

Guidelines for Funding Public Agencies  
under the  
California Stream Gage Improvement  
Program

**California Department of Water Resources**

**August 2024**

**State of California  
Natural Resources Agency  
Department of Water Resources  
Division of Regional Assistance**

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## Acronyms and Abbreviations

CalSIP	California Stream Gage Improvement Program
CDEC	California Data Exchange Center
CEQA	California Environmental Quality Act
CWA	Clean Water Act
DGS	Department of General Services
DWR	California Department of Water Resources
NAVD88	North American Vertical Datum of 1988
SB 19 Plan	<i>California Stream Gaging Prioritization Plan 2022</i>
State Water Board	State Water Resources Control Board
O&M	operations and maintenance
USGS	U.S. Geological Survey

# 1. General Information

## 1.1 Foreword

This document contains the California Department of Water Resources' (DWR's) California Stream Gage Improvement Program (CalSIP) Guidelines. The program is funded by the Budget Act of 2023 (Stats. 2023, Ch. 189, Section 43). This document contains the procedures for submitting questionnaires for funding. All qualified and interested public agencies (including federally recognized Tribes) are encouraged to submit a questionnaire to seek funding under CalSIP to telemeter, upgrade, reactivate, or install new stream gages (gage) and publicly share gage data.

## 1.2 Contact

For questions about this document or the program, please email the [California Stream Gaging Improvement Program](#).

## 1.3 Website

This document, as well as other pertinent information, can be found on the [CalSIP webpage](#).

## 1.4 Due Date and Questionnaire Submittal

Based on the desire to implement projects in a timely manner, and an unknown level of interest from potential applicants, the following submittal and evaluation process will be used.

- Interested public agencies need to start with submitting a short survey and location via online map. This can be done at any time and starts the application process. Information for the application questionnaire will follow.
- Submitted application questionnaires will be reviewed and evaluated monthly by close of business (5 p.m.) on the last business day of the month.
- Questionnaire submittals will be accepted starting August 15, 2024. The first monthly questionnaire submittal deadline is August 30, 2024. Questionnaires can be submitted at any time during the month.

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- Reviews will begin the business day following the monthly deadline.
- DWR will announce eligibility and tentative award notifications within three weeks after monthly due dates. DWR and the selected agency will enter into a funding agreement to implement the project and disburse project funding.
- Questionnaires that are deemed eligible but did not make priority selection for a given month will automatically be considered the following month.
- Questionnaires that are deemed ineligible will be returned. The agency can resubmit a refined questionnaire to address deficiencies for future monthly considerations.
- Questionnaires will be accepted until all available funding is awarded, or until December 31, 2024, whichever occurs first.

### **1.5 Questionnaire Materials**

See Attachment 2, "Funding Questionnaire Content," for general questions requesting agencies should be prepared to address. Questionnaires will be an online fillable form. Refer to Section 6, "Project Solicitation," for additional details. In summary, applicants will start the application process by submitting an interest survey on an online map for each site, at which point these will be evaluated for eligibility. If eligible, questionnaire links will be sent to requesting agencies. If requesting agencies experience connectivity issues or have questions, please contact the program for assistance.

Each gage site will require a separate evaluation process for location-based criteria, and thus will require a separate survey and questionnaire.



## 2. Purpose of Guidelines

This document describes the process, procedures, and criteria that DWR will use to fund public agencies to telemeter, upgrade, reactivate, or install new gages and publicly share data as part of CalSIP. This document provides general information about CalSIP and instructions on submitting questionnaires for funding including CalSIP requirements, eligible applicants and projects, submittal process, questionnaire evaluation process, the interagency agreement and award process, and expectations of agencies receiving funding.

### 3. Program Introduction and Overview

Senate Bill (SB) 19 (Stats. 2019, Ch. 361, Section 2.) directed DWR and the State Water Resources Control Board (State Water Board) to develop a plan to deploy a network of stream gages to help address significant gaps in information needed for water management and the conservation of freshwater species. The SB19 legislation directs that priority be given to places where lack of data contributes to conflicts in water management or where water can be more effectively managed for multiple benefits, including water supply, flood, water quality, ecosystems, and reference gages. DWR and the State Water Board coordinated with the California Department of Fish and Wildlife, Department of Conservation, and interested entities to develop the recommendations.

Following the directions of SB 19, the interagency group developed, and the State Water Board published, the [\*California Stream Gaging Prioritization Plan 2022\*](#) (SB 19 Plan). The SB 19 Plan includes recommendations to upgrade existing stream gages, install new stream gages, reactivate historical stream gages, and install water temperature sensors to existing stream gages. The plan identifies the top locations at a watershed level to make improvements based on analysis that was conducted for the development of the plan.

The SB 19 Plan sets a robust foundation for where stream gages can be installed to maximize benefits for various management activities. While this CalSIP utilizes many of the recommendations and logic of that plan, it also recognizes operational limitations of operators that may not be able to install and operate gages in all high-priority locations. CalSIP serves to disburse fiscal resources to public agencies and federally recognized Tribes in a timely and judicious manner to best enhance the surface water monitoring network in the state.

CalSIP serves to execute funding agreements as soon as reasonably possible with a deadline to award by March 1, 2025, and to fully execute agreements by June 30, 2025. Gages should be fully operational by October 1, 2026. This requires recipient local agencies to faithfully and diligently, permit and install gages within 15 months. Failure to make this deadline will require justification and coordination with DWR and may result in loss of funding. Final reimbursement invoices must be submitted to DWR by April 15, 2027.

### 3.1 Intent and Objectives

The intent of CalSIP is to support the reactivation and deployment of priority stream gages consistent with the SB 19 Plan. Funds for this program were authorized by the Legislature pursuant to the Budget Act of 2023. DWR is electing to award funding on a competitive basis to public agencies to expedite benefit to the stream gage network. CalSIP aims to implement the needed infrastructure improvements, and operations and maintenance, for stream gaging data collection that provides reliable real-time stream flow data to the public. CalSIP will support projects and programs that provide real-time flow (flow, depth, or elevation) and water-quality data to the public stream gage network to assist with the management of the state's water resources. Potential projects include the installation of new stream gages, integration of existing stream gage data into public databases, reactivation of historical stream gages, upgrades to existing stream gages, purchase and installation of stream gaging equipment, and maintenance and operation of stream gages installed under CalSIP. The data must be telemetered and will be published real-time for public viewing. The data must be certified by a qualified licensed civil engineer or hydrologist no less frequently than annually.

Entities must commit to operating and maintaining the stream gages through the useful life of the stream gage. The useful life of a stream gage is typically a minimum of five years of continuous operation of measuring and telemetering data.

## 4. Eligibility Requirements

### 4.1 Eligible Funding Applicants

Applicants applying to the CalSIP must meet all relevant eligibility criteria to be considered for funding. In addition, entities that are currently recipients of another funding from DWR must comply with the terms of that funding. Eligible applicants include:

- Public agencies (e.g., counties, cities).
- Special districts (e.g., school districts, community service districts, irrigation districts, flood control districts, reclamation districts, groundwater sustainability agencies, colleges, and universities).
- Federally recognized Tribes.
- Any of the above public entities that have adequate (or consultant) expertise and qualifications to install and operate a stream gage that yields robust data.

### 4.2 Tribal Status

DWR acknowledges federally recognized Tribes are protected by the doctrine of sovereign immunity. If a Tribe is awarded funding, DWR will consult with the Tribe on a government-to-government basis to execute a limited waiver of sovereign immunity prior to the execution of a funding agreement. An example of a limited waiver of sovereign immunity is available in Attachment 7, "Limited Waiver of Sovereign Immunity Template."

### 4.3 Eligible Project Types

To be eligible for the CalSIP funding, projects must provide real-time stream data to the public stream gage network through the [California Data Exchange Center](#) (CDEC). Eligible projects need to provide data to inform at least one program water management areas (e.g., flood, water quality, water supply, ecosystem).

Eligible gaging sites must:

- Be on natural waterways within California (not on canals or diversion ditches where flows are controlled by diversion structures where primary function is for conveyance and distribution of surface water).

#### 4. Eligibility Requirements

- Provide telemetered real-time stream gage data (15-minute intervals). The measurement and reporting of the stage (water surface elevation in feet, North American Vertical Datum of 1988 [NAVD88]), flow (discharge in cubic feet per second), and water temperature in °F, are preferred.
- Have an operational gage by October 1, 2026.

Projects and locations not eligible for CalSIP funding include:

- Canals or waterways developed and maintained for water delivery, non-natural waterways.
- Operations and maintenance (O&M) for current stations.

Examples of projects that meet the intent of CalSIP are provided in Table 1. This list is not exhaustive; other projects can be considered at the discretion of DWR. Proposed gage locations are not limited to the priority watersheds identified in the SB 19 Plan; sites located outside of SB 19 priority watersheds are eligible.

