

Introduction:





CENTRIFUGE®
The Liquid-Solid Separation Experts

Automatic Batch-sequence Wastewater Processing System

Advantages of the self-monitoring automatic batch-sequence wastewater treatment system:

Can be used on a wide variety of applications with a wide variety of chemical treatment programs

Fully automatic batch-sequence process requires virtually no operator attention

Fully integrated skid mounted system components and controls for simplified installation

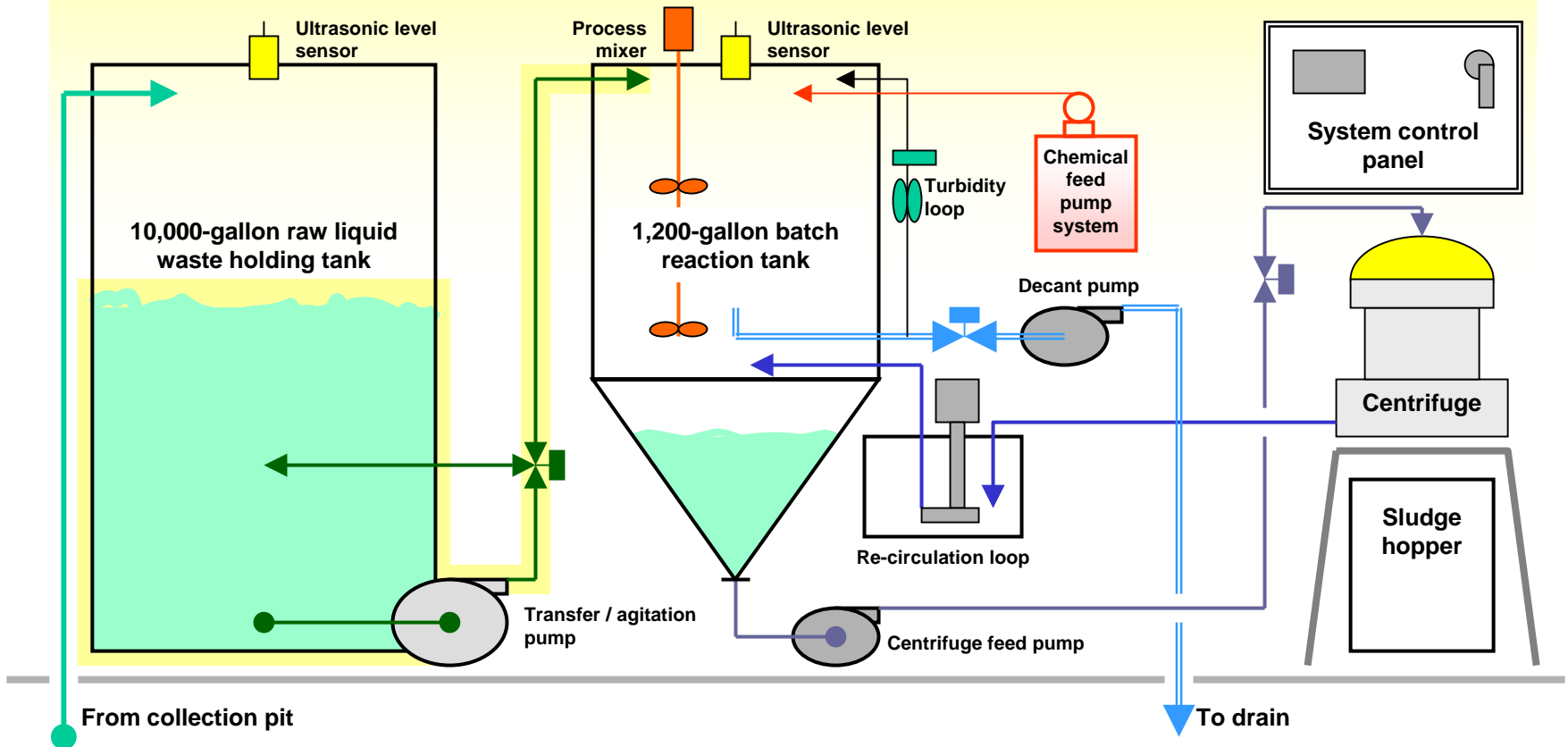
Complete chemical and process time variation controls for maximum process flexibility

Centrifugal sludge removal process produces a relatively moisture free cake for disposal

