Agenda

- Welcome and Introduction (10 min)
- Sustainable Groundwater Management Act Requirements (10 min)
- Questions/Discussion (10 min)
- Current Understanding of Cuyama Basin Conditions (20 min)
- Questions/Discussion (20 min)
- Approach for Better Understanding the Cuyama Basin (15 min)
- Questions/Discussion (20 min)
- Next Steps and Future Workshops (5 min)

Planning for Sustainable Groundwater

Decision-makers

Cuyama Basin Groundwater Sustainability Agency (GSA)

Counties
Kern
San Luis Obispo
Santa Barbara (2)
Ventura

Landowners & Agriculture
Cuyama Valley Water District (5)

Community
Cuyama Community Services District

Managers

Executive Director
Jim Beck
Taylor Blakslee

Consultants

Woodard & Curran
Lyndel Melton
Ali Taghavi
Brian Van Lienden

Catalyst
Charles Gardiner
Mary Currie

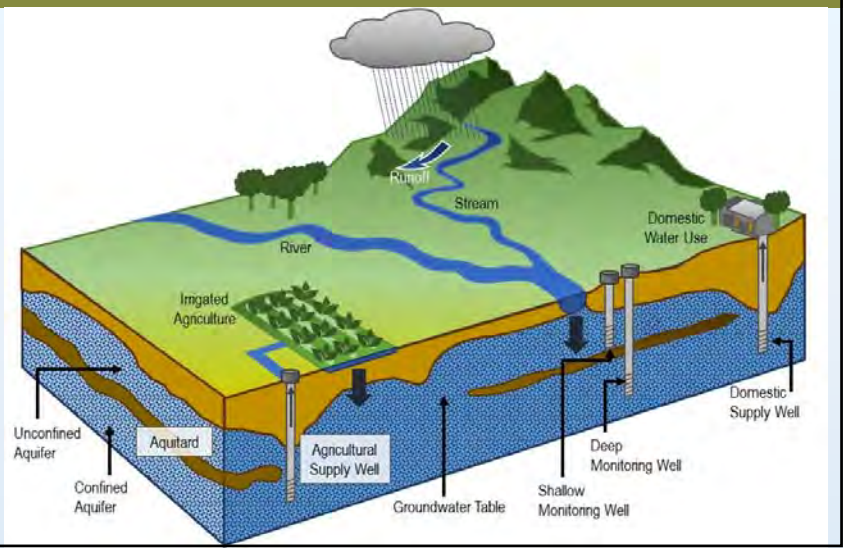
Standing Advisory Committee (7)

Community Representatives

WOODARD &CURRAN

Components of a Groundwater Basin

- Groundwater aquifers
- Agricultural and domestic pumping
- Recharge
- Surface water interaction

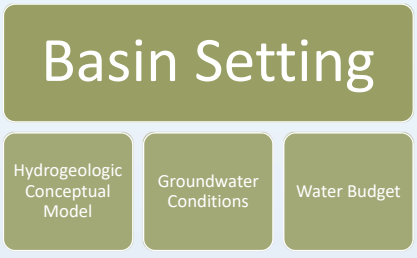


Sustainable Groundwater Management Act (SGMA) Requirements

- Basin Setting
- Six Undesirable Results & Sustainability Goals
- Monitoring Network
- Measurable Objectives, Minimum Thresholds, and Interim Milestones
- Identify Projects and Management Actions
- Annual Groundwater Sustainability Plan (GSP) Reporting

SGMA Requirements: Basin Setting

- Hydrologic Conceptual Model (HCM)
  - Defines the physical conditions of the basin and supports the numerical model
  - Numerical model estimates water budgets and supports analysis of GW sustainability options
- The draft HCM is being developed and will be available in a few months

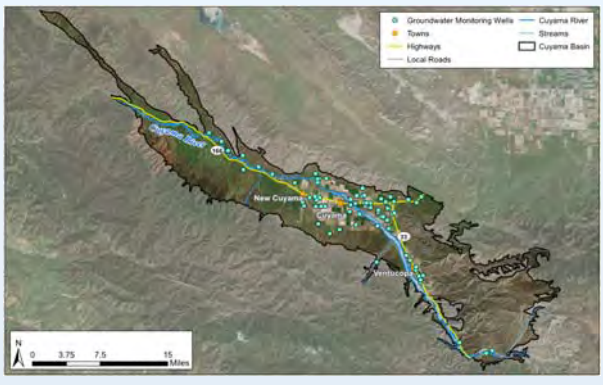


SGMA Requirements: Six Undesirable Results Guide Development of Sustainability Goals

- **Lowering of Groundwater Levels**
- **Reduction of Groundwater Storage**
- **Degraded Water Quality**
- ~~Seawater Intrusion~~
- Land Subsidence
- Depletions of Interconnected Surface Water

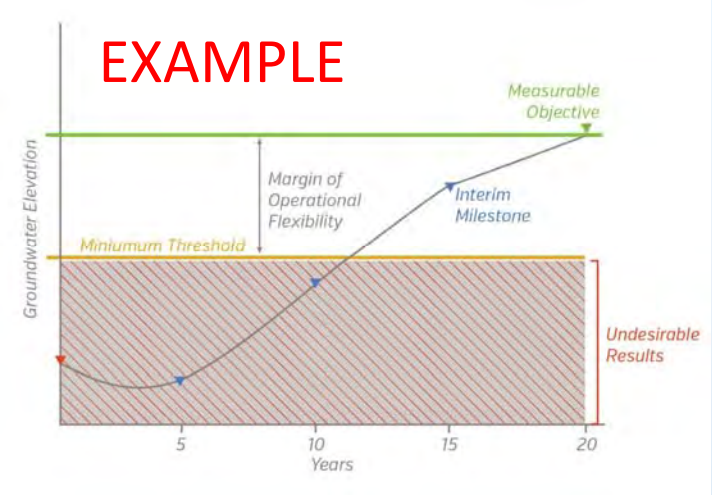
SGMA Requirements: Monitoring Network

- Develop/refine monitoring approach
- Identify data gaps and develop a plan to fill them
- Monitor for each undesirable result within each aquifer in basin
- Data management to track monitoring data over time



SGMA Requirements: Measurable Objectives, Minimum Thresholds, and Interim Milestones

- Define for each undesirable of the six results
- Monitor to track trends and progress



SGMA Requirements: Identify Projects & Management Actions

- Identify potential projects and management actions through Stakeholder input
- Evaluate each project/management action
  - Screening
  - Detailed Evaluation
- Develop implementation strategy

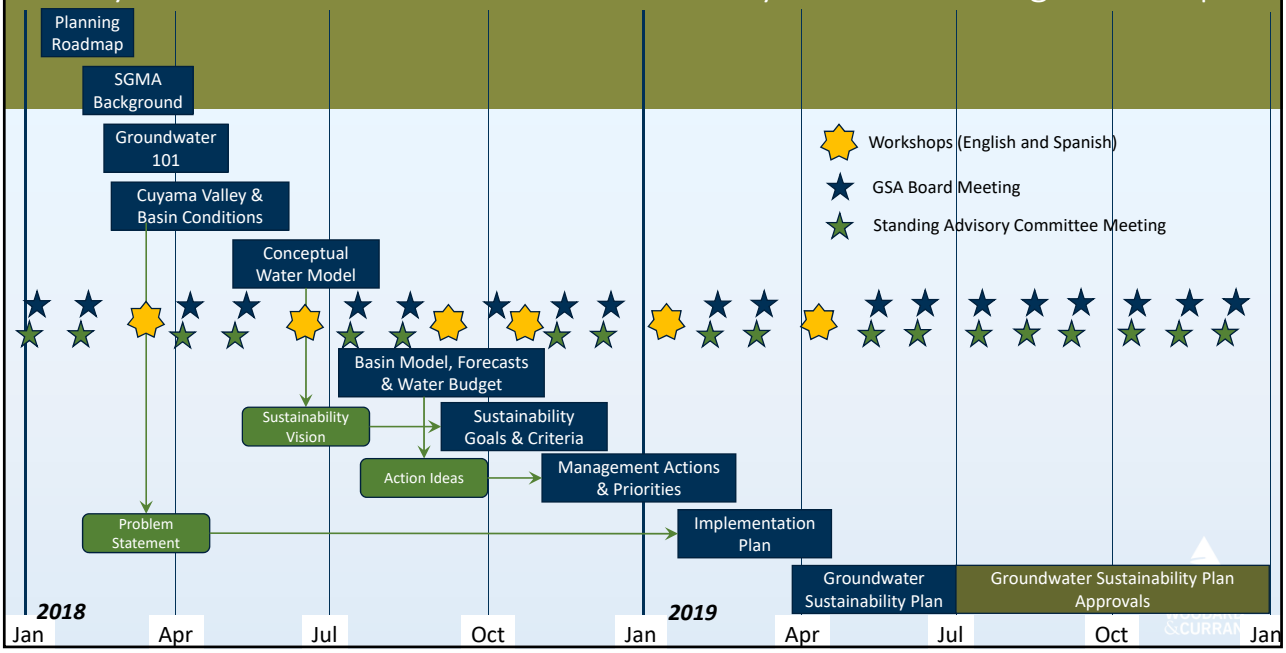
Option Name	Cost	Quantity of Yield	Timing	Technical Feasibility	Permitting	Legal	Policy
In-Basin Water Supply							
Recycled Water	D	B	C	C	C	C	C
Storm & Flood Water Capture	C	B	C	B	C	C	A
Imported Water Supply							
Twitchell Exchange	E	C	C	B	D	C	B
New Imported Supply	B	A	C	B	C	C	B
In-Basin Water Management							
Water Allocations	C	B	C	B	B	B	A
Managed Aquifer Recharge	A	B	C	D	C	C	E

EXAMPLE

SGMA Requirements: Annual GSP Reporting

- Groundwater Sustainability Plan update every five years
- Data management plan
- Monitoring network updates
- Groundwater model updates (if needed)

