



Merced River Wild & Scenic River Fact Sheet #5 Threatening a Wild & Scenic River

September 14, 2018

The Merced River upstream of Lake McClure Reservoir was designated as a National Wild & Scenic River in 1987 and 1992 by the Congress and Presidents Reagan and H.W. Bush, respectively.¹

The Lake McClure Reservoir expansion proposals

Unprotecting a permanently protected wild & scenic river—or trying to

In 2011 Representative Jeff Denham (R-Turlock) carried bills (H.R. 869 & 2578)² and in 2013 Rep. Tom McClintock (R-Elk Grove) carried a bill (HR 934), all to remove protection from a portion of the Merced National Wild and Scenic River. These bills were intended to allow the enlargement³ of Lake McClure Reservoir a second time, an artificial body of water in Mariposa County impounded by the 490-foot-high New Exchequer Dam. This rockfill dam, completed in 1967, was built against the original Exchequer Dam, a 300-foot-high concrete gravity dam completed by the Merced Irrigation District in 1926.⁴ The House of Representatives voted in support of Rep. Denham's bill, H.R. 2578, in June of 2012. Rep. McClintock's H.R. 934 was incorporated into Rep. Valadao's H.R. 5781, which passed the House in December 2014. Neither effort was taken up in the U.S. Senate nor enjoyed Administration support.⁵

The National Wild & Scenic River System was created in 1968. If successful, this would be the first time in the history of the System that a permanently protected river was de-designated for the purpose of stilling its free-flowing waters under a reservoir.⁶

Working the angles with another approach too

In August of 2014 Merced ID prepared and presented a briefing paper to members of Congress with an alternative project (while still expressing support for the original de-designation effort and the potentially resulting project). It proposed to reduce the height of its previous proposed dam raise (actually, a spillway raise), announce an operating intention not to invade the wild and scenic river as a result of the raise of the dam complex⁷, and to reduce its 350,000 acre-foot of seasonal rainflood space reservation by 57,000 acre feet.⁸

Merced ID made this proposal based on a nearly decade-old assessment and more recent consultant work that concluded it had overbuilt a key dam-safety feature of the dam complex,

a 1,080 ft. wide, 11 ft. high ungated emergency spillway intended to be used in extreme floods or failure of its mechanically controlled outlets. In a show of some hubris, Merced ID proposed to wall off 8 ft. of Exchequer Dam's emergency spillway (leaving just a 3 ft. high emergency spillway). The raised spillway would confine reservoir floodwaters against the spillway in very large rainfloods, thus allowing the floodwaters to be eventually routed through the main dam's existing outlet works and the gated, mechanically controlled, and also potentially raised service spillway.⁹



Gated service spillway at right. Emergency spillway is flat gap on the crest of hill to the left.

At this writing, Merced ID has not approached state regulators (Central Valley Flood Control Board,¹⁰ Division of Dam Safety Department of Water Resources,¹¹ California Department of Fish & Wildlife,¹² and CalTrans¹³) with detailed proposals for agency review of flood safety, dam safety, threatened and fully protected species impacts, and bridge-clearance issues with either project variation. Nor have they requested federal approvals from the Federal Energy Regulatory Commission,¹⁴ U.S. Army Corps of Engineers,¹⁵ or Bureau of Land Management¹⁶ for their August 2014 proposal.¹⁷

Currently, Merced ID intends to finance an Army Corps of Engineers review that they hope will support Merced ID's conclusion that the original flood reservation and dam-safety features were, are, and will be excessive to Army requirements. Legislation authorizing such financing authority is included in "America's Water Infrastructure Act (AWIA) of 2018."¹⁸

Why are they seeking more water by this means?