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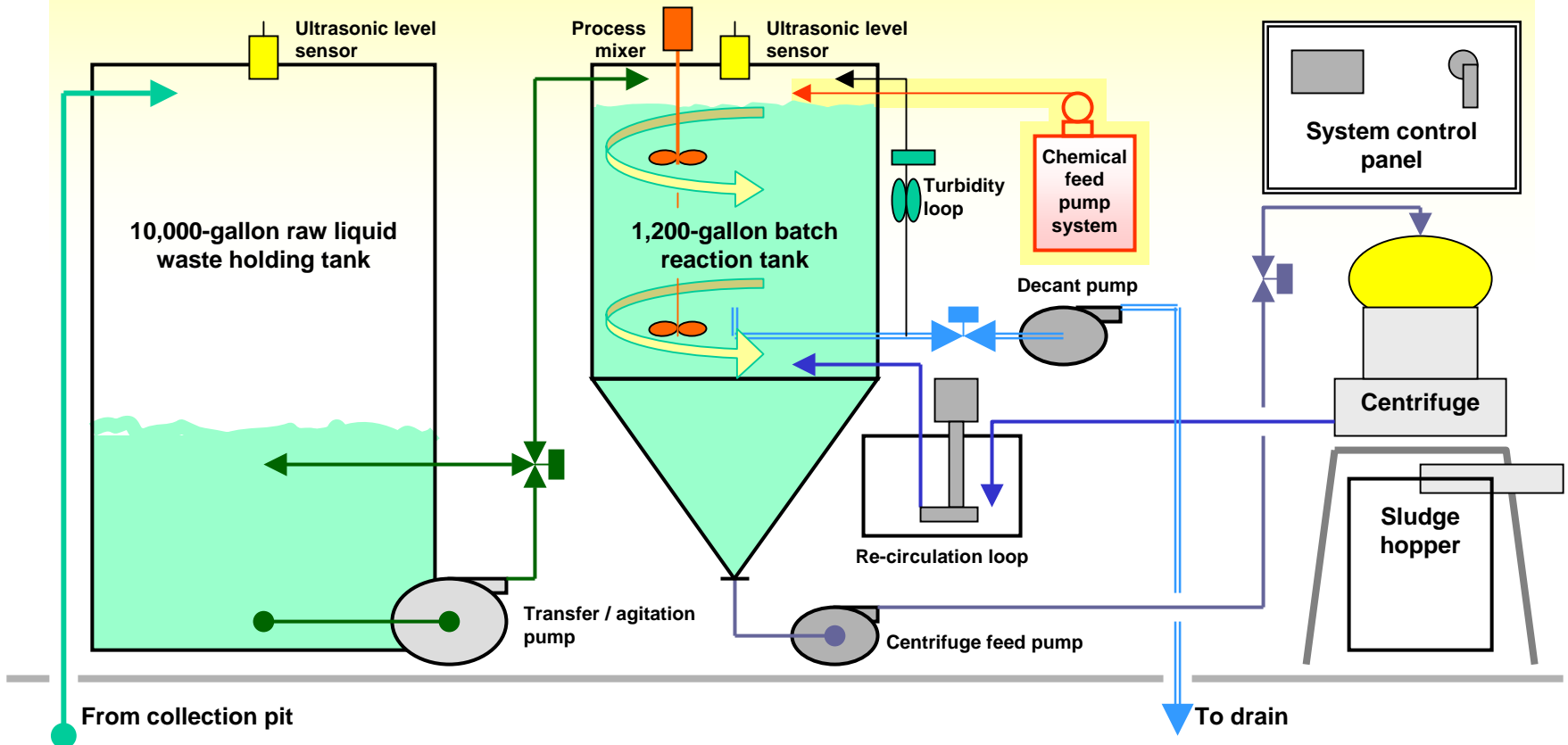
How the system works: (Step-One) Wastewater collected in the collection pit is pumped into the raw liquid waste holding tank where it is continually agitated to maintain a homogeneous consistency. Once the liquid level sensor reaches the pre-determined high level set point the liquid is transferred into the batch reaction tank for processing.



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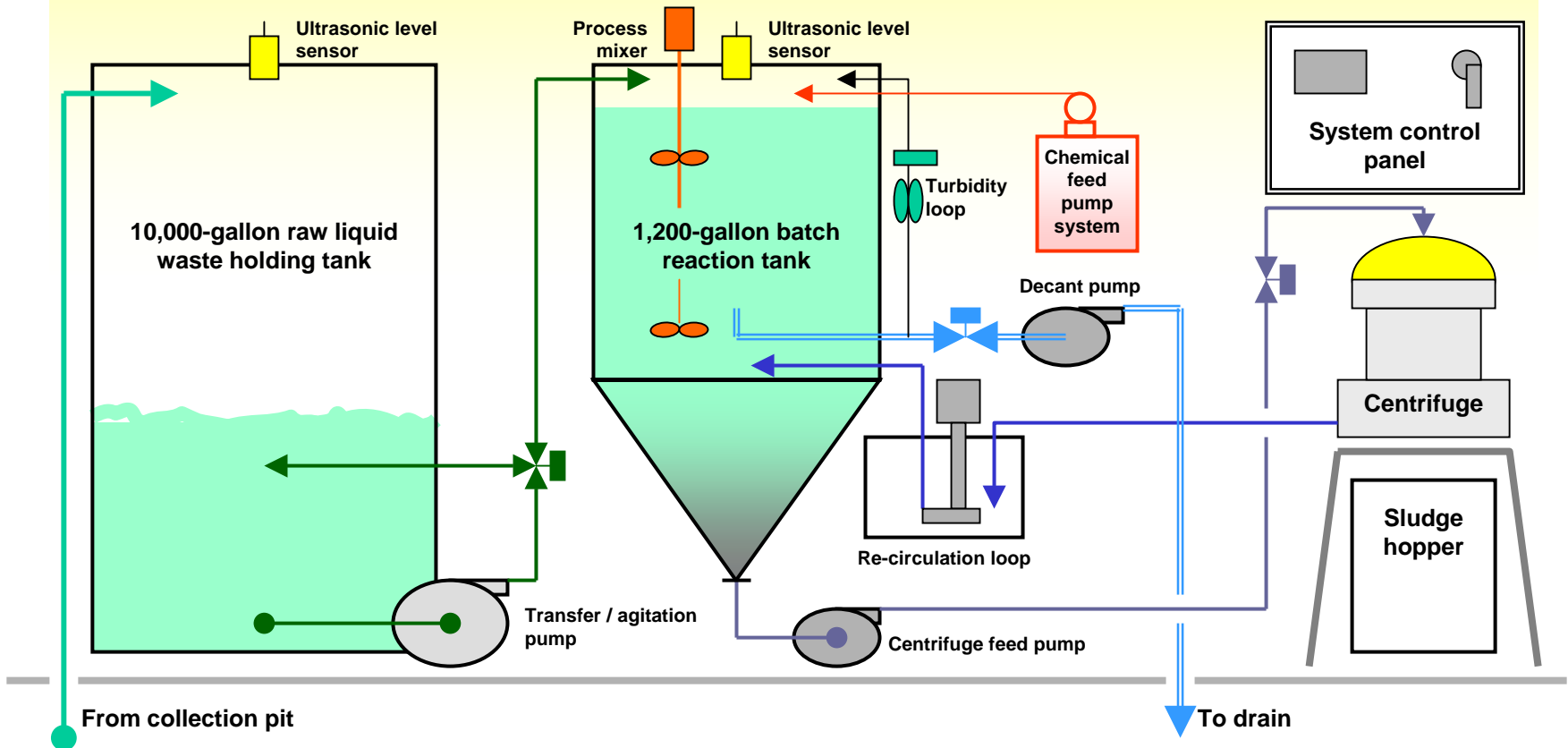
How the system works: (Step-Two) The raw liquid waste fills the batch reaction tank until the liquid level sensor reaches its high level set. As the mixer agitates the tank contents the flocculation chemistry is added. The multiple chemical additions, dosages, and mixing times are completely adjustable.



