



Sewer Authority Mid-Coastside

REQUEST FOR PROPOSALS

WASTEWATER TREATMENT PLANT CAPACITY AND TREATMENT PROCESS REVIEW STUDY

The Sewer Authority Mid-Coastside (SAM) is a regional wastewater agency responsible for the treatment and disposal of wastewater collected from within its service area. SAM provides wastewater treatment services and contract collection maintenance services for a population of approximately 27,000 people in the following coastal San Mateo County communities:

- City of Half Moon Bay
- El Granada
- Miramar
- Montara
- Moss Beach
- Princeton by the Sea

SAM owns and operates a wastewater treatment plant (WWTP) and a sanitary sewage collection system that collects sewage from its three member agencies: the City of Half Moon Bay, the Granada Community Services District, and the Montara Water and Sanitary District.

SAM is soliciting proposals from qualified engineering consulting firms with exceptional wastewater treatment expertise to review the WWTP processes and units and develop engineering recommendations regarding the WWTP capacity and operations. The firms are requested to submit a proposal for a minimum of the following work:

1. A comprehensive review of the SAM WWTP processes and other available information with the purpose of establishing the plant operating parameters and capacity to deal with potential variations in high influent loading;
2. Develop a report of findings and recommendations for process optimization to address high variations in influent loading at the SAM WWTP.

Background and History

The regional wastewater facilities that comprise SAM were designed in 1979-1981 by a consortium of engineering firms called Mid-Coastside Area Consultants. The project included four (4) units, including Units 1 and 2 – the Intertie Pipelines and Pumping Facilities (now

commonly referred to as Intertie Pipeline System or (IPS) to connect the participating communities to the regional WWTP, Unit 3, the WWTP, and Unit 4, the Effluent Pumping Facilities and the Ocean Outfall.

The regional WWTP is an activated sludge secondary treatment facility that was constructed on a site within the City of Half Moon Bay that had been used for treating wastewater since the 1950s. The WWTP and its discharge pipe extending approximately 1,900 feet from the shore into the Pacific Ocean were inaugurated in 1983. The original plant included the headworks with two comminutors and five small influent pumps, two grit tanks, two primary clarifiers, two aeration basins, two secondary clarifiers, disinfection and dechlorination facilities, and two effluent pumps. Solids were aerobically digested, decanted, and dewatered using two belt presses.

The 1993 SAM WWTP expansion was designed in 1991 by Carollo Engineers and construction was completed in 1999. The expansion replaced influent comminutors with automatic bar screens and a screenings compactor; added three large influent pumps; converted the two existing rectangular secondary clarifiers to two primary clarifiers (one future); and added two new aeration basins and two new circular secondary clarifiers, along with new sludge pumps. The project also replaced the existing single aerobic digester with two new anaerobic digesters and the two existing belt presses with a single new belt press. The expansion included a new supervisory control and data acquisition system (SCADA) for the plant. The WWTP capacity was expanded in 1999 to flows presented in Table 1.

Table 1 SAM WWTP Influent Flows

Parameter	Flow, million gallons per day, MGD
Average Daily Dry Weather	4
Peak Day Wet Weather	9
Peak Hourly Wet Weather	15

The performance expected from the WWTP was included in the plant expansion design documents and in the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) Order No. R2-2012-0061 that governs the discharge of treated wastewater into the Pacific Ocean.

The main requirements included the following:

1. The WWTP shall handle influent flows as high as those listed in Table 1.
2. The WWTP shall produce a final effluent that complies with the quality limitations listed in Table 2. The maximum values permitted for 5-day Biochemical Oxygen Demand (BOD₅)

and Total Suspended Solids (TSS) assume that the primary and secondary clarifiers operate to the best of their ability.

Table 2 Effluent Limitations

Parameter	Units	Average Monthly	Average Weekly	Six-month Median	Maximum Daily	Instantaneous Maximum
Biochemical Oxygen Demand (5-Day @ 20°C)	mg/L	30	45	–	–	–
Total Suspended Solids	mg/L	30	45	–	–	–
pH	–	Within 6.0 to 9.0 at all times				
Total Chlorine Residual	mg/L	–	–	0.36	0.64	4.8
	kg/day	–	–	5.4	9.7	–
Acute Toxicity	TUa	–	–	–	2.7	–
Chronic Toxicity	TUc	–	–	–	80	–
Enterococcus Bacteria	MPN/100mL	Single sample maximum 8,300; five-sample geometric mean maximum 2,800				

The WWTP shall not be entirely or partially bypassed, unless:

- Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime.

The original WWTP design included no emergency retention capacity, and hence allows for zero downtime. Staff can only temporarily reduce the influent flow by mobilizing remote storage structures at the Montara and Granada pump stations.

The WWTP currently includes the following treatment steps:

- Primary: influent screening, grit removal, primary clarification; and
- Secondary: sludge activation, secondary clarification, chlorination, dechlorination; and
- Solids: anaerobic digestion, dewatering, and disposal.

A site plan and the treatment plant schematics are included as attachments with this RFP. Additionally, the following reference materials will be made available to the successful engineering consulting firm:

1. **San Francisco Bay Regional Water Quality Control Board:** *Order No. R2-2012-0061 – NPDES No. CA0038598;*
2. **Sewer Authority Mid-Coastside:** *Regional Wastewater Treatment Facility Operation and Maintenance Manual; January 2001*
3. **Mid-Coastside Area Consultants, An Engineering Joint Venture between Black and Veatch, Barrett Harris and Associates, And Resources Engineering and Management Consulting Engineers:** *Contract Drawings for Construction of Unit 3: Regional Wastewater Treatment facilities; 1981*
4. **Mid-Coastside Area Consultants, An Engineering Joint Venture between Trotter-Yoder and Associates, Barrett and Associates, And Resources Engineering and Management Consulting Engineers:** *Unit 4: Ocean Outfall and Pumping Facilities; 1979*
5. **Carollo Engineers:** *Expansion of Regional Wastewater Treatment Facility – Phase I; Record Drawings; May 2000*

Recent WWTP Process Upset Issues

In late September and early October of 2020, the SAM WWTP experienced abnormally high BOD levels in its influent. These BOD levels stressed the plant processes and resulted in the discharge of non-compliant effluent by the plant. Above-normal BOD levels continue to appear through the remainder of 2020, however, the plant was able to meet the discharge requirements in November and December 2020 and continues to meet them today.

Historical BOD averages in the WWTP influent range between 350 and 400 mg/L. The high BOD levels in the early October 2020 were between 1100 and 1900 mg/L in the plant influent with continued high BOD readings in upper 400 to lower 750 mg/L. SAM staff increased sampling to 5 or more times per week per the WWTP permit requirements and started investigating the source of the high BOD levels coming into the plant.

RFP Scope of Services

SAM is soliciting qualified engineering consulting firms with significant wastewater process treatment expertise to review SAM's wastewater treatment facility and develop engineering recommendations regarding the WWTP capacity and operations. The selected consultant will provide a comprehensive review of the SAM WWTP processes and other available information with the purpose of establishing the plant operating parameters and capacity with the goal of establishing the WWTP capacity under the stress of high influent BOD levels to ensure that all discharge permit requirements are met no matter what BOD levels were coming into the plant.

Based on the existing information provided by SAM and influent quality data, the selected consultant will develop a comprehensive study identifying the WWTP processes and units needing improvement in particular the secondary aeration system. The current aeration system is not adequate for handling high BOD loads during wet weather. Modifications to the basin diffusers and potential operational improvements shall be considered. The results of the study will be presented to the SAM Board of Directors at a public meeting for review and consideration.

Based on the input from the Board and staff, the consultant will then finalize the findings and recommendation for the improvements needed at the SAM WWTP.

Minimum Qualifications

SAM requests proposals from engineering consulting firms that meet the following minimum firm qualifications:

1. The firm shall have a minimum of 20 years in business delivering professional engineering services in Northern California with expertise in activated sludge wastewater treatment facilities design and process review with the engineering services focused on municipal wastewater processes' design and optimization;
2. Proven industry leader in municipal wastewater treatment with demonstrated history of delivering cost-effective, reliable, and flexible wastewater solutions to municipal clients.

Additionally, the key members of the team proposed to conduct the study for SAM must possess the following minimum qualifications:

1. Project Manager: a minimum of 20 years of wastewater treatment experience; must possess a license as Professional Engineer in the State of California as either Civil or Mechanical Engineer; must be employed by the prime proposer;
2. Lead Team Member: a minimum of 20 years of experience in wastewater treatment design and/or process optimization and a professional engineering license in one of the following fields: civil, mechanical, or chemical engineering; must be employed by the prime proposer.

Project Schedule

The following dates for issuance of the RFP, receipt and evaluation of proposals, as well as the contract award by the Board of Directors, are tentative, non-binding, and subject to change without prior notice.

SAM anticipates the following key milestones for submitting the proposals and conducting the work under the Study:

- Board approval to issue the RFP for the Study February 8, 2021
- SAM provides the RFP to the engineering firms February 9, 2021
- **Mandatory WWTP Site Visit @10am February 17, 2021**
- Deadline for questions February 19, 2021
- **Proposals due to SAM March 9, 2021**
- Consultant Selection Notification from SAM March 12, 2021
- Board approval of the contract March 22, 2021
- Notice to Proceed to the Selected Consultant March 24, 2021
- Consultant presents preliminary results to the Board July 12, 2021
- Final presentation to the Board End August 2021
- Final Report due to SAM September 2021

RFP Submittal Requirements

The proposers are requested to submit written proposals limited to 10 pages of text and figures (not including the proposed staff resumes) that contain the following key information:

1. A cover letter addressed to SAM's General Manager, Kishen Prathivadi, PE summarizing the key points of the proposal and identifying the key personnel proposed to lead and execute the work;
2. A brief firm description and qualifications of the proposed team; identify subconsultants, if any;
3. Approach to conducting the work under this Study;
4. Proposed scope of services;
5. Proposed fee for the scope of services.

Questions about the RFP should be submitted electronically to SAM's General Manager, Kishen Prathivadi PE at the following email address:

kishen@samcleanswater.org

on or before February 19, 2021.

Consultant Selection Criteria

SAM intends to award the contract for this Study to the most qualified engineering consulting firm based on the following selection criteria:

EVALUATION CRITERIA	SCORE
Proposer Qualifications	50%
Proposed Team Qualifications	25%
Work Approach	25%

Submittal of the Proposals

Proposals shall be delivered electronically to SAM's General Manager, Kishen Prathivadi PE at the following email address:

kishen@samcleanswater.org


























on or before March 9, 2021.








SAM reserves the right to reject any proposals and to waive informalities and minor irregularities in any proposal reviewed. SAM may reject any proposal that does not conform to the instructions provided. Additionally, SAM reserves the right to negotiate all final terms and conditions of any proposal received before entering into a final contract. All costs associated with the preparation of the proposal shall be the sole responsibility of the proposer.





