HERUM CRABTREE
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VIA ELECTRONIC MAIL

Chad Dibble, Staff Environmental Scientist
State of California Department of Fish and Game
Ecosystem Conservation District
830 "S" Street
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Re: Draft *Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions* Comments of the Stockton East Water District

Dear Mr. Dibble:

Please find attached comments on the draft *Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions,* submitted on behalf of the Stockton East Water District.

Very truly yours,

KARNA E. HARRIGFELD
Attorney-at-Law

KEH:lac

cc: Kevin M. Kauffman

Comments of Stockton East Water District on the Draft Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions

Page 154. Water temperatures in the Calaveras River are generally within suitable levels for various steelhead lifestages.

The Draft Ecosystem Restoration Program Conservation Strategy for Restoration (Draft ERP) (DFG 2011, p. 154) states that:

> In the Calaveras River, water temperature is closely related to flow, reservoir release, and pool volume at New Hogan reservoir. Temperatures often exceed those suitable for migration, spawning, incubation, and rearing of anadromous salmonids (USFWS 1993).

Unfortunately, DFG 2011 did not provide the correct reference associated with this citation so it is difficult to address this statement. The reference given for USFWS 1993 pertains to delta smelt—not to the Calaveras River (i.e., *USFWS. 1993. Endangered plants; Determination of threatened status for the delta Part 17*). Nonetheless, we believe that this citation refers to a USFWS Conjunctive Use Study document entitled "Stanislaus River Basin Calaveras River Conjunctive Use Water Program Study: A Preliminary Evaluation of Fish and Wildlife Impacts with Emphasis on Water Needs of the Calaveras River" (Prepared in 1992 [revised 1993] by Schoenberg, S. of the U.S. Fish and Wildlife Service for the U.S. Bureau of Reclamation. 24 pp). Assuming that this is the correct report, DFG 2011 also erroneously interpreted the information presented in the USFWS evaluation and the statement regarding Calaveras River temperatures is false.

The USFWS Conjunctive Use Study (USFWS 1993) does not indicate that temperatures in the Calaveras River "often exceed those suitable" for the various lifestages as stated by DFG 2011. Instead, the document identifies that under normal and wet year conditions that flows provide favorable habitat for development of an "outstanding" trout fishery. However, drought conditions resulted in increased water temperatures that were likely unsuitable. According to the USFWS Conjunctive Use Study (USFWS 1993), New Hogan reservoir outflows may result in less than suitable instream water temperatures whenever reservoir storage drops below 85,000 AF. Less than suitable temperatures were speculated to arise under low reservoir storage conditions as a result of "skimming" by the presence of Old Hogan Dam, whereby only water from the epilimnion (warm upper region of the lake) flowed over the old dam even though colder hypolimnionic water was present behind it. However, a recent evaluation regarding this potential skimming effect has found that the available data do not provide any support for the conclusion that "skimming" occurs and absolutely no support for storage falling under 85,000 AF as having any affect on downstream temperatures. The recent evaluation confirmed that the three major factors affecting New Hogan Lake temperature are upstream inflows, the intensity of solar radiation on the lake and ground temperatures below the lake.

Also, with the exception of severe drought years such as 1976-77 and 1987-92 when reservoir storage was at critically low levels (i.e, less than 50,000 AF), seven-day average daily maximum (7DADM) temperatures at New Hogan have generally not exceeded 55°F[1], particularly in the November through March period (Figure 1). Despite these general trends, there are occasions when temperatures are higher than this recommended temperature even under relatively high storage conditions (Figure 2). Furthermore, whenever seasonal (November through March) reservoir storage minimums are greater than 75,000 AF, the seasonal (Nov-Mar) maximum of 7DADM temperatures generally varies between 55°F and 57°F (Figure 3). These various temperature scenarios provide further indication that storage level has minimal influence on, and is not a predictor of, outflow temperatures. Release temperatures that are greater than 60°F coincide with periods of critically low reservoir storage (Figure 1); however, reservoir releases were also critically low (i.e., <5 cfs) which would result in greater warming from ambient temperatures. Taking into consideration the uncertainty about a potential 'skimming' effect and low releases coinciding with low storage, the relative contribution of storage level versus ambient air temperatures to outflow temperatures cannot be determined based on the available records.

