

**Dry Weather Allocations
for the LA River Watershed
Bacteria TMDL**

**Joint Steering Committee/WT Group
July 29, 2009**

Overview

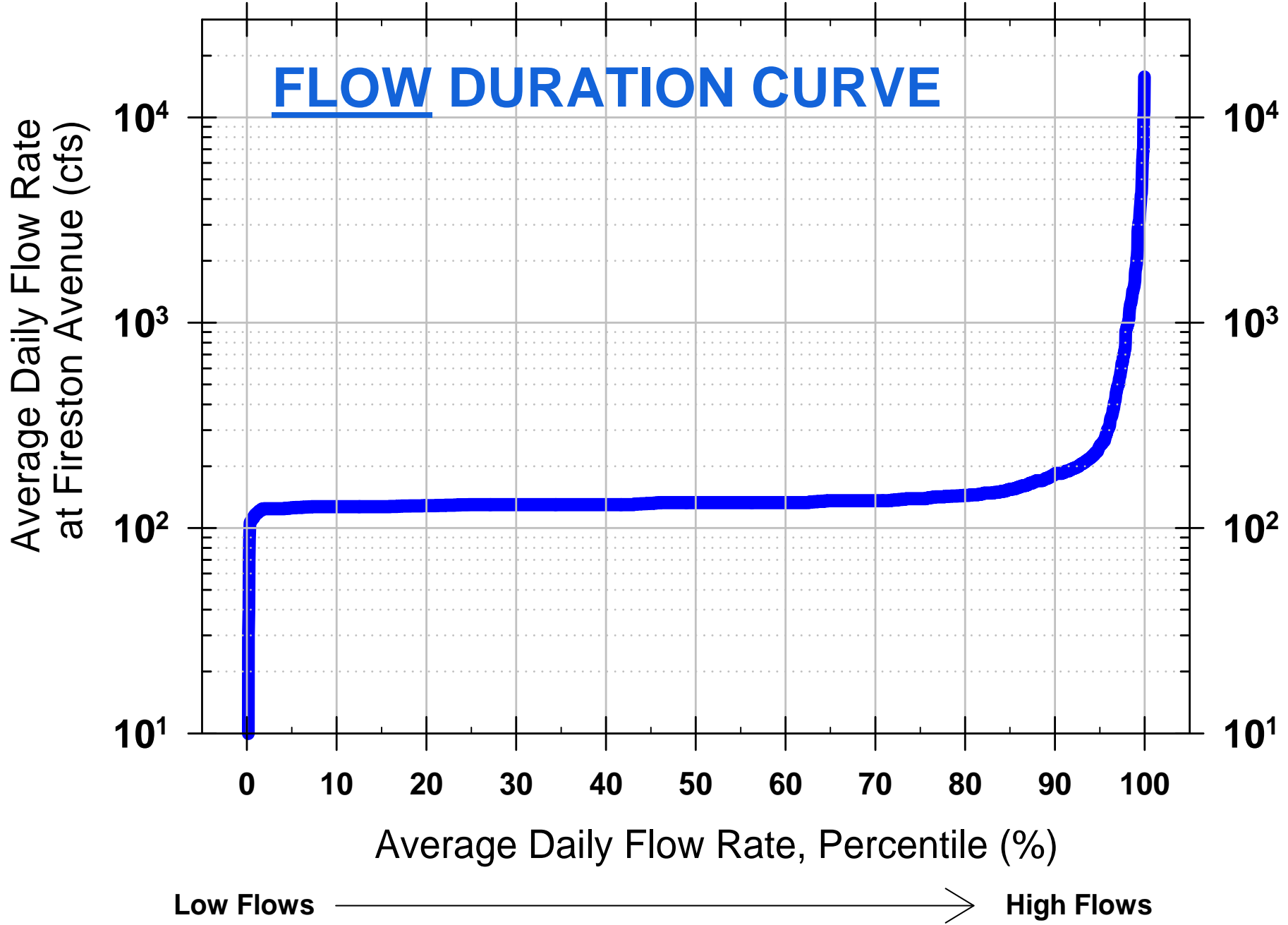
- Approach to Calculating Allocations
- Application to Entire Watershed
- Distribution among Source Types
- Margin of Safety
- Implementation

