

Pure Water Project Las Virgenes-Triunfo: Seasonal Imbalance and Facility Sizing



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Agenda

1 Project Background

2 Seasonal Imbalance

3 Facility Sizing

4 Acknowledgements and Questions

Project Background

MWH, now part of Stantec delivered the Recycled Water Plan of Action and Basis of Design Reports culminating in 2016

Key Project Goals

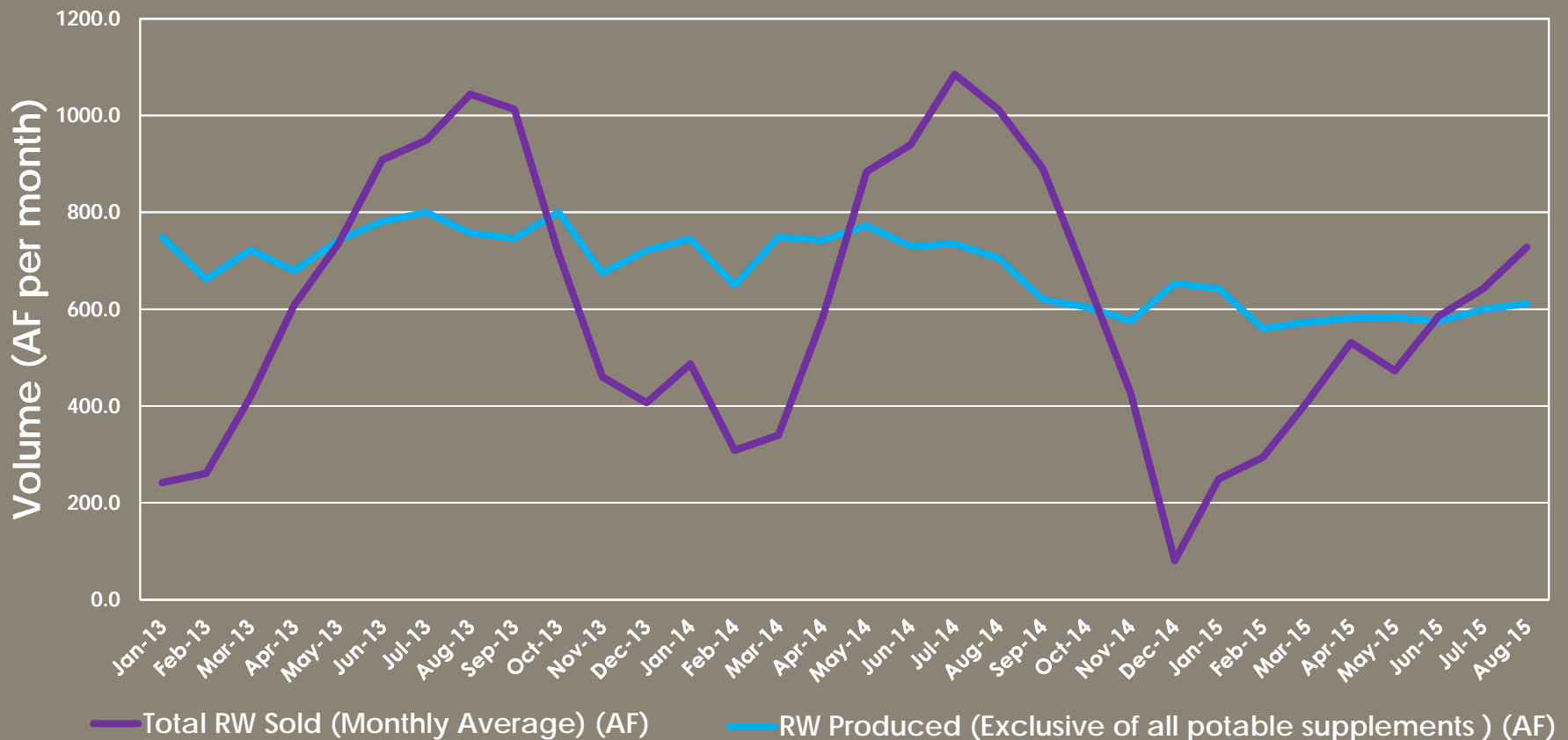
- Beneficially reuse 100% of the JPA's Water
- Stop discharging to Malibu Creek
- Increase Reliability
- Address Seasonal Imbalance



