

Malaga Bend Update

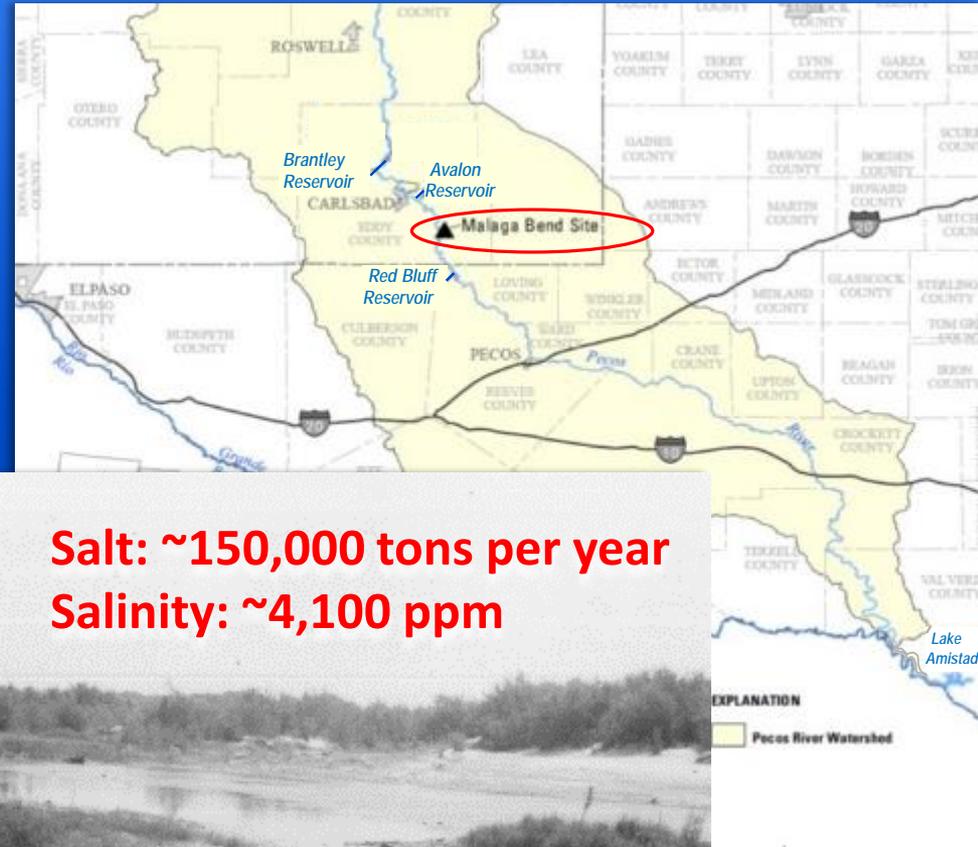
Pecos River Commission Annual Meeting Carlsbad, New Mexico