CHAPTER B

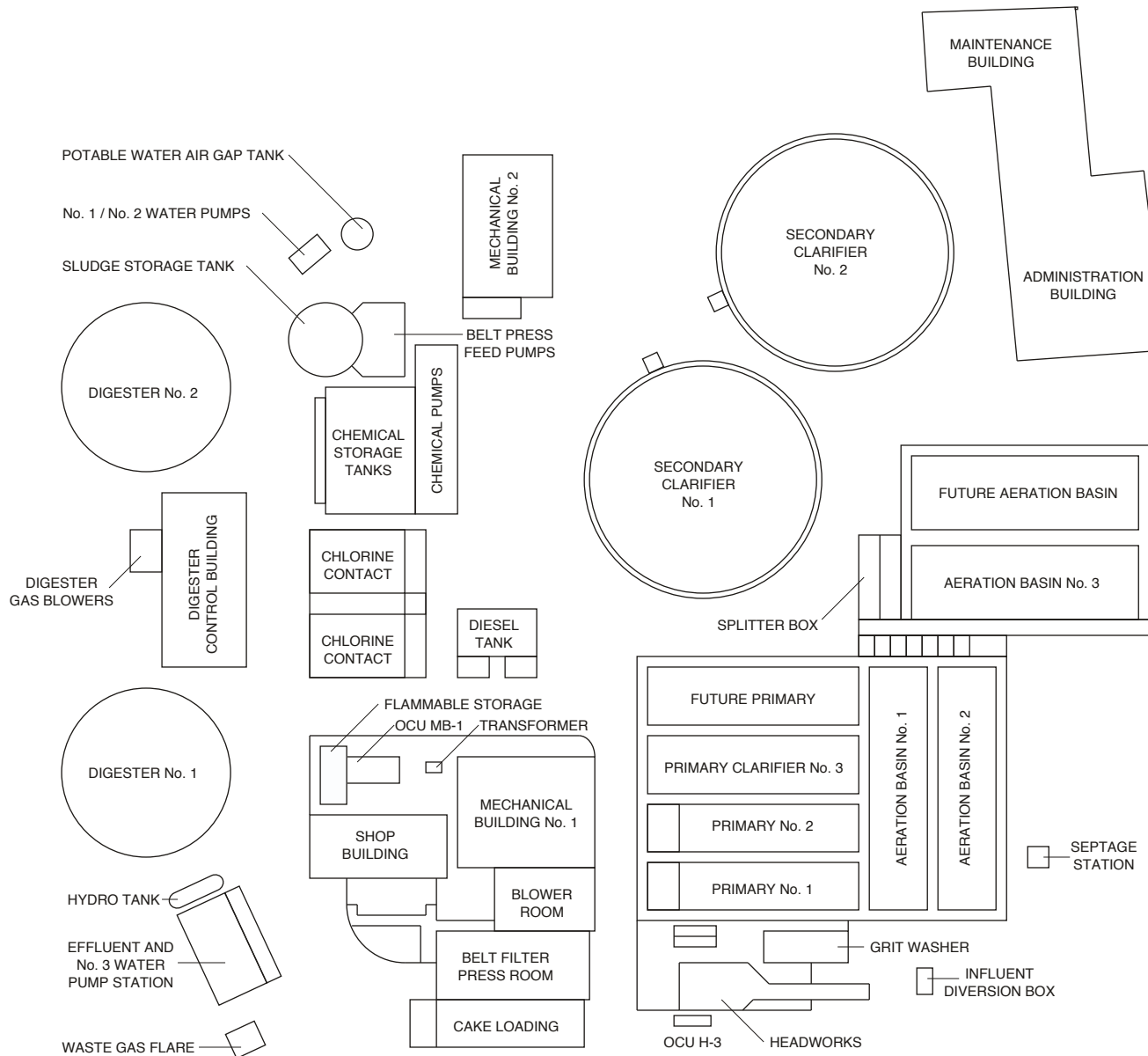
SYSTEM SCHEMATICS

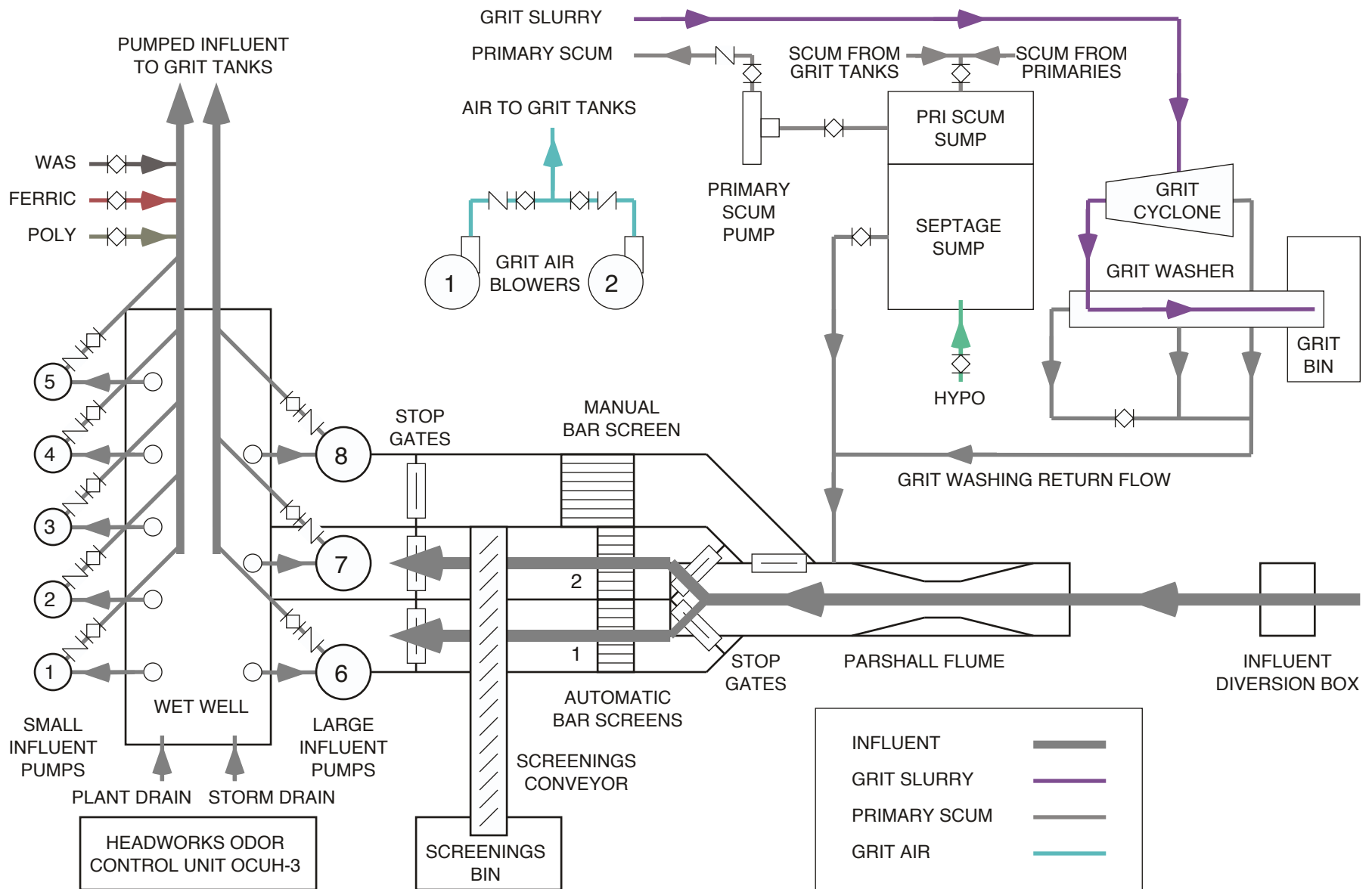
Schematic Name	Number
Colors and Symbols	Legend
Plant Site Layout	Schematic 1
Headworks and Influent Pumping	Schematic 2
Grit Removal and Primary Treatment	Schematic 3
Secondary Treatment	Schematic 4
Chlorine Contact	Schematic 5
Effluent and 3W Pumping	Schematic 6
Chemical Storage and Feed	Schematic 7
Anaerobic Sludge Digesters	Schematic 8
Digester Feed and Heating	Schematic 9
Digester Mixing and Transfer	Schematic 10
Digester Heating Loops	Schematic 11
Digester Gas System	Schematic 12
Sludge Dewatering	Schematic 13
Electrical Power Distribution	Schematic 14
SCADA System	Schematic 15
Plant Process Summary	Schematic 16
1W System	Schematic 17
2W System	Schematic 18
3W System	Schematic 19
MCC Locations	Schematic 20
Service Air System	Schematic 21
1W/2W Pump Station	Schematic 22
Plant Influent Sewers	Schematic 23

