

California Stormwater Quality Association (CASQA) Approach to Municipal Program Effectiveness Assessment

EPA Webcast
June 4, 2008



Introduction to the Guidance Manual and Key Concepts - Betsy Elzufon



CASQA



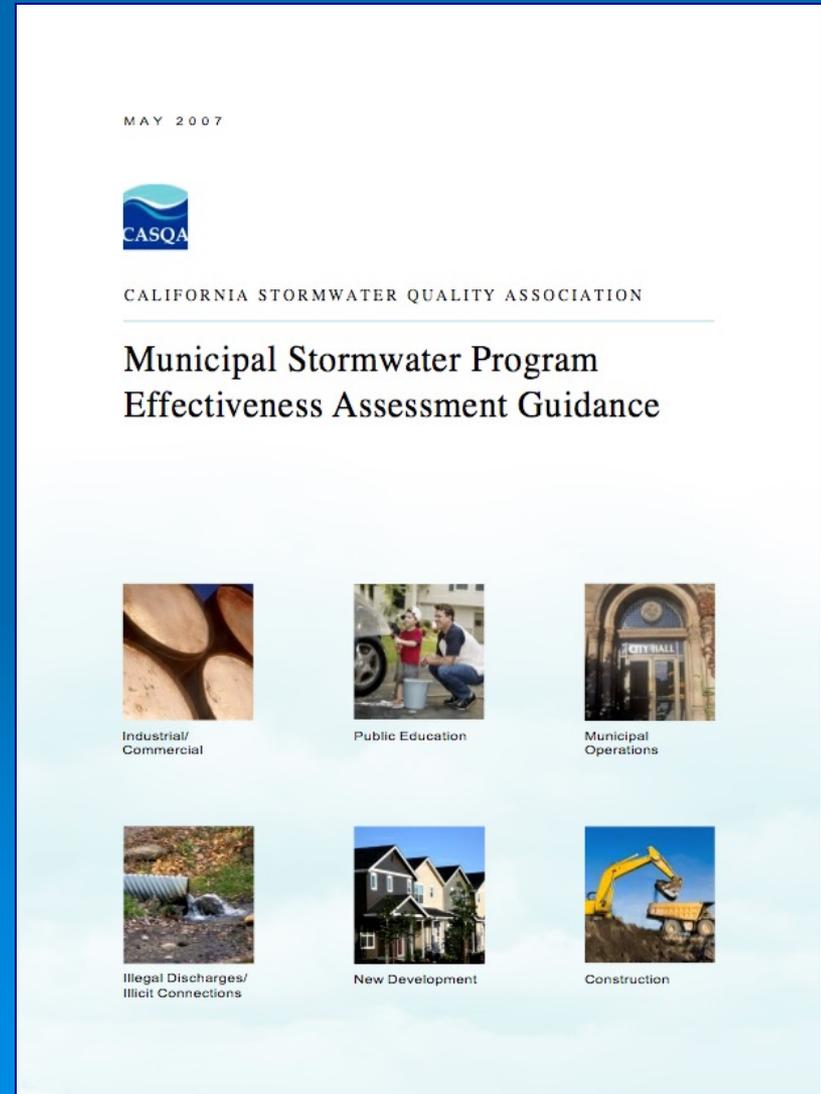
History of Guidance Document

- Regulatory requirements in permits
- Municipalities unsure how to conduct these assessments
- CASQA identified a need for a guidance document
- San Diego and wastewater community provided a foundation



CASQA Approach

- Overview of key concepts
- Assessment strategy
- Description of different assessment methods
- Applicability to program elements/ minimum control measures

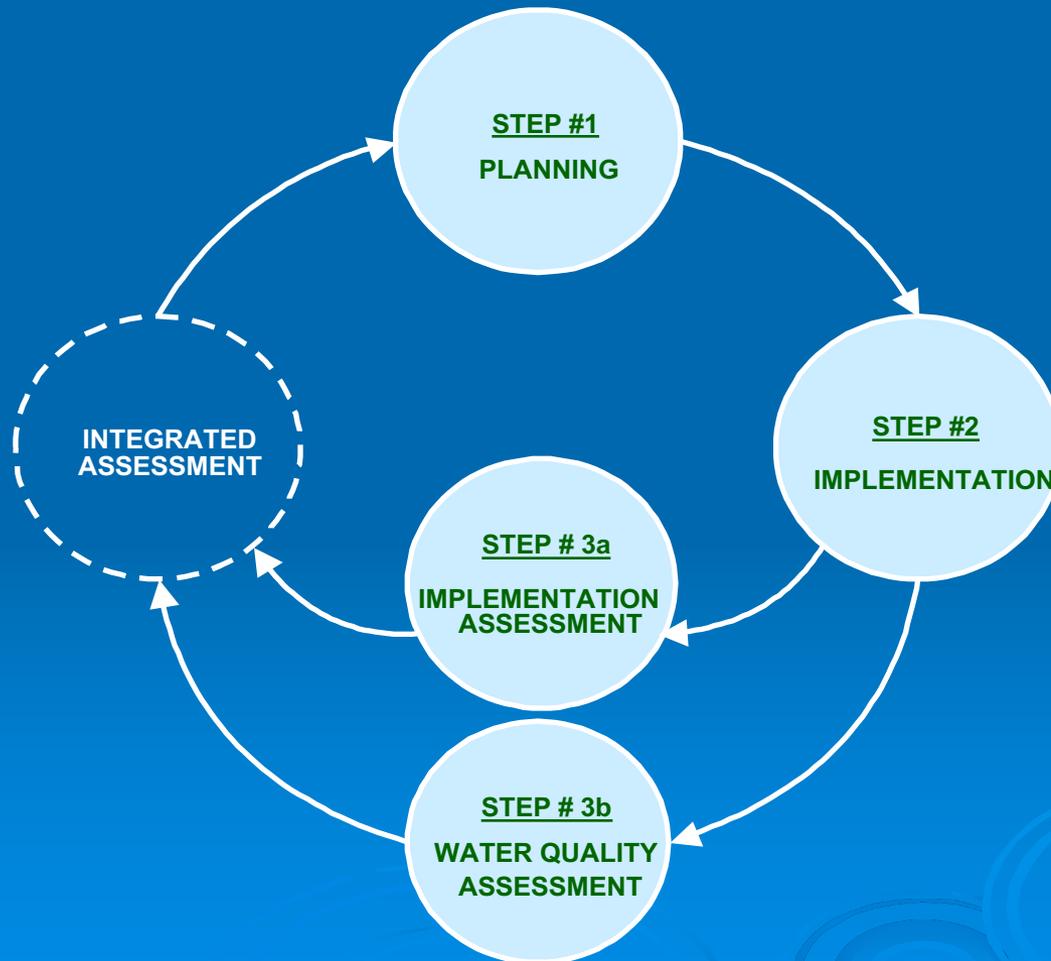


Why Conduct Effectiveness Assessments?