Wasteload Allocations

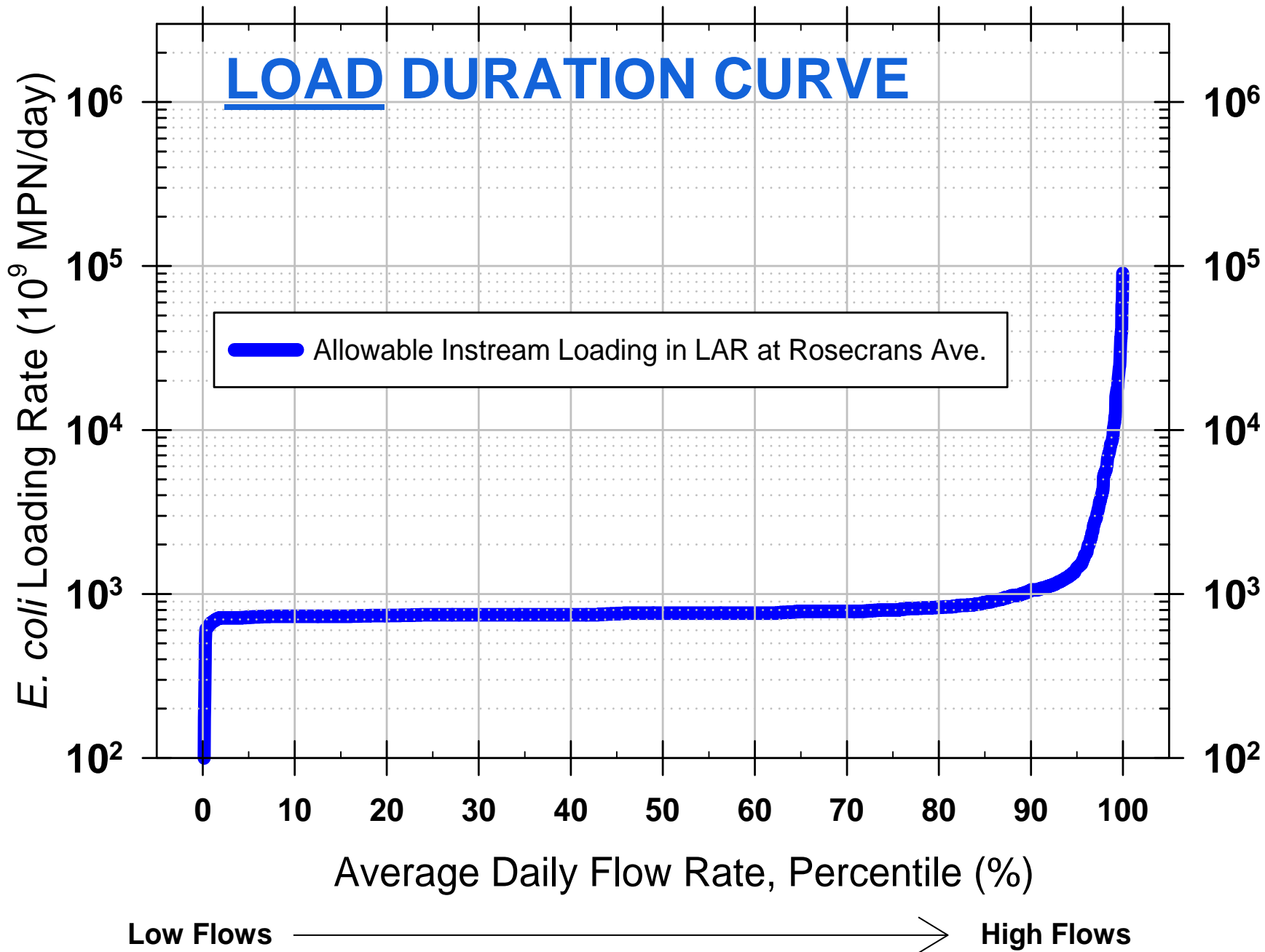
- All TMDLs have WLAs
- For LA River Bacteria TMDL, developed WLAs are end-of-pipe (MPN/day)
 - Allows MS4 to focus on their discharges
 - Addresses concerns about in-stream sources highlighted by the BSI Study
- **Simple approach:** load duration curves

Duration Curves

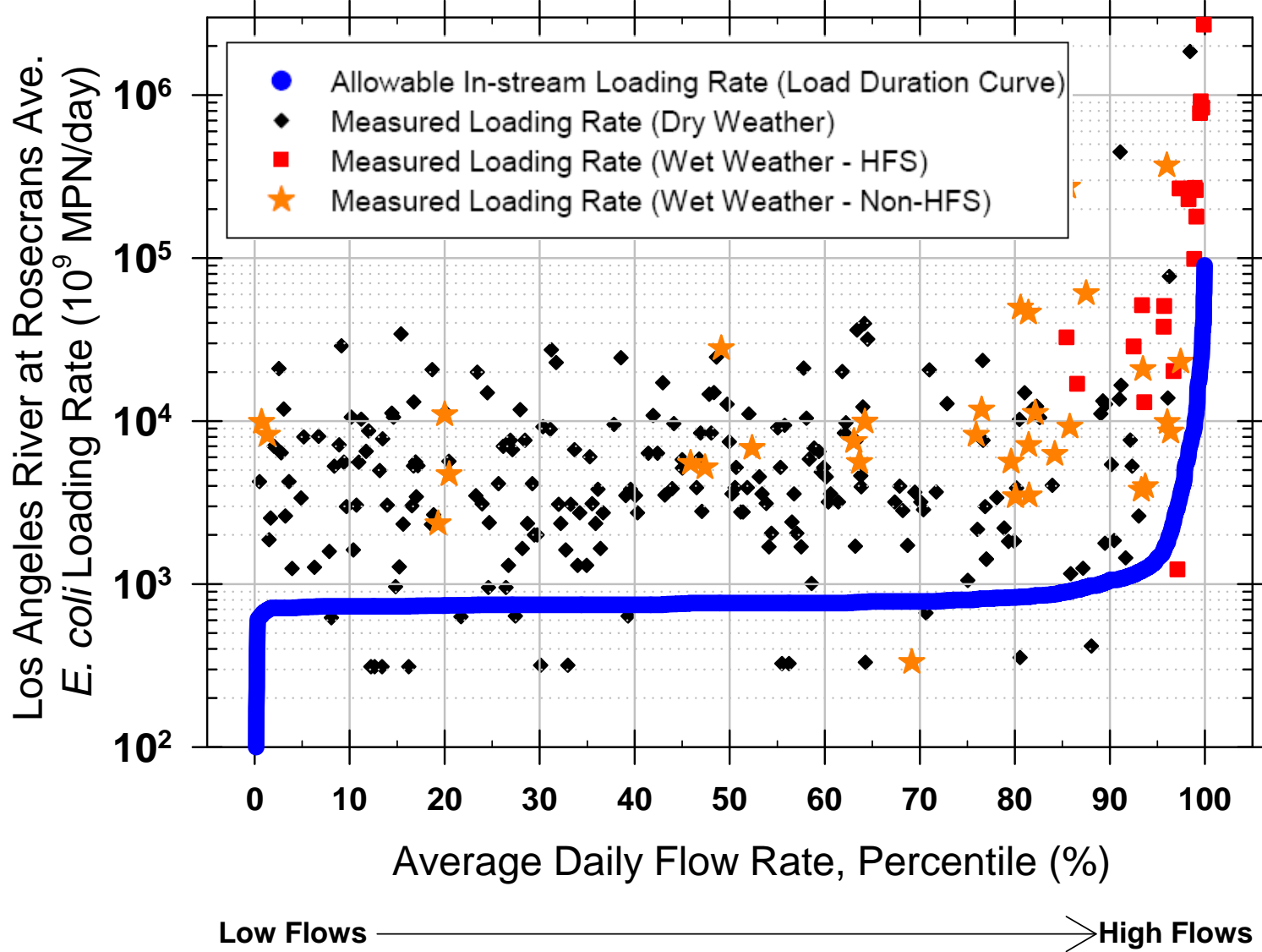
2001-2008: Los Angeles River near Rosecrans Ave.