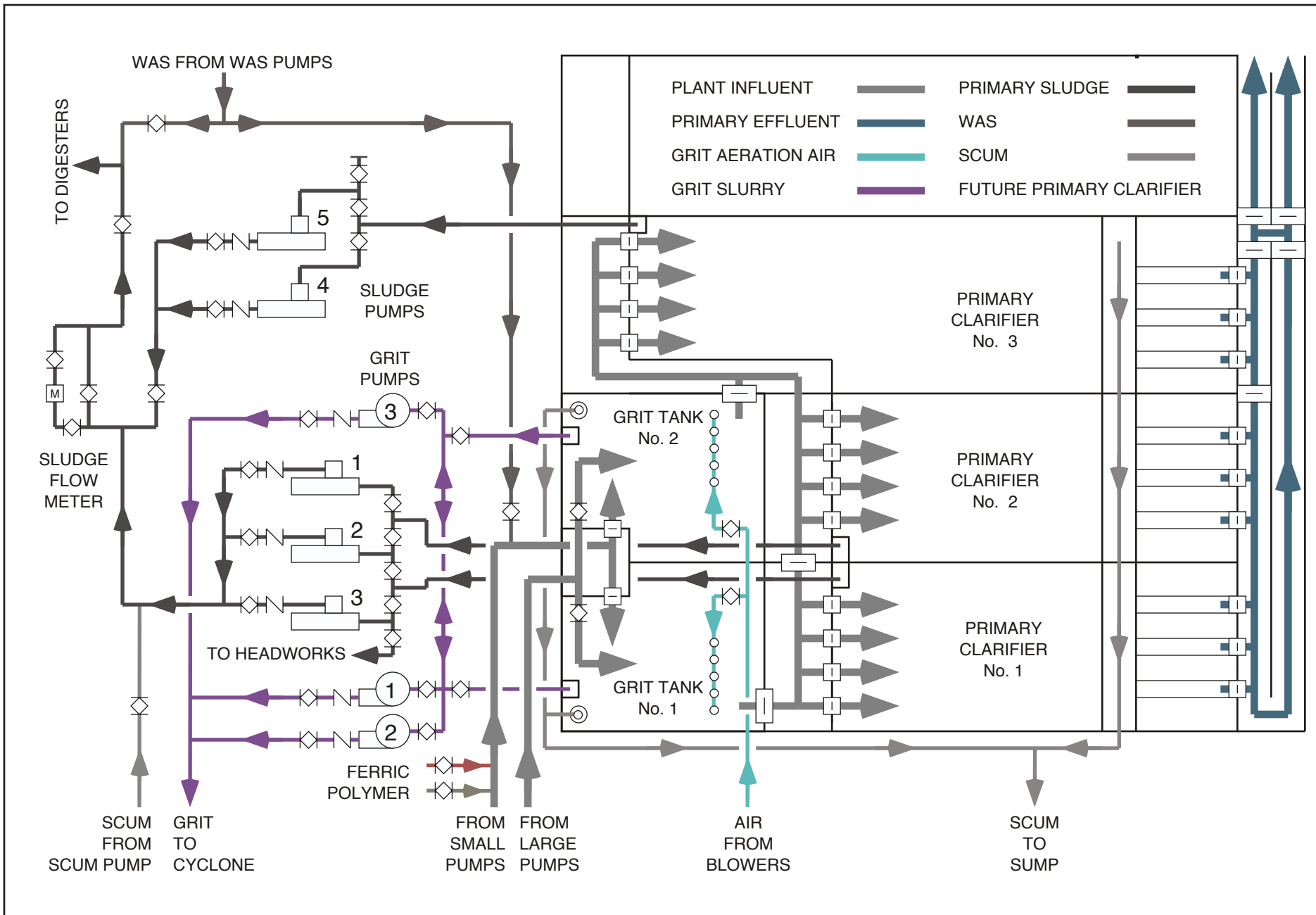
INF WASTEWATER 
 PRIMARY EFFLUENT 
 SEC EFFLUENT 
 MIXED LIQUOR 
 RAS / WAS 
 PRIMARY SLUDGE 
 PRIMARY SCUM 
 GRIT SLURRY 
 DIGESTED SLUDGE 
 DIGESTER MIXING 
 DIGESTER RECIRC 
 SODIUM HYPO 
 SODIUM BISULFITE 
 SODIUM HYDROXIDE 
 FERRIC CHLORIDE 
 POLYMER 
 No. 1 / No. 2 WATER 
 No. 3 WATER 
 DIGESTER GAS - LOW 
 DIGESTER GAS - HIGH 
 NATURAL GAS 
 AERATION AIR 
 POLYMER 
 PRIMARY LOOP 
 SECONDARY LOOPS 

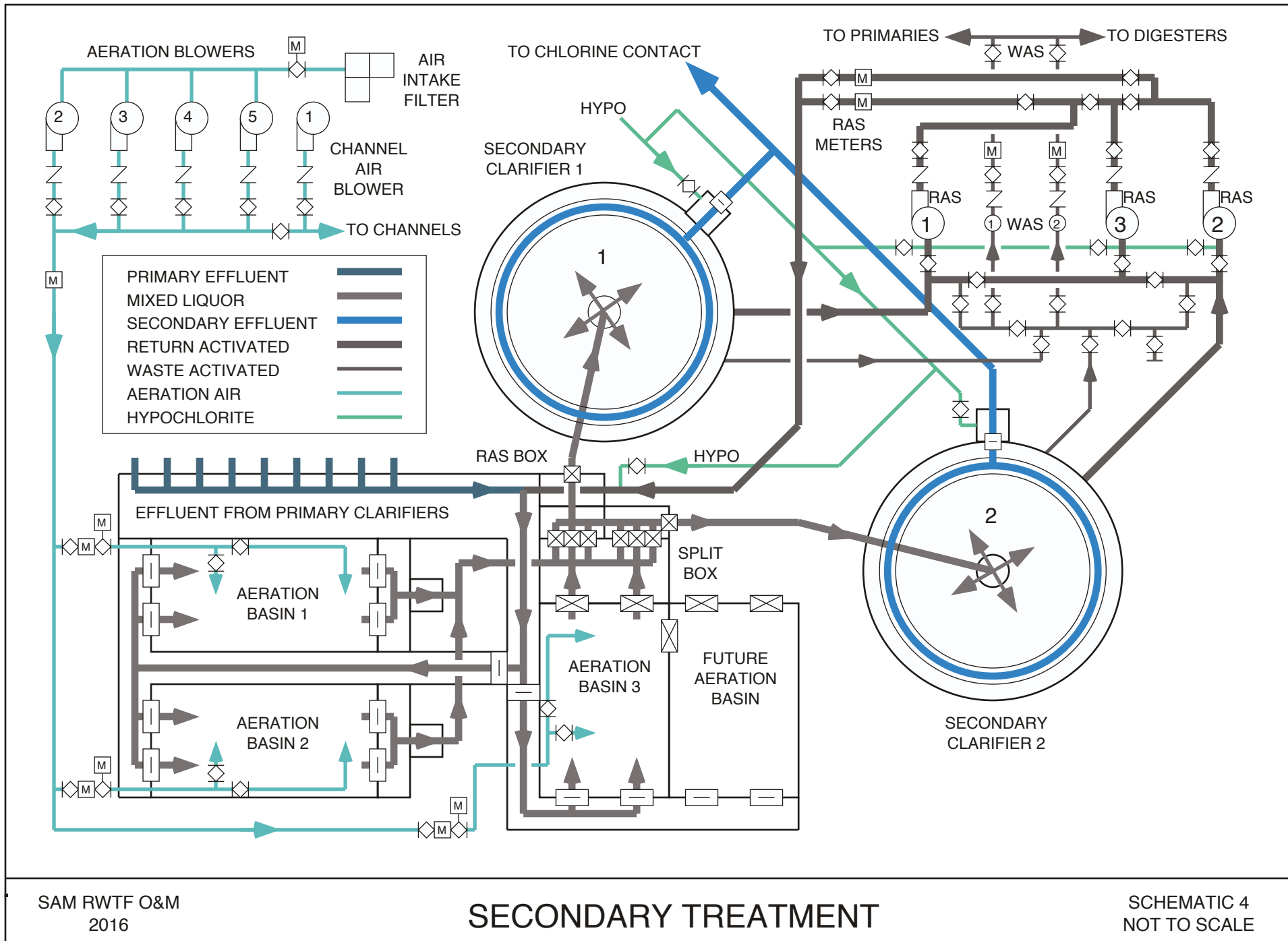
LINE VALVE 
 CHECK VALVE 
 MOTOR VALVE 
 SOLENOID VALVE 
 Y-STRAINER 
 DRAIN 
 THREE-WAY VALVE 
 SLUICE GATE 
 SLIDE/WEIR GATE 
 TELESCOPIC VALVE 

