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**Water Supply
Planning Committee
Members:**
*Robert S. Brower, Sr.
Chair
Jeanne Byrne
Ralph Rubio*

Alternate:
Andrew Clarke

Staff Contact
*David J. Stoldt,
General Manager*

*After staff reports have
been distributed, if
additional documents are
produced by the District
and provided to the
Committee regarding any
item on the agenda, they
will be made available at
5 Harris Court, Building
G, Monterey, CA during
normal business hours.
In addition, such
documents may be posted
on the District website at
mpwmd.net. Documents
distributed at
the meeting will be made
available in the same
manner.*

AGENDA
Water Supply Planning Committee
Of the Monterey Peninsula Water Management District

Tuesday, October 16, 2018, 10:00 am
MPWMD Conference Room, 5 Harris Court, Bldg. G, Monterey, CA

Call to Order

Comments from Public - *The public may comment on any item within the District's jurisdiction. Please limit your comments to three minutes in length.*

Action Items – *Public comment will be received.*

1. Consider Adoption of August 21, 2018 Committee Meeting Minutes

Discussion Items – *Public comment will be received.*

2. Status of CEQA Challenges to Monterey Peninsula Water Supply Project FEIR/FEIS
3. Status of Pure Water Monterey
4. Update on Los Padres Dam Alternatives Study

Set Next Meeting Date

Adjournment

Upon request, MPWMD will make a reasonable effort to provide written agenda materials in appropriate alternative formats, or disability-related modification or accommodation, including auxiliary aids or services, to enable individuals with disabilities to participate in public meetings. MPWMD will also make a reasonable effort to provide translation services upon request. Please send a description of the requested materials and preferred alternative format or auxiliary aid or service by 5PM on Friday, October 12, 2018. Requests should be sent to the Board Secretary, MPWMD, P.O. Box 85, Monterey, CA, 93942. You may also fax your request to the Administrative Services Division at 831-644-9560, or call 831-658-5600.

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WATER SUPPLY PLANNING COMMITTEE

ITEM: ACTION ITEM

1. CONSIDER ADOPTION OF COMMITTEE MEETING MINUTES OF AUGUST 21, 2018

Meeting Date: October 16, 2018

**From: David J. Stoldt,
General Manager**

Prepared By: Arlene Tavani

CEQA Compliance: This action does not constitute a project as defined by the California Environmental Quality Act Guidelines Section 15378.

SUMMARY: Attached as **Exhibit 1-A** are draft minutes of the August 21, 2018 committee meeting.

RECOMMENDATION: The Committee should adopt the minutes by motion.

EXHIBIT

1-A Draft Minutes of the August 21, 2018 Committee Meeting

DRAFT MINUTES
Water Supply Planning Committee of the
Monterey Peninsula Water Management District
August 21, 2018

Call to Order: The meeting was called to order at 9 am.

Committee members present: Robert S. Brower, Sr. - Committee Chair
Jeanne Byrne
Ralph Rubio

Committee members absent: None

Staff members present: David J. Stoldt, General Manager
Larry Hampson, Water Resources & Engineering
Manager/District Engineer
Arlene Tavani, Executive Assistant

District Counsel present David Laredo

Comments from the Public: No comments.

Action Items

- 1. Consider Adoption of February 21, 2018 Committee Meeting Minutes**
On a motion of Byrne and second by Rubio, the minutes were approved unanimously on a vote of 3 – 0 by Bryne, Brower and Rubio

Discussion Items

- 2. Water Supply Charge and User Fee – Citizens Oversight Panel Discussion**
Stoldt updated the committee on discussions with the Oversight Panel regarding the water supply charge and user fee, and commitments for use of those funds. He stated that the Oversight Panel would like to see the water supply charge suspended, but Counsel advised them that it would be preferable to suspend collection of the fee, rather than allowing it to sunset. The Panel also recommended that a sinking fund be established to collect funds for the Rabobank balloon payment due in 2023.
- 3. Monterey Peninsula Water Supply Project (MPWSP) CPUC Proposed Decision on Application 12-04-019; Discuss District Comments and August 22nd Oral Arguments**
Staff explained that if the CPCN is issued, \$1 million has been budgeted to develop an allocation program, which requires preparation of an EIR and mitigation program. The Water Supply Planning committee would oversee the process, which could begin as soon as the Coastal Development Permit is issued, and could continue through the

18-month desalination project construction period. The committee urged staff to begin planning for development of the allocation program. Staff mentioned that development of the water supply solution was focused on drought conditions. Decisions must be made about how excess water production from the desalination plant will be paid for and stored in wet years.

