

LIST OF EXHIBITORS

ABT, Inc.
AbTech Industries Inc
AEI-CASC Engineering
Attitude Technology, Inc.
BaySaver Technologies, Inc.
Bio Clean Environmental Services
CDM
CDS Technologies
Clearwater Solutions
Crystal Stream Technologies
Earthwater Stencils
GeoSyntec Consultants
Global Environmental Network
Kristar Enterprises
Layfield Geosynthetics and Industrial Fabrics
MACTEC Engineering & Consulting
MRC Technologies
MWH
RBF Consulting
Reed & Graham, Inc.
Revel Environmental Manufacturing
Roscoe Moss Company
RPA
Safe Drain Inc.
Shilts Consultants
SI Geosolutions
Stormceptor
StormTrap
Stormwater Management, Inc.
URS Corporation



CALIFORNIA STORMWATER
QUALITY ASSOCIATION™

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www.casqa.org



CALIFORNIA STORMWATER
QUALITY ASSOCIATION™

CONFERENCE
2005

OCTOBER 3rd-5th
ONTARIO, CALIFORNIA

DoubleTree Hotel and Conference Center

Greetings and thank you for participating in CASQA's inaugural conference and exposition, featuring presentations and trainings covering the full gamut of the conference theme – Stormwater, Treatment, Operations, Research, and Management.

The California Stormwater Quality Association is unique among associations in two important ways:

CASQA is the only statewide association in the country dedicated to the advancement of stormwater quality management, science, and regulation.

CASQA is an association of multiple interest groups – including government, science, industry, development, and construction – all with the common goal of advancing the stormwater quality profession.

As a result of these unique qualities, CASQA has been the "place" for stormwater quality information in California since it was founded in 1989 as the Stormwater Quality Task Force. Back then, the State looked to us for help in designing and implementing the new stormwater regulations recently mandated by Congress in the 1987 Clean Water Act amendments. Through the administrative procedures of the State Water Resources Control Board, the Stormwater Quality Task Force was formally commissioned as the principal advisor to the State on stormwater quality program issues.

Starting in the 1990s and continuing into the 2000s, local governments, businesses, and other organizations learned about stormwater quality management – designing, funding, implementing, and evaluating their stormwater quality programs along the way. And the "Task Force" meetings on the second Friday of a month were the place to be for stormwater professionals in California. During the ensuing years, the Task Force evolved into a more formal organization – the California Stormwater Quality Association. And it worked hard to increase the network of professionals it created and to receive and make more information available to more people, more easily. The location of the general meetings was switched from Sacramento to rotating between northern and southern California, and their frequency was reduced first to every-other-month and then to the current once-a-quarter frequency so subcommittees and ad hoc work groups could spend more time on the details of managing stormwater quality. That evolution brings us to this time and this place for CASQA's first comprehensive stormwater quality conference. We hope you enjoy the diverse agenda and that the information exchange is valuable to you and your work.

Again, thanks for being part of CASQA's inaugural conference!



Executive Director

Quick Reference Session Guide

Tuesday October 4, 2005

Conference Opening 8:30 AM - 9:30 AM

ROOM	EVENT
Vineyard Room	Conference Opening

SESSION 1 9:30 AM - 10:30 AM

Strawberry Peak Room	Stormwater Chemical Dosing System Development The Caltrans Route 73 BMP Pilot Study
Lake Silverwood Room	Riverside County's IC/ID Programs Mobile Pressure Washers, Complying with Stormwater BMPs
Big Bear Room	Life After Diazinon - What's New for Urban Creeks The Increasing Environmental Significance of Pyrethroid Pesticides & Pyrethroid Pesticide Analyses at Environmentally Relevant Levels
Lake Gregory Room	Development of a Hydromodification Management Plan for the Santa Clara Valley - Part 1: Assessment of Hydromodification Development of Hydromodification Management Plan for the Santa Clara Valley - Part 2: Performance Criteria and Guidance for Local Implementation

SESSION 2 11:00 AM - 12:00 PM

Strawberry Peak Room	Post-Project Monitoring of BMPs/SUDs to Determine Performance and Whole-Life Costs
Lake Silverwood Room	Treatment Trains: Don't Get Run Over Performance, Maintenance and Costs of Full Sedimentation vs. Partial Sedimentation Sand Filters
Big Bear Room	Characterization of Runoff from the Sacramento Urban Area A Watershed Scale Approach to Estimating Pollutant Loading from Dry Season Urban Runoff
Lake Gregory Room	Hydrograph Modification Management Using Simplified Low Impact Development Design

LUNCH 12:00 PM - 1:30 PM

Vineyard Room	CASQA Awards and Recognition Program
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SESSION 3 1:30 PM - 2:30 PM

Strawberry Peak Room	A New Method for Estimating Runoff Quantities for Flow and Volume-based BMP Design
Lake Silverwood Room	Collaboration & Integration Opportunities for Stormwater Programs Stormwater Monitoring Coalition: A Regional Approach to Research/Monitoring in Southern California
Big Bear Room	Management of Pathogens Associated with Stormwater Discharges: Methodology and Application for Molecular Detection of Target Organisms Combined with Microbial Source Tracking First Flush Phenomenon
Lake Gregory Room	The Role of Economic Considerations in Stormwater Permits Stormwater - A Federal Legal Update

SESSION 4 2:45 PM - 3:45 PM

Lake Gregory Room	Simplified Low Impact Development Design for Compliance with Stormwater Treatment Requirements A Lower-Impact Development Approach for a Coastal Resort in Southern California
Lake Silverwood Room	Arroyo Seco Watershed Plan: Strategic Water Quality Implementation The Nitrogen and Selenium Management Program for the San Diego Creek and Newport Bay Watershed: An Alternative Compliance Approach to Waste Discharge Requirements
Big Bear Room	The World According to TAPE: A Journey Through the Washington State Department of Ecology's Approval Process
Strawberry Peak Room	Strategies for New Revenue in Stormwater Management: California Case Studies

SESSION 5 4:00 PM - 5:00 PM

Lake Gregory Room	Effects of Infiltrating Stormwater On Soils and Groundwater Countrywide Stormwater Infiltration Site Characterization Criteria and Guidance Study, Contra Costa Clean Water Program
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ROOM	EVENT
Lake Silverwood Room	Evaluation of Recreational Uses and Bacteria Water Quality Objectives in the Santa Ana River Watershed
Big Bear Room	An Innovative Approach for Protecting the San Diego Marine Life Refuge: A Prototype Model for ASBS Management
Strawberry Peak Room	Rancho Mission Viejo Water Quality Management Plan

Wednesday October 5, 2005

SESSION 6 8:30 AM – 9:30 AM

Lake Gregory Room	LEED Requirements: From a Hydrology and Drainage Design Perspective Sun Valley Park Stormwater Infiltration Basin Demonstration Project
Strawberry Peak Room	The Stormwater Data Report: How Caltrans Documents Compliance in the Design Phase Using Web Technology to Improve MS4 Regulatory Reporting
Big Bear Room	Solid Measurements in Stormwater Runoff Design of BMPs for Contaminants Removal with Respect to Small Particle Size Distribution
Lake Silverwood Room	Evaluation of Municipal Stormwater Programs Implemented Throughout California Evaluation of New Development Standards for Municipal Stormwater Programs in Southern California

SESSION 7 9:45 AM – 10:45 AM

Lake Gregory Room	Performance of a California Wet Pond Stormwater Treatment: Can We Make Them Smaller?
Lake Silverwood Room	Analyses of the Expanded International BMP Data Base and Implications for BMP Selection and Design
Big Bear Room	Basin Sizer: A Free Software Tool for Determining Water Quality Volumes and Water Quality Flows Finding Water Body Information Using the Water Quality Planning Tool Web Site
Strawberry Peak Room	LID Techniques and Water Quality Management Plans for Water Quality Control in New Development and Redevelopment

SESSION 8 11:00 AM – 12:00 PM

Lake Gregory Room	Tahoe Basin BMP Evaluation and Feasibility Study Effort to Keep Lake Tahoe Blue
Strawberry Peak Room	Using a Water Quality Database as a Stormwater Program Management Tool Report of Water Quality Exceedances – Assessing Water Quality Compliance for Central Valley Phase I Municipal Stormwater Discharge
Big Bear Room	Don't Trash Fresno Public Education Research Study (PERS) Using Technical Data and Marketing Research to Change Behavior
Lake Silverwood Room	Program Assessment – The Need for Quantifiable Measurements

LUNCHEON PRESENTATIONS 12:00 PM – 1:30 PM

Vineyard Room	Dealing with Last Year's Record Southern California Rainfall
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SESSION 9 1:30 PM – 2:30 PM

Lake Gregory Room	Pilot Study to Full Scale Implementation: How to Design a Trash Capture Device for California Freeways One Solution for Meeting LA's Trash TMDL; Utilization of Louvered Linear Radial Screen for Gross Solids Removal
Lake Silverwood Room	Caltrans Vegetation Erosion Control Research and Seed Selection Tool Testing and Quality Control of Seed for Erosion Control
Big Bear Room	Municipal Strategies for Implementing TMDLs: The Florida Perspective An Integrated, Iterative, Adaptive Approach to TMDL Implementation for Santa Monica Bay Jurisdictions 1 and 4
Strawberry Peak Room	CASQA Public Information and Education Resources Directory

Session 10 2:45 PM – 3:45 PM

Lake Gregory Room	Selenium Treatment and Management
Lake Silverwood Room	Santa Barbara County Urban Runoff Treatment Control Project
Big Bear Room	Development of Treatment Processes for Removing Turbidity and Phosphorus at Lake Tahoe
Strawberry Peak Room	Ballona Creek Watershed BMP Retrofit Study – Phase 1: Conceptual Planning

CASQA Conference 2005

HYDROMODIFICATION WORKSHOP AGENDA

Lake Silverwood Room

8:30 A.M. – 8:40 A.M.

Welcome and Opening Remarks

Chris Crompton
SMC Chair

8:40 A.M. – 9:15 A.M.

Introduction to Hydromodification

Jeff Haltiner
Philip Williams and Associates

9:15 A.M. – 10:15 A.M.

Why is Hydromodification such a big deal? (Mini-panel discussion)

Policy Perspective

Susan Cloke
Los Angeles Regional Water Quality Control Board

Regulatory Perspective

John Robertus
San Diego Regional Water Quality Control Board

Homebuilders Perspective

Marolyn Parson
National Association of Home Builders

Natural Resource Perspective

Shelley Luce
Santa Monica Bay Restoration Commission

10:15 A.M. – 10:30 A.M.

BREAK

10:30 A.M. – 12:30 P.M.

Hydromodification Research and Studies

Risk-Based Channel Stability Analysis for Urbanizing Watersheds

Brian Bledsoe
Colorado State University

Changes in Streamflow Patterns from Urbanization - A Humid-Region Perspective

Derek Booth
Univ. of Washington

Modeling Urbanization Impacts and Channel Stability in Ventura County

Tony Donigian
Aqua Terra

Southern California Peak Flow Study Results and Conclusions

Craig MacRae
Aquafor Beech

Santa Clara Valley HMP Studies

Gary Palhegyi
GeoSyntec

12:30 P.M. – 1:30 P.M.

LUNCH BREAK

Buffet, Dining in the Vinyard Room

1:30 P.M. – 2:15 P.M.

Regulatory Response to Hydromodification Northern California perspectives

Larry Kolb
San Francisco Regional Water Board

Southern California Perspectives

Xavier Swamikannu,
LA Regional Water Board

2:15 P.M. – 3:30 P.M.

Implementation of Hydromodification Management Practices

Dan Cloak
Contra Costa County

Santa Clara Valley

Jill Bicknell,
Santa Clara Valley Urban Runoff Program

Newhall Land and Farming

Mark Sobotin
Newhall Land and Farming

Control of Hydromod Through Land Planning

Laura Eisenberg
Rancho Mission Viejo

3:30 P.M. – 4:30 P.M.

Panel discussion on Implementation Issues Facilitated by: Chris Crompton

Matt Yeager
San Bernardino Co. Flood Control District

Rene DeShazo
Los Angeles Regional Water Quality Control Board

Mark Abrahamson
Heal the Bay

Marolyn Parson
National Association of Home Builders

Jeff Haltiner
Philip Williams and Associates

Jill Bicknell
Santa Clara Valley Urban Runoff Program

Pre-Conference Workshop 2

Monday 8:30 AM – 4:00 PM

Lake Gregory Room NPDES Inspection Training



**California
Water
Environment
Association**

A full day of NPDES inspection training will be provided by CASQA member trainers and guest California Water Environment Association (CWEA) trainers who are

experts in the topics of construction, industrial, and commercial NPDES inspections. Training is designed to educate municipal staff upon the elements of inspection, documentation, record keeping, and proper and improper implementation of stormwater Best Management Practices (BMP). An overview of recent inspection findings in California will be provided.