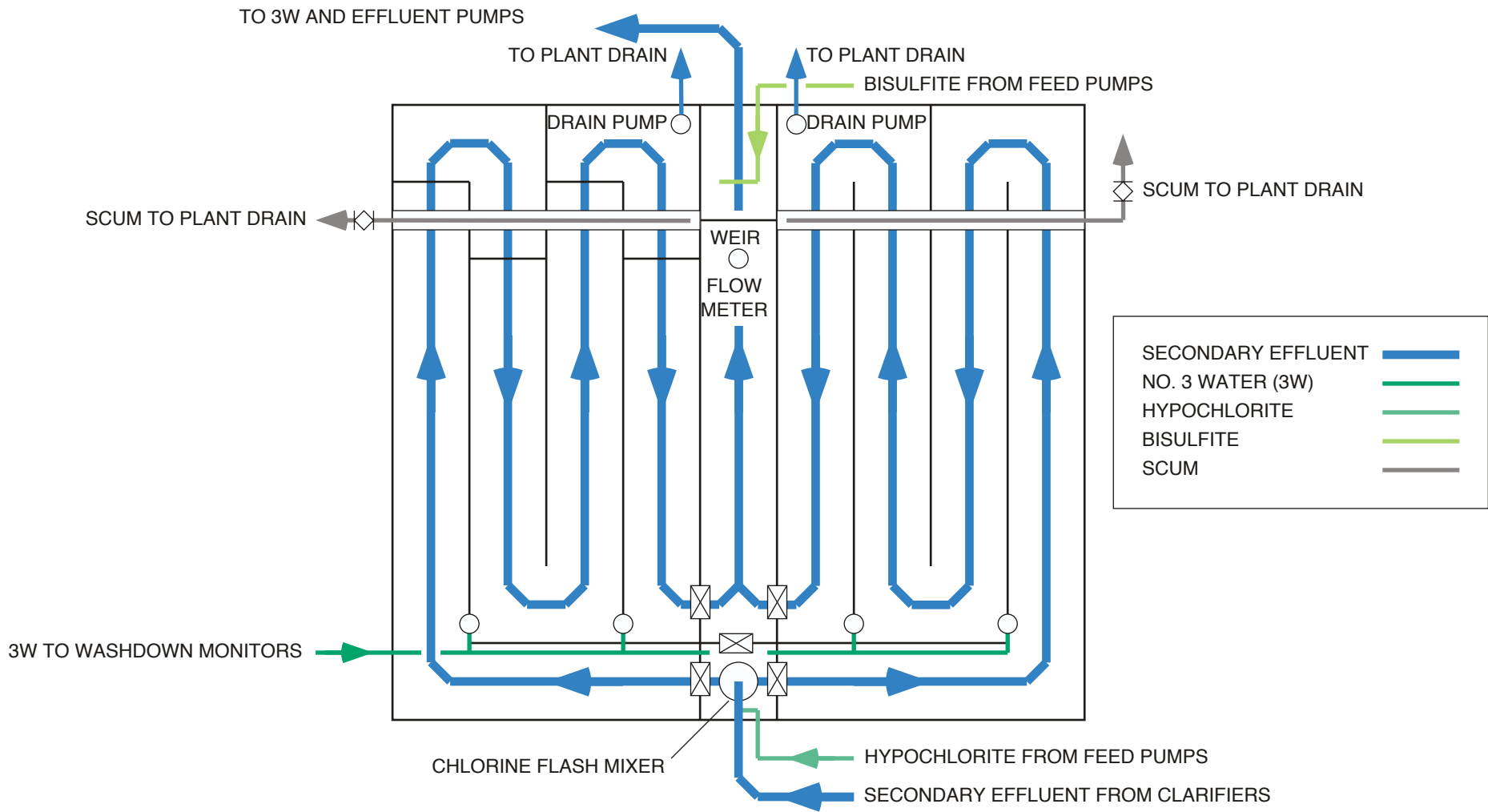
AIR BLOWER 
 CENTRIFUGAL PUMP 
 PROGRESSIVE PUMP 
 PRESSURE RELIEF 

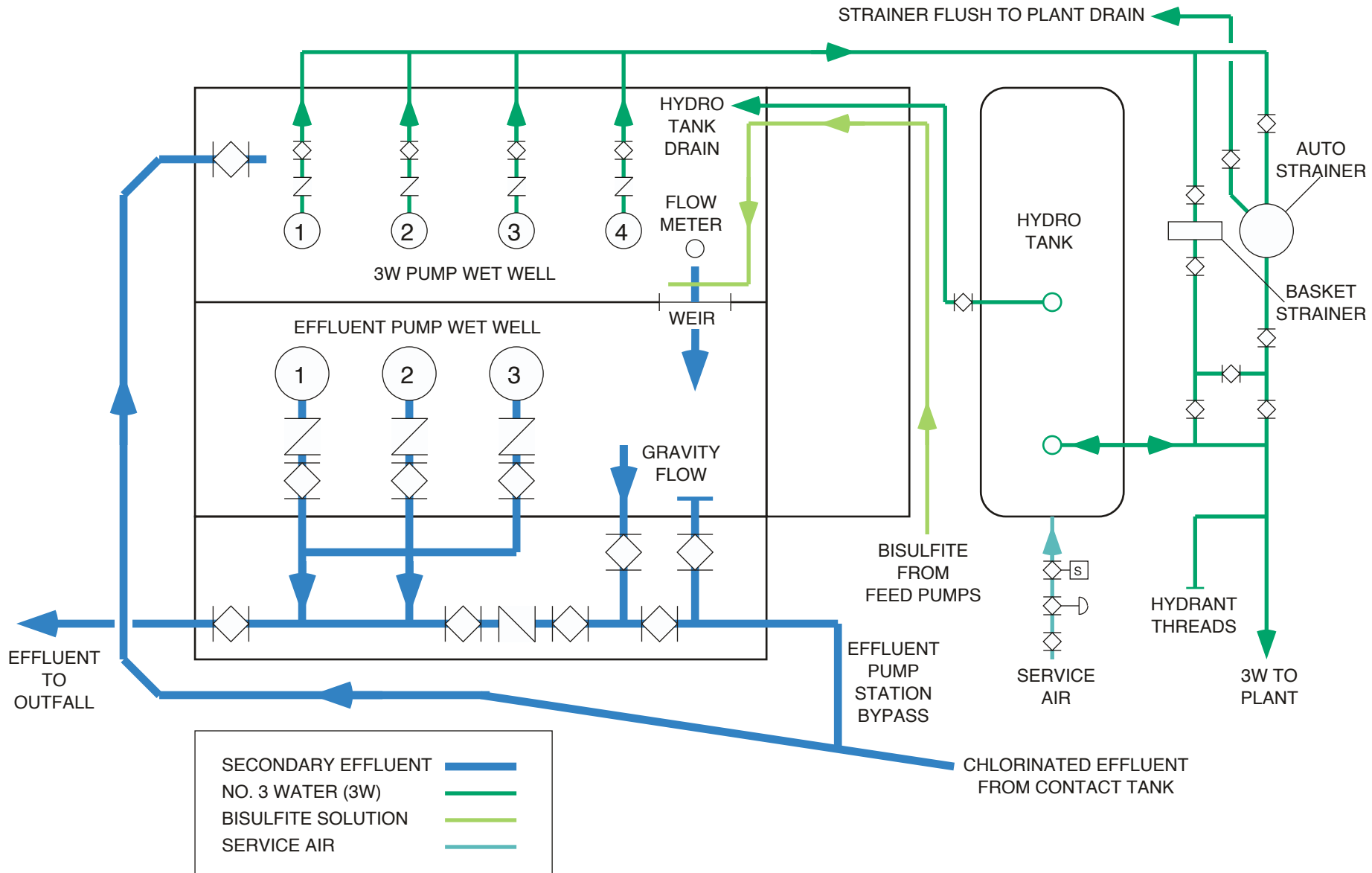


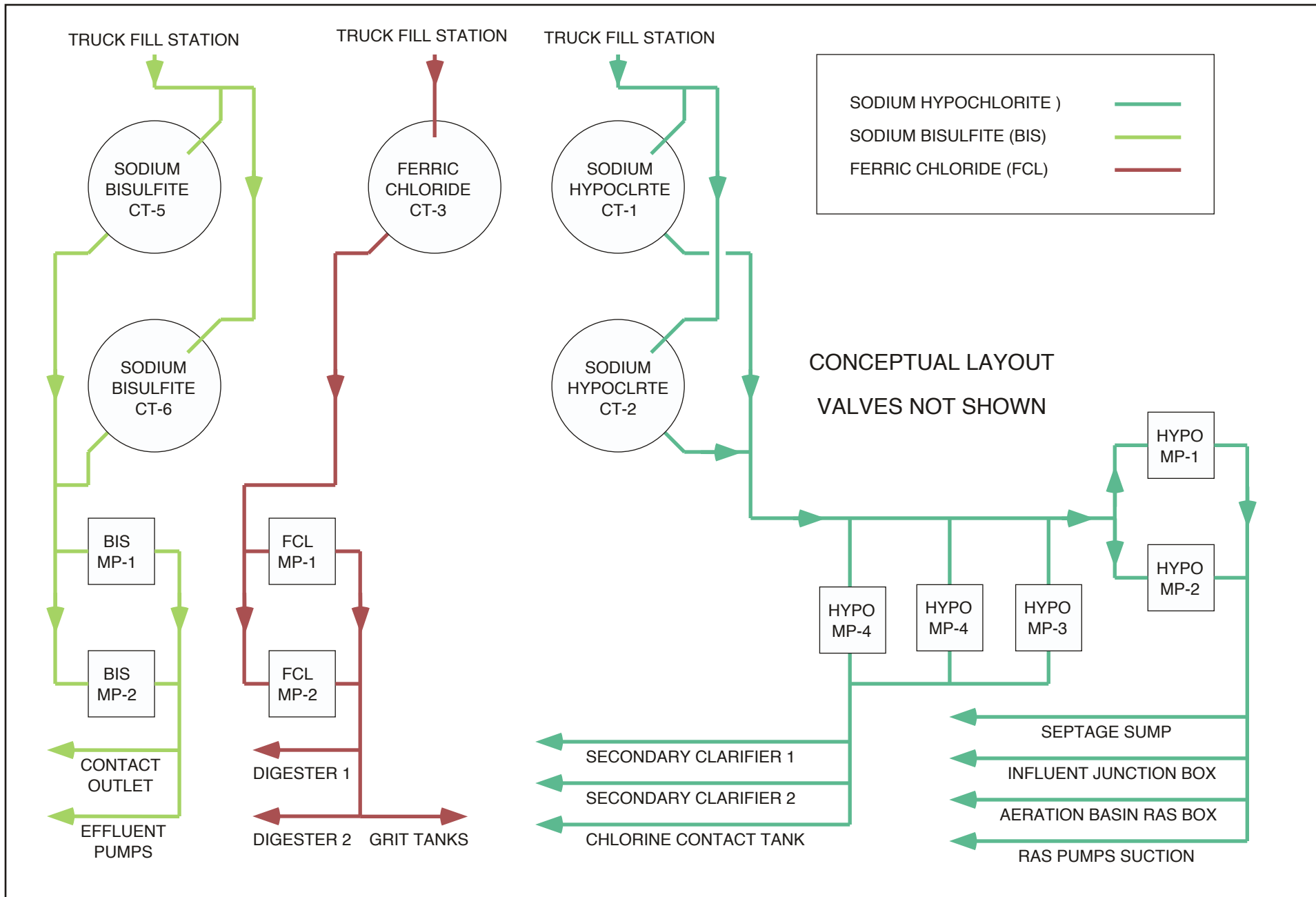


