REPLENISH
— Big Bear —

Replenish Big Bear Regulatory Meeting #5

Santa Ana Regional Water Quality Control Board

February 17, 2021

PRESENTATION AGENDA

1. Introductions and Icebreaker
2. Meeting Goals
3. Project Update
4. Big Bear Lake Analysis
5. Regulatory Pathway
6. Next Steps

Introductions and Icebreaker

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Replenish Big Bear is at a critical point

Meeting Goals

1. Develop a shared understanding of lake conditions with and without Replenish Big Bear
2. Gain clarity on regulatory approval pathway and any additional information needs
3. Set shared expectations for next steps and timeline

Desired Outcome: Confirm feasibility and process for permitting Replenish Big Bear

Project Update

- Dr. Anderson developed a model to evaluate lake conditions with and without Replenish Big Bear
- Based on results, Alternative 1 is not sufficient to reliably protect lake water quality and beneficial uses. Offsets were not modeled but due to uncertainties with efficacy and long-term sustainability, Alternative 1 is no longer being considered
- The Project Team anticipates proposing a discharge comparable to Alternative 2 to achieve intended benefits and protect beneficial uses
- Project refinements and economic analysis are underway to assess affordability

BIG BEAR LAKE ANALYSIS

DR. MICHAEL ANDERSON
PROFESSOR EMERITUS
UC RIVERSIDE

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Introduction

- Big Bear Lake is an important natural resource that provides extensive recreational, ecological, economic, social and aesthetic benefits for the region
- Formally recognized beneficial uses include:
  - COLD
  - WARM
  - REC1
  - REC2
  - RARE
  - WILD
  - MUN
  - AGR
  - GWR
- Several challenges and impairments have been identified that keep the lake from fully meeting its beneficial uses
- A key challenge for lakes and reservoirs throughout California is the occurrence of extended droughts that limit rainfall-runoff and result in low lake levels and limited water supply

Introduction

- The proposed Replenish Big Bear project seeks to augment water supply to Big Bear Lake with 1,870-2,200 af/yr of highly treated effluent
- The key benefit to the lake is increased lake level which provides greater recreational access, improved aesthetics and wide array of related benefits
- Several different treatment strategies and nutrient offset actions are under consideration, which have varying effluent concentrations and potential effects on water quality in lake

Objectives

- The objectives of this study are to better understand drivers of water quality in Big Bear Lake, and assess impacts of the Replenish Big Bear project on lake conditions

Approach

- This study will:
  - (i) analyze 2009-2019 data on lake conditions to improve quantitative understanding of water quality in Big Bear Lake
  - (ii) develop and calibrate a 2-D hydrodynamic-water quality model using available historical data to develop improved process-level understanding of water quality
  - (iii) assess conditions in Big Bear Lake under naturally variable hydrology and climate change through application of the 2-D hydrodynamic-water quality model
  - (iv) evaluate, through model simulations, lake conditions with different operational scenarios for the proposed Replenish Big Bear project

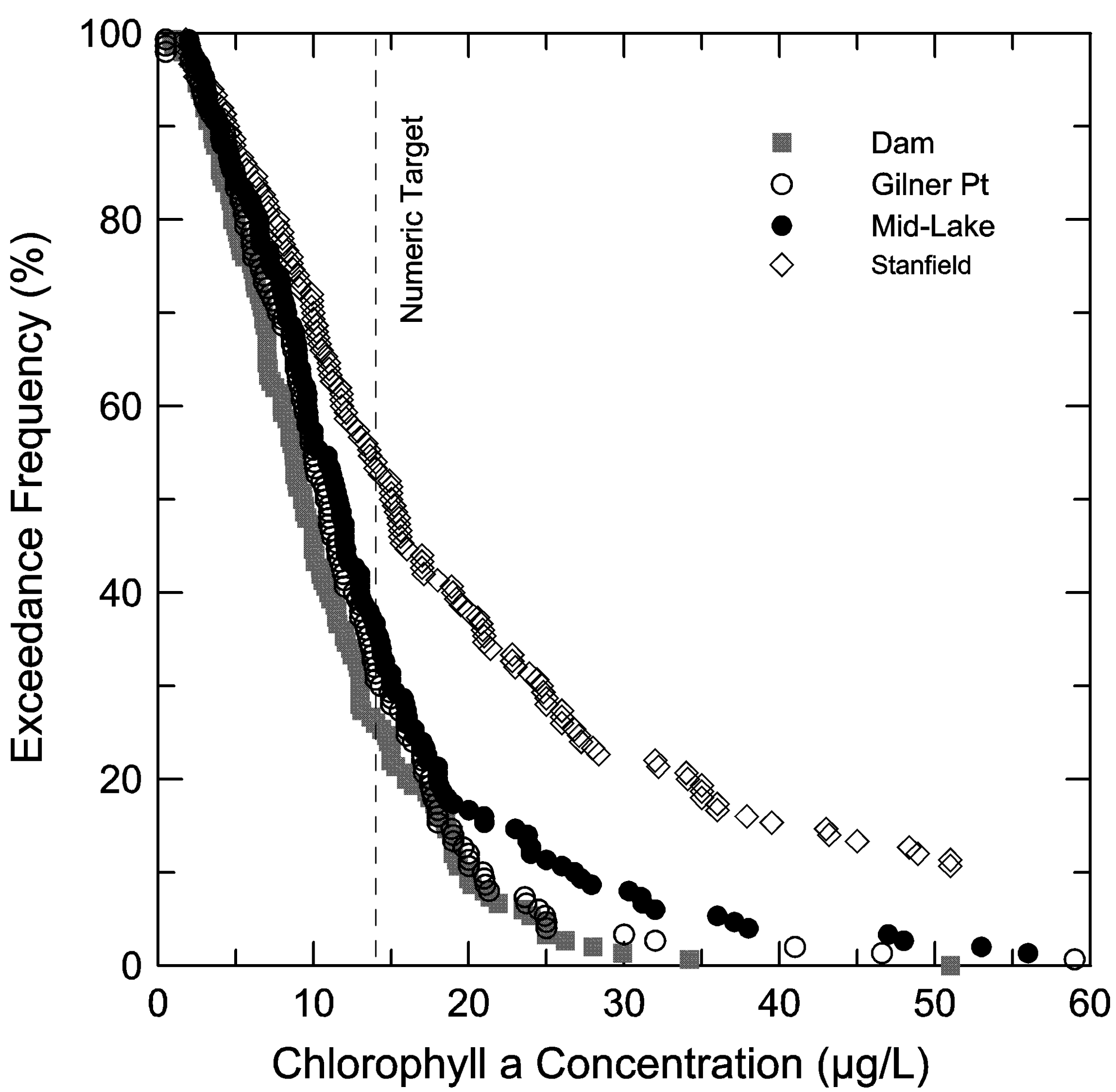
Analysis of Water Quality Data

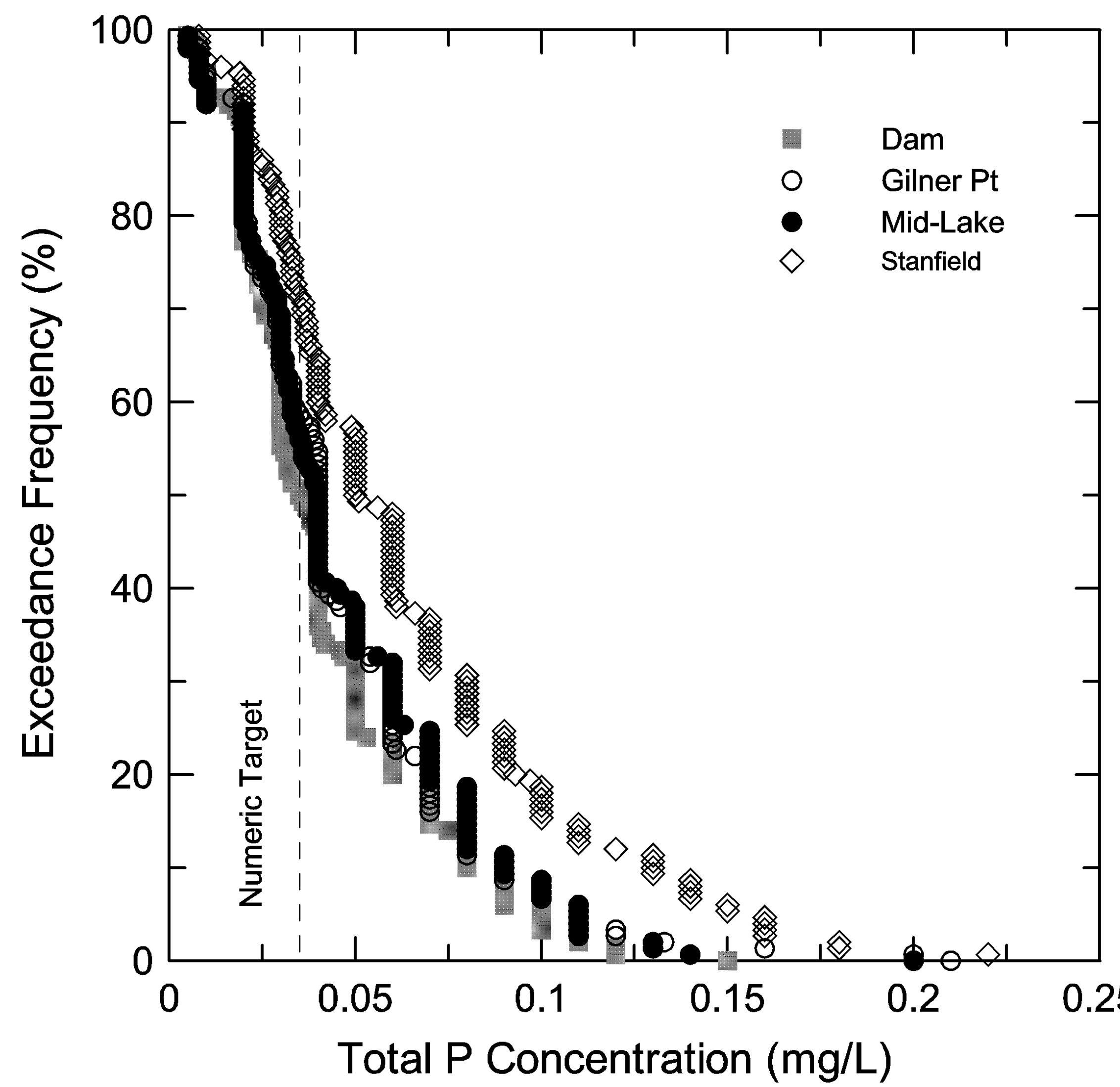
Analysis of Available Water Quality Data

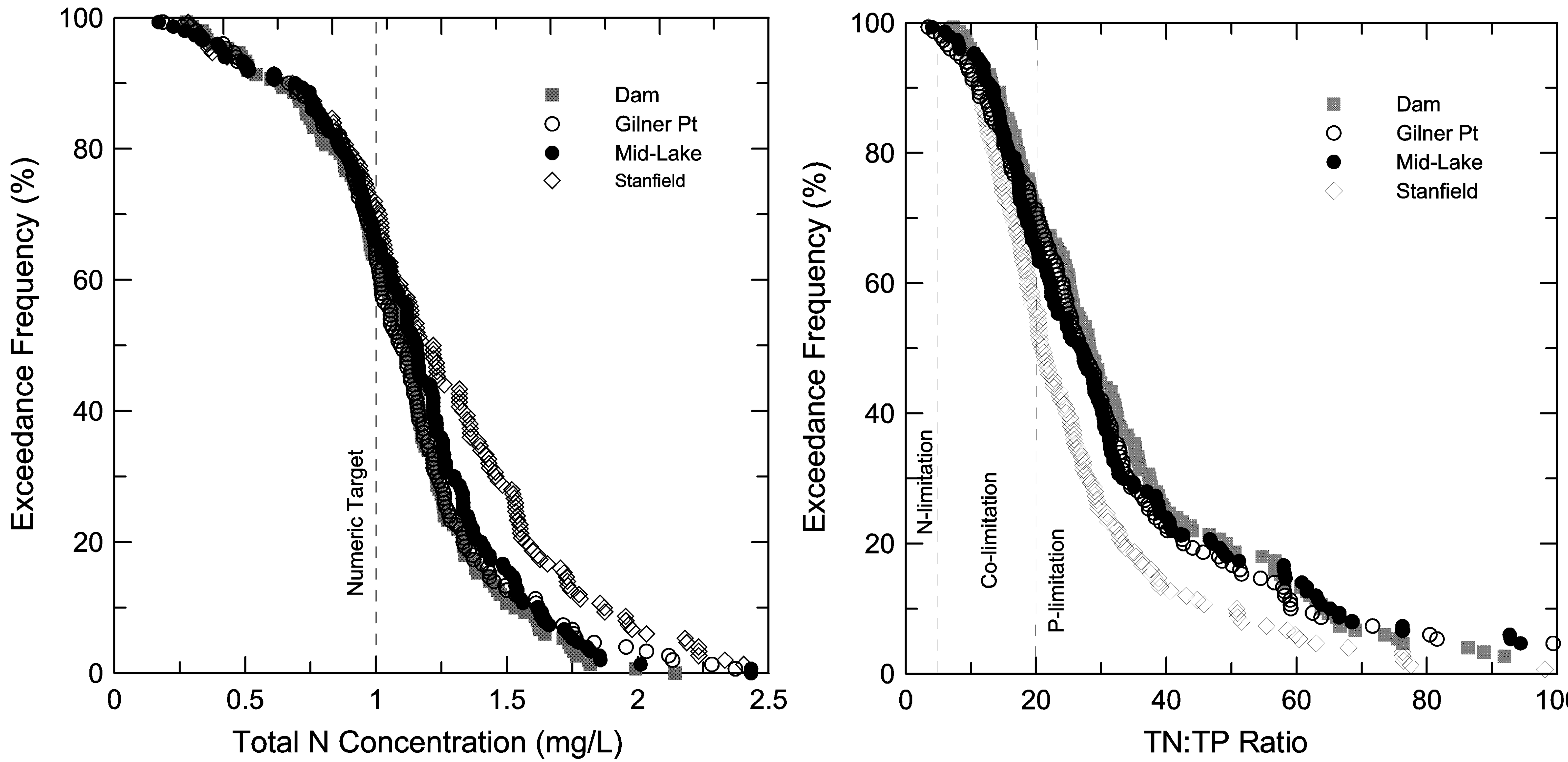
- As well-illustrated in TMDL reports and previous Tech Memo, Big Bear Lake is subject to widely varying lake levels and concentrations of TDS, nutrients and chlorophyll-a
- Additional calculations, regressions and machine learning algorithms were used to better understand interactions and relationships governing lake water quality

Factors Affecting Algal Productivity

- Water quality in Big Bear Lake has varied considerably between 2009-2019, *e.g.*,
    - Reported chlorophyll-a levels have ranged from <1 to >100 ug/L
    - Reported total P concentrations have ranged from 0.005 to >0.2 mg/L
    - Concentrations of nutrients and chlorophyll-a often exceeded numeric targets (more frequently at low water levels)

