

MANAGEMENT PLANS WORK GROUP SAFE-YIELD SUBGROUP MEETING



Attention attendees:

There is no assigned seating.

We are hoping for a collaborative and interactive process.

Please have a seat at the front table with the microphones if you would like to speak.



Safe-Yield Technical Subgroup

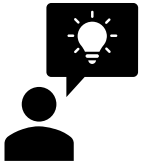
September 23, 2019

Agenda

- I. Introduction and Meeting Logistics
- II. Overview of Safe-Yield Data and Calculation
- III. Discussion of Methodology and Analyses
- IV. Future Meetings
- V. Closing Remarks



Meeting Logistics



- * Meetings are open to anyone who would like to participate.
- * We are looking for feedback and to learn from participants' expertise.
- * We are expecting an open and collaborative process, including opportunity to challenge ideas in a transparent manner.

Management Plans

A.R.S. § 45-563 (A)

“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.”

Management Plans Work Group

ADWR-led stakeholder forum for the development of the 5th Management Plans

- * Goals:
 - * Assess existing conservation programs
 - * Update existing management strategies
 - * Develop new management strategies



Timeline

4MP

Phoenix
AMA
Adoption

Pinal
AMA
Adoption

Santa
Cruz
AMA
Adoption

2019

2021

2022

2023

MPWG

Drafting
Plans

Adopting
Plans

5MP



Safe-Yield Data and Calculation



Management Goals (A.R.S. § 45-562)

Safe-yield:

“A groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area.”

(A.R.S. § 45-561(12))

Prescott, Phoenix, and Tucson AMAs:

Safe-yield by the year 2025

Pinal AMA:

To allow development of non-irrigation uses and to preserve existing agricultural economies in the AMA for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.

Santa Cruz AMA:

To maintain a safe-yield condition in the AMA and to prevent local water tables from experiencing long term declines



Safe-Yield

A.R.S. § 45-561(12):

“A groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area.”



Annual Calculation

Inflows

- * Natural
 - * Groundwater Inflow
 - * Streambed Recharge
 - * Mountain-front Recharge
- * Artificial
 - * Incidental Recharge
 - * Agricultural
 - * Municipal
 - * Industrial
 - * Canal Seepage
 - * Cut to the Aquifer
 - * CAGRDR Replenishment

Outflows

- * Natural
 - * Groundwater Outflow
 - * Riparian Demand
- * Artificial
 - * Sector Demands
 - * Agricultural
 - * Municipal
 - * Industrial
 - * Indian
 - * Remediated Groundwater
 - * Poor Quality Groundwater



Annual Calculation – Data Sources

Inflows

- * Natural
 - * Groundwater Inflow
 - * Streambed Recharge
 - * Mountain-front Recharge
- * Artificial
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 - * Agricultural
 - * Municipal
 - * Industrial
 - * Canal Seepage
 - * Cut to the Aquifer
 - * CAGR Replenishment

Outflows

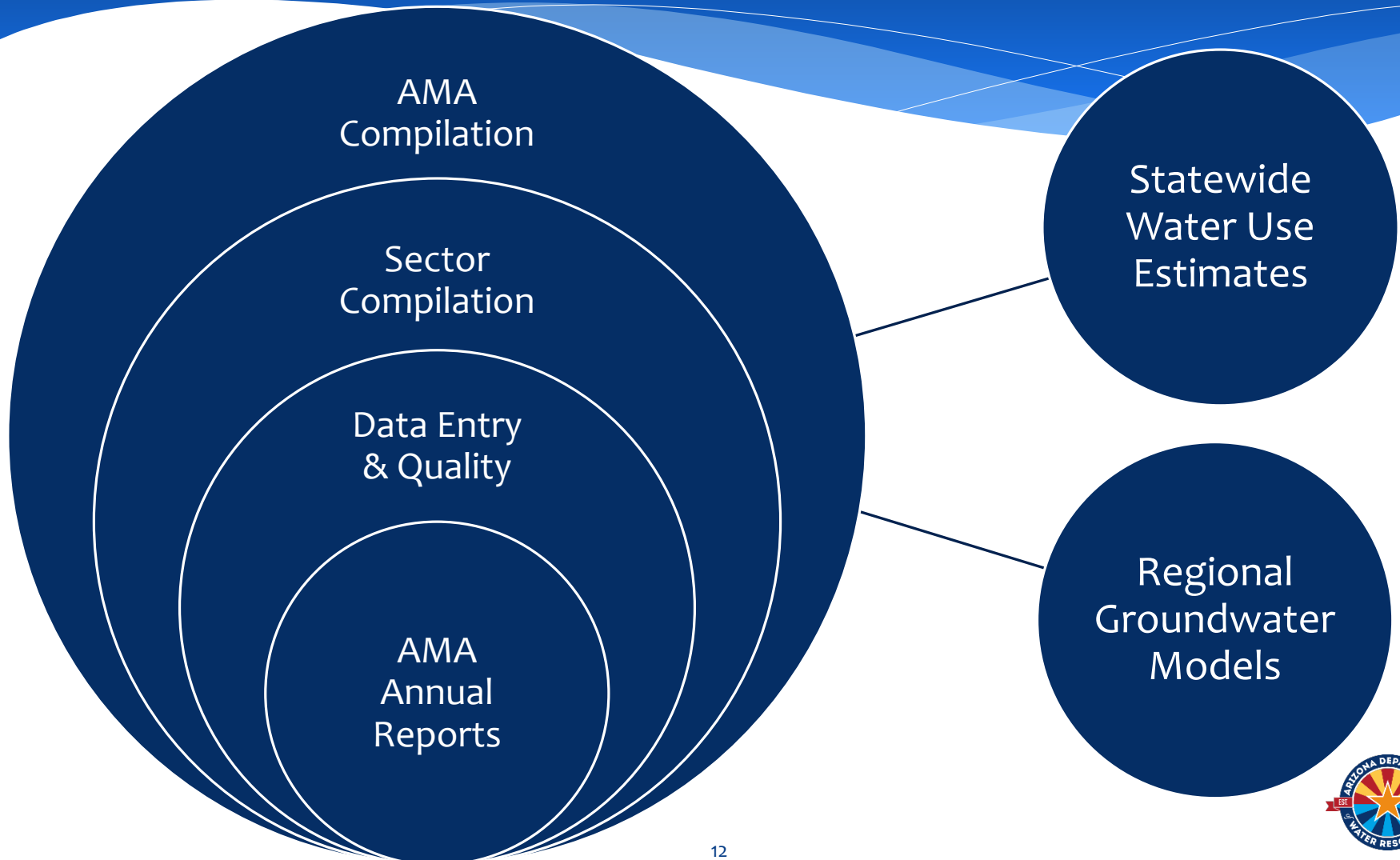
- * Natural
 - * Groundwater Outflow
 - * Riparian Demand
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 - * Agricultural
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 - * Remediated Groundwater
 - * Poor Quality Groundwater

Items highlighted in blue are outputs of ADWR's regional groundwater models.

Items highlighted in gray are compiled from AMA Annual Reports.



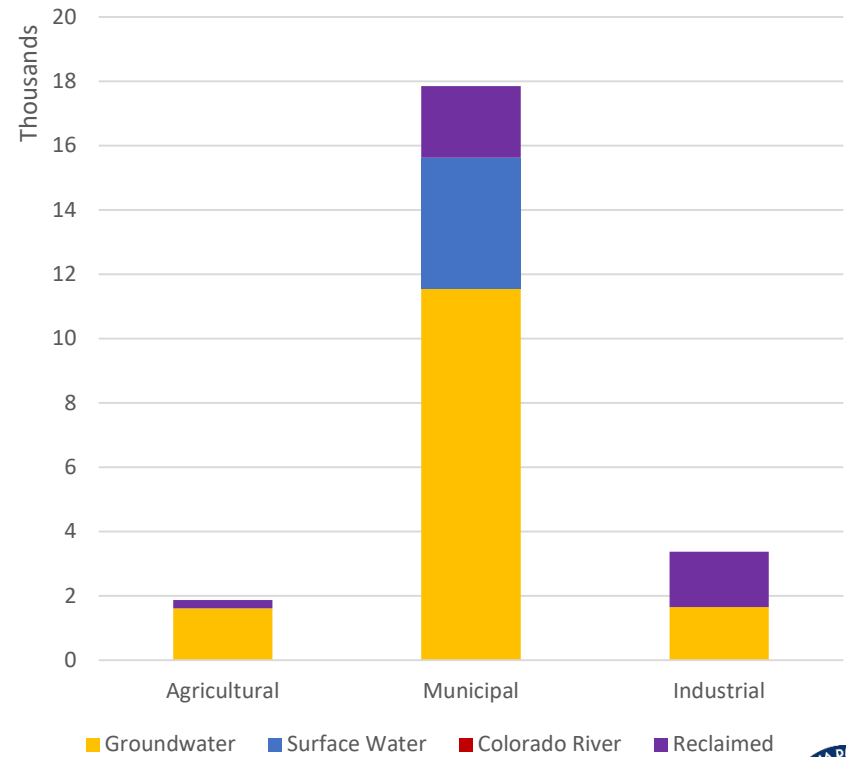
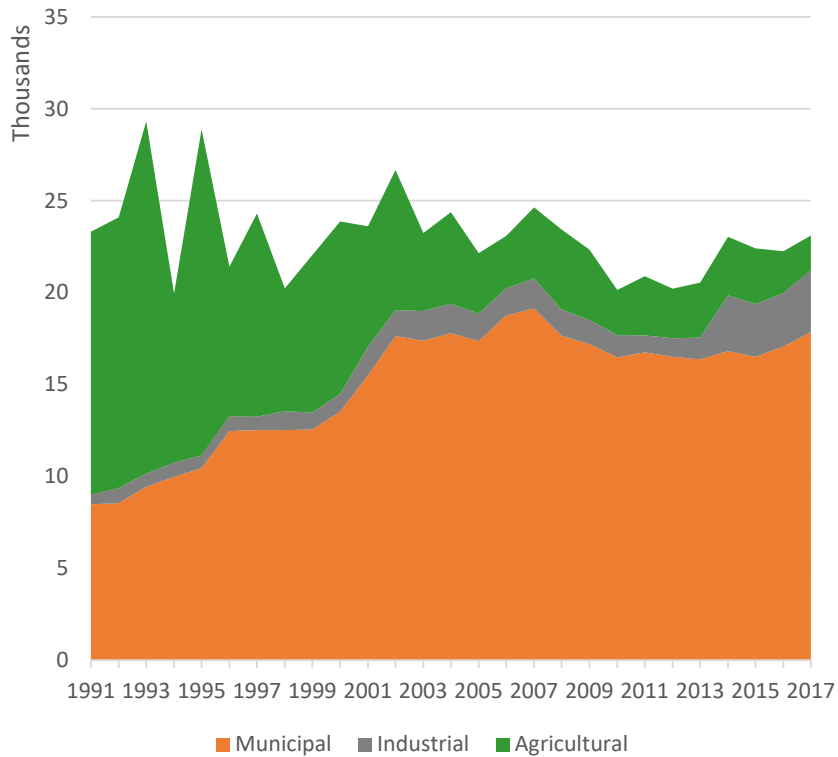
ADWR Data