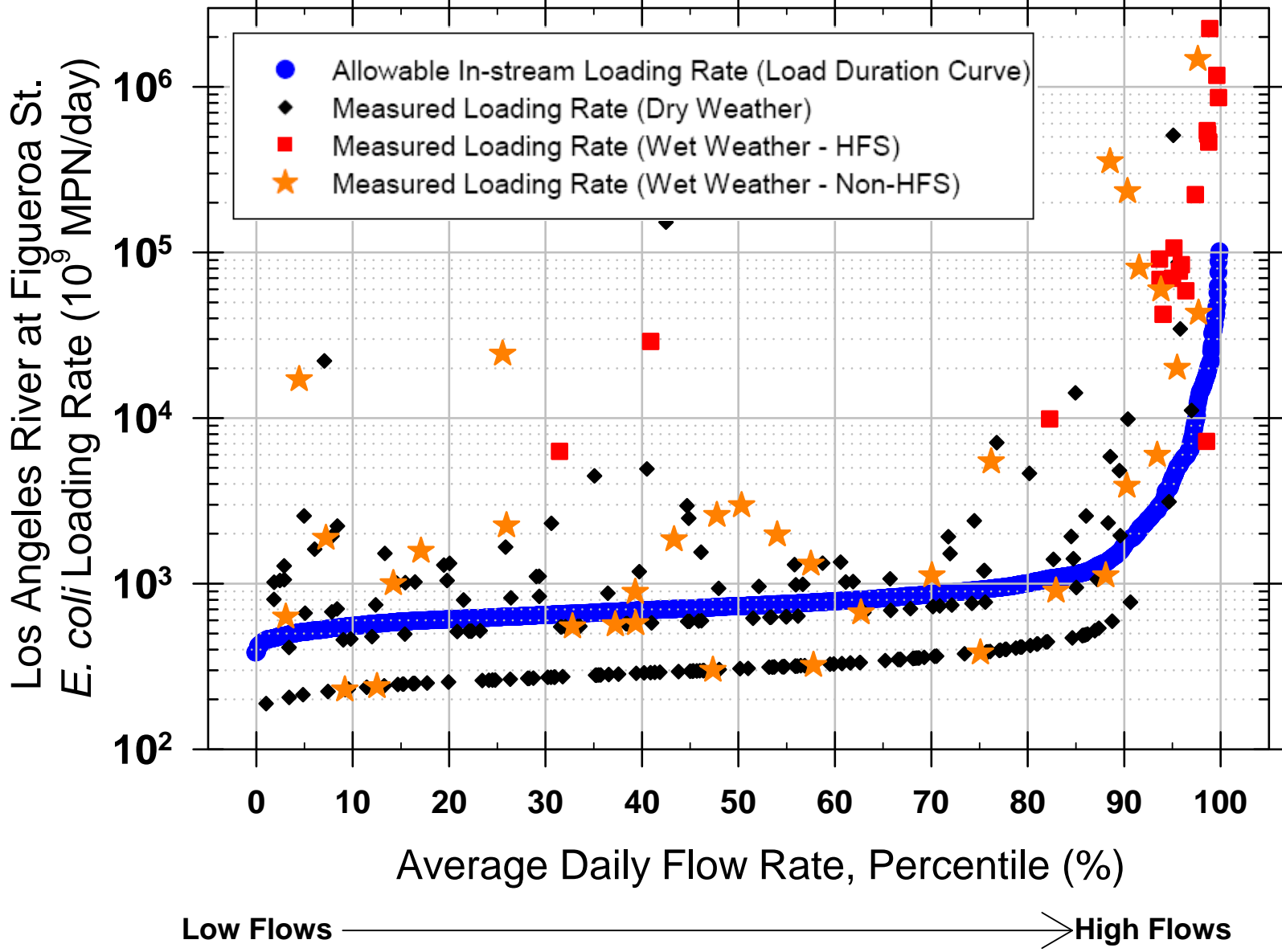
2001-2008: Los Angeles River at Rosecrans Ave.



Los Angeles River at Rosecrans Ave.



Los Angeles River at Figueroa St.