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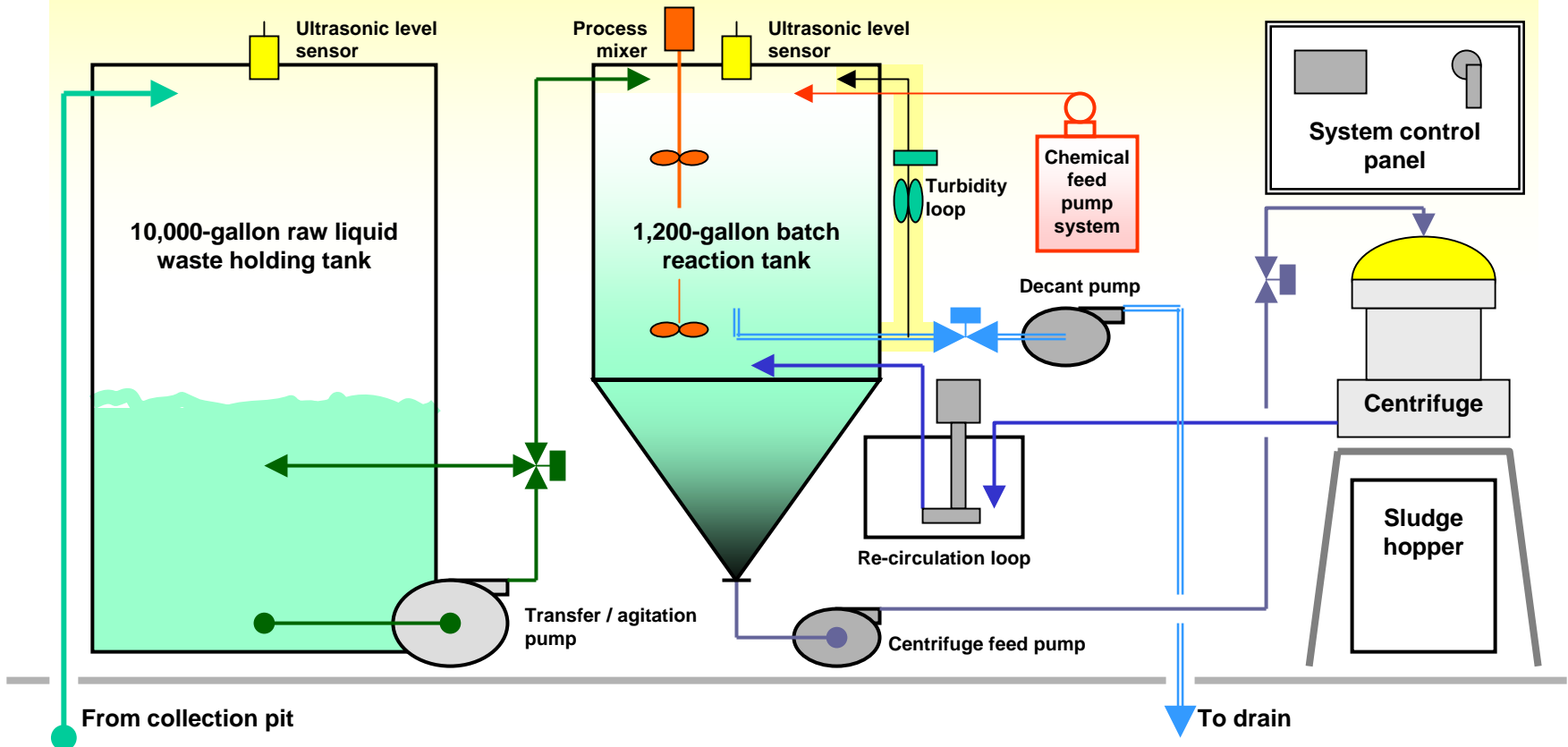
How the system works: (Step-Three) The mixer stirs the the flocculation chemistry into the tank contents. The mixer stops after an adjustable period of time allowing the tank to sit idle while the flocculated solids settle to the bottom of the tank.