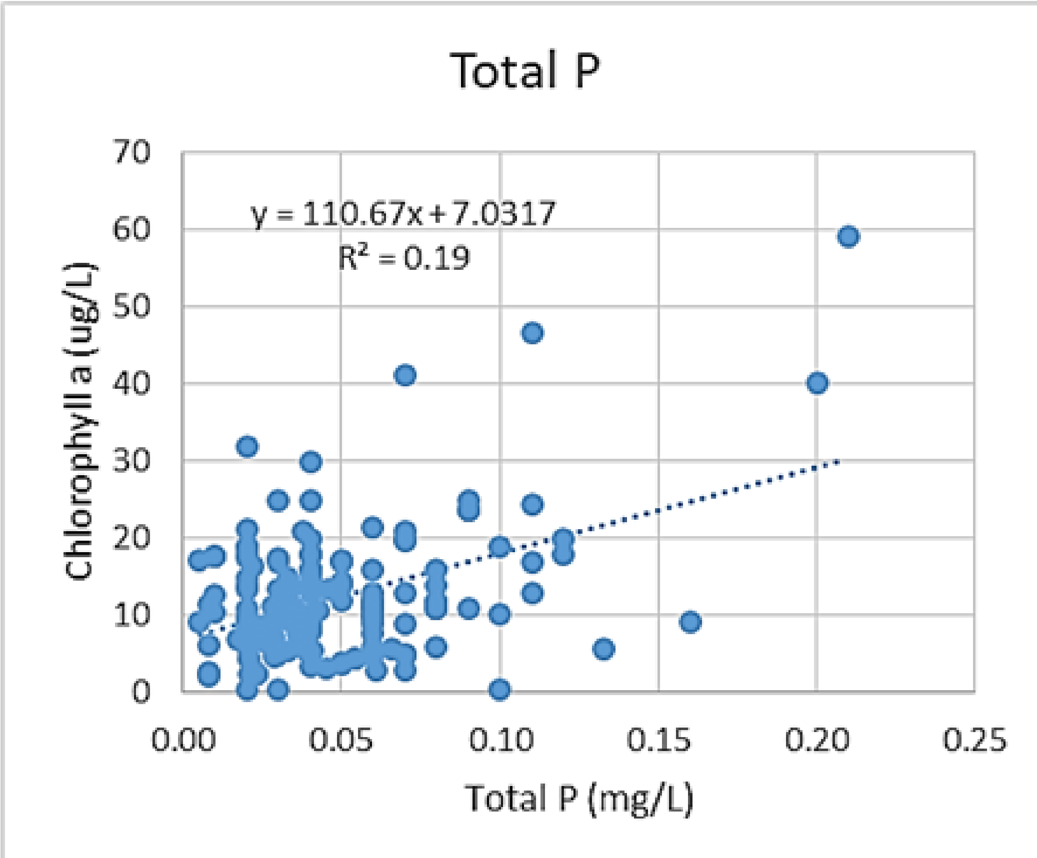


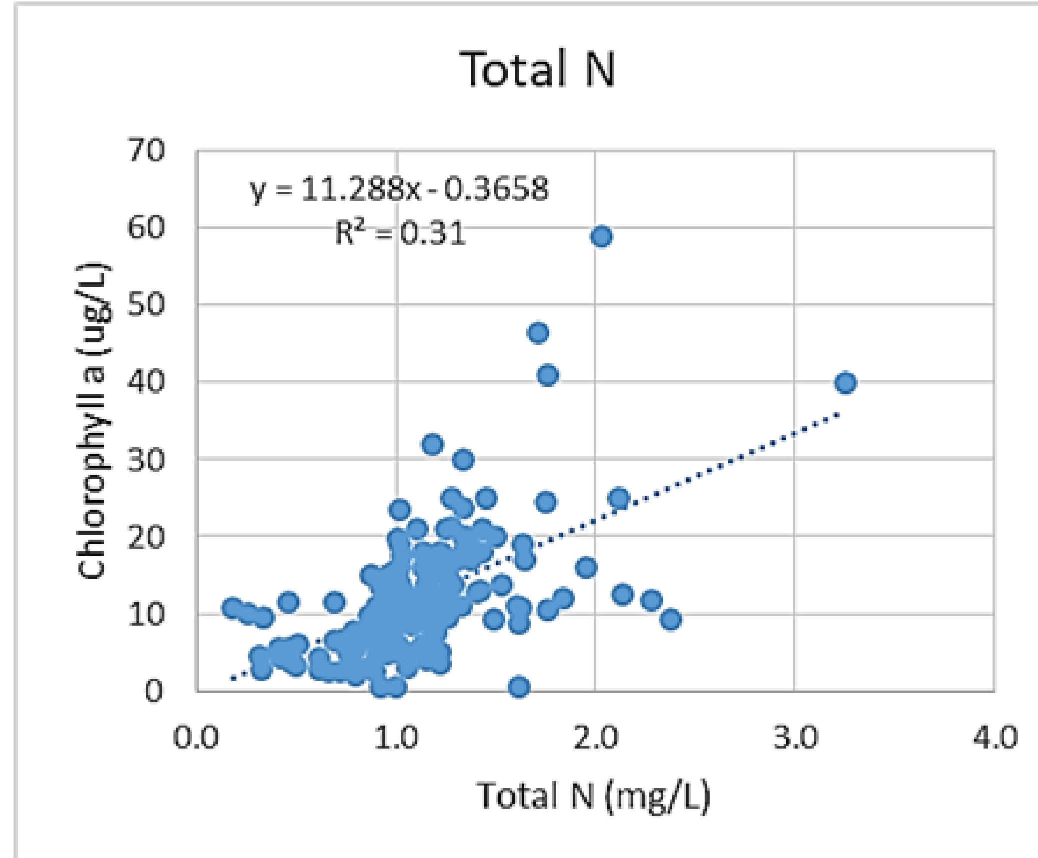


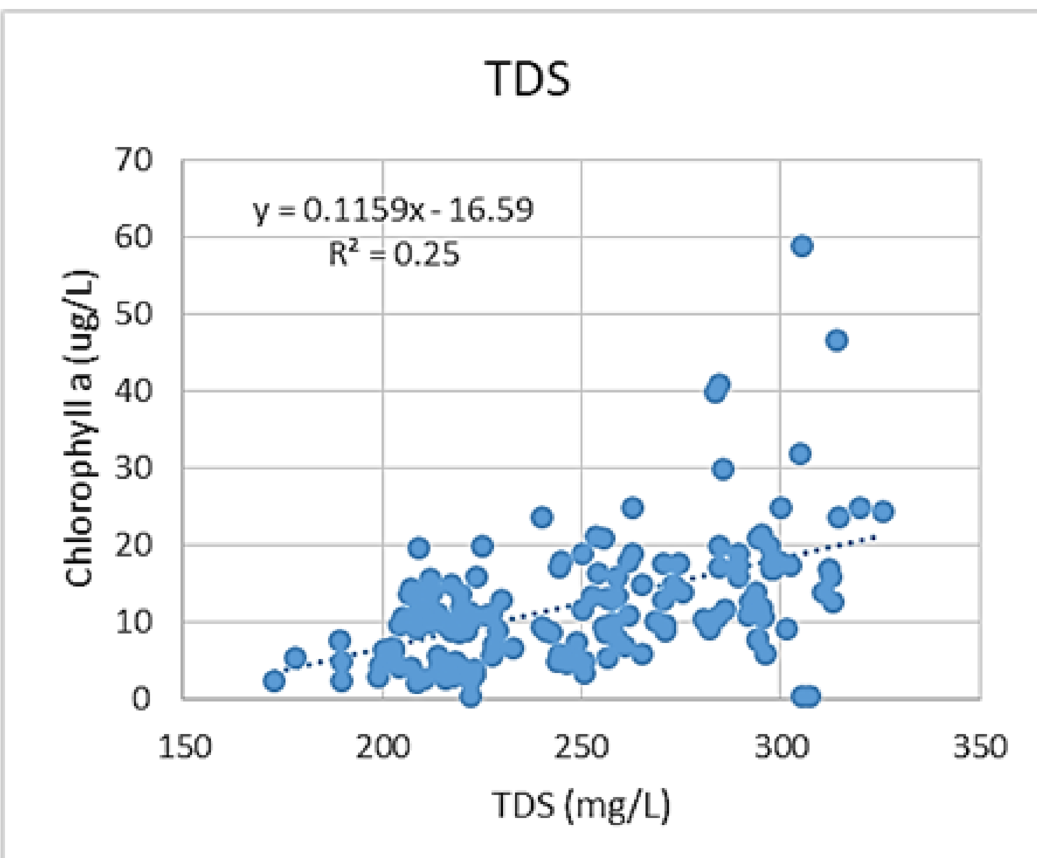


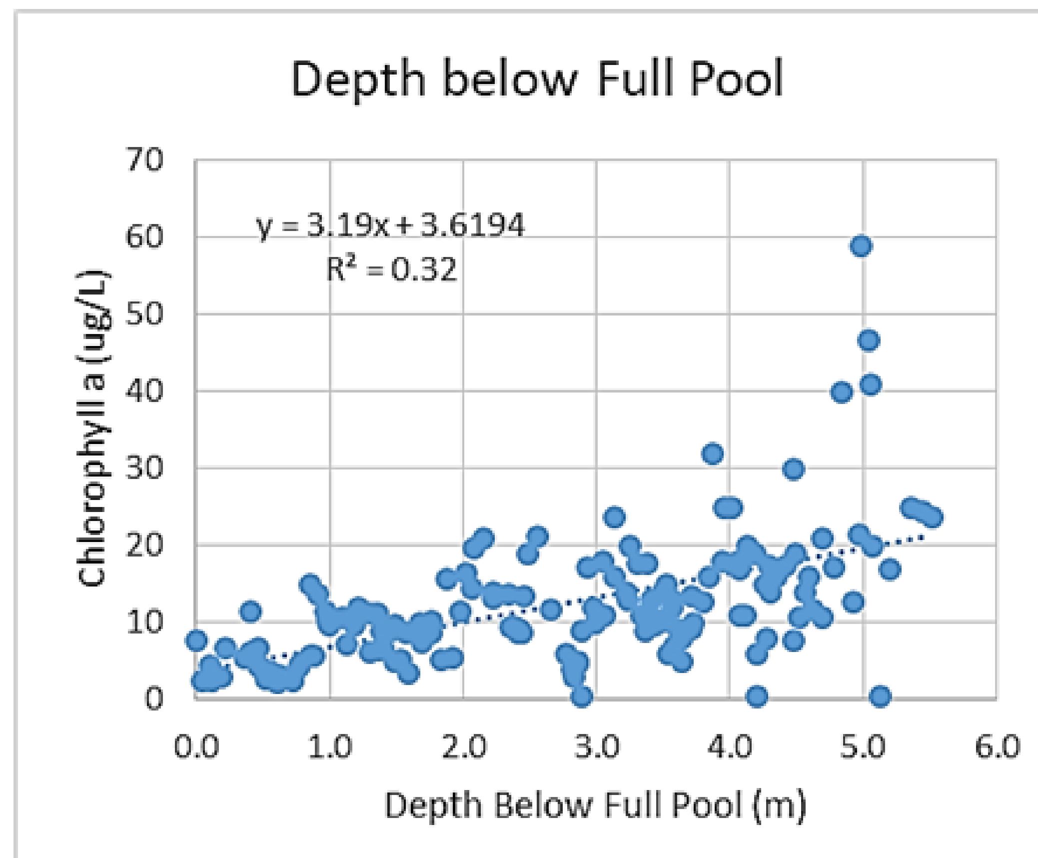
- The TN:TP ratio affirms P-limitation typically present in the lake, although periods of co-limitation with N also present
- Linear regressions yielded modest R^2-values between chlorophyll-a and nutrient, TDS and lake levels (typically 0.2-0.3)

Relationships between Chlorophyll-a and Other Variables (Gilner Point)









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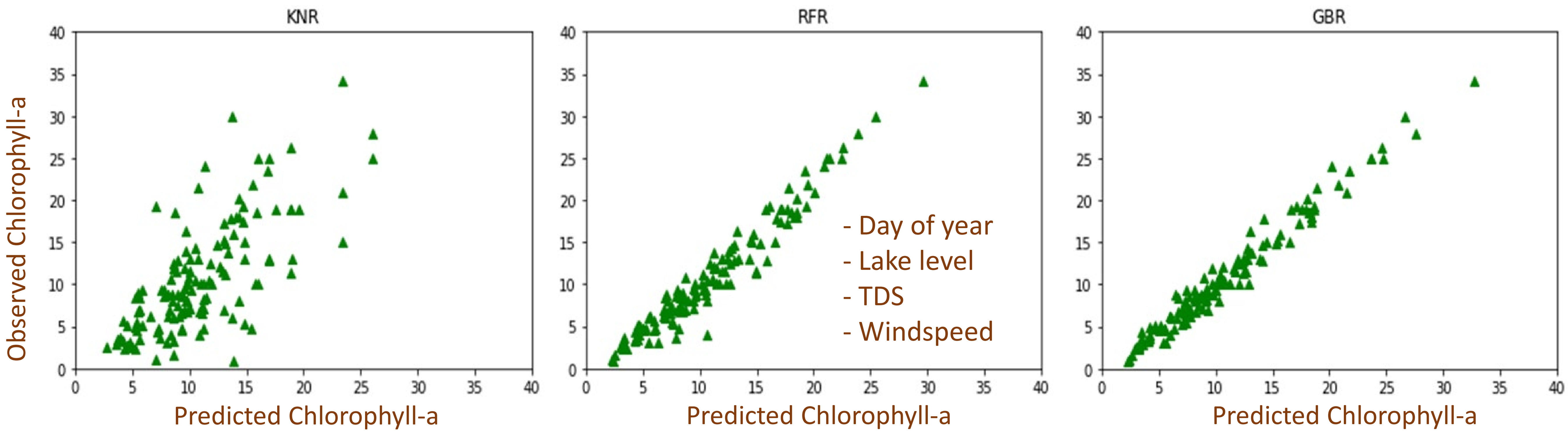
- Chlorophyll-a concentrations are a complex function of numerous factors and conditions present in the lake
- Simple linear regression analyses do not adequately capture this complexity
- Machine learning is an alternative, data science-based approach to identifying and understanding relationships



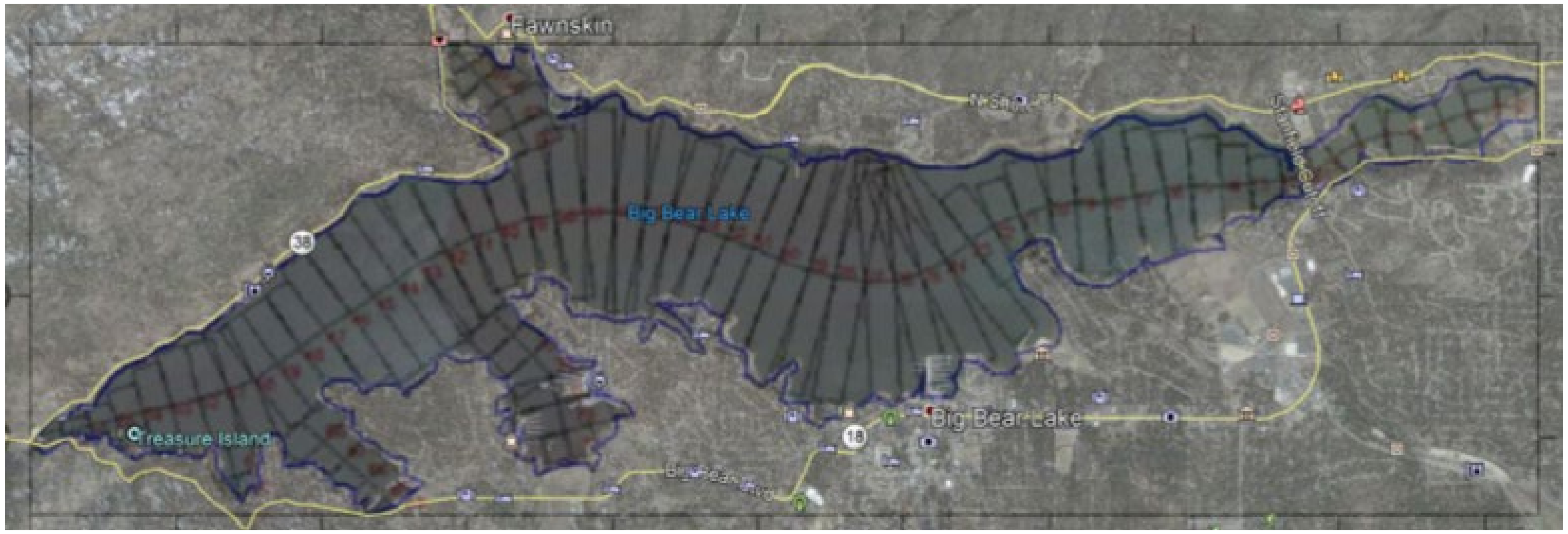
Model (TMDL Station #1)	MAE (ug/L)	Variance Captured (%)
K-Nearest Neighbor Regressor (KNR)	3.4	52
Random Forest Regressor (RFR)	1.4	92
Gradient-Boosted Regressor (GBR)	1.0	96

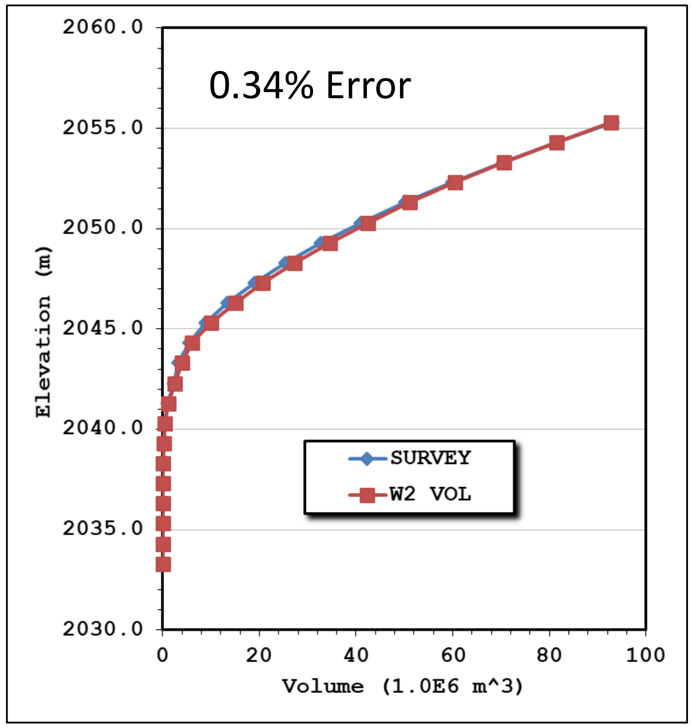
CE-QUAL-W2: Model Development and Calibration

Lake Modeling

- Numerical modeling with process-based models is routinely used to simulate historical/baseline and future conditions in lakes and reservoirs
- Big Bear Lake exhibits significant longitudinal and vertical gradients in water quality and hydrodynamics, indicating that a 2-D laterally-averaged or 3-D representation of the lake is appropriate
- Prior modeling was conducted using WASP, which is a finite-segment model that requires external hydrodynamic driver
- The 2010 TMDL update recommended development of a new model for the lake based on CE-QUAL-W2
- CE-QUAL-W2 was originally developed by the USACE and has been used for over 450 lakes & reservoirs, 300 rivers and numerous estuaries and other water bodies

- CE-QUAL-W2 requires detailed information about:
  - Lake bathymetry, spillway and related infrastructure
  - Meteorological conditions
  - Hydrological conditions and water quality of all inflows
  - Key lake biogeochemical and ecological processes
  - Lake water quality (for initial conditions and model calibration)
- A 2-D laterally-averaged grid with 85 horizontal segments was developed from the multibeam hydroacoustic survey conducted by Fugro Pelagos Inc (2006)

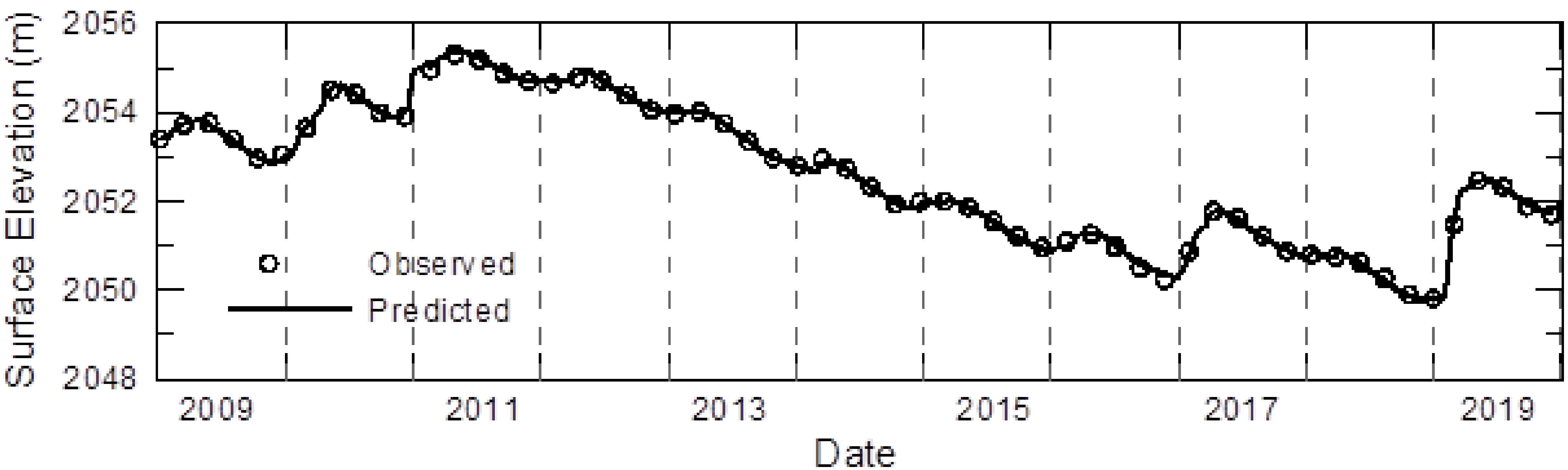




- Hourly meteorological conditions for 2009-2019 were taken from Big Bear Airport and CIMIS Station #199 located at Golf Course
  - Solar shortwave radiation (W/m^2)
  - Air temperature (°C)
  - Dewpoint temperature (°C)
  - Windspeed (m/s)
  - Wind direction (°)
  - Cloud cover (%)
- Inflows, outflows and withdrawals for the lake were developed from Water Master reports
- Model was calibrated against
  - Measured lake levels
  - In situ profiles of temperature, DO and conductivity (TDS)
  - Laboratory analyses of water samples