How to Calculate a WLA

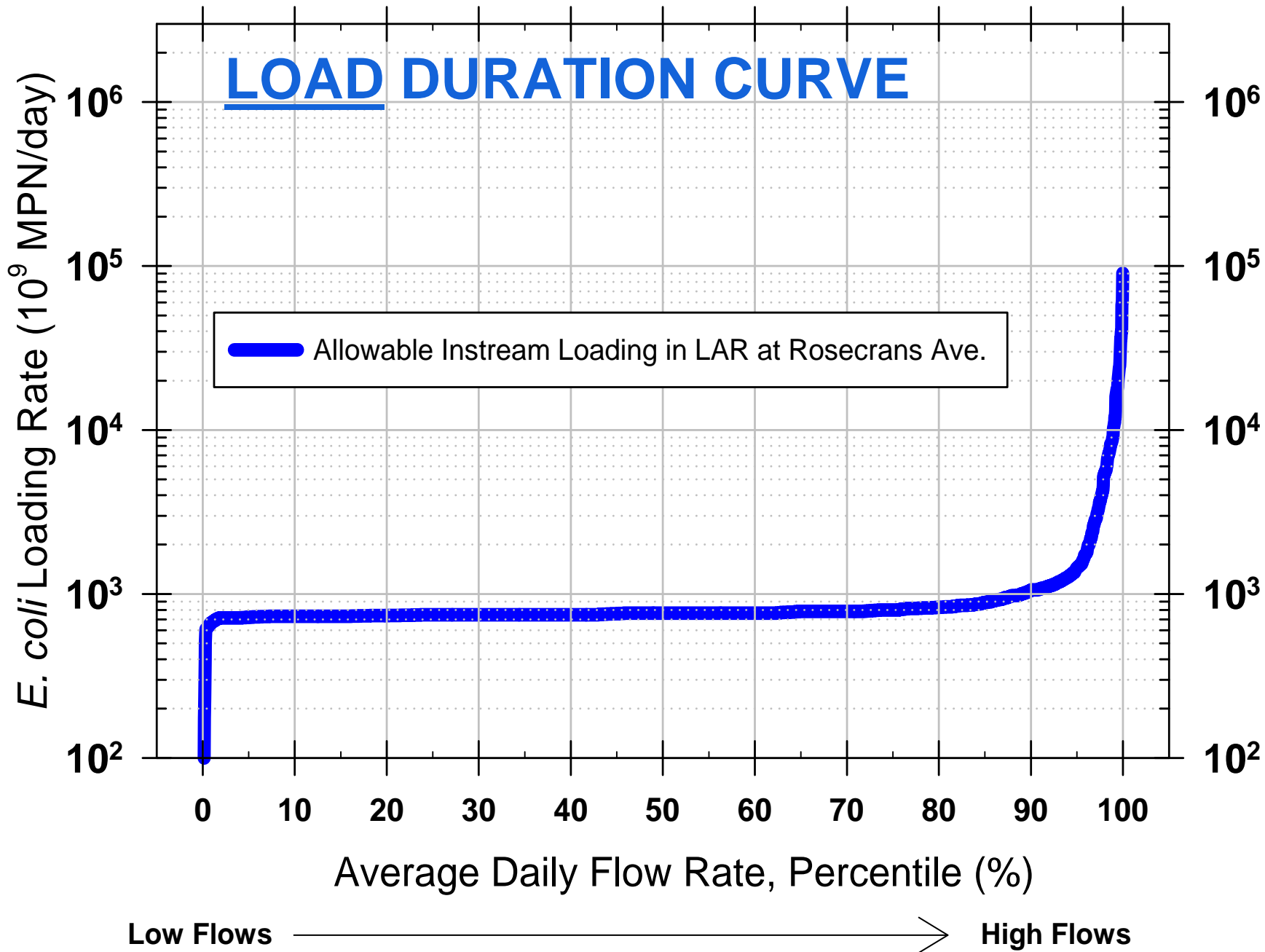
Allocation Development

- Two primary considerations
 - 1. Loading Allocated to Upstream Sites
 - 2. Loading Allocated to Upstream Tributaries
- For example, in the case of the LA River @ Rosecrans Avenue, must incorporate “already allocated” loading from:
 - LA River @ Figueroa Street
 - Arroyo Seco
 - Rio Hondo
- The “effect” of these upstream allocations depends on the **rate of decay** and downstream **travel time**