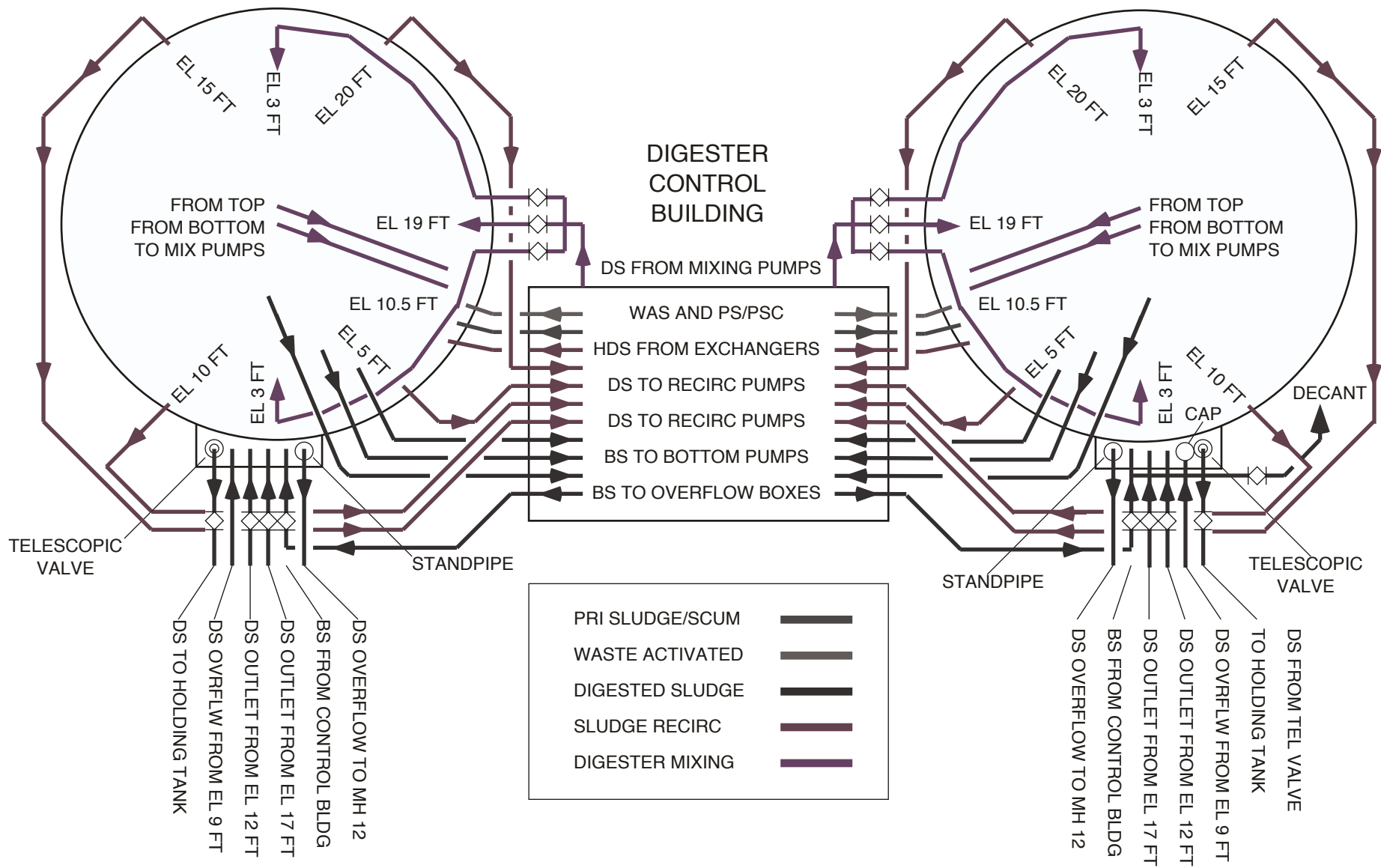




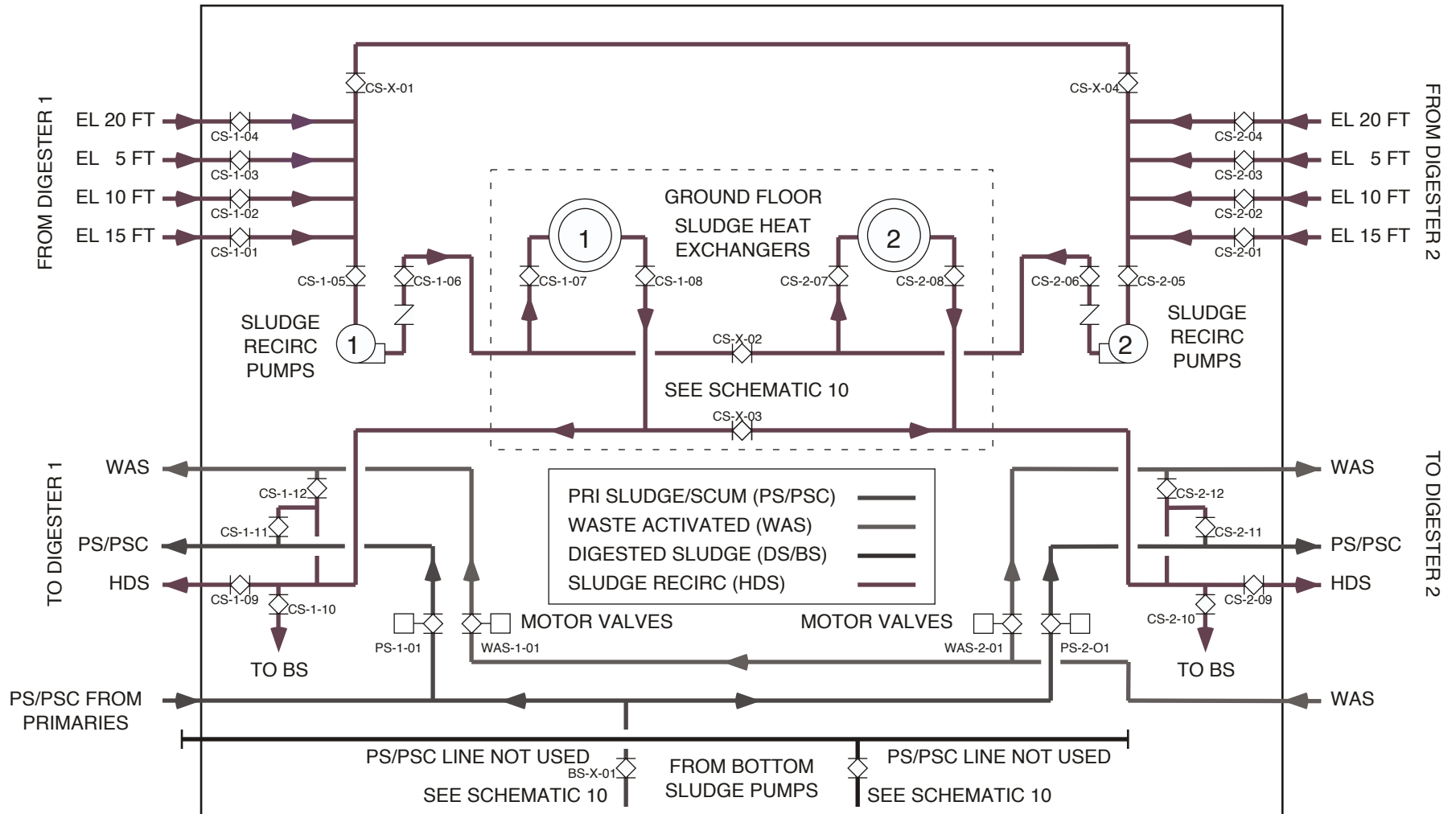


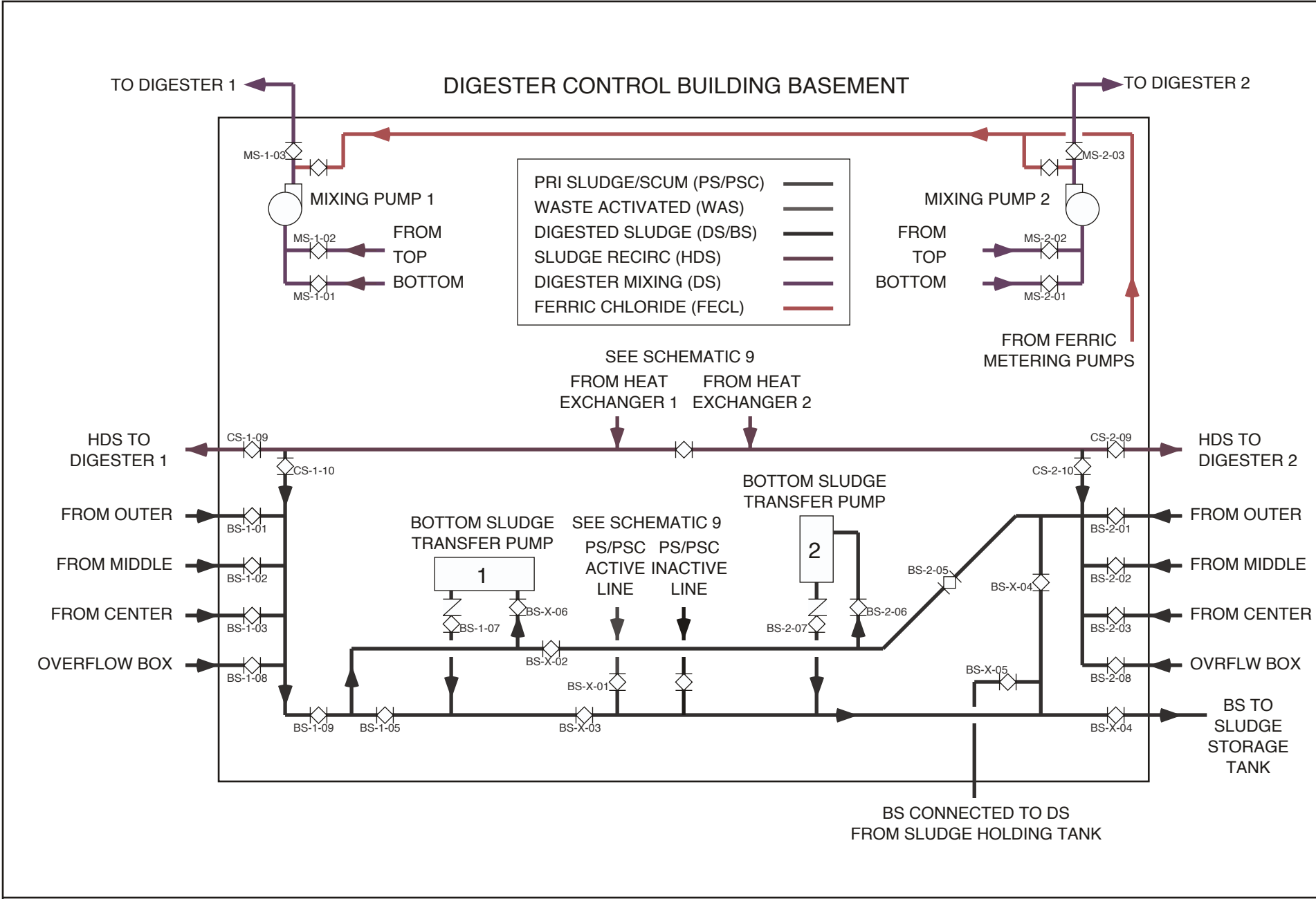


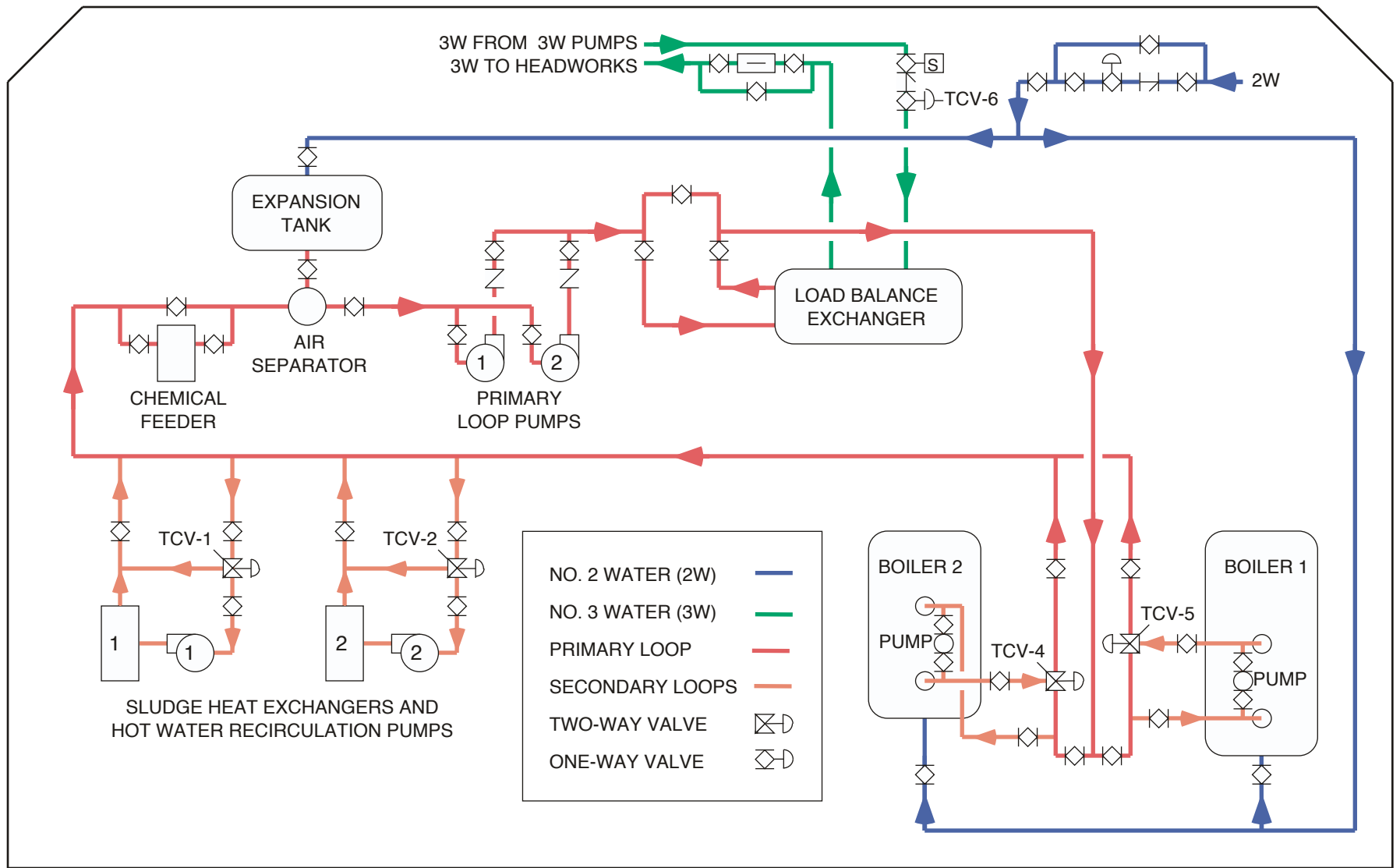