Seasonal Imbalance

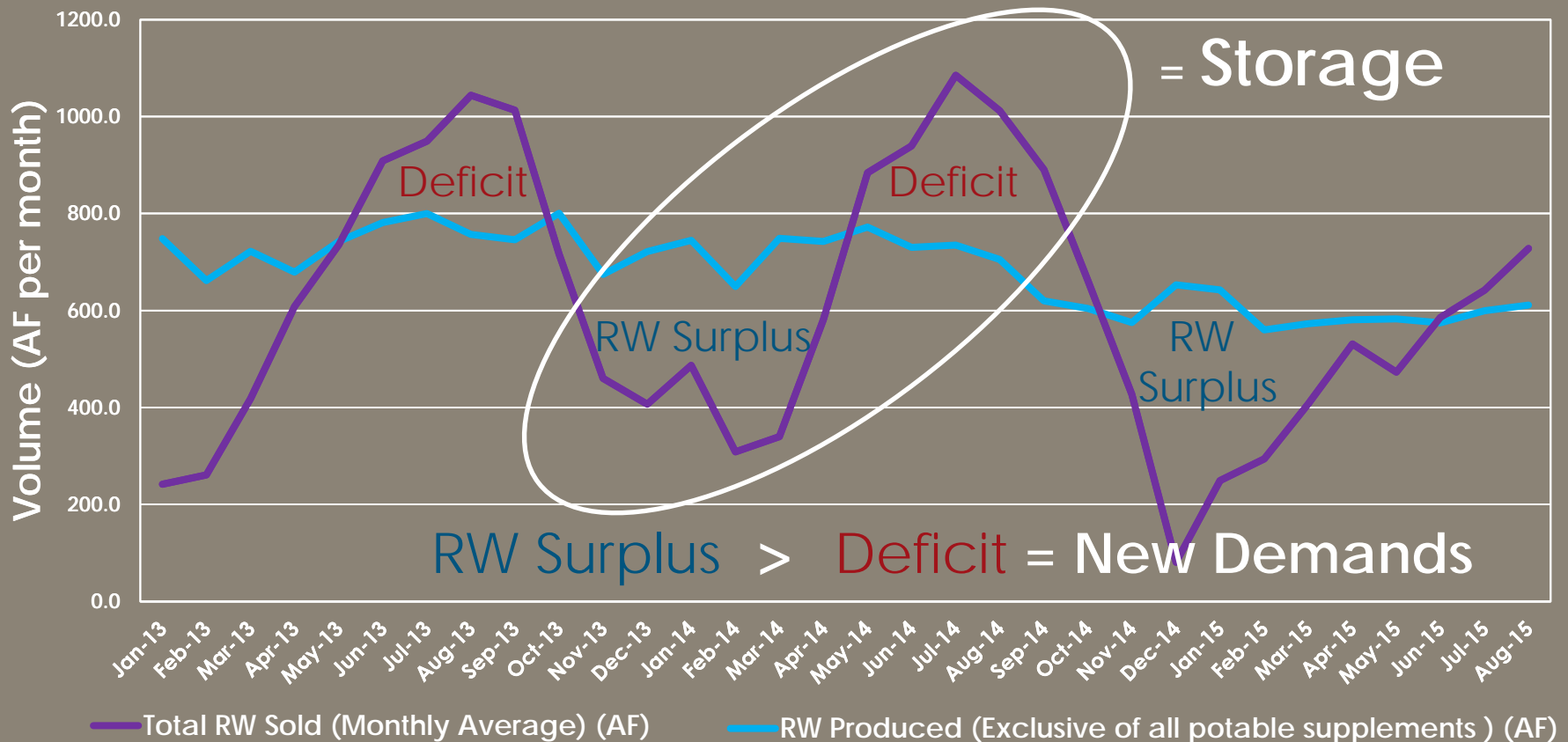
Seasonal imbalance between supply and demand

Recycled Water Supply and Demand



Seasonal imbalance between supply and demand

Recycled Water Supply and Demand



RW Storage

vs.

Indirect Potable Reuse



A new reservoir...



Encino Reservoir?



Las Virgenes Reservoir...

RW Storage

vs.

Indirect Potable Reuse

Requires new
storage to be built

Additional Demand
would need to be
identified

Addresses storage
in recycled water
system only

Allows JPA to use
existing facility for
storage

Created a potable
demand for
treated water

Addresses storage
in potable and
recycled systems

Indirect Potable Reuse using Surface Water Augmentation

- Facilities that need to be properly sized in order to capture all flow that may go to Malibu Creek.
 - Pipelines
 - Pump Stations
 - Reservoir (Operation Strategy)
 - AWT Facility



Facility Sizing

Volume Drivers (Reservoir Sizing)

- Adequate size to address seasonal imbalance, or ability to fill and draw reservoir simultaneously
- Adequate size to achieve required detention time

Flow Rate Drivers (AWT Sizing)