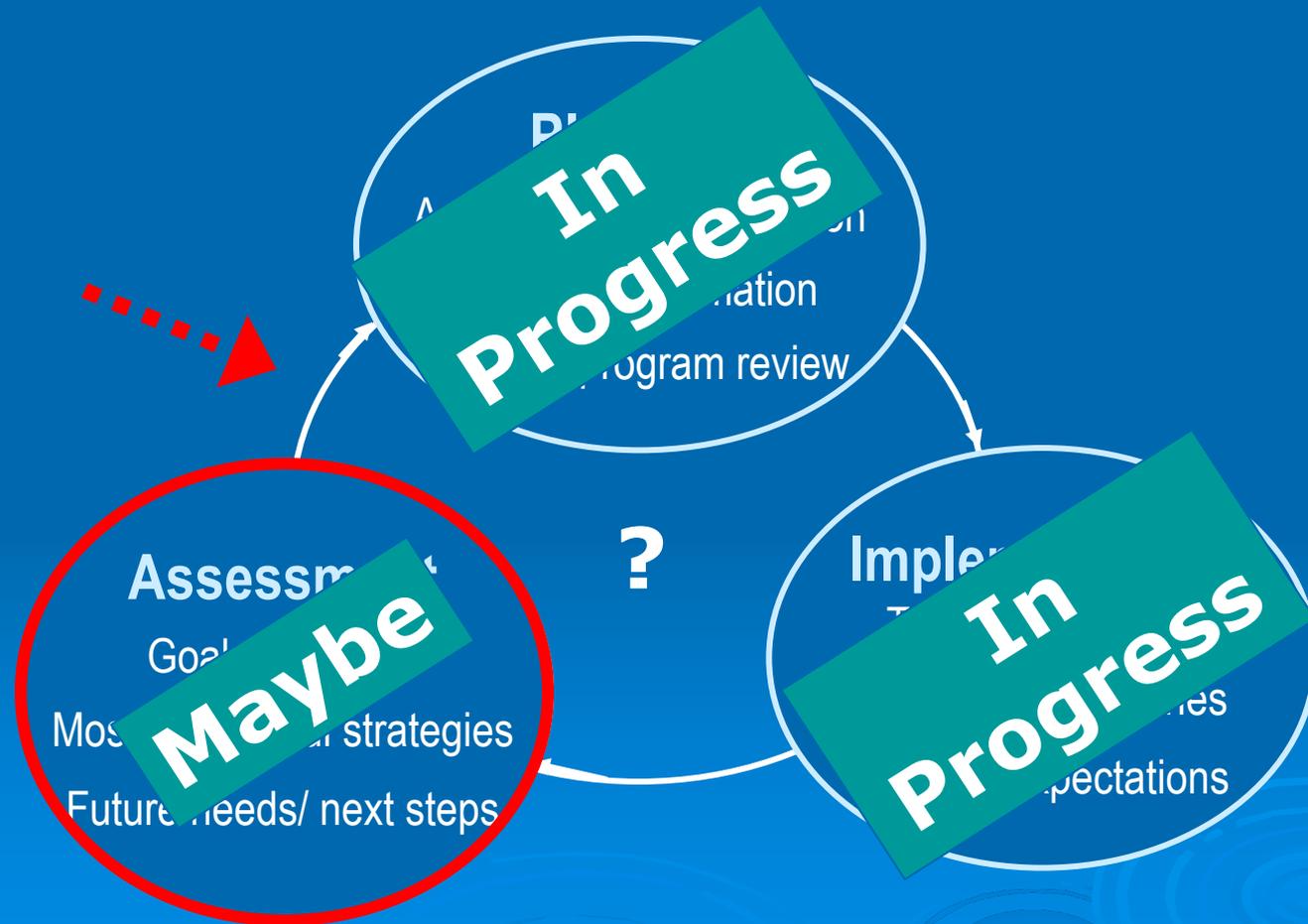
Use the Results to:

- Determine if the program is progressing towards its goals
- Determine if data is meaningful
- Focus/ modify the program
- Identify resource needs
- Meet permit requirements

