

CALIFORNIA DEPARTMENT OF WATER RESOURCES

REPORT OF ACTIVITIES

MARCH 2019

THE PURPOSE OF THIS REPORT...

is to provide a brief update to Central Valley Flood Protection Board (CVFPB) members on California Department of Water Resources (DWR) activities that occurred in the previous month. This report is organized by the five DWR mega-programs:

- Flood Emergency Response
- Flood Management Planning
- Floodplain Risk Management
- Flood Risk Reduction Projects
- Flood System Operations and Maintenance

Only programs with updates for this month have been included in this report. Programs not listed in this month's report may be included in future reports if updates are provided.

A full list of programs and program descriptions are available upon request. If you have any questions or concerns regarding this report, please call Ricardo Pineda at (916) 574-0632 or email Ricardo.Pineda@water.ca.gov.

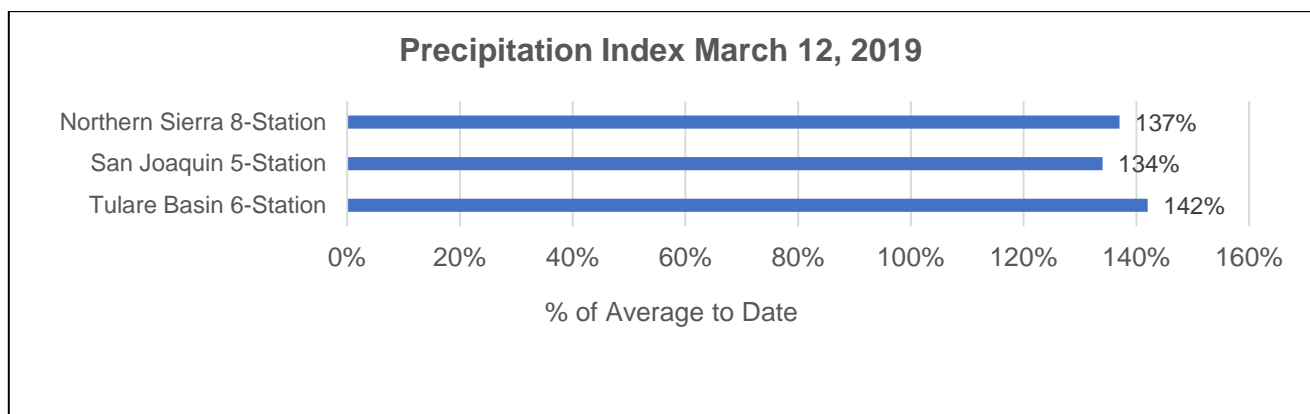
FLOOD EMERGENCY RESPONSE (FER)