Moderator:

Daniel Rourke

Fresno Metropolitan Flood Control District

8:30 AM – 10:00 AM

Industrial / Commercial Facility Inspection Training – Part 1

CWEA Trainers:

Steve Aguiar

City of Livermore

and

Daryl Hartwill

City of Riverside

Pre-Inspection Preparation

SWPPP Review

Inspection Training Video

Morning Break

10:00 AM – 10:15 AM

10:15 AM – 11:25 AM

Industrial / Commercial Facility Inspection Training – Part 2

CWEA Trainers:

Steve Aguiar

City of Livermore

and

Daryl Hartwill

City of Riverside

Site Inspection

Sampling Procedures

Inspection Documentation

Enforcement Procedures and Referral

11:25 AM - 12:00 PM

Overview of California Industrial Inspection Findings

John Kosco, P.E. CPESC

Principal Engineer

Tetra Tech

Lunch

12:00 PM - 1:00 PM

Buffet, Dining in the Vineyard Room

1:00 PM – 2:30 PM

Construction Site Inspection Training – Part 1

Trainers:

Melinda McCoy, R.G.

CDM

Luis Leon, P.E.

CDM

Pre-inspection Preparation

SWPPP Review

Inspection Training Video

Afternoon Break

2:30 PM – 2:45 PM

2:45 PM – 3:25 PM

Construction Site Inspection Training – Part 2

Trainers:

Melinda McCoy, R.G.

CDM

Luis Leon, P.E.

CDM

Site Inspection

Inspection Documentation

Enforcement Procedures and Referral

3:25 PM - 4:00 PM

Overview of California Construction Inspection Findings

John Tinger

USEPA Region 9

TUESDAY October 4, 2005

7:30 AM: Open Registration

8:00 AM: Exhibit Opening

8:30 AM – 9:30 AM

Conference Opening Vineyard Room

Welcoming:

Karen Ashby

Chair, and CASQA Board of Directors

Opening Remarks and Introductions

Keynote Address: Mistakes of the Past, Promises of the Future

Doug Harrison

Founding CASQA Chair

Mr. Harrison has been recognized by the American Public Works Association with its "Top Ten Public Works Leaders of the Year Award", the "Excellence in Water Leadership Award" by the Association of California Water Agencies, with a recognition of appreciation by the State Water Resources Control Board, with the "General Manager of the Year Award" of the California Special Districts Association, and was awarded the first "Leadership Award" of the California Storm Quality Association

*** Note: Within time sessions (1-10), presentations run in parallel organized along these four tracks: Stormwater – Treatment Track; Operations Track; Research Track; and Management Track ***

9:30 AM – 10:30 AM

Session 1

Strawberry Peak Room Treatment Track

Stormwater Chemical Dosing System Development

Jeff Lawrence
URS

The Caltrans Route 73 BMP Pilot Study

Gary Friedman
Metcalf & Eddy

Lake Silverwood Room Operations Track

Riverside County's IC/ID Program

Linda C. Garcia
Riverside County Flood Control

Mobile Pressure Washers, Complying with Stormwater BMPs

Regan S. Bailey
Wastewater Resources Analyst

Nicole Green

Environmental Compliance Inspector II
City of Riverside

Big Bear Room Research Track

Life After Diazinon –

What's New for Urban Creeks

Armand Ruby
Armand Ruby Consulting

The Increasing Environmental Significance of Pyrethroid Pesticides & Pyrethroid Pesticide Analyses at Environmentally Relevant Levels

Pete W. Halpin
Caltest Analytical Laboratory

Lake Gregory Room Management Track

Development of a Hydromodification Management Plan for the Santa Clara Valley Part 1: Performance Criteria and Guidance for Local Implementation

Jill C. Bicknell, P.E.
Assistant Program Manager
EOA, Inc
Santa Clara Valley Urban Runoff Pollution Prevention Program

Development of a Hydromodification Management Plan for the Santa Clara Valley – Part 2: Assessment of Hydromodification Impacts and Control Measure Effectiveness

Gary Palhegyi
Senior Professional
GeoSyntec

10:30 AM – 11:00 AM

Morning Break

11:00 AM – 12:00 PM

Session 2

Strawberry Peak Room Treatment Track

Post-Project Monitoring of BMPs/SUDs to Determine Performance and Whole-Life Costs

Michael Barrett, Ph.D.
University of Texas

Lake Silverwood Room Treatment Track

Treatment Trains: Don't Get Run Over

Gary R. Minton, Ph.D., P.E.
Resource Planning Associates

Performance, Maintenance and Cost of Full Sedimentation vs. Partial Sedimentation Sand Filters

David Alderete
Office of Water Programs
California State University Sacramento

Big Bear Room Research Track

Characterization of Runoff from the Sacramento Urban Area

Bill Busath
City of Sacramento

A Watershed Scale Approach to Estimating Pollutant Loading from Dry Season Urban Runoff

Dustin Bambic
Larry Walker Associates

Lake Gregory Room Management Track

Hydrograph Modification Management Using Simplified Low Impact Development Design

Christie Beeman, P.E.
Senior Associate
Philip Williams and Associates

12:00 PM – 1:30 PM

Luncheon Presentation

In the Vineyard Room

CASQA Awards and Recognition Program

The CASQA Board of Directors recognizes that individuals and organizations play a key role in furthering the educational, technical, and scientific initiatives that advance stormwater quality management, science, and regulation. Furthermore, the Board has determined that certain individuals and organizations display exemplary leadership, excellence, and initiative in advancing stormwater quality management, science, and regulation, and that the purpose of CASQA can be better achieved by formally recognizing these individuals and organizations.

Therefore, the Board has established the CASQA Awards and Recognition Program to recognize excellence in the above-mentioned areas.

During the luncheon CASQA will recognize individuals and organizations that show exemplary leadership, courage, excellence, or initiative in advancing stormwater quality management, science, and regulation consistent with CASQA's mission.

1:30 PM – 2:30 PM

Session 3

Strawberry Peak Room Treatment Track

A New Method for Estimating Runoff Quantities for Flow and Volume-based BMP Design

William R. Lanton
*Department of Geological Sciences
California State University, Fullerton*

Lake Silverwood Room Management Track

Collaboration & Integration Opportunities for Stormwater Programs

Stephen McCord
*Senior Engineer
Larry Walker Associates*

Stormwater Monitoring Coalition: A Regional Approach to Research/Monitoring in Southern California

Chris Crompton
*Manager, Environmental Resources
County of Orange/Watershed & Coastal Resources*

Big Bear Room Research Track

Management of Pathogens Associated with Stormwater Discharges: Methodology and Application for Molecular Detection of Target Organisms Combined with Microbial Source Tracking

Professor Stefan Wuertz
*Department of Civil and Environmental Engineering
University of California, Davis*

First Flush Phenomenon

Masoud Kayhanian
*Associate Director
Center for Environmental and Water Resources Engineering
Department of Civil and Environmental Engineering
University of California, Davis*

Lake Gregory Room Management Track

The Role of Economic Considerations in Stormwater Permits

John J. Lormon,
*Partner
Procopio Cory Hargreaves & Savitch LLP*

Stormwater – A Federal Legal Update

Elizabeth (Nena) Shaw, Esq.
Hunton & Williams LLP

2:30 PM – 2:45 PM

Afternoon Break

2:45 PM – 3:45 PM

Session 4

Lake Gregory Room Treatment Track

Simplified Low Impact Development Design for Compliance with Stormwater Treatment Requirements

Dan Cloak, P.E.
*Principal
Dan Cloak Environmental Consulting*

A Lower-Impact Development Approach for a Coastal Resort in Southern California

Eric W. Strecker
GeoSyntec

Lake Silverwood Room Management Track

Arroyo Seco Watershed Plan: Strategic Water Quality Implementation

Ken Susilo, P.E., CPSWQ
GeoSyntec Consultants
Brandon Steets

The Nitrogen and Selenium Management Program for the San Diego Creek and Newport Bay Watershed: An Alternative Compliance Approach to Waste Discharge Requirements

Karen Hauptly
County of Orange

Big Bear Room Research Track

The World According to TAPE: A Journey Through the Washington State Department of Ecology's Approval Process

Vaikko Allen
Stormwater Management Inc.

Strawberry Peak Room
Management Track

Strategies for New Revenue for Stormwater Management: California Case Studies.

John W. Bliss, P.E.
Vice President
Shilts Consulting

4:00 PM – 5:00 PM

Session 5

Lake Gregory Room
Treatment Track

The Effects of Infiltrating Stormwater On Soils and Groundwater

Scott Meyer
Office of Water Programs

Countywide Stormwater Infiltration Site Characterization Criteria and Guidance Study, Contra Costa Clean Water Program

Lucas W. Paz, Ph.D.
Senior Hydrologist
LFR Levine - Fricke

Michael S. Thomas, P.E.
Principal Engineer
LFR Levine - Fricke

Lake Silverwood Room
Management Track

Evaluation of Recreational Uses and Bacteria Water Quality Objectives in the Santa Ana River Watershed

Richard Meyerhoff, Ph.D.
CDM

Big Bear Room
Management Track

An Innovative Approach for Protecting the San Diego Marine Life Refuge: A Prototype Model for ASBS Management

Nathan J. Schaedler, P.E.
Project Manager
MACTEC

Strawberry Peak Room
Management Track

Rancho Mission Viejo Water Quality Management Plan

Peter Mangarella, P.E., Ph.D.
Associate
GeoSyntec Consultants, Oakland, CA

Laura Coley Eisenberg
Director, Planning and Entitlement
Rancho Mission Viejo
San Capistrano

5:30 PM – 7:30 PM

Exhibitor Hosted Reception

In the Harvest and Grove Room

Join us in the Exhibitor's Hall for Drinks and Appetizers

**Wednesday
October 5, 2005**

7:30 AM: Open Registration

8:00 AM: Exhibit Opening

8:30 AM – 9:30 AM

Session 6

Lake Gregory Room
Treatment Track

LEED Requirements: From a Hydrology and Drainage Design Perspective

Eliza Jane Whitman, P.E.
Inland Empire Utilities Agency (IEUA)

Sun Valley Park Stormwater Infiltration Basin Demonstration Project

Kathleen Higgins
CH2M Hill

Strawberry Peak Room
Management Track

The Storm Water Data Report: How Caltrans Documents Compliance in the Design Phase

Timothy B. Sobelman, P.E.
Chief – Office of Stormwater Management
California Department of Transportation

Using Web Technology to Improve MS4 Regulatory Reporting

Jon Spangenberg
CDM

Big Bear Room
Research Track

Solid Measurements in Stormwater Runoff

Masoud Kayhanian
Associate Director
Center for Environmental and Water Resources Engineering
Department of Civil and Environmental Engineering
University of California, Davis

Design of BMPs for Contaminants Removal with respect to Small Particle Size Distribution

Masoud Kayhanian
Associate Director
Center for Environmental and Water Resources Engineering
Department of Civil and Environmental Engineering
University of California, Davis

Lake Silverwood Room
Management Track

Evaluation of Municipal Stormwater Programs Implemented Throughout California

Pamela Creedon

Tetra Tech

Evaluation of New Development Standards for Municipal Stormwater Programs in Southern California

John Kosco, P.E. CPESC

Principal Engineer

Tetra Tech

9:30 AM – 9:45 AM

Morning Break

9:45 AM – 10:45 AM

Session 7

Lake Gregory Room
Treatment Track

Performance of a California Wet Pond

Gary Shawley

Alameda County

**Stormwater Treatment:
Can We Make Them Smaller?**

Gary R. Minton

Resource Planning Associates

Lake Silverwood Room
Research Track

Analyses of the Expanded International BMP Database and Implications for BMP Selection and Design

Eric W. Strecker

GeoSyntec

Big Bear Room
Management Track

Basin Sizer: A Free Software Tool for Determining Water Quality Volumes and Water Quality Flows

Scott Meyer

Office of Water Programs

Finding Water Body Information Using the Water Quality Planning Tool Web Site

Scott Meyer

Office of Water Programs

Strawberry Peak Room
Management Track

LID Techniques and Water Quality Management Plans for Water Quality Control in New Development and Redevelopment

Jeffery D. Endicott, P.E., DEE

Engineering Director

AEI-CASC Engineering Inc.

11:00 AM – 12:00 PM

Session 8

Lake Gregory Room
Treatment Track

Tahoe Basin BMP Evaluation and Feasibility Study

Eric W. Strecker

GeoSyntec

Effort to Keep Lake Tahoe Blue

Sara A. McIlroy

Stantec

Strawberry Peak Room
Management Track

Using A Water Quality Database as a Stormwater Program Management Tool

Mike Troughon

Senior Scientist

Larry Walker Associates

Report of Water Quality Exceedances – Assessing Water Quality Compliance for Central Valley Phase I Municipal Stormwater Dischargers

Brian Laurensen, P.E.

Senior Engineer

Larry Walker Associates

Big Bear Room
Research Track

Don't Trash Fresno Public Education Research Study (PERS)

Misha Gutierrez

Ogilvy, PR

Using Technical Data and Marketing Research to Change Behavior

Stephen Groner, P.E.

President

S. Groner & Associates Inc.

Lake Silverwood Room
Management Track

Program Assessment – The Need for Quantifiable Measurements

Betsy Elzufon

CASQA

12:00 PM – 1:30 PM

Lunch in the Vineyard Room

Luncheon Presentation

*Dealing with Last Year's Record Southern
California Rainfall - Impact and Agency Response*

Guest luncheon speakers from Southern California water resources agencies will present impacts and challenges related to managing the previous wet season's record rainfall and resulting stormwater runoff. Guest luncheon speakers include:

Vana Olson

San Bernardino County Department of Public Works

Herb Nakasone

*Director Public Works / Chief Engineer, Resources & Development
Management Department, County of Orange*

Warren "Dusty" Williams

*General Manager / Chief Engineer, Riverside County Flood Control
and Water Conservation District*

1:30 PM – 2:30 PM

Session 9

Lake Gregory Room Treatment Track

Pilot Study to Full Scale Implementation: How to Design A Trash Capture Device for California Freeways

Timothy B. Sobeman, P.E.

