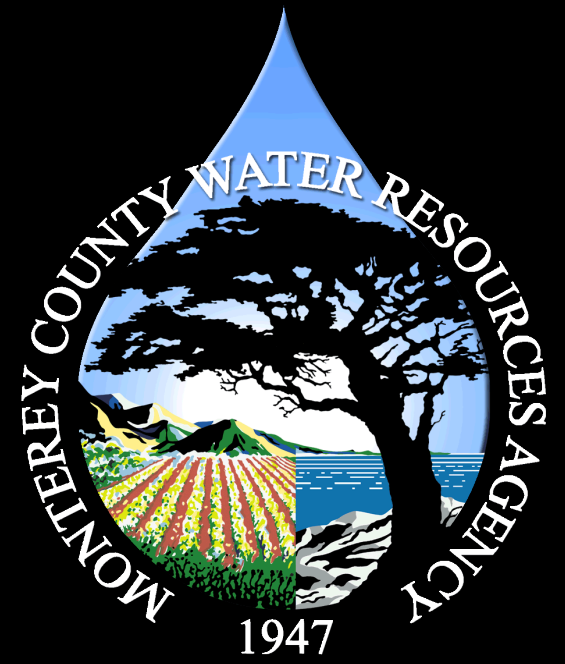

MONTEREY COUNTY WATER RESOURCES AGENCY
1947

Today's Action

Consider receiving the
2021 Groundwater Level and
Seawater Intrusion Contour Maps

Committee Action

- Basin Management Advisory Committee received these reports on March 2, 2022

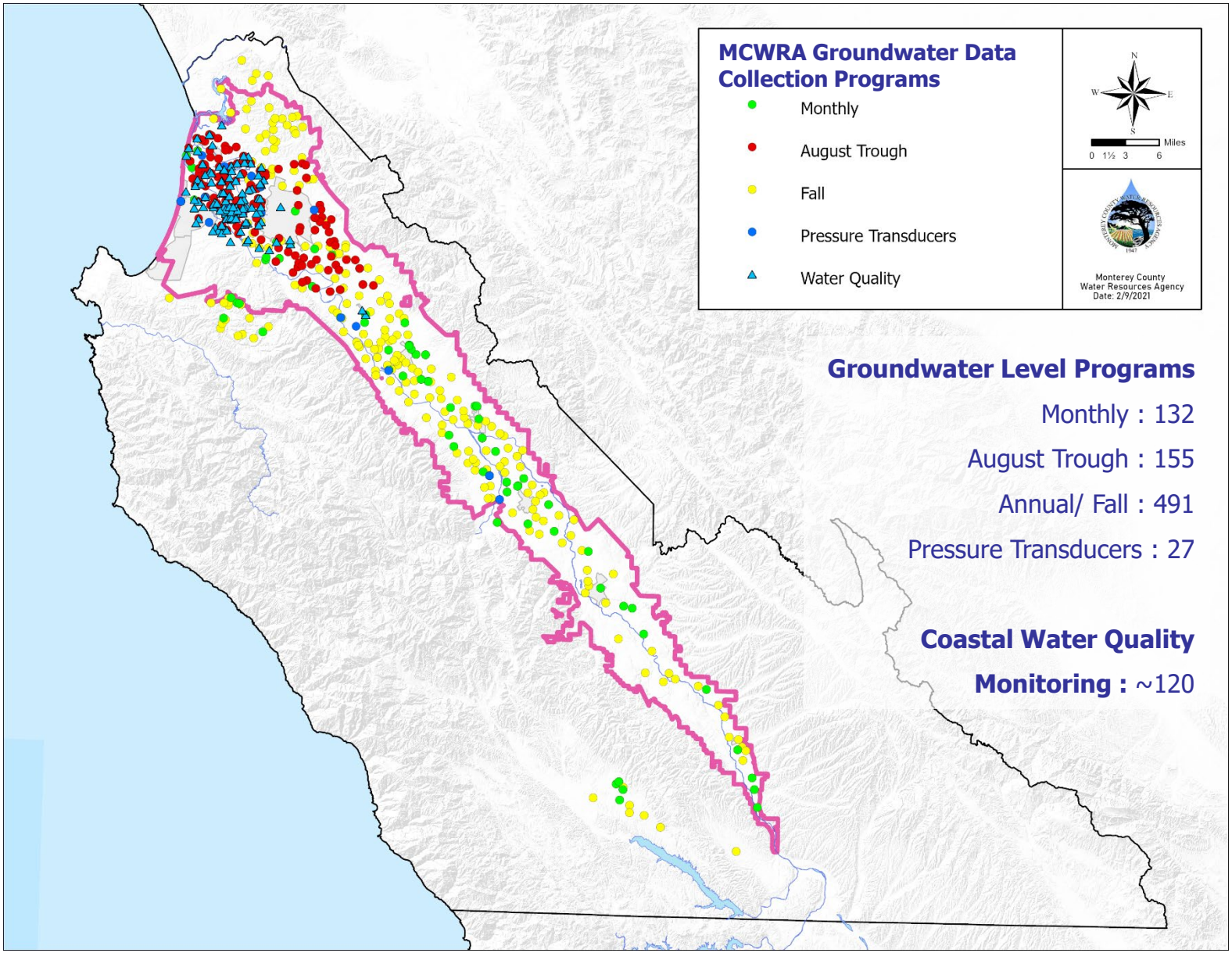
Prior BOD/BOS Action

- Board of Directors receives this report every year

- These activities can be linked to Strategic Plan Goals
  - B7 - Using data and analysis to make informed decisions based on science
  - E1 - Improve public outreach to increase transparency, communication education and information about Agency projects and programs
  - Program line items
    - 21 - Groundwater level Monitoring (annual)
    - 23 - Groundwater monitoring of dedicated wells
    - 50 - August Trough
    - 52 - Coastal WQ Monitoring Program

Financial Impact

- No financial impact to receive this report
- Activities associated with this program are funded by Funds 111 and 116, and are included in each year's budget

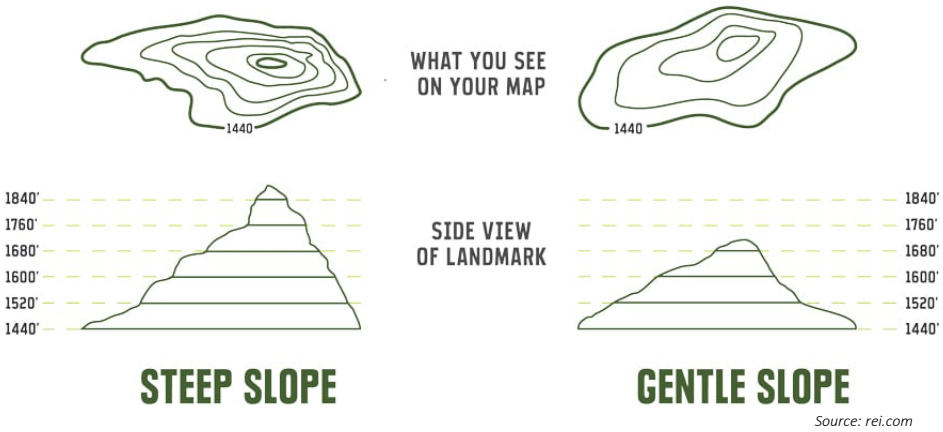

MCWRA Groundwater Data Collection Programs
Monthly
August Trough
Fall
Pressure Transducers
Water Quality
N
W
E
S
Miles
0 1½ 3 6
Monterey County Water Resources Agency
Date: 2/9/2021
Groundwater Level Programs
Monthly : 132
August Trough : 155
Annual/ Fall : 491
Pressure Transducers : 27
Coastal Water Quality
Monitoring : ~120

What are Groundwater Level Contours?

- Lines on a map representing groundwater levels, or elevations relative to mean sea level

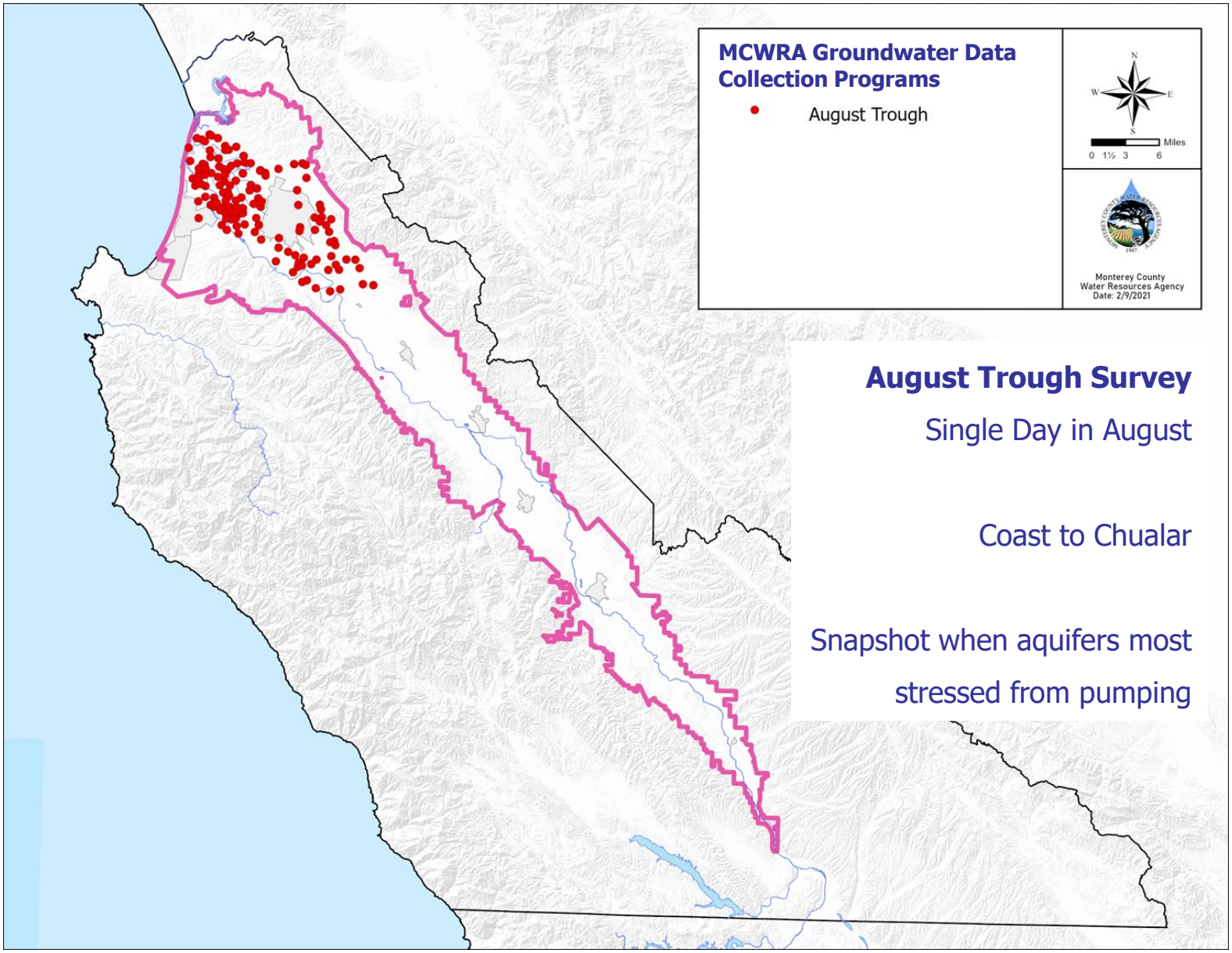
- Lines close together
  - steep sections
  - stronger gradient

- Lines further apart
  - gentler slope
  - weaker gradient



Source: rei.com

August 2021
Groundwater Level Contours


MCWRA Groundwater Data Collection Programs
August Trough
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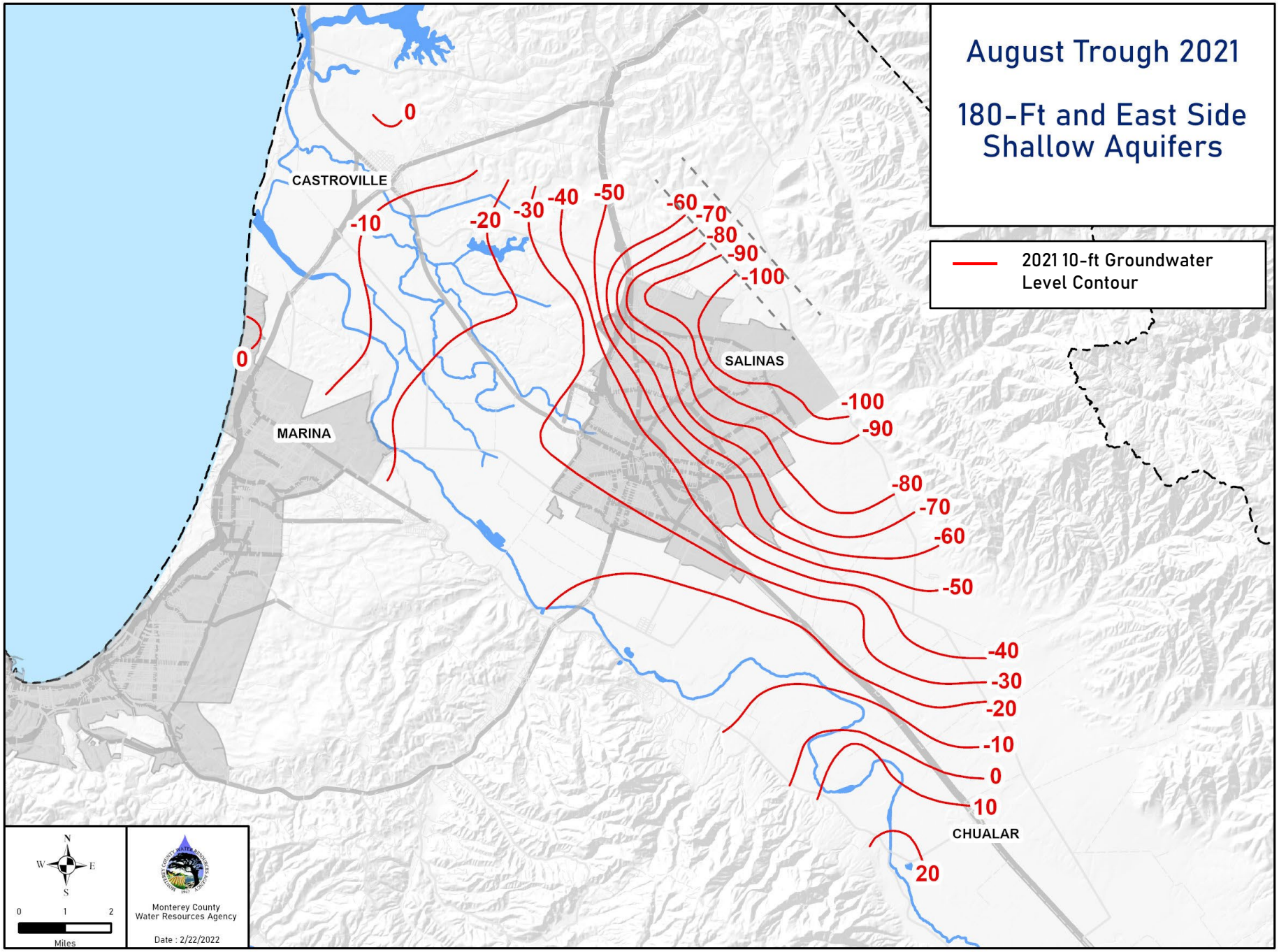
Miles
0 1½ 3 6
Monterey County Water Resources Agency
Date: 2/9/2021
August Trough Survey
Single Day in August
Coast to Chualar
Snapshot when aquifers most stressed from pumping


August Trough 2021
180-Ft and East Side Shallow Aquifers
2021 10-ft Groundwater Level Contour
CASTROVILLE
MARINA
SALINAS
CHUALAR
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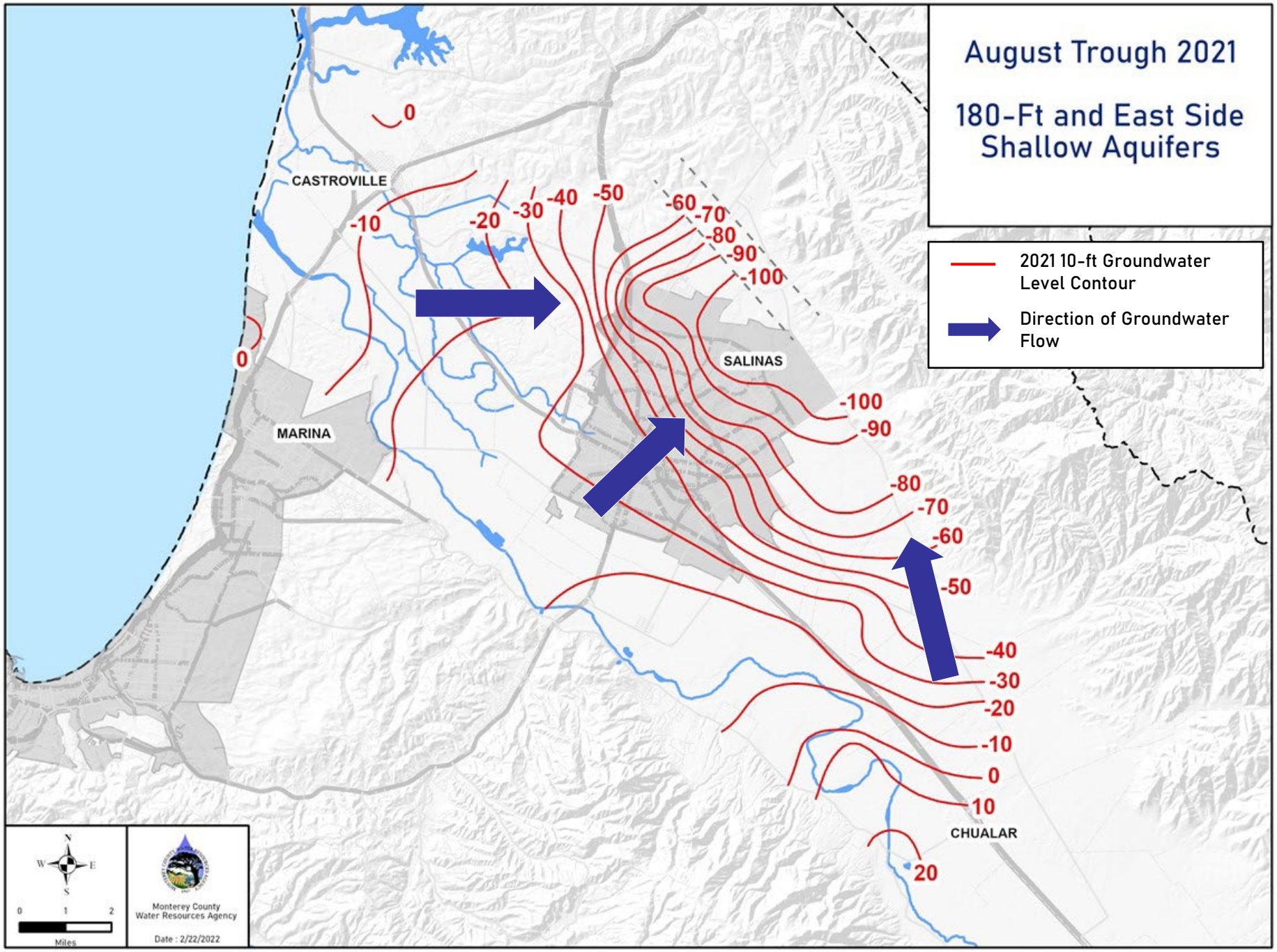
Monterey County Water Resources Agency
Date : 2/22/2022


August Trough 2021
180-Ft and East Side Shallow Aquifers
2021 10-ft Groundwater Level Contour
Direction of Groundwater Flow
CASTROVILLE
MARINA
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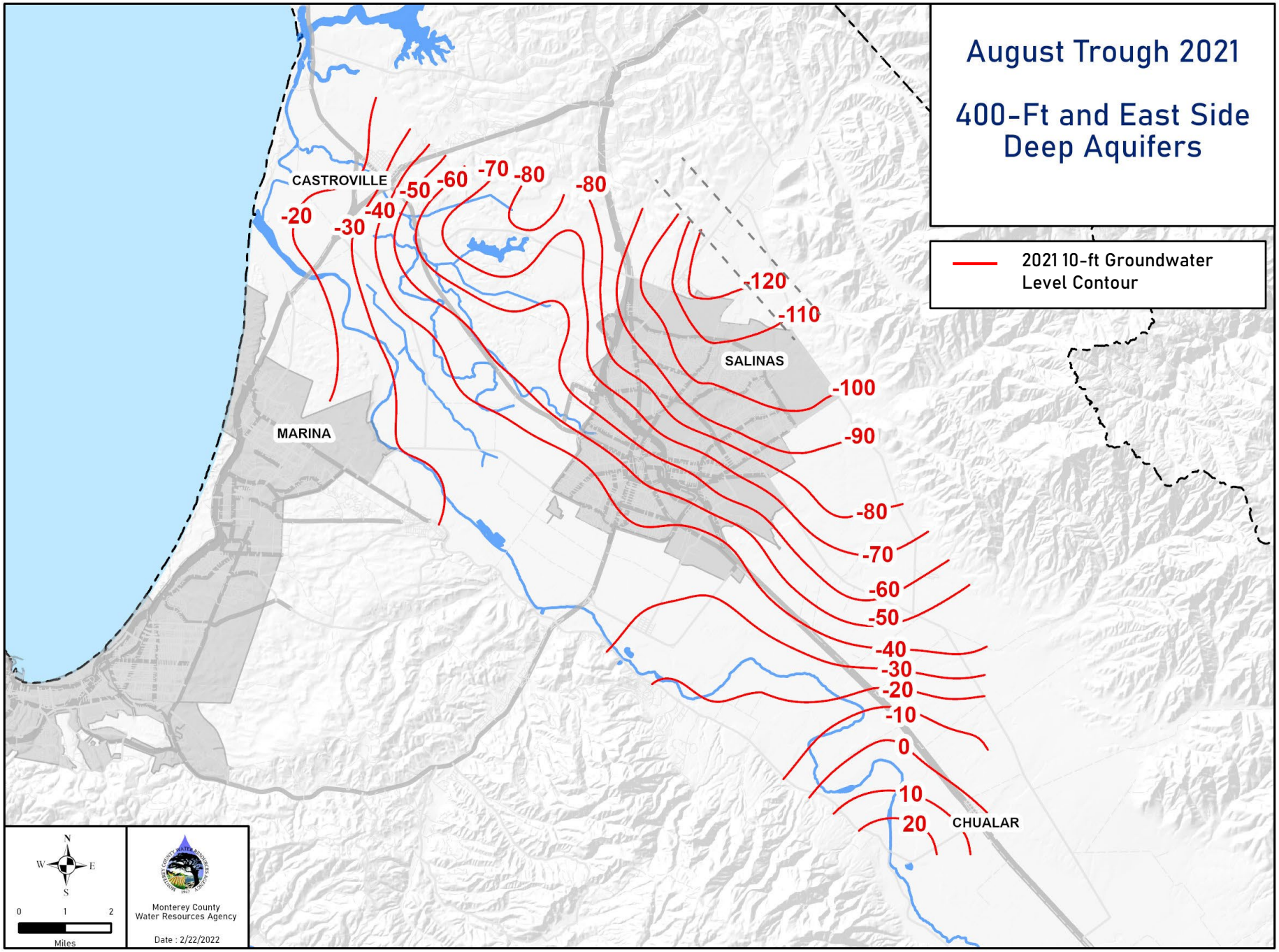
Monterey County
Water Resources Agency
Date : 2/22/2022


August Trough 2021
400-Ft and East Side Deep Aquifers
2021 10-ft Groundwater Level Contour
CASTROVILLE
SALINAS
MARINA
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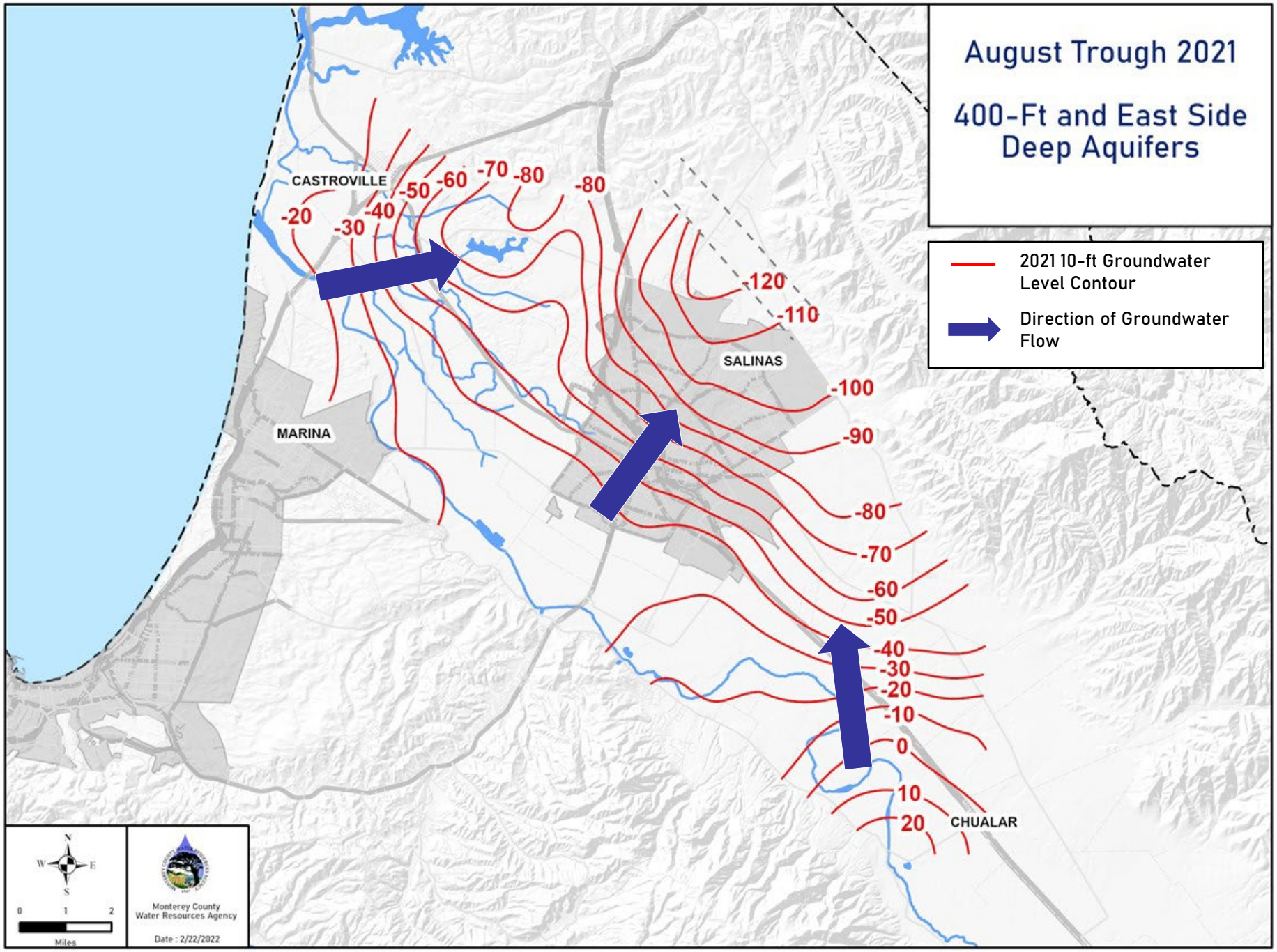
Monterey County Water Resources Agency
Date : 2/22/2022


August Trough 2021
400-Ft and East Side Deep Aquifers
2021 10-ft Groundwater Level Contour
Direction of Groundwater Flow
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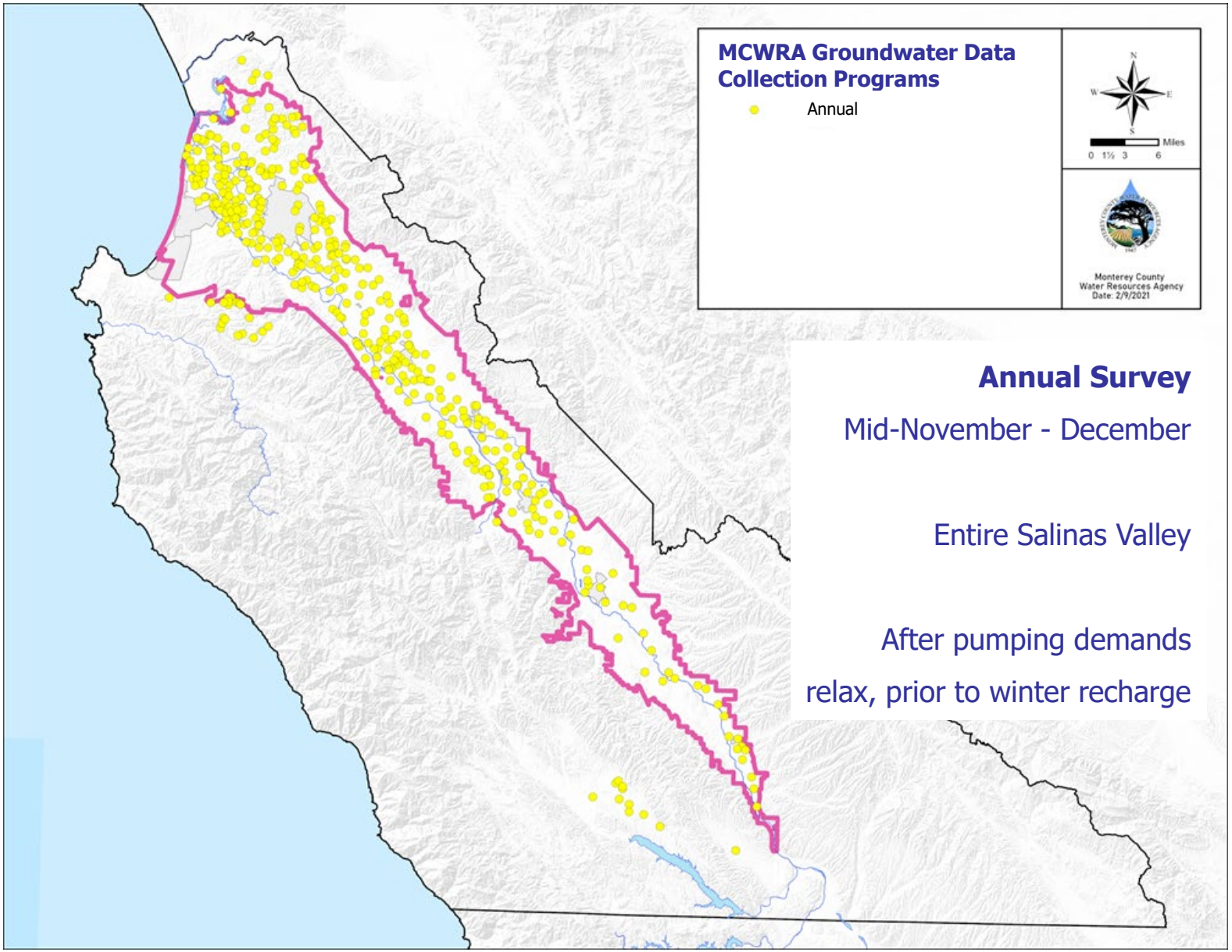
Miles
Monterey County Water Resources Agency
Date : 2/22/2022

August 2021 Summary: Changes Since 2020

- 180-Ft Aquifer, East Side Shallow
  - Decline near coast of 1-3’
  - Widening of East Side trough towards north
  - Decline in levels up valley of 1-5’

- 400-Ft Aquifer, East Side Deep
  - Decline at coast, ranging from 2-4’ near river, to -15’ around Castroville and Espinosa Lake
  - Widening of East Side trough towards north
  - Decline in levels up valley of 2-9’

Annual 2021
Groundwater Level Contours


MCWRA Groundwater Data Collection Programs
Annual
N
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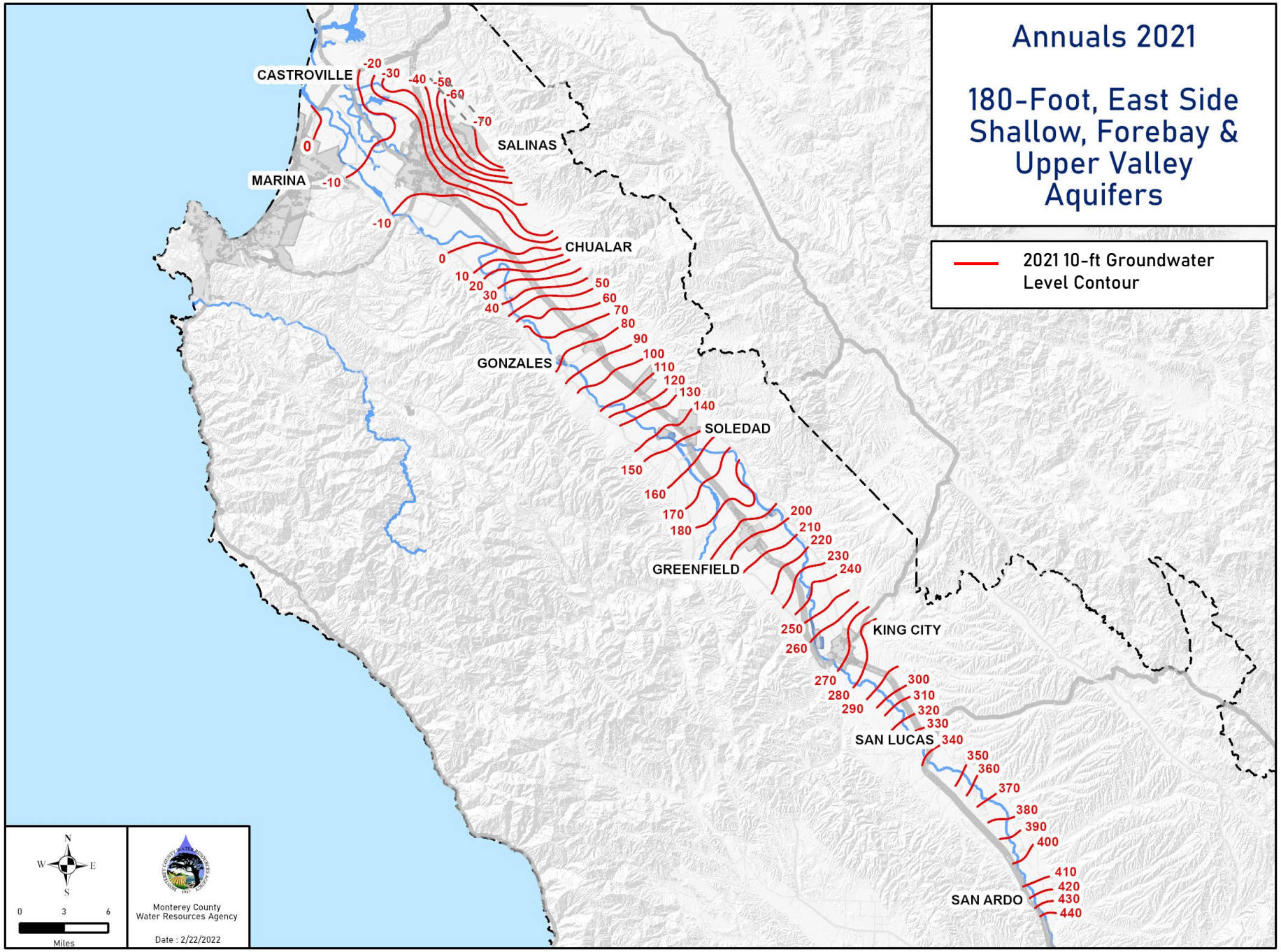
Miles
0 1½ 3 6
Monterey County Water Resources Agency
Date: 2/9/2021
Annual Survey
Mid-November - December
Entire Salinas Valley
After pumping demands relax, prior to winter recharge


Annuals 2021
180-Foot, East Side Shallow, Forebay & Upper Valley Aquifers
2021 10-ft Groundwater Level Contour
CASTROVILLE
MARINA
SALINAS
CHUALAR
GONZALES
SOLEDAD
GREENFIELD
KING CITY
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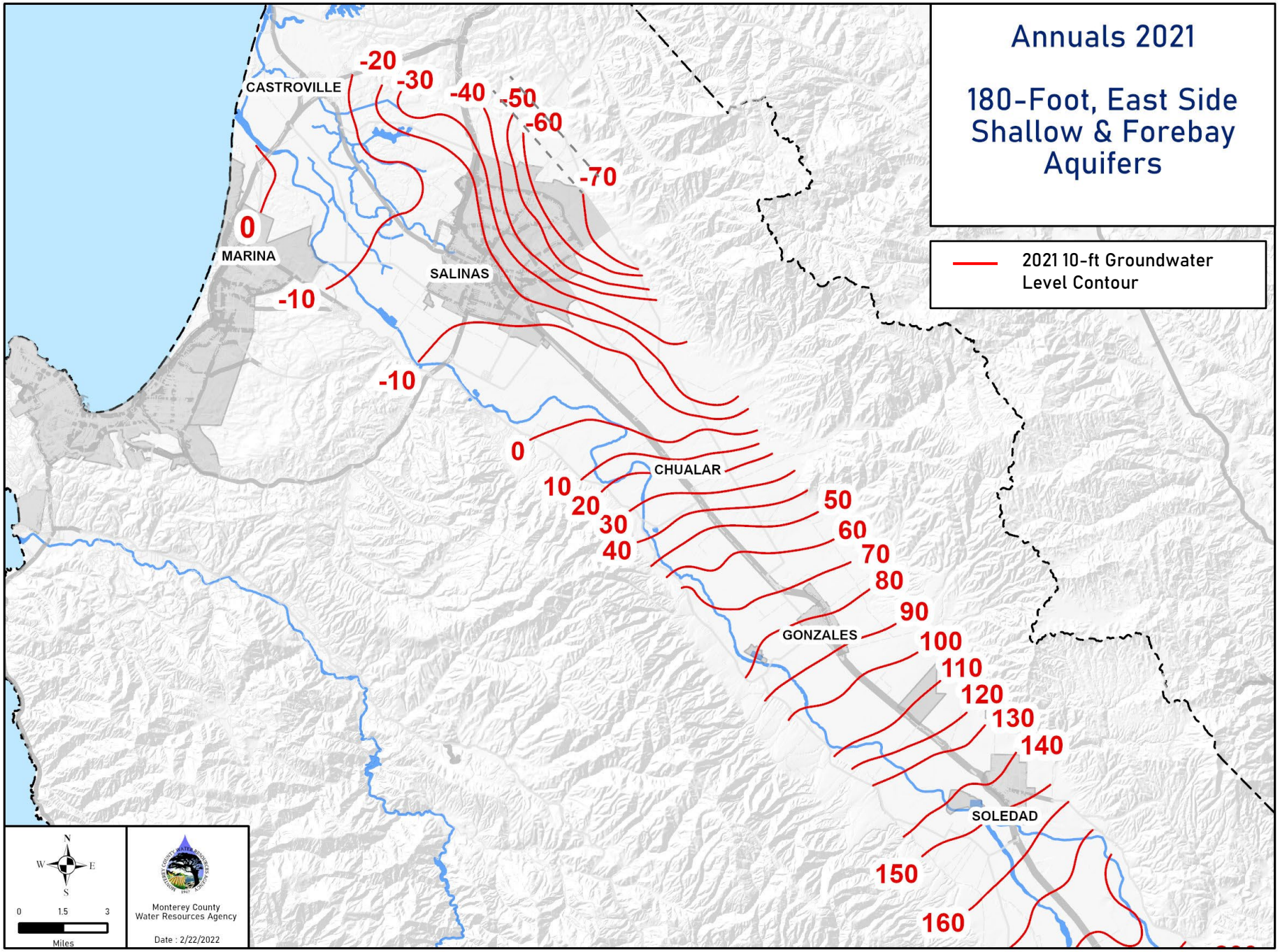
Miles
Monterey County Water Resources Agency
Date : 2/22/2022


Annuals 2021
180-Foot, East Side Shallow & Forebay Aquifers
2021 10-ft Groundwater Level Contour
CASTROVILLE
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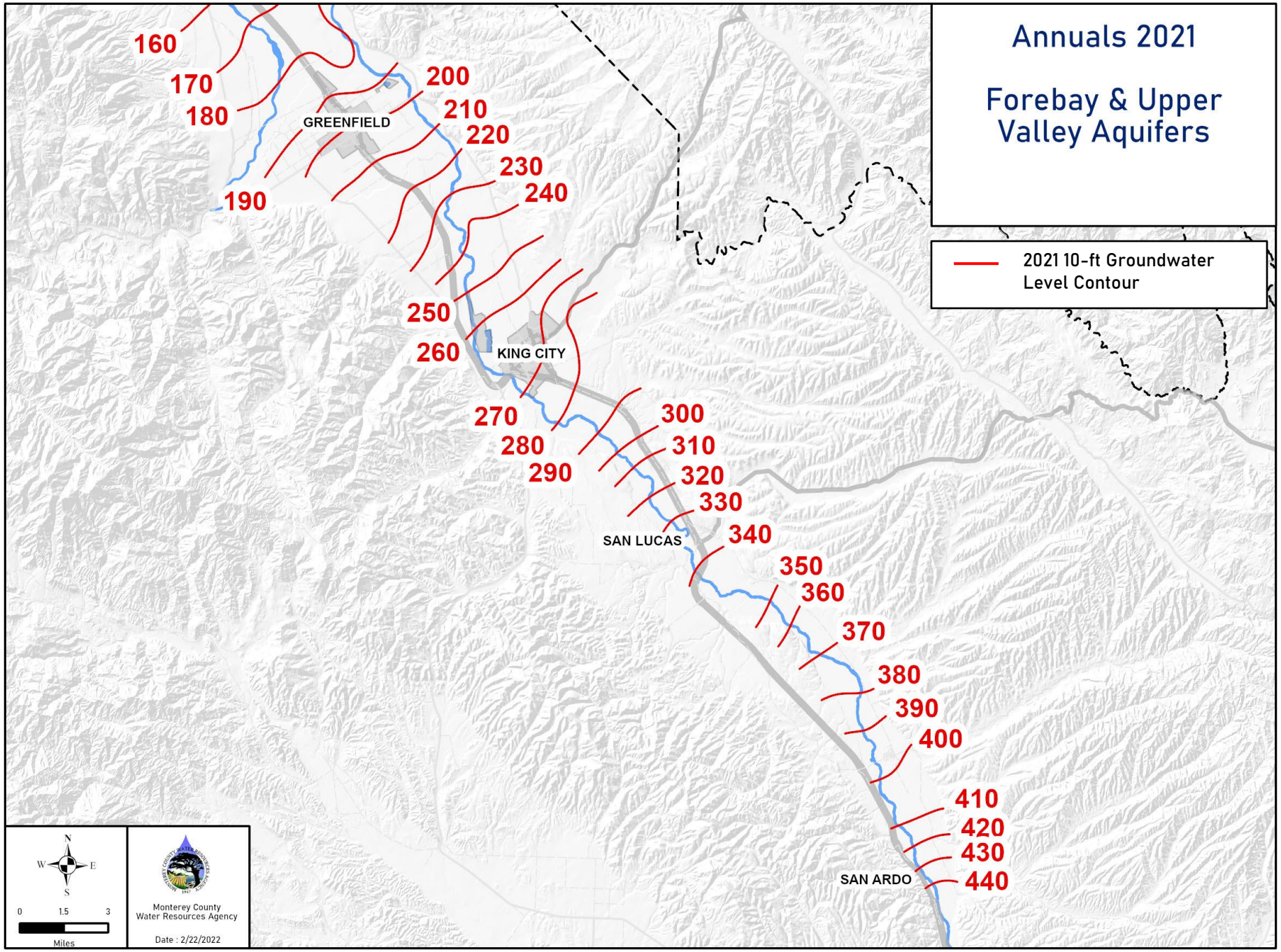
Miles
Monterey County Water Resources Agency
Date : 2/22/2022


Annuals 2021
Forebay & Upper Valley Aquifers
2021 10-ft Groundwater Level Contour
160
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GREENFIELD
KING CITY
SAN LUCAS
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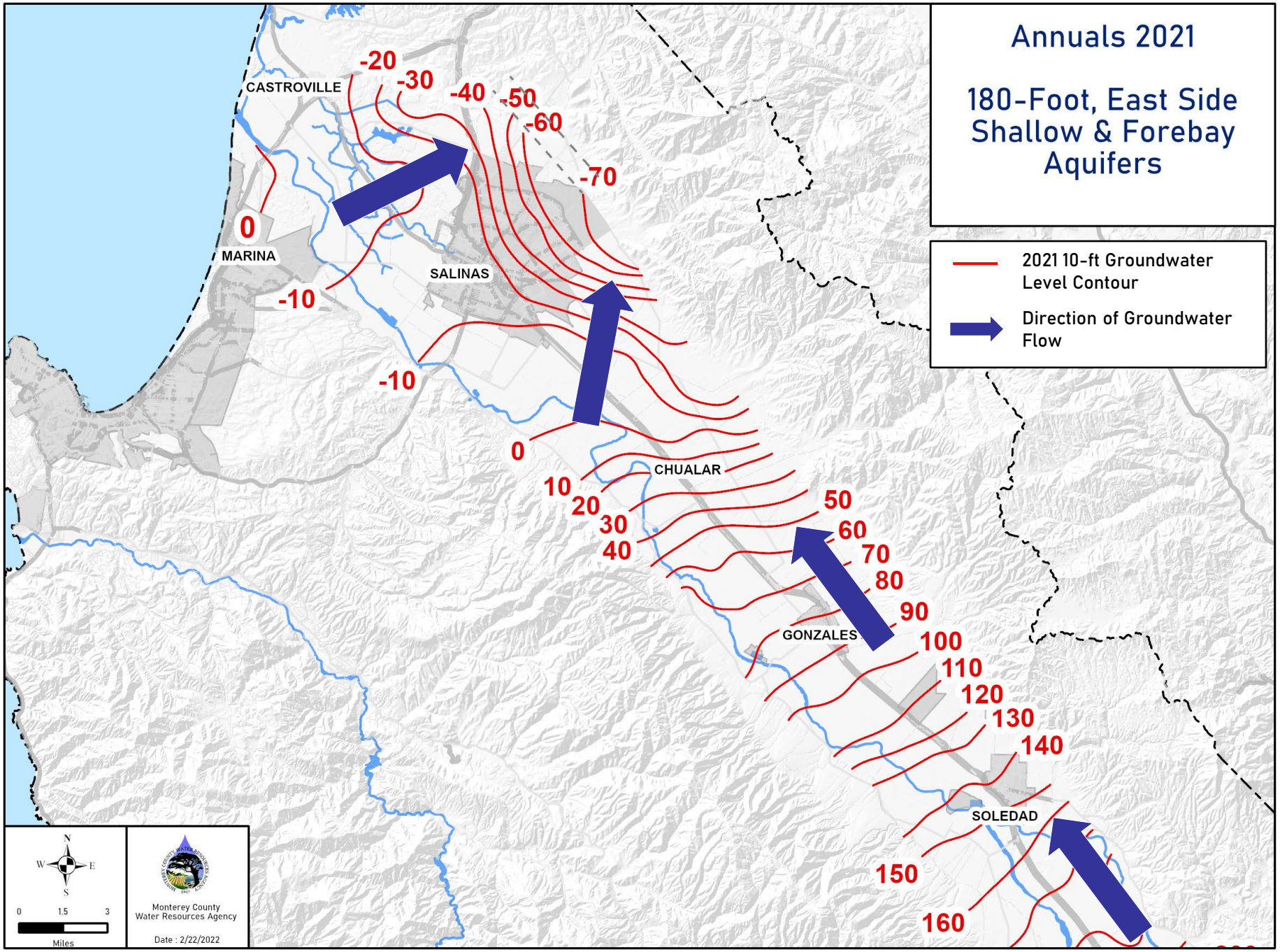
Miles
Monterey County Water Resources Agency
Date : 2/22/2022


Annuals 2021
180-Foot, East Side Shallow & Forebay Aquifers
2021 10-ft Groundwater Level Contour
Direction of Groundwater Flow
CASTROVILLE
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SALINAS
CHUALAR
GONZALES
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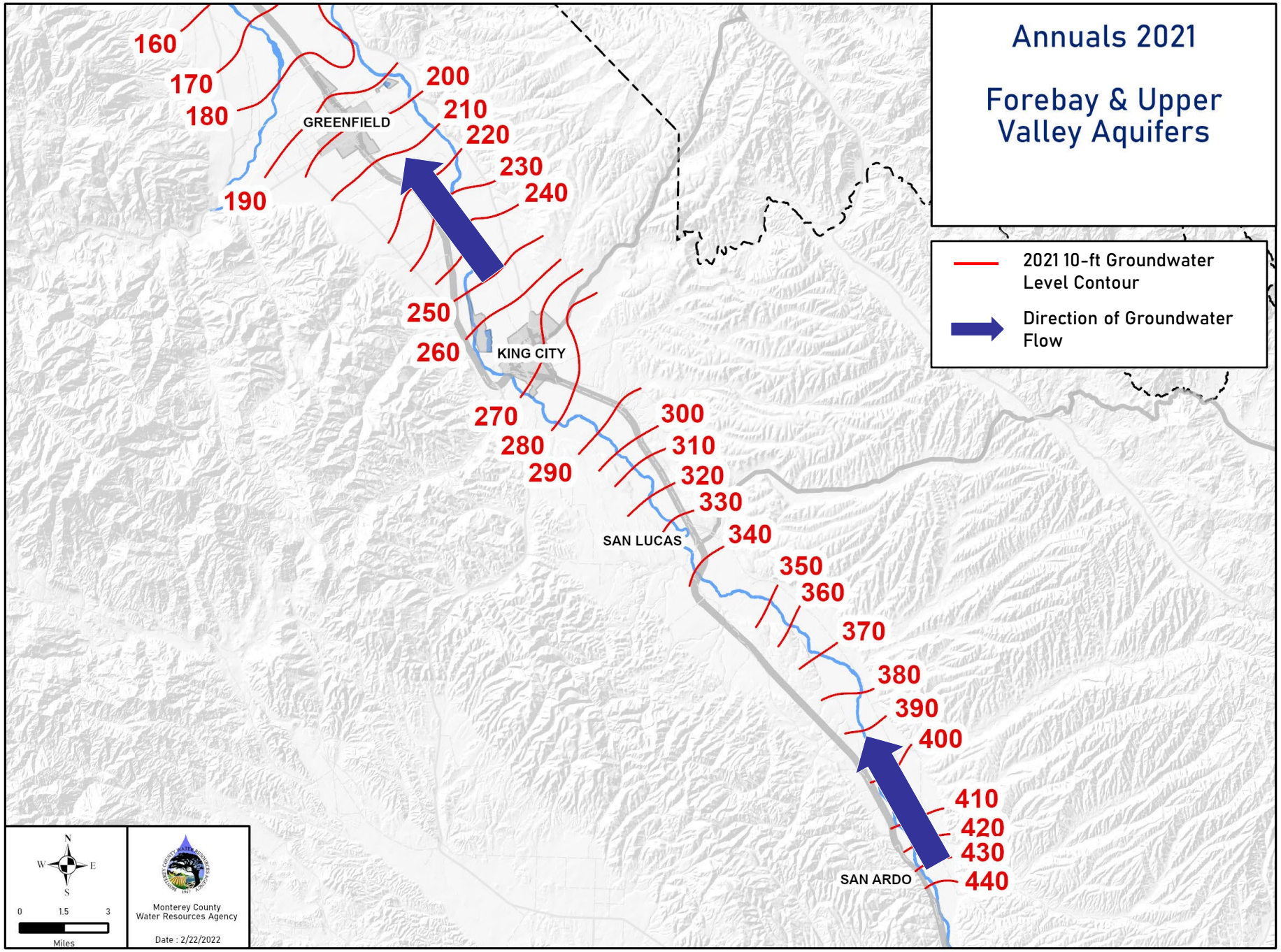
Monterey County Water Resources Agency
Date : 2/22/2022


Annuals 2021
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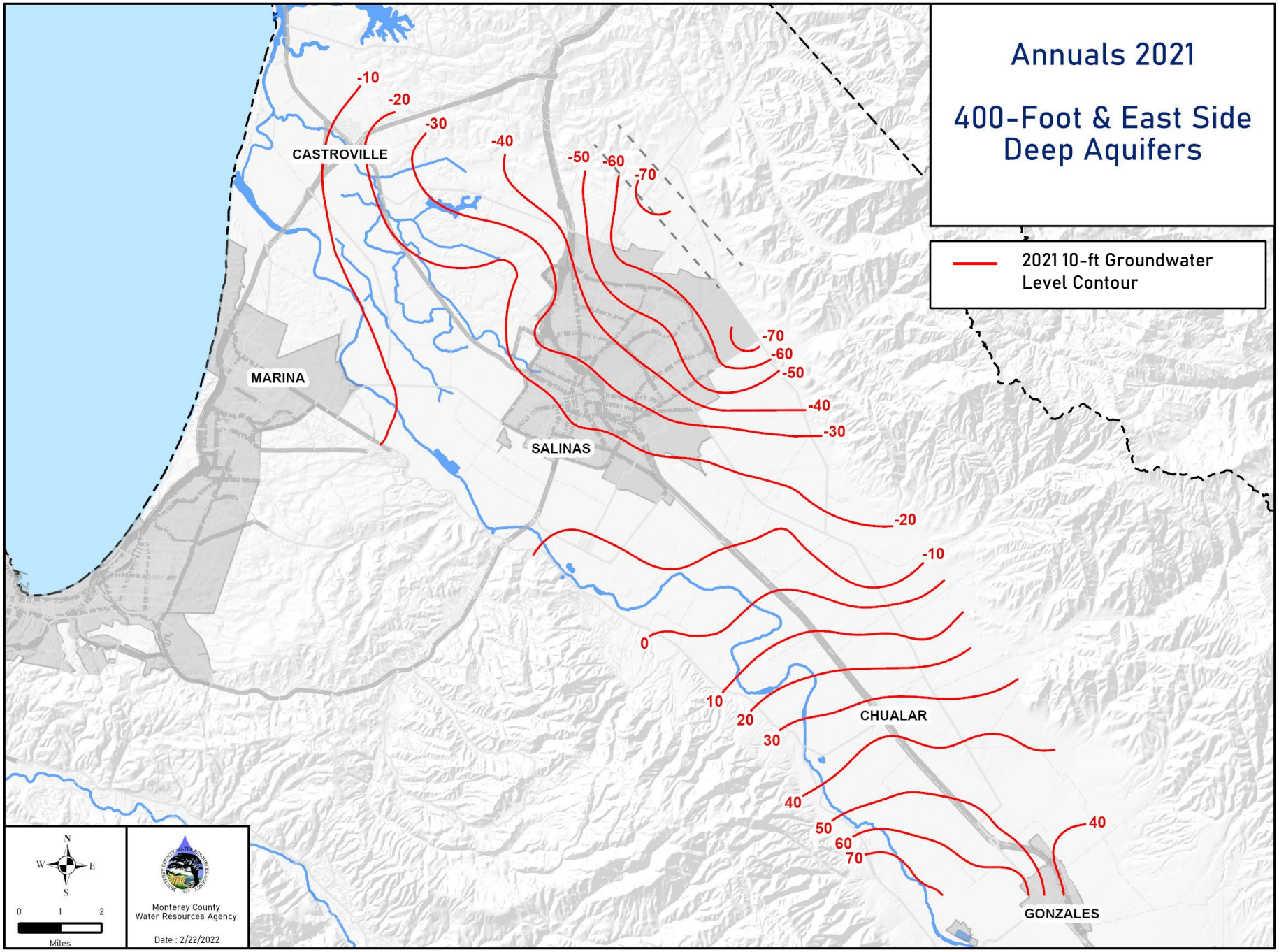
Miles
Monterey County Water Resources Agency
Date : 2/22/2022


Annuals 2021
400-Foot & East Side Deep Aquifers
2021 10-ft Groundwater Level Contour
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CHUALAR
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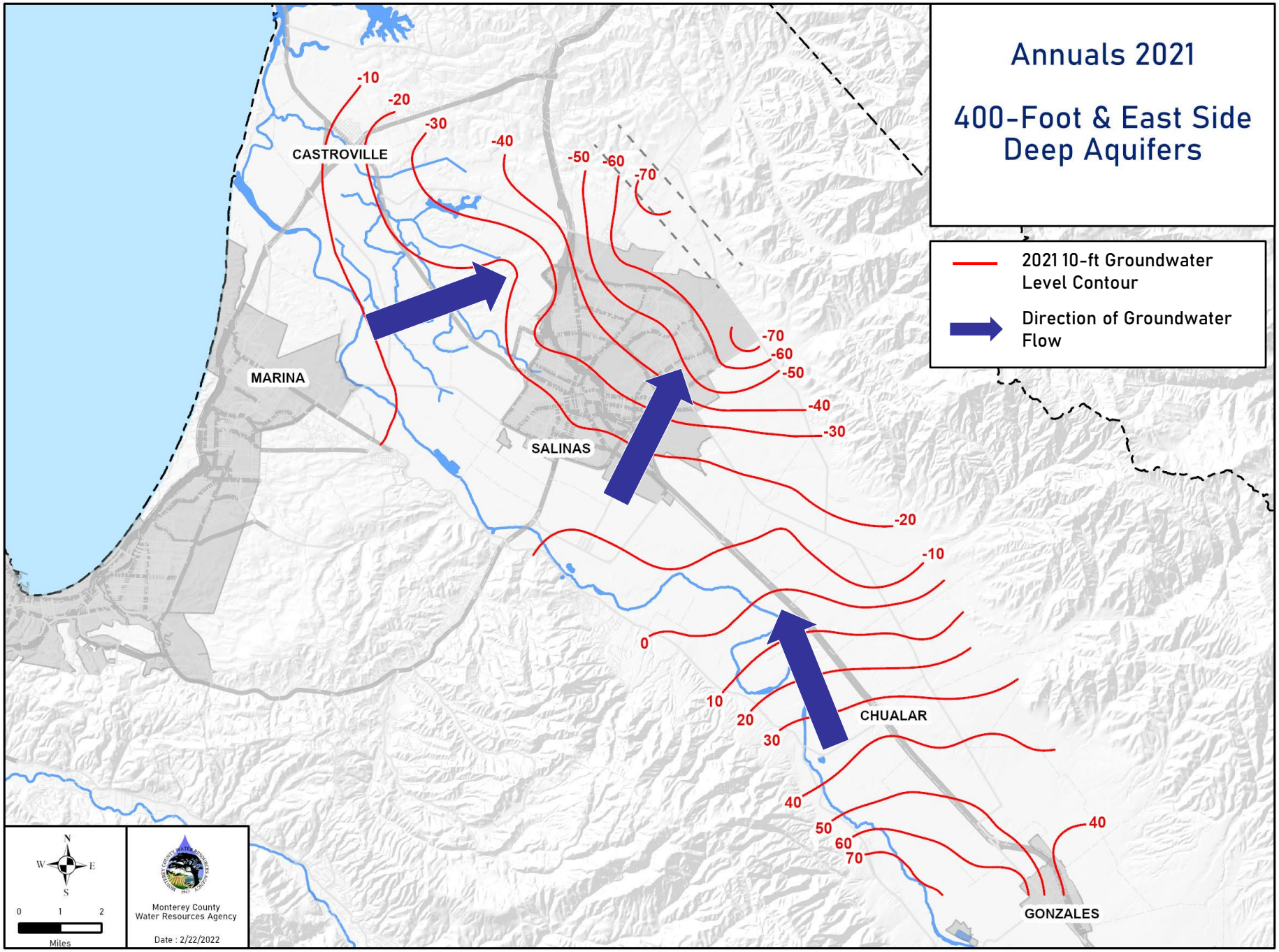
Monterey County Water Resources Agency
Date : 2/22/2022


Annuals 2021
400-Foot & East Side Deep Aquifers
2021 10-ft Groundwater Level Contour
Direction of Groundwater Flow
CASTROVILLE
MARINA
SALINAS
CHUALAR
GONZALES
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Miles
Monterey County Water Resources Agency
Date : 2/22/2022

Annual 2021 Summary: Changes Since 2020

- 180-Ft Aquifer, East Side Shallow, Forebay, Upper Valley
  - 1-2’ decline near coast
  - Expansion of East Side trough to north
  - Up Valley, average 3’ decline
  - South of King City, levels similar to last year

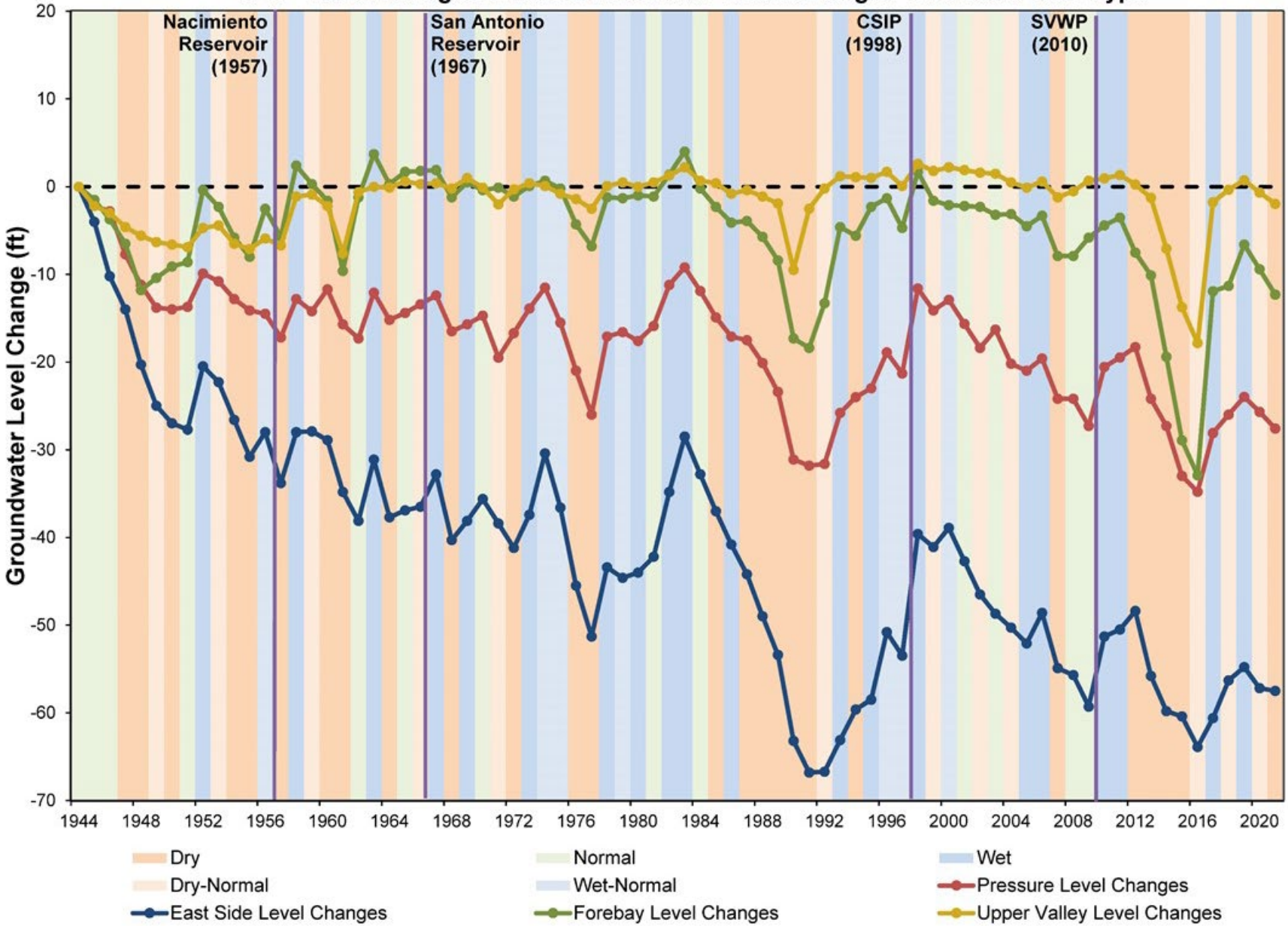
- 400- Ft Aquifer, East Side Deep
  - 1’ decline near coast
  - Deepening of East Side trough
  - Decline in levels up valley, more in 400-Ft Aquifer than in East Side

Cumulative Change Chart

- Cumulative summary of the average annual change, for each subarea
- Groundwater storage changes and trends since 1944

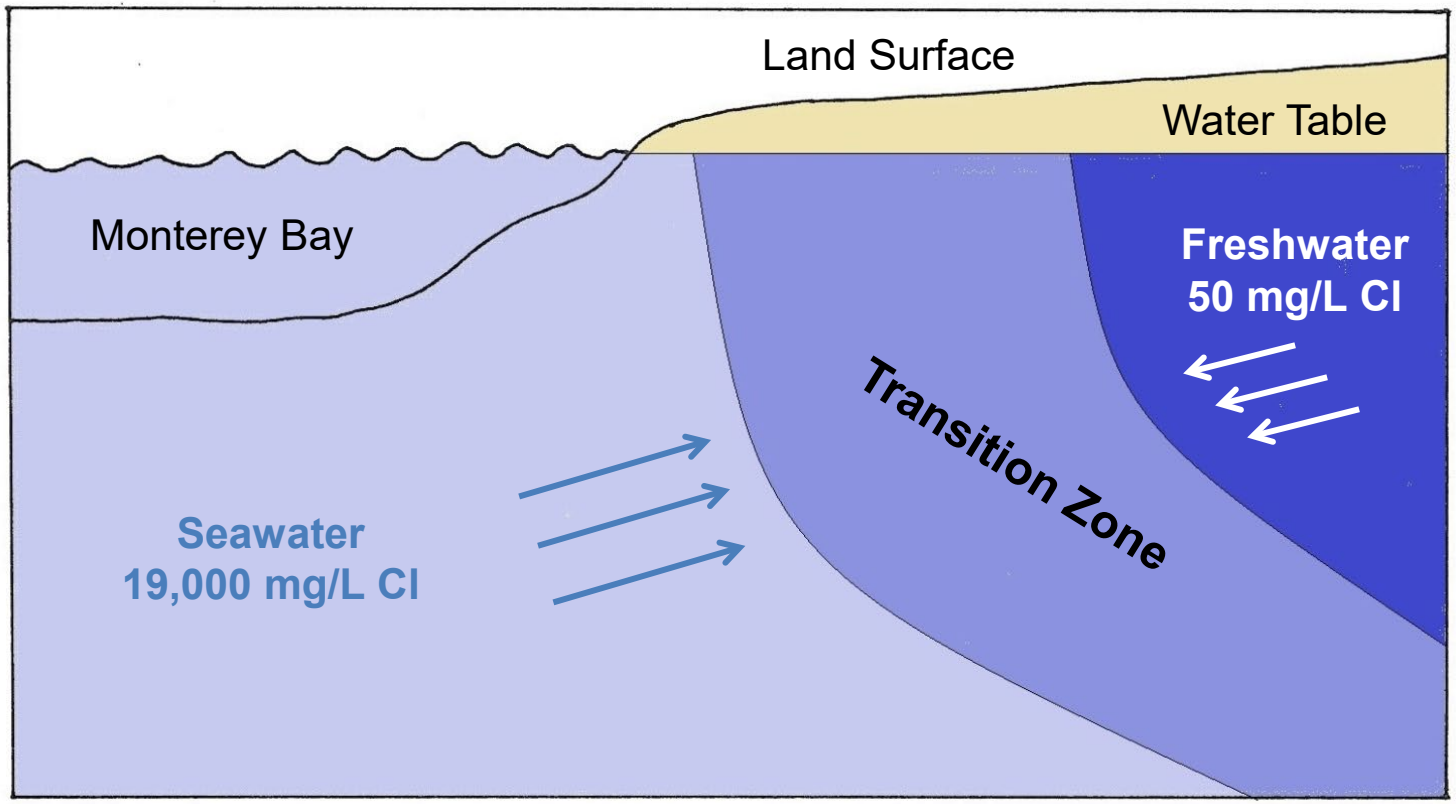
Salinas Valley Groundwater Level Changes

1944 - 2021 Average Annual Groundwater Level Changes with Water Year Type



2021
Seawater Intrusion Contours

Seawater Intrusion – Transition Zone

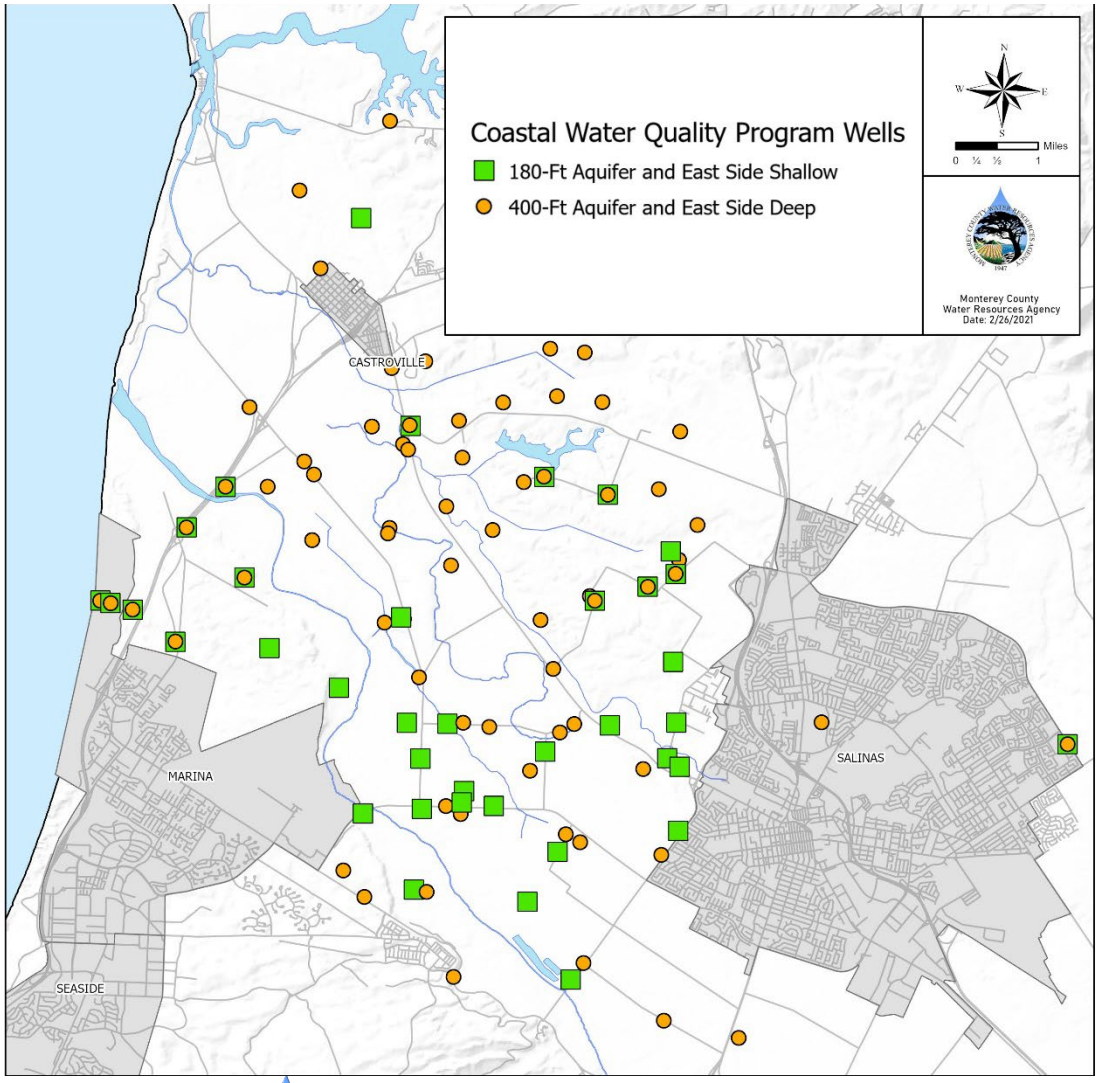


Seawater Intrusion – Monitoring Program

Groundwater Wells

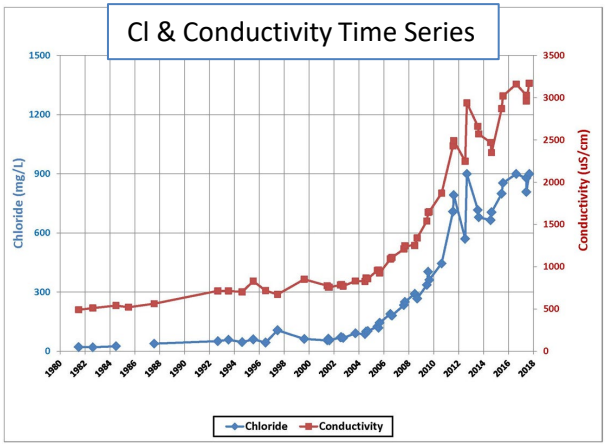
- Ag & Urban wells
- Dedicated monitoring wells
- Analyzed for Ag Waiver Panel

(ELAP #1395)

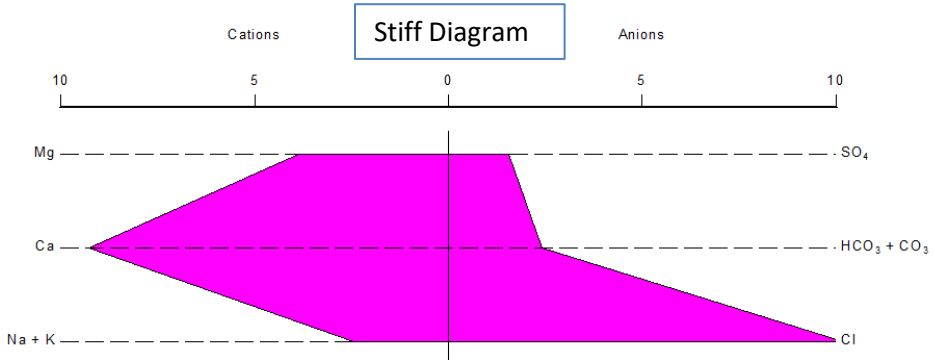


Seawater Intrusion – Data Analysis

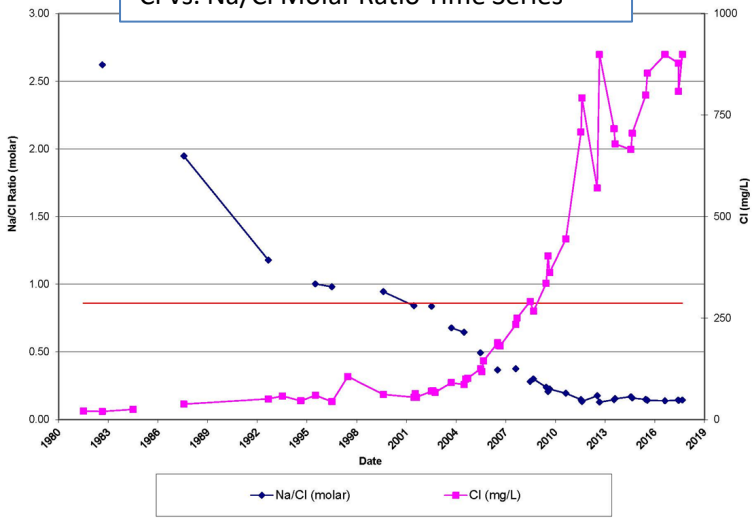
Cl & Conductivity Time Series



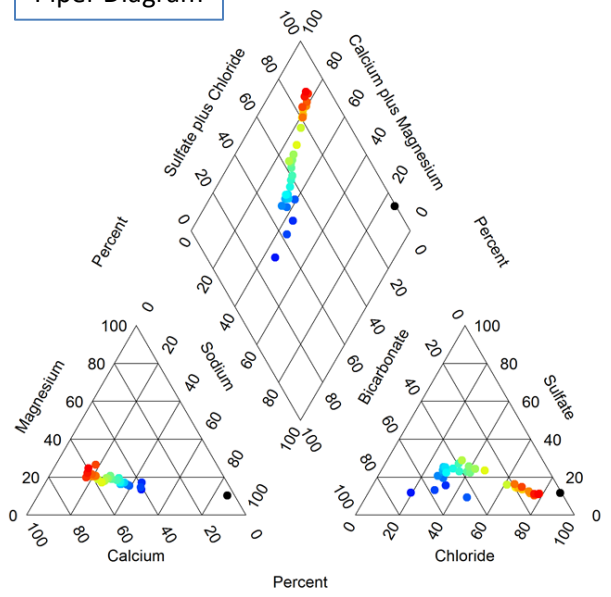
Stiff Diagram



Cl vs. Na/Cl Molar Ratio Time Series



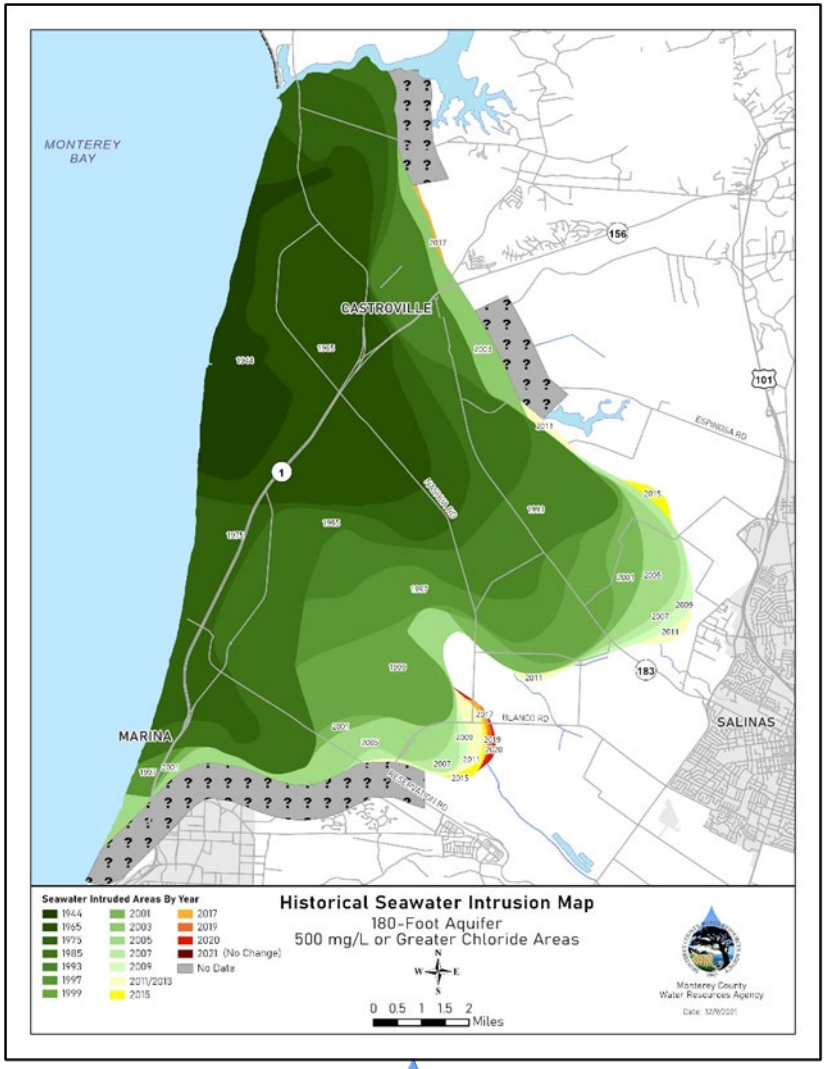
Piper Diagram



Seawater Intrusion – Data Analysis

- Data Development Process
  - Water Quality
  - Well Construction
  - Well Pumping Data
  - Groundwater Level Contours

2021 180-Foot Aquifer
500 mg/L Chloride Areas



2021 180-Foot Aquifer
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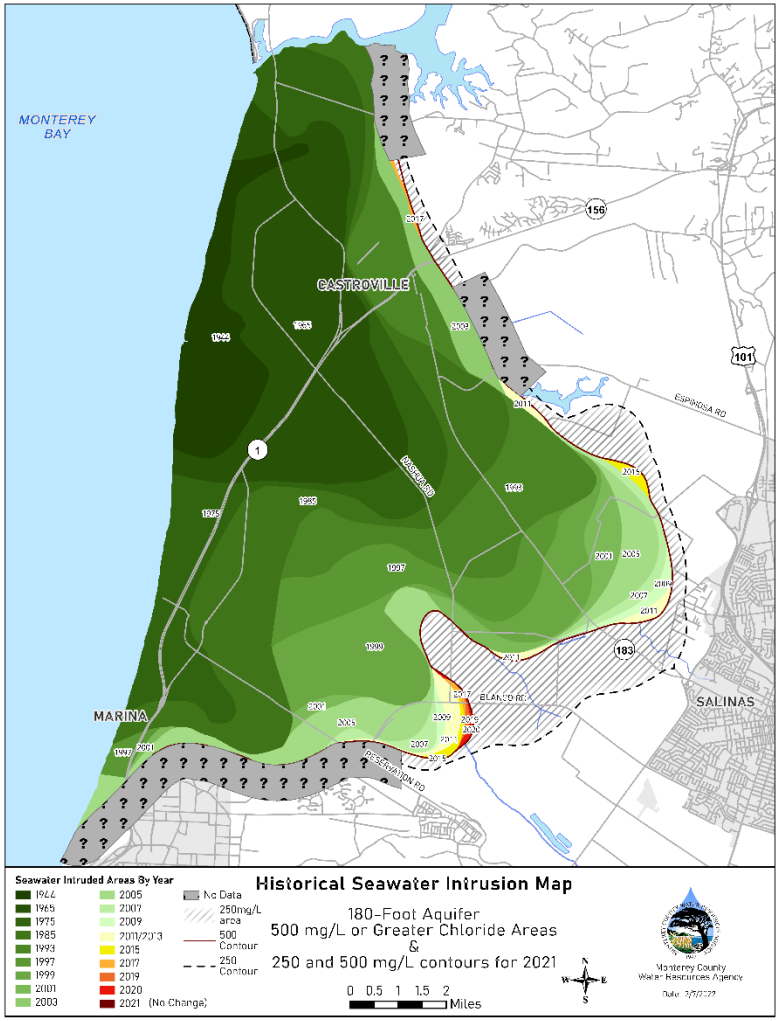
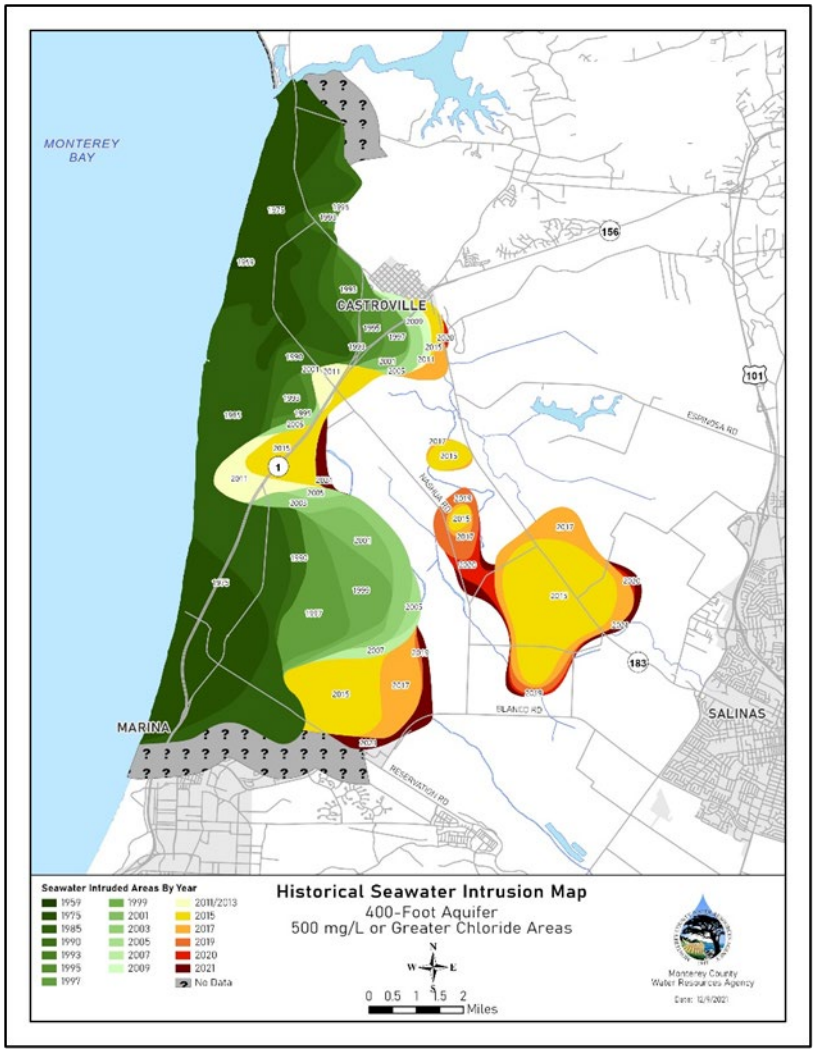
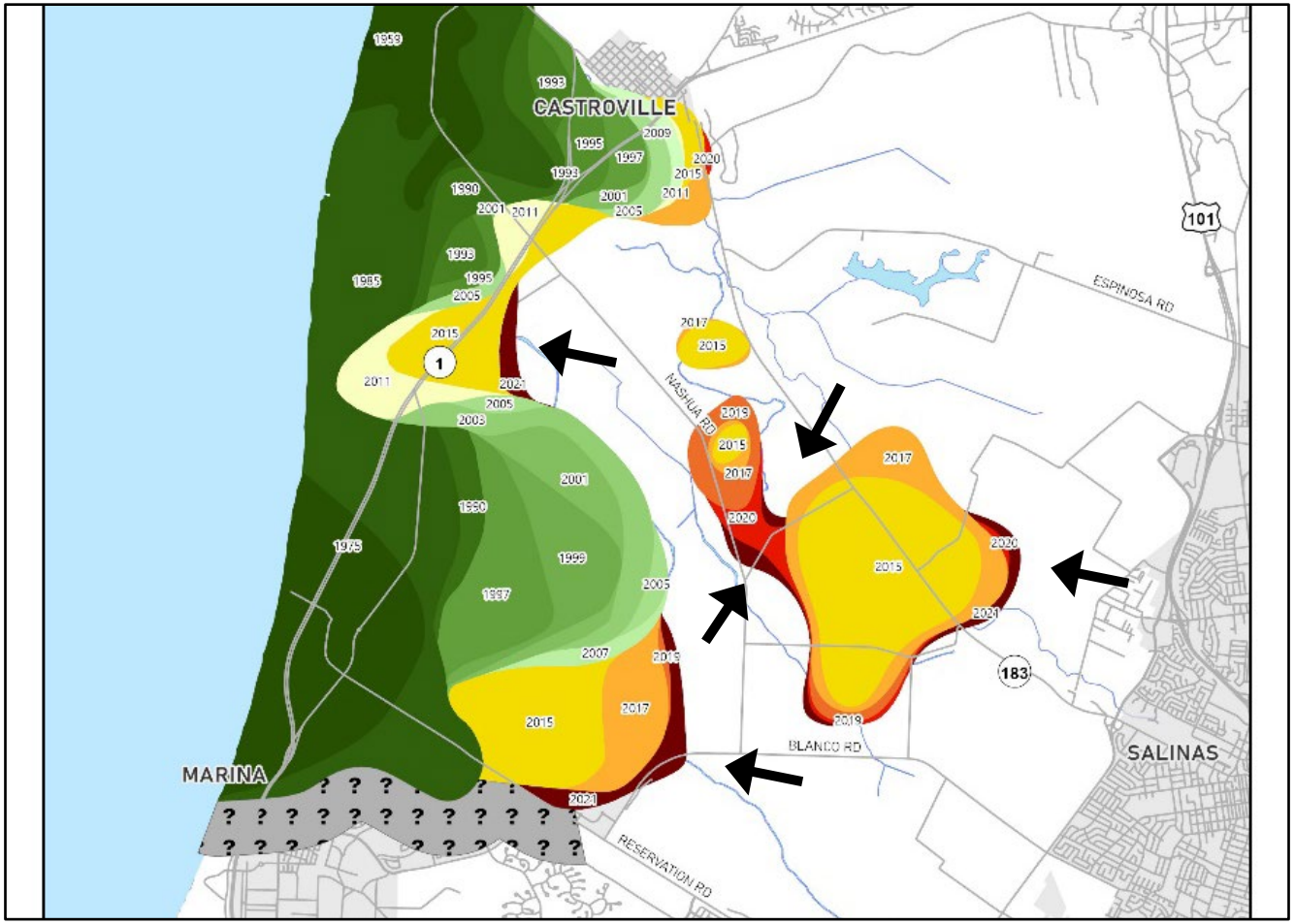


2021 400-Foot Aquifer
500 mg/L Chloride Areas



2021 400-Foot Aquifer
500 mg/L Chloride Areas



2021 400-Foot Aquifer
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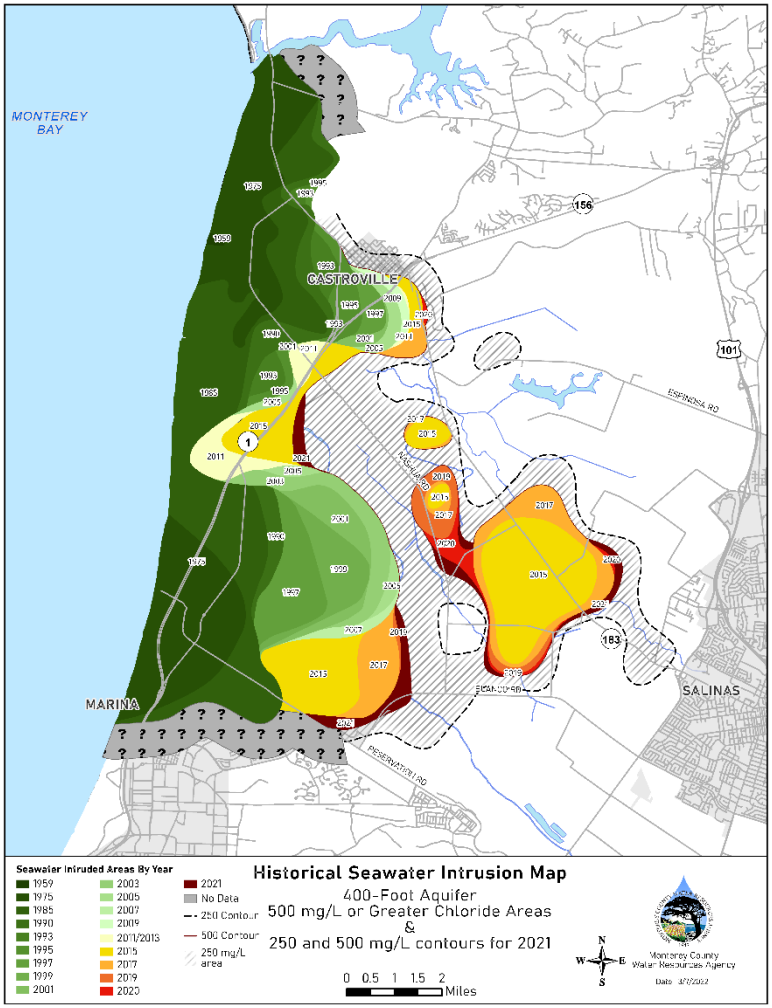


Conclusion

180-Ft Aquifer Contours

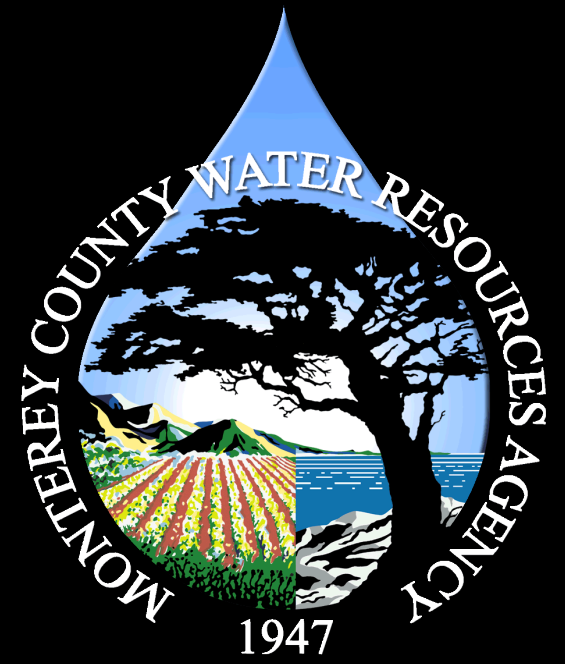
- No Advancement from 2020 Contours

400-Ft Aquifer Contours

- Some Lateral Advancement
- Expansion of the Large Cl "Island" Continues
- Expansion at the "Arm" connecting Middle and Large Islands

Today's Action

Consider receiving the
2021 Groundwater Level and
Seawater Intrusion Contour Maps


MONTEREY COUNTY WATER RESOURCES AGENCY
1947