Safe-Yield by AMA

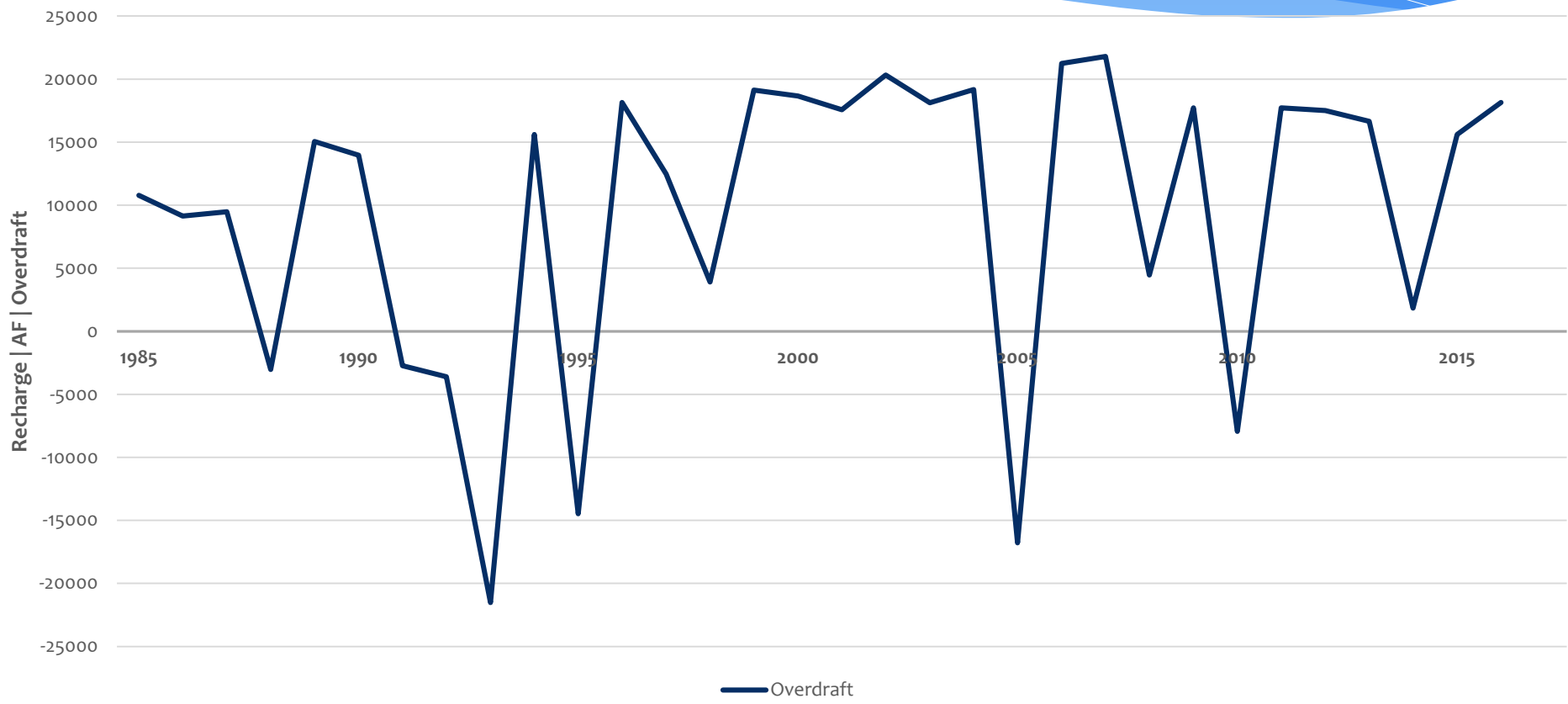


Prescott AMA Water Demand & Supply





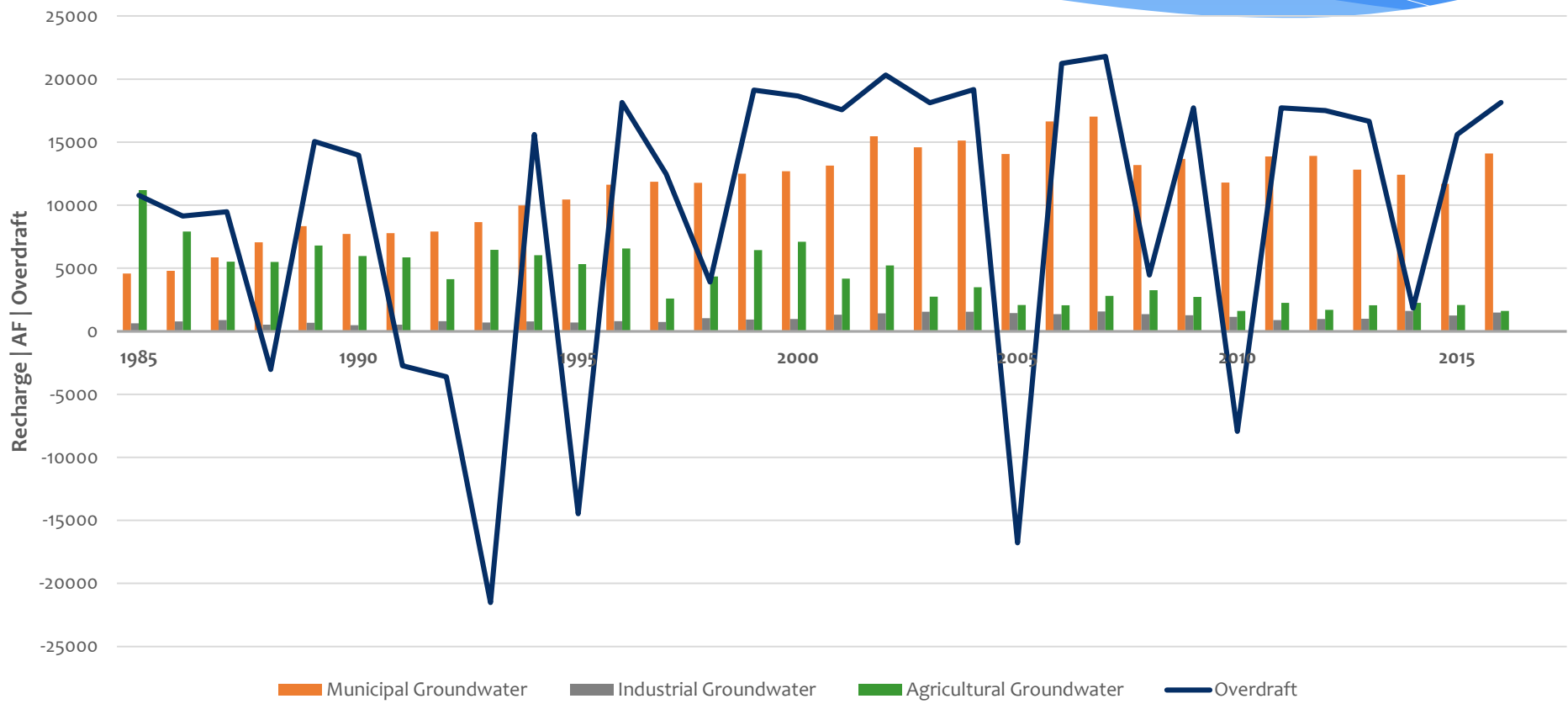
Prescott AMA Annual Overdraft





Prescott AMA

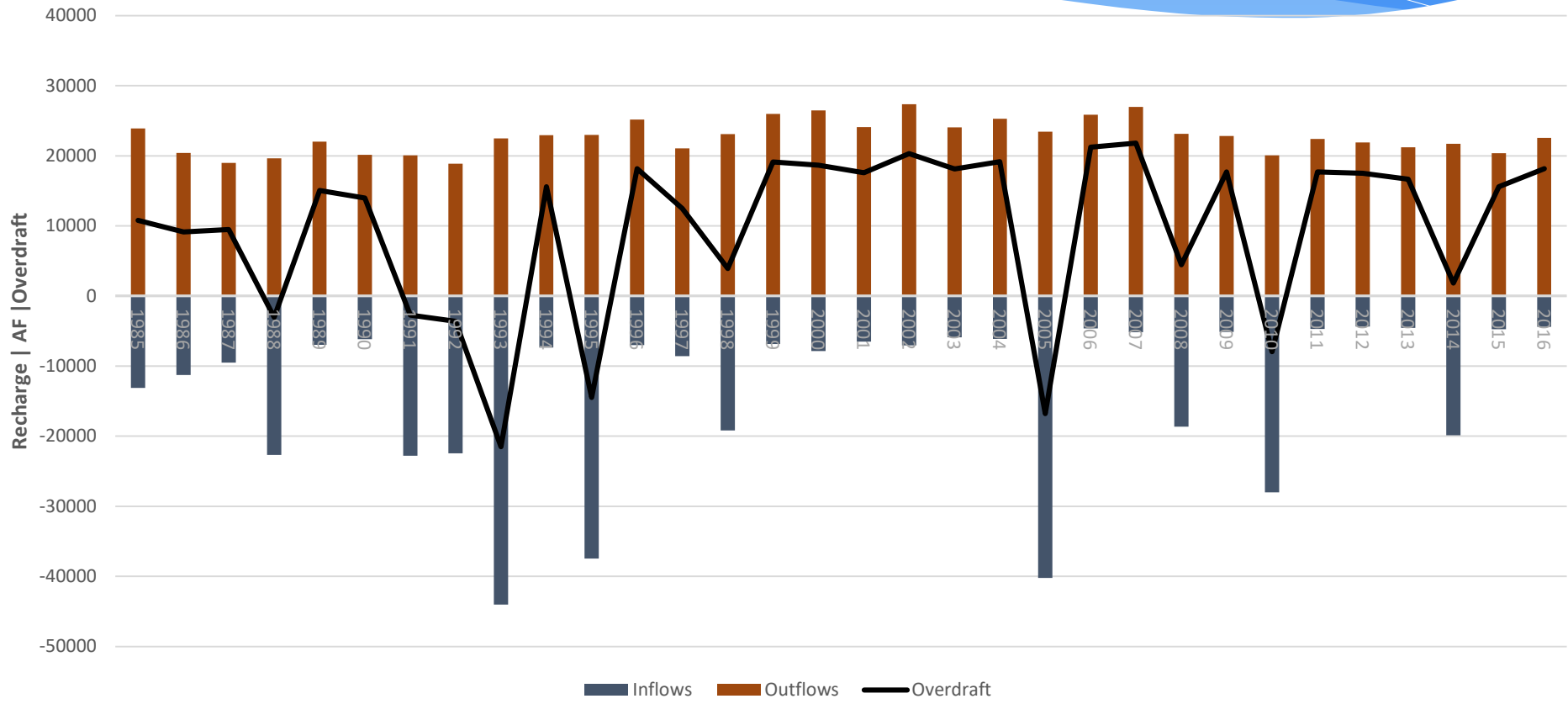
Annual Overdraft & Groundwater Demands