Cuyama Basin Groundwater Sustainability Plan – Planning Roadmap



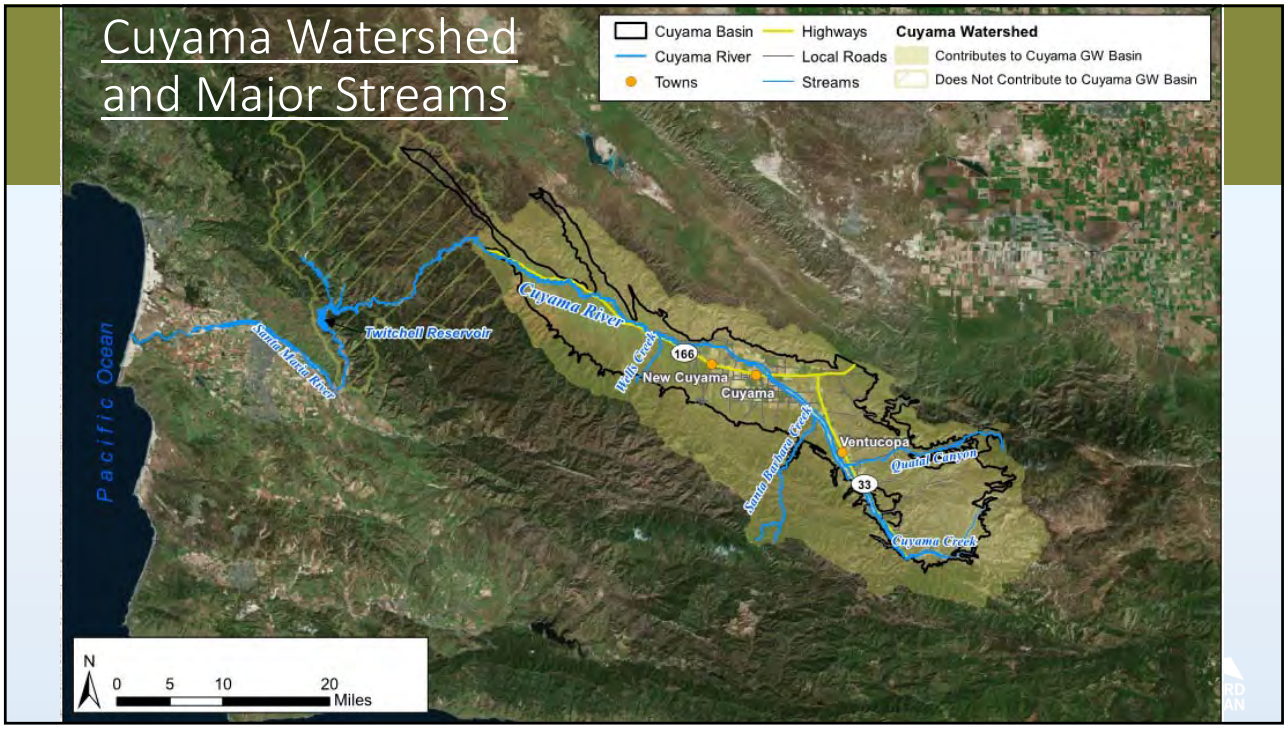
Questions/Discussion

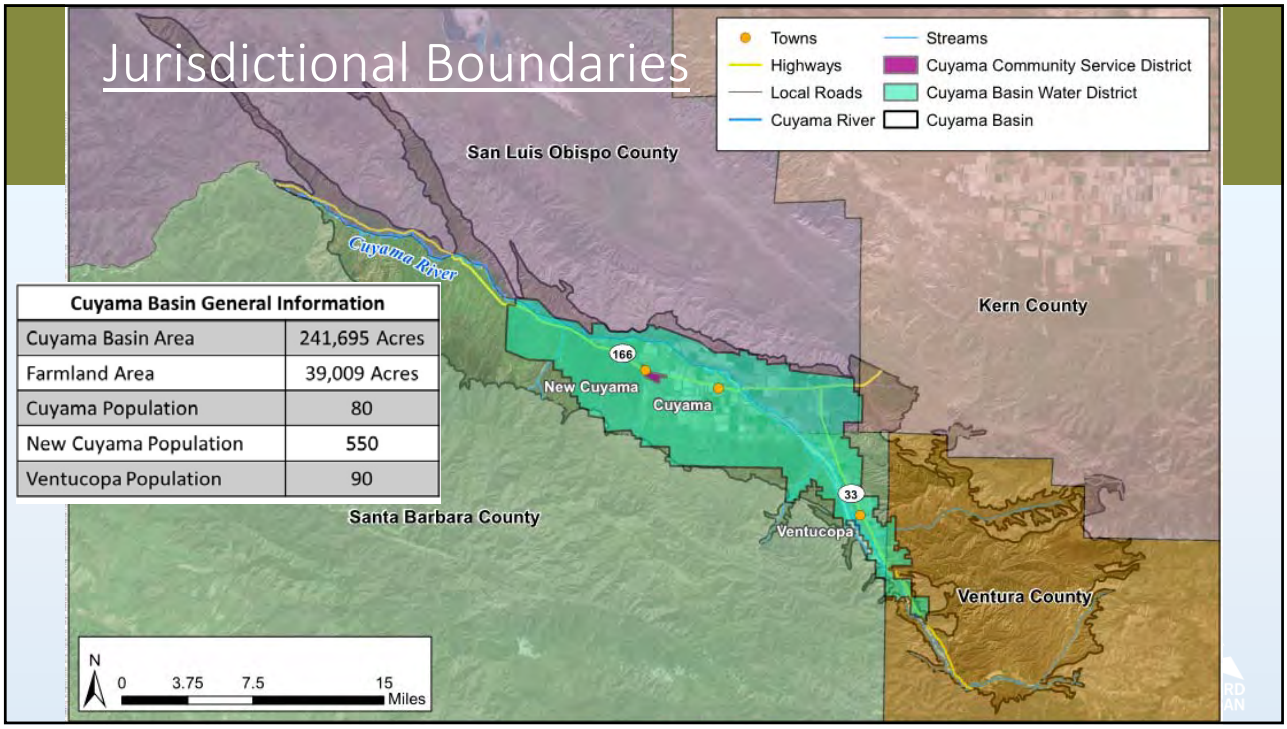
- Questions about the project purpose and the Sustainable Groundwater Management Act

Current Understanding of Cuyama Basin Conditions: Description of the Plan Area

- Watershed and Streams, Basin, and Jurisdictional Boundaries
- Basin Geology and Soils Types
- Existing Monitoring Wells
- Production Wells
- Precipitation and Surface Water Data
- Land Use

- The Description of the Plan Area GSP section is under development and will be available for review in late March/early April



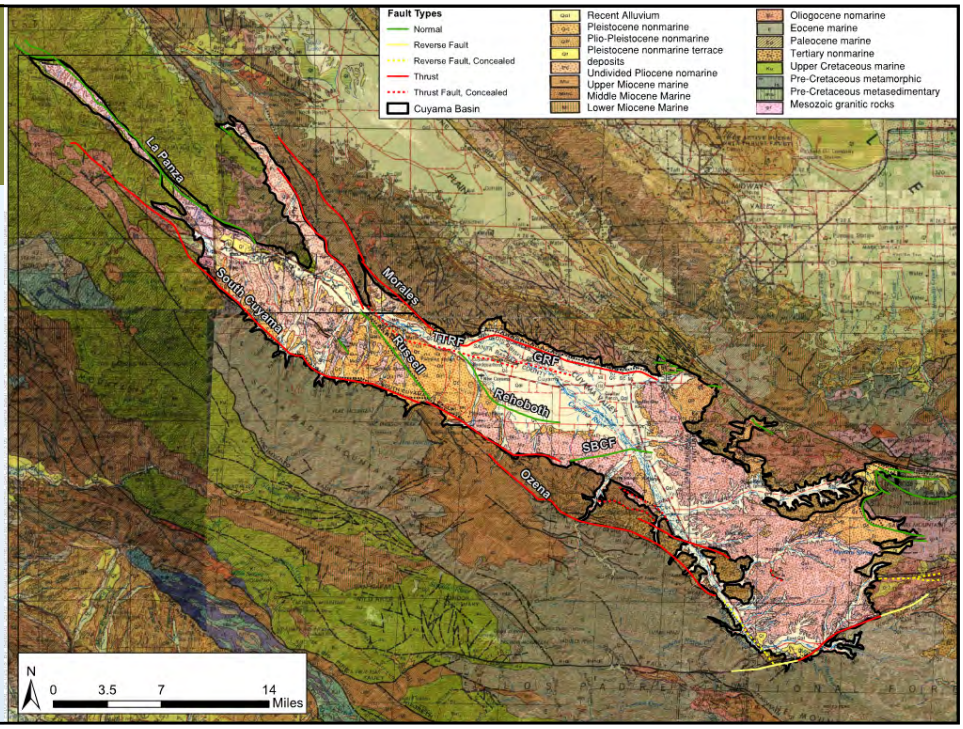


Cuyama Basin General Information	
Cuyama Basin Area	241,695 Acres
Farmland Area	39,009 Acres
Cuyama Population	80
New Cuyama Population	550
Ventucopa Population	90