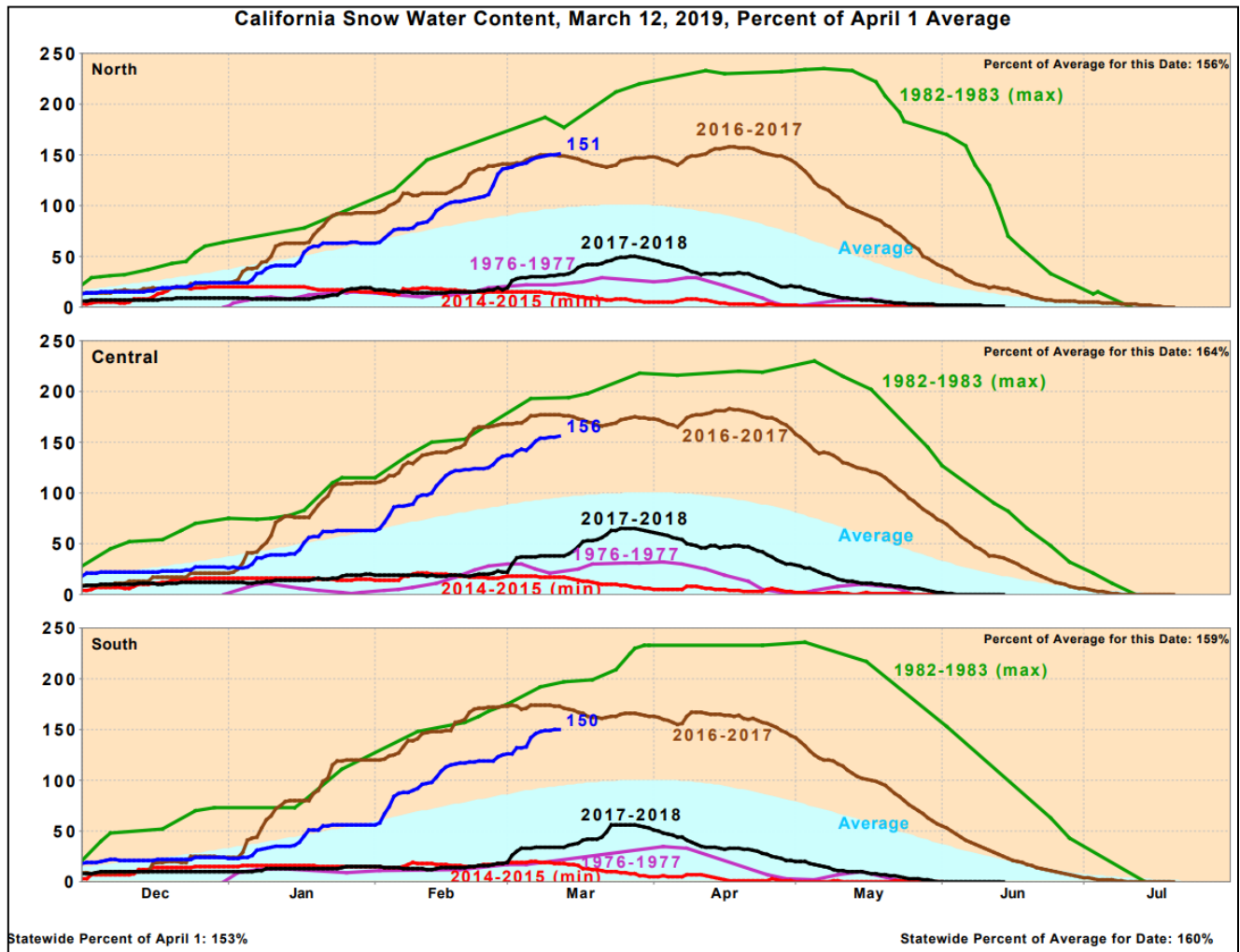
FER // REAL-TIME FLOOD CONDITIONS, STATUS, & WARNING

- The Flood Project Integrity Section completed inspection of 25 pipes in February as part of the Utility Crossing Inventory Program (UCIP).
- The Flood Project Integrity Section is conducting QA/QC reviews of the Levee Log database. To date, approximately 622 miles of the 1,600 miles of Levee Log updates are QA final.
- The Flood Project Integrity and Inspection Branch (FPIIB) staff conducted high water staking on Cache Creek after the February 14 storm and again after the February 25 - 28 storms.
- Flood Project Inspection Section (FPIS) staff closed 40 CVFPB permits in the month of February, closing a total of 126 permits so far for 2019.
- FPIS Inspectors completed inspection of 15 designated floodway reaches this month completing the designated floodway inspection for all 60 reaches included in the 2019 inspection.
- Inspectors collected 18 miles of street view imagery (pilot study) this month for a total of 78 miles so far for 2019.
- FPIS held the quarterly Levee Maintaining Agency Coordination Meeting and attended the USACE/CVFPB Coordination Meeting.

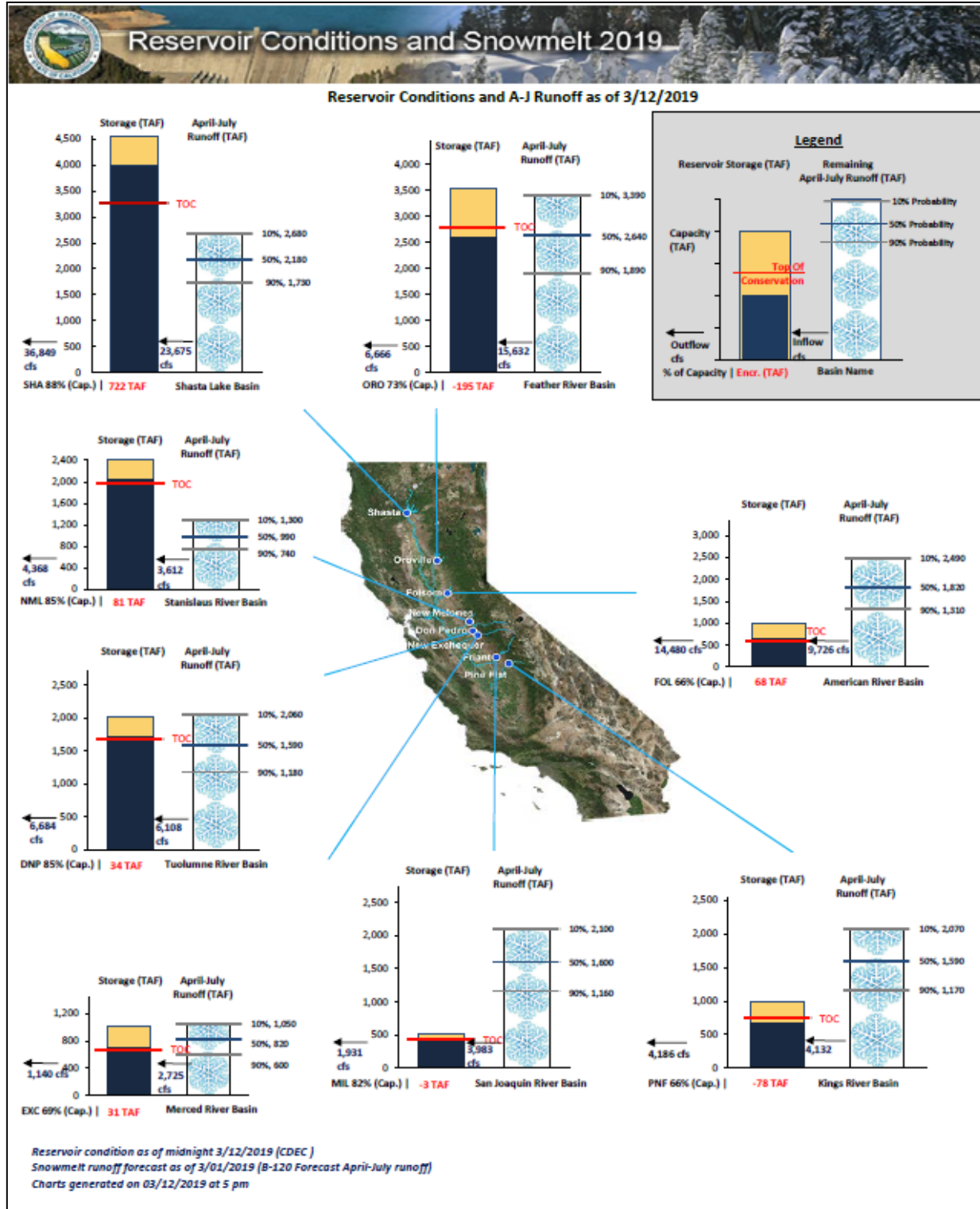
FER // HYDRO-CLIMATE DATA COLLECTION & PRECIPITATION / RUNOFF FORECASTING

An active weather month in February has increased the precipitation indices beyond 100% for the North, Central, and Southern regions. The month also brought colder than normal temperatures which resulted in much of the precipitation remaining in the Sierra Nevada as snow (see two figures below).

