STORMWATER QUALITY TASK FORCE
Science Workgroup

Stormwater Monitoring and Research Agenda

July 12, 2002

OVERVIEW

PROJECT DESCRIPTION

Jon Van Rhyn, County of San Diego

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PROJECT RESULTS

Armand Ruby, Larry Walker Associates

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SWQTF SCIENCE WORKGROUP
PROJECT PARTICIPANTS

- **Art Barnett, MEC Analytical, Inc.**
- **Chris Campbell, Lawrence Livermore National Laboratory**
- **Bob Hale, Alameda County**
- **Roger James**
- **John Johnston, Caltrans**
- **David Keith, Prism Environmental**
- **Jayme Laber, County of Ventura**
- **Ed Othmer, URS Greiner**
- **Dave Pomaville, Fresno County**
- **Armand Ruby, Larry Walker Associates**
- **Jon Van Rhyn, County of San Diego**

PROJECT OBJECTIVE

Develop and annually update a statewide monitoring and research agenda that reflects the priorities and needs of stormwater dischargers

- **All aspects of monitoring, research, and data management**

- **Statewide or regional focus as appropriate**

ACTIVITIES AND TIMELINES

Past Meetings

- **January 2002 SWQTF Meeting (San Diego)**
- **March 2002 SWQTF Meeting (Sacramento)**
- **May 1, 2002 Science Workgroup Meeting (Oakland)**
- **May 10, 2002 SWQTF Update (Ontario)**
- **June 21, 2002 Science Workgroup Meeting (Oakland)**
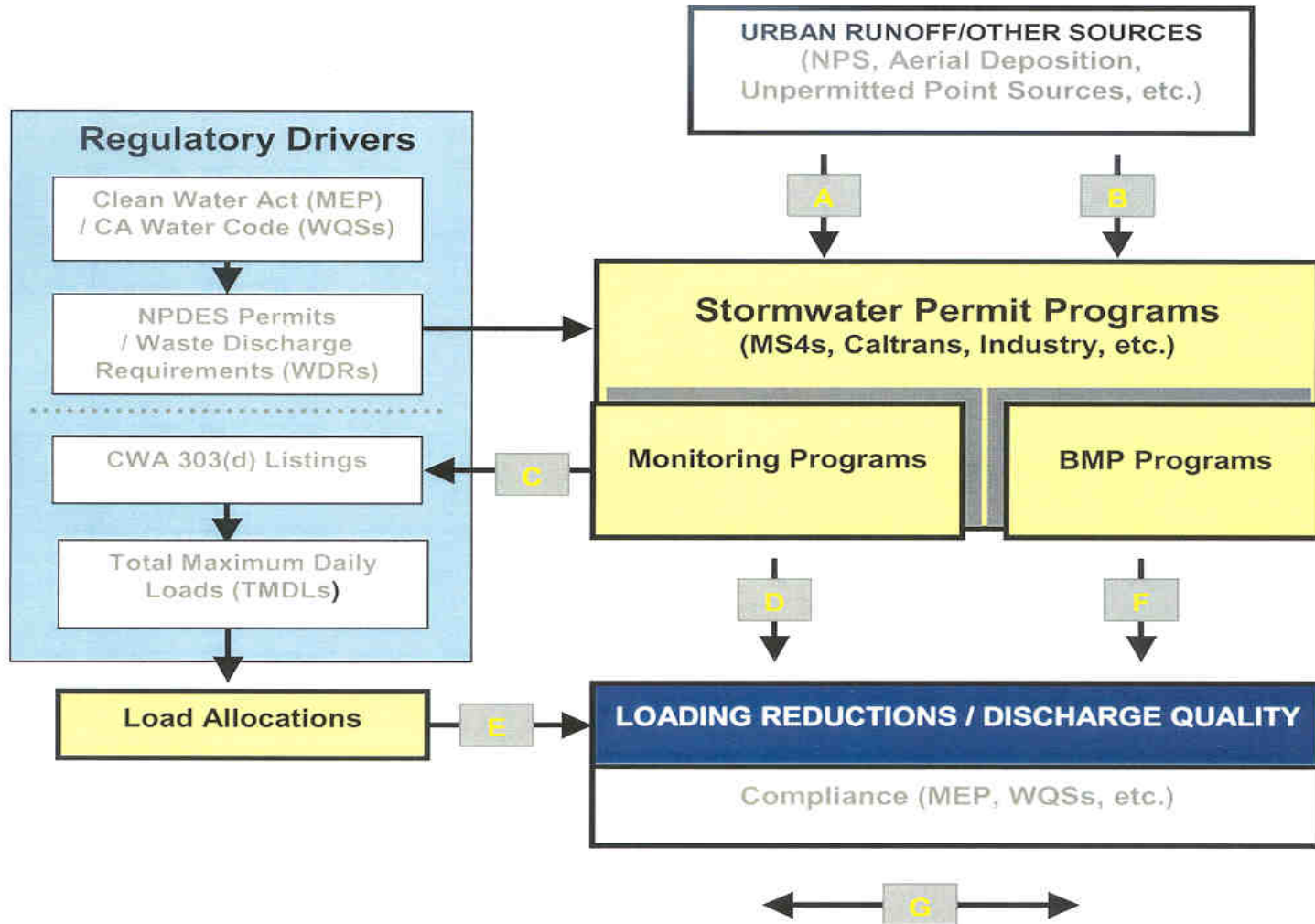- **July 12 SWQTF Update (Sacramento)**

Future Activities

- **Solicit comments on draft Priority Projects list through August 2002**
- **Continue meeting to finalize first year results**
- **Refine long-term objectives**
- **Develop an administrative framework to support objectives**

ISSUES FOR ONGOING DISCUSSION

- **Identification / solicitation of specific projects**

- **Project selection / ranking**

- **Peer review**

- **Information dissemination / advocacy / technology transfer**

PROJECT RESULTS

URBAN RUNOFF/OTHER SOURCES
(NPS, Aerial Deposition, Unpermitted Point Sources, etc.)