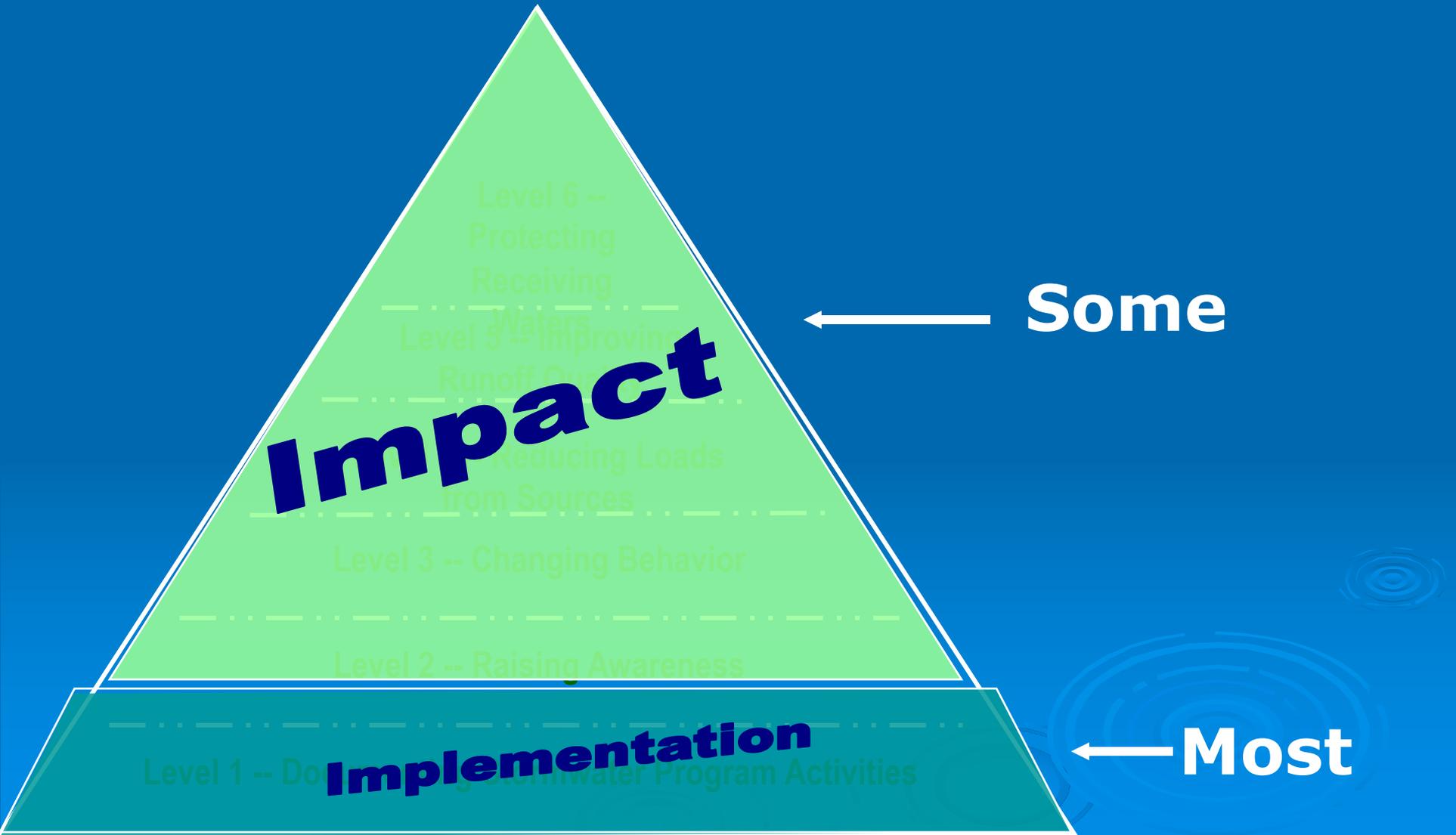
Adaptive Management with Assessment



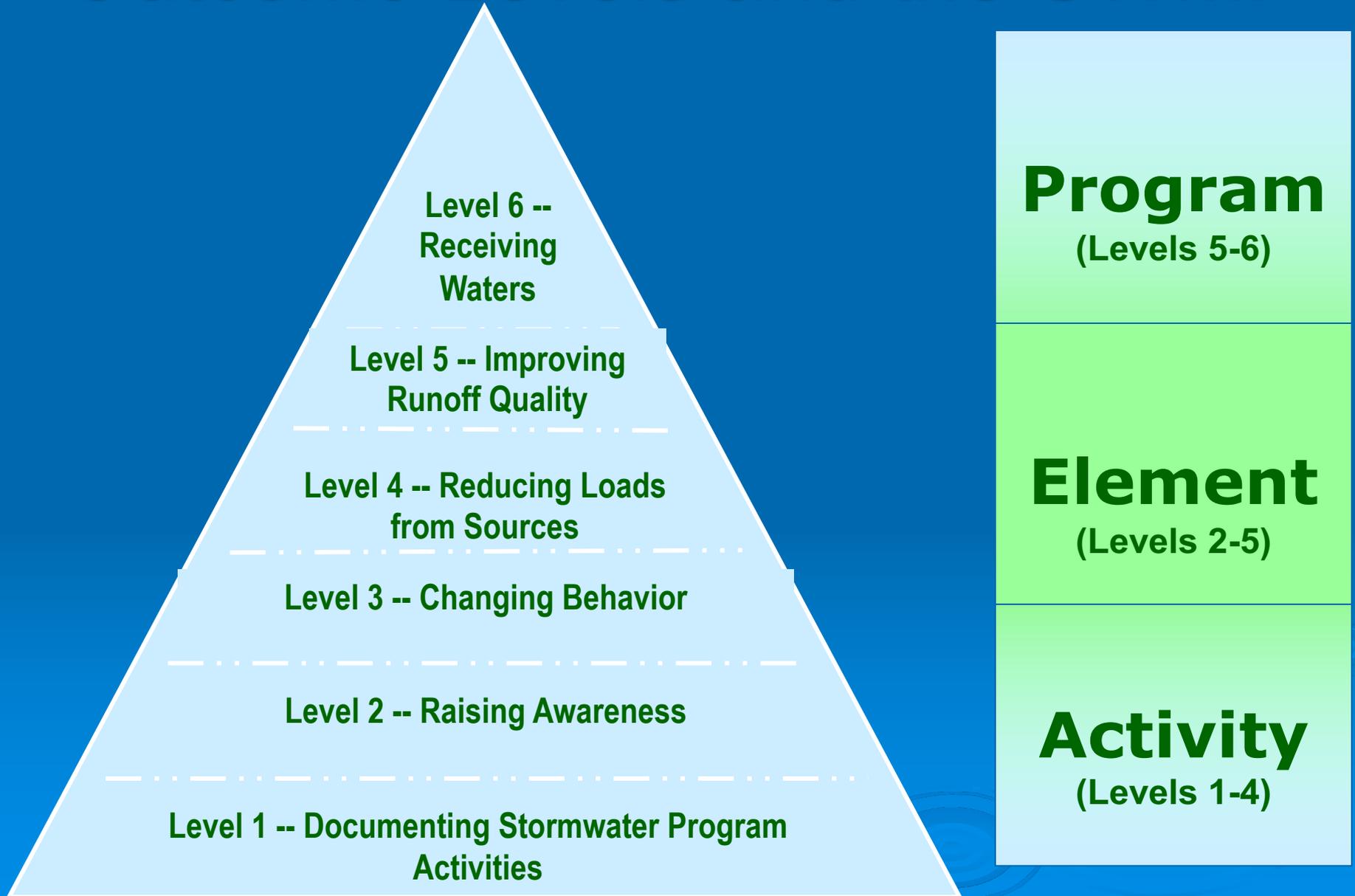
Where are We in Adaptively Managing the Programs?



How Do We Currently Assess Effectiveness?



Outcome Levels and the SWMP



Level 6 --
Receiving
Waters

Level 5 -- Improving
Runoff Quality

Level 4 -- Reducing Loads
from Sources

Level 3 -- Changing Behavior

Level 2 -- Raising Awareness

Level 1 -- Documenting Stormwater Program
Activities

Program
(Levels 5-6)

Element
(Levels 2-5)

Activity
(Levels 1-4)

Does the Result Measure:

- If a permit activity was conducted? **Level 1**
 - A change in awareness, knowledge, or attitude? **Level 2**
 - An action taken by target audience? **Level 3**
 - A pollutant or waste stream? **Level 4**
 - Runoff quality? **Level 5**
 - Receiving water or environmental condition? **Level 6**
- 

Outcome Level Applicability

Program Element	Outcome Levels					
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Program Management	X					
Construction	X	X	X	X		
Maintenance	X	X	X	X		
Public Education	X	X	X			
Monitoring	X				X	X

Effectiveness Assessment Strategy

- Determining Assessment Focus
- Determining Baseline Condition
- Selecting Assessment Method(s)
- Using the information

Establishing Assessment Focus

- What are you trying to achieve?

Goal

- Where are you starting from?

Baseline

- How will you know if the goal has been achieved?

Target

- What is the desired outcome?

Outcome Level

Assessment Focus

- Is the activity being implemented (**Level 1**)?
- Does the activity/element raise awareness (**Level 2**)?
- Does the activity/element change behavior (**Level 3**)?
- Does the activity/element reduce loads from sources (**Level 4**)?
- Does the element/program result in improved runoff quality (**Level 5**)?
- Has a measurable change been observed in receiving waters (**Level 6**)?

Effectiveness Assessment Strategy

- Determining Assessment Focus
- Determining Baseline Condition
- Selecting Assessment Method(s)
- Using the information

Example Baseline Information

- What have we done - what do we know? (**Level 1**)
- Is the target audience aware – did they change behavior? (**Level 2**)
- Can we use a past survey? (**Levels 2, 3**)
- Do we have baseline monitoring data? (**Levels 4, 5, 6**)

Effectiveness Assessment Strategy

- Determining Assessment Focus
- Determining Baseline Condition
- **Selecting Assessment Method(s)**
- Using the information

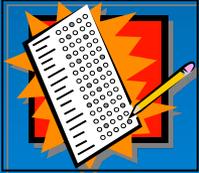
Selecting Assessment Methods

➤ Confirmation 

➤ Inspections/
Observation 

➤ Tabulation 

➤ Quantification 

➤ Surveys 

➤ Monitoring 

Effectiveness Assessment Strategy

- Determining Assessment Focus
- Determining Baseline Condition
- Selecting Assessment Method(s)
- Using the information

Methods & Outcome Levels



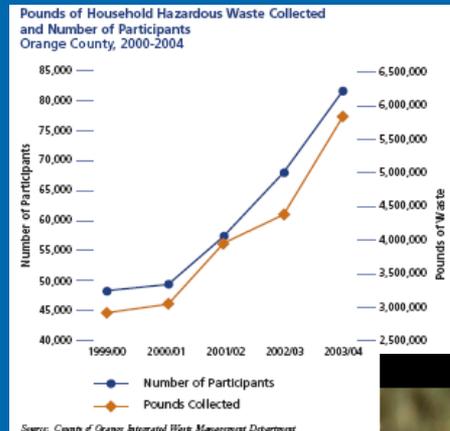
Example - Setting a target/ Selecting a method

- Goal: Reduce pesticide use.

Target	Data Collected	Assessment Method
Use protocols to reduce pesticide use by municipal staff by 50%	Pounds of pesticide used by location and toxicity category	Tabulation Quantification
Conduct outreach to reduce pesticide use by residents by 10%	Reported Use Shelf survey, sales tracking	Surveys Tabulation

