



**LOS ANGELES COUNTY  
SANITATION DISTRICTS**  
*Converting Waste Into Resources*

# Industrial Waste Permit Rainwater Guidelines: Present & Future

March 2024



OUR SERVICE AREA



**LOS ANGELES COUNTY  
SANITATION DISTRICTS**  
*Converting Waste Into Resources*

# Industrial Waste Permit

## Rainwater Guidelines: Present & Future

- Sewer System & Rainwater
- Permit Requirements
- Challenges & Opportunities

March 2024



OUR SERVICE AREA



## LOS ANGELES COUNTY SANITATION DISTRICTS

*Converting Waste Into Resources*

# Sewer System

- 1,400 Miles
- 8 Inches to 12 Feet in Diameter
- 49 Operational Pumping Plants
- 11 Wastewater Treatment Plants



THE SANITATION DISTRICTS TREAT ABOUT

**400** MILLION GALLONS OF WATER PER DAY

THAT IS ENOUGH WATER TO

FILL THE ROSE BOWL NEARLY

**FIVE** TIMES EVERY DAY!



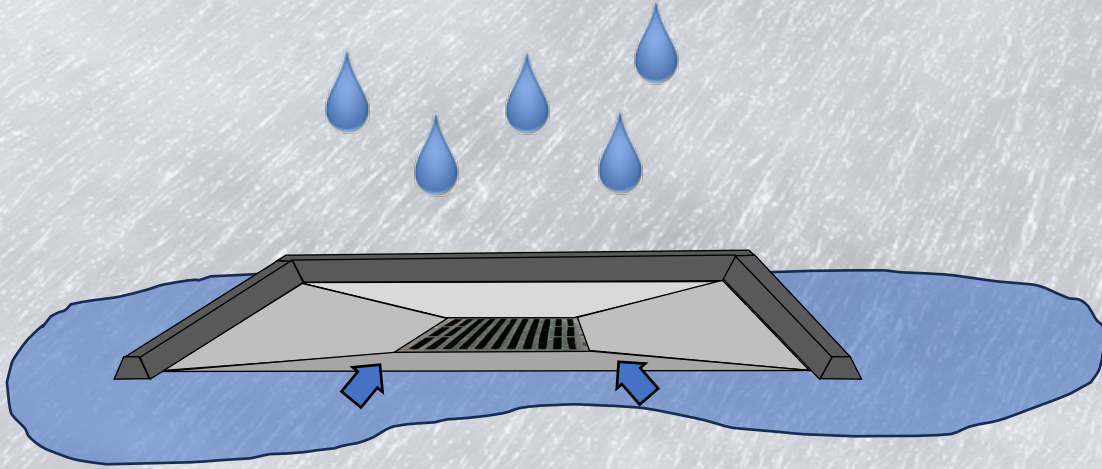


# Wet Weather

- ❖ Ordinance, §A-39 Rainwater  
*“Water Resulting from Precipitation which directly falls on parcel.”*
- ❖ Ordinance, §A-55 Stormwater  
*“Volume of water following a storm which runs off or travels over the ground surface to a drainage area.”*



# Wet Weather Challenges for Sewers

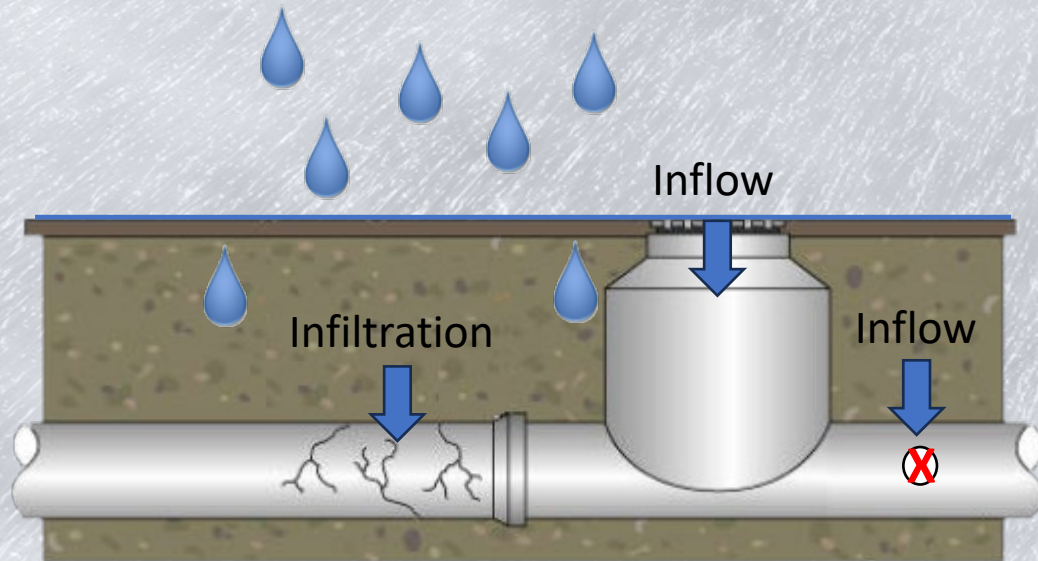


## Uncontrolled Discharge

- Runoff into Controlled Areas
- Malfunctioning Diversion Equipment
- Non-Approved Discharge



# Wet Weather Challenges for Sewers



## Inflow & Infiltration

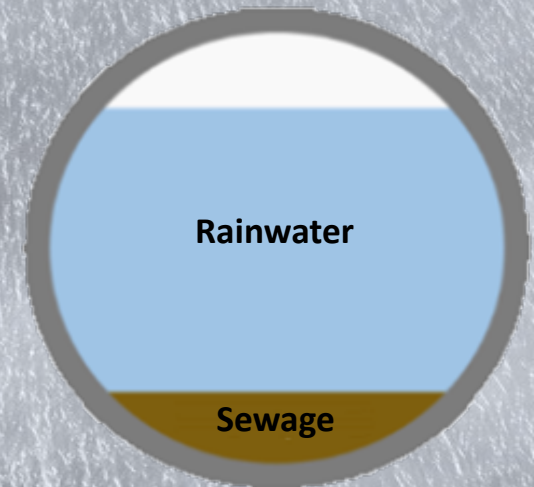
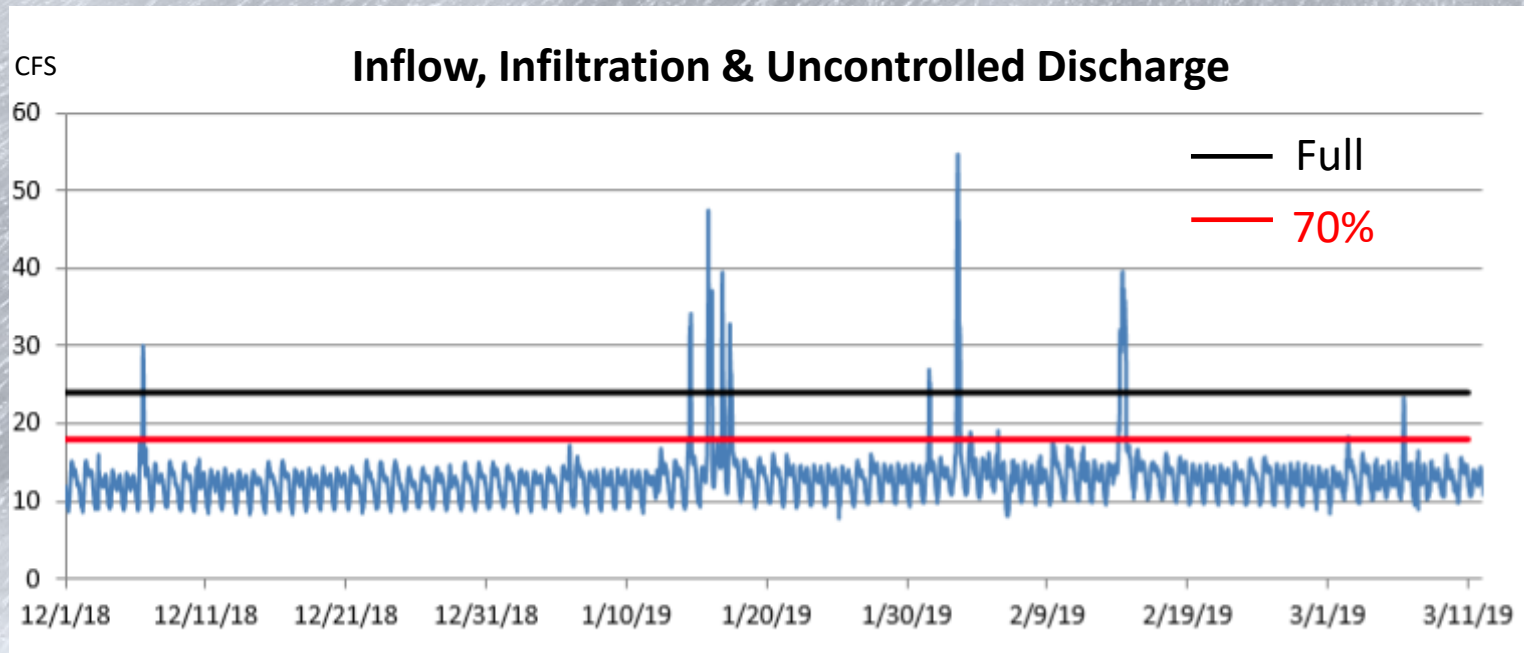
- Through Maintenance Holes
- Damaged Piping, Joints, & Connections
- Illegal Connections

<https://iscservices.com.au/blog/understanding-identifying-inflow-infiltration/>



<https://www.mwra.com/comsupport/ii/iiprogram.html>

# Wet Weather Challenges for Sewers



- Inflow, Infiltration, Uncontrolled Discharge
- Large system with long travel times (up to 8 hours) and limited real-time information
- Zero tolerance for sanitary sewer overflows (SSOs)





**Our Mission:**  
 To protect public health and the environment through innovative and cost-effective wastewater and solid waste management and, in doing so, convert waste into resources such as recycled water, energy, and recycled materials.

