

Review of Director Rowe's Memo Regarding Recharge Capacity

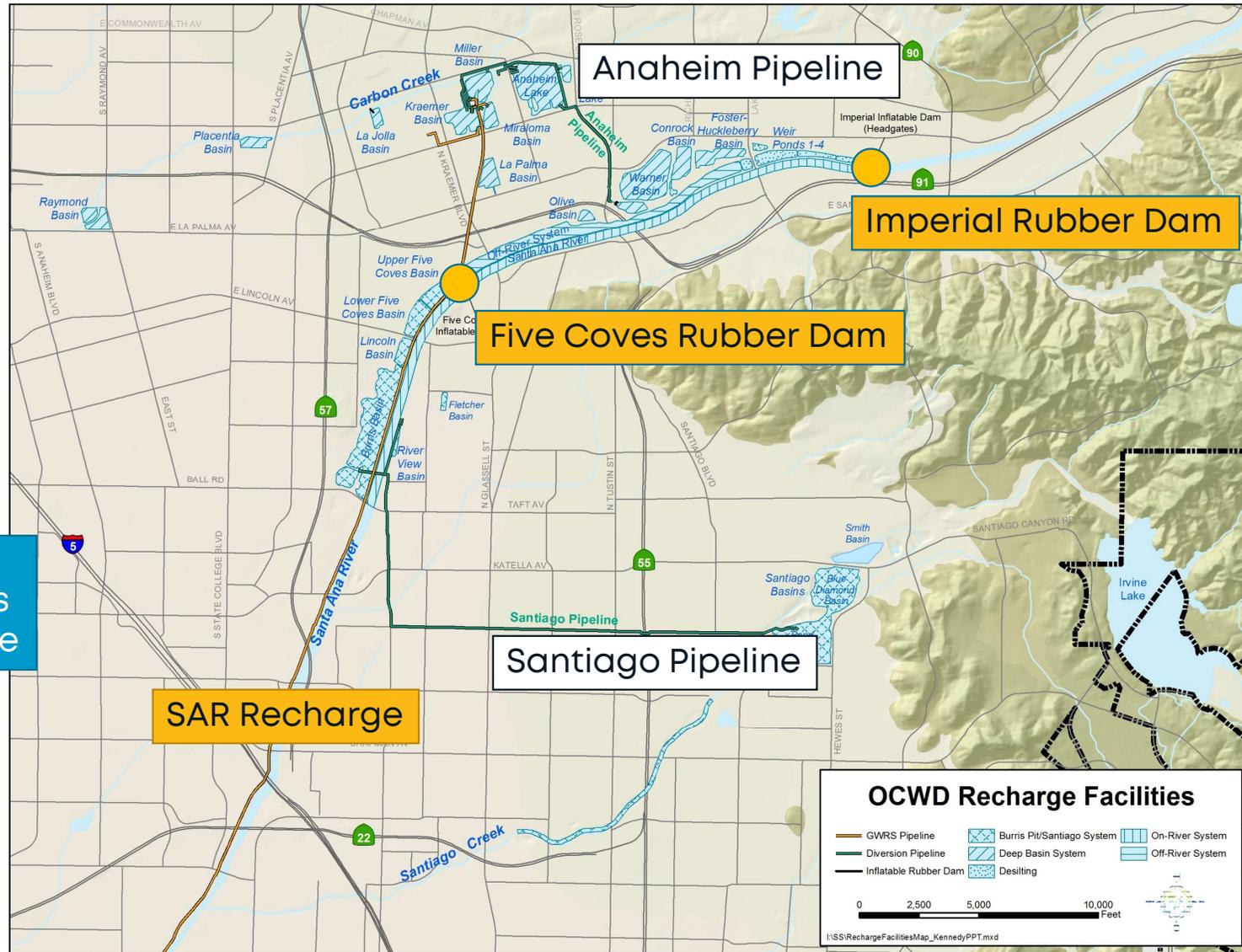
Water Issues Committee

January 13, 2021



OCWD's recharge system is designed to capture storm flow and recharge multiple sources of water.

- 1,586 acres of land
- Over two dozen facilities
- Over 26,000 af of storage



Describing Water Flow

- Cubic feet per second (cfs)
 - A cubic foot is equivalent to the volume of one basketball
 - Contains 7.5 gallons of water
 - 1 cfs flowing for one day equals 2 acre-feet of water
- Context:
 - Typical summer Santa Ana River flow: 60-100 cfs
 - Historical maximum flow: Approx. 10,000 cfs
 - Future max Prado outflow: 30,000 cfs
 - Avg Mississippi flow: 600,000 cfs



OCWD's ability to capture and recharge water varies through the year.