**Table 1 Examples of Eligible Projects Category**

<b>Eligible Projects</b>	<b>Project Examples</b>
New Stream Gage	Installing a new stream gage on a natural waterway. This would include obtaining the necessary permits, purchase of equipment, installation of equipment, development of a rating curve, and operation and maintenance of the stream gage through at least June 30, 2027. The entity must share the data publicly during the useful life of the stream gage.
Reactivate Stream Gage	<p>Utilize an historic stream gage station, or previously used site, and replace equipment or otherwise reactive the station. This may include obtaining the necessary permits, purchase of equipment, installation of equipment, development or verifying prior rating curve, and operation and maintenance of the stream gage through at least June 30, 2027. The entity must share the data publicly during the useful life of the stream gage. Reactivation can include installation of a gage in the same pool or within hydraulic connectivity of the prior or historic gage site. The adjusted location needs to be disclosed and addressed.</p> <p>Reactivations may include prolonging site operations for an eligible site where temporary or non-discretionary funding will terminate in the immediate future.</p>
Integration of Private Stream Gage Data	Provide real-time stream flow data from existing operational gages (that are not currently publishing data) to the public stream gage network. This would include purchasing any equipment necessary to telemeter and provide data to CDEC. The entity must continue to provide the stream gage data publicly thorough useful life of the stream gage.
Upgrade of Existing Stream Gage	Installation of additional sensors (temperature, dissolved oxygen, pH, turbidity, EC), equipment, telemetry (recording and transmitting of data without in-person effort), or camera. The entity must continue to operate the sensors through at least June 30, 2027. The entity must share the data publicly during the useful life of the sensors.
Emerging Technologies	Various technologies are available for funding that enhance stream gage network. Some of these technologies include automated discharge measurements or machine learning-based flow forecasting.

Table 1 Note: Useful life of a stream gage is typically a minimum of five years of continuous operation of measuring and telemetering data.

## 5. Program Requirements

### 5.1 Time Limit

DWR shall award funding and execute funding agreements as soon as reasonably possible with a deadline to issue final awards by March 1, 2025, and to fully execute agreements by June 30, 2025.

Gages will need to be fully operational by October 1, 2026. This requires recipients to fully permit and install gages within no less than 15 months.

After contract execution, expenditures can be invoiced for reimbursement up to the expenditure deadline of March 30, 2027. Final invoices must be submitted by April 15, 2027. Funds are liquidated June 30, 2027.

### 5.2 Matching Funds and Cost-Sharing

Cost-sharing is not required, but it is encouraged. Matching funds for project expenses will not be a factor in evaluating sites for funding. But preference will be given to those sites that will provide long-term operations and maintenance beyond the life of the agreement.

If entities plan on using matching funds, awardees shall provide details of all other costs (including O&M costs), and funding sources integral to the project that are not covered by CalSIP funding. In addition, awardees must show cost share (e.g., federal, local, other funds, or in-kind services) if an awarded project costs more than the approved fund amount.

Any project awarded program funds must be completed, with the gage operational, by October 1, 2026. Failure to complete the project by an awardee may be considered breach of contract and may result in the required repayment of program funds disbursed.

### 5.3 Eligible Costs for Reimbursement

Only costs incurred from the final execution date of the agreement will be eligible for reimbursement. Eligible project costs may include the reasonable costs of site identification, engineering, design, construction, and other work directly related to the scope of work. Reimbursable administrative expenses

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and other necessary incidental costs that are directly related to the project are eligible for reimbursement.

Costs associated with travel are eligible for reimbursement if the travel expenses are reasonable, justifiable, and necessary for the successful completion of the project. Allowable reimbursement rates for mileage, lodging, and per diem are limited to the requirements specified by the [California Department of Human Resources](#). No travel outside the State of California shall be reimbursed unless prior written authorization is obtained from the State.

Operation and maintenance costs for stream gage is allowed and is required to sustain gage operation.

Costs that are not eligible for reimbursement include:

- Costs incurred prior to the execution of the funding agreement.
- Purchase of equipment that is not an integral part of the project.
- Purchase of supplies that are not an integral part of the project.
- Establishing a reserve fund.
- Replacement of existing funding sources for ongoing stream gaging stations.
- Support of existing punitive regulatory agency requirements and mandates.
- Purchase of land (in fee title) in any capacity. Real property rights (access and construction easements) more than the minimum required acreage necessary to operate as an integral part of the project, as set forth and detailed by engineering and feasibility studies.
- Payment of principal or interest of existing indebtedness or any interest payments.
- Costs incurred as part of any necessary response and cleanup activities required under the Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; Hazardous Substances Account Act; or other applicable laws.



- Any federal or state taxes. Sales tax does apply (is allowed to be reimbursed) as it is distributed to a combination of State, county, and local governments.
- Expenses incurred in preparation of the proposal or an application for another program.
- Any indirect costs up to 25% of the overall awarded amount. Indirect cost is defined as a cost incurred for a common or joint purpose benefiting more than one cost objective and are not readily assignable to the funded project (i.e., costs that are not directly related to the funded project). Examples of indirect costs include:
  - Central service costs.
  - General administration of the funding recipient.
  - Non-project-specific accounting and personnel services performed within the funding recipient's organization.
  - Depreciation or use allowances on buildings and equipment; the costs of operating and maintaining non-project-specific facilities.
  - Tuition.
  - Conference fees.
  - Generic overhead or markup.
- This prohibition applies to the awardee and any subcontract or sub-agreement for work on the funded project that will be reimbursed with program funds from DWR.

### **5.4 Performance Expectations**

Specific performance expectations will be included in the scope of work in applicable agreements. These requirements are generalized and provided here for reference and information to applicants.

#### **5.4.1 Minimum Duration of Operation**

As noted in Section 5.1, "Time Limit," gages will need to be operated for a minimum duration of one water year (October 1–September 30) to yield value from the installation and activation effort. Note that evaluation criteria for funding include the duration of extended operation. The entity must share the data publicly, via CDEC, during the useful life of the stream gage.

#### **5.4.2 Installation and Operation Standards**

It is imperative that the data produced from stream gages is robust and reliable. To achieve this, it is expected that each site will follow a minimum standard of practice and care for the installation, calibration, and continuous operation of a stream gage.

Telemetered data shall be decoded and posted on CDEC that follows the process outlined in Attachment 5, "Stream Gage Operations Reference Document."

#### **5.4.3 Annual Data Certification Process**

To provide quality control and quality assurance to the program, each gage will be required to submit annually, to DWR, for review and approval of the data, the rating curve adjustments, all field observations, and all operational information. This data will be reviewed for consistency with standard industry practice and operational standards (see Attachment 5). This final data will be posted on DWR's [Water Data Library](#) as validated data.

## 6. Project Solicitation

The following sections provide instructions and processes for public agencies and federally recognized Tribes to request and be awarded funding to implement stream gage improvements. There will not be a proposal solicitation package. As a result, applicants are encouraged to start the application process as soon as possible.

Questionnaires will be processed as they are received until funds are exhausted, or until December 31, 2024, whichever comes first. Questionnaires and supporting documentation received after this date will not be reviewed or considered for funding.

### 6.1 Publication of Guidelines

Publication of the guidelines will be posted on the [DWR CalSIP website](#).

### 6.2 Step 1: Initial Interest and Survey Submittal

For each stream gage site an agency is interested in working on, a GIS-based interest survey should be submitted through an [ArcGIS online map website](#). This online interest survey within the online map is structured to identify who is applying, the location of the site, gage elements, and general information about station installer or operator. This initial step serves three primary purposes:

1. Confirms the intended location of the site.
2. Provides an initial evaluation of the applicant and site to confirm the minimum criteria is met.
3. Avoids confusion on which entity may be requesting funding for a site.

After the station survey is submitted, an email response will be sent to the provided contact information to confirm submittal.

An initial eligibility evaluation will be performed. If the project does not meet minimum criteria, an email will be sent notifying the requestor why or where the proposed site is deficient. A new station survey will need to be submitted if the requestor desires to resubmit for future consideration.

If the project is deemed eligible, an additional email will be sent that provides a unique site ID, site name, site location coordinates, and a link to complete the questionnaire portion of the funding request process. The site will be added to the online map with a “pending” status label.

### **6.3 Step 2: Application Questionnaire**

An online questionnaire with standard questions will serve as the platform for submitting information and evaluating the site for funding under this program. Questions with context that will be in the questionnaire are provided in Attachment 2, “Funding Questionnaire Content.” Requestors will be able to submit information for multiple sites if applicable.

Upon completion of the questionnaire, an email will be sent confirming the submittal.

Questions on this process can be emailed to the [California Stream Gage Improvement Program](#). When submitting questions, please provide applicant information, unique site ID, and all applicable details.

## 7. Evaluation and Review

To allocate program funding to public agencies in a logical and effective manner, questionnaires will be scored based on established evaluation criteria.

### **7.1 Completeness and Eligibility Review**

Upon completion of the application questionnaire, a review on each site will be performed to confirm eligibility and completeness to fully evaluate the site and operator. If a questionnaire is determined to be ineligible, the questionnaire will not be reviewed or considered in the given round of evaluations. An email will be sent to the requestor addressing why the request was determined to be ineligible.

All eligible questionnaires will be evaluated as described below. The questionnaire will be evaluated based on its content. Requestors may be asked to provide additional information for clarification to the questionnaire.

### **7.2 Technical Evaluation Each Site Submittal**

All eligible program questionnaires will undergo a technical evaluation by no fewer than three CalSIP staff. Each site will be scored based on the scoring criteria in Attachment 3, "Evaluation Criteria," and the merits of information provided. Each site will be given a score based on the evaluation.

The threshold scores for awarding sites will be based on the relative scores in the evaluation period and available funding. Requestors with sites that will be recommended for funding will be notified by email. The email will provide additional information on the award process including confirmation that requesting public agencies consent to electronic signatures via the DocuSign platform, site ID or code, and confirmation of site coordinates.

For proposed sites that do not meet the threshold scoring, an email will be sent notifying the requestor that its questionnaire will automatically be submitted in the next (monthly) evaluation round unless the requestor elects to remove the questionnaire from consideration or resubmit with a revised application questionnaire.

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DWR is not obligated to award CalSIP funding if a proposed site does not provide appropriate value or certain elements that contribute to improving the stream gage network. Additionally, there is a minimal technical score each proposed site will need to meet to be eligible for funding.