It is a puzzle.¹⁹ After all, unlike dams to the north and south,²⁰ New Exchequer Dam has never filled and spilled (made a release from a full reservoir larger than its normal maximum flood release and floodway corridor capacity).²¹

And using standard storage-to-yield estimates, Merced ID's first proposed reservoir expansion could increase average yield by only around ten thousand acre feet per year.²² The *Merced Sun-Star* reports that Merced ID expects an average yield of 12,000 feet per year.²³ Their smaller proposal no doubt would yield less. But context is important Merced ID facilities divert around a half a million acre-feet per year.²⁴ Average San Joaquin Valley groundwater overdraft (mostly to the south of the comparatively well-watered Merced Irrigation District)

is around one or two million acre-feet per year.²⁵ Obviously, further damming the Merced River does not result in a meaningful amount of new water, either to the District or to anyone else.²⁶

Clearly, their first wild and scenic river amendments would break the National Wild & Scenic River System precedents of practice and intent to protect these special rivers for the benefits of future generations.²⁷ The diminished capacity of the emergency spillway carries dam safety²⁸ and potential floodwater management risks. Whatever the reason, it's appropriate for citizens to be fully informed about what might be happening to this national treasure, the Merced River, *el rio de nuestra senora de Merced*, the river that flows through Yosemite Valley.

For more information concerning this project, please contact Ronald Stork, Friends of the River, (916) 442-3155 x 220, rstork@friendsoftheriver.org or Theresa Simsiman, American Whitewater, (916) 835-1460, theresa@americanwhitewater.org. For the latest version of this fact sheet plus other resources, see also <http://www.friendsoftheriver.org/our-work/rivers-under-threat/merced-threat/>.

Endnotes

1. H.R. 317, P.L. 100-149; H.R. 2431, P.L. 102-432. Supportive federal agency recommendations from the Forest Service, National Park Service, and Bureau of Land Management (BLM) arose out of the draft Sierra National Forest Land and Resource Management Plan, 1986. In 1992 the Congress designated (H.R. 2431) the BLM river segment between Lake McClure Reservoir and Briceburg, the latter where State Route 140 meets the Merced River on the way to Yosemite Valley. This designation enjoyed the support of the Merced Irrigation District (Merced ID) Board of Directors, Mariposa County, Federal agencies, and environmental groups. See Merced Canyon Committee Newsletter, Spring Summer 1991 for chronology and commentary; Committee reports on H.R. 2431 (102-349) and S. 549 (Report 231, 102nd Congress) and Congressional Record floor statements at passage.
2. H.R. 869 would have allowed Lake McClure Reservoir to occupy a portion of the Merced Wild & Scenic River for a up to 60 days, while H.R. 2578 de-designated this portion of the river. H.R. 934 adopted the latter approach as well.
3. See "Merced County CA: New Exchequer Spillway Modification, Request: Temporary Encroachment in a Wild & Scenic River," Merced County Association of Governments, *circa* 2011. Prepared in support of H.R. 869.
4. With the construction of the current Exchequer Dam in 1967, storage capacity at Lake McClure Reservoir is 1,024,00 acre-feet, an expansion from the 281,000 acre-feet impounded by the original Exchequer Dam. See *History of the Merced Irrigation District, Merced and Mariposa Counties, California, 1999–1977*, Kenneth McSwain, 1977.



The Exchequer main dam is in the distance to the left of sign. Powerhouse and river outlet are at base of dam out of view. Spillways to the left out of frame.

5. See Library of Congress website for the 112th Congress for the text and bill history for H.R. 869 and 2578. H.R. 934 and H.R. 5781 were introduced in the 113th Congress.

6. Administration Testimony, Ned Farquhar, Assistant Deputy Secretary, Department of the Interior, Before the House Natural Resources Committee Subcommittee on Public Lands and Environmental Regulations, H.R. 934, April 18, 2013, p. 1. However, technical revisions to national wild & scenic river boundaries have been made because of designations not intended by the Congress that were within or adjacent to water project works.

It is noteworthy that as a result of the 2018 amendments to the California Wild and Scenic Rivers Act, Congressional actions or executive orders to remove the Merced River from the National Wild and Scenic Rivers System or exempt it from the protections from adverse effects of water resources projects can result in the California Natural Resources Secretary adding them to the state system (AB 2975, Friedman, D-Glendale).

7. Currently, the wild and scenic river ends at the full pool elevation of Lake McClure Reservoir. That is one foot below the elevation of the ungated spillway lip. This small differential is not uncommon because reservoir chop and waves make it difficult to contain the reservoir above the full (also called gross or normal) pool. And in the case of unlined spillways, it is best to contain a reservoir fully. In the 2014 Merced ID proposal, the emergency spillway, and thus the low point of the dam complex, would be nine feet above the full pool elevation. This would amount to new project works that would be capable of backing up the reservoir up into the wild and scenic river, although Merced ID proposes that this would not be their operational intent.