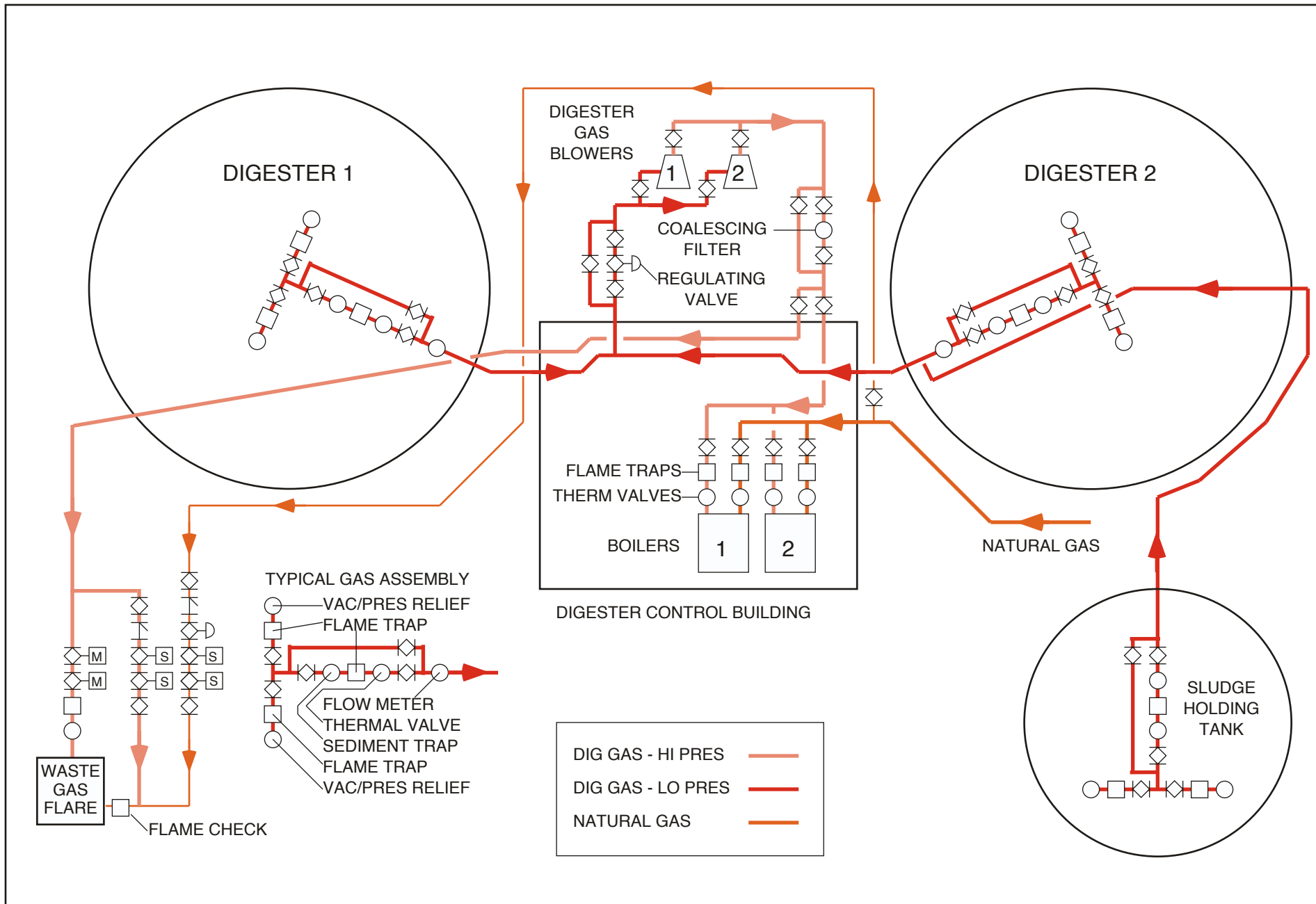
DIGESTER CONTROL BUILDING BASEMENT

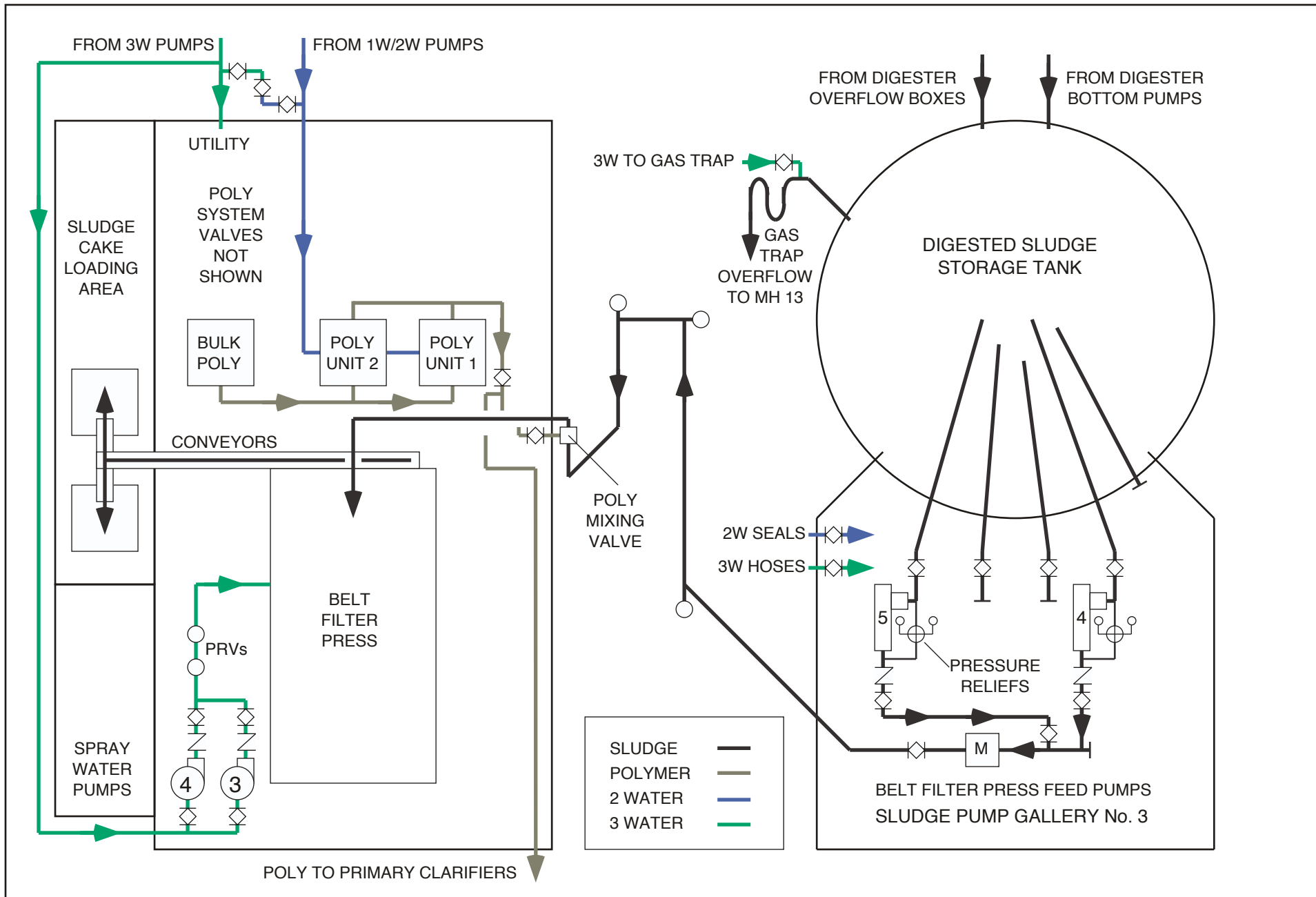


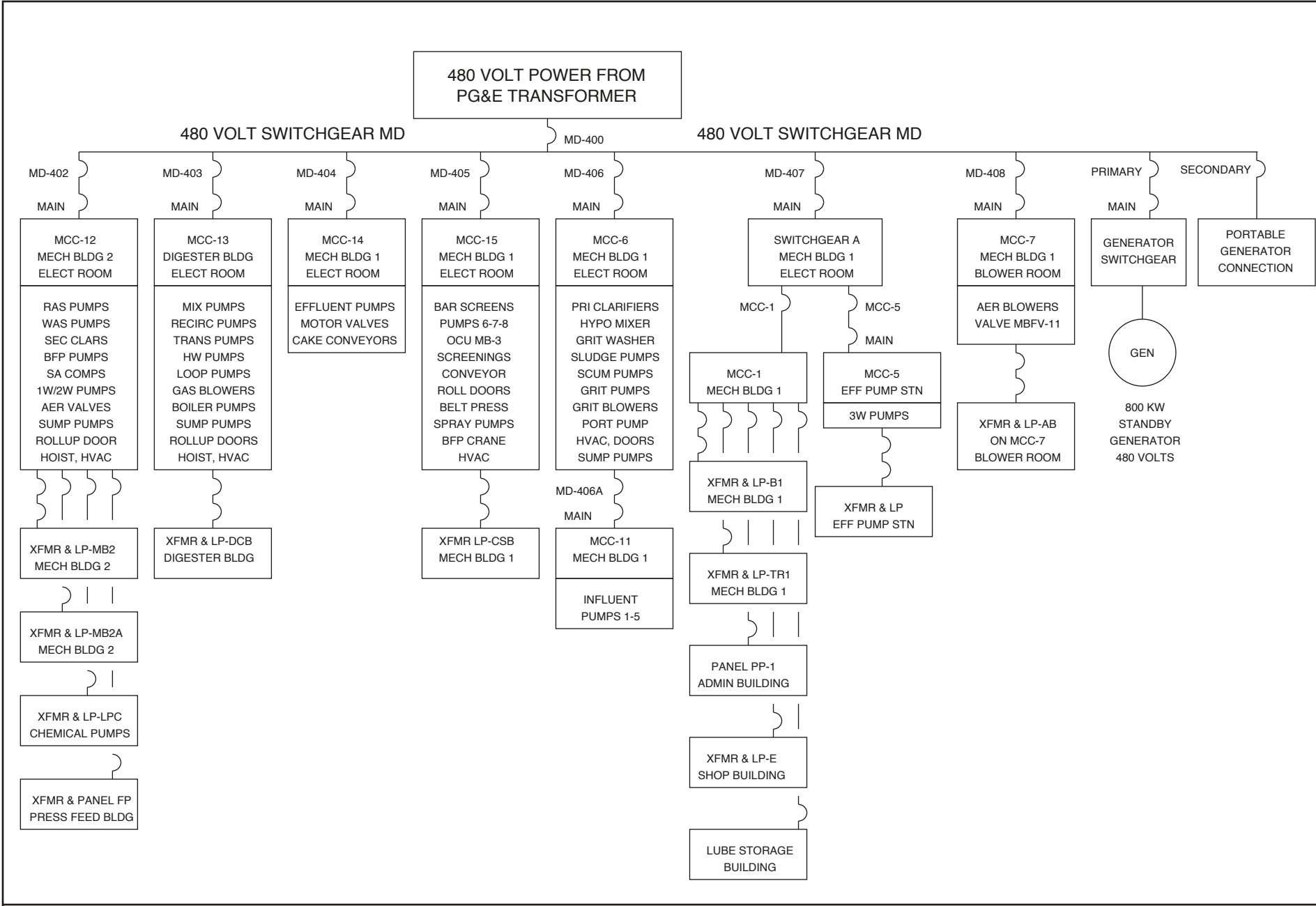