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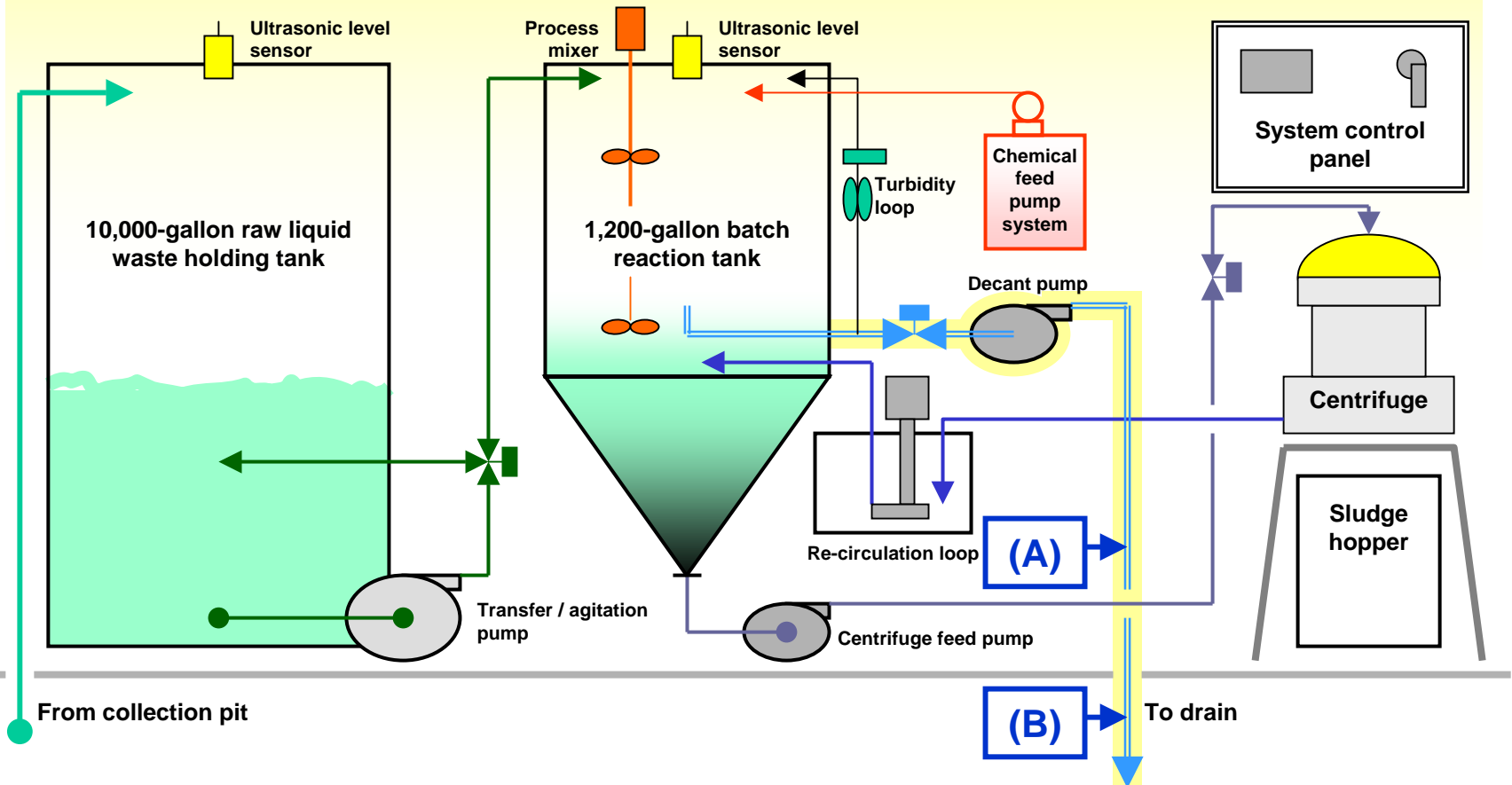
How the system works: (Step-Four) After the tank has set idle for a pre-determined amount of time the turbidity loop pumps the top decant portion of the tank contents past the turbidity monitor at a low flow rate to check the water clarity for discharge.



How the system works: (Step-Five) After the turbidity monitor registers the pre-determined turbidity set point allowable for discharge, the reaction tank's decant valve opens and the pump empties the top decant portion of the tank.

(A) An optional back washable filter can be added in the decant line for additional security.

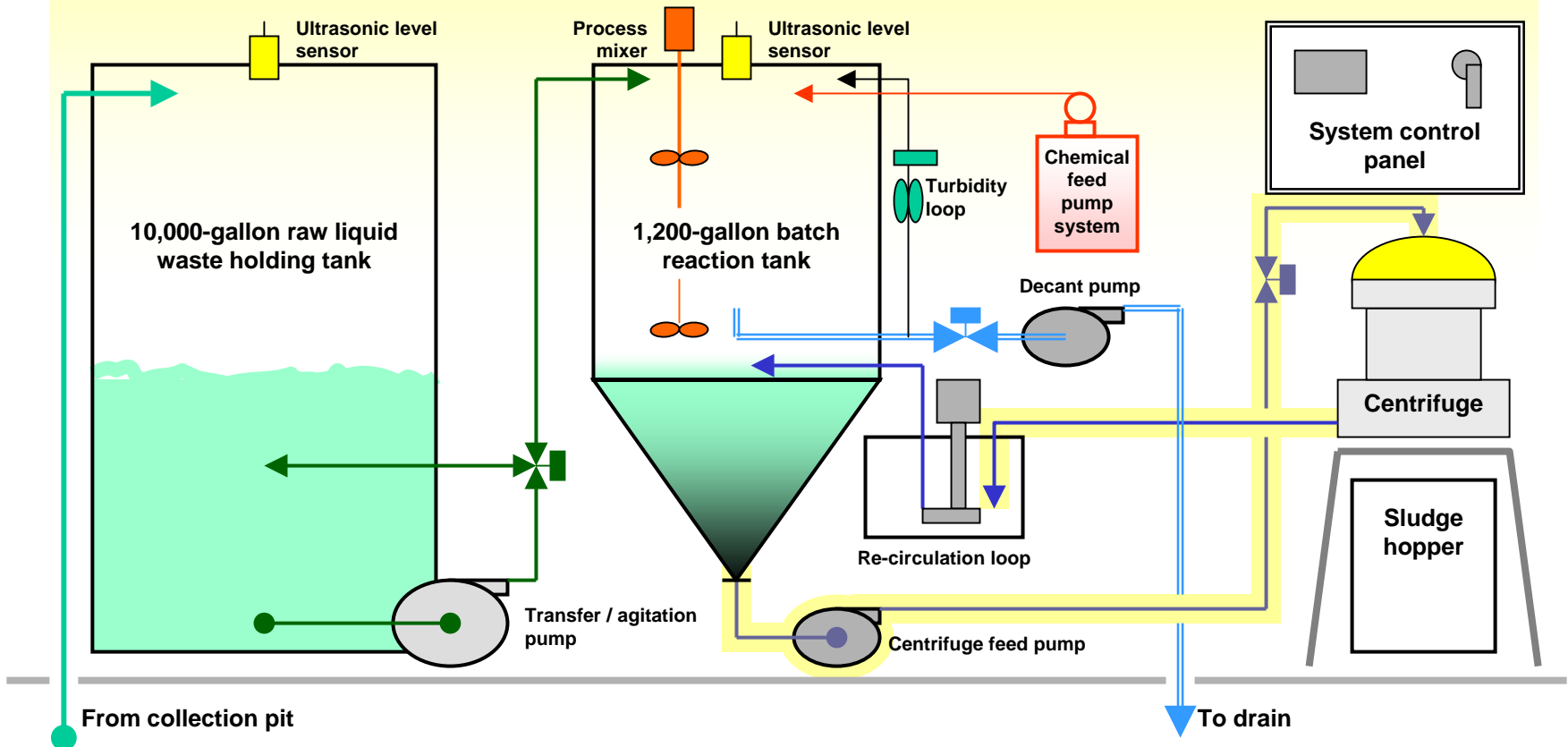
(B) An optional pH, turbidity, and flow sensor can also be added to record the water discharge.



