

**PRELIMINARY DESIGN MEMORANDUM FOR
FDEP CONSTRUCTION PERMIT**

Owner:

Citrus County
Department of Public Works
Division of Solid Waste Management
230 W. Gulf to Lake Highway
Lecanto, FL 34460
(904) 746-5000

Existing Facility:

Citrus County Landfill
Leachate Treatment Plant

Request:

Modification of FDEP Operation Permit No. SO 09-187229 for construction approval to implement process improvements for increased nitrate removal.

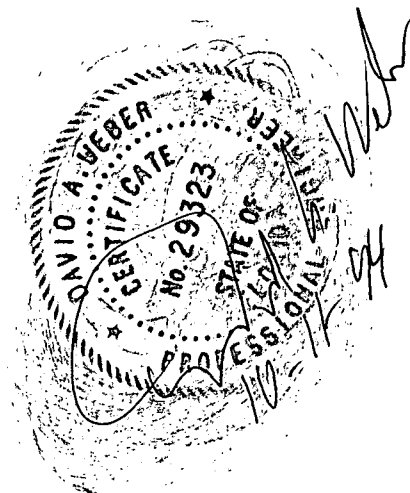
Reason:

Modification of existing Leachate Treatment Plant is proposed to achieve acceptable nitrate levels in the discharge to the permit standard of 12 mg/l.

The leachate treatment plant was designed for a BOD₅ of 2,000 mg/l and an NH₃ of 400 mg/l. The influent characteristics of the leachate is different than expected at the time of design, particularly the BOD₅ at significantly reduced level of less than 200 mg/l. The reduced carbon (BOD₅) levels has hindered the nitrate removal phase by limiting the carbon necessary to allow denitrification to proceed during the anoxic mode. The modification will consist of conversion of the three parallel reactors to a two stage aeration system. The first stage (Reactors No. 1 and 2) will remain a sequencing batch reactor with fill, aeration, anoxic, settling and decant modes. The second stage will be converted to a sequencing batch anoxic reactor with the addition of a supplemental carbon source (methanol) for efficient denitrification. The second stage will be an anoxic mode modified with improved mixing to allow more complete mixing.

Existing Process:

The existing leachate treatment facility of three parallel Zimpro powered activated carbon reactor tanks followed by a tertiary sand filter. Each reactor tank is a sequencing batch reactor consisting of process modes for fill, aeration, anoxic mixing (denitrification), settling and decant.

