

11.1 Introduction

The Sacramento-San Joaquin Delta has sustained Indigenous Peoples for over 5,000 years. At one point, the Bay-Delta watershed may have supported a population of around 10,000 of the estimated 300,000 Indigenous Peoples inhabiting present-day California (Zedler and Stevens 2018). Many California landscapes were traditionally managed to improve yield of fish, wildlife, and plants. Stewardship practices often included fire management for riparian vegetation and food productivity, harvesting fish and other native species sustainably, and tending to the land to prevent the overgrowth of vegetation (Hankins 2018; Norgaard 2014). Colonization, genocide, and disease prevented Native Californians from continuing their land management practices and culturally significant ceremonies (Zedler and Stevens 2018; Norgaard 2014).

The relationship of many California Native American tribes to water is profound, with “water considered the backbone” of many tribal societies. Water is at the heart of traditional stories about human origins and spiritual passage as well as sacred in places used for story, ceremony, healing, and other purposes. Culturally, individuals or tribes may view themselves as belonging to the water, and as stewards, which is distinct from the western notion of asserting individual ownership and dominion over natural resources (DWR 2009). This is true even in California where water belongs to the people and therefore water rights are considered “usufructuary,” meaning that one has a right to the use and enjoyment of the resource without owning it, destroying it, or wasting its substance (Wat. Code, § 102).

California Native American tribes, or the Indigenous Peoples of present-day California, endured waves of colonization through Spanish, Mexican, and American settlers. These waves of colonization severed the connection to Place for Indigenous Peoples, including culturally significant access to waterways, traditional uses of plants and animals, and sacred sites through forced relocation and acts of genocide. Colonization not only displaced native societies but also fundamentally altered the landscape through the introduction of western agricultural practices, rearing of livestock, and construction of dams and levees.

The United States signed its first treaty with the Delaware Tribe in 1778 and continued, until 1871, to sign and ratify 370 treaties with Native American tribes. At least 45 other treaties were negotiated with tribes but never ratified by the U.S. Senate. Sometimes, the Senate would unilaterally alter a treaty prior to ratification. Often times, the U.S. would renege on promises made (BIA 2023; Howard 2023). In 1820, as the U.S. grew in population, the federal government sought to displace Native Americans to create room for western expansion. This policy was codified in 1830 with passage of the Indian Removal Act. The Act displaced thousands of Native Americans from their homes including through the death march infamously referred to as the Trail of Tears, during which over 4,000 Cherokee tribal members perished (Howard 2023).

It is estimated that, between 1846 and 1873, the state and federal governments funded the removal and murder of Native Americans, resulting in the deaths of an estimated 270,000 Native American people (Claire and Surprise 2021). The series of military campaigns and bounties is known as the California Genocide, and fewer than 30,000 Native Americans were estimated to have survived. The

1850 Act for the Government and Protection of Indians legalized the practice of indenturing Native American children and adults to white settlers (Ramos et al. 2021). During this period, tribal members often were restricted to lands federally reserved by the U.S. government in a program of Americanizing tribes into communities of farmers. Native American children were sent to boarding schools, ceremonies were outlawed, and ceremonial regalia were destroyed in efforts to erase indigenous culture. Some Yurok tribal members described these events and contact with European colonizers as a time when “the government tried to break our culture” and “when your way of life becomes illegal” (Howard 2023; Ramos et al. 2021).

The California Genocide occurred during the same timeframe as land reclamation policies swept through California. In the 1850s, several state and federal policies promoted land reclamation where large, inexpensive parcels of land could be purchased by settlers. The 1855 Swamp Lands Act and the 1877 Desert Land Act allowed settlers to purchase land contingent upon reclaiming the land with a purpose. The 1855 Swamp Lands Act required reclamation of land for agricultural use; the 1877 Desert Land Act required construction of a residence and irrigation system within 3 years (Claire and Surprise 2021). These policies encouraged drainage and enclosure of wetlands and semi-arid scrublands for agricultural use (Claire and Surprise 2021). Additionally, the diminished land management led to an overgrowth of vegetation, resulting in the closing of riparian forests and Delta marshes (Zedler and Stevens 2018). Introduced vegetation replaced native grasses; today only 14 percent of the Delta’s native vegetation remains (Zedler and Stevens 2018). These two concurrent events allowed settlers to have greater control of California’s landscape. The result was a fundamental change as dams, canals, and reclaimed land replaced the natural landscape.

A decade after the Desert Land Act, Congress passed the Act of February 8, 1887, also called the General Allotment Act or the Dawes Act. Under this policy, tribes surrendered tribally owned land for individual allotments that, in some cases, were then sold to white settlers. As a result of this policy, the total amount of tribal land in the United States was reduced by about 90 million acres (Howard 2023.) The Indian Reorganization Act of 1934 led to a brief period of self-government where Native American people were permitted to adopt constitutions and organize into federally recognized Indian tribes, and surplus land on reservations was returned to tribal ownership if it was not previously acquired by another entity. Twenty years later, however, this self-government era saw a reversal of policies during the “Termination Era.” On August 1, 1953, Congress adopted House Concurrent Resolution 108 and, subsequently, in the 1950s and 1960s terminated government-to-government relationships with over 100 tribes, removed over 1 million acres of land from trust, and transferred jurisdiction over Native American communities to the state through Public Law 280 (GAO 2012; Howard 2023). According to a 2012 report, of 38 tribes who saw their recognition terminated between 1955 and 1967 and later restored, over 70 percent (27 tribes) were from California; another 9 tribes in California were terminated between 1961 and 1970 and not restored (GAO 2012).

Landscape alteration and displacement of communities prevented Native Americans from practices such as hunting, gathering, and participating in culturally significant rituals (Claire and Surprise 2021; Kondrashova 2020). For example, dams along the Klamath River led to the decline in salmon populations and a significant die-off event that affected the health of Karuk tribal members who traditionally relied on salmon as a significant portion of their diet (Kondrashova 2020). The Agua Caliente Band of Cahuilla Indians used groundwater sustainably until current land use practices and development extracted more groundwater from the aquifer than could be replenished (Kondrashova 2020); and lumber production displaced the Washoe People from Meeks Meadow where they traditionally fished, hunted, and harvested (Kondrashova 2020).

Beginning in the late 1960s, as civil rights activism swept across the U.S., it ushered in a new wave of tribal leadership that sought policies to promote tribes' inherent sovereign powers, foster economic development on Indian land, and encourage self-determination. The Indian Self-Determination and Education Assistance Act of 1975, amended in 1988, was amended again in 1994 to address some tribal criticisms, including that it previously lacked tribal input in the rulemaking process. The Act gives tribes the authority to contract with the federal government to operate programs serving their tribal members and other eligible persons (Pub. Law 93-638; 25 C.F.R. § 900 et seq.). Since that time, there is also a growing tribal emphasis on environmental justice and recognition that Indigenous People are intricately linked to the land, including its waters. For Native American peoples, the environment is not just a natural resource but a cultural resource and the struggle against "European colonization can be characterized as a fight to protect the cultural resources Native Americans inherited from their ancestors." (Howard 2023.)

