



Safe Yield Data Collection and Evaluation

Workshop #2

March 2, 2022

Agenda

- **Welcome and Introductions**
- **Background and Objectives**
- **Groundwater Pumping**
- **Q&A**
- **Supplemental Water Recharge**
- **Q&A**
- **Water Use Practices and Regional Infrastructure**
- **Q&A**
- **Next Steps and Schedule**

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Background – April 28, 2017 Court Order

- April 28, 2017 Court Order
 - Approved current Safe Yield Reset methodology
 - Included a provision to update the Safe Yield Reset methodology
 - Required that the Chino Valley Model be updated and that the Safe Yield be reevaluated by June 30, 2025
 - Required annual data collection, evaluation, and reporting
 - Allowed for an interim correction of Safe Yield (+/- 2.5%)
 - Required a peer review process

Background – April 28, 2017 Court Order

“4.5 – Annual Data Collection and Evaluation. *In support of its obligations to undertake the reset in accordance with the Reset Technical Memorandum and this order, Watermaster shall annually undertake the following actions:*

- a) *Ensure that, unless a Party to the Judgment is excluded from reporting, all production by all Parties to the Judgment is metered, reported, and reflected in Watermaster’s approved Assessment Packages;*
- b) *Collect data concerning cultural conditions annually with cultural conditions including, but not limited to, land use, water use practices, production, and facilities for the production, generation, storage, recharge, treatment, or transmission of water;*

Background – April 28, 2017 Court Order

“4.5 – Annual Data Collection and Evaluation. *In support of its obligations to undertake the reset in accordance with the Reset Technical Memorandum and this order, Watermaster shall annually undertake the following actions: [...]*

- c) *Evaluate potential need for prudent management discretion to avoid or mitigate undesirable results including, but not limited to, subsidence, water quality degradation, and unreasonable pump lifts. Where evaluation of available data suggests that there has been or will be a material change from existing and projected conditions or threatened undesirable results, then a more significant evaluation, including modeling, as described in the Reset Technical Memorandum, will be undertaken;*
- d) *As part of its regular budgeting process, develop a budget for the annual data collection, data evaluation, and any scheduled modeling efforts, including the methodology for the allocation of expenses among the Parties to the Judgment. Such budget development shall be consistent with section 5.4(a) of the Peace Agreement.”*

Considerations in scope development

- Comments on 2020 Safe Yield Recalculation
 - Comparison to prior work
 - Effects of projected cultural conditions on groundwater response
- Discussions with Appropriative Pool responding to comments in July 2021
 - Clarifying the data evaluation process
- February 2022 Watermaster Board recommendation
 - Collect additional data regarding Parties' 20-year operating projections that forecast their near- and long-term pumping and storage activities.

Scope to Implement Court Order

- Collect and evaluate the following data:
 - Land use
 - Groundwater pumping (evaluate only)
 - Supplemental water recharge
 - Water use practices
 - Regional water infrastructure
- Prepare annual report
 - Recommend future updates to data collection/evaluation process
 - Recommend additional analyses/modeling (if necessary)

Summary of Workshop #1 (11/16/2021)

- Proposed outline of the Data Collection Annual Report
- Presented results of land use data collection and evaluation

Meeting Goals

- Peer reviewers clearly understand the objectives and scope of work for the data collection/evaluation effort
- Communicate the findings of the data collection and evaluation effort for:
 - Groundwater pumping
 - Supplemental water recharge
 - Water use practices (background only)
 - Regional water infrastructure

Key Takeaways from Today's Workshop

- Actual groundwater pumping was greater than projected groundwater pumping for FY 2019 through FY 2021 by 7,400 afy
- Actual supplemental water recharge was greater than projected recharge for FY 2019 through FY 2021 by about 9,600 afy
- There have been no significant changes in projections of future supplemental water recharge
- Future infrastructure is expected to increase the capacity to pump from the Chino Basin, consistent with projections

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Groundwater Pumping in the CVM

- How is groundwater pumping used in the CVM?
 - Historical data → Model calibration
 - Water-supply plans → Developing model scenarios for projections
- Why is it important to evaluate differences between projected and actual pumping?
 - Pumping (rate and location) affects groundwater levels, water budget, and net recharge
 - Net recharge = pumping + change in storage – supplemental water recharge

Groundwater Pumping Data Collection and Evaluation

- Objectives:
 - Quantify the differences between:
 - Groundwater pumping projections in the 2020 Safe Yield Recalculation planning scenario (FY 2019-2050)
 - Actual groundwater pumping (FY 2019-2021)
 - Current projections (FY 2022-2050)
 - Determine whether “there has been or will be a material change from existing and projected conditions or threatened undesirable results” (2017 Court Order, p. 17)
 - Evaluate based on potential effect on net recharge, pumping sustainability, risk of new land subsidence, water quality impacts, and Hydraulic Control

Groundwater Pumping Data Collection and Evaluation

- Actual groundwater pumping (FY 2019-2021) :
 - Appropriative Pool – Metered data provided by the Parties
 - Overlying Non-Ag Pool – Metered data provided by the Parties
 - Agricultural Pool – Metered data provided by the Parties and estimated data provided by Watermaster Staff

Groundwater Pumping Data Collection and Evaluation

- Projected groundwater pumping in 2020 SYR (FY 2019-2050):
 - Appropriative Pool – Projections provided by the Parties
 - Overlying Non-Ag Pool – Projections provided by the Parties or estimation based on historical patterns
 - Agricultural Pool – Estimation based on historical data, projected land use changes, and water supply data
 - DYYP was not included in the 2020 SYR projection scenario beyond historical operations (FY 2018)
- Current projections (FY 2022-2050):
 - Same sources as above

Estimation of Agricultural Pool Pumping

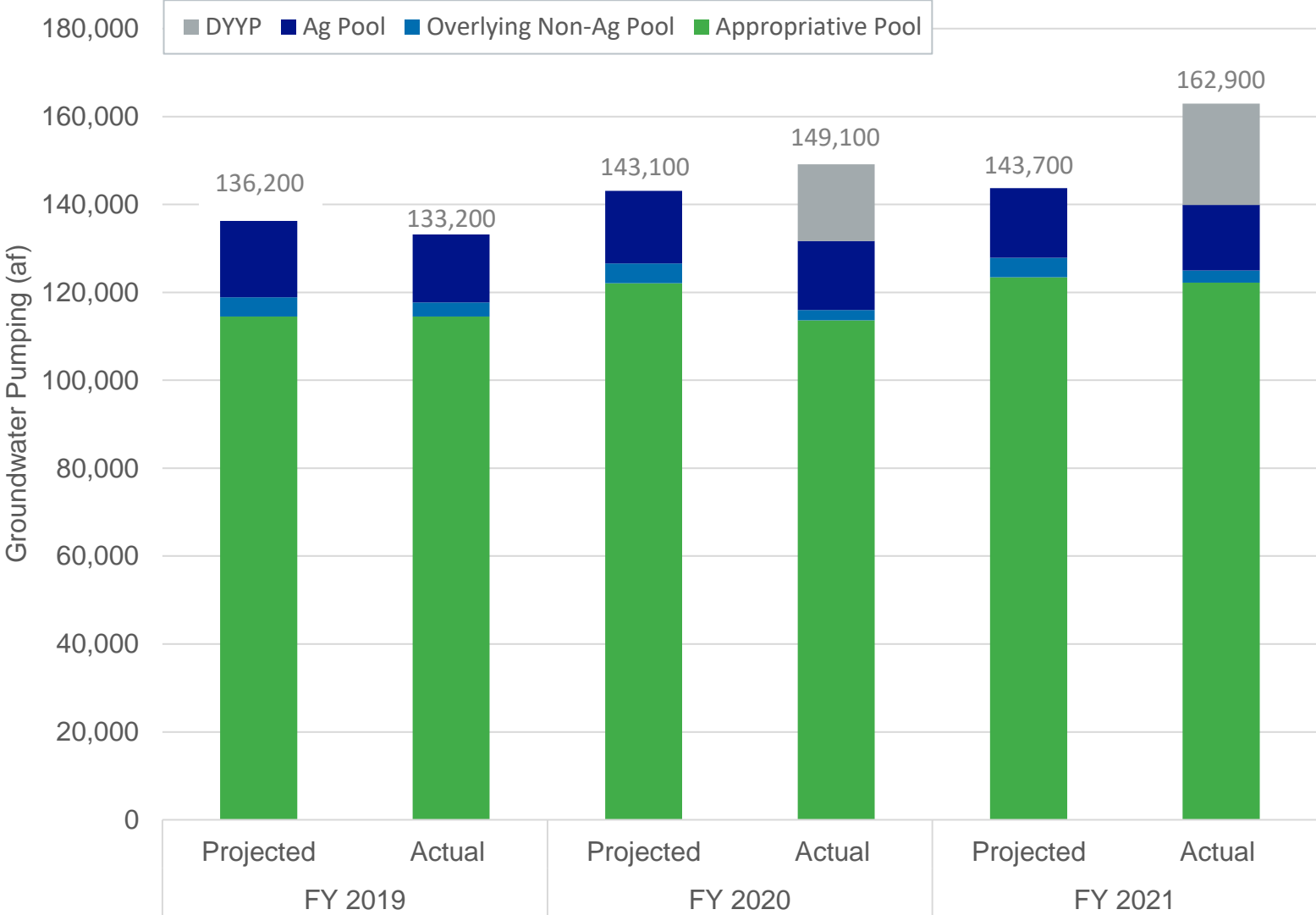
- Not feasible to meter all wells
- Watermaster Staff employs a water duty method to estimate production at unmetered wells