Public Comment: Dan Turner described the desalination project as “a bad idea” due to the cost of excess water that may not be utilized by the ratepayers.

4. Pure Water Monterey – Cost of Water Discussion

General Manager Stoldt presented information on costs for the Pure Water Monterey project. The presentation can be viewed on the District’s website or at the agency’s office.

Public Comment: Dan Turner stated that if the estimated \$1 million per year in labor costs was divided among four workers, that would be approximately \$265,000 per worker. He asked what portion of that would be salary. *Stoldt responded that he estimated approximately 70% of that could be salary.* Mr. Turner stated he was impressed with District staff and their focus on fiscal responsibility. He noted that Kevan Urquhart had achieved savings in the fishery program, and Maureen Hamilton had reduced costs related to Pure Water Monterey project well construction.

Set Next Meeting Date: No meeting date was set.

Adjournment: The meeting was adjourned at 10:00 am.

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WATER SUPPLY PLANNING COMMITTEE

ITEM: DISCUSSION ITEM

4. UPDATE ON LOS PADRES DAM ALTERNATIVES STUDY

Meeting Date: October 16, 2018

**From: David J. Stoldt,
General Manager**

Prepared By: Arlene Tavani

CEQA Compliance: This action does not constitute a project as defined by the California Environmental Quality Act Guidelines Section 15378.

SUMMARY: Larry Hampson will provide an oral update at the meeting, however, attached as Exhibits 4-A, 4-B, and 4-C are background information provided for your review.

EXHIBITS

4-A September 18, 2018 Agenda – Los Padres Dam Alternatives Analysis

4-B Los Padres Dam Feasibility Study and Related Supporting Studies - Acronyms

4-C August 24, 2018 Letter from NOAA, NMFS

1. Current status of non-IFIM studies

- Fish Passage Study: Final Technical Review Committee (TRC) meeting to be held 9/26/2018. Final recommendations in October.
- Sediment transport study: next TRC discussion on 9/19. Possible end of transport modeling or may run “worst case” scenario. Draft report to follow in mid-November
- Watershed basin model (CRBHM): historic model fitted to data; simulation of no-dam and dredge with rubber dam begun. Need to have TRC meeting to discuss model.

2. IFIM study

- Final report completed in November 2017 after solicitation of comments from all agencies (NMFS, CDFW, Cal-Am, SWRCB)
- NMFS decided to conduct another review
- MPWMD received comments from NMFS in April 2018; addressed comments in June 2018 and held a teleconference among all parties
- NMFS sent more comments in August 2018

NMFS Issues:

- Don't believe PHABSIM¹ is appropriate to use with LP Dam alternatives, given that Carmel River channel changes in response to changes in sediment load
- Highly critical of PHABSIM in general
- Requested information outside of the scope of LP Dam Alternatives Analysis includes:
 - (a) timing and duration of hydrologic events; *Note: this may be covered by CRBHM*
 - (b) dam operations which cause the estuary and mainstem to become disconnected from the ocean;
 - (c) poor water quality (which may be influenced by instream flow recommendations)
 - (d) loss of historic habitats that could be regained to some extent by removing LPD or modifying how it is operated;
 - (e) reduction or loss of access to cold headwater habitats above LPD to maintain a resident steelhead population

Additional studies requested by NMFS:

- 1) a geomorphic assessment of historic, existing, and predicted channel conditions within the watershed;

¹ PHABSIM = physical habitat simulation model. PHABSIM is a tool that offers prediction capabilities associated with flow changes such as microhabitat, physical habitat and life stage changes.

- 2) a limiting conditions analysis (incorporating the results of any fish marking and recapture studies); and
- 3) a fish passage opportunity study demonstrating how much passage opportunity is being lost and/or gained compared to historic, existing, and any proposed actions being considered.