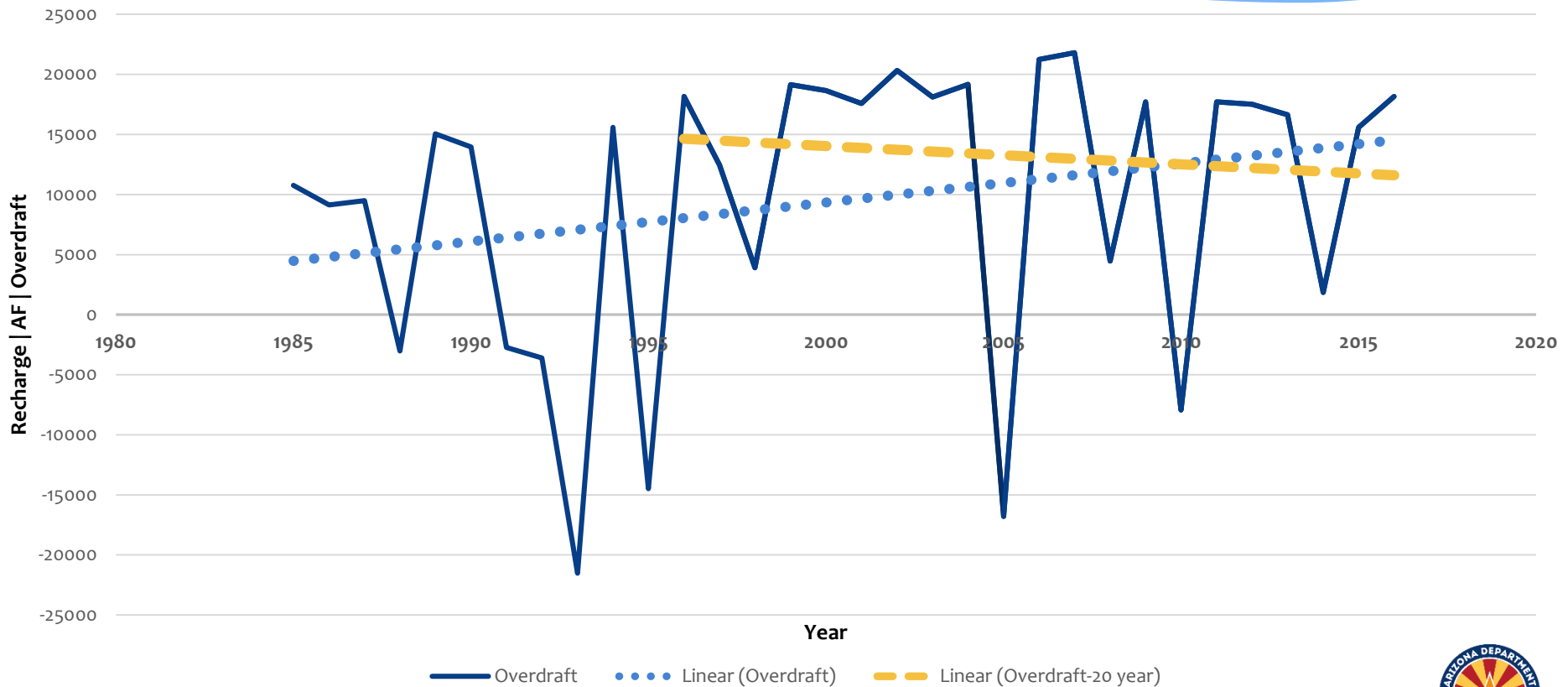
Prescott AMA

Annual Overdraft – Inflows & Outflows



Prescott AMA

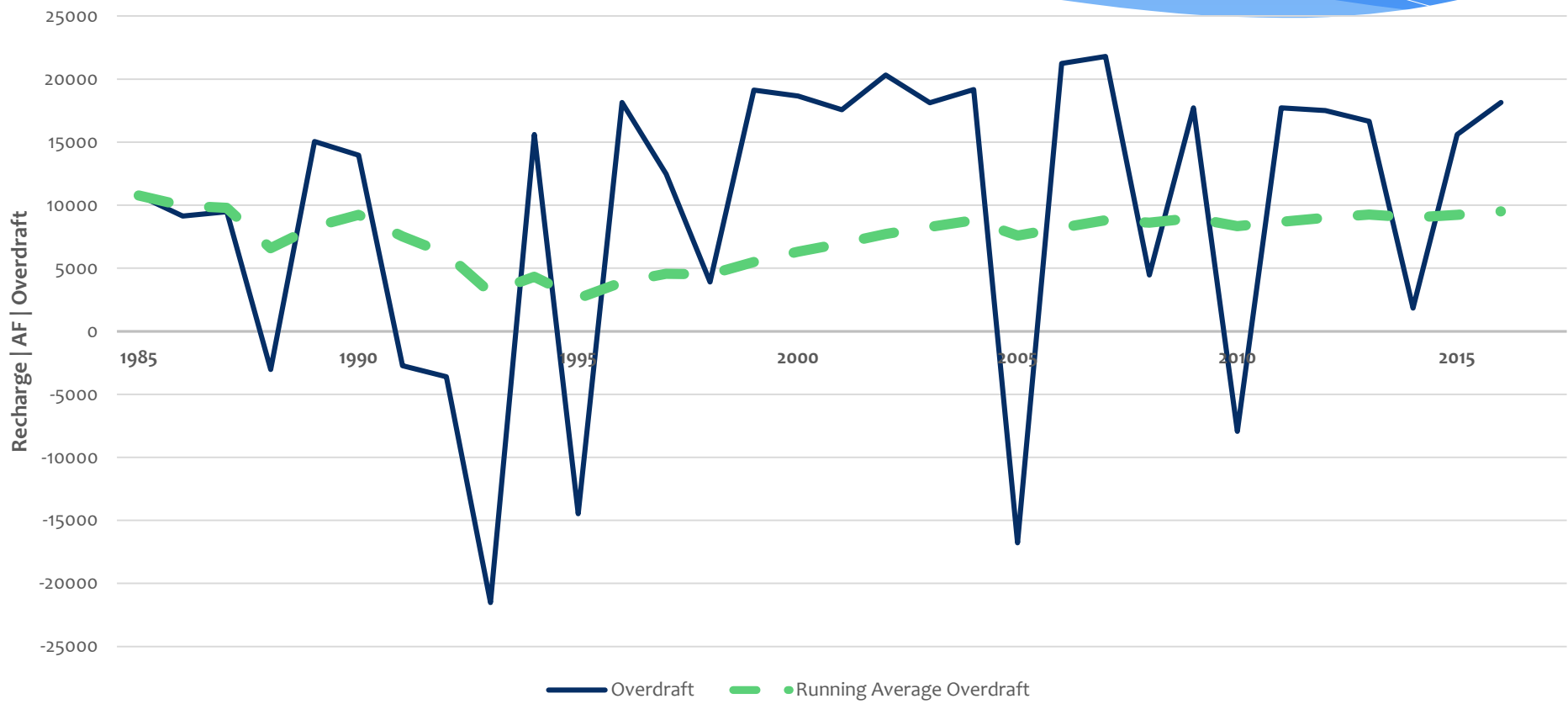
Annual Overdraft & Trendlines



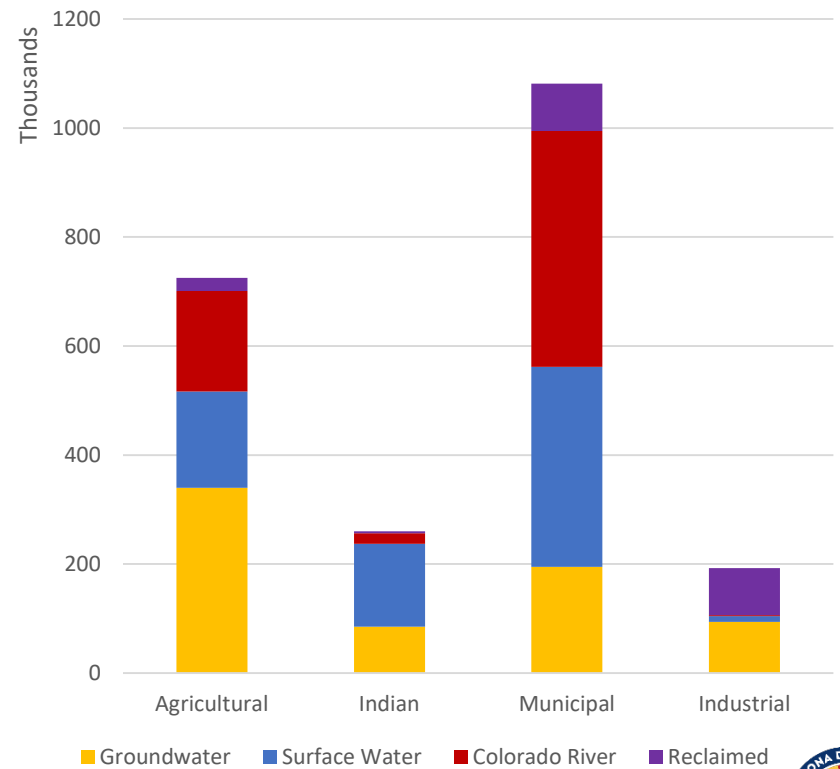
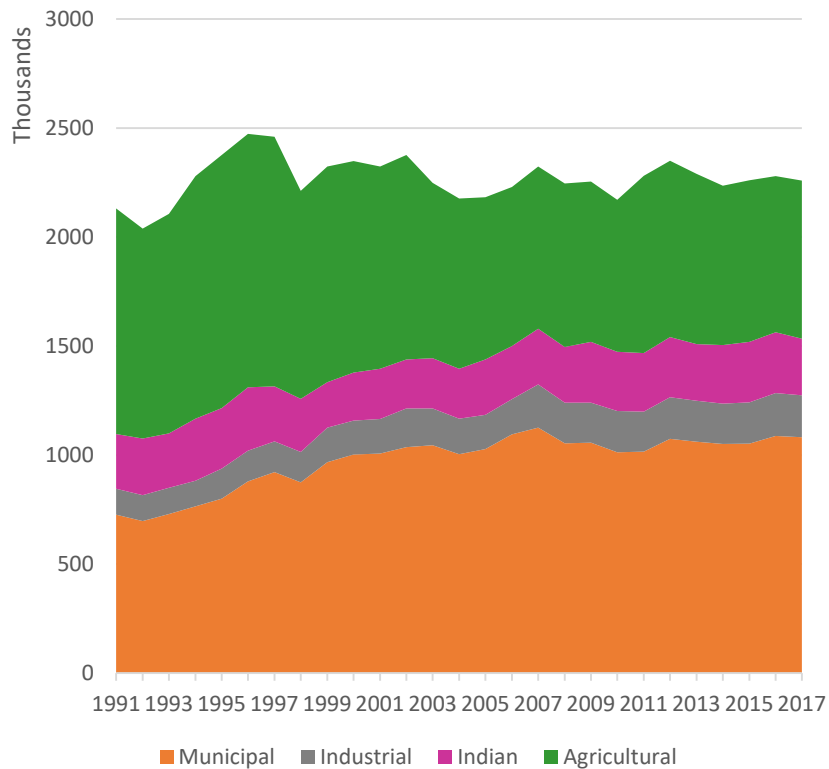