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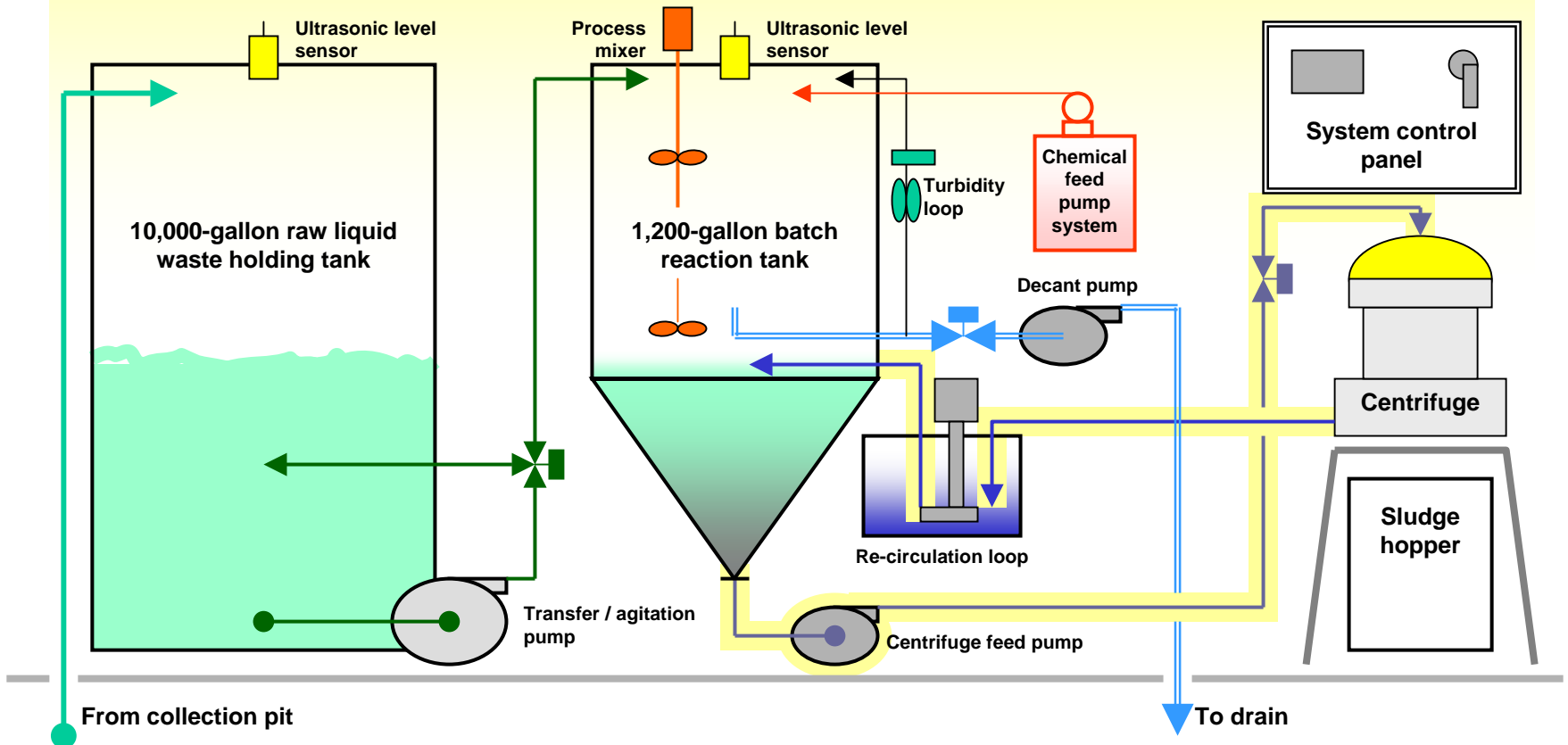
How the system works: (Step-Six) After the pump empties the top portion of the tank contents, the process of separating the settled solids begins. The centrifuge feed pump, which features an adjustable flow rate control, pumps the liquid concentrate to the centrifuge so the solids can be centrifugally separated.