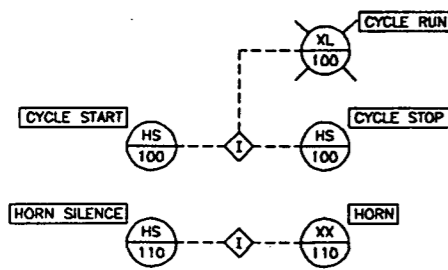
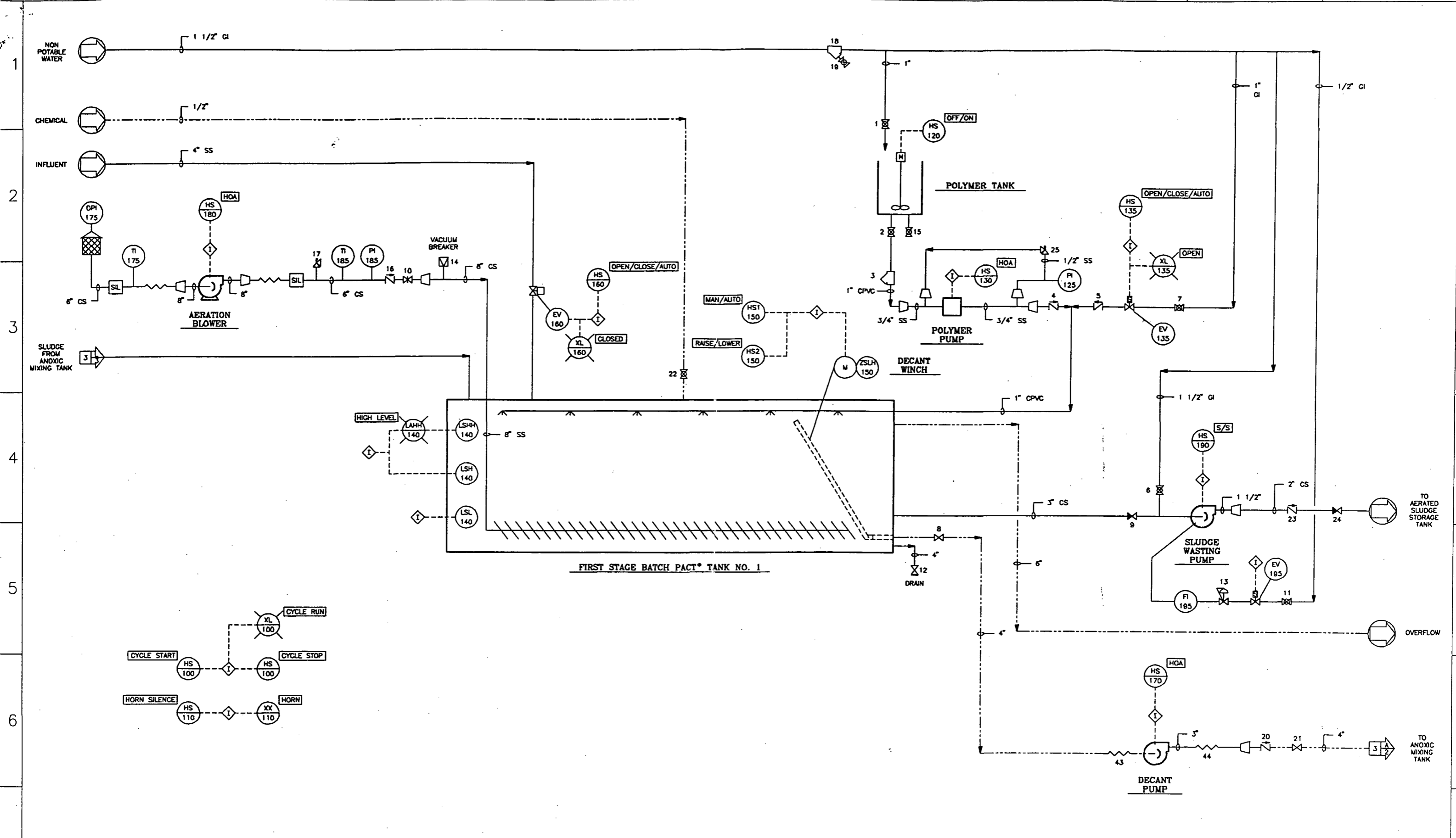


**PRELIMINARY DESIGN MEMORANDUM FOR
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Process Modification:

The revised leachate treatment facility will consist of a first stage (Reactor No. 1 and 2) powered activated carbon sequencing batch reactor and a second stage (Reactor No. 3) powered activated carbon anoxic batch reactor.

1. Convert Aeration Reactor No. 3 to a second stage reactor. Reroute discharge from Reactors No. 1 and 2 to Reactor No. 3 (see attached Drawing 1 of 4 and 2 of 4 with this change). Modify controls for Reactor No. 3.
2. Add three new mixers (3 HP each) to Reactor No. 3 to replace single submersible mixer (see attached Drawing 3 of 4 with this change). Add new access bridge and grating and hand rails.
3. Add methanol storage tank (1700 gal) and methanol feed pumps with piping to Reactor No. 3 (see attached Drawing 4 of 4 with this change).



REV.	DATE	BY	DESCRIPTION	CHKD	APPRD
2	9-94	LJD	REVISED TO 2 STAGE SYSTEM	<i>[Signature]</i>	<i>[Signature]</i>

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PREFABRICATED MODEL B140 BATCH PACT® LEACHATE TREATMENT SYSTEM FOR CITRUS COUNTY, FLORIDA

