Overview of the Salinity Database Project

California Water Institute

California State University, Fresno

Central Valley Salinity Policy Group
Technical Advisory Committee Meeting
CV Regional Water Quality Control Board
28 June 2007

Objectives

- Identify existing data sources and types.
- Determine ownership and accessibility; seek permission for use.
- Collect data and validate data quality.
- Design and implement a GIS-compatible Central Valley data repository, and arrange data transfer.
- Identify data gaps for future data collection plans.
- Recommend data models and tools.

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Work Plan

- ✓ Develop work plan
- ✓ Identify and locate data sources
- ✓ Data transfer
- ✓ Data repository (set up Internet server)
- o Demonstrate use of data
- o Documentation and report

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Specific tasks

Completed:

- Identify major internet accessible water-quality databases.
- Locate other non-internet accessible digitized data sources.

Ongoing:

- Summarize major data sources and the data attributes.
- Transfer accessible data files to a computer server.

Planned:

- Convert to standardized format and data structure.
- Demonstrate applications of the data by examples of spatial and temporal analyses.

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List of major data sources

Internet accessible:

STORET – U.S. EPA
NWIS – USGS
NAWQA – USGS
GAMA – USGS and State Water Boards
IEP – USGS, USBR, DWR, USEPA, NMFS, DFG, SWRCB, USFWS and USACE
SWAMP – State Water Resources Control Board
- BDAT – DWR, DHS, CRWQCV, LBNL, USBR

U.S. Bureau of Reclamation
DPR

Non-internet accessible:

DWR
DHS

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	STORET	NWIS	NAWQA	GAMA	IEP	SWAMP	USBR	DPR	DWR	DHS
County/Region	√	√	√		√	√	√	√	√	√
Coordinates	√	√	√		√	√		√	√	√
Date	√	√	√		√	√	√	√	√	√
Inorganics	√	√	√	√		√			√	√
Nutrients	√	√	√	√		√			√	√
Physical	√	√	√	√	√	√	√		√	
TDS	√		√			√			√	
Sediment	√	√				√		√		