Lake Level

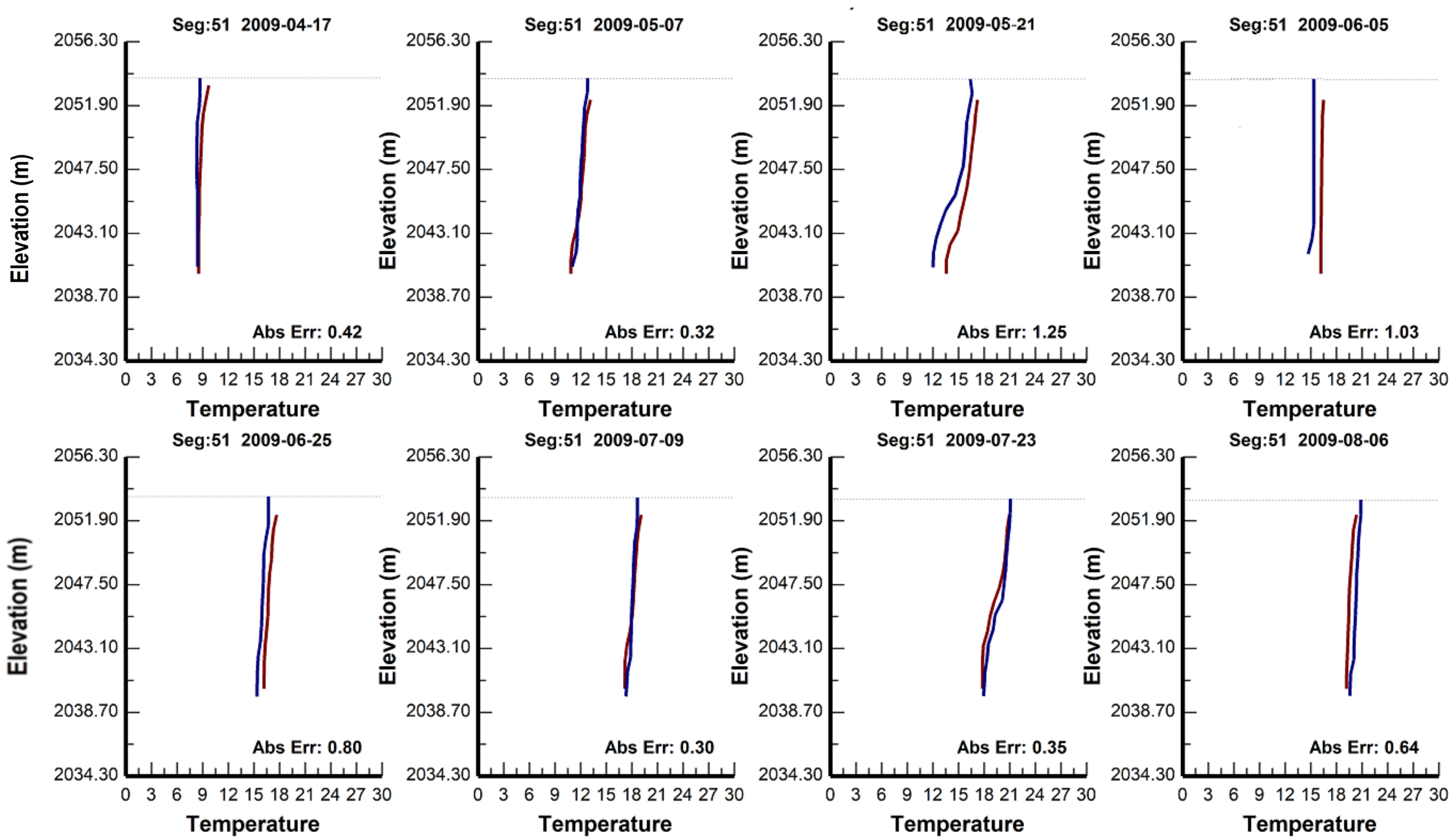
- Monthly Water Master water balance data were combined with weekly lake level data to develop finer resolution hydrology
- The W2 water balance tool was used to adjust inflows (dependent variable) to match observed water level (independent variable), as done in Water Master calculations

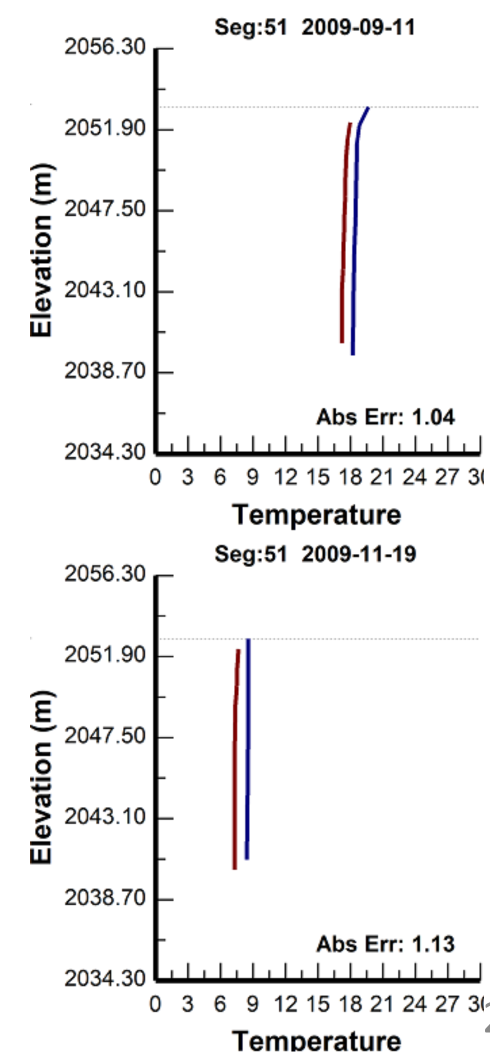


- With fitting of inflows, water levels were very accurately reproduced by model (MAE= 3.6 cm)

Lake Temperature

- Evaporation is principal mechanism of water loss from lake
- Evaporation is also a critical part of heat budget
- Water Master uses simple Blaney-Criddle equation, while CE-QUAL-W2 uses wind speed & vapor pressure gradient (17.0% error)
- Model-predicted temperature profiles *(purple)* were compared with those measured by BBMWD *(blue)*





- Model was calibrated to 145 profiles for each site, with 858-1974 discrete temperature measurements (depending upon site)
- Good agreement between predicted and observed water column temperature profiles was found

	#1 (Dam)	#2 (Gilner)	#6 (Midlake)	#9 (Stanfield)
MAE (^{o}C)	1.14	0.99	0.95	1.02

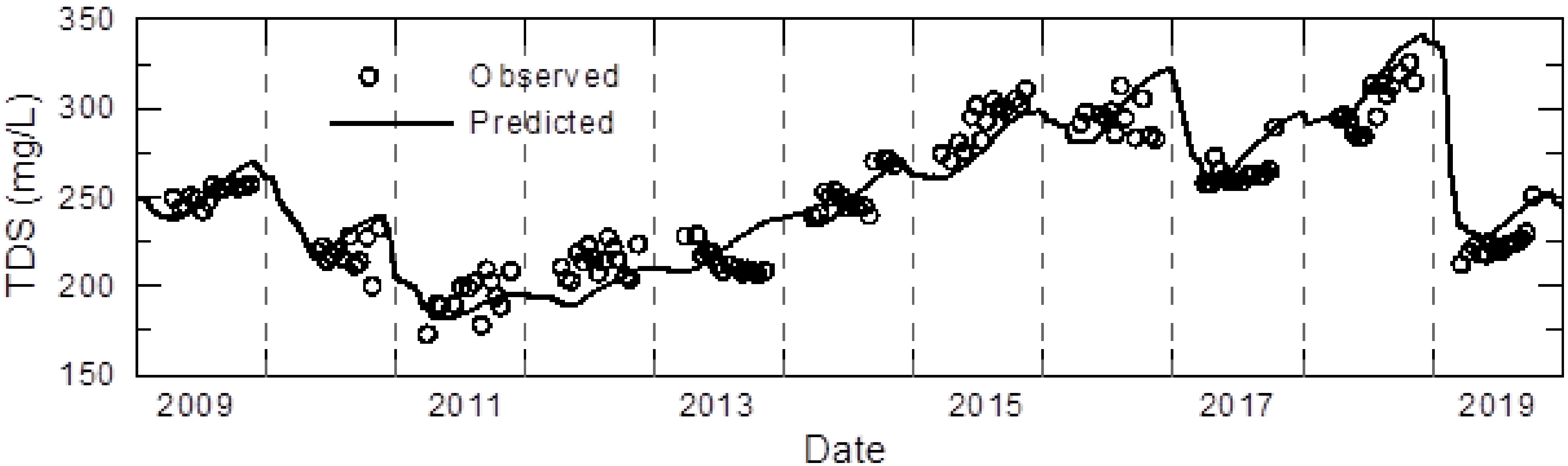
Lake TDS

- With good water balance and heat balance, the next step was to reproduce observed TDS levels (from conductivity)
- This required information about TDS (conductivity) of inflowing water over full range of 2009-19 runoff conditions
- Limited data were available, generally under low flow conditions
- It was thus not feasible to develop comprehensive discharge-TDS relationships for creeks from available data
- USGS gage #10260500 at Deep Creek was used to develop a general form of discharge-TDS relation (inverse power law) that was then fitted to the Big Bear watershed:

$$\text{TDS (mg/L)} = 36{*}Q\ (m^3/s)^{-0.26}$$

- Relationship yielded a MAE of 13.3 mg/L (rel error of 15.4%) when applied to Metcalf & Summit Cr data (n=6)

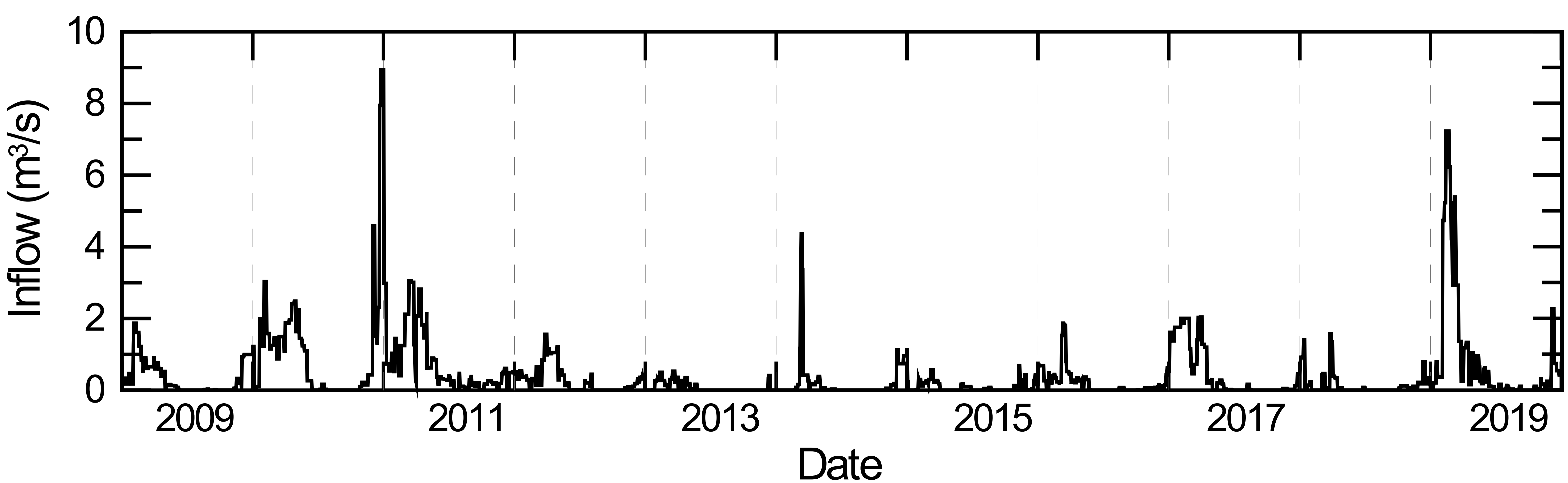
- Application of the TDS-Q equation to lake inflows and simulation with CE-QUAL-W2 captured main features and trends in measured lake TDS (from conductivity) for 2009-19



- MAE between predicted and observed lake TDS concentrations was 11.9 mg/L (4.8% relative error)

Water Quality

- Following initial focus on water, heat and salt budgets, calibration then turned to nutrients, DO and chlorophyll-a
- This required information about:
    - external nutrient loading from the watershed
    - atmospheric deposition
    - Internal nutrient recycling
    - macrophyte and epiphyte cycling
- Excluding a few point estimates, flows for creeks into Big Bear Lake were generally not available, so total flows (below) were allocated to different creeks following TMDL HSPF simulations



- External loading from the watershed is a product of flow and concentration
- Median nutrient concentrations varied across the watershed

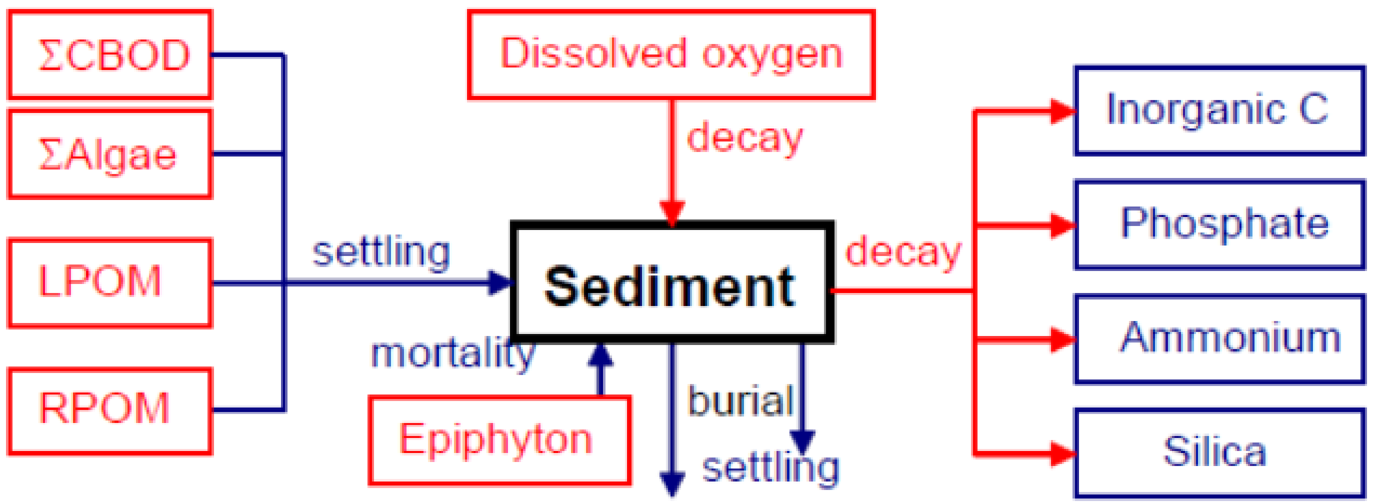
Median concentrations (mg/L) of nutrients and organic C in creek water samples.									
Creek	TP	o-P	TN	TKN	DKN	NH_4-N	NO_3-N	TOC	DOC
Boulder (n=7)	0.009	0.007	0.184	-	-	0.011	0.022	-	-
Grout (n=12)	0.024	0.015	0.282	-	-	0.008	0.121	-	-
Knickerbocker(n=53)	0.055	0.038	0.374	0.34	0.22	0.015	0.132	2.9	2.7
Rathbun (n=28)	0.055	0.038	0.786	0.46	0.36	0.015	0.428	5.1	4.9
Summit (n=27	0.069	0.021	0.530	0.52	0.25	0.015	0.215	6.0	3.6

- The ranges in total P and total N concentrations for a given creek often spanned an order-of-magnitude or more

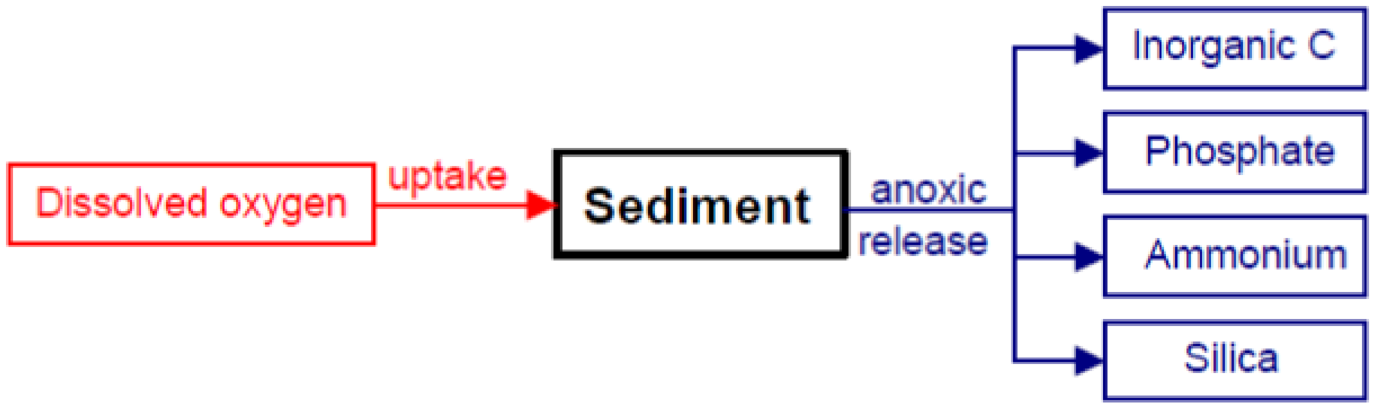
- Measured N and P concentrations were used when available and assumed to represent influent concentrations for entire month in which the measurements were made
- For time periods when measured values were not available, median values were used, except when concentrations were estimated from regressions with total flow for that date as follows:
    - NO_3-N (all creeks except Boulder)
    - PO_4-P (Grout and Knickerbocker only),
- Concentrations of nutrients in runoff are recognized to often vary widely depending upon flow rate, antecedent conditions and seasonal and other factors