Prescott AMA

Annual Overdraft & Running Average

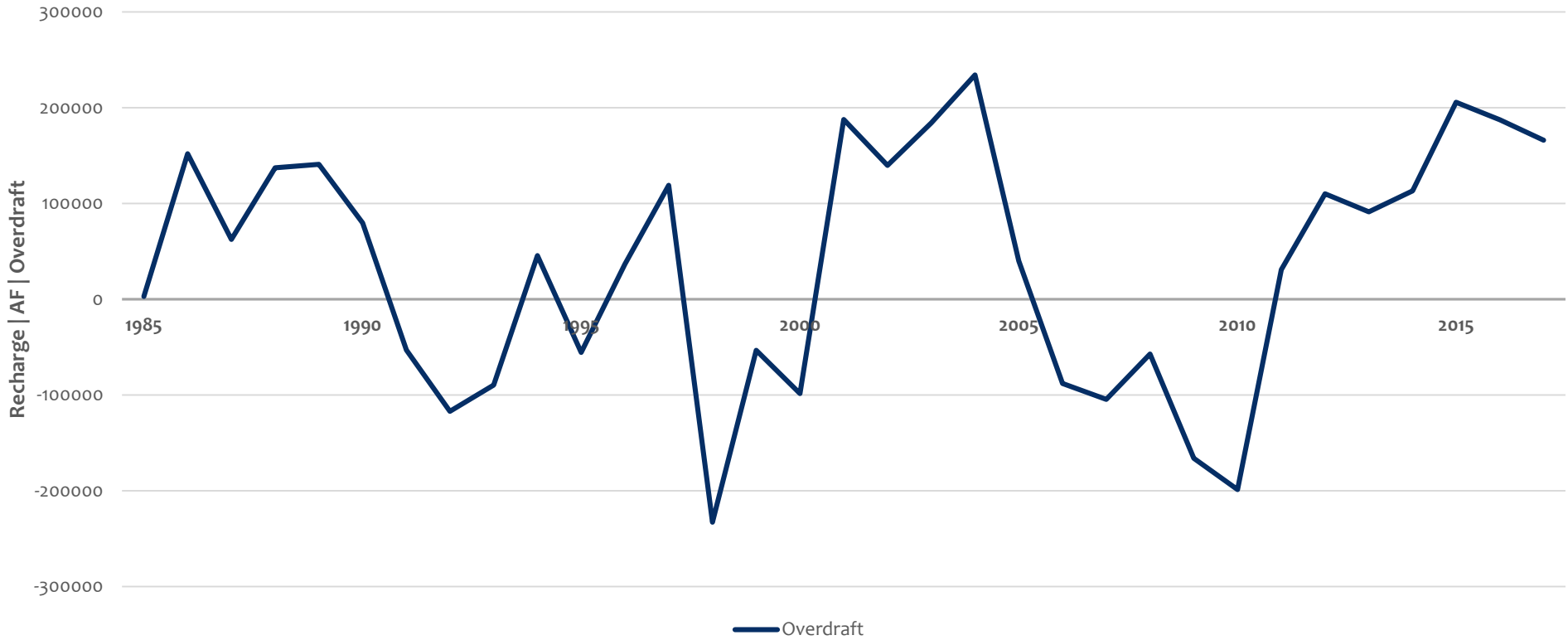


Phoenix AMA Water Demand & Supply





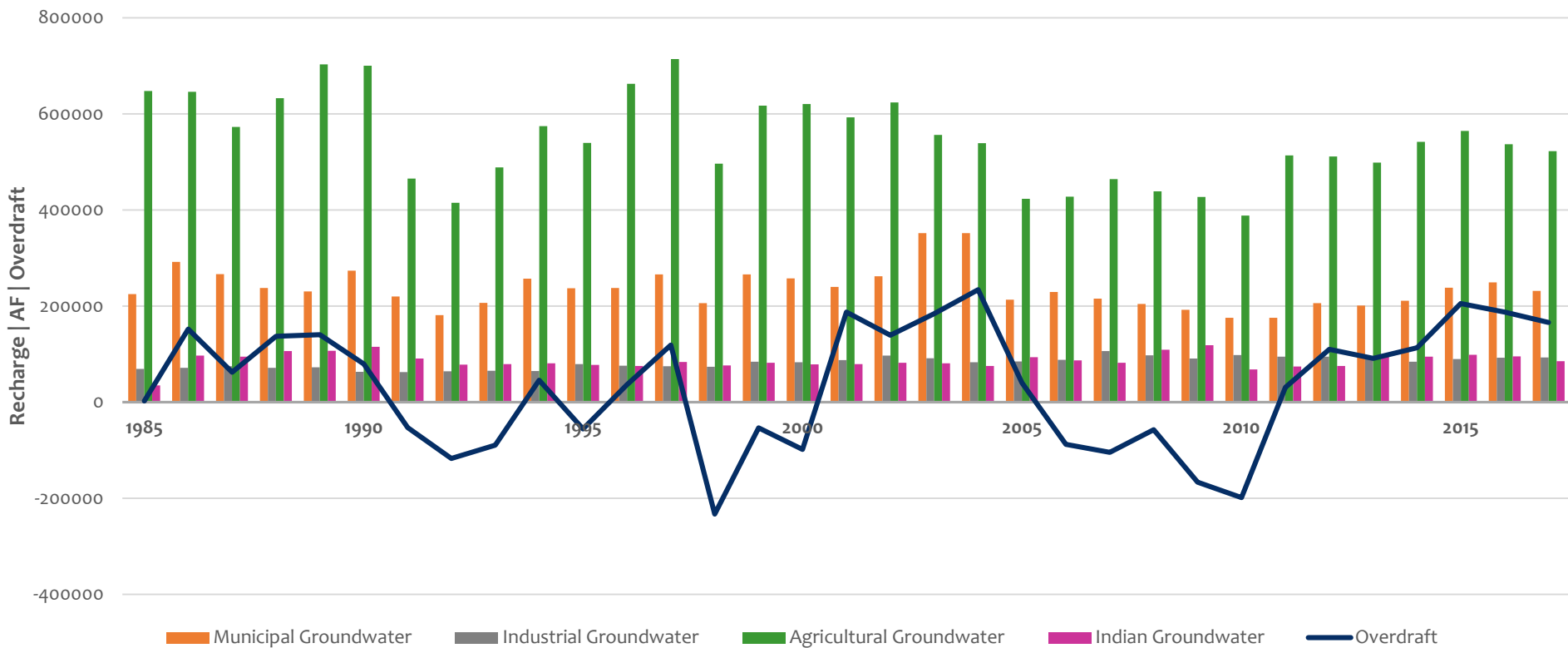
Phoenix AMA Annual Overdraft





Phoenix AMA

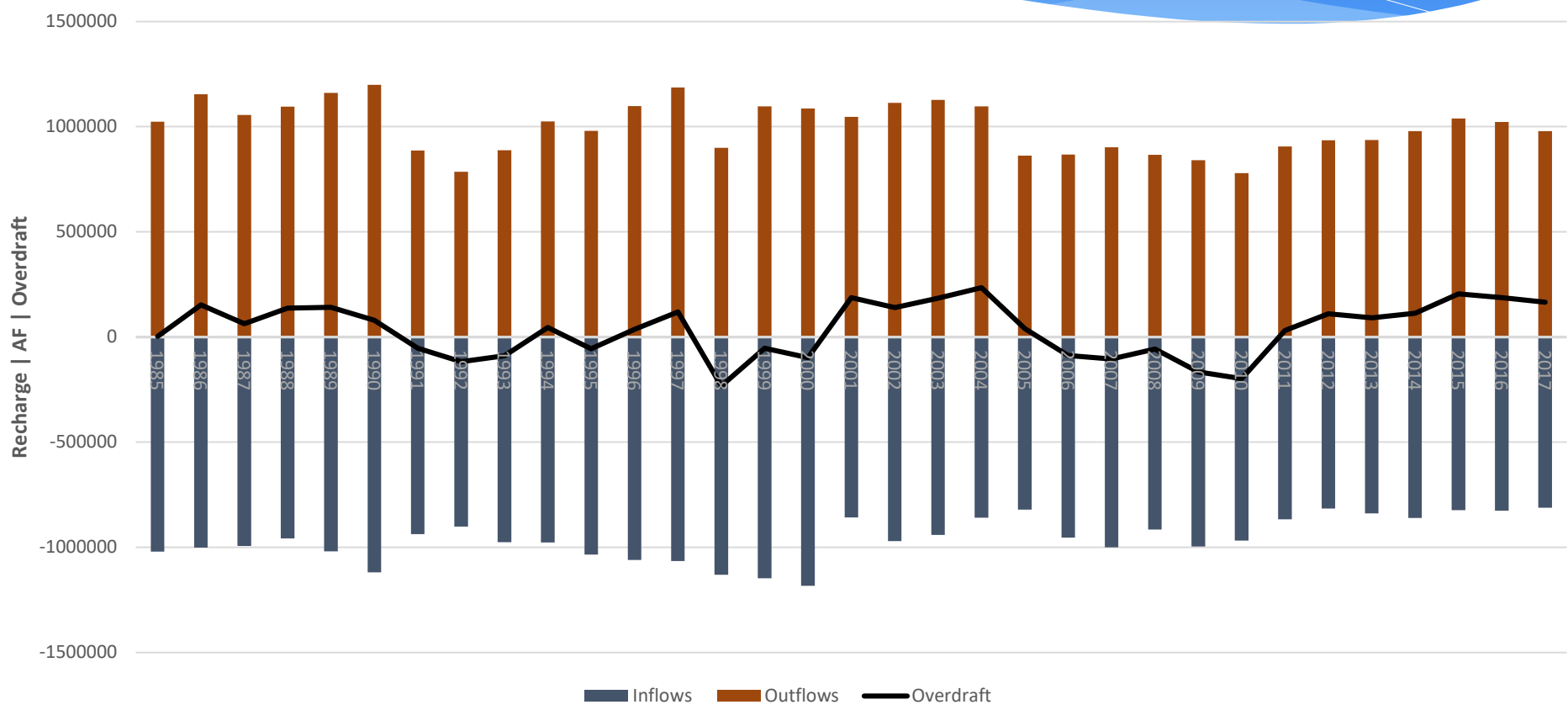
Annual Overdraft & Groundwater Demands





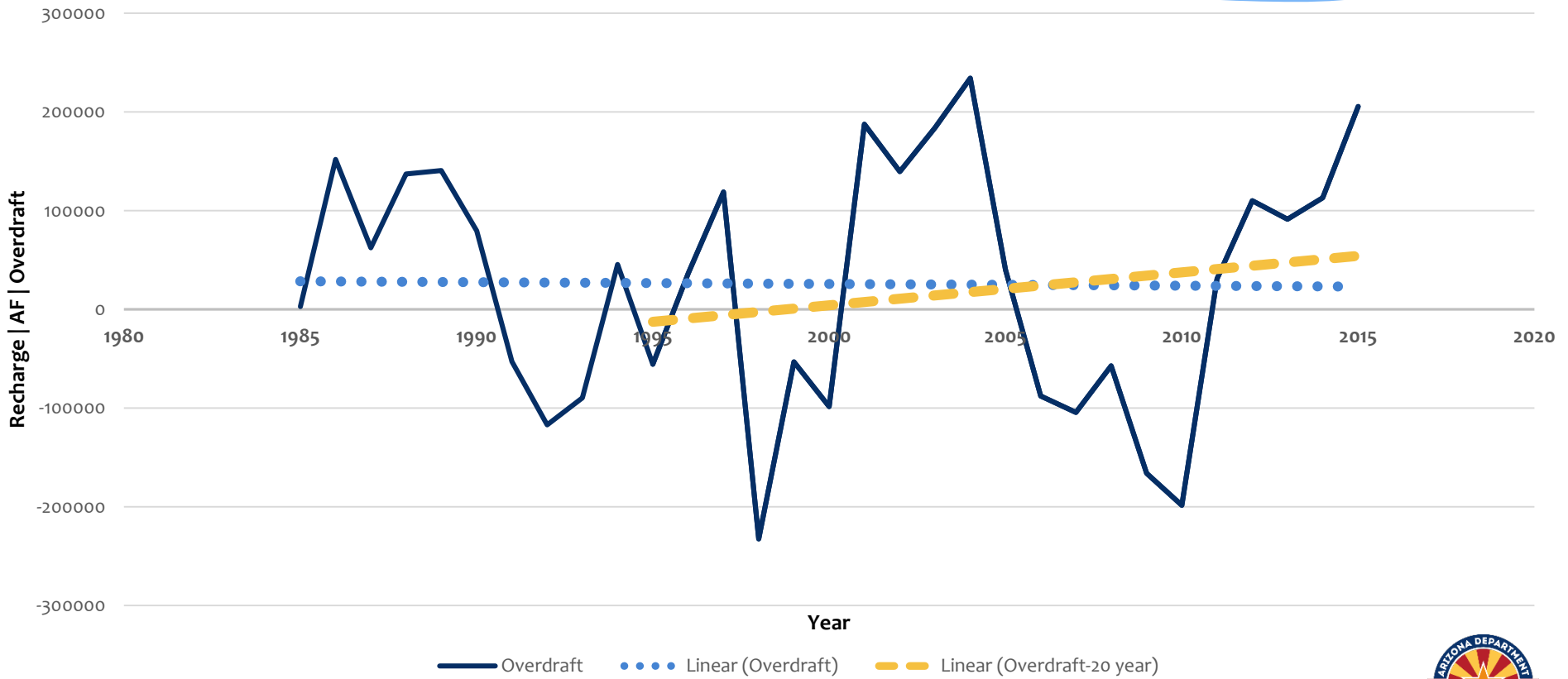
Phoenix AMA

Annual Overdraft – Inflows & Outflows



Phoenix AMA

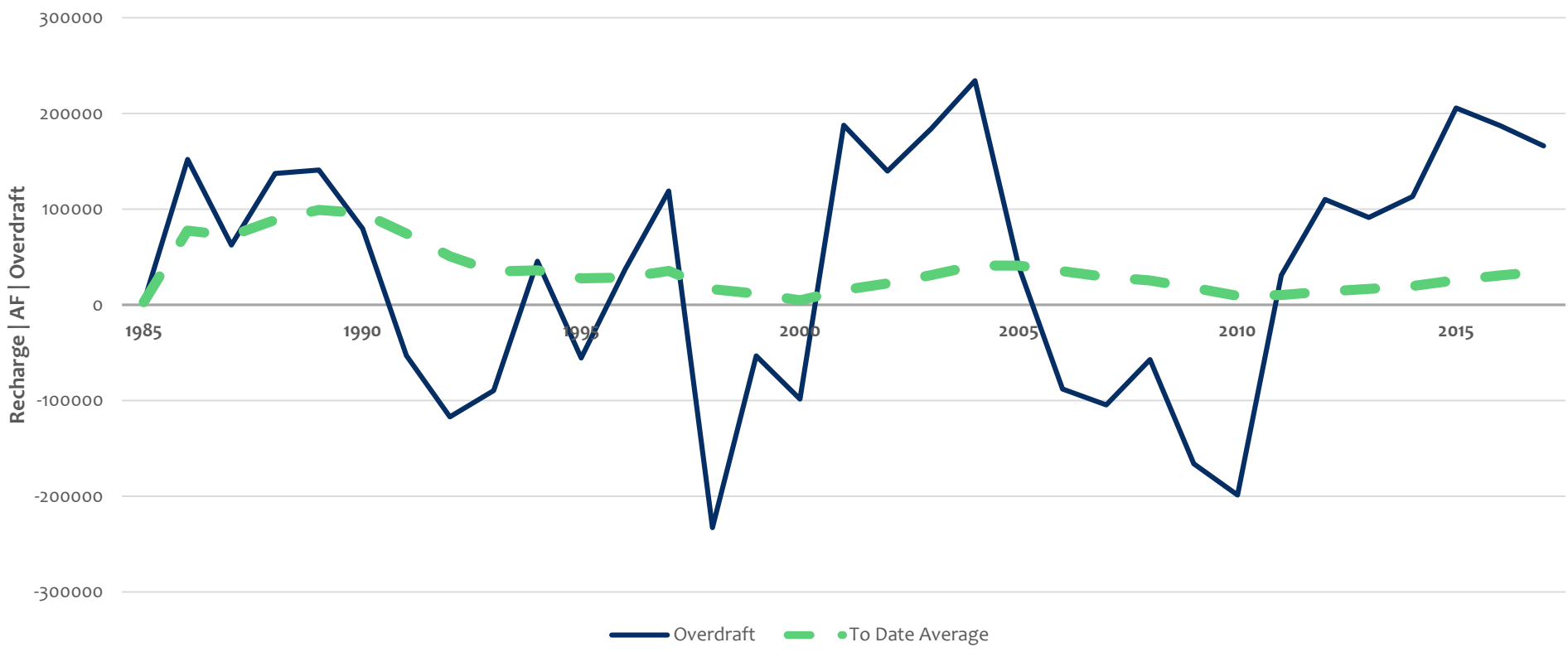
Annual Overdraft & Trendlines





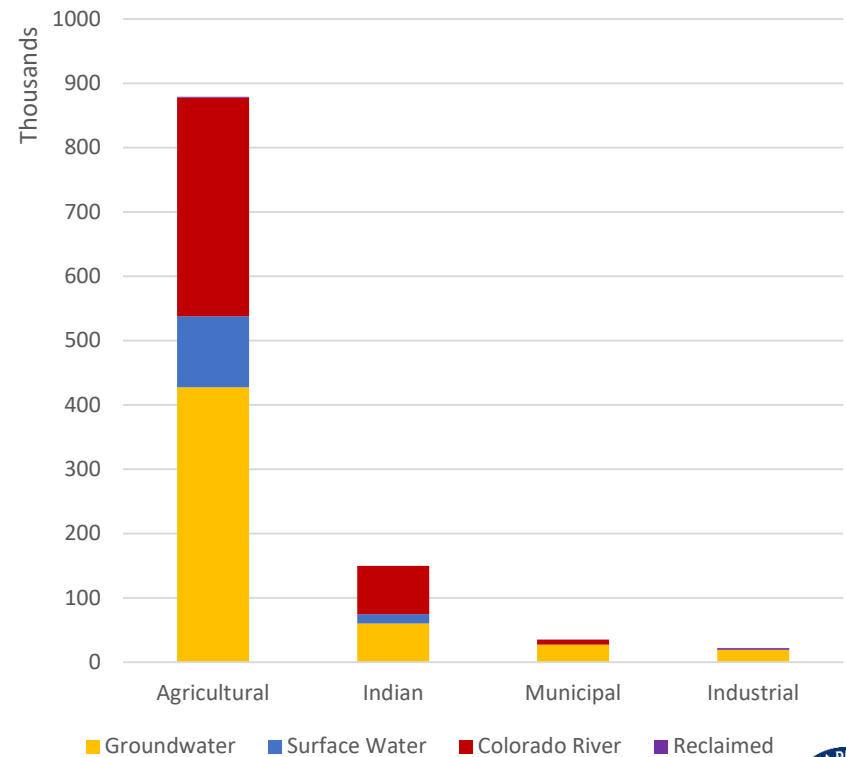
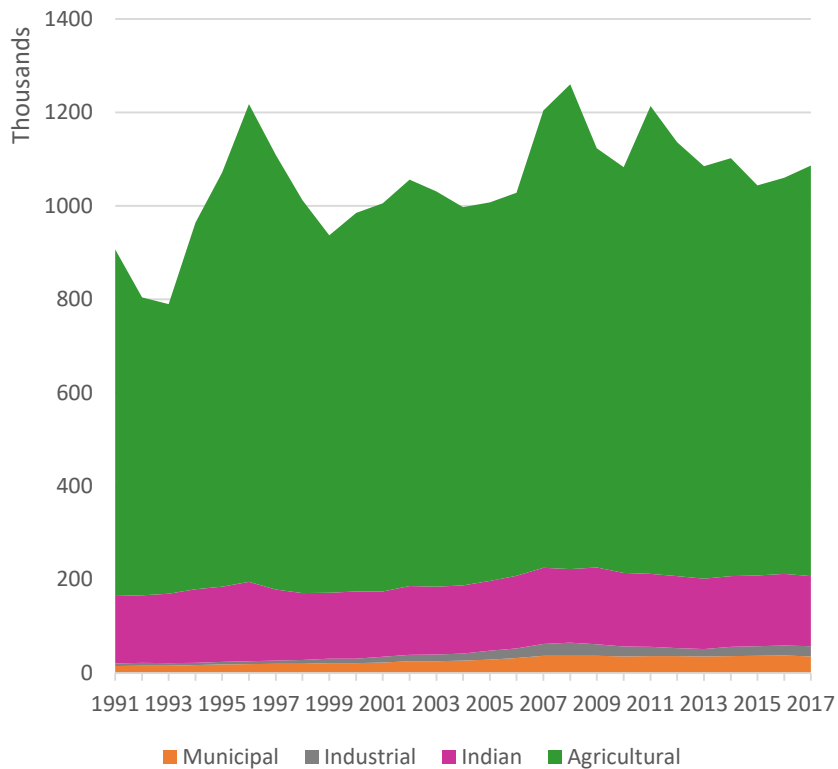
Phoenix AMA

