CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

DRAFT LEAK REGISTRY DATA SPECIFICATIONS v1.0

Starting in compliance year 2025 and ending in 2027, water systems will be required to collect information for a leak registry to be submitted to the State Water Resources Control Board. These are the data specifications of the information that will be expected to be submitted no later than January 1, 2029.

Data Fields

Field Name	Submission	Data Type	Validation	Example
Failure_ID	Required	String	Unique Alphanumeric	WL-2025-0001
Water_System_Name	Required	String	Full Water System Name	City of Sacramento Water
PWSID	Required	String	Division of Drinking Water issued PWSID	CA1234567
Location_Latitude	Required	Decimal	±90.000000 degrees, within California	38.575764
Location_Longitude	Required	Decimal	±180.000000 degrees, within California	-121.468926
Street_Address	Optional	String	Full Street Location	1234 Main Street Sacramento, CA 92505
Nearest_Intersection	Optional	String	Cross Streets	J Street & 12th Avenue
Pipe_ID	Optional	String	Alphanumeric	ML-001
Failure_Discovery_Time	Required	Datetime	MM/DD/YYYY HH:MM	7/15/2025 14:23
Leak_Stopped_Pre_Repair	Optional	Datetime	MM/DD/YYYY HH:MM	7/15/2025 15:23
Repair_Initiation_Time	Required	Datetime	MM/DD/YYYY HH:MM	7/15/2025 15:45
Repair_Completion_Time	Required	Datetime	MM/DD/YYYY HH:MM	7/16/2025 9:15

Calculated_Loss_Gallons	Not Applicable	Numeric	Whole Number (Autocalculated)	12,455
Estimated_Loss_Gallons	Optional	Numeric	Whole Number, non negative	12,450
Leak_Duration_Hours	Not Applicable	Numeric	Decimal Allowed (Autocalculated)	17.8
Pipe_Material	Required	Dropdown	[Predefined List] (AWWA ones, use closest material)	Ductile Iron
Pipe_Diameter_Inches	Required	Numeric	Decimal Allowed	3.5
Pipe_Age_Years	Required	Numeric	Decimal Allowed	35.5
Type_of_Asset	Required	Dropdown	[Predefined Categories]	valve break
Failure_Severity_Mode	Required	Dropdown	[Predefined List]	major
Cause of Failure	Required	Dropdown	[Predefined List]	Corrosion-Induced
Repair_Method	Required	Dropdown	[Predefined Methods]	Replacement
Pressure Envelope (Daily Range of Operational Pressure, psi)	Required	String	Two numbers with a – in between, in psi units	40-120
Estimated_Repair_Cost	Optional	Numeric	Whole Dollar Amount, non-negative	24,750
Reporting_Year	Not Applicable	Integer	YYYY Format (Autocalculated)	2025
Date Submitted	Not Applicable	Datetime	MM/DD/YYYY HH:MM (Autocalculated)	2/9/2024 10:15

Definitions:

Failure_ID

A unique identifier that matches up with a failure of an asset that occurred at a particular period of time. The identifier could be something already in use by the water system as long as it is unique in the registry. Examples are many but could include the pipe ID plus the date of failure or the street address and number of failures at that address.

Water_System_Name

The legal name of the water system associated with the Public Water System ID that is listed on the domestic water supply permit from the Division of Drinking Water. This should not be your urban water supplier name unless it is the same name.

PWSID

A unique identifier of your water system as assigned by the Division of Drinking Water. These numbers begin with CA and have a seven-digit number that follows, i.e. CA1234567.

Location_Latitude

A geographic coordinate that precisely defines the vertical position of a point on the Earth's surface, measured as an angular distance north or south of the equator. Latitude values range from -90.000000 (South Pole) to +90.000000 (North Pole) degrees, with six decimal places providing meter-level precision for identifying the exact vertical location of an infrastructure failure.

Location_Longitude

A geographic coordinate that specifies the horizontal position of a point on the Earth's surface, measured as an angular distance east or west of the prime meridian. Longitude values range from -180.000000 to +180.000000 degrees, with six decimal places enabling precise pinpointing of an infrastructure failure's horizontal location within a specific geographic context.