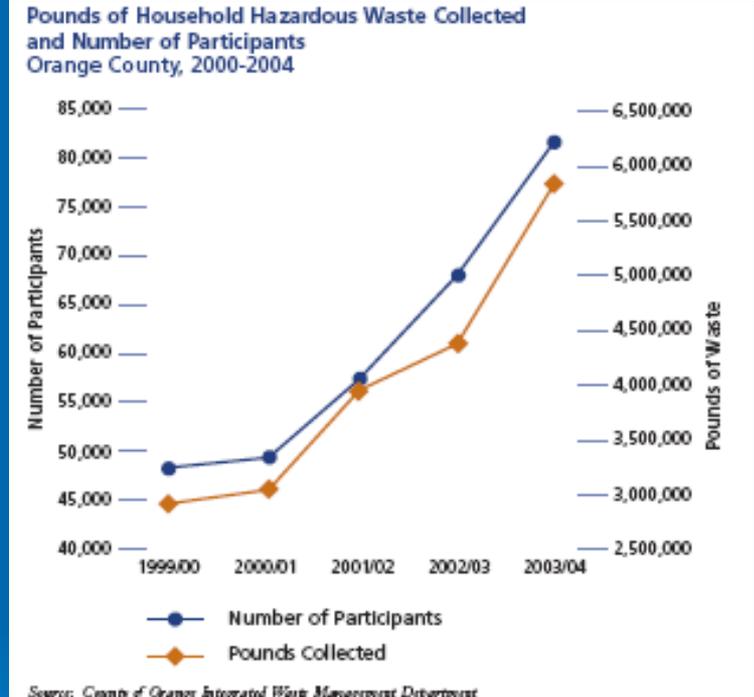
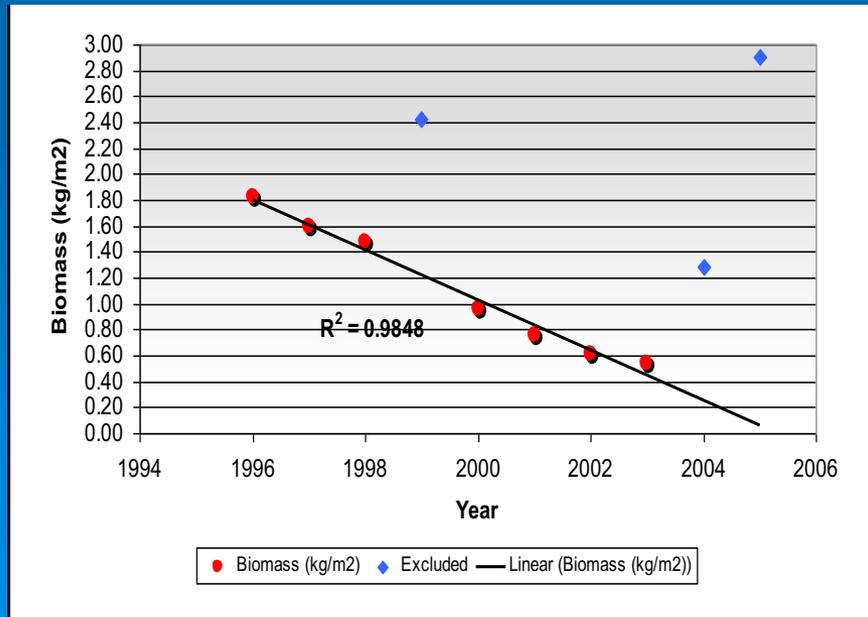
Using the information

- Data analysis
- Future planning
- Reporting & communicating



Using the information

- Data analysis
 - Observed changes
 - Trends
 - Quantitative analysis



Interpreting Data for Future Planning



Putah Creek Parkway

This area serves as a narrow transition between urban development and adjacent open space.

- The grasses, weeds and perennials in the Parkway are allowed to grow. Infrequent mowing reduces the need to apply herbicides and lessens fire danger.
- Invasive non-natives are being removed from this corridor. Habitat restoration includes planting native vegetation such as Coyote Bush, Ceanothus, Toyon, Western Redbud, Valley Oak, Butterfly Bush, and California Sycamore.



• Theatre slides more effective than signs



• Relate message to wetlands

• Move from awareness to behavior change

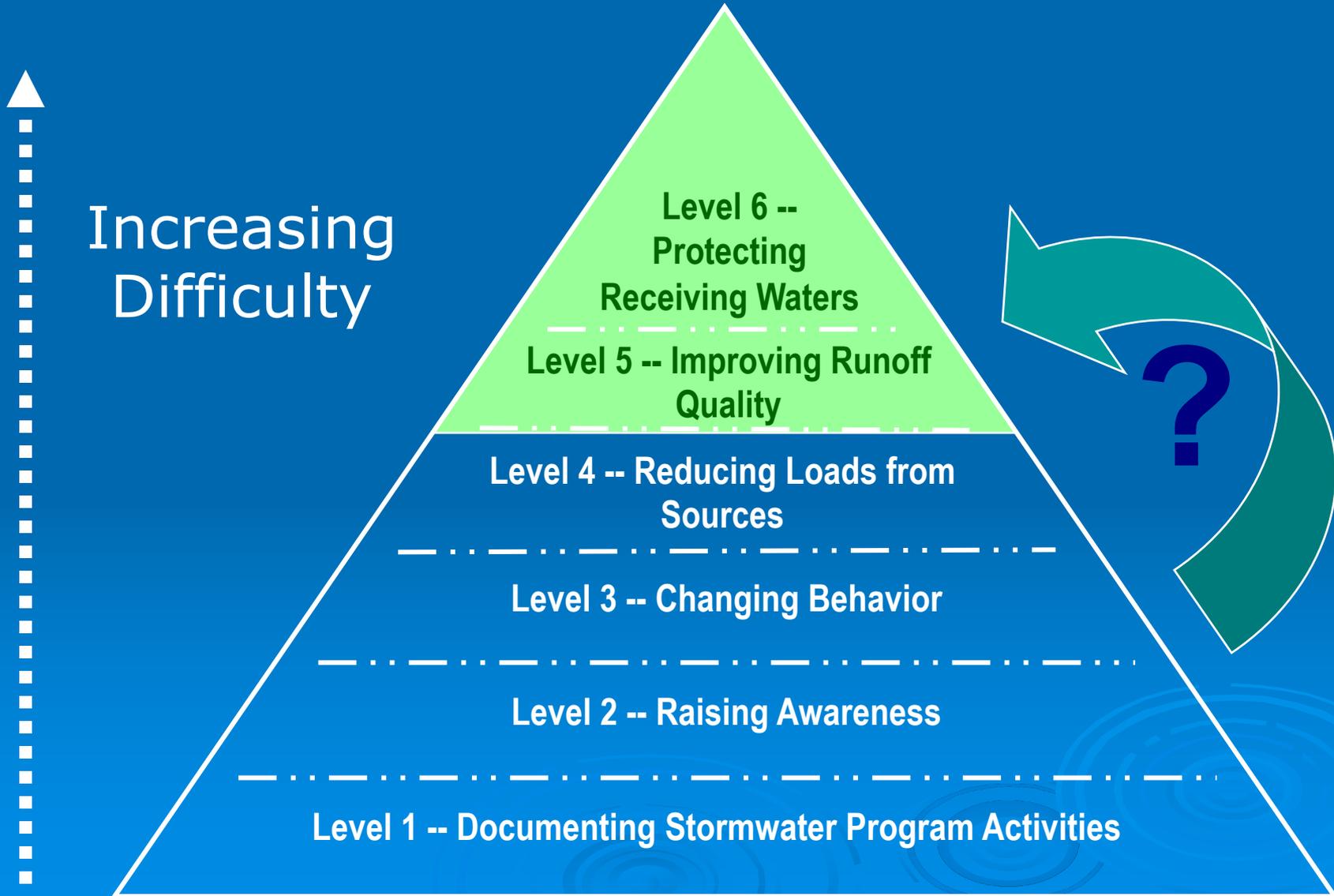


Know your pests before applying pesticides.
Help keep our ponds and wetlands healthy.