Annual Overdraft & Running Average



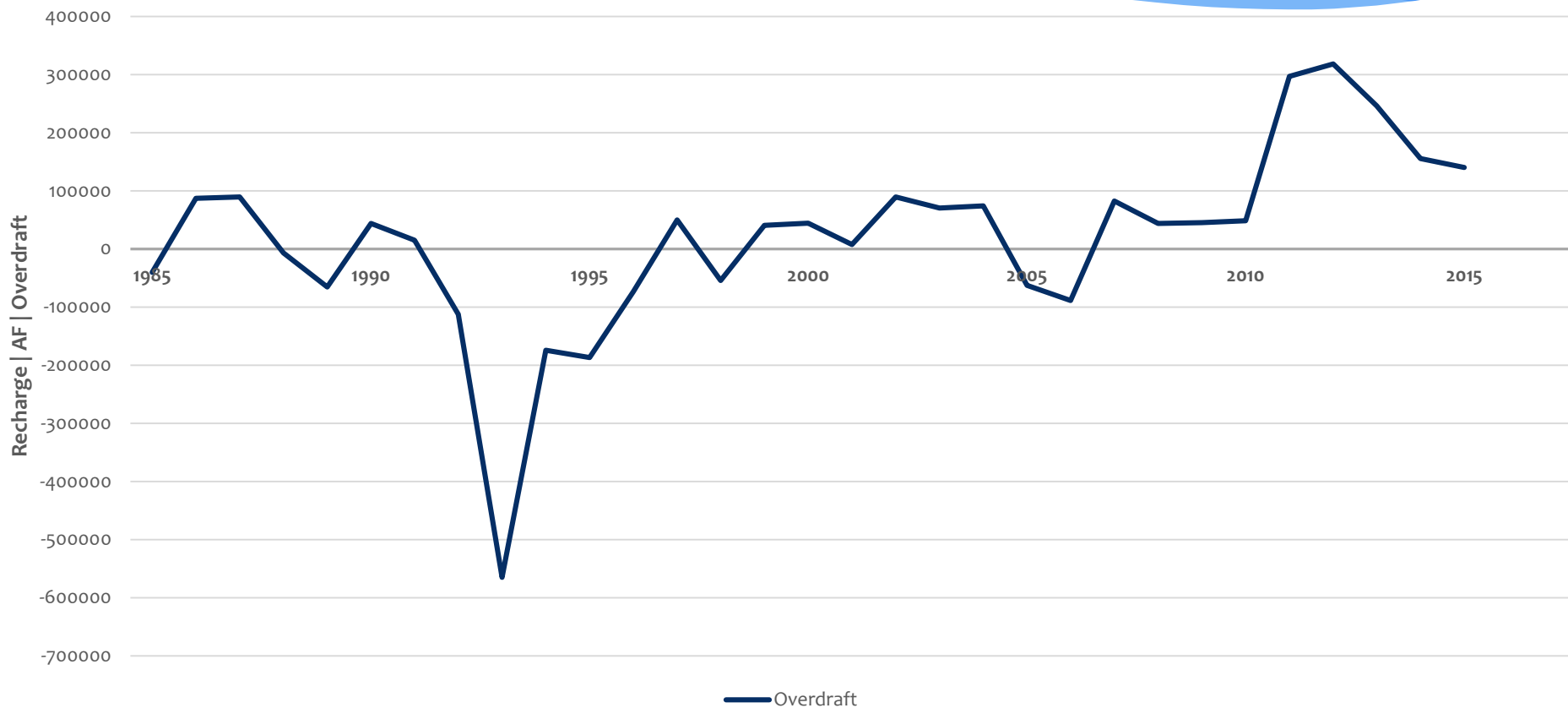
Pinal AMA

Water Supply & Demand





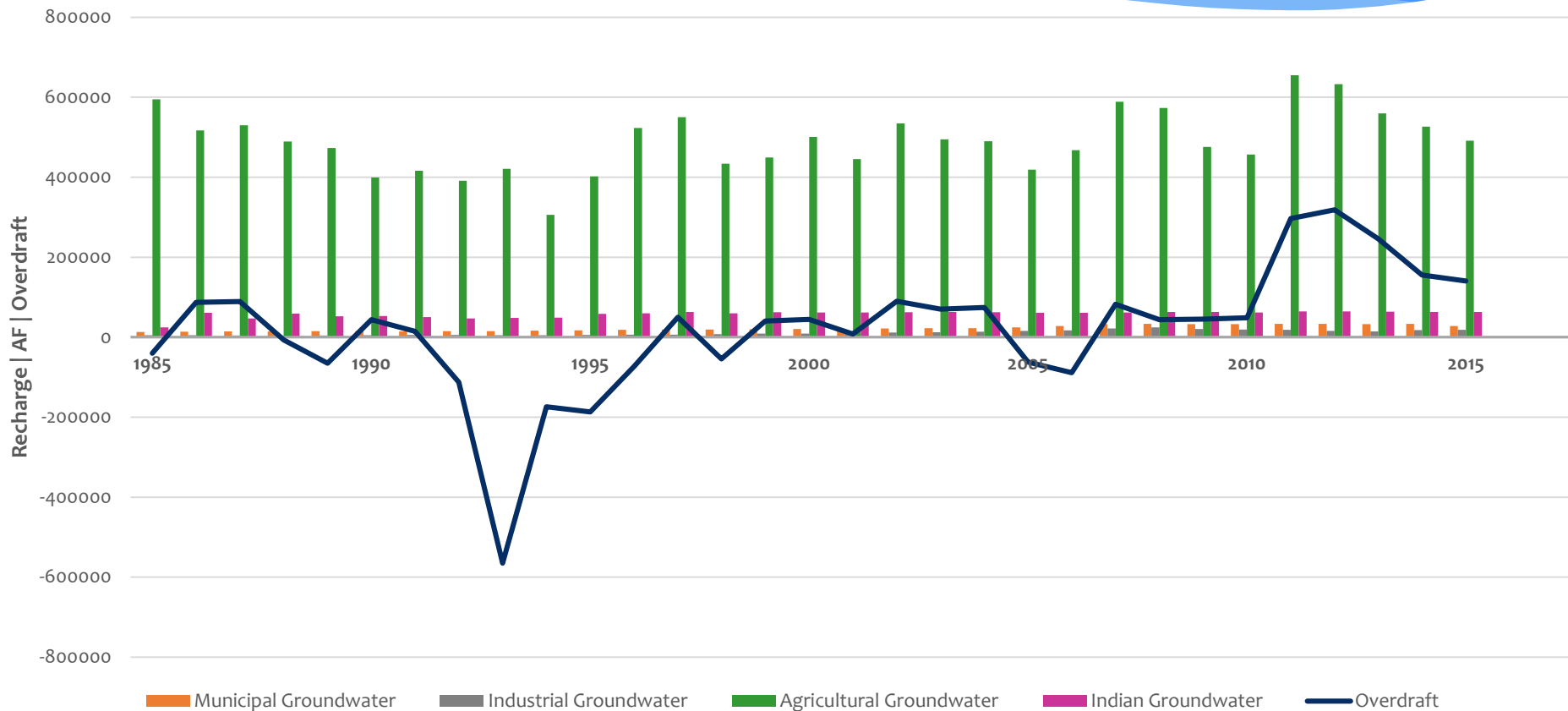
Pinal AMA Annual Overdraft





Pinal AMA

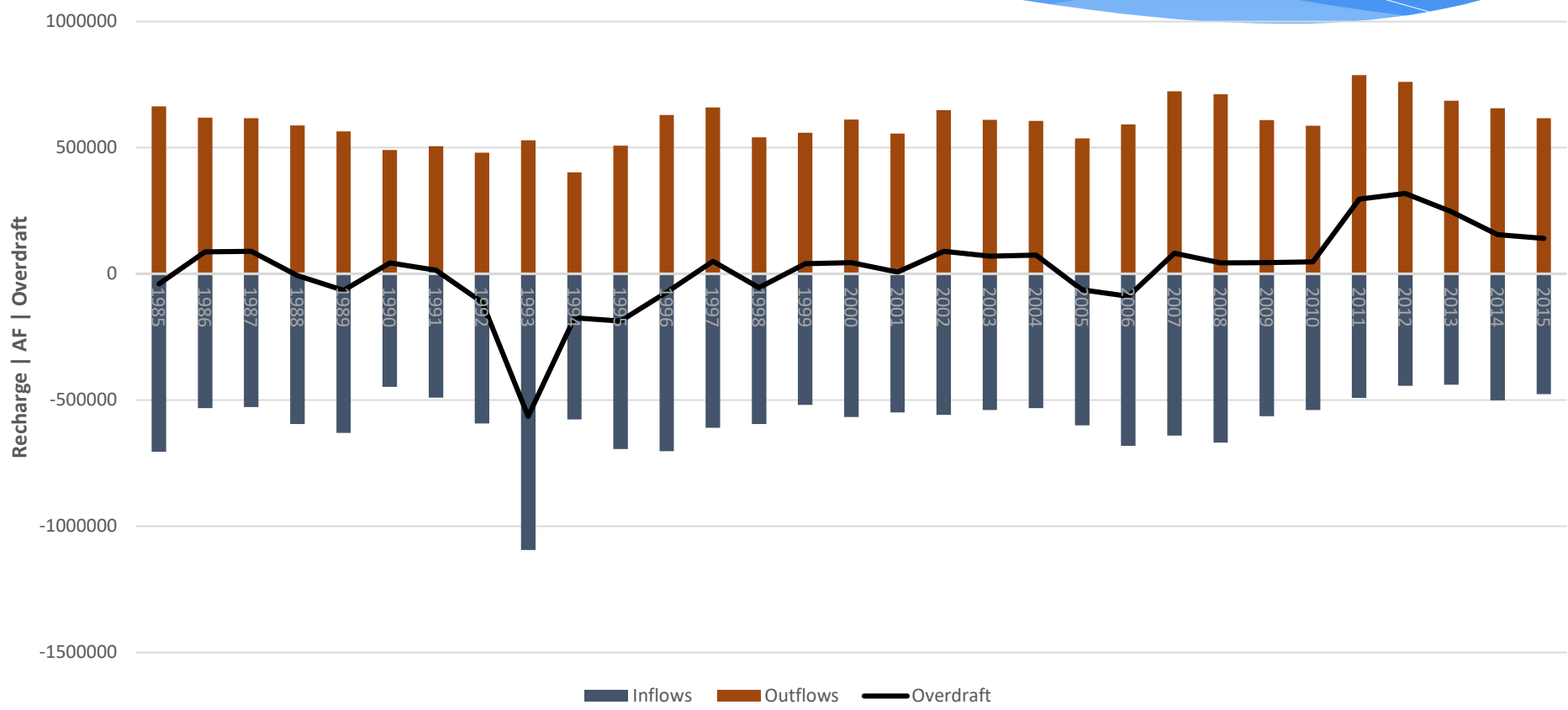
Annual Overdraft & Groundwater Demands