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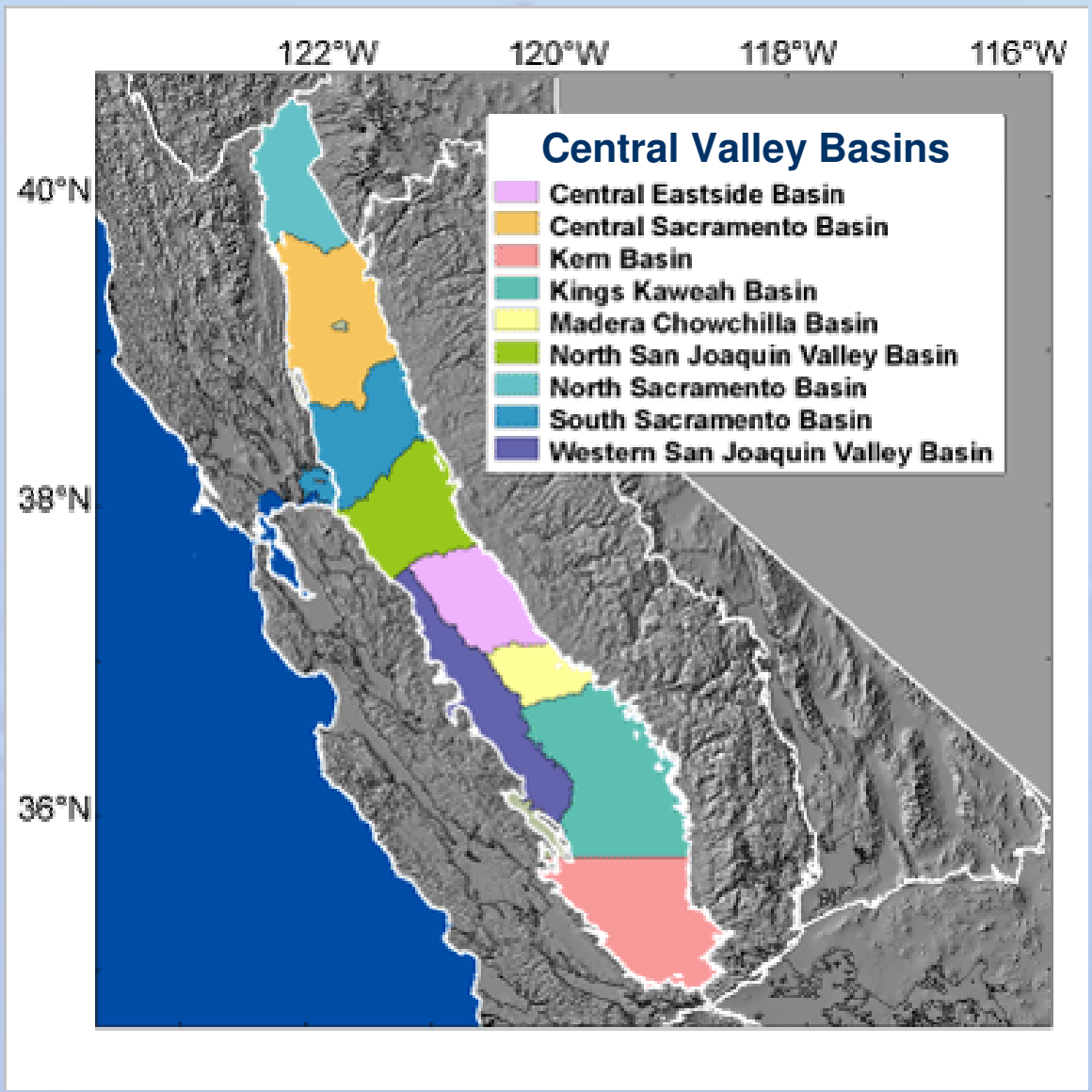
USGS' Ground-water Ambient Monitoring and Assessment program (GAMA)