Prado Dam

Imperial Rubber Dam

Five Coves Rubber Dam

SAR Recharge

Santa Ana River

160-290 cfs

140-240 cfs

100 cfs

Diversion w. Storage Available,
Unclogged: **400 - 630 cfs (1-2 mo)**

Santa Ana River

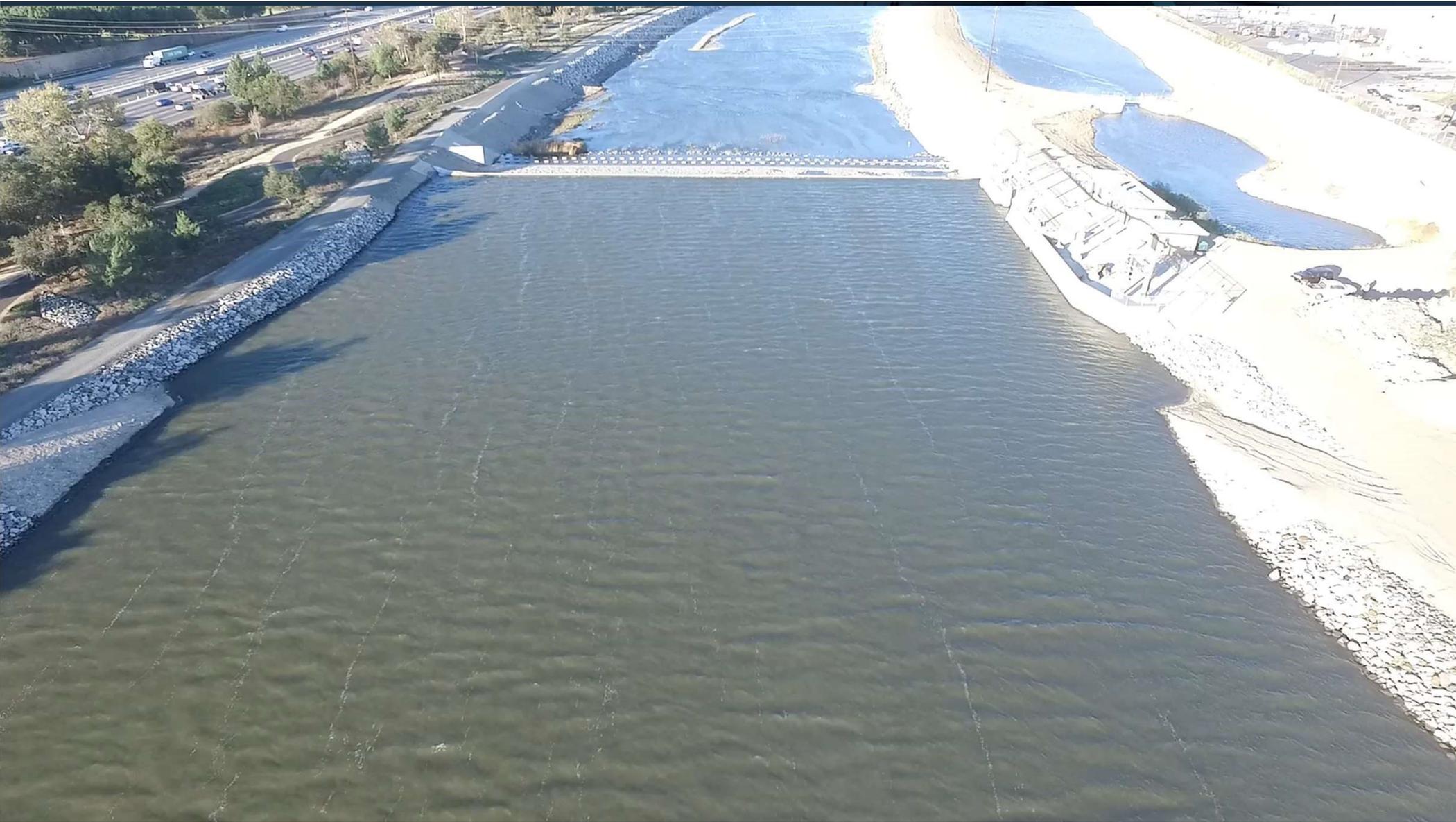
100 - 260 cfs

100 - 140 cfs

100 cfs

Diversion w. No Storage
Available, Clogged: **400 - 300 cfs (>3 mo)**





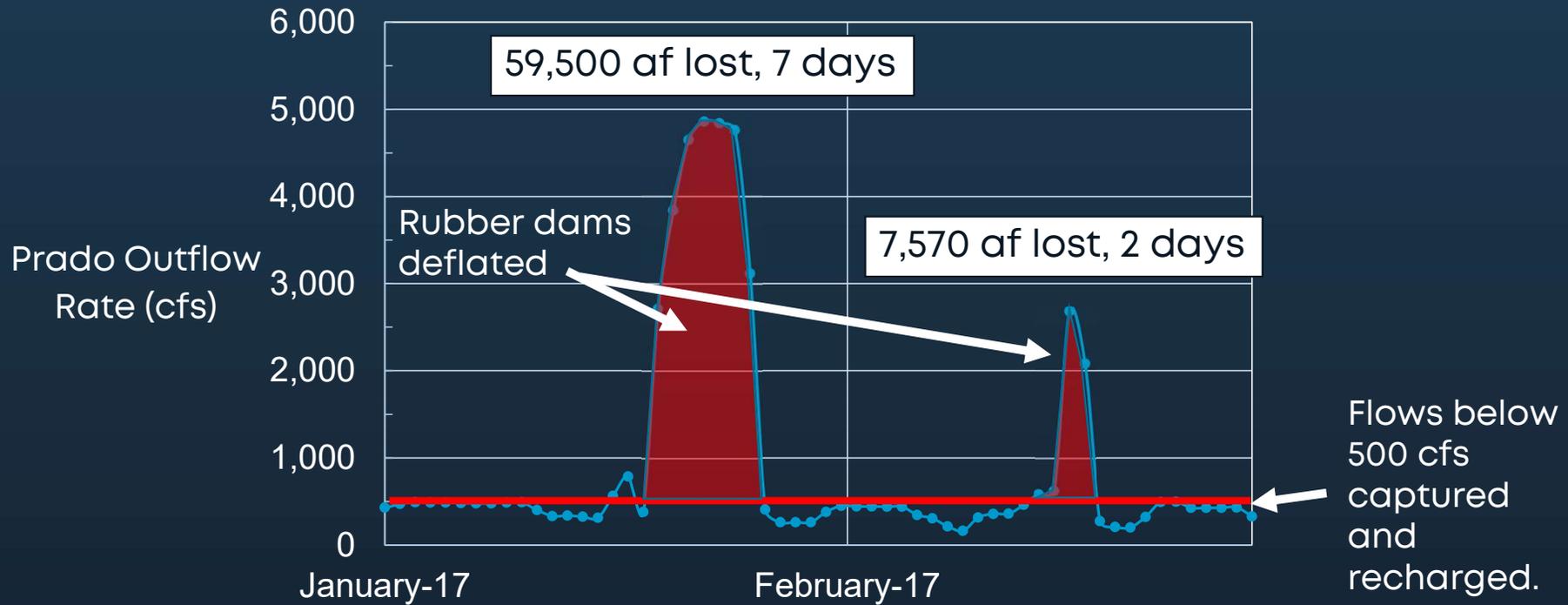
Capturing additional storm flow presents a number of challenges.

- Stormwater is lost to the ocean during brief, high flow periods (1,000 – 10,000 cubic feet per second- cfs)
 - 1,000 cfs = 2,000 acre-feet per day
- Inflatable dams lowered when flow rate > 1,000 cfs
- Water is not lost every year
- Significant new infrastructure would be required to capture these intermittent flows
- Optimal recharge areas already in use



All losses in 2016-17 occurred over a period of 9 days.