## WASTEWATER ORDINANCE

Sanitation Districts of Los Angeles County

### WASTEWATER ORDINANCE

April 1, 1972 As amended July 1, 1998

SANITATION DISTRICTS OF LOS ANGELES COUNTY

Grace Robinson Hyde

Chief Engineer and General Manager

In 1972, the Districts' Boards of Directors first adopted the *Wastewater Ordinance*. The purpose of the Ordinance is to establish controls on users of the Districts' sewerage system in order to protect the environment and public health, and to provide for the maximum beneficial use of the Districts' facilities.

1955 Workman Mill Road

P. O. Box 4998

Whittier CA 90607

562/699-7411

Industrial Waste Section - Extension 2900

To report any emergencies relating to wastewater discharges which occur after normal working hours or on the weekends, please telephone 562/437-6520 or 437-1881.

The Boards of Directors of County Sanitation Districts Nos. 1, 2, 3, 4, 5, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 32, 34, 35 and South Bay Cities Sanitation Districts of Los Angeles County do ordain as follows:

AN ORDINANCE PROVIDING FOR THE ADMINISTRATION OF AN INDUSTRIAL WASTEWATER CONTROL SYSTEM; FOR THE REGULATION OF SEWER CONSTRUCTION AND SEWER USE; FOR THE IMPOSITION OF PERMIT REQUIREMENTS FOR INDUSTRIAL WASTEWATER DISCHARGERS; FOR THE PROHIBITION, REGULATION AND PRETREATMENT OF INDUSTRIAL WASTEWATERS; FOR THE IMPOSITION OF FEES AND CHARGES; FOR THE DISTRIBUTION OF REVENUE; FOR THE IMPLEMENTATION OF FEDERAL AND STATE POLLUTION CONTROL REGULATIONS AND FOR THE IMPLEMENTATION OF OTHER METHODS OF CONTROLLING AND REGULATING THE DISCHARGE OF WASTEWATERS

## ❖ Section 305 of WW Ordinance

- **Prohibited Rainwater, Groundwater and Other Water Discharges.**
  - *“No person shall discharge or cause to be discharged any **contaminated or uncontaminated rainwater**, water used in fighting fires, stormwater, groundwater, artesian well water, street drainage, yard drainage, water from yard fountains, ponds or lawn sprays into any sewerage facility which directly or indirectly discharges to facilities owned by the Districts, **except where prior approval for such discharge of water is given by the Chief Engineer. Approved discharges shall be considered industrial wastewater discharges under this Ordinance. Any such approval may be revoked at any time by the Chief Engineer.**”*







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## RAINWATER GUIDELINES



LOS ANGELES COUNTY  
SANITATION DISTRICTS  
Converting Waste Into Resources

INDUSTRIAL WASTE SECTION  
1955 Workman Mill Road, Whittier, CA 90601-1400  
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998  
Telephone: (562) 908-4288, FAX: (562) 908-4224  
<https://www.lacsd.org/>

### GUIDELINES FOR THE DISCHARGE OF RAINWATER, STORMWATER, GROUNDWATER AND OTHER WATER DISCHARGES

#### PURPOSE AND SCOPE

The Los Angeles County Sanitation Districts (Sanitation Districts) Policy on Rainwater, Groundwater and other Water Discharges is established under the provisions of [Section 305](#) of the [Wastewater Ordinance](#) as amended July 1, 1998. [Section 305](#) specifies that no rainwater, stormwater, groundwater, artesian well water, street drainage, yard drainage, water from yard fountains, ponds or lawn sprays shall be discharged to the Sanitation Districts' sewerage system, except where prior approval has been given by the Chief Engineer. The purpose of this document is to present guidelines for the implementation of this policy as it applies to rainwater, groundwater and other water discharges mentioned in [Section 305](#).

#### RAINWATER AND STORMWATER<sup>1</sup>

As a general practice, the Sanitation Districts require roofing and/or grading of open areas with exposed drains which discharge to the public sewer, so that all direct rainfall, stormwater and other runoff are conveyed to the storm sewer. This practice protects the Sanitation Districts' sewerage system from excessive hydraulic loads that can be created by stormwater runoff. The Sanitation Districts recognize that there may be situations where roofing and/or grading of exposed areas may be impossible or prohibited by local regulations. Under these conditions, the Sanitation Districts may accept the controlled discharge of rainwater or stormwater to the sewerage system on a case-by-case basis, and only after all other alternatives have been demonstrated to be unfeasible. Applications for discharge of rainwater or stormwater to the sewerage system must include sufficient documentation to demonstrate that no other alternatives are feasible. Alternatives that must be considered include treatment and discharge to the storm sewer, reuse, on-site storage/evaporation and relocation of the processing or treatment areas exposed to rainwater intrusion.

Any rainwater or stormwater accepted into the public sewer from any area larger than 400 square feet is considered to be industrial wastewater and, as such, it must be regulated by a Sanitation Districts' industrial wastewater discharge permit and must comply with all applicable effluent limits. In addition, restrictions may be imposed on the maximum flow rate discharged from a facility during rainfall periods, as well as on the time of day when the discharge of rainwater/stormwater to the sewerage system may occur. Finally, the Sanitation Districts may require rainwater diversion systems, effluent flow monitoring systems, flow restrictors and other devices on a case-by-case basis and as determined necessary by the Chief Engineer. Additional restrictions on the discharge of rainwater to the public sewer may be imposed by the local sewerage agency.

#### Specific Requirements

**Roofing or Regrading.** Provided that local regulations are satisfied, whenever practical, roofing will be required for all exposed process areas under 4,000 square feet; roofing for exposed areas greater than 4,000 square feet will be determined by the Sanitation Districts on a case-by-case basis. If the roof structure does not include side walls, then the roof's overhang must extend a minimum of 20 percent of

<sup>1</sup> Rainwater and stormwater are defined terms in the [Wastewater Ordinance](#).

- ❖ **Rainwater & Stormwater Regulated as “Industrial Water”**
- ❖ **Industrial Waste Permit Limits Apply**
  - Controlled Discharge (Flow Rate)
  - Off-Peak Discharge (Hours, Days)
- ❖ **Automated Diversions, Impound Discharge Delay**
- ❖ **Special Consideration for Exposed Areas**
  - Demonstrate No Other Alternatives Feasible
  - Storm Sewer, Reuse and/or Evaporation, Relocation of Process Areas
  - Limited to Process Areas
- ❖ **May Require Equipment and Controls**
  - Flow Monitoring, Restrictors, etc.



# RW Guideline Conditions

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## ❖ Diversion System

- 0.1" Rainfall (Areas <10,000sf)
- Automatic Shutoff to Sewer
- Pumped Discharge

## ❖ 400sf < Area < 10,000sf

## ❖ Roofing/Grading for Areas < 4,000sf

## ❖ Impound

- Delayed Discharge (24 hours Typical)
- Off-Peak Hours



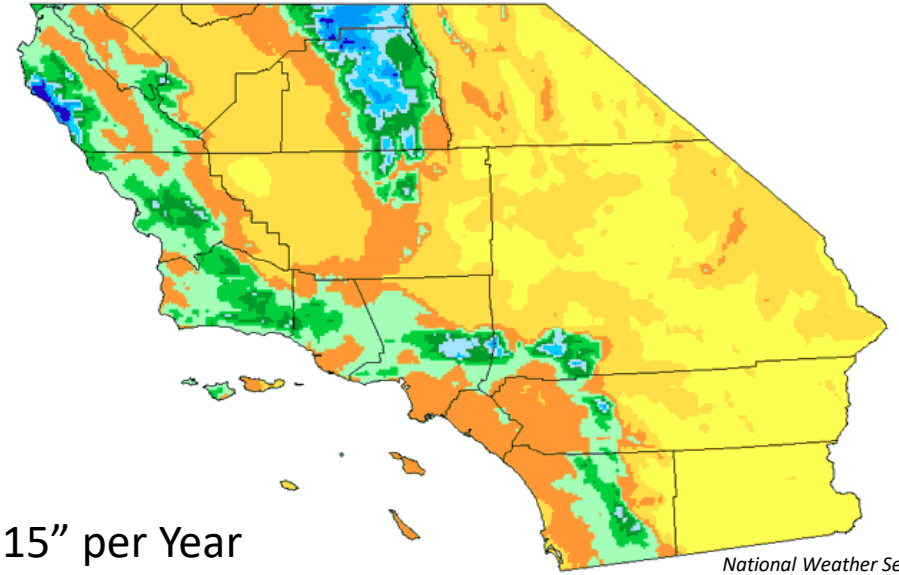
<https://www.jbmdl.jb.mil/News/Article/3521804/everyone-can-contribute-to-stormwater-pollution-prevention/>