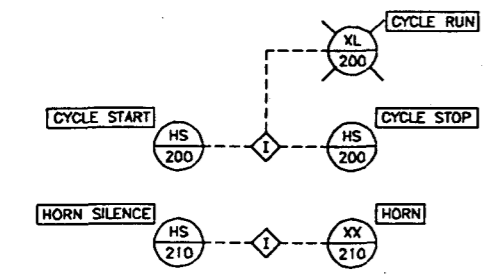
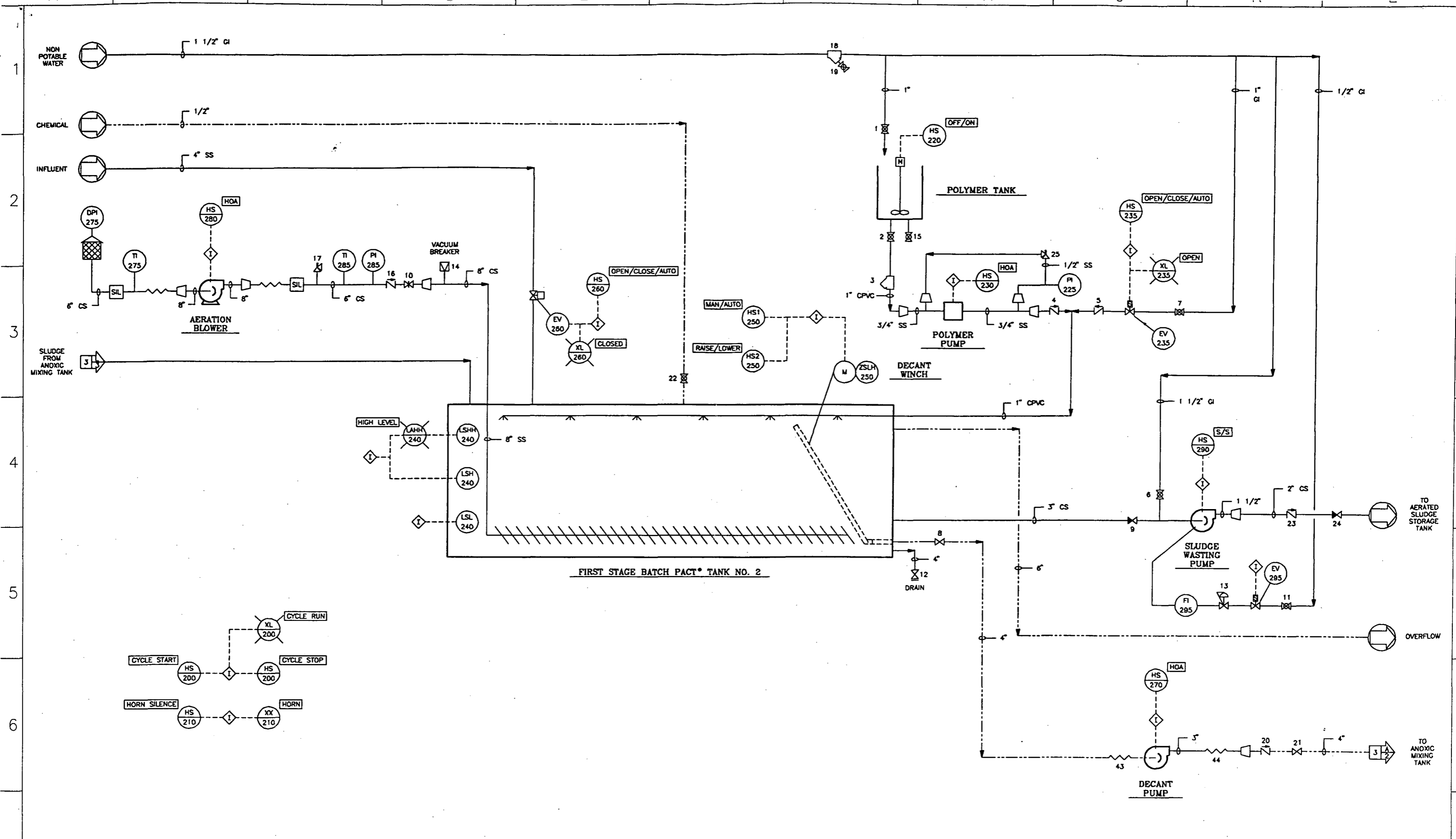
ENGINEERING FLOW DIAGRAM

DRAWN	Larry J. Doepke
CHECKED	Larry J. Doepke
APPROVED	David A. Beula
DATE	10-12-89
DWG. SAVE NAME	CC-EFD1
SCALE	NONE
SHEET	1 of 4

ZIMPRO ENVIRONMENTAL, INC.
An Affiliate of the Black Clawson Co.