## 8. Award and Agreement Process

If recommended for funding, the awardee will receive an email notifying them of approval and to start the funding agreement process. Additionally, the following site information will be provided to the awardee that will be referenced in the agreement and with the operation of the site:

1. CDEC Site ID (three-letter designation).
2. Latitude and Longitude coordinates (in NAD83).
3. Sensors to be telemetered and reported to CDEC (e.g., stage, flow, temperature).
4. CalSIP Site ID (issued previously).

### 8.1 Agreement Development Process

#### 8.1.1 Step 3: Provide Authorizing Resolution

Before the funding agreement will be drafted and advanced for review and execution, the awardee will need to provide an approved authorizing resolution (see Attachment 4, "Draft Authorizing Resolution"), and for federally listed Tribes, a limited waiver of sovereign immunity.

Following receipt of the awardee's resolution and limited waiver of sovereign immunity, DWR will develop the work plan and other elements of the funding agreement.

#### 8.1.2 Step 4: Review and Execution of Agreement

The draft funding agreement will be sent to the awardee for review and execution. The awardee will be the first to execute the agreement by hard copy (in triplicate), or through DocuSign.

The funding agreement will then be routed for signature by DWR and the to the Department of General Services (DGS) for final review and approval. Upon approval by DGS, the funding agreement will be considered executed, and reimbursement of expenses incurred from that point forward will be honored.

## **8.2 Contract Administration and Expectations**

Following the execution of the funding agreement, recipients shall follow the terms and requirements set forth in the agreement. Please refer to Attachment 1, "Funding Requirements," for pertinent information about performance during the agreement period.



# Attachment 1: Funding Requirements

A template funding agreement is available upon request. Below are several requirements that are within a funding agreement with DWR.

## **Conflict of Interest**

All participants are subject to State conflict-of-interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the proposal being rejected and any agreement being declared void. Other legal action may also be taken. Applicable statutes include Government Code Section 1090 and Public Contract Code Sections 10410 and 10411.

As part of the conflict-of-interest requirements, individuals working on behalf of a funding recipient (awardee) may be required by the State to file a Statement of Economic Interests (Fair Political Practices Commission Form 700) if it is determined that an individual is a consultant for Political Reform Act purposes.

## **Confidentiality**

Applicants should be aware that when submitting a proposal to the State, they will waive their rights to the confidentiality of the contents of the proposal. After a decision on a questionnaire has been made by DWR, the proposal is subject to disclosure pursuant to the California Public Records Act (Government Code, Section 7920.000 et seq.).

## **Labor Code Compliance**

As part of the funding agreement, the funding recipient shall agree to be bound by all the provisions of the Labor Code regarding prevailing wages and shall monitor all contracts subject to reimbursement from the funding agreement to assure that the prevailing wage provisions of the Labor Code are being met. Current requirements are available on the Department of Industrial Relations (DIR) [Labor Compliance Programs](#) webpage. Before submitting a questionnaire, applicants are urged to consult with their legal counsel regarding Labor Code compliance. DWR will not advise applicants on Labor Code compliance. For more information, please refer to DIR's [Public Works Manual](#). The funding recipient will also affirm that it is aware of the

provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance.

### **Compliance with CEQA and Other Environmental Laws**

All activities funded pursuant to the Program must comply with the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.). Any work that is subject to CEQA and funded under a funding agreement shall not proceed until documents that satisfy the CEQA process are received by DWR, and DWR has completed its CEQA compliance. Alternatively, the awardee shall notify DWR if they believe their activities will not be considered a project under CEQA, or that their activities qualify for a CEQA exemption. DWR must ensure the adequacy of the CEQA documents before it can provide funding; early coordination between the lead agency and DWR during the preparation of the CEQA documents will help expedite DWR's review and approval process.

If CEQA compliance by the awardee or lead agency is not complete at the time a funding agreement is executed by the parties, after DWR has considered the environmental documents, it may decide to require changes, alterations, or other mitigation to the project; or to not fund the project. Should the State decide not to fund the project, the funding agreement shall be terminated. Any work subject to CEQA that proceeds prior to DWR's review and approval process is completed, will not be reimbursed and the amount will be reduced from the award amount.

Other online information about environmental compliance can be found on the following CEQA webpages:

- [General compliance information.](#)
- [CEQA document submission.](#)

### **Greenhouse Gas Compliance**

In 2005, California Governor Schwarzenegger's Executive Order S-3-05 committed the State to reduce greenhouse gas (GHG) emissions. One year later, the governor signed the Global Warming Solutions Act of 2006 (Assembly Bill 32), which legally obligates the State to reduce GHG emissions to 1990 levels by 2020. Analysis of GHG emissions was made a

requirement in the CEQA guidelines in December 2009, becoming effective March 18, 2010.

All CEQA documents must analyze potential projects related GHG emissions. As a responsible agency, DWR must also evaluate potential GHG emissions for the proposed project before exercising its discretion to give final approval for a funding.

### **Competitive Bidding and Procurement**

An awardee's contracts with other entities for the acquisition of goods, services, and construction of public works with funds provided by the State must be in writing and shall comply with all applicable laws and regulations regarding the securing of competitive bids and undertaking competitive negotiations.

If a funding recipient does not have a written policy to award contracts through a competitive bidding or sole source process, the Department of General Services' [\*State Contracting Manual\*](#) rules must be followed. Applicants with questions regarding competitive bidding requirements should be directed to their counsel. DWR will not advise applicants on competitive bidding requirements.

### **Indemnify and Hold Harmless**

As part of the funding agreement, awardees shall indemnify and hold harmless the State, its officers, agents, and employees from all liability from any claims and damages (including inverse condemnation) arising from the planning, design, construction, repair, replacement, rehabilitation, maintenance, and operation of the project, and any breach of the funding agreement.

### **Records Retention Guidelines for Awardees**

The lists below provide details on the documents and records State auditors would need to review in the event a funding agreement is audited. Awardees should ensure that such records are maintained. Where applicable, this list of documents includes documents relating to the awardee's cost share that will be required for audit purposes.

## **State Audit Document Requirements**

### Internal Controls

1. Organization chart (e.g., agency's overall organization chart and organization chart for the funding or loan-funded program or project).
2. Written internal procedures and flowcharts for the following:
  - A. Receipts and deposits.
  - B. Disbursements.
  - C. State reimbursement requests.
  - D. Funding or loan expenditure tracking.
  - E. Guidelines, policies, and procedures on funding or loan-funded program or project.
3. Audit reports of the agency's internal control structure and financial statements for the last two years.
4. Prior audit reports on funding or loan-funded program or project.

### Contracts

1. All subcontractor and consultant contracts and related or partners' documents, if applicable.
2. Contracts between the agency and member agencies as related to the funding or loan-funded program or project.

### Invoices

1. Invoices from vendors and subcontractors for expenditures submitted to the State for payments under the funding or loan.
2. Documentation linking subcontractor invoices to State reimbursement, requests, and related funding or loan budget line items.
3. Reimbursement requests submitted to the State for the funding loan.

### Cash Documents

1. Receipts (copies of warrants) showing payments received from the State.

2. Deposit slips or bank statements showing deposit of the payments received from the State.
3. Cancelled checks or disbursement documents showing payments made to vendors, subcontractors, consultants, and agents under the grants or loans.
4. Bank statements showing the deposit of the receipts.

#### Accounting Records

1. Ledgers showing entries for loan receipts and cash disbursements.
2. Ledgers showing receipts and cash disbursement entries of other funding sources.
3. Bridging documents that tie the general ledger to requests for funding or loan reimbursement.

#### Administration Costs

1. Supporting documents showing the calculation of administration costs.

#### Personnel

1. List of all contractors and agency staff that worked on the funding or loan-funded program or project.
2. Payroll records including timesheets for contractor staff and the agency personnel who provided services charged to the program.

#### Project Files

1. All supporting documentation is maintained in the project files.
2. All funding or loan-related correspondence.

# Attachment 2: Funding Questionnaire

## Content

### **California Stream Gage Improvement Program (CalSIP) Public Agency Questionnaire for Stream Gage Station Funding**

#### **Applicant/Public Agency Information**

- Name of public agency/entity?
- Primary point of contact (POC) name?
- Direct/mobile phone?
- Email address?
- Secondary point of contact (POC) name?
- Title?
- Direct/mobile phone?
- Email address?
- Which operational model will the public agency/entity choose for the proposed sites?

#### **Site Information**

- Was the location submitted previously in ArcGIS online platform?
- Is the site a reactivation of a previous or historic site?
- How long was the most recent duration of the record?
- What data were previously observed?
- Who will be implementing the stream gage?
- Who will be principally responsible for operations and maintenance (O&M) of the stream gage?
- Site name?
- Site unique ID? (if historical site is being upgraded or reactivated)
- Site location information?

- Surface water body name?
- What is the stream gage station seeking to measure/data to collect?
- What management objectives will the site perform?
- For this site, is there a long-term sustainable funding for the ongoing operation and maintenance?
- If the answer to the previous question is yes, please provide information to validate secured funding for a specified duration, ensuring the project's longevity beyond the program timeframe (June 2027). Examples include providing sources of revenue and current assessments with stipulated program goals. Prior and current approved budget appropriations, if the answer is no, enter N/A.

### **Cost**

- What are the expected capital costs for the site?
- What are the expected annual maintenance costs for the site?
- What is the total cost of the project?
- Are the capital and or O&M costs being funded with funds other than CalSIP funding?
- Amount of local agency cost share (if any).
- Amount of federal contribution (if any).
- Amount funded by other (non-local agency) sources (if any).
- The total amount of non-CalSIP requested.
- Amount requested from CalSIP?

### **Operator Qualifications**

- Name?
- Role?
- Entity/consultant?
- Operation and maintenance experience?
- Site development experience?

