California Voluntary Drought Initiative

VOLUNTARY DROUGHT AGREEMENT
Sacramento River Tributaries
Antelope Creek

Goals of the Voluntary Drought Initiative

NOAA's National Marine Fisheries Service (NMFS) is among the State and Federal agencies that recognize the severe constraints the 2014 drought is likely to have on agriculture and fish in California. This document expresses our intention to work with water users in high priority areas throughout the State to reduce the negative effects of the drought on salmon and steelhead during this challenging water year.

NMFS is charged by Congress to protect species through the Federal Endangered Species Act (ESA). The ESA provides for formal agreements with individuals and organizations pursuing activities, such as agriculture that allow them to be conducted while protecting fish and their habitat. These formal agreement processes generally take time to implement; it may simply be impractical to implement them quickly during a severe drought-related water year.

To address the urgency created by the drought, NMFS and CDFW have developed the Voluntary Drought Initiative (Initiative) to reduce the effects of the drought on priority salmon and steelhead populations in California during the 2014 drought, while Federal and State drought declarations or designations are in effect. For NMFS, the Initiative includes an approach to the application of the ESA's section 9 enforcement standards, as they are related to the withdrawal of water, from salmon and steelhead-bearing stream and rivers. It is a temporary, voluntary program that is only being implemented during State and Federal drought declarations or designations, with the goal of supporting agricultural activities while protecting the survival and recovery of ESA-listed salmon and steelhead.

Priority Watersheds

In an effort to focus resources and maximize the efficiency of this Initiative in the shortest time possible, we have chosen to concentrate on priority watersheds where the risk of drought-related effects to Federally-listed fish species are greatest. This section describes those priority watersheds and summarizes their importance to conserving sensitive species.

Sacramento River Tributaries

Priority Sacramento River tributaries are Mill, Deer and Antelope creeks. These streams contain migration, spawning, and rearing habitat for some of the last remaining naturally-produced

populations of Federally threatened Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) and threatened California Central Valley steelhead (*O. mykiss*).

The importance of Antelope Creek to the survival and recovery of salmon and steelhead in the Northern California's Central Valley, is significant. Of the 19 independent spring-run Chinook salmon populations that historically occurred in the Central Valley, the Antelope Creek population is among the last of a small group of naturally-produced populations. Antelope Creek is a Core 1 population for Central Valley steelhead and a Core 2 population for spring-run Chinook salmon. Preserving and restoring Core 1 populations is the foundation of the recovery strategy because Core 1 populations are considered to have the greatest potential to support independent viable populations. Core 2 populations are assumed to have the potential to meet the moderate risk of extinction criteria and protecting these populations is also a priority of the recovery plan.

Antelope Creek is also unique in the Central Valley because it has no upstream water storage facilities that can be managed to meet the stream flow and water temperature requirements of these fish species, to buffer the effects of drought. Instead, all of the water management facilities and water use occur on downstream reaches near the confluence with the Sacramento River, and their careful management is needed this year, to ensure salmon and steelhead are able to successfully migrate upstream to spawning habitat and downstream to the Sacramento River.

Table 1 lists the months when adult and juvenile forms of Chinook salmon and steelhead are present in the diverted stream sections of lower Antelope Creek. Supporting documentation used to create this table was obtained from annual adult salmon and steelhead population monitoring conducted by CDFW's Red Bluff Fisheries Office (Killam and Johnson 2012) and a summary report of rotary screw trap monitoring conducted on Deer and Mill Creek between 1994 and 2010 (Johnson and Merrick 2012) .

Table 1. – Occurrence, by month, of adult and juvenile Chinook salmon and steelhead in the diverted stream sections of lower Mill, Deer, and Antelope Creeks. Dark shades indicate peak presence, while white indicates not presence.

Species	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
Adult spring-run Chinook (upstream migration)										
Adult steelhead (upstream migration)										
Adult fall-run Chinook (upstream migration and spawning)										
Juvenile Chinook (downstream migration)										
Juvenile steelhead (downstream migration)										

Benefits for Water Users Who Participate in the Voluntary Drought Initiative

ESA Enforcement

Under the ESA, NMFS has responsibility to protect and recover listed species including salmon and steelhead in California. The NMFS Office of Law Enforcement, often working with State and other Federal agencies, investigates activities or inactivity that may result in the unlawful take of these species, and refers suspected unlawful activity to the Enforcement Section of the NOAA Office of the General Counsel for civil prosecution, or to the Department of Justice for criminal prosecution. Protection of ESA listed salmon and steelhead are a priority for NOAA across their range, and NOAA uses management plans and takes enforcement actions to help ensure the protection and recovery of these species.

