similar to a fire “water brigade”, was used in the first rescue to quickly get the fish from the net pens to the hatchery trucks. The net brigade started at the shoreline where the net pen was located and extended up the bank to the waiting hatchery truck. Fish were netted using a dip net and closely inspected to determine species; the net was then handed to the next person in the line until it reached the truck. Participants in the net brigade stood close together so that no steps had to be taken as they passed the net to the next person in line. The last person in line was the hatchery truck driver who re-inspected the fish to insure it was the appropriate species before placing it into the truck. All participants went through a short briefing covering where to stand and how to safely pass the net. Participants were asked to keep the nets moving as fast as possible.

In the second rescue, volunteers carried fish up the face of the dam in trash cans and buckets full of water to the hatchery trucks. Once at the top, BK were separated and placed into a truck headed for Red Lake. All other fish were placed into the truck to be taken to Silver Lake.

8.3 Transporting Fish

For both rescue operations three hatchery trucks were assigned to move fish from Caples Lake to either Red or Silver Lakes. A 1200 gallon truck was used to deliver the bulk of the fish to Silver Lake and a 600 gallon truck was used to transport BK to Red Lake. A third 1200 gallon truck and driver were placed on standby.

In the initial rescue the trucks were filled with water from Caples Lake by electric sump pumps plugged into generators. The pumps were placed in approximately 3 feet of water inside a plastic 30 gallon trashcan with multiple holes drilled in it to limit debris. The trucks were filled with water as the net pens were brought to shore to ensure the water would be cool and well oxygenated. For the second rescue the trucks came preloaded with water from their hatchery of origin. Water was kept oxygenated with an onboard oxygen delivery system. The poundage of fish placed into each truck was monitored and documented using sight tubes. Once the trucks were loaded to capacity or all fish were cleared from the net pen, they were driven to their destination reservoir and the fish were released. Several LT and BN were too large to fit through the release tube and had to be netted out using dip nets.

9.0 Results:

Estimates of the total number of fish collected for the first rescue range from 3,550 based on data sheets to 6,800 based on the volumetric displacement in the trucks using an average of two fish to the pound. Estimates for the total number of fish collected for the incidental rescue vary from 18,000 to 25,000 fish based on an average of two fish to the pound volumetric displacement. Fish species composition was not enumerated; however, estimates for the first fish rescue are primarily for salmonids whereas estimates for the second fish rescue include a significant percentage of non-game species.

There are a number of factors which lead to the disparity in estimates for the first fish rescue. The volumetric displacement number of approximately 6,800 fish for the first rescue is most likely high. Most of the fish placed into the trucks in the first rescue were BK and BN and were approximately one-half to three quarters of a pound. There were several hundred fish, particularly suckers and chub, which were well under one-half pound, several dozen fish, mostly RT, were in the one to five-pound range and approximately two dozen fish were in the 8-20 pound range. The 3,550 fish number was taken directly from data sheets used by crews as they put fish into the net pens during the first rescue. It is known that this number is low because there are several missing data sheets from crews that did collect fish, but in the confusion of shift changes, boat malfunctions, and fatigue several data sheets are missing. In addition to data sheets, crews were asked to radio the SA with a count of fish that were being placed into the net pens to aid in tracking the number and species composition of fish captured, however not all crews radioed the SA every time fish were placed in the pens. These numbers are

consistently low when compared to the data sheets. Lengths and weights of fish were not collected to reduce stress and increase survival as well as to increase the numbers of fish collected, however length was estimated by crews in the first rescue.

For the second rescue the total number of fish collected was estimated to be 18,000 to 25,000 based on two fish to the pound volumetric displacement conversion. Due to the fast pace and the numbers of fish encountered during the second rescue, relative sizes and species composition was only estimated by several observers including the hatchery truck drivers and Department biologists sorting fish before they were taken to the trucks. It appeared to the observers that the majority of fish early on were non-game fish, predominantly Tahoe suckers. After the crews were instructed to target game fish only, the species composition going to the trucks shifted to almost exclusively game fish between ½ and 1.5 pounds. The largest fish moved during the second rescue were about a dozen BN in the 5-7 pound range.

The data presented in the paragraphs below are calculated from the data sheets from the first rescue. Because of the short ~~time line~~timeline for the repairs to the outlet structure at Caples Dam, this rescue operation was done in late summer, which is not the optimal period to collect cold water fish in high elevation reservoirs. Most fish are fairly lethargic and reside in deeper, cooler water in the summer months, especially during the day. However as night fell the movement of fish picked up dramatically as did the capture success with approximately 92% of the fish captured by night shift crews.

Boat electrofishing accounted for the vast majority of fish collected. Approximately 96% of the fish were collected by electrofishing boats. Boat electrofishing during the first day shift accounted for a total of 17 fish while operating three boats for a combined effort of approximately 22.5 hours for a catch per unit effort (CPUE) of 0.75 fish per hour. The first night shift captured approximately 685 fish in a combined 18 hours of effort for a CPUE of 38 fish per hour. The majority of fish captured by electrofishing boat crews were BN, BK and RT in the catchable size with some up to 20 inches. There was one large LT, approximately 10 pounds, captured by an electrofishing boat on the second night. The majority of the first night only two boats were operational due to electrical malfunctions; however, the total number of fish captured and the CPUE is much higher than that of the day shifts. The first night of boat electrofishing was so successful that four more electrofishing boats were brought in from R-1 and R-3 to assist.

The majority of larger fish, most notably LT and BN over about 20 inches, were collected by gill net, and as with electrofishing, night shifts were much more successful than the day shifts. Gill nets captured 142 fish total, however as expected when using this type of gear there were 52 mortalities, a survival rate of 63%, bringing the number of fish relocated to 90. It was understood at the outset of the operation that the use of entanglement type nets would result in high mortality. While the rate of loss was high compared to electrofishing, there was no other efficient way to capture large LT and BN from the depths the fish were holding. There were at least three mortalities of larger LT in the net pens that were believed to have been caused, at least in part, by over inflated air bladders due to barotrauma. The trammel nets did capture fish, however they had a

relatively small mesh of one inch which prevented them from working as designed on larger fish and made it more difficult to remove fish than the large mesh gill nets. The trammel nets were not used after the second day.

Hoop nets were deployed beginning the first day in both shallow and deep water and were checked every 12 hours. The morning of the second day they were left to soak for 24 hours before being pulled the morning of the third day. Their effectiveness was limited for this application. A total of 57 fish were captured, all of which were in the "catchable" or one-half to three-quarters of a pound size range or smaller and mostly non-game species. While hoop nets can be very effective, Caples Lake is extremely clear and with the heavy gauge netting on these particular hoop nets it appears that most fish either avoided the nets or were not moving along the shoreline enough to effectively capture large numbers of fish.

10.0 Considerations for Future Fish Rescues:

10.1 Rescue Planning

- Get out in front of the issue using the best available science.
- Evaluate all options prior to authorizing a fish rescue, a blanket "we will or will not do fish rescues" statement is not advised.
- When seeking reimbursement through a contract, remember significant work will likely occur prior to a final signed contract agreement. This situation should be avoided whenever possible.
- Even with a reimbursable contract there will be significant costs associated with the project that will not be reimbursed.
- 24-hour operations may not be necessary.
- 24-hour operations overextend command staff and field crews.
- A carefully designed safety plan is critical and should be developed early in the process. If fully implementing a realistic safety plan is not possible, a rescue will not be attempted.
- Be adaptable and be able to adapt.

10.2 Resource Identification

- Have a volunteer liaison.
- Request more volunteers than you think you need.
- Request more Department personnel than you think you need.
- Have back up boats, equipment, supplies and people ready.
- Have a media liaison.

10.3 Logistics

- Only use volunteers that are committed to working an entire shift.
- Use of volunteers pays huge dividends in the short term and long run.
- Document all volunteer time for possible grant match.
- Don't compromise time on the water for rescue operations to appease volunteers waiting for a "turn on the boat".
- Send home non-necessary staff and volunteers as the project progresses.
- Plan media events after you have a good idea of methods and capture rates.
- Choose a staging area that can be secured from the general public.

- Have a plan in place to purchase repair materials and other emergency supplies.
- E-boats were not built to run for 24 hours straight.
- Each e-boat needs at least one dedicated battery charger with a generator to run it, and one or two extra batteries.
- Many Department boats are for special projects and infrequently used, and are not ready to be put on the water at a moment's notice.
- A talented, multi-disciplined, support crew that can fix almost anything is a great asset to have.

10.4 Biological Consideration

- State upfront that there will be high mortality to fish taken from deep water using entanglement nets.
- State upfront that despite the rescue, the majority of fish likely will not survive.

10.5 Project Goals and Objectives

- Use the operation as an opportunity to have experienced Biologists mentor and teach newer Biologists and Scientific Aides.
- Alternate crews so Biologists and Scientific Aides can learn different capture techniques from crew leaders.

10.6 Fish Capture Methods

- Consult with biologists, from other states if necessary, to learn capture techniques for your target fish.
- If the target fish inhabit deep waters, have an experienced crew on hand to fizz swim bladders to increase survivorship.
- Consult with guides and anglers that fish the water regularly to locate hot spots.
- Night is much more productive for capturing fish than day.

10.7 Fish Holding and Relocation

- If all captured fish species cannot go to the same water body, check each fish as many times as possible by several different people.
- A 10 foot deep net pen will tear in 9 feet of water on a rocky shoreline.
- The mesh of a net pen can easily become entangled in a boat prop causing a disabled boat and a large tear in the net pen.
- Zip ties are very useful for repairing torn net pen material.

10.8 Intangible Results

The success of the project can be measured not simply in numbers of fish rescued, but also in relationships built, partnerships strengthened and appreciation of Northern California anglers.

Citations:

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Murphy, B. R., and D. W. Willis, editors. 1996. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland

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Figure 1: ICS Org. Chart

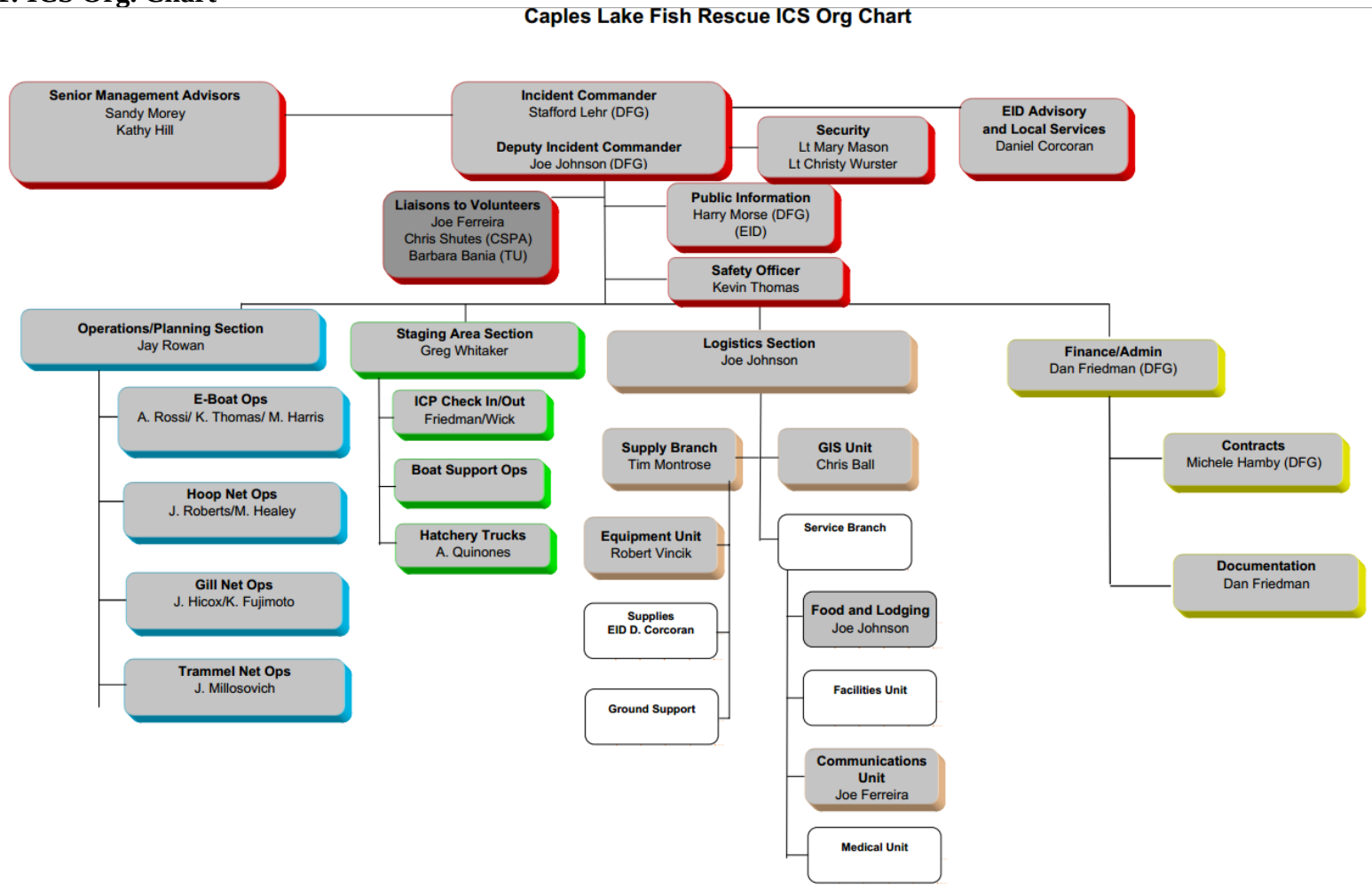


Figure 2: Caples Grid Overlay

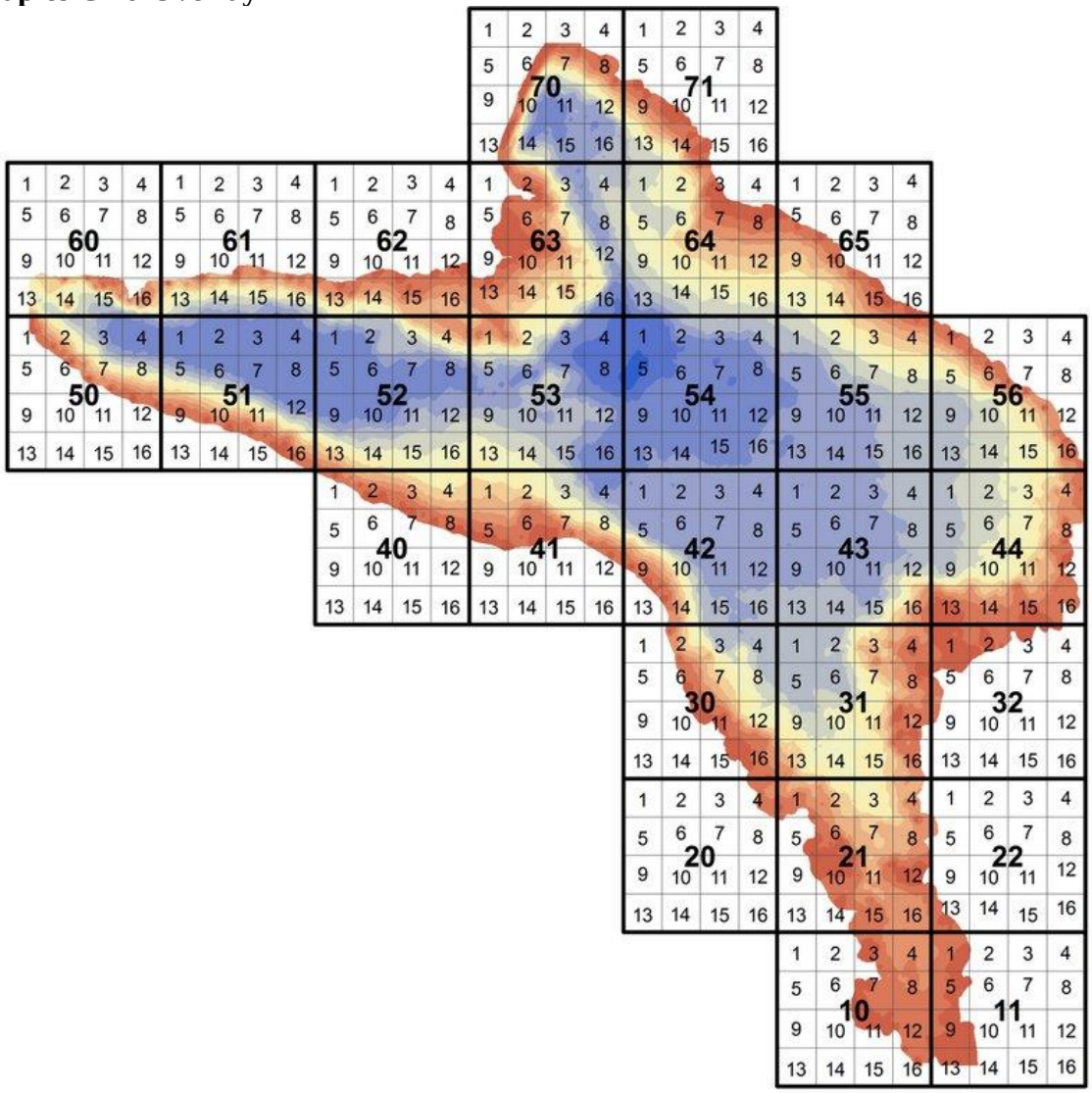


Figure 3: Day One E-boat Tracks

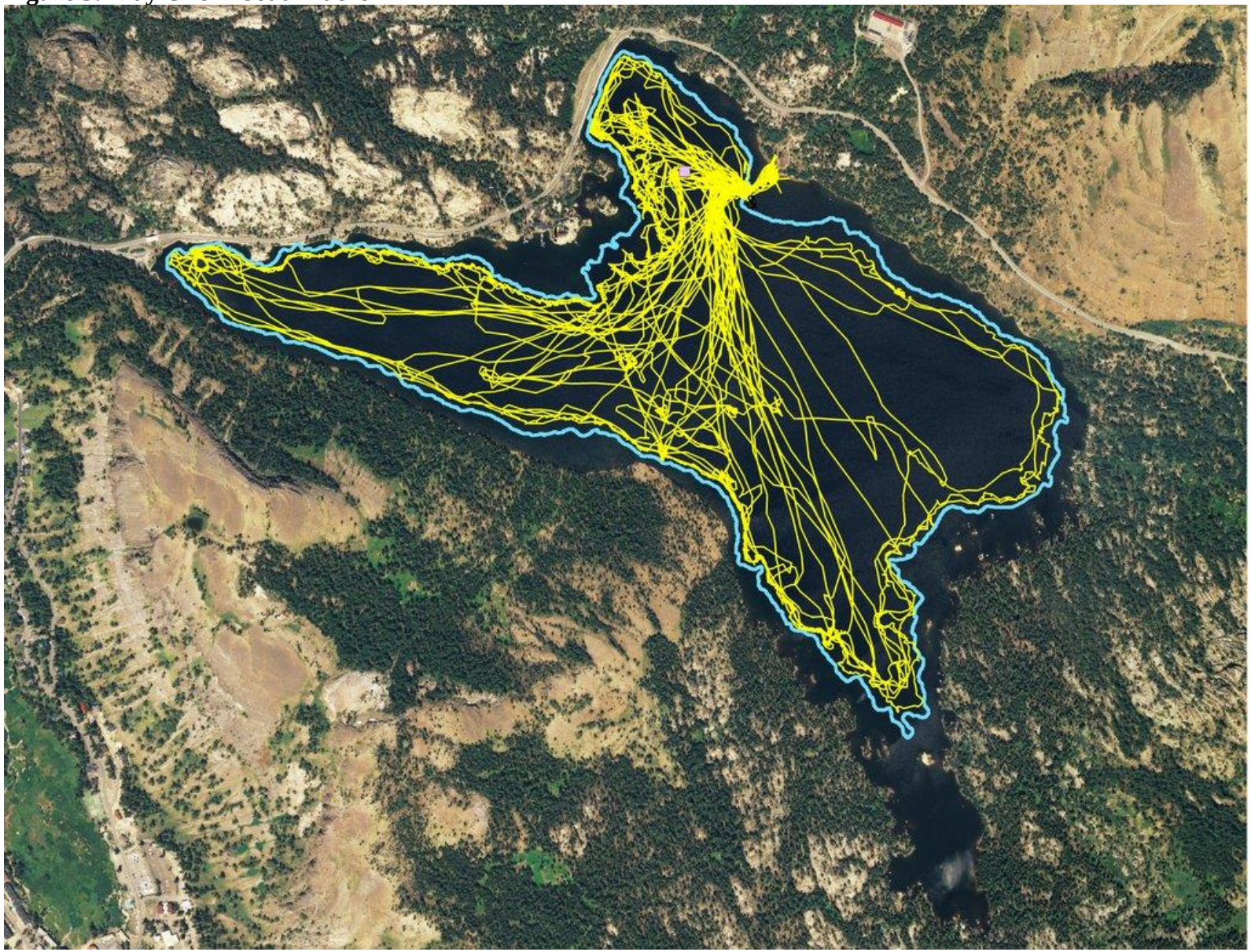


Figure 4: Day Two E-boat Tracks

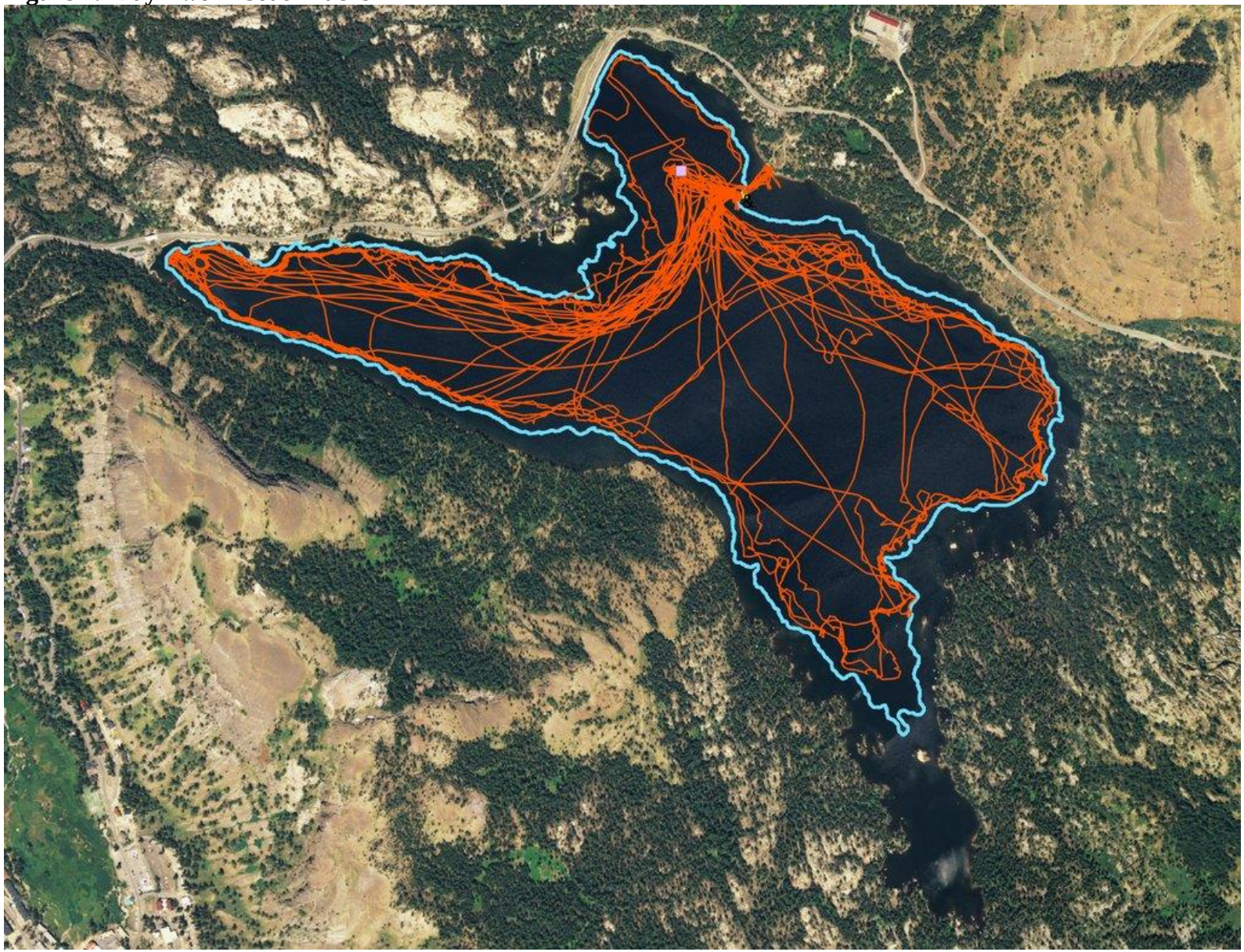


Figure 5: Day Three E-boat Tracks

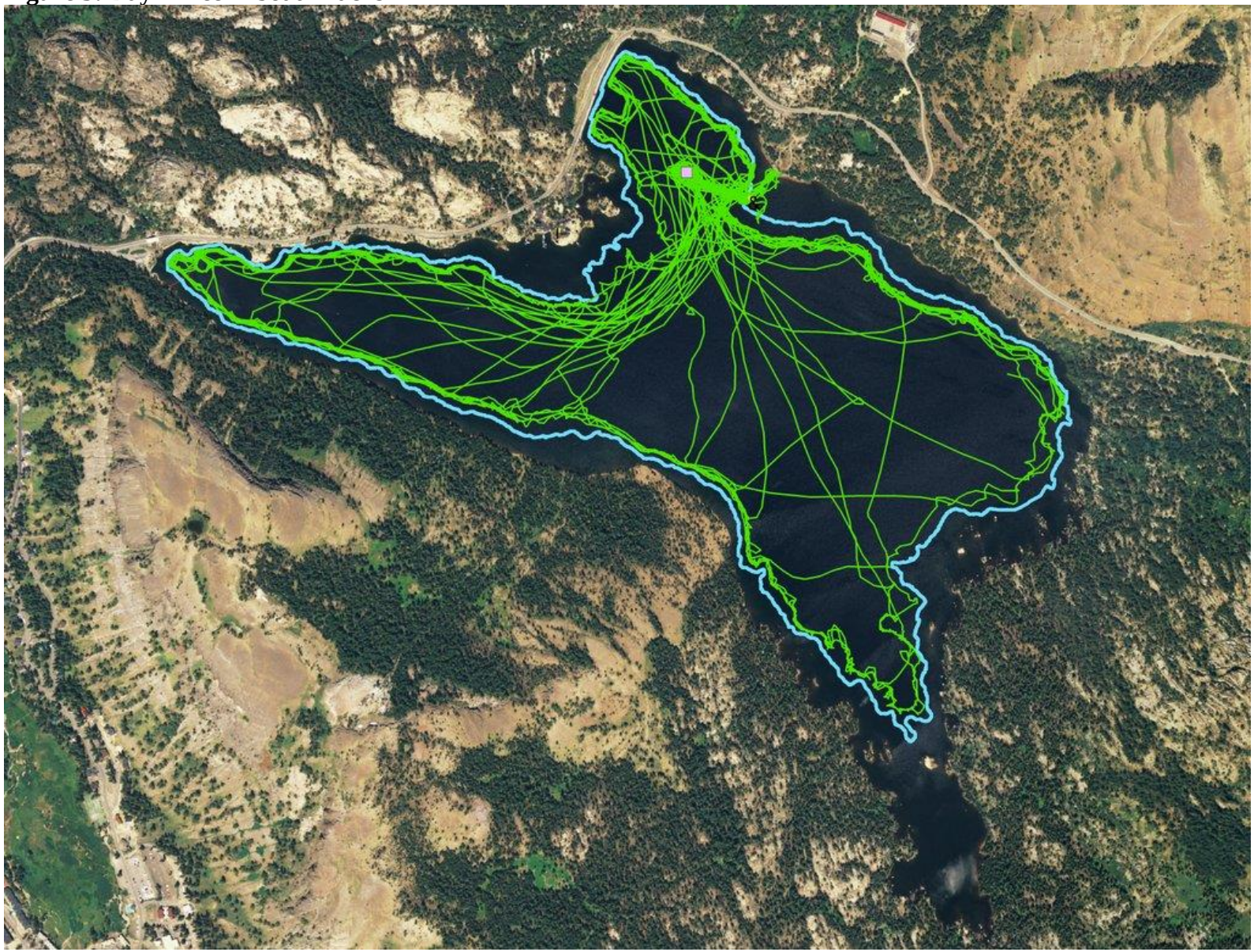


Figure 6: All E-boat Tracks

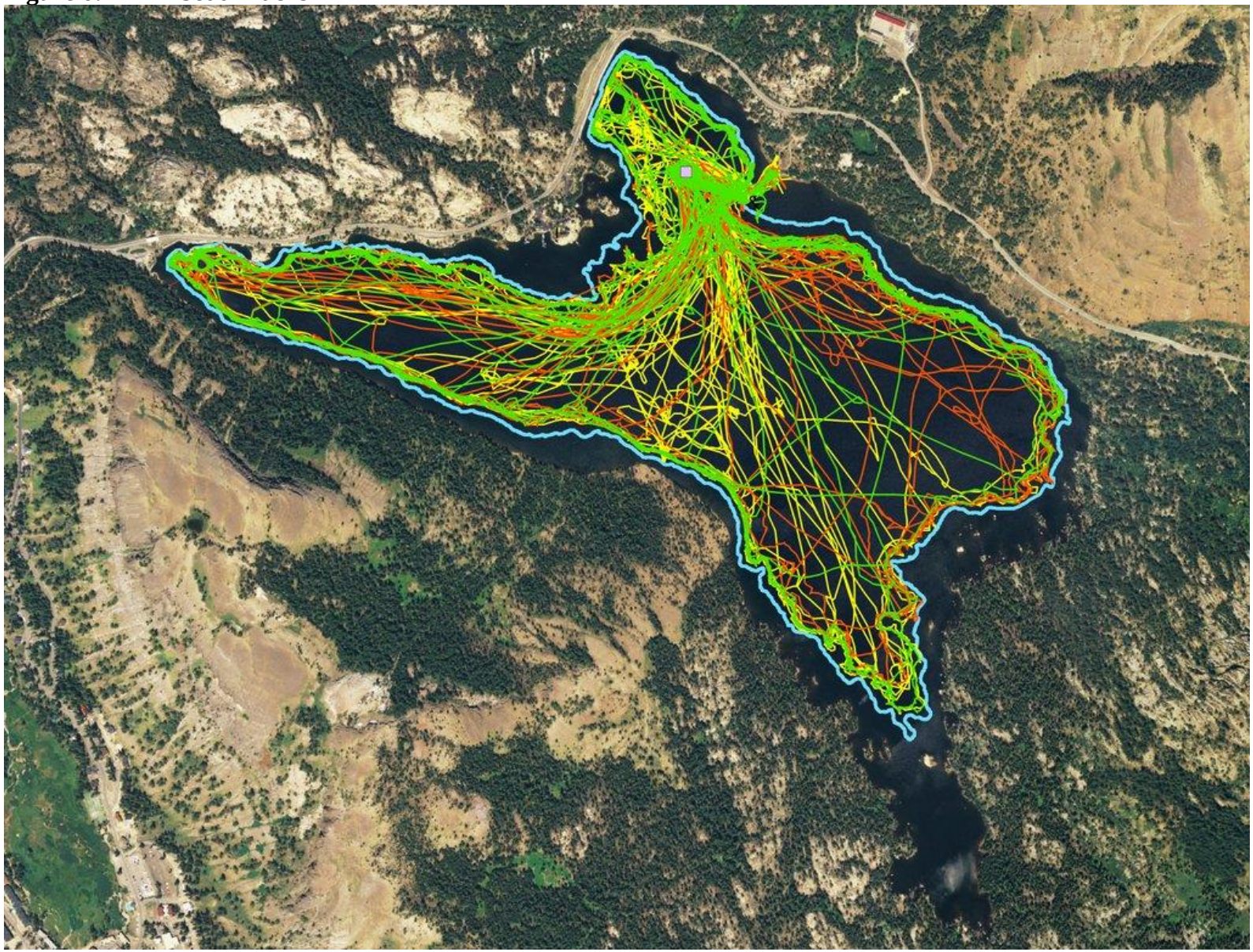


Figure 7: All Net Locations

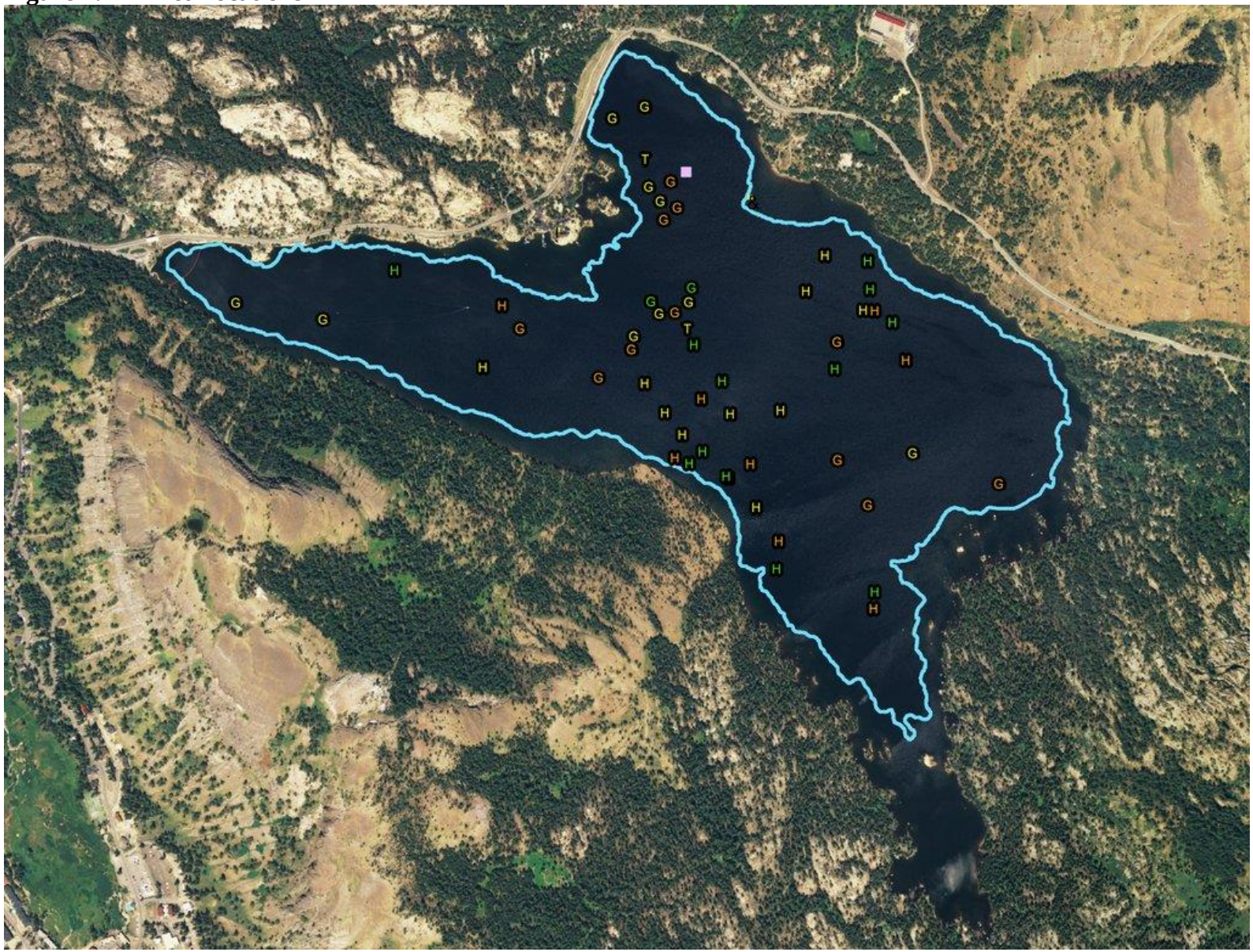


Table 1: Preliminary Draw Down Schedule

PRELIMINARY CAPLES LAKE DRAWN DOWN SCHEDULE

Date	Caples Release Flow Target	Caples Release Flow Actual	Caples Release	Caples Staff Gage Read	Caples Staff Gage Read Target	Caples Storage Target	Caples Storage Actual
	cfs	cfs	ac-ft	ft	ft	ac-ft	ac-ft
07/17/08	14	14	28	56.6	56.6	19,066	19,066
07/18/08	34	34	67	56.5	56.5	18,999	18,999
07/19/08	80	80	159	56.3	56.3	18,840	18,840
07/20/08	80	80	159	56.1	56.1	18,682	18,682
07/21/08	80	80	159	55.8	55.8	18,523	18,523
07/22/08	80	80	159	55.5	55.5	18,395	18,395
07/23/08	134	134	266	55.4	55.4	18,366	18,366
07/24/08	134	134	266	55.0	55.0	18,101	18,101
07/25/08	150	149	296	54.5	54.0	17,539	17,836
07/26/08	150	150	297	54.1	53.5	17,242	17,539
07/27/08	150	150	297	53.6	53.0	16,944	17,242
07/28/08	150	154	305	52.6	54.4	16,647	16,758
07/29/08	150	151	299	52.1	51.9	16,349	16,451
07/30/08	150	149	296	51.5	51.4	16,052	16,146
07/31/08	150	154	305	51.0	50.8	15,754	15,843
08/01/08	150	149	296	50.4	50.3	15,457	15,545
08/02/08	150	150	297	49.8	49.7	15,159	15,248
08/03/08	150	150	297	49.2	49.2	14,862	14,950
08/04/08	150	152	301	48.6	48.6	14,565	14,585
08/05/08	150	154	305	48.2	47.9	14,267	14,375
08/06/08	150	154	305	47.6	47.5	13,970	14,063
08/07/08	150	156	310	47.0	46.9	13,672	13,753
08/08/08	150	154	305	46.4	46.3	13,375	13,447
08/09/08	150	150	297	46.0	45.7	13,077	13,243
08/10/08	150	150	297	45.6	45.1	12,780	13,041
08/11/08	150	149	296	45.1	44.0	12,482	12,790
08/12/08	150	152	300	44.5	43.9	12,185	12,494
08/13/08	150	147	292	43.9	43.3	11,887	12,201
08/14/08	150	154	305	43.3	42.7	11,590	11,887
08/15/08	150	152	300	42.6	42.1	11,293	11,577
08/16/08	150	150	297	42.1	41.4	10,995	11,340
08/17/08	150	150	297	41.6	40.9	10,698	11,103
08/18/08	150	150	297	41.1	40.2	10,400	10,866
08/19/08	150	152	300	40.6	39.5	10,103	10,629
08/20/08	150	154	305	40.3	38.9	9,805	10,466
08/21/08	150	152	300	39.6	38.2	9,508	10,184
08/22/08	150	152	300	39.1	37.8	9,210	9,923
08/23/08	150	150	297	38.5	36.9	8,913	9,665
08/24/08	150	150	297	37.8	36.2	8,615	9,351
08/25/08	150	152	300	37.1	35.5	8,318	9,058
08/26/08	165	166	328	36.5	34.8	8,021	8,755
08/27/08	165	170	338	35.5	34.1	7,723	8,347
08/28/08	165	168	333	34.8	33.4	7,426	8,061
08/29/08	165	173	343	34.1	32.7	7,128	7,726
08/30/08	165	175	347	33.2	31.9	6,831	7,383
08/31/08	165	163	323	32.3	31.2	6,533	7,036
09/01/08	165	170	337	31.5	30.4	6,236	6,713
09/02/08	165	163	323	30.9	29.7	5,938	6,447
09/03/08	165	163	323	30.3	28.9	5,641	6,183
09/04/08	165	166	328	29.3	28.1	5,344	5,831
09/05/08	165	173	343	28.5	27.3	5,046	5,504
09/06/08	165	181	358	27.6	26.5	4,749	5,188
09/07/08	165	169	335	26.7	25.6	4,451	4,830
09/08/08	165	175	348	25.7	24.8	4,154	4,496
09/09/08	165	181	358	24.8	23.9	3,856	4,193
09/10/08	165	173	343	23.9	23.0	3,559	3,867
09/11/08	165	173	343	22.9	22.0	3,261	3,559
09/12/08	165	163	323	21.9	21.1	2,964	3,226
09/13/08	165	165	327	20.8	20.1	2,666	2,899
09/14/08	165	163	323	19.7	19.0	2,369	2,576
09/15/08	165	158	313	18.6	17.9	2,072	2,262
09/16/08	165	152	300	17.8	16.8	1,774	2,058
09/17/08	165	141	279	16.8	15.6	1,477	1,798
09/18/08	165	136	270	15.7	14.3	1,179	1,518
09/19/08	165	132	262	14.8	12.9	882	1,296
	9/20/2008	BLADDER DAM INSTALLED					
09/26/08				Available Storage		746	

Footnotes:

1.98	ac-ft/cfs/day
19,066	ac-ft in Caples as of 07/17/08
5	cfs per day discharge reduction due to head loss
actual	data
forecasted	data

Table 2: Caples Lake Draw Down Schedule (page 1 of 4)

