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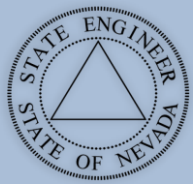
# GROUNDWATER MANAGEMENT IN THE LOWER WHITE RIVER FLOW SYSTEM, NEVADA

TIMBER WEISS, P.E.

NEVADA DIVISION OF WATER RESOURCES

ASSOCIATION OF WESTERN STATE ENGINEERS ANNUAL MEETING

OCTOBER, 2019



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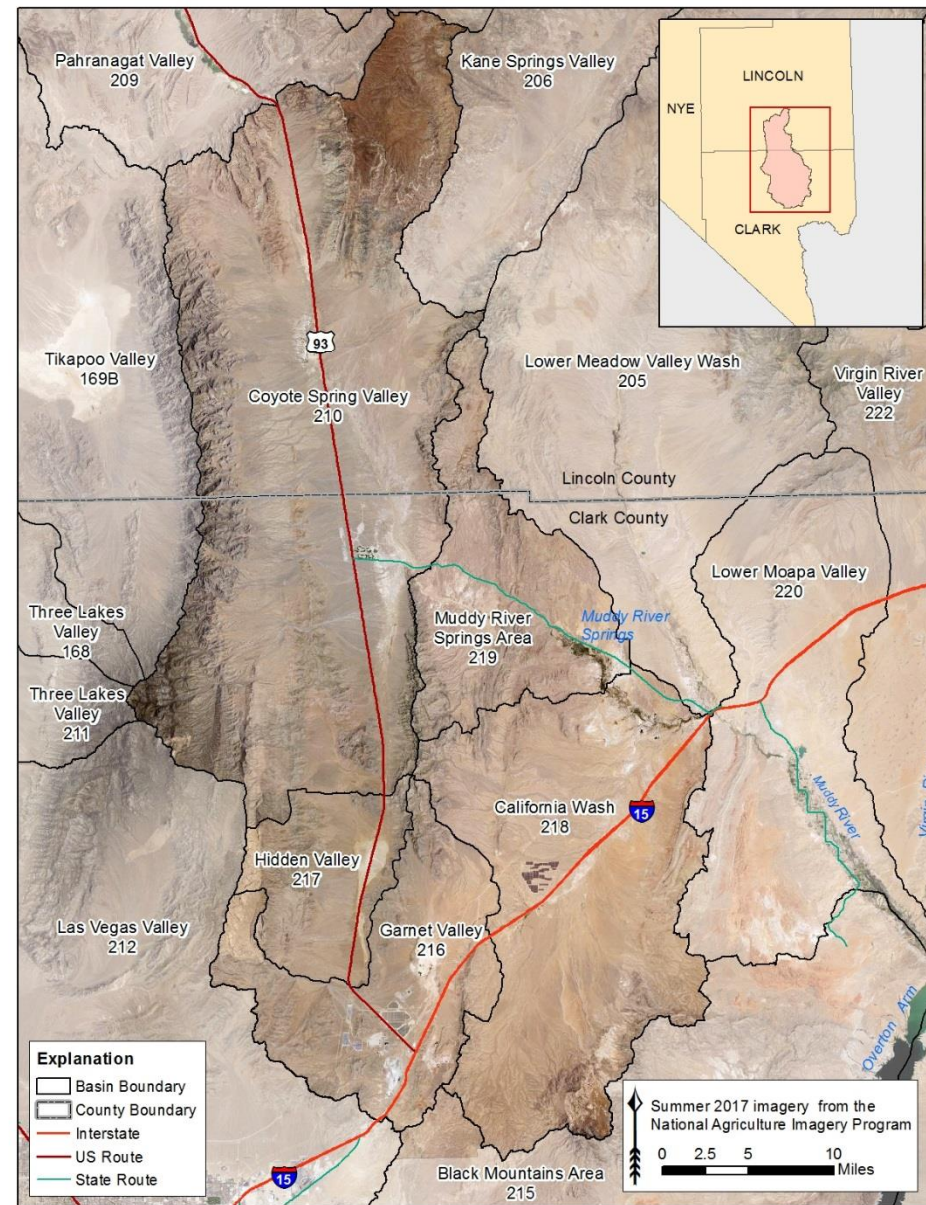
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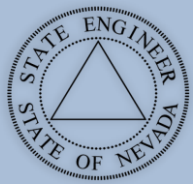
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## LWRFS

- 5+ BASINS
- UNDERLAIN BY REGIONAL CARBONATE AQUIFER
- DISCHARGE TO SPRINGS AT THE HEADWATER OF THE MUDDY RIVER
- ~40,000 AF GROUNDWATER APPROPRIATIONS
- MUDDY SPRINGS IS HABITAT TO THE FEDERALLY ENDANGERED MOAPA DACE







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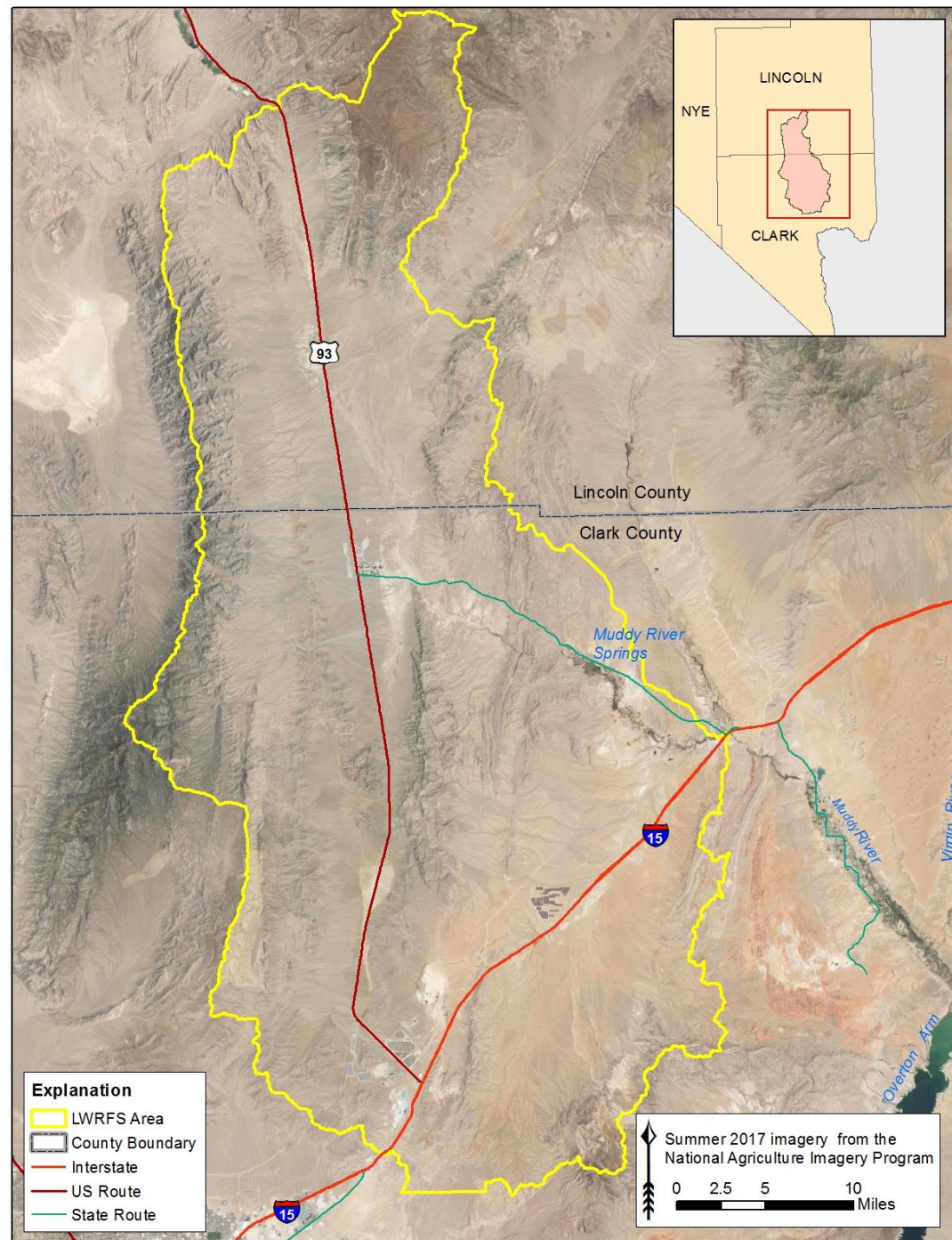
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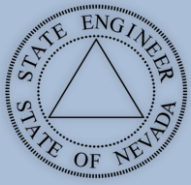
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## LWRFS

- APPLICATIONS FILED FOR ~400,000 AF IN THE 1990S.
- STATE ENGINEER'S ORDER 1169 IN 2002 REQUIRED APPLICANTS TO CONDUCT AN AQUIFER TEST TO EVALUATE WATER AVAILABILITY





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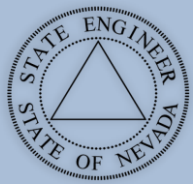
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# ORDER 1169 PUMPING TEST

- 2-YEAR TEST (2010-2012) OF 5,300 AFA IN COYOTE SPRING VALLEY
- DAILY MONITORING OF WELLS AND SPRINGS OVER 1,100 SQUARE MILES
- INTERPRETIVE REPORTS FILED BY ALL PARTICIPANTS (WATER RIGHT APPLICANTS)





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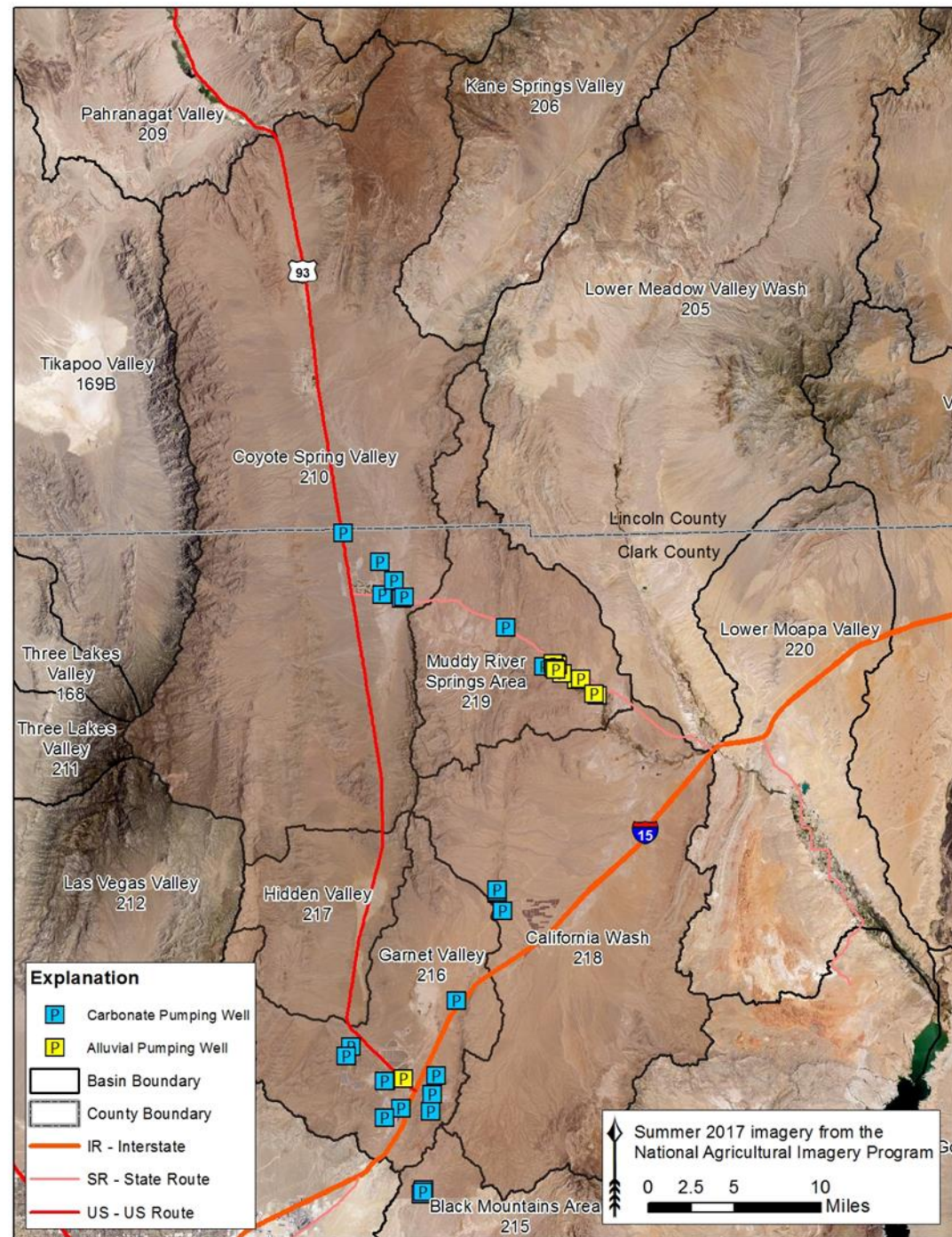
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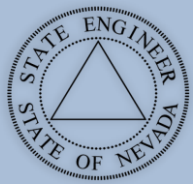


# PUMPING AREAS

- 5,300 AFA IN COYOTE SPRINGS VALLEY
- 10,200 AFA TOTAL CARBONATE PUMPING
- 3,700 AFA ALLUVIAL PUMPING







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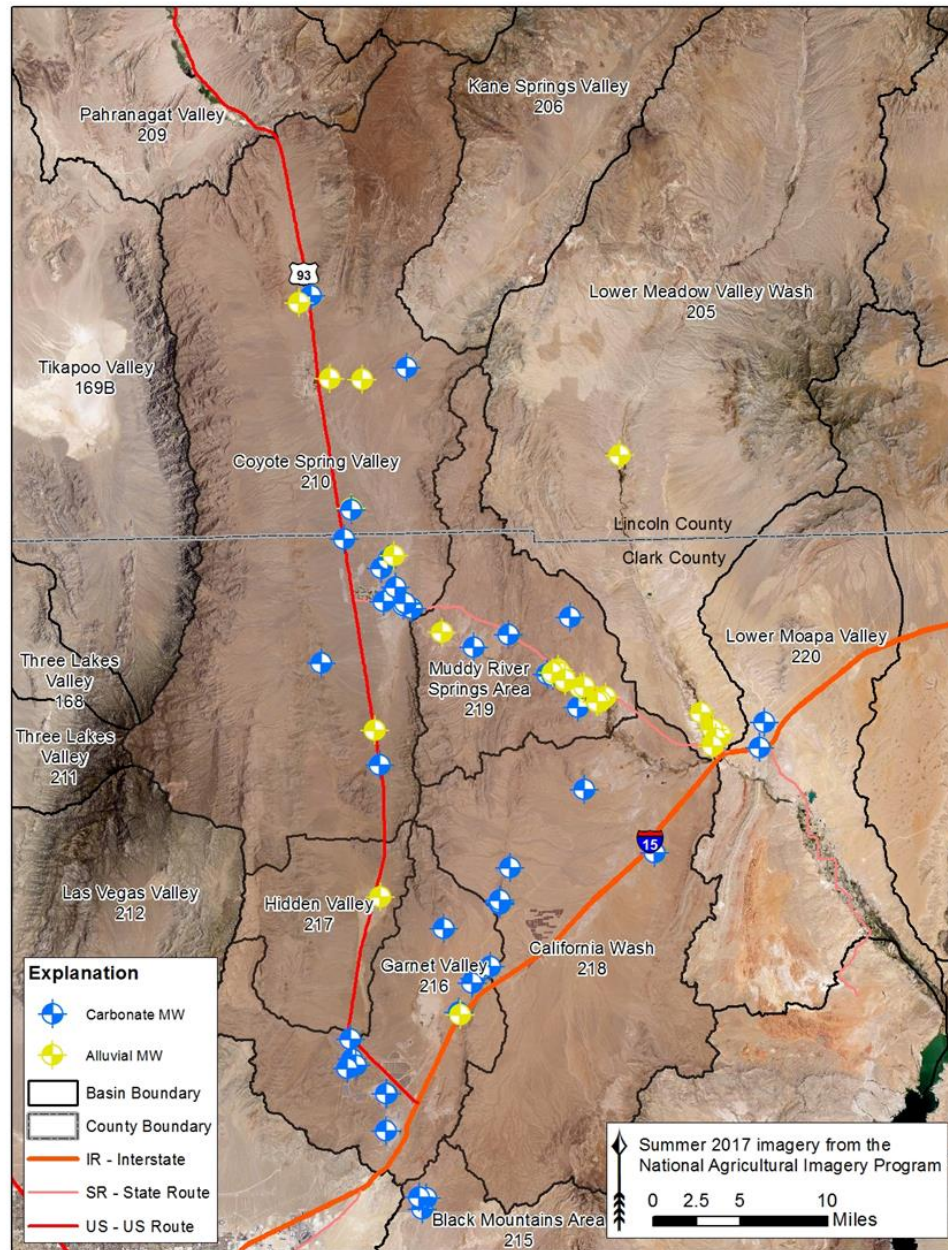
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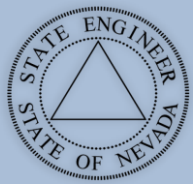
# MONITORING SITES

- 81 MONITORING  
WELLS

■ CARBONATE

■ ALLUVIAL

- 11 SPRINGS AND  
STREAMFLOW  
MONITORING  
SITES



# Order 1169 Pumping Test

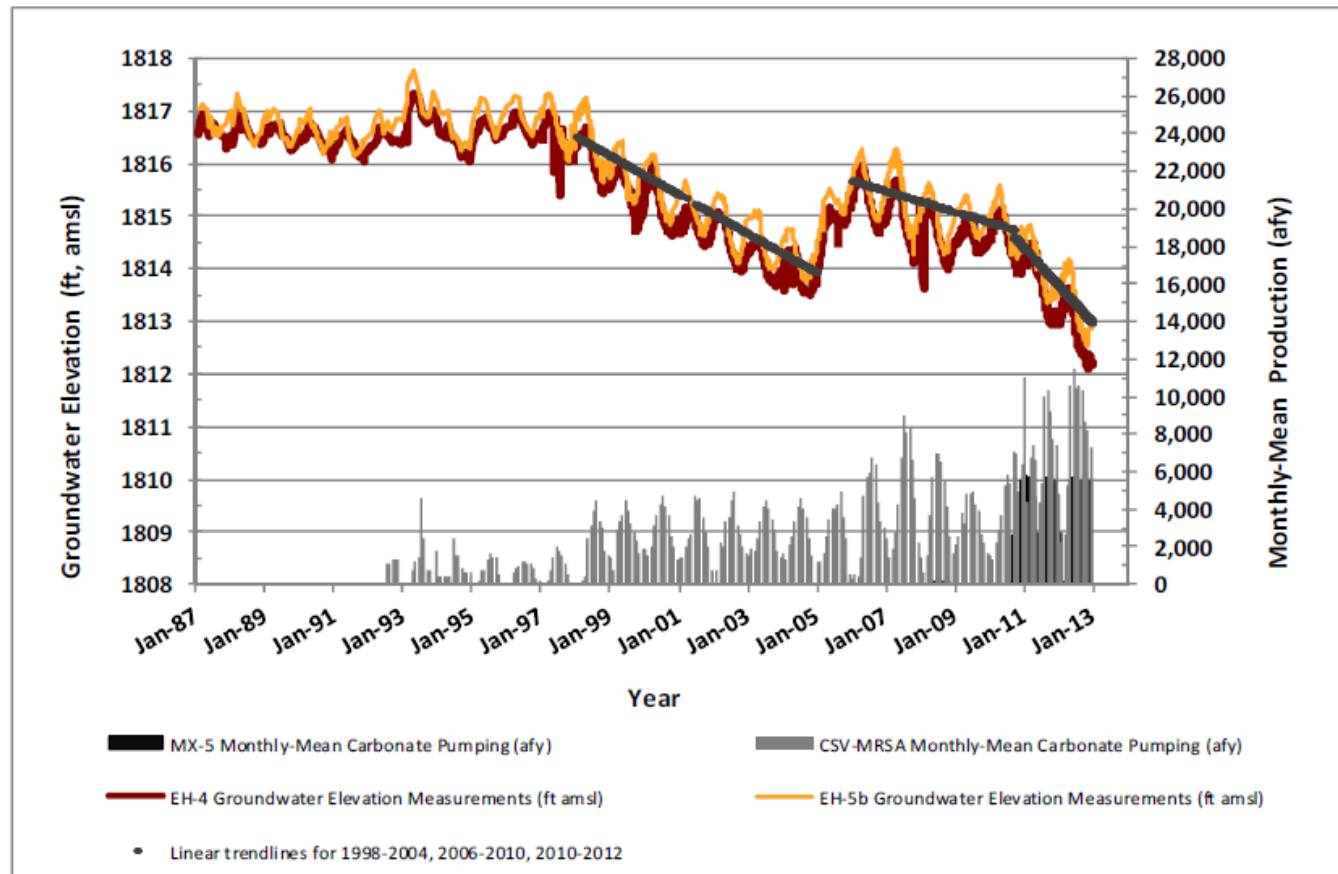
What did we learn . . .

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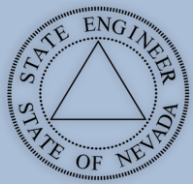
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**Figure 1.2.** Groundwater elevations in carbonate monitoring wells EH-4 and EH-5b in the MRSA and monthly-mean production rates in the carbonate-rock aquifer at production well MX-5 and in the combined CSV and MRSA area from 1987 to 2012. Linear trendlines are shown for 1998-2004, 2006-2010, and 2010-2012.



# Order 1169 Pumping Test

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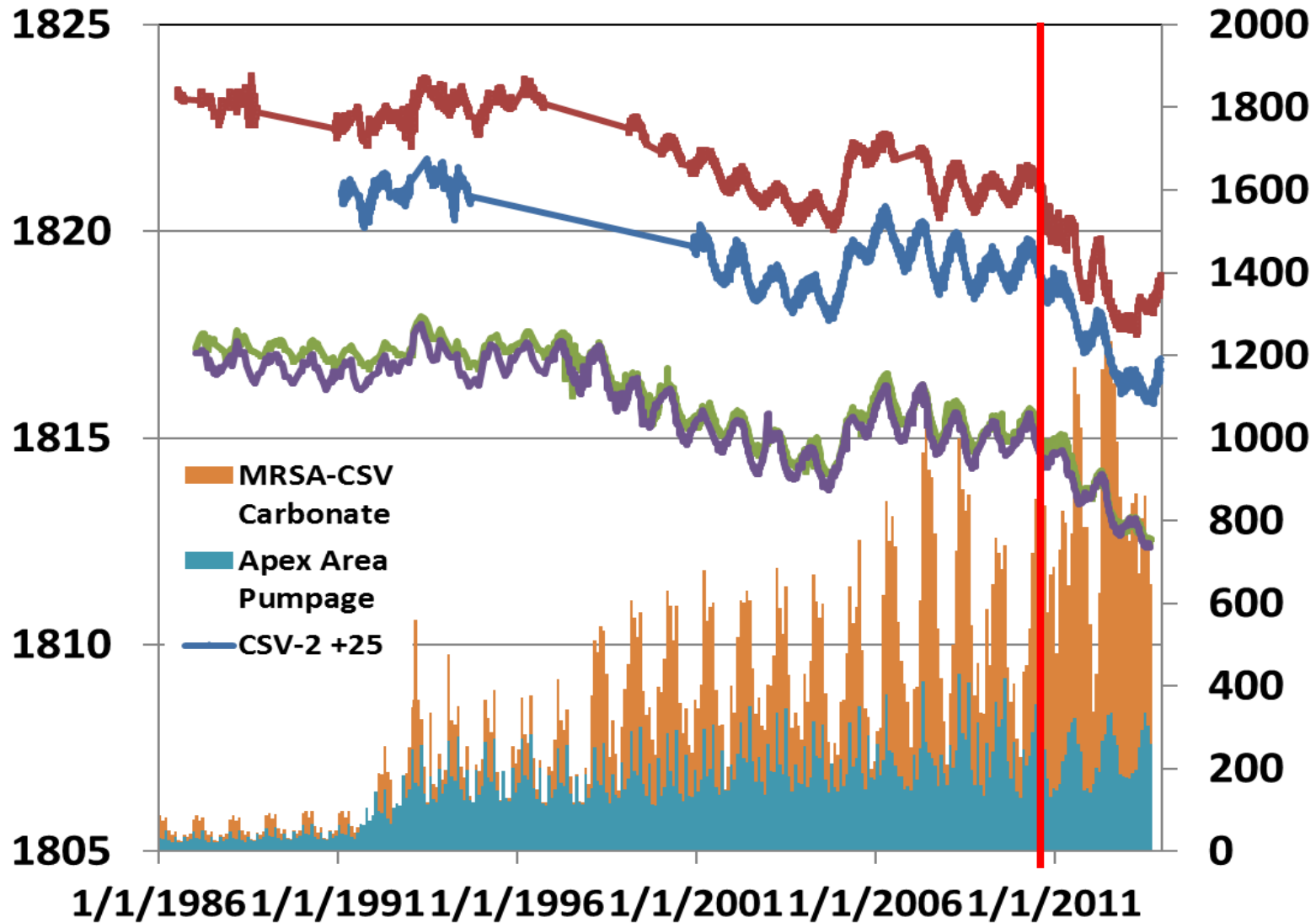
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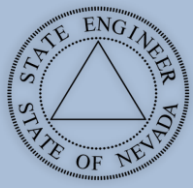
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# CORRELATION BETWEEN GROUNDWATER LEVELS AND SPRING FLOWS

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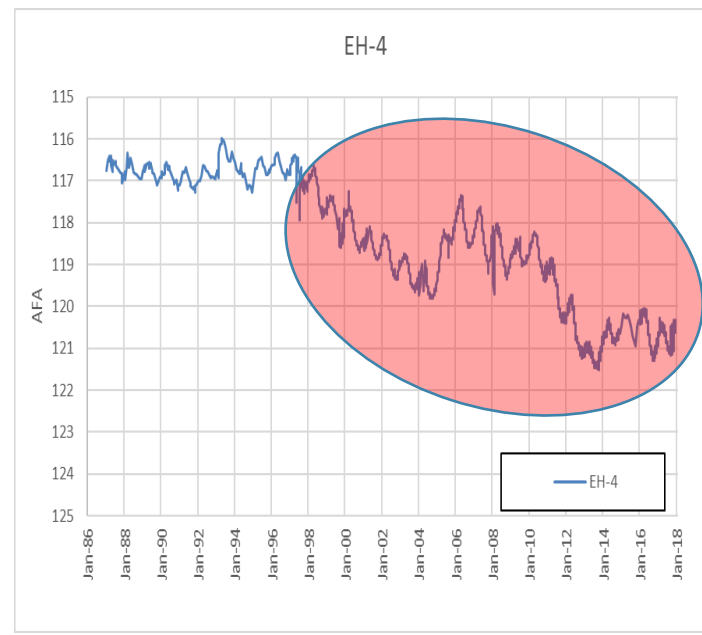
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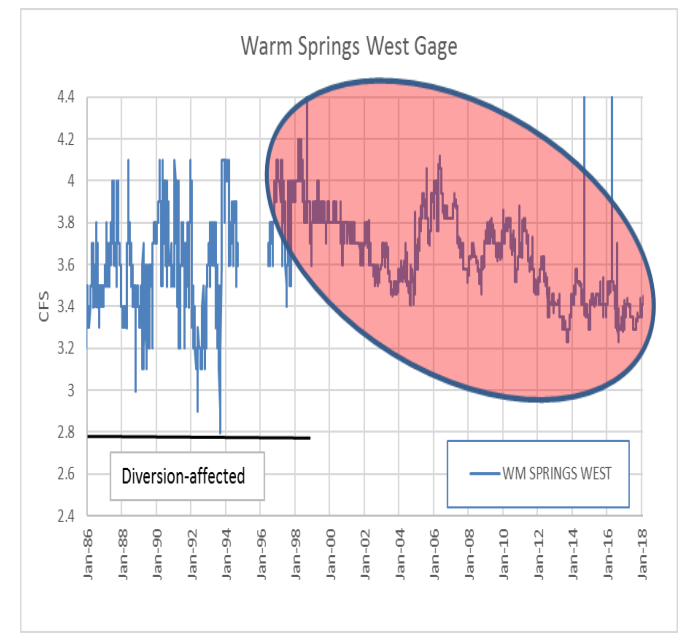
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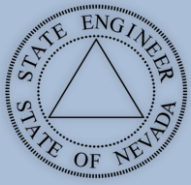


GROUNDWATER LEVELS



SPRING FLOW: WARM SPRINGS WEST





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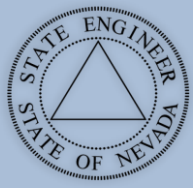
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# OUTCOME OF PUMPING TEST

- STATE ENGINEER DENIED PENDING APPLICATIONS FOR ~400,000 AFA
- CONCLUDED THAT TOTAL WATER SUPPLY WAS LESS THAN 50,000 AFA, INCLUDING THE MUDDY RIVER (HISTORIC FLOW OF 34,000 AFA)
- DEMONSTRATED CONNECTIVITY OF CARBONATE AQUIFER SYSTEM AND INTERCONNECTIVITY OF CARBONATE, ALLUVIAL, AND SURFACE WATER RESOURCES
- RECOMMENDED MANAGEMENT OF BASINS OVERLAYING THE CARBONATE AS A SINGLE ADMINISTRATIVE UNIT
- BUT, NO ACTION WAS TAKEN ON EXISTING 40,000 AF GROUNDWATER RIGHTS



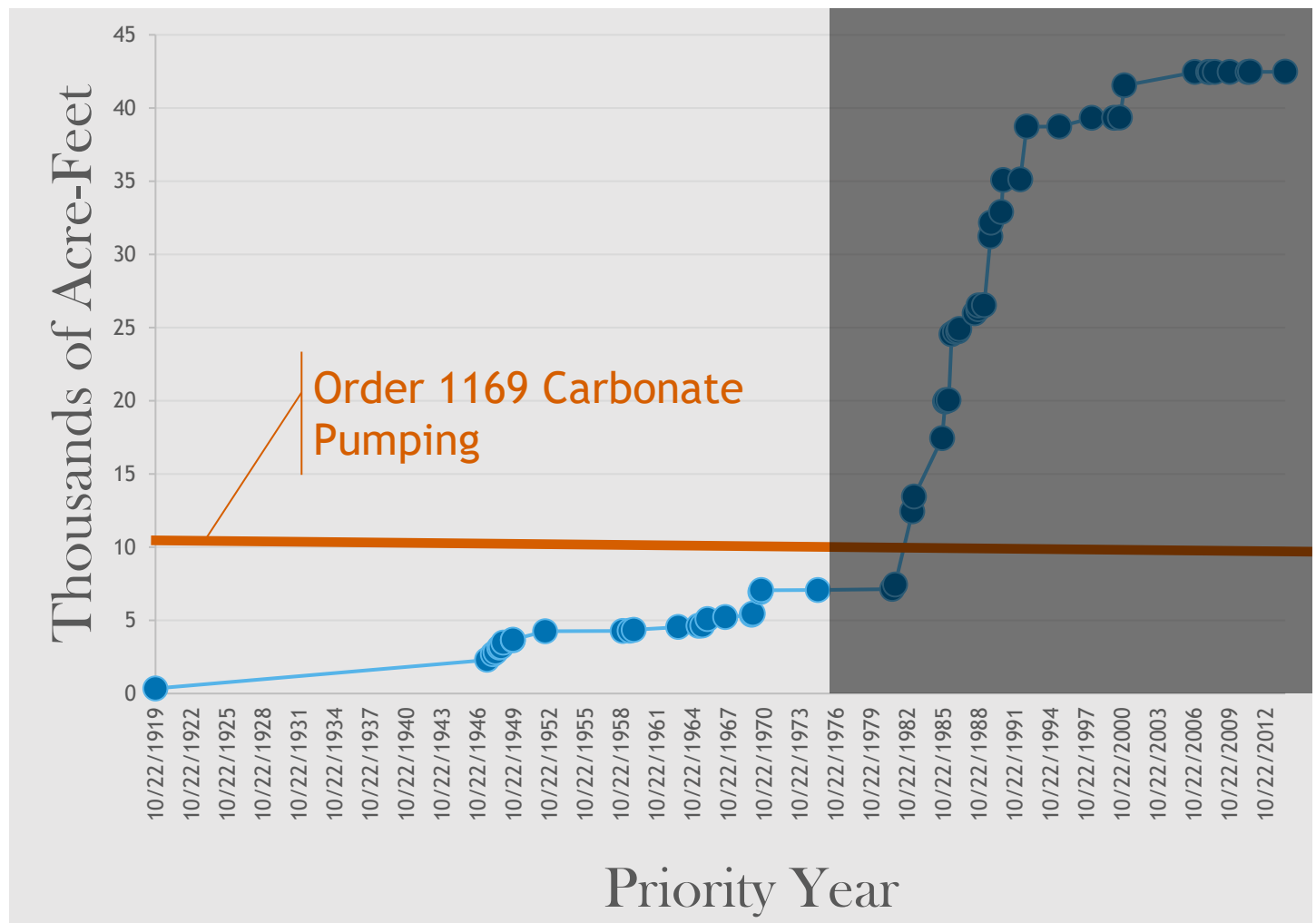
# APPROPRIATIONS OVER TIME

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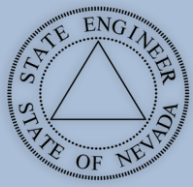
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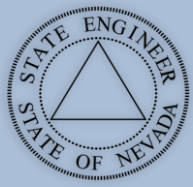


# THERE IS NOW AN INCREASING DEMAND TO DEVELOP EXISTING VALID WATER RIGHTS

- PLANS TO DEVELOP THOUSANDS OF HOMES IN COYOTE SPRING VALLEY
  - 65 SQUARE MILE MASTER PLANNED COMMUNITY WITH 150,000 HOMES, 10 GOLF COURSES AND MULTIPLE CASINOS



- PLANS TO EXPAND THE APEX INDUSTRIAL AREA NORTHEAST OF LAS VEGAS
  - 20,00 ACRES WITH A PLANNED LARGE INDUSTRIAL PARK WITH ELECTRICITY GENERATION, MANUFACTURING AND MORE.



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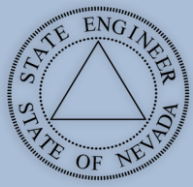
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# THERE IS NOW AN INCREASING DEMAND TO DEVELOP EXISTING VALID WATER RIGHTS

- STATE ENGINEER RESPONSE:
  - MULTIPLE PUBLIC MEETINGS
  - PRESENTED THE DATA AND FINDINGS FROM THE ORDER 1169 TEST
  - REVIEWED THE STATUTORY LIMITATIONS OF THE STATE ENGINEER
  - SOLICITED INPUT ON LOCAL SOLUTIONS
  - ALL MINUTES, REPORTS, AND CORRESPONDENCE MADE AVAILABLE ON NDWR WEBSITE



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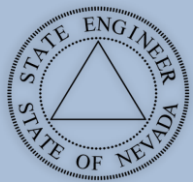
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# CONCURRENT WITH PUBLIC OUTREACH, ADMINISTRATIVE DETERMINATIONS WERE REQUIRED TO MAINTAIN STATUS QUO

- DUE TO THE INCREASED LIKELIHOOD OF DEVELOPMENT DEMANDS THE STATE ENGINEER ALSO ENGAGED IN AN ADMINISTRATIVE PROCESS THROUGH THE ISSUANCE OF A INTERIM ORDER
  - MAINTAIN THE STATUS QUO
  - EVALUATE THE ORDER 1169 PUMPING TEST OUTCOMES WITH DATA FROM THE PAST 5 YEARS
  - PROVIDE A SCIENCE BASED OPEN AND TRANSPARENT PROCESS TO MAKE FUTURE DECISIONS





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**IN THE OFFICE OF THE STATE ENGINEER  
OF THE STATE OF NEVADA**

**INTERIM ORDER**

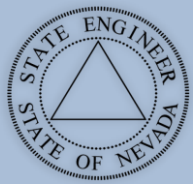
**#1303**

**DESIGNATING THE ADMINISTRATION OF ALL WATER RIGHTS WITHIN  
COYOTE SPRING VALLEY HYDROGRAPHIC BASIN (210), A PORTION OF BLACK  
MOUNTAINS AREA BASIN (215), GARNET VALLEY BASIN (216), HIDDEN VALLEY  
BASIN (217), CALIFORNIA WASH BASIN (218), AND MUDDY RIVER SPRINGS  
AREA (AKA UPPER MOAPA VALLEY) BASIN (219) AS A JOINT ADMINISTRATIVE  
UNIT, HOLDING IN ABEYANCE APPLICATIONS TO CHANGE EXISTING  
GROUNDWATER RIGHTS, AND ESTABLISHING A TEMPORARY MORATORIUM  
ON THE REVIEW OF FINAL SUBDIVISION MAPS**

  
JASON KING, P.E.  
State Engineer

Dated at Carson City, Nevada this

11<sup>th</sup> day of JANUARY, 2019.



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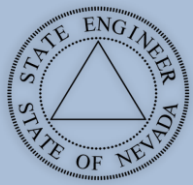
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# CONTENTS OF INTERIM ORDER 1303

- DEFINES THE LWRFS AS A SINGLE ADMINISTRATIVE UNIT
- PRESCRIBES A CONTINUED PUBLIC PROCESS TO DETERMINE THE AMOUNT OF GROUNDWATER AVAILABLE
- ANY STAKEHOLDER MAY FILE A REPORT ADDRESSING:
  - THE GEOGRAPHIC BOUNDARY OF THE LWRFS
  - ORDER 1169 AQUIFER TEST RECOVERY AND SPRING RECOVERY ANALYSIS
  - LONG-TERM ANNUAL QUANTITY OF GROUNDWATER THAT MAY BE PUMPED
  - EFFECTS OF MOVEMENT OF WATER RIGHTS BETWEEN ALLUVIAL AND CARBONATE WELLS
  - AND ANY OTHER MATTER DEEMED RELEVANT
- OPPORTUNITY FOR WRITTEN REBUTTAL, THEN A HEARING
- UNTIL CONCLUSION OF THE PUBLIC PROCESS:
  - PERMANENT CHANGE APPLICATIONS OF GROUNDWATER RIGHTS ARE HELD IN ABEYANCE
  - TEMPORARY MORATORIUM ON APPROVING FINAL SUBDIVISION MAPS OR OTHER DEVELOPMENT/CONSTRUCTION SUBMISSIONS
    - UNLESS APPLICANT CAN DEMONSTRATE A PERMANENT SUPPLY OF WATER SUFFICIENT TO MEET ANTICIPATED LIFE OF THE PROJECT (IMPORT FROM ELSEWHERE)



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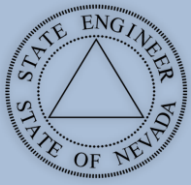
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# TIMELINE

- JULY 3, 2019: PARTIES SUBMIT HYDROGEOLOGY REPORTS
- AUGUST 16, 2019: PARTIES SUBMIT REBUTTALS
- SEPTEMBER-OCTOBER 2019: ADMINISTRATIVE HEARING (RIGHT NOW)
- STATE ENGINEER RULING BY EARLY 2020





# AN UNUSUAL HEARING

- NON-ADVERSARIAL
- 12 PARTIES WHO SUBMITTED TECHNICAL REPORTS CAN PRESENT ARGUMENTS, THEN ALL PARTIES WHO SUBMITTED REPORTS OR REBUTTAL REPORTS CAN CROSS-EXAMINE THE WITNESSES
- WIDE VARIETY OF ANALYSES: WATER BUDGET APPROACH, FLOW PATHS WITH GEOCHEMICAL OR GEOPHYSICAL CHARACTERIZATION, GROUNDWATER MODELS
- REPORTS GENERALLY, BUT NOT ALWAYS, FOUND THAT THERE WAS ENOUGH WATER TO SUPPORT THEIR OWN INTERESTS BUT NOT ENOUGH FOR EVERYONE ELSE
- GROUNDWATER AVAILABILITY ESTIMATES RANGE FROM 0 AFA TO ~40,000 AFA

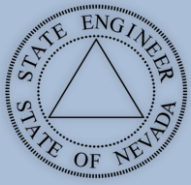
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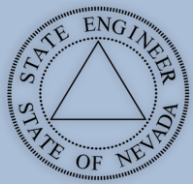
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# SOME OF THE POSSIBLE OUTCOMES

- IF APPROPRIATIONS ARE DETERMINED TO EXCEED WATER AVAILABILITY, MANAGEMENT OPTIONS WITHIN STATUTE ARE LIMITED
  - REGULATION BY PRIORITY?
  - DESIGNATION OF CRITICAL MANAGEMENT AREA
- STAKEHOLDERS CAN DEVELOP THEIR OWN GROUNDWATER MANAGEMENT PLAN TO PRECLUDE THE CMA DESIGNATION
- STATE ENGINEER CAN DENY EXTENSIONS FOR CANCELLATION AND FORFEITURE: REDUCE COMMITMENTS BY ATTRITION
- NO ACTION



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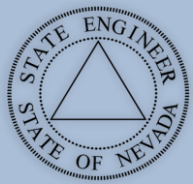
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# CONCLUSIONS

- STRONG EMPHASIS ON BEING OPEN AND TRANSPARENT, WITH STAKEHOLDER ENGAGEMENT AND DUE PROCESS AT ALL TURNS.
- FINAL ORDER NEEDS TO BE BASED ON THE BEST SCIENCE AVAILABLE, IN ACCORDANCE WITH NEVADA WATER LAW, AND IN THE BEST INTERESTS OF THE COMMUNITY AT-LARGE
- AIM IS TO WITHSTAND JUDICIAL REVIEW UNDER CERTAIN APPEALS, REGARDLESS OF THE DECISION



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# QUESTIONS?