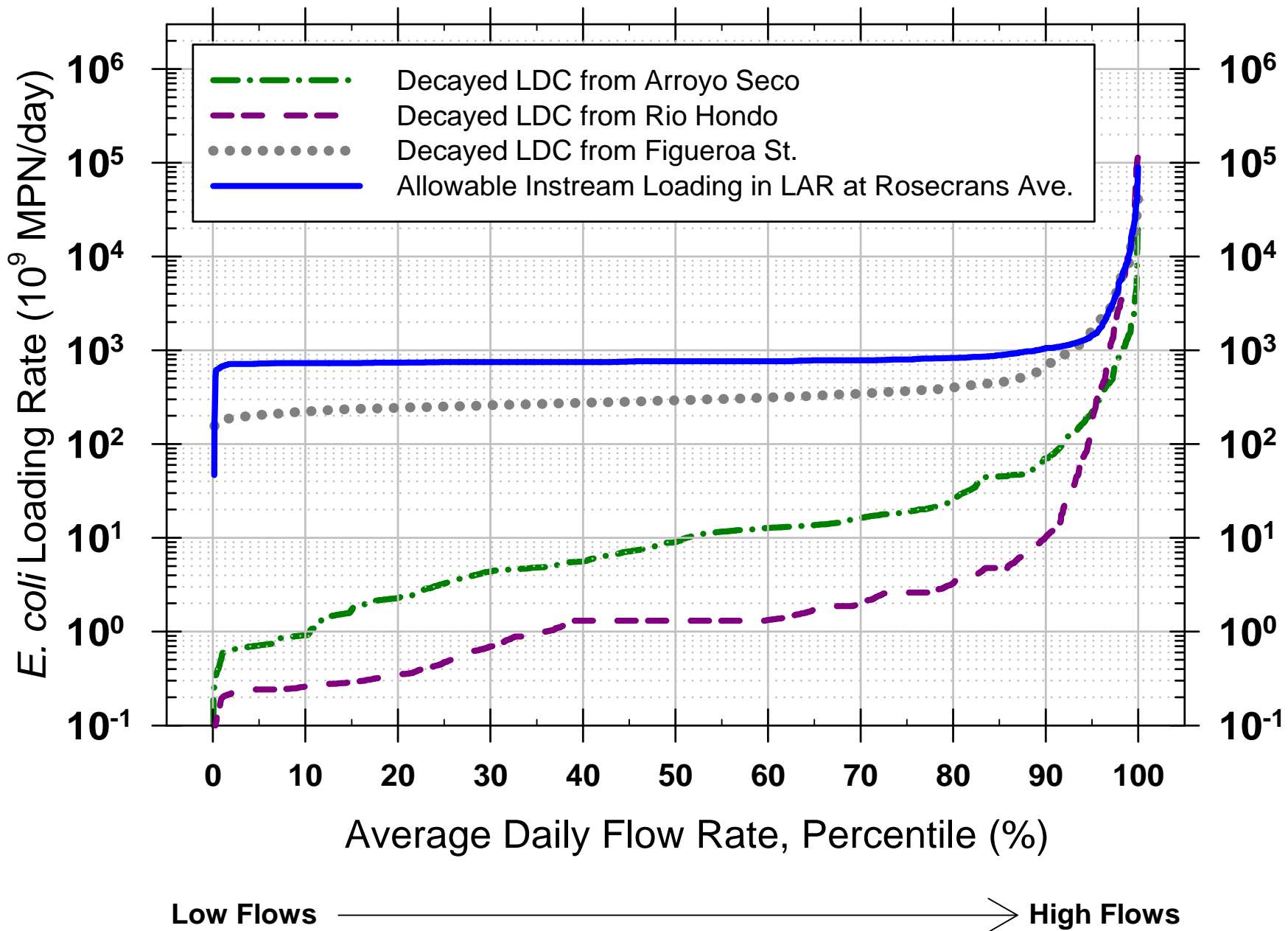
Technical Details

- **Decay** – used decay rates measured by SCCWRP during decay studies published in 2004
 - Water and sunlight conditions representative of So Cal
 - SCCWRP used two conditions during lab tests: “summer” and “winter”
 - For TMDL, used decay value that is the average of these two conditions
- **Travel times** – used in-stream LA River velocities from EFDC model used for Metals TMDL

2001-2008: Los Angeles River at Rosecrans Ave.