Suzy Valentine, P.E., CFM
April 11, 2017

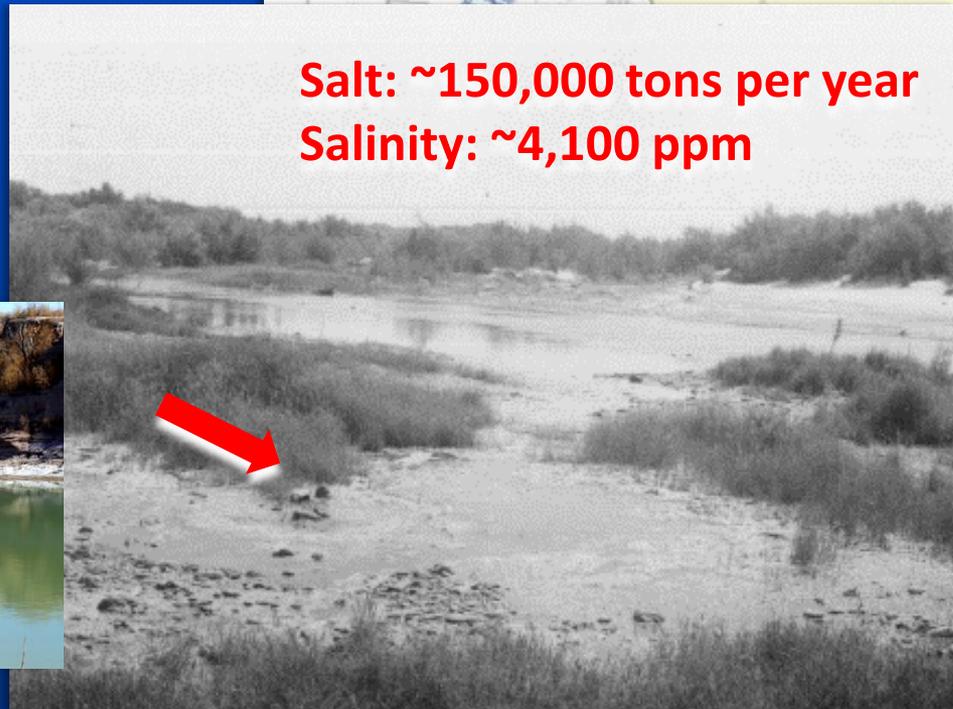


Malaga Bend Site

- In New Mexico downstream of Avalon Reservoir
- Upstream of Red Bluff Reservoir
- Highly saline Malaga Bend springs



Salt: ~150,000 tons per year
Salinity: ~4,100 ppm



Salinity Impacts in Texas

- **Red Bluff Reservoir**

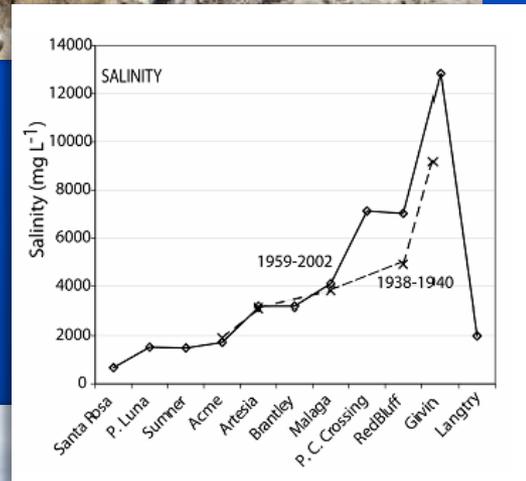
- Salt loading: ~560,000+ tons/year
- Outflow: ~410,000 tons per year
- TDS of water: ~6,000 ppm

