

Wastewater E3 Scenario Input Definition – Phase 7 Draft

Version Date: July 14, 2026. For Wastewater Treatment Workgroup approval at the July 23rd WWTWG meeting.

Category	Phase 6 E3	Draft Phase 7 E3	Justification
Definition	LOT Everywhere	LOT Everywhere	
Concentration Sig Municipal Plants	TN=3 mg/l and TP=0.1 mg/l; BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l	TN=3 mg/l and TP=0.1 mg/l; BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l	No change in reliable, widely achievable performance for major facilities. 3 mg/L TN remains the low end of the working definition of limit of technology (LOT) used by permitting agencies in multiple states and EPA regions - Higher performing facilities often have site-specific characteristics not broadly applicable to all wastewater facilities (e.g., consistently higher influent temps, low concentrations of poorly degradable organic-N, operational capacities less than full design capacity, and other process components and configurations not practical at all wastewater facilities). - Some concentration buffer is needed to ensure regulatory compliance. Facility operators must target below their limit in order to ensure compliance. - Consistently achieving 0.1 mg/L TP is similarly challenged. Significantly lower concentrations have not been shown to be broadly achievable.
Concentration Sig Industrial Plants	WIP loads adjusted by the percentage of equivalent sig municipal average load reduction from WIP to E3 level by state; BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l	WIP loads adjusted by the percentage of equivalent sig municipal average load reduction from WIP to E3 level by state; BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l	No justification to change.
Concentration Non-sig Municipal Plants	TN=8 and TP=2 or the same level as sig plants if ENR is required; BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l	TN=8 and TP=2 or the same level as sig plants if ENR is required; BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l	No change in reliable, widely achievable performance for minor facilities. - Minor facilities are disproportionately vulnerable to collection-system and weather-related perturbations. Limited buffering capacity due to small size. Biological nutrient removal is particularly sensitive to swings in load, temperature, and carbon-to-nutrient ratios. - Achieving very low nutrient concentrations requires advanced biological nutrient removal that demands careful process control. Less redundancy in process control and laboratory capacity than large plants. Smaller facilities typically operate with limited staff and shared resources.

Category	Phase 6 E3	Draft Phase 7 E3	Justification
Concentration Non-sig Industrial Plants	State estimated non-sig industrial data adjusted by the percentage of equivalent reduction from No-Action (18 mg/l TN, 3mg/l TP) to E3 (3 mg/l TN, 0.1 mg/l TP); BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l	State estimated non-sig industrial data adjusted by the percentage of equivalent reduction from No-Action (18 mg/l TN, 3mg/l TP) to E3 (3 mg/l TN, 0.1 mg/l TP); BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l	No justification to change.
Flow	WIP flows for sig plants; 2006 data or newly submitted non-sig data for non-sig plants	WIP flows for sig plants; 2006 data or newly submitted non-sig data for non-sig plants	Current approach preserves the use of the best available information on design/permitting capacity for significant plants, and consistent with the WIP.
CSO	100% CSO overflow reduction	100% CSO overflow reduction	No need to modify (already 100%).
Septic Systems	10% of septic systems connected to WWTP; Remaining septic system applied 69% TN reduction for the most efficient combined ex situ and in situ BMPs	10% of septic systems connected to WWTP; Remaining septic system applied 75% TN reduction for the most efficient combined ex situ and in situ BMPs	75% reduction reflected in the 2018 OWTS Expert Panel Report which considered additional BMPs.
Exfiltration	N/A	Not recommending to include for Phase 7	New load source for Phase 7 model. - Insufficient literature and case studies to quantify the range of what is practical for exfiltration reduction. - WWTWG-approved method of assigning load includes a theoretical upper limit to the exfiltration-reduction credit (70%) given for sewer replacement and rehabilitation. However: * The upper limit is not tied to a demonstration of practical feasibility, and * The small number of case studies available would indicate much lower rehab/replacement rates. - At this time, there is no effective manner to report on exfiltration reduction watershed-wide.

The proposed changes and additions from Phase 6 are **highlighted in red**.

Acronyms

BMP: Best Management Practice
BOD: Biochemical Oxygen Demand
CSO: Combined Sewer Overflow
DO: Dissolved Oxygen
E3: Everything, by Everyone, Everywhere
LOT: Limit of Technology
OWTS: On-Site Wastewater Treatment Systems

TN: Total Nitrogen
TP: Total Phosphorus
TSS: Total Suspended Solids
WIP: Watershed Implementation Plan
WWTP: Wastewater Treatment Plant
WWTWG: Wastewater Treatment Workgroup