Today, there are about 110 federally recognized tribes in California, and roughly 81 groups pursuing federal recognition (California Tribal Court-State Court Forum). Federal recognition comes with certain federal benefits and protections, including eligibility for funding and services from the U.S. Department of the Interior, Bureau of Indian Affairs. Where the federal government has reserved land for a federally recognized tribe, that reservation is presumed to encompass sufficient water to fulfill the "primary purpose" of the reservation as of the date it is created. This is known as the Winters Doctrine and was established in the seminal case *Winters v. United States*, 207 U.S. 564 (1908). Tribes that lack federally reserved water rights still have a significant interest in water management decisions that could support traditional practices or culturally significant species.

In response to and in recognition of the role the State of California has played in the maltreatment and exploitation of Indigenous Peoples in California, Governor Gavin Newsom issued Executive Order (EO) N-15-19 in June 2018. Through the EO, the Governor issued an apology to California Native American Peoples for the many instances of violence, mistreatment, and neglect inflicted on California Native Americans throughout the state's history. The EO also announced that the Governor's Tribal Advisor shall establish a Truth and Healing Council to provide an avenue for Indigenous Peoples to clarify and correct the historical record and provide their own historical perspective on the relationship between tribes and the state.

This historical recognition further reinforces the need for robust outreach and engagement. The following discussion addresses current statewide policies and efforts the State Water Board has taken to engage with California Native American tribes and document traditional ecological knowledge (TEK) to inform the State Water Board's efforts to (1) update the Bay-Delta Plan, including possible incorporation of Tribal Beneficial Uses (TBUs) incorporated into the Bay-Delta Plan. The State Water Board is committed to ongoing engagement with California Native American tribes to incorporate TEK, tribal feedback, and perspectives into the Bay-Delta Plan to inform the reasonable protection of beneficial uses and TBUs that are under consideration.

11.2 State Policies on Outreach and Engagement

The State of California has multiple policies, statutes and executive directives that guide state agencies when conducting tribal outreach, engagement, and consultation efforts. Listed below are the relevant policies that guide the State Water Board's outreach and engagement efforts with California Native American tribes.

11.2.1 Governors' Executive Orders

11.2.1.1 Executive Order B-10-11

On September 19, 2011, former Governor Gerald "Jerry" Brown issued EO B-10-11, which was "committed to strengthening and sustaining effective government-to-government relationships between the State and the Tribes by identifying areas of mutual concern and working to develop partnerships and consensus." In addition, "it is the policy of the administration that every state agency and department subject to executive control is to encourage communication and consultation with California Native American tribes."

11.2.1.2 Executive Order N-15-19

On June 18, 2019, Governor Gavin Newsom issued EO N-15-19, which recognizes that "the State historically sanctioned over a century of depredations and prejudicial policies against California Native Americans." It commends and honors California Native Americans for their persistence and stewardship and apologizes for "the many instances of violence, maltreatment, and neglect." EO N-15-19 also established the Truth and Healing Council and reaffirmed and incorporated by reference the principles of EO B-10-11, issued by Governor Jerry Brown on September 19, 2011, regarding communication and government-to-government consultation with California Native American Tribes on policies that may affect tribal communities.

11.2.2 Assembly Bill 52 (2014)

On September 24, 2014, Governor Brown signed into law Assembly Bill 52 (Gatto), Chapter 532, Statutes of 2014 (AB 52). AB 52 added CEQA requirements for consultation among California Native American tribal governments and lead agencies to protect tribal cultural resources (Pub. Resources Code, § 21084.3). AB 52 applies to any "project that has a notice of preparation (NOP) or a notice of negative declaration or mitigated negative declaration filed on or after July 1, 2015." (AB 52, § 11.) This means that agencies and tribal governments consulting on projects with NOPs filed before July 1, 2015, can utilize the B-10-11 process and those with NOPs filed on or after July 1, 2015, can avail themselves of either AB 52 or B-10-11. Although the Sacramento/Delta update is exempt from AB 52—since the project's NOP was filed before July 1, 2015—the State Water Board looks forward to conducting consultation with interested tribes consistent with its Tribal Consultation Policy and EO B-10-11.

11.2.3 State Water Board Tribal Consultation Policy (2019)

The State Water Board Tribal Consultation Policy (Tribal Consultation Policy) affirms the State Water Board and regional water boards (collectively, the Water Boards) continued commitment to strengthening and sustaining government-to-government relationships with both federally and non-

federally recognized California Native American tribes. The Water Boards are committed to the foundation and principles outlined in the Tribal Consultation Policy. The intent of this policy is to guide State Water Board staff to engage with California Native American tribes through timely and meaningful consultation and collaboration on actions that may affect tribal lands, tribal interest and/or tribal cultural resources consistent with the mission of the Water Boards. This policy establishes statewide general guidelines for tribal consultations across the Water Boards. Included within the Tribal Consultation Policy are the foundations and tools necessary for fostering and sustaining meaningful government-to-government relationships between the Water Boards and California Native American tribes. Best practices include consulting with one tribe at a time unless otherwise agreed upon, and understanding the scope of a project that may affect tribes. (SWRCB 2019.) Specific to the Water Boards' projects and mission, this policy is consistent with and builds upon the 2020 California Environmental Protection Agency (CalEPA) Tribal Consultation Protocol.

11.2.4 CalEPA Tribal Consultation Protocol (2020)

The Tribal Consultation Protocol (Protocol) establishes a step-by-step process that will assist CalEPA and each of its boards, departments, and offices in engaging with California Native American tribes broadly and in government-to-government consultations. The Protocol builds upon CalEPA's 2015 update to its policy on consultation with California Native American tribes by providing CalEPA, its boards, departments, and offices with a process for determining which, if any, tribes or tribal communities their actions might affect. The Protocol establishes a set of best practices for CalEPA to use when engaging with Tribes regarding the potential effects its actions and the actions of its boards, departments, and offices might cause, in a meaningful, inclusive, and mutually respectful way. (CalEPA 2020.)

This Protocol sets forth minimum process requirements that each board, department, or office and its staff should follow, in addition to all other separately applicable legal, procedural, and substantive requirements, as well as additional best practices that are specific to particular programs. Best practices include the early identification of interest and potentially affected tribes and familiarizing staff with tribal political structure, preference of consultation, and the scale and scope of affected areas. In some instances, the Protocol may not have the level of detail required for each of the Agency's boards, departments, and offices. Each board, department, and office may therefore elaborate on the Protocol's requirements where necessary, by developing a more appropriately tailored set of principles and practices for use in their specific programs and should communicate those principles and practices to CalEPA's executive office. (CalEPA 2020.)