For free pesticide management guide, call 757-5686 or www.city.davis.ca.us



Overall Program and Water Quality Assessment



Case Studies –
How the Guidance Document
Has Been Used Within
California
- Karen Ashby



Example Annual Reports

SEPTEMBER 2006

City of Stockton

National Pollutant Discharge
Elimination System
Municipal Stormwater Program
2005-2006 Annual Report

STORMWATER MANAGEMENT PROGRAM ANNUAL REPORT



California Department of Transportation
Statewide Stormwater Management Program Annual Report
Fiscal Year 2006-2007
CTS/WRT/09/162/92.1
APRIL 2008



Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Executive Summary FY 2004-2005 Annual Report



UNIFIED ANNUAL PROGRESS REPORT PROGRAM EFFECTIVENESS ASSESSMENT

Santa Ana Region & San Diego Region

2006-2007 Reporting Period



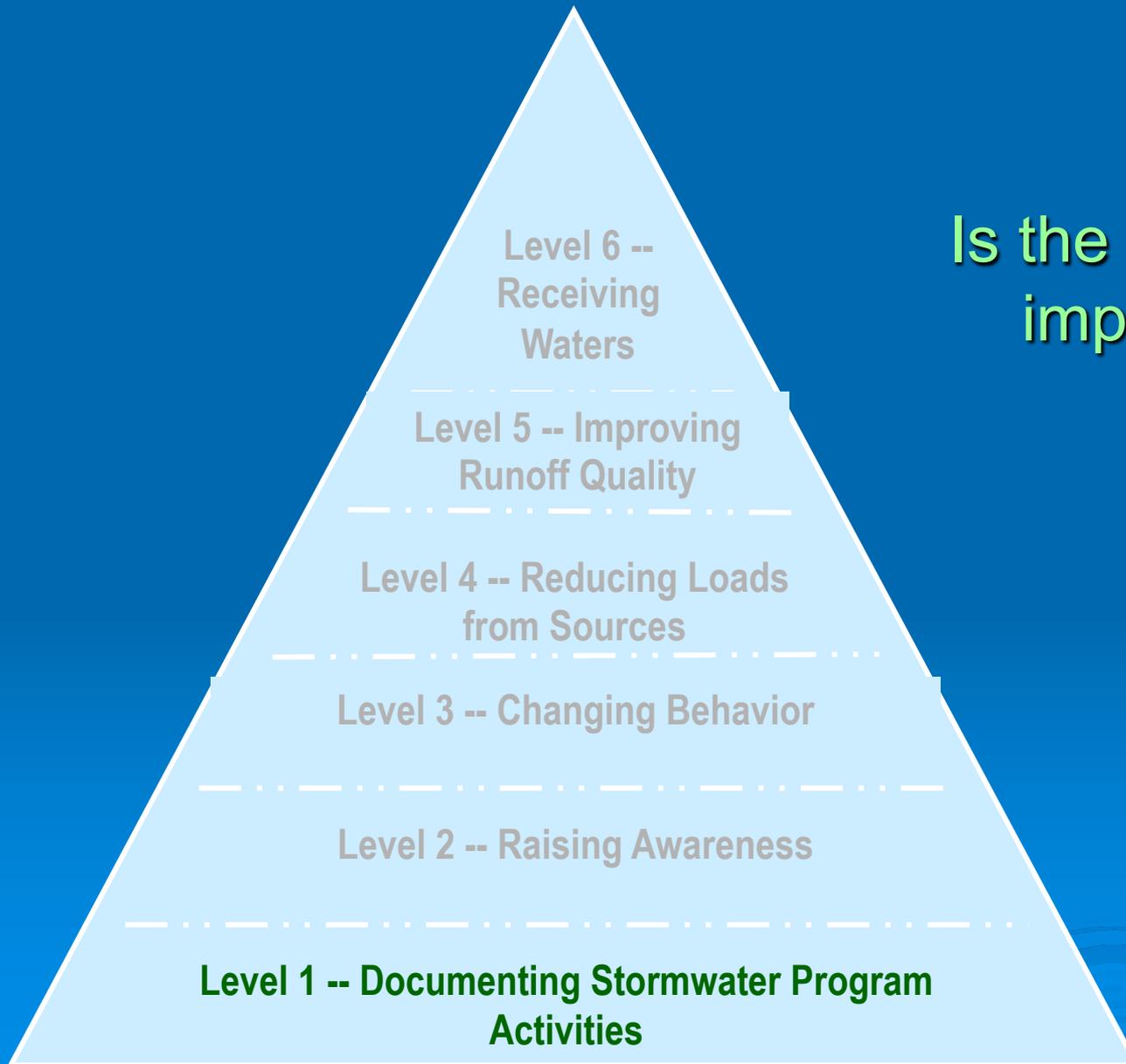
November 15, 2007



A COOPERATIVE PROJECT OF THE COUNTY OF
ORANGE, THE CITIES OF ORANGE COUNTY, AND THE
ORANGE COUNTY FLOOD CONTROL DISTRICT

d and
ement

Outcome Levels and the SWMP

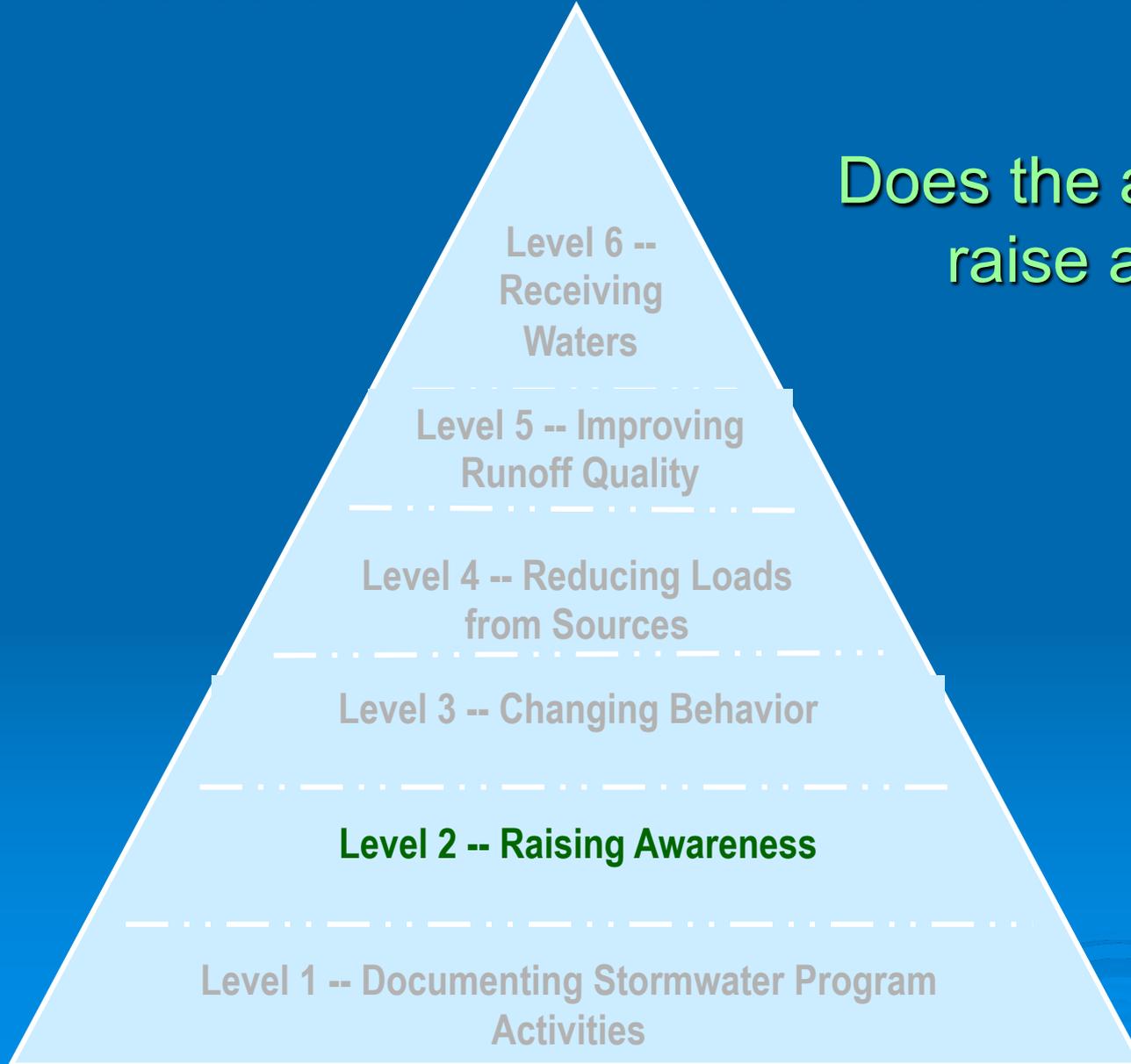


Is the activity being implemented?