## California Stream Gage Improvement Program Guidelines

- Provide experience in installing and maintaining data transmission (telemetry)?
- Where, and for how long, have they installed and operated stream gages?
- Provide details about the measurements performed at each site and any unique factors that demonstrate competency and differentiate expertise?
- Describe any individual training or expertise regarding data collection quality assurance and quality control?
- Training and other qualifications?

### **Additional Explanation**

- Please add additional information that you think would be helpful for the evaluation.



# Attachment 3: Evaluation Criteria

## California Stream Gage Improvement Program (CalSIP) Public Entity Gage Site Ranking and Selection Criteria

### Minimum Criteria

There are three minimum criteria that must be met for the proposal to be advanced to the remainder of the selection criteria process. If any of the three minimum criteria's ranking is "No", the proposal will be returned to the requestor as ineligible for CalSIP funding.

### Eligible Applicant (Public Agency) (Yes/No; minimum criteria)

- Legal status and eligibility of the applicant as a public agency or federally listed Tribe.

### Minimally Qualified Operator (Yes/No; minimum criteria)

- Does entity have reasonable ability to successfully operate and maintain a stream gage (gage) station?
- Staff availability to perform fieldwork.
- If no internal experience, ability to procure and utilize outside entity to perform work?

### Site Location Eligibility (Yes/No; minimum criteria)

- All sites must be in the state of California.
- The site must be on natural waterways. Natural waterways are considered surface waterways, not canals or diversion ditches, where flows are controlled by diversion structure and primary function is for conveyance and distribution of surface water.
- Each site must provide real-time, telemetered data (15-minute intervals) to the public through the [California Data Exchange Center](#).
- Funding for only operation and maintenance for a currently active site is not allowed; offsetting existing operations and maintenance funding for a gage without any other improvement is not allowed.
- Offsetting existing funding or responsibility to operate and maintain a gage is not allowed.

## Scoring Criteria

Following the eligibility evaluation, or minimum criteria, each site will be scored based on the below criteria based on answers and information provided in the questionnaire. The questionnaire is structured to require answers such that a score can be given for each of the scoring criteria.

### Installer and Operator Experience

How much demonstrated experience with gage operations does the applicant have? Is the applicant or agent of the applicant qualified to install, operate, maintain a stream gage station.

- Who (agency staff or consultant) will be implementing the gaging station? Who will be performing operations and maintenance of the gage [note if same persons or entity]?
- Where, and for how long, have they installed and operated gages? Include details such as the measurements included at each gage and any unique factors that demonstrate competency and differentiate expertise.
- Include any individual training or expertise regarding data collection quality assurance and quality control.

[Note: Reviewers may contact individuals if questions arise, or if clarifications needed. Applicants should be ready to provide contact information to the review team]

### Long-term O&M Funding Commitment

One of the primary goals of CalSIP is to enhance the quality and number of gages in the stream gage network and to maintain them for as long as possible. This criteria item is evaluating the potential for long-term funding, and the ability of operators to maintain the gages after CalSIP ends.

- Does the gage(s) have long-term sustainable funding for the ongoing operation and maintenance? If so, please provide a brief explanation of the funding commitment for the proposed gaging network.
- Provide any information committed to securing funding for a specified duration, ensuring the longevity of the gage beyond CalSIP's timeframe (June 30, 2027).

### **Located in a Priority Watershed**

The Senate Bill (SB) 19 [California Stream Gaging Prioritization Plan 2022](#) (SB 19 Plan) identifies a variety of high-priority, ungaged watersheds based on environmental significance, water resource management needs, or emergency response. This criteria item is not required to be considered for funding but will be considered in the ranking of proposals.

- Is this site within SB 19 priority watershed? (Yes or No).

### **Located in an Underrepresented or Disadvantaged Census Community**

This criteria item serves to consider the socio-economic status of the communities potentially benefiting from, and approximate to, the proposed gage site. There is a programmatic goal to award 25% of available project funding to disadvantaged census communities.

- Is the site located within a [disadvantaged census community](#)? (Yes or No).

### **Watershed Gage Density**

Distribution and concentration of gages within a watershed is a consideration to promote watersheds with low or no gage density, and to avoid excessive gage density in an area.

- Are there existing gages nearby? How much value or additional information does this gage provide as compared to surrounding gages?
- Does the proposed gage fill data gaps or enhance monitoring capabilities?
- What is the added value of this station as compared to other nearby stations?
  - Is the reach “well-gaged”, or “poorly gaged” (using SB 19 Plan evaluation).

### **Reactivation of Previous Site**

One of the factors considered in the SB 19 Plan is the reactivation of historical data and the value of adding to a historic period of record. Additionally, the reactivation of a site on a reach that lacks other gages has more value as compared to sites on reaches that have more sites.

- Is the site “well-gaged”, “almost well-gaged”, or “poorly gaged” reach of stream (using SB 19 Plan evaluation)?

- What is the period of record of the historical site?

### **Proximity to Existing Nearby Gages**

One of the factors considered in the SB 19 Plan was proximity of reacting gages in reaches where other gages are operating. Using similar logic, this criteria item considers proximity to other gages and additional value the proposed gage provides in light of surrounding gages.

- Is there existing stream gaging infrastructure nearby? How much value or additional information does this gage provide as compared to surrounding gages?
- Does the proposed gage fill data gaps or enhance monitoring capabilities?
- What is the added value of this station as compared to other nearby stations?
- Is the reach “well-gaged”, or “poorly gaged” (using SB 19 Plan evaluation)?

### **Amount of Program Funding Spent in the Watershed/Area**

This criteria item evaluates CalSIP funding distribution for excessive concentration in a watershed or region. This can be determined from the ArcGIS online mapping tool for current, or in-process, sites in the CalSIP program.

- Does the proposed gage require funding in a watershed or region that is already receiving strong levels of CalSIP funding?

### **Stage, Flow, Temperature Data**

Stream-flow data are considered higher-value information for water managers and general use. Because of this, a high point value is provided for gages that develop a stage-flow rating curve and provide flow data in addition to stage. Similarly, water temperature is a high-value parameter that yields valuable data for environmental resource management. This criteria item prioritizes sites that propose to generate flow, stage, and temperature data. Sites proposing to add telemetry to existing gages are viewed as new sites to the stream gage network. In the case when an existing gage that measures stage, flow, and temperature, and telemetry is

added, the site would be scored as if it is a new or reactivated site because new data are being made public.

- Is the proposed station providing stage; stage and flow; or stage, flow, and temperature?

**Cost and Benefit (Qualitative)**

This criteria item evaluates, qualitatively, the cost effectiveness of a gage.

- Is the expected or proposed cost reasonable for the location, sensors, and gage types (as compared to typical DWR and U.S. Geological Survey [USGS] costs)?
- How cost effective is the gage in utilizing available funds for meaningful improvements to the stream gage network?

## Attachment 4: Draft Authorizing Resolution

### **Authorizing Resolution**

If possible, include a resolution adopted by the applicant's governing body authorizing the questionnaire for funding under this program and designating a representative to submit the questionnaire; and, in the event of an award of program funds, a representative to execute the funding agreement and all necessary documentation (e.g. invoices, progress reports). If the resolution has not been adopted prior to the questionnaire's submission, indicate in the proposal document when a signed resolution will be received by DWR. A signed, certified resolution must be received prior to the execution of a funding agreement with the State. In some cases, an applicant may have a standing (permanent) delegation, applicable ordinance, or bylaws that already delegate a representative. In such cases, please include the applicable documents with the questionnaire. The following sample resolution template may be used.

Resolution No. [xxxx]

A resolution of the [Governing Body] of the [Agency Name]

Authorizing the Funding Request, Acceptance, and Execution for the  
[Project Title]

WHEREAS, [Agency Name] proposes to implement [Project Title];

WHEREAS, [Project Title] is being implemented to support and improve the stream gage network within the State of California and is intended to: (1) provide publically available data on natural surface waters; and (2) provide sound data that informs water management decisions;

WHEREAS, [Agency Name] has the legal authority and is authorized to enter into a funding agreement with the State of California; and

WHEREAS, [Agency Name] intends to apply for funding from the California Department of Water Resources for the [Project Title];

WHEREAS, [Agency Name] intends to apply for funding from the California Department of Water Resources for the [Project Title];

THEREFORE, BE IT RESOLVED by the [Governing Body] of the [Agency Name] as follows:

1. That pursuant and subject to all of the terms and provisions of Budget Act of 2023, as amended (Stats. 2022, ch. 44, § 25), the [Agency Name] [Title of Authorized Representative], or designee is hereby authorized and directed to prepare and file a questionnaire for funding with the Department of Water Resources and take such other actions as necessary or appropriate to obtain funding.
2. The [Agency Name] [Title of Authorized Representative], or designee is hereby authorized and directed to execute the funding agreement with the Department of Water Resources and any amendments thereto.
3. The [Agency Name] [Title of Authorized Representative], or designee is hereby authorized to utilize electronic signatures to execute

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agreements with the Department of Water Resources and any amendments thereto.

4. The [Agency Name] [Title of Authorized Representative], or designee is hereby authorized and directed to submit any required documents, invoices, and reports required to obtain funding.

CERTIFICATION: I hereby certify that the foregoing Resolution was duly and regularly adopted by the [Governing Body Name] of the [agency name] at the meeting held on [date], motion by [member name] and seconded by [member name], motion passed by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

---

[Printed Name]

[Title], [Governing Body]

Attest:

---

[Printed Name]

[Secretary/Clerk]



# Attachment 5: Stream Gage Operations Reference Document

## Introduction

### Preface

Stream gaging is generally a process of measuring and recording water surface levels of a stream via a stream gage, and then converting the stage to discharge by means of a stage (flow depth) vs. discharge rating table. This requires plotting simultaneous stage data and discharge measurements to develop the stage-to-discharge curves. The rating is applied to the continuous stage data to calculate discharge in the stream at the gage location.