[1] Reservoir outflow temperatures are expected to be even lower due to the warming that occurs between the dam and the New Hogan temperature station.

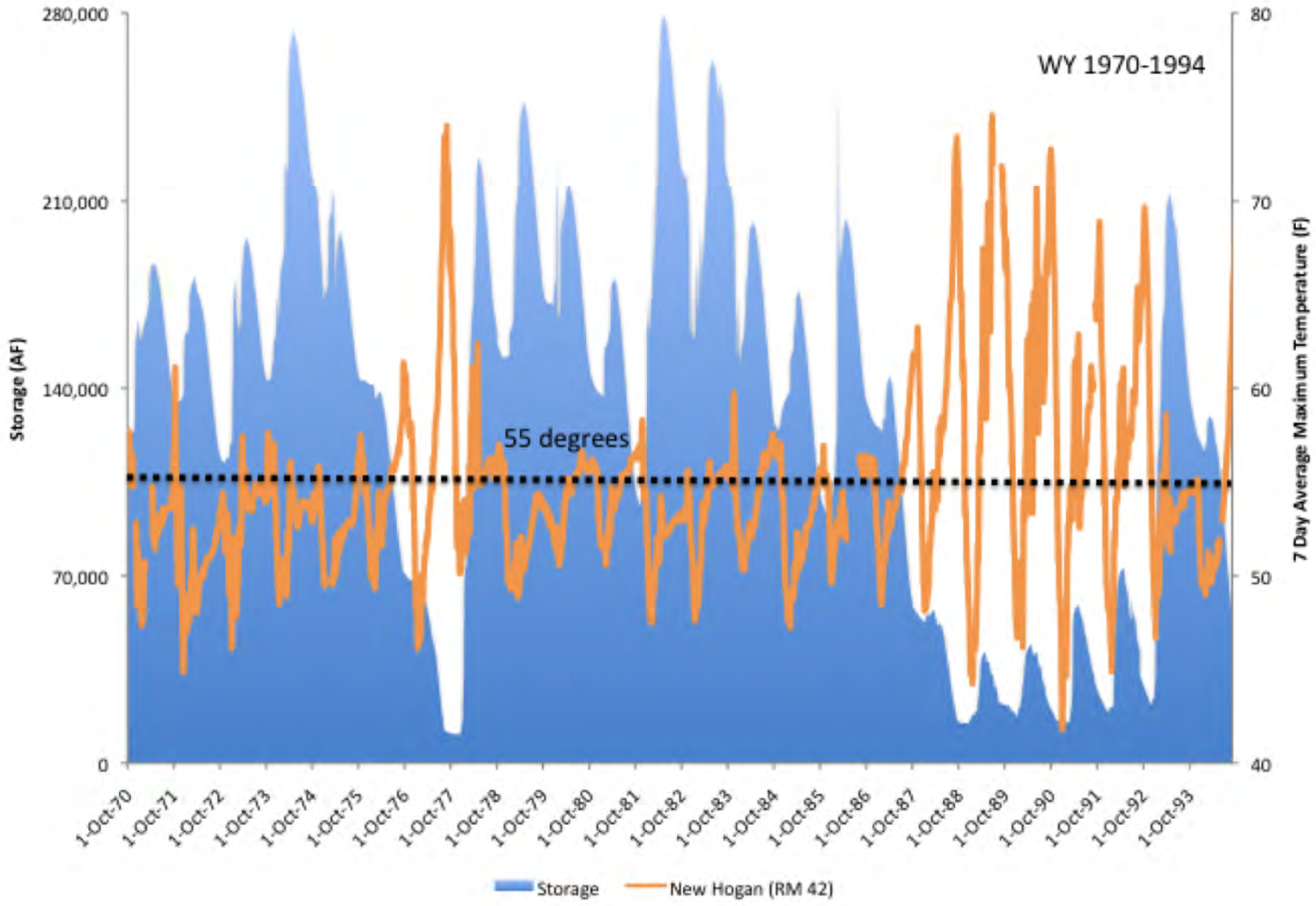

Figure 1. 7DADM water temperature in the Calaveras River at New Hogan Dam and daily average reservoir storage, water years 1971-2010.