Date	Caples Lake Inflow	Caples Lake Inflow	Caples Release Flow Target	ERC Approved Min. Flow	Caples Release Flow Actual	Caples Release Flow Actual	Caples Staff Gage Read Target	Caples Staff Gage Read Actual	Caples Storage Target	Caples Storage Actual
	cfs	ac-ft	cfs	cfs	cfs	ac-ft	ft	ft	ac-ft	ac-ft
09/19/08	0.00	0.00	132.0		135.00	267.71	14.48	14.60	1,256	1,256
9/20/2008 BLADDER DAM INSTALLED										
09/20/08	0.00	0.00	7.5	2.0	5.80	11.50	13.39	13.40	997	997
09/21/08	0.00	0.00	10.0	2.0	10.00	19.83	13.39	13.39	995	995
09/22/08	0.00	0.00	5.8	2.0	5.80	11.50	13.39	13.37	990	990
09/23/08	0.00	0.00	5.8	2.0	6.00	11.90	13.34	13.34	940	940
09/24/08	0.00	0.00	3.0	2.0	6.30	12.49	13.29	13.30	932	932
09/25/08	0.00	0.00	3.0	2.0	2.90	5.75	13.26	13.26	924	924
09/26/08	0.00	0.00	3.0	2.0	2.73	5.41	13.23	13.22	916	916
09/27/08	0.00	0.00	3.0	2.0	2.73	5.41	13.20	13.20	911	911
09/28/08	0.00	0.00	3.0	2.0	2.73	5.41	13.17	13.17	905	905
09/29/08	0.00	0.00	3.0	2.0	2.73	5.41	13.14	13.15	901	901
09/30/08	1.73	3.43	3.0	2.0	2.73	5.41	13.12	13.14	899	899
10/01/08	0.46	0.91	3.0	2.0	2.73	5.41	13.09	13.12	895	895
10/02/08	0.00	0.00	3.0	2.0	2.60	5.16	13.06	13.08	887	887
10/03/08	0.00	0.00	3.0	2.0	2.73	5.41	13.03	13.03	877	877
10/04/08	7.14	14.16	3.0	2.0	2.60	5.16	13.00	13.07	885	885
10/05/08	7.39	14.65	3.0	2.0	2.85	5.65	12.97	13.12	895	895
10/06/08	1.96	3.89	3.0	2.0	2.98	5.91	12.94	13.16	903	903
10/07/08	1.19	2.36	3.0	2.0	3.35	6.64	12.91	13.13	897	897
10/08/08	0.00	0.00	2.2	2.0	2.42	4.80	12.88	13.10	891	891
10/09/08	0.48	0.95	2.2	2.0	2.24	4.44	12.85	13.08	887	887
10/10/08	0.00	0.00	2.2	2.0	2.15	4.26	12.82	13.04	879	879
10/11/08	0.00	0.00	2.2	2.0	2.51	4.98	12.79	13.00	871	871
10/12/08	0.00	0.00	2.2	2.0	2.50	4.96	12.76	12.96	863	863
10/13/08	0.00	0.00	2.2	2.0	2.50	4.96	12.73	12.92	856	856
10/14/08	0.00	0.00	2.2	2.0	2.50	4.96	12.70	12.88	848	848
10/15/08	0.00	0.00	2.4	2.0	2.51	4.98	12.86	12.86	844	844
10/16/08	0.00	0.00	2.4	2.0	2.60	5.16	12.83	12.83	838	838
10/17/08	0.00	0.00	2.4	2.0	2.87	5.69	12.81	12.80	832	832
10/18/08	0.00	0.00	2.4	2.0	2.51	4.98	12.79	12.78	828	828
10/19/08	0.00	0.00	2.4	2.0	2.51	4.98	12.76	12.76	825	825
10/20/08	0.00	0.00	2.4	2.0	2.51	4.98	12.74	12.75	823	823
10/21/08	0.00	0.00	2.4	2.0	2.51	4.98	12.71	12.72	817	817
10/22/08	0.00	0.00	2.4	2.0	2.60	5.16	12.68	12.69	811	811
10/23/08	0.00	0.00	2.4	2.0	2.51	4.98	12.66	12.64	802	802
10/24/08	0.00	0.00	2.4	2.0	2.51	4.98	12.63	12.60	794	794
10/25/08	0.00	0.00	2.4	2.0	2.51	4.98	12.61	12.57	788	788
10/26/08	0.00	0.00	2.4	2.0	2.51	4.98	12.58	12.54	782	782
10/26/2008 BLADDER DAM REMOVED										

Table 2, continued. Caples Lake draw down schedule (page 2 of 4)

Date	Caples Lake Inflow	Caples Lake Inflow	Caples Release Flow Target	ERC Approved Min. Flow	Caples Release Flow Actual	Caples Release Flow Actual	Caples Staff Gage Read Target	Caples Staff Gage Read Actual	Caples Storage Target	Caples Storage Actual
	cfs	ac-ft	cfs	cfs	cfs	ac-ft	ft	ft	ac-ft	ac-ft
10/27/08	0.00	0.00	2.4	2.0	2.51	4.98	12.56	12.26	775	775
10/28/08	0.00	0.00	2.4	2.0	2.51	4.98	12.53	12.22	767	767
10/29/08	0.00	0.00	2.4	2.0	1.85	3.67	12.50	12.20	764	764
10/30/08	0.00	0.00	2.4	2.0	2.24	4.44	12.48	12.18	760	760
10/31/08	0.00	0.00	2.4	2.0	2.51	4.98	12.45	12.14	753	753
11/01/08	13.60	26.97	2.5	2.0	2.51	4.98	12.31	12.31	784	784
11/02/08	94.60	187.59	2.5	2.0	2.51	4.98	13.25	13.25	966	966
11/03/08	33.48	66.39	2.5	2.0	2.98	5.91	13.43	13.43	1,003	1,003
11/04/08	25.10	49.77	2.5	2.0	3.10	6.15	13.64	13.64	1,047	1,047
11/05/08	0.00	0.00	2.5	2.0	3.48	6.90	13.38	13.59	1,036	1,036
11/06/08	9.01	17.87	2.5	2.0	2.51	4.98	13.35	13.64	1,045	1,045
11/07/08	14.10	27.96	2.5	2.0	2.60	5.16	13.33	13.75	1,068	1,068
11/08/08	12.75	25.28	2.5	2.0	2.60	5.16	13.30	13.83	1,088	1,088
11/09/08	12.97	25.72	2.5	2.0	2.60	5.16	13.28	13.91	1,109	1,109
11/10/08	5.10	10.11	2.5	2.0	2.60	5.16	13.26	13.98	1,119	1,119
11/11/08	7.73	15.33	2.5	2.0	3.23	6.41	13.24	14.00	1,128	1,128
11/12/08	14.23	28.22	2.5	2.0	3.23	6.41	13.21	14.10	1,145	1,145
11/13/08	11.80	23.40	2.5	2.0	2.60	5.16	13.18	14.20	1,163	1,163
11/14/08	19.23	38.13	2.5	2.0	2.73	5.41	13.16	14.25	1,178	1,178
11/15/08	9.16	18.16	2.5	2.0	2.60	5.16	14.31	14.31	1,191	1,191
11/16/08	9.13	18.10	2.5	2.0	2.33	4.62	14.39	14.39	1,205	1,205
11/17/08	9.73	19.29	2.5	2.0	2.33	4.62	14.43	14.43	1,218	1,218
11/18/08	17.92	35.54	2.5	2.0	2.42	4.80	14.57	14.57	1,249	1,249
11/19/08	4.15	8.23	2.5	2.0	2.15	4.26	14.59	14.59	1,253	1,253
11/20/08	4.74	9.40	2.5	2.0	2.24	4.44	14.61	14.61	1,258	1,258
11/21/08	4.15	8.23	2.5	2.0	2.15	4.26	14.63	14.63	1,262	1,262
11/22/08	10.87	21.56	2.5	2.0	2.50	4.96	14.70	14.70	1,278	1,278
11/23/08	11.10	22.01	2.5	2.0	2.50	4.96	14.78	14.78	1,295	1,295
11/24/08	25.70	50.96	2.5	2.0	2.51	4.98	14.85	14.85	1,312	1,312
11/25/08	2.51	4.98	2.5	2.0	2.51	4.98	14.83	14.85	1,312	1,312
11/26/08	2.40	4.76	2.5	2.0	2.73	5.41	14.81	14.84	1,311	1,311
11/27/08	2.45	4.86	2.5	2.0	2.85	5.65	14.78	14.84	1,311	1,311
11/28/08	2.50	4.96	2.5	2.0	2.73	5.41	14.76	14.84	1,310	1,310
11/29/08	2.35	4.66	2.5	2.0	2.73	5.41	14.74	14.83	1,309	1,309
11/30/08	2.75	5.45	2.5	2.0	2.73	5.41	14.72	14.83	1,309	1,309
12/01/08	2.73	5.41	2.5	2.0	2.73	5.41	14.83	14.83	1,308	1,308
12/02/08	2.60	5.16	2.5	2.0	2.60	5.16	14.71	14.83	1,308	1,308
12/03/08	2.60	5.16	2.5	2.0	2.73	5.41	14.79	14.83	1,308	1,308
12/04/08	0.00	0.00	2.5	2.0	2.80	5.55	14.77	14.80	1,302	1,302
12/05/08	0.00	0.00	2.5	2.0	2.85	5.65	14.74	14.79	1,295	1,295
12/06/08	0.00	0.00	2.5	2.0	2.90	5.75	14.00	14.75	1,289	1,289
12/07/08	0.00	0.00	2.5	2.0	2.90	5.75	72.00	14.72	1,282	1,282
12/08/08	0.00	0.00	2.5	2.0	2.73	5.41	14.70	14.69	1,276	1,276

Table 2, continued. Caples Lake draw down schedule (page 3 of 4)

Date	Caples Lake Inflow	Caples Lake Inflow	Caples Release Flow Target	ERC Approved Min. Flow	Caples Release Flow Actual	Caples Release Flow Actual	Caples Staff Gage Read Target	Caples Staff Gage Read Actual	Caples Storage Target	Caples Storage Actual
	cfs	ac-ft	cfs	cfs	cfs	ac-ft	ft	ft	ac-ft	ac-ft
12/09/08	7.10	14.08	2.5	2.0	2.60	5.16	14.68	14.73	1,285	1,285
12/10/08	2.51	4.98	2.5	2.0	2.51	4.98	14.65	14.73	1,285	1,285
12/11/08	0.00	0.00	2.5	2.0	2.51	4.98	14.63	14.59	1,253	1,253
12/12/08	2.51	4.98	2.5	2.0	2.51	4.98	14.31	14.59	1,253	1,253
12/13/08	9.80	19.43	2.5	2.0	2.51	4.98	14.59	14.65	1,267	1,267
12/14/08	11.50	22.80	2.5	2.0	2.51	4.98	14.56	14.72	1,285	1,285
12/15/08	7.23	14.34	2.5	2.0	2.73	5.41	14.77	14.77	1,294	1,294
12/16/08	0.50	0.99	2.5	2.0	2.60	5.16	14.75	14.75	1,290	1,290
12/17/08	0.08	0.16	2.5	2.0	2.60	5.16	14.73	14.73	1,285	1,285
12/18/08	8.40	16.66	2.5	2.0	2.85	5.65	14.78	14.78	1,296	1,296
12/19/08	9.60	19.04	2.5	2.0	2.60	5.16	14.84	14.84	1,310	1,310
12/20/08	4.78	9.48	2.5	2.0	2.42	4.80	14.86	14.86	1,315	1,315
12/21/08	5.02	9.95	2.5	2.0	2.40	4.76	14.88	14.88	1,320	1,320
12/22/08	7.30	14.48	2.5	2.0	2.73	5.41	14.90	14.90	1,324	1,324
12/23/08	7.35	14.58	2.5	2.0	2.85	5.65	14.94	14.94	1,333	1,333
12/24/08	0.85	1.69	2.5	2.0	2.73	5.41	14.92	14.92	1,329	1,329
12/25/08	10.80	21.42	2.5	2.0	2.73	5.41	14.99	14.99	1,345	1,345
12/26/08	10.75	21.32	2.5	2.0	2.73	5.41	15.05	15.05	1,361	1,361
12/27/08	10.93	21.67	2.5	2.0	2.60	5.16	15.12	15.12	1,377	1,377
12/28/08	10.71	21.24	2.5	2.0	2.60	5.16	15.19	15.19	1,393	1,393
12/29/08	2.60	5.16	2.5	2.0	2.60	5.16	15.26	15.26	1,408	1,408
12/30/08	5.10	10.11	2.5	2.0	2.60	5.16	15.28	15.28	1,413	1,413
12/31/08	2.60	5.16	2.5	2.0	2.60	5.16	15.28	15.28	1,413	1,413
01/01/09	11.00	21.81	2.5	2.0	2.60	5.16	15.35	15.35	1,430	1,430
01/02/09	17.10	33.91	2.5	2.0	2.60	5.16	15.42	15.42	1,446	1,446
01/03/09	5.10	10.11	2.5	2.0	2.60	5.16	15.44	15.44	1,451	1,451
01/04/09	5.00	9.92	2.5	2.0	2.60	5.16	15.46	15.46	1,456	1,456
01/05/09	2.60	5.16	2.5	2.0	2.60	5.16	15.49	15.49	1,462	1,462
01/06/09	17.10	33.91	2.5	2.0	2.60	5.16	15.61	15.61	1,491	1,491
01/07/09	3.10	6.15	2.5	2.0	3.10	6.15	15.61	15.61	1,491	1,491
01/08/09	3.48	6.90	2.5	2.0	3.48	6.90	15.61	15.61	1,491	1,491
01/09/09	2.24	4.44	2.5	2.0	2.24	4.44	15.61	15.61	1,491	1,491
01/10/09	4.30	8.53	2.5	2.0	2.98	5.91	15.63	15.63	1,494	1,494
01/11/09	4.75	9.42	2.5	2.0	2.85	5.65	15.64	15.64	1,497	1,497
01/12/09	4.28	8.49	2.5	2.0	2.60	5.16	15.65	15.65	1,501	1,501
01/13/09	2.60	5.16	2.5	2.0	2.60	5.16	15.65	15.65	1,501	1,501
01/14/09	0.00	0.00	2.5	2.0	2.60	5.16	15.63	15.63	1,496	1,496
01/15/09	3.60	7.14	2.5	2.0	2.60	5.16	15.64	15.64	1,498	1,498
01/16/09	2.60	5.16	2.5	2.0	2.60	5.16	15.64	15.64	1,498	1,498
01/17/09	2.73	5.41	2.5	2.0	2.60	5.16	15.64	15.64	1,498	1,498
01/18/09	2.86	5.67	2.5	2.0	2.60	5.16	15.64	15.64	1,499	1,499
01/19/09	3.00	5.95	2.5	2.0	2.60	5.16	15.65	15.65	1,500	1,500
01/20/09	3.00	5.95	2.5	2.0	2.60	5.16	15.65	15.65	1,501	1,501

Table 2, continued. Caples Lake draw down schedule (page 4 of 4)

Date	Caples Lake Inflow	Caples Lake Inflow	Caples Release Flow Target	ERC Approved Min. Flow	Caples Release Flow Actual	Caples Release Flow Actual	Caples Staff Gage Read Target	Caples Staff Gage Read Actual	Caples Storage Target	Caples Storage Actual
	cfs	ac-ft	cfs	cfs	cfs	ac-ft	ft	ft	ac-ft	ac-ft
01/21/09	1.01	2.00	2.5	2.0	2.51	4.98	15.64	15.64	1,498	1,498
01/22/09	1.50	2.97	2.5	2.0	2.51	4.98	15.63	15.63	1,496	1,496
01/23/09	36.60	72.58	2.5	2.0	2.51	4.98	15.91	15.91	1,564	1,564
01/24/09	18.50	36.69	2.5	2.0	2.51	4.98	16.04	16.04	1,596	1,596
01/25/09	18.50	36.69	2.5	2.0	2.51	4.98	16.17	16.17	1,628	1,628
01/26/09	22.01	43.65	2.5	2.0	2.51	4.98	16.30	16.30	1,660	1,660
01/27/09	8.10	16.06	2.5	2.0	2.60	5.16	16.34	16.34	1,671	1,671
01/28/09	15.10	29.94	2.5	2.0	2.60	5.16	16.44	16.44	1,696	1,696
01/29/09	15.10	29.94	2.5	2.0	2.60	5.16	16.54	16.54	1,721	1,721
01/30/09	7.73	15.33	2.5	2.0	2.73	5.41	16.58	16.58	1,731	1,731
01/31/09	6.00	11.90	2.5	2.0	2.51	4.98	16.61	16.61	1,738	1,738
02/01/09	6.00	11.90	2.5	2.0	2.51	4.98	16.64	16.64	1,745	1,745
02/02/09	2.51	4.98	2.5	2.0	2.51	4.98	16.66	16.66	1,751	1,751
02/03/09	2.51	4.98	2.5	2.0	2.51	4.98	16.66	16.66	1,751	1,751
02/04/09	11.60	23.00	2.5	2.0	2.60	5.16	16.73	16.73	1,769	1,769
02/05/09	10.50	20.82	2.5	2.0	2.42	4.80	16.79	16.79	1,785	1,785
02/06/09	7.78	15.43	2.5	2.0	2.73	5.41	16.83	16.83	1,795	1,795
02/07/09	11.50	22.80	2.5	2.0	2.73	5.41	16.89	16.89	1,812	1,812
02/08/09	11.50	22.80	2.5	2.0	2.73	5.41	17.96	17.96	1,830	1,830
02/09/09	13.10	25.98	2.5	2.0	2.60	5.16	17.03	17.03	1,847	1,847
02/10/09	15.70	31.13	2.5	2.0	2.60	5.16	17.13	17.13	1,873	1,873
02/11/09	10.10	20.03	2.5	2.0	2.60	5.16	17.19	17.19	1,888	1,888
02/12/09	14.60	28.95	2.5	2.0	2.60	5.16	17.28	17.28	1,912	1,912
02/13/09	6.60	13.09	2.5	2.0	2.60	5.16	17.31	17.31	1,920	1,920
02/14/09	16.00	31.73	2.5	2.0	2.60	5.16	17.41	17.41	1,947	1,947
02/15/09	16.50	32.72	2.5	2.0	2.60	5.16	17.51	17.51	1,974	1,974
02/16/09	16.00	31.73	2.5	2.0	2.60	5.16	17.61	17.61	2,001	2,001
02/17/09	29.60	58.70	2.5	2.0	2.60	5.16	17.72	17.72	2,029	2,029
02/18/09	2.42	4.80	2.5	2.0	2.42	4.80	17.72	17.72	2,029	2,029

Appendices A – I:

Appendix A: EID Emergency Declaration

FERC PROJECT NO. 184
DSOD DAM NO. 53-13
CAPLES LAKE OUTLET EMERGENCY REPAIRS
PROJECT DESCRIPTION

EL DORADO IRRIGATION DISTRICT

AUGUST 2008

SUMMARY

The purpose of the Caples Lake Outlet Emergency Repairs Project is to restore the safety and operational reliability of the malfunctioning reservoir regulating gates in the outlet system. The outlet system consists of a submerged concrete intake with a trash rack located approximately 200 ft upstream of the dam centerline; approximately 185 ft of concrete conduit with a 4.5 ft horseshoe shape; a 68.5 ft high central concrete shaft located immediately upstream of the dam centerline with a gate shaft and an air shaft separated by a concrete breast wall; two 2.5 ft by 2.5 ft sluice gates (upper gate and bottom gate) with mechanical operators located within a gate building on the crest of the dam; and a concrete conduit approximately 203 ft long to a downstream concrete outlet discharge portal. The existing outlet system was built in two stages with the lower, and oldest, portions completed in 1917 and 1918 and the upper portions of the concrete shaft between 1922 and 1923.

District staff experienced gate binding in June 2006 and immediately conducted a remote camera inspection and identified extensive corrosion on the two gates and broken stem guides. A follow-up manned dive inspection of the outlet works, in June 2008, discovered many other deficiencies in the gates and appurtenances which then recognized the present risk of sudden failure during operation. The gates were judged to be unsafe and unreliable for continued operation.

The overall findings of the inspection were that the gates and appurtenances were in a severely deteriorated condition compromising their structural integrity and were found to be irreparable. Specifically, brass sets for the lower slide gate were missing, resulting in excessive leakage and vibration; the lifting connection of the lower slide gate leaf and the gate stem is degraded and loose; the concrete adjacent to the lower slide gate frame is heavily eroded, resulting in steel reinforcement exposure and corrosion; the lower gate stem is bent in two directions, which results in binding against the concrete shaft wall and the upper gate during gate operation; several metal stem restraints required to align, guide, and prevent stem buckling are missing or broken, the slide gates, gate stems, and stem guides are all severely corroded, compromising their structural integrity and putting them at risk of sudden failure, both gate stems were installed out-of-plumb; combined leakage from the closed slide gates was approximately 900 gallons per minute (2 cfs); the trash rack on the intake is severely bent and dislodged from its original installation. Due to the inherent limitations of underwater inspection, not all components of the system could be inspected and there remain the potential for additional necessary repairs. In this case, complete inspections and rehabilitations can be completed only in a de-watered condition.

The gates were judged to be unsafe and unreliable for continued operation. The recommended project consists of measures to replace the existing gates, gate frames, gate stems, gate wall guides, mechanical operators, complete concrete repairs, and replace the trashrack in order to renew the system and restore operational reliability. The full scope of the work may change depending on the findings of the dry inspection which will be conducted at the beginning of the construction period.

To accomplish the gate replacement project, it will be necessary to completely dewater the outlet system and accomplish the work in the dry. This will require lowering the reservoir, installing a temporary cofferdam, installing a flow bypass system, and providing necessary health and safety

protocols for working in the outlet shaft and outlet conduit. The existing outlet gates and existing hardware will be removed. The existing concrete shaft and conduit system will be inspected by engineers with indicated damage repairs specified. New stainless steel gate wall thimbles will be installed through the breast wall concrete ports to armor the concrete and provide mounting for the new slide gates. The new stainless steel sluice gates, stems, and wall brackets will be mounted to the breast wall. The new mechanical operators and floor stands will be installed in the gate control building. The gates will be aligned and tested. The upstream trash rack will be replaced with a like steel bar structure into the upstream intake. The gate replacement project will not affect the outlet works capacity.

When the system restoration is complete, inspected, and tested, the temporary cofferdam and flow bypass system will be removed and the outlet system partially re-watered.

The emergency project began July 1, 2008 with the District Board declaration of an emergency. Reservoir drawdown commenced on July 21, 2008 and is anticipated to continue through beginning of construction in mid September. Mobilization will be initiated September 2, 2008 and construction will continue through mid to late October 2008.