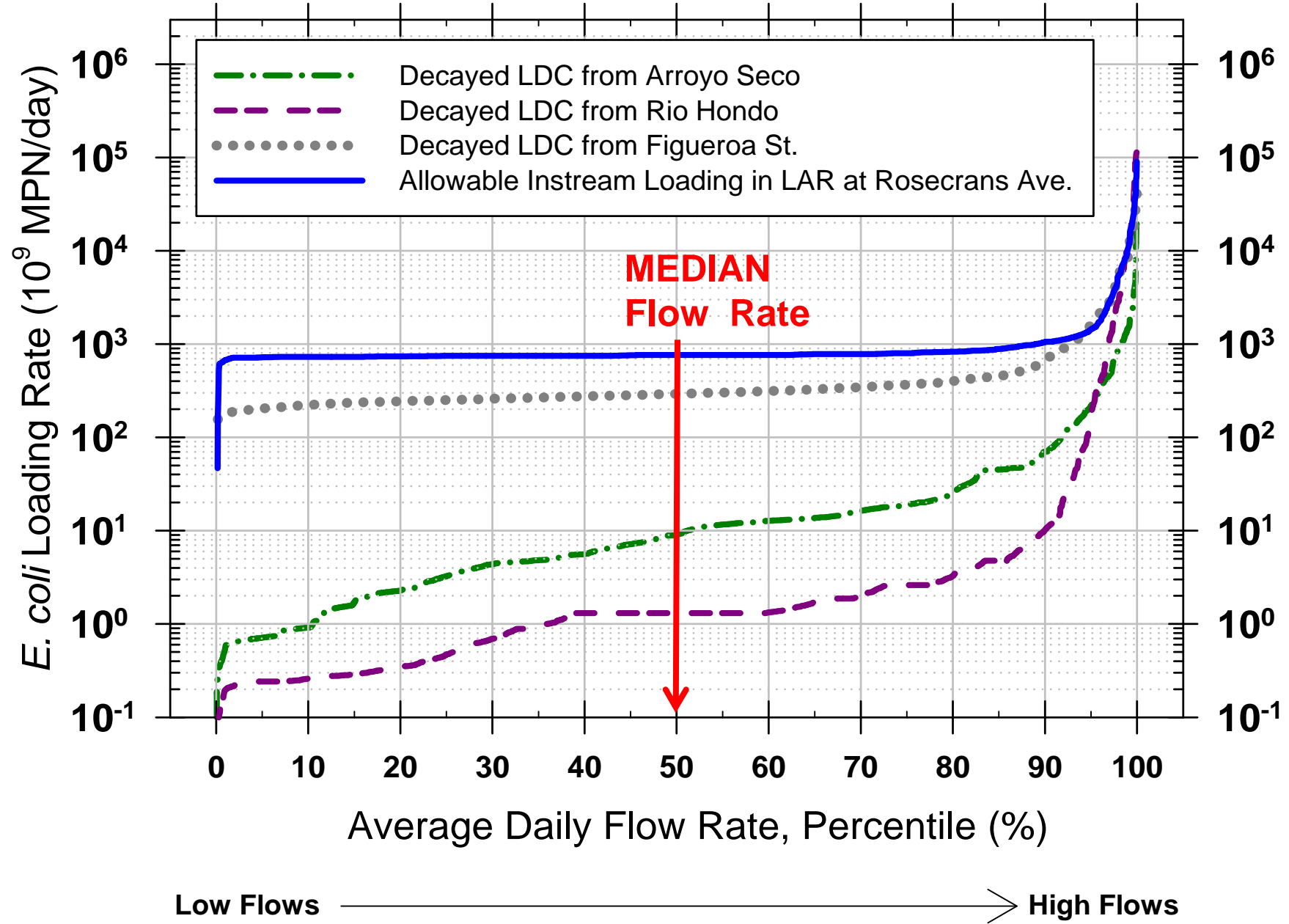


Los Angeles River at Rosecrans Ave.



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Los Angeles River at Rosecrans Ave.



WLA Calculation

<i>E. coli</i> Loading Rate (10^9 MPN/day)				
Median Allowable In-stream Loading at Rosecrans Ave. (1)	Decayed Median Allowable In-stream Loading from Figueroa St. (2)	Decayed Median Allowable In-stream Loading from Arroyo Seco (3)	Decayed Median Allowable In-stream Loading from Rio Hondo (4)	WLA for Non-WRP NPDES Discharges between Figueroa St. and Rosecrans Ave. (1)-(2)-(3)-(4)
764	283	9	1	472

For discharges to the LA River between
Figueroa Street and Rosecrans Avenue

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Expand to Entire Watershed





Legend

- LA River Watershed
- Minor Waters/Reaches
- Tributaries for Which Allocations were Developed
- Locations used to Develop Allocations**
- Mainstem LAR Locations
- Tributary Locations
- LA County Flow Gauges
- + LAR Reach Breaks
- LAR Segments for which Allocations were Developed**
- Segment A
- Segment B
- Segment C
- Segment D
- Segment E

LAR Segments and Tributaries

LA River Segment	Included LA River Reaches	LA River Segment for which Dry Weather Wasteload Allocations are Required		Tributaries
		Upstream End (median flow rate, cfs)	Downstream End (median flow rate, cfs)	Name
A	1 and 2	Rosecrans Ave. ^{F1} (133)	Willow St. ^{F2} (132)	Compton Creek ^{F3}
B	2	Figueroa St. ^{F4} (125)	Rosecrans Ave. ^{F1} (133)	Arroyo Seco ^{F5}
				Rio Hondo ^{F6}
C	3 and 4	Tujunga Ave. ^{F7} (82)	Figueroa St. ^{F4} (125)	Verdugo Wash ^{F8}
				Burbank Western Channel ^{F9}
D	4 and 5	Balboa Blvd. ^{F10} (10)	Tujunga Ave. ^{F7} (82)	Tujunga Wash ^{F11}
				Bull Creek ^{F12}
E	6	Confluence with Calabasas Creek/ Bell Creek ^{F13} (4.4)	Balboa Blvd. ^{F10} (10)	Aliso Canyon ^{F14}
				Dry Canyon ^{F15}
				McCoy Canyon ^{F15}
				Bell Creek ^{F15}

Distribute Allocations among Source Types

Point Source Allocations

POINT SOURCE TYPE	WLA APPROACH (dry weather)
Water Reclamation Plants	Permit limit (Effluent Flow * 2 MPN/100mL)
Industrial Stormwater	Zero <i>E. coli</i> discharged to waterbody
Industrial Wastewater	Zero <i>E. coli</i> discharged to waterbody
“Other” NPDES discharges (construction, dewatering, etc.)	Zero <i>E. coli</i> discharged to waterbody
MS4s	The remaining allowable loading

Nonpoint Source Allocations

NONPOINT SOURCE TYPE	LA APPROACH (dry weather)
Onsite Wastewater Treatment Systems (septics)	Zero <i>E. coli</i> discharged to waterbody
Natural sources	Allowable Exceedance Days

Allocations for LA River

LA River Segment	Included LA River Reaches	LA River Segment for which Dry Weather Wasteload Allocations are Required		Wasteload and Load Allocations ^{1,2} [<i>E. coli</i> Loading Rate (10 ⁹ MPN/day)]					LA for Natural, Non-point Sources (Single Sample Maximum Exceedance Days) ⁵
		Upstream End	Downstream End	WLA for WRP Discharges ³	WLA for MS4 Discharges along Segment ⁴	WLA for Industrial Stormwater and Wastewater Discharges along Segment	WLA for Other NPDES Discharges along Segment	LA for OWTS Discharges along Segment	
A	1 and 2	Rosecrans Ave.	Willow St.	0	274	0	0	0	5
B	2	Figueroa St.	Rosecrans Ave.	0	472	0	0	0	5
C	3 and 4	Tujunga Ave.	Figueroa St.	2 x Q ^a	422	0	0	0	5
D	4 and 5	Balboa Blvd.	Tujunga Ave.	2 x Q ^b	412	0	0	0	5
E	6	Headwaters	Balboa Blvd.	0	28	0	0	0	5