Comparison of Projected and Actual Groundwater Pumping (FY 2019-2021)

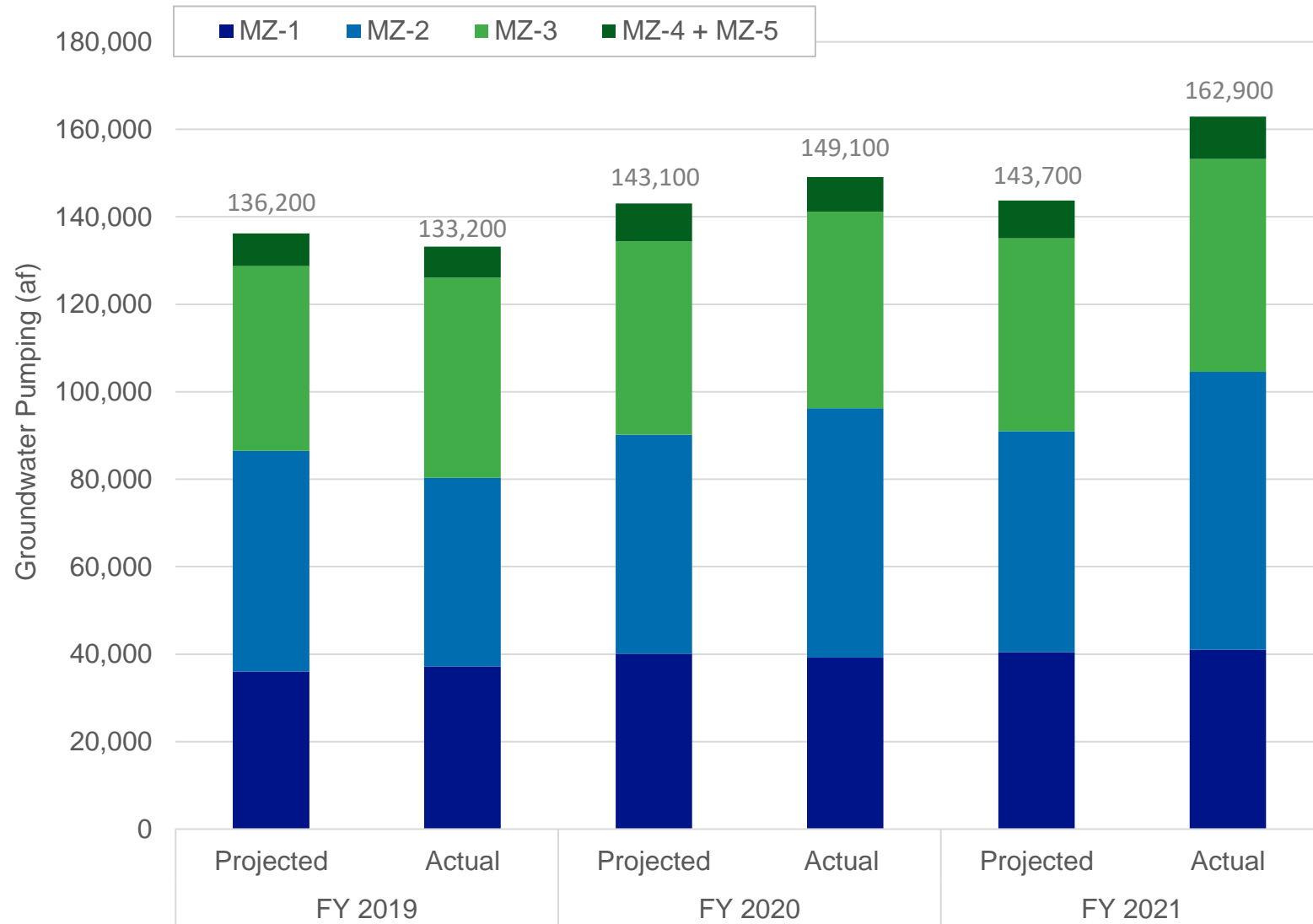
Process:

1. Compiled actual and projected pumping data (FY 2019-2021)
2. Compared total pumping:
 - By quarter/FY
 - Spatially (agency/MZ)

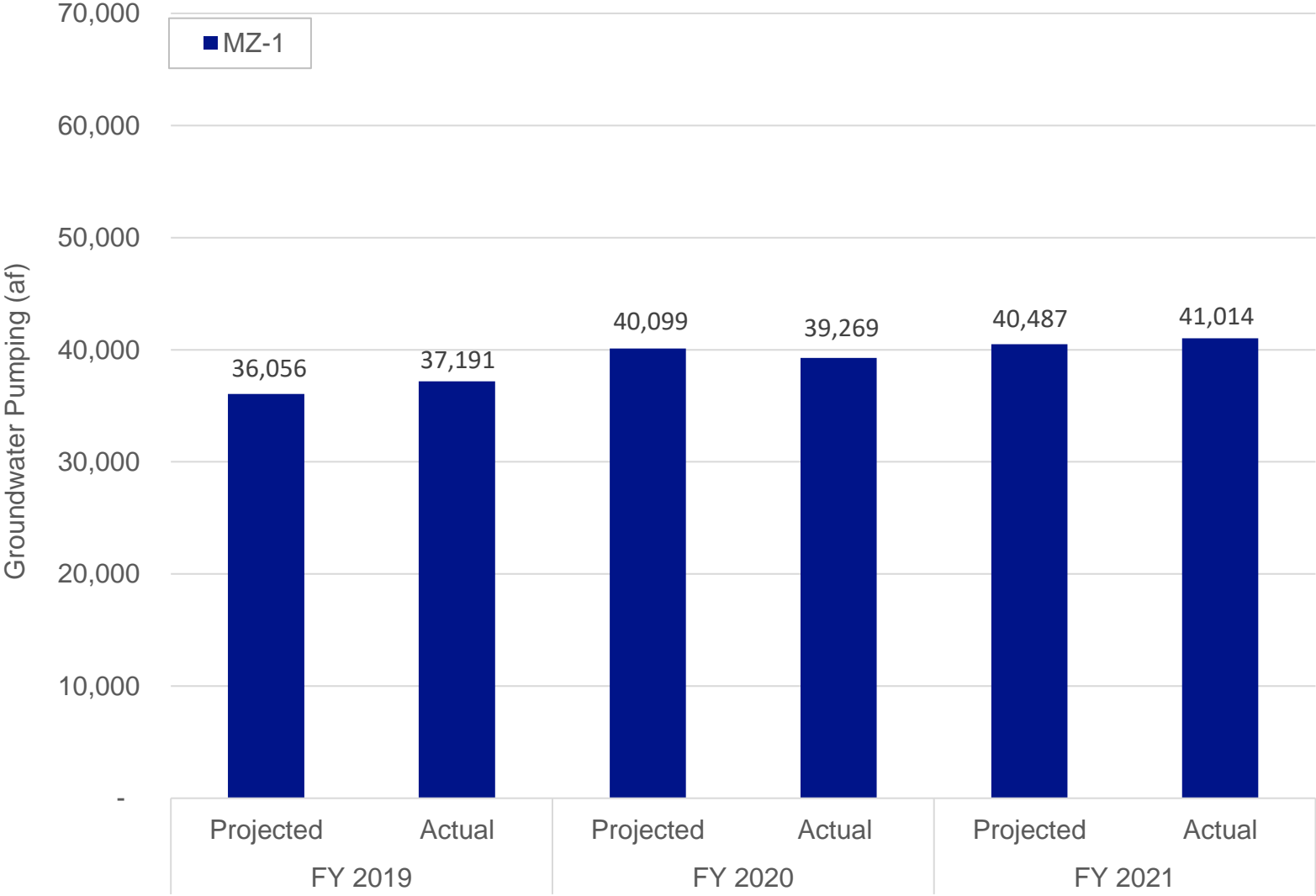
Comparison of Projected and Actual Groundwater Pumping