Facility Description

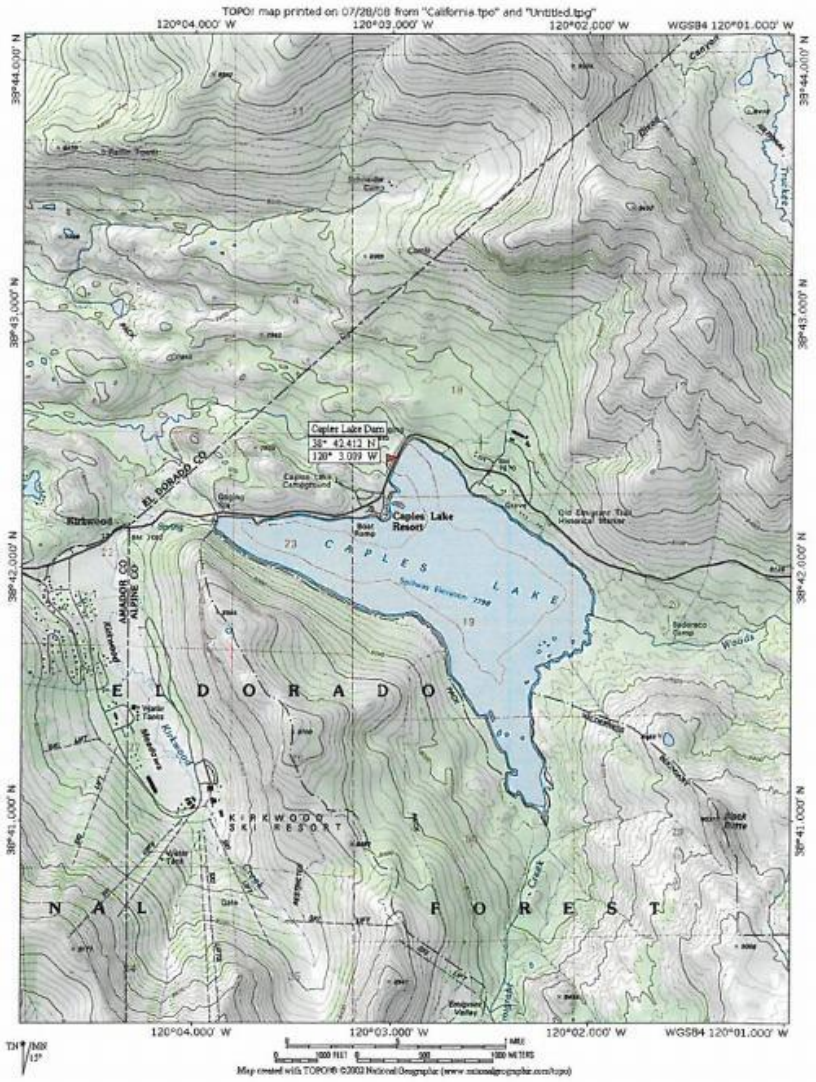
Caples Lake is part of FERC Project 184-CA, which also includes El Dorado Forebay, Silver Lake, Lake Aloha, and Echo Lake these dams are also under the jurisdiction of California Department of Water Resources Division of Safety of Dams (DSOD No. 53-13). Caples Lake is formed by a Main Dam and an Auxiliary Dam, located about 0.8 miles apart. The Main Dam is on Caples Creek and the Auxiliary Dam is on a small, unnamed branch of Caples Creek southwest of the Main Dam. The reservoir serves the primary function of storing spring snowmelt runoff and releasing it throughout the year to serve power generation commitments downstream. Caples Lake also supports recreational uses. The dam is classified as a "High Hazard Potential" structure under the FERC guidelines.

Project Location

Caples Lake Main Dam is located on Caples Creek on the south side of U.S. Highway 88 in northwest Alpine County. Caples Creek flows into the Silver Fork of the American River. See Figure 1. Construction work will be performed within the FERC Project 184-CA boundary on United States Forest Service (FS) lands.

Alpine County.

Figure 1 – Project Location



Low-Level Outlets

A small gate house is located at the upstream edge of the dam crest and contains the manual gate operators. The shaft is dual chambered with the upstream, full height chamber being open to full reservoir head, while the downstream, full height chamber receives discharges from the upstream chamber through ports in the wall separating the two chambers. There are three 30-inch-square

ports with inverts at El. 7892.0, 7920.0, and 7945.0 ft (El. 7736.9 ft, 7764.9 ft, and 7789.9 ft USGS). The upper port at El. 7945.0 ft (El. 7789.9 ft USGS) is bulk-headed and has never been used. The middle and bottom ports are controlled by 30-inch-square, manually operated slide gates controlled from the gate house at the crest.

The single reservoir outlet consists of a horseshoe-shaped, 4.5-foot-high, reinforced concrete conduit at the base of the Main Dam near its maximum section. The conduit is controlled from a 69-foot-high, reinforced concrete gate shaft, contained within the embankment.

The outlet conduit is guarded at its upstream end by a small, inclined, steel grizzly. The conduit discharges freely at its downstream end to the natural channel of Caples Creek. The maximum rated discharge capacity with both gates open is about 350 cfs. Releases are continuously gauged at a weir and recorder about 1,000 feet downstream.

Previous Reservoir Drawdowns and Subsequent Refills
Data back through 1972 indicate that the reservoir experienced near complete drawdowns in 1972, 1975, 1981, and 1987. Data previous to 1972 is not available.

- 1972: Caples Lake was drawn down to 479 acre feet and filled to 20,155 acre feet
- 1975: Caples Lake was drawn down to 2,790 acre feet and filled to 21,155 acre feet
- 1981: Caples Lake was drawn down to 2,371 acre feet and filled to 17,465 acre feet
- 1987: Caples Lake was drawn down to 2,427 acre feet and filled to 12,326 acre feet

After considering the instream flow releases to Caples Creek throughout the winter, it is anticipated that the reservoir drawdown due to the gates replacement project and winter bypass flows will be similar to that of 1972.

CONSTRUCTION

Construction Alternatives Reviewed by GEI Consulting, Syblon Reid Construction, and District staff

1. >6' Bladder Dam Bladder Dam -Completing work in the dry:
    a. Pros: Complete repair possible, allow a greater capacity of water to be retained in Caples Lake for fisheries, instream flows
    b. Cons: Worker safety, constructability difficulties and additional requirements for worker safety, scheduling delays to meet DSOD jurisdictional dam requirements, construction delays, fisheries benefit not known

2. Completing work in the wet:
    a. Pros: not necessary to completely reservoir
    b. Cons: extensive underwater work in confined space, worker safety, dam and outlet facility not designed to withstand resulting forces, puts the dam in jeopardy due to tunnel buoyancy, DSOD/FERC compliance, lengthened regulatory review and construction duration, and construction delays.

3. Installing a Tunnel Plug
    a. Pros: No bladder dam required
    b. Cons: Limits inspection and repair of outlet works, worker safety, construction period lengthens due to confined space, less reservoir storage than alternative 4, facility/personnel safety limitation

4. <5.9' Bladder Dam Storing 5 vertical feet -Completing work in the dry:
    a. Pros: Complete repair possible
    b. Cons: Reservoir fisheries will be impacted

Pre-construction tasks

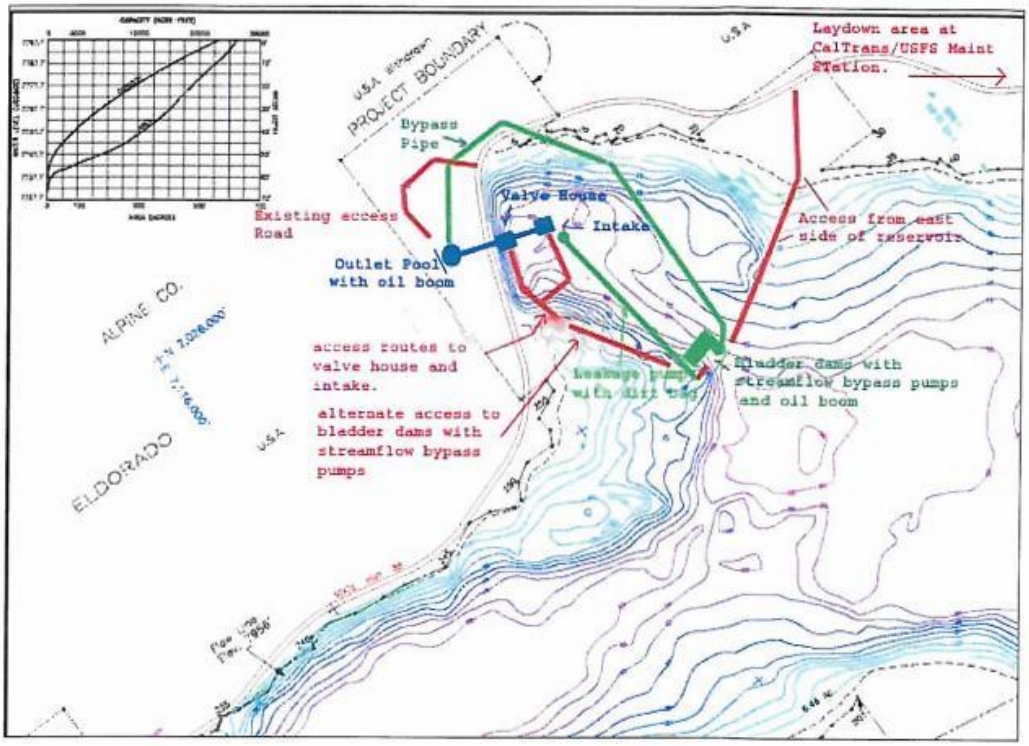
The pre-construction phase of the project encompasses all activities which occur prior to the beginning of site construction work. This includes site walk downs, acquisition of all necessary permits, and preparation of the pre-job safety and emergency response plan. Construction mobilization is scheduled to begin September 2, 2008. A six man construction crew is planned for the majority of the time.

Site access

Several potential access routes have been identified including the overflow parking lot used by Caples Lake Resort and the Caples Lake Tender's house as indicated in Figure 2. The parking lot can serve as a staging area for construction equipment and materials. The parking lot may also serve as the entry point into the lake bed. There is an existing trail that will need some small brush removal, boulder relocation, and minor grading to facilitate access. It appears that no tree removal will be necessary with this route. See Figure 3 and 4 for staging area to water's edge from the parking lot.

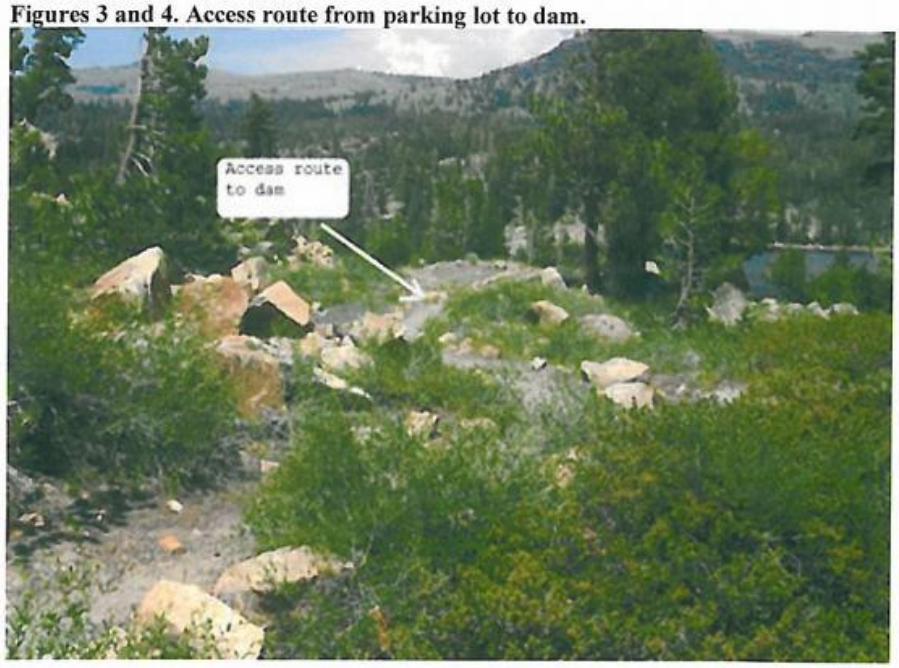
Once this access road reaches the lake below high water mark, the road will split. One leg of the road will be routed to obtain access to the dam's bench on the upstream side of the reservoir on the dam at elevation 7949 above sea level and the other leg will traverse its way down to the intake area as water recedes.

Figure 2. Access routes and bypass pump pipe alignment



Access to the bladder dam and stream flow bypass system location will be from the east side of the reservoir at the location. Gate construction activities will be conducted so as not to interfere with the FS boat launch construction scheduled concurrently. A temporary spur road may be constructed adjacent to the boat launch facility to avoid any interference between the projects. As with the west access route, the road will be extended down to the lower elevations of the lake bed as water recedes.

Figures 3 and 4. Access route from parking lot to dam.



Install Temporary Facilities

For safety concerns, a log boom barrier will be installed to restrict public access to the low level inlet area during the drawdown period. This will be accomplished by temporarily moving the existing barrier located at the spillway area to the main dam. Temporary pre-cast cured concrete anchors will be placed on the shore line and in the lake as to ensure that the barrier fully warns anyone from getting too close to the intake. See photo below for general location of log boom.

Bypass stream flow will be required during construction activities and throughout the winter. As the lake lowers, the discharge piping for the stream flow bypass system will be installed. The 12 inch piping will extend from the discharge pool at the downstream side the dam, up the right side of the dam to an existing 16 inch culvert pipe approximately 300' east of the dam. The piping will be located up on the bank on the north side of Highway 88 limiting vulnerability to crushing and other impacts from road traffic on the shoulder and ditch. The discharge pipe will go under Highway 88 via this culvert and extend out to a location in the lake where the pumps will be placed. The pump will be either electrical submersible or trailer mounted centrifugal pumps. Duplicate pumping systems will be installed with an automatic transfer switch. In the event that the primary pumping system fails, an automatic transfer switch will engage the back up pump preventing interruptions in bypass flows. Each pumping system will be designed to pump 2 to 5 cfs.

Through review of the original lake drawings and a more current bathymetric survey, it appears there is a narrow gap in the lake bed approximately 1200 feet upstream of the dam, which appears to be at the approximate location of the original natural control to the original Twin Lakes. After the stream flow bypass pumping system is operational, a double 5.9 foot high water filled bladder dam (storing 5 feet) will be installed at this location to store stream flow bypass water. Pumps will be placed slightly upstream of the bladder dam. See photo of typical bladder dam with bypass pumps. The District is researching the feasibility of procuring and installing a taller and longer bladder dam which would not increase the risk to construction personnel and meet CA Division of Safety of Dams jurisdictional dam requirements for construction and operation.

Once the bladder dam is installed, the remaining downstream portion of the lake will continue to drain. A small sand-filled sack dam will be installed in the concrete inlet area to prevent any seepage water from entering the work area. Leakage and free draining water downstream of the main bladder dams will be captured at this location and pumped up and over the bladder dams into the lake.

Once water control has been established, the existing damaged trash rack will be removed and temporary facilities in the work areas will be installed. These include ventilation systems, tunnel lights, electrical lines, compressed air lines, and mine phone type communications. At this point, a detailed inspection of the facility will occur.

Access to the work areas inside the concrete conduit will mainly be from both the upstream and downstream portals. At the downstream portal, a simple aluminum walk board system with hand rails will be placed in such a manner to avoid walking into the discharge pool water below the dam. Also near the downstream portal, a small sack dam will be installed inside the concrete conduit to capture any debris or potential leakage water that may be contaminated with cementious material. This water will be pumped to a tank truck or other containment area to prevent discharge directly into the downstream discharge pool. Any cementious water collected will be transported from the site and disposed of properly.

Since a portion of the work will be conducted in the two vertical shafts that intersect with the lower conduit, the roof of the existing outlet gate building will need to be removed. Exterior scaffolding will be erected on 2 to 3 sides of the building to facilitate safe roof removal. This will allow lowering and removing materials via a small crane or boom truck sitting on the bench at elevation 7949 and allow the installation of fall protection and scaffold systems. A safety rail will be installed inside the valve building to prevent unauthorized entry to the shaft areas.

Demolition/Investigation

Once all the tunnel utilities and safety measures have been installed, the existing sluice gates, stems and frames, and guides will be removed. There will also be concrete cutting and removal necessary for installation of the new gate and wall thimble.

Core samples will be taken to determine the existing concrete compressive strength. Any areas discovered that have spalled, eroded, or deteriorated concrete, or exposed reinforcing steel will have the perimeter of the patch area saw cut and chipped out.

It is suspected that portions of the existing corroded steel ladder rungs in the wet shaft will need to be removed and replaced.

Gate Assembly and Trash Rack Installation

The concrete in the gate opening ports will be enlarged, formed, and backfilled with 4000 psi concrete with an epoxy bonding agent. The new stainless steel thimbles will also be cast in place. Forms will be stripped after the proper cure time and the gate frames, new stainless steel gates, wall guides, stems, and mechanical operators will be installed. Testing of the gates in the dry will be performed to check for proper operation and leakage.

The existing floor inside the valve house at the top of the gate shaft will be modified for the installation of the new support beams for new manual operators. New gripstrut or bar grating will be installed to close the wet shaft opening. The vent shaft conduit that currently exits at the top inside of the valve house will be replaced in kind.

A new trash rack will be installed. In the event that spalled or deteriorated concrete is discovered in the trash rack area, it will be repaired using high strength, non shrink repair grout. The new trash rack will be constructed of hot-dipped galvanized steel material with stainless steel anchor bolts.

Miscellaneous Repairs
As noted in the demolition section, core samples will be taken to determined existing concrete strength. These holes as well as any other areas of concrete deterioration will be filled using a high strength, non shrink repair mortar. In the event that cracks in the concrete are discovered, they will be repaired by epoxy injection procedures as directed by the engineer.

Watering-up and Testing
After all the construction repairs and new installations and dry testing are complete, the temporary sack dam in the intake area will be removed. The bladder dams will be slowly deflated to re-water the intake area. When flows can be re-established from the upstream side of the bladder dams to the intake area, the bypass pumping system will be shutdown and removed. Complete removal of the bladder dams will then commence.

Clean up and Demobilization
Following completion of construction activities, the job site will be returned, as much as is reasonably practical, to its original condition. All the tunnel utilities will be removed just prior to watering up the system. The temporary anchors for the log boom will be removed. Boulders will be placed to block the access roads above the high water mark. The roof for the valve house will be replaced in kind with the possible exception of adding a new roof hatch.

Equipment
Construction equipment that is expected to be used on the site and the temporary access roads include:

- backhoe/front-loader
- excavator
- crane truck
- water truck
- trailer mounted with air compressor
- 2 small trailer mounted generators
- water truck
- concrete pump truck
- rubber tracked vehicle
- light plant
- pickup/crew trucks with supplies.

All equipment will be pressure washed and inspected prior to transporting to the work site.

Traffic Control
Initially, several loads per day for a one week period will be transporting construction and equipment materials to various locations between the hours of 0800 and 1630. After initial delivery of materials and equipment, one or two trucks per day are anticipated. Since the potential lay down areas and access routes already have established encroachments, the only need for traffic control would be the installation of the stream flow bypass piping through an existing culvert under Highway 88 and possibly a short one lane closure to remove and replace the roof on the valve house. The District will obtain an encroachment permit from Caltrans for these activities.

Work Shift/Schedule
It is anticipated that the work will be performed on a 5 day a week 8 hour a day schedule, Monday through Friday up until the time when the bladder dam and streamflow bypass system will be installed. At that time, the pumps and other work site critical equipment will be observed 24 hours a day and the remaining work is scheduled to be performed at a minimum of 10 hour days, 7 days a week.

Erosion Control/Dust Abatement
The construction sites and laydown areas are paved or exposed granite and gravels. Therefore, dust abatement would largely be unnecessary. However, the access routes down into the reservoir may create nuisance dust if the lake bed sufficiently dries out. A water truck or pumps with fire hose will be used to mitigate nuisance dust where necessary. Best management practices including the use of straw bales, straw mulch, fiber rolls, silt fence, etc. will be employed and upon leaving certain locations reinstallation of surface drainage ditches, water bars, and filter barriers would be provided to mitigate any potential erosion from rain.

Water Quality/Discharge
During construction, attempts will be taken to avoid turbidity in the streamflow bypass system and at existing access routes on the project site. However, some turbidity may occur in the process of installing these systems and the resulting affect of the drawdown of the reservoir. The location of the bladder dams and bypass pumping station was chosen as to minimize the affects of soil disturbance associated with the access roads to the work areas. Minor excavation/grading and lake bed disturbance will be done in the dry whenever possible. All stationary equipment will be placed or located in lined secondary containment berms to capture any possible leakage of petroleum products. Oil collection booms will be placed as precautionary measures.

Fire Prevention / Protection Plan
The provisions below outline the channels of responsibility for fire prevention and suppression activities, and establish an attack procedure for fires. Project personnel will make all reasonable efforts to prevent and suppress wild fires. A FS Fire Plan will be prepared and implemented.

Hazardous Material
Material such as fuel (gasoline/diesel), hydraulic oil, and motor oil, will be used on the job site. Material Safety Data Sheets for all substances used on the job site would be on file at the field office, as required by the Hazard Communication Law, General Industry Safety Orders, Sec. 5194, and will be available as necessary.