Allocations for Tributaries

Tributary Name	LA River Reach at Tributary Confluence	Wasteload and Load Allocations ^{1,2} (<i>E. coli</i> Loading Rate [10 ⁹ MPN/day])					LA for Natural, Non-point Sources (Single Sample Maximum Exceedance Days) ⁵
		WLA for MS4 Discharges to Tributary ³	WLA for WRP Discharges to Tributary ⁴	WLA for Industrial Stormwater and Wastewater Discharges to Tributary	WLA for Other NPDES Discharges to Tributary	LA for OWTS Discharges to Tributary	
Compton Creek	1	6	0	0	0	0	5
Arroyo Seco	2	22	0	0	0	0	5
Rio Hondo	2	2	0	0	0	0	5
Verdugo Wash	3	46	0	0	0	0	5
Burbank Western Channel	3	78	2 x Q ^a	0	0	0	5
Tujunga Wash	4	9	0	0	0	0	5
Bull Creek	5	8	2 x Q ^b	0	0	0	5
Aliso Canyon Wash	6	21	0	0	0	0	5
Dry Canyon	6	6	0	0	0	0	5
McCoy Canyon	6	6	0	0	0	0	5
Bell Creek	6	13	0	0	0	0	5

Margin of Safety

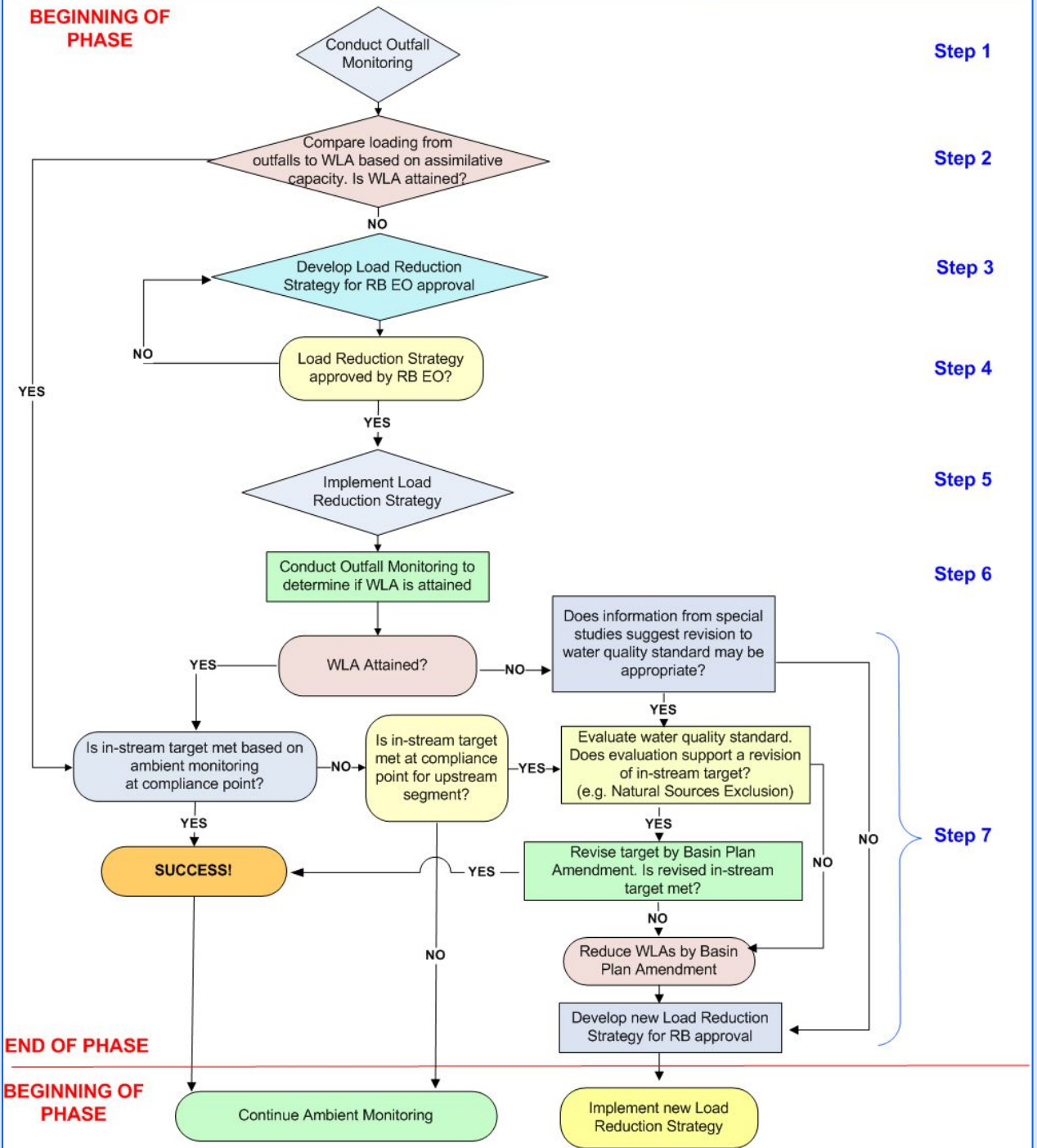
Margin of Safety

- MOS is used to account for uncertainty in TMDL and WLA calculations
- Two types:
 - **Explicit:** subtract a percentage of allowable loading prior to calculating WLAs
 - **Implicit:** highlight conservative assumptions that reduce uncertainty and/or magnitude of WLAs ← **THIS TMDL**
- **Implicit conservative assumption:** ignore decay of E.coli from MS4 discharges
 - the “effect” of this assumption can be quantified