- **Girvin**

- ~12,000 ppm

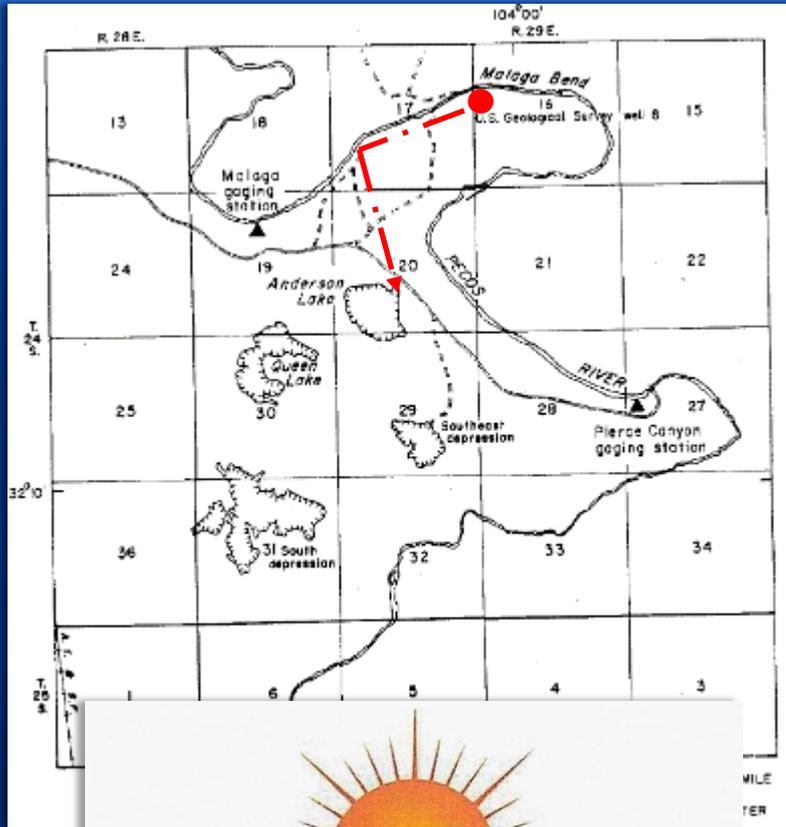
- **Lake Amistad**

- ~26% of salinity from Pecos River
- Only ~10% flow
- Upper limit of drinking water standards for Lake Amistad

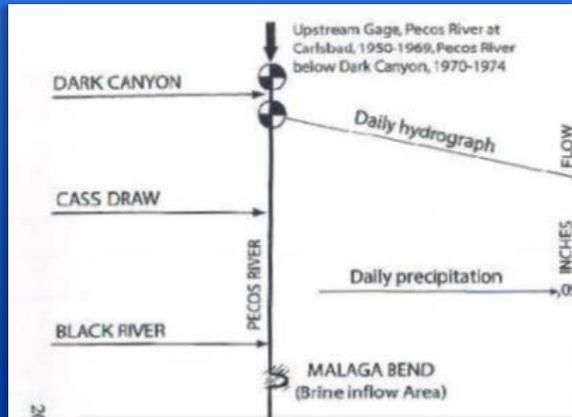


Malaga Bend Project History

- **1958-1993:** Numerous attempts to reduce salinity
- **2010-2012:** Cooperation between Pecos Commissioners, Pecos Water Quality Coalition, and Southwest Salt Company
- **2013:** Pumping Began



Malaga Bend Project Requirements



- Red Bluff NM Diversion Permit for original well C-2713
 - Max of 645 acre-feet
- Southwest Salt NM Discharge Permit, D-1754
- 2012 River Master Manual update
- Water quality limitations
 - “Average daily brine inflow” of 367.7 tons per day limit
 - Testing upstream and downstream, 2x month



Southwest Salt Facilities

- New diversion location – DP-2
- 4th pond in operation in 2016
 - Will increase evaporation & pumping
- 201 AF Total diverted in 2016
- About 38 AF through 2/2017



SWS Onsite Processing Plant

- Processing facility and equipment
- Adding new equipment to handle increased production
- Salt for water softening primarily; some cattle feed and highway deicing
- Delivery by truck



“Pure Salt Harvested from an Underground Sea Below the Pecos River” at HEB



SWS 2016 Pumping

- DP-2 DP-1754 diverting in May 2016
 - ~40 gpm/day
 - average ~ 3 AF/mo
- C-2713 pumps
 - 100-300 gpm/day
 - 3-30 AF/mo
 - average ~15 AF/mo

Acre-feet			
Month	DP-1 (C-2713)	DP-2 (DP-1754)	Total
January	2.74	0.00	2.74
February	13.60	0.00	13.60
March	5.76	0.00	5.76
April	12.17	0.00	12.17
May	28.88	0.28	29.16
June	25.03	1.17	26.19
July	33.76	0.93	34.69
August	25.27	1.59	26.86
September	7.31	0.86	8.16
October	7.32	7.20	14.51
November	5.97	3.96	9.93
December	13.12	4.31	17.42
Total	180.91	20.28	201.19