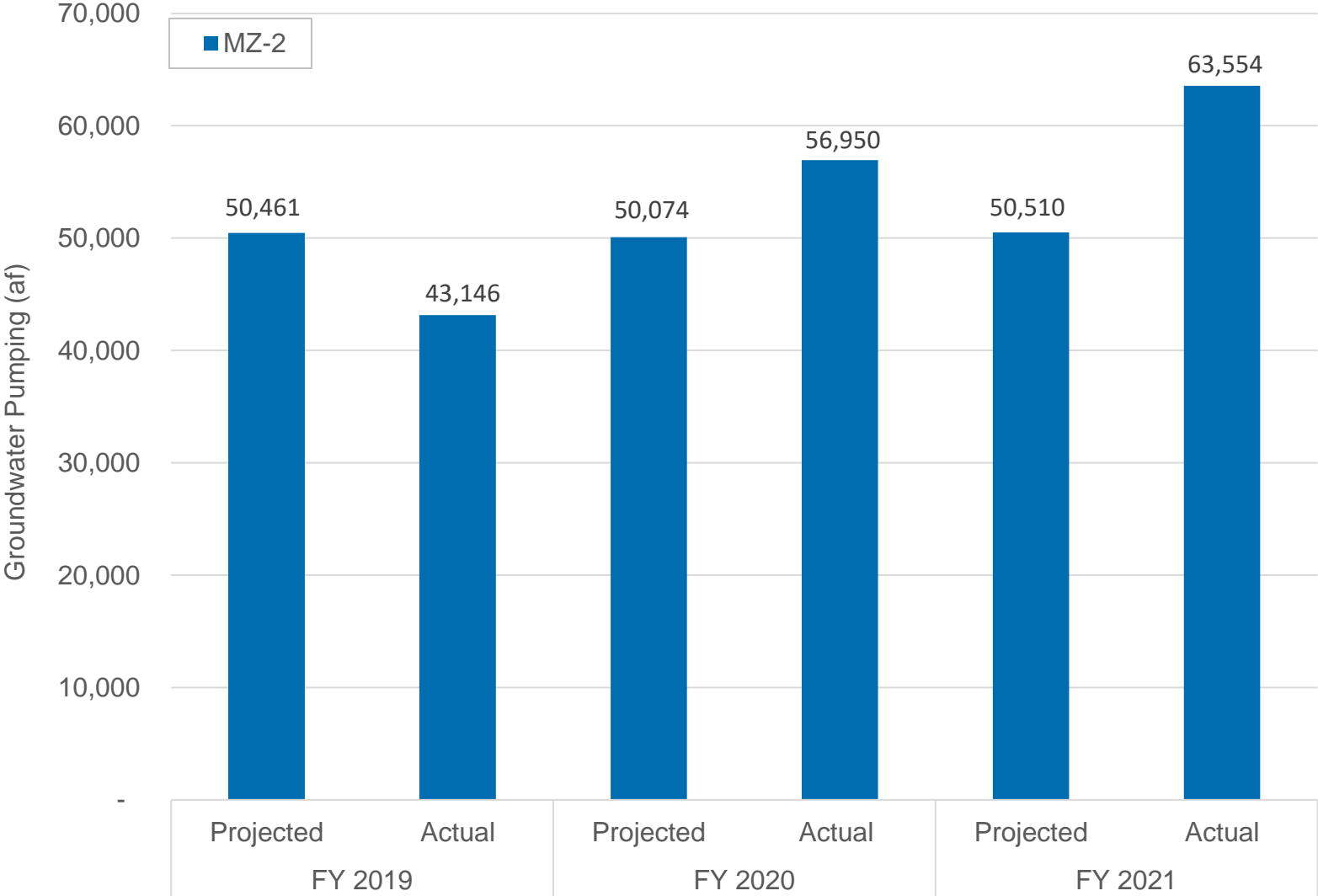
Comparison of Projected and Actual Groundwater Pumping by MZ



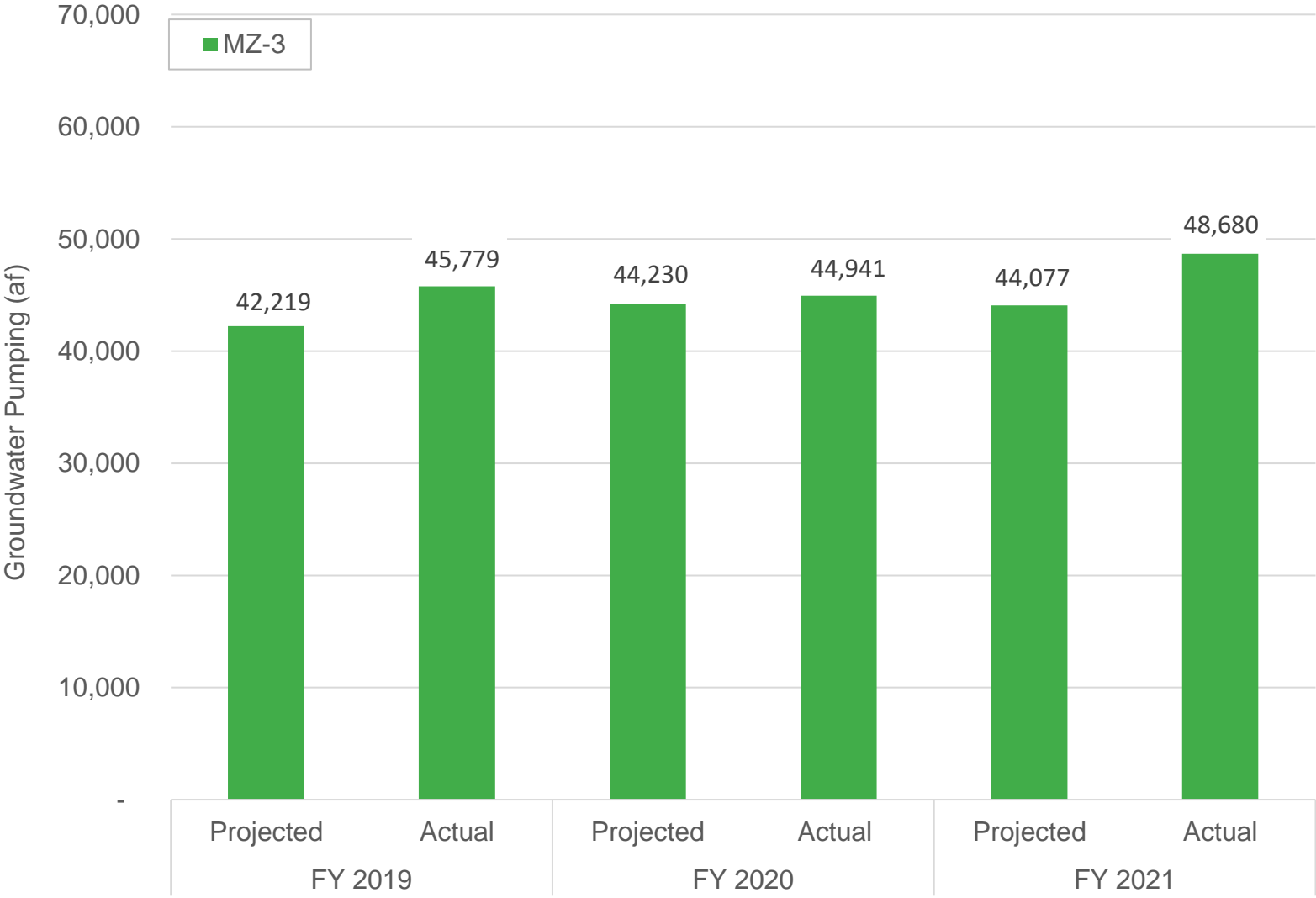
Comparison of Projected and Actual Groundwater Pumping – MZ-1



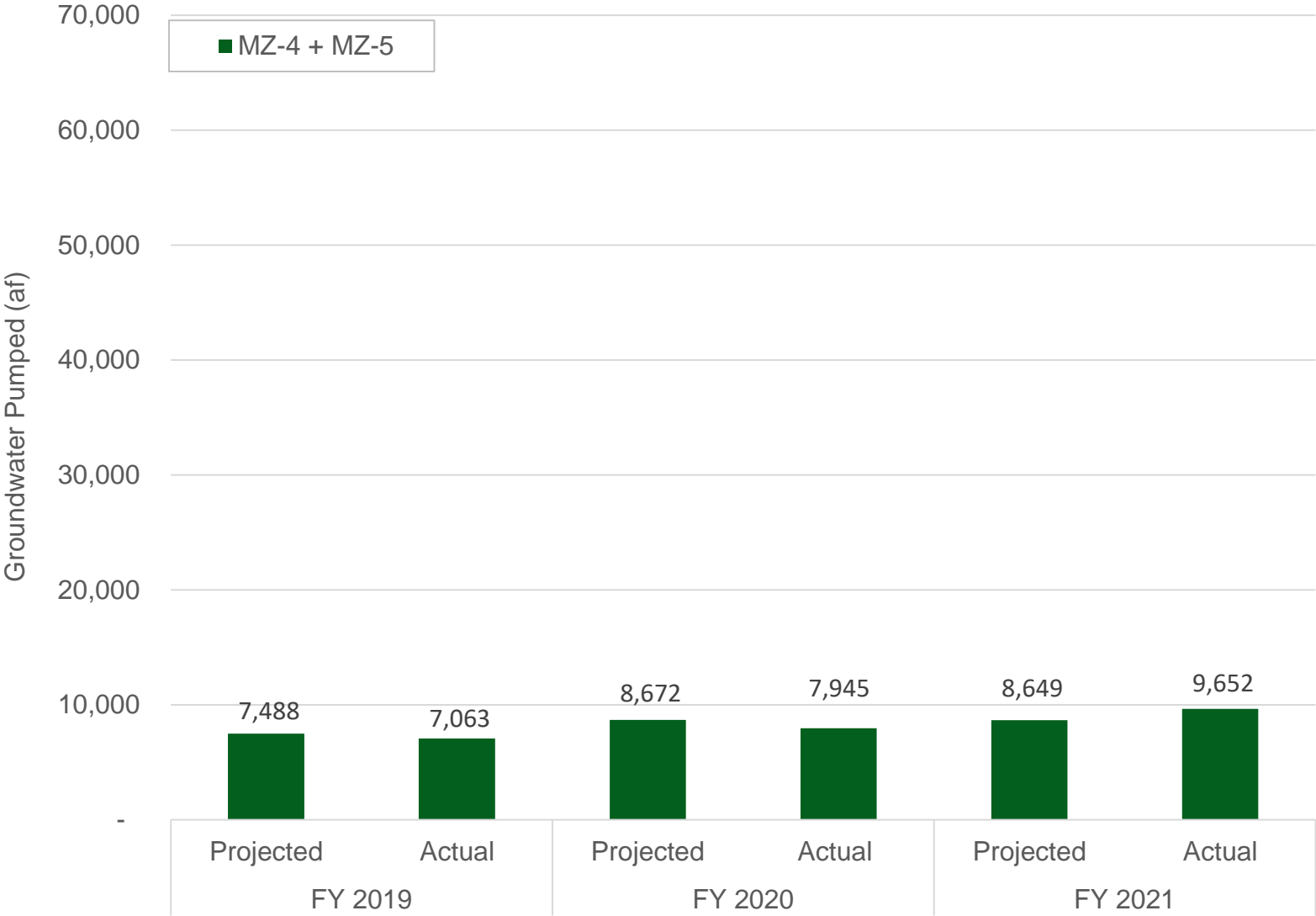
Comparison of Projected and Actual Groundwater Pumping – MZ-2