8. The Merced ID briefing paper discusses changing the flood-space reservation in terms of a 400,000 acre-foot reservation. This existing reservation is for snowmelt, and the difference between the rainflood reservation and the snowmelt reservation is not discussed. However, the existing and contemplated reservations are depicted in the rainflood season, and the new reservation is described as a maximum of 292,400 acre-feet, lining up the metrics with a 57,000 acre-foot change in the 350,000 acre-foot rainflood reservation. The briefing paper does not describe any change in the snowmelt reservation or its operating procedures. The specific operational details for the existing floodwater-management operations are described in Exchequer Dam's water control manual and are briefly described by the following excerpt:

Generally, water stored within the rainflood space (a maximum of 350,000 acre-feet) will be released as rapidly as possible without exceeding 6,000 c.f.s. in [sic] Merced River at Stevinson. During the snowmelt season, when inflow is predictable, flood releases will be made so as to minimize damages. A maximum of 400,000 acre-feet of space is dedicated to flood control during the snowmelt season, and when any part of this space is not required for flood control, it may be used for other purposes. (New Exchequer Dam and Reservoir, Merced California, Water Control Manual, Appendix to Master Water Control Manual, San Joaquin River Basin, California, 1981, p. 7-1.)

9. "Merced Irrigation District, Water and Power, McClure Storage Capacity Enhancement Project," August 2014. Merced ID has not proposed in either project to proportionately increase the height of their dam nor undertake any consequent improvement of stability or seepage measures at the dam. With the proposed decreased capacity of the emergency spillway, the main dam is at increased risk of overtopping in very large floods, especially if gate operations are compromised in some way.

10. The Central Valley Flood Control Board's concerns would go to any loss of parts of Exchequer Dam's flood control reservation (such as the proposed 57,000 acre-feet loss) and its impact on the performance of the Central Valley Flood Protect Plan.

11. The Department of Water Resources' Division of Safety of Dams, along with the Federal Energy Regulatory Commission, is principally responsible for ensuring that the physical conditions and structures at a dam will not fail at any time, including during routine or exceptional flood operations. In its concept papers, Merced ID is considering (1) making the operable spillway gates taller and/or set on a higher spillway lip (the August 2014 proposal has more options than earlier proposals) and, more controversially, (2) raising by ten feet (or eight feet in its August 2014 alternative) the 1,080-foot-long ungated emergency-spillway crest of the dam complex (by comparison, the crest of the main dam itself is only 1,220 feet long). The current spillways are the low point of the dam complex and permit the reservoir to safely rise and spill waters eleven feet above the reservoir's normal maximum pool before potential flood flows reach the crest of the main dam (neglecting a three-foot-tall parapet wall to control waves and splash). The dam is not designed to be safely overtopped. See New Exchequer Dam and Reservoir, Merced California, Water Control Manual, Appendix to Master Water Control Manual, San Joaquin River Basin, California, 1981. There are two features that characterize design of this and many other emergency spillways: (1) they are passive, not relying on

mechanical devices, control systems, nor operators, and (2) they are the major part of sufficient spillway capacity to ensure that a dam can pass standard modeled flows (the spillway design flood) that would otherwise overtop and destroy the dam in extreme floods.

12. The Department of Fish & Wildlife in this circumstance bears principal responsibility for the well being of the Limestone Salamander, an Merced River canyon endemic terrestrial salamander that is a state threatened and fully protected species and has been found immediately about the existing Lake McClure Reservoir. Any aestivating salamanders and eggs in the proposed inundation zone are highly likely to be killed by a seasonally rising and expanded reservoir. (See November 7, 2011, letter from the Director of the California Department of Fish and Game to Rep. Raul Grijalva, Subject Inquiry Regarding H.R. 869 and H.R. 2578 (Denham), Concerning Enlargement of Lake McClure.)

13. The Highway 49 Bridge crosses the reservoir at the former hamlet of Bagby. The metal and more vulnerable footings for a portion of the Highway 49 steel bridge that crosses the reservoir at Bagby would be exposed to water by Merced ID's plan to raise the reservoir ten feet. For photos and descriptions, see "Lake Elevation Assessment at Highway 49 Bridge at Bagby," June 28, 2011.