At this time, severe and unprecedented drought conditions are affecting parts of California. To help address the concerns those conditions present, NMFS is working with those withdrawing water from California streams and rivers to take into account those needs and at the same time carry out its responsibilities towards ESA listed salmon and steelhead by taking the extraordinary steps outlined in this Drought Initiative. NMFS is thus seeking to encourage participation in the Drought Initiative, and, to that end, will in making decisions about bringing or referring enforcement actions and about appropriate penalties, consider participation in the Drought Initiative an important mitigating factor when a Drought Initiative participant unintentionally takes ESA listed fish species while withdrawing water or carries out other action that affects fish passage while complying with a Voluntary Drought Initiative Agreement. To obtain this special consideration, a Drought Initiative participant must establish that it has implemented the specified water mitigation measures described in a Voluntary Drought Initiative Agreement and fully complied with the requirements of an agreement. NOAA will actively pursue enforcement actions against those who act negligently, recklessly, or intentionally in violation of the ESA.

Financial and Technical Assistance

NMFS will endorse efforts by public and private organizations to provide technical and financial assistance for water users who participate in this initiative. If requested, NMFS will provide recommendations and letters of support to those organizations, for targeting financial and technical assistance for improvements to fish passage associated with water deliveries, with initiative participants.

Elements of the Voluntary Drought Initiative and Agreements

The general elements of the Initiative include eligibility, designated fish passage flows, and changes in the timing of diversions to help with flow and water temperature management,

monitoring and evaluations. The specific elements of the program are tailored by stream and described in this Voluntary Drought Initiative Agreement (Agreement).

Eligibility

The Initiative will be available specifically to water users who do not have an existing ESA section 7 nexus, or other fish passage or flow agreements with NMFS. Participants must establish that they have implemented and fully complied with the specified applicable measures described in this Agreement. Eligible participants may include water companies or water districts functioning as water masters for multiple water rights holders or individual water rights holders or water users that do not have existing Federal or State regulatory coverage under the ESA, as described above.

Implementation and Duration

Implementation will occur when water users sign onto this Agreement. Agreements will be implemented during the 2014 drought, and will remain place until December 31, 1014, or as long as any Federal or State drought emergency declarations or designations are no longer in effect, whichever comes first.

Instream Flows

The flows described in this Agreement were developed based on instream flow studies, data collection efforts and reports associated with fish biology data collection, relevant literature, and the professional knowledge and experience of CDFW and U.S. Fish and Wildlife Service (USFWS) field staff. CDFW and USFWS have conducted flow studies, snorkel surveys, and established video monitoring stations to determine what flow conditions allow salmon and steelhead to move up- and downstream through areas in these streams where physical obstacles (riffle height, dams, and fish ladders, etc.) are a challenge for the fish migration during drought conditions.

The range of instream flows that are proposed in this Agreement are considered by NMFS and CDFW to be the minimal flows that are necessary to allow for adult and juvenile fish migration on lower Mill, Deer and Antelope creeks. The range of flows in this Agreement (which incorporate base flows and pulse flows) incorporate, to the best of our knowledge, the uncertainty associated with a variety of fish passage consideration in these streams, including passage past critical riffles, fish ladders and other obstacles. The range also incorporates consideration for the variable run timing of target fish species. These are not optimal flows, but the minimum, reasonable targets that will minimize the effect of drought while balancing fish and agricultural interests. Flows below those described in this Agreement would be expected to cause significant harm to the target species.

Water users will be working closely with the NMFS and CDFW to ensure that flow contributions are closely coordinated, monitored, and evaluated to determine fish migration success. Adjustments may be needed to fine tune flows in coordination with NMFS and other fish and water agencies field to ensure successful fish passage. NMFS and CDFW will work closely with water users to ensure that minimum fish passage flows are scheduled at the best times to ensure fish passage and survival.