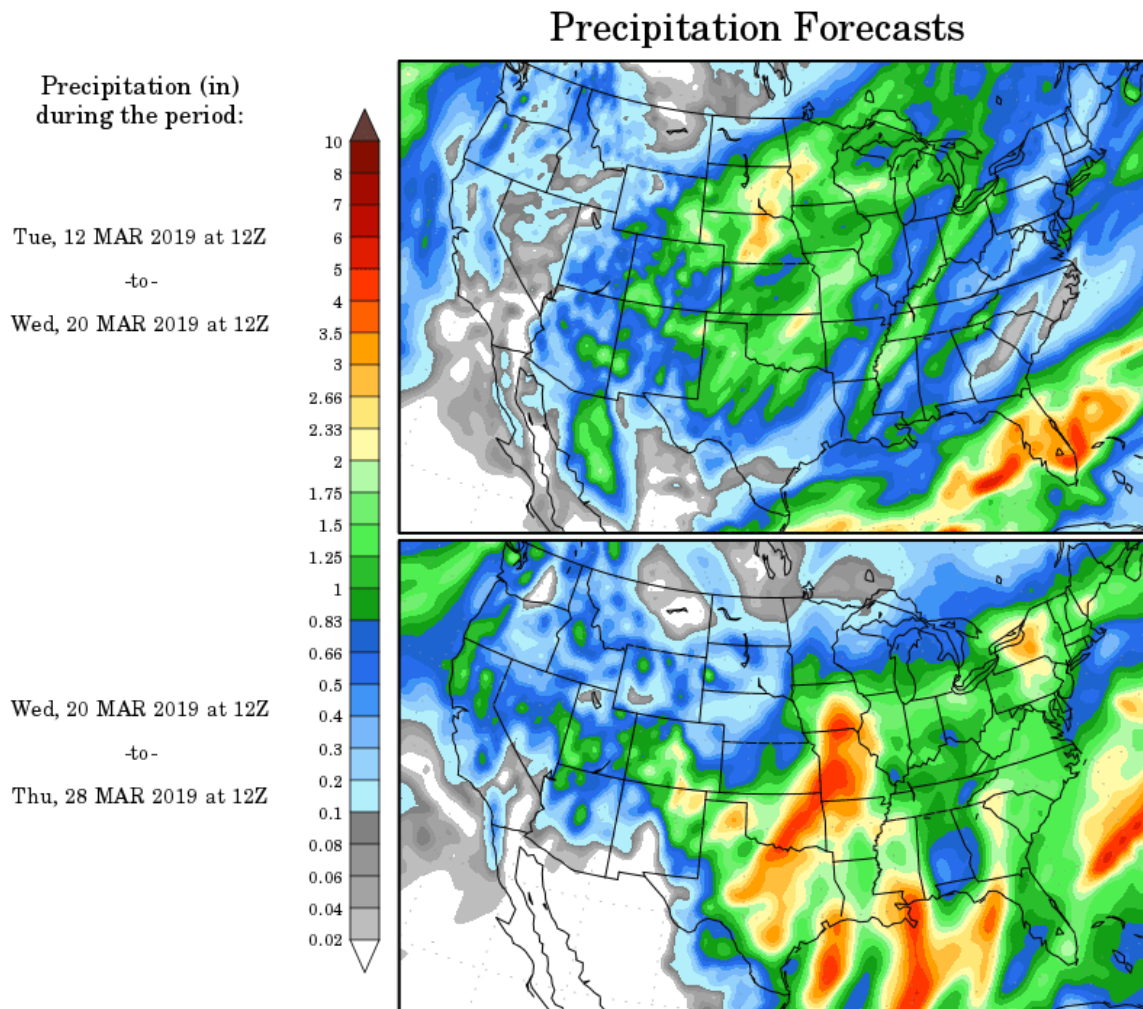




Snowmelt impacted reservoirs are shown below with their respective April-July runoff estimates from DWR's Bulletin 120 for March 1, 2019. Factors including irrigation demand, spring temperatures, and precipitation events will play a major role in determining flood control releases.



The weather forecast moving forward is mostly dry across the state for the middle of March, followed by increasing precipitation near the end of the month. The two 8-day panel graphics (3/12-3/20 and 3/20-3/28) from the GFS weather model (used by NOAA) show this result.