Providing stream gage data is an extensive process with ample opportunity for the operator or equipment to introduce error, which can result in inaccurate or incomplete data. Standardizing the stream gaging process can reduce the potential for error and will improve data integrity and accuracy. In addition, standardization improves the consistency in documentation and data collection among different gage operators, resulting in more consistent and comparable data. For these reasons, standardization of the stream gaging process is pertinent when providing accurate, continuous, and comparable stage and discharge data.

### Objective and General Stream Gaging Procedure

The objective of this manual is to guide [California Stream Gage Improvement Program](#) (CalSIP) gage operators with standards and procedures, in providing continuous stage and discharge record on the [California Data Exchange Center](#) (CDEC) and submitting certified records to the California Department of Water Resources (DWR) that will later be retrievable through the [Water Data Library](#). References are made to U.S. Geological Survey (USGS) and U.S. Bureau of Reclamation publications, which were used as a guide in writing this manual.

This manual supports DWR's stream gaging efforts under CalSIP to upgrade, reactivate, or install stream gages to enhance California's publicly available

stream gage network. The stream gages will provide essential surface water stage, flow, and water quality data to water managers and the public via the CDEC.

This document focuses on sites located where simple stage-to-flow relationship occurs, commonly located in a “pool-to-riffle” geomorphic type condition.

### **Summary of Stream Gage Standard Operations – CalSIP Specific**

Below is a summary of standard operations for stream gages operated by CalSIP funds.

1. Funding recipients and operators will be responsible for all required environmental and operational permits, including access permissions.
2. Re-established historical stream gaging sites should be as close as possible to the original location. If the re-established location is outside of the same geomorphic control or measurement pool, this should be considered a “new” site.
3. A unique name, number, and geographic coordinates to the World Geodetic System (WGS) for each site must be determined or made for each site. For the CalSIP public agency gage sites, an index number will be provided to public agencies for each site. WGS coordinates and site names will be confirmed based on proposed data and site names provided in the application process.
4. All submitted stage data must be in the North American Vertical Datum 88 (NAVD88), with any applicable specific epoch versions.
5. Typical water level sensors and recorders to record stage data.
  - A. Typical gage setups and layouts can be found in Appendix A. Dry gas bubblers and radars are the preferred method for measuring stage. Do not use “wetted pressure transducer” type sensors. These sensors are problematic with biofouling and they require significant and disproportionate maintenance.
6. Telemetered in near real-time to CDEC. All sensor data need to be retrievable on the CDEC site.
7. Operators will be responsible for all safety requirements for operating near fast-moving water. Always use acceptable personal flotation

devices and personal protective equipment while working around moving water. It is recommended that each site have a unique safety evaluation and mitigation measures or protocols to reduce risk to human health and safety.

8. All sites must have a station site visit log file that will need to be submitted with the station record. Typical parameters are the following:
  - A. Dates, times, stage and staff or wire weight observations, a flow measurement summary, and when downloads were performed.
9. Flow measurements: At least six per year if calculating flow records. Typical meters can include:
  - A. Price AA current meters.
  - B. Acoustic doppler measurements.
  - C. Flowtrackers.
  - D. Weir sticks (or staff gage) or other approved means.
10. Stage shift, time shift, and datum shift data.
  - A. An electronic table of all shifts and adjustments to the stage or discharge curve.
11. All station records for stage and flow measurements will be processed and submitted by December 31 of each year for the prior water year (October 1 through September 30). This process is considered the annual "certification" process that signifies the applicable prior-year data is valid and referenced to reflect all adjustments and corrections are correct. A final certification package needs to be provided as a hard copy and electronic copy and include the following elements:
  - A. Site summary report.
  - B. Field notes from all site visits and measurements.
  - C. Flow measurement report summary to summarize when, how, and results of flow measurements.

## California Stream Gage Improvement Program Guidelines

- D. Certification (signature) by a qualified and experienced reviewer (someone who has completed a USGS, or similar, course; or professional licensed civil engineer).
- E. Flow measurement sheets.
- F. Rating table documentation, PDF or Excel spreadsheet.
- G. Rating table and discrete flow measurement plots.
- H. Primary computations.
- I. Mean daily gage height summary.
- J. Mean daily flow summary.
- K. Mean daily temperature summary.
- L. Mean daily gage height, water year plots.
- M. Mean daily gage flow, water year plots.
- N. Mean daily gage water temperature, water year plots.

## Establishing a Stream Gage

### Gage Site Selection

Reactivating a previously existing gage can be advantageous, if that is an option. Historical gaging station site names and locations can be found on the CalSIP website. Reactivation of existing stream gage sites are inherently useful because they include historic records that are needed for a variety of hydrology analyses, and information about the suitability of the site may inform integrity of rating.

If installing a new gage, site reconnaissance is facilitated by field visits and examination of the geologic, topographic, and other maps of the area.

In the selection of any stream gage site, consideration should be given to the following items:

1. Channel characteristics relative to a fixed and permanent relationship between stage and discharge at the gage. Look for a pool-and-riffle-type section with a hard, rocky bottom where there is a lower risk of bed movement that affects the stage-discharge relationship.

2. Stay away from possible backwater conditions from other downstream tributaries or other sources (e.g., dams, weirs). Shallow grade channels are susceptible to backwater conditions.
3. Availability of nearby cross-section where good discharge measurements can be performed.
  - A. Suitability of existing structures (e.g., bridges) for use in making high-flow discharge measurements. A remote boat may be considered in place of a bridge if conditions are favorable. The current remote boats need velocities to be less than 14 feet per second and be free of debris.
  - B. Boat access if a bridge or access to both banks is unavailable for high-flow measurements.
  - C. Hazardous conditions upstream and downstream of the gage (in and out of water).
4. The proper placement of stage recording sensor is ideally in calm water. Velocities of 10 feet per second, or more, are hard to measure.
5. The possibility of flow bypassing the site in flood channels or going subsurface.
6. Road accessibility to the site, particularly in flood conditions.
7. Common snow conditions for sites above 5,000 feet.
  - A. The availability of line power (instead of solar) will likely be useful to keep equipment warm and protected from freezing.
8. Land ownership and access at site. Permission to private property is susceptible to being revoked, causing data gaps in the continuous record or ending the period of record.
9. Environmental and archeological concerns.

### **Property Access and Permitting**

Each stream gage can have significant differences in environmental and archeological resources, concerns, and limitations. The following list is a suggested starting point when developing the permits for each new site. It is the responsibility of the operator to determine all applicable permits.

## California Stream Gage Improvement Program Guidelines

### List of Common Regulatory Permits

New gages typically require the following five documents, but more permits may be needed:

1. Landowners' permission or encroachment permit.
2. California Environmental Quality Act (CEQA).
  - A. Most gages typically fall under the gaging station exemption that requires the operator to file a notice of exemption.
3. Department of Fish and Wildlife: DFW 1600 Stream Alteration Agreement.
  - A. Fish and Game Code Section 1602 requires any person, State or local government agency, or public utility to notify the California Department of Fish and Wildlife prior to beginning an activity that may do any of the following:
    - Divert or obstruct the natural flow of any river, stream, or lake.
    - Change the bed, channel, or bank of any river, stream, or lake.
    - Use material from any river, stream, or lake.
    - Deposit or dispose of material into any river, stream, or lake.
4. U. S. Army Corps Engineers: USACE 404 Permit.
  - A. The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the act was significantly reorganized and expanded in 1972. Clean Water Act became the act's common name with amendments in 1972.
  - B. Section 404: Establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands.
5. Regional Water Quality Control Board: RWQCB 401 Water Quality Certification.
  - A. The 401 program protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters

because these waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. It is involved with protection of special-status species and regulation of hydromodification impacts. The 401 program encourages basin-level analysis and protection because some functions of wetlands, riparian areas, and headwater streams — including pollutant removal, flood water retention, and habitat connectivity — are expressed at the basin or landscape level.

B. Most projects are regulated by California regional water quality control boards.

Addition permits may be needed. They include:

- Flood board permit: For those sites in the jurisdiction of a regulatory floodway or floodplain, a permit may be needed to confirm minimal flood risk or to identify as potential encroachment.
- Encroachment permit: For those sites on any local or State roadway facility, an encroachment permit is likely needed.

### **Station Name, Number, and Location Convention**

Every stream gage shall have a unique name, number, and set of coordinates. Gage names and numbers should be assigned using the DWR Index Numbering System. For the CalSIP public agency gage sites, a gage index number will be provided to public agencies for each site. Gage positions are assigned coordinates based on the World Geodetic System 1984 (WGS84) global datum reference system.

Gage names are divided into three units, set off by commas, which identify the stream, branch of the stream, and the landmark near the gage's location on the stream (usually nearest town with a post office).

- Example #1: OSBORN C, SF, A LEANING TREE RD, NR TOMLINE, identifies the gage on the south fork of Osborn Creek at Leaning Tree Road, near the town of Tomline.
- Example #2: A gage located on Thomes Creek just 3 miles downstream from the closest town of Paskenta would likely be named, Thomes Creek NR Paskenta. If the gage was in the town of Paskenta, then it would be named Thomes Creek A Paskenta (the AT is abbreviated to A).

## California Stream Gage Improvement Program Guidelines

Gage numbers are comprised of six characters, one letter and five numbers. They are assigned using the Surface Hydrologic Station Index Numbering (SHSIN) System following the DWR Index Numbering System. For the CalSIP public agency gage sites, a gage index number will be provided to public agencies for each site. The system parallels coding systems for hydrologic areas, provides for discrete identification of gages and sample locations, and signifies the upstream and downstream relation of gages.