The elements of this Agreement, including flows, monitoring and evaluation, if implemented in the manner described in this below, will provide fishery protections necessary to avoid significant drought-related harm to the CV spring-run Chinook salmon and CCV steelhead. The flows in this Agreement are based on our understanding of the best available information for protecting fisheries while maintaining water use in Antelope Creek and are comparable to, and achieve similar a similar biological outcome for fishery protection as those required in the regulations being proposed by the State Water Board (Title 23 CCR 877-879.9).

Pulse Flows

In past years, it has been found that pulse flows on Mill and Deer creeks lasting 24 hours or more have helped to create an attraction flow at the confluence of the tributary creek with the Sacramento River, encouraging fish to enter the stream, and providing the greatest instantaneous improvement to fish passage conditions through critical riffles and diversion structures. Pulse flows also encourage juvenile salmonids to migrate downstream before summer water temperatures become too warm. Coordination between diverting entities and their points of diversion must be conducted so that the duration and magnitude of water delivery interruptions are shared equally by all constituents in their respective service areas. To be most effective, pulse flows must be maintained for a minimum of 24 hours, with the first 12 hours of the event at maximum flow to promote fish attraction, and the remainder of the event stepped down incrementally to reduce potential fish stranding.

Antelope Creek flow targets

Minimum Flow Recommendation:

Spring Pulse Flows: To meet the needs of out-migrating juvenile spring-run Chinook salmon and for the upstream migration of spring-run Chinook salmon for 2014, a pulse flow was conducted using water volunteered by Los Molinos Mutual Water Company and Mr. Jim Edwards, equal to full natural flow in Antelope Creek. The pulse flow was conducted on May 14-16, 2014 for a 48 hr. period. This pulse flow was conducted with video monitoring in place, at the Edward's diversion dam, to detect any adult migrating fish passing over the dam to the upper Antelope habitat. Results of this video monitoring will be available within two weeks of the pulse flows.

Fall Base flows: Once there is a freshet that doubles the full natural flow (measured at USGS gage above Edward's Dam) after October 15, but prior to November 1, then a base flow of 35 cfs, or full natural flows (measured at Cone Grove Park), whichever is less, will be maintained through December 31, 2014.

If there not a freshet that doubles the full natural flow, then a baseflow of 35 cfs or the full natural flow, whichever is less, will be maintained from November 1 – December 31, 2014.

These flows are based on evidence that historical water temperatures in Antelope Creek and nearby Mill Creek, on the valley floor, reach tolerable levels for salmonids by mid- to late-October. It appears evident from CDFW data on Mill and Deer Creeks that fall freshets stimulate the outmigration of yearling spring-run Chinook; presumably the same would be true for spring run and steelhead in Antelope Creek. Releasing water downstream of the diversion during October (either as a pulse flow or base flow) without a preceding or co-occurring precipitation event may not create a freshet for outmigration because most juveniles would be upstream of the diversion and not experience the outmigration stimulus of increased flow and turbidity. However, it would benefit transport flows for juvenile salmon at the diversion dam in October to the Sacramento River but, based on historical data those numbers would likely be small.

Adult and juvenile spring-run Chinook salmon and steelhead are present in stream during other months. However, for the purpose of this Agreement, the critical passage periods described above are critical to fish protection during the drought.

Monitoring and Evaluations

Monitoring and evaluations plans continue to be in place to inform the effectiveness of the program. Monitoring and evaluations will be conducted by CDFW staff and reported to and reviewed by NMFS. At a minimum, monitoring will involve:

(1) Use of video stations to determine if fish are moving through lower Mill, Deer, and Antelope Creeks in response to minimum base flows and pulse flow events, and to determine population abundance.

It is the intent of NMFS and CDFW to detect any fish stranding issues before mortalities are observed, so that sufficient time is provided to inform diverters and take proactive flow restoration or other fish rescue actions.

Literature Cited and Supporting Information

Deer Creek Pulse Flows, A Proposal to Determine When Pulse Events/Diversion Bypass May be Beneficial for Salmonids, CDFW, Region 1. January 31, 2013.

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CDFW. 2009. Surface Flow Criteria for Salmon Passage, Lower Mill Creek Watershed Restoration Project.

USFWS. 2013. Identification of the Instream Flow Requirements for Anadromous Fish in the Streams with the Central Valley of California and Fisheries Investigations. Annual Progress Report, Fiscal Year 2013. Sacramento, CA.

PARTICIPATING PARTIES

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