Summary of Pumping Results

Malaga Bend Salt Production Facility Southwest Salt Company

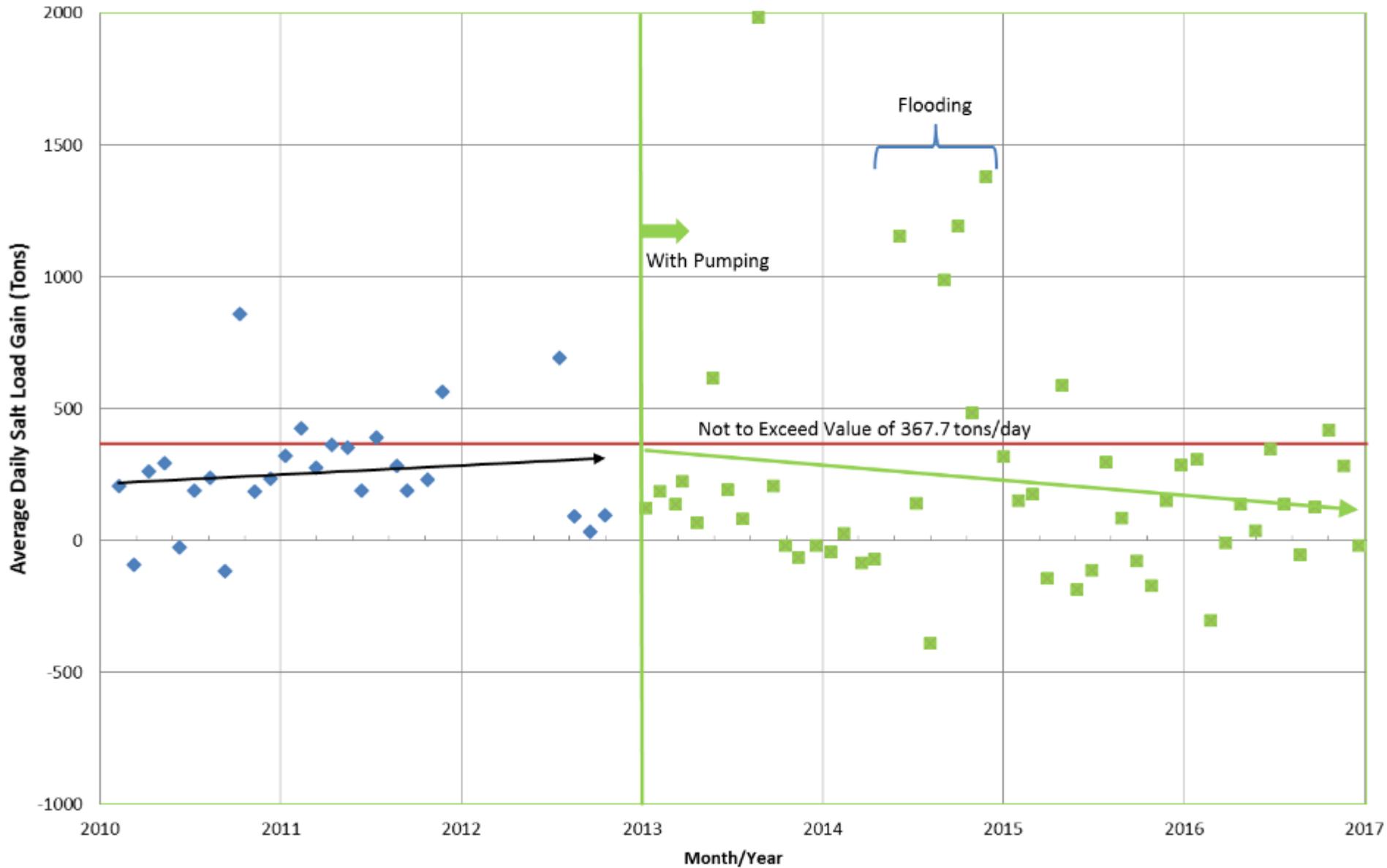
Average over Period *						
Period	TDS (g/l)	Salinity (ppt)	Real-time Discharge (cfs)	Daily Salt Loading (tons)	Monthly Average Salt Loading	Average Daily Gain (per month) (tons of salt)
Pre-Pumping (2010-2012)						
Upstream	4.96	4.20	59.6	704	543	
Down stream	7.83	6.74	56.9	969	778	235.2
Post-Pumping (2013-2017)						
Upstream	4.14	3.51	92.7	902	822	
Down stream	5.31	4.55	94.7	963	958	170.5
Change (Avg gain in tons/mo)						-64.8
Percent Change						-28%