Gage's location and position are identified using latitude and longitude, in North American Datum of 1983 (NAD 83) projection and coordinate system. The format should be Latitude xx-xx-xx.xxx North by Longitude xxx xx xx.xxx and be accurate to within 50 feet or a half second (00.00X) for both latitude and longitude. Decimals or degrees-minutes-seconds are acceptable, but decimal degrees are preferred. Multiple mapping software systems can provide coordinates in the WGS projection, including Google Earth which uses a WGS84 geographic projection with an ESPG code of 4326. Converting from WGS 84 datum to NAD 83 datum can be accomplished using different translation software applications or tools. When reporting coordinates, reference to the datum must be included to confirm accuracy.

Gage locations are sometimes described using the [Public Land Survey System](#).

### **Measuring Water Surface Levels: Benchmarks, Reference Gages, and Water-Level Sensors**

The product of stream gaging, discharge data, is largely built on measured water surface levels; otherwise known as stage. As a result, the quality of discharge data is dependent on the quality of stage data. A network of elevations provides the means to record quality stage data and a continuous record. The elevation network is established at a benchmark with an assigned datum. Reference gage elevations are based off the benchmark and are set to measure water levels in the same pool being measured by the water-level sensor. Based on the same datum as the benchmark and reference gage, the water-level sensor measures stage every 15 minutes. This sensor is routinely compared to the reference gage to verify the accuracy of measured and recorded water levels within 0.02 foot.



### Benchmarks and Vertical Datums

Recorded water surfaces require a measured reference point. A benchmark with an applied vertical datum provides this reference. Benchmarks can be an established marker or a fixed and stable object such as a scribed marking in concrete. The latter is referred to as a temporary benchmark. Three benchmarks are required at each station. Elevations of benchmarks are defined by a vertical datum. Measured water surface levels will be set to read above this specified reference surface; also known as the gage datum. To provide accurate and relevant data, it is imperative that gages agree with the established gage datum for the life of the station.

There are numerous vertical datums (e.g., National Geodetic Vertical Datum of 1929 (NGVD29), North American Vertical Datum of 1988 (NAVD88), local). The CalSIP gages must be in NAVD88.

If a benchmark near the station is unavailable, a temporary benchmark or new benchmark needs to be set. To assign an elevation to the new benchmark, a survey from an established benchmark is required. When established benchmarks are less than 2 miles away from the station, optical differential leveling technique should be used. Differential leveling is the process of measuring the vertical difference between a point of unknown elevation and a point of known elevation (McCormac 1983). When referencing benchmarks greater than two miles away, initial datum surveys should be performed using a survey grade global navigation satellite system (GNSS) or real-time kinematic (RTK) type of system. The USGS published a Techniques and Methods publication (Kenney 2010) on leveling at gaging stations and is a comprehensive reference for this work.

### Reference Gages

The reference gage (a staff gage, typically) can quickly and routinely be used to verify water-level sensor data relative to the referenced benchmark. It is imperative that the reference gage measure the same pool of water as the water-level sensor, and it must be mounted on solid objects that are not subject to significant movement or flexing. The reference gage should also be mounted in a way that they are able to measure the range of desired gage heights. Staff gages and wire weights are the most common type of reference gages.

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Reference gage elevations should be compared every three years to ensure that reference gages and ultimately stage elevations are being accurately recorded.

### **Water-Level Recorders**

The primary function of a water-level recorder is to digitize and record stage values with corresponding dates and times. Measurements are typically recorded in 15-minute increments, starting on the hour. Recorders must be able to telemeter the data to provide near real-time information on CDEC.

#### Water-Level Recorder File Format

The raw file created from water-level recorders needs to be saved as a suitable file type and formatted to allow uploading into a database management system. Acceptable file extension formats include:

- Comma separate values: (.csv).
- Text format: (.txt) can be comma delimited, tab delimited.
- Date (mm/dd/yy), time (hh:mm:ss), stage (xxxx.xx).
  - 01/01/19, 14:00:00, 1034.12.
  - 01/01/19, 14:15:00, 1034.11.
  - 01/01/19, 14:30:00, 1034.10.

### **Telemetry**

Telemetry is an automated process of collecting data from a remote location by transmitting data to a different location for monitoring. CalSIP gage data must be reported and decoded by CDEC in near real-time. It is up to the operator to determine the best method to meet this requirement.

#### Decoding and Posting Transmitted Data at California Data Exchange Center (CDEC)

Transmitted stream gage data will be decoded and posted on CDEC. The operator must include the following information when developing the site on CDEC.

- Station name and number (described in Section 2.3, "Station Name, Number, and Location Convention").
- Data logger manufacturer and model.

- County.
- Nearby city.
- Hydrologic area.
- River basin.
- Latitude (degree-minute-second format).
- Longitude (degree-minute-second format).
- Elevation (reported in feet to the hundredths).
- Suggested three letter CDEC ID (check with CDEC to see availability of ID).
- Type and format of data telemetered.
- The order the data is sent (ascending/oldest first or descending/newest first)

A stage-discharge rating and additional information is required by CDEC when discharge is calculated.

## **Station Operation and Maintenance**

The fundamental goal of collecting accurate gage heights for stream gages will vary, which affects the operation and maintenance requirements. Required resources depend on the desired data type and its level of accessibility. Providing near real-time flow data requires more operational effort than solely recording stage data.

### **Remote Monitoring**

Periodically monitoring a near real-time stream gage can decrease the amount of missed or inaccurate data when malfunctions occur. It can also aid in deciding when to take discharge measurements.

Routinely viewing telemetered stream gages on CDEC can reduce data errors and improve stage-discharge ratings. The quicker it is known a gage is problematic, the quicker a repair can be made, and accurate data recording can resume. In addition, knowing when a stream is at a desired gage height to measure discharge is helpful in building or improving a stage-discharge

rating. CDEC is a valuable tool when operating and maintaining stream gages.

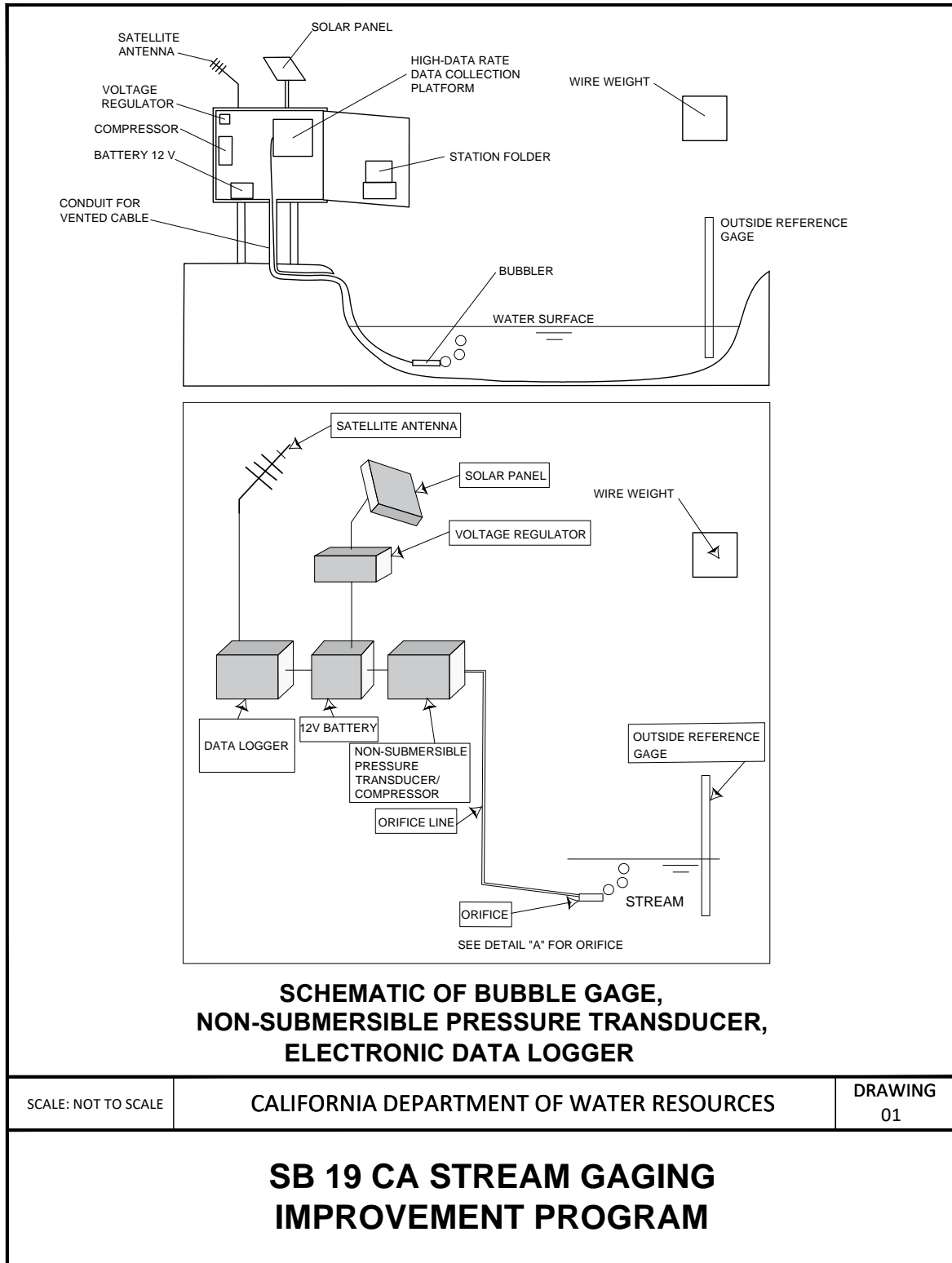
## References

McCormac, J.C., 1983, *Surveying fundamentals*: Englewood Cliffs, New Jersey, Prentice-Hall, 522 p.