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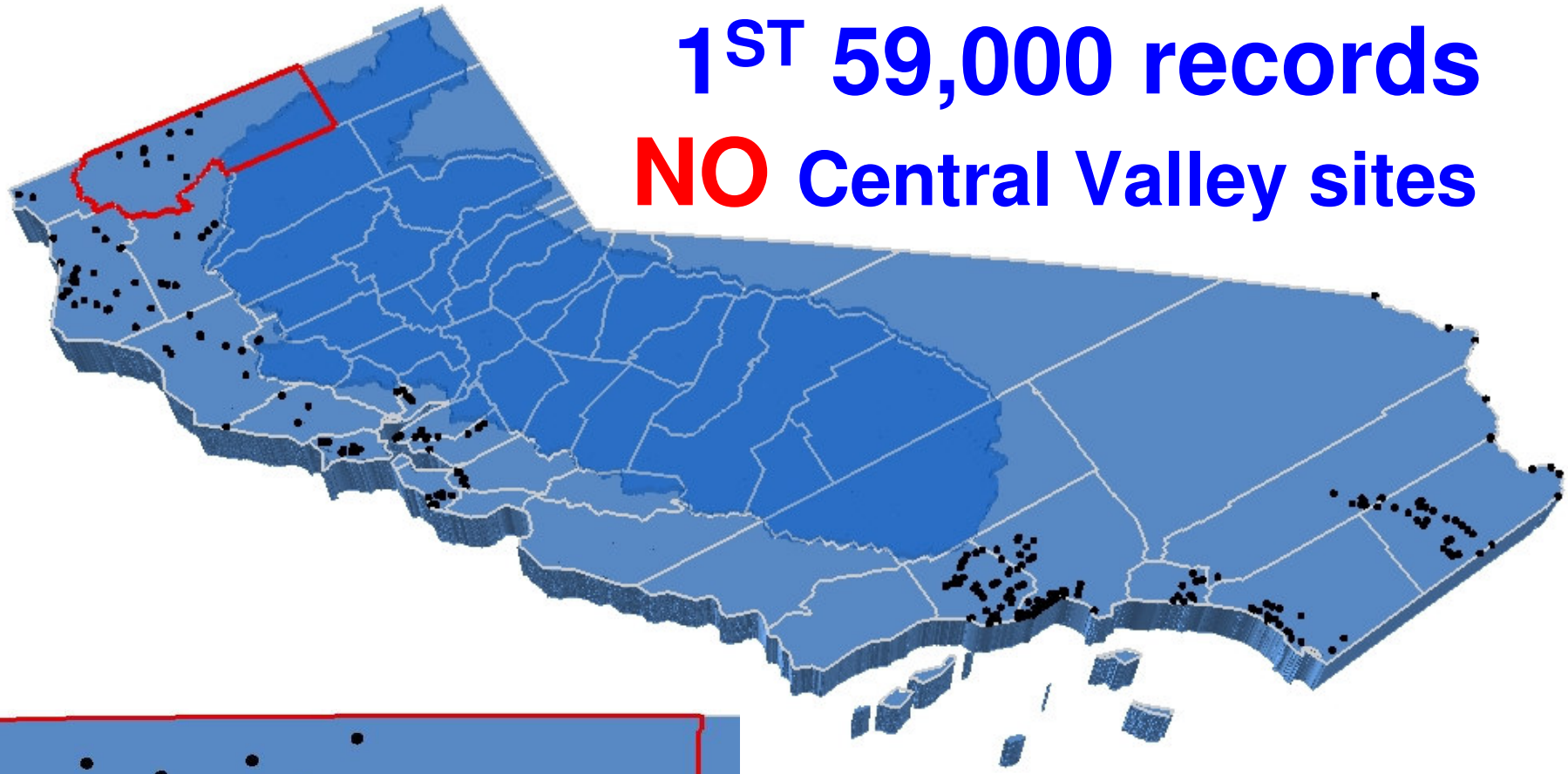
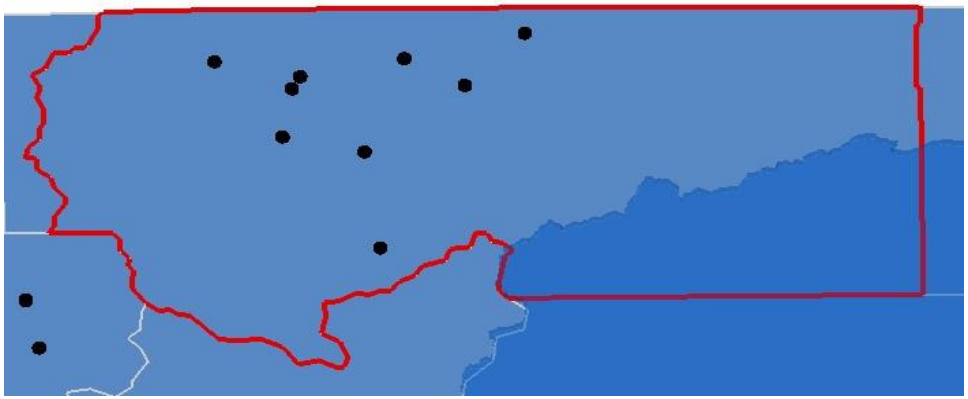
SWAMP Sites

