

Role of the Regional Water Board



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How will the Regional Water Board assess temperature data for 2008?

Step 1: Compile available data

Step 2: Determine data quality

**Step 3: Evaluate data against
temperature standard**

**Step 4: Make decision
to list or not list, or
to delist or keep on list**



Step 1: Compile Available Data

Use Readily Available Data and Information:

- 1. Data submitted by interested parties before February 28, 2007.**
- 2. In-house data:**
 - SWAMP (Surface Water Ambient Monitoring Program) data**
 - Discharger Monitoring Reports**
 - Data used from previous 303(d) lists and 305(b) reports**
 - Other data sets**

See 303(d) List Policy Section 6.1.1

Step 2: Determine Data Quality

Is the Data of good, fair, or poor quality?

Good Quality Temperature Data:

- Quantified and qualified**
- Representative of the waterbody**
- Collected at least 200m apart**
- Collected when temperature is most likely to impact the waterbody and beneficial uses**

See 303(d) List Policy Sections 6.1.4 and 6.1.5

Step 2: Determine Data Quality

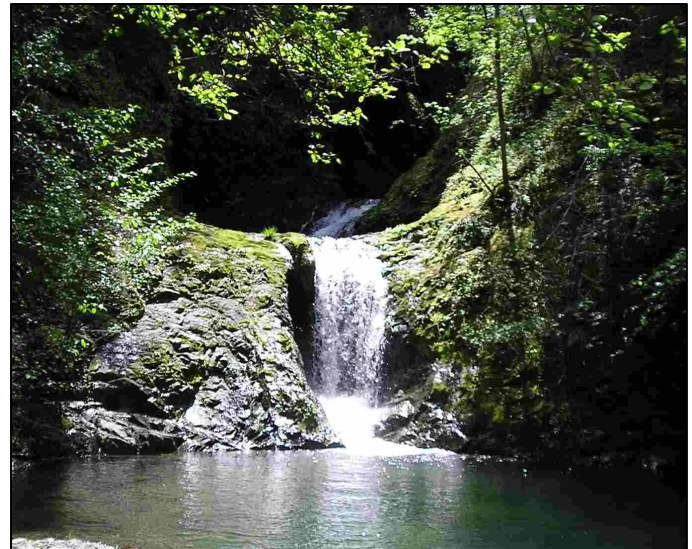
Good Quality Numeric Temperature Data:

- 1. From:**
 - published USGS reports**
 - SWAMP**
 - US EPA's EMAP**
(Environmental Monitoring and Assessment Program)
- 2. Have a quality assurance plan (QA Plan or QAPP).**
- 3. Have a project or site-specific sampling and analysis plan.**
- 4. Meet lab quality control checks.**

Step 2: Determine Data Quality

For narrative, qualitative, visual, or anecdotal information:

- Describes events or conditions that indicate impacts on water quality.
- Provides analyst's credentials and training.
- Scientifically defensible
- Verifiable.



Step 3: Evaluate Data

Details on how the Regional Water Board evaluates temperature data against standards will be presented by Bryan McFadin.



Step 4: Make Decision

Waterbody/Pollutant **IS NOT** on the 2006 303(d) List:

List
(impaired)

or

Do Not List
(not impaired or
not enough data)

Waterbody/Pollutant **IS** on the 2006 303(d) List:

Keep on List
(impaired)

or

Delist
(not impaired)

Step 4: Make Decision To List or Not to List

Waterbody/Pollutant IS NOT on the 2006 303(d) List

List if any one of these is found:

- 1. Numeric data exceed numeric objective more than a certain number of times . . .**
- 2. Adverse biological response . . .**
- 3. Diminished numbers of a species or individuals . . .**
- 4. Trend of increasing water temperatures . . .**
- 5. Non-attainment of the objective per weight-of-evidence.**

Step 4: Make Decision To List or Not to List

Waterbody/Pollutant IS NOT on the 2006 303(d) List

List if any one of these is found:

- 1. Numeric data exceed numeric objective more than a certain number of times**
 - per the binomial test in 303(d) List Policy Table 3.2**
 - see 303(d) List Policy Section 3.2**

TABLE 3.2: MINIMUM NUMBER OF MEASURED EXCEEDANCES NEEDED TO PLACE A WATER SEGMENT ON THE SECTION 303(D) LIST FOR CONVENTIONAL OR OTHER POLLUTANTS.