Los Padres Dam Feasibility Study and Related Supporting Studies

Acronyms

BESMo - Bedload Scenario Model. A sediment transport model for the Carmel River that simulates fluvial responses to changes in sediment delivery below Los Padres Dam

Cal-Am – California America Water. The water purveyor for most of the Monterey Peninsula region. Los Padres Dam owner.

AECOM – A global consultant firm providing services on a wide variety of projects. Lead consultant on Los Padres Dam alternatives study.

CDFW – California Department of Fish and Wildlife. Regulates activities within the Carmel River riparian corridor. First agency to intervene concerning Carmel River water rights and protection of steelhead (1948, Application 11674 to the State Water Resources Control Board to appropriate water at Los Padres Dam).

CRBHM – Carmel River Basin Hydrologic Model. The U. S. Geological Survey developed GSFLOW in 2008 as a coupled Groundwater and Surface-water flow model based on the integration of the USGS Precipitation-Runoff Modeling System (PRMS) and the USGS Modular Groundwater Flow Model (MODFLOW and MODFLOW-NWT). The model is calibrated to a 25-year period with daily records of rainfall, temperature, evapotranspiration, runoff, groundwater elevations, and diversions in the basin.

HDR – global consultant firm founded in 1917. Lead firm on a fish passage study at Los Padres Dam.

IFIM – Instream Flow Incremental Method. A series of computer-based models which calculate how much fish habitat you gain or lose as you increase or decrease stream flow. Initially developed in the 1970s by the US Fish and Wildlife Service.

LPD – Los Padres Dam. A 120-foot high earthen dam owned by Cal-Am and located 25 river miles upstream of the Pacific Ocean. It was built in 1948 with an initial reservoir storage of

2,700 acre-feet (AF). A 2017 bathymetric survey shows the reservoir storage at about 1,700 acre-feet. Cal-Am's water right associated with this dam is 2,179 AF/year.

MPWMD – Monterey Peninsula Water Management District. A local district formed in 1978 to manage the integrated water resources of the Monterey Peninsula. Currently taking the lead in conducting studies that will inform a long-term management plan for Los Padres Dam.

NMFS – National Marine Fisheries Service. The federal agency charged with protecting steelhead in the Carmel River. NMFS listed the species as threatened under the federal Endangered Species Act in 1997.

Normandeau – Normandeau Associates, Inc. Normandeau was founded in 1970 and is a national leader in providing science-based environmental consulting services, research and technological innovation across a biological spectrum.

RFP – request for proposals

SWRCB – State Water Resources Control Board. The state agency that oversees allocation of California's water resources.

TRC – technical review committee. Formed to guide the development of a long-term management plan for Los Padres Dam. Members include staff from Cal-Am, CDFW, MPWMD, NMFS, State Coastal Conservancy, USFWS, Normandeau, AECOM, and HDR.

USFWS - U.S. Fish and Wildlife. The federal agency charged with protecting California red-legged frogs. The agency listed the species as threatened under the federal Endangered Species Act in 1996.

USGS – U.S. Geologic Survey. Scientific agency that studies natural resources. Operates two stream gages in the Carmel River. Has worked jointly with MPWMD since the late 1970s on a variety of planning studies, surface, and groundwater models of the Carmel River watershed.

Current status of studies (September 2018)

- CRBHM – calibrated against historical data. Ready to be reviewed by TRC before modeling various scenarios.
- IFIM study – 1-D and 2-D models are complete. Normandeau addressing NMFS most recent comments concerning constraints to using for LPD alternatives.
- Fish passage study – final TRC meeting to refine alternatives on September 26, 2018. Final report to come out in November 2018.
- Sediment transport modeling – all scenarios have been modeled. Question remains as to whether to model a “blow and go” scenario (complete evacuation in a short period under the wettest of conditions).
- Technical memorandum on effects to steelhead – will be under development in November 2018.
- In general, the review turn-arounds by agency staff for draft technical papers, RFPs, agreements, and other deliverables has varied between 2012 and 2018 from as little as 24 working days to more than five months. Participation in the development of the BESMo sediment transport model has improved after discussion with NMFS management about meeting milestones.
- For most tasks, feedback from agencies is required before completing a task and moving on.
- The schedule for completing the alternatives analysis has been delayed by: 1) the discovery of inaccurate information critical to understanding historic sedimentation of the reservoir (1947 topography of Los Padres Reservoir); 2) expansion in the scope of work; 3) extended review periods by agency staff.
- Scope expansion has generally improved the quality of studies, but comes at a cost of both time and money. Examples include incorporation of recent data from river surveys, additional field investigation, and additional sediment transport model work.
- Recent recommendations from NMFS concerning the need for additional studies and the clear rejection of using the Carmel River IFIM study and steelhead habitat model means that the Los Padres Dam Alternatives Study that was initially conceived in 2013 will likely remain incomplete until additional studies can be carried out.
- MPWMD recommends that Cal-Am, NMFS, and SCC discuss funding additional studies with Settlement Agreement funds.
- MPWMD is ready to assist with administration and coordination of consultants for other studies.