*Supervising Transportation Engineer
Chief-Office of Stormwater Management-Design*

One Solution for Meeting LA's Trash TMDL; Utilization of Louvered Linear Radial Screen for Gross Solids Removal

Kevin McGillicuddy

*Director, Stormwater Treatment Division
Roscoe Moss Company*

Lake Silverwood Room Research Track

Caltrans Vegetation Erosion Control Research and Seed Selection Tool

Misty Scharff

Office of Water Programs

Testing and Quality Control of Seed For Erosion Control

Randy Marx

Brown & Caldwell

Big Bear Room Management Track

Municipal Strategies for Implementing TMDLs: The Florida Perspective

Michael Batemen

Vortech Inc.

An Integrated, Iterative, Adaptive Approach to TMDL Implementation for Santa Monica Bay Jurisdictions 1 and 4

Ken Susilo

GeoSyntec

Strawberry Peak Room Management Track

CASQA Public Information and Education Resources Directory

Sharon Gosselin

CASQA

2:30 PM – 2:45 PM

Afternoon Break

2:45 PM – 3:45 PM

Session 10

Lake Gregory Room Research Track

Selenium Treatment and Management Approaches

Ken Susilo

GeoSyntec

Lake Silverwood Room Treatment Track

Santa Barbara County Urban Runoff Treatment Control Project

Peter Mangarella, P.E., Ph.D.

Associate, GeoSyntec Consultants Oakland, CA

Cathleen Garnand, P.E.

*Civil Engineering Associate
Santa Barbara County Water Agency*

Craig Steward, P.E.

*Principal Engineer
Penfield & Smith*

John Gray

URS Corporation

Big Bear Room Research Track

Development of Treatment Processes for Removing Turbidity and Phosphorus at Lake Tahoe

Depen Patel

Office of Water Programs

Strawberry Peak Room Management Track

Ballona Creek Watershed BMP Retrofit Study – Phase I: Conceptual Planning

Lisa Austin, P.E.

GeoSyntec

A New Method for Estimating Runoff Quantities for Flow and Volume-based BMP Design

W. Richard Laton, California State University, Fullerton
Ted Hromadka, US Military Academy, West Point
Matt Yeager, San Bernardino County Flood Control
Jack A. Picciuto, US Military Academy, West Point
Bob Whitely, University of California, Irvine

Module 25; Day 1; Session 3

Introduction

- Controlling rainfall runoff is an important process for City, County and State Agencies because large concentrations of pollutants are typically found in runoff from small volume storms and from the first flush of larger storms. The ability to quantify the magnitude of rainfall in any give area without conducting a large-scale hydrologic study will aid managers and individuals throughout the United States.

BMPs

- A BMP design criterion for management of stormwater from rainfall events is broken into two types; volume-based and flow-based.
 - A volume-based BMP design calls for the capture and infiltration or treatment of a certain percentage of the runoff from the project site, usually in the range of the 75th to 85th percentile average annual runoff volume. This range corresponds to the “knee of the curve”.
 - A low flow based BMP design criteria calls for the capture and infiltration or treatment of runoff produced by rain events in excess of 0.2 inches/hour.

Study Approach

- Analysis was conducted to discern if there exists a statistical link between rainfall frequency distribution and the NOAA Atlas 14.
- Idea was to develop a statistical approach to compare rainfall data with overwhelming number of storms to simple correlations.
- In areas where no rainfall gauges exist, this analysis could provide the mechanism to establish a correlation between the NOAA Atlas and the expected cumulative frequency curves.
- Note: This approach can be applied throughout the United States where NOAA has completed analyses similar to the Atlas 14 study conducted for the southwestern United States (Geoffrey, M.B., et al., 2004).

Rainfall Station Information

Total Number of rainfall stations	Total number of daily stations	Total number of hourly stations	Total number of 15 minute stations	Total number of hourly stations used in study
655	544	227	27	90

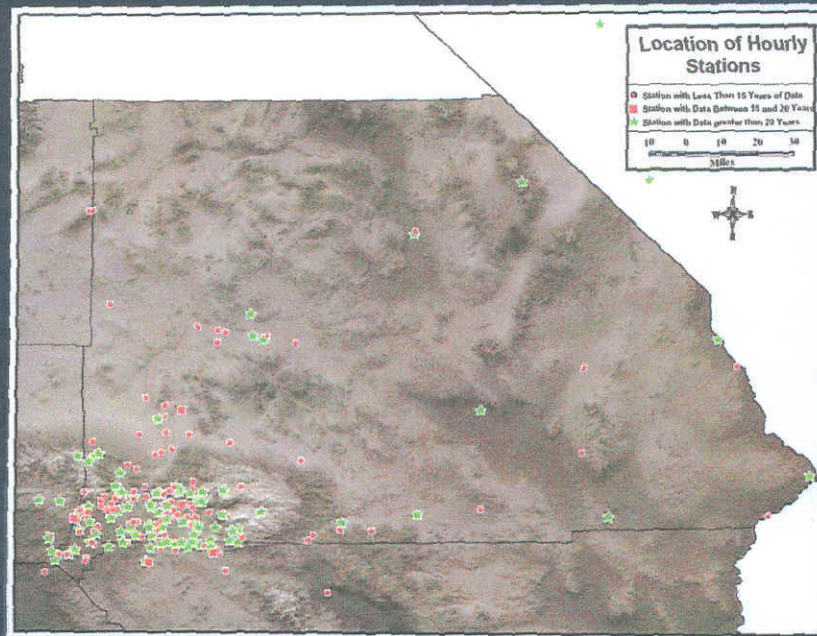
Table 1: General Rainfall Station Information.

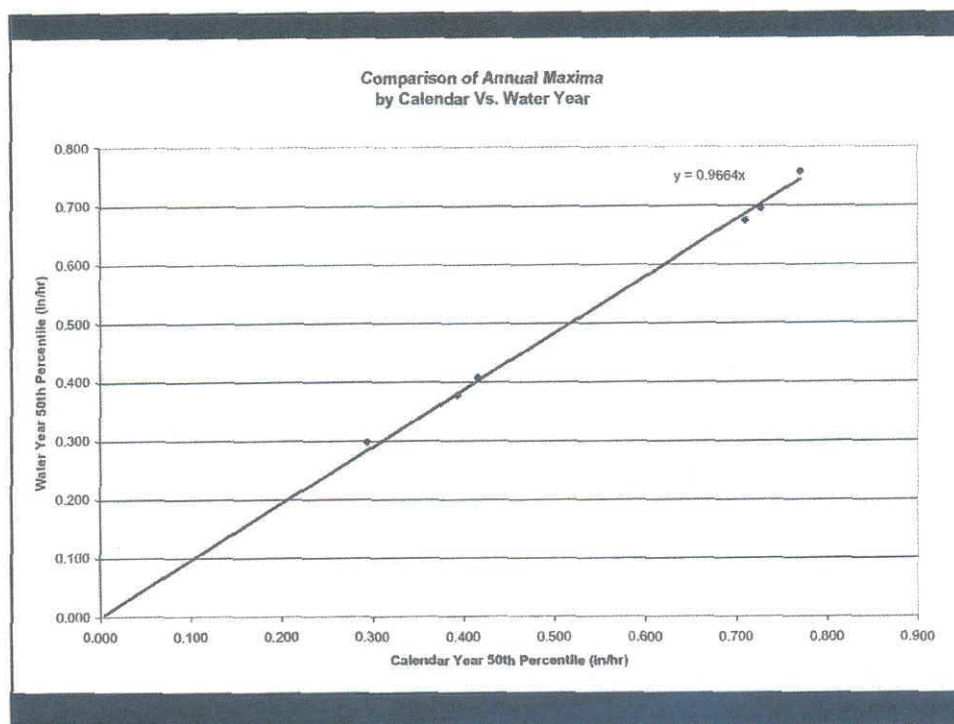
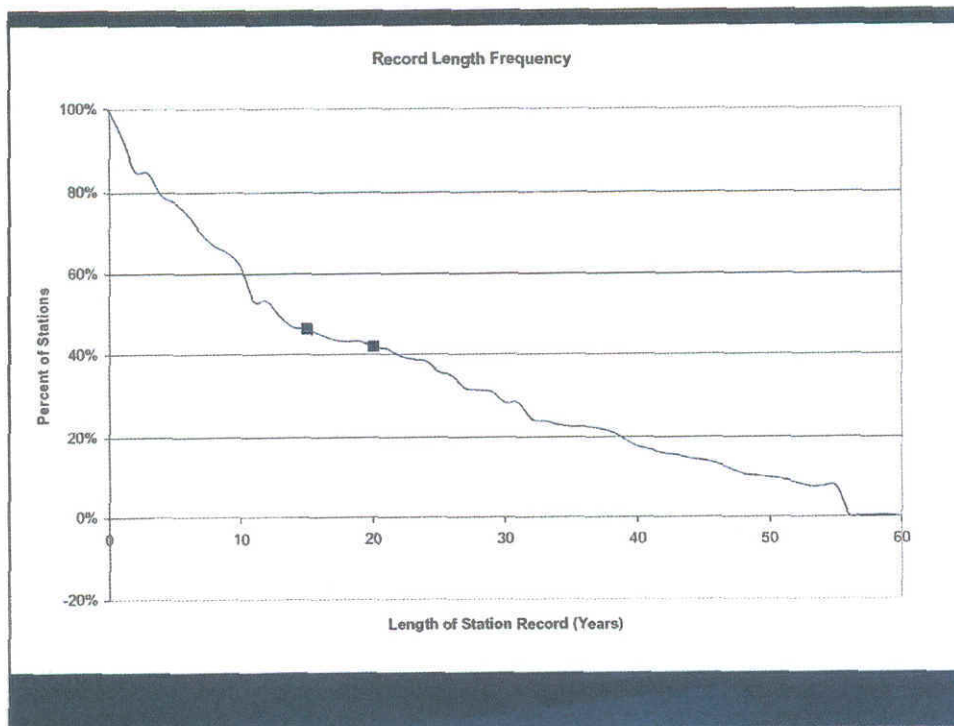
Total number of hourly stations	NOAA	San Bernardino County	CMIS	UC Davis
227	45	173	9	0

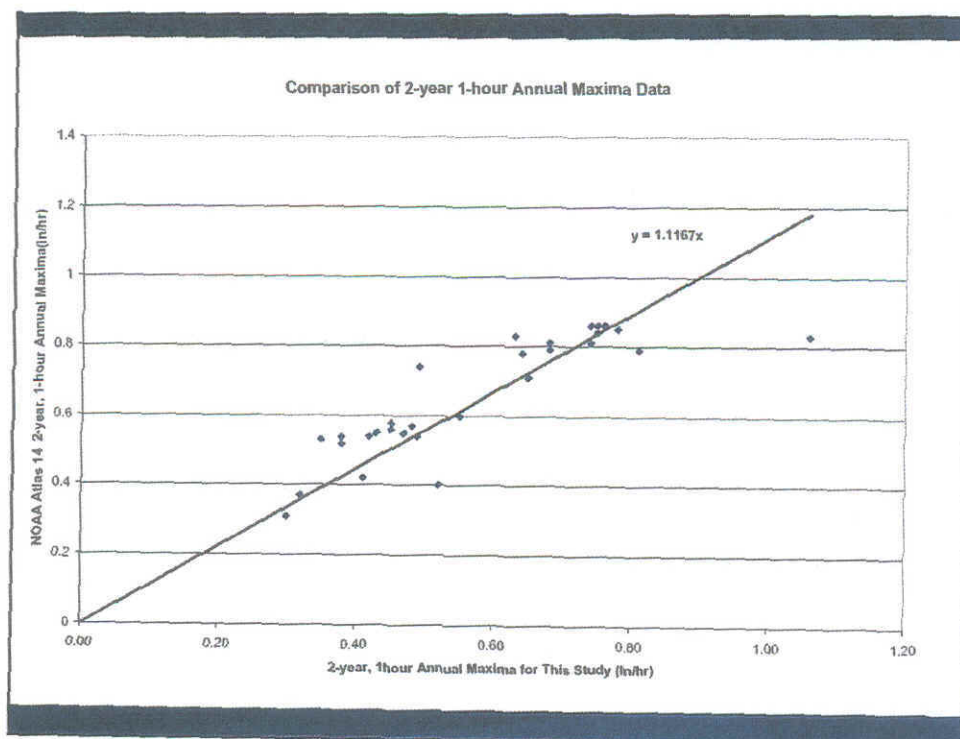
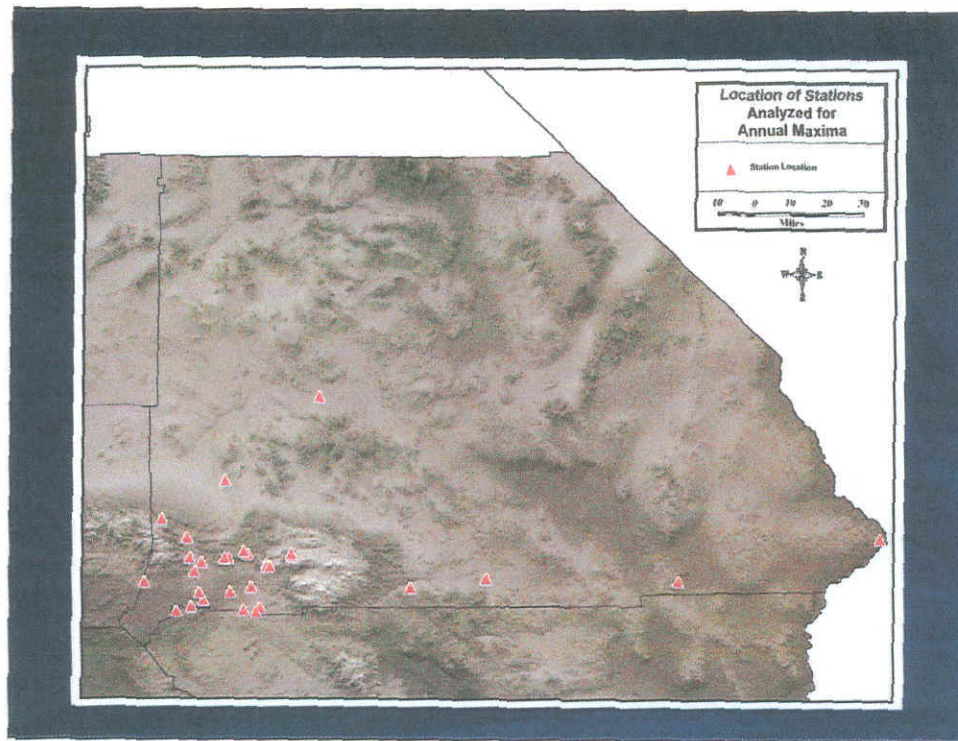
Table 2: Source of Hourly Data.