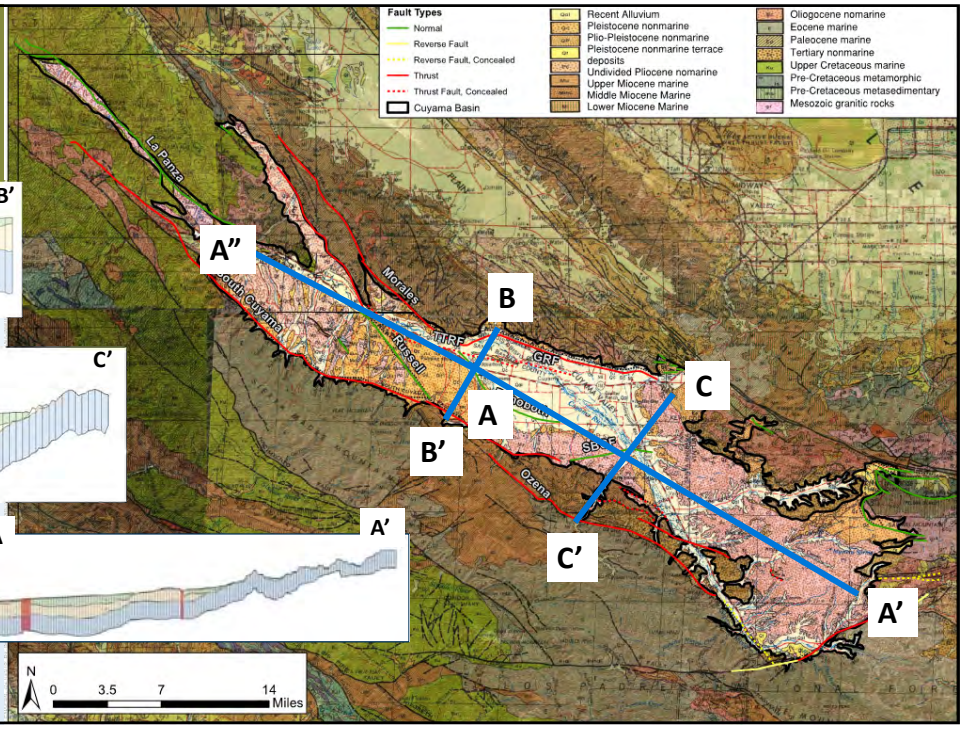
Cuyama Basin Geology

Major Features:

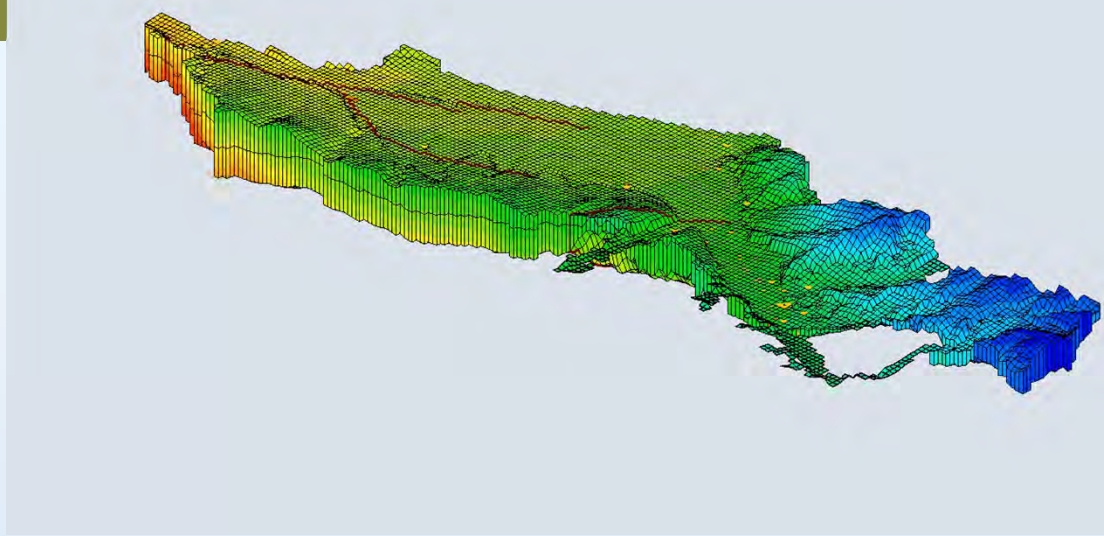
- Faults
- Cuyama River
- Formations:
  - Alluvium
  - Pleistocene Nonmarine
  - Undivided Pliocene Nonmarine



Cuyama Basin Geology



Conceptual Model of the Cuyama Basin Geology



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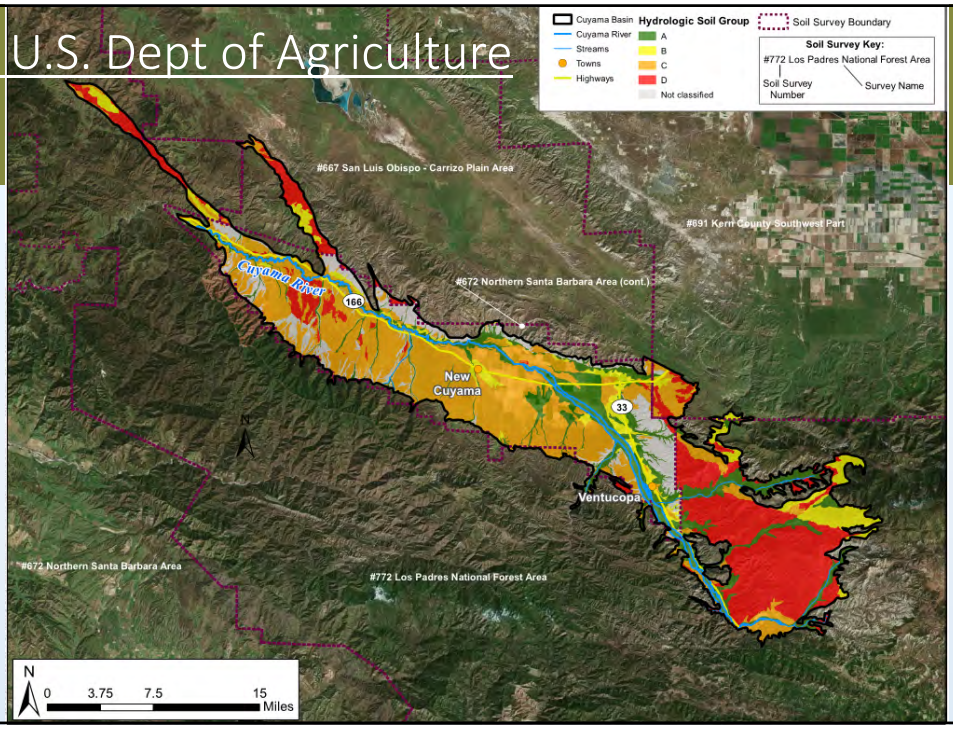
Soils: U.S. Dept of Agriculture