Chronology

August 2008	Carmel River put on CDFW priority streams list for instream flow assessment.
August 2011	MPWMD develops scope of work with USGS for a new Carmel River Basin Hydrologic Model.
January 2012	Cal-Am sends letter to MPWMD strongly supporting update of Carmel River instream flow recommendations.
March 2012	MPWMD initiates contract with USGS for assistance with development of the CRBHM.
September 2012	MPWMD holds a teleconference with NMFS to discuss development of an IFIM study. Action item for MPWMD is to develop a study scope of work in cooperation with NMFS, Cal-Am, and CDFW.
April 2013	NMFS "... strongly encourages CAW to resolve the fish passage and other potential take issues at LPD by completing a thorough feasibility study on the merits of either: 1) entirely removing the dam and restoring the reservoir area to its original environs; or 2) improving the dam with appropriate permanent fish passage modifications that allow for unimpeded, safe and effective, upstream and downstream migration of all life stages of S-CCC steelhead."
April 2013	Cal-Am proposes comprehensive alternatives study for LPD in 2015-17 General Rate Case application to California Public Utilities Commission.
July 2013	MPWMD enters into consultant agreement with Normandeau Associates, Inc. for development of Carmel River Instream Flow Incremental Method study.
September 2013	MPWMD completes assessment of flow models for use in the Carmel River Basin.
January 2014	MPWMD circulates scope of work for IFIM study to Technical Review Committee (TRC) comprised of staff from Cal-Am, NMFS, CDFW, State Coastal Conservancy, and MPWMD.
April 2014	MPWMD holds workshop with agencies, Trout Unlimited, and Carmel River Steelhead Association on developing IFIM study.

May 2014	MPWMD files testimony with CPUC stating MPWMD should take the lead in developing a long-term management plan for LPD.
July 2014	Cal-Am and MPWMD enter into a Settlement Agreement on GRC issues that includes MPWMD taking lead on LPD alternatives study with Cal-Am co-funding a portion.
February 2015	Teleconference with TRC on study plan to transfer Big Sur River habitat suitability curves (HSC) to Carmel River for use in IFIM model. Memo re: study plan for HSC testing.
April 2015	CPUC Decision 15-04-007 entered on 2015-17 GRC rate case.
November 2015	MPWMD and Cal-Am execute reimbursement agreement for LPD alternatives study. MPWMD circulates draft fish passage study plan to Technical Review Committee comprised of staff from Cal-Am, NMFS, CDFW, State Coastal Conservancy, and MPWMD.
February 2016	MPWMD circulates Request for Proposals for fish passage study.
February 2016	NMFS, CDFW, SWRCB, MPWMD, and Normandeau staff select IFIM model transect locations in field.
February 2016	MPWMD contracts with USGS to calibrate CRBHM.
April 2016	TRC reviews fish passage study proposals, selects HDR, Inc.
May 2016	MPWMD and HDR execute agreement for fish passage study.
August 2016	TRC coordination call on fish passage study.
October 2016	MPWMD circulates draft RFP for dam alternatives and sediment management.
November 2016	MPWMD advertises RFP for dam alternatives and sediment management.
November 2016	TRC meeting No. 1 to introduce the fish passage alternatives study.
January 2017	TRC selects AECOM, Inc. for dam alternatives and sediment management study. TRC recommends change in scope of work concerning number of samples to be obtained from LP Reservoir sediments. Cal-Am & MPWMD agree to expand scope.