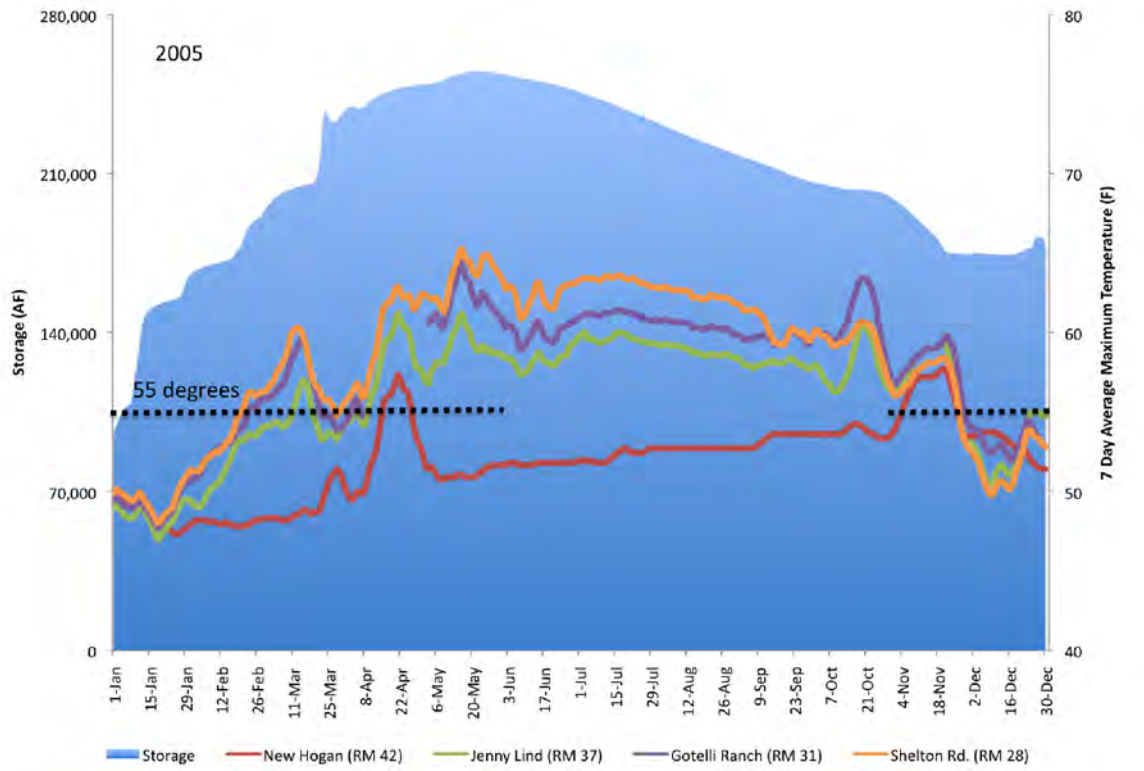

Figure 2. New Hogan temperatures greater than 7DADM 55°F occur even under reservoir storage > 165,000 AF.