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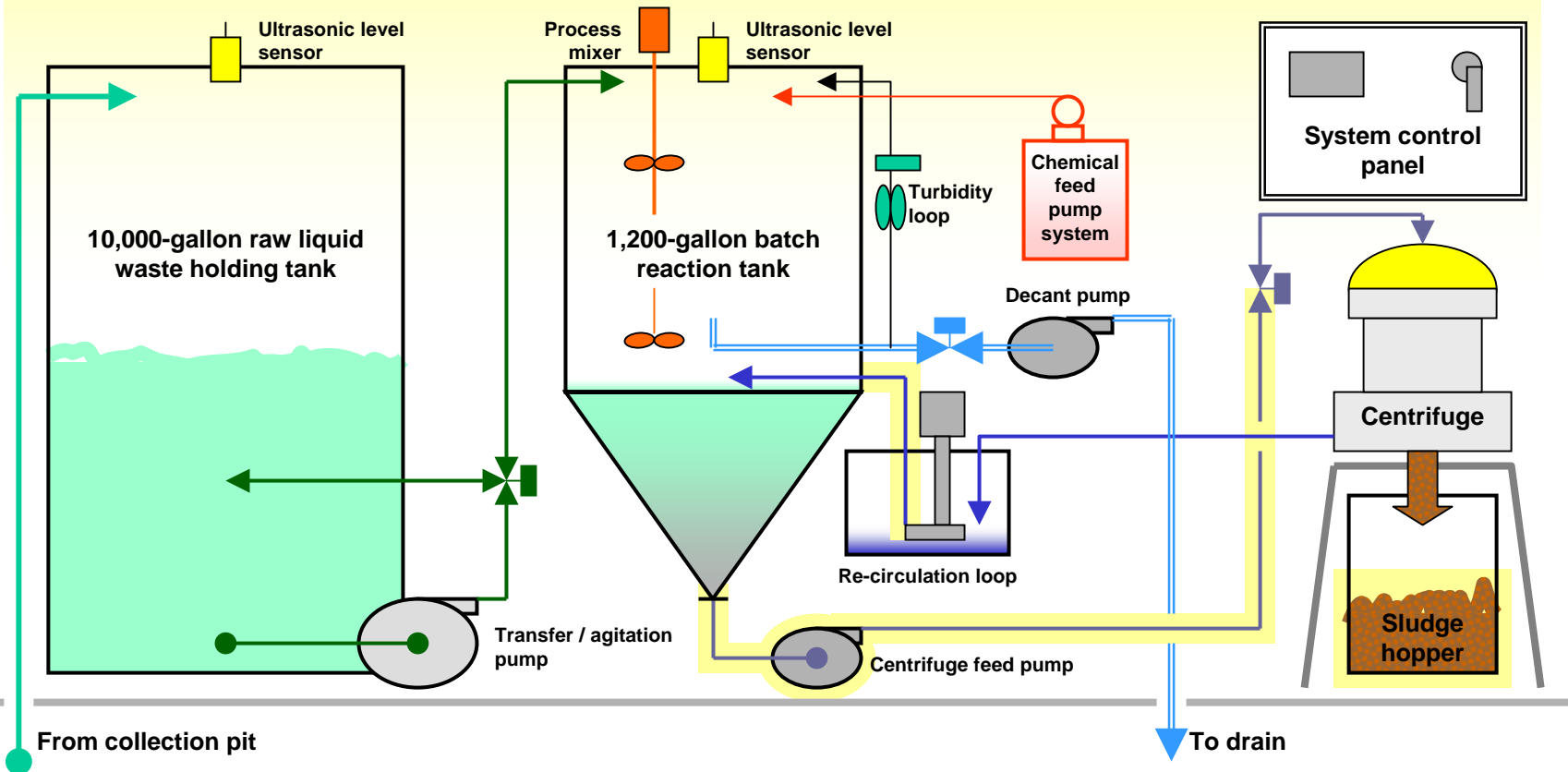
How the system works: (Step-Seven) The centrifuge gravity discharges the clarified liquid into the re-circulation tank where it is pumped back into the reaction tank. The liquid concentrate continuously loops through the centrifuge and returns to the reaction tank.