11.2.5 State Water Board's Racial Equity Resolution (2021) and Racial Equity Action Plan (2022)

The State Water Board adopted the Racial Equity Resolution in November 2021, which directed staff to develop a plan of action to advance racial equity within the Water Boards. The Racial Equity Team released a draft of the plan for consideration during public workshops in summer 2022 and has now revised the plan with feedback received from the workshops, the fall 2022 public comment period, and the comments of Water Board employees. The State Water Board's Racial Equity Action Plan is a compilation of goals, actions, and metrics intended to advance efforts to create a future where we equitably preserve, enhance, and restore California's water resources and drinking water for all Californians, regardless of race; and where Water Board employees reflect the racial and ethnic

diversity of California. The State Water Board 2023–2025 *Racial Equity Action Plan* was released in January 2023 (SWRCB 2023a).

11.3 Tribal Policies

To provide clear direction to governments, agencies, and departments seeking tribal consultation, some tribes have developed policies identifying the requirements that must be met for a meeting or meeting process to be considered consultation. The State Water Board recognizes, respects, and commits to adhering to tribal specific consultation policies when engaging with tribes that employ such policies.

11.4 Outreach and Engagement with Tribes

Meaningful engagement with California Native American tribes is fundamental to the mission of the Water Boards. (SWRCB 2023b). The Office of Public Participation coordinates the Water Boards Tribal Affairs Program statewide. The Water Boards have designated tribal liaisons who oversee coordination of the Tribal Affairs Program. To help strengthen the Tribal Affairs Program and assist the liaisons, each of the Water Boards regions and divisions have designated regional/divisional tribal coordinators.

As noted above, in June 2019, the State Water Board finalized its Tribal Consultation Policy, reaffirming that collaboration and input from all California Native American tribes helps the State Water Board advance decisions and policies that better protect California’s water resources. California Native American tribes can request government-to-government consultations on Water Board topics on an ongoing basis, consistent with the Tribal Consultation Policy. The Tribal Consultation Policy establishes the guiding principles to consult with California Native American tribes on a government-to-government basis when requested and deemed to be appropriate through discussion with the requesting tribe(s), or as required by statute (e.g., AB 52 or Section 106 of the National Historic Preservation Act). *Consultation* is defined in the Tribal Consultation Policy as, “a meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties’ cultural values and, where feasible, seeking agreement. Consultation between government agencies and California Native American tribes shall be conducted in a way that is mutually respectful of each party’s sovereignty. Consultation shall also recognize a tribes’ potential needs for confidentiality with respect to places that have traditional tribal cultural significance.” (SWRCB 2019.)

11.4.1 Applicable Consultation Policy

Agencies and tribal governments consulting on projects with NOPs filed before July 1, 2015, can utilize the EO B-10-11 process and those with NOPs filed on or after July 1, 2015, can employ either AB 52 or EO B-10-11. The State Water Board issued the NOP to develop the environmental review document for the Sacramento/Delta update to the Bay/Delta Plan on January 24, 2012, which is 2.5 years before AB 52 took effect. Although the Sacramento/Delta update to the Bay-Delta Plan was initiated prior to the passage of AB 52, the State Water Board continues to engage with all interested parties throughout the planning process, including conducting consultation with interested tribes consistent with EO B-10-11 and its Tribal Consultation Policy. The State Water Board’s Tribal

Consultation Policy is consistent with and builds upon the 2020 CalEPA Protocol and guides the agency and its boards, departments, and offices in their daily operations to ensure that they work with tribes in a knowledgeable, sensitive, and respectful manner.

11.4.2 Consultation Letters

The State Water Board continues to actively seek consultation with California Native American tribes consistent with EO B-10-11 and its Tribal Consultation Policy. Given the significant tribal interest in the Bay-Delta Plan, the State Water Board is moving forward with tribal consultations under the EO B-10-11 process to hear and learn from tribal perspectives on this project.

On January 13, 2023, State Water Board staff mailed EO B-10-11 letters offering formal consultation on the update and implementation of the Bay-Delta Plan to approximately 90 California Native American tribes identified within the Bay-Delta and Trinity watersheds. The EO B-10-11 letters also contained general information on the Bay-Delta Plan and the efforts to update and implement the Bay-Delta Plan, as well as a timeline for milestones. Tribal contact information was obtained through the State Water Board's Office of Public Participation's tribal consultation list, which is periodically updated with information from the Native American Heritage Commission.

11.4.3 Board Workshop on Draft Scientific Basis Report Supplement

On January 19, 2023, the State Water Board held a public workshop on the *Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the Bay-Delta Water Quality Control Plan (Scientific Basis Report Supplement)*. The workshop followed a Board information item on the process and timeline for updating the Bay-Delta Plan and was attended by several Board members. The workshop consisted of a presentation by staff from the State Water Board, California Department of Fish and Wildlife, and Department of Water Resources, followed by public comments. Notice of the workshop was distributed via State Water Board email subscription lists, including a dedicated tribal matters list.

In response to the State Water Board release and workshop on the draft Scientific Basis Report Supplement, comments were submitted both verbally and in writing identifying the need for additional tribal consultation and inclusion of Traditional Ecological Knowledge (TEK) in the Bay-Delta Plan update and implementation processes, as well as the voluntary agreements (VA) processes. Comments were also received endorsing the incorporation of Tribal Beneficial Uses (TBU) into the Bay-Delta Plan.

11.4.4 Tribal Listening Sessions

In addition to consultation letters, the State Water Board held tribal listening sessions to provide background information on the Bay-Delta Plan update and implementation processes and to hear feedback from interested tribal representatives. On March 15, 2023, staff held the first tribal listening session. Invitations for the tribal listening session were sent to approximately 100 tribes via email, using contact information provided by the State Water Board's Office of Public Participation. Additional phone calls were made to these tribes promoting the listening session. The following five tribes participated: Winnemem Wintu, Shingle Springs Band of Miwok Indians, Yurok Tribe, Federated Indians of Graton Rancheria, and Santa Rosa Rancheria Tachi Yokut Tribe.

During the first listening session, tribal representatives expressed concerns with the Board's tribal outreach and engagement efforts and with the VA process. Tribal representatives also expressed interest in the State Water Board moving forward with adding TBUs to the Bay-Delta Plan. The listening session was recorded and is available on the State Water Board ftp site. The presentation slides are posted on the State Water Board's Tribal Consultation webpage (SWRCB 2023c).

On May 4, 2023, staff held a second tribal listening session focused on the Sacramento/Delta update to the Bay-Delta Plan and discussed efforts to incorporate TEK into the planning process and possible Board consideration of TBUs as part of the Update to the Bay-Delta Plan. Tribal participants reiterated their interest in the State Water Board moving forward with the addition of TBUs to the Bay-Delta Plan and the value of incorporating TEK into the planning process. The staff presentation portion of the listening session was recorded and is available on the State Water Board website (SWRCB 2023).