Total hourly stations used in study	San Bernardino County	Riverside County	Los Angeles County	Nevada
90	82	2	4	2

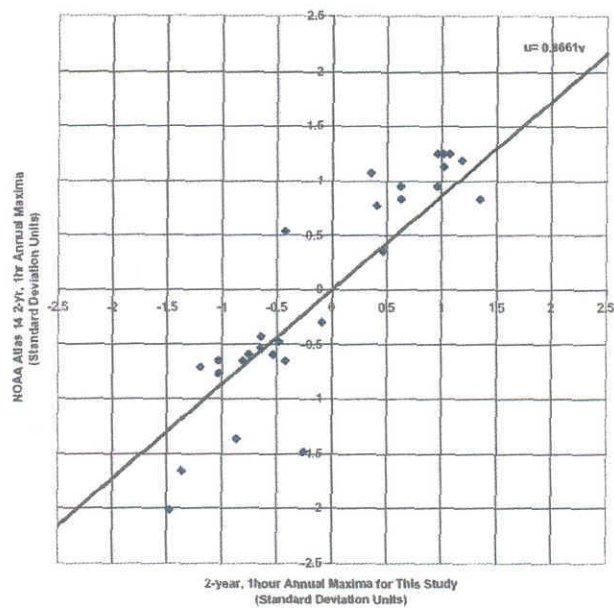
Table 3: Location of Hourly Data.



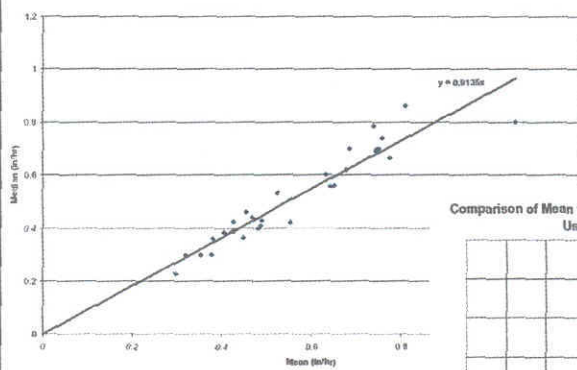




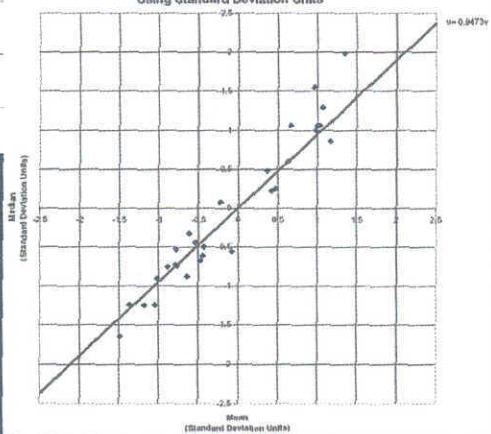
Comparison of 2-year, 1-hour Annual Maxima
Using Standard Deviation Units



Comparison of Mean vs Median 2-yr 1-hr Annual Maxima

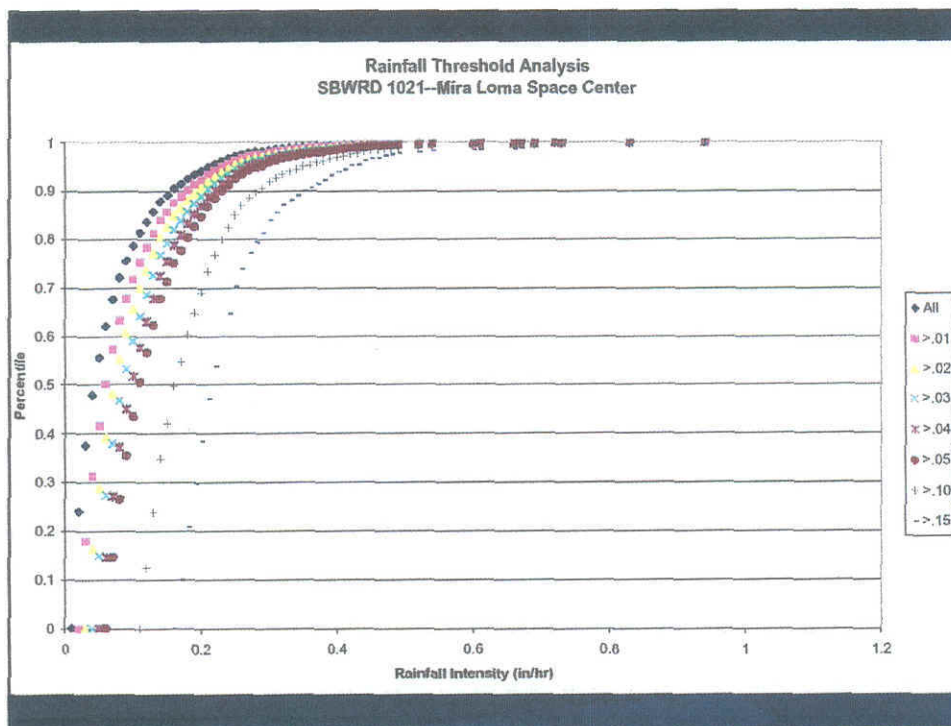


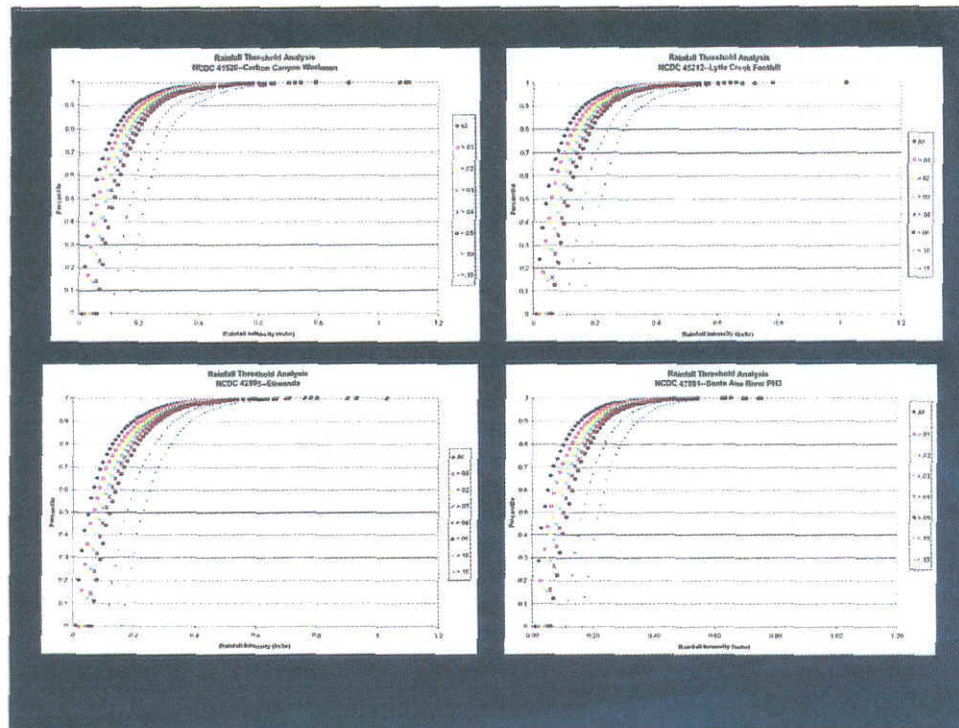
Comparison of Mean vs Median 2-yr 1-hr Annual Maxima (This Study)
Using Standard Deviation Units



Sensitivity Analysis

- Sensitivity analysis was run by filtering out data of less than equal to 0.01, 0.02, 0.03, 0.04, 0.05, 0.10, and 0.20 inches and re-percentile ranked.
- The recognized variance was a subtle shift of the curves to the right (increased rainfall intensity).
- The elimination of 0.01 values is custom and practice for these type of analysis (Miller, R.H., et al., 1973; Geoffrey, M.B., et al., 2004; and State of California BMP manual, 2004).

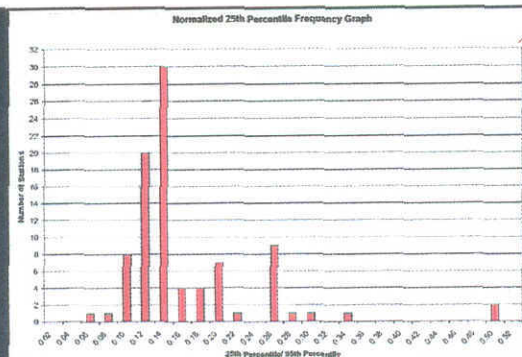




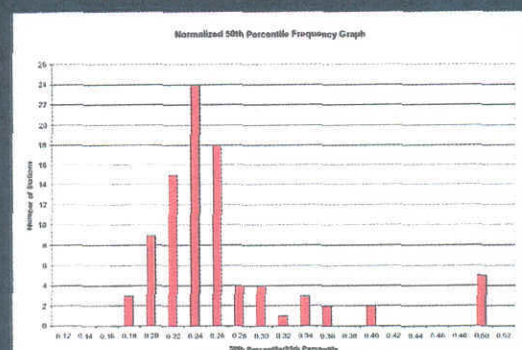
Characteristic Ratios

- Pattern of regionality
- All graphs suggest a normal distribution
- The 50th percentile graph corresponds to a resistant statistic (mean) and therefore is not subject to effects in the changes of magnitude by the largest and smallest values.

25th



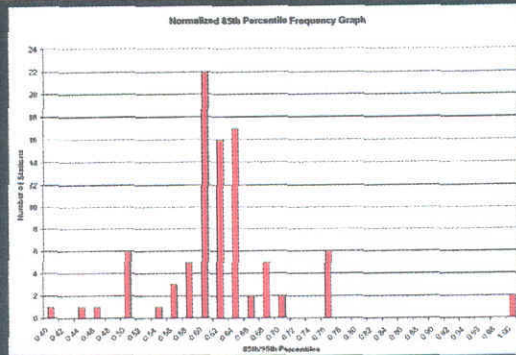
50th



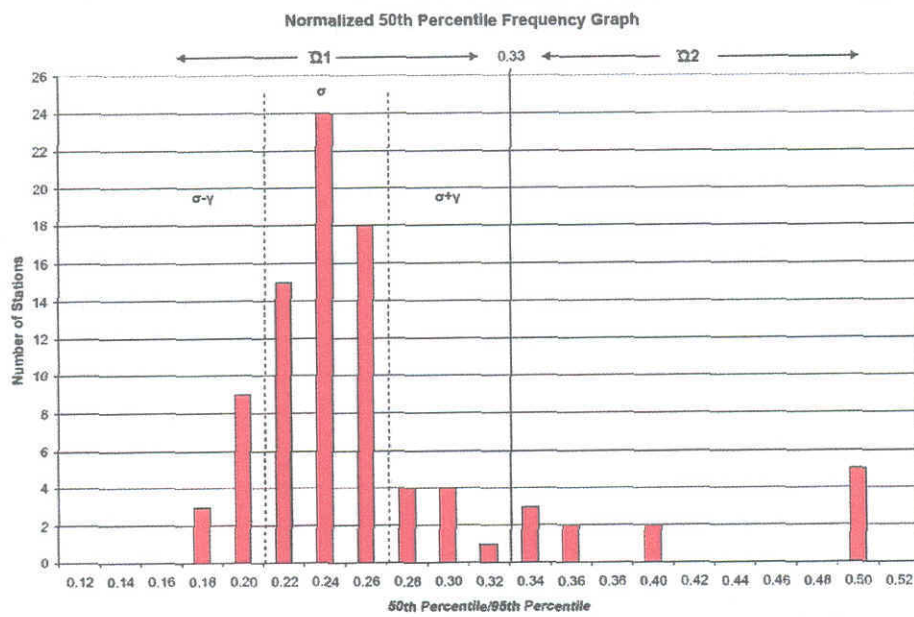
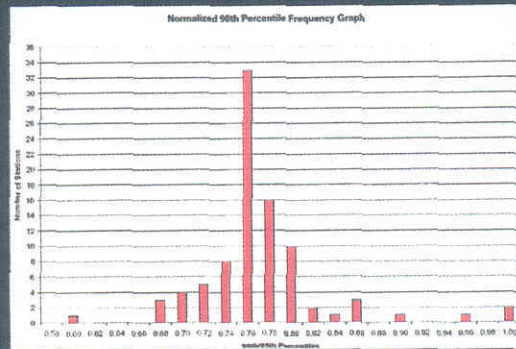
70th