Regulatory Drivers

Clean Water Act (MEP) / CA Water Code (WQSs)

NPDES Permits / Waste Discharge Requirements (WDRs)

CWA 303(d) Listings

Total Maximum Daily Loads (TMDLs)

Load Allocations

A

B

Stormwater Permit Programs
(MS4s, Caltrans, Industry, etc.)

Monitoring Programs

BMP Programs

C

D

F

E

LOADING REDUCTIONS / DISCHARGE QUALITY

Compliance (MEP, WQSs, etc.)

G

SEVEN CORE MONITORING AND RESEARCH QUESTIONS

A. What are the sources and relative contributions of pollutants / stressors?

B. How does the system work (sources, fate, transport, effects)?

C. Are receiving waters impacted (and if so, how)?

D. How do we characterize / assess discharge quality and quantity?

E. Are proposed / adopted load allocations appropriate?

F. How do we achieve appropriate loading reductions?

G. How do we use the information to improve stormwater programs?

A. WHAT ARE THE SOURCES AND RELATIVE CONTRIBUTIONS OF POLLUTANTS / STRESSORS?

Priority Project A1

- *ASSESS AVAILABLE OR POTENTIAL TECHNOLOGIES TO IDENTIFY SOURCES OF HUMAN PATHOGENS IN RUNOFF*

B. HOW DOES THE SYSTEM WORK? (SOURCES / FATE / TRANSPORT / EFFECTS)

Priority Project B1

- *DEVELOP APPROPRIATE FLOW / VOLUME CRITERIA FOR SUSMPS*

  - Control peak flows / volumes
  - Maintain appropriate low flows / volumes
  - Maintain or reduce downstream erosion

C. ARE RECEIVING WATERS IMPACTED? (AND IF SO, HOW?)

Priority Project C1

- ***DEVELOP APPROPRIATE INDICATORS OF HUMAN PATHOGEN EXPOSURE IN SURFACE WATERS***

  - Identify what / how to measure (indicators/pathogens?)
  - Determine how to collect representative samples
  - Derive means of calculating human health risks

Priority Project C2

- ***INVESTIGATE THE EFFECT OF THE EPA BAN ON ORGANOPHOSPHORUS PESTICIDES ON TOXICITY IN URBAN RUNOFF AND URBAN CREEKS***

Priority Project C3

- *ASSESS THE WATER QUALITY IMPACTS OF LEGACY PESTICIDES (DDT, ETC.)*

Priority Project C4

- *IDENTIFY POTENTIAL GROUNDWATER / VADOSE ZONE IMPACTS OF INFILTRATION (INCL. FROM CHANNELS, DETENTION PONDS, INFILTRATION BASINS, ETC.)*

Priority Project C5

- *DEVELOP APPROPRIATE REGIONAL BIOASSESSMENT INDICES*

Priority Project C6

- *CHARACTERIZE HYDRODYNAMIC IMPACTS OF SUSMPS*

  - **Investigate downstream effects after implementation of SUSMPs**

Priority Project C7

- *DETERMINE WATER QUALITY EFFECTS OF SOIL BINDER BYPRODUCTS AND / OR OTHER "NON-VISIBLE" POLLUTANTS (CONSTRUCTION PERMITS)*

  - **Develop appropriate sample collection and analytical techniques**

D. HOW DO WE CHARACTERIZE / ASSESS DISCHARGE QUALITY AND QUANTITY?

Priority Project D1

- *DEVELOP IMPROVEMENTS IN COLLECTION OF REPRESENTATIVE SAMPLES*

  - Sample collection techniques
  - Flow measurement methods
  - In situ and continuous monitoring

Priority Project D2

- *ESTABLISH STANDARD APPROACH FOR BMP EFFECTIVENESS EVALUATIONS*

  - Sample collection modes (e.g., flow-prop composites)
  - Sampling protocols (e.g., clean techniques)
  - Constituents; analytical methods
  - Minimum number of monitoring events
  - Event representativeness criteria

  Provides basis for comparing the results of various studies conducted by various entities (see Priority Project F1)

E. HOW DO WE DEVELOP APPROPRIATE (IMPLEMENTABLE / ACHIEVABLE) LOAD ALLOCATIONS?

- *Priority Projects Not Yet Identified*

F. HOW DO WE ACHIEVE APPROPRIATE LOADING REDUCTIONS?

Priority Project F1

- *PERFORM CASE STUDIES / PILOT STUDIES OF SPECIFIC BMPS IN SPECIFIC SETTINGS*

    - Determine pollutant removal effectiveness
    - Determine most appropriate type, size, and placement of BMPs
    - Compare costs (capital, O&M) vs. WQ benefits

G.   HOW DO WE USE THE INFORMATION TO IMPROVE STORMWATER PROGRAMS

Priority Project G1

- ***DEVELOP CONSENSUS STANDARDS FOR DATA MANAGEMENT***

  - **Data validation, QA/QC evaluation, reporting, statistical analysis, non-detects handling, protocols for metadata**

Priority Project G2

- ***DEVELOP A STRATEGY TO INTEGRATE / TRANSLATE SCIENCE TO POLICY AND THUS MANAGEMENT***

Priority Project G3

- ***USE THE RESULTS OF BMP STUDIES AND OTHER MONITORING TO HELP GUIDE PROGRAM IMPLEMENTATION***

  - Relate to in-stream water quality improvements, and meeting WQOs (esp. for bacteria, nutrients, metals)
  - Relate to meeting MEP standard (identify the best tools for the job)

THANK YOU