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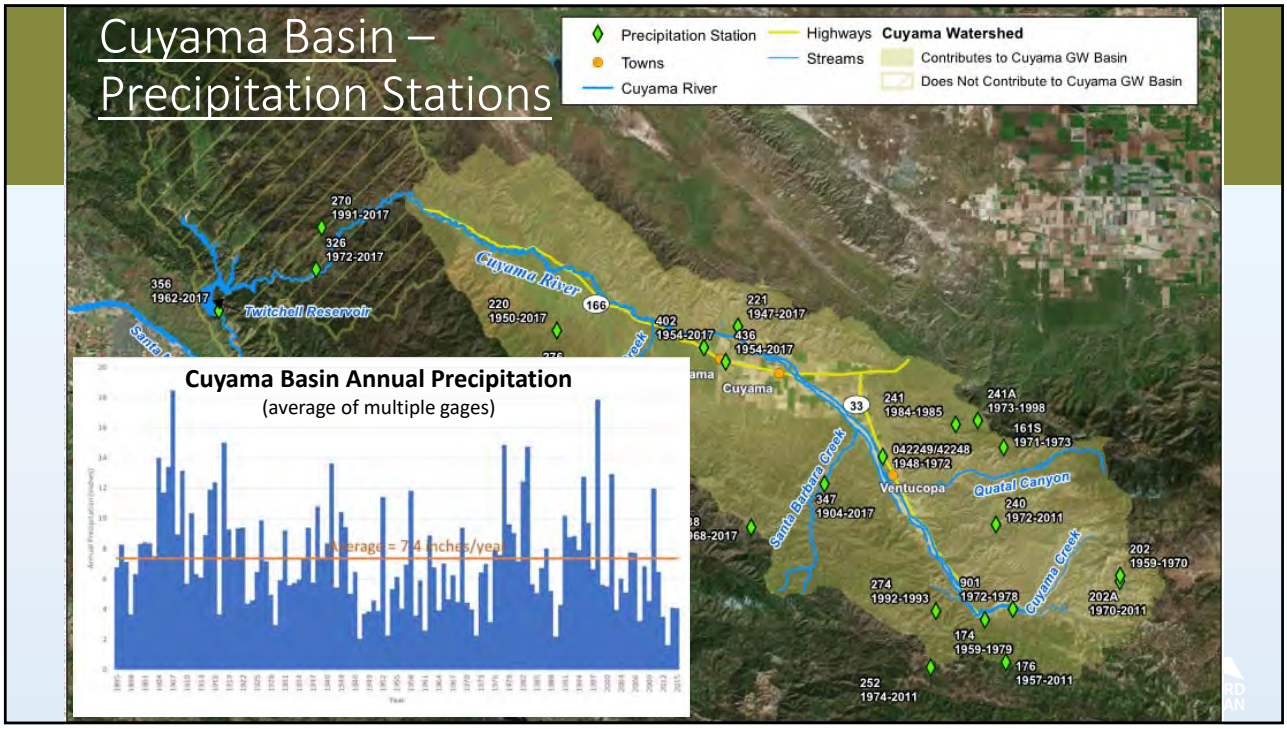
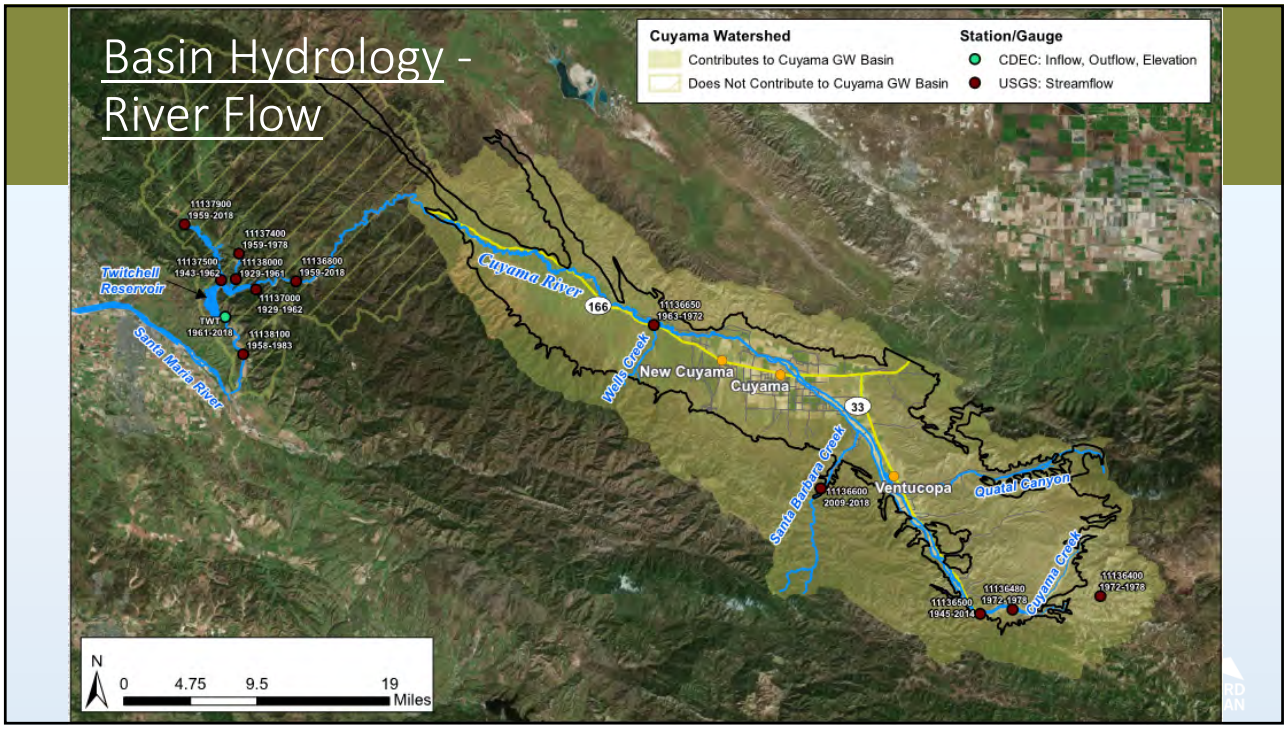
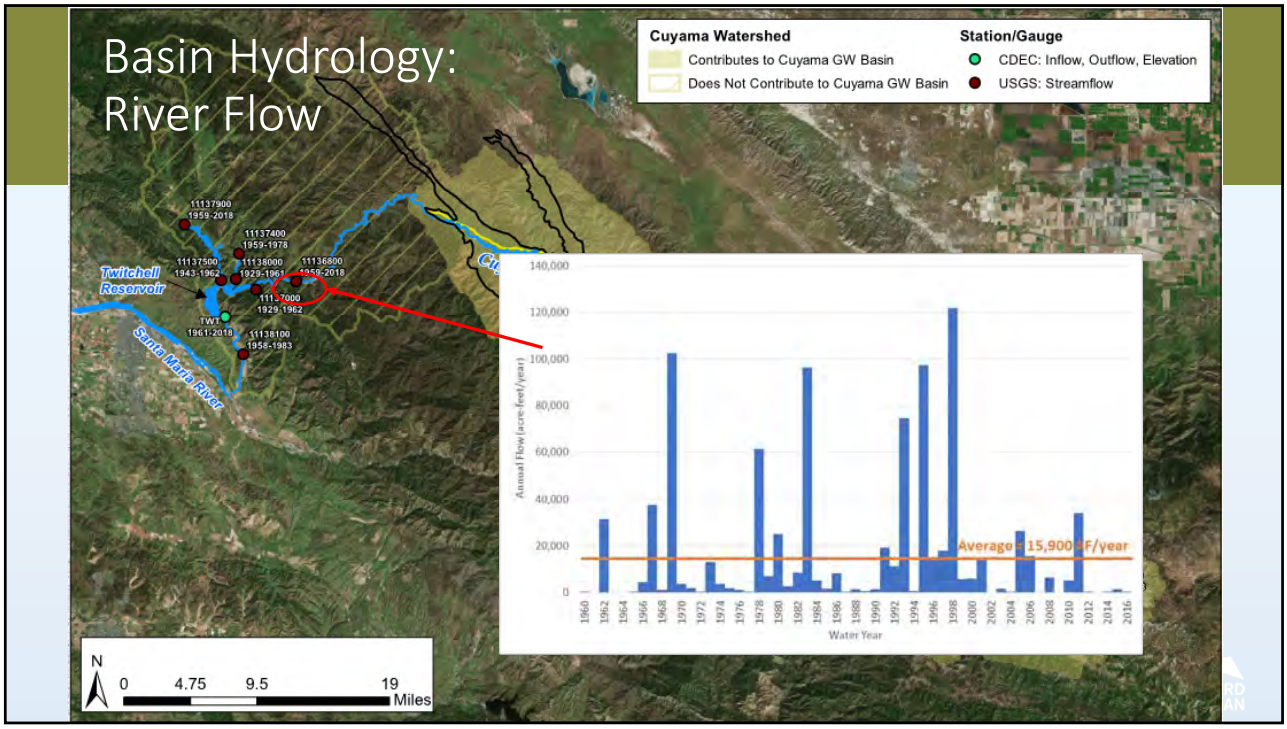
Cuyama Basin – Precipitation Stations

Cuyama Basin – Precipitation Stations




Basin Hydrology - River Flow
Cuyama Watershed
Contributes to Cuyama GW Basin
Does Not Contribute to Cuyama GW Basin
Station/Gauge
CDEC: Inflow, Outflow, Elevation
USGS: Streamflow
11137900 1959-2018
11137400 1959-1978
11137500 1943-1962
11138000 1929-1961
11136800 1959-2018
Twitchell Reservoir
11137000 1929-1962
TWT 1961-2018
11138100 1958-1983
Santa Maria River
Cuyama River
166
11136650 1963-1972
Wells Creek
New Cuyama
Cuyama
33
Santa Barbara Creek
11136600 2009-2018
Ventucopa
Quatal Canyon
11136480 1972-1978
11136500 1945-2014
Cuyama Creek
11136400 1977-1978
N
0
4.75
9.5
19
Miles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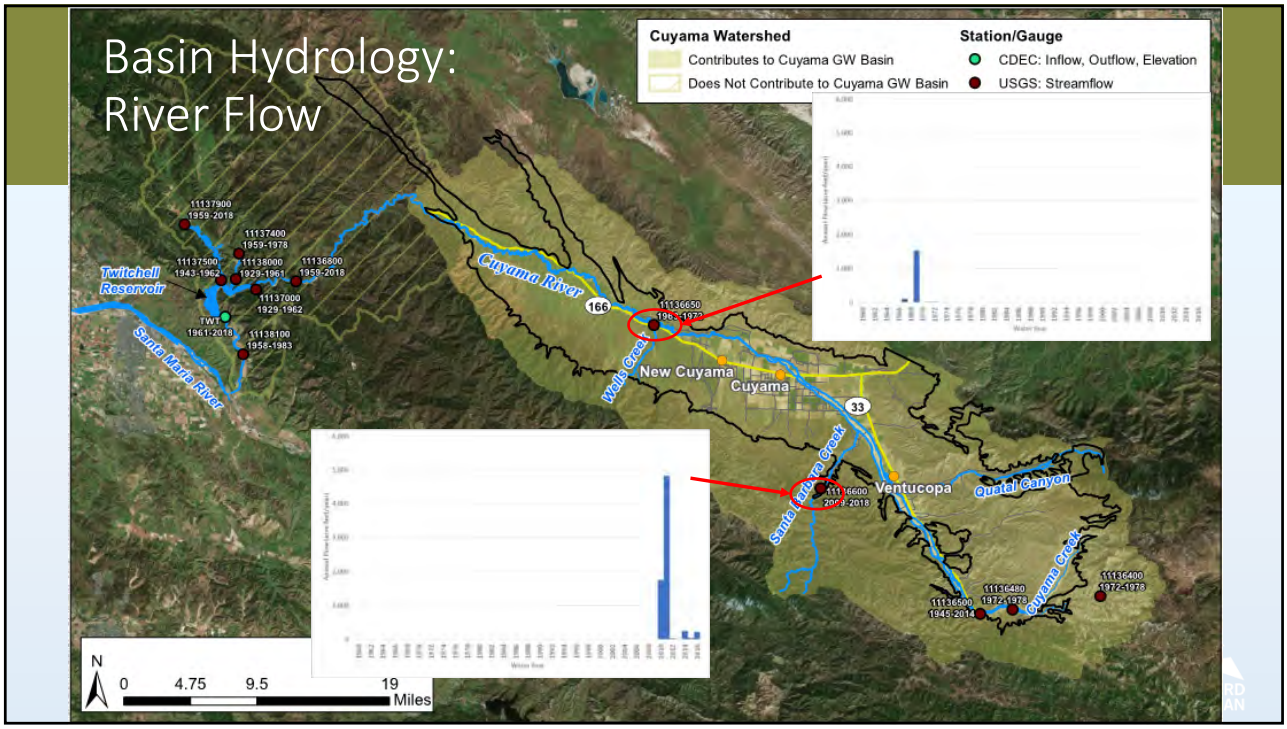
11137500 1943-1962
11138000 1929-1961
11136800 1959-2018
Twitchell Reservoir
11137000 1929-1962
TWT 1961-2018
11138100 1958-1983
Santa Maria River
Annual Flow (acre-feet/year)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
Average = 15,900 AF/year
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Water Year
N
0
4.75
9.5
19
Miles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River Flow
Cuyama Watershed
Contributes to Cuyama GW Basin
Does Not Contribute to Cuyama GW Basin
Station/Gauge
CDEC: Inflow, Outflow, Elevation
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Twitchell Reservoir
Santa Maria River
Cuyama River
Wells Creek
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Quatal Canyon
Cuyama Creek
166
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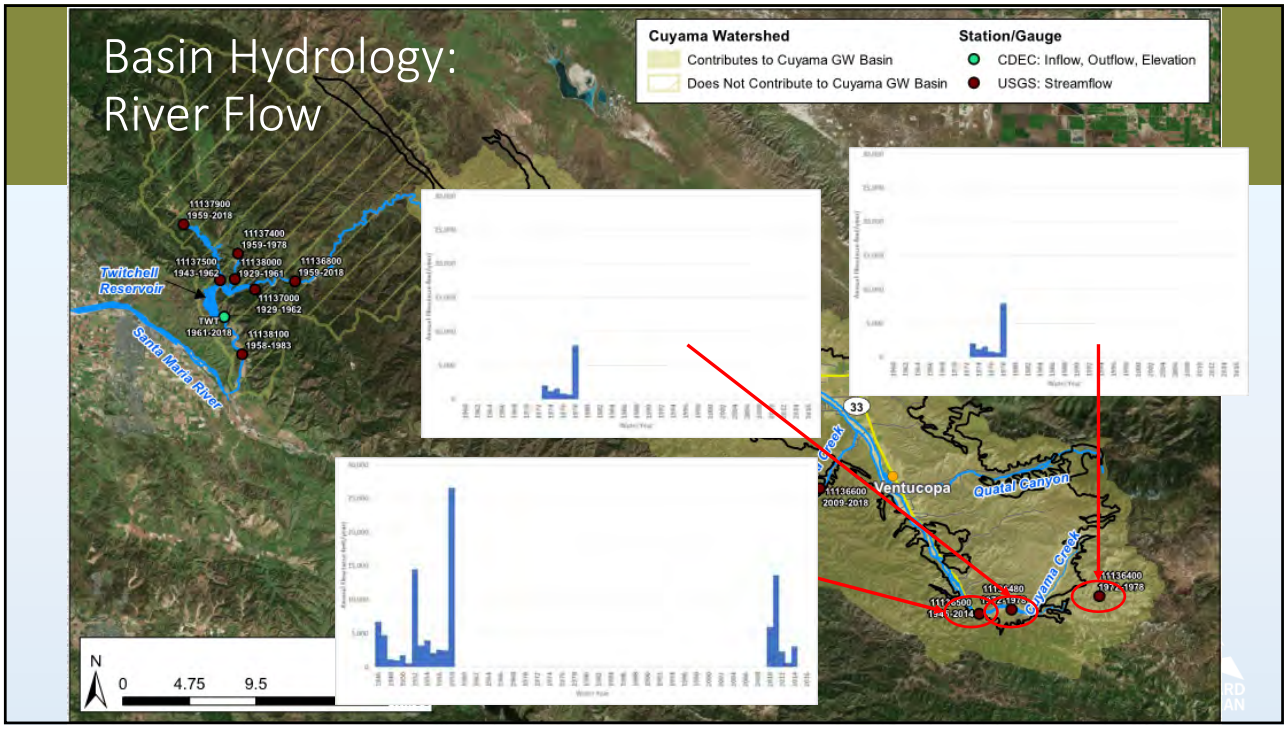
N
0
4.75
9.5
19
Miles