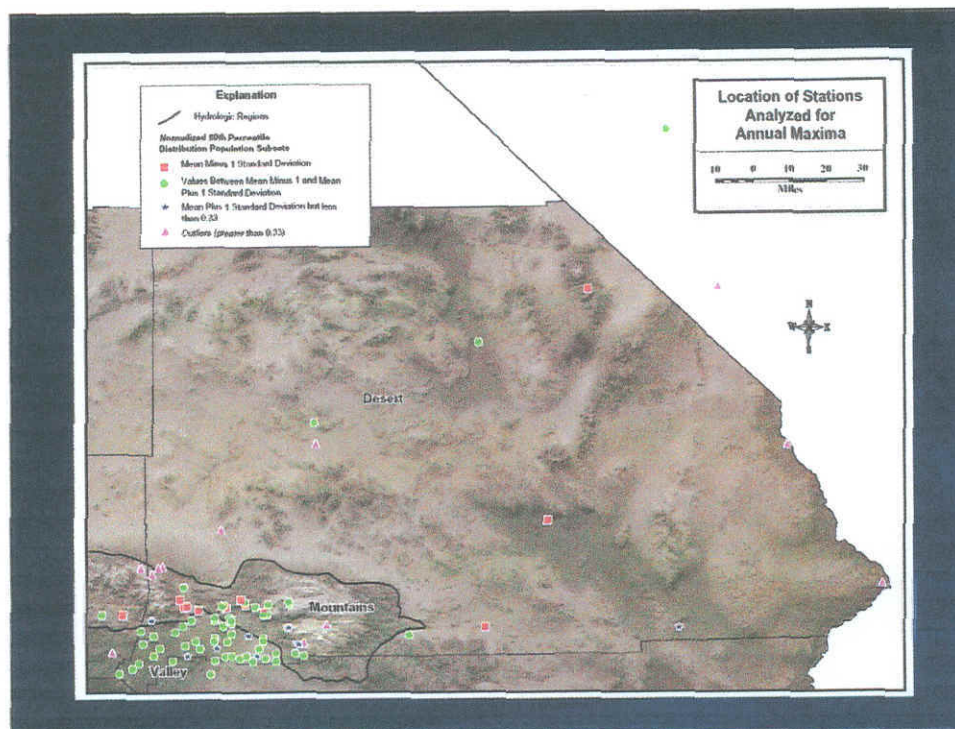
75th

85th



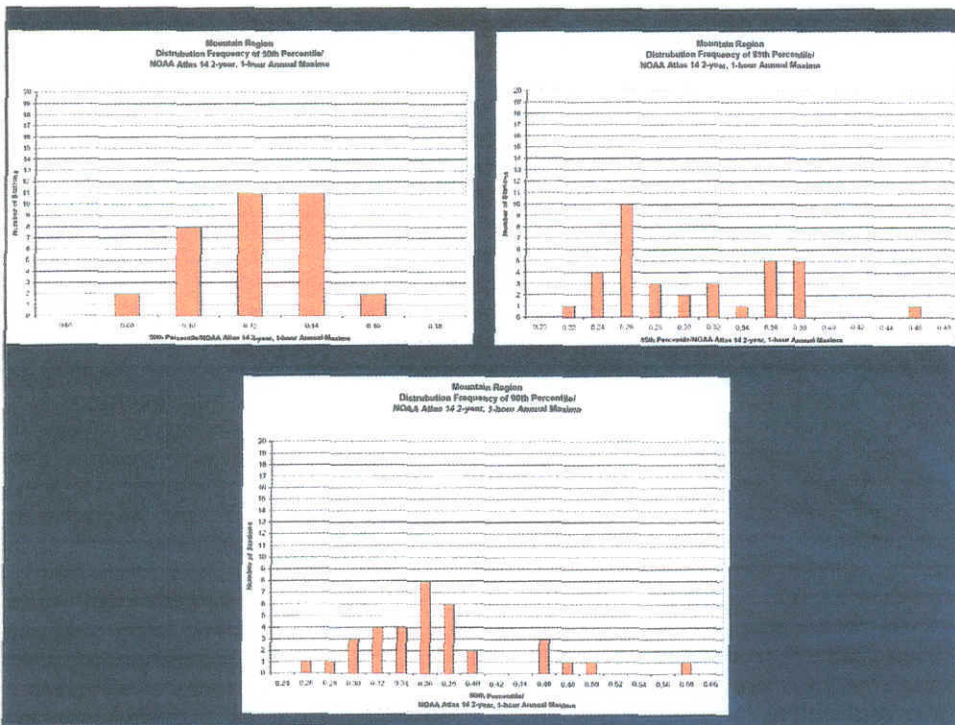
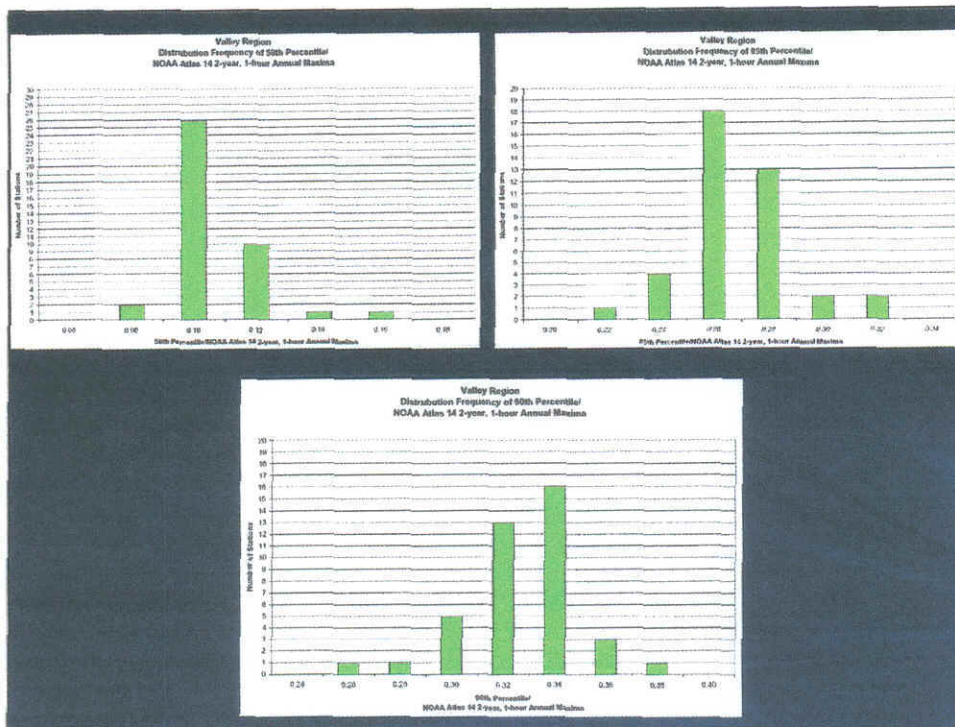
90th

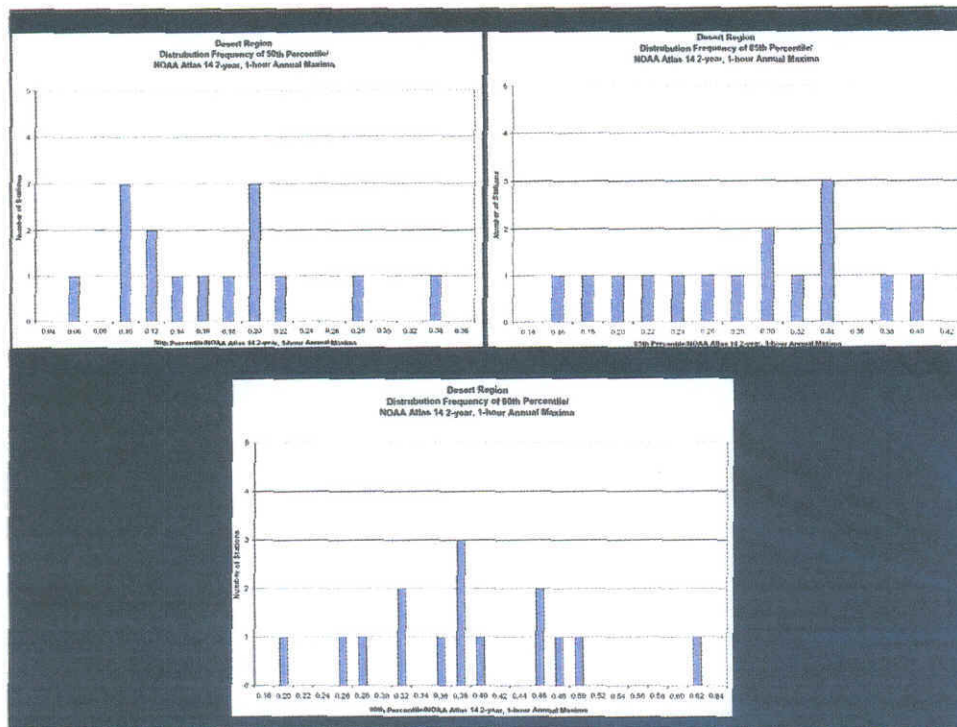




Percentile Counts versus NOAA Atlas 14, 2-yr 1-hour Rainfall Data

- Nearly all the hourly rainfall data (99%) is less than that of NOAA Atlas 14, 2-yr 1-hour rainfall intensity values
- All data normalized to the 95th percentile
- Data plotted by region

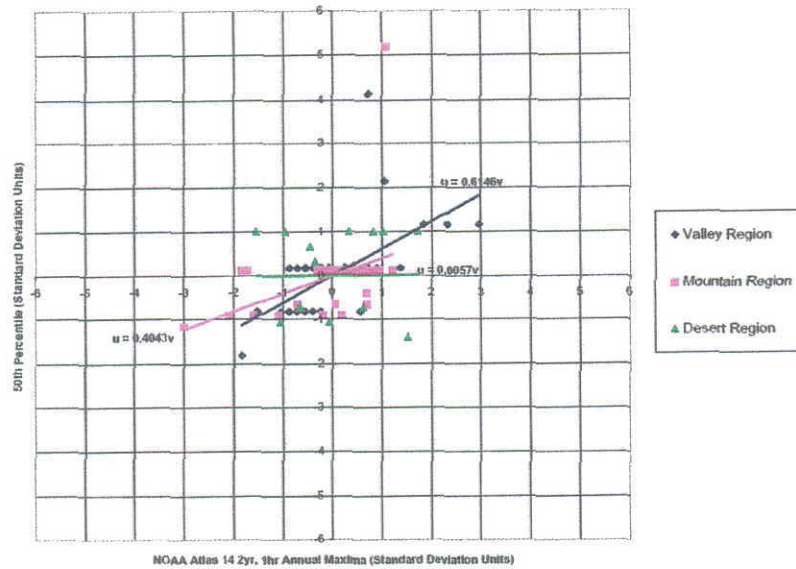




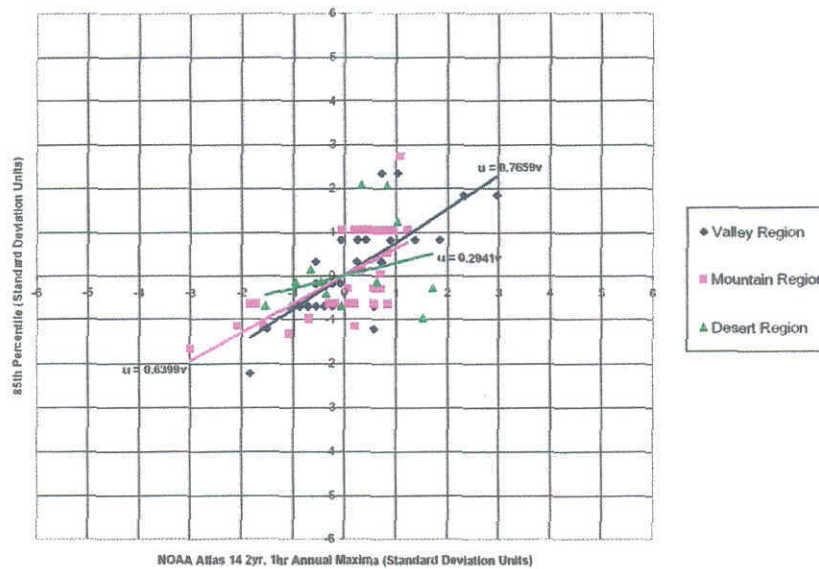
Comparative Analysis

- Standard deviation statistical plots were constructed for the 50, 85 and 95th percentile frequency versus NOAA Atlas 14, 2-yr 1-hour rainfall. These plots provided direct evidence of a correlation between the data sets. Note, that each region (valley, mountain and desert) were plotted on the same graph.