* Adjusted to remove values with flows over 700 cfs

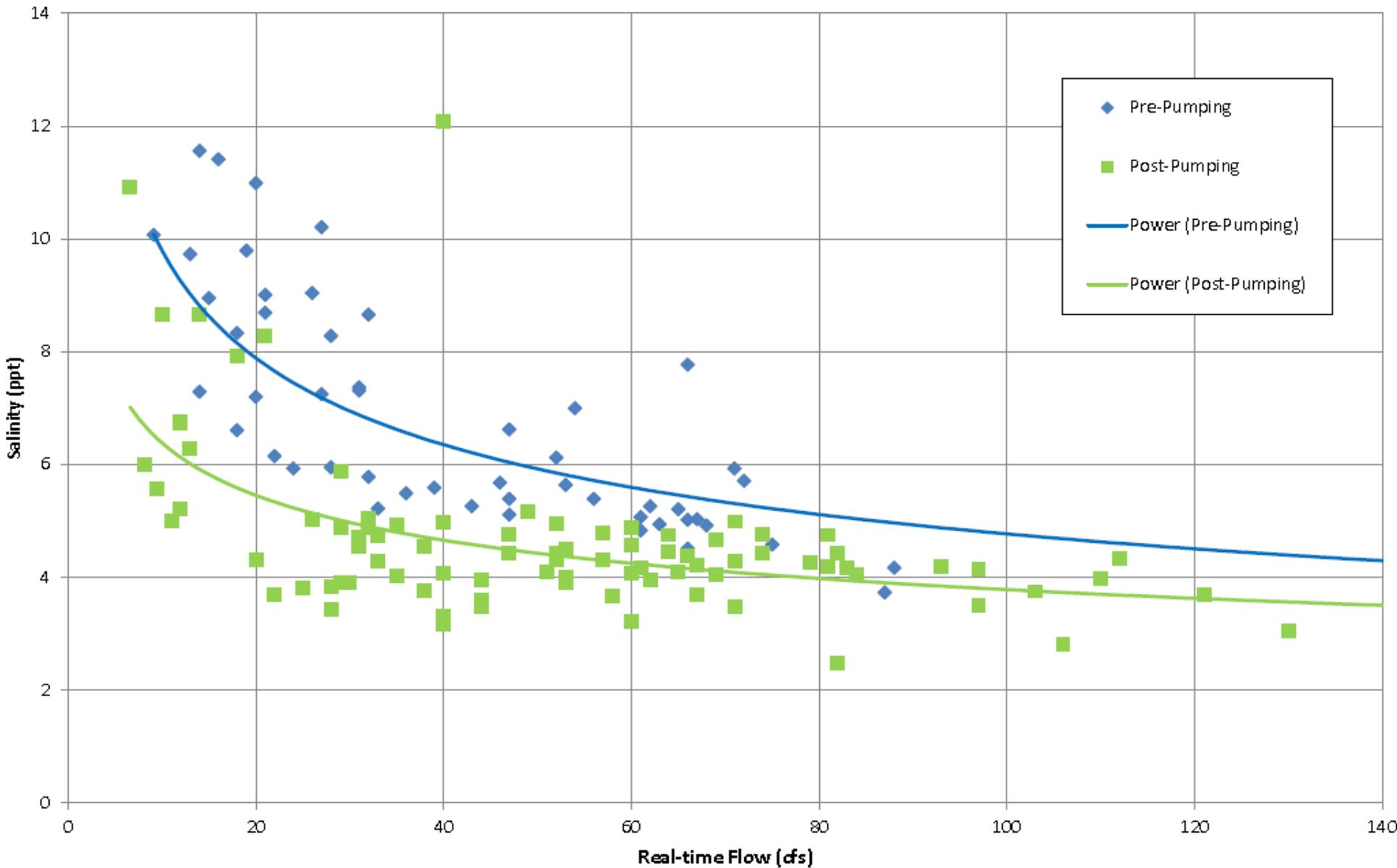
Southwest Salt Company Malaga Bend Project