Basin Hydrology:
River Flow
Cuyama Watershed
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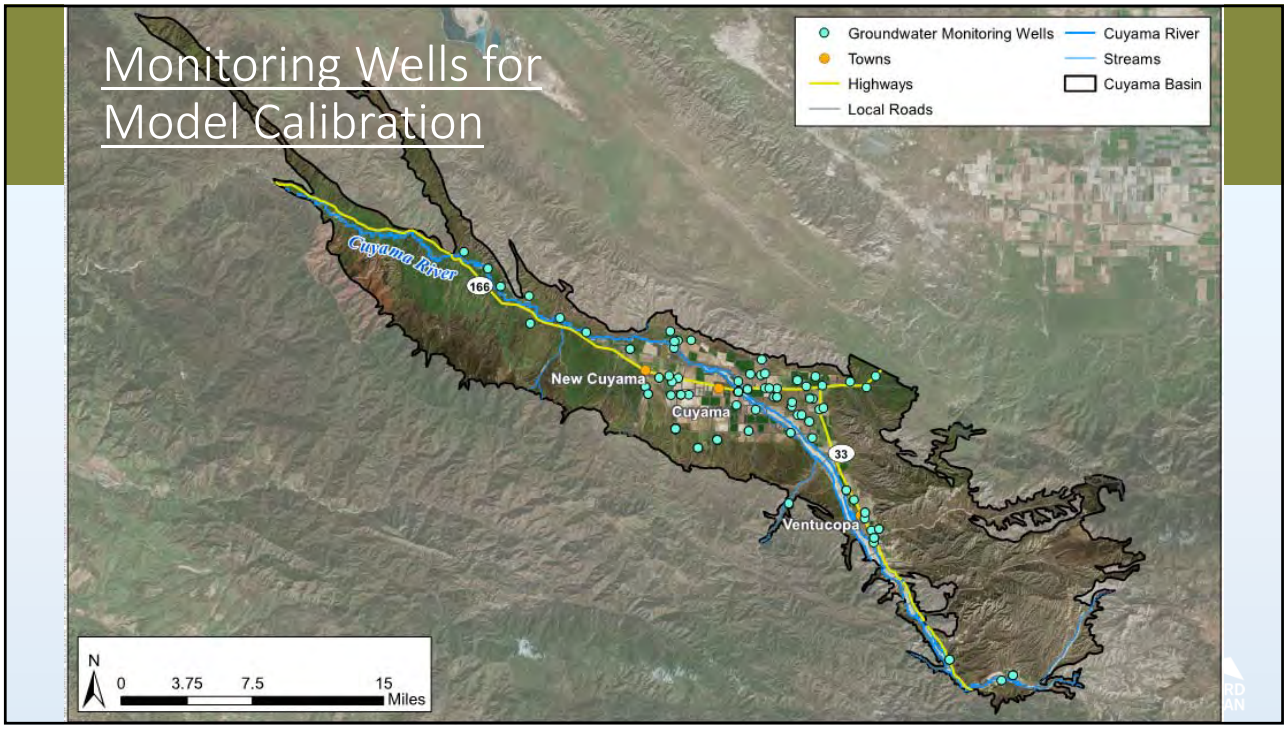
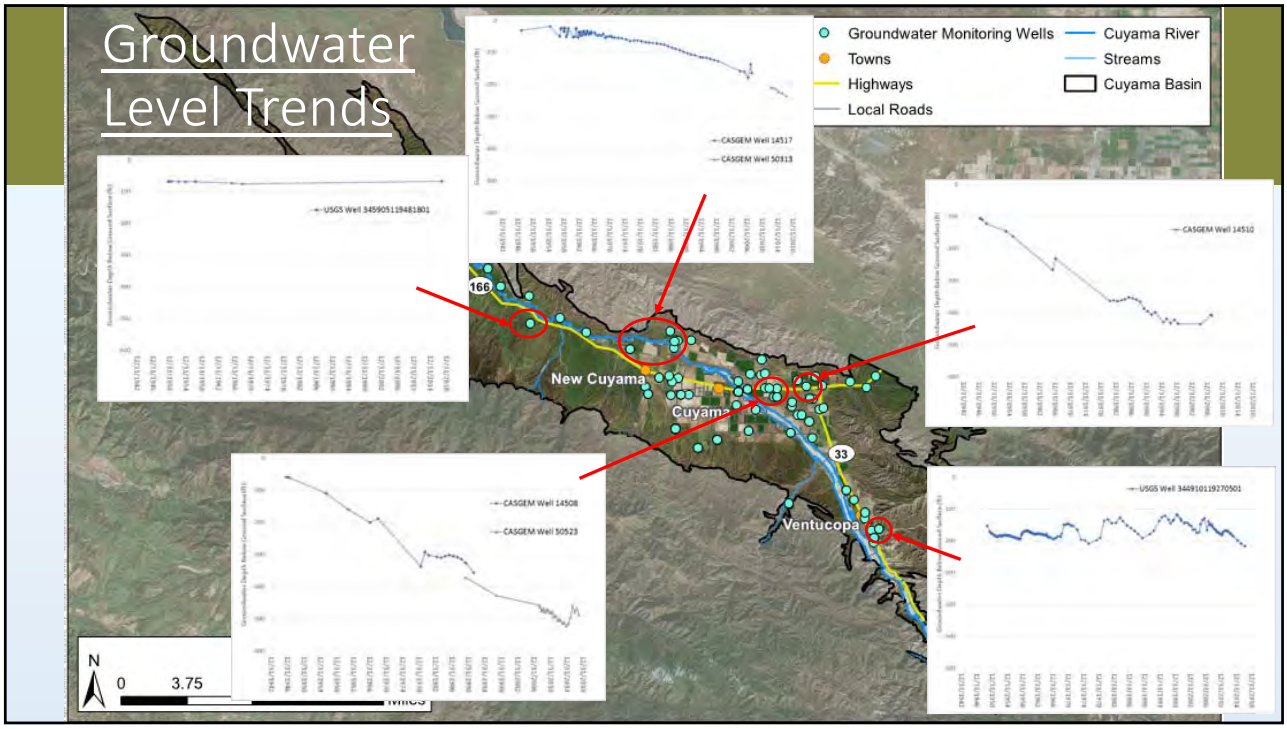
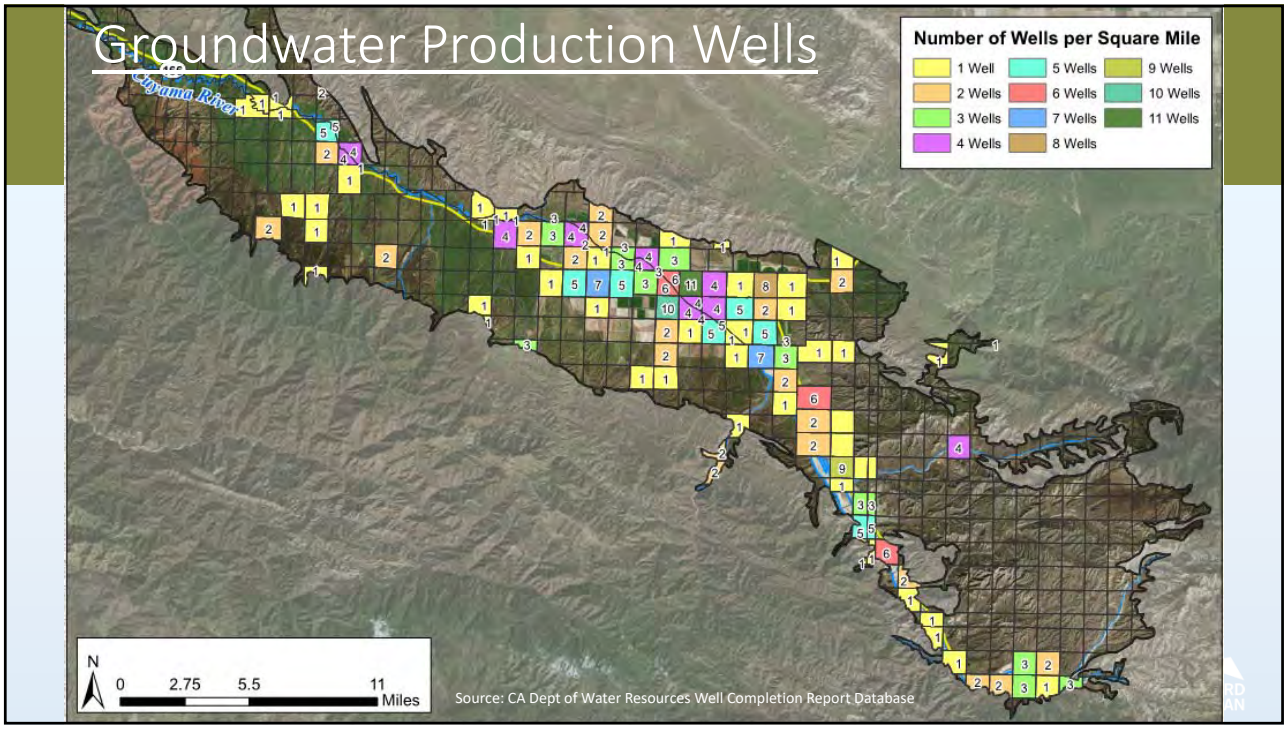
Does Not Contribute to Cuyama GW Basin
Station/Gauge
CDEC: Inflow, Outflow, Elevation
USGS: Streamflow
Twitchell Reservoir
Santa Maria River
Ventucopa
Quatal Canyon
Cuyama Creek
33
N
0
4.75
9.5