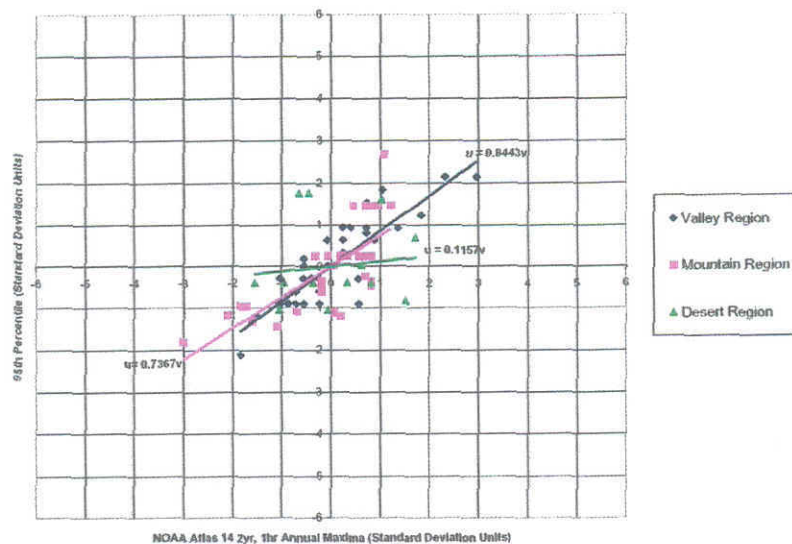
50th Percentile vs. NOAA Atlas 14 2yr, 1hr Annual Maxima
Standard Deviation Units



85th Percentile vs. NOAA Atlas 14 2yr, 1hr Annual Maxima
Standard Deviation Units



95th Percentile vs. NOAA Atlas 14 2yr, 1hr Annual Maxima
Standard Deviation Units



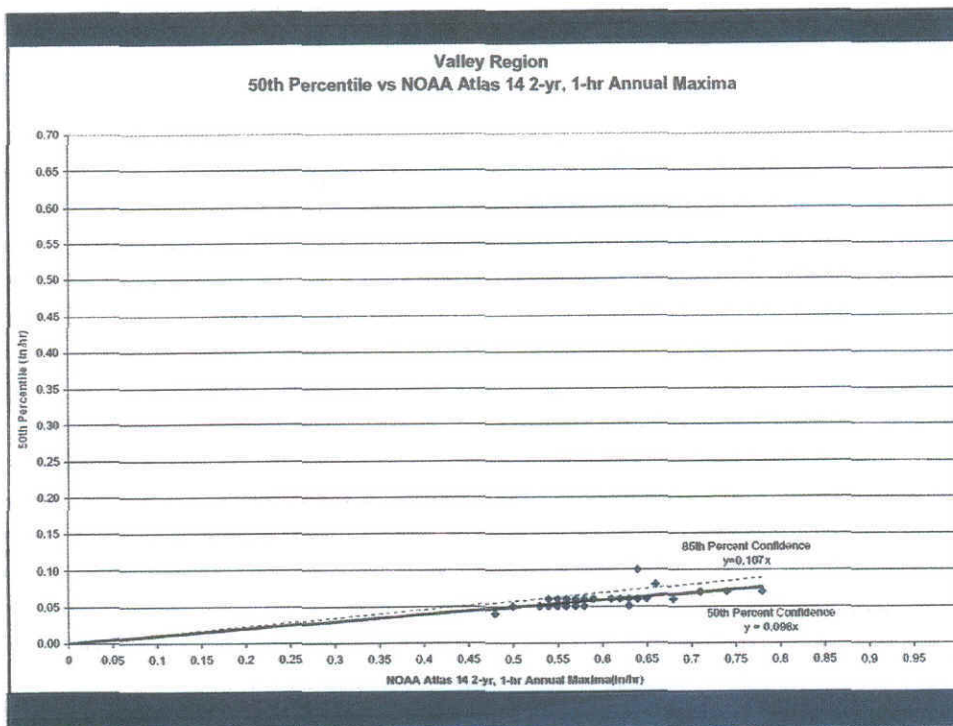
Regression Coefficients

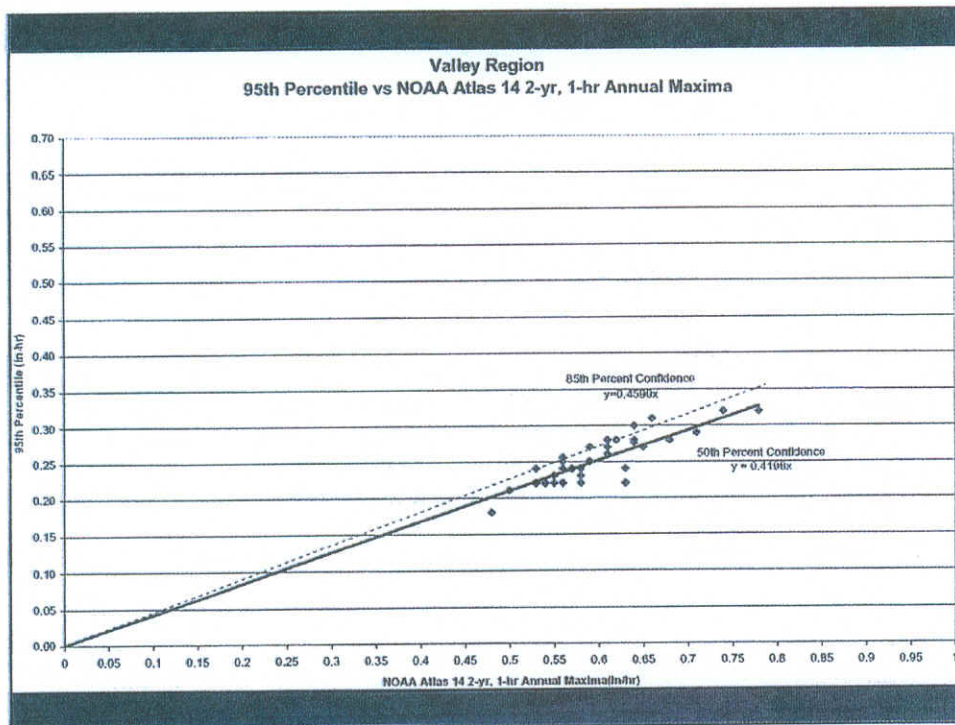
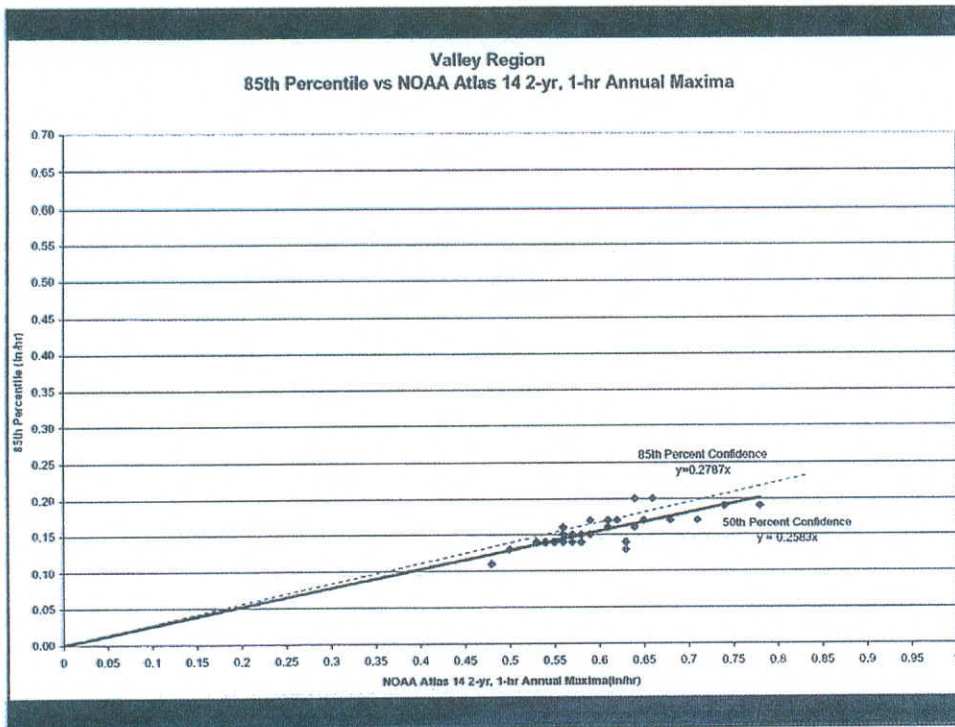
- Using a straight line regression analysis the following equation was used for calculating the regression coefficients.
- Equation: $Y = \alpha X$
- Where:
 - Y = Intended target value of interest (50th or 85th percentile frequency)
 - α = Relevant regression coefficient as determined by this study for the 50th or 85th upper confidence limit
 - X = NOAA Atlas 14, 2-yr 1-hour rainfall value

Valley Region

■ Statistic

- 50th percentile
– 0.0978 (0.1071)
- 85th percentile
– 0.2583 (0.2787)
- 95th percentile
– 0.4198 (0.4590)