# Rainwater - Permit Requirements

## ❖ Rainfall Estimation

- 15" per Year
- 36 Storms @ 0.1" (First Flush)



National Weather Service

Station:(045115) LOS ANGELES CIVIC CENTE														
From Year=1906 To Year=2012														
	Precipitation										Total Snowfall			
	Mean	High	Year	Low	Year	1 Day Max.	>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year	
	in.	in.	-	in.	-	in.	dd/yyyy or yyyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.20	14.94	1969	0.00	1948	5.71	26/1956	6	4	2	1	0.0	0.3	1949
February	3.38	13.68	1998	0.00	1912	4.80	24/1913	6	5	2	1	0.0	0.0	1949
March	2.40	8.37	1983	0.00	1931	5.88	02/1938	6	4	2	1	0.0	0.0	1949
April	1.01	7.53	1926	0.00	1909	2.74	05/1926	3	2	1	0	0.0	0.2	1950
May	0.25	3.57	1921	0.00	1923	2.02	08/1977	2	1	0	0	0.0	0.0	1949
June	0.06	0.98	1999	0.00	1908	0.76	05/1993	1	0	0	0	0.0	0.0	1913
July	0.01	0.18	1986	0.00	1907	0.60	25/1906	0	0	0	0	0.0	0.0	1913
August	0.05	2.26	1977	0.00	1907	2.06	17/1977	0	0	0	0	0.0	0.0	1913
September	0.27	5.67	1939	0.00	1907	3.96	25/1939	1	0	0	0	0.0	0.0	1913
October	0.48	4.56	2004	0.00	1913	1.72	17/1934	2	1	0	0	0.0	0.0	1913
November	1.25	9.68	1965	0.00	1907	3.85	07/1966	1	0	0	0	0.0	0.0	1913
December	2.41	10.23	2010	0.00	1912	5.55	28/2004	1	0	0	0	0.0	0.0	1948
Annual	14.77	34.04	1983	3.85	1953	5.88	1938030	48	30	13	4	0.0	0.3	1949
Winter	8.99	29.11	2005	1.19	1924	5.71	19560120	18	13	6	3	0.0	0.3	1949
Spring	3.66	13.89	1983	0.00	1997	5.88	19380302	11	7	2	1	0.0	0.2	1950
Summer	0.12	2.26	1977	0.00	1912	2.06	19770817	1	0	0	0	0.0	0.0	1949
Fall	2.00	11.48	1965	0.00	1980	3.96	19390925	6	4	1	0	0.0	0.0	1948

36 Events

West. Reg. Climate Center

Table updated on Oct 31, 2012

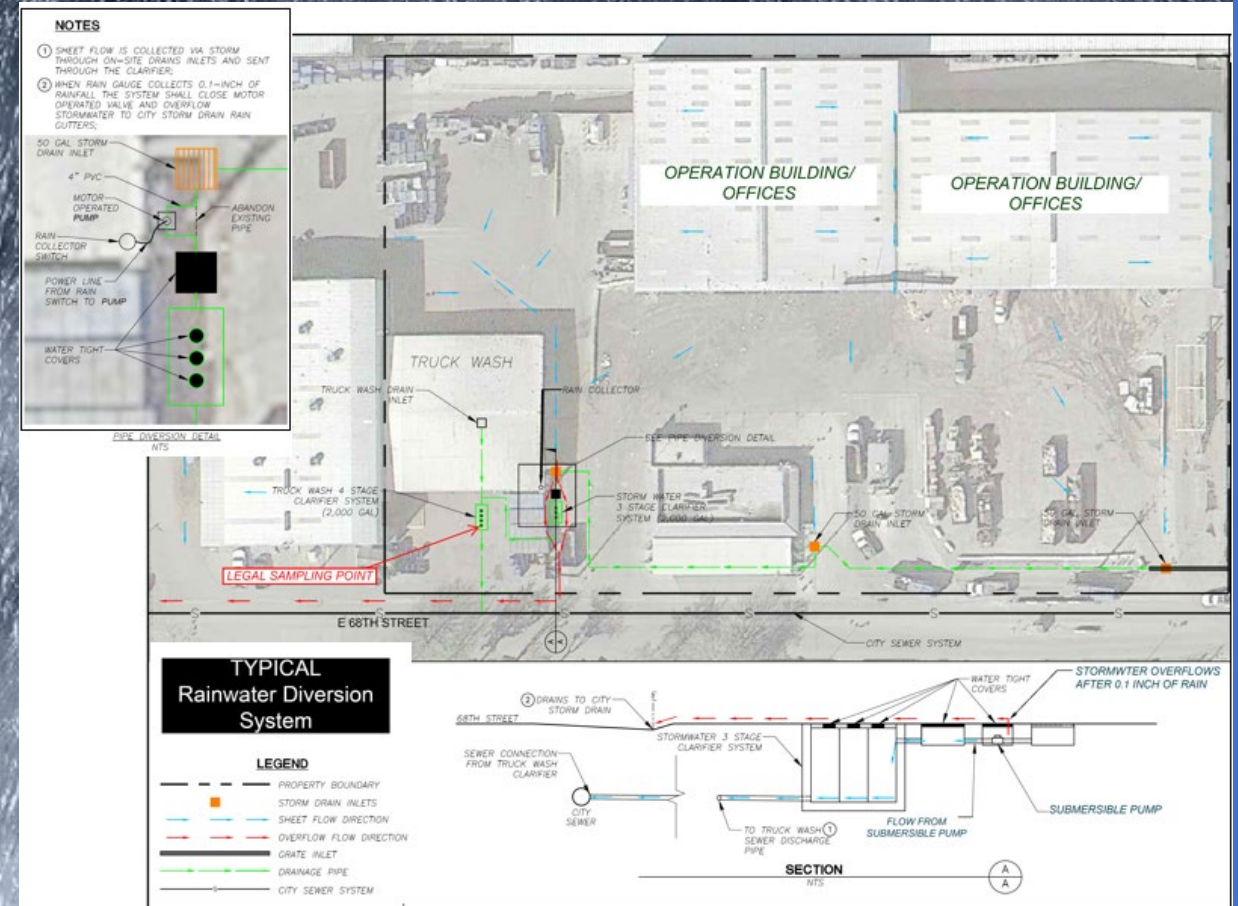
# Rainwater - Permit Requirements

## ❖ Rainfall Estimation

- 15" per Year
- 36 Storms @ 0.1"

## ❖ Consolidation of Drainage Areas

- Drainage Maps/Locations



# Rainwater - Permit Requirements

## ❖ Rainfall Estimation

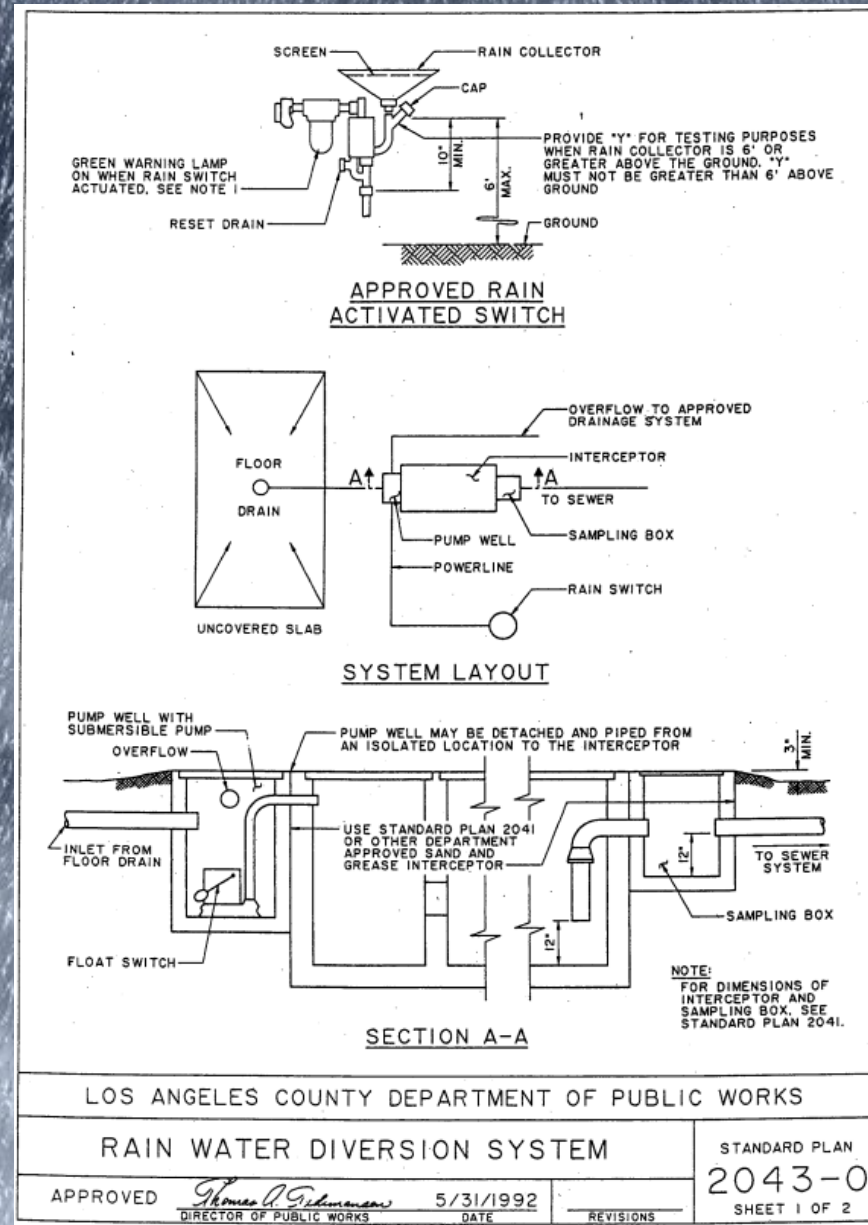
- 15" per Year
- 36 Storms @ 0.1"