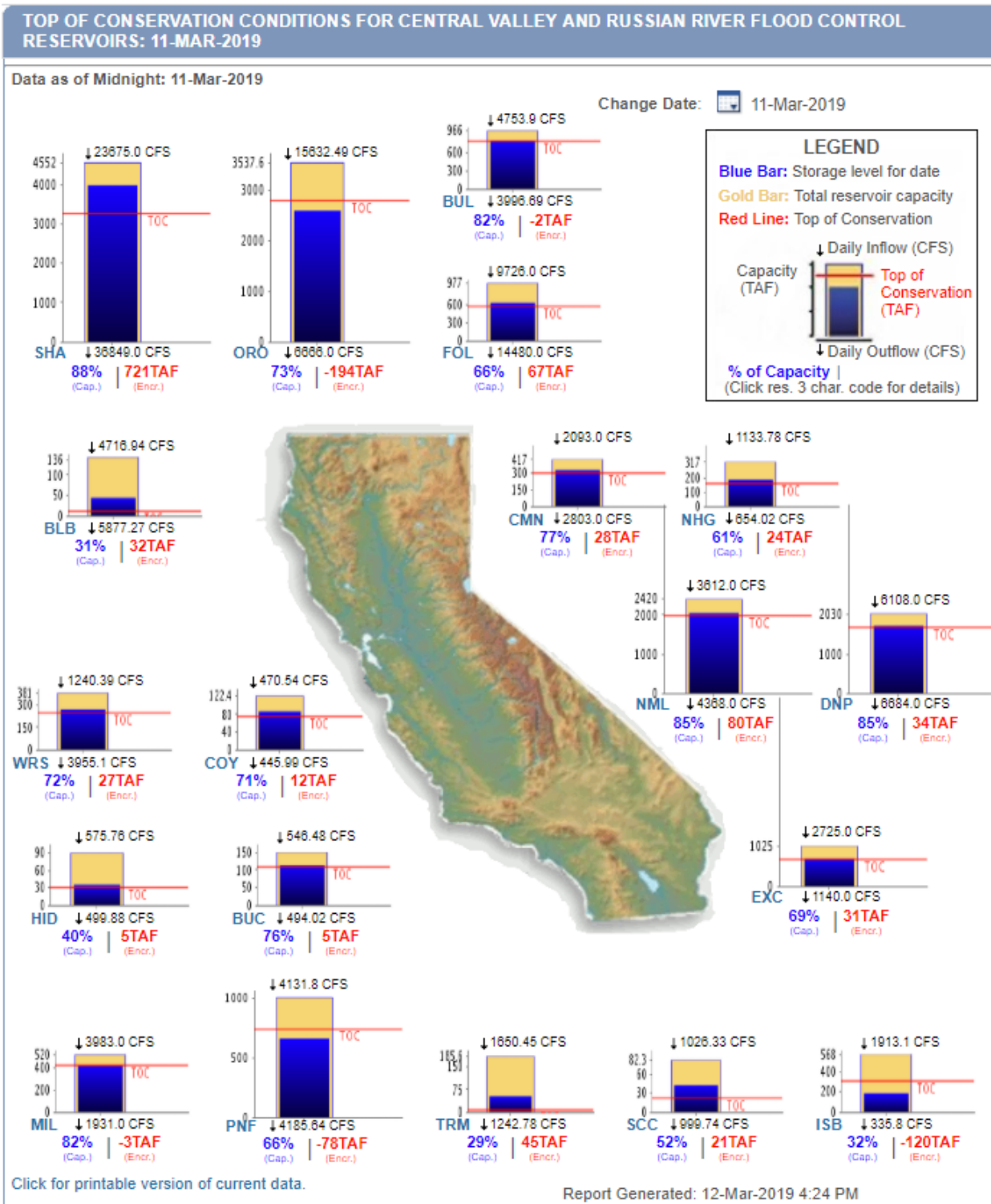


National Weather Service Climate Prediction Center (CPC) long-range, 1-month precipitation outlook for March 2019 (issued February 28, 2019), suggests:

- Increased chances of below normal temperatures across the state.
- Increased chances of above normal precipitation across the state.
- Staff issued the first Bulletin 120 forecast of the 2019 Water Year as well as another Water Supply Index forecast both for conditions as of February 1, 2019. The projected statewide median April - July forecast is 12.44 million acre-feet (MAF) (89 percent of the historic average). The Sacramento Valley Index (SVI) was forecast at 6.9 based on the 50 percent exceedance and is classified as Below Normal. The San Joaquin Valley Index (SJI) was forecast at 2.8 based on the 75 percent exceedance level and is classified as Below Normal.
- In February, staff serviced the Sierra City (SRC) gage in the Yuba River Basin.

FER // RESERVOIR OPERATIONS & RIVER FORECASTING

Reservoirs across the state are storing more water than their historical averages for early March, with many at the top of their conservation (TOC) limits.



Notable flood control releases have been made downstream of Shasta Dam (40,000 cfs) and Folsom Dam (25,000 cfs), with major San Joaquin tributary reservoirs likely to follow if additional storms impact California this spring.

- Statewide reservoir storage totaled 23.3 MAF as of February 1, 2019.
 - 100 percent of average to date.
 - 61 percent of capacity for this time of year.
- Due to significant inflows from the February storms, the State Hydrologist projects that statewide reservoir storage will improve to 26.8 million acre-feet or approximately 110 percent of average.
- On February 8, staff produced and disseminated the February forecast of accretions/depletions of the Sacramento River at Freeport.
- Forecasting staff continue to perform operational forecasting duties with the California Nevada River Forecast Center (CNRFC) to issue daily forecasts of flows in rivers and into reservoirs in California. In response to the multiple atmospheric rivers and several dozens of forecasts of flood and monitor stages up and down California, forecasters expanded to 24-hour operation on the week of February 11 and to extended evening operations on the week of February 25.
- Forecasting staff, in coordination with CNRFC, conducted 10 weather and hydrology briefings that included daily briefings on the weeks of February 11 and 25.
- Staff coordinated with multiple reservoirs in the Central Valley and on the Russian River on flood releases that have resulted in weir flows and high stages within the State Plan of Flood Control system.
- On February 13, the Yuba-Feather Forecast-Coordinated Operations (F-CO) Quarterly Management Team held its first quarterly meeting of 2019.
- On February 21, staff conducted a training session for reservoir operators of Friant and Pine Flat on the use of the San Joaquin F-CO tool that is designed to help manage high snowmelt.
- On February 26, staff supported the California Cooperative Snow Surveys program and the DWR media event by conducting manual snow measurements at the Lyons Creek and Alpha courses.
- Staff continues to work with California Data Exchange Center (CDEC) to implement the enhanced rule curves for the operations of Oroville on to the Yuba-Feather F-CO tool.