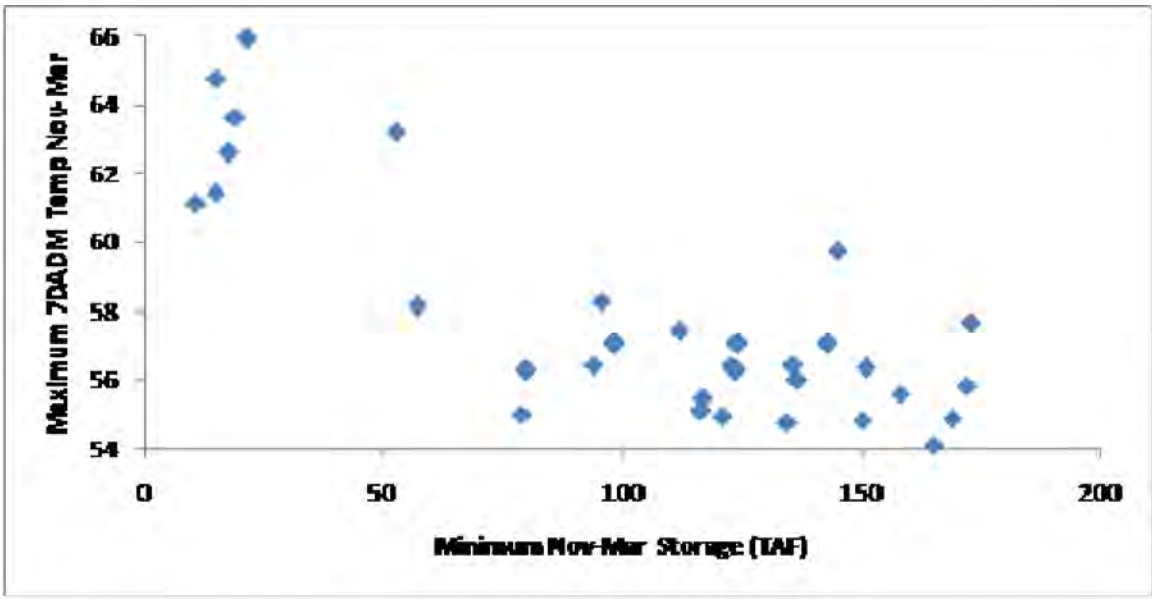

Figure 3. Seasonal (Nov-Mar) maximum of 7DADM temperatures in the Calaveras River at New Hogan Dam and seasonal (Nov-Mar) minimum reservoir storage.

According to more recent 2001-2008 temperature data, water temperature criteria recommended by the Environmental Protection Agency (EPA 2003) for salmonid spawning, egg incubation, and fry emergence (i.e., <13°C; 55°F)[2] are generally met under typical base flow releases from November through March between New Hogan[3] and Jenny Lind (Figure 4). These temperatures are even typically met most of this period in years when storage is moderately low (i.e., between 55,000 AF and the conservation storage of 84,100 AF, which is equivalent to reservoir storage of 99,100 AF)(Figure 5).

However, as ambient air temperatures begin to rise beginning typically in April, water temperatures often exceed this objective even though flows are high (i.e., >150 cfs) due to increased releases for irrigation, indicating that water temperatures above recommended criteria are highly correlated with high ambient air temperatures occurring in spring through late summer/early fall and are independent of storage level. EPA recommended water temperatures for "core" rearing (<16°C; 61°F)[2] are also generally met between New Hogan and Jenny Lind year-round (Figure 4).

[2] Little is known about the specific responses of Central Valley salmonid species to water temperatures (Williams and others 2007). In absence of Central Valley specific data, criteria developed for more northern stocks are typically used as a conservative objective. For example, a Peer Review Panel on the nearby Stanislaus River recommended that EPA Region 10 criteria (developed based on laboratory studies of Pacific Northwest and Alaskan stocks) be used as objectives to evaluate potential benefits of various operating scenarios against one another (Deas and others 2004). These temperature criteria are believed to be conservative for Central Valley salmonids since water temperatures in more southern areas have always been naturally higher, particularly in the San Joaquin basin, and regional salmonids have likely evolved to withstand higher temperatures. Therefore, it was assumed that as long as temperatures were within the EPA criteria which are based on a 7-day average of the daily maximum (DADM) values (i.e., <13°C [55°F] for salmonid spawning, egg incubation, and fry emergence; <16°C [61°F] for "core" rearing areas; and <18°C; 64°F for migration plus "non-core" rearing areas), the likelihood of temperature effects to salmonids would be minimized. These objectives can be applied in a similar approach to the Calaveras River.

[3] Since New Hogan temperature is not measured directly at the outlet but is measured about 0.8 miles downstream of the dam, water temperatures recorded have already experienced up to as much as 2.3°F warming as evidenced by difference in minimum reservoir profile temperatures versus those recorded at New Hogan.