## ❖ Consolidation of Drainage Areas

- Drainage Maps

## ❖ Automatic Diversion Equipment

- LACDPW Std 2043-0



ATIONAL ROOM OR  
READ "NOTIFY  
".

THE PUMP AFTER 0.1"  
P WELL WILL DISCHARGE  
OINT OF DISPOSAL.

ITTED PEAK FLOW RATE.

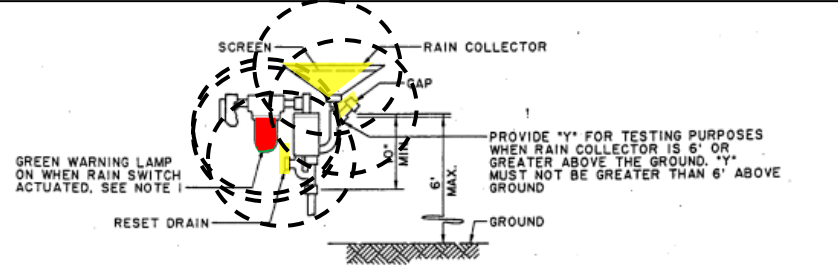
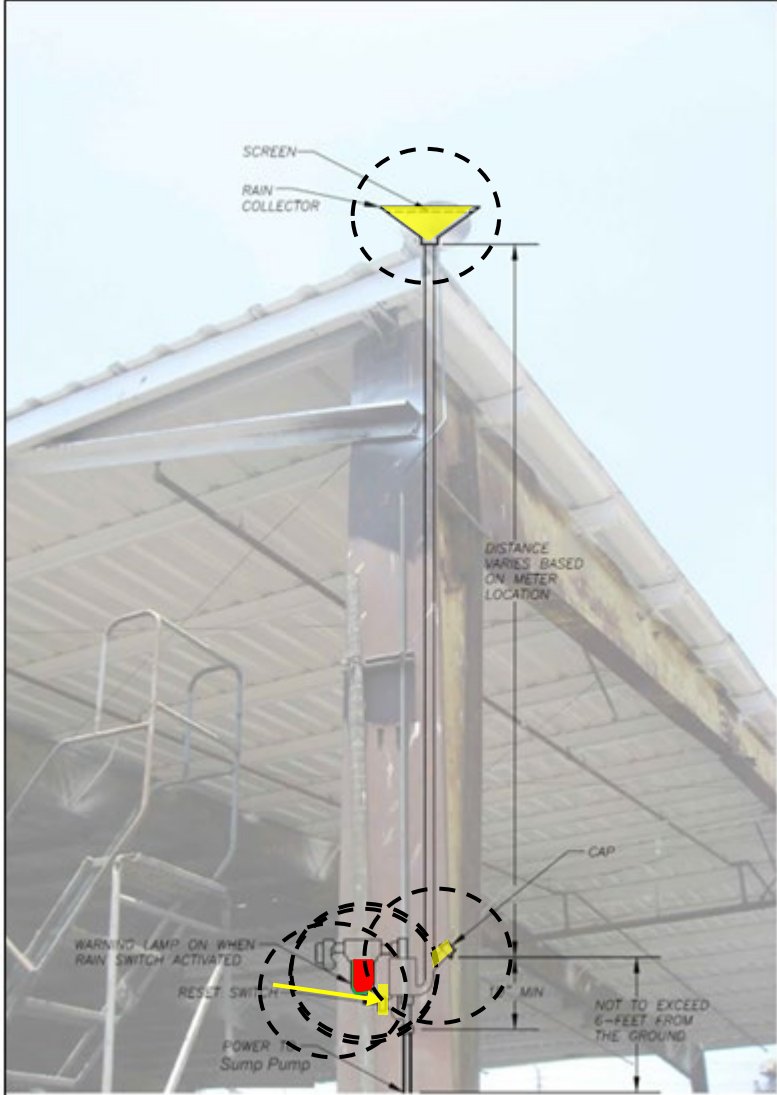
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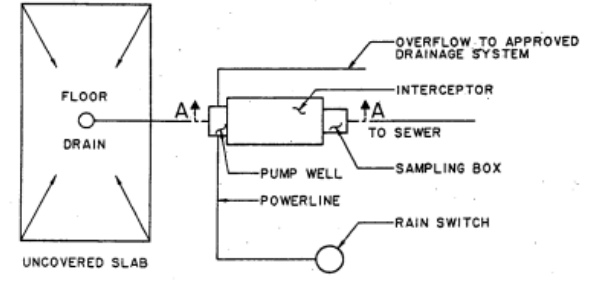
E FROM OBSTRUCTION  
TH THE SHORTEST

RAIN WATER DIVERSION SYSTEM

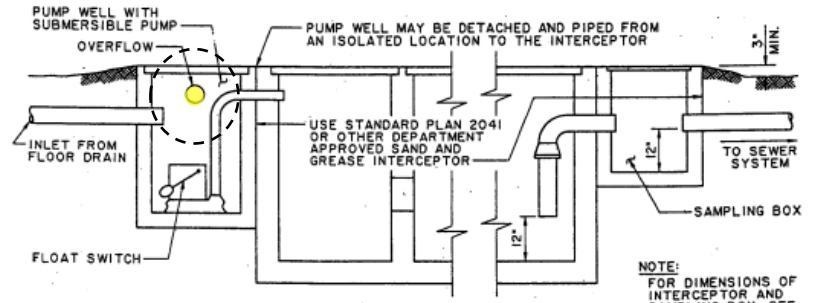
STANDARD PLAN  
2043-0  
SHEET 2 OF 2



APPROVED RAIN ACTIVATED SWITCH



SYSTEM LAYOUT



SECTION A-A

NOTE:  
FOR DIMENSIONS OF  
INTERCEPTOR AND  
SAMPLING BOX, SEE  
STANDARD PLAN 2041.