Outflow From Prado Dam, Jan-Feb. 2017

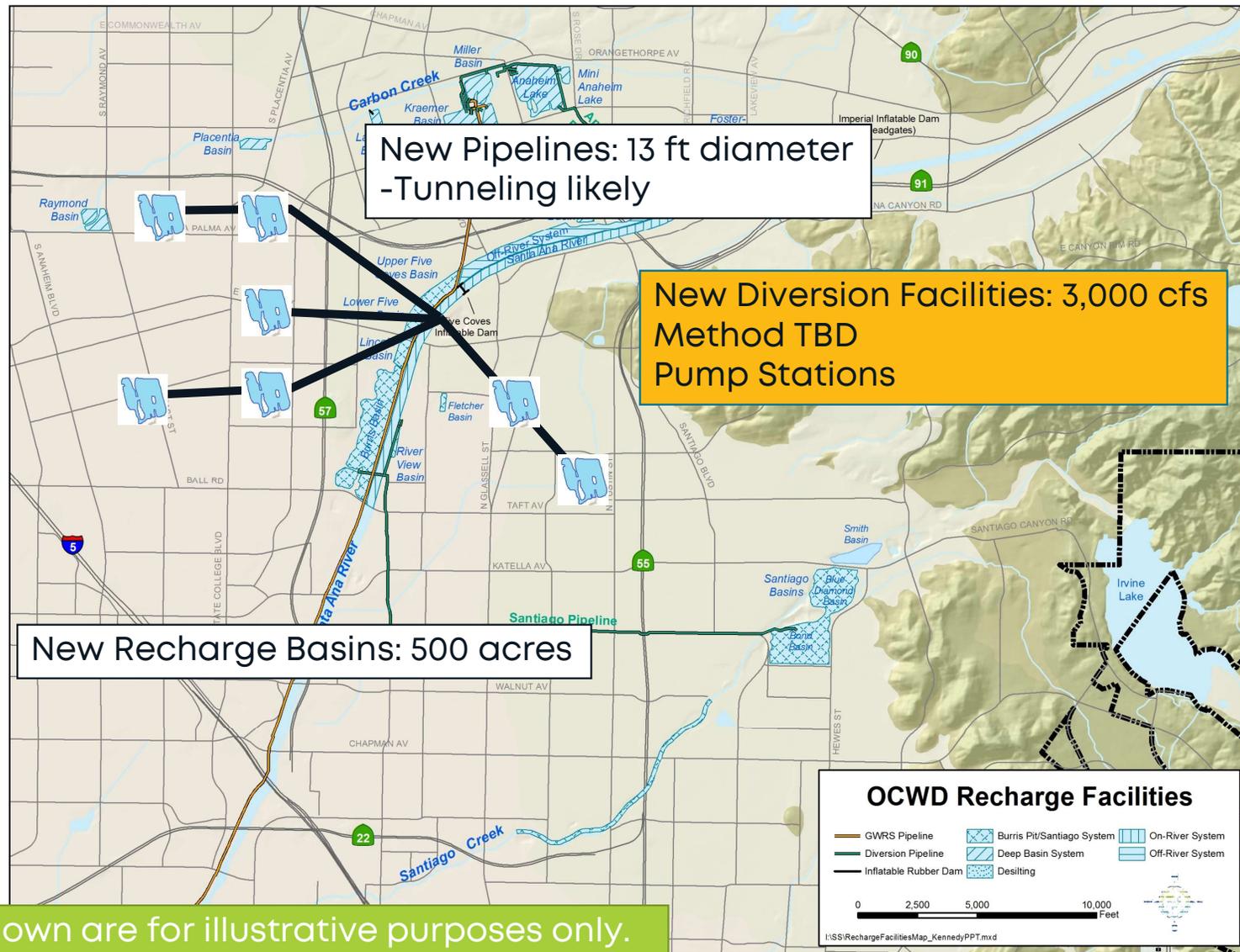


Director Rowe's Memorandum suggests that OCWD needs 500 additional acres of recharge facilities to capture storm flow.

| Director Rowe Memorandum | Staff Comment |
|---|--|
| Evaluated Santa Ana River flow for 1979-2020 | Past outflow data cannot be used to evaluate future conditions. |
| System percolation rate ranges from 250 - 400 cfs | System capture/percolation rate ranges from 300 - 630 cfs |
| Additional storm water is available for capture 100 days in "wet" years | Historical losses are much less than 100 days in wet years. Future projected losses average 10 days per year and only 63 days in wettest year. |
| 500 acres of additional land will result in capture of 65,000 af in wet years | Assumes water is available 100 days in wet years. Would only be used 1 of 4 years. |
| 500 acres of land will cost \$1B | Need to include infrastructure, resulting in costs in range of \$1.5 to \$3B |
| Return on \$1B investment would payback in 30 years | Actual cost of project and estimated water capture would result in high unit cost, ~\$10,000 per acre-foot. |



It would be a significant undertaking to install 500 additional acres of recharge basins and infrastructure required to capture and convey water other wise lost to ocean.



New facilities shown are for illustrative purposes only.



Concluding Thoughts on Director Rowe's Memo

- OCWD has significant diversion/recharge capacity for storm flow
- Increasing the Water Conservation Pool at Prado Dam is most cost-effective way to increase storm water capture
- It would be cost prohibitive to capture additional storm flows on the scale envisioned in Director Rowe's Memo (500 acres new recharge basins)
 - Significant storm flow lost only 1 of 4 years
 - Storm flows lost to the ocean occur during short, high flow periods
 - Significant new infrastructure would be required to capture these flows