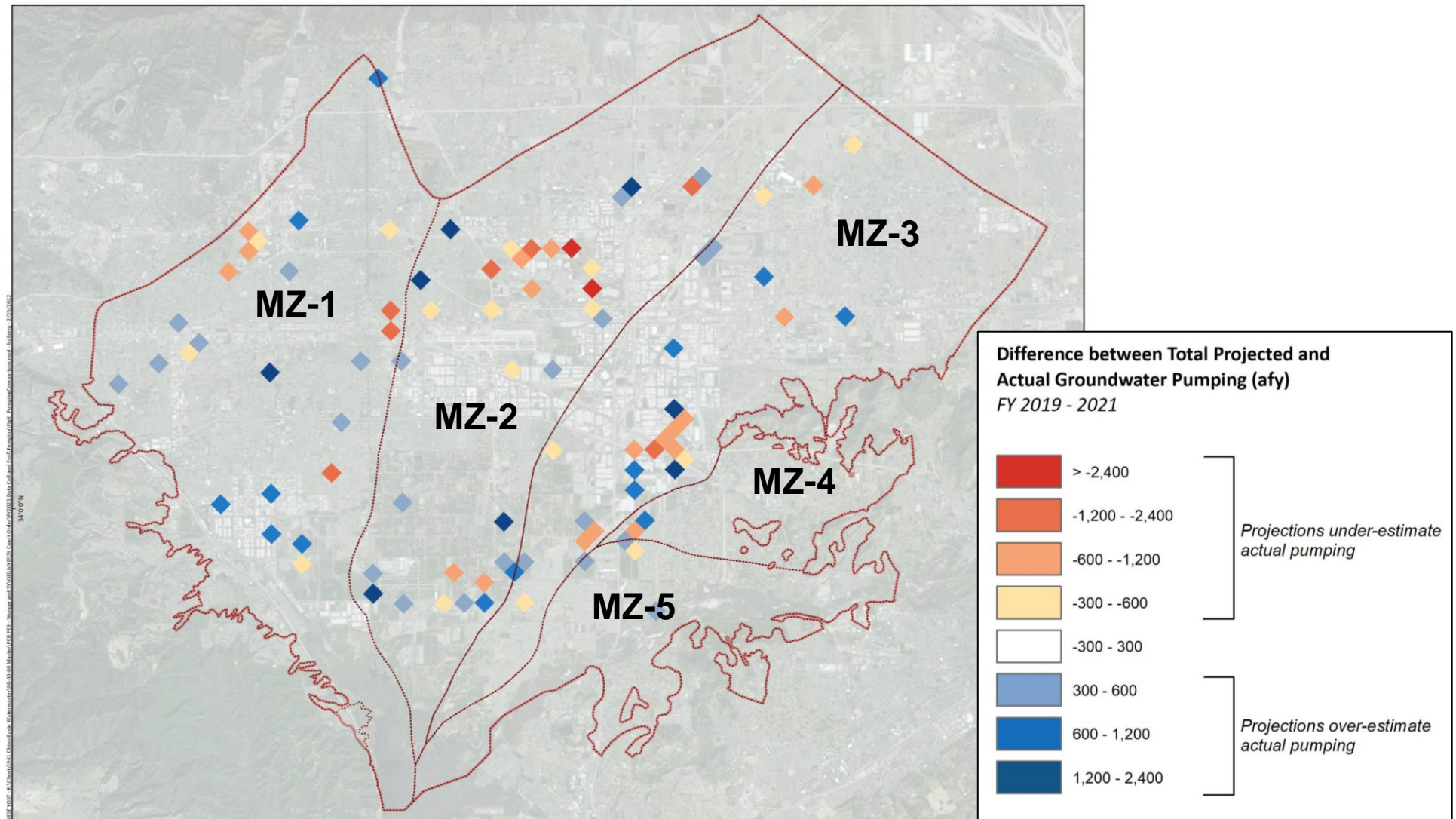
Comparison of Projected and Actual Groundwater Pumping – MZ-3



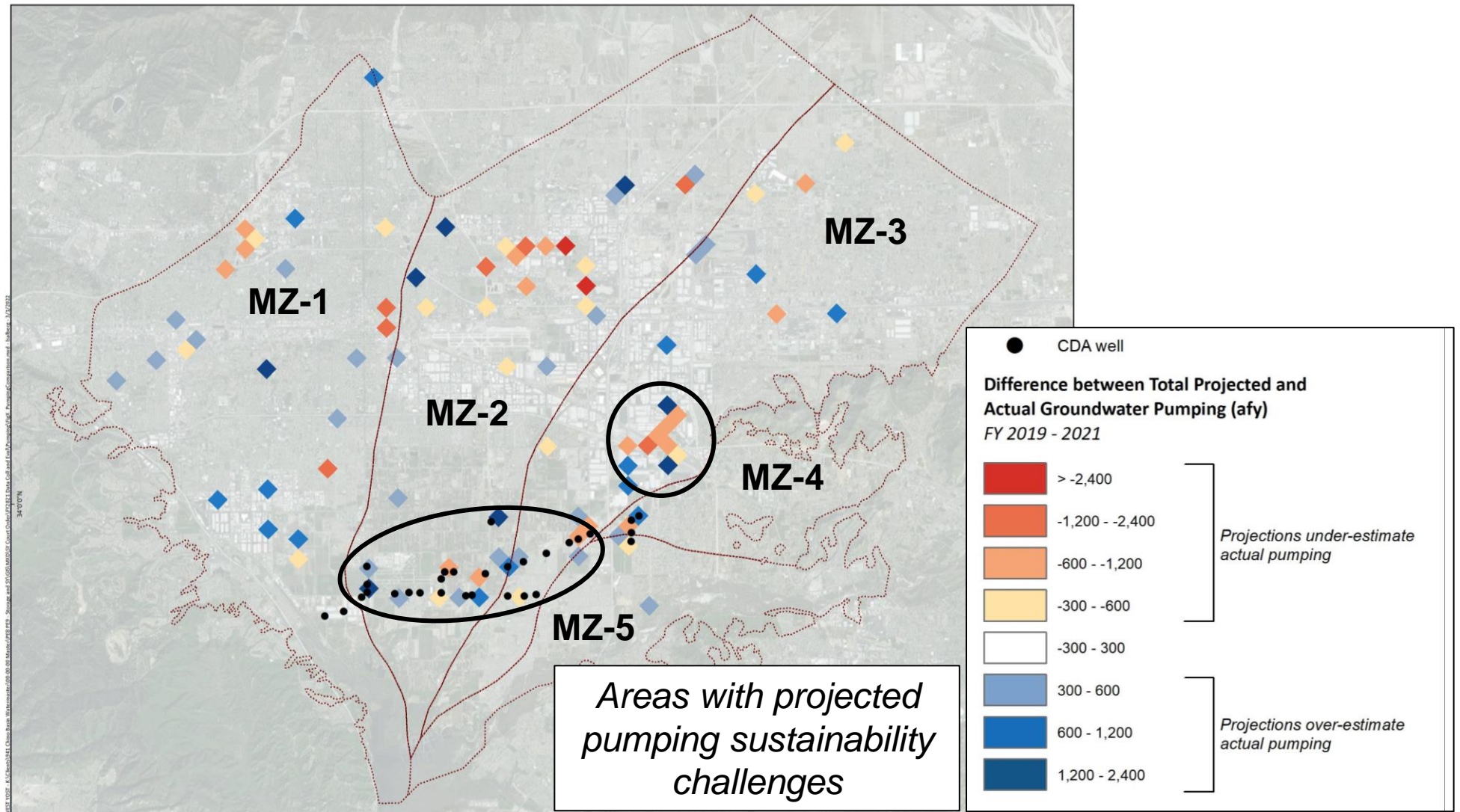
Comparison of Projected and Actual Groundwater Pumping – MZ-4/5