Null Hypothesis: Actual exceedance proportion ≤ 10 percent.

Alternate Hypothesis: Actual proportion > 25 percent.

The minimum effect size is 15 percent.

Sample Size	List if the number of exceedances equal or is greater than
5 – 30	5*
31 – 36	6
37 – 42	7
43 – 48	8
49 – 54	9
55 – 60	10
61 – 66	11
67 – 72	12
73 – 78	13
79 – 84	14
85 – 91	15
92 – 97	16
98 – 103	17
104 – 109	18
110 – 115	19
116 – 121	20

Step 4: Make Decision To List or Not to List (cont.)

Waterbody/Pollutant IS NOT on the 2006 303(d) List

List if any one of these is found:

- 2. Adverse biological response in resident individuals (e.g., salmonids) is found compared to reference conditions**
 - see Section 3.8**

- 3. Diminished numbers of a species or individuals, or other significant degradation in biological populations or communities, is found compared to reference conditions.**
 - see Section 3.9**

Step 4: Make Decision To List or Not to List (cont.)

Waterbody/Pollutant IS NOT on the 2006 303(d) List

List if any one of these is found:

- 4. Trend of increasing water temperatures over at least 3 years with observed impacts.**
 - Several conditions must be met**
 - see Section 3.10**

- 5. Non-attainment of the objective is found per the weight-of-evidence.**
 - see Section 3.11**

Step 4: Make Decision To List or Not to List

Weight-of-Evidence Approach:

- **Data or information on current conditions support recommendation**
- **Data or information affords a substantial basis in fact from which the decision can be inferred**
- **Demonstrate non-attainment of the objective**
- **Scientifically defensible and reproducible**



Step 4: Make Decision To List or Not to List

Waterbody/Pollutant IS NOT on the 2006 303(d) List

List if any one of these is found:

- 1. Numeric data exceed numeric objective more than a certain number of times . . .**
- 2. Adverse biological response . . .**
- 3. Diminished numbers of a species or individuals . . .**
- 4. Trend of increasing water temperatures . . .**
- 5. Non-attainment of the objective per weight-of-evidence.**

Step 4: Make Decision To Delist or Not

Waterbody/Pollutant IS on the 2006 303(d) List

Delist if all of these is true:

- 1. Numeric data exceed numeric objective less than a certain number of times . . .**
- 2. No adverse biological response . . .**
- 3. No diminished numbers of a species or individuals . . .**
- 4. No trend of increasing water temperatures . . .**
- 5. Attainment of the objective per weight-of-evidence.**

Step 4: Make Decision To Delist or Not

Waterbody/Pollutant IS on the 2006 303(d) List

Delist if all of these are true:

- 1. Numeric data exceed numeric objective less than a certain number of times**
 - per the binomial test in 303(d) List Policy Table 4.2**
 - see Section 4.2**

TABLE 4.2: MAXIMUM NUMBER OF MEASURED EXCEEDANCES
ALLOWED TO REMOVE A WATER SEGMENT FROM THE SECTION 303(D)
LIST FOR CONVENTIONAL OR OTHER POLLUTANTS.

Null Hypothesis: Actual exceedance proportion ≥ 25 percent.

Alternate Hypothesis: Actual exceedance proportion < 10 percent.

The minimum effect size is 15 percent.