February 2017	MPWMD and AECOM execute an agreement for dam alternatives and sediment management study.
March 2017	Draft Carmel River IFIM report circulated to TRC, SWRCB.
May 2017	Comments on draft IFIM study received from CDFW.
June 2017	Comments on draft IFIM study received from NMFS. TRC meeting No. 2 on fish passage alternatives.
July 2017	TRC meeting No. 2 on setting scoring criteria for fish passage alternatives.
September 2017	Comments received from CDFW and NMFS re: scoring criteria for fish passage alternatives.
August 2017	TRC meeting No. 1 - LPD and Reservoir Alternatives and Sediment Management Study
September 2017	AECOM discovers error in 1947 LP Reservoir topography after completion of draft sediment characterization memo. Requires several weeks of additional work to resolve.
November 2017	Final Draft IFIM study completed. Fish passage TRC progress meeting. Comments received from NMFS on use of biological performance tool to assess downstream migration and alternatives for fish passage improvement.
December 2017	Teleconference on Carmel River IFIM and CRBHM with CDFW and NMFS staff. NMFS requests additional review of IFIM study.
January 2018	TRC meeting No. 3 on fish passage alternatives, meeting No. 2 on LPD alternatives. TRC recommends change in process for completing studies to allow for sequential completion of technical components. Additional sediment transport scenario requested to calibrate model to changes in the Carmel River between 2016 and 2017.
January 2018	Cal-Am, NMFS, SCC sign Memorandum of Agreement concerning LPD operations.
March 2018	USGS completes calibration of CRBHM. Begins testing historic data against modeled data.

April 2018	MPWMD receives additional set of comments on Carmel River IFIM study from NMFS.
May 2018	MPWMD develops pump files for CRBHM to simulate LPD alternatives. Carmel Valley well field simulated with Cal-Am proposed post-Cease-and-Desist Order operations (i.e., concentrating diversions into the wet season). Dam removal, reservoir dredging, and status quo scenarios developed.
June 2018	MPWMD sends responses on IFIM study to TRC and conducts teleconference to resolve issues.
August 2018	NMFS conveys letter to Cal-Am and MPWMD with concerns about using IFIM with the LP Dam Alternatives study.
September 2018	USGS & MPWMD will complete testing of historic data against model data in the CRBHM



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

EXHIBIT 4-C

August 24, 2018

Refer to NMFS No: WCR-2017-7369

Richard Svindland, President
California-American Water Company
655 West Broadway, Suite 1410
San Diego, California 92101

David Stoldt, General Manager
Monterey Peninsula Water Management District
P.O. Box 85
Monterey, California 93942-0085

Re: NOAA's NMFS' comments on the Monterey Peninsula Water Management Districts' draft Instream Flow Incremental Methodology report for the Carmel River, California

Dear Mr. Svindland and Mr. Stoldt:

On April 17, 2018, NOAA's National Marine Fisheries Service (NMFS) submitted its comments on the Instream Flow Incremental Methodology (IFIM) study report prepared by Normandeau Associates for the Monterey Peninsula Water Management District (MPWMD). During a June 20, 2018, conference call between NMFS, California Department of Fish and Wildlife (CDFW), and MPWMD, we agreed to provide our final recommendations to the MPWMD regarding finalization of the IFIM study.

We acknowledge that the intended goals and objectives of the study (i.e., identify minimum depths for adult passage, test transferability of habitat suitability curves, and provide estimates of spawning and rearing habitat for the geomorphic conditions present when the study was conducted) were addressed. However, we have prepared the accompanying technical memorandum that outlines specific limitations of the study and our concerns with the applicability of these results for determining future instream flows in the Carmel River. At this time, NMFS has no objection to finalizing the IFIM study provided the context and limitations of the study outlined in the technical memorandum are acknowledged in the final report. The technical memorandum also identifies additional studies that will help inform future hydrologic and geomorphic conditions in the Carmel River under different management scenarios (e.g. removal or retention of Los Padres Dam, reduced groundwater overdraft). These include, conducting a geomorphic assessment of historic, current, and predicted channel morphology, a limiting factors analysis, and assessing fish passage opportunities.