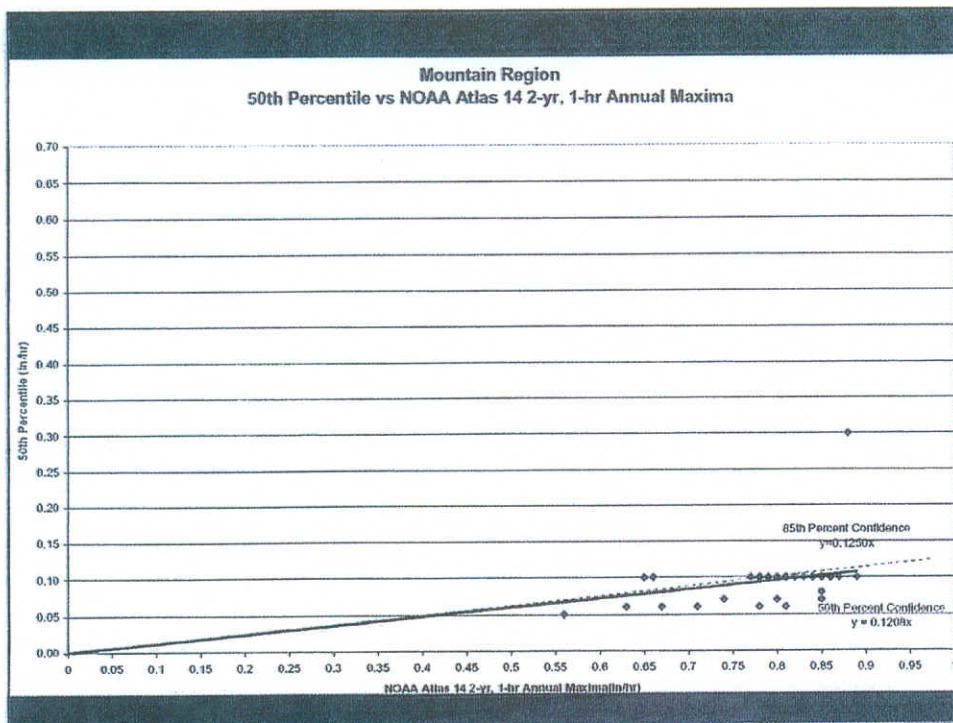


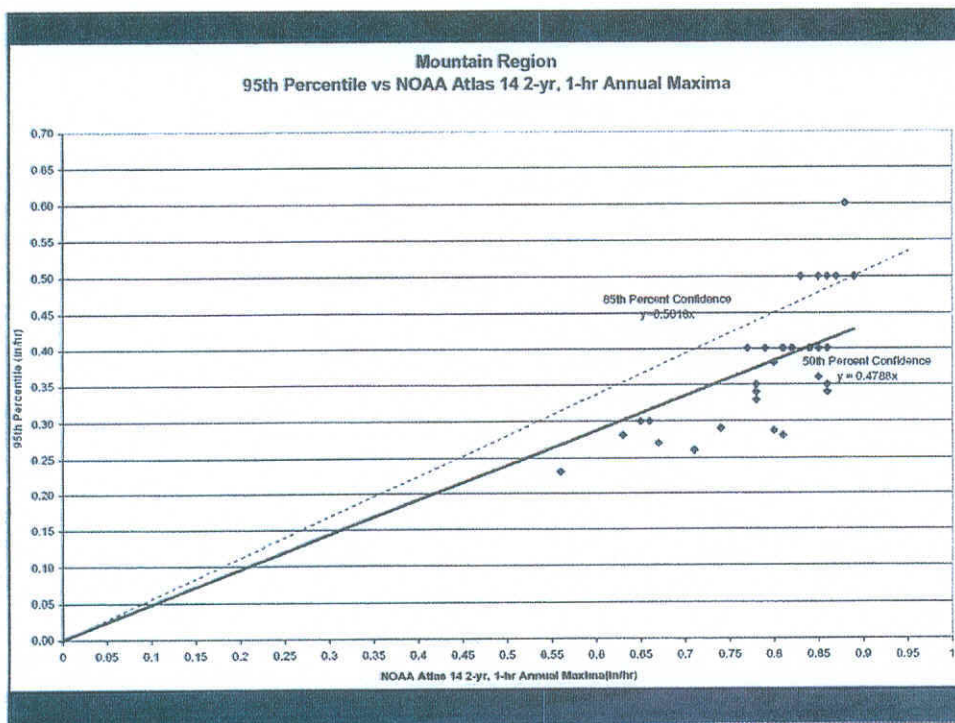
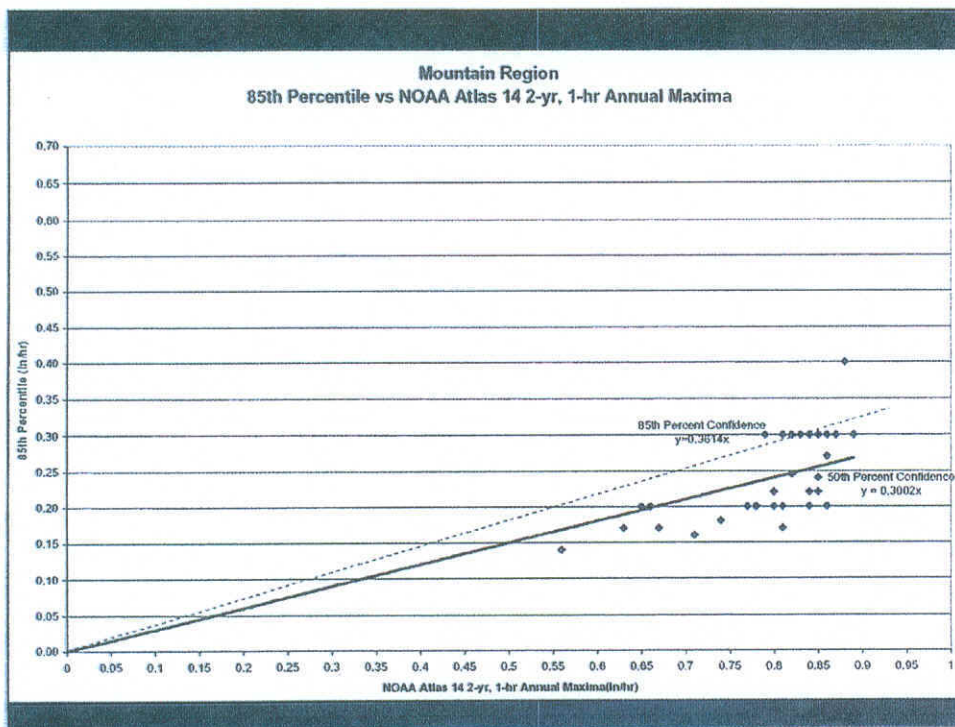


Mountain Region

Statistic

- 50th percentile
– 0.1208 (0.1250)
- 85th percentile
– 0.3002 (0.3614)
- 95th percentile
– 0.4788 (0.5618)

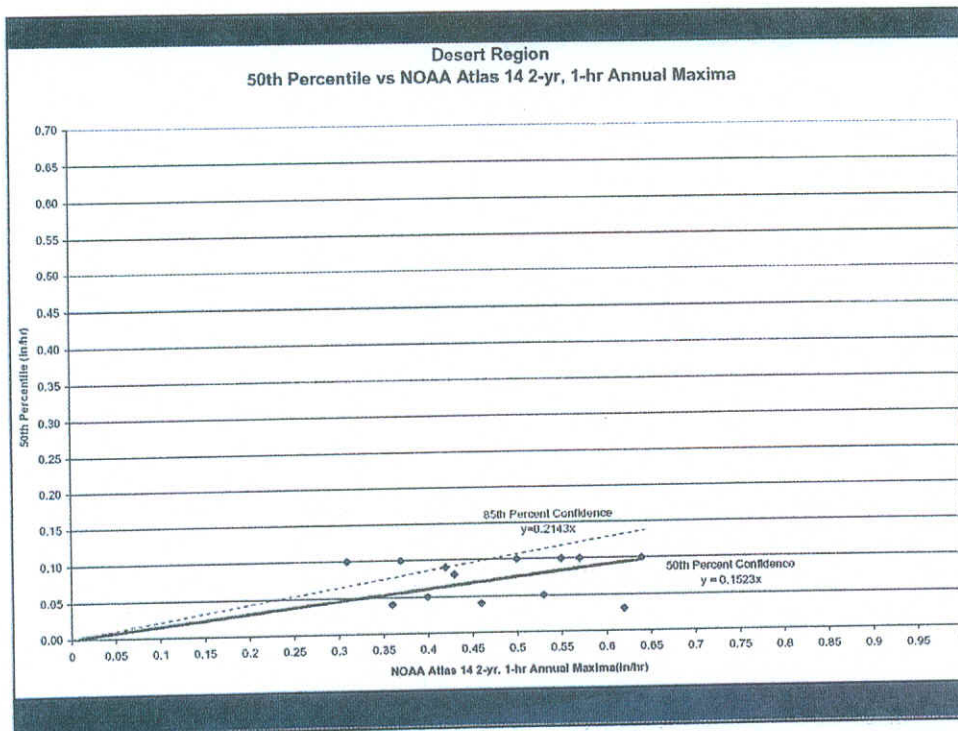


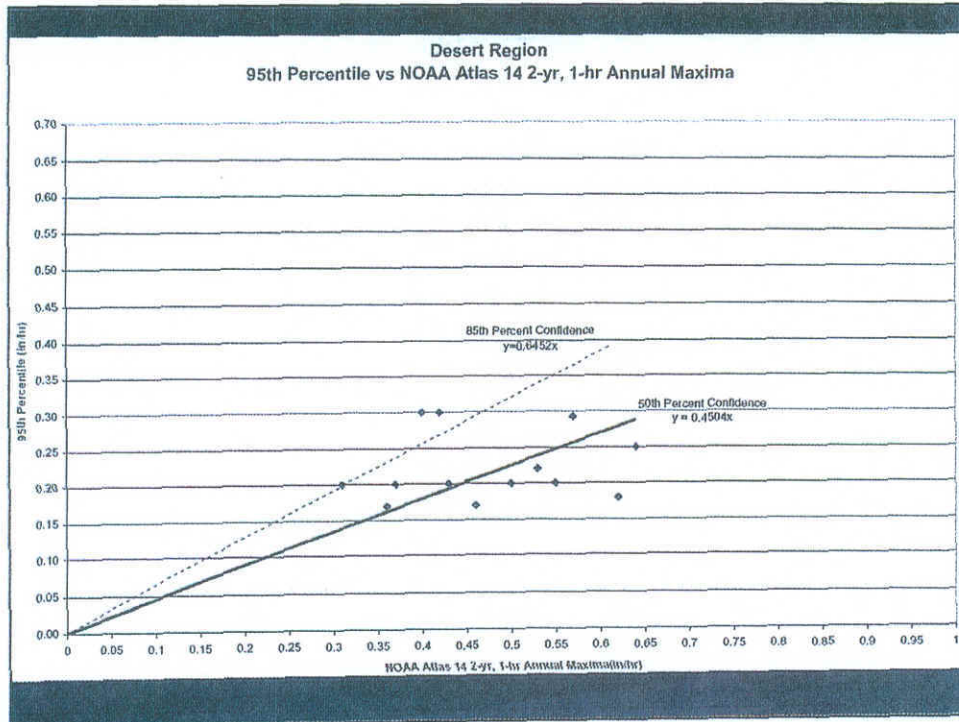
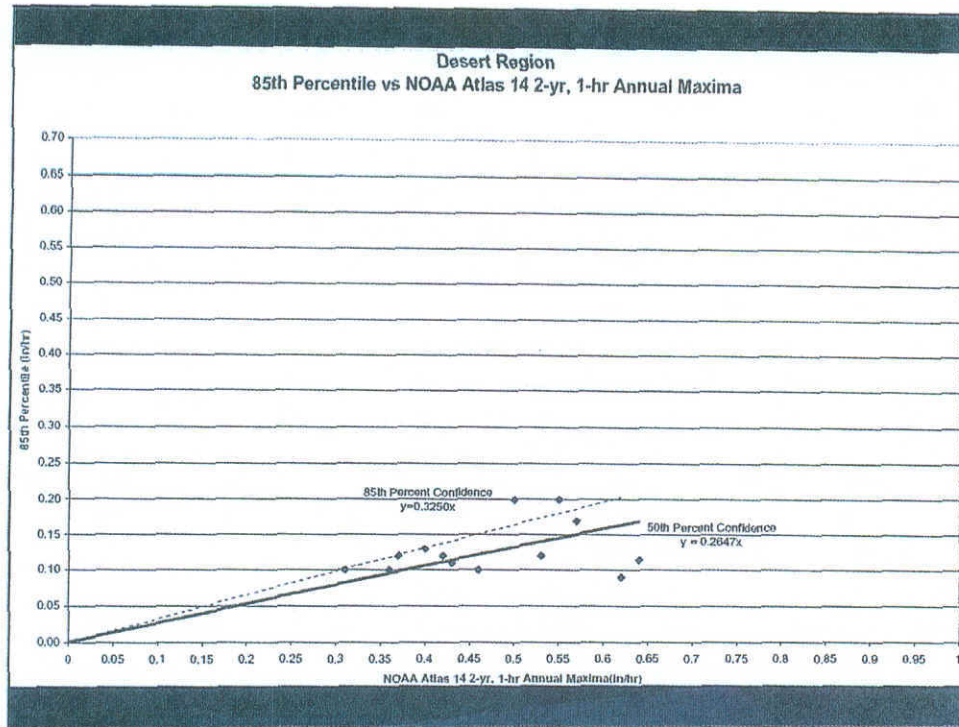


Desert Region

■ Statistic

- 50th percentile
– 0.1523 (0.2143)
- 85th percentile
– 0.2647 (0.3250)
- 95th percentile
– 0.4504 (0.6452)





P_6

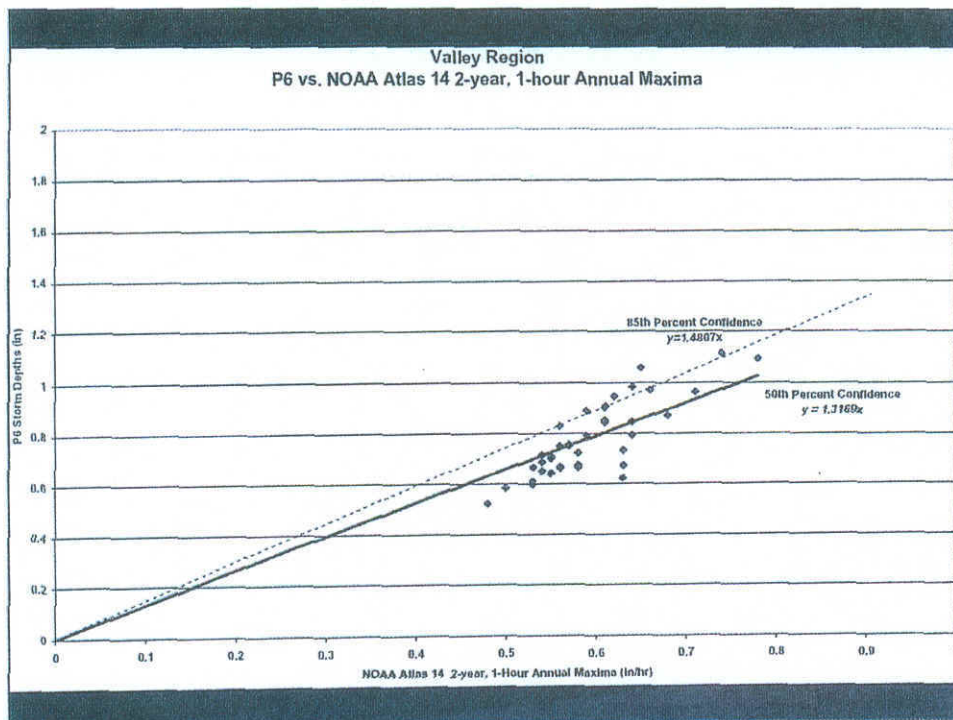
- mean storm precipitation volume
- rainfall events whose depths are less than or equal to 0.10 inches tend to produce little if any runoff