- Atmospheric deposition rates were assumed to be same as used in earlier TMDL (approximately 10 and 0.5 kg/ha/yr for N and P)
- Internal recycling rates were dynamically calculated within CE-QUAL-W2 using the dynamic 1st-order sediment model in combination with the 0-order SOD model

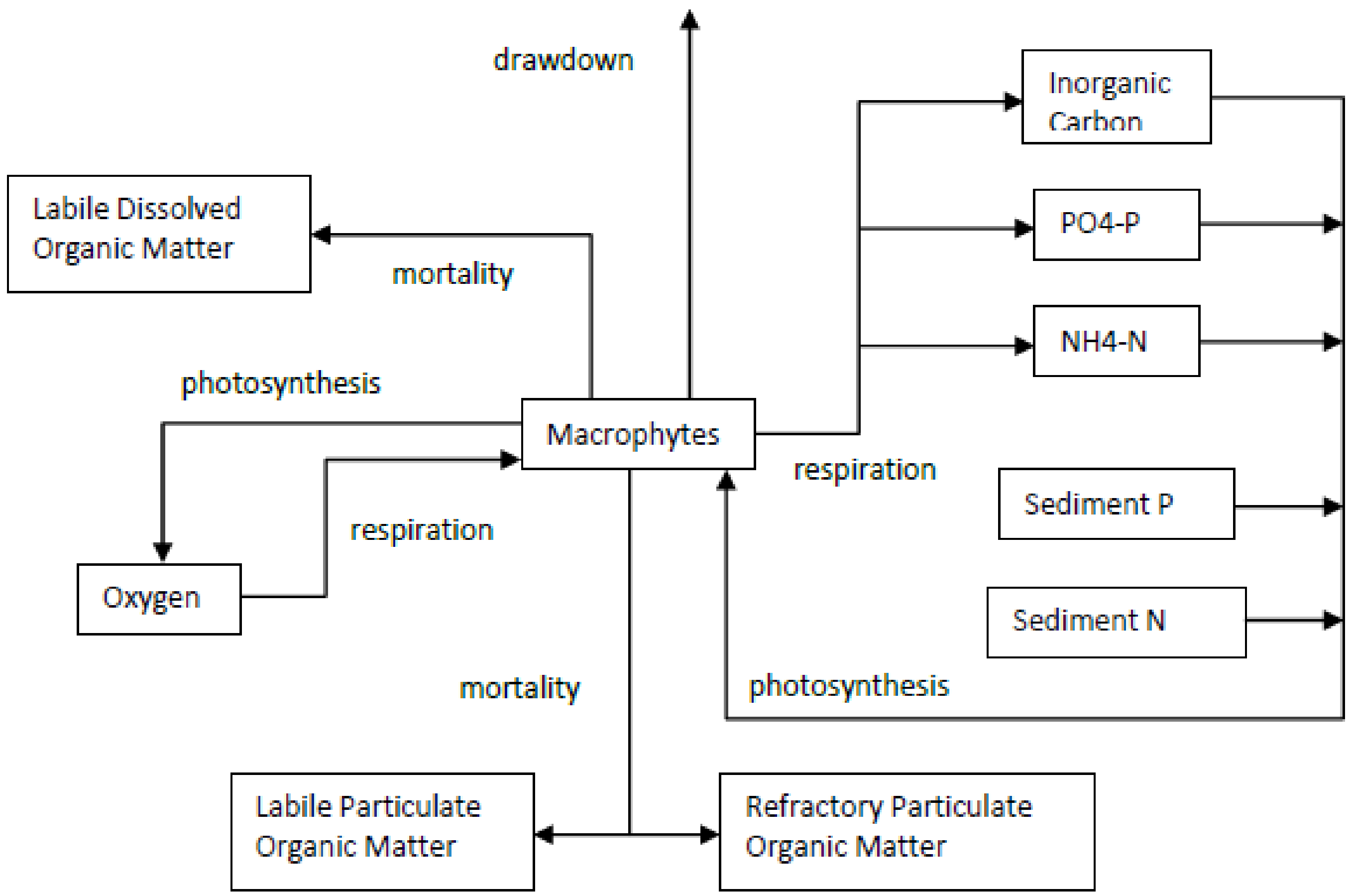
1st-order model



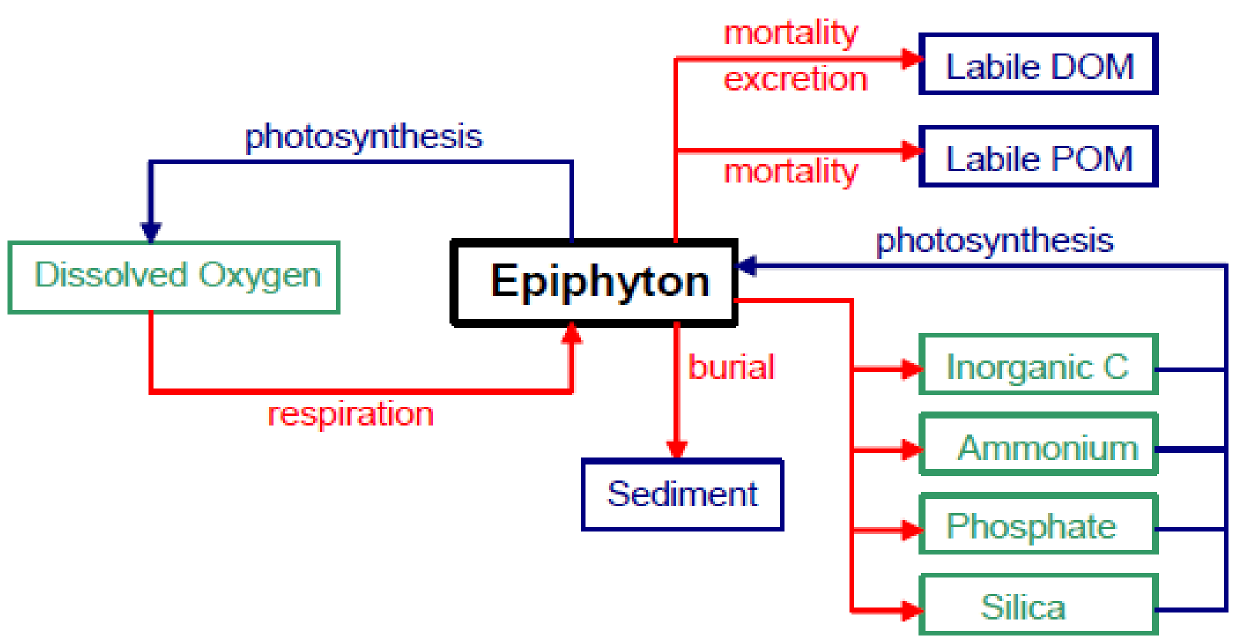
0-order model



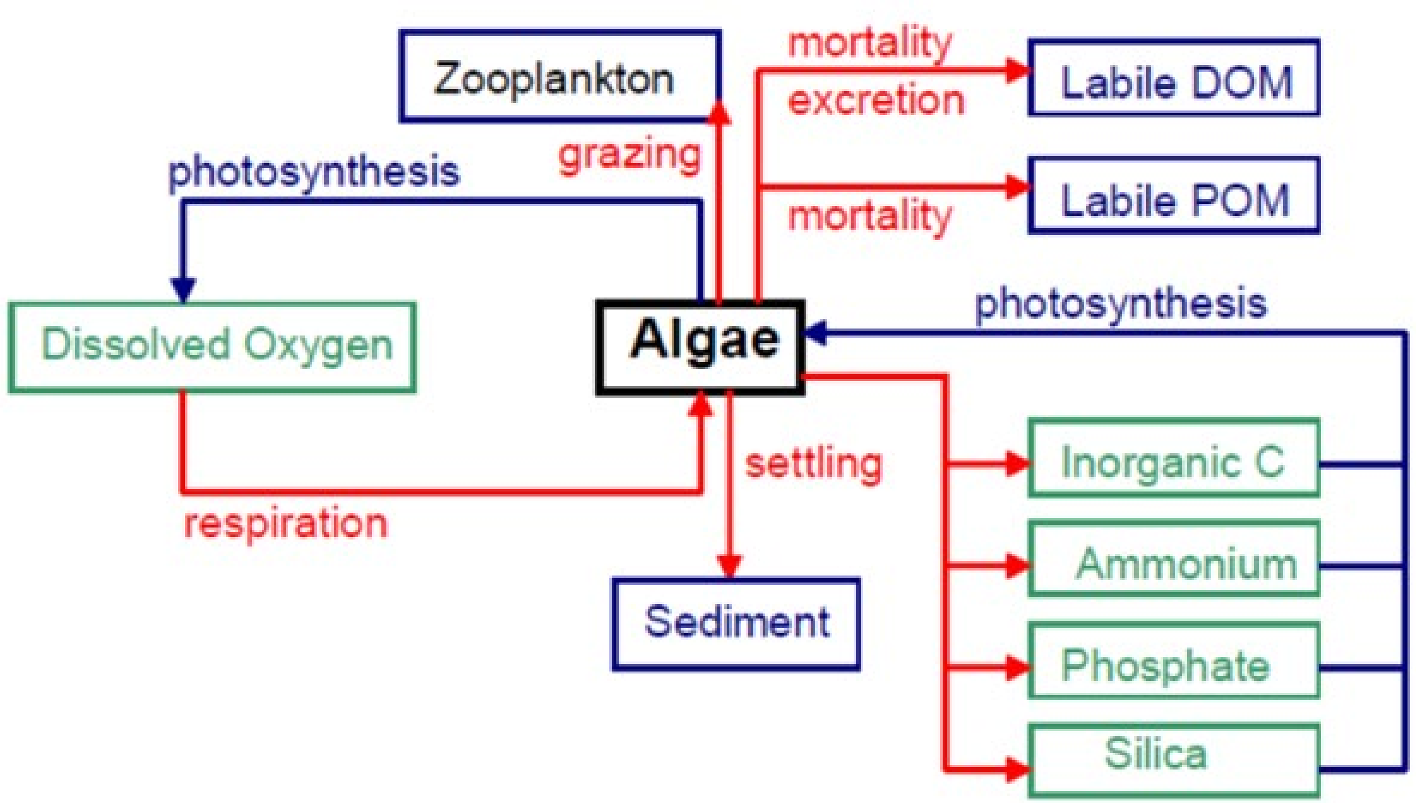
Macrophyte cycle



Epiphyton cycle

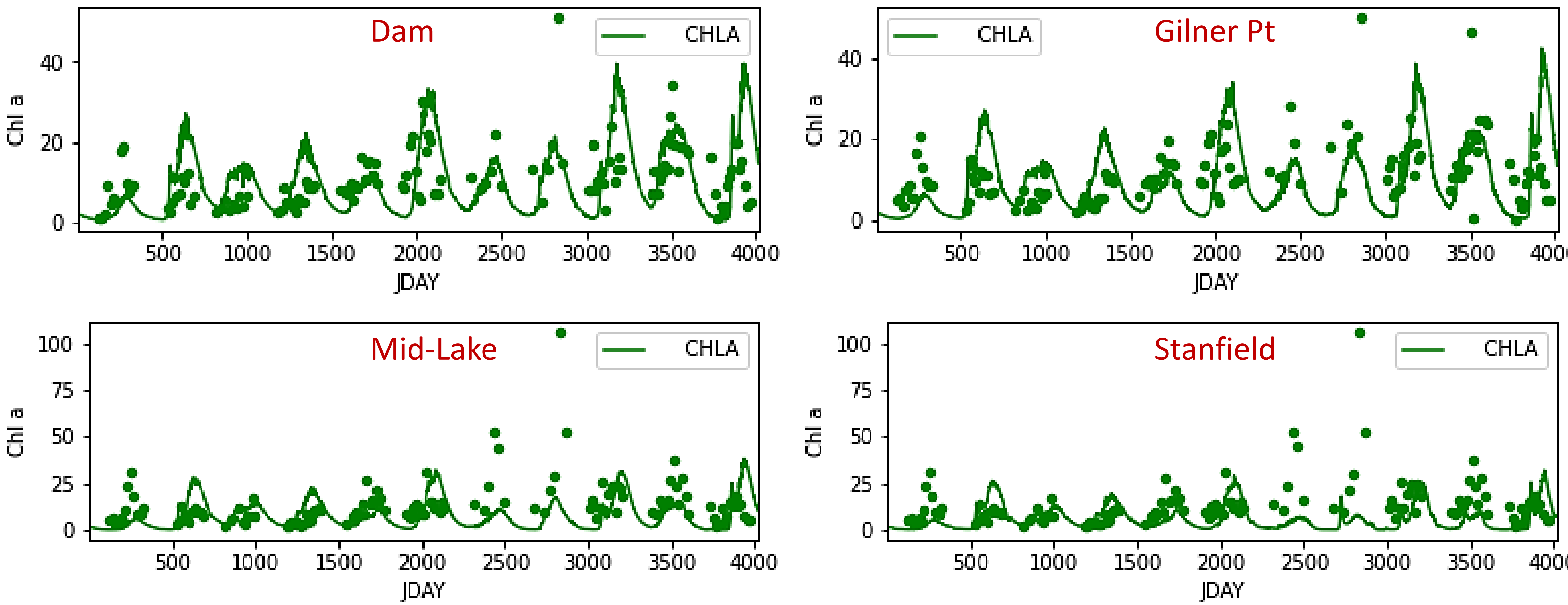


- With information about nutrient inputs and recycling, as well as light, temperature and other factors, two algal groups were simulated, including 1 capable of fixing N_2
- CE-QUAL-W2 default parameter values were used as starting points for model calibration, and selected values were adjusted to improve model fit
- Most values were unchanged; default and final values are provided in draft final report



Water Quality Calibration Results

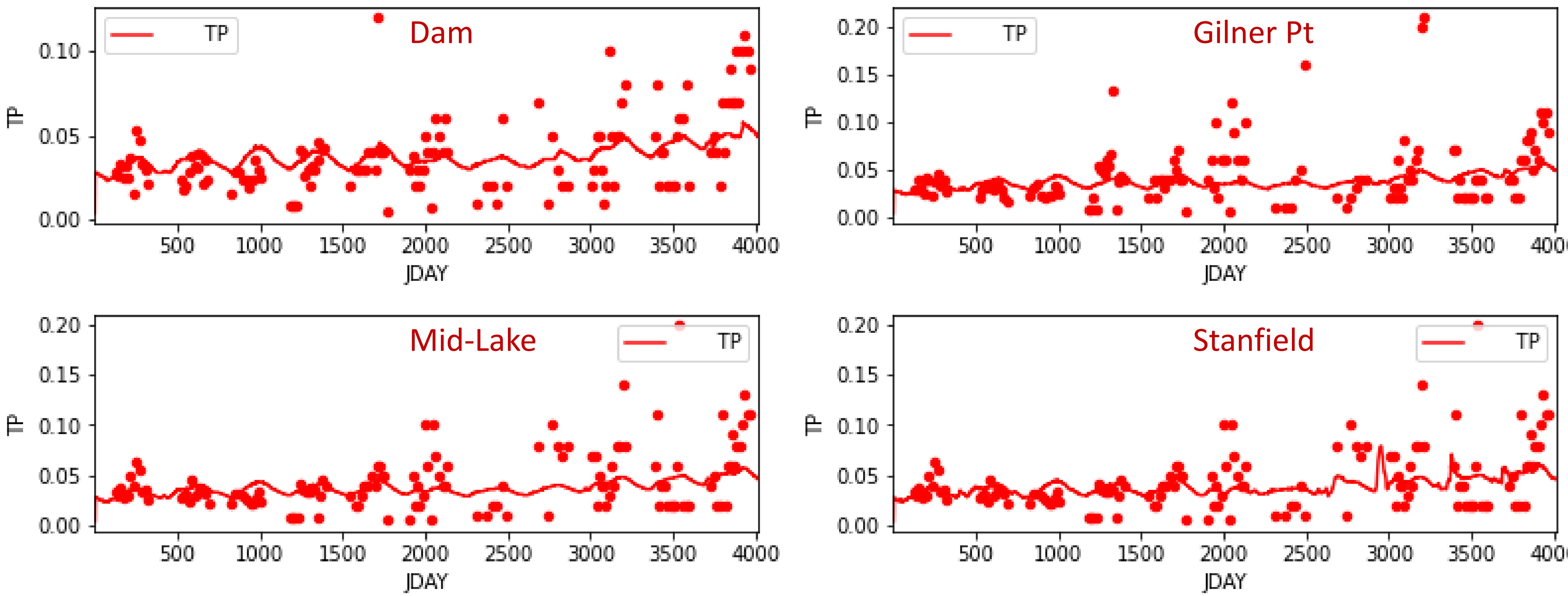
- Model reproduced seasonal and inter-annual variations in chlorophyll-a concentrations reasonably well



- Grubbs test (p<0.01) used to remove outliers prior to error calcs

Property	N	Range	ME	MAE	RMSE	RRMSE (%)
Chlorophyll-a (µg/L)	417	0.5 – 43.2	-1.3	7.9	10.3	24.0

- Model reproduced central tendencies in measured total P concentrations, but predicted seasonal variations were damped relative to reported data
- Also, over-predicted total P around day 2300-2700 (year 2015) when alum was applied



Property	N	Range	ME	MAE	RMSE	RRMSE (%)
Total P (mg/l)	595	0.005 - 0.180	-0.010	0.022	0.031	17.7