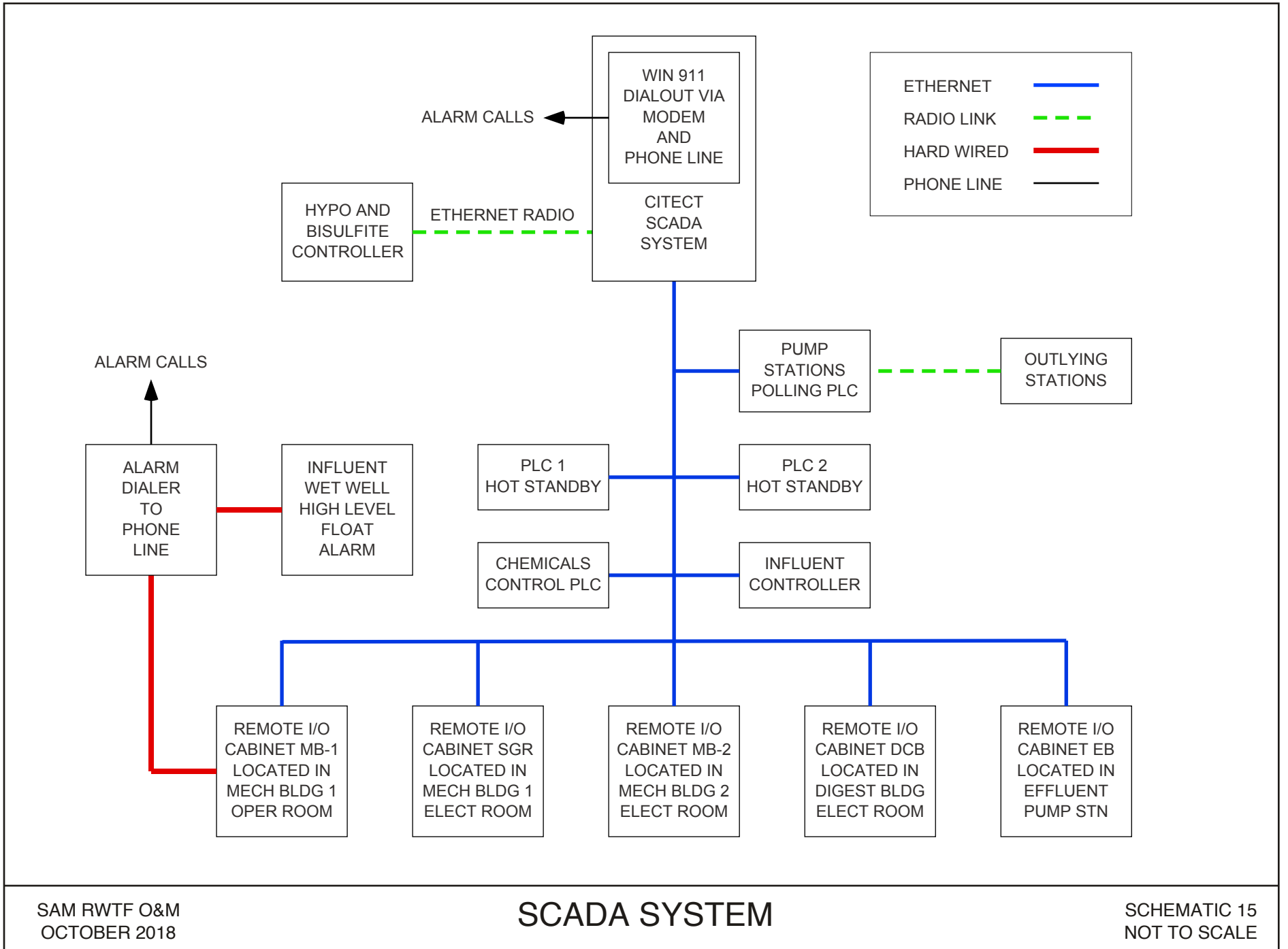


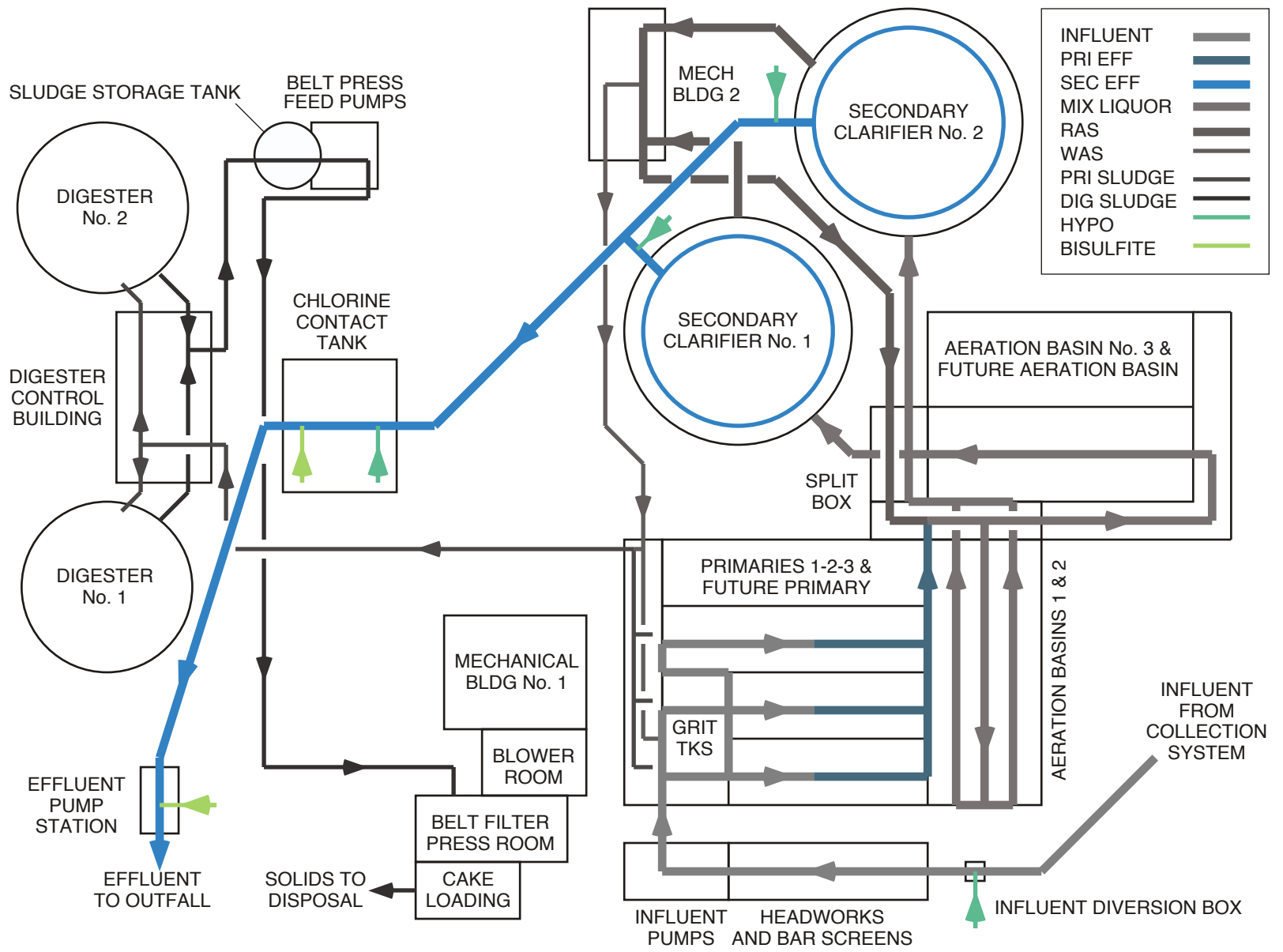
DIGESTER CONTROL BUILDING GROUND FLOOR



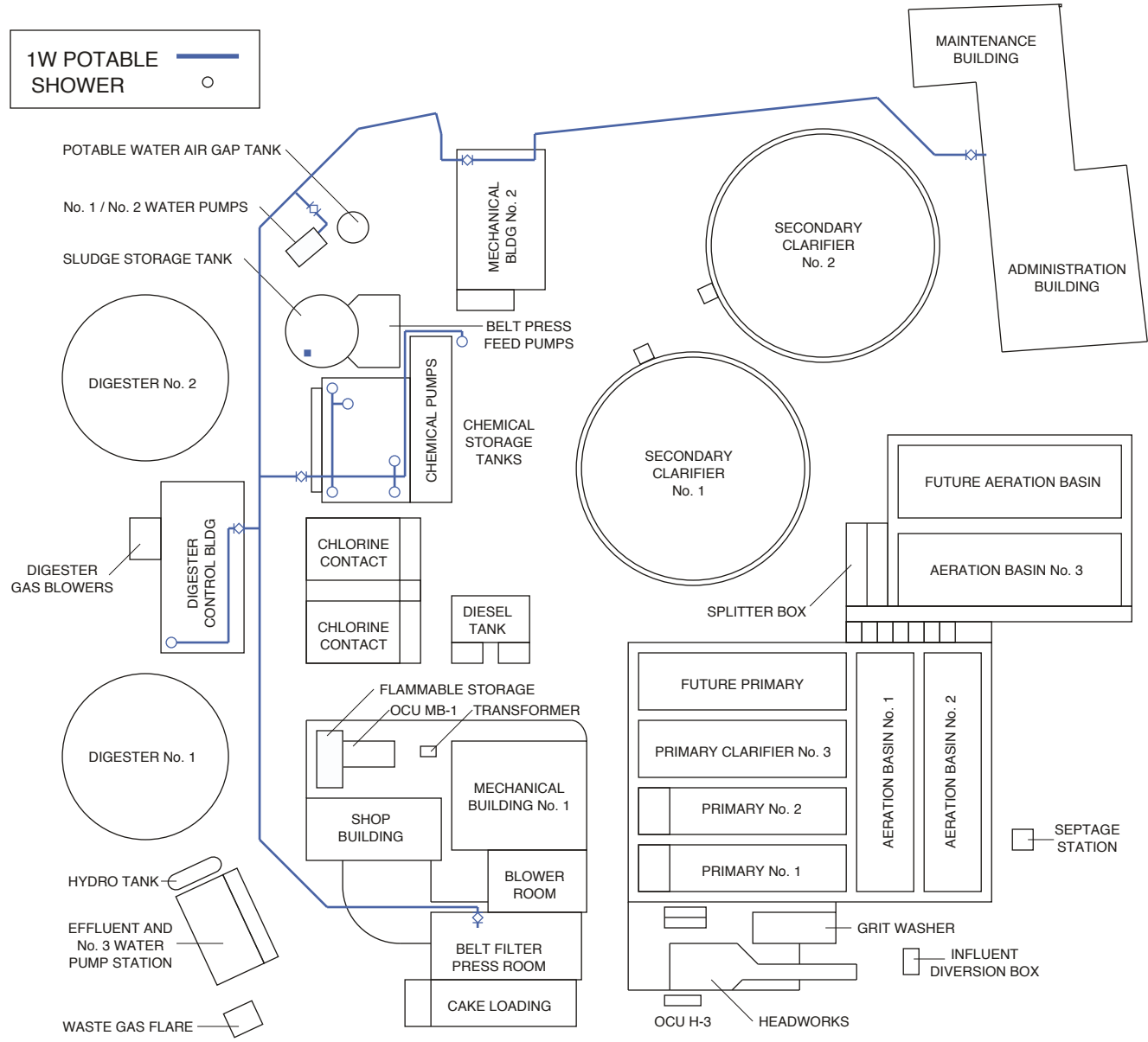




