

**BEACH REPORT CARD**

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**GRADING METHODOLOGY**



# Beach Report Card

- Easy-to-understand translation of bacteria indicator data
- A - F grades for beach water quality
- Data from public agencies (Environmental Health Departments and POTWs)
- Endorsed by the CA State Water Resources Control Board and Beach Water Quality Workgroup as an effective education tool
- Modified in 2005 to include:
  - Geometric mean
  - Firm zero to 100 points scale
  - Greater significance to the most recent sample relative to past samples
  - Greater weight for *Enterococcus* and the Total to Fecal ratio relative to Total Coliform and Fecal Coliform

$$\% \text{ Grade} = \frac{\text{Total Points Available} - \text{Total Points Lost}}{\text{Total Points Available}}$$

# Total Points Available

- Derived from adding points from two components together: Geometric Mean and Single Sample Standard

Geometric Mean	29 points (50 points for annual)
Single Sample Standard	71 points (50 points for annual)
<b>Total Points Available</b>	<b>100 points</b>

# Total Points Lost

- Points lost are calculated separately for each component
- Geometric Mean:

Indicator Exceeded	California Beach Bathing Standard*	% of Total Available Points Lost Due to Exceedance	Total Available Points
Enterococcus	35	80%	29
Fecal Coliform	200	40%	
Total Coliform	1,000	40% (20% for annual)	

\* Colony forming units per 100 milliliters of ocean water

# Total Points Lost

- Single Sample Standard:

Indicator Bacteria	SLIGHT T - 1 SD	MODERATE T + 1 SD	HIGH >T + 1 SD	EXTREME Very High Risk
<b>Total Coliform</b>	6,711-9,999	10,000-14,900	>14,900	na
<b>Fecal Coliform</b>	268-399	400-596	>596	na
<b>Enterococcus</b>	70-103	104-155	>155	na
<b>Total to Fecal Ratio (if: Total ≥ 1,000)</b>	10.1-13	7.1-10	2.1-7	<2.1

\* Colony forming units per 100 milliliters of ocean water

SD = standard deviation

**Red** = California State Health Department standards for a single sample

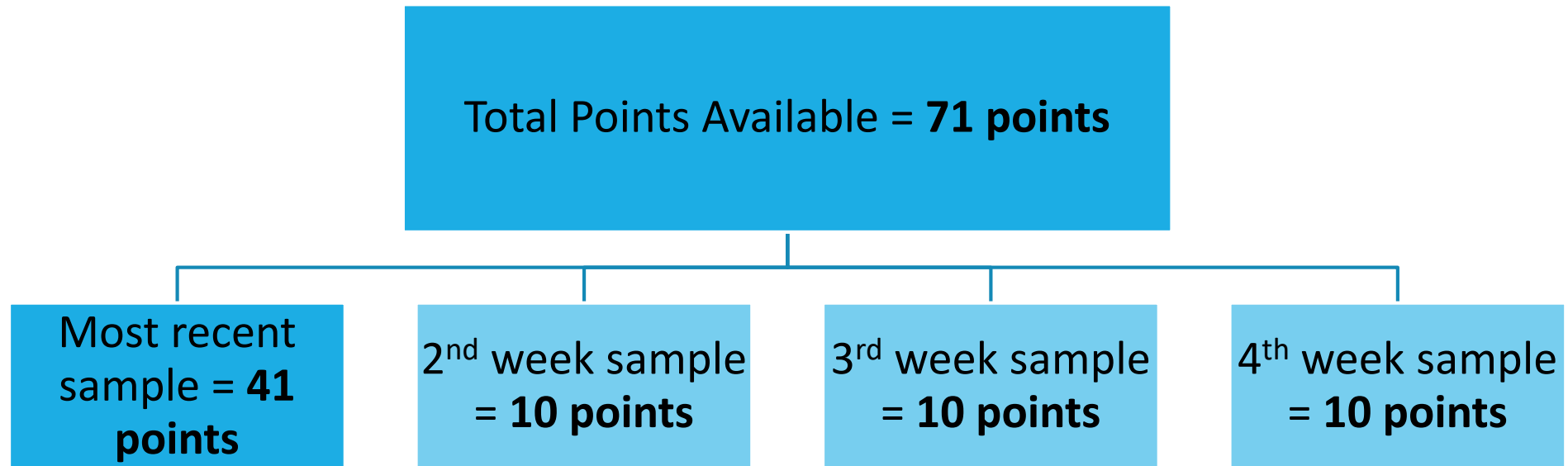
# Total Points Lost

- Single Sample Standard:

Indicator Exceeded	SLIGHT % Points Lost	MODERATE % Points Lost	HIGH % Points Lost	EXTREME % Points Lost	Total Points Available
<b>Total Coliform</b>	10%	30%	40%	na	<b>71</b>
<b>Fecal Coliform</b>	10%	30%	40%	na	
<b>Enterococcus</b>	20%	40%	60%	na	
<b>Ratio (when Total <math>\geq</math> 1,000)</b>	25%	50%	75%	100%	

# Total Points Lost

- Single Sample Standard:





$$\% \text{ Grade} = \frac{\text{Total Points Available} - \text{Total Points Lost}}{\text{Total Points Available}}$$

# Grading Scale

GRADE	POINTS
A	90 – 100%
B	80 – 89%
C	70 – 79%
D	60 – 69%
F	≤ 59%

# Example: Malaga Cove in Palos Verdes

- Total Points Available:
  - Geometric Mean = 29 points
  - Single Sample = 71 points

Sample Date	Total Coliform	Fecal Coliform	Enterococcus
10/30/2017	697	175	101
10/23/2017	245	31	5
10/16/2017	223	41	5
10/11/2017	546	30	5
10/9/2017	2012	528	75

# Example: Total Points Lost - Geomean

	Total Coliform	Fecal Coliform	Enterococcus
CA Beach Bathing Standard	1000	200	35
% Points Lost	40%	40%	80%
Geometric Mean at Malaga Cove	530.04	81.17	15.68
% Points Lost at Malaga Cove	0%	0%	0%
<b>Total Points Lost for Geomean = 0</b>			

# Example: Total Points Lost – Single Sample

Sample Date	Total Coliform	Fecal Coliform	Enterococcus
10/30/17	697	175	101
10/23/17	245	31	5
10/16/17	223	41	5
10/11/17	546	30	5
10/09/17	2012	528	75

Total Coliform	Fecal Coliform	Enterococcus	TF Ratio	% Points Lost	Total Points Available	Points Lost per Week
0%	0%	20%	0%	20%	41	0.20 (41 points) = 8.2
0%	0%	0%	0%	0%	10	0
0%	0%	0%	0%	0%	10	0
0%	0%	0%	0%	0%	10	0
0%	30%	20%	75%	125%		1.25/2 = 0.625 (10 points) = 6.25
<b>Total Points Lost for Single Sample = 14.45</b>						

Indicator Bacteria	SLIGHT T - 1 SD	MODERATE T + 1 SD	HIGH >T + 1 SD	EXTREME Very High Risk
<b>Total Coliform</b>	6,711-9,999	<b>10,000</b> -14,900	>14,900	na
<b>Fecal Coliform</b>	268-399	<b>400</b> -596	>596	na
<b>Enterococcus</b>	70-103	<b>104</b> -155	>155	na
<b>Total to Fecal Ratio (if: Total ≥ 1,000)</b>	10.1-13	7.1- <b>10</b>	2.1-7	<2.1

\* Colony forming units per 100 milliliters of ocean water

SD = standard deviation

**Red** = California State Health Department standards for a single sample

Indicator Exceeded	SLIGHT % Points Lost	MODERATE % Points Lost	HIGH % Points Lost	EXTREME % Points Lost	Total Available Points
<b>Total Coliform</b>	10%	30%	40%	na	<b>71</b>
<b>Fecal Coliform</b>	10%	30%	40%	na	
<b>Enterococcus</b>	20%	40%	60%	na	
<b>Ratio (when Total ≥ 1,000)</b>	25%	50%	75%	100%	

# Example: Final Grade

- Total Points Available: 100 points
- Total Points Lost: 14.45 points
  - Geomean Points Lost: 0 points
  - Single Sample Points Lost: 14.45 points

$$\% \text{ Grade} = \frac{\text{Total Points Available} - \text{Total Points Lost}}{\text{Total Points Available}}$$

$$\% \text{ Grade} = \frac{100 \text{ points} - 14.45 \text{ points}}{100 \text{ points}} = 85.6\% \rightarrow \text{B grade}$$