FER // FLOOD EMERGENCY PREPAREDNESS & OPERATIONS

- On February 6, Hydrology and Flood Operations Office staff assisted as part of the Evaluation team in conducting the Pyramid Dam Functional Exercise. Flood Operations Center (FOC) staff also participated as a Flood Operations Liaison on site.
- During the February storms, FOC monitored forecasts, updated river recordings, and participated on various weather-related conference calls.
- On February 19, DWR staff deployed a new version of the Flood Emergency Management System (FEMS) that will be used by emergency roster staff during flood

activations. The system is used to store, organize, and track information related to flood emergency response activities and incidents.

- From February 25 - March 1, the FOC was activated to monitor and respond to the atmospheric river event that impacted northern California. During that time, flood fight/technical assistance was provided for 11 incidents in Glenn, Sutter, Lake, Colusa, Sonoma, Sacramento, San Joaquin, and Yolo counties.
- This month, staff conducted one Flood Fight Training Course in Sacramento County.
- As of mid-March, the Flood Operations Branch has conducted 33 Flood Fighting Methods training classes and trained approximately 900 people from partner agencies, including local maintaining agencies, cities, counties, CAL FIRE and California Conservation Corps crews, and DWR staff.

FLOOD MANAGEMENT PLANNING (FMP)

Regional Flood Management Assistance Program

- On February 20, the first of two RMAP Guidelines Public Workshops was hosted in West Sacramento.
- On February 27, the second of two RMAP Guidelines Public Workshops was hosted in Modesto.

FLOOD RISK REDUCTION PROJECTS (FRRP)

FRRP // DELTA LEVEE SYSTEM INTEGRITY (DLSI)

Delta Levees Maintenance Subventions Program

The Subventions Program has been dedicated to maintaining and helping to manage the aging levees in the Sacramento-San Joaquin Delta (Delta) for over 45 years, investing over \$200 million in flood control and habitat projects carried out by local agencies in the Delta. Historically, the Subventions Program has reimbursed an average of about \$6 million annually. Since the passage of Propositions 1E and 84, the funding level for the Subventions Program has significantly increased allowing the program to reimburse an average of \$9 million each year. The funding has been used to support maintenance and rehabilitation activities of over 700 miles of project and non-project levees annually.

- **Subventions Program FY 2016-17**
 - 67 final claims received.
 - 60 final claims for \$7.3 million have been processed for reimbursement.
- **Subventions Program FY 2017-18**
 - CVFPB approved \$12 million for the FY 2017-18 Funding Plan on June 23, 2017.

- CVFPB approved \$2.5 million for the FY 2017-18 Funding Plan on January 25, 2019.
- 72 work agreements have been executed.
- 71 final claims received.
 - Maximum estimated reimbursement of \$14.5 million.
- **Subventions Program FY 2018-19**
 - 72 applications were received and reviewed.
 - The CVFPB approved \$12 million for the FY 2018-19 Funding Plan on May 18, 2018.
- **Subventions Program FY 2019-20**
 - Applications due April 1, 2019.

FRRP // USACE/CVFPB PROJECTS

American River Watershed Project – Natomas Basin

- DWR has received a letter from USACE stating that \$202,486,306 of Work-In-Kind Section 104 credits have been perfected and will be applied to the Non-Federal Sponsor's (NFS) share of the project cost. These credits will be used to partially offset the NFS share of future USACE construction packages. The application of this credit will require a 5% cash share from the local partners, of which state's share will be a total of approximately \$7.5M.

American River Watershed Project – American River Common Features – ARCF 2016 (Previously WRDA 2016)

- The first construction contract, Sacramento River, Reach D, Contract 1, Front Street Stability Berm (Front Street) is scheduled to be awarded in May of this year.
 - The Supplemental Environmental Assessment / Initial Study / Mitigated Negative Declaration (SEA/IS/MND) for Front Street was adopted by the CVFPB at the February Board meeting.
- Sacramento Weir & Bypass confirmed design concept. 35% design has begun.
 - Passive (ungated) weir with the elevation +/- 26.0 ft (NAVD88).
 - Options for stop-logs are being evaluated for operational purposes.
 - Follow existing operation criteria until otherwise superseded.
- The Draft Supplemental Environmental Assessment/Initial Study/Mitigated Negative Declaration for the Beach-Stone Lakes Mitigation Site Project is expected to be circulated for a 30-day public review period beginning in March. The Project would plant 24.2 acres of riparian woodland to mitigate for tree removal that will result from the construction of levee improvements along the Sacramento River east levee, as a part of the ARCF 2016 Project.

Folsom Dam Modifications Joint Federal Project (JFP)

- USACE has awarded a contract to complete many of the project punch-list items.

Folsom Dam Raise Project

- USACE Engineering Design (PED) of dikes #1-6 is underway.
- USACE Engineering Design (PED) of dikes #7 & 8, Left Wing Dam and Right Wing Dam, is underway.
- The Project Partnership Agreement (PPA) with USACE and local sponsor (SAFCA) was presented to the Board on February 22, 2019 and has been revised by USACE HQ to include language consistent with the Bipartisan Budget Act 2018 (BBA 2018) funding. Approving the PPA at the March CVFPB meeting is necessary to meet schedule constraints associated with the BBA 2018 funding.

Lake Kaweah Enlargement Project (Terminus Dam, Kaweah River Project)

- USACE has reimbursed the Kaweah Delta Water Conservation District (KDWCD) \$627,748.05 for the Integral Determination Report (IDR) reimbursement.
- USACE is processing a reimbursement to the State and KDWCD for \$1.4 million.