Average Daily Salt Gain

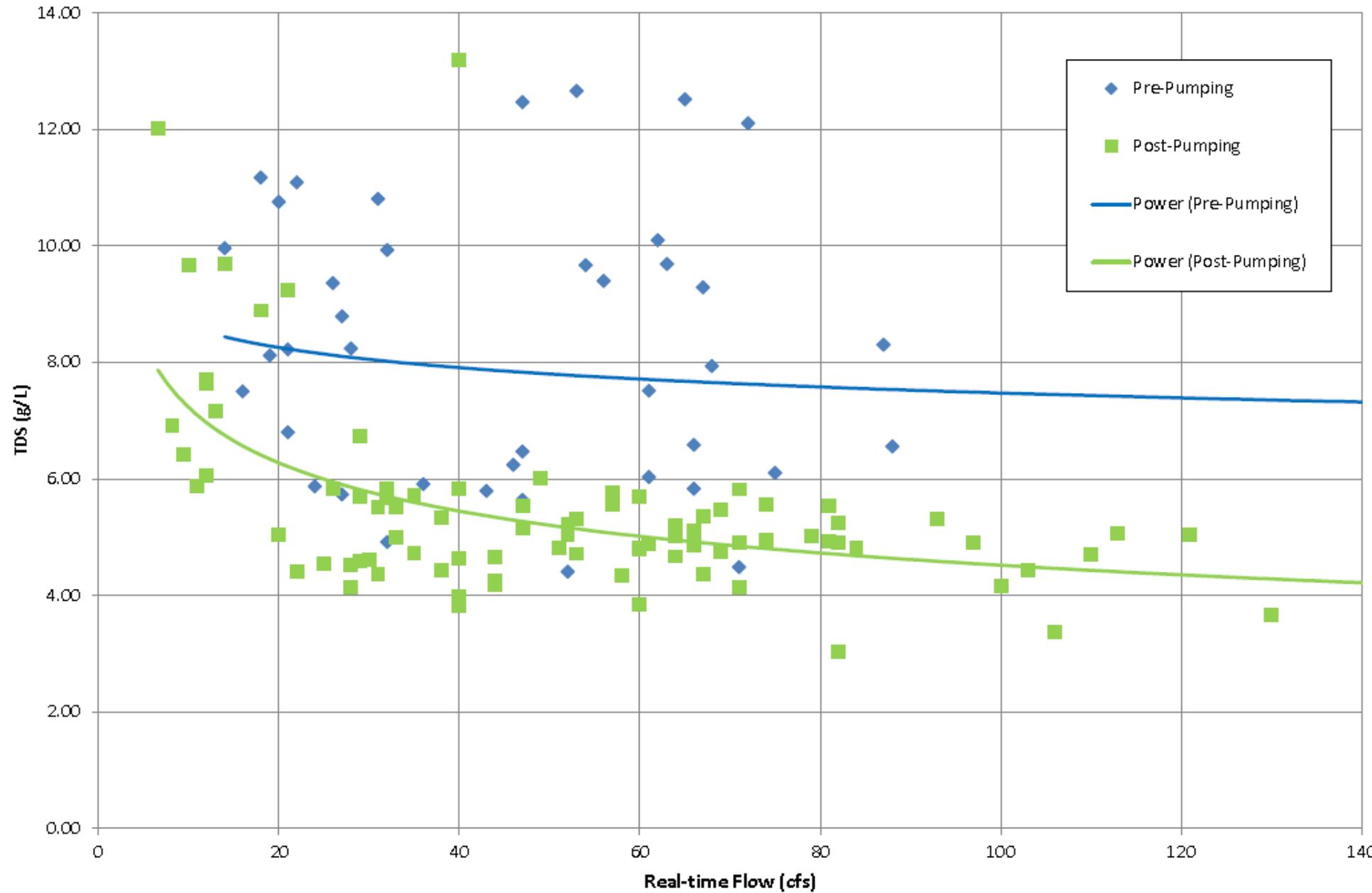
Between Upstream and Downstream Stations



Salinity vs. Flow at Malaga Bend Pre- and Post-Pumping



TDS vs. Flow at Malaga Bend Pre- and Post-pumping



Questions?



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