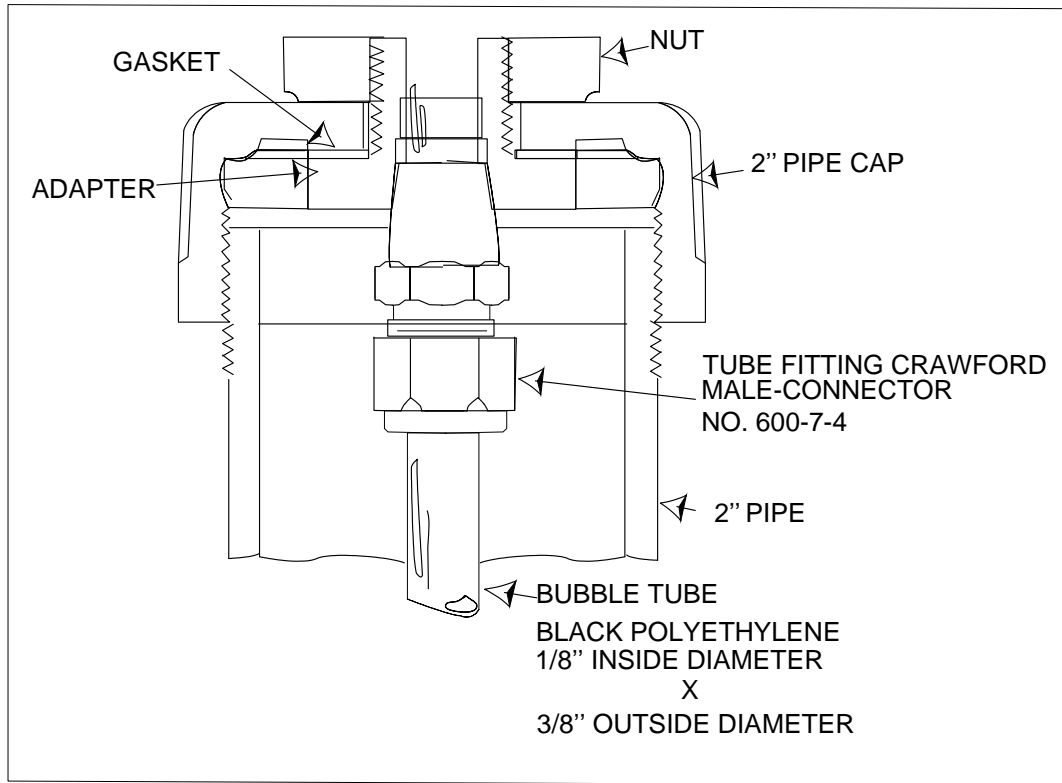
Kenney, T.A., 2010, *Levels at gaging stations*: U.S. Geological Survey Techniques and Methods 3-A19, 60 p. Viewed online at: <https://pubs.usgs.gov/tm/tm3A19/tm3A19.pdf>, Accessed: August 8, 2024.

## Appendix A. Typical Stream Gage Configurations

**Figure 1 Schematic of Bubble Gage**



**Figure 2 Suggested Bubble-Orifice Assembly**



**DETAIL "A"  
SUGGESTED BUBBLE-ORIFICE ASSEMBLY**

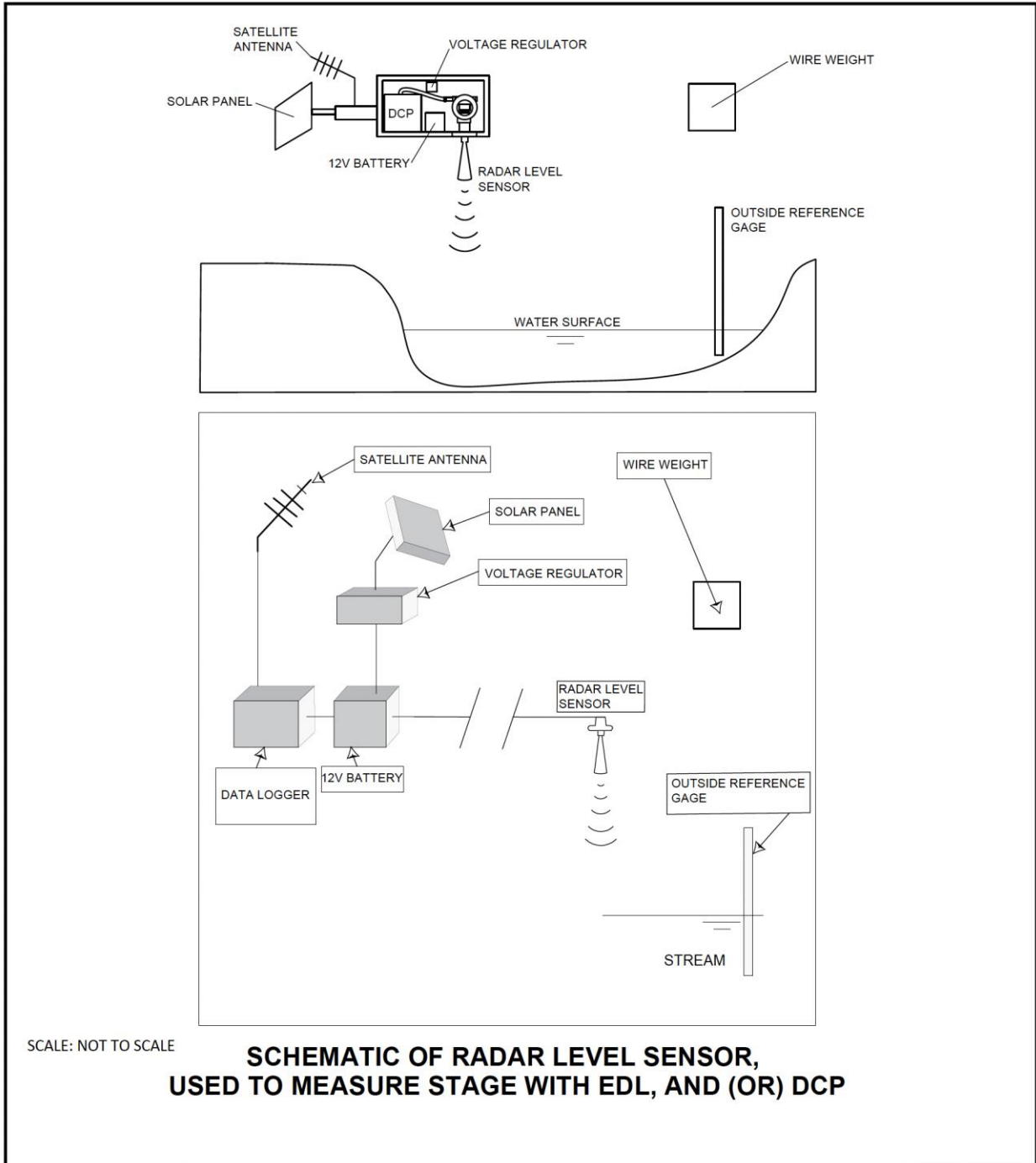
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CALIFORNIA DEPARTMENT OF WATER RESOURCES

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02

**SB 19 CA STREAM GAGING  
IMPROVEMENT PROGRAM**

**Figure 3 Schematic of Radar Level Sensor**



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**SB 19 CA STREAM GAGING  
IMPROVEMENT PROGRAM**

## Attachment 6: Frequently Asked Questions

### **Q: What is the purpose of the California Stream Gage Improvement Program (CalSIP)?**

A: The purpose of CalSIP is to increase the number of high-quality stream gages that provides reliable real-time stream flow data to the public. One of the approaches in accomplishing this is to enter public-agency, or interagency agreements with public agencies to implement and maintain sites during the funding window.

### **Q: How does the program benefit water resource management in California?**

A: The intent of the program is to support the reactivation and deployment of priority stream gages consistent with the SB 19 Plan. The program aims to implement needed infrastructure improvements and operations and maintenance for stream gaging data collection that provides reliable real-time stream flow data to the public. CalSIP will support projects and programs that provide real-time data (stage, flow, depth, or elevation) and water quality data to the public stream gage network to assist with the management of California's water resources.

### **Q: How are stream gages selected for funding?**

A: The selection process is competitive, with stream gages evaluated based on minimum criteria and assigned points according to specific evaluation criteria. For more information, please see the guidelines.

### **Q: Who funds CalSIP?**

A: CalSIP is funded by the general fund, allocated in 2023.



**Q: How often are stream gages maintained and calibrated?**

A: A stream gage is to be maintained and calibrated a minimum of 6 times per water year, or during each site visit. Site visits should occur every other month, or when desired flow rates are available to measure, or if real-time data appear to have a problem with recorded water levels. Water level observations from a reference gage and measured discharges are compared to recorded gage heights and rated flow, respectively.

At each site visit the water-level sensor is verified and maintained by comparing it to the reference gage. If the difference is greater than +/- 0.02 foot, or consistently off in a positive or negative direction, the cause needs to be determined and corrected. Clear documentation of the problem and when it was corrected is pertinent when processing the data.

Discharge measurements are taken to calibrate the latest stage-discharge rating by providing the required data to adjust or shift the rating, or to develop a new rating when needed. Comments on conditions that may affect the measurement, or the rating are pertinent when determining if calibration of the stage-discharge rating is required. To check if the shift needs to be applied, the percent difference of measured flow to rated flow, known as %Q<sub>diff</sub>, is calculated and compared to the acceptable values for the quality of the measurement.

