COMMITMENT & INTEGRITY
DRIVE RESULTS

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Via Electronic Mail

March 11, 2021

Maia Hoffman, P.