Sutter Basin Preconstruction Engineering and Design (PED)

- USACE awarded the construction contract to Great Lakes Environmental & Infrastructure, LLC on February 20, 2019.

San Joaquin River Basin, Lower San Joaquin River California Project (PED)

- USACE will provide an informational update to the CVFPB on March 29, 2019.

Yuba River Basin, California Project – Marysville Ring Levee Project

- The Draft Supplemental Environmental Assessment / Initial Study / Mitigated Negative Declaration (SEA/IS/MND) for the Marysville Ring Levee Project Phase 2B and 3 is anticipated to be circulated for a 30-day public review period from March 29 to April 28, 2019. The SEA/IS/MND analyzes impacts to environmental resources and outlines mitigation measures for construction of phases 2B and 3.

FRRP // USACE/CVFPB STUDIES**Lower San Joaquin River Feasibility Study (LSJRFS)**

- The Record of Decision (ROD) was approved on February 8, 2019.

Woodland/Lower Cache Creek Feasibility Study

- USACE held a Tentatively Selected Plan (TSP) conference on February 28, 2019. USACE management has conditionally supported the TSP which has also been endorsed by the local sponsors.

FRRP // URBAN FLOOD RISK REDUCTION PROGRAM (UFRR)

Three Rivers Levee Improvement Authority (TRLIA) – 200-year Goldfields Levee Project (UFRR)

- TRLIA has completed 65% project design.

West Sacramento Area Flood Control Agency (WSAFCA) – Construction (EIP & UFRR)

- The West Sacramento Construction Amendment No. 4 has been signed. This amendment adds time and scope to support the pending Design Agreement for the USACE project. The unused funds from the original WSAFCA design contract which has been closed.

Woodland Study and Preliminary Design (UFRR)

- The City of Woodland UFRR project Amendment No. 4 has been signed. This amendment defines additional scope that will support the Lower Cache Creek Feasibility Study (LCCFS). No funds were added to the agreement.

FRRP // SYSTEMWIDE FLOOD RISK REDUCTION PROGRAM (SFRR)

Lower Elkhorn Basin Levee Setback (LEBLS) Project

- A link providing access to the proposed final EIR including written responses to public agency comments was emailed to commenting agencies (USFWS, USEPA, USDO, CDFW, Yolo County, City of West Sacramento and Lower Sacramento Delta North RFMP) on March 6, 2019. The EIR can be certified 10 days following this notice to public agencies.

FLOOD SYSTEM OPERATIONS & MAINTENANCE (FSO&M)

Flood Maintenance Office (FMO) is responsible for two areas of SPFC facilities, State Maintained Areas (SMAs), which are authorized by CWC Section 8361, and ten Maintenance Areas (MAs), which are described in CWC Section 12878. SMAs are funded by State general fund, while MAs are on reimbursable accounts funded by property owners protected by the MA levees and facilities.

State Maintained Areas (SMAs)

- Levees: ~145 miles
- Channels: ~1,200 miles
- Flood Structures: ~30 (11 weirs, 5 gate structures, 4 pumping plants, crossing bridges, etc.)
- Collecting Canals: ~60 miles

Maintenance Areas (MAs)

Currently, FMO maintains ten MAs: MA01, 02, 04, 05, 07, 09, 12, 13, 16, & 17.

- *Levees: ~150 miles*
- *Structures: ~1 pumping plant and 1 diversion weir*

OPERATIONS & MAINTENANCE (O&M)

Listed activities are mandated by O&M manuals for facilities in SMAs or MAs. This work is performed by two maintenance yards in Sacramento and Sutter with technical and environmental support from JOC.

- *Levee and channel vegetation management*
- *Access road and levee crown maintenance*
- *Debris and obstruction removal*
- *Rodent abatement*
- *Rodent damage repair*
- *Levee erosion repair*
- *Channel scour repair*
- *Small sediment removal*
- *Pumping plant, weir, outfall gates, and bridge operation, maintenance, and repair*
- *Pipe/Culvert repair*

FMO is in the process of developing a new program, Flood Maintenance Assistance Program (FMAP), with annual funding to increase the level of maintenance in SMAs and support Local Maintaining Agencies (LMAs), including MAs, to do the same.

SMA Activities

Sacramento Yard

- *Cache Creek Levees: 22 cubic yards (cy) of vegetation from high water is being piled up in 2 cy piles for burning (in progress).*
- *Cache Creek Levees: 15 cy of debris over 5 acres has been removed due to high water (in progress).*
- *Cache Creek Levees: Vegetation spot spraying (in progress).*
- *Cache Creek Levees: 21 miles of vegetation broadcast spraying (complete).*
- *Cache Creek Levees: High water patrolling February 13-15, and February 27-28.*
- *Dry Creek: Rodent depredating (in progress).*
- *East Levee Yolo Bypass: 2 miles of vegetation broadcast spraying (complete).*
- *Magpie Creek Diversion: 100 cy of aquatic vegetation removal (complete).*
- *Magpie Creek Diversion: Rodent depredation (in progress).*
- *Putah Creek: Vegetation spot spraying (in progress).*
- *Putah Creek: Levee gate repair/replace (in progress).*
- *Putah Creek: Road grading (in progress).*
- *Putah Creek: Rodent baiting (in progress).*
- *Sacramento Bypass Levees: Levee gate repair/replace (in progress).*
- *Sacramento Bypass Levees: Vegetation dragging (complete).*
- *Sacramento Bypass Levees: Vegetation broadcast spraying (complete).*

- Sacramento Bypass Levees: Rodent depredation (complete).
- Sacramento Bypass Channel: Aquatic vegetation spraying (in progress).
- Sacramento River (Collinsville to Knights Landing): 150 cy scour repair at Ponds 10, and 12 (in progress).
- Sacramento River (Collinsville to Knights Landing): 3.2 miles of vegetation mowing around Prospect Island on Miner Slough (in progress).
- West Yolo Bypass levees, Units 1-4: Road grading (in progress).
- Willow Slough Bypass Channel: Toe road grading (in progress).
- Willow Slough Bypass levee: Road grading (in progress).
- Willow Slough Bypass levee: Rodent depredation (in progress).
- Completed levee damage repair, with engineering and environmental support from FMO, and emergency contract support from Division of Engineering (DOE) under 10122, for five crown locations that had overtopping or near overtopping during recent flood events, and two waterside channel scour locations that had damage cutting into the levee prism. Staff is finalizing the emergency 10122 contracting paperwork and making required environmental notifications. Emergency work has stabilized the flood damage on the Cache Creek levees.