- Staying out of Malibu Creek
- AWT must be sized to capture at least 95% of historical flows

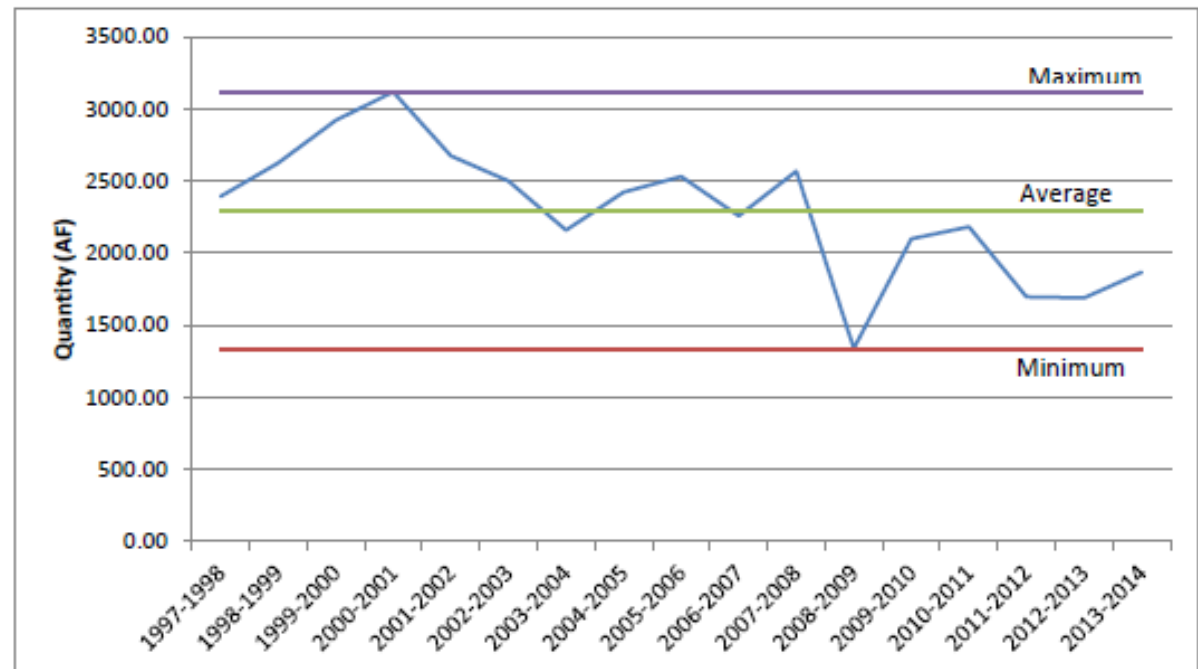
Reservoir Sizing

Historical Surplus Recycled Water

Net Seasonal Storage for Scenario 4

| Year | Net RW Available for Storage |
|-----------|------------------------------|
| 1997-1998 | 2392.38 |
| 1998-1999 | 2624.11 |
| 1999-2000 | 2920.47 |
| 2000-2001 | 3117.83 |
| 2001-2002 | 2674.31 |
| 2002-2003 | 2500.24 |
| 2003-2004 | 2158.17 |
| 2004-2005 | 2422.01 |
| 2005-2006 | 2531.30 |
| 2006-2007 | 2258.06 |
| 2007-2008 | 2567.30 |
| 2008-2009 | 1338.83 |
| 2009-2010 | 2098.71 |
| 2010-2011 | 2181.58 |
| 2011-2012 | 1695.43 |
| 2012-2013 | 1688.14 |
| 2013-2014 | 1867.10 |
| Minimum | 1338.83 |
| Average | 2296.23 |
| Maximum | 3117.83 |