11.4.5 California Tribal Water Summit

As a result of the 2005 update to the California Department of Water Resource's (DWR) *California Water Plan*, a recommendation to increase tribal engagement in statewide, regional, and local water planning initiated formation of a Tribal Communications Committee. The purpose of this committee is to advise DWR on how to improve outreach and communication with the more than 160 Native American tribes in California. The California Tribal Water Summit was created on recommendation by the Tribal Communications Committee, with the first summit held in November 2009. The goal of the Tribal Water Summit is to engage with tribes to develop strategies for preserving Native water rights and providing for the sustainable management of California's sacred waterways. (DWR 2023)

In 2023, the second Tribal Water Summit was hosted by DWR from April 11 to April 13, 2023. The summit convened tribal, state, and federal leaders to discuss water issues and strategies toward watershed resilience of California's sacred waters. The State Water Board was invited to attend and participate in plenary discussions and individualized workshops on topics ranging from water rights to Federal Energy Regulatory Commission licensing issues. While at the Summit, State Water Board attendees engaged with tribal representatives from across the state of California and tribes specifically connected to the Bay-Delta watershed. (DWR 2023)

11.4.6 Tribal Meetings

As a result of engagement with tribal representatives at the 's California Tribal Water Summit, State Water Board staff were invited to participate in a May 2, 2023, Tribal Coalition meeting related to the Bay-Delta watershed. At the meeting, Board staff received input from participating tribes on the Board's Bay-Delta Plan update and implementation efforts and addressed questions. During the May 2 meeting, Board staff were invited by tribal representatives in attendance to collaborate with them to document tribal feedback and TEK (see Section 11.7, *Traditional Ecological Knowledge*) for possible updates to the Bay-Delta Plan.

The State Water Board recognizes the outsized benefits gained from connection and interaction with smaller groups during in-person meetings. With this recognition, the State Water Board is committed to continuing individual meetings with interested tribes or tribal representatives to discuss Bay-Delta Plan update and implementation efforts.

11.4.7 Commitment to Ongoing Engagement and Coordination

The State Water Board is committed to ongoing engagement with California Native American tribes throughout the processes to update and implement the Bay-Delta Plan. Tribal input will be considered during the public review and comment process that informs development of final proposed Plan amendments for consideration and adoption by the Board. In addition to the public process, Board staff are available to engage with tribes individually to receive feedback and answer questions. The State Water Board is also committed to engaging with tribes through the implementation phase of the Bay-Delta Plan when the State Water Board may consider regulations or voluntary actions to meet the Plan's flow and water quality objectives. The State Water Board is also committed to engaging with tribes throughout the adaptive management phase of the Bay-Delta Plan when the Board considers and implements adaptive actions as needed that are consistent with the Bay-Delta Plan based on monitoring and special studies to improve the effectiveness of implementation actions. Finally, the Board recognizes the importance of considering tribal perspectives in the evaluation phase where the Board will evaluate the overall effectiveness of the implemented Plan and consider whether changes may be needed to the Plan or its implementation.

11.5 Tribal Beneficial Uses

TBUs are a group of beneficial uses that can help protect activities specific to Native American cultures and their uses of California waters, including consumption of non-commercial fish or shellfish. TBUs can also be referred to as *cultural uses of water*.

California Native American tribes use California's surface waters in a manner unique to tribal culture, tradition, ceremonies, and lifeways. TBUs provide a way to reasonably protect certain uses of water that directly relate to Native American cultures. In some cases, the levels of waste allowed to be released into California waters (discharge requirements) or existing water quality standards may not reasonably protect TBUs. To account for this, in 2017 the State Water Board identified and described beneficial uses unique to California Native American tribes, in addition to subsistence fishing by other cultures or individuals (SWRCB 2020).

Tribal and Subsistence Fishing Beneficial Uses are defined as follows.

- Tribal Traditional Culture (CUL) – Uses of water that support the cultural, spiritual, ceremonial, or traditional rights or lifeways of California Native American tribes, including but not limited to, navigation, ceremonies, fishing, gathering, or other consumption of natural aquatic resources (including fish, shellfish, vegetation, and abiotic materials).
- Tribal Subsistence Fishing (T-SUB)* – Uses of water involving noncommercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities of California Native American tribes to meet needs for sustenance.
- Subsistence Fishing (SUB) – Uses of water involving non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities, to meet needs for sustenance.
 - *The SUB beneficial use does not explicitly pertain to “California Native American tribes,” as that phrase is defined but may, nevertheless, reflect activities of tribal governments as well

as tribal members, tribal-focused organizations, and the public. As a result, this document collectively refers to the three beneficial uses as the “Tribal Beneficial Uses (TBUs).”

11.5.1 State Water Resources Control Board Resolution No. 2017-0027 (2017)

In 2017, through Resolution No. 2017-0027, the State Water Board established and defined two beneficial uses unique to California Native American tribes and a third beneficial use unique to people and communities who engage in subsistence fishing. These beneficial uses were developed in collaboration with California Native American tribes and the public. Together, these beneficial uses are generally referred to as Tribal Beneficial Uses (TBUs) and include Tribal Subsistence Fishing (T-SUB), and Tribal Tradition and Culture (CUL) beneficial uses.

This resolution established three new beneficial use classifications for use by State and regional water boards as described above.

11.5.2 Regional Water Board Tribal Beneficial Use Status

The nine regional water boards are in different stages of their Basin Plan amendment processes to include the TBUs and designate surface waters with those uses. The State Water Board’s Tribal Affairs website (SWRCB 2023b) presents the Regional Water Board progress updates on TBUs. Updates include the status of engagement efforts, including education (website), outreach (informal), and consultations (formal).

11.5.3 Consideration of Adding Tribal Beneficial Uses to Bay-Delta Plan

In response to feedback received on TBUs, at its meeting on June 7, 2023, the State Water Board included an Informational Item on consideration of adding TBUs to the Bay-Delta Plan. Staff presented the current status of the Bay-Delta Plan update, provided a summary of tribal outreach and engagement efforts to date, and outlined the tribal and subsistence fishing beneficial uses under Board consideration for addition to the Plan. Following the staff presentation, a California Native American tribal panel addressed the Board on the significance of TBUs to California Native American Peoples, their culture, heritage, and way of life, along with sharing TEK with the Board surrounding tribal perspectives on water and its significance to Native American lifeways. The tribal panel comprised representatives from the Winnemem Wintu Tribe, Shingle Springs Band of Miwok Indians, Buena Vista Ranchería of Miwok Indians, and an additional tribal individual representing the non-governmental organization Save California Salmon.

