



## Summary of Alum Application Program in Canyon Lake (2013-2018)<sup>9</sup>

Total Phosphorus (TP) Loads and Alum Offsets	Entire Lake	Main Body	East Bay
Est. Average Annual External Load of TP <sup>1</sup>	3,026 kg/yr	1,916 kg/yr	1,110 kg/yr
Est. Average Annual External TP Load Allowed <sup>2</sup>	1,711 kg/yr	1,149 kg/yr	562 kg/yr
Est. Average Annual TP Load Reduction Required <sup>3</sup>	1,315 kg/yr	767 kg/yr	548 kg/yr
Est. Average Annual Alum Offset Needed <sup>4</sup>	197,250 kg/yr	115,050 kg/yr	82,200 kg/yr
<b>Compliance Status To-Date (CY2011-2018) <sup>5</sup></b>			
Est. Cumulative External TP Load (sum of 8 year avg.)	24,208 kg	15,328 kg	8,880 kg
Est. Cumul. External TP Load Allowed (sum of 8 year avg.)	13,688 kg	9,192 kg	4,496 kg
Est. Cumul. Load TP Reduction Required (sum of 8 year avg.)	10,520 kg	6,136 kg	4,384 kg
Est. Cumul. Alum Offset Needed (sum of 8 year avg.)	1,578,000 kg	920,400 kg	657,600 kg
Total Cumul. Alum Applied (actual sum for CY2013-18) <sup>6</sup>	1,713,500 kg	1,228,300 kg	485,200 kg
Est. Cumul. Total Excess Alum Applied (CY2011-18) <sup>7</sup>	135,500 kg	307,900 kg	-172,400 kg
Est. Percent Diff. (Excess vs. Required; CY2011-18) <sup>10</sup>	+9%	+33%	-26% <sup>8</sup>
<b>Projected Compliance Status (CY2011-2020)</b>			
Est. Alum Offset Needed for CY2011-20 (all sources) <sup>11</sup>	1,972,500 kg	1,150,500 kg	822,000 kg
Total Alum Applied by TMDL Task Force (CY2013-18)	1,713,500 kg	1,228,300 kg	485,200 kg
Est. Total Alum to Apply in CY2019 & CY2020 <sup>12</sup>	259,000 kg	-77,800 kg	336,800 kg
Est. Avg. Annual Alum to Apply in CY2019 & CY2020	129,500 kg/yr	-38,900 kg/yr	168,400 kg/yr

<sup>1</sup> Based on est. annual average runoff for 1948-2017 from ALL sources; see Table 7-7 on pg. 7-26 of 2018 TMDL Technical Report.

<sup>2</sup> Natural background TP loading for reference condition = 0.32 mg/L; see Table 7-7 on pg. 7-26 of 2018 TMDL Technical Report.

<sup>3</sup> Total External Load minus External Load Allowed (annualized averages); includes ALL anthropogenic sources (not just Task Force).

<sup>4</sup> 150 kg of dry-weight alum will sequester 1 kg of Total Phosphorus; see Footnote #3 in Table 7-7 on pg. 7-26 of TMDL Technical Report.

<sup>5</sup> Cumulative external loads were computed based on estimated long-term annual averages (1948-2017) not the precipitation, runoff and TP loads that actually occurred from 2011 thru 2018 (which was largely characterized by drier than average conditions).

<sup>6</sup> Actual amount of alum applied; main body includes alum applied to North Ski Area; see Table 7-6 on pg. 7-18 of 2018 TMDL Technical Report (amount of alum applied in Fall of 2018 was also added to the total values shown in Table 7-6).

<sup>7</sup> Excess based on estimated average long-term load not the actual TP loading that occurred from 2011 thru 2018.

<sup>8</sup> Alum applied in East Bay at 30 mg/L dosing rate; CEQA documentation allows dosing rate up to 40 mg/L.

<sup>9</sup> TMDL compliance is computed based on 10-year rolling averages, beginning Jan. 1, 2011 thru Dec. 31, 2020, for all load allocations and waste load allocations. Alum offset program began in Sept., 2013; summary includes all alum applied thru the end of CY2018.

<sup>10</sup> Percent difference computed based on the estimated amount needed (using long-term annual averages for the first eight years of the ten year rolling waste load allocation) compared to the amount of alum actually applied from 2013 thru 2018.

<sup>11</sup> Amount needed includes that which is required to achieve full compliance for ALL sources (including dischargers who have not made any financial contribution to the alum program) but non-participants are not entitled to, and cannot rely on, any offset credits from this program to demonstrate their own compliance with the applicable load allocations or wasteload allocations.

<sup>12</sup> Estimated remaining amount may need to be adjusted to account for TP loading that actually occurs from 2011 thru 2020. All computations are based on the loadings and allocations as described in the proposed 2018 TMDL Technical Report not the loadings and allocations shown in the currently applicable TMDL that became effective with EPA approval on Sept. 30, 2005.