- $\%Q_{diff} = (Q_{measured} - Q_{rated}) / (Q_{rated}) * 100$

Acceptable %Q<sub>diff</sub> depends on the quality of the discharge measurement and are listed below. Based on the quality of the measurement, shifts are applied when %Q<sub>diff</sub> is greater than the acceptable tolerances listed below.

- Good quality measurement: acceptable %Q<sub>diff</sub> ≤ 5%.
- Fair quality measurement: acceptable %Q<sub>diff</sub> ≤ 8%.
- Poor quality measurement: acceptable %Q<sub>diff</sub> ≤ 10%.

Real-time data posted to CDEC requires maintaining accurate recorded gage heights and updating CDEC when an adjustment or shift needs are applied to the stage-discharge rating.

**Q: Can the public access real-time stream flow data from program funded gages?**

A: Yes. A requirement of the program is to make all data available to the public via CDEC.

**Q: Who can apply for this fund?**

A: Eligible applicants must be public agencies that have expertise and qualifications (or utilize external consultant technical support) to install and operate a stream gage. Public entities may include:

- State agencies (e.g., Department of Fish and Wildlife, groundwater sustainability agencies).
- Local agencies (e.g., counties, cities).
- Special districts (e.g., community service districts, irrigation districts, flood control districts, reclamation districts).
- Federal agencies (e.g., USGS, U.S. Fish and Wildlife Service)
- Federally recognized Tribes.

**Q: How can my public agency apply for funding through CalSIP? What is the application process?**

A: Step 1: Initial Interest Survey Submittal

For each stream gage site an agency is interested in working on, a GIS-based interest survey should be submitted via the [ArcGIS online map and website](#).

Step 2: Application Questionnaire

An online questionnaire with standard questions will serve as the platform for submitting information and evaluating the site for funding in this program. Questions with context that will be in the questionnaire will be provided. Applicants will be able to submit information for duplicate sites if applicable. Questions on this process can be emailed to the [Stream Gage Improvement Team](#). When submitting questions, please provide applicant information, unique site ID, and all applicable details.

**Q: What are the eligibility criteria for funding?**

A: Eligible project elements include the following:

- On natural waterways in California.
- Must provide telemetered real-time stream gage data (15-minutes).
- Measuring and reporting of stage, flow (discharge), and temperature are preferred.
- Must be operational by October 1, 2025.

Projects and locations not eligible include the following:

- Canals or waterways developed and maintained for water delivery, non-natural waterways.
- Operations and maintenance for sites currently funded, or for supplementing other programs.

**Q: What types of stream gages will be considered for funding?**

A: In general, the following types of improvements or sites are eligible:

- New stream gage.
- Reactivation of historical gage or site.
- Integration of private stream gage data.
- Upgrade of existing stream gage.
- Emerging technologies (e.g., AI alternative gages, camera systems, acoustic velocity).

Refer to guidelines for details on each activity.

**Q: Can applicants request funding for more than one site?**

A: Yes, applicants can apply for multiple sites. Additionally, requests for funding can be for new stream gage installations, reactivations of a historic or discontinued site, or upgrades to existing or operational gages.

**Q: Are there any limitations on the geographical areas where projects can be implemented?**

A: Eligible projects sites:

- On natural waterways in California.

Non-eligible project sites:

- Canals or waterways developed and maintained for water delivery, non-natural waterways.

**Q: What are the evaluation criteria for funding?**

A: Program funding will be allocated in a logical and effective manner. Submitted questionnaires will be scored based on the following criteria.

- Completeness and eligibility review.
- Technical evaluation per site submittal.

**Q: Is there a timeline or deadline for submitting application questionnaires?**

A: The deadline for submitting the application questionnaire is December 31, 2024. Questionnaires will be evaluated monthly. The monthly deadline to submit a questionnaire is the last business day of the month.

**Q: What if I want to add telemetry only to gage in operation. Is it applicable?**

A: Yes, but data must be made available online through the CDEC.

**Q: How can public agencies get support on the application process?**

A: For questions about the program or support in the application process, please email the [California Stream Gage Improvement Program](#). Applicants are encouraged to refer to program materials, including the program guidelines for additional information.

**Q: How are funds distributed to successful applicants, and what are the reimbursement procedures?**

A: Funds are distributed through public agency agreements. Multiple sites or locations per agency can be included in a single agreement. No cost-sharing is required, but it is encouraged. Matching funds will not be a factor in evaluating sites for funding. Reimbursement invoices are required to be submitted no less frequently than quarterly. No retention requirements.

**Q: Are indirect costs reimbursable?**

A: Yes. Please see guidelines and template agreement for additional details.

**Q: Are there any additional resources or support services available to help applicants develop strong proposals?**

A: Yes. Please see the program guidelines for additional information.

**Q: What if I want to reactivate an existing historical site?**

A: Yes, you can apply to activate an existing site.

**Q: I'm representing a non-profit organization; can I apply for the fund?**

A: No, eligible applicants include:

- State agencies (e.g., Department of Fish and Wildlife, groundwater sustainability agencies).
- Local agencies (e.g., counties, cities).
- Special districts (e.g., community service districts, irrigation districts, flood control districts, reclamation districts).
- Federal Agencies (e.g., USGS, U.S. Fish Wildlife Service).
- Federally recognized Tribes.

**Q: Can non-federally recognized Tribes apply for funding?**

A: Unfortunately, no. Provisions in DWR procurement do not allow public agency or DWR interagency agreements with non-federally recognized Tribes.

**Q: Is there is a maximum limit for funding?**

A: No, there is no specific limit for funding, but cost-effectiveness will be considered in the selecting criteria.

**Q: Is a public agency eligible for funding if they lack experience operating the gage?**

A: Yes, eligibility remains possible. But applicants must outline plans for staff training or consultant hiring to ensure proper operation.

**Q: Is there federal funding available for this program?**

A: No, funding for this program is sourced from State general funds.

**Q: Are there any specific requirements associated with this funding?**

A: Yes, please refer to the guidelines and template agreement for the typical language outlining these requirements.

**Q: What if the funding recipient local agency cannot have the site operational by the October 1, 2026, deadline?**

A: This may be considered a breach of the funding agreement.

# Attachment 7: Limited Waiver of Sovereign Immunity Template

The [Insert Name of the Tribe] hereby expressly, unequivocally, and irrevocably provides a limited waiver of immunity from suit in any court of competent jurisdiction and all relevant courts of appeal, to enforce or seek relief of any term or provision of this Funding Agreement executed by and between the State of California, Department of Water Resources and the [Insert Name of the Tribe]. This waiver of immunity includes any action for monetary damages, injunctive relief, or declaratory relief, or attorneys' fees related to this Funding Agreement. The [Insert Name of the Tribe] agrees that it will not raise sovereign immunity as a defense in any judicial action brought in any venue by either Party to enforce or seek relief of any Funding Agreement term or provision entered into by and between the Parties contained herein. The [Insert Name of the Tribe] does not waive any aspect of its sovereign immunity with respect to actions by any third parties. This limited waiver of sovereign immunity is limited to the amount of the State funding being provided to the [Insert Name of the Tribe] and its duration shall be coextensive with the Term of the Funding Agreement.

## Useful Web Links

CalSIP ArcGIS online map

[https://experience.arcgis.com/experience/ac8ac7d58dcc40f1b552dd34ea87f8db?data\\_id=dataSource\\_1-18b5df17cbc-layer-5%3A49867&views=Feature](https://experience.arcgis.com/experience/ac8ac7d58dcc40f1b552dd34ea87f8db?data_id=dataSource_1-18b5df17cbc-layer-5%3A49867&views=Feature)

California Data Exchange Center

<https://cdec.water.ca.gov/>

California Department of Human Resources — Travel Reimbursements

<https://www.calhr.ca.gov/employees/pages/travel-reimbursements.aspx>

California Stream Gage Improvement Program (CalSIP)

<https://water.ca.gov/CalSIP>

California Stream Gaging Prioritization Plan 2022

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/stream\\_gaging\\_plan/docs/sb19-report.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/stream_gaging_plan/docs/sb19-report.pdf)

CEQA Document Submission

<https://opr.ca.gov/sch/document-submission.html>

CEQA General Compliance Information

<https://opr.ca.gov/ceqa/>

Department of General Services State Contracting Manual

<https://www.dgs.ca.gov/OLS/Resources/Page-Content/Office-of-Legal-Services-Resources-List-Folder/State-Contracting>

Department of Industrial Relations Labor Compliance Programs

<https://www.dir.ca.gov/lcp.asp>

Department of Industrial Relations Public Works Manual

<http://www.dir.ca.gov/dlse/PWManualCombined.pdf>

Disadvantaged Census Community

<https://data.ca.gov/dataset/dacs-census>



Online form for stream gage funding

<https://forms.office.com/g/xeG5Z5be7r>

Senate Bill 19 Stream Gaging Prioritization Plan

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/stream\\_gaging\\_plan/](https://www.waterboards.ca.gov/waterrights/water_issues/programs/stream_gaging_plan/)

Water Data Library

<https://wdl.water.ca.gov>

World Geodetic System 84

<https://gisgeography.com/wgs84-world-geodetic-system/>

### **Email Addresses**

California Stream Gage Improvement Program

[CASGIP\\_GeneralQuestions@water.ca.gov](mailto:CASGIP_GeneralQuestions@water.ca.gov)

Stream Gage Improvement Team

[StreamGagingImprovement@water.ca.gov](mailto:StreamGagingImprovement@water.ca.gov)