A public comment period followed the staff presentation and tribal panel, during which the Board heard substantial support for adding tribal and subsistence fishing beneficial uses to the Bay-Delta Plan. Commenters also called for the Board to recognize that these beneficial uses should apply throughout the watershed, avoiding the specific designation process employed by the regional water boards. The Board is expected to make a decision on the pathway for incorporating, designating, and protecting TBUs when Plan amendments are scheduled for adoption at a Board Meeting in 2024.

Aquatic life beneficial uses identified in the Bay-Delta Plan form the basis for implementation actions related to flow, water project operations, and physical restoration for the reasonable

protection of fish and wildlife. However, during the Bay-Delta Plan update outreach efforts, tribal members and representatives expressed that numerous tribal beneficial uses are intrinsically reliant on a healthy aquatic ecosystem and inherently encompass the deep connection many tribes have with fisheries, specifically salmon; and that flow-based actions to support aquatic life would also strengthen or further those connections. That is, numerous cultural and other uses of water by the tribes within the state are predicated in significant respects on vital and healthy fisheries.

The State Water Board recognizes the centrality that vital fish populations and aquatic life have for cultural, spiritual, ceremonial, and traditional rights and lifeways. Except in large part the health-based, consumption-related activities within the TBUs as specified in the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, activities within the CUL use may be directly supported by flow actions, including for example, navigation, gathering of natural resources, immersion ceremonies, and ceremonies that involve thriving fisheries (see Section 11.6.6.3, Importance of Flow and Water Quality to Tribal Uses of Water). Similarly, while T-SUB and SUB relate to the risks to human health from consumption of noncommercial fish or shellfish at higher rates and were not developed to in and of themselves protect aquatic life, a thriving fish population could support fishing at higher consumptive rates; therefore, flow actions for the reasonable protection of fish and wildlife are related to the T-SUB and SUB beneficial uses on the same waters. Implementation measures for the reasonable protection of fish and wildlife also will inure to the benefit of subsistence fishing by tribes and non-tribal communities.

The project would increase instream flows, change reservoir storage levels, and reduce the availability of surface water supplies under certain circumstances or conditions. There are many important water uses that must be considered carefully when determining regulatory flow requirements for fish and wildlife, including municipal, industrial, agricultural, hydropower, and recreational uses as well as other environmental uses such as wetlands and refuges. Implementation mechanisms are intended to be flexible to encourage innovative solutions by various parties and accommodate a variety of different watershed circumstances and needs. Reconciliation of the Bay-Delta ecosystem will require an unprecedented level of coordination and cooperation with agencies, water users, environmental groups, tribes, and other interested parties. Incorporating TBUs into the Bay-Delta Plan recognizes the tribes' participation in this process.

Incorporation of the TBU definitions into the Bay-Delta Plan is not proposed as a formal "designation" of the uses as applying to specific waterbodies or waterbody segments within the Bay-Delta. California's Porter-Cologne Water Quality Control Act envisions that most water quality control planning will be accomplished on a regional, hydrologic basis by the regional water boards. (Wat. Code, §§ 13000, 13240–13245.) In addition to the Bay-Delta Plan, there are two foundational water quality control plans (basin plans) that designate the beneficial uses of all the waterbodies within the two regions, including the waterbodies in the Bay-Delta watershed, which includes portions of both regions. These two basin plans are the Central Valley Regional Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins and the San Francisco Bay Regional Water Board's Water Quality Control Plan for the San Francisco Bay Region. For waters subject to the Clean Water Act, the beneficial uses designated in these two basin plans serve as designated uses under the Clean Water Act, and the water quality objectives to protect those uses serve as criteria under the Clean Water Act. (33 U.S.C., § 1313(c); 40 C.F.R. §§ 131.2, 131.4.) The water quality standards for the Bay-Delta watershed are largely established in these two basin plans.

While the two regional basin plans serve as the bedrock water quality standards-setting function of the Porter-Cologne Act and the federal Clean Water Act, the State Water Board has adopted an additional water quality control plan, the Bay-Delta Plan, that overlays the two basin plans in the Bay-Delta watershed. The State Water Board's Bay-Delta Plan is a recognition that discharges of waste, including discharges regulated through National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements for nonpoint-source discharges, are not the only sources of pollution affecting the Bay-Delta ecosystem. Instead, water diversions from the Bay-Delta watershed's rivers and streams, including large export diversions from the Delta by the CVP and SWP, have created an additional, significant nonpoint-source of pollution that has degraded the ecosystem, contributing to the decline of native fish populations. The State Water Board developed the initial Bay-Delta Plan and subsequent updates to focus on impacts from, and regulatory actions potentially available to address, the water quality and beneficial use impacts from water diversions in the Bay-Delta watershed. The State Water Board could do so because, unlike the regional water boards, it has direct authority to regulate diversions of water, including through its permitting and licensing of post-1914 appropriative water rights. (Wat. Code, §§ 174, subd. (c), 1200-1851, and 13170.)

The three plans work together to provide the foundational requirements for protecting beneficial uses of the Bay-Delta watershed. All NPDES permits issued within the Bay-Delta watershed by the State Water Board, Central Valley Water Board, and San Francisco Bay Water Board include provisions to require compliance with applicable water quality standards. (33 U.S.C., § 1311(b)(1)(C).) Likewise, waste discharge requirements and conditional waivers issued under the Porter-Cologne Act (which governs all discharges of waste—not just from point-sources—to all waters of the state—not just navigable waters) by the State and the two regional water boards protect beneficial uses identified within the three basin plans. (Wat. Code, §§ 13263, 13269). The State and the two regional water boards also issue water quality certifications to implement section 401 of the Clean Water Act and assure compliance with state water quality standards and other applicable provisions of state law, including those specified in the three basin plans. (33 U.S.C., § 1341; Wat. Code, § 13160.) Put simply, the State Water Board and the two regional water boards have a comprehensive program for water quality protection that draws on the three distinct plans and myriad authorities to implement them. No one plan provides all the solutions, and actions are taken under a variety of authorities to implement the three plans and to protect beneficial uses of water.

Additional work and collaboration are needed among the tribes, the State Water Board, and the regional water boards to define the proper scope and identify the effects of formal designations as applicable to the geographical area of the Bay-Delta watershed. The CEQA component of the Staff Report for the Bay-Delta Plan update may be used to support flow-related actions that support TBUs and water quality actions in a programmatic way. Prior to formal designation of the TBUs, the State Water and the two regional boards will exercise their existing authorities to protect the TBUs on a case-by-case basis where supported by the evidence. This applies to discharge permitting and specific water right actions. In addition, the State and regional boards recognize that actions taken to protect aquatic habitat also benefit many of the tribes' connections to the fish and the waters, regardless of the status of TBU designations.