14. Physical modifications of the Exchequer Dam complex would require a license or license amendment from the Federal Energy Regulatory Commission (Federal Power Act). Although the dam is currently undergoing relicensing, no license provision or amendment to undertake physical changes to the dam is pending before the Commission.

15. Merced ID's contemplated changes to Exchequer Dam's Corps of Engineers Reservoir Regulation Manual would require approval by the Army Corps of Engineers, which has dam-safety and floodwater-management responsibilities, although here it would tend to focus on measures of performance of the latter. (§7 Flood Control Act of 1944, 33 U.S.C. 709. See also New Exchequer Dam and Reservoir, Merced California, Water Control Manual, Appendix to Master Water Control Manual, San Joaquin River Basin, California, 1981.)

16. The U.S. Bureau of Land Management, U.S. Department of the Interior, is the wild & scenic river manager for this portion of the Merced River. The BLM has established both a Merced River and Limestone Salamander Area of Critical Environmental Concern (ACEC) to focus management on the protection of river-based recreation and Limestone Salamander habitat in the Merced River canyon affected by the proposed reservoir expansion. In order for the Federal Energy Regulatory Commission to license physical changes to the dam, the Secretary of the Interior must find that the project would have no direct adverse affect on the values for which the river was established (designated), including it being free-flowing. (See §7(a) National Wild & Scenic Rivers Act).

17. The Federal Energy Regulatory Commission (FERC) is precluded from approving dam modifications that would place a reservoir into a National Wild & Scenic River. Other federal agencies are precluded from doing so without a National Wild & Scenic Rivers Act consistency determination from the Secretary of the Interior. While the 2011 and 2013 design concepts were clearly illegal, Merced ID believes that its August 2014 proposal is not, presumably because, although the dam complex is being raised, Merced ID does not characterize the proposal as raising Lake McClure Reservoir's normal maximum pool. This concept has not undergone a wild & scenic river consistency review by the wild & scenic river manager, however. (See §7 National Wild & Scenic Rivers Act)

18. AWAI §1169. Contributed Funds for Non-federal Reservoir Operations.

19. Confusion is possible. During the House Natural Resources Committee subcommittee hearing on H.R. 869, Rep. Denham apparently believed that the expansion of the reservoir could prevent flooding in Yosemite Valley (located 3,000 feet higher in elevation and 40 miles upstream) and in the city of Merced (which is not in the watershed of the Merced River). The chair of the National Parks Subcommittee, the subcommittee of jurisdiction, was unable to distinguish between reservoir inundation and riverine flooding, having apparently never seen a reservoir "bathtub ring" or developed a familiarity with the ecosystem differences between rivers and reservoirs. Lastly, in another odd departure from common sense, Merced ID asserted that one side of its reservoir (the upriver side) was at the time sixty feet higher than another side (the downriver end by the dam), and that its reservoir was then actually flooding the potentially affected reach of river—this while gauge information was reporting considerably lower reservoir elevations than the elevation of the wild & scenic river upstream. The geography and physics were, of course, unexplainable, but they were trying to convince the House subcommittee that their reservoir routinely expands into the wild & scenic river when, in fact, it never has.

Confusion has also extended to Rep. McClintock. He makes much that the Lake McClure Federal Energy Regulatory Commission (FERC) project boundary for its project extends into the upstream wild & scenic river corridor, implying

that this is somehow unusual and in ordinary circumstances should make it somehow pre-approved to store water there. This implication is untrue. The National Wild & Scenic Rivers Act prohibits dams from storing waters into wild and scenic rivers. It does not prevent FERC from establishing administrative boundaries for projects in wild & scenic river corridors. In fact, since FERC typically establishes project boundaries some distance away from project works and reservoirs, it is common for FERC administrative and wild and scenic river boundaries to overlap.

20. See Appendix B, Final Report, Governor's Flood Emergency Action Team, May 10, 1997.

21. In order to spill and fill according to this definition, the reservoir would have to reach elevation 867 or 868 ft. with releases in excess of 6,000 cfs.