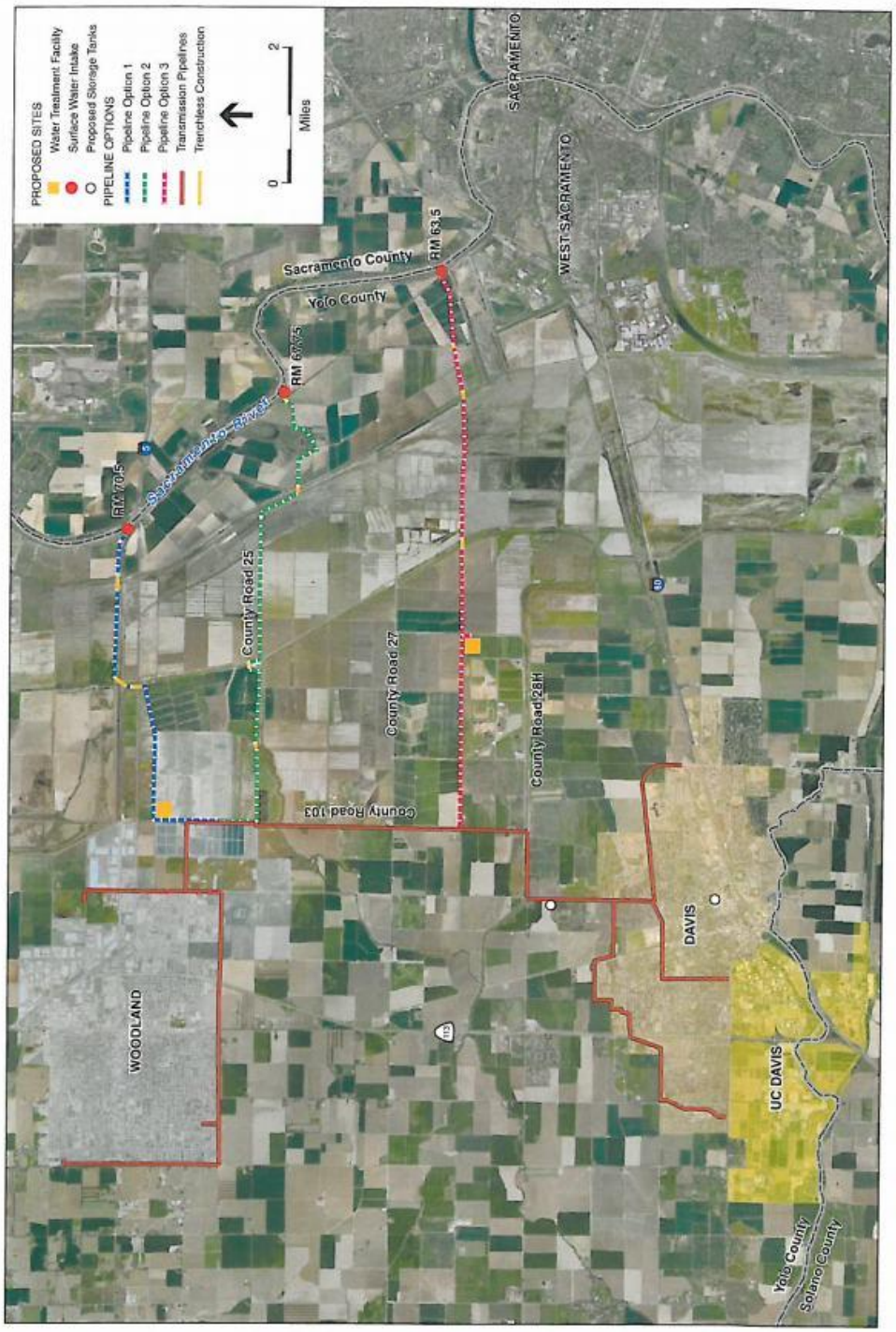
Hazardous waste products such as grease cartridges and oil absorbents will be placed in proper containers and transported from the job site to an authorized Hazardous Waste Collection Site.

Fuel will be delivered by a conventional lube truck to the site on a regular basis. Trucks and equipment not readily accessible by the lube truck would be refueled as required from 110 gallon capacity diesel tanks carried in the back of pickup trucks or in a rubber tracked vehicle. It is not anticipated to have a fuel tank on site.

Permitting and Agency Requirements
EID is continuing to consult with resource agencies to obtain any necessary approvals and permits that may be necessary to conduct this work including, but not limited to:

- California Department of Water Resources Division of Safety of Dams
- Federal Energy Regulatory Commission
- California Department of Fish and Game Lakebed Alteration Agreement
- Army Corps of Engineers Section 404 Permit
- Regional Water Quality Control Board Section 401 Water Quality Certification
- FS Archaeological Resources Protection Act Special Use Permit
- Caltrans Encroachment Permit

FERC License Requirements
All work will comply with Project 184 FERC license requirements including the FS section 4(e) conditions, the California State Water Resources Control Board section 401 water quality certification conditions, and FERC License Articles. If deviations from license requirements are necessary, all procedures defined in the license will be followed.



SOURCE: GlobeXplorer, 2006; West Yost & Associates, 2006; and ESA, 2006

Davis-Woodland Water Supply Project EIR . 205413

Figure 2-2
Potential Locations of Project Facilities

FINAL

Caples Lake Fisheries Management Plan

Version 4.0

August 18, 2008

Purpose

The Caples Lake Fisheries Management Plan (Plan) outlines the stocking plan to re-establish a sport fishery in Caples Lake following completion of the Caples Lake Main Dam Emergency Repair Project.

Introduction

El Dorado Irrigation District (EID) conducted an underwater inspection of the Caples Lake Main Dam outlet works in June 2008. Both slide gates and appurtenances were found to be in severely deteriorated condition and were judged to be unsafe and unreliable for continued operation. At a special meeting on July 1, 2008, the EID Board of Directors declared an emergency and directed EID staff to proceed with necessary repairs.

To accomplish the emergency repairs, it is necessary to completely dewater the outlet system. This will require lowering the reservoir, installing a temporary cofferdam, installing a flow bypass system, and providing necessary health and safety protocols for contractors working in the outlet works including the vertical shaft and inlet and outlet conduits. Reservoir drawdown commenced on July 21, 2008. EID has prepared a drawdown schedule (Appendix A) which provides an estimate of releases required to bring the reservoir elevation down to complete the repairs in late September 2008.

The proposed temporary cofferdam will consist of double 5-6 foot high water filled bladder dams that will be installed in the lake bed approximately 1200 feet upstream of the dam. This location is just downstream of the original Twin Lakes. The volume of water that can be impounded (including the estimated 600 acre-feet in Twin Lakes) is approximately 1,500 - 2,000 acre-feet. High resolution bathymetric data will be collected in mid August 2008 which will provide data to inform the best placement of the bladder dams and refine calculations of total volume that can be impounded. The volume of water stored by the bladder dam will serve to provide streamflows during the emergency repairs and throughout the winter.

When the emergency repairs are completed, inspected, and tested, the temporary cofferdam and flow bypass system will be removed and the outlet system re-watered. Depending upon the remaining water in the reservoir at the end of construction, the bottom gate will be used for releases during the winter season and operated as necessary as the reservoir refills in the spring of 2009.

The California Department of Fish and Game (DFG) was consulted on the potential effects to the reservoir fisheries as a result of the low lake levels. Given the constraints on the volume of water that can be impounded, DFG has determined that the fisheries in Caples Lake will be severely impacted by crowding of large numbers of fish causing increased biochemical oxygen demand and decreased dissolved oxygen levels. The crowding may also cause increased predation of catchable and smaller size fish. The

minimal depth (10-15 feet) of the remaining pool will not likely be adequate to sustain the fish over the winter. The fishery will most likely not survive or at a minimum be severely impacted. DFG recommended that EID develop a fish restocking mitigation plan that is modeled after the DFG's Lake Davis Fisheries Management Plan (DFG 2007). This plan has been developed to respond to DFG's request.

General Setting

Caples Lake is part of the Federal Energy Regulatory Commission (FERC) Project 184-CA, which also includes Silver Lake, Lake Aloha, and Echo Lake. Caples Lake is formed by a Main Dam and an Auxiliary Dam, located about 0.8 miles apart. The Main Dam is located on Caples Creek and the Auxiliary Dam is located on a small, unnamed branch of Caples Creek to the left of the Main Dam. The reservoir serves the primary function of storing spring snowmelt runoff and releasing it throughout the year to serve power generation commitments downstream. The reservoir is capable of storing up to 21,600 acre-feet (AF) with a maximum surface area of 624 acres.

Caples Lake was constructed near a shallow lake basin called Twin Lakes. The volume of Twin lakes is estimated to be approximately 600 acre-feet with a maximum depth of approximately 15 feet. Based upon existing information the mean depth is estimated to be considerably less than 15 feet.

Status of the Fishery

Lake trout (mackinaw) fingerlings were first introduced into Caples Lake in 1965 and 1966. Based upon data collected it was determined that some of the fish did successfully reproduce in the reservoir. The most regularly captured lake trout are estimated to be between 7 and 12 years old. The lake trout that are greater than 24 inches (10+ lbs) are most likely 20+ years old. Large rainbow, brown and brook trout are also captured indicating that many fish do survive winter ice over conditions and carry over for several seasons.

Based on a review of records and creel survey data, DFG summarized the current fishery at Caples Lake as follows: The fishery is comprised of rainbow trout (mean size 10-14 inches), brown trout (mean size 12-14 inches with larger older fish (24+ inches), brook trout (mean size 12-14 inches, lake trout (mean size 17-23 inches) with large fish >24+ inches, >10lbs. showing up in the creel), tui chubs, and Sacramento suckers. The DFG stocks11,000 lbs. of catchable sized rainbow trout, 3,500 lbs. of catchable size brook trout, and 2,300 lbs. of catchable size brown trout. Approximately 30,000 lake trout fingerlings are also stocked into the reservoir each year (DFG 2008).

Management Program

EID's Plan is modeled after DFG's Lake Davis Fisheries Management Plan. The Plan consists of both short and long term components over a ten year timeframe. To restore fishing opportunities at Caples Lake in the short term, EID proposes to stock catchable

sized rainbow trout as well as large trophy sized rainbow and brown trout (~2.5 lbs). The planting of catchables will be supplemented by sub-catchables and fingerlings to support development of multiple age class structure in the fishery population. These younger fish are anticipated to develop into catchable size trout within 1-2 years depending on environmental conditions. The trophy sized rainbow and brown trout are proposed to replace the existing lake trout fishery until the population of this species recovers following construction.

To support restoration of the existing fishery in the long term, DFG proposes to stock lake trout fingerlings. Although lake trout are typically known for their slow growth rates, based upon consultations with DFG it is anticipated that these fish will utilize the niche created by replacement of the population and experience increased growth rates during the first several years.

Short term Management Objective:
Re-establish a multi-species catchable and trophy sport fishery as soon as Caples Lake fills to a level at which hatchery trucks can access the lake via a boat ramp or when environmental conditions allow the stocking of fingerling, sub-catchable, catchable, and trophy sized rainbow trout and trophy sized brown trout.

Long term Management Objective:
Work in cooperation with DFG to augment the existing lake trout fingerling program to help re-establish a lake trout trophy fishery. EID also proposes to augment the existing trophy stocking portion of the Fish Enhancement Fund with trophy sized rainbow and brown trout for an additional 9 years. This timeframe will allow the trophy lake trout fishery to re-establish and begin to show up in the creel.

Species Composition and Stocking Rates

The proposed stocking plan is focused on three sport fish species: rainbow trout, brown trout, and lake trout. Based upon consultation with DFG, it is anticipated that non-game species (Sacramento sucker and tui chub) will recover following refill of the reservoir.

Table 1 summarizes the proposed species composition, size class, and stocking rates for Year 1 of the Caples Lake Fisheries Management Plan. The stocking rate for trophy sized rainbow and brown trout is 10 fish per acre. The Lake Davis Fisheries Management Plan recommended 5 fish per acre due to the short term reduced forage base in the reservoir following the chemical treatment (DFG 2007). Because the forage base in Caples Lake will not be affected by chemical treatment, the stocking rate of 10 fish per acre is proposed for trophy rainbow and brown trout. Stocking rates for smaller size classes of trout include: fingerlings, 230 per acre; sub-catchable, 50 per acre; and catchable, 30 per acre.

In the first year, trophy rainbow trout, trophy brown trout, and catchable sized rainbow trout (included in Table 1) will be stocked immediately after the reservoir fills to an adequate level. This infusion of large numbers of catchable and trophy sized fish is

intended to immediately re-establish a sport fishery at Caples Lake. Stocking for sub-catchable and fingerling rainbow trout (included in Table 1) will occur later in the season, but will be based on input from the DFG and availability of each size class. The DFG will continue its stocking program (~11,000 lbs. of catchable sized rainbow trout, 3,500 lbs. of catchable size brook trout, and 2,300 lbs. of catchable size brown trout) throughout the rest of the season. In addition, during year one, DFG will stock an additional 50,000 lake trout fingerlings to the existing 30,000 fingerling DFG stocking program (~80,000 total).

Table 1: Recommended stocking rates for year 1 of the Plan based upon Lake Davis Fisheries Management Plan.

Caples Lake				
Surface acres	624			
Volume (acre-feet)	21,600			
Species and size class	Stocking rate (fish/acre)	Total fish	Average size (lb)	Total lbs
Rainbow Trout				
Trophy	10	6,240	2.5	15,600
Brown Trout				
Trophy	10	6,240	2.5	15,600
Rainbow Trout				
Fingerling	230	143,520		
Sub-catchable	50	31,200		3,900
Catchable	30	18,720		9,360
Lake Trout				
Fingerling		50,000		

In years two through ten, EID proposes to augment the existing trophy stocking program of the Fish Enhancement Fund with additional trophy sized rainbow and brown trout. Ten years was selected because this provides adequate time for the trophy lake trout fishery to re-establish and begin to be caught by anglers. The proposed stocking rate for trophy sized rainbows and brown trout in years 2-10 is approximately one fish per acre, representing ten times the stocking rate (0.1 fish per acre) recommended in the Lake Davis Fisheries Management Plan.

Coordination with Other Stocking Programs

EID proposes to integrate this fisheries management plan with existing stocking programs for Caples Lake to enhance the fisheries in Caples Lake after the completion of the emergency repairs:

> **DFG:** The American River Hatchery annually stocks approximately 30,000 lake trout fingerlings and approximately 11,000 lbs catchable size (8-12 inches; ½ lb) rainbow trout, 3,500 lbs. of catchable size brook trout, and 2,300 lbs. of catchable size brown trout into Caples Lake.

FISH ENHANCEMENT FUND
COMMITTEE MEETING
MEETING DATE: MARCH 31, 2004
PLACE: KIRKWOOD COMMUNITY SERVICES BUILDING

MEETING MINUTES

Attendees: Tom Henie (KMPUD), Stafford Lehr (California Department of Fish and Game), Leonard Turnbeaugh (Alpine County) Brad Pearson (Kit Carson Lodge, League to Save Sierra Lakes), Dick Wentzel (East Silver Lake), Miysha-el Gailson (Caples Lake Resort).

The meeting was opened with a general discussion regarding the purpose of the "Fish Enhancement Fund", the types and sizes of fish which could be planted, and a basis by which to determine the percentage of annual fish plantings allocated to Caples and Silver Lakes. Based on these discussions, Stafford Lehr (CDF&G) presented the following recommendations which were approved by the committee;

* Percentage of annual fish plantings to Caples Lake, 55%. Silver Lake, 45%.

* Type of fish. Rainbow. Possible plantings of German Brown "subcatchables" in future.

* Fish plantings per year. Three plantings per year minimum.

* First five year plan\fish size.

Year 1 & 2.

60%-------- 12" to 14" size.
40%-------- 2.5 lb. and above.

Year 3 & 4.

15%--------- 8" to 10" size.
51%--------- 12"to 14" size.
34%---------2.5 lb. and above.

Year 5.

5%-------- 4"to 8" (Pen Rearing).
10%--------- 8" to 10" size.
55%--------- 12" to 14" size.
30%---------2.5lb. and above.

There was also general agreement that this program could be extended beyond 10 years if community support can be built to provide donations of money and volunteer time. The pen rearing of fish at these lakes was discussed as a possible way to include the local communities into this program.

It was determined that the Fish Enhancement Fund Committee should meet at least twice a year to review the program and provide possible recommendations to the Ecological Resources Committee (ERC). These meetings would coincide with ERC meetings and take place just prior to the first fish planting for the year and after the last planting of the season.

Appendix C: Draft Rescue Options

Caples Lake Fish Rescue Options:

Option 1

- No Action

Option 2

- 3 NCR Electrofishing boats 3 people per boat 9 people.
- 2 Fish transport trailers, 2 trucks and 2 drivers.

Option 3

Limited one time rescue.

- 3 NCR Electrofishing boats. 3 people per boat total of 9 people.
- 2-5 gillnet/trammel net sets. Max 2 hour sets between checks. 1 boat fitted with live well with three people per 2 nets. Total 6-9 people 2 boats. Some fish will be lost but hopefully with short set times some can be saved.
- Up to 6 Hoop nets. 1 Boat fitted with livewell and crew of 3
- 2 hatchery trucks with drivers.
- 5-10 people to move fish from boats to trucks

Total of 25-30 people
Total of 6 boats

Option 4

- 5 Electrofishing boats, 3 NCR and 2 Bay Delta, 3 people per boat, 15 people
- 5-10 gill/trammel net sets. Max 2 hour sets between checks. 1 boat fitted with live well with three people per 2 nets. Total 15 people 5 boats. Some fish will be lost but hopefully with short set times some can be saved.
- Up to 6 Hoop nets. 1 Boat fitted with livewell and crew of 3
- 3 Hatchery trucks with drivers
- 10-15 people to move fish from boats to trucks

Total of 45-50 people
Total of 11 boats

Appendix D: Incident Action Plan

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

Caples Lake Fish Rescue Project

Incident Action Plan

August 8, 2008

Caples Lake Fish Rescue Incident Action Plan:

The goal of this project is to rescue as many fish as possible with the emphasis on trophy brown, rainbow and lake trout. This operation will be a one week effort beginning on Monday August 25 and going through Friday August 29. There will be day and night shift crews; each crew will work a 12 hour shift. While working at night can present safety hazards it also is the most effective time to intercept fish with the capture methods being used. A safety protocol is provided with specific steps for working at night.

The rescue operation will be broken into four main components.

1. **Incident Command Post (ICP) and Staging Area (SA)**
    a. Locate ICP and SA
    b. Mobilize ICP and Staging area
2. **Fish capture**
    a. Electrofishing
    b. Gill/trammel netting
    c. Hoop Netting
3. **Fish Transfer**
    a. Getting net pens to shore
    b. Transfer of fish from Net Pens to Trucks
    c. Delivery of fish to Silver and Red Lakes
4. **Demobilize**
    a. Dead fish disposal
    b. Clean up of ICP and staging area

ICP and SA

Locate ICP and SA.

Find a suitable location for ICP and SA. SA must have easy access for boats and hatchery trucks and adequate room to park all vehicles and equipment. SA must also have deep water access for net pens. ICP must have parking for 15-20 vehicles and a place to locate one travel trailer.

Mobilize ICP and Staging area

Monday, August 25 will be set aside for travel to Caples Lake and the set up of the staging area and Incident Command Post.

The ICP will be located at the Caples Lake Resort. A travel trailer will be located at the resort and will be the location for crews and volunteers to check in and out for the project, get lodging assignments and food vouchers. Volunteers will also need to fill out a DFG and EID waiver form and receive a pass to permit them access to the staging area.

The staging area will be located at the old PG&E lake tenders cabin. A travel trailer will be set up at the top of the staging area and will serve as the on site

command post. This will be the meeting location at the start and end of each shift for assignments and briefings, where crews will receive necessary equipment, GIS units are downloaded, maps created, and lunches snacks and drinks are delivered. It will also be the location of the first aid station.

There will be some minor leveling using heavy equipment that needs to be done at the staging area to facilitate the hatchery trucks getting access to the water. Pumps will need to be set up to fill the tanks on the hatchery trucks. Lights and generators will need to be set up for night operations. Tracks will need to be installed to facilitate the launching of boats, and tee posts will need to be driven into the shore to tie off the boats. Boats will need to be outfitted with nets, anchors, rope and floats as necessary and launched. Net pens will need to be constructed and anchored in water at least 15 feet deep.

Fish Capture:
On the water capture operations will start at 06:00 on Tuesday August 26 and will run continuously until 06:00 on Friday August 28.

Three main capture techniques are being used for this rescue operation. Each is designed to capture fish from a different section of the water column. As the project proceeds, capture methods and the number of boats and crews assigned to each type of capture method will be adjusted to maximize the number of fish caught and reduce mortalities.
In order to make the capture more efficient and reduce stress to fish, only visual estimates of length and species will be made.

Three net pens will be set up for crews to transfer fish to. One net pen will be for Brook Trout only which will be going to Red Lake. The other two Net Pens will be for all other fish and will be going to Silver Lake. A fisheries biologist or hatchery person on the boat will be checking the species of each fish before it is put into the net pen. Volunteers should not be determining the species of fish before it is placed into the net pen. If there is any doubt as to the species of the fish, it is to be kept in the livewell until it can be identified.

Crews are to keep track, on data sheets, the species and approximate size class of each fish placed into the net pens. In addition to the data sheets, skippers are to radio the information to the crew at the staging area each time they put fish into the net pens.
Any trout mortalities are to be brought back to the staging area so that the fish can be measured and have its head collected for future ageing studies.

The day shift net crews will mark the floats at the ends of each net with yellow light on the last set of their shift to allow them to be seen at night. Net boat crews will take a Latitude and Longitude (NAD 83) and make a waypoint at each net set location. Electrofishing boat crews will have the tracking feature on the GPS enabled to track the amount of water covered by the boats. Crew leads will

make note of which locations and reaches are most effective at capturing fish at relay that information at the post shift debriefing.

If any of the net crews can not keep up with the number of nets to check or the numbers of fish they are getting, additional boats will be reassigned to assist and the number of nets deployed reduced as necessary to keep set times short and reduce mortalities. The use of gill nets as a method for the capture and release of Lake Trout has been done on the Great Lakes for mark recapture tagging studies. Even with short net sets we are expecting approximately 50-60% mortality of fish caught in entanglement gear. While this is a high percentage of fish, it is believed that the majority of the fish left in the reservoir will not survive the winter. In addition it is the only way to capture a large number of fish out of deep water so it has been deemed acceptable for this rescue operation.