11.6 Traditional Ecological Knowledge

11.6.1 Incorporating Traditional Ecological Knowledge

During public outreach and engagement activities in support of proposed Sacramento and Delta updates to the Bay-Delta Plan, the State Water Board received requests from California Native American tribes to incorporate TEK into proposed Plan amendments and implementation measures to inform reasonable protection of beneficial uses and TBUs that are under consideration for incorporation into the Bay-Delta Plan. As a result of these requests, State Water Board staff have engaged in efforts to document TEK and traditional resource management strategies of federally recognized and non-federally recognized tribes whose historical lands fall within the Bay-Delta watershed, including its tributaries. Part of these efforts include a literature review of TEK, which has formed the bulk of the State Board's current knowledge of TEK relevant to the Bay-Delta Plan update and implementation process. However, the availability of TEK in the literature is limited because tribes are often hesitant to share their knowledge for fear that they will lose the rights to their data, threatening their tribal sovereignty (^Huntington 2000; ^Carroll et al. 2021). Conversations between Board staff and tribal representatives have confirmed this perspective. Board staff acknowledge the limitations of literature review and are currently pursuing other avenues for documenting TEK.

To continue the ongoing process of documenting TEK, the State Water Board held two tribal listening sessions and other meetings with coalitions of Bay-Delta tribes during 2023 (Section 11.5, *Outreach and Engagement with Tribes*). Board staff are also currently exploring working with individual tribes to interview tribal members and document their TEK. This effort will involve relationship building and ongoing dialogue with tribal representatives. The process may involve workshopping interview questions with tribal cultural and natural resource representatives, interviewing tribal members, documenting TEK in narrative form, and providing for review of the resulting narrative with tribal representatives to ensure that it represents tribal perspectives and respects tribal data sovereignty. This additional TEK and TEK that may be provided in comments on this draft Staff Report is planned to be incorporated in the next version of this Staff Report. Tribal engagement to document TEK is also planned to continue after completion of the current updates to the Bay-Delta Plan to inform adaptive management and future updates to the Bay-Delta Plan.

11.6.2 Description of Traditional Ecological Knowledge

Traditional ecological knowledge is often defined in the academic literature as “a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes et al. 2000). TEK can be considered a form of adaptive management. From conversations with California Native American tribes, we have learned more about what TEK is; it may be described as knowledge of historical and lived experiences in the environment, passed down through many generations. Yurok tribal members described TEK as a “way of life” that includes aspects of science, spirituality, and cultural traditions. Yurok TEK includes knowing how and when to gather, hunt, harvest, and prepare traditional foods. The essence of Yurok TEK can be expressed through a word in the Yurok language that means “to take care of the Earth” (^Ramos 2021).

Whereas western ecological knowledge is often quantitative, TEK is often qualitative, incorporating knowledge, teaching, practices, and spiritual beliefs (^Tolowa Dee-ni' Nation et al. 2017). TEK is also place-based; TEK from one tribe is not representative of TEK from all tribes in a region. In addition, all types of ecological knowledge are interconnected (e.g., fire, fish, rivers, estuaries, and more). Therefore, the parceling of management categories among U.S. state and federal agencies can be in direct conflict with how tribes conceptualize these ecological resources (Save California Salmon Series on TEK). The Western conservation perspective of limited human involvement with the environment is problematic for many Indigenous communities because, for them, landscape management necessarily includes Indigenous people. Historically, Indigenous people managed landscapes; they were not pristine and untouched (^Ramos 2021).

When incorporated with western ecological knowledge, TEK can improve the spatial and temporal resolution of environmental monitoring data and provide knowledge that predates that obtained by practitioners of western science. For example, TEK can provide knowledge about native fish species like Chinook salmon and native vegetation that are culturally significant to tribes and were prevalent prior to the arrival of European settlers (^Tolowa Dee-ni' Nation et al. 2017), as well as information about environmental conditions prior to and during human development of the landscape (^Usher 2000). Indigenous knowledge may also provide historical information about geographic distributions of native species (^Tolowa Dee-ni' Nation et al. 2017) and how they are influenced by environmental conditions.

TEK could improve ongoing monitoring and assessment of native species. For example, several tribes were interviewed to inform the California North Coast Marine Protected Area baseline (^Tolowa Dee-ni' Nation et al. 2017) for a 2017 collaborative project between the State Coastal Conservancy, the Tolowa Dee-ni' Nation, InterTribal Sinkyone Wilderness Council, Cher-Ae Heights Indian Community of the Trinidad Ranchería, the Wiyot Tribe, Ecotrust, and University of California, San Diego. Representatives from 10 tribes provided knowledge about changes over time in populations and geographic distributions of several culturally important keystone species (^Tolowa Dee-ni' Nation et al. 2017). In these interviews, tribal representatives were asked how species changed in abundance from harvests in childhood and early adulthood to 2015. Tribal members reported that harvests of culturally significant species, including abalone, clams, and smelt, were lower in 2015 than in childhood (^Tolowa Dee-ni' Nation et al. 2017). The interviews enhanced existing geospatial monitoring data by providing specific locations where tribal members harvested abalone throughout their lives, resulting in a fine-scale mapping of changes in abalone occurrence over time (^Tolowa Dee-ni' Nation et al. 2017). Overall, the findings demonstrated that smelt and abalone experienced the most significant declines of the species in question.

Indigenous knowledge was also incorporated into research and management of beluga and bowhead whales and forage fish in Alaska. This collaboration in monitoring and management between government scientists and Eskimo whalers has provided temporally and geographically extensive observations of herring and other forage fish dating from the 1930s, which has substantially improved the accuracy of population censuses of both fish and whales, enabling the government to increase the Eskimo bowhead-hunting quota (^Huntington 2000). These examples emphasize that TEK can improve resource management by offering a deeper understanding of historical environmental conditions over a longer time span and potentially at finer spatial or temporal resolution than western science.

In addition to improving environmental monitoring and assessment, inclusion of TEK in science-based decision-making can benefit tribes if effects on tribal resources are explicitly considered in

environmental policy and management (^Runge et al. 2015; ^Zedler and Stevens 2018). A salient example is the structured decision-making process undertaken by the U.S. Geological Survey to evaluate alternatives in the environmental impact statement and adaptive management of water releases from Glen Canyon Dam on the Colorado River. Performance metrics for the decision-making process were developed by the U.S. Bureau of Reclamation and National Park Service in collaboration with federal, state, tribal, and private experts; several tribes and the Bureau of Indian Affairs were cooperating agencies in development of the environmental impact statement. By considering TEK and spiritual resources, the collaborators developed scientifically based performance metrics for evaluating how well alternative scenarios for water management protected tribal resources (^Runge et al. 2015).