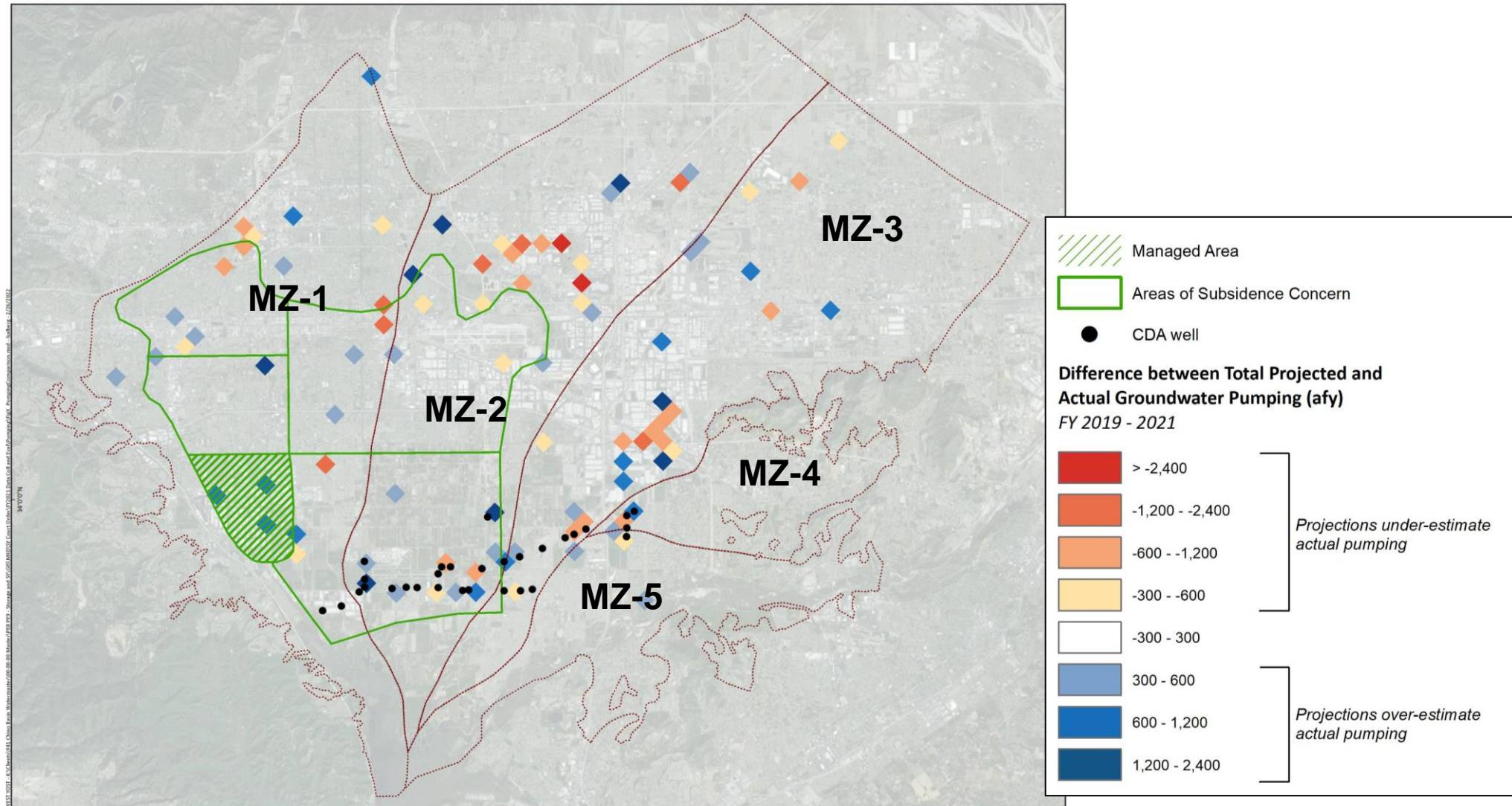
Comparison of Projected and Actual Pumping



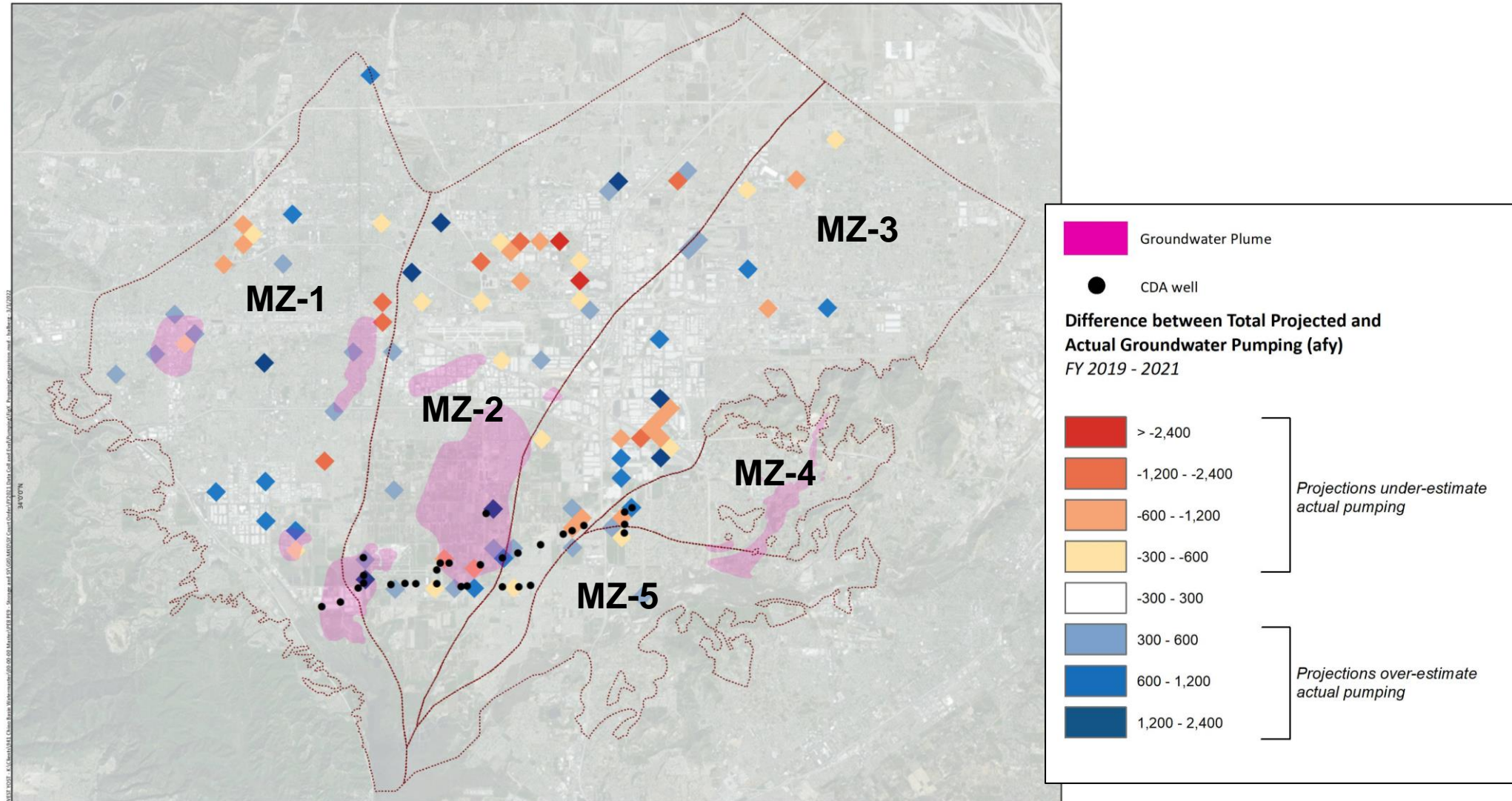
Comparison of Projected and Actual Pumping: Areas with Projected Pumping Sustainability Challenges



Comparison of Projected and Actual Pumping: Areas of Subsidence Concern



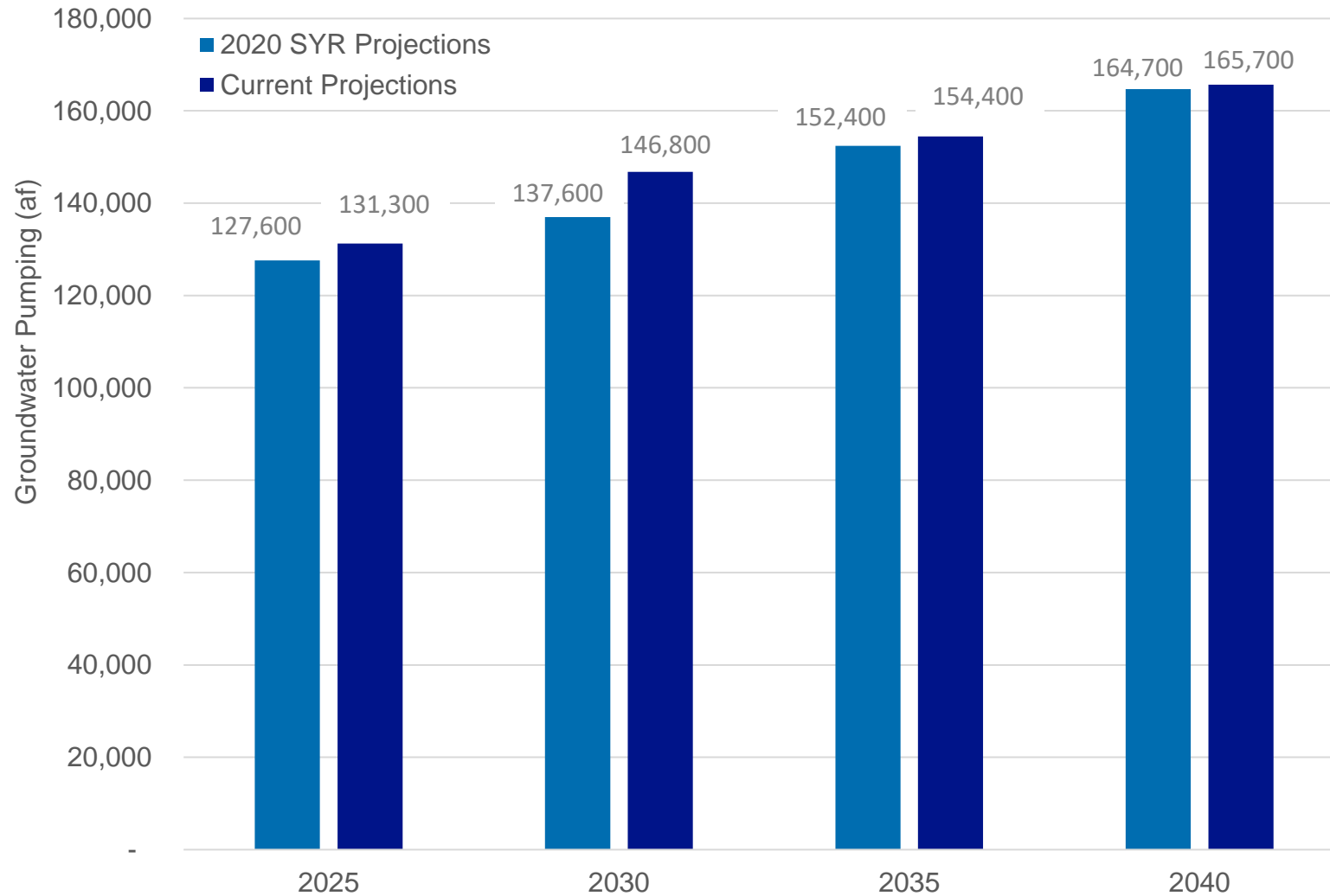
Comparison of Projected and Actual Pumping: Water Quality



Comparison of Projected and Actual Groundwater Pumping

- Projected pumping was less than actual pumping for FY 2019 through 2021 by about 7,400 afy.
 - MZs 1 – 3: Projected pumping was less than actual pumping for FY 2019 through 2021.
 - MZs 4 & 5: Projected pumping was greater than actual pumping for FY 2019 though 2021.