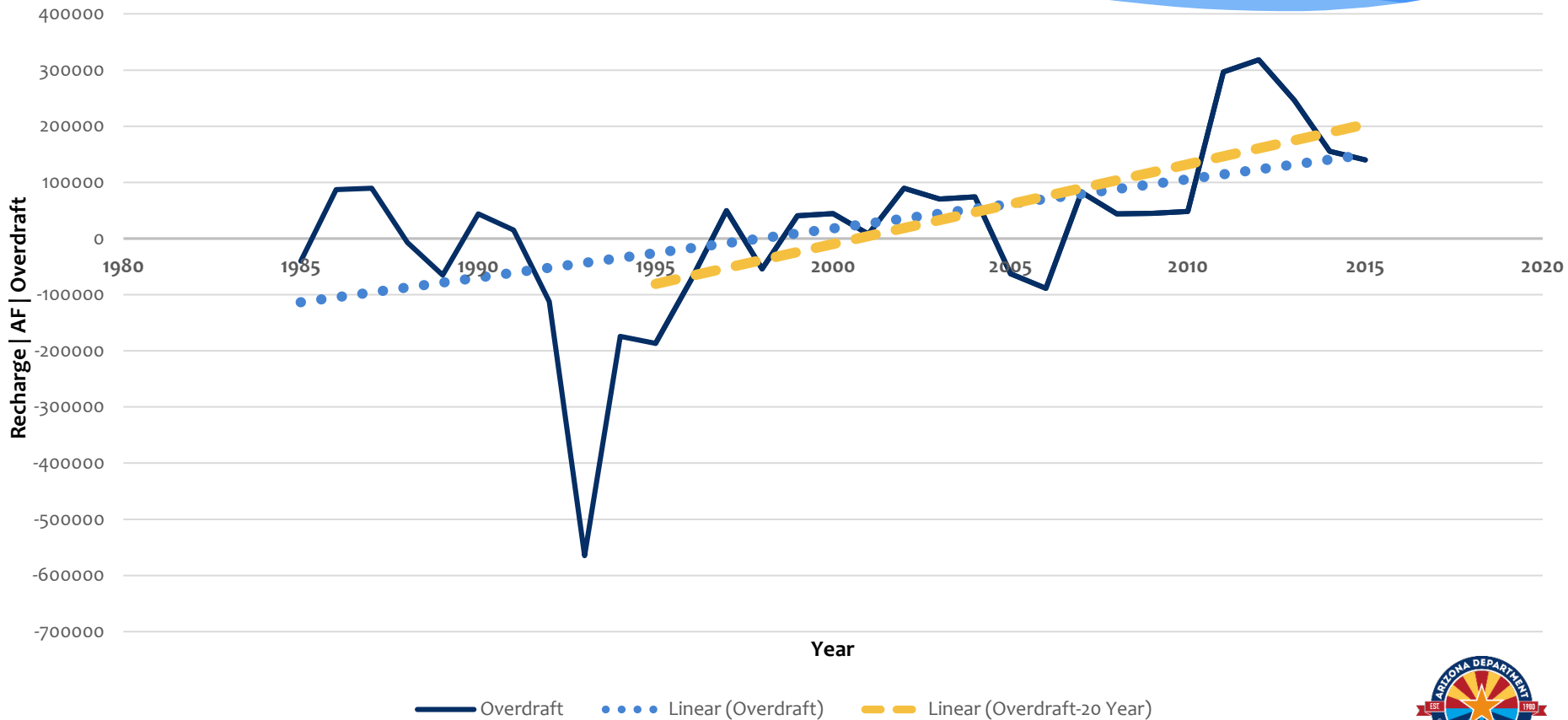
Pinal AMA

Annual Overdraft – Inflows & Outflows



Pinal AMA

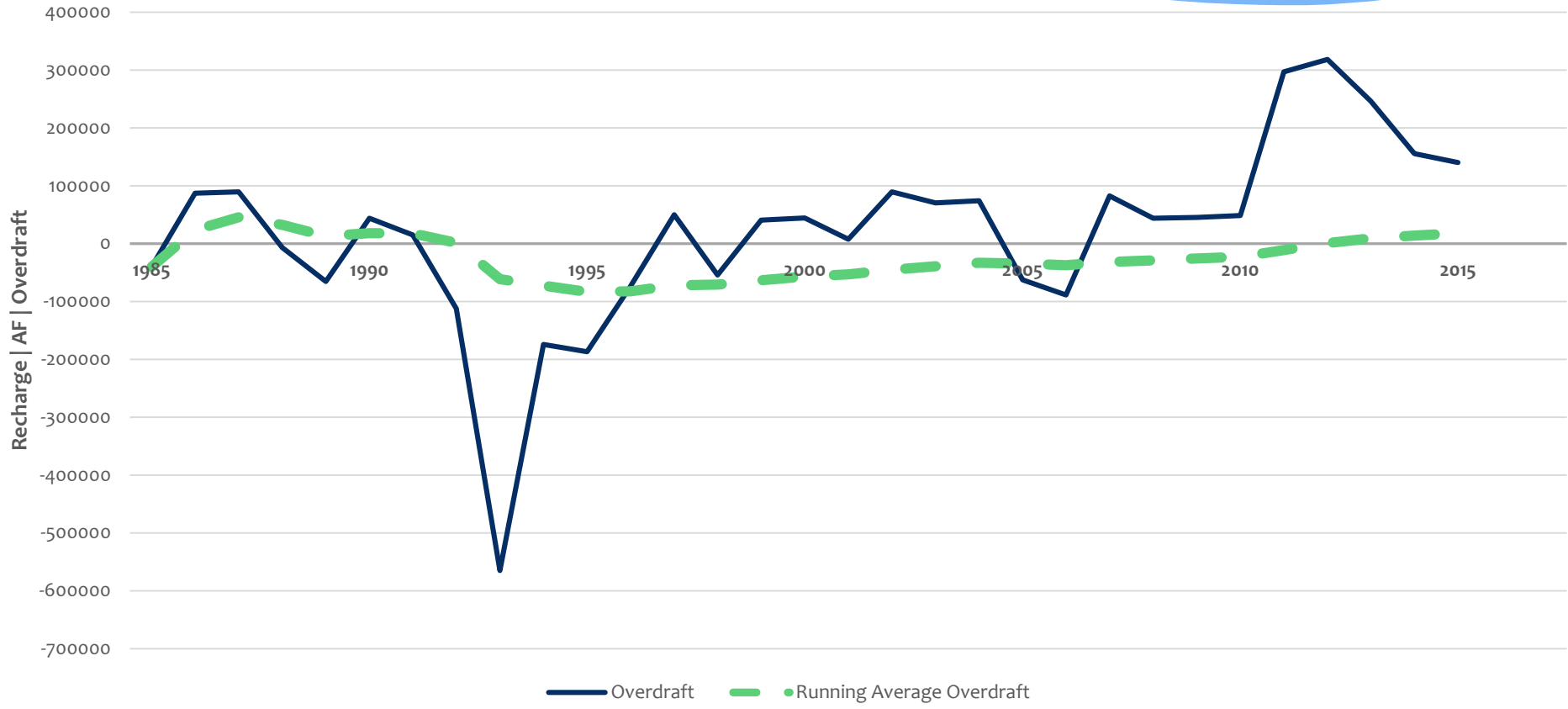
Annual Overdraft & Trendlines



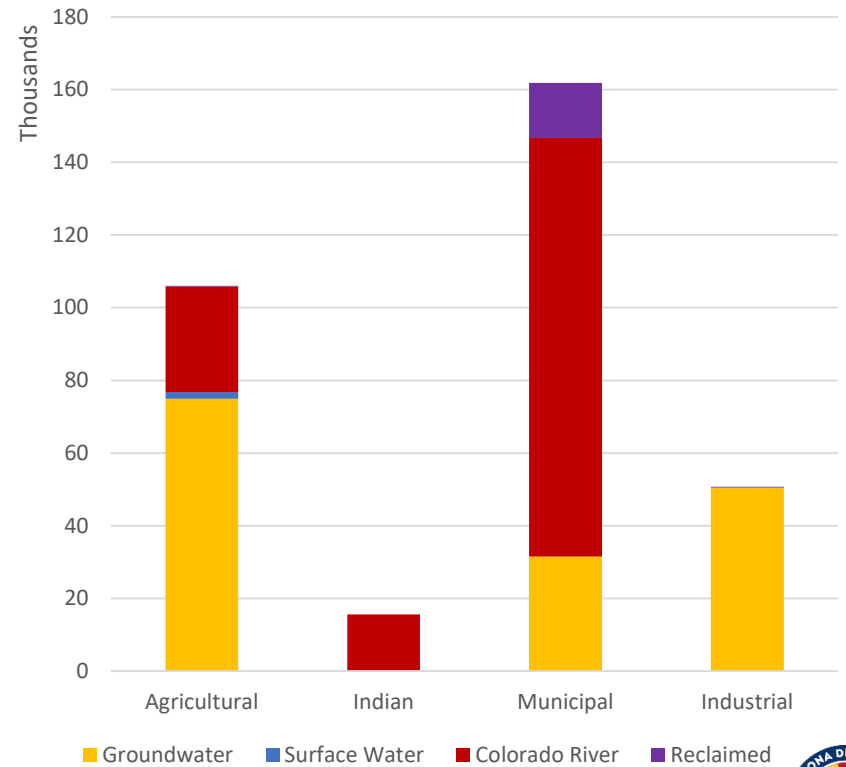
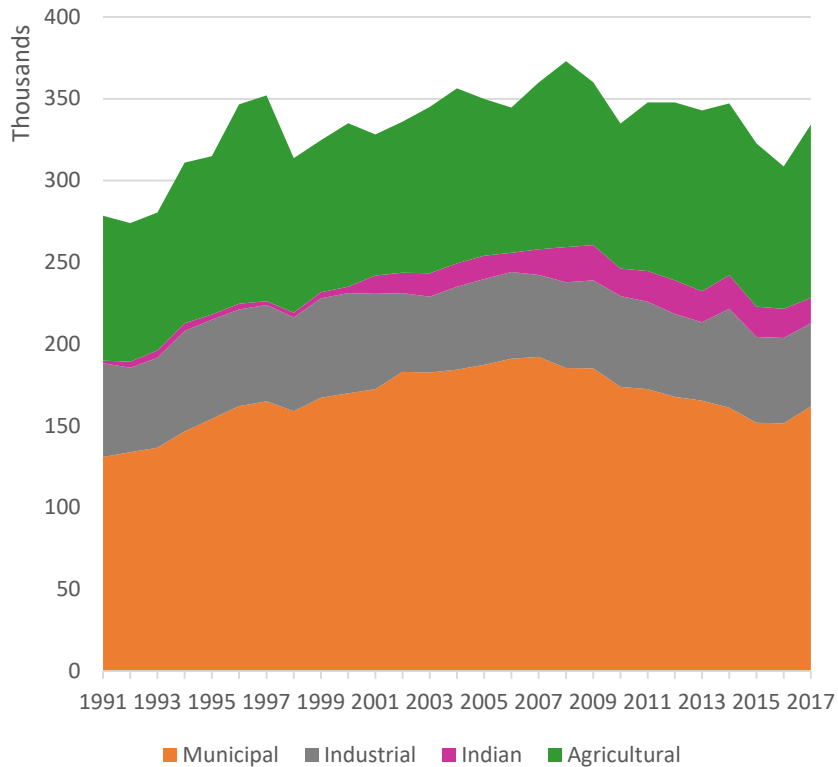