TEK is complementary to western ecological knowledge, and the two approaches combined can provide a more holistic and effective approach to adaptive management (^Zedler and Stevens 2018). Traditionally, native Californians tended the landscape, observing and applying different practices to improve yield of culturally important plant species; these same principles can be applied to adaptively manage restoration sites. Zedler and Stevens (^Zedler and Stevens 2018) propose a process of including TEK in restoration and adaptive management that they term “ecocultural restoration.” They develop an example of ecocultural restoration for floodplains in the Sacramento-San Joaquin Delta and suggest establishing a network of ecocultural restoration sites throughout the region. Their plan includes restoring culturally significant plant species during the floodplain restoration process and incorporating indigenous land stewardship practices into adaptive management of restored sites. They suggest that western ecological knowledge and TEK, along with traditional resource management, could be combined in adaptive management of floodplain restoration sites by engaging indigenous people in planning and decision-making, where western ecological knowledge provides the hydrological modeling and target plant assemblages to plan restoration and TEK provides information about historical species assemblages to inform planning. TEK could also identify culturally significant plants to include in target plant assemblages that are likely to establish successfully and outcompete nonnative plant species. Once the initial restoration activities are complete, traditional resource management could be applied to adaptively manage restoration sites. For example, tending plantings and using prescribed fire can favor ecoculturally important species in plant assemblages. Several restoration sites in the Bay-Delta watershed already incorporate Native American heritage, such as Cache Creek Nature Preserve, which includes a tending and gathering garden created by the California Indian Basketweaving Association (^Zedler and Stevens 2018).

11.6.3 Traditional Ecological Knowledge of Native American Tribes in the Bay-Delta Watershed

Native fish species are culturally significant to many tribes in the Bay-Delta watershed. Delta smelt, Chinook salmon, and green sturgeon are important food species for the Plains Valley Miwok culture (Hankins 2018), and green sturgeon are significant to the Yurok people (^Ramos 2021). Salmon (“NUR” is the Winnemem Wintu name for salmon) are integral to the Winnemem Wintu’s (Middle Water People’s) way of life in the McCloud River watershed region. The Winnemem Wintu have had a physical and spiritual connection with salmon for thousands of years. Their creation story tells of the connection between the Winnemem Wintu and the Salmon, where the first humans had no voice until the salmon gave their voice to the people; from then on, the fish were silent and the Winnemem Wintu promised to always speak for them (Mulcahy 2023). Salmon nourish their people; in return, the people speak for, protect, and care for the salmon (Middleton-Manning et al. 2018). Chinook

salmon also play a significant role in the Karuk's creator story and traditionally have provided half of the diet for Karuk tribal members in California (Norgaard 2014; Long and Lake 2018). Prior to colonization by European settlers, fish species including pacific lamprey, steelhead, coho, sockeye pink salmon, and Chinook salmon were abundant on Karuk tribal lands (Kondrashova 2020). The Karuk collectively imposed sustainable limits on harvests so that all tribes could depend on salmon as a primary food source (Norgaard 2014).

In addition to fish species, Native Californians likely harvested over 500 plant species from the Delta region (reviewed by Zedler and Stevens 2018). Along the San Joaquin River and its tributaries, people clustered near oak groves with abundant acorns. The Northern Valley Yokuts gathered acorns and established territories for fishing, hunting, and gathering. They subsisted primarily on fish, fowl, acorns, and tule roots but also relied on freshwater bivalves, small mammals, and corms, bulbs, grass, and forb seeds. California Native Americans harvested plants for medicinal, spiritual, and ceremonial uses (reviewed by Zedler and Stevens 2018). In the Delta, mugwort (*Artemisia douglasiana*) was an important medicine plant. Riparian plant species, including white root (*Carex barbarae*), willow (*Salix* spp.), deergrass (*Muhlenbergia rigens*), California hazelnut (*Corylus cornuta*), and western red bud (*Cercus occidentalis*), were used as basketweaving materials. Other plants such as milkweed (*Asclepias californica*) and Indian hemp (*Apocynum cannabinum*) were used to make fish and deer nets and for ceremonial regalia. Tule (*Schoenoplectus acutus*) was a culturally significant plant species; indigenous people used every part of the plant, and it served a variety of purposes, such as for food, building boats, and duck decoys for fishing and hunting.

11.6.4 Traditional Resource Management Practices in the Bay-Delta Watershed

Pre-modern development, California's grasslands, wetlands, oak chaparrals, old growth forests, and other environments were not truly wilderness, as they were tended for millennia by Native Americans through practices such as selective burning, planting, harvesting, and hunting (Claire and Surprise 2021). Traditional resource management improved landscape diversity and biodiversity and favored the growth of culturally important species (Zedler and Stevens 2018). It also improved streamflows. Before 1850, the lower Cosumnes River watershed was managed through planned burning to achieve more open riparian woodlands, reducing evapotranspiration and thereby prolonging streamflow during the wet season (Zedler and Stevens 2018). The Karuk used fire to selectively thin forests and increase streamflows based on the principle that certain species of trees and shrubs utilize more water than others (Norgaard 2014). With managed burns, the Karuk reduced forest density to decrease evapotranspiration and increase soil moisture and infiltration during rainstorms to improve availability of water in natural springs in the upper watershed, enabling more water to flow into tributaries. This practice was beneficial during drought years, when planned burns could remove the forest understory to enhance streamflow.

Traditional resource management practices in the Bay-Delta watershed also improved food yield. Roughly 75 percent of Karuk food and cultural species are enhanced by fire (Norgaard 2014). The Karuk managed fire to increase the prevalence of preferred plant species, including acorns, berries, roots, and fibrous materials and to improve the overall food quality of the forest for culturally important game species like deer and elk (Norgaard 2014). Selective burning also improved the yield of acorns, mushrooms, and lilies that the Karuk gathered. Indigenous People selectively harvested fish based on their developmental stage or time of year, such as restricting harvests during spawning, to manage fish populations (Zedler and Stevens 2018). Plains Miwok land

stewardship in the Delta is believed to have increased production and abundance of native fishes sufficient to supply one-third of Plains Miwok diet for as many as 57 people per square mile along the lower Cosumnes River streams and sloughs (Zedler and Stevens 2018).

11.6.4.1 Importance of Flow and Water Quality to Tribal Uses of Water

Tribal uses of water are connected to the hydrology and ecology of the Bay-Delta watershed. California Native American tribes rely on functional flows that resemble natural patterns of flow variability to sustain cultural uses of water (Moloney 2023). Flows support geomorphic, chemical, and biological processes that contribute to water quality and maintain tribal subsistence fishing and other tribal beneficial uses. For example, peak river flows are needed to move sediment and clean gravels, and to expose bare mineral soil. These exposed soils help cottonwood (*Populus* spp.) seeds germinate, and cottonwood flowering historically has coincided with peak flows. Cottonwoods provide building materials and medicine for tribes; thus, scouring flows sustain these cultural uses. Functional flows also cue salmon migrations and build floodplains to support salmon rearing (Moloney 2023).