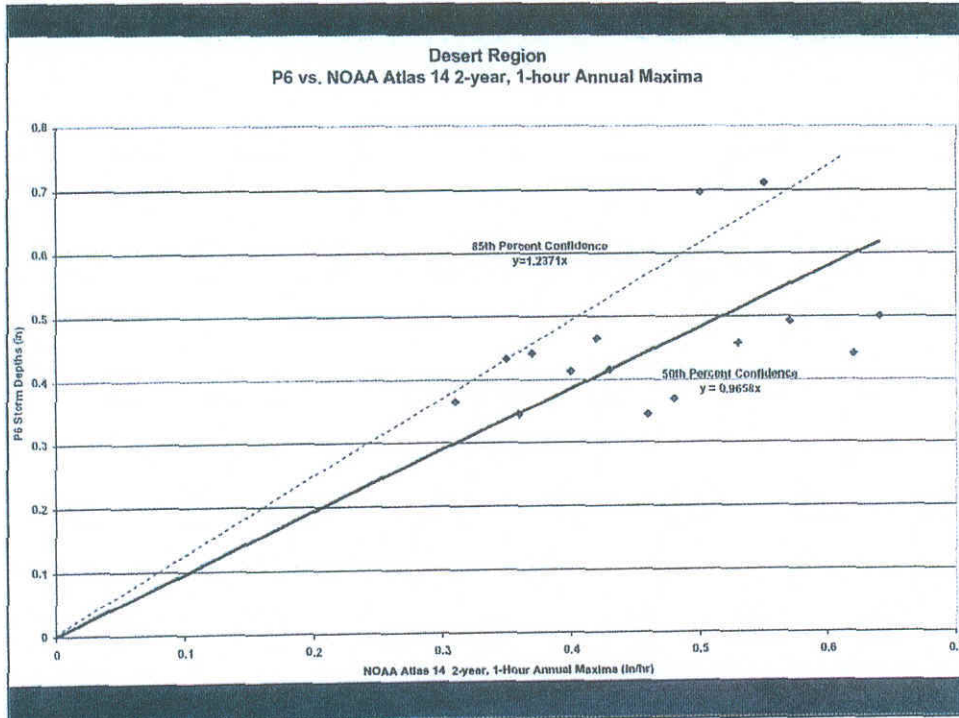
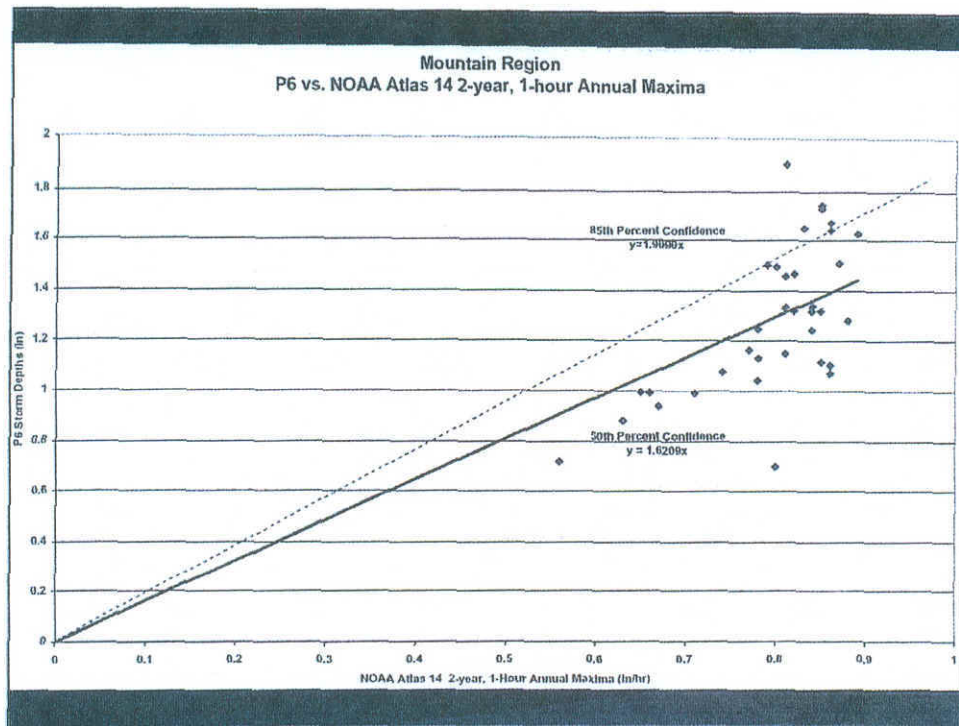
P_6 regression coefficient

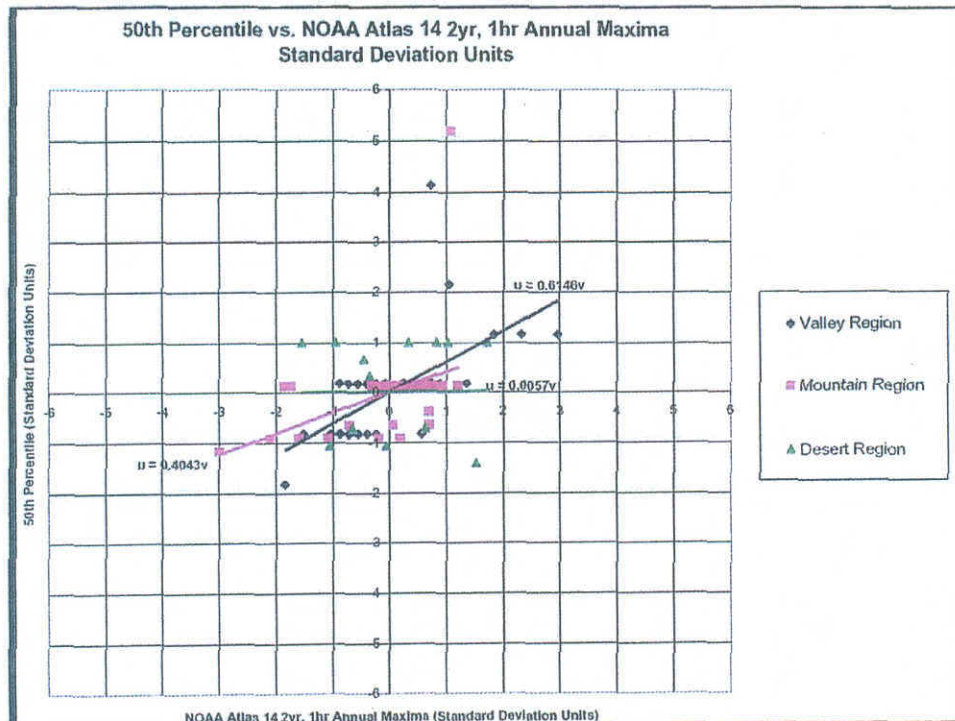
- Equation: $V = \alpha U$
- Where:
 - V = Intended target value of interest (50th or 85th percentile frequency)
 - α = Relevant regression coefficient as determined by this study for the 50th or 85th upper confidence limit
 - U = NOAA Atlas 14, 2-yr 1-hour rainfall value
- The P_6 regression coefficients are highest in the mountain region and lowest in the desert region. This can be attributed to the higher storm totals typically found in this hydrologic region.

Regression Coefficients

- Valley
 - 1.3169 (1.4807)
- Mountain
 - 1.6209 (1.9090)
- Desert
 - 0.9658 (1.2371)







“Knee of the Curve”

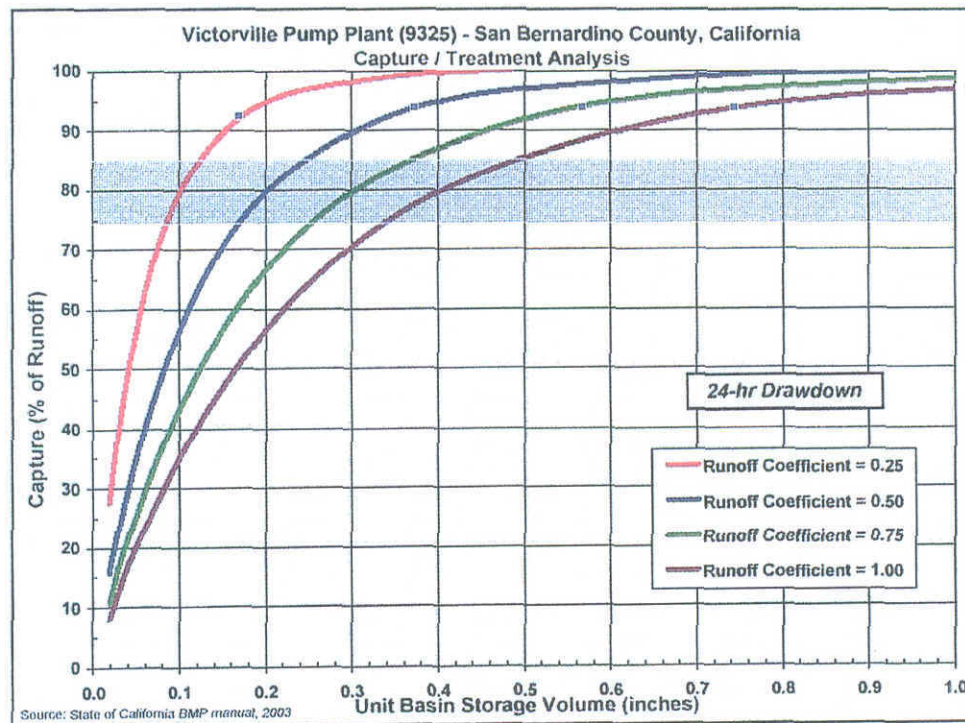
- Design criteria for water quality control BMPs are set to coincide with the “knee of the curve”, that is, the point of the inflection where the magnitude of the event increases rapidly than number of events captured (State of California BMP Handbook, 2003).

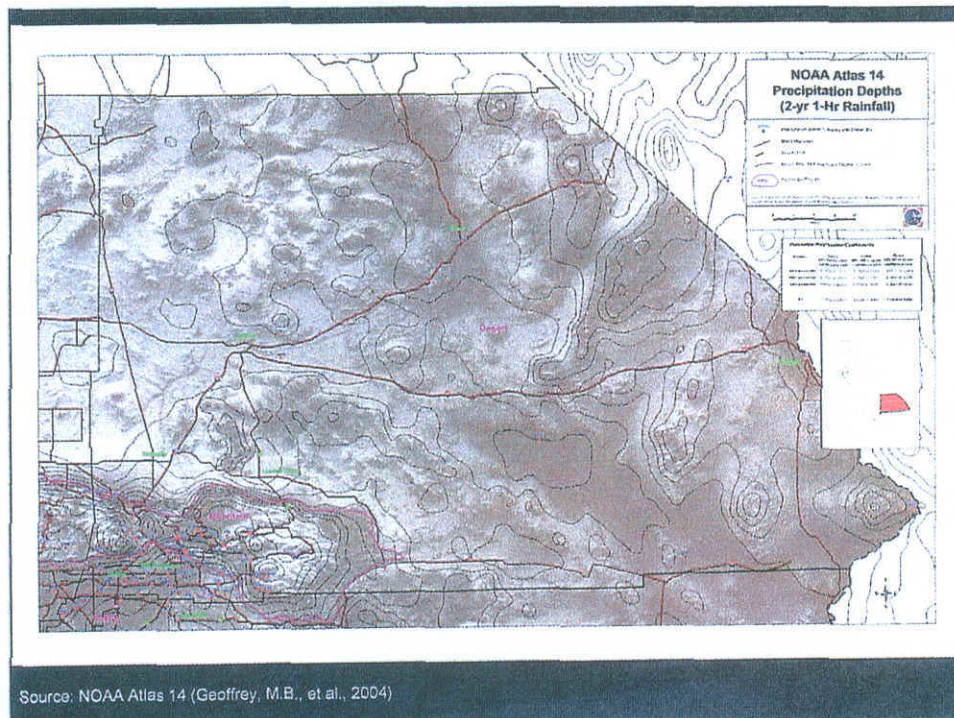
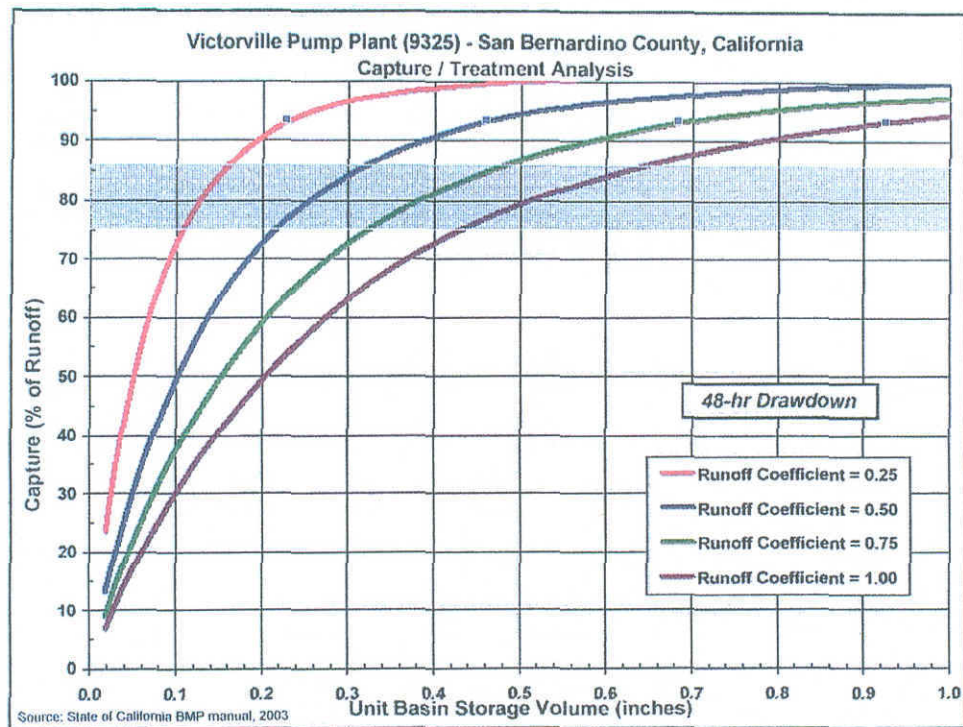
Storage Volume

■ Equation $P_0 = (a \cdot C) \cdot P_6$

■ Where:

- P_0 = Maximized Detentions Volume, in watershed inches
- a = regression constant from least-squares analysis; $a = 1.582$ and $a = 1.963$ for 24 and 48 hour draw down,
- C = runoff coefficient; and
- P_6 = mean storm precipitation volume, watershed (inches)





Conclusions