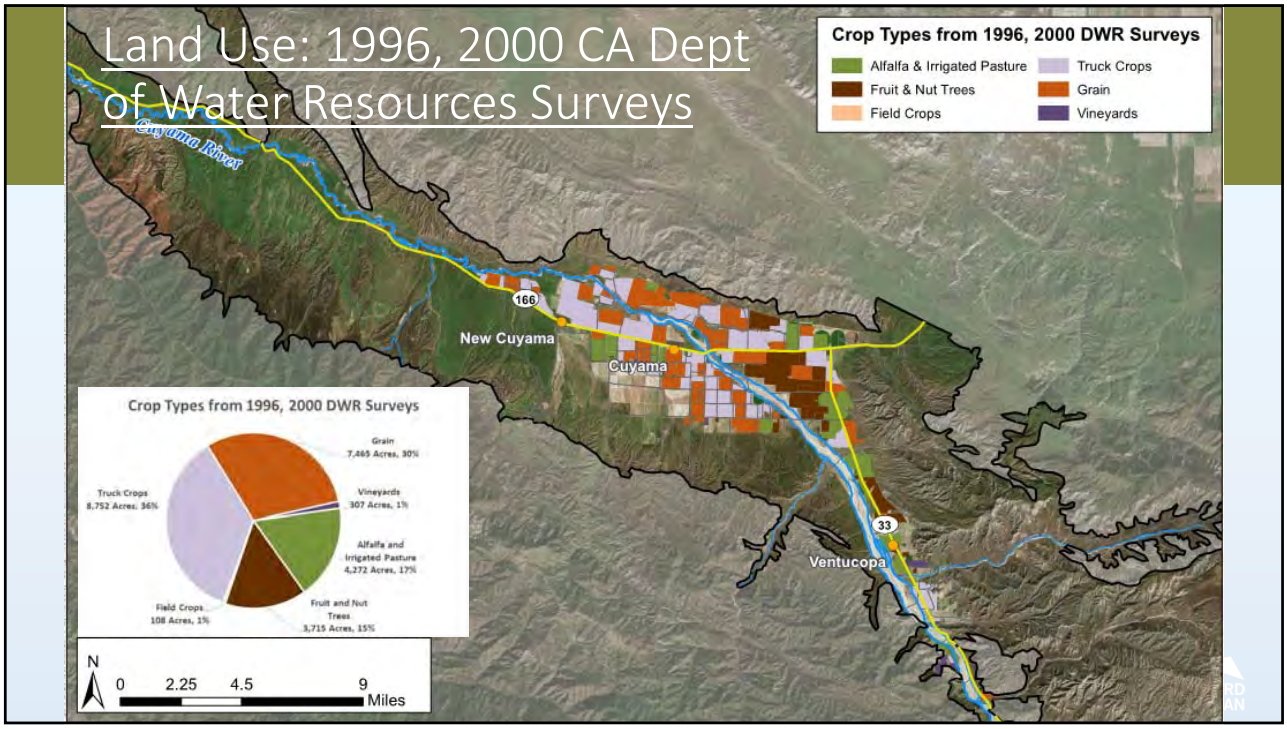

Monitoring Wells for Model Calibration
Groundwater Monitoring Wells
Towns
Highways
Local Roads
Cuyama River
Streams
Cuyama Basin
Cuyama River
166
New Cuyama
Cuyama
33
Ventucopa
N
0
3.75
7.5
15
Miles


Groundwater Level Trends
Groundwater Monitoring Wells
Towns
Highways
Local Roads
Cuyama River
Streams
Cuyama Basin
CASGEM Well 14517
CASGEM Well 50313
USGS Well 345905119481801
CASGEM Well 14510
166
New Cuyama
Cuyama
33
Ventucopa
CASGEM Well 14508
CASGEM Well 50523
USGS Well 344910119270501
N
0
3.75