Electrofishing

Three electro-fishing boats will work the perimeter shore line and any other shallow areas during the day on the second day, then only at night thereafter. Skipper and Crews will be assigned at the beginning of shift briefing. Volunteers will be put on boats to be note takers and netters. Boat skipper is responsible for a safety briefing for all new crew members each time the boat leaves shore. Safety briefing must include the use of PFD, gloves, proper netting technique and the dangers of working on an electrofishing boat. In addition, the boat skipper should also go over their boat rules, storage of personal gear, proper electrofishing technique, and any other items they would like their crew members to know such as hand signals.

Gill/trammel netting

Two boats will be assigned to working gill/trammel nets. Each boat will be fitted with livewell and aeration pump. Each crew will start with 3 gill/trammel net sets. Nets will be set in deep areas of the reservoir, as well as any other areas that appear to have large concentrations of fish on fish finders including ledges and humps. Nets should be set at varying depths through the first two nights to see what is most effective. The goal is to capture fish alive, so crews will need to watch nets closely to judge set time, but should be set for no more than 2 hours between physical checks. More nets will be available to replace tangled nets or if additional nets can be fished effectively. Boat skipper is responsible for a briefing for all new crew members each time the boat leaves shore. Briefing must include the use of PFD and the dangers of working with entanglement type nets. Volunteers may be placed on to boats to assist in data taking efforts, help untangle fish, and assist as needed. Volunteers will not be allowed to pull or set nets.

Hoop netting

One boat will be assigned to work Hoop nets. This boat will also be fitted with a livewell and aeration pump. Up to 10 hoop nets will be placed in shallow and

deep areas of the lake, around the shoreline, underwater humps, islands etc. Nets should be checked approximately every 12 hours or the start of each shift. Once all hoop nets are deployed the boat can return to the staging area and pick up several gill nets to set. Boat skipper is responsible for a safety briefing for all new crew members each time the boat leaves shore. Safety Briefing must include the dangers of working with hoop nets. Volunteers may be placed on to boats to assist in data taking efforts, help remove fish, and assist as needed. Volunteers should not be allowed to pull or set nets.

Fish Transfer

The transfer of fish is an unknown component of this rescue operation due to the uncertainty of the numbers of fish that will be captured. The number of fish placed into each net pen will be monitored. A maximum of 2500 fish will be allowed per pen before the fish are transferred to the truck, or they will be empted in the mid morning after all day crews have been deployed whichever comes first.

Every fish that is removed from the net pen will need to be identified to species to ensure it is going into the proper truck.

Brining net pens to shore

The net pens will be anchored such that the anchor lines have attached floats and can be unattached using a carabineer or quick release type system. Two boats will pull along side the net pen and tie off. They will slowly shuttle the net pen into shore. Personnel will need to be on the net pens as they get close to shore and will need to slowly bring the bottom of the netting up as the water depth decreases to prevent it from snagging and tearing as it is brought to shore.

Transferring fish from net pens to trucks

As the net pens are being brought to shore, the hatchery trucks should be filled and a net passing line formed. Net passers will be predominantly volunteers, with a DFG biologist as the first person at the net pen, and the hatchery driver as the last person before the fish goes into the truck. Persons in the net line need to be lined up very close together so that the net can be passed without anyone taking a step or struggling to move the fish. All persons will be instructed to not stop the nets to look at the fish, take pictures, etc. This technique as proved to be the fastest way to get fish from the water to the trucks in previous rescues at Butte Creek, and it does not subject any one person to overly heavy weight. Once the net pens are brought to shore, the fish will be netted out, no more than two fish at a time, by either a fisheries biologist or hatchery person where they will identified to species then handed up the line to the waiting truck driver, who will then identify the fish to species again before placing it in the tank.

Fish delivery

Brook trout will be taken to the normal stocking location at Red Lake and all other fish will be taken to the main ramp at Silver Lake. Once a truck is full of fish or

such time passes that there is a risk of loss of fish from being in the truck to long, that truck will go to its designated drop off location. Each truck driver will make the decision as to how many fish can be placed into each truck per load and when that truck should leave.

Clean Up

Friday August 29 will be the final day of the operation. The last load of fish will be taken to Red and Silver Lakes just after the night shift finishes their last shift. Boats and net pens will be removed from the water and the Staging Area and ICP will be demobilized. Any fish mortalities will be bagged and disposed of in the specially marked container secured by EID after having their measurements taken and their head removed.

Appendix E: Site Safety Plan

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

Caples Lake Fish Rescue Project
Site Safety Plan

August 18, 2008

TABLE OF CONTENTS

Caples Lake Fish Rescue Project
Site Safety Plan

This site safety plan is intended to identify and mitigate for potential hazards associated with the California Department of Fish and Game's (DFG) Caples Lake Fish Rescue Project. Caples Lake is located in Alpine County, CA. The Caples Lake Fish Rescue Project is necessary due to emergency dam repairs being conducted by El Dorado Irrigation District. Fish rescue operations will consist of a combination of removal methods including: electrofishing, hoop nets, trammel nets, and gill nets. Rescue personnel will be working 12 hour shifts while operations run continuous for 72 hours.
DFG will use the incident command system (ICS) for coordinating project activities and for providing a central decision and communication base. The project safety officer (SO), as part of the ICS Command Staff, has the primary authority to monitor and assess hazardous and/or unsafe situations and develop measures for assuring personnel safety. The SO will provide training sessions and conduct inspections of equipment and procedures used during the course of this project.

1) Safety and Health Risks of Associated Project Tasks

To ensure a safe and healthy work environment for project personnel, the DFG has conducted a Job Hazard Analysis (JHA) (Attachment B) for each of the anticipated tasks associated with the Caples Lake Fish Rescue Project. The JHA is used as a means to determine the hazards involved with each task, and how to adequately control those hazards. Personnel are encouraged to be aware of potential hazards that may be encountered when performing their tasks and to not take risks. If a new or unknown hazard is noticed, the person will cease operations and notify the SO. The SO will determine whether the operation can proceed. Any new hazards found during the Caples Lake Fish Rescue Project will be noted on the JHA and briefed to personnel before operations continue.

2) Site Control Measures

To control access to the site, and to ensure personnel working on this project are properly protected, a site control program will be in effect for the Caples Lake Fish Rescue Project. Personnel must check **IN** and **OUT** of the Incident Command Post (ICP) when you arrive and leave the project. Site control is a type of administrative tool to ensure the safety of all individuals involved in the project. Supervisors will be required to fill out a Daily Activity Report (DAR) to account for time worked on the project by themselves and supporting personnel.

3) General Safety Hazards

General safety hazards that may be encountered during this project include, but are not limited to, slips, falls, improper lifting techniques, heat stress, hazards around heavy equipment and/or boating, falling objects, and biological hazards. Personnel will be informed of the on-site safety hazards during a daily safety briefing before work begins. All identified potential safety hazards will be evaluated and mitigated via preventative actions.

A) Slips, Trips, and Falls

The most common injury at any worksite is slips, trips, and falls. All personnel will be briefed each day before work begins, on areas to avoid that contain severe tripping or fall hazards. All equipment cords or lines, such as electrical cables, will be stationed out of the way of foot traffic. This includes power cables in the ICP. Personnel, who become injured during a fall, will seek medical attention from the on-site EMT and will notify the SO.

B) Lifting Techniques

Personnel who may be lifting heavy or awkward objects should get help when possible and should not attempt to lift the object alone. Improper lifting techniques can cause serious back strain on the lower back. When an object is lifted, the feet should be placed shoulder width apart and the back kept straight. Objects should be lifted with the legs, not with the back. If a person feels they have injured themselves from improper lifting, they will notify the SO and will seek medical attention from the on-site EMT.

C) Heat Stress

Heat stress is a potential hazard to personnel whenever outside duties are performed. Effects from heat stress to personnel can include; heat rash, heat cramps, heat exhaustion, and heat stroke. This can be especially troubling for personnel who are not acclimated to the heat. Personnel will have shade made available, or have a place of refuge that has shade, where they can cool down for a period of no less than five minutes. Each person will be provided one quart of water per hour when working outdoors in a potential heat stress environment. A heat stress monitoring program will be in effect for personnel to control heat related illness, and determine work/rest cycles. Personnel that suspect that they are suffering from the effects of heat stress will be instructed to go immediately to the onsite EMT. The project SO will be immediately notified of cases of suspected heat stress.

D) Noise Hazards

Persons who are exposed to noise sources greater than 85 decibels (dB) as a Time Weighted Average (TWA) during the Caples Lake Fish Rescue Project, will be provided with, and will wear, hearing protection as required in Title 8, CCR Section 5098 “Hearing Protectors.” Noise sources exceeding 85 dB include; generators, all boat outboard motors, and All-Terrain Vehicles (ATV). Personnel will have the option of wearing either foam plugs or muffs, as long as the hearing protectors have a minimum Noise Reduction Rating (NRR) of 29. Personnel working with hazardous noise producing equipment exceeding 85 dB will be trained on the effects of noise on hearing, the advantages and disadvantages of hearing protectors, and how to properly fit, use, and care for hearing protectors. Any new equipment that may be a potential hazardous noise source, will have sound level measurements taken by the SO prior to personnel use. All records containing measurements of hazardous noise exposures will be retained by DFG, in accordance with CCR Title 8, Section 5100.

E) Falling Objects

Personnel working in areas that have a potential for falling objects will be required to wear hard hats. The staging area and roadway will be required hard hat areas. Additional areas may be designated as required hard hat areas by the SO.

F) Biological Hazards

DFG field crews working on the Caples Lake Fish Rescue Project need to be aware of poisonous plants and reptiles, and stinging insects that will be present around the reservoir. These include: northern pacific rattlesnakes, black-legged ticks, and yellowjackets. Effects from encounters can range from mild irritation to life-threatening encounters.

The northern pacific rattlesnake is the only poisonous reptile found in the Caples Lake area. This snake can be found under rock and debris piles and crevices where it can be concealed. The snake may be found in the open during morning hours. A snake bite is a medical emergency. Any personnel who has been bitten by a rattlesnake will immediately suspend activities and be taken to the on-site EMT for first aid treatment and transport to the nearest hospital. The SO will be notified of all snake-related incidents.

Western black legged ticks can be found in areas of vegetation, where adults can attach themselves to passing mammals or humans. The western black legged tick is responsible for the transmission of Lyme disease to humans in California. Avoidance is the best means of defense against being bitten by a tick. Personnel should avoid walking through vegetation and should stay on well defined trails when possible. Repellants containing "DEET" can be used on clothing to repel ticks. DEET should not be applied to bare skin. If a person notices that a tick has attached itself, the person should not attempt to remove the tick but proceed to the on-site EMT for removal.

Bees, yellowjackets, and wasps are present in the vicinity of Caples Lake. While most individuals experience painful but temporary reactions to the stings, a small percentage of the population is allergic and may suffer from anaphylactic shock. Yellowjackets, sometimes called "meat-bees", usually nest in cavities in the ground although some are aerial nesters. Bees and Wasps will form aerial nests in protected areas such as the branches of trees or in the crevices or eaves of a building. Although bees will sting only once, yellowjackets and wasps can sting multiple times. To reduce the chance of encounter with stinging insects, personnel should avoid areas where the insects are noticed congregating. If a person locates a nest, the SO will be notified and the area kept off limits to personnel until deemed safe. If a person is stung, they will proceed to the on-site EMT for first aid treatment and evaluation. Personnel who are experiencing complications from insect stings will be transported to the nearest medical facility for treatment.

G) Hand/Industrial Truck Use

All hand trucks used during the Caples Lake Fish Rescue Project shall be maintained in a safe condition. Handles shall be maintained free of hazardous burrs, splinters, cracks, or splits. Any hand truck not meeting these requirements will be taken out of service. Industrial trucks (forklifts) will only be operated by certified individuals with proof of current training and all industrial trucks must meet the safety and maintenance requirements outlined in CCR Title 8, Sections 3653, 3660, 3661, 3663, and 3664.

H) Fueling of Gas Engines

No internal combustion engine fuel tank will be refilled while the engine is running. Fueling will be done in a manner that minimizes spillage. If a spill occurs it shall be washed away completely, evaporated, or equivalent action taken to control vapors before restarting the engine. Fuel tank caps shall be replaced before starting the engine. Open lights, open flames, or sparking or arcing equipment, will not be used near fuel storage tanks or internal combustion engine equipment while being fueled with flammable liquids.

4) General Boat Operations

Boat operators will be required to carry two-way radios and GPS units to aid in communication and navigation. All boats should be equipped with a fire extinguisher and first aid kit. Personnel working on boats will be required to wear a United States Coast Guard approved Personal Floatation Device (PFD), either Type I, II, or III. Personnel working in or operating boats should wear appropriate shoes/boots designed to help maintain traction on wet surfaces. Opened-toed shoes are **NOT** allowed to be worn while working on boats. Attempt to stay in the center of the boat, and avoid rocking the boat as mush as possible. Avoid jumping across gaps/openings when docking or launching boat. Personnel should be aware of hot surfaces and potential noise sources when working around boats. Hearing protection for boat operators is required when outboard motors/ generators are running. At no time will fueling of gasoline powered engines be allowed while the engine is running.

5) Nighttime Boat Operations

In addition to the general boat operations previously described, additional safety measures will be implemented for all nighttime boat operations. Personnel working on boats will be required to wear a United States Coast Guard approved Personal Floatation Device (PFD), either Type I, II, or III equipped with a glow stick attached on either the front or back surfaces. Personnel working on a boat will be required to

carry a luminary source (flashlight, headlamp, etc.) at all times. Boat operators are required to carry a spotlight of sufficient magnitude to aid in navigation and fieldwork.

6) Electrofishing

Electrofishing is dangerous and extreme care should be taken to ensure safety. The amount of energy created by generators and passed from anode to cathode is enough to electrocute a person. All personnel working on electrofishing boats are required to follow the general boat operation procedures as well as additional safety measures designed to reduce exposure to electrical energy. Heavy-duty rubber gloves will be worn at all times by personnel during electrofishing activities. Care should be taken to prevent skin and clothes from becoming wet and coming into contact with electrical energy. Dip nets with fiberglass handles are required to remove fish from the water.

7) Emergency Services

Markleeville Fire Department, Alpine County – (530) 694-2223

Fire Protection District, Amador County – (209) 223-6391

Barton Memorial Hospital
2170 South Avenue
South Lake Tahoe, CA 96150
(530) 541-3420

Sutter Amador Hospital
200 Mission Blvd
Jackson, CA 95642
(209) 223-7500

Modifications: This implementation plan applies to a project that by necessity is being managed adaptively under the Incident Command System. As such, this plan may be modified, as needed, to respond to specific information, circumstances, requirements, and events as they arise or are discovered.

Approvals

Incident Commander	Date
Safety Officer	Date
Operations Chief	Date
Staging Area Manager	Date
Environmental Response Branch Supervisor	Date

ATTACHMENT A

RECOMMENDATIONS FOR CONTROLLING FATIGUE

RECOMMENDATIONS FOR THE CONTROL OF FATIGUE DURING THE CAPLES LAKE FISH RESCUE PROJECT

I. BACKGROUND

The Caples Lake Fish Rescue Project involves tasks that have the potential for long hours of continuous work. Because of the continuous work that will be performed, recommendations to control fatigue have been developed to alert employees of the signs and symptoms of fatigue, provide preventive measures, and help control potential workplace accidents related to fatigue.

II. SCOPE AND APPLICATION

These recommendations cover all personnel who may work long or irregular hours beginning at the onset of the project and continuing through to the end. Adherense to these recommendations will help to alleviate fatigue-related accidents and provide long range planning of site personnel by rotating staff in and out of the project after a significant number of work hours are reached within a specific time period.

III. RESPONSIBILITY

Employees working at the Caples Lake Fish Rescue Project must be aware of the signs and symptoms of fatigue. All individuals working on the project are required to sign-in each day they begin work with the time they start, and sign-out with the time they finish work for the day. This helps ensure employees are not working too many hours in one day. The project incident commander and safety officer are responsible for recognizing the signs and symptoms of fatigue and ensuring staff are not working excess hours each day which may attribute to fatigue related accidents.

IV. RECOGNITION

Human error is responsible for 80% of all industrial accidents and injuries, with one of the greatest causes being fatigue. Fatigue is defined as tiredness, which is a slowing down of an employee due to exertion, sleep deprivation, or both. There is currently no Occupational Safety and Health Administration (OSHA) regulation governing the area of fatigue. However, fatigue is considered a health hazard and therefore appropriate control measures will be taken to reduce or eliminate this hazard during the Caples Lake Fish Rescue Project.

Signs and Symptoms

The physical signs and symptoms of fatigue can include; tiredness, sleepiness (including falling asleep against an individual's will), irritability, depression, giddiness, loss of appetite, digestive problems, and an increase susceptibility to illness. Some mental and physical task impairments can include; slow reactions in both physical speed and speed of thought, failure to respond to surrounding stimuli, incorrect physical or mental actions, flawed logic and judgment, and an inability to concentrate. In addition, fatigue can cause an increase in forgetfulness, decrease in vigilance, reduced motivation, poor work performance, and increased tendency for risk taking. The highest chance for mistakes in judgment and accidents typically occur between midnight and 0600 hours, peaking at 0200 hours and during mid afternoon (1400-1600 hrs). Low human performance accounts for many midday vehicular accidents regardless of food consumption. The 1400 hour period is the hardest time to concentrate on tasks during the day and is the time when day-dreaming occurs most frequently. It's at this time period that momentary sleepiness begins regardless of food consumption.

V. PREVENTION

Fatigue Management

Caffeinated Drinks
Avoid the consumption of caffeinated beverages (such as coffee, tea, or soft drinks) for at least four hours before sleep. Also try to limit intake of these beverages to 1-3 cups or cans per work shift. The use of caffeine to ward off sleepiness or fatigue is only transitory, lasting usually 3 to 4 hours. Once the stimulant effect wears off, a rebound effect can occur making an individual even more fatigued or sleepy. Caffeinated drinks are falsely credited for morning alertness. Caffeinated drinks demonstrate a more alerting effect at mid afternoon than at a morning break. Drinking caffeinated drinks prior to sleeping (< 4 hours) can cause your sleep to be lighter and less satisfying. If you are too fatigued due to the lack of sleep, caffeine has very little chance to act as a stimulant and maintain a person's state of alertness. If an employee is suffering from fatigue in the middle of the afternoon they should try taking a walk outside instead of drinking more caffeinated beverages.

Alcohol
Alcohol makes falling asleep easier but actually is detrimental to a good nights rest. A person who drinks alcohol prior to going to sleep (< 4 hours) wakes up more frequently and receives a lighter sleep. Alcohol is known to suppress REM sleep in the first half of the night. Alcohol can also reduce sleep duration which leads to sleep depravation. Alcohol is also known to worsen sleep disorders.

Foods
Avoid heavy foods before you go sleep. Heavy and greasy foods are harder to digest and can reduce effective because they tend to upset the stomach.

Napping
Napping for a minimum of 20-30 minutes during a work break has been shown to stave off fatigue. Furthermore, napping can actually increase alertness and extend the time before a person becomes fatigued.

Physical Fitness
Staying physically fit helps to resist stress and illness. Exercise should be done for no longer than a 20-minute duration and prior to the work shift. Avoiding exercise at least 3 hours prior to going to sleep. Exercise will help also to raise your body temperature. Once exercise ceases then the body temperature will begin to drop sending a message to the brain to induce sleep in a few hours.

Sleeping
Try to keep a regular sleep routine. The minimum amount of sleep most people need is approximately six hours. Try to awaken and fall asleep at the same times each day to keep your body rhythms in balance.

Smoking
Smokers should avoid smoking at or close to bedtime due to nicotine's ability to act as a stimulant.

VI. REGULATED WORK SHIFTS

Work Schedules

Federal law currently regulates fatigue only in certain groups, such as pilots and commercial motor vehicle operators. However to ensure employees working at the Caples Lake Fish Rescue Project are not being subject to fatigue on the job, it is recommended that employees work:

-no more than 16 consecutive hours in any 24-hour period;
-no more than two 16 consecutive hours days in 6 day period; and
-no more than 72 hours in any 6 day period
In addition, a break of at least 8 hours in a 24-hour period should be taken after working 6 consecutive days.

The work time includes the time needed to drive to and from the site. Employees who have questions concerning this work schedule, or need further clarification concerning fatigue during the project, should consult the site safety officer.

ATTACHMENT B CAPLES LAKE FISH RESCUE PROJECT
JOB HAZARD ANALYSIS (JHA)

Caples Lake Fish Rescue Project
Job Hazard Analysis

1. Incident Name Caples Lake Fish Rescue Project		2. Date/Time Prepared	3. Operational Period
4. Safety Officer (Include method of contact) Kevin Thomas Cell: (916) 817-7054		5. Incident Commander Stafford Lehr	
6. Location Alpine County, CA		7. Attachments	
8. TASKS / ACTIVITY	**9. HAZARDS**	**10. CONTROL MEASURES**	
General site activities (all staff)	Lifting Material handling	Proper lifting techniques will be used when lifting/handling large and/or heavy objects. Attempt to keep back straight and lift with the legs. Whenever possible, loads will be broken down. When loads cannot be reduced, lifting/carrying aids or the buddy system will be used.	
General site activities (all staff)	Heat stress	Workers will be informed of the hazards and symptoms of heat stress prior to work. Workers will be provided with at least 1 quart of water per hour, take appropriate rest breaks. A shade area will be provided for staff during periods of potential heat stress.	
General site activities (all staff)	Fatigue	Workers need to be able to recognize the signs and symptoms of fatigue and possible ways to reduce its onset. Rest breaks will be taken as needed to remain mentally alert.	
General site activities (all staff)	Steep or Unstable Terrain	Plan each step carefully. Do not rely on the unstable terrain to support your body weight. If you must work in this area, avoid being directly above or below others.	
General site activities (all staff)	Vehicles	Be aware of traffic around you. Watch for vehicles in the roadway as well as those parked or entering/exiting work or parking areas.	