There are other ongoing studies that are intended to inform future water availability, sediment transport and river morphology, instream flows, habitat connectivity and the potential effects on steelhead in the Carmel River mainstem under different management scenarios. These



include the Carmel Basin Hydrologic Model, the Los Padres Reservoir Sediment Management Alternatives analysis, and steelhead population studies conducted by the NOAA's Southwest Fisheries Science Center and MPWMD. Before MPWMD and California-American Water Company (CAW) move forward with developing any final instream flow targets or begin writing the Effects on Steelhead Technical Memorandum, we would like to review and comment upon the reports from the aforementioned ongoing studies and review an outline of the proposed Effects on Steelhead Technical Memorandum.

The IFIM study was identified in the Memorandum of Agreement (MOA) between CAW, NMFS, and the California Coastal Conservancy (Parties) as one of many studies to inform the Los Padres Dam (LPD) Feasibility Study. NMFS appreciates MPWMD and CAW's efforts to complete this study in order to meet specified deadlines in the MOA. We realize our request to halt progress towards completing the Effects on Steelhead Technical Memorandum will likely prevent CAW and MPWMD from meeting the deadline specified in the MOA for completing the LPD Feasibility Study (June 30, 2019). However, in anticipation of potential technical and permitting delays, the Parties to the MOA included allowances in the MOA for additional studies and alternative study deadlines to be discussed and agreed upon (Section IV.A.1.b). Thus, following our review of the ongoing studies and Effects to Steelhead Technical Memorandum outline, we would like to meet with CAW to discuss whether additional studies are needed and if the deadlines proposed in the MOA should be revised to accommodate these studies.

We look forward to continuing our collaborative process towards completing the Los Padres Dam Feasibility Study. Please contact Joel Casagrande at 707-575-6016 or at Joel.Casagrande@noaa.gov if you have any questions regarding this letter.

Sincerely,



Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Julio A. Gonzalez, CAW, Carmel
Larry Hampson, MPWMD, Monterey
Trish Chapman, State Coastal Conservancy, Oakland
Copy to ARN 151422WCR2017SR00186
Copy to Chron File

NMFS Technical Memorandum



To: Monterey Peninsula Water Management District (MPWMD)
From: National Marine Fisheries Service (NMFS)
Date: August 24, 2018
Subject: Los Padres Dam (LPD) IFIM Study
NMFS Contacts: David Crowder, Ph.D. and Joel Casagrande

PURPOSE: On June 20, 2018, the Los Padres Dam Technical Review Committee (TRC) had a teleconference to discuss NMFS' April 27, 2018, comments regarding the final draft IFIM study report (Normandeau Associates, 2017). During the June 20 teleconference, NMFS was asked to provide a follow-up memo describing NMFS recommendations for finalizing the IFIM study report. The following comments are NMFS' recommendations for helping address the major themes and concerns NMFS conveyed via email on April 27, 2018 and during the June 20, 2018 call. NMFS hopes these recommendations, if implemented, will allow the Draft Final IFIM study to be completed without having to address each of NMFS' comments point by point and without substantial back and forth discussions and comments.

GENERAL RECOMMENDATIONS FOR FINISHING REPORT:

1. NMFS recommends that the goals and objectives of this study be stated in terms of its context and utility within the suite of studies currently being conducted for LPD. The report does not state how the results can be interpreted to yield meaningful instream flow recommendations, given that river cross-sections and geomorphic characteristics have changed over time, and likely under LPD future scenario to change more in the future. Also, the report does not identify what additional analyses or studies are needed before a final instream flows recommendation can be made. While Normandeau Associates (2017) states that these results will be used to help establish instream flows, the report inherently assumes that the reader knows how and to what extent these results can and will be utilized in the future. Specifically, the report appears to assume: (a) the reader knows how the dam is currently operated; (b) the dam will remain in place and continue to operate as it currently does; (c) the reader knows when and for how long instream flows will be implemented within any given year; (d) maintaining the dam is desirable in order to provide spawning and rearing habitat in portions of the river that may have historically gone dry during dry years and/or during certain months; and (e) limiting factors to increasing anadromous salmonid abundance and diversity within the watershed have been correctly identified and are independent of the IFIM study and the setting of instream flows. It is not clear to NMFS that any of these assumptions are correct, particularly given the fact that a variety of different river management and dam alternatives are under consideration at this time -including: various sediment management scenarios; fish passage alternatives; and dam modification or removal.