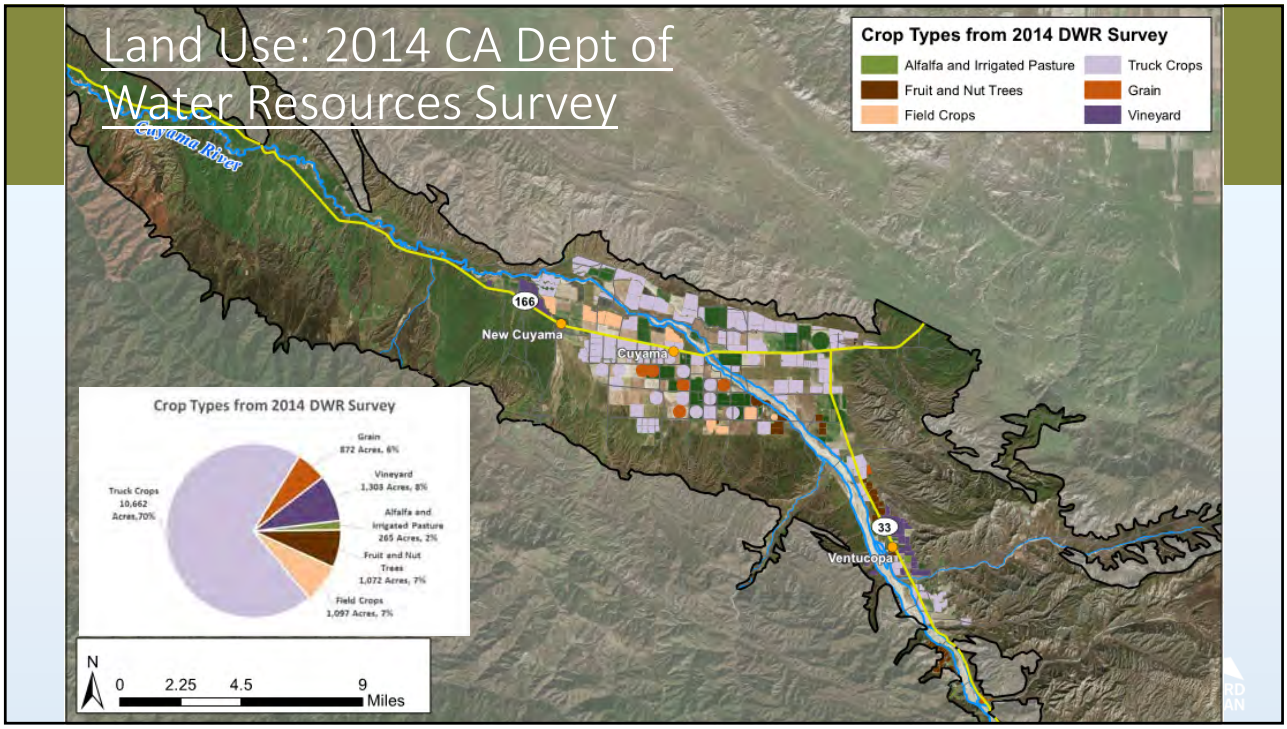
Groundwater Production Wells



Land Use: 1996, 2000 CA Dept of Water Resources Surveys



Land Use: 2014 CA Dept of Water Resources Survey

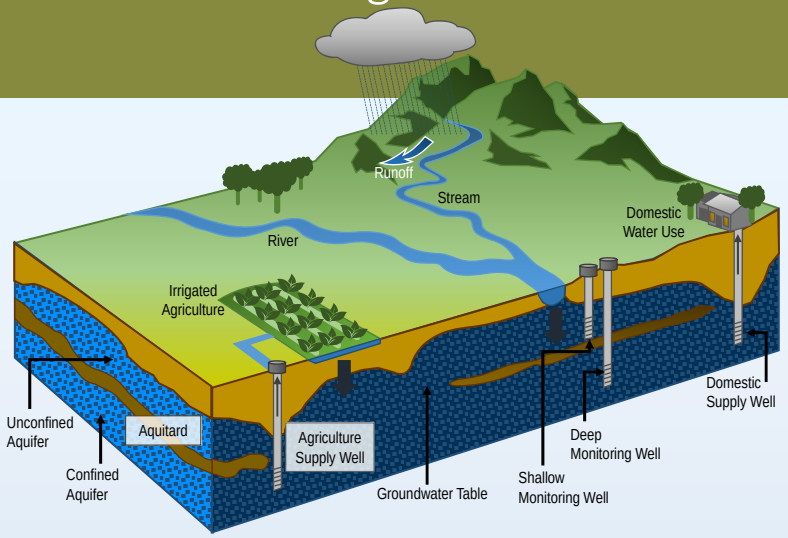


Questions/Discussion

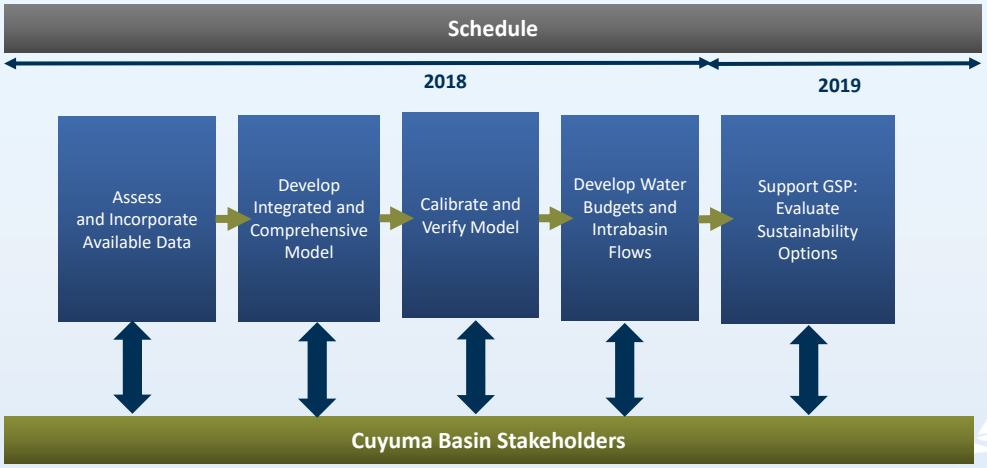
- What is your understanding of surface water and groundwater conditions in your area?
- What additional information and data do you think are important to understand the Cuyama basin?

Approach for Better Understanding the Cuyama Basin

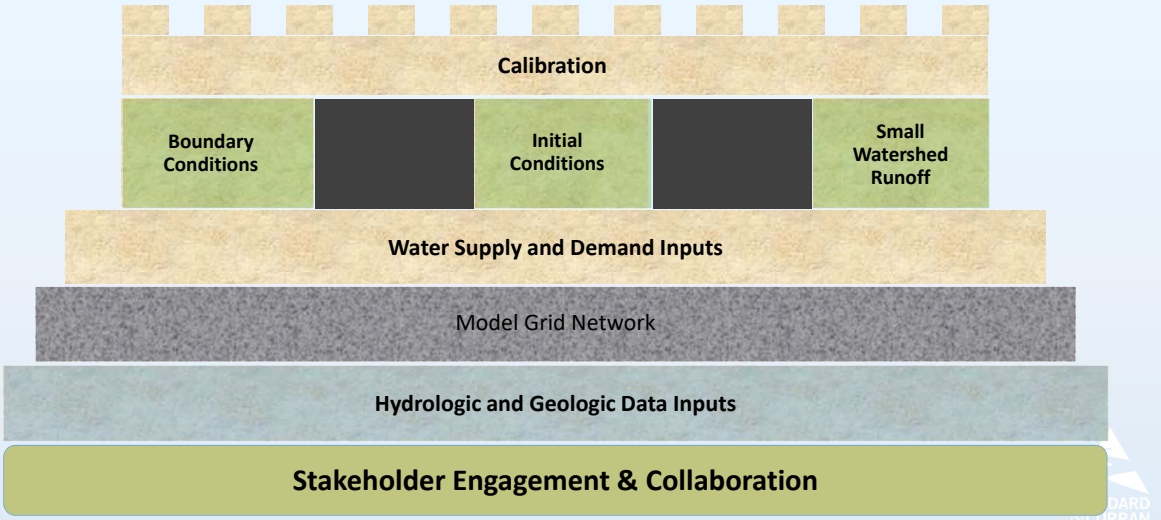
- Developing a Robust and Defensible Model
- Preliminary Model Grid
- Estimating Agricultural Water Demands



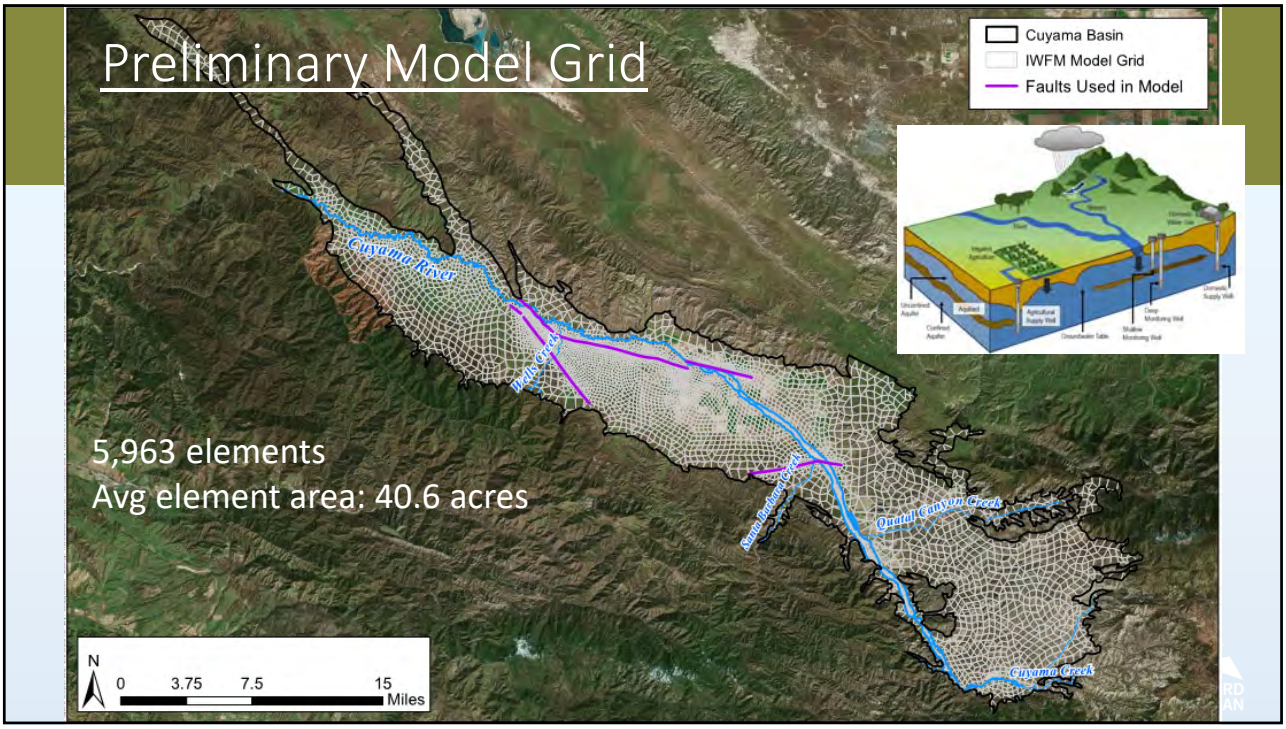
Developing a Robust and Defensible Model