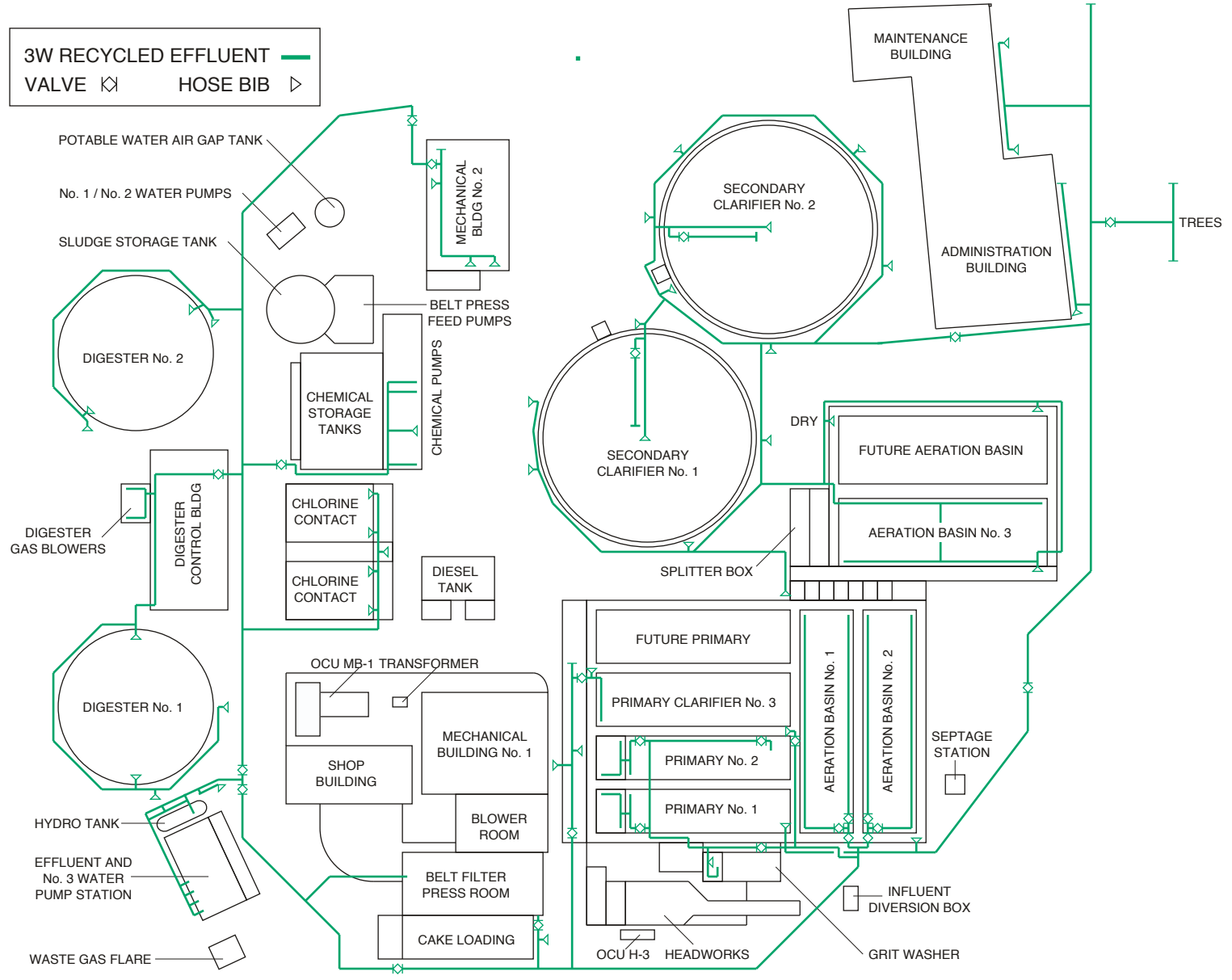


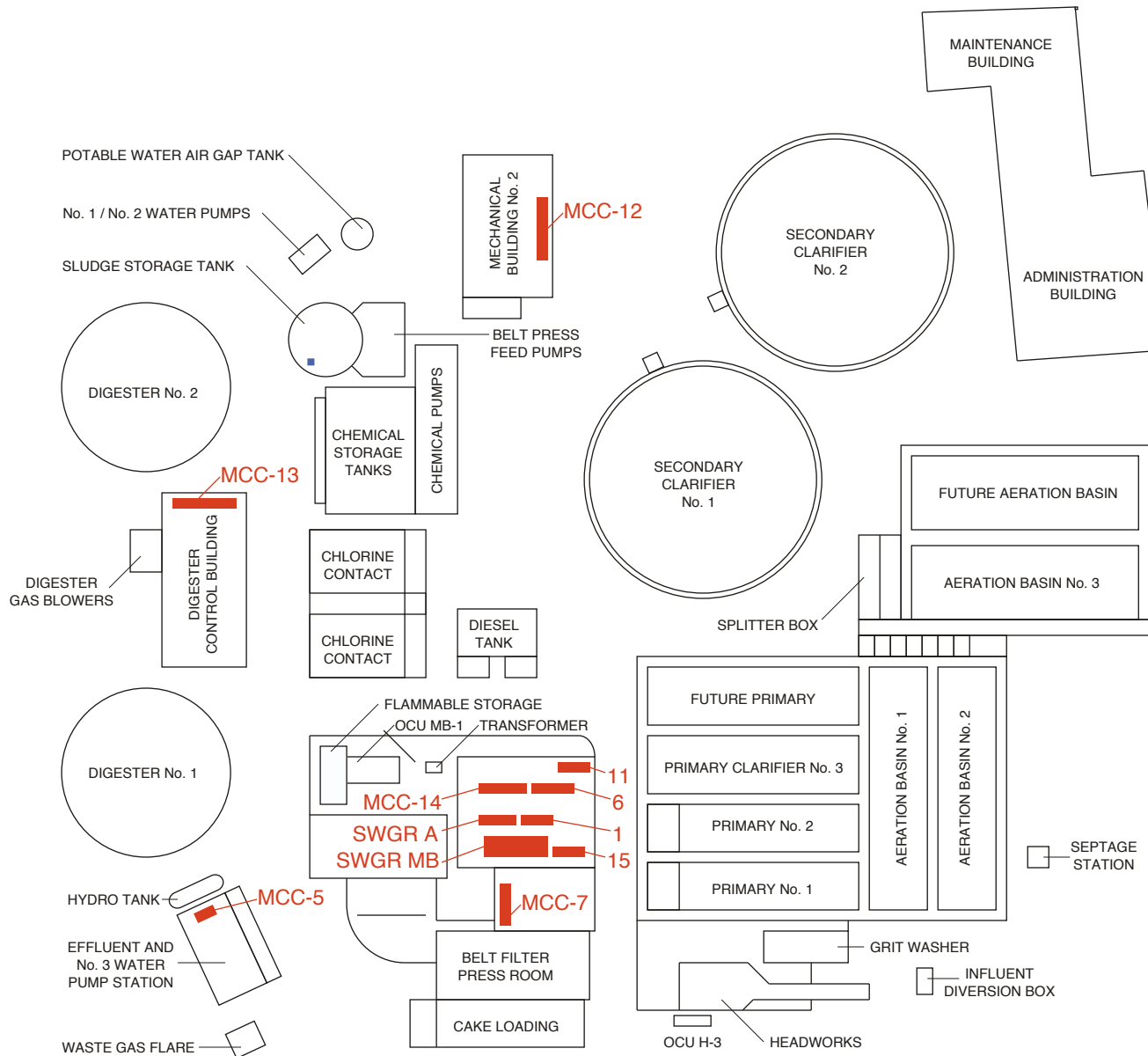


1W POTABLE
SHOWER



3W RECYCLED EFFLUENT —
 VALVE ◊ HOSE BIB ▷





SERVICE AIR 