Example – Outcome Level 1

- Submitted plans
- Updated and implemented internal guidelines
- Developed inspection forms
- Conducted inspections
- Provided brochures
- Attended meetings/events

Outcome Levels and the SWMP



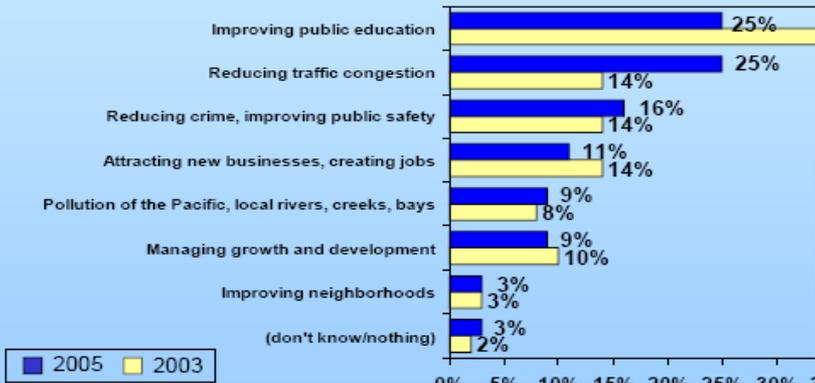
Does the activity/element raise awareness?

Example – Outcome Level 2



Consistent with findings from 2003, education, traffic congestion, safety, and jobs continue to trump pollution as top issues for elected officials to address.

There are many important issues facing Orange County. Although they ALL may be important, which ONE of the following is MOST important for your elected officials to address?

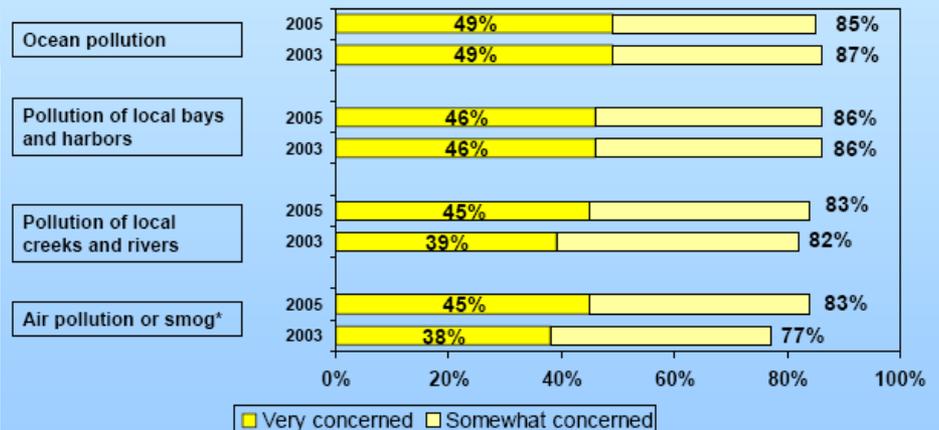


Lake Research Partners
January 2006



Pollution of the ocean and waterways and air pollution are top environmental concerns. Intensity has increased regarding air pollution concerns over the past two years.

Please tell me if you are very concerned, somewhat concerned, not too concerned, or not at all concerned about each of the following issues in Orange County.



Lake Research Partners
January 2006

*Split sampled questions

Outcome Levels and the SWMP



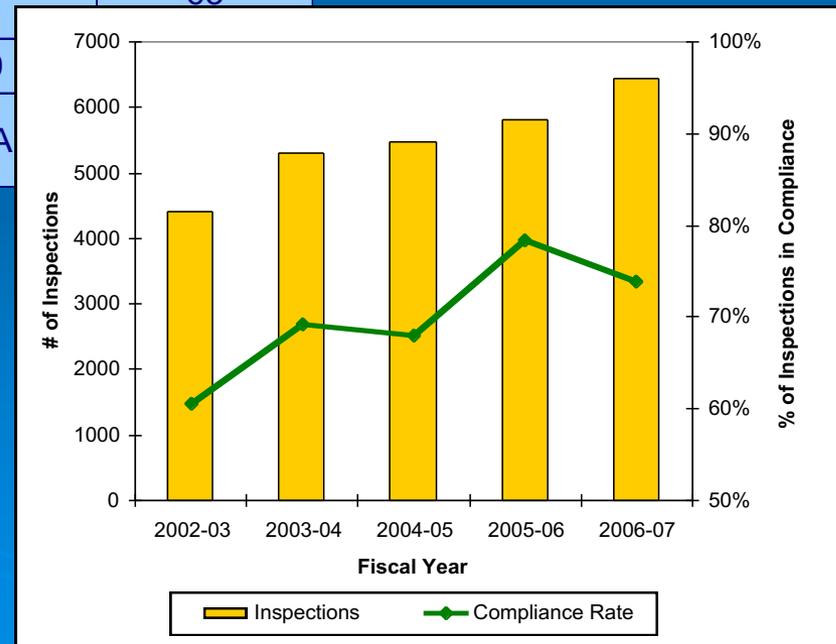
Does the
activity/element change
behavior?

Example – Outcome Level 3

Industrial Program

Cycle (Calendar Years)	Total Number of Industrial Facilities Requiring Inspection	Total Number of Industrial Facilities Inspected	Inspection Results		
			Number of Facilities Adequately Implementing BMPs	Number of Facilities Requiring Additional BMPs	Percent of Facilities Adequately Implementing BMPs
First Cycle (2003-2004)	392	155	98	57	63
2004-2005	245	245	216	29	
(2005-2006)	269	0	N/A	N/A	

Inspections and Resulting Compliance Over Time



Outcome Levels and the SWMP

Does the activity/element
reduce loads from sources?

Level 6 --
Receiving
Waters

Level 5 -- Improving
Runoff Quality

**Level 4 -- Reducing Loads
from Sources**

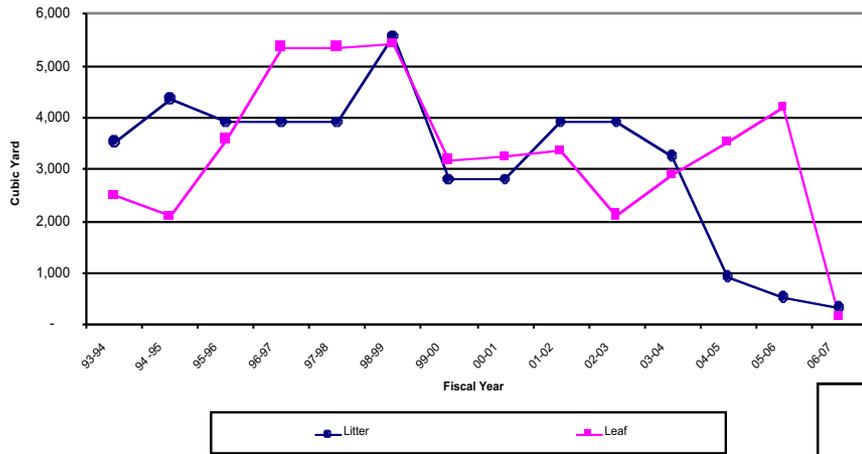
Level 3 -- Changing Behavior

Level 2 -- Raising Awareness

Level 1 -- Documenting Stormwater Program
Activities

Example – Outcome Level 4

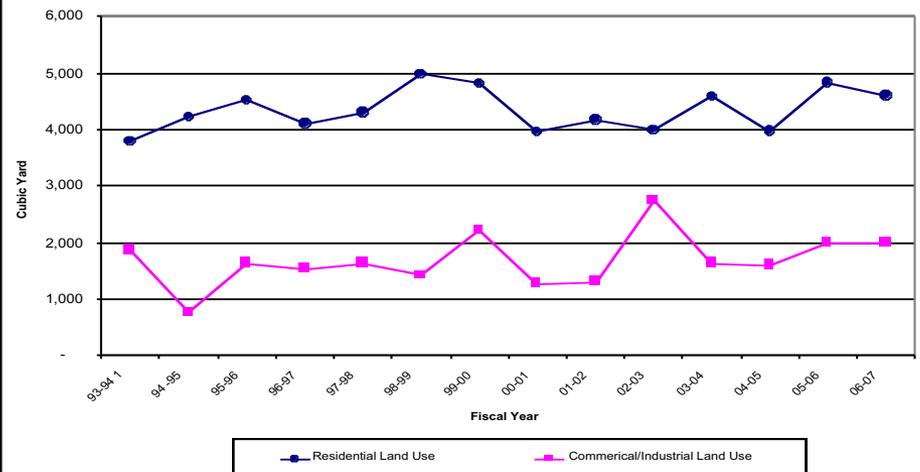
Figure 5-3
City of Fairfield Litter and Leaf Removal Summary
FY 93/94 to 06/07