22. The California Department of Water Resources has used a "back of the envelope" new-storage-to-yield ratio of 7 to 1 for already developed watersheds (watersheds with significant dam development) for preliminary planning/screening purposes for years. (Personal communication with Gerald Meral, retired Deputy Director of the Department of Water Resources and the Natural Resources Agency.)

23. 360,000 acre-feet/30 years according to data from Merced ID, which is equal to 12,000 acre-feet per year. See "Contested McClure reservoir expansion project inches forward, Rival interests watch closely," By Joshua Emerson Smith, Merced Sun-Star, June 26, 2012. The reporter ran the "yield" conclusion by Merced ID before publication (personal communication with the reporter).

24. "On average, about 520,000 ac-ft of water is diverted annually into the Merced ID system." Relicensing Pre-Application Document, Merced Irrigation District, Merced River Hydroelectric Project, FERC Project No. 2179, November 2008, p. 6-10.

25. For example, the California Department of Water Resources estimated that the groundwater overdraft in the Tulare Basin of the San Joaquin Valley to be 3.6 to 8.8 million acre-feet from 2005-2010. "California's Groundwater Update 2013: A Compilation of Enhanced Content for California Water Plan Update 2013," Department of Water Resources, April 2015, Chapter 9, p. 6. The San Joaquin Basin to the north was estimated to have overdrafted between 1.1 to 2.6 million acre-feet of groundwater during the same period according to Chapter 8, p. 6 of the same source. Taken together, the two basins encompass the San Joaquin Valley.

26. At full reservoir pools, the four Merced ID dams on the Merced River inundate 32 miles of river. The San Joaquin River system, in which the Merced River is located, is one of the most overallocated in the state of California. New projects with junior water rights may not be in a position to command much priority on deliveries from these rights.

27. See "Dangerous precedent? Environmental groups say removing Wild and Scenic status from a section of the Merced River would be an alarming first," By Dana M. Nichols, Stockton Record Staff Writer, Stockton Record, December 27, 2012 12:00 AM. Here's an excerpt:

Denham disagrees. He has said repeatedly during deliberations in Congress that it won't set a precedent and that it is entirely reasonable for Congress to adjust the boundaries it has set for Wild and Scenic rivers.

"We should be able to adjust those boundaries, especially if it serves the greater good," Denham said when he introduced the measure.

Congressman Jeff Denham, R-Turlock, wants the Merced's Wild and Scenic River boundary moved so McClure Lake Reservoir's level can be raised.

Denham said that he believes allowing Merced Irrigation District to store and use an additional 70,000 acre feet of water a year would create 840 jobs. He calls critics of his proposal "extremists that are willing to ignore putting people back to work."

But Denham has also said that environmental restrictions are preventing many other worthy California projects from proceeding.

"We need many more projects like this," he said of the McClure Lake Reservoir plan.

That's what worries conservationists.

28. The spillways at the Exchequer Dam complex have their share of issues in addition to the loss of reservoir flood reservations and potential operational consequences of them being raised while the dam is not. Neither spillway is lined, and visual inspection of the geological setting reveals rock that is fractured, weathered, and prone to crumbling. One wonders what would happen if the spillway design flood of more than 400,000 cfs were to tumble over them.



Ungated spillway lip at left, fractured rock below



Closeup of fractured rock below ungated spillway

The emergency spillway (it's just a short concrete spillway lip about 3 feet high) has never been used. The gated spillway has a short spillway apron below and has had one operational use, plus some occasional tests and releases for scenic effects. After the 2017 Oroville Dam Spillways incident, FERC ordered a quick dam safety review of many California dam complexes. Shortly after, access to the Exchequer spillway was blocked and construction equipment appeared. When the closure ended, the apron had been extended and some of the downstream eroded channel shotcreted. The purpose of the work seems obvious: there was concern that the Exchequer gated spillway might experience backstepping erosion similar to the Oroville Dam emergency spillway incident, possibly compromising the spillway structure or supporting hillside, and more likely washing more erodible canyon side into the downstream channel. Whether there are plans for more work at the gated spillway or lining the Exchequer emergency spillway is unknown to the public, as that information is Critical Energy Infrastructure Information.



2012 view of Exchequer gated spillway apron



2018 view. Note rough concrete pour next to concrete apron slabs and shotcrete stabilization downstream