Sutter Yard

- Butte Creek: 7.5 acres of vegetation mowing (complete).
- Cherokee Canal Channel: Rodent depredating (complete).
- Colusa Bypass levee: High water patrolling February 3-5.
- East Levee Sacramento River: 10 cy debris removal (in progress).
- East Levee Sacramento River: Rodent fumigation (in progress).
- East Levee Sacramento River: High water patrolling all month (in progress).
- East Levee Sutter Bypass: Repair/replace 30 signs (in progress).
- East Levee Sutter Bypass: Rodent depredation (in progress).
- Elder Creek Channel: Scour repair (completed).
- Highlands Canal: 1 cy of debris removal (complete).
- Highlands Canal: Wet sediment removal (complete).
- Lake of the Woods: 300 acres vegetation mowing (in progress).
- Little Chico & Butte Creek Diversion Weirs: 5 cy of debris removal (complete).
- Little Chico Creek: 30 cy of debris removal (complete).
- Middle Creek pumping plant: Structure maintenance (complete).
- Moulton Bypass Levees: Rodent fumigating (in progress).
- O'Connor Lakes: 6 acres of vegetation mowing (in progress).
- Sutter Pumping Plants 1-3: 7 cy of debris removal (in progress).
- Sutter Pumping Plants 1-3: Vegetation cutting and limbing (in progress).
- Sutter Collecting Canals: Wet sediment removal (in progress).
- Tisdale Bypass Levees: Repair/replace 10 signs (in progress).
- Tisdale Bypass Levees: Rodent depredation (in progress).
- Tisdale Bypass Levees: 4.5 miles vegetation mowing (in progress).
- Wadsworth Canal: Rodent depredation (in progress).

MA Activities*MA01*

- Rodent Fumigating (in progress).
- Rodent baiting (in progress).
- High water patrolling February 3-5, 2019.

MA03

- Rodent depredation (in progress).

MA04

- 1 mile of vegetation cutting and limbing (complete).

MA05

- Repair or replace 8 gates (in progress).
- 33.42 miles of vegetation broadcast spraying (in progress).
- 300 cy erosion repair (complete).
- 3 cy debris removal (complete).
- High water patrolling February 26-27, 2019.

MA09

- High water patrolling February 26-27, 2019.

MA12

- Rodent fumigating (in progress).
- High water patrolling February 3-5, 2019.

MA13

- High water patrolling February 2-5, February 13-16, February 26-28.
- 20 cy of road gravel placed (complete).

Flood Maintenance Assistance Program (FMAP)

- On January 25, 2019, CVFPB was briefed on the progress and status of FMAP.
- On January 25, 2019, submittals included 23 applications at an estimated \$3.35M commitment.
- On February 22, 2019, submittals included 15 applications at an estimated \$2.55M commitment.
- DWR has begun processing the applications.
- New applications for the final 2018/2019 submittal due date of March 25, 2019 are being accepted.

STUDIES & EVALUATIONS

Activities related to evaluating all SPFC facilities to identify any deficiencies, and prioritizing (emergency, critical, serious, monitor) them for repair, rehabilitation, or replacement. These evaluations include:

- *Levee stability*
- *Levee penetrations, such as pipes and culverts*
- *Channel capacity*
- *Structure functionality*
- *Levee Tree Assessment*
- *Encroachments*
- *O&M right-of-way (ROW)*

Channel Evaluation

Cherokee Canal Evaluation

- Staff requested DWR Northern Region Office (NRO) to do a high water survey for the February 27 event. NRO has already staked the high water marks and will do the survey in coming weeks. Staff also requested NRO to do a bathymetric survey at the HEC-RAS model cross-section locations and the survey will begin in coming weeks.

Sacramento Area Streams Survey

- Division of Engineering (DOE) will deliver processed 2018 LiDAR survey data for Cache Creek by early March 2019. Staff is contacting DOE to do a bathymetric survey for Cache Creek at the HEC-RAS model cross-section locations.

Levee Evaluation

Pipe/Culvert Evaluation

- Phase 1 video inspections:
 - 154 of 258 pipes passing through State Maintenance Area (SMA) levees have been video inspected by FMO.
 - 32 DWR directed funding agreements have been executed. The LMAs are in the process of inspection and evaluation of their pipes.

Levee Tree Assessment (LTA)

- Assessments will resume when trees leaf out in Spring 2019.

Encroachments

- FMO continues to coordinate with HAFOO, CDEC, FPO, and CVFPB to prepare a comprehensive list of encroachments in SMAs and MAs.
- The draft lists for the following have been completed and are under review and field confirmation:
 - ST0010, Wadsworth Canal (North)
 - ST0002, East Levee, Sutter Bypass

- ST0020, East-West Interceptor Canal (NA20)
- Tisdale Bypass Unit 1, North Levee
- MA07

DEFERRED MAINTENANCE

Maintenance that has not been completed to keep the facilities in an acceptable and operable condition will result in deferred maintenance. If the work is not completed as part of O&M activities, it will lead to a larger maintenance issue and cost significantly more.