Pinal AMA

Annual Overdraft & Running Average

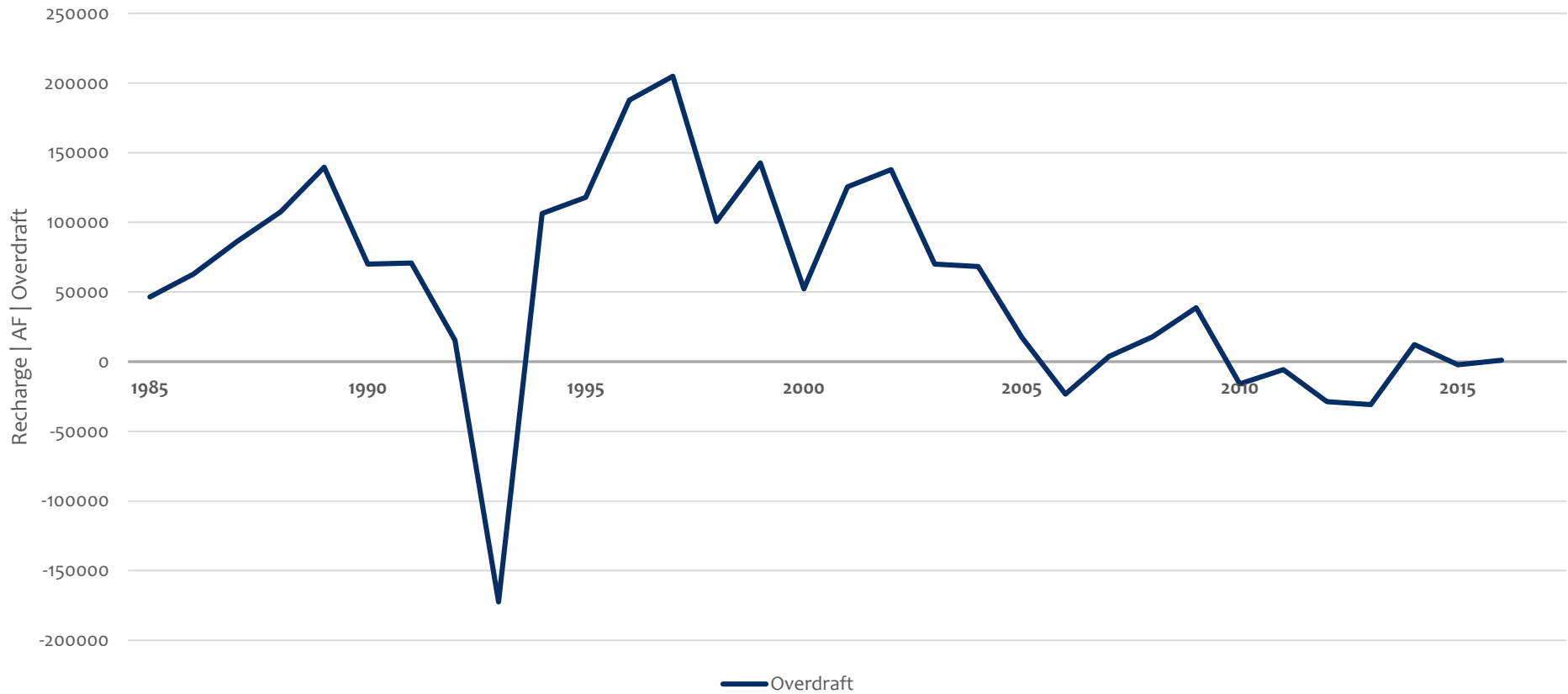


Tucson AMA Water Demand & Supply





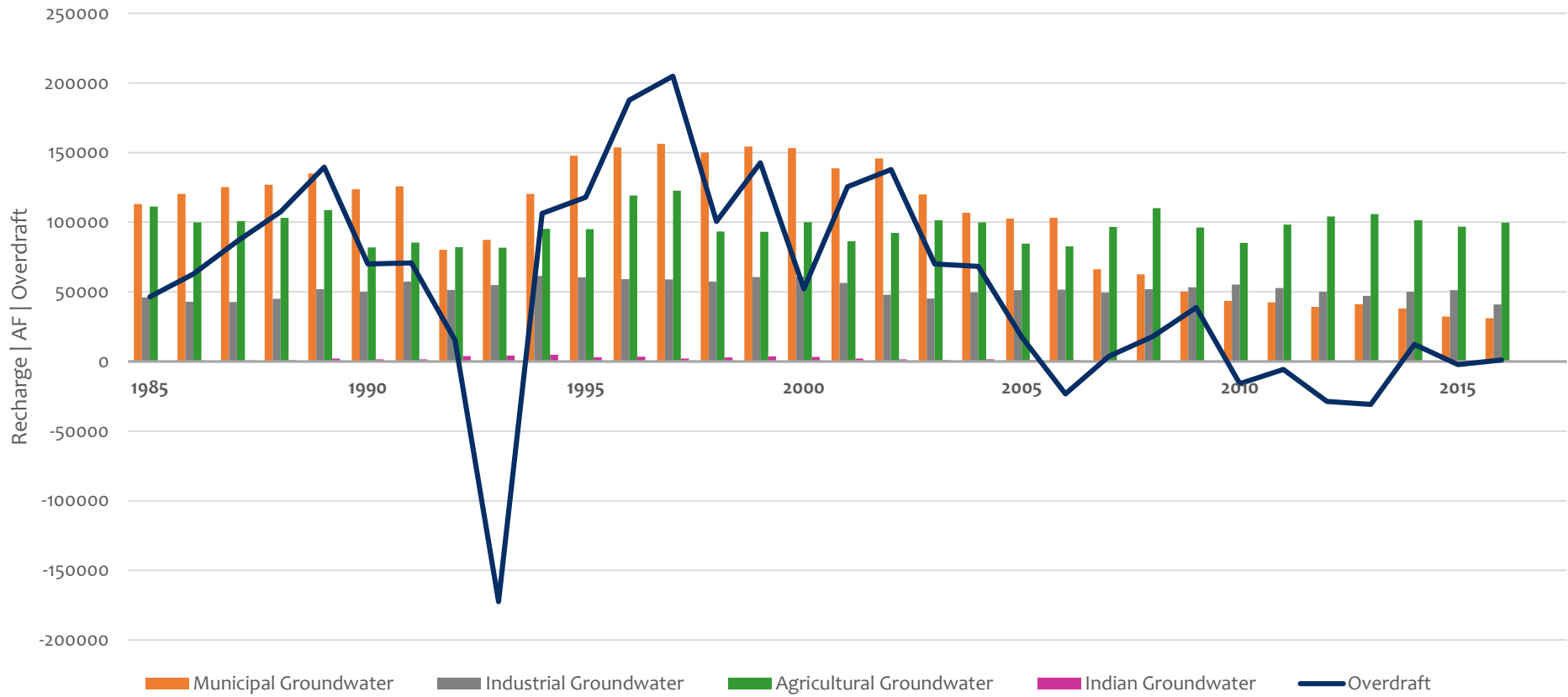
Tucson AMA Annual Overdraft





Tucson AMA

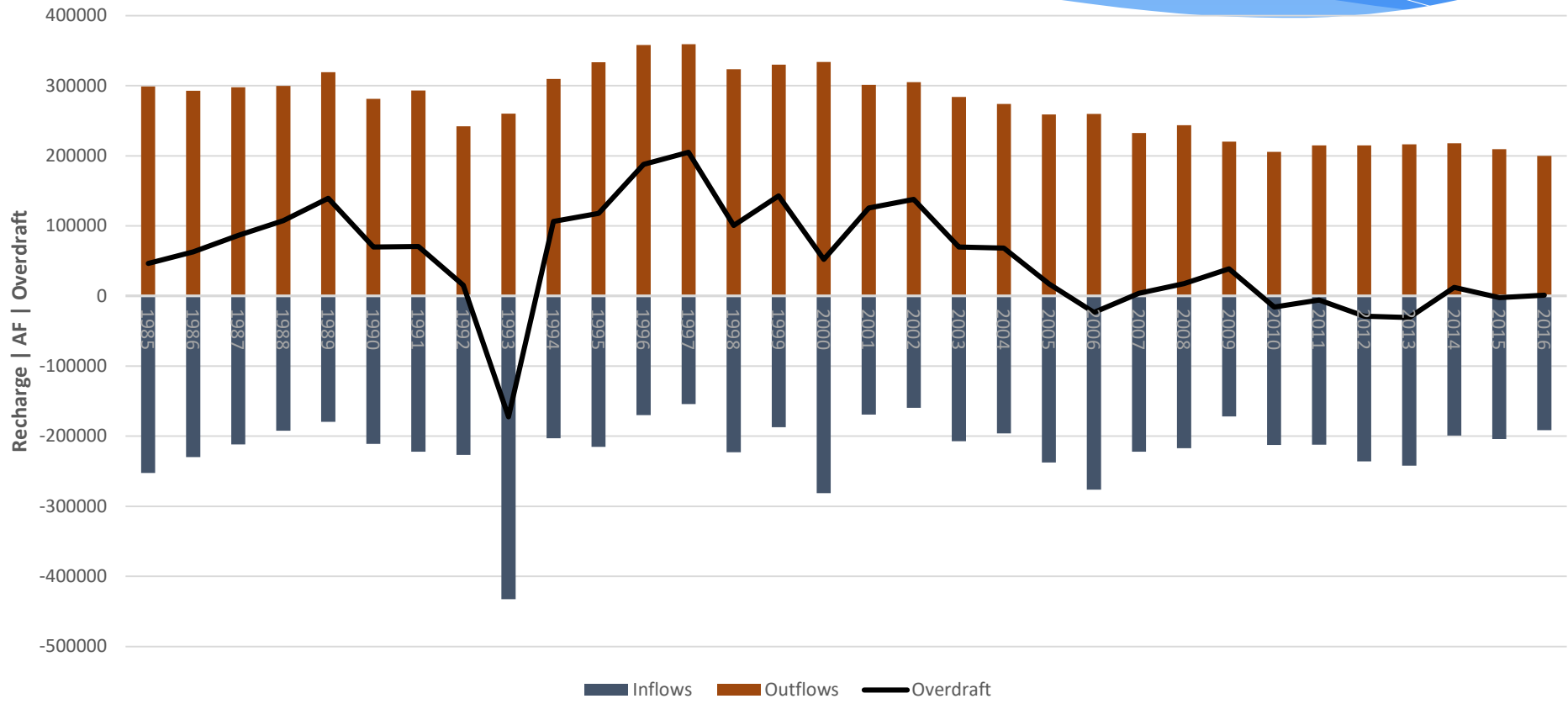
Annual Overdraft & Groundwater Demands





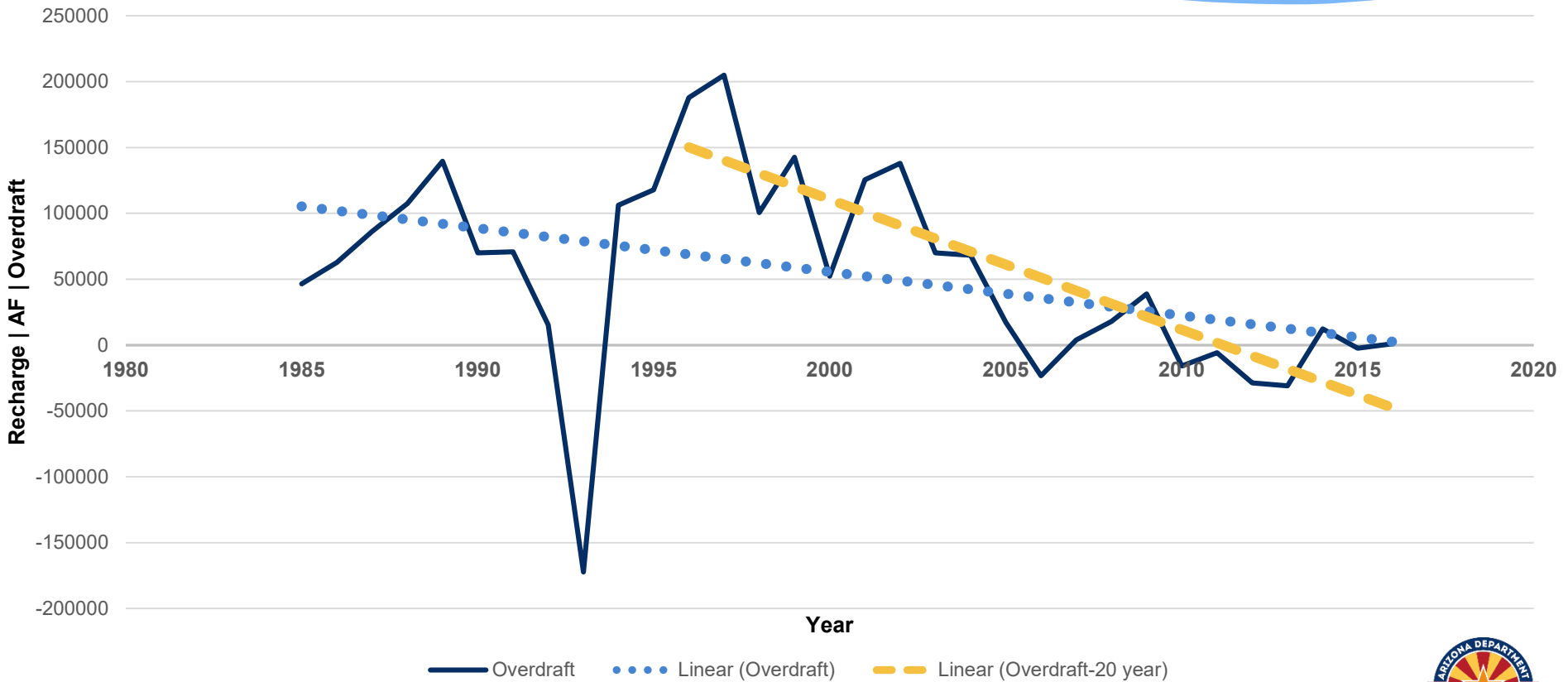
Tucson AMA

Annual Overdraft – Inflows & Outflows



Tucson AMA

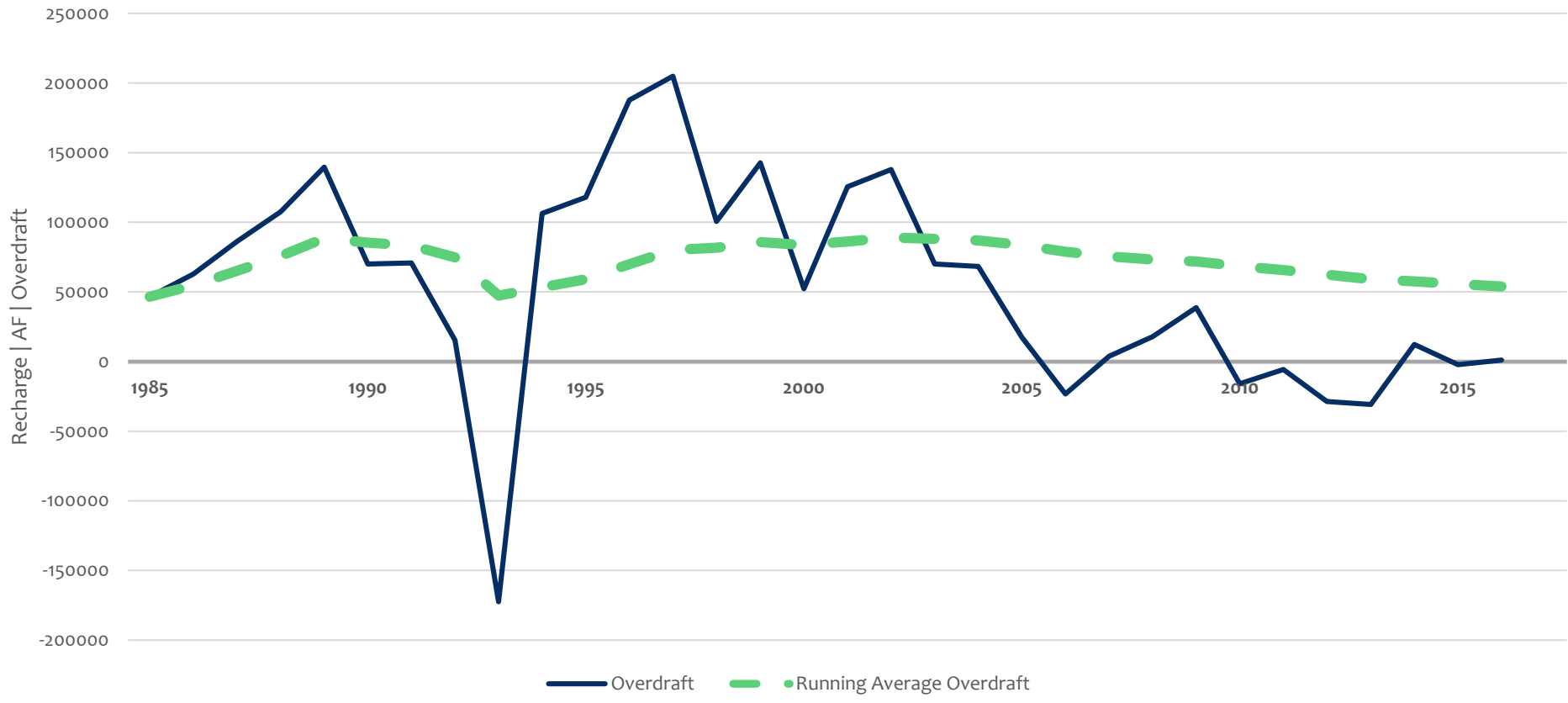
Annual Overdraft & Trendlines



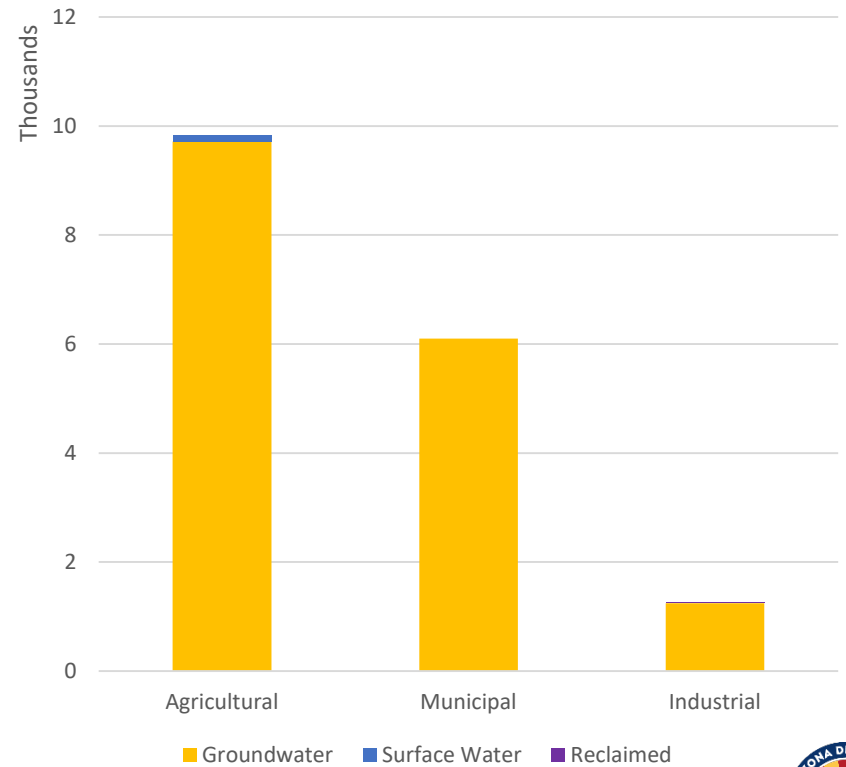
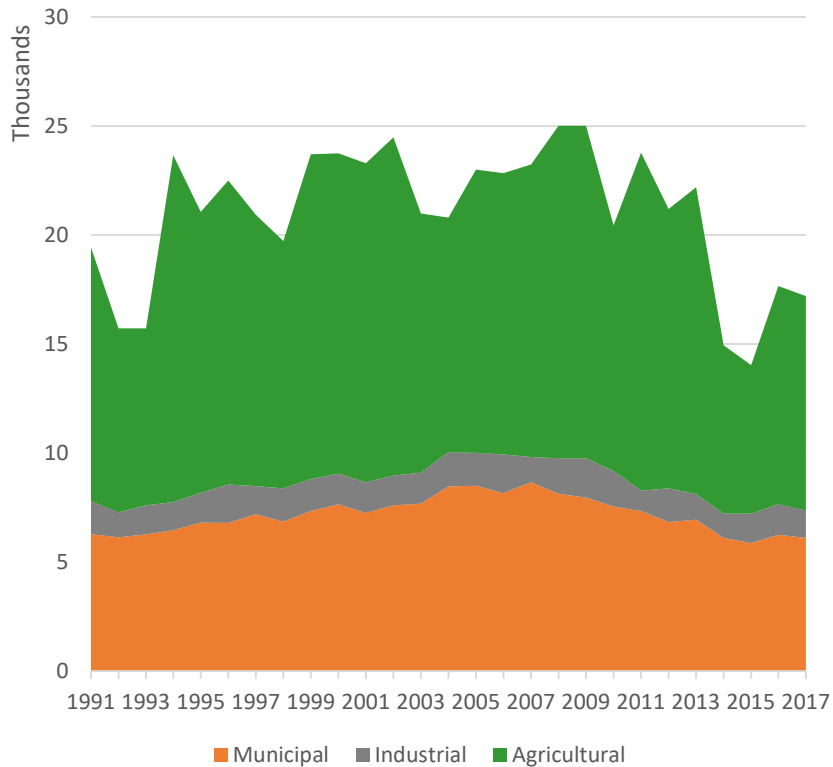