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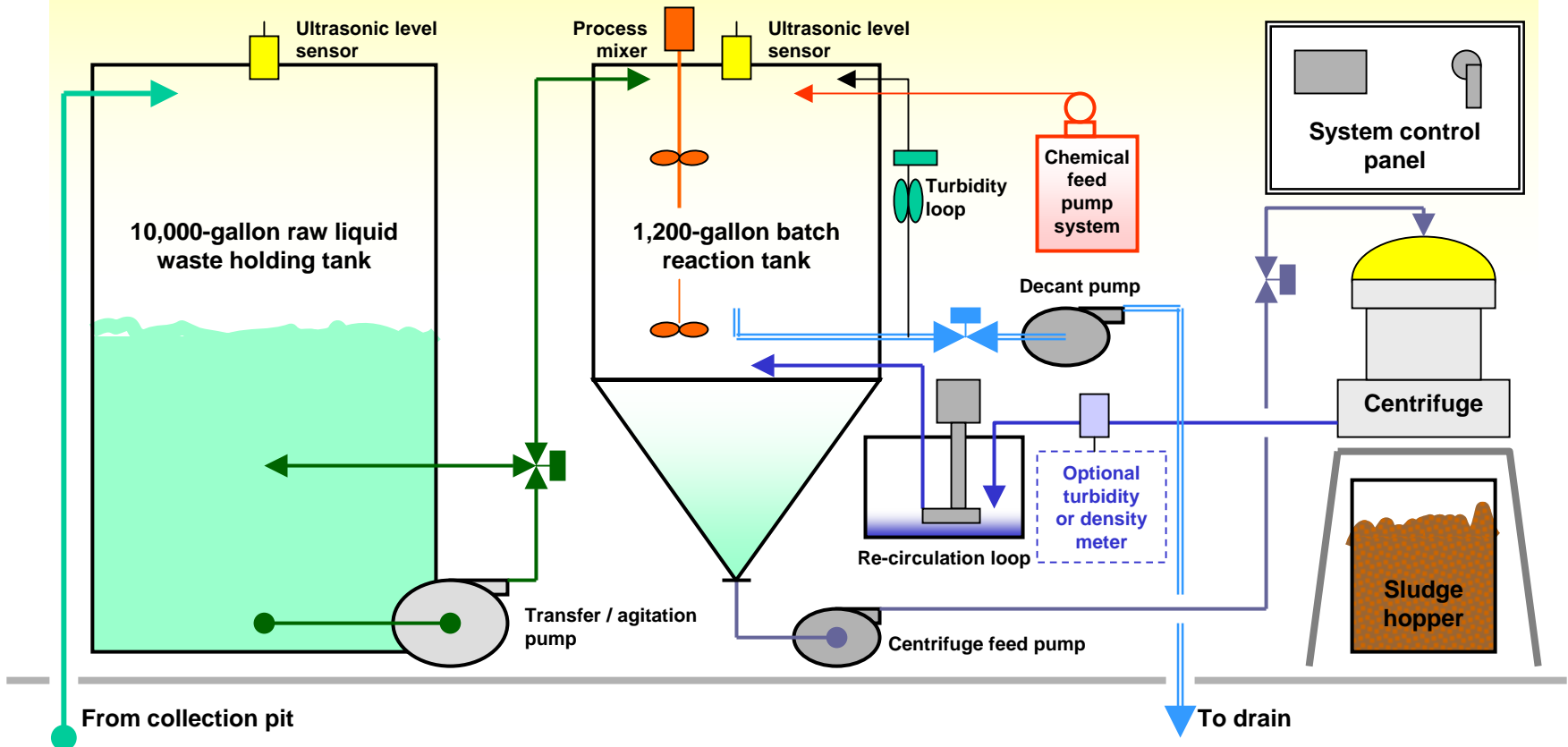
How the system works: (Step-Eight) The centrifuge continuously separates solids from the liquid until the centrifuge reaches its maximum solids holding capacity. Once the centrifuge senses that it is full, the unit automatically activates a self-cleaning cycle where the feed is temporarily stopped and the sludge is plowed from the centrifuge bowl into a hopper below the machine. The clean cycle takes 3 to 5 minutes. The centrifuge then resumes operation automatically.



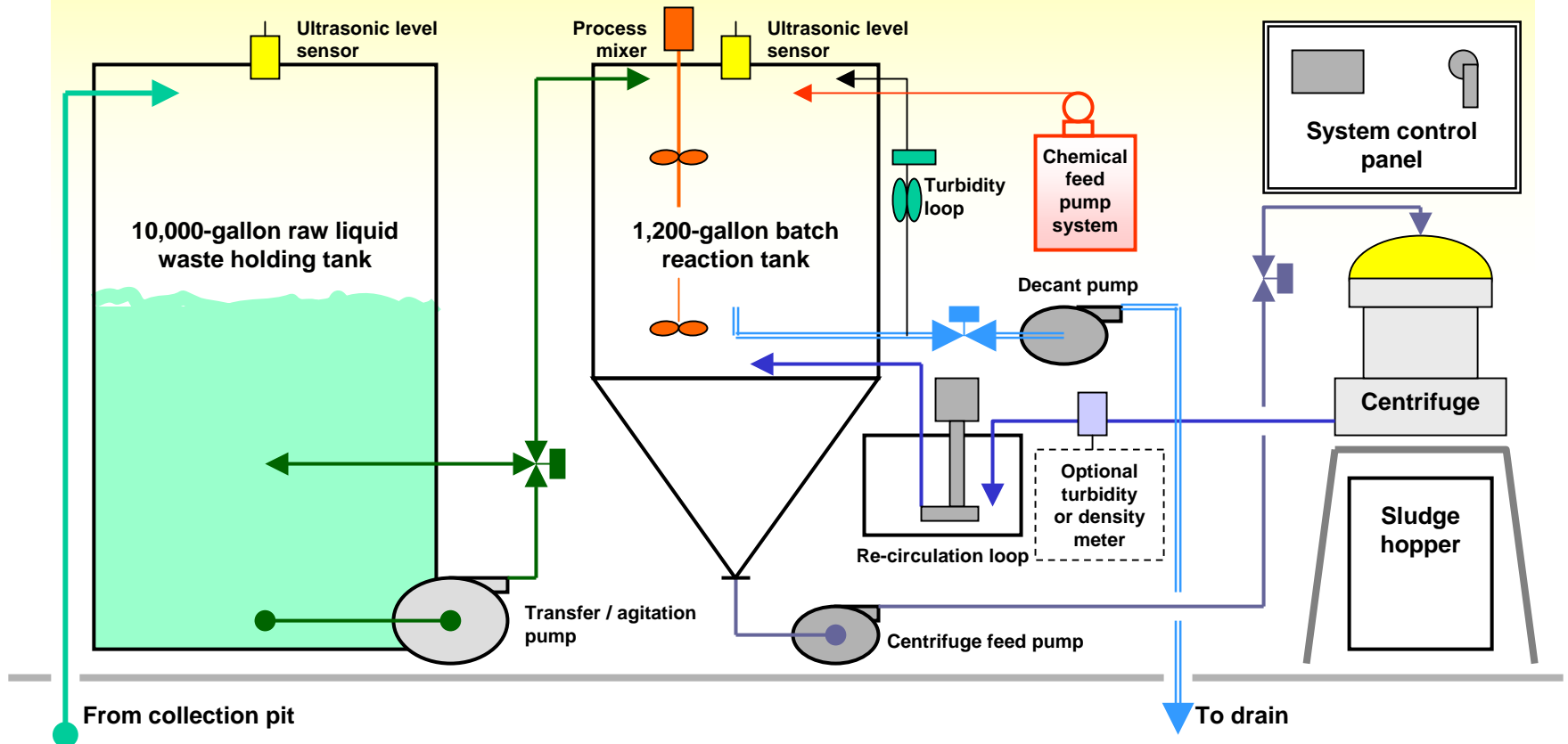
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How the system works: (Step-Nine) The centrifuge continues operation repeating the separation and cleaning process cycles until the solids have been sufficiently removed from the liquid and discharged into the solid waste hopper. An optional turbidity or density meter can be employed to determine this factor.