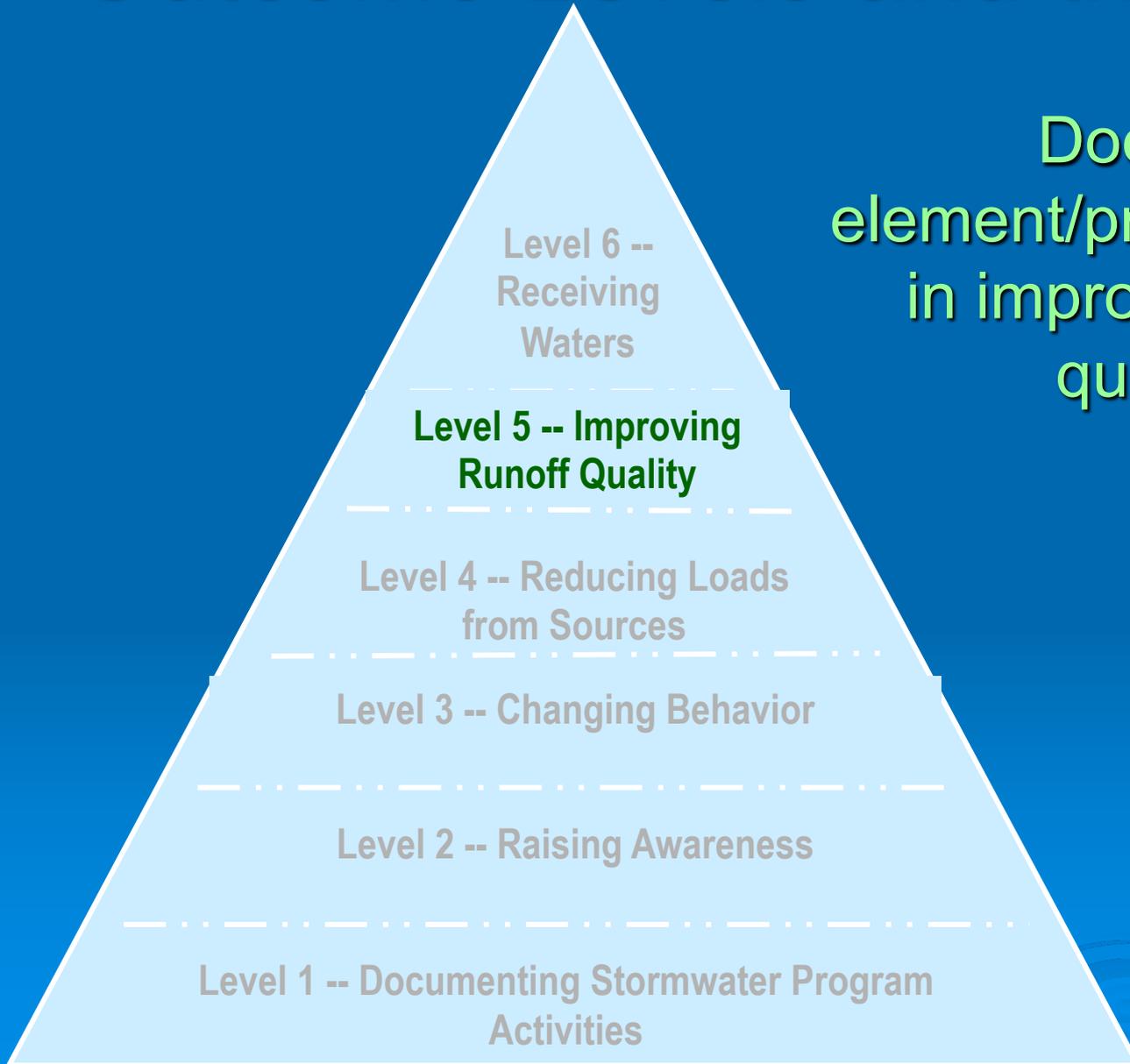
Municipal Program

Removal of debris
over time

Figure 5-1
City of Fairfield Street Sweeping Summary
FY 93/94 to 06/07



Outcome Levels and the SWMP



Does the element/program result in improved runoff quality?

Outcome Levels and the SWMP

Has a measurable change
been observed in receiving
waters?