Tucson AMA

Annual Overdraft & Running Average

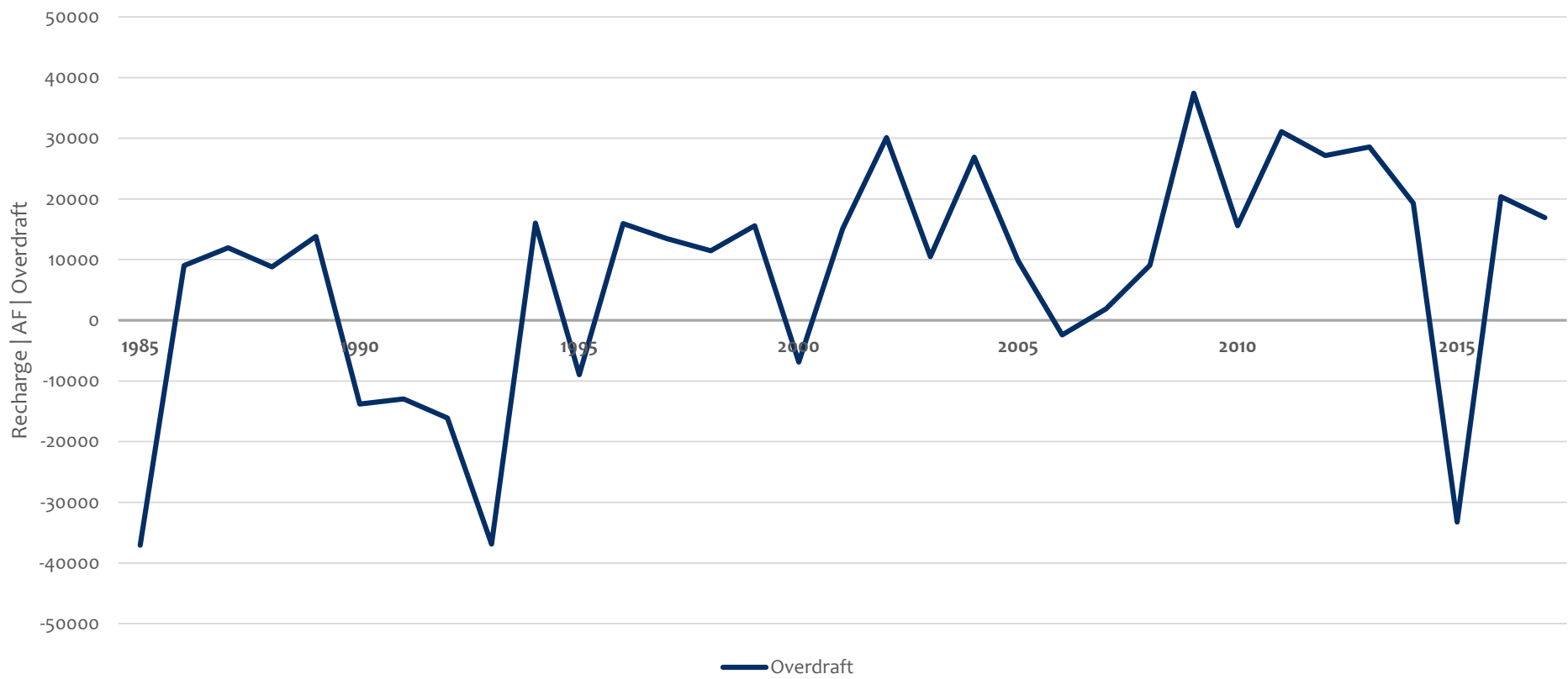


Santa Cruz AMA Water Demand & Supply





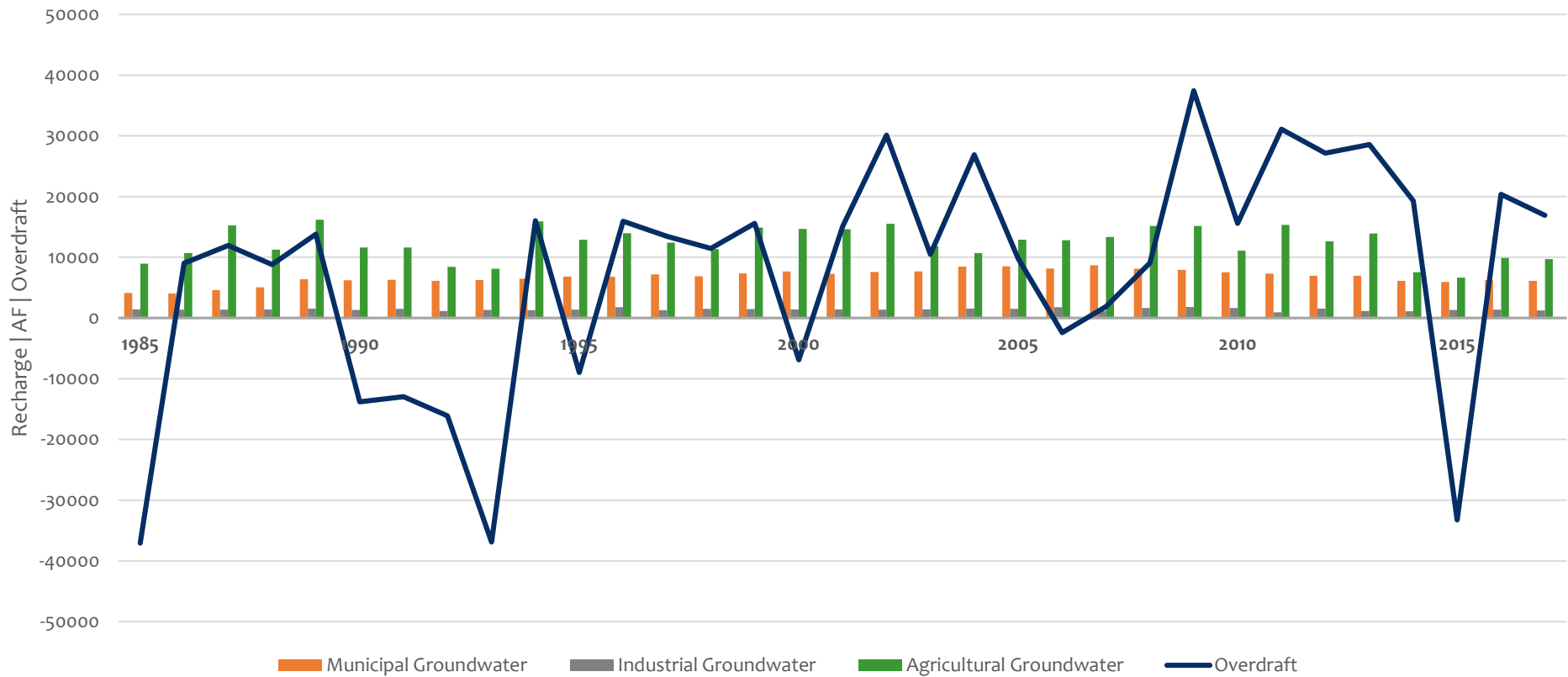
Santa Cruz AMA Annual Overdraft





Santa Cruz AMA

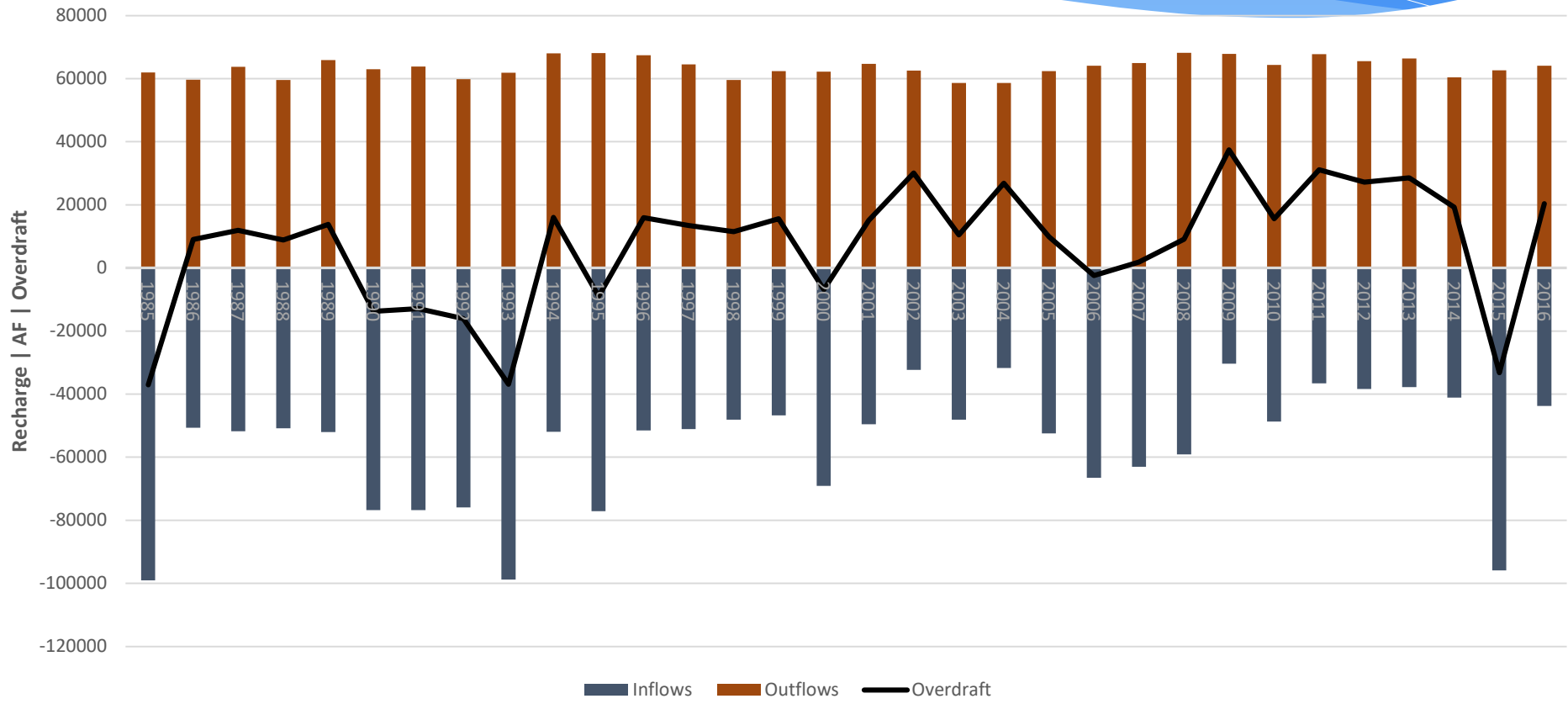
Annual Overdraft & Groundwater Demands





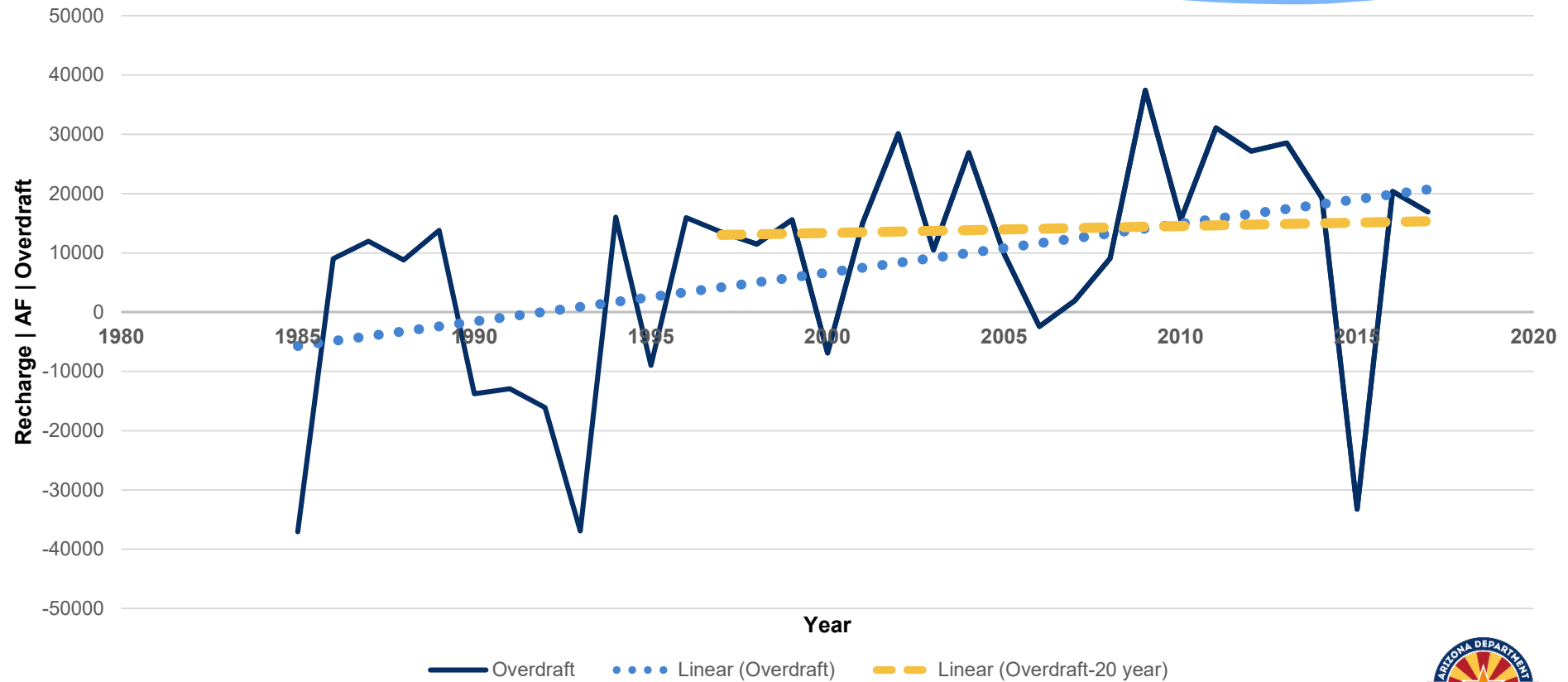
Santa Cruz AMA

Annual Overdraft – Inflows & Outflows



Santa Cruz AMA

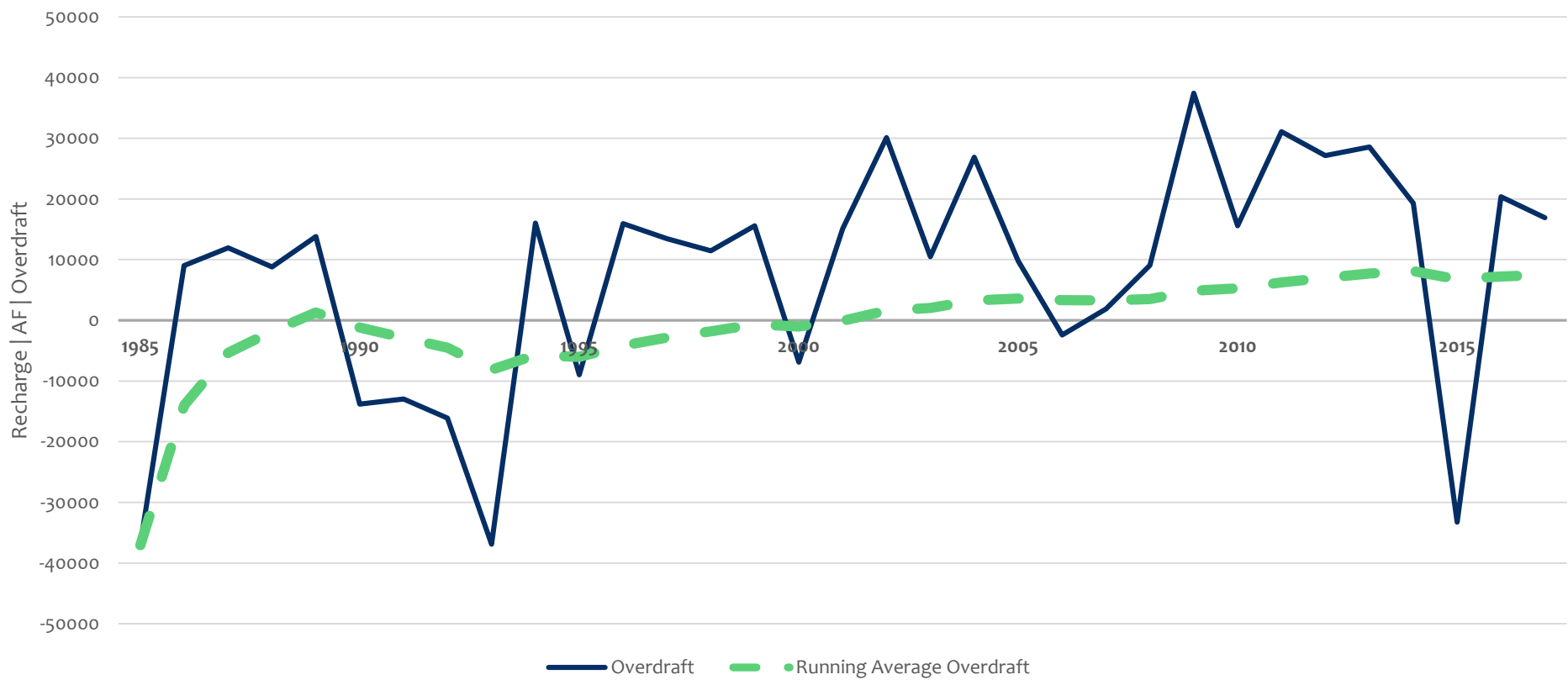
Annual Overdraft & Trendlines





Santa Cruz AMA

Annual Overdraft & Running Average



Conservation Progress Report

As a part of the 4MP, ADWR will periodically publish an analysis of each AMA's progress toward its goal.

- * Expand scope of report required under A.R.S. § 45-563.01 to include analysis of:
 - * Effectiveness of Conservation Programs in all 3 sectors
 - * Progress toward the goal in each of the 5 AMAs
- * Transparency
 - * Communicating success or need for improvement
 - * Tracking and ensuring progress of each AMA toward its goal
 - * Sharing underlying data and methodology



Data Availability

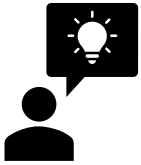
- * Reported data is compiled and updated on an annual basis.
- * Data from ADWR's models lags behind the reported data.
- * Data is published in spreadsheet and dashboard form at <https://new.azwater.gov/ama/ama-data>.
- * Source data from the dashboard can also be downloaded from this site.



Discussion of Future Analyses

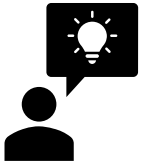


Challenges in Analyzing Safe-Yield



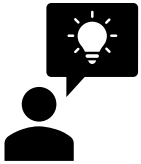
- * Extreme year-to-year variability
- * Ambiguous definition
 - * Annual Components
 - * Differences in how data for various components is generated
 - * “Long-term”
- * Analyzing trends and identifying influences

Safe-Yield Technical Group Goals



- * Consensus on methodology and definitions
 - * Assessing each component
 - * Identifying a general approach for assessing long-term status
 - * Consistency across AMAs
- * Clear communication of status of each AMA

Potential Resources and Analyses



* Questions

- * Annual overdraft
 - * Are these components the right components?
 - * Is the data source for each component the best source?
- * How do we quantify “long-term overdraft”?
- * How do we communicate where each AMA stands?

* Resources

- * Previous analyses
- * Other definitions or similar concepts

* Analyses

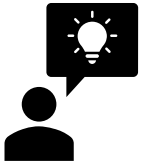
- * Smoothing or averaging individual components
- * Identifying influences



Future Meetings



Future Meetings



- * Frequency?
- * Next Dates?
- * Topics? Available tools?
Guests?
- * Subgroups
 - * Additional Meetings TBD
- * Next MPWG meeting:
2pm on December 4, 2019

Questions?

managementplans@azwater.gov

Management Plans Work Group:
new.azwater.gov/5MP

Full Text of Management Plans:
new.azwater.gov/ama/management-plans