2. The primary goals of Normandeau Associates (2017) were: (a) determine the minimum discharge that would provide barely passable conditions (i.e., minimum depth, max velocity, and minimum passageway width) at critical riffles; (b) test the transferability of various habitat suitability curves; and (c) estimate how much spawning and rearing habitat would be available under the bathymetry conditions mapped at the time of the study at various low to moderate discharges. While NMFS concurs these goals were met, the actual utility of these results remains unclear, particularly with respect to if, or how, they can be used to help compare various sediment management scenarios, compare various fish passage alternatives, and inform the feasibility of removing LPD. Specifically, how the study methodology's assumptions and limitations affect the accuracy and utility of the study results are not extensively addressed. Some of the limitations that need to be stated and put in context are described below.

3. A primary limitation of the PHABSIM and the 2-D model results is that they are highly dependent upon the channel bathymetry not changing from the time the channel was mapped. Channel bathymetry data and cross-section selections are critical inputs which drive model results. This is problematic as there are multiple reasons for believing the bathymetry of the channel has already changed since the original mapping occurred, and will substantially change into the future. These reasons include: (a) channel morphology is constantly in flux, particularly in a Mediterranean climate driven by the El-Nino Southern Oscillation; which is typified by periods of drought followed by wet years having large storm events capable of significantly reworking the channel bathymetry; (b) much of the bathymetry data was collected at the end of a substantial drought period and just before the first large storm events following the removal of San Clemente Dam; (c) San Clemente Dam was only recently removed and the channel may still be adjusting to the re-establishment of sediment transport processes in the river; (d) future sediment releases from LPD, or removing LPD, would significantly alter sediment inputs and could substantially alter portions of the channel's bathymetry downstream of the dam; and (e) several different sediment management scenarios are being considered for LPD and each of these scenarios will likely change the channel conditions over time. Consequently, the PHABSIM results are solely limited to estimating the amount of spawning and rearing habitat that would occur at various discharges under the channel bathymetry that existed at the time that depth and velocity calibration data was collected. For this reason, NMFS currently believes that it would be inappropriate to use the PHABSIM results obtained in this study to predict the types and amounts of habitats that will exist subsequent to any significant changes in sediment inputs or sediment management practices, or after a few ENSO cycles. NMFS recommends the final report clearly states that the results are applicable to the channel configuration existing at the time the bathymetry and depth/velocity measurements were taken to calibrate/run the PHABSIM and 2-D models. A discussion on how this limitation prevents using these results to conjecture on how various LPD sediment management alternatives and/or removing the dam will have on habitat is also recommended.

4. A second important limitation of the PHABSIM study is that habitat suitability is only defined in terms of the variables used in the Habitat Suitability Curves. Any variables that may be equally or more important to why fish selected and/or prefer a particular habitat are thus not accounted for in the amount of unsuitable, suitable, and preferred habitat estimated by PHABSIM. Failure to correctly account for all the variables to characterize unsuitable, suitable and preferred habitat can significantly overestimate the types of habitat available within the river at any given discharge. For example if one uses only depth, velocity, and distance to cover to define what is unsuitable, suitable, and preferred habitat via an HSC, PHABSIM will treat two locations/areas with the same depth, velocity and distance to cover as equally suitable habitat regardless of the temperature, dissolved oxygen, salinity, and/or spatial flow patterns around these two locations. This may have profound implications upon the accuracy at which PHABSIM can estimate the locations and total amount of useable/preferred habitat when one considers factors including (but not limited to) the following: (a) water temperatures may vary dramatically temporally and spatially throughout the watershed; (b) algae blooms in specific locations of the watershed may reduce or deplete oxygen levels at night; (c) predation rates may differ spatially throughout the watershed; and (d) redds may benefit from upwelling, down-welling or other spatially varying flows that aerate the eggs within a redd and prevent siltation from smothering the eggs. If any of the above (or other) variables are not incorporated in the HSC (which may occur spatially and temporally within the watershed), but play a role in determining what constitutes suitable and/or preferred habitat, PHABSIM will most likely overestimate the amount and/or time at which useable or preferred habitat exist within the watershed. A primary concern with this study is that spawning habitat does not appear to be equally and randomly spread throughout the watershed. Instead, the study focused on collecting depth, velocity, and substrate size data at specific locations that fish were known to spawn because fish were not routinely spawning elsewhere. Yet there is no evidence to suggest that there are not numerous other locations within the river that have similar depth, velocity and substrate size values that according to PHABSIM would be equally suitable for spawning. This suggests that there may be one or more variables that are not being accounted for when it comes to describing suitable and preferred spawning habitat and that the current PHABSIM's estimated area of spawning habitat are overestimated by an unknown amount.
5. A crucial element of increasing the abundance and diversity of anadromous salmonids within the study watershed is to identify and eliminate any limiting factors, some of which may be caused (or exacerbated) by the presence and operation of Los Padres Dam. It is not apparent that all of the potential limiting factors that could influence if, or how, LPD should be operated have been considered. Instead, this study inherently assumes that simply maximizing spawning and rearing habitat downstream of LPD will eliminate/mitigate all of the potential limiting factors that LPD may be contributing toward. Some possible limiting factors that may need to be carefully considered are: (a) timing and duration of hydrologic events; (b) dam operations which cause the estuary and mainstem to become disconnected from the ocean; (c) poor water quality (which may be influenced by instream flow