Sample Size	Delist if the number of exceedances equal or is less than
26 – 30	4
31 – 36	5
37 – 42	6
43 – 48	7
49 – 54	8
55 – 60	9
61 – 66	10
67 – 72	11
73 – 78	12
79 – 84	13
85 – 91	14
92 – 97	15
98 – 103	16
104 – 109	17
110 – 115	18
116 – 121	19

Step 4: Make Decision To Delist or Not

Waterbody/Pollutant IS on the 2006 303(d) List

Delist if all of these are true:

- 2. Adverse biological response in resident individuals is not found compared to reference conditions.**
 - see Section 4.8**

- 3. Degradation in biological populations/communities is not found compared to reference conditions.**
 - see Section 4.9**

Step 4: Make Decision To Delist or Not

Waterbody/Pollutant IS on the 2006 303(d) List

Delist if all of these are true:

- 4. Data do not show a trend of increasing water temperatures over at least 3 years with observed impacts.**
 - see Section 4.10**

- 5. Attainment of the objective is found per the weight-of-evidence.**
 - see Section 4.11**

Step 4: Make Decision To Delist or Not

Waterbody/Pollutant IS on the 2006 303(d) List

Delist if all of these is true (standards are met):

- 1. Numeric data exceed numeric objective less than a certain number of times . . .**
- 2. No adverse biological response . . .**
- 3. No diminished numbers of a species or individuals . . .**
- 4. No trend of increasing water temperatures . . .**
- 5. Attainment of the objective per weight-of-evidence.**

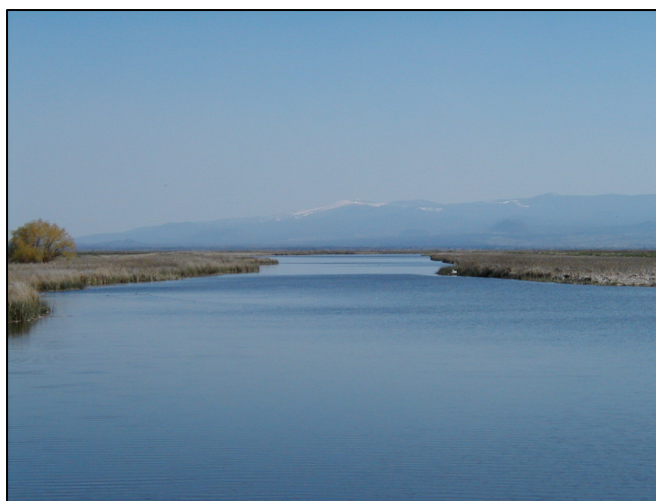
OR . . .

Step 4: Make Decision To Delist or Not

Waterbody/Pollutant IS on the 2006 303(d) List

Delist if :

- Data show objectives/standards are met.**
- Listing was based on faulty data and listing would not have occurred in the absence of the faulty data.**



How will the Regional Water Board assess temperature data for 2008?

Step 1: Compile available data

Step 2: Determine data quality

Step 3: Evaluate data against temperature standard

Step 4: Make decision to list, to not list, or delist



Evaluation of Temperature Data

303(d) List Policy Section 6.1.5.9:

“In the absence of data to interpret numeric water quality objectives, recent temperature monitoring data shall be compared to the temperature requirements of aquatic life in the water segment.”

Other requirements:

- Current and historic conditions and distributions of aquatic life must be given**
- Data must reflect most sensitive life stage**
- Temperature requirements of aquatic life must be based on peer-reviewed literature**
- Evaluate data using temperature metrics reflective of the sensitive aquatic life species (e.g., MWAT, upper lethal limit)**

Regional Water Board's Next Steps

**October 2008: Release of
2008 Integrated Report
Public Review Draft**

**October 2008: Public Workshops
in Santa Rosa and Eureka area**

**October 23, 2008: Board Public Workshop
in Weaverville**

Early November 2008: Close public comment period

**December 11, 2008: Regional Water Board Hearing
in Santa Rosa**

All dates are tentative and subject to change.