Comparison of Groundwater Pumping between 2020 SYR and Current Projections – Appropriative Pool



Comparison of Groundwater Pumping between 2020 SYR and Current Projections

- The current pumping projections are greater than 2020 SYR projections
- Analysis is ongoing and will be available in draft report

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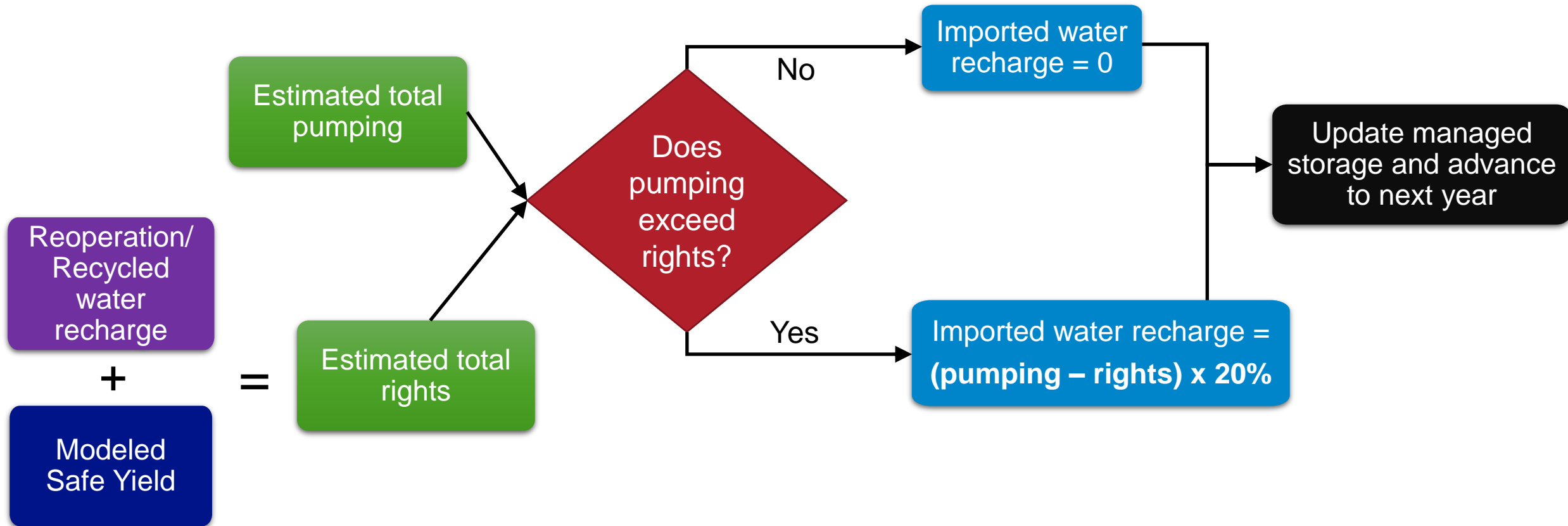
Supplemental Water Recharge in the CVM

- Supplemental water = recycled water + imported water
- How is supplemental water recharge used in the CVM?
 - Historical data → Model calibration
 - Projections → Develop model scenarios
- Why is it important to evaluate differences between projected and actual supplemental water recharge?
 - Recharge (rate and location) affects groundwater levels, water budget, and net recharge
 - Net recharge = pumping + change in storage – supplemental water recharge

Supplemental Water Recharge in the CVM

- Historical data (recycled and imported water) provided by IEUA
- Projected recycled water recharge data provided by IEUA
- Projected imported water recharge estimated by:
 - Projected pumping/net recharge
 - Parties' projected use of managed storage versus wet-water (supplemental) recharge to satisfy replenishment obligations
- DYYP was not included in the 2020 SYR projection scenario beyond historical operations (FY 2018)

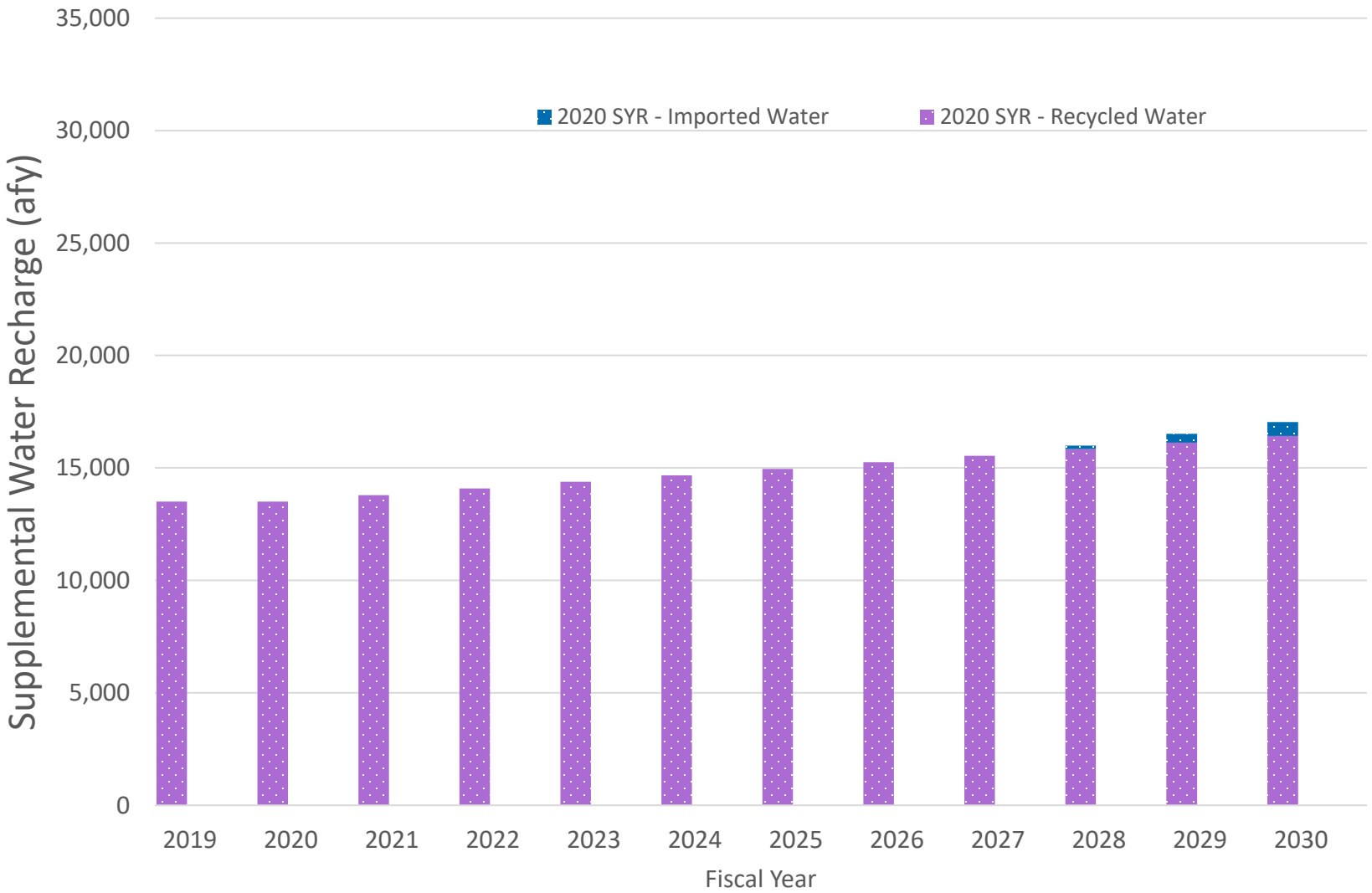
General Method for Projecting Imported Water Recharge