1ST 59,000 records

NO Central Valley sites





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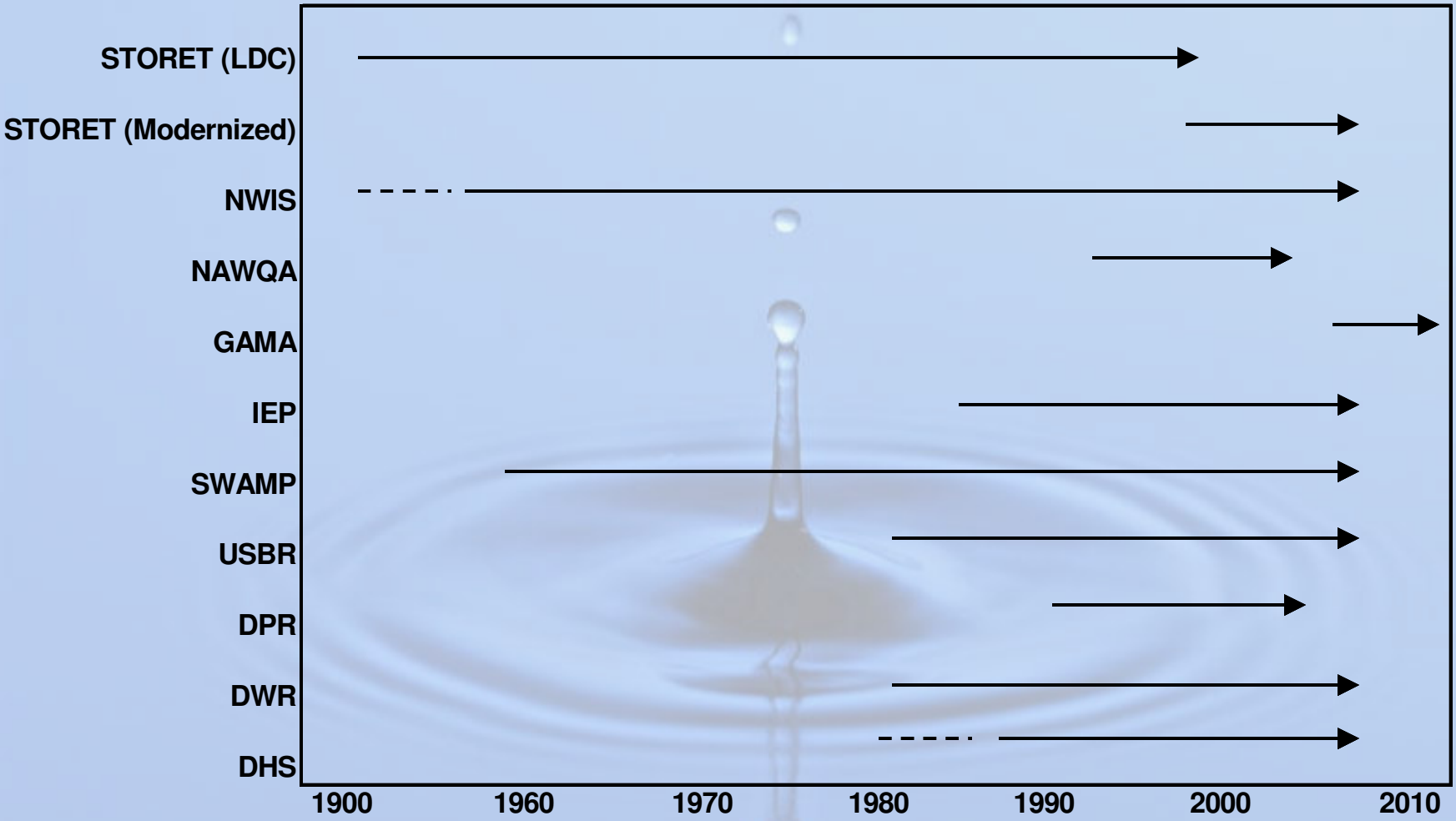

