PRIMARY TREATMENT
(A Physical Process)

Taking out the trash

Large pumps lift raw wastewater (called influent) into the treatment process. Bar screens first remove large debris like rags, paper, and leaves. Next, aerated grit tanks remove sand and gravel. The removed debris and grit are washed and trucked to a landfill.

Floating off scum, settling out sludge

In long tanks called primary clarifiers, heavy material in the wastewater sinks to the bottom (as sludge), and light material floats to the top (as scum). Skimmers remove scum from the surface, and scrapers remove sludge from the bottom of the tank. Both are sent on to the solids-handling process.

SECONDARY TREATMENT
(A Biological Process)

Feeding contaminants to friendly bugs

Primary effluent flows by gravity into aeration basins where dissolved oxygen is added to encourage growth of useful micro-organisms naturally present in the wastewater. Micro-organisms break down suspended material and absorb dissolved organic material in the water. In the process, they produce more micro-organisms.

The wastewater then goes to secondary clarifiers, which are large tanks where micro-organisms settle to the bottom as secondary sludge. Most (90 percent) of secondary sludge goes back to the aeration tanks to consume more organic material ("more hungry mouths to feed"); the rest goes to the solids-handling process. The remaining water (secondary effluent) leaves the clarifiers—85 to 95 percent cleaner than when it entered Easterly.

DISINFECTION/RECYCLE

Zapping pathogens

Secondary effluent is chlorinated to kill pathogens or disease-causing bacteria. The final effluent is dechlorinated before it is released through an outfall pipe into a drainage channel, which is a remnant of Old Alamo Creek.

Saving H_2O

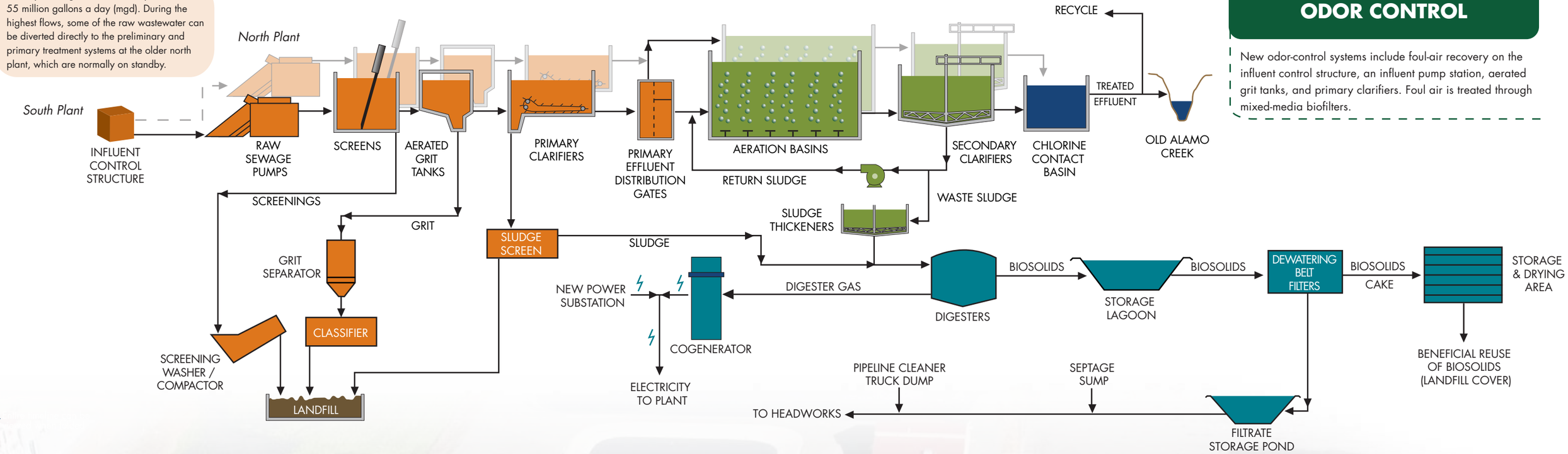
After disinfection, some secondary effluent is used to irrigate landscaping and to reduce other uses of potable water in plant processes.

BIOSOLIDS

Thickening, digesting, dewatering

Biosolids from the secondary clarifiers are thickened to reduce volume, combined with primary sludge and scum, heated, and pumped to the digesters. There, anaerobic bacteria (at 98° F) break down organic material and pathogens. The process creates digester gas and reduces the solids mass by 50 percent. The digested solids are then dewatered by equipment that squeezes out the water using large porous belts and high-pressure rollers. Water removed goes back to the treatment process. The resulting material is nutrient-rich biosolids. Biosolids are stored, further dried on a large asphalt pad, and then periodically hauled to a local landfill for reuse as landfill cell construction or cover material. Biosolids may also be beneficially reused as an agricultural soil amendment or fertilizer.

ODOR CONTROL

New odor-control systems include foul-air recovery on the influent control structure, an influent pump station, aerated grit tanks, and primary clarifiers. Foul air is treated through mixed-media biofilters.

Easterly is designed to handle a peak flow of 55 million gallons a day (mgd). During the highest flows, some of the raw wastewater can be diverted directly to the preliminary and primary treatment systems at the older north plant, which are normally on standby.