2017 Emergency Rehab

- All Phase III (2018) site construction work has been completed. Plant maintenance activities are planned for December 2019.
- Construction is planned for Fall 2019 on up to 27 previously identified serious sites.

Levee Rehab

Flood System Repair Program (FSRP)

- DWR is completing LMA outreach and field reconnaissance to prioritize eligible repairs and continue to enter into project agreements with the remaining program funding. Reclamation Districts are reporting their high priority sites as part of this reconnaissance.

Slip Failure

- FMO repaired a small slip on the landside of the Cherokee Bypass levee, which was caused because of the recent heavy storms in late January 2019.
- FMO also removed a large quantity of debris from various Chico Creeks, which would have likely caused localized flooding due to increased flow stages from the fire damaged hillsides.

Pipe Rehab

- The Verification Request Form (VRF) for the Cured In Place Pipe (CIPP) lining of 26 pipes along Putah Creek was approved by the California Department of Fish and Wildlife (CDFW) as part of the Routine Maintenance Agreement on February 11, 2019. Pipe lining operations began on February 19, 2019, and eight pipes along Putah Creek were completed as of February 28, 2019. The operation will continue, but the schedule may be impacted by weather and flows within Putah Creek.
- As part of the pipe lining operation, new flood control gates will be installed. FMO has received a partial delivery of the flood control gates, but we are still waiting for delivery of 32 gates. The remaining order is expected to be delivered in March 2019.

The following table provides an overall status update of the pipe inspection / rehabilitation work:

DMP-Pipes Program Status Update: 2/28/2019			
	MA/SMA	Non-Participating LMAs	Participating LMAs¹
Phase 1			
Total pipes for C&I (Cleaning & Inspection):	258	161	995
Total pipes completed:	154	134	TBD
Irrigation Impacted Pipes:	50	7	TBD
Continuous water Pipes:	28	10	TBD
Vault access required:	23	--	TBD
Geophysical Evaluation*			
"Not-Found" Pipe Location:			
Total Pipes for Geophysics (GP)	137	174	221
Total Pipes GP Complete	137	172	221
Phase 2 - R/R/R			
CIPP Slip-Lining Rehabilitation Completed**	8	TBD	TBD
Removal and Replacement***	TBD	TBD	1
Removal	TBD	TBD	TBD
Abandonment in Place	TBD	TBD	TBD

* DWR Contractor completing geophysical evaluation in MAs/STs, Non-Participating LMAs, and where requested by participating LMAs

** DWR has a contract for Cured-In Place Pipe (CIPP) Slip-Lining Rehabilitation; 35 pipes are ready for rehab along Willow Slough and Putah Creek. Additional pipe locations for CIPP are being assessed and will be added soon.

*** RD784 has 1 pipe in Phase 2 agreement with DWR for removal/replacement; Design/permitting work in progress.

1 - Many Participating LMAs are reporting difficulty in contracting geophysics, pipe cleaning, and video inspection work.

Channel Rehab

Elder Creek Channel Rehab

- Year 2 of sediment removal has been completed.

Structural Rehab

Butte Slough Outfall Gate (BSOG) Rehabilitation

- DWR is formulating a proposal based on input from natural resource agencies.

Tisdale Weir Rehabilitation and Fish Passage Project

- Multi-agency meetings continue monthly. Agencies include Central Valley Flood Protection Board, California Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The conceptual design is being developed by this group led by FMO.

Knights Landing Outfall Gates (KLOG) Fish Barrier

- Previous fish exclusion barrier became inoperable and was removed in the fall of 2016.
- FMO is moving forward to identify the appropriate design and operational needs for replacing the fish exclusion barrier.

Yard Rehab*Sacramento Yard Improvements*

- Phase 2 work will be put on hold for the winter and will start back up in the spring of 2019. Work to place the new sewer line down the entrance ramp to the service line in the street is complete. Other work that may occur during the winter includes extra work to remove and reinstall domestic and fire water backflow preventers and connect to city water.
- The electrical contract is in the design phase and comments on the 95 percent plans were submitted to DOE. That contract is expected to be executed in the summer of 2019.

ENVIRONMENTAL INITIATIVES

Environment coordination, advance mitigation, and other holistic measures to expedite our project delivery. FMO is looking to find long-term solutions that will allow more effective and efficient O&M by identifying and implementing environmental measures as part of the system.

Environmental Permitting for Operations and Maintenance Project (EPOM)

FMO is hiring more environmental staff to assist with the permitting requirements and for mitigation planning and agency collaboration.

O&M Habitat Conservation Plan (HCP)

This effort is on hold due to how the Systemwide Improvement Framework Endangered Species Act nexus process works out.

Systemwide Improvement Framework (SWIF) - Endangered Species Act, Section 7 Nexus

The USACE has agreed to provide a nexus for the Endangered Species Act for SWIF through a workplan review and approval process. FMO will be proposing rodent damage abatement and repair activities along MA05 to the USACE under the SWIF. FMO will be meeting with the USACE to discuss how environmental consultation and review will proceed.

FEDERAL PROGRAM

FMO's interaction with federal agencies, mainly USACE, in rehabilitation of deferred maintenance projects.

Federal Public Law 84-99 Emergency Repair Project (PL 84-99)

- USACE completed repairs to 15 damaged sites in 2017, and 7 damaged sites in 2018. These are PL 84-99 eligible repairs identified from the 2017 high water events. Up to 22 additional sites are targeted for repair in 2019 and 2020. DWR and CVFPB are working closely with USACE to manage the state's interest in these projects.