# LACDPW Standard Plan 2043-0

# Attitude Systems Jensen Systems

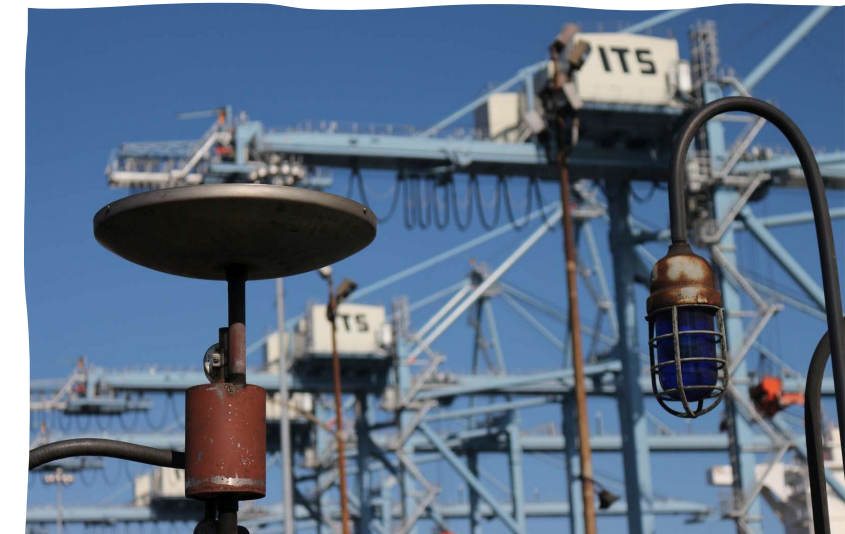
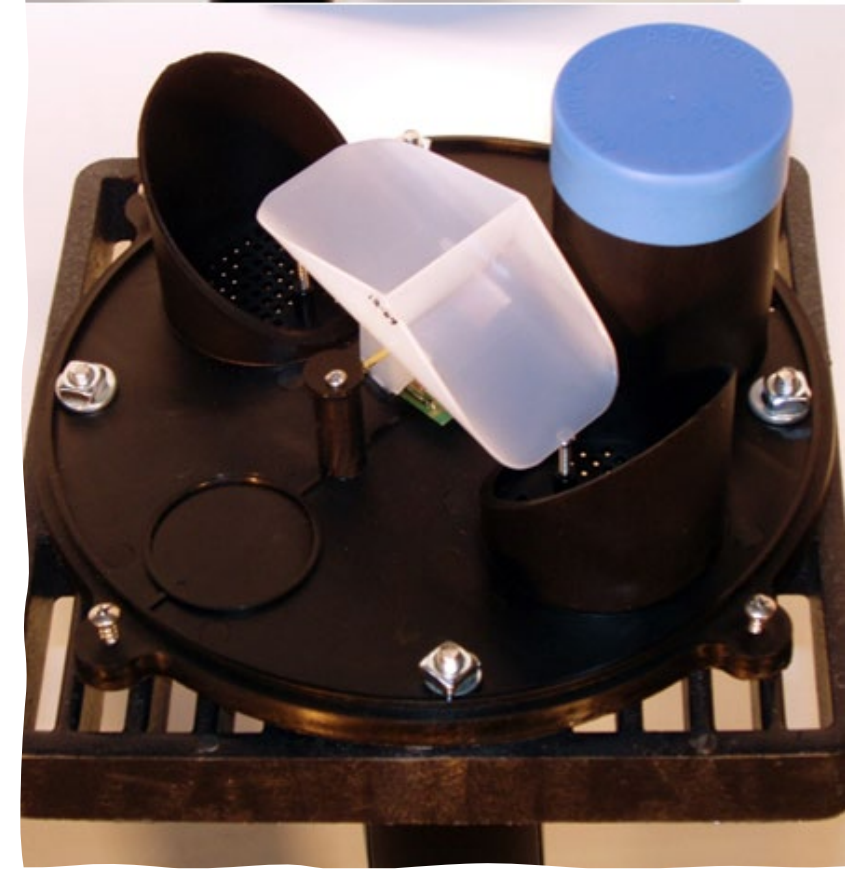
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## ❖ Attitude Systems

- 9" Collector Dish
- Cone Screen
- Calibrated Tipping Bucket
- Sensor

## ❖ Jensen

- 14" Collector Dish
- Bird/Debris Screen
- Conductive Level Sensor



# Rainwater - Permit Requirements

## ❖ Rainfall Estimation

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- 36 Storms @ 0.1"

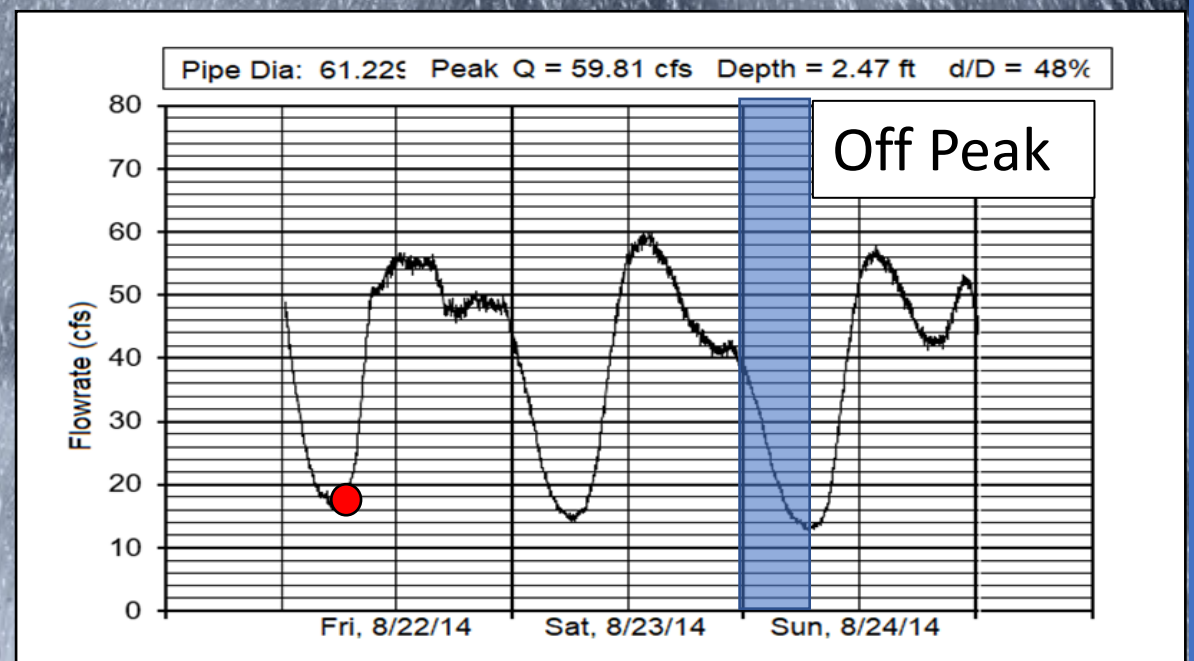
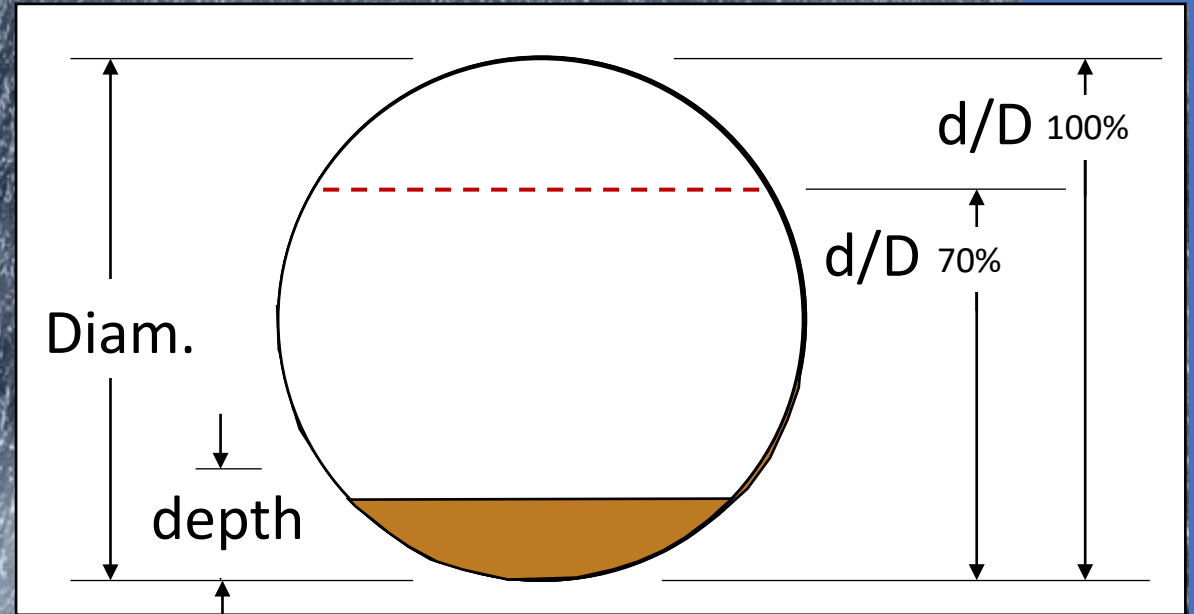
## ❖ Consolidation of Drainage Areas