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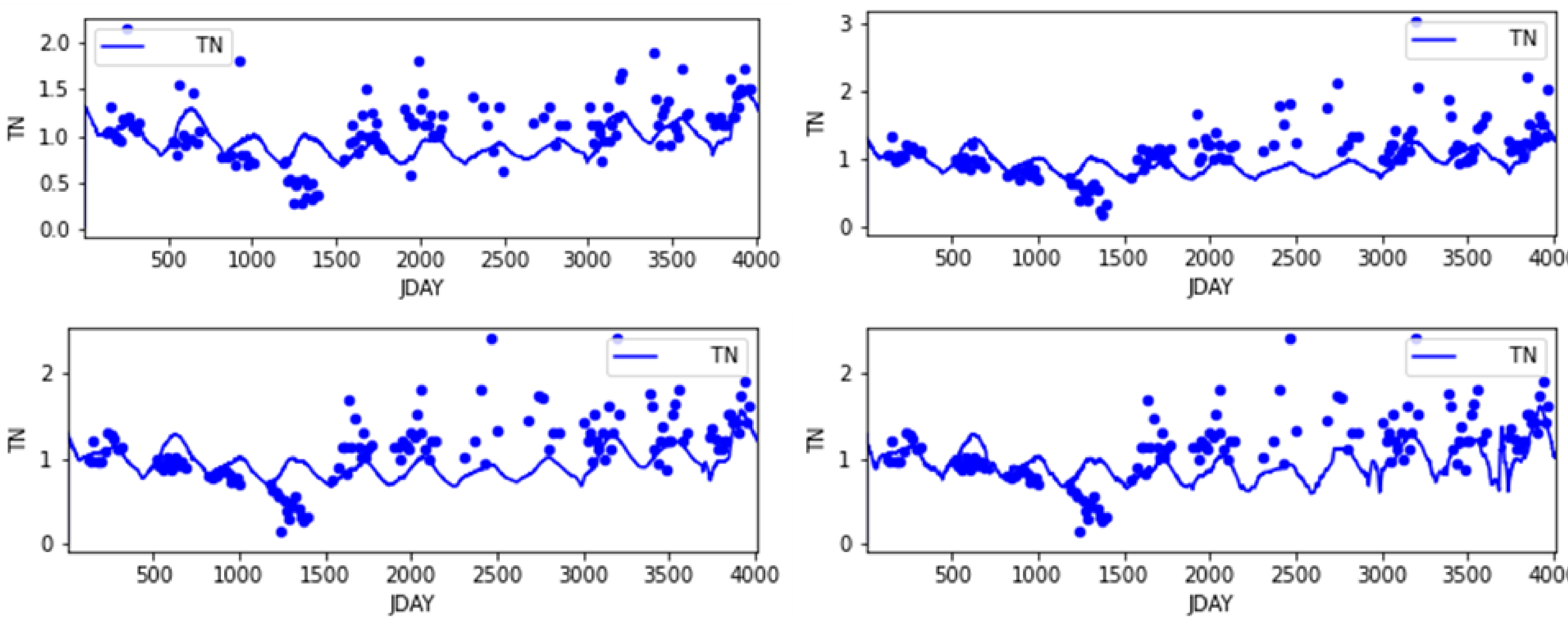
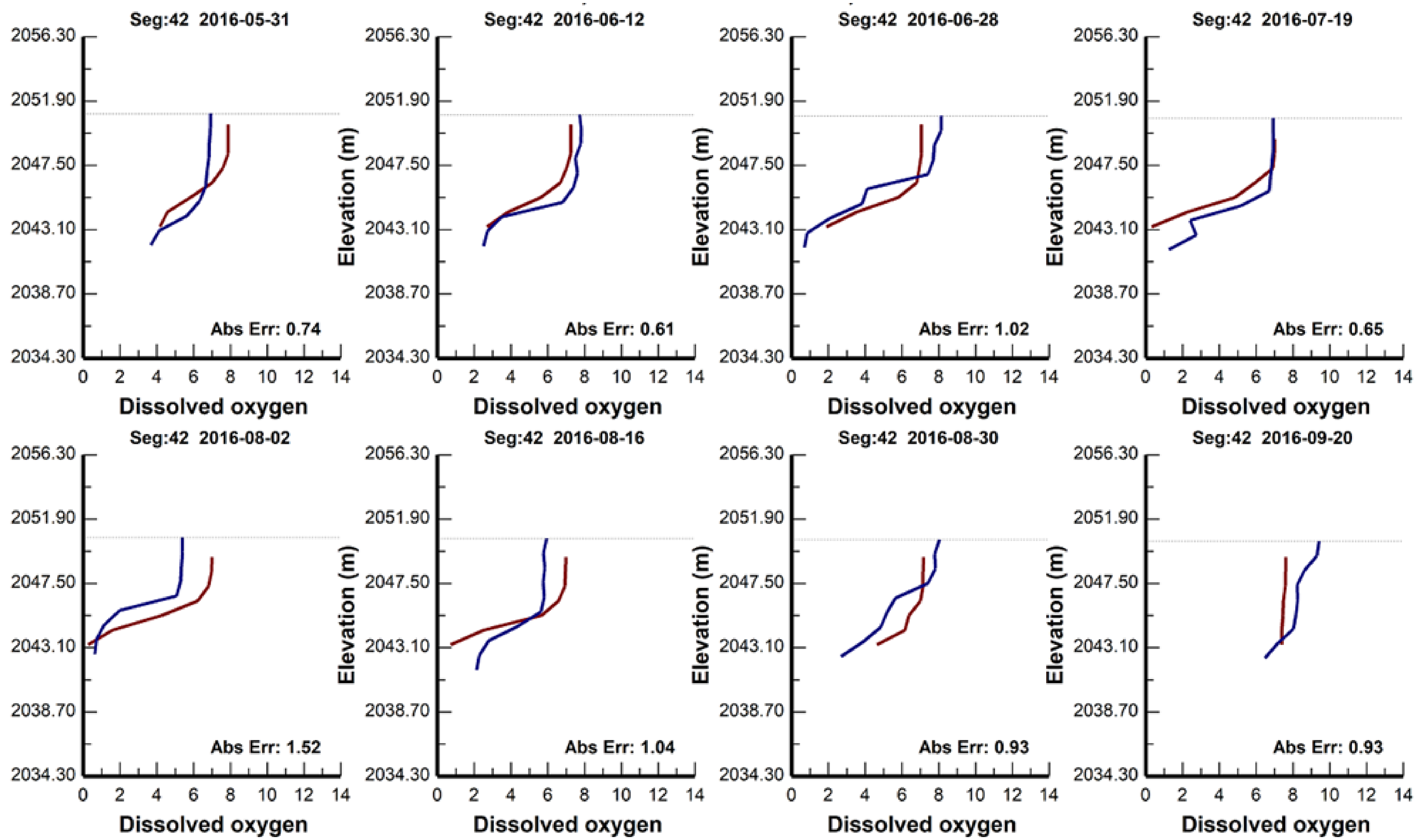
- Model also reproduced general trends in total N, but tended to under predict later in simulation, especially around day 2300-2700 (year 2015) when alum was added
- Suppression of P could increase N levels due to less uptake



Property	N	Range	ME	MAE	RMSE	RRMSE (%)[a]
Total N (mg/L)	598	0.126 - 2.415	-0.148	0.310	0.413	18.0

- Algal productivity also influences DO concentrations through photosynthesis, respiration and via aerobic decomposition
- DO profiles were typically well reproduced, e.g., at Gilner Pt



Predicted DO	#1 (Dam)	#2 (Gilner Pt)	#6 (Mid-lake)	#9 (Stanfield)
MAE (mg/L)	1.40	1.25	1.16	1.02

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Break

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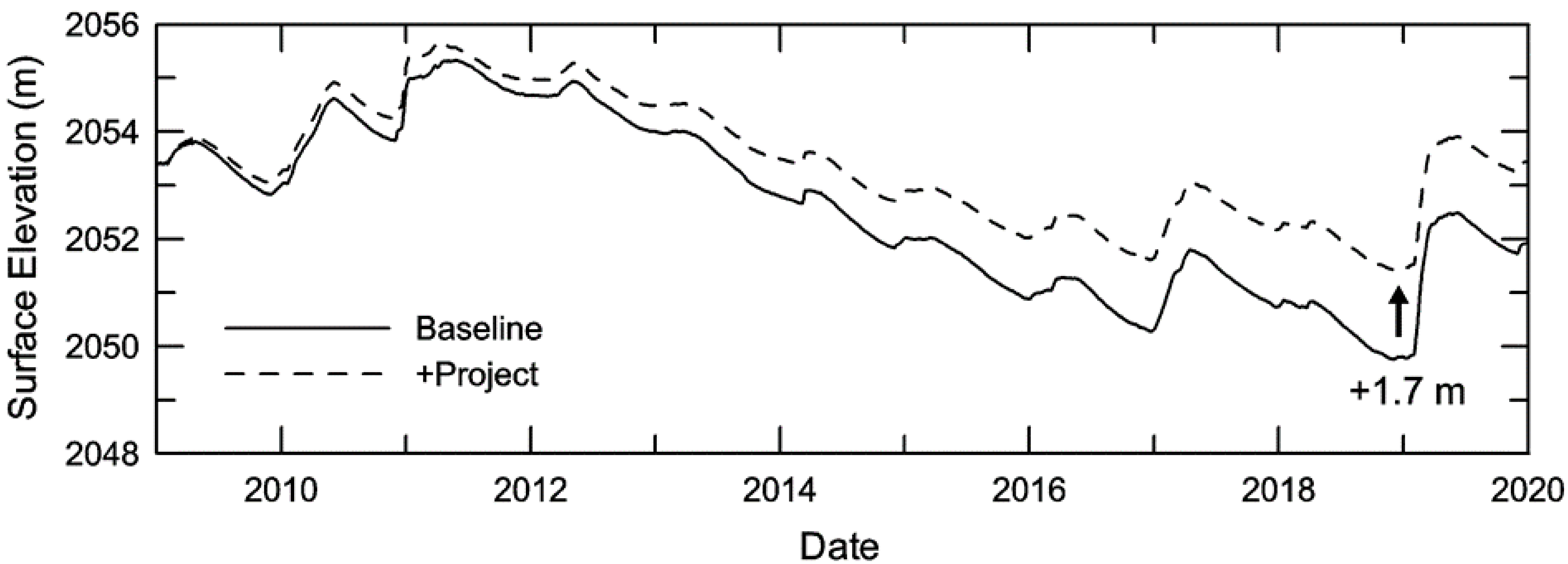
Application of Model to Evaluate Conditions with Replenish Big Bear: 2009-2019

- Model was then used to evaluate changes in lake under selected Replenish Big Bear treatment scenarios
- 1,920 af of BBARWA WWTP effluent was delivered annually through Stanfield Marsh to lake
- Three progressive levels of treatment assuming advanced nutrient removal and reverse osmosis (RO) technologies were evaluated (Treatment Alternatives):
  - Alternative 1: TIN & TP Removal
  - Alternative 2: 70% RO (70% RO + 30% TIN & TP Removal)
  - Alternative 3: 100% RO

Constituent (mg/L)	Alternative 1	Alternative 2	Alternative 3
TDS	450	150	50
NO_3-N	0.6	0.2	0.05
NH_4-N	0.2	0.1	0.05
PO_4-P	0.25	0.06	0.02
Dissolved Organic N	1.33	0.76	0.5
Dissolved Organic P	0.24	0.04	0.01
Particulate Organic N	0.07	0.04	0.00
Particulate Organic P	0.01	0.002	0.00

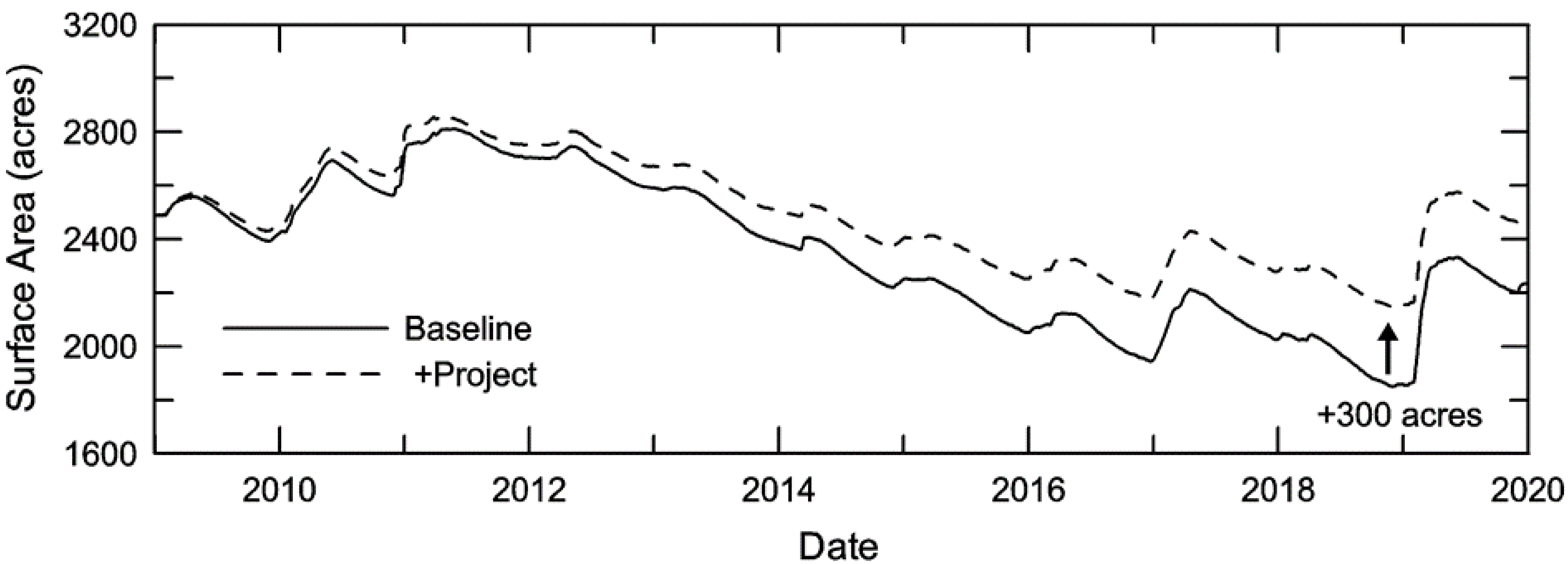
Lake Level

- Addition of 1,920 af/yr represents about a 20% increase in average annual inflow and adds about 0.2 m to lake level
- That increase accumulates over time until level reaches spillway elevation
- Supplemental water would have significantly increased lake level relative to baseline (no project) 2009-19 condition



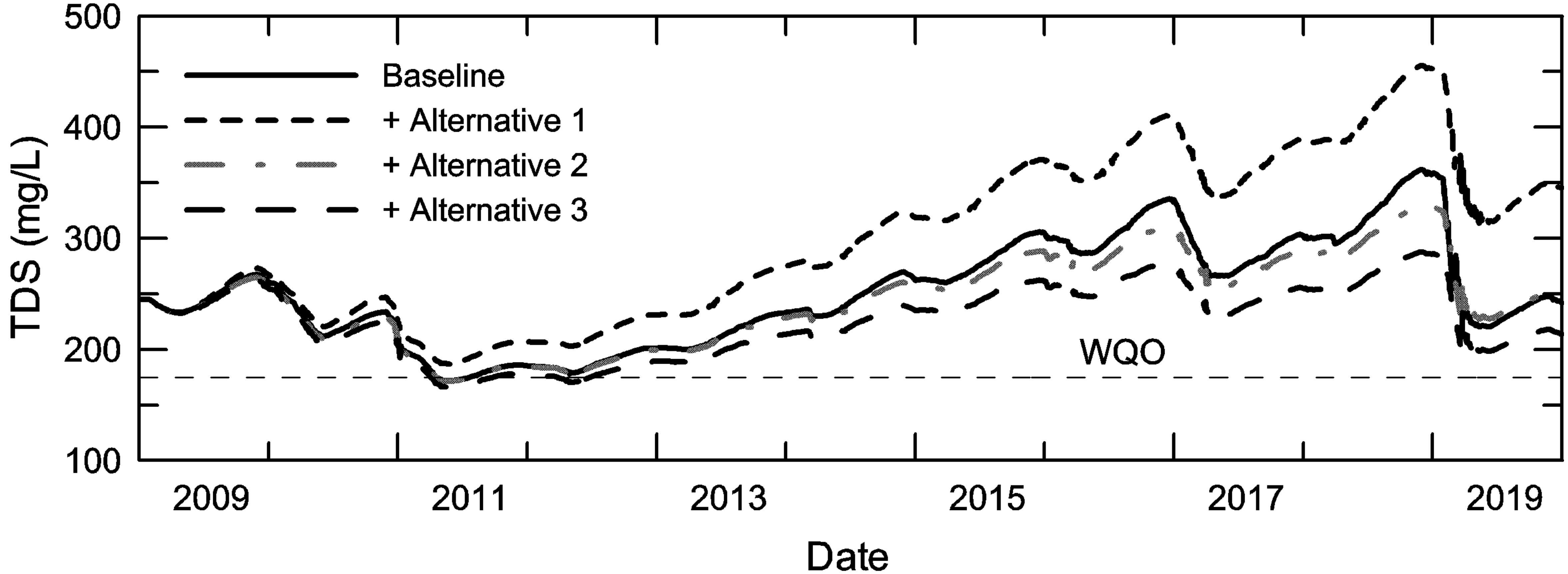
Lake Area

- Addition of supplemental water also increased predicted lake area relative to levels observed in 2009-2019
- As with lake level, the relative difference is particularly apparent in late 2018
  - lake was only about 1900 surface acres in size following protracted drought
  - Supplemental water increased area by ~300 acres (+16%)



TDS

- Supplementation also influenced TDS concentrations in lake
- TDS was strongly influenced by level of treatment



Scenario	Average TDS (mg/L)	Range TDS (mg/L)	WQO Exceedance Frequency (%)
Baseline	251	172 - 362	97.6
Alternative 1	300	187 – 455	100.0
Alternative 2	244	171 – 329	97.6
Alternative 3	226	166 – 287	93.3