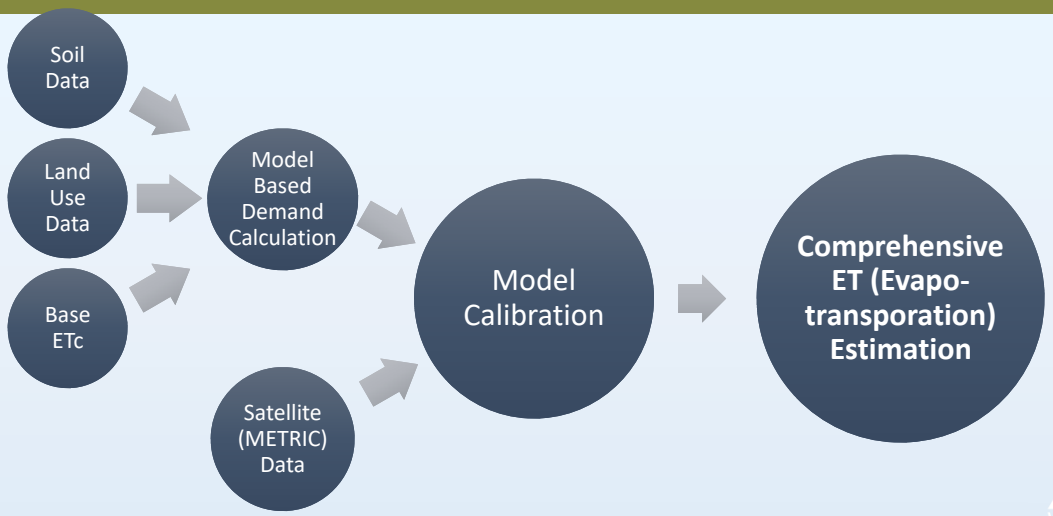
Robust and Defensible Model Components



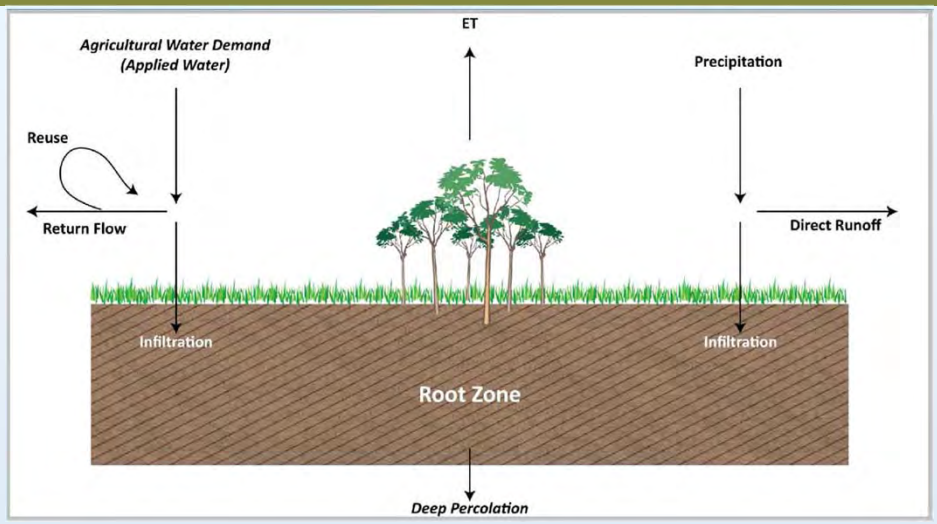
Preliminary Model Grid



Estimating Agricultural Water Demands

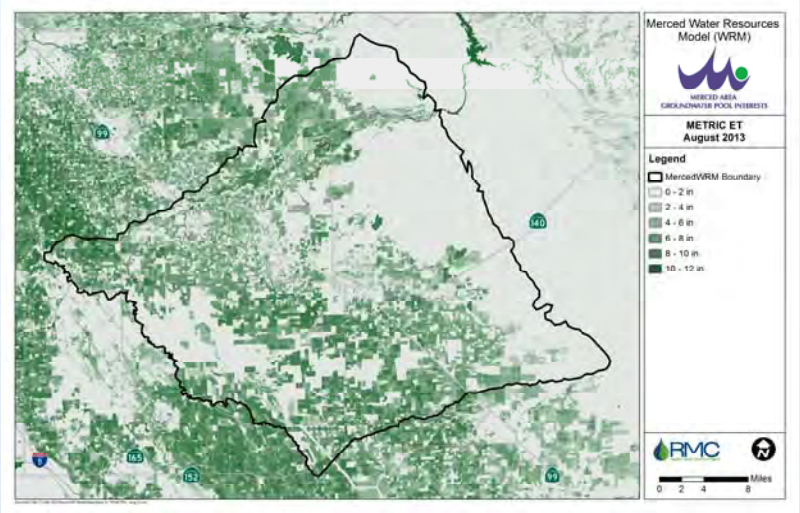


Agricultural Water Demand Components



Estimating Agricultural Water Demands Using the Metric Process

- Base Data
  - 30 meter grid
  - Available monthly data
- Processed Data
  - Subregional aggregation
  - Used as calibration tool for model demand calculation



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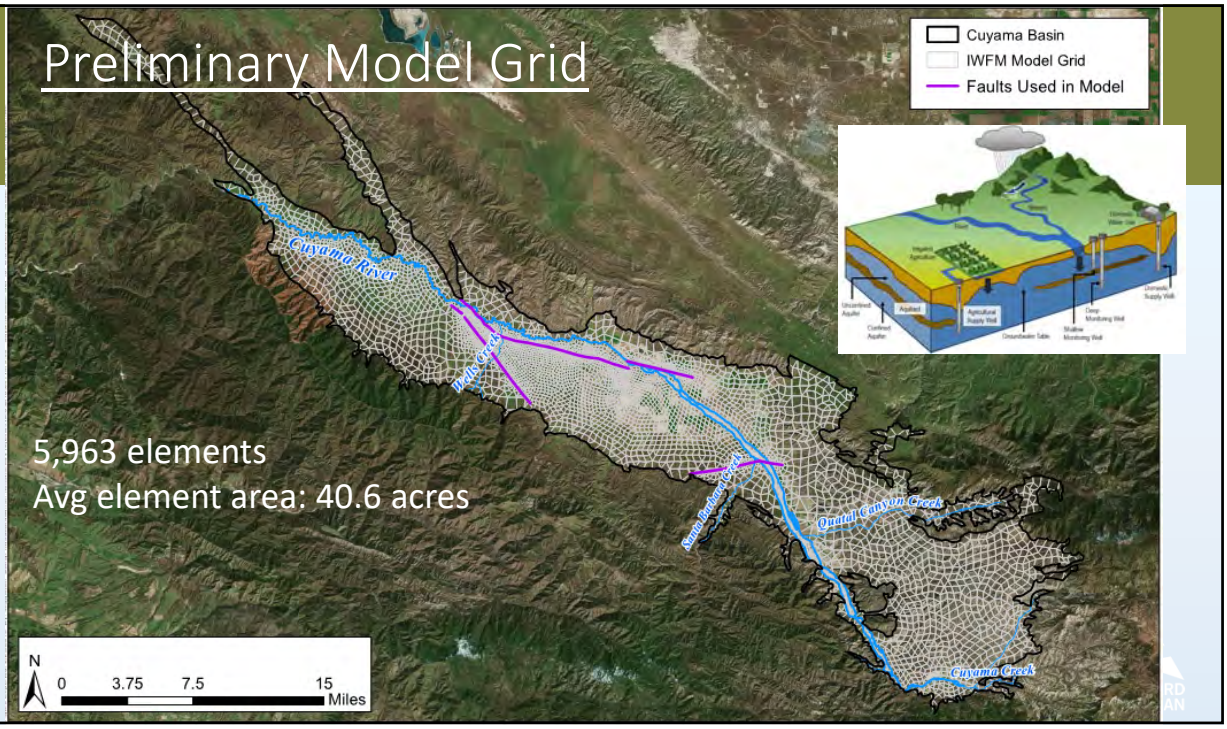
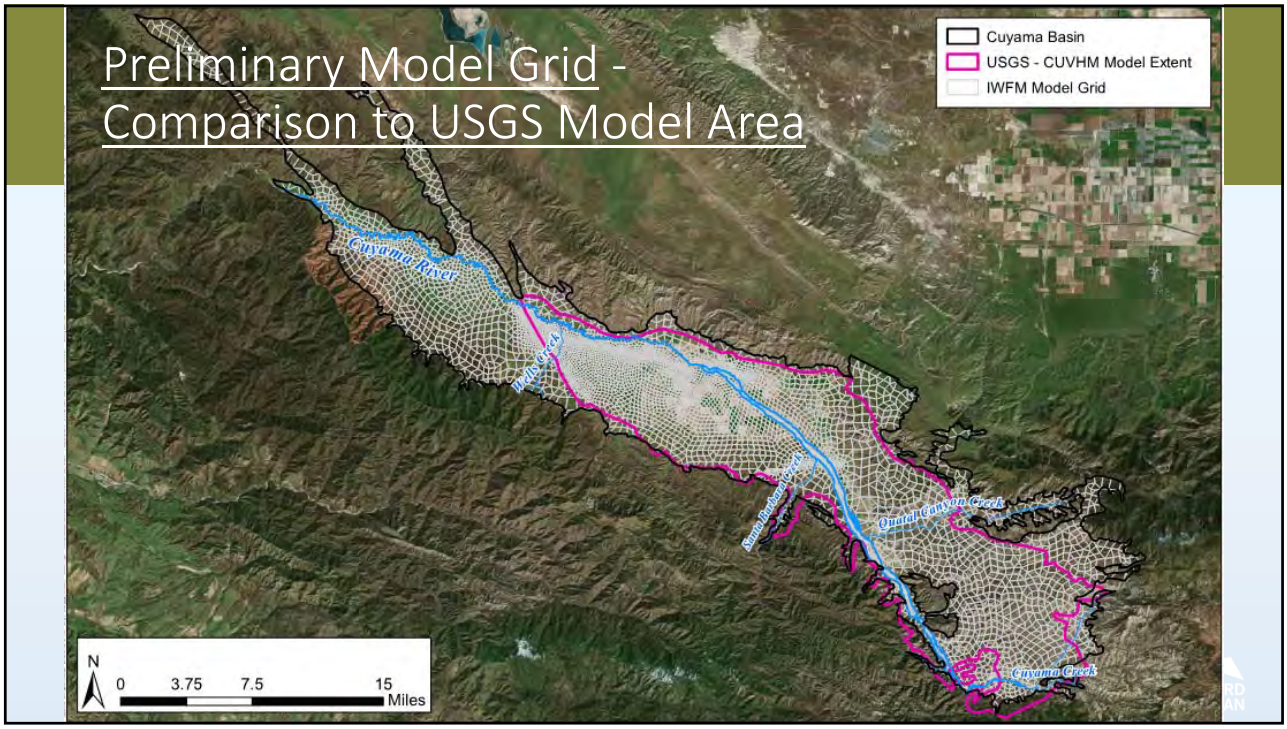


Preliminary Model Grid - Comparison to USGS Model Area



Questions/Discussion

- How would you define/refine the groundwater problem(s) for the Cuyama Valley?

Next Steps and Future Workshops

- Finalize Data Gathering and Confirmation
  - State and federal data sources
  - Counties, Water District, Community Services District
  - Individuals
- Basin/Plan Area Description
  - Ready for review in late March/early April
- Model Development
  - Refine grid
  - Organize data into input file formats
  - Confirm basin geology and associated input files