- Drainage Maps

## ❖ Equipment List

- LACDPW Std 2043-0

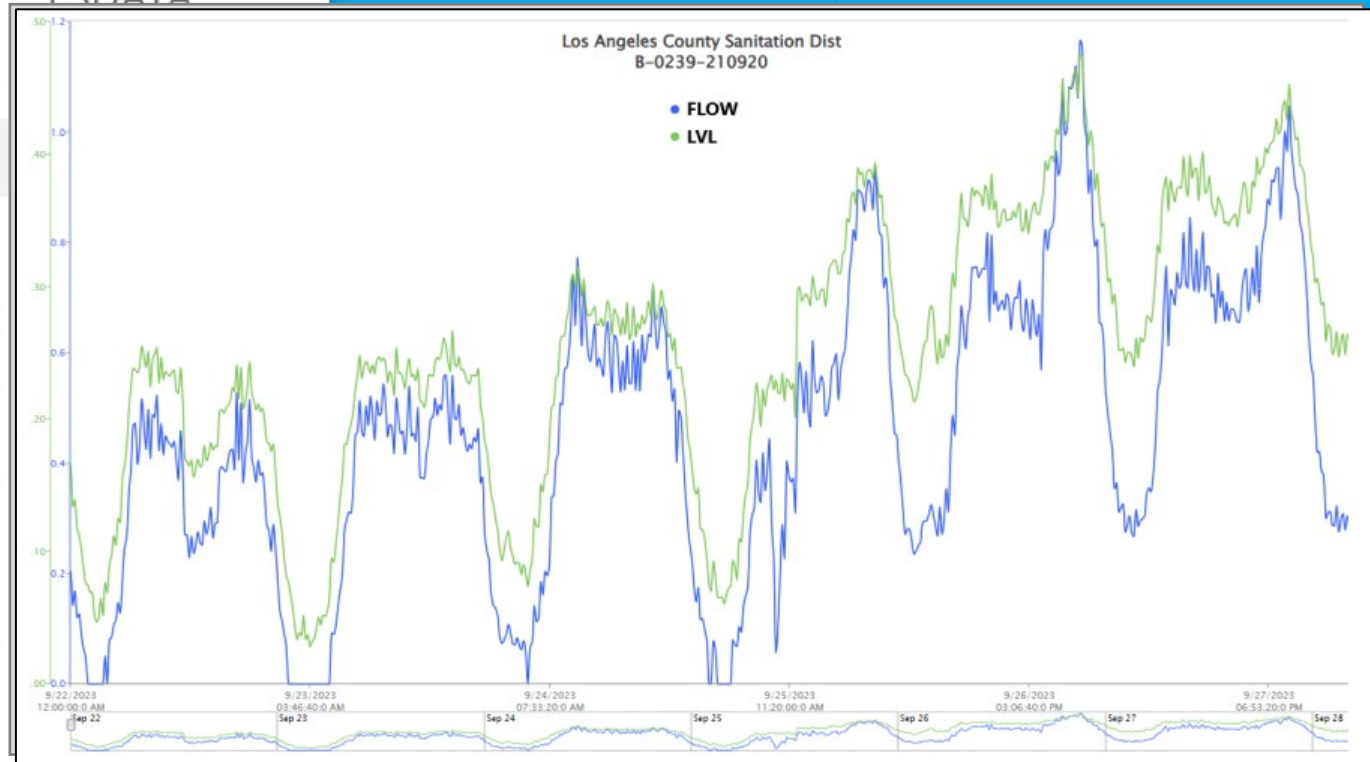
## ❖ Capacity Analysis





# Sewer Level & Flow Monitoring

- Since 2019 ~1500 Sites
- Spatial Coverage High
- 2-Week Window



(\*) 05-0673-220000

(\*) 05-0893-221031

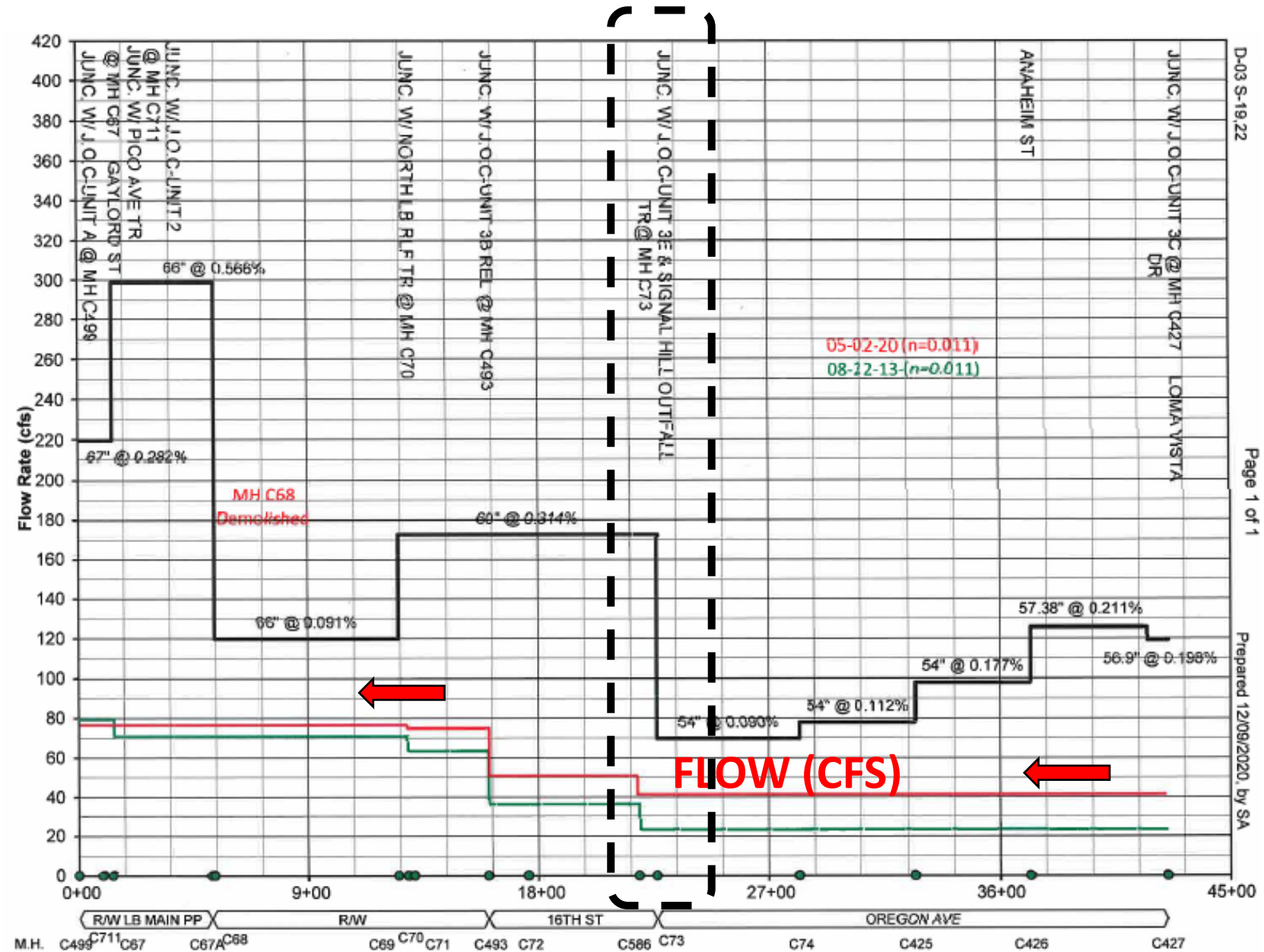
Type Hach FL902  
S/N 210100004744  
Ports 1:AV9000  
2:Not Detected  
3:Not Detected  
4:Not Detected

01-0262-230908

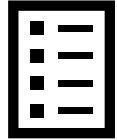
N 33° 56.571' W 118° 15.913'

# Clearance Diagrams

- Current Sewer Capacity
- Static Sewer Conditions
- Dry Weather Data



# Increasingly Stringent Regulations



## Clean Water Act

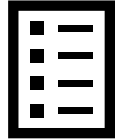
- Construction General Permit (CGP)
- Municipal Separate Storm Sewer Sys. (MS4)
- Industrial General Permit (IGP)
- Residual Designation Authority



## Compliance Options

- Continuous Monitoring
- Agreement: Local Watershed Mgmt Group (MS4)
- Facility Specific Compliance
  - POTW

# Increasingly Stringent Regulations



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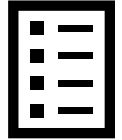


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# Increasingly Stringent Regulations



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# Increasingly Stringent Regulations