Net Recycled Water Storage

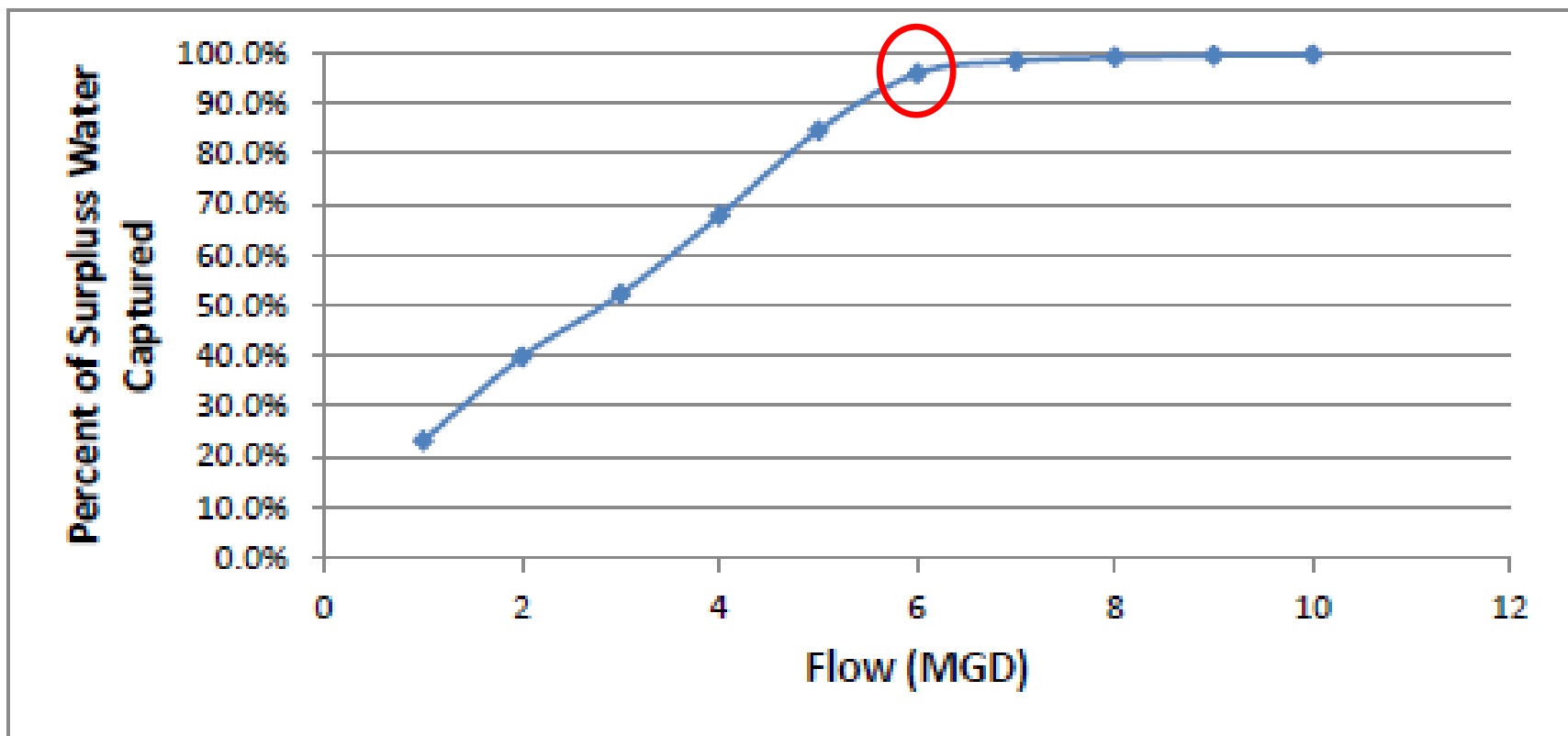


- Confirmed reservoir size is adequate for storage
- Recommended pursuing continuous fill draw for operational flexibility

AWT Sizing

Calculating Daily Surplus

Las Virgenes Reservoir Capture Rate



AWT Sizing

Additional Operational Tools

- Smaller Reservoirs within the system to store RW temporarily
- Spray fields to add Recycled Water Demand
- Ability to Discharge AWT Plant to the Sewer
- Conservative Reservoir Management to ensure adequate capacity
- Storage at the AWT

Acknowledgements

Thank you to...