Caples Lake Fish Rescue Project
Job Hazard Analysis

1. Incident Name Caples Lake Fish Rescue Project	2. Date/Time Prepared	3. Operational Period
4. Safety Officer (Include method of contact) Kevin Thomas Cell: (916) 817-7054	5. Incident Commander Stafford Lehr	
6. Location Alpine County, CA	7. Attachments	

8. TASKS / ACTIVITY	9. HAZARDS	10. CONTROL MEASURES
General site activities (all staff)	Unstable or uneven surfaces Slick or slippery surfaces	Be aware of terrain and footing at all times. Sturdy work boots or appropriate footwear must be worn to provide sufficient traction and ankle support.
General site activities (all staff)	Ultraviolet radiation	Employees will be informed of the risks of sunburn and will use sunscreen, hats and sunglasses as preventive measures for reducing injury.
General site activities (all staff)	Falling Objects	Employees working in locations where there is a risk of receiving head injuries from falling objects, such as the staging area or roadways are required to wear hardhats.
General site activities (all staff)	Biological Hazards (Poisonous plants, spiders, reptiles, animals and/or insects)	Any disease-causing organism that can infect site staff will be evaluated.Insects (bee, wasp, ticks, black widows), and animals will be evaluated, considered, and communicated to staff prior to the start of work. Preventive methods and appropriate handling techniques will be communicated to staff prior to potential exposure.
General site activities (all staff)	Electrical Hazards	All electrical equipment will be properly bonded and grounded. Employees will ensure that all extension cords contain a grounding plug. Electric cords used outdoors or in damp environments will be plugged into an outlet containing a Ground Fault Circuit Interrupt (GFCI). All electrical equipment use will follow the requirements of the low voltage electrical safety orders found in CCR Title 8, Chapter 4, Subchapter 5, “Electrical Safety Orders.”
Boat Operations Fish Collection/Retrieval	Water immersion	Any employees working in and around water will be required to wear a United States Coast Guard approved Personal Floatation Device (PFD), either Type I, II, or III.

Caples Lake Fish Rescue Project
Job Hazard Analysis

1. Incident Name	2. Date/Time Prepared	3. Operational Period
Caples Lake Fish Rescue Project		
6. Safety Officer (Include method of contact)	5. Incident Commander	
Kevin Thomas Cell: (916) 817-7054	Stafford Lehr	
6. Location	7. Attachments	
Alpine County		

8. TASKS / ACTIVITY	9. HAZARDS	10. CONTROL MEASURES
Fish Collection/Retrieval	Trips, slips, falls	In addition to the floatation device, all employees collecting live or dead should be aware of surroundings.
Boat Operations	Thunderstorms /Lightning	Avoid water, high ground, open spaces, and all metal objects including electric wires, fences, motors, power tools, etc. Immediately remove metal objects (including caps with metal buttons). Where possible, find shelter in a substantial building (one with plumbing and electrical) or in a fully enclosed vehicle such as a car, truck or van with the windows completely shut.
Boat Operations	Slip/Fall	Personnel working in or operating boats should wear appropriate shoes/boots designed to help maintain traction on wet surfaces. Attempt to stay in the center of the boat, and avoid rocking the boat as mush as possible. Avoid jumping across gaps/openings when docking or launching boat.
Boat Operations	Gas powered motors, hot surfaces, potential high noise exposure	Personnel should be aware of hot surfaces and potential noise sources when working around boats. Hearing protection for boat operators is required when boat motors/ generators are running. At no time will fueling of gasoline powered engines be allowed while the engine is running. Any spilled gasoline will immediately be cleaned up or allowed to evaporate before starting the motor.
Boat Operations	Electrofishing	Electrofishing is dangerous, the energy used is more than enough to electrocute a person. Heavy-duty rubber gloves should be worn at all times during electrofishing. Care should be taken to keep skin and clothing from becoming wet. Nets with fiberglass handles should be used to collect fish from the water.

Caples Lake Fish Rescue Project
Job Hazard Analysis

1. Incident Name Caples Lake Fish Rescue Project		2. Date/Time Prepared	3. Operational Period
7. Safety Officer (Include method of contact) Kevin Thomas Cell: (916) 817-7054		5. Incident Commander Stafford Lehr	
6. Location Alpine County, CA		7. Attachments	

8. TASKS / ACTIVITY	9. HAZARDS	10. CONTROL MEASURES
Staging area (general)	Industrial truck accidents Hand/Foot/Back injuries	Personnel will at no time walk in front of moving industrial trucks, and will stay clear of areas where containers are being stacked or moved until completed. Personnel will wear leather gloves, coveralls, and steel toed boots when working in the staging area. Lifting heavy objects will be accomplished by bending at the knees and keeping the back straight.
Staging area industrial truck use (forklift and backhoe operators)	Collision Roll-over Falling objects	Only trained and certified individuals will be allowed to operate forklifts. All operators must have proof of current training, and abide with the powered industrial truck operator rules as specified in 8 CCR 3664: 1. Securely fasten your seat belt if the tractor has a ROPS. 2. Where possible, avoid operating the tractor near ditches, embankments, and holes. 3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces. 4. Stay off slopes too steep for safe operation. 5. Watch where you are going, especially at row ends, on roads, and around trees. 6. Do not permit others to ride. 7. Operate the tractor smoothly--no jerky turns, starts, or stops. 8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers. 9. When tractor is stopped, set brakes securely and use park lock if available.

Caples Lake Fish Rescue Project
Job Hazard Analysis

1. Incident Name	2. Date/Time Prepared	3. Operational Period
Caples Lake Fish Rescue Project		
8. Safety Officer (Include method of contact)	5. Incident Commander	
Kevin Thomas Cell: (916) 817-7054	Stafford Lehr	
6. Location	7. Attachments	
Alpine County, CA		

8. TASKS / ACTIVITY	9. HAZARDS	10. CONTROL MEASURES
All Terrain Vehicle (ATV) use (all staff)	Collision Roll-over Hot objects	Only trained and certified individuals will be allowed to operate ATV's. Wear appropriate riding gear: ANSI-approved helmet, goggles, gloves, over-the-ankle boots, long-sleeve shirt and long pants. The mechanical condition of your ATV (including tires, chain, fuel, oil, lights and switches) must be inspected prior to each ride. The ATV should not be operated if the driver is fatigued.
Incident Command Post	Trips, slips, falls Electrical outlet overload Foot injuries	Power bars or strips will not be plugged into each other, to avoid overloading circuits causing potential for fire. All staff assigned duties in the command post will wear appropriate foot wear at all times. Open toed shoes, sandals, or bare feet will not be allowed at any time. All power cables and cords will be routed away from foot traffic areas. Cables and cords that cannot be routed away from foot traffic areas will be secured to the floor, to avoid tripping hazards.

Caples Lake Fish Rescue Project
Job Hazard Analysis

1. Incident Name Caples Lake Fish Rescue Project		2. Date/Time Prepared	3. Operational Period
9. Safety Officer (Include method of contact) Kevin Thomas Cell: (916) 817-7054		5. Incident Commander Stafford Lehr	
6. Location Alpine County, CA		7. Attachments	
8. TASKS / ACTIVITY	**9. HAZARDS**	**10. CONTROL MEASURES**	
All land based remote activities (All Staff)	Encounter with Bears/ Mountain Lions	1. DO NOT RUN! They may think you are prey 2. Do not threaten or try to frighten the animal 3. Avoid the element of surprise. Be aware of your surroundings 4. Work in groups when possible 5. If you suspect a bear or mountain lion is present, make noise. Let them notice you 6. Give the bear/ mountain lion plenty of room, allow it to continue its activities undisturbed 7. Maintain eye contact, talk in low soft tones and slowly back away 8. If the animal notices you and is interested, try to look larger than you are. Hold backpacks/jackets etc. above your head 9. If attacked, curl up in a ball on the ground, and "play dead". Cover your head with your arms or backpack 10. If you notice a bear or mountain lion, or suspect one is in the area, notify the safety officer immediately	

Appendix F: Contract

State of California - The Resources Agency
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor

FISH & GAME REGION 2
08 SEP -8 AM 9:51

September 5, 2008

Ton Gallier
EL DORADO IRRIGATION DISTRICT
2890 MOSQUITO ROAD
PLACERVILLE, CA 95662

Agreement #: R0820011 00
Project: CAPLES LAKE FISH RECOVERY PROJECT

Enclosed is one (1) fully executed copy of the Agreement.

Please refer to the Agreement number when communicating with our office.

Questions concerning the services to be performed under this Agreement should be directed to the Contract Manager, STAFFORD LEHR at (916) 358-2838.

Sincerely,

Lynne Shively
Contract Analyst

Enclosure(s)
c: File
Accounting
NCR, STAFFORD LEHR
NCR, Michelle Hamby

Conserving California's Wildlife Since 1870

AGREEMENT SUMMARY

STD 215 (Rev 4/2002)

☐ CHECK HERE IF ADDITIONAL PAGES ARE ATTACHED

AGREEMENT NUMBER	AMENDMENT NUMBER
R0820011	

1. CONTRACTOR'S NAME: El Dorado Irrigation District
2. FEDERAL I.D. NUMBER: 94-6036480
3. AGENCY TRANSMITTING AGREEMENT: Department of Fish and Game
4. DIVISION, BUREAU, OR OTHER UNIT: North Central Region
5. AGENCY BILLING CODE: 028018
6. NAME AND TELEPHONE NUMBER OF CONTRACT ANALYST FOR QUESTIONS REGARDING THIS AGREEMENT: Lynne Shively (916) 651-8328
7. HAS YOUR AGENCY CONTRACTED FOR THESE SERVICES BEFORE?
☒ NO ☐ YES (*If YES, enter prior contractor name and Agreement Number)*
8. BRIEF DESCRIPTION OF SERVICES - LIMIT 72 CHARACTERS INCLUDING PUNCTUATION AND SPACES: Safely rescue as many fish as possible during the Caples Lake outlet repair project
9. AGREEMENT OUTLINE *(Include reason for Agreement: Identify specific problem, administrative requirement, program need or other circumstances making the Agreement necessary; include special or unusual terms and conditions.)*

The Agreement is tied to the FERC Project No. 184 Caples Lake Outlet Emergency Repair Project for the EL Dorado Irrigation District. The main objective of this Agreement is to safely rescue as many fish as possible with the emphasis on trophy Brown, Rainbow and Lake Trout. The operation will consist of five days of operations, four of which will have active fish removal. In addition to the initial Caples Lake fish rescue outlined in this Agreement, the Department of Fish and Game (DFG) will continue to monitor the lake through the Spring of 2009 with the potential of additional rescues when necessary and feasible.

10. PAYMENT TERMS *(More than one may apply.)*
☐ MONTHLY FLAT RATE ☐ QUARTERLY ☐ ONE -TIME PAYMENT ☐ PROGRESS PAYMENT
☒ ITEMIZED INVOICE ☐ WITHHOLD _____ % ☐ ADVANCED PAYMENT NOT TO EXCEED
☒ REIMBURSEMENT/REVENUE $ _____ or _____ %
☐ OTHER *(Explain)* _____

11. PROJECTED EXPENDITURES

FUND TITLE	ITEM	F.Y.	CHAPTER	STATUTE	PROJECTED EXPENDITURES
General	3600-001-0001-99	08/09		2008	$103,120.00
					$
					$

OBJECT CODE

AGREEMENT TOTAL $ 103,120.00

OPTIONAL USE 2241 239 15005 270000

AMOUNT ENCUMBERED BY THIS DOCUMENT $ 103,120.00

I CERTIFY upon my own personal knowledge that the budgeted funds for the current budget year are available for the period and purpose of the expenditure stated above.

PRIOR AMOUNT ENCUMBERED FOR THIS AGREEMENT $ -0-

ACCOUNTING OFFICER'S SIGNATURE ✍

DATE SIGNED

TOTAL AMOUNT ENCUMBERED TO DATE $ 103,120.00

12.

AGREEMENT	TERM From	TERM Through	TOTAL COST OF THIS TRANSACTION	BID, SOLE SOURCE, EXEMPT
Original	08/25/08	06/30/09	$ 103,120.00	EXEMPT
Amendment No. 1			$	
Amendment No. 2			$	
Amendment No. 3			$	
		TOTAL	$ 103,120.00	

(Continue)

STATE OF CALIFORNIA
AGREEMENT SUMMARY
STD. 215 (Rev 04/2002)

13. BIDDING METHOD USED:
☐ REQUEST FOR PROPOSAL (RFP) ☐ INVITATION FOR BID (IFB) ☐ USE OF MASTER SERVICE AGREEMENT
(Attach justification if secondary method is
☐ SOLE SOURCE CONTRACT ☒ EXEMPT FROM BIDDING ☒ OTHER *(Explain)* Reimbursement Agreement
(Attach STD. 821) *(Give authority for exempt status)*

NOTE: *Proof of advertisement in the State Contracts Register or an approved form STD. 821, Contract Advertising Exemption Request, must be attached*

14. SUMMARY OF BIDS *(List of bidders, bid amount and small business status) (If an amendment, sole source, or exempt, leave blank)*
N/A

15. IF AWARD OF AGREEMENT IS TO OTHER THAN THE LOWER BIDDER, PLEASE EXPLAIN REASON(S) *(If an amendment, sole source, or exempt, leave blank)*
N/A

16. WHAT IS THE BASIS FOR DETERMINING THAT THE PRICE OR RATE IS REASONABLE?

The EL Dorado Irrigation District will reimburse DFG for actual direct and overhead costs.

17. JUSTIFICATION FOR CONTRACTING OUT *(Check one)*
☐ Contracting out is based on cost savings per Government Code 19130(a). The State Personnel Board has been so notified.
☒ Contracting out is justified based on Government Code 19130(b). Justification for the Agreement is described below.

Justification:

Reimbursable Contract. EID does not have the personnel with the necessary expertise to perform this project.

18. FOR AGREEMENTS IN EXCESS OF $5,000, HAS THE LETTING OF THE AGREEMENT BEEN REPORTED TO THE DEPARTMENT OF FAIR EMPLOYMENT AND HOUSING?	19. HAVE CONFLICT OF INTEREST ISSUES BEEN IDENTIFIED AND RESOLVED AS REQUIRED BY THE STATE CONTRACT MANUAL SECTION 7.10?	20. FOR CONSULTING AGREEMENTS, DID YOU REVIEW ANY CONTRACTOR EVALUATIONS ON FILE WITH THE DGS LEGAL OFFICE?
☐ NO ☒ YES ☐ N/A	☐ NO ☒ YES ☐ N/A	☐ NO ☐ YES ☐ NONE ON FILE ☒ N/A

21. IS A SIGNED COPY OF THE FOLLOWING ON FILE AT YOUR AGENCY FOR THIS CONTRACTOR?		22. REQUIRED RESOLUTIONS ARE ATTACHED
A. CONTRACTOR CERTIFICATION CLAUSES	B. STD. 204, VENDOR DATA RECORD	
☐ NO ☒ YES ☐ N/A	☐ NO ☒ YES ☐ N/A	☐ NO ☒ YES ☐ N/A

23. ARE DISABLED VETERANS BUSINESS ENTERPRISE GOALS REQUIRED? *(If an amendment, explain changes, if any)*
☒ NO *(Explain below)* ☐ YES *(If YES complete the following)*

DISABLED VETERAN BUSINESS _____ % OF AGREEMENT
☐ Good faith effort documentation attached
3% goal is not reached.
☐ We have determined that the contractor has made a sincere good faith effort to meet the

Explain:

Exempt per SCM 8.12.A.4

24. IS THIS A SMALL BUSINESS CERTIFIED BY OSBCR? ☒ NO ☐ YES *(Indicate Industry Group)*	SMALL BUSINESS REFERENCE NUMBER

25. IS THIS AGREEMENT (WITH AMENDMENTS) FOR A PERIOD OF TIME LONGER THAN ONE YEAR? *(If YES, provide justification)*
☒ NO ☐ YES

I certify that all copies of the referenced Agreement will conform to the original Agreement sent to the Department of General Services.

SIGNATURE/TITLE	DATE SIGNED
✍ Kyrene Shively	08/20/08

AGREEMENT	AGREEMENT NUMBER
	R0820011

1. This Agreement is entered into between the District and the Contractor named below:

DISTRICT
El Dorado Irrigation District

CONTRACTOR'S NAME
Department of Fish and Game

2. The term of this Agreement is: **August 25, 2008 through June 30, 2009**

3. The maximum amount of this Agreement is: **$103,120.00**
One hundred three thousand, one hundred twenty dollars and no cents

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of this Agreement.

Exhibit A	**Scope of Work**	**5 Pages**
Exhibit B	**Budget Detail and Payment Provisions**	**1 Page**
	Line Item Budget	**1 Page**

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

For Department of General Services use

CONTRACTOR

CONTRACTOR'S NAME
Department of Fish and Game

DATE SIGNED: 08/22/08

BY (Authorized signature): Shirley for

PRINTED NAME AND TITLE OF PERSON SIGNING
Cynde Jones
Assistant Deputy Director, Administration

ADDRESS
1416 9th Street, 12th Floor
Sacramento, CA 95814

APPROVED
AUG 25 2008
DEPT OF GENERAL SERVICES

DISTRICT

DISTRICTS NAME
El Dorado Irrigation District

DATE SIGNED: 8/22/2008

BY (Authorized signature): W. Thomas Gallier

PRINTED NAME AND TITLE OF PERSON SIGNING
Tom Gallier
General Manager

ADDRESS
2890 Mosquito Road
Placerville, CA 95662

8.25.08

Reviewed & Approved on: 8/22/08
EID General Counsel's Office
as to form

1. The Contractor agrees to provide the services of field technicians and assistants for the removal of fish from Caples Lake Dam Outlet Emergency Repair Project site described in the Scope of Work.

2. This Agreement is to coordinate efforts between the El Dorado Irrigation District (EID) and the Department of Fish and Game (DFG) for the recovery and rescue of as many fish as possible with the emphasis on trophy brown, rainbow and lake trout from Caples Lake. Both parties will work together to achieve the following objectives: acquire data; share resources to implement joint recovery efforts; ensure joint efforts are compatible with other State needs; and to continue the dialogue with other State agencies, local governments, and the general public to achieve goals.

3. The services shall be performed at Caples Lake Mai Dam located on Caples creek on the south side of U. S. Highway 88 in northwest Alpine County. Caples Creek flows into the Silver Fork of the American River. Construction work will be performed within the FERC Project 184-CA boundary on United States Forest Service (FS) lands.

4. The services shall be provided Monday through Friday, 24-hours a day, unless the DFG Contract Manager authorizes a change.

5. The Project Officials during the term of this Agreement will be:

DFG Contract Manager
Name: Stafford Lehr
Phone: 916-358-2838
Fax: 916-358-2912
Email: slehr@dfg.ca.gov

EID Project Director
Name: Tom Gallier
Phone: 530-622-4513
Fax:
Email:

Direct all inquiries to:

Department of Fish and Game
Section/Unit: North Central Region
Attention: Stafford Lehr
Address: 1701 Nimbus Road
Rancho Cordova, CA 95670
Phone: 916-358-2839
Fax: 916-358-2912
Email: slehr@dfg.ca.gov

EL Dorado Irrigation District
Section/Unit:
Attention: Tom Gallier
Address: 2890 Mosquito Road
Placerville, CA 95667
Phone: 530-622-4513
Fax:
Email:

6. **Scope of Work**

A. BACKGROUND AND OBJECTIVES

This Agreement is tied to the FERC Project No. 184 Caples Lake Outlet Emergency Repair Project for the El Dorado Irrigation District (EID) to restore the safety and operational reliability of the malfunctioning Caples Lake DSOD Dam No. 53-13 reservoir-regulating gates in the outlet system. The outlet system consists of a submerged concrete intake with a trash rack located approximately 200 ft upstream of the dam centerline. The existing outlet system was built in two (2) stages with the lower, and oldest portions completed in 1971 and 1981, and the upper portions of the concrete shaft between 1922 and 1923.

In June 2006, District staff conducted a remote camera inspection and identified extensive corrosion on the two (2) gates and stem guides. A follow-up manned dive inspection of the outlet works discovered many other deficiencies in the gates and appurtenances which ten (10) recognized the present risk of sudden failure during operation. The overall finding of the inspection was that the gates and appurtenances were in a severely deteriorated condition compromising their structural integrity and were found to be irreparable, unsafe and unreliable for continued operation.

To accomplish the gate replacement, it will be necessary to completely dewater the outlet system and accomplish the work in the dry. This will require lowering the reservoir, installing a temporary cofferdam, and installing a flow bypass system. As the system is being dewatered, this will jeopardize the health and welfare of the fish. DFG will coordinate efforts between EID to rescue as many fish as possible with the emphasis on trophy brown, rainbow, and lake trout.

The operation will take five (5) days; four (4) of which will have active fish removal. The first day will be for setup and the last day will be for tear down and clean up. Operations of the first rescue will begin at approximately 10:00 AM on Monday, August 25, 2008 and end at approximately 3:00 PM on Friday, August, 29, 2008.

In addition to the initial Caples Lake fish rescue outlined in this plan, the DFG will continue to monitor the lake through the Spring of 2009 with the potential of additional rescues when necessary and feasible. Monitoring will depend on the amount of snowmelt, rainfall, weather conditions and condition of the fish. Final monitoring plans will be determined in the Spring of 2009.

B. WORK TO BE PERFORMED

The rescue will be broken into lake and ground operations.