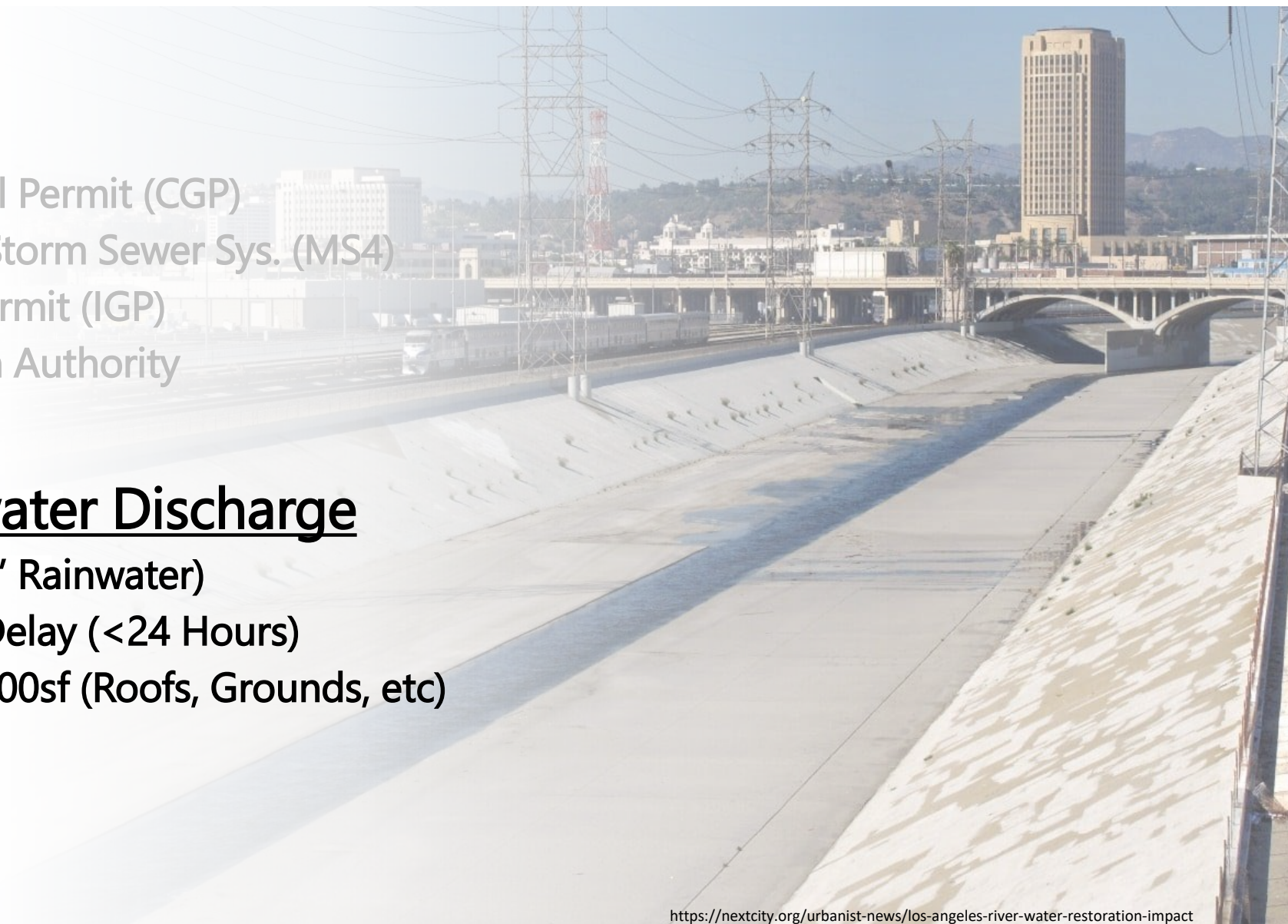
## Clean Water Act

- Construction General Permit (CGP)
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## Request for Rainwater Discharge

- 85%, 24hr Storm (~1" Rainwater)
- Reduced Discharge Delay (<24 Hours)
- Exposed Areas > 10,000sf (Roofs, Grounds, etc)



# Rainwater & Reuse

## ❖ CA Senate Bill (SB) 485

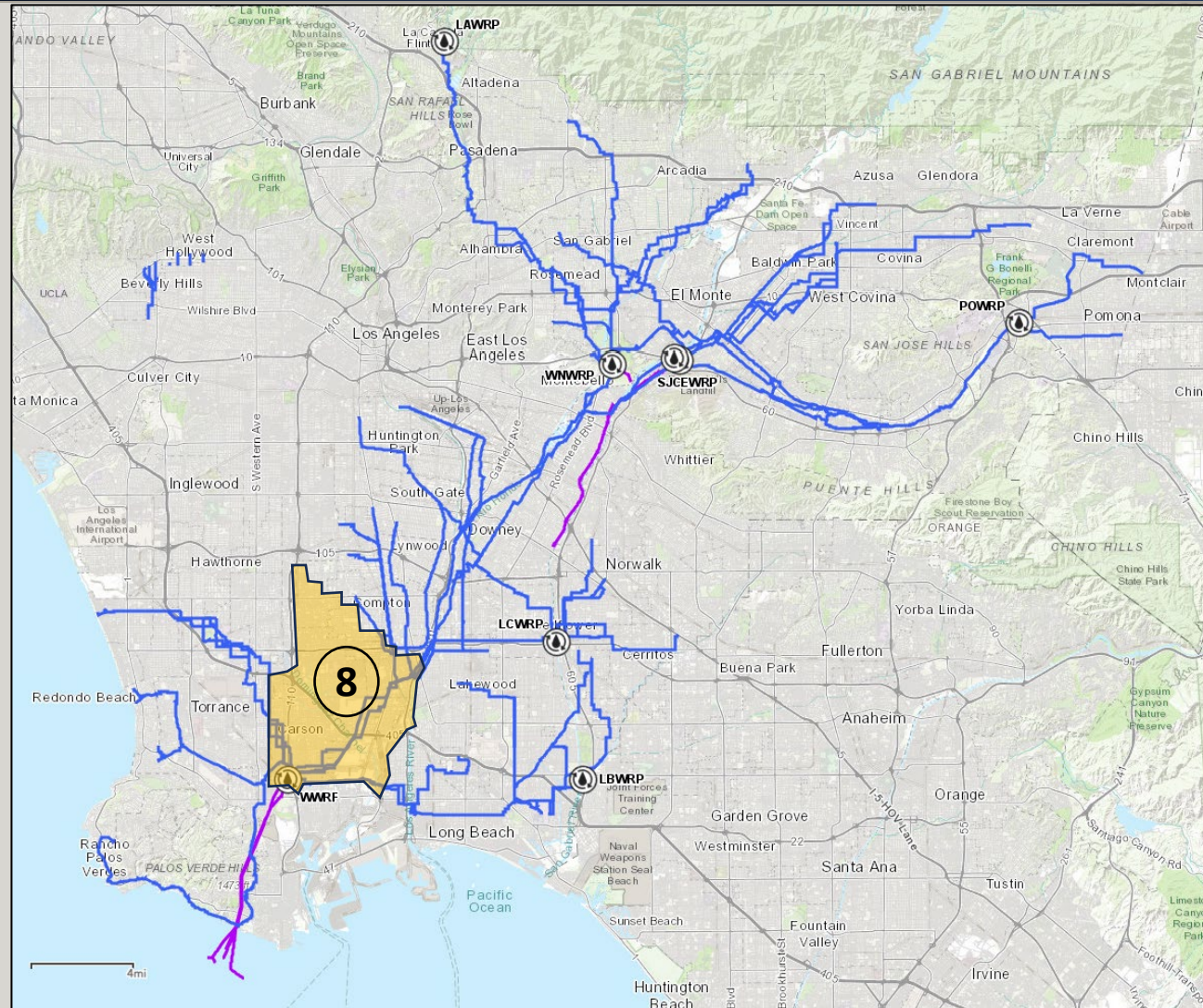
- Authority to Manage & Treat Stormwater
- Better Serve Member Cities
- Divert Water for Recycle & Reuse



<https://www.jbmdl.jb.mil/News/Article/3521804/everyone-can-contribute-to-stormwater-pollution-prevention/>



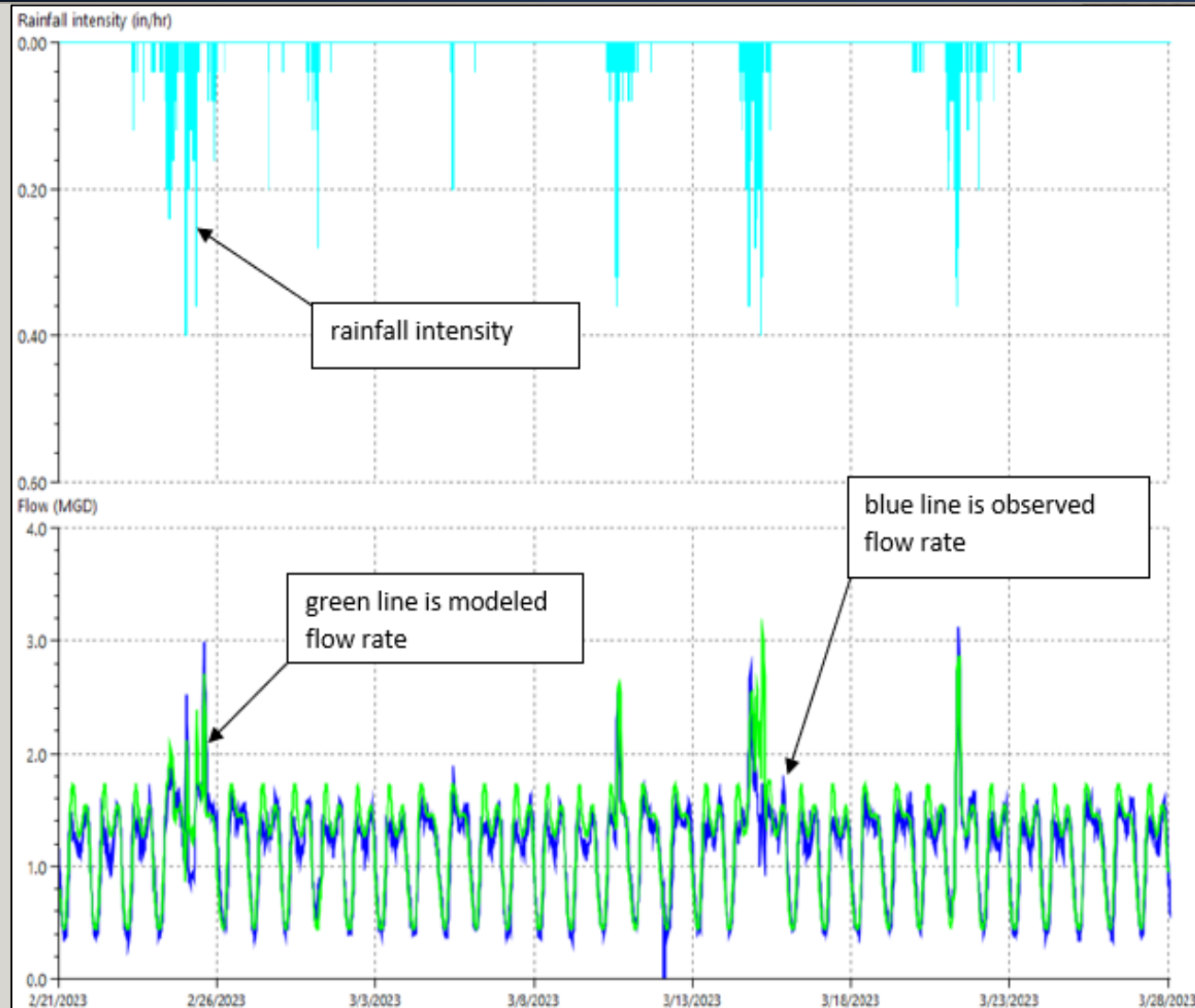
# Sewer System Modelling



- Predict & Analyze Wet Weather Flows into the Pumping Plants and Water Reclamation Plants
- Develop Operational Strategies for Controlled Stormwater Discharges into the Collection System
- Investigate Opportunities for Collection System Optimization
- Several Years to Complete