Tribes in the Bay-Delta watershed need access to clean water as a spiritual and cultural resource and to protect human health (Moreno 2023). For example, the Winnemem Wintu utilize cultural sites for ceremonies along the McCloud River. Girls Puberty Rock is the site of a coming-of-age ceremony, and Children's Rock is where Winnemem Wintu children begin their journey along their spiritual and cultural path (Gary Mulcahy 2023). Other important sites include burial sites and medicinal gathering sites. The Winnemem Wintu hold the girls coming-of-age ceremony along the shore of the McCloud River; during the ceremony, they gather herbs and meditate, and they complete the ceremony by swimming across the river.

The Buena Vista Ranchería of Me-Wuk Indians ("people of the fish net") in Amador County, California of the Mokelumne River watershed (Miwok name for "fish net"), the lower San Joaquin River, and the southern Delta call water "Ki-ku" (Moloney 2023). To the Me-Wuk, "Ki-ku is life, Ki-ku is a relation," and Ki-ku connects their people to the past, present, and future. The Me-Wuk consider all water to be connected as "an entity with a life of its own, a relative who connects all things," a teacher and a guide, and a cleaning agent; therefore, water itself is a significant resource (Moloney 2023). Cultural uses of water include sustenance and maintenance of basic needs, for use as a material, to maintain health, provide medicine, hold ceremonies, and produce food. Water also sustains species that the Me-Wuk rely upon to meet their cultural needs. For example, willow is an important riparian plant that is used in basket weaving and building sweat lodges. Tribal uses of water are the historical human use and management of water in California; these uses have been disrupted by colonization, genocide, and other aquatic ecosystem stressors (Moloney 2023).

11.6.5 Effects of Aquatic Ecosystem Stressors on Tribal Uses of Water

Land development, water management infrastructure, flow alteration, climate change, nonnative species, and HABs are some of the aquatic ecosystem stressors that have negatively affected aquatic resources in the Bay-Delta watershed that are significant to California Native American tribes. Those stressors have in turn affected the physical, cultural, and spiritual health of tribal communities. Drained wetlands, diverted streams, and decimated fisheries have disrupted not only the ecology of the region but also the Indigenous Peoples' way of life (Claire and Surprise 2021).

Water management infrastructure such as channelization, levees, dams, and hydrologic alteration of streams have impacted tribes throughout the Bay-Delta watershed. These and other ecosystem stressors have degraded the abundance, accessibility, and quality of freshwater mussels, salmonids, lamprey, and sturgeon in northern California (Long and Lake 2018). Anadromous fish species, a staple of traditional tribal diets, have declined substantially. Salmon and tanoak traditionally provided half of the diet among members of the Karuk tribe. However, consumption of salmon has dropped from an average of 200 kilograms per person per year to 2.25 kilograms per person per year. The reduction in salmon harvest has resulted in low food security and poor health of tribal members, disrupted social relationships, and resulted in an overall decline in quality of life. Other aquatic ecosystem stressors such as climate change, invasive species, extirpations of culturally important animals, and contamination of streams by toxins have also reduced the availability of ecoculturally important resources (Long and Lake 2018).

Shasta and Friant Dams of the CVP flooded the land of the Winnemem Wintu and North Fork Mono Indians, respectively (Claire and Surprise 2021; Mulcahy 2023). Middleton-Manning et al. (2018) review how three Indian nations, the Pit River, Winnemem Wintu, and Mountain Maidu, have advocated for restoration and preservation of their homelands, as hydrologic alteration of rivers has significantly affected the tribal resources of these northern California Native American tribes. In 1947, Shasta Reservoir flooded over 90 percent of the Winnemem Wintu's homelands and prevented salmon from returning to their natal spawning sites in the McCloud River (Mulcahy 2023). Shasta Reservoir also affected traditional lives of the Pit River, Shasta, Modoc, and other nations, who relied on salmon that historically migrated upstream past the dam and whose homelands were flooded by the reservoir (Middleton-Manning et al. 2018).

Mountain Maidu homeland is in the headwaters of the north Fork Feather River in Plumas County and parts of Lassen and Butte Counties. Today, two federally recognized nations of Mountain Maidu people include Greenville and Susanville Rancherías, and two tribes petitioning for federal recognition include the United Maidu Nation and Tsi' Akim Maidu. The Maidu people have lost part of their way of life due to the powerhouses and dams constructed in the Feather River Canyon. A part of the circle of life for the Maidu was the annual trek to the canyon to harvest salmon and eels (the Maidu name for Pacific lamprey). Aside from losing access to salmon, eels, turtles, river otters, beavers, and other aquatic animals, they lost religious ceremonies and sites associated with the harvesting as well as their spiritual relationship with the salmon. Other food sources that were important to the Maidu, from animals that consumed the salmon, have also diminished (Middleton-Manning et al. 2018). Climate change has affected California Native American tribes through increased reliance on groundwater, decreases in native vegetation and wildlife, and degraded aquatic habitat (OEHHA 2022). Sea level rise has limited access to traditional sites along shorelines, and warm temperatures have increased toxins due to HABs in lakes, rivers, and streams, threatening tribal communities' access to clean water and food. Elevated temperatures along with reduced streamflows have harmed native fish, including salmon, that are of cultural and spiritual importance to many tribes. Invasive plants, such as water primrose (*Ludwigia* spp.), have increased in abundance due to climate change and have outcompeted culturally significant native plant species (OEHHA 2022).

11.6.6 Incorporating Traditional Ecological Knowledge into Bay-Delta Plan Implementation

Incorporating TEK into the Bay-Delta Plan update and implementation may inform reasonable protection of beneficial uses, including TBUs in the event that these beneficial uses are added to the Bay-Delta Plan. TEK may also improve the Plan's monitoring and assessment activities to evaluate whether implementation activities achieve objectives and provide for protection of beneficial uses. TEK could help shape adaptive implementation of flows to reasonably protect fish and wildlife beneficial uses and inform measures to support T-SUB if that TBU is added to the Bay-Delta Plan. Knowledge of how flows and voluntary measures such as habitat restoration could affect tribes' ability to access and use their cultural historical sites along waterways may also help protect CUL if that TBU is included in the Plan. Additionally, incorporating TEK and traditional resource management into habitat restoration can help achieve ecologically functional restoration sites that also sustain culturally and spiritually important species.

TEK may also help refine monitoring metrics used to assess the success of the Bay-Delta Plan implementation. For example, TEK could be incorporated into the Bay Delta Monitoring and Evaluation Program (BDMEP), which would include requirements for monitoring, assessment, special studies, and reporting activities necessary to implement the Plan (see Section 5.6.1.3, *Proposed Changes to Monitoring, Assessment, Special Studies, and Reporting* in Chapter 5, *Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta*).

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