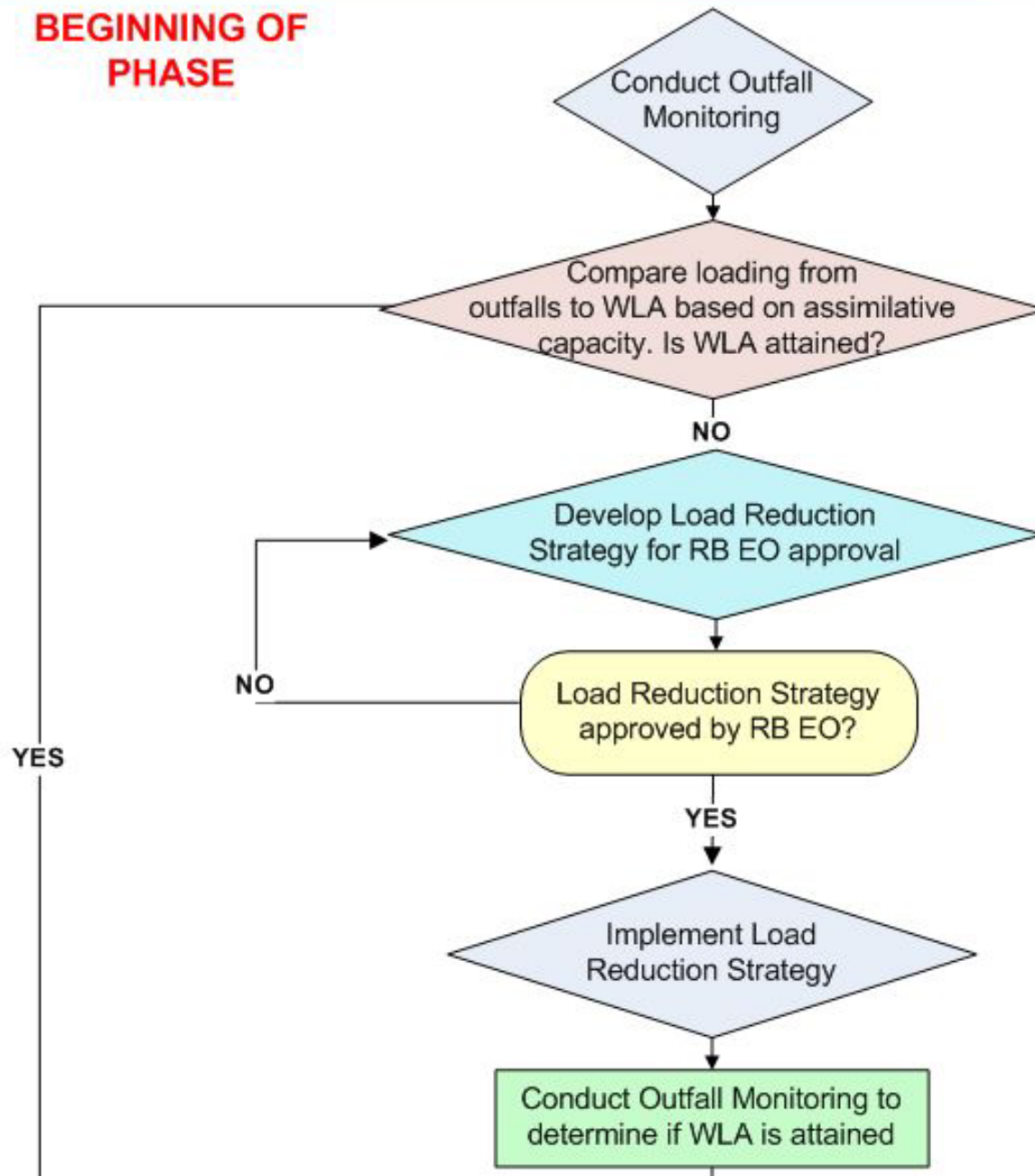
LA River Margins of Safety

LA River Segment	Included LA River Reach	LA River Segment for which Dry Weather Wasteload Allocations are Required		E. coli Loading Rate (10 ⁹ MPN/day)			
		Upstream End	Downstream End	MS4 WLA (1)	Potential Allowable Storm Drain WLA if Decay is Included (2)	Margin of Safety (2)-(1)	% of MS4 Loading Reserved for MOS $[(2)-(1)]/(2) \times 100\%$
A	1 and 2	Rosecrans Ave.	Willow St.	274	345	71	21%
B	2	Figueroa St.	Rosecrans Ave.	472	741	269	36%
C	3 and 4	Tujunga Ave.	Figueroa St.	422	640	218	34%
D	4 and 5	Balboa Blvd.	Tujunga Ave.	412	561	149	26%
E	6	Headwaters	Balboa Blvd.	29	37	8	21%

Implementation “Reminder”



BEGINNING OF PHASE



Current MS4 Loading to Segment B

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Draft WLA for
MS4 Discharges
= 472
(67% Reduction)

Monitoring Event	Loading Rate (10^9 MPN/day)		
	Total Loading from All Outfalls between Figueroa St. and Rosecrans Ave. ¹	Loading from Arroyo Seco	Loading from Rio Hondo
Event 1	2,900	2867	0.01
Event 2	1,700	66	164
Event 3	900	95	39
Event 4	1,100	164	237
Event 5	3,300	162	43
Event 6	16,000	23	0.17
Median Monte Carlo-Simulated Loading Rate	1,431		263

1 – Does not include the R2-N during Events 1, 2 and 3

Conclusions

Conclusions

- Proven approach to developing WLAs
- Provides a clear compliance goal for MS4s
- Supports a quantitative implementation strategy that provides flexibility to responsible agencies
- Next Steps for TMDL Technical Report:
 - Distribute draft Allocations section (Section 6)
 - Integrate into Implementation Strategy (Section 7)
 - Create monitoring program section (Section 8)

Discussion