# Sewer System Modelling



- District No. 8 Pilot Study
- 58 Flow Meters Installed
- Finalized Late 2023
- Final Calibration Mid 2024



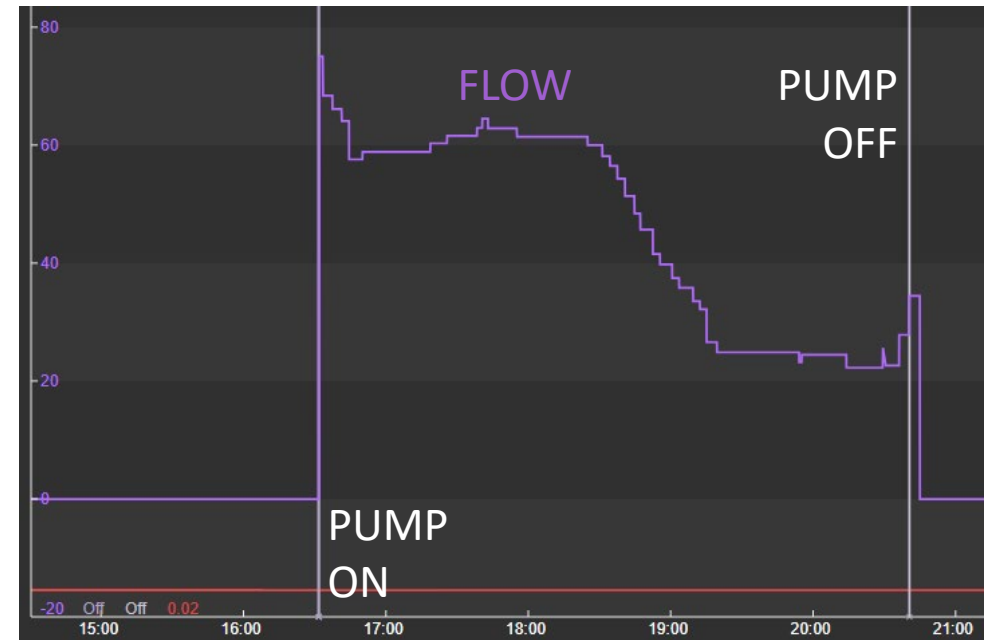
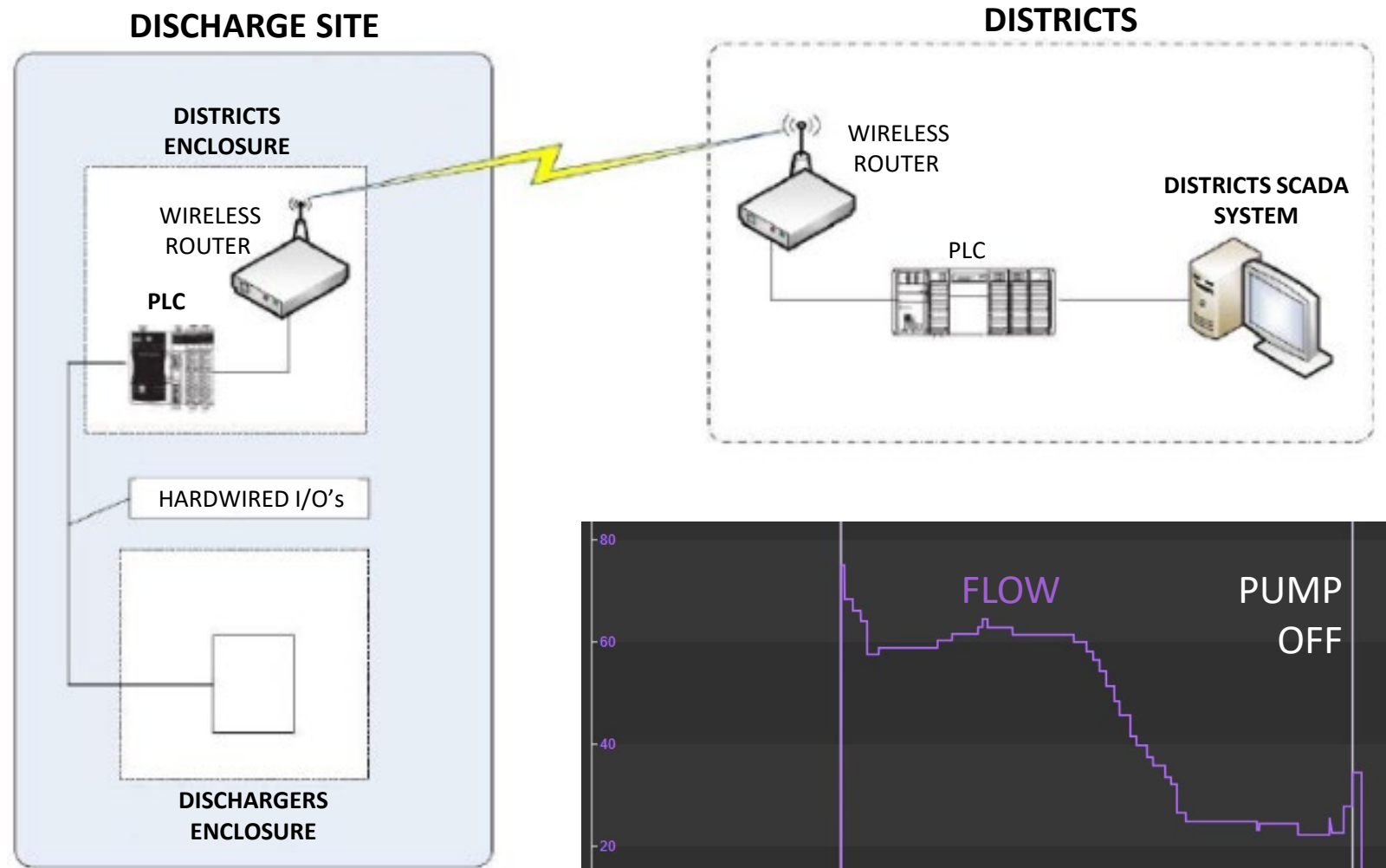
# Telemetry Systems

## ❖ Telemetry Function

- Districts Remote Monitor
- Districts Remote Shutoff
- Automatic Local Shutoff

## ❖ Permissive Control

- Communication Failure
- Sewer Flow Conditions
- Time of Use Allowance





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# CONCLUSIONS

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Sanitation Districts of Los Angeles County

### WASTEWATER ORDINANCE

SANITATION DISTRICTS

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To report any emergency hours or on the weekends.

The Boards of Directors of the Sanitation Districts 19, 20, 21, 22, 23, 26, 27 and the Board of Directors of Angeles County do hereby.

AN ORDINANCE PROVIDING FOR THE CONTROL SYSTEM, FOR THE IMPOSITION OF PERMIT PROHIBITION, REGULATION, IMPOSITION OF FEE, AND IMPLEMENTATION OF THE WASTEWATER ORDINANCE.

## RAINWATER GUIDELINES



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<sup>1</sup> Rainwater and stormwater are defined terms in the Wastewater Ordinance.

- ❖ **Ordinance & Rainwater Guidelines Prevail**
  - First Flush; .1" from Automated Discharge Systems
  - Delayed Discharge of Impounded Water (24hrs Typical)
  - Off-Peak Hours
- ❖ **Static Capacity Analysis Based on Dry-Weather**
- ❖ **Special Consideration for Exposed Areas**
  - Developing Real-Time Hydraulic Model
  - Likely will Require Several Years to Complete
  - Pilot Studies Being Conducted
  - Telemetry System





**LOS ANGELES COUNTY  
SANITATION DISTRICTS**

*Converting Waste Into Resources*

# Industrial Waste Permit

## Rainwater Guidelines: Present & Future

## Questions?



OUR SERVICE AREA