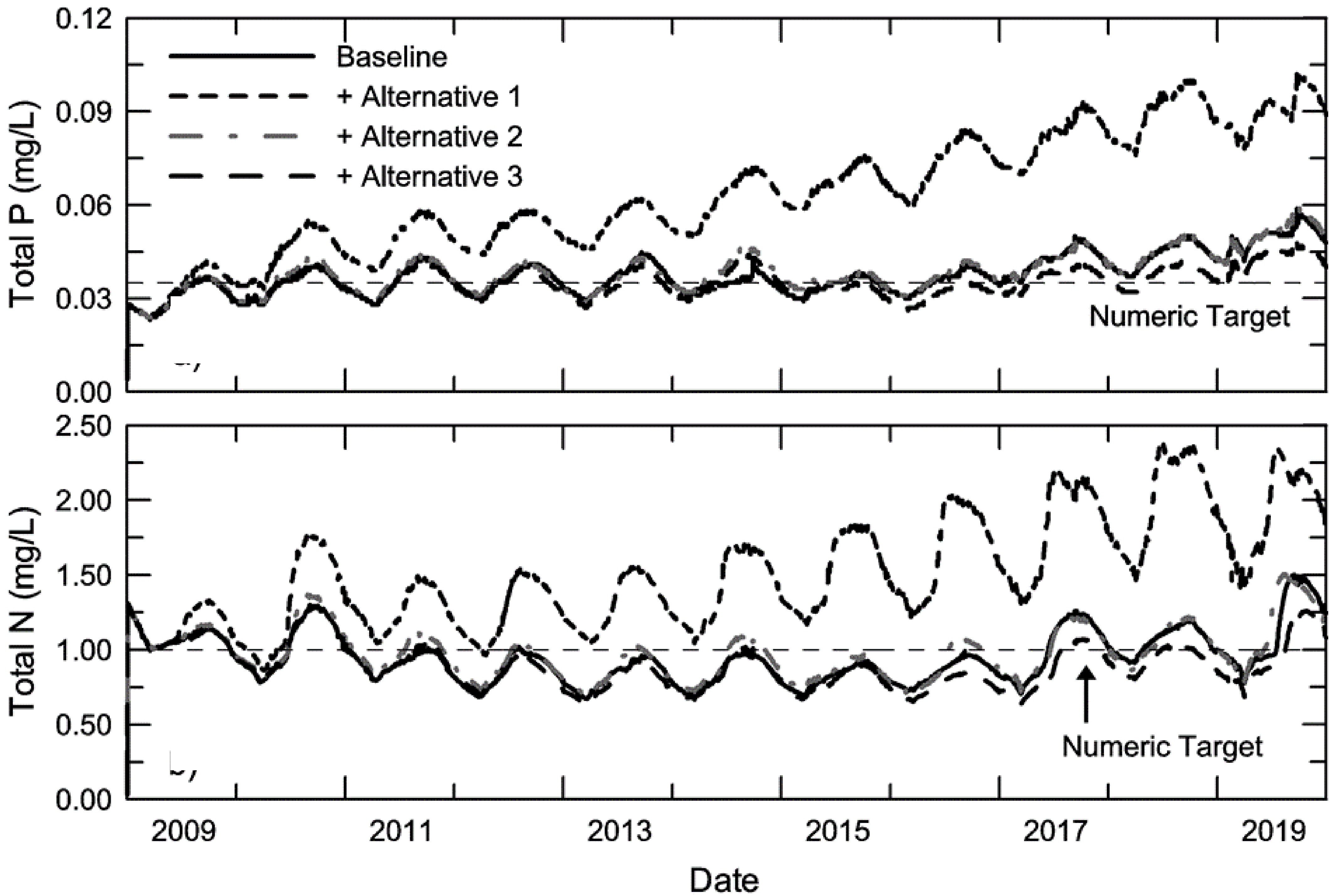
Nutrient Concentrations

- It is useful to compare concentrations in watershed with those in the 3 project treatment alternatives
- Alternative 1 effluent greatly exceeded median watershed concentrations, while Alternatives 2 & 3 were often similar

	Median Watershed Concentrations (mg/L)					Nutrient Concentrations (mg/L)		
Variable	Boulder Cr	Grout Cr	Knickerb Cr	Rathbun Cr	Summit Cr	Alt 1	Alt 2	Alt 3
NO_3-N	0.05	0.183	0.13	0.419	0.19	0.6	0.2	0.05
NH_4-N	0.011	0.01	0.015	0.015	0.015	0.2	0.1	0.05
PO_4-P	0.007	0.015	0.038	0.038	0.021	0.25	0.06	0.02
Total N	0.184	0.378	0.312	0.716	0.481	2.2	1.1	0.6
Total P	0.009	0.023	0.055	0.055	0.075	0.5	0.1	0.03
TN/TP	20.4	16.4	5.7	13.0	6.4	4.4	11	20

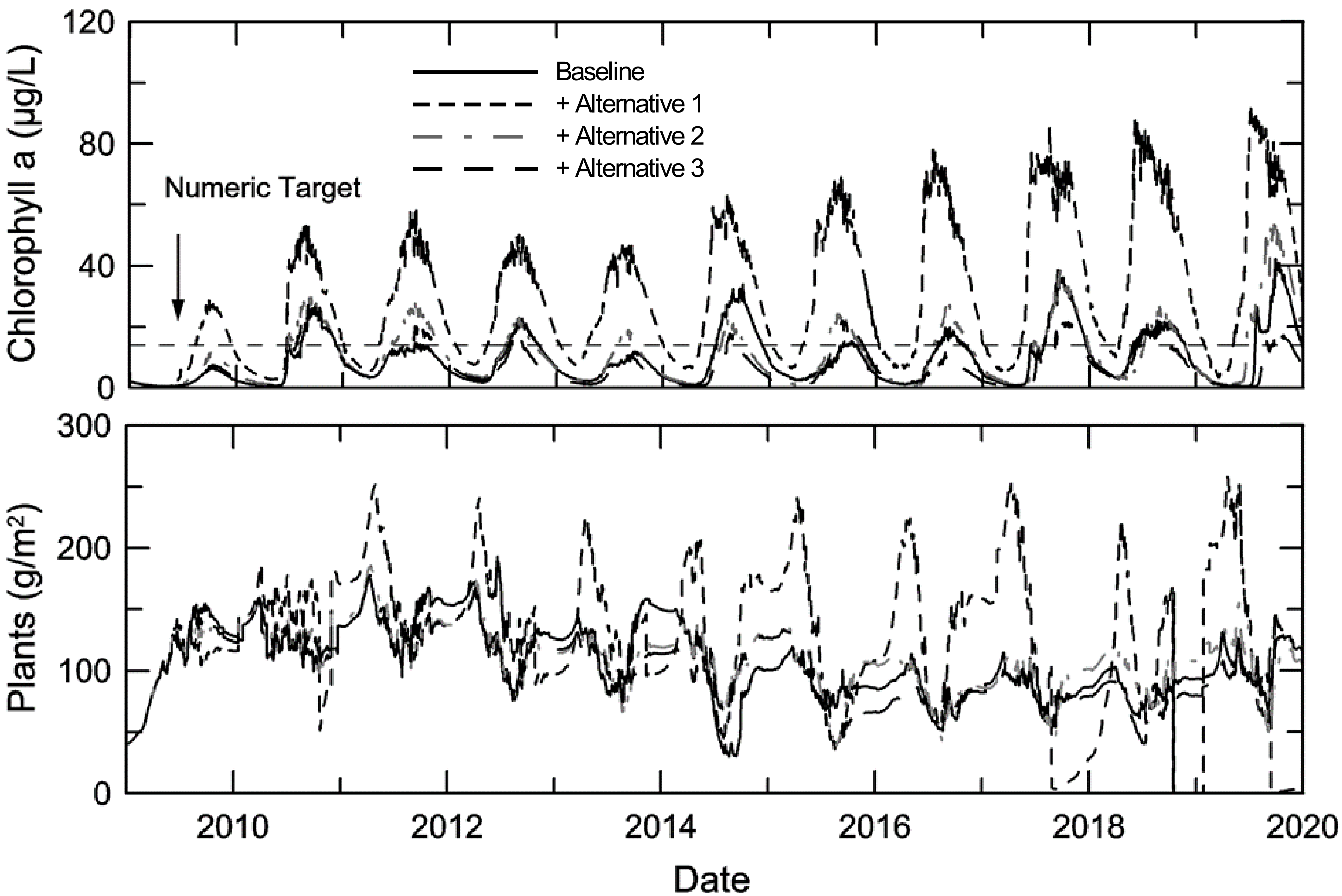
	Concentration Enrichment Factor		
Variable	Alternative 1	Alternative 2	Alternative 3
NO_3-N	3.3	1.1	0.3
NH_4-N	13.3	6.7	3.3
PO_4-P	11.9	1.6	0.5
Total N	5.8	2.3	0.8
Total P	9.1	1.8	0.4

- Predictably, total P and total N levels in lake increased markedly with Alternative 1 water, while Alternatives 2 &3 did not dramatically alter concentrations (*e.g.*, Gilner Pt)



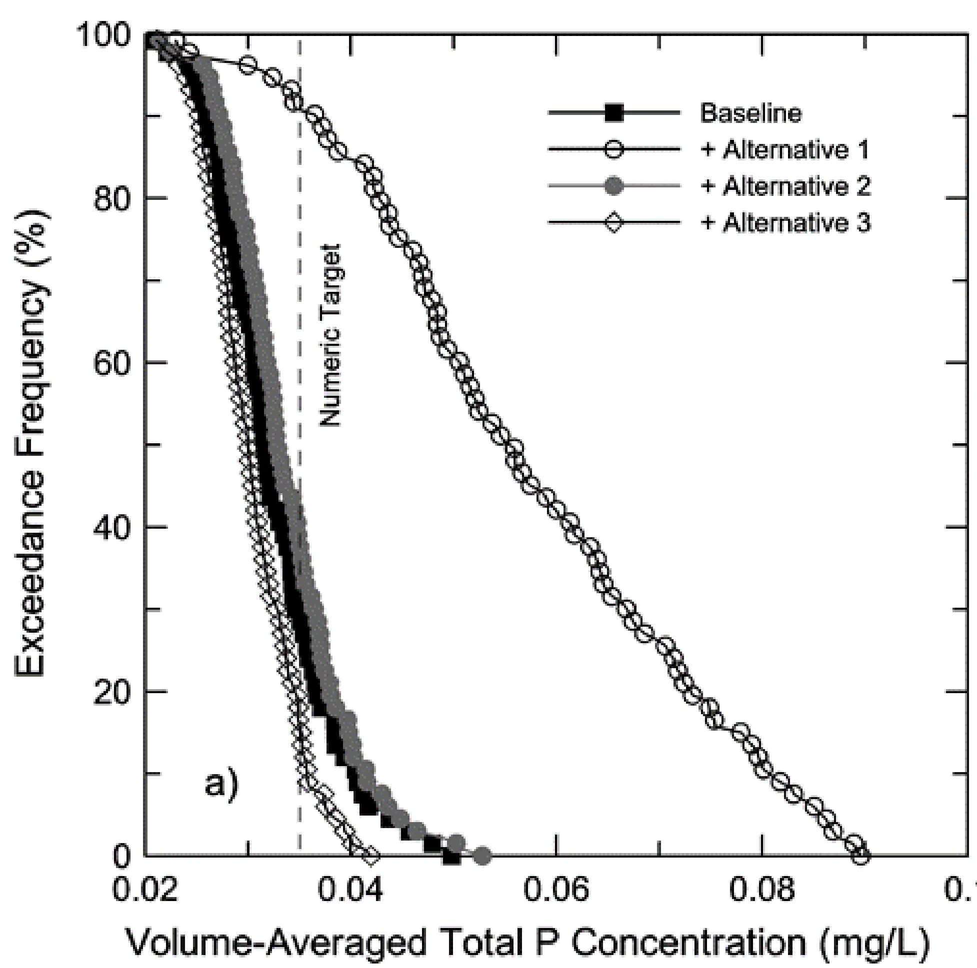
Chlorophyll-a

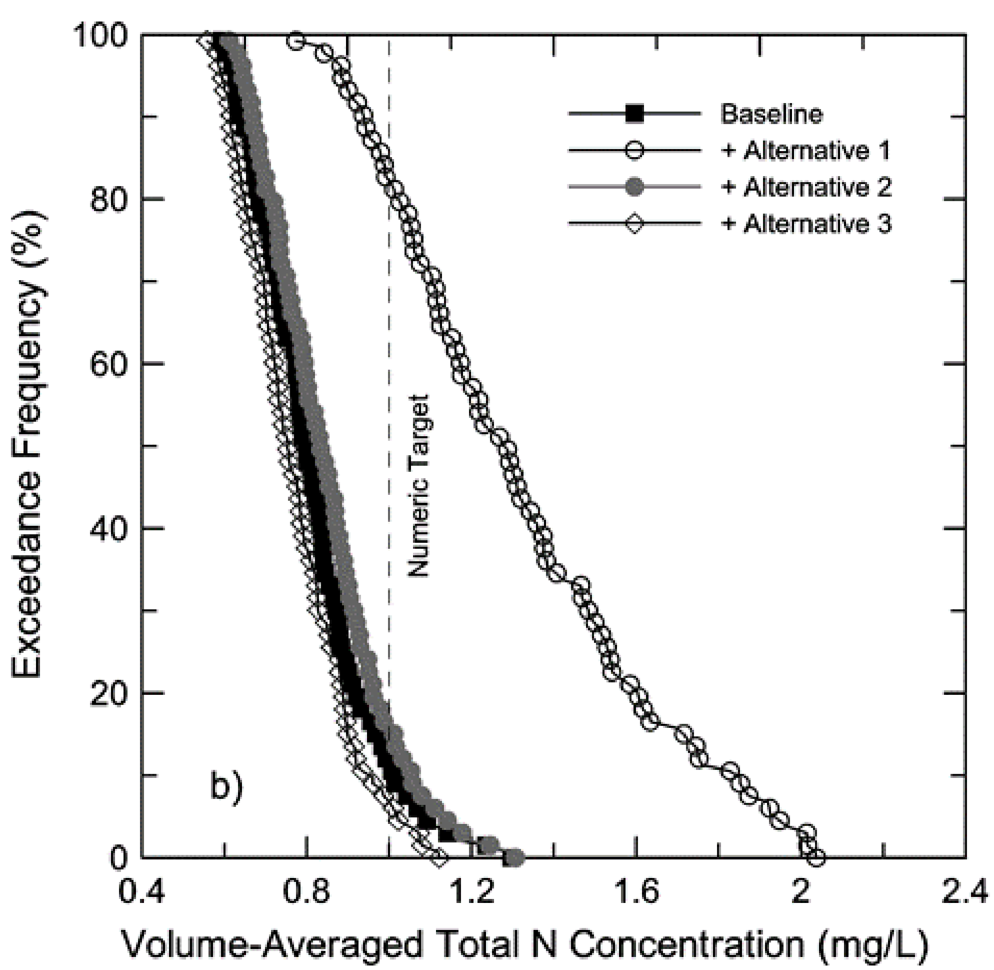
- The substantial increase in nutrient concentrations with Alternative 1 yielded greatly increased chlorophyll-a and plant (epiphyte + macrophyte) biomass



- Average concentrations for 2009-2019 period shifted with supplementation from the three Treatment Alternatives (e.g., Gilner Pt), as did volume-weighted TP and TN concentrations

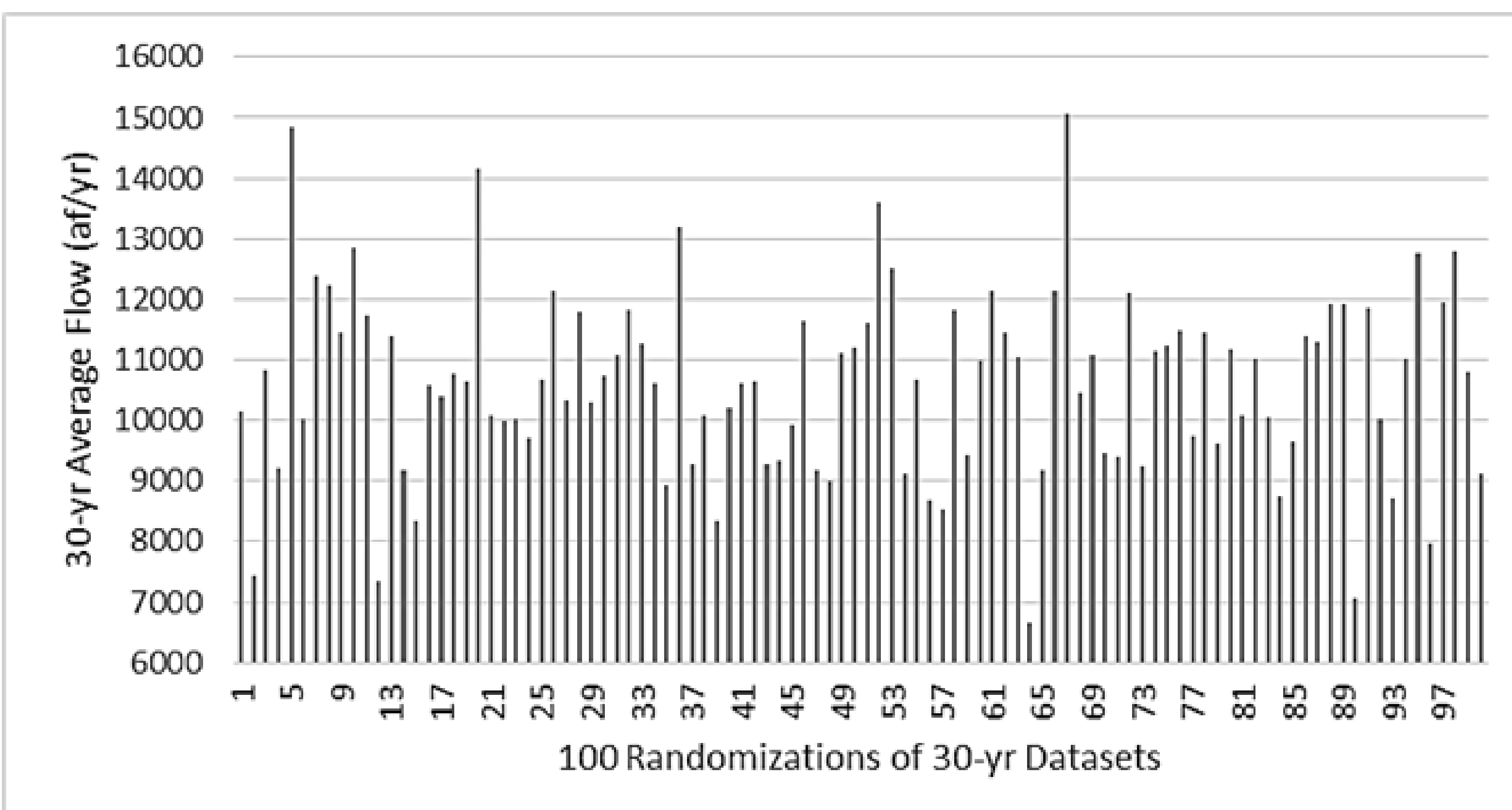
Scenario	Total N (mg/L)	Total P (mg/L)	Chl a (µg/L)	PO_4-P (µg/L)	TIN (mg/L)	Plants (g/m²)
Baseline	0.948	0.037	9.3	3.5	0.049	106.9
Alternative 1	1.511	0.063	30.5	7.8	0.120	126.3
Alternative 2	0.979	0.038	10.9	3.6	0.047	110.2
Alternative 3	0.894	0.035	7.1	3.3	0.046	103.1