DRAWING NUMBER: **30.0-2343-D-1003**

REV. **2**



REV.	DATE	BY	DESCRIPTION	CHK'D	APPR'D
2	9-94	LJD	REVISED TO 2 STAGE SYSTEM		

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LEACHATE TREATMENT SYSTEM FOR
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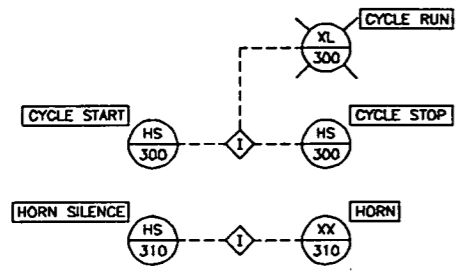
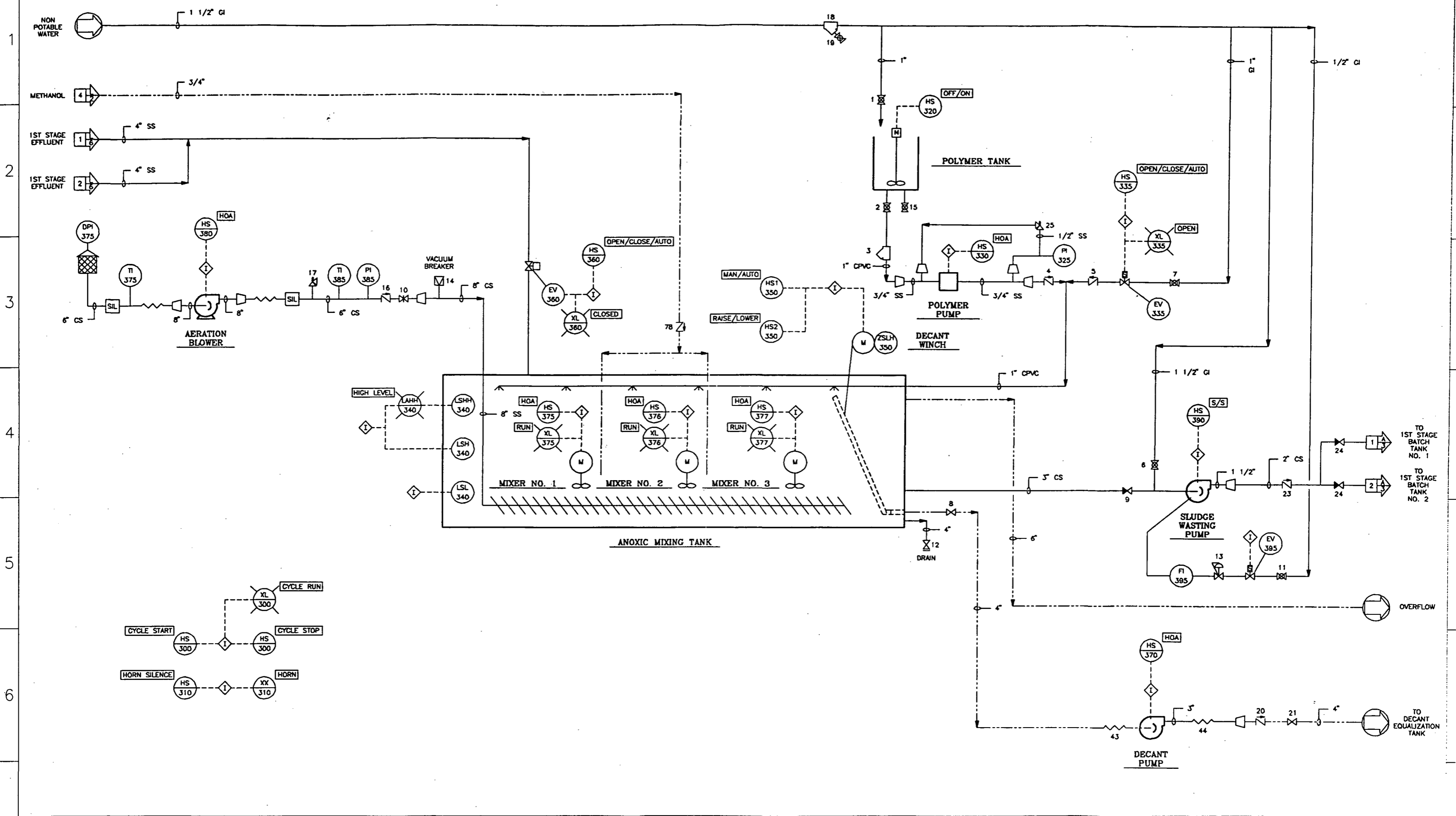
ENGINEERING FLOW DIAGRAM

DRAWN	Larry J. Doepke
CHECKED	Larry J. Doepke
APPROVED	David A. Bula
DATE	10-12-89
DWG. SAVE NAME	CC-EFD2
SCALE	NONE
SHEET	2 OF 4