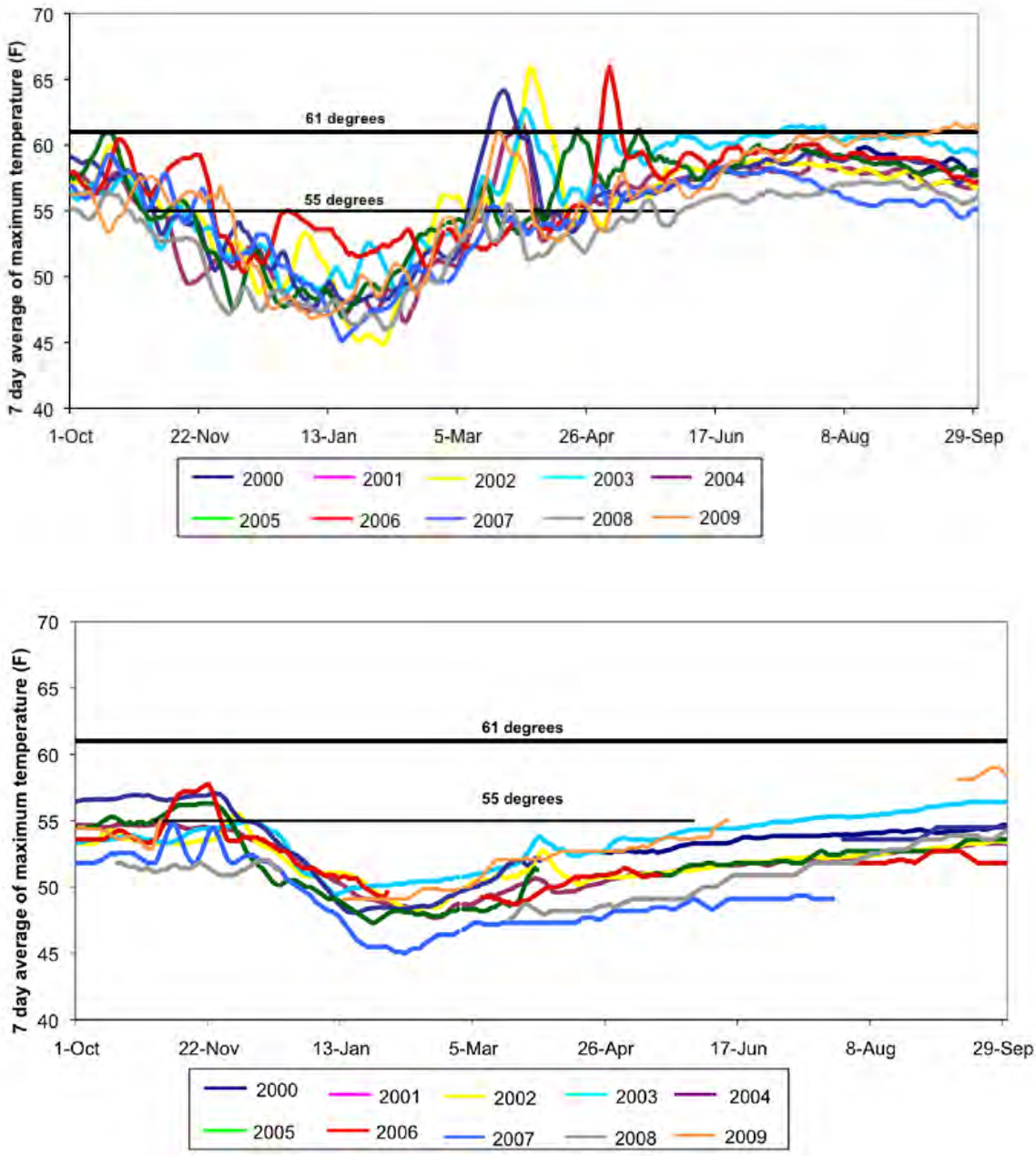

Figure 4. Seven day moving average of the daily maximum at New Hogan (RM 42; thermograph located about 0.8 miles downstream of dam) and Jenny Lind (RM 34.6), Water Years 2000-2009.