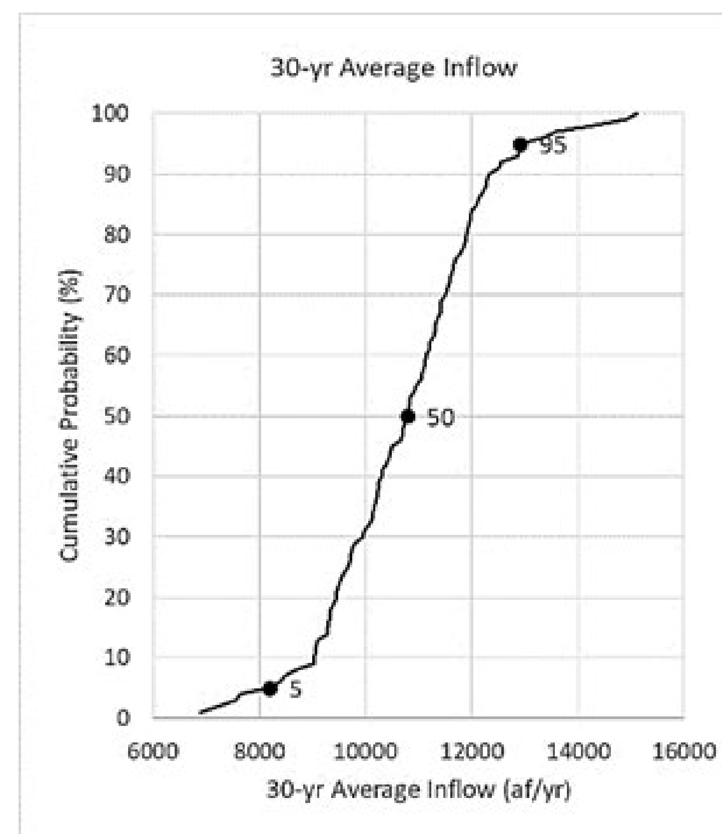




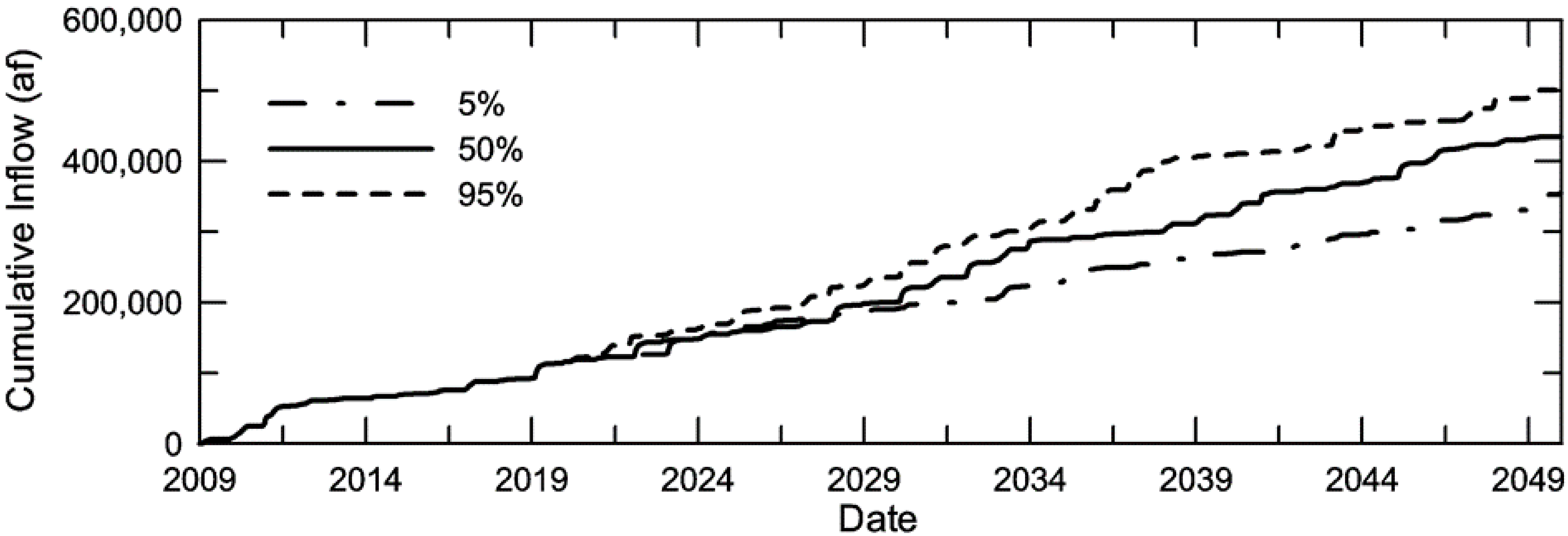
Predicted Long-Term Conditions with Replenish Big Bear

- Simulations were extended from baseline period 2009-2019 to include 30 additional years (2019-2050)
- Since detailed information about future weather conditions is not available, existing meteorological and flow data for 2009-2019 were used as basis for forecast, which included
  - Record or near-record air temperatures
  - Periods of extreme rainfall and protracted drought
- Monte Carlo technique used to randomly develop 100 different 30-yr records; 5th-, 50th- and 95th-percentile used





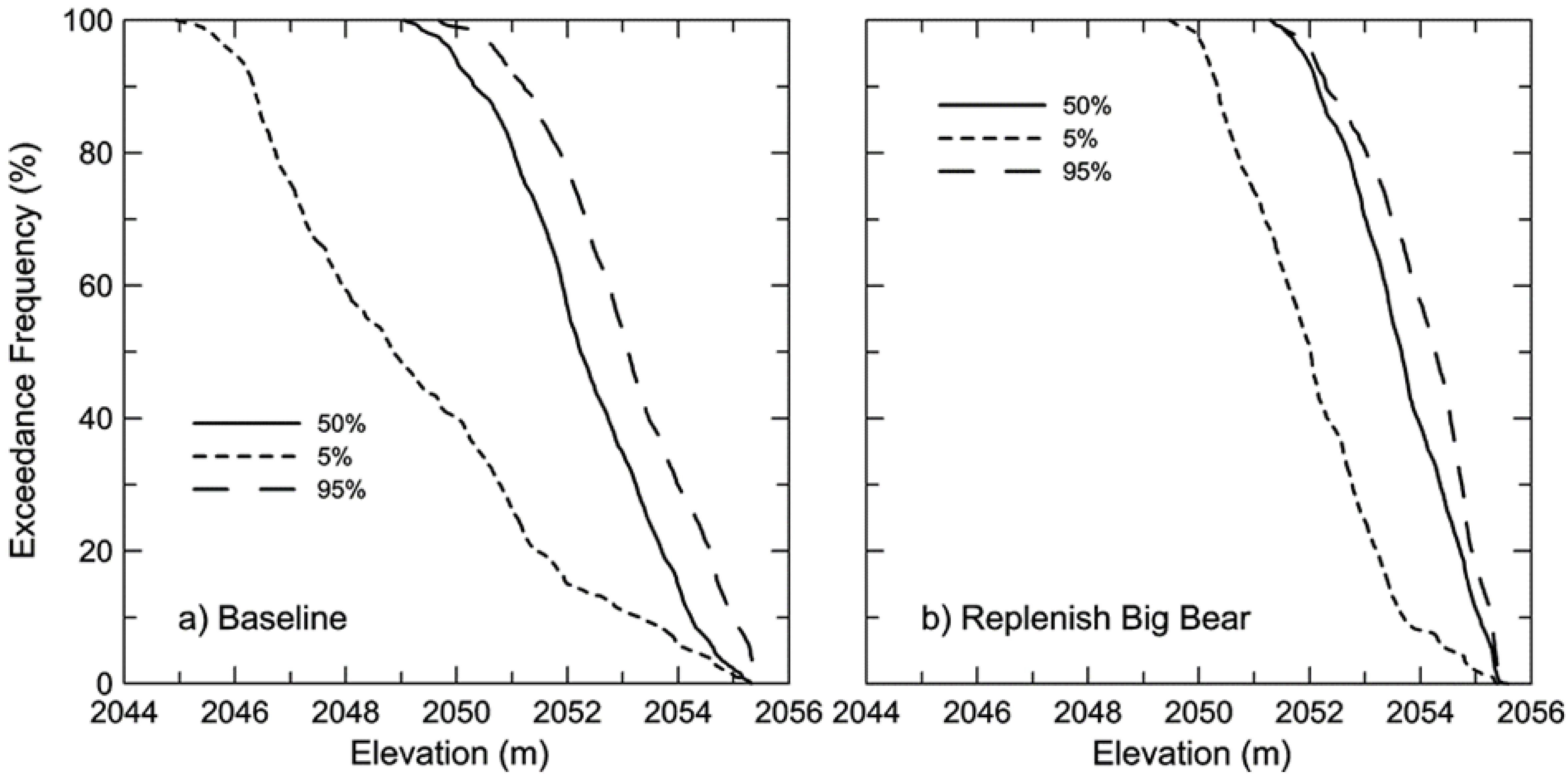
- 5^{th}-, 50^{th}- and 95^{th}-percentile hydrologic scenarios represent extreme drought (~1950s-1960s), conditions similar to 2009-2019, and above-average runoff, respectively
- Cumulative inflows thus differed for these 3 hydrologic scenarios



- Since simulations are not forecasts for specific points in time, results are presented as cumulative distribution functions

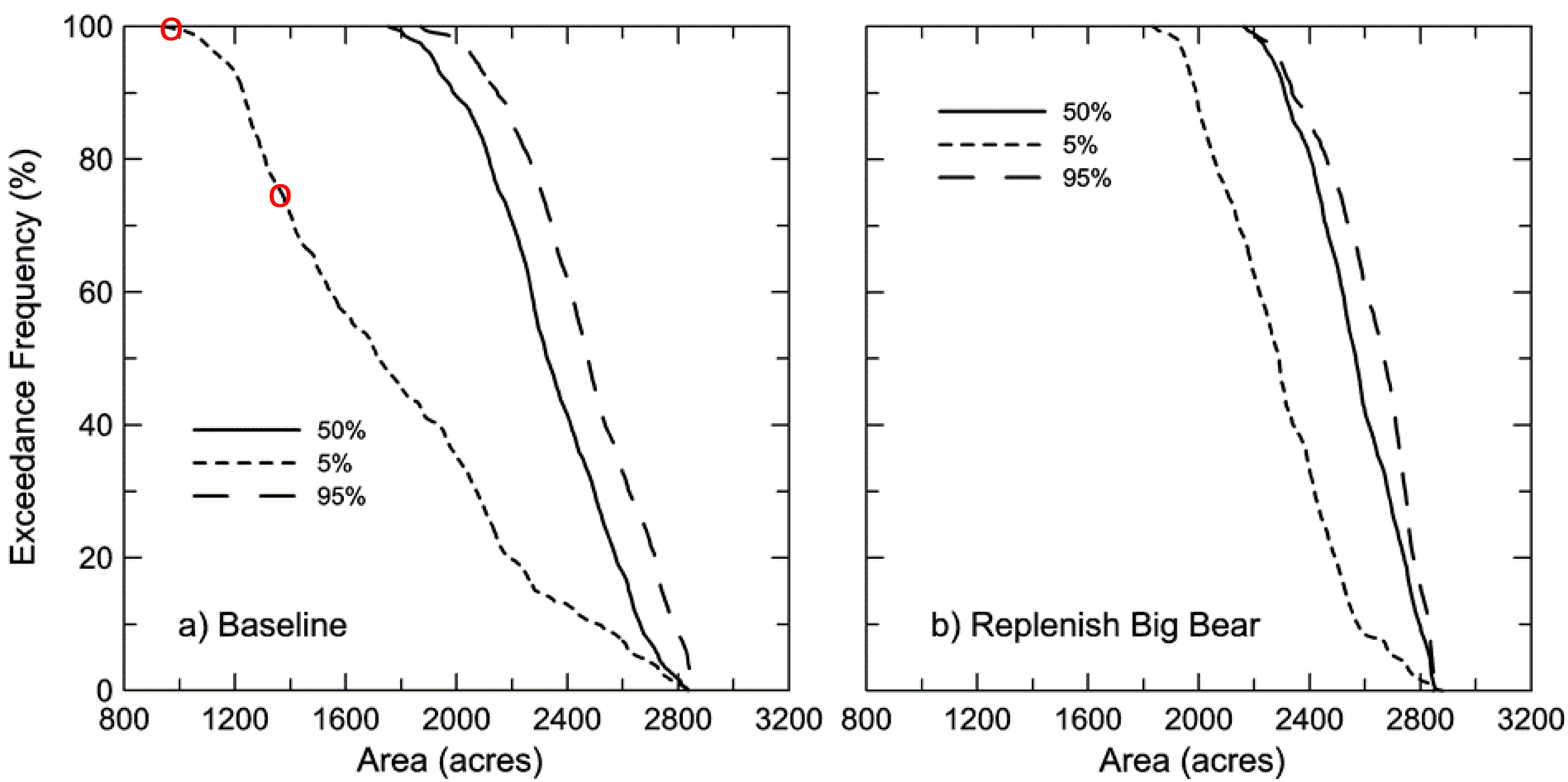
Lake Level

- Extremely low lake levels predicted for 5th-percentile hydrologic scenario
- Replenish Big Bear very favorably increases lake level, volume under extreme drought conditions (shifts CDF to right)

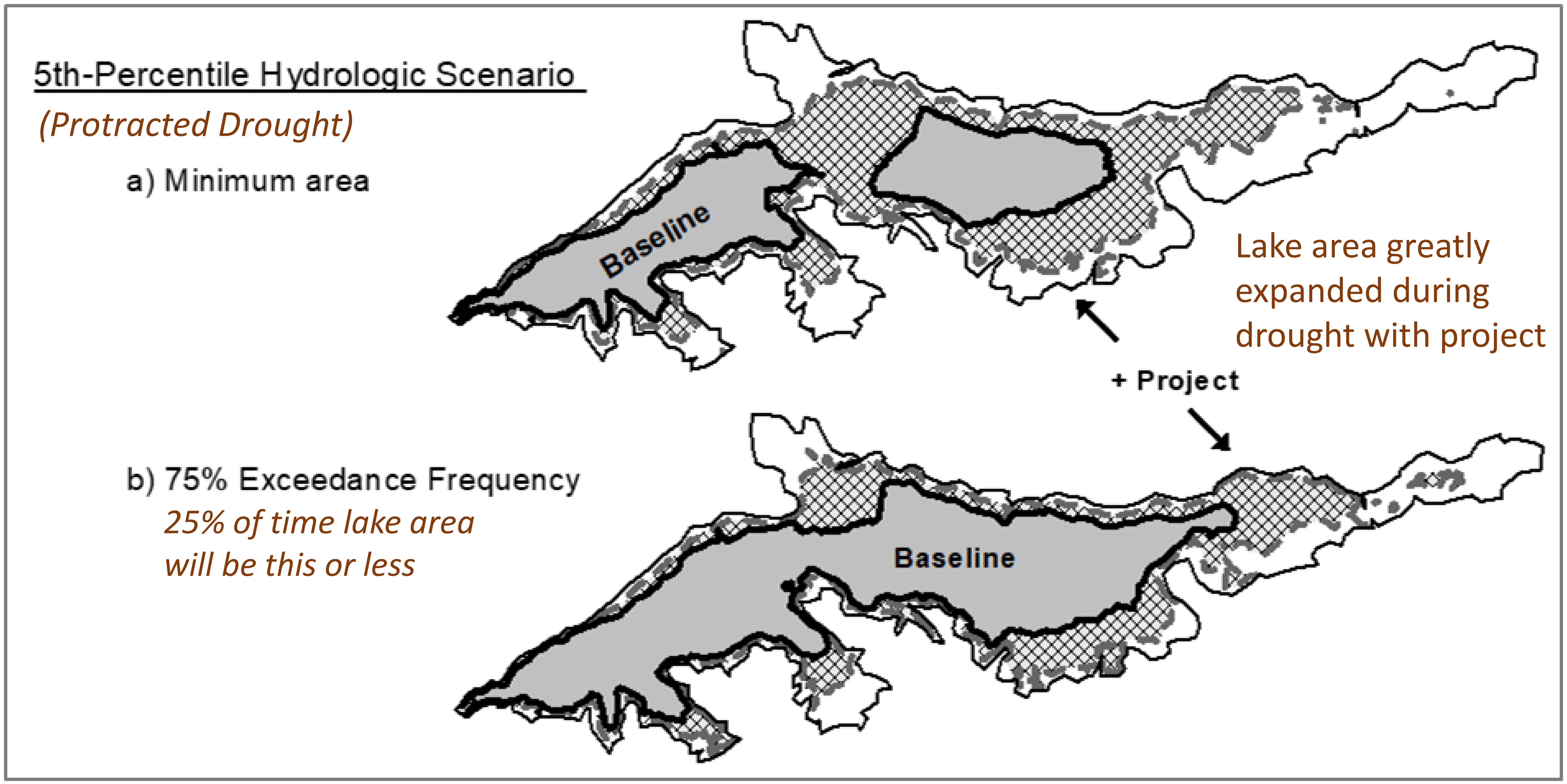


Lake Area

- Supplementation substantially increases lake area under 5th-percentile (extreme drought) hydrologic scenario
- Supplementation also increases lake area under nominal conditions, with modest increases area under wet conditions