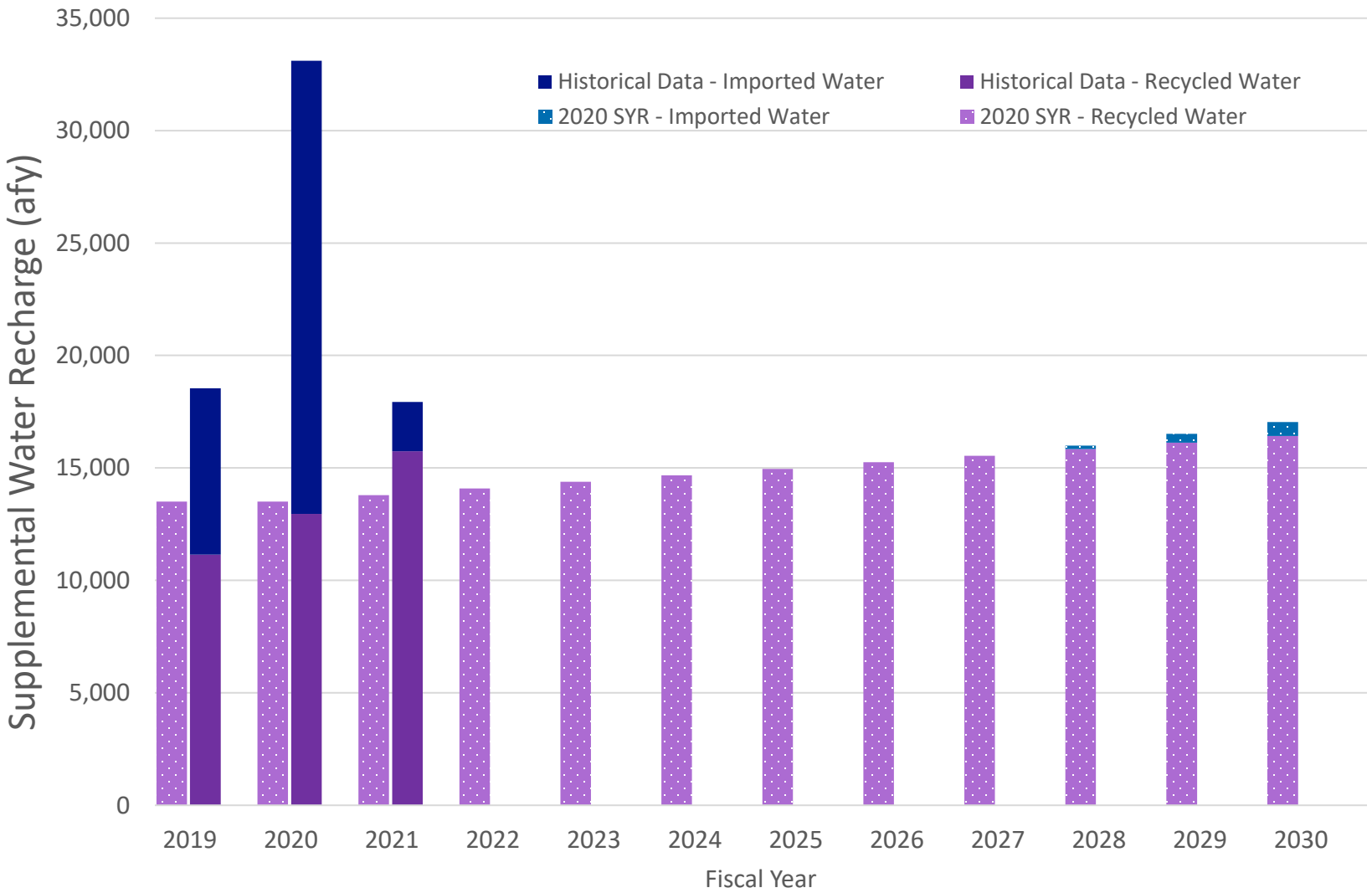
Parties' Projected Use of Managed Storage

- 2020 SYR: 80 percent of replenishment obligations were satisfied from managed storage
 - Based on historical data
- Parties provided updated projections in 2022 for future use of managed storage
 - Expected to use managed storage to satisfy 50 to 100 percent of replenishment obligations, usually closer to 100 percent
 - Indicated some uncertainty based on future economic/water supply conditions
 - No recommended change in imported water recharge projection

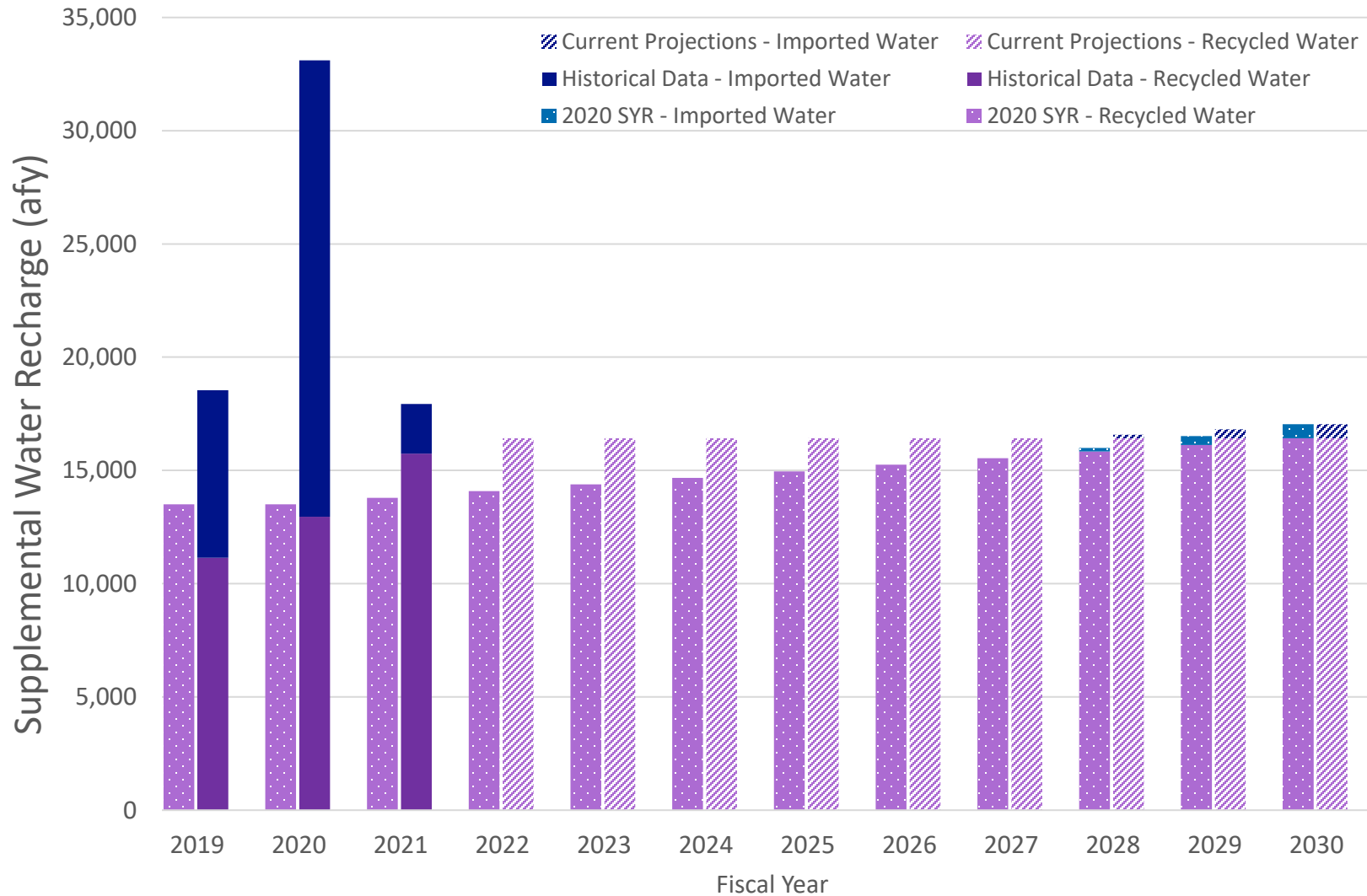
Comparison of 2020 SYR Projections to Actual Supplemental Water Recharge and Current Projections