Street_Address

The complete physical street location of a water infrastructure failure, typically including the numerical address, street name, city, state, and zip code. This field is optional.

Nearest_Intersection

The closest cross streets or intersecting roads to the location of the water infrastructure failure, providing additional geographic context and helping to precisely locate the incident. This field serves as a supplemental reference point for field personnel, utility staff, and data analysts who may need to quickly identify or investigate the specific failure location. This field is optional.

Pipe_ID

A unique alphanumeric identifier assigned to a specific water infrastructure asset within a utility's asset management system. This identifier allows for precise tracking, historical performance analysis, and systematic documentation of infrastructure components throughout their operational lifecycle. This field is optional because not all utilities utilize an asset management tracking number.

Failure_Discovery_Time

The exact timestamp indicating the moment when a water infrastructure failure was first identified, recorded in a standardized MM/DD/YYYY HH:MM format using a 24-hour clock. This critical data point establishes the initial temporal reference for tracking the duration, response, and resolution of the infrastructure failure.

Leak_Stopped_Pre_Repair

The exact timestamp, if applicable, when the water system stopped the leak prior to the actual repair or renewal of the asset. This is recorded in a standardized MM/DD/YYYY HH:MM format using a 24-hour clock. This data point handles situations where the leak is stopped before the repair is completed because the leak was valved off to minimize loss and initiate the repair.

Repair_Initiation_Time

The precise moment when active repair activities officially commence, documented with a timestamp in the MM/DD/YYYY HH:MM format using a 24-hour clock. This field captures the transition from failure detection to active intervention, providing crucial data for analyzing response times and operational efficiency.

Repair_Completion_Time

The definitive timestamp marking the full restoration of water infrastructure to its operational state, recorded in the MM/DD/YYYY HH:MM format using a 24-hour clock. This field represents the final stage of the failure event, allowing for comprehensive analysis of total incident duration and repair effectiveness. There could be further site construction and clean-up efforts after this timestamp, however the loss of water from the failure should be largely resolved, including any flushing water needed to properly disinfect the repaired asset.

Calculated_Loss_Gallons

A mathematically derived measurement of water volume lost during an infrastructure failure, computed using technical calculations that consider flow rates, pipe characteristics, and duration of the incident. This calculated value provides an objective assessment of water loss that can be compared against utility-estimated volumes.

Estimated_Loss_Gallons

A utility-provided approximation of water volume lost during an infrastructure failure, representing the water system's professional judgment based on field observations, operational knowledge, and preliminary assessments. This estimate offers a practical, experience-based perspective on water loss complementing more precise calculated measurements. This field is optional and can be provided if the water purveyor has a better calculation of water loss than was auto-calculated.

Leak_Duration_Hours

The total elapsed time between the initial discovery of an infrastructure failure and the completion of repair activities, measured and recorded with one decimal place precision. This metric provides critical insight into the efficiency of detection, response, and restoration processes within a water utility's operational framework. This field is automatically calculated based on the leak reported time and the time when the asset was repaired or renewed.

Pipe_Material

A classification describing the primary physical composition of the water infrastructure asset, representing the fundamental substance from which the pipe or component is manufactured. This field captures critical information about the infrastructure's inherent physical properties, potential durability, and susceptibility to various failure modes. If your piping material is not listed, please select the closest material from the list. Options: PVC, HDPE, Fiberglass, Ductile Iron, Copper, Concrete.

Pipe_Diameter_Inches

The nominal width of the water infrastructure asset measured in standard inches, representing the internal cross-sectional dimension of the pipe or conduit. This measurement provides essential information about the infrastructure's capacity, flow characteristics, and potential hydraulic performance under various operational conditions.

Pipe_Age_Years

The estimated chronological duration since the original installation of the water infrastructure asset, calculated from the initial deployment date to the current reporting period. This field offers critical insight into the potential degradation, historical performance, and remaining serviceable life of the infrastructure component. Decimal years can be provided for assessing the performance of newly installed mains.