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30.1-2343-D-1003

REV. **2**



REV.	DATE	BY	DESCRIPTION	CHK'D	APPR'D
2	9-94	LJD	REVISED TO 2 STAGE SYSTEM	ND	ND

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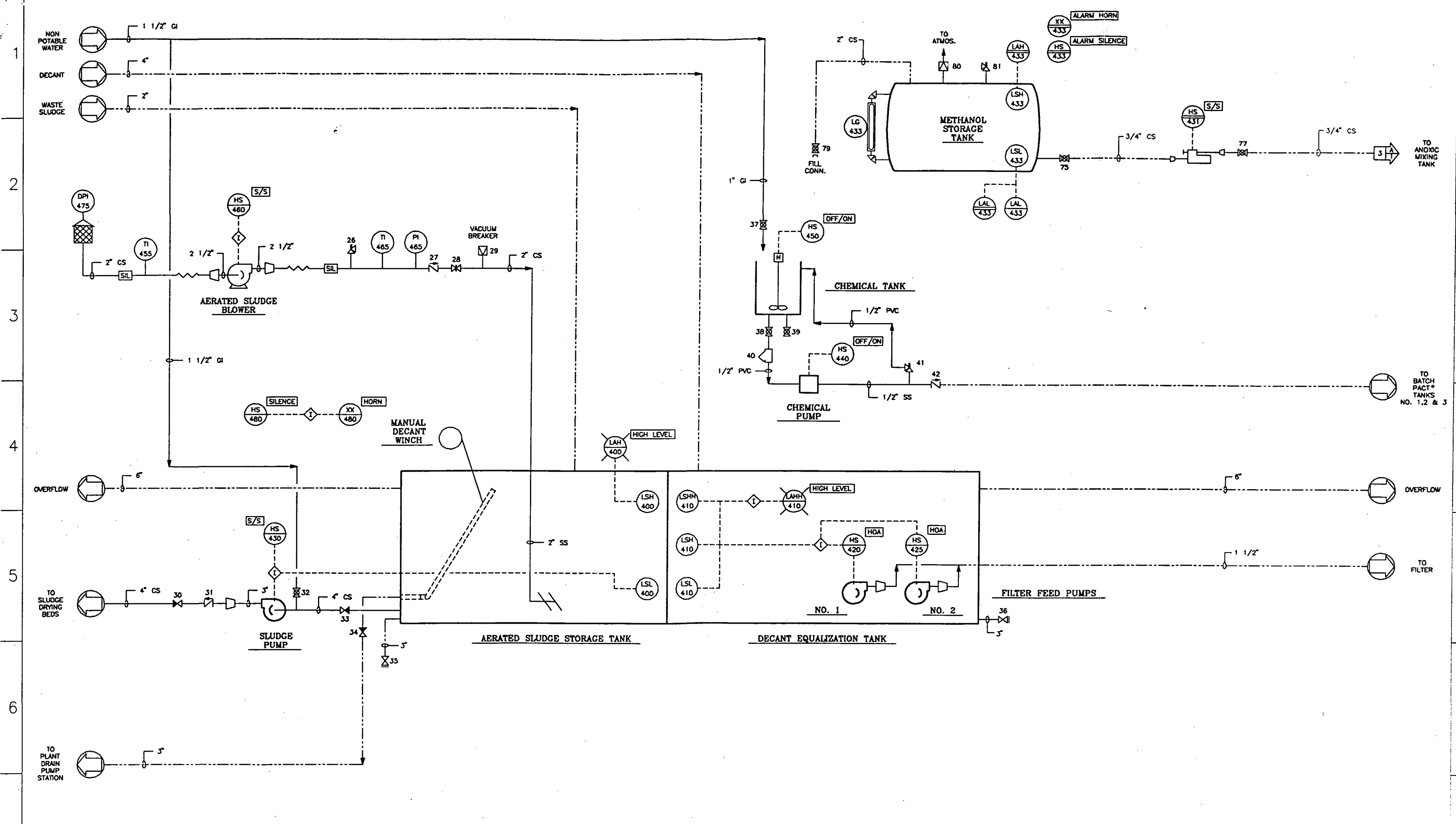
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DRAWN	Larry J. Doepke
CHECKED	Larry J. Doepke
APPROVED	David A. Bula
DATE	10-12-89
DWG. SAVE NAME	CC-EFD3
SCALE	NONE
SHEET	3 of 4

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2



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DRAWN	Larry J. Dopke
CHECKED	Larry J. Dopke
APPROVED	David A. Buda
DATE	10-12-89
DWG. SAVE NAME	CC-EFD4
SCALE	NONE
SHEET	4 of 4

ZIMPRO ENVIRONMENTAL, INC.
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REV
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D.E.P.
OCT 14 1994
DISTRICT
TAMPA