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Example from STORET- Legacy

Organization	Station Location Name	State	County	Latitude	Longitude	Date	Time	Parameter Long Name	Result Value
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	NITRATE NITROGEN, DISSOLVED (MG/L AS NO3)	4.00E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	CARBONATE ION (MG/L AS CO3)	0.00E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	TEMPERATURE, WATER (DEGREES CENTIGRADE)	1.72E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	NITRATE NITROGEN, DISSOLVED (MG/L AS NO3)	1.10E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	CHLORIDE, DISSOLVED IN WATER MG/L	8.02E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	POTASSIUM, DISSOLVED (MG/L AS K)	1.20E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	PH, LAB, STANDARD UNITS SU	8.30E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	HARDNESS, CA MG CALCULATED (MG/L AS CACO3)	4.49E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	POTASSIUM, DISSOLVED (MG/L AS K)	7.80E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	TEMPERATURE, WATER (DEGREES CENTIGRADE)	1.78E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	CODE NO FOR AGENCY ANALYZING SAMPLE	5802
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	HARDNESS, CA MG CALCULATED (MG/L AS CACO3)	4.90E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	CHLORIDE, DISSOLVED IN WATER MG/L	4.86E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	MAGNESIUM, DISSOLVED (MG/L AS MG)	5.91E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	SILICA, DISSOLVED (MG/L AS SI02)	2.80E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	FLUORIDE, DISSOLVED (MG/L AS F)	2.00E-01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	POTASSIUM, DISSOLVED (MG/L AS K)	4.70E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	SODIUM, DISSOLVED (MG/L AS NA)	1.41E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	CARBONATE ION (MG/L AS CO3)	0.00E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	TEMPERATURE, WATER (DEGREES FAHRENHEIT)	7.40E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	HARDNESS, TOTAL (MG/L AS CACO3)	4.50E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	NUMBER USED IN SAMPLE ACCOUNTING PROCEDUF	97355
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	RESIDUE,TOTAL FILTRABLE (DRIED AT 180C),MG/L	1.06E+03
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	SILICA, DISSOLVED (MG/L AS SI02)	2.88E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	CALCIUM, DISSOLVED (MG/L AS CA)	9.89E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	MAGNESIUM, DISSOLVED (MG/L AS MG)	3.50E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	CALCIUM, DISSOLVED (MG/L AS CA)	6.40E+01
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	PH, LAB, STANDARD UNITS SU	7.10E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	CODE NO FOR AGENCY ANALYZING SAMPLE	5050
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	HARDNESS, CA MG CALCULATED (MG/L AS CACO3)	7.42E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	13-Oct-65	1440	SODIUM, DISSOLVED (MG/L AS NA)	3.84E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	SULFATE, DISSOLVED (MG/L AS SO4)	1.41E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	CHLORIDE, DISSOLVED IN WATER MG/L	4.44E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	SODIUM, DISSOLVED (MG/L AS NA)	1.86E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	PH, LAB, STANDARD UNITS SU	7.30E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	11-Apr-56	1125	SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)	1.87E+03
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	CARBONATE ION (MG/L AS CO3)	0.00E+00
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.966667	120.616667	15-Jun-55	1030	ALKALINITY, TOTAL (MG/L AS CACO3)	1.49E+02
CAWRCB	KINGS/KERN RIVERS AND TULARE LAKE	CA	Fresno	36.983333	120.616667	11-Apr-56	1140	HARDNESS, TOTAL (MG/L AS CACO3)	3.04E+02

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DATA ASSEMBLY

Collection
Content: Salinity Management
Geographical Extent: CVRWQB
Quality: Suitability, Confidence Ranking
Availability: Ownership
Gaps: Geographical and Attributes

DATA REPOSITORY

Design Structure
Data Loading
Maintenance & Updates

DATA ACCESS

Internet
Web interface or FTP
Public and Private
Conformity to State standards

DATA

(First Phase)

INFORMATION

(Future Phase)

- ANALYSIS
- FILLING THE INFORMATION GAPS
- MODELING
- DECISION-SUPPORT SYSTEMS

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TECHNICAL ADVICE

- Additional data sources

  Examples: Unpublished data, published but non-digital data

  Private and proprietary data

- Areas of concern

  Examples: Other significant sources of salinity

- Data quality criteria

  Examples: Quality ranks: high, medium, low, etc.

- Digital information protocols and standards

  Examples: State and agencies spatial information standards

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