Type_of_Asset

A categorical classification defining the specific functional role and operational context of the water infrastructure component within the broader utility distribution system. This field provides a standardized method for categorizing and understanding the diverse range of infrastructure elements that comprise a water delivery network. Options: Main, service line, hydrant, valve, tank, etc.

Failure_Severity_Mode

Level of severity of the failure of the asset. Select from the dropdown options.

Options:

- Catastrophic: Blowout (complete failure with high-volume leakage)
- Major: Circumferential cracks, longitudinal cracks (leading to significant water loss)
- Minor: Seepage (hairline leaks that may be difficult to detect), Pinholes (leak from small holes typically caused by localized corrosion), Joint Leaks (leakage due to misalignment or wear)

Cause of Failure

The primary mechanical, chemical, or structural mechanism responsible for compromising the integrity of the water infrastructure asset, describing the specific process through which the failure was initiated and propagated. This field enables systematic analysis of root causes and informs future preventative maintenance strategies.

Options:

- Corrosion-Induced Failures: These failures occur due to chemical reactions (internal or external corrosion, oxidation) that weaken the pipe material through interaction with its environment, gradually leading to leaks, cracks, or holes.
- Mechanically-Induced Failures: Physical forces such as ground movement, traffic loading, thermal expansion, or third-party damage (fatigue, stress, impact) exert pressure on the pipe, causing structural damage like cracks or deformation.
- Hydraulic and Pressure-Induced Failures: Abnormal pressures or sudden hydraulic changes, such as water hammer or pressure build-up from blockages, create excessive strain on the pipe, leading to bursts or collapses.
- Material Degradation: Natural aging or environmental erosion degrades the pipe material over time, reducing its strength and leading to eventual failure as the pipe wears down.
- Joint and Connection Failures: Weakness at pipe joints or fittings, often due to improper installation or stress at connection points, leads to leaks or misalignment that compromises the overall system integrity.
- Construction Damage: Situations where the asset failed due to damage by an entity performing construction activities in the area.

Repair_Method

The specific technical approach and procedural methodology employed to restore the water infrastructure asset to its operational condition, documenting the precise intervention used to address the identified failure. This field provides a standardized record of restoration techniques that can inform future maintenance and rehabilitation practices.

Options:

- Repairs: Includes clamp sealing using clamps to temporarily seal small leaks, valve replacement to restore flow control by replacing faulty valves, and joint repairs to address leaks and alignment issues by fixing or sealing joints.
- Rehabilitation: Includes pipe relining, slip-lining or Cured-in-Place Pipe (CIPP) techniques.
- Replacement: Includes open cut replacement, pipe bursting and directional drilling techniques.

Pressure Envelope (Daily Range of Operational Pressure)

Include the high and low pressures experienced by the asset at this location during a typical month of operation.

Estimated_Repair_Cost

A monetary valuation representing the utility's projected financial expenditure required to fully restore the water infrastructure asset to its intended operational state. This field captures the economic impact of infrastructure failures and provides a quantitative measure of the resources necessary for system maintenance and rehabilitation.

Reporting_Year

The specific calendar year associated with the infrastructure failure and corresponding to the current three-year reporting cycle mandated by regulatory requirements. This field ensures proper temporal classification and enables systematic tracking of infrastructure performance across designated reporting periods.

Date Submitted

The precise timestamp indicating the exact moment of data entry into the official leak registry, documenting the administrative processing of the infrastructure failure report. This field provides an audit trail of information submission and ensures accountability in the documentation of water system infrastructure incidents.

TECHNICAL NOTES:

1. All fields are case-sensitive

2. Use standardized dropdown lists for consistency

3. Decimal precision requirements:

- Coordinates: 6 decimal places
- Water Loss: Whole Gallons
- Duration: 1 decimal place

VALIDATION REQUIREMENTS:

- No blank mandatory fields
- Geospatial data within California boundaries
- Timestamps must be chronologically valid
- Numeric fields must be positive values

SUBMISSION FORMAT:

- CSV or Excel (.xlsx)
- UTF-8 Encoding
- No merged cells
- No formulas in data cells

COMPLIANCE DEADLINE:

Initial Submission: January 1, 2029

Covering Years: 2025-2027