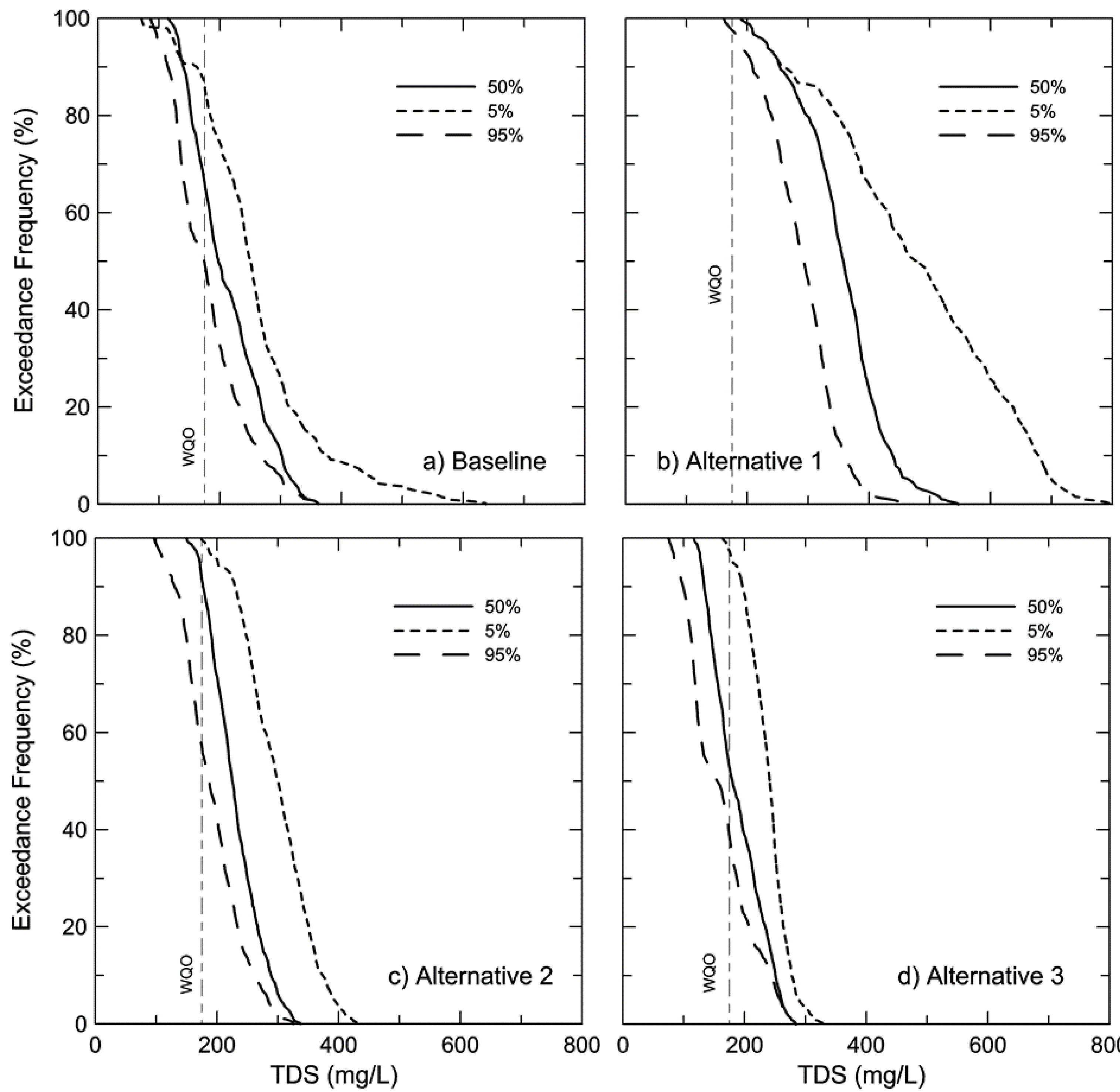


- The increased lake area resulting from supplementation can be clearly seen when projected in 2-D (solid gray = baseline; cross-hatched = supplemented water supply)



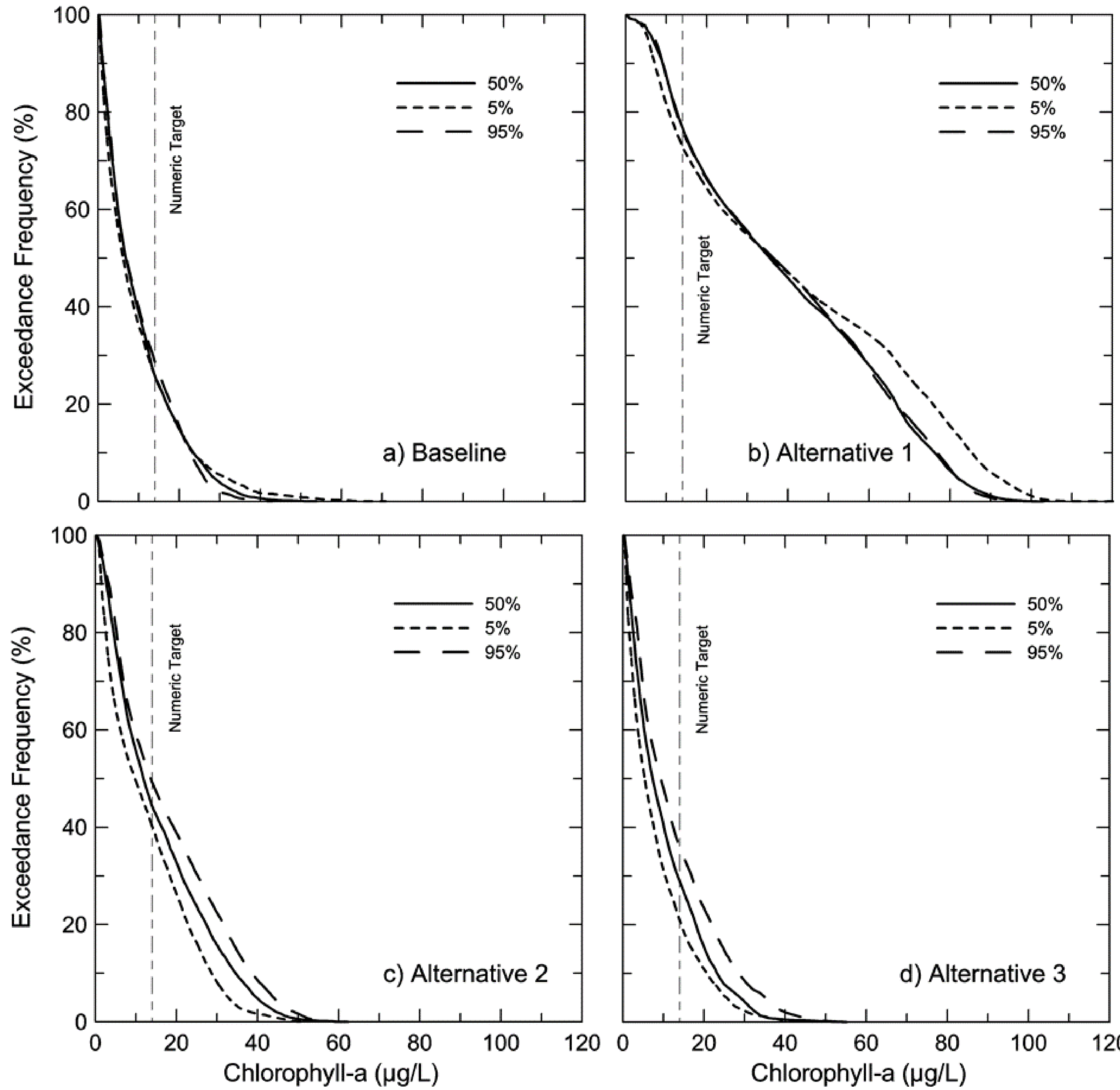
TDS

- As with 2009-2019 results, TDS concentrations varied with level of treatment across the 3 hydrologic scenarios



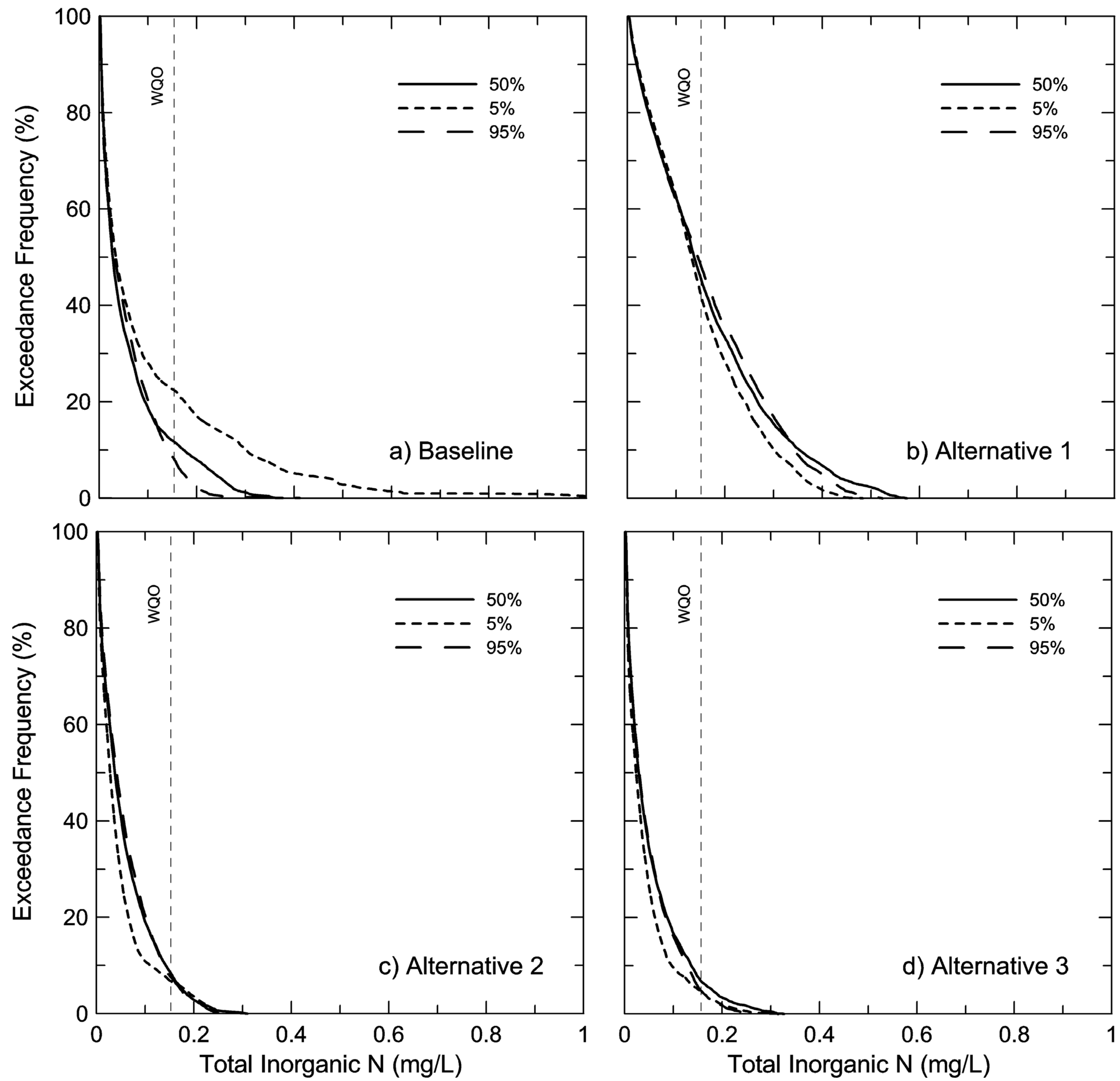
Chlorophyll-a

- Chlorophyll-a concentrations also varied markedly due to differences in treatment and resulting nutrient concentrations



<u>TIN</u>

- TIN concentrations in lake were predicted to decrease relative to baseline with Alternatives 2 and 3



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- Influence of hydrologic scenarios and supplementation on median lake dimensions are summarized below

Parameter	Scenario	5th-Percentile	50th-Percentile	95th-Percentile
Elevation (m)	Baseline	2048.9	2052.2	2053.1
	+Project	2052.0 (+3.2)	2053.7 (+2.2)	2054.3 (+1.6)
Volume (af)	Baseline	23,404	47,536	54,724
	+Project	45,746 (+22,342)	59,664 (+12,128)	65,204 (+10,480)
Area (acres)	Baseline	1717	2328	2474
	+Project	2290 (+572)	2568 (+240)	2669 (+195)

- Influence of hydrologic scenarios and supplementation (with alternative levels of treatment) on predicted median concentrations of TDS, total P and chlorophyll-a are summarized below

Parameter	Scenario	5th-Percentile	50th-Percentile	95th-Percentile
TDS (mg/L)	Baseline	250	198	175
	Alternative 1	478	358	293
	Alternative 2	300	225	187
	Alternative 3	241	180	155
Total P (mg/L)	Baseline	0.055	0.050	0.045
	Alternative 1	0.109	0.094	0.088
	Alternative 2	0.054	0.052	0.052
	Alternative 3	0.046	0.044	0.045
Chlorophyll-a (µg/L)	Baseline	6.2	6.9	7.0
	Alternative 1	36.1	35.6	36.5
	Alternative 2	9.7	11.9	13.7
	Alternative 3	5.4	7.3	9.4

- Influence of hydrologic scenarios and supplementation (with alternative levels of treatment) on predicted median concentrations of total N and TIN are summarized below

Parameter	Scenario	5th-Percentile	50th-Percentile	95th-Percentile
Total N (mg/L)	Baseline	1.22	1.11	1.06
	Alternative 1	2.17	1.96	1.85
	Alternative 2	1.21	1.20	1.20
	Alternative 3	1.05	1.05	1.05
TIN (mg/L)	Baseline	0.034	0.028	0.032
	Alternative 1	0.132	0.137	0.145
	Alternative 2	0.028	0.038	0.042
	Alternative 3	0.024	0.029	0.030

Routing Water through Stanfield Marsh

- Supplemental water was routed through Stanfield Marsh in all Replenish Big Bear simulations
- Wetlands are often very good at improving water quality by:
  - Filtering and settling out particulate matter
  - Biological uptake of dissolved forms of nutrients
  - Denitrification when suitable DO regime is in place
- All of these processes, as well as epiphyton and macrophyte senescence and death, cell lysis and organic matter decomposition are included in the simulations
- Model simulations indicate that Stanfield Marsh is an effective sink for total P in supplemental water with treatment alternatives 1 & 2, but was a modest source of total P to Alternative 3 water owing to very low influent concentrations
- The Marsh was predicted to be a net source of total N for all 3 treatment alternatives

Conclusions

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- Lake conditions and water quality in Big Bear Lake varied significantly over 2009-2019, with wide natural variations in
  - lake level, volume and surface area
  - concentrations of TDS, nutrients and chlorophyll-a
- Statistical, machine learning and hypolimnetic mass balance analyses provided useful information about water quality in Big Bear Lake
- CE-QUAL-W2 was able to reproduce observed trends in lake conditions
- Supplementation of natural runoff with Replenish Big Bear water significantly increased lake levels, volumes and surface areas, especially in drought
- Increased water in turn provides recreational, ecological, aesthetic, community and related benefits

- Level of treatment had dramatic effects on effluent and lake water quality
- Nutrient removal (Alternative 1) significantly degraded lake water quality and was thus not sufficient to protect beneficial uses (offsets were not modeled)
- Nutrient removal with further treatment (Alternatives 2 and 3) was predicted to yield lake water quality generally comparable to or slightly improved relative to baseline conditions

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Regulatory Pathway

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Project Team Conclusions

- Based on results, Alternative 1 is not sufficient to reliably protect lake water quality and beneficial uses
- Offsets were not modeled but due to uncertainties with efficacy and long-term sustainability, Alternative 1 is no longer being considered
- The Project Team anticipates proposing a discharge comparable to Alternative 2 to achieve intended benefits and protect beneficial uses
- Project refinements and economic analysis are underway to assess affordability

Potential Pathway for NPDES Permit

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- TDS - discharge at or below WQO
- TIN - discharge above WQO
  - Lake analysis shows improvement from Baseline under all conditions.
  - Basin Plan allows for demonstration that discharges above WQO would not cause or contribute to the violation of the established objectives.
- TP - discharge at or below WQO (TMDL controls)
  - Surgical modification to TP TMDL to establish Waste Load Allocation for Replenish Big Bear based on meeting response targets (chlorophyll-a and macrophytes)
- Reasonable Potential Analysis to determine other constituents needing water quality-based limits
- Incorporate DDW input

	WQO (mg/L)	TMDL Target (mg/L)	Proposed Discharge (mg/L)
TDS	175		150
TIN	0.15		0.30
TP	0.15	0.035	0.1

Key Questions:

- Based on the Lake Analysis, could an NPDES permit be issued for a discharge similar to Alternative 2?
- Can the project be permitted prior to a TMDL reopener (e.g. surgical modification)?
- How does higher level of treatment affect DDW requirements (e.g. potable well setbacks)?
- What additional information is needed?

Key Regulatory Questions (cont.)

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- Are there opportunities for:
  - Seasonal or hydrologic condition-based limits?
  - Different compliance points
  - Nutrient reduction credit through Stanfield Marsh and/or engineered wetland at BBARWA?
  - Targeted offsets for nutrients (e.g. alum application)
  - Flexibility in DDW well setback provisions based on higher level of treatment and hydrogeologic analysis?

Open Discussion

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Next Steps

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Path Forward

- Receive feedback from Board and DDW
- Prepare a socioeconomic impact analysis based on EPA guidance
- Continue coordination with DDW
- Replenish Big Bear Regulatory Meeting #6 (3/17/2021)
  - Discuss feedback received
  - Project Team to provide overview of socioeconomic impact analysis
  - Discuss additional information needed
  - Confirm feasibility and process for permitting Replenish Big Bear
- Prepare and submit a Report of Waste Discharge and supporting documentation
- Continue stakeholder coordination

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THANK YOU!