How the system works: (Step-Ten) The system sits idle until the raw liquid waste holding tank once again reaches the pre-determined high liquid level set point, which automatically re-activates a repeat performance of the automatic Multi Batch Sequence Process.



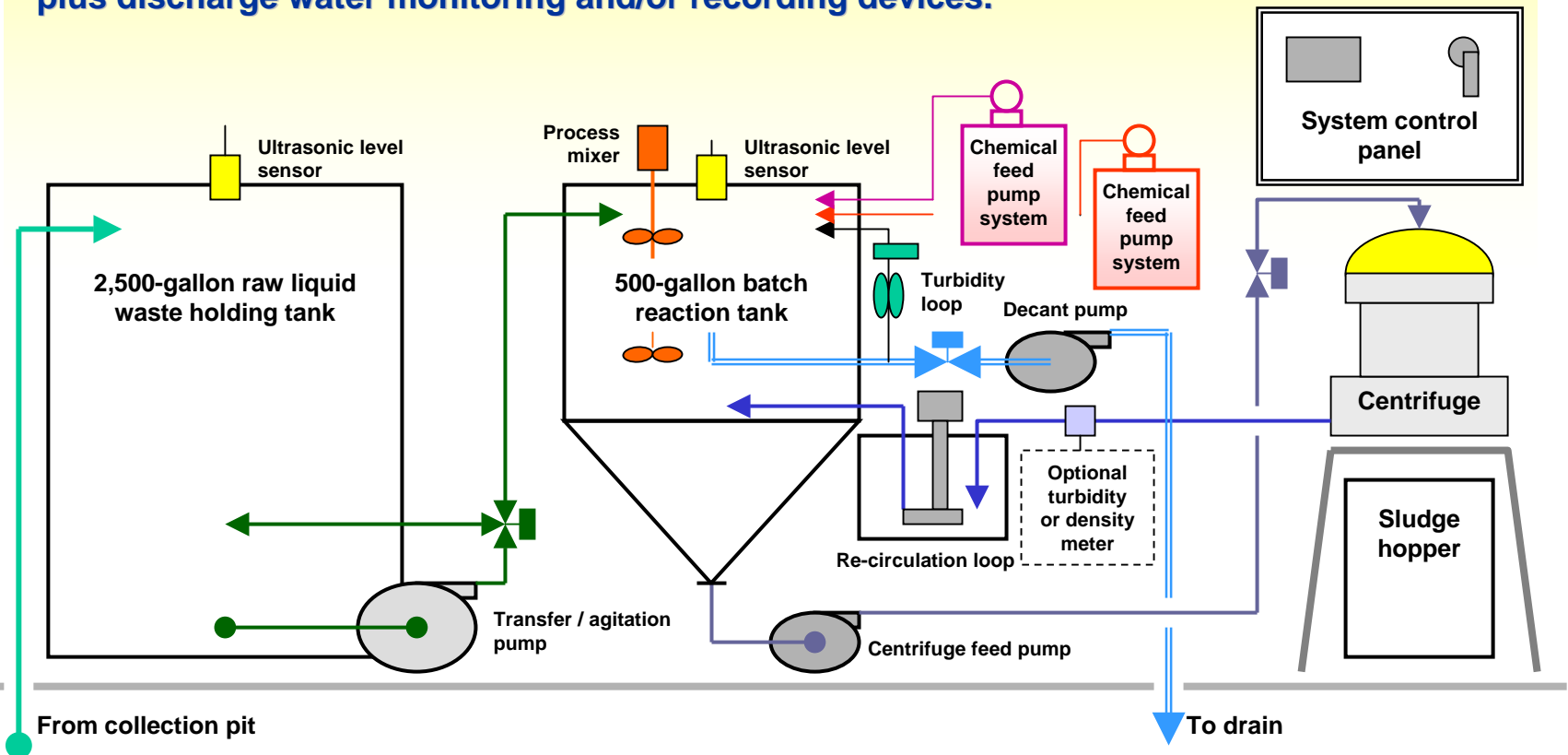
Automatic systems are equipped and constructed with quality components:

- Allen Bradley controls and operator interfaces
- Endress+Hauser instrumentation and controls
- G&L, Gusher, Continental, and ARO pumps



10,000-gallon per day system built for Interprint Pittsfield, MA

A system can be configured, equipped, and constructed to suit each customer's individual process and chemical treatment requirements. These requirements could include: different size tank volumes, multiple chemical feed pumps and/or systems, various size and/or multiple centrifuges, additional discharge water filtering devices, plus discharge water monitoring and/or recording devices.



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Systems can be designed and constructed to treat wastewater volumes from 500 to 50,000 GPD depending on the chemical program and % solids. Systems range from \$50,000 to \$350,000 depending on the necessary components and materials of construction.