**Level 6 --
Receiving
Waters**

Level 5 -- Improving
Runoff Quality

Level 4 -- Reducing Loads
from Sources

Level 3 -- Changing Behavior

Level 2 -- Raising Awareness

Level 1 -- Documenting Stormwater Program
Activities

Example – Outcome Level 6 Aquatic Toxicity in Urban Creeks

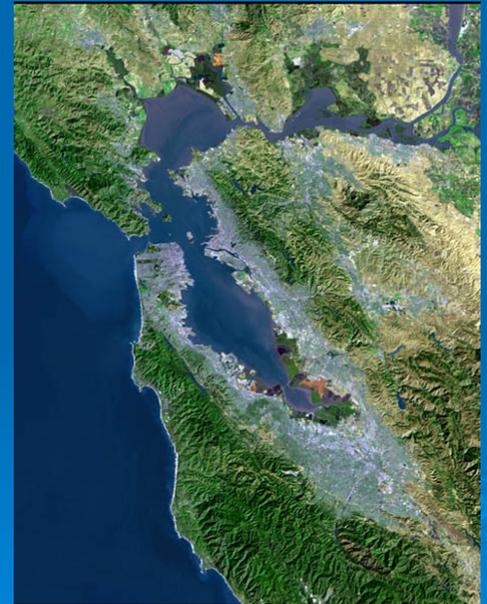


Water Quality Assessment

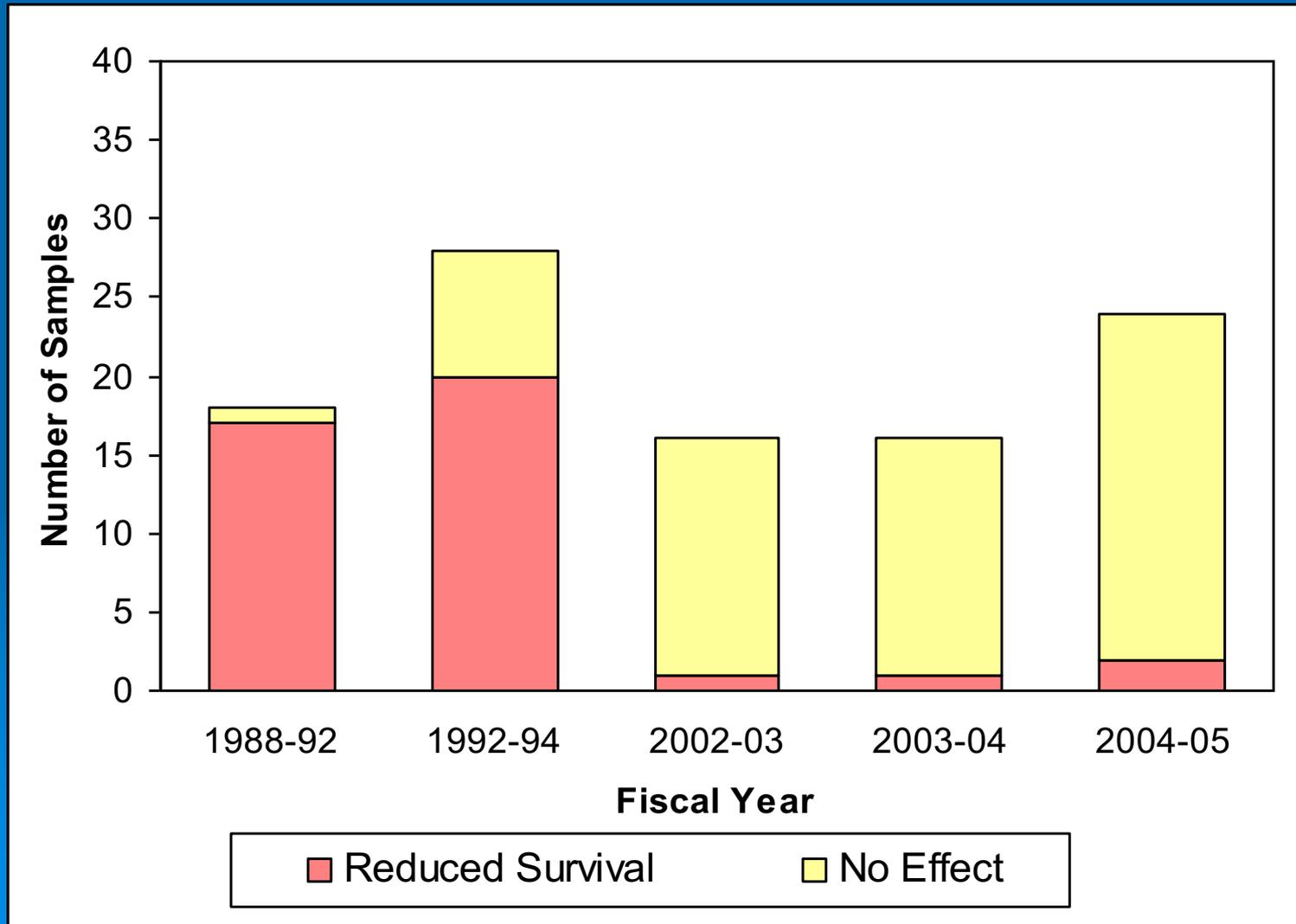
Receiving Water Quality – Diazinon and Aquatic Toxicity

➤ San Francisco Bay Area Urban Creeks

- **Variability in data** – Medium to Low (consistently high concentrations)
- **Degree of change** – 100% (near complete phase-out)
- **Timeframe to detect change** – 1 to 3 years
- **Confidence in measurement** – High (~95% certain)



Aquatic Toxicity in Urban Creeks



Example – Outcome Level 6 Newport Bay Nutrient Reduction

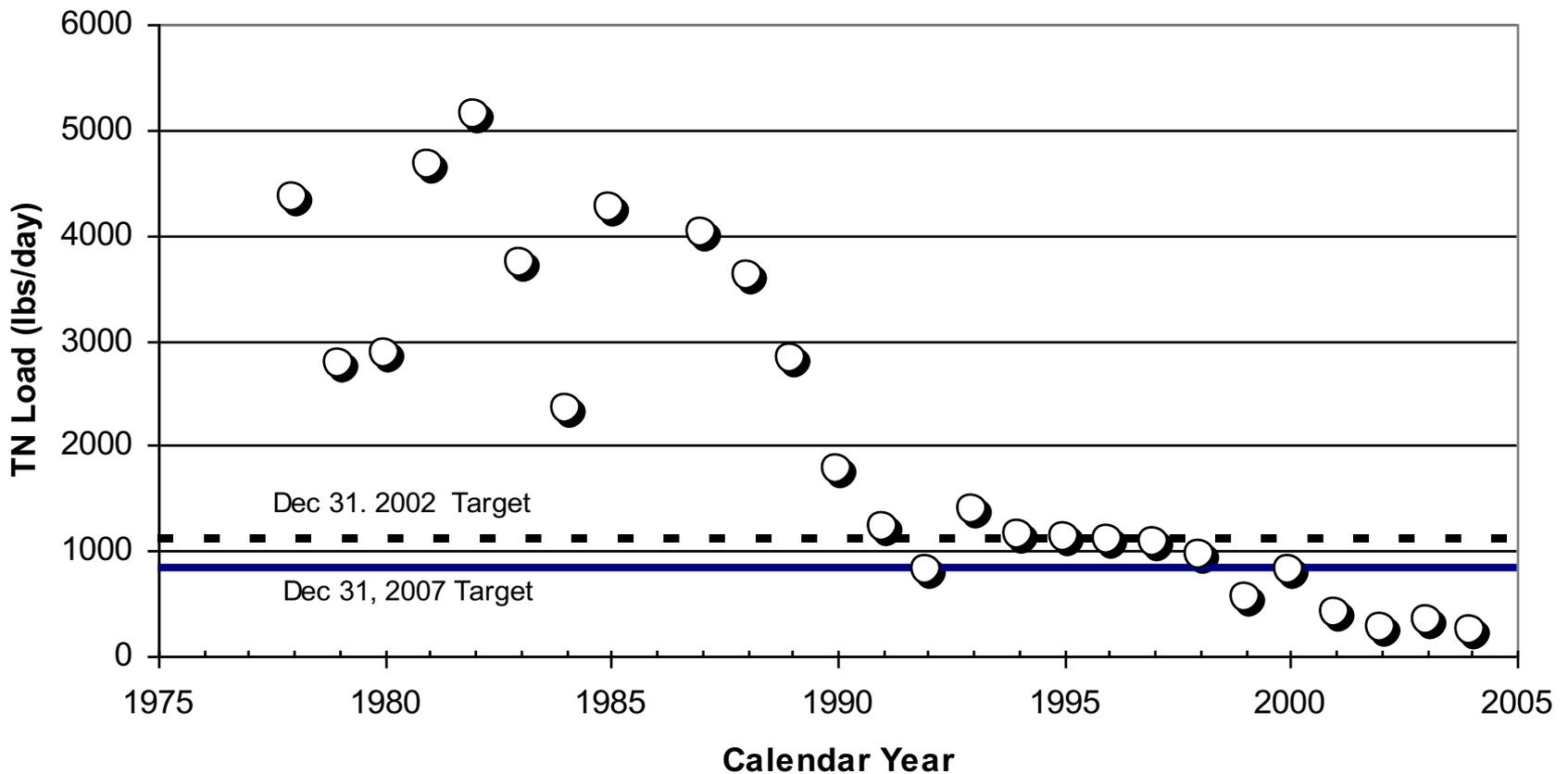


Newport Bay Nutrient Reduction

- 1998 TMDL – Set Nutrient Reduction Targets for Total Nitrogen and Total Phosphorus
- Nutrient Controls implemented
 - Urban runoff controls
 - IRWD San Joaquin Marsh
 - Regulation of nursery discharges

Nitrogen Trends 1976 – Present

Average Summertime TN Load from San Diego Creek



Visual progress (Site 7)

1997



2007



In Summary....

- Guidance Document is one approach for demonstrating effectiveness
- Assists in completing the iterative process
- Evaluates activities and impacts of program
- Can demonstrate intermediary progress towards program goals
- Approach is still evolving – stay tuned

CASQA Guidance Manual

MAY 2007



CALIFORNIA STORMWATER QUALITY ASSOCIATION

Municipal Stormwater Program Effectiveness Assessment Guidance



Industrial/
Commercial



Public Education



Municipal
Operations



Illegal Discharges/
Illicit Connections



New Development



Construction

For More Information:

www.casqa.org

For More Questions.....

Karen Ashby

Larry Walker Associates

707 Fourth Street

Suite 200

Davis, CA 95618

(530) 753-6400 x232

karena@lwa.com

Betsy Elzufon

Larry Walker Associates

707 Fourth Street

Suite 200

Davis, CA 95618

(530) 753-6400 x232

betsye@lwa.com

Thank You!