DFG Ground operations will consist of:

1. Set-up
2. Transfer of Fish to Trucks
3. Delivery of Fish to Silver Lake
4. Clean-up

DFG Lake operations will consist of:

1. Electro Fishing
2. Gill / Trammel Netting
3. Hoop Nets

DFG GROUND OPERATIONS

1. ***Set-up***

DFG Setup crews will arrive at the old PG&E lake tenders cabin access point off Hwy 88 at approximately 10:00 AM on Monday and begin getting the boat launch, net pens, and fish transfer area ready.

DFG Tasks necessary for setup include:

- Minor grading to the boat launching area
- Installing and anchoring aircraft landing mats for boat launching
- Launching boats
- Construction of net holding pens
- Setting and anchoring pens out in deep water
- Coordinating fish transfer steps.

2. ***Transfer of Fish to Trucks***

A combination of DFG staff and volunteers will be used to transfer fish from the net pens to the waiting hatchery trucks. There will be two (2) fish transfer shifts starting with volunteer sign in at 0700 and 1600 each day except for the first day, which will only have a PM shift. **(All volunteers will sign up according to the DFG volunteer Program procedures in the DFG Ops Manual.)**

Boats will slowly tow or push the net pins into the selected unloading locations. DFG staff will unload fish from net pens and pass nets up the shore to volunteers and into the awaiting hatchery trucks or an intermediate transfer vessel. Ground crew leads will be responsible for Daily Activity Reports (DAR) listing the names of all crewmembers, including volunteers, their duties, and the number of hours they worked.

3. ***Delivery of Fish to Silver Lake***

Fish will be taken from Caples Lake to Silver Lake. Once a truck is full of fish or such time passes that there is a risk of loss of fish from being in the truck too long, that truck will go. Each driver will have the final say over how many fish can be placed into each truck per load and, when that truck should leave. However, there must be at least one (1) truck on site at all times so fish can be loaded as net pens are brought in. If there are fish in the trucks that are too large to fit through the discharge pipe to be dumped out by normal methods, volunteers will be transported to Silver Lake to assist drivers unload fish.

4. ***Clean-up***

The Incident Command and staging area will need to be cleaned of all gear and trash starting on Friday morning after the last load of fish goes out.

DFG LAKE OPERATIONS

1. ***Electro Fishing***

A combination of DFG staff and volunteers will be assigned to three (3) electro-fishing boats that will work the perimeter shoreline and any other shallow areas of the lake. Electro-fishing boats will be deployed at 0600 on Tuesday 08/26/08 and work until 1700 then return for a debriefing. Night shift crews will then start at 1800 on Tuesday 08/26/08 working until 0500 each day. Daytime Electro-fishing will only take place on Tuesday 08/26/08. Wednesday, 08/27/08 and Thursday, 08/28/08, Electro-fishing will take place from 1800 through 0500. **(Volunteers will have proper gear and training according to DFG procedures for using volunteers in the Ops Manual.)**

Electro-fishing boats will help hoop net crews set nets on Tuesday (08/26/08) morning and help pull nets near the end of their shift on Thursday (08/28/08) night and Friday (08/29/08) morning. Electro-fishing crews may be redeployed to net operations after the first night depending on their effectiveness. Take a GPS latitude and longitude (Nad 83) and make a waypoint at the beginning and end of each reach sampled, taking note of locations that were especially productive on the data sheet.

2. ***Gill / Trammel Netting***

Two (2) boats will be assigned to work gill/trammel nets day and night. Day shift crews will start at 0600 returning to the staging area for a debriefing at 1700. Night shift crews will begin work at 1800 and return to the staging area at 0500 for a debriefing. Each boat will be fitted with a live well with recirculation pumps. Each crew will have three (3) gill/trammel nets available that will be labeled on the floats with a net ID number, T1, T2, or G1, G2 etc. The ends of each net will be marked with a labeled float. Nets will be set in deep areas of the reservoir, as well as any other areas that appear to have large concentrations of fish on fish finders including ledges and humps. Nets should be set at varying depths through the first two (2) nights to see what is most effective. The goal is to capture fish alive so crews will need to watch nets closely to judge set time but should be set for no more than two (2) hours between physical checks.

3. ***Hoop Netting***

Two (2) boats will be assigned to work hoop nets day and night. Day shift crews will start at 0600 returning to the staging area for a debriefing at 1700. Night shift crews will begin work at 1800 and return to the staging area at 0500 for a debriefing. This boat will also be fitted with a live well. 10-15 hoop nets will be placed at various locations around the lake, in both deep and shallow water, around the shoreline, underwater humps, islands etc. The ends of each net will have a labeled float attached. Floats will be labeled with a net ID number H1, H2 etc. Nets will be checked on a rotational basis in the order they were placed, or in the order that is fishing most effectively. Electro-fishing boats will help deploy and pickup hoop nets at the beginning of operations on Tuesday (08/26/08) and the end of operations on Thursday (08/28/08) night and Friday (08/29/08) morning.

C. **SCHEDULE OF COMPLETION DATES**

Activity	Date
Set-up	August 25, 2008
Transfer fish and fish delivery ~ Electro Fishing ~ Gill / Trammel Netting ~ Hoop Netting	August 26 - 28, 2008
Clean-up	August 29, 2008

1. INVOICING AND PAYMENT

A. The maximum amount payable for the 08/09 Fiscal Year ending June 30, 2009 shall not exceed $103,120.00

B. For services rendered, the El Dorado Irrigation District will compensate the DFG, in one (1) lump sum payment, in arrears, upon receipt of an invoice, in accordance with the rates specified herein.

C. El Dorado Irrigation District will provide payment to the DFG within thirty (30) business days upon receipt of the invoice.

2. INDEMNIFICATION

EID recognizes that DFG is performing the services provided for in this Agreement to assist EID with its dam repair project. DFG intends to use its own equipment and staff as well as volunteers. EID agrees to indemnify and hold harmless DFG, its employees, and volunteers, for all injuries or damages they may incur in carrying out the services provided for in this Agreement, including but not limited to, full reimbursement for any workers compensation claims arising from the work to be performed under this Agreement.

EID, at the discretion of DFG, agrees to defend DFG against any claims or lawsuits that may be filed in connection with the Agreement. EID shall defend such action by counsel reasonably acceptable to DFG or reimburse DFG for all charges incurred for services of the California Attorney General, at DFG's option.

In the event EID is indemnifying, holding harmless or defending DFG pursuant to this Section, the amount of this Agreement may exceed $103,120.00.

LINE ITEM BUDGET

Personnel Services

Title	Regular Hours	Hourly Rate	Regular Salary	Overtime Hours	Overtime Amount
Administrative Officer III Total	18	36.47	656	-	-
Associate Biologist Total	213	33.24	7,080	25	1,246
Biologist B Total	182	24.90	4,532	13	486
Environmental Scientist Total	168	33.99	5,711	10	510
Executive Assistant Total	23	23.79	547	-	-
Executive Secretary Total	24	21.86	525	-	-
F&WL Interpreter II Total	23	31.64	728	-	-
Fish and Wildlife Tech Total	273	20.87	5,697	2	63
Fish Habitat Specialist Total	40	25.95	1,038	13	506
Fish Habitat Supervisor Total	40	31.18	1,247	1	47
Fish Hatchery Manager I Total	32	25.96	831	-	-
Mate, Fish & Game Vessel Total	12	23.36	280	-	-
Public Information Officer I Total	32	31.83	1,019	-	-
Research Analyst Total	24	27.80	667	-	-
Research Analyst II Total	24	33.43	802	-	-
Sci. Aid Total	413	13.34	5,509	25	500
Sr. Biologist Specialist Total	87	37.33	3,248	-	-
Sr. Environmental Scientist Total	107	39.15	4,189	-	-
Sr. Hydraulic Engineer Total	11	53.30	586	-	-
Staff Environmental Scientist Total	75	39.14	2,935	13	763
Warden Lt (Supervisor) Total	40	34.08	1,363	8	409
Wardens Total	160	30.53	4,885	18	824
Total Wages and Hours	**2,021**		**54,076**	**128**	**5,354**
Staff Benefits (35.26% Regular, 7.65% OT)			**19,067**		**410**
Subtotals - Regular and Overtime			**73,143**		**5,764**

Total Personnel Services	**$ 78,907**

Operating Expenses and Equipment

Object	Amount
Vehicle Fuel (30 vehicles, 30 gal/vehicle @ $4.00/gal	3,600
Vessel Fuel (9 vessels, 30 gal/vessel @ $4.00/gal)	1,080
Minor Equipment	1,000

Total Operating Expenses and Equipment	**5,680**
Total Direct Costs	**84,587**
Administrative Overhead (21.91%)	**18,533**
Agreement Total	**$ 103,120**

* All cost include overtime.

** All volunteers have signed proper DFG documents according to DFG Volunteer Program procedures Ops Manual.

*** **Travel Expenses** and per diem rates set at the rate specified by the Department of Personnel Administration for similar employees. No travel outside the State of California shall be reimbursed unless prior written authorization is obtained from the State.

Appendix G: Invoice

State of California - The Resource Agency — ARNOLD SCHWARZENEGGER, *Governor*
DEPARTMENT OF FISH AND GAME

EL DORADO IRRIGATION DISTRICT
TOM GALLIER
2890 MOSQUITO ROAD
PLACERVILLE, CA 95667

INVOICE NO. 31174
INVOICE DATE 06/11/2009

DESCRIPTION	AMOUNT
SERVICE IN ACCORDANCE WITH AGREEMENT FOR: R0820011	
CAPLES LAKE FISH RECOVERY PERIOD COVERED:08/25/2008 THROUGH:03/31/2009	
PERSONAL EXPENSES:	
SALARIES/WAGES	$55,904.62
STAFF BENEFITS	$17,904.16
SUB TOTAL $73,808.78	
OPERATING EXPENSES:	
GENERAL EXPENSES	$1,111.13
TELEPHONE	
PER DIEM	$275.40
FAC. OPERATIONS	
UTILITIES	
CONSULT/PROF-INTERDEPT/EXTERNAL	
EQUIPMENT/MINOR	
VEHICLE OPS.	$3,090.32
SUB TOTAL $78,285.63	
ADMIN. OVERHEAD	$17,152.38
TOTAL $95,438.01	
CC: STAFFORD LEHR / TIM MONTROSE - NCR	
TOTAL PRIOR PAYMENTS	
QUESTIONS CALL: WEIJING LAI (916)653-0866 — TOTAL AMOUNT DUE	$95,438.01

FOR ACCOUNTING USE ONLY:

TC	122	FY	2008	DOC	31174-00	INDEX	2241	OBJ		PCA	84253	AMT	$95,438.01
TYPE:	02	FM:	12	BATCH:	513	BATCH DATE:		06/11/2009		SUBSIDIARY:			
PROJ	G18200-98	SOURCE	991937	AS		FS		FD		FUND	M	Act/Loc	

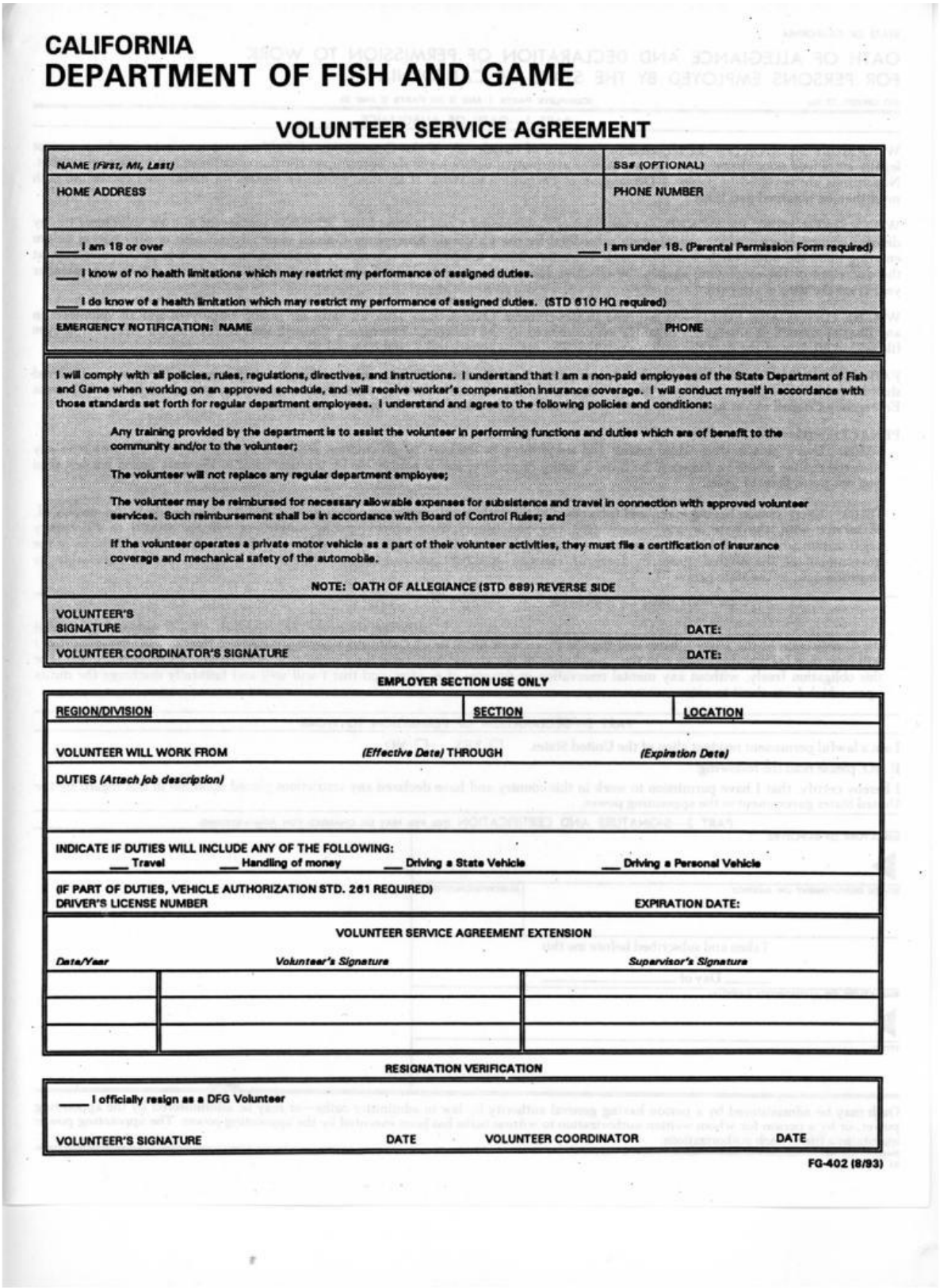
IMPORTANT Send a copy of the invoice along with the remittance to:
Dept. of Fish and Game, P.O. Box 944209, Sacramento, CA 94244-2090

Appendix H: Inventory

ITEM	REQ	HAVE	NEED	UNIT COST	Current Location	Notes	Caretaker
Electrofishing boat	**3**	**3**	**0**		2 in Portola, 1 in Rancho	Add.R-3 and R-1	Rossi, Rowan
Net boat	**4**	**4**	**0**		1 in Portola, 1 at Alpine, 1 at MOK, 1 Rancho		Vincik, Rossi, Lehr
Fish pen boat	**1**	**1**	**0**		Rancho	Add. R-3	Healey
Safety boat	**1**	**1**	**0**		Mok	Add. R-3	Vincik
Talk about Radio	**26**	**30**	**0**		Portola, Alpine, Rancho		Vincick, Ferreira, Rossi
BACKHOE	**1**	**1**	**0**		Yolo		Greg Whitaker
PUMPS 1 1/2 - 2 INCH	**3**	**3**	**0**		Alpine		Robert Vincik
I TON TRUCK							
DUMP TRUCK	**1**	**1**	**0**		Yolo		Greg Whitaker
GENORATORS	**6**	**6**	**0**		Yolo, Alpine, Rancho		Whitaker, Vincik, Rowan
50 gallon tank	**1**	**1**	**0**		Rancho		ARTH
GPS HAND	**10**	**10**	**0**		Portola and Alpine		Johnson
LAPTOPS	**3**	**3**	**0**		Rancho		Lehr, Ball, Rowan
TRAVEL TRAILER	**2**	**2**	**0**		Rancho, Yolo		ARTH, Whitaker
PORTA-A-POTIES	**2**	**2**	**0**	**$85.00**	Rental EID	EID to rent	
WASH STATIONS	**1**	**1**	**0**		Alpine		Robert Vincik
WADERS, BREATHABLE						Bring if you have	All
4MIL CLR PLASTIC BAG	**15**	**15**	**0**		Alpine	2 cases	Robert Vincik
BUG SPRAY/SUN SCREEN	**2**	**2**	**0**		Alpine	2 cases	Robert Vincik
Hoop Nets	**20**	**20**	**0**		Portola		Rossi
Eboat live wells	**3**	**3**	**0**		Rancho		Roberts, Kundargi
Bildge Pumps	**4**	**3**	**1**				Roberts, Kundargi
Bouys/crab floats	**60**	**100+**	**0**		Portola		Rossi
Yellow Flood Lights	**3**	**3**	**0**		Alpine, EID	EID to rent	Robert Vincik, Jim Adams
Spot lights	**12**	**3**	**9**	**$59.99**		EID Purchase	Thomas
Light Sticks (Green and yellow	**200**	**0**	**200**	**$1.09**		EID Purchase	Thomas
GILL NETS 2.5-4 inch mesh	**20**	**18**	**0**		Portola, Rancho, R-3		Rossi, Roberts, Kundargi, Healey
Tramel nets	**10**	**0**	**10**				Lehr, Roberts, Kundargi
Tool Kit	**2**	**2**	**0**		Alpine, yolo		Vincick, Whitiker
Floating Fish Pens	**3**	**3**	**0**		Alpine		Vincick
Anchors	**40**	**20**	**20**		Alpine, Yolo, Portola		Vincick, Whitiker, Rossi
FIRST AID KITS	**6**	**6**	**0**		Alpine		Robert Vincik
LIFE JACKET	**40**	**25**	**15**			Bring it you have	Rowan, Rossi, Vincick, Thomas, Roberts
FLASHLIGHTS	**20**	**20**	**0**		Alpine		Vincick
AA BATTERIES	**1**	**1**	**0**		Alpine	one case	Robert Vincik
D BATTERIES	**1**	**1**	**0**		Alpine	one case	Robert Vincik
12 VOLT BATT	**6**	**4**	**2**	**$75.00**	Rancho		Roberts, Kundargi
Battery Charger	**6**	**6**	**0**		Rancho, Alpine, Portola		Rowan, Rossi, Vincick,

ITEM	REQ	HAVE	NEED	UNIT COST	Current Location	Notes	Caretaker
BOTTLED WATER						EID	
ICECHEST	**10**	**10**	**0**		Alpine		Robert Vincik
5 GAL GAS CAN	**20**	**20**	**0**		Alpine		Robert Vincik
Popup canopy	**6**	**6**	**0**		Rancho		Roberts, Kundargi
EMT Supplies					Alpine		Johnson, Hues
Duct tape	**2**	**0**	**2**		Alpine		Vincick
Zip Ties assortment	**12**	**0**	**12**		Alpine		Vincick
Work Gloves	**50**	**36**	**12**		Alpine, Rancho		Vincick, Roberts, Kundargi
Sand Bags	**24**		**24**		Rancho		ARTH
Rope	500 ft	300 ft.			Alpine, Rancho		Vincik, Roberts, Kundargi

Appendix I: Department Volunteer Release



CALIFORNIA
DEPARTMENT OF FISH AND GAME

VOLUNTEER SERVICE AGREEMENT

NAME *(First, MI, Last)*	SS# (OPTIONAL)
HOME ADDRESS	PHONE NUMBER

___ I am 18 or over ___ I am under 18. (Parental Permission Form required)

___ I know of no health limitations which may restrict my performance of assigned duties.

___ I do know of a health limitation which may restrict my performance of assigned duties. (STD 610 HQ required)

EMERGENCY NOTIFICATION: NAME PHONE

I will comply with all policies, rules, regulations, directives, and instructions. I understand that I am a non-paid employees of the State Department of Fish and Game when working on an approved schedule, and will receive worker's compensation insurance coverage. I will conduct myself in accordance with those standards set forth for regular department employees. I understand and agree to the following policies and conditions:

Any training provided by the department is to assist the volunteer in performing functions and duties which are of benefit to the community and/or to the volunteer;

The volunteer will not replace any regular department employee;

The volunteer may be reimbursed for necessary allowable expenses for subsistence and travel in connection with approved volunteer services. Such reimbursement shall be in accordance with Board of Control Rules; and

If the volunteer operates a private motor vehicle as a part of their volunteer activities, they must file a certification of insurance coverage and mechanical safety of the automobile.

NOTE: OATH OF ALLEGIANCE (STD 689) REVERSE SIDE

VOLUNTEER'S SIGNATURE DATE:

VOLUNTEER COORDINATOR'S SIGNATURE DATE:

EMPLOYER SECTION USE ONLY

REGION/DIVISION	SECTION	LOCATION

VOLUNTEER WILL WORK FROM *(Effective Date)* THROUGH *(Expiration Date)*

DUTIES *(Attach job description)*

INDICATE IF DUTIES WILL INCLUDE ANY OF THE FOLLOWING:
___ Travel ___ Handling of money ___ Driving a State Vehicle ___ Driving a Personal Vehicle

(IF PART OF DUTIES, VEHICLE AUTHORIZATION STD. 261 REQUIRED)
DRIVER'S LICENSE NUMBER EXPIRATION DATE:

VOLUNTEER SERVICE AGREEMENT EXTENSION

Date/Year	*Volunteer's Signature*	*Supervisor's Signature*

RESIGNATION VERIFICATION

____ I officially resign as a DFG Volunteer

VOLUNTEER'S SIGNATURE DATE VOLUNTEER COORDINATOR DATE

FG-402 (8/93)