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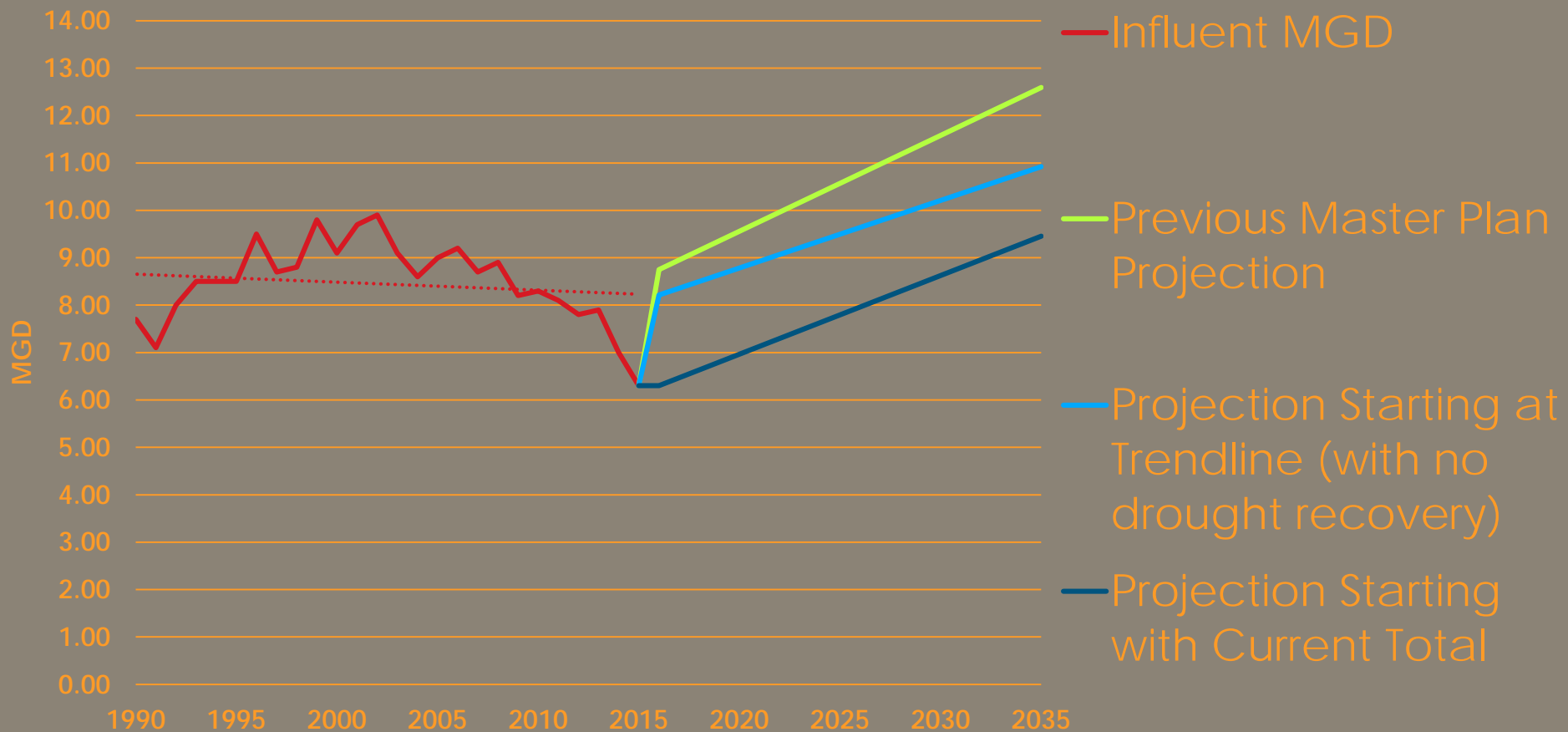
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Thank you!

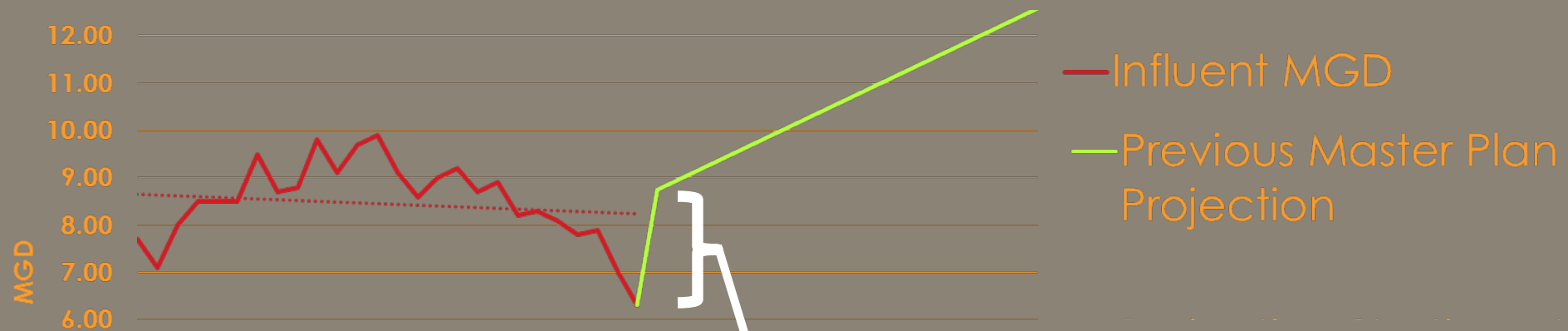
Questions?

Reservoir Sizing

- When sizing storage and treatment, projections for future wastewater generation were inconsistent with current trend.



Reservoir Sizing



Difference between projected and observed flows roughly 2.5 MGD in 2015