recommendations), d) loss of historic habitats that could be regained to some extent by removing LPD or modifying how it is operated; (e) reduction or loss of access to cold headwater habitats above LPD to maintain a resident steelhead population (which would contribute to genetic/life-history diversity, produce anadromous out-migrants, and provide a buffer against climate change); and (f) introduction of invasive species and increased predation due to artificially created instream flow releases and/or ponding of water. NMFS recommends that the report state that adopting instream flows based upon the results of these PHABSIM results by themselves does not necessarily identify, eliminate and/or mitigate all of the limiting factors associated with maintaining and operating LPD. It should also emphasize that the results merely predict the amounts of spawning and rearing habitat that would exist below LPD under the bathymetric conditions that existed at the time the study was conducted. It should also be noted that the most recent habitat mapping showed the channel has changed since much of the river was mapped and, thus, the PHABSIM results are already out of date.

6. During the June 20, 2018, teleconference, it was stated that the accuracy at which PHABSIM predicts the amounts of habitat available within a stream is not a major concern because the goal of PHABSIM is not to predict the amount of available habitat, but to be an Index. NMFS requests clarification on what was meant by this statement and what the purpose of PHABSIM is if its major goal is not to estimate the quality and amount of various types of habitat (e.g. spawning and rearing habitats) at various discharges within a river. NMFS agrees that one could normalize the predicted amounts of habitat to compare differences in habitat amounts at two different discharges. However, this assumes that all of the habitat area estimates have the same amount of potential error, which is not the case, as one is extrapolating hydraulic parameters from values measured at a known discharge to predict hydraulic parameters at a different discharge. Consequently, there tends to be more error for estimates at non-calibrated discharges. Moreover, one cannot extrapolate or interpolate results to a channel that has changed its geometry as a channel's geometry plays a significant role on the resulting flow field (e.g. depth, velocities, and hydraulic complexity). Thus, NMFS believes it is important to highlight the limitations to which PHABSIM can predict different amounts of suitable, unsuitable, and preferred habitat.
7. NMFS recommends that the final report state that before one recommends any instream flows that the biological benefits (if any) and feasibility of removing Los Padres dam (and various sediment management alternatives) first be fully assessed and that at least three additional studies to facilitate that process be conducted: 1) a geomorphic assessment of historic, existing, and predicted channel conditions within the watershed; 2) a limiting conditions analysis (incorporating the results of any fish marking and recapture studies); and 3) a fish passage opportunity study demonstrating how much passage opportunity is being lost and/or gained compared to historic, existing, and any proposed actions being considered. NMFS further recommends that MPWMD work with NMFS to determine the scope and analyses appropriate for these studies. For example, the fish passage opportunity study

NMFS is proposing goes beyond determining the minimum discharge at which fish are able to pass the critical riffles as done in this report. A fish passage opportunity study would focus on the timing, frequency, and duration to which steelhead historically had access to various habitats (e.g. spawning, rearing, floodplain/backwater, etc.) and how that opportunity has changed or will change under existing and proposed conditions. This information, in turn, will be used to help assess and identify potential limiting factors and means of eliminating limiting factors.

REFERENCES:

Normandeau Associates. 2017. Assessing Instream Flow Requirements for Steelhead in the Carmel River, California. Final Report. November 30, 2017.