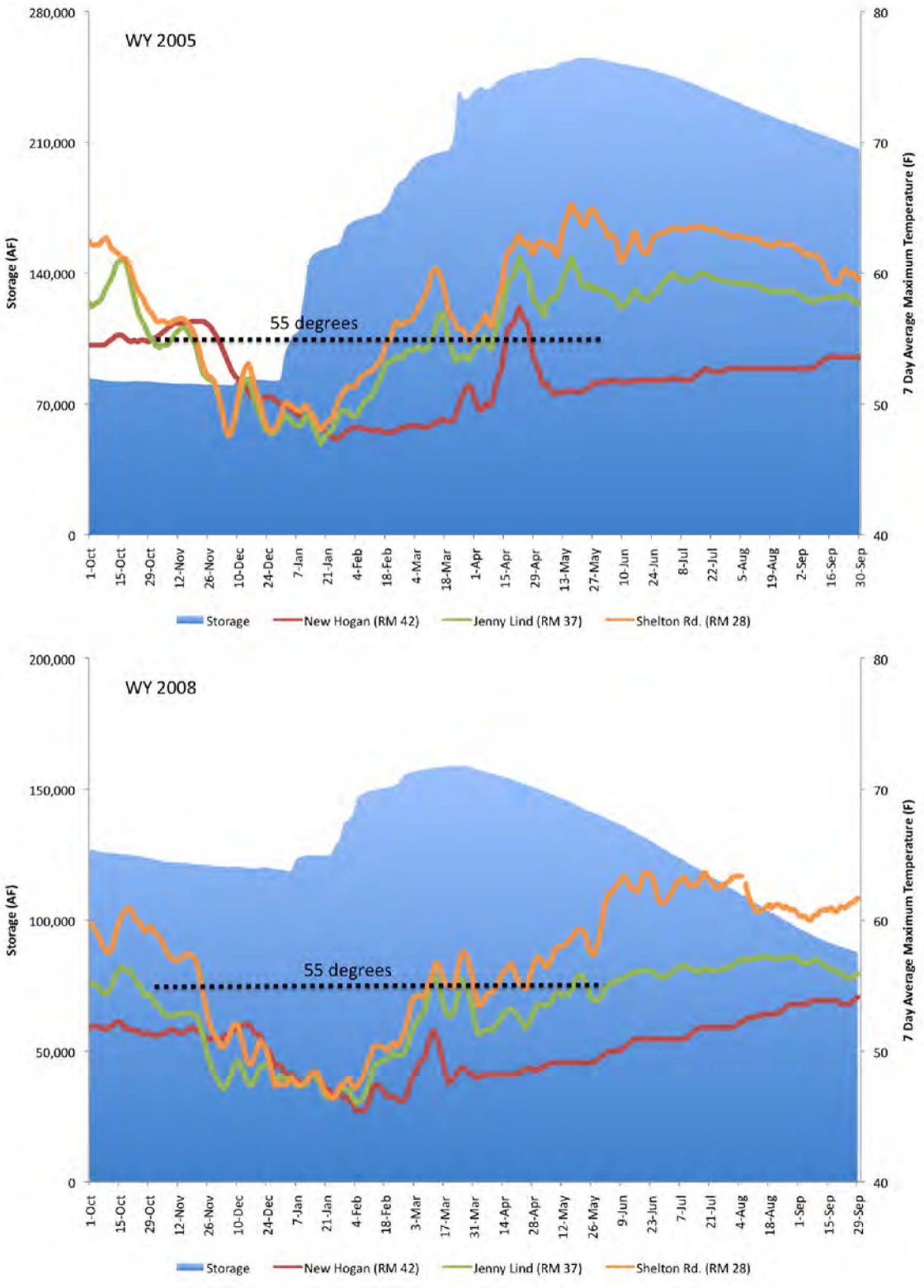

Figure 5. Reservoir storage versus water temperature, Water Years 2005 and 2008.

Page 162-163. Historical Calaveras River steelhead population is unknown; however, a healthy and abundant resident rainbow trout fishery is supported by current flow management.

The Draft ERP (DFG 2011, p. 162-163) states that:

> Although steelhead populations are much smaller than historically recorded, incidental captures of juvenile steelhead via monitoring on the Calaveras, Cosumnes, Stanislaus, Tuolumne, and Merced rivers confirmed that steelhead are distributed throughout accessible streams and rivers in the SJBPA (NMFS 2009b).

Historically, there was no systematic sampling for steelhead in the Calaveras River, so there is no historic population estimate available to indicate that populations are "much smaller than historically recorded." On the contrary, the historic use of the Calaveras River by steelhead prior to Old/New Hogan Dam is uncertain and information regarding steelhead presence and life history characteristics must be inferred from sparse anecdotal information, occasional documented sightings of rainbow/steelhead trout beginning in 1972 (infrequent observations ranging from one to an estimated >500 fish), and monitoring studies within the lower Calaveras River beginning in 2001.

Although few steelhead (i.e., 4 adults) or steelhead progeny (i.e., 47 of 178 samples; 26%) have been identified in recent years, the Stockton East Water District's (SEWD) management of the river on behalf of their constituents and Calaveras County Water District (CCWD) over the past thirty years has created conditions that maintain a healthy and abundant resident rainbow trout fishery as evidenced by relatively high abundance[4] and fish condition factors (i.e., Fulton's K Factor) recorded during the past several years during rotary screw trap (RST) monitoring and by anecdotal accounts from local fishermen. While very few studies of the fishery resources in the Calaveras River have been conducted to date, SEWD's recent monitoring indicates that steelhead, a form of rainbow trout, opportunistically use the watershed when sufficient rainfall produces passage flows in the system.

Today, although the duration and magnitude of peak winter/spring flows have been reduced due to reservoir operations, steelhead are able to opportunistically access the reach between Bellota and New Hogan for spawning whenever adequate naturally occurring migration flows are available and no structural barriers are installed (i.e., flashboard dams are installed and operated in Mormon Slough/Stockton Diverting Canal

[4] Estimated juvenile *O. mykiss* migrant abundance has averaged 5,789 fish annually (median: 5,941; range: 1,127 to 11,116). Lowest abundance estimates occurred in 2005, which is attributed to several periods of flows greater then 2,000 cfs when sampling could not occur. Regardless, these annual numbers are much higher than those observed in nearby basins independent of water year type, storage conditions, outflows, and outflow temperatures.

and the Old Calaveras River channel from early to mid-April through mid-October). Upstream and downstream migration opportunities are currently limited to occasions between November and early April when passage conditions are created by substantial precipitation events that result in flood control releases and/or run-off events below the dam. In many years, precipitation events resulting in passage conditions do not begin until December because rainfall from initial storm events is generally absorbed into the ground through infiltration and run-off does not occur until the ground becomes saturated.

Based on previous observations of fish and physical habitat, it appears that most rainbow/steelhead trout spawning and rearing can be expected to occur above Jenny Lind (FFC 2002; SEWD unpublished data) with some usage observed downstream to Shelton Road. Sustained, summer flow releases for water management purposes during most years result in over-summer rearing opportunities within this reach. Due to steelhead life history patterns, these year-round flow conditions provide substantial benefits for this species.

Page 252. In the Calaveras River, there is abundant riparian habitat in many areas that provides suitable conditions for salmonid spawning, incubation, and rearing.

The Draft ERP (DFG 2011, p. 252) states that:

> Degradation and loss of riparian habitat have substantially reduced the habitat area available for associated wildlife species. Loss of this habitat has reduced water storage, nutrient cycling, and food web support functions. Regional priorities for riparian habitat in the Sacramento Valley include the purchase of streambank conservation easements along the Calaveras, Cosumnes, and Yuba Rivers to improve salmonid habitat and instream cover.

The Calaveras River has abundant riparian habitat in the salmonid spawning and rearing reach (i.e., between Bellota and New Hogan Dam) and in many areas of the secondary migration route (i.e., Old Calaveras River channel). Riparian habitat is not adequate in the primary migration route (i.e., Mormon Slough) due to channel maintenance for flood control.