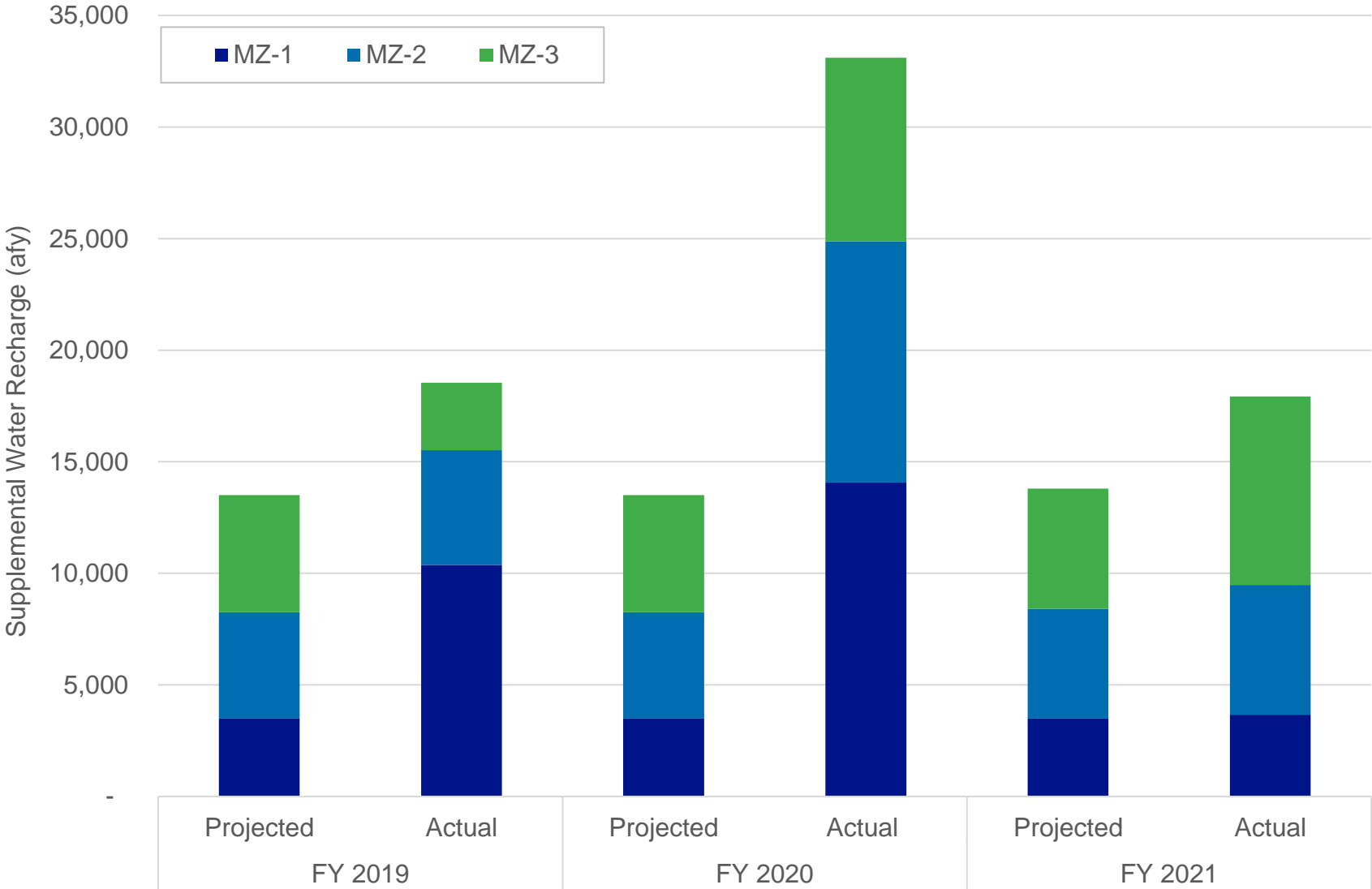
Comparison of 2020 SYR Projections to Actual Supplemental Water Recharge and Current Projections



Comparison of 2020 SYR Projections to Actual Supplemental Water Recharge and Current Projections



Comparison of Projected and Actual Supplemental Water Recharge – by MZ



Results – Supplemental Water Recharge

- Imported water recharge since FY 2018 is almost entirely DYYP puts (22kaf)
 - Actual supplemental water recharge in MZ-1 over this period exceeded 2020 SYR projections by 17,600 af.
- Minor increase in projected recycled water recharge (0 to 2,300 afy)
- No change in projected imported water recharge

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Water Use Practices and Regional Water Infrastructure

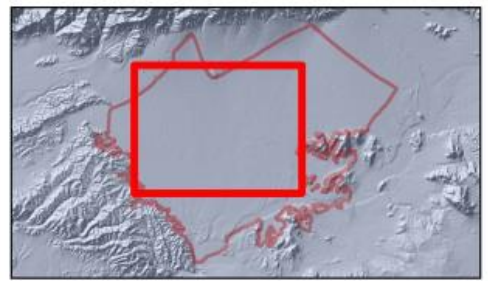
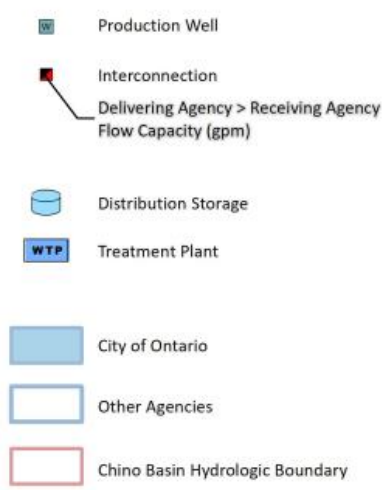
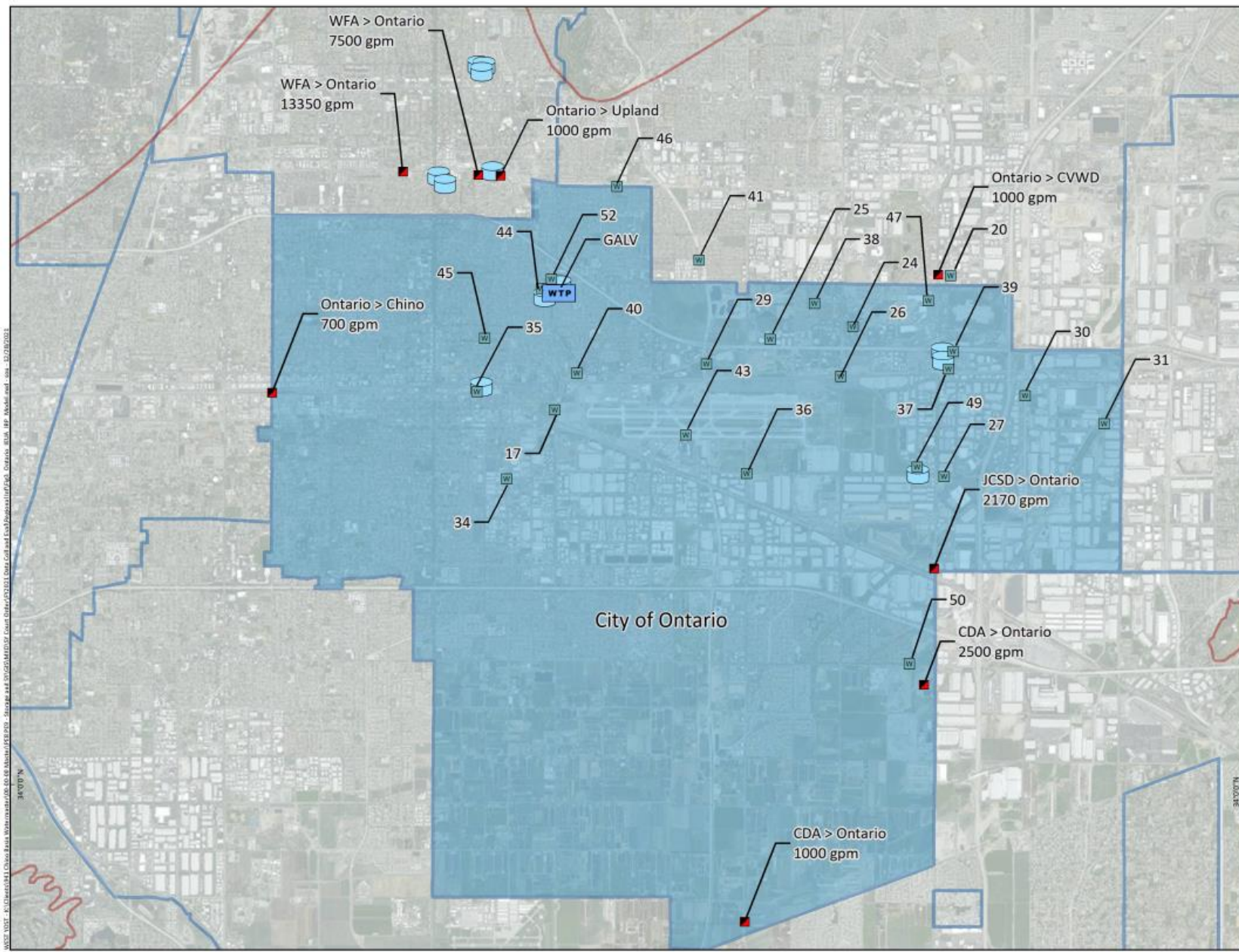
- Water use practices:
 - Indoor and outdoor water use patterns
- Regional water infrastructure includes:
 - Water treatment plants
 - Interconnections
 - Reservoirs
 - Anything that would impact pumping from Chino Basin

Water Use Practices and Regional Water Infrastructure

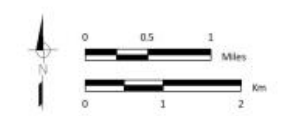
- How are water use practices used in the model?
 - Indoor/outdoor water use → Calibration of the R4 model and applied water assumptions
- Data collection process:
 - Data on indoor/outdoor water use includes:
 - Land use
 - Water efficiency regulations
 - Waste increment reports (IEUA)
 - Information on regional water infrastructure provided by the Parties and IEUA

Water Use Practices and Regional Water Infrastructure

- Objective for review of water use practices and regional water infrastructure
 - Does the information suggest the potential for behavioral changes that would affect the assumptions we make in our development of future scenarios?



Prepared by:



Prepared for:

Chino Basin Watermaster
Data Collection and Evaluation
FY 2020/21



Major Water Supply Infrastructure
City of Ontario

Figure 1

Conclusion of Impacts – Water Use Practices and Regional Water Infrastructure

- Future infrastructure is expected to increase the capacity to pump from the Chino Basin
 - New wells
 - New treatment facilities
 - New conveyance facilities
- No significant changes from prior projections
- Indoor/outdoor water use analysis is ongoing and will be available in draft report

Key Takeaways from Today's Workshop

- Actual groundwater pumping was greater than projected groundwater pumping for FY 2019 through FY 2021 by 7,400 afy
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Next Steps and Schedule

- Summarize feedback from today's workshop
- Complete analysis of:
 - Groundwater pumping projections
 - Water use practices
- Future deliverables:
 - **April 6, 2022** – release of draft annual data collection report
 - **Tuesday April 26, 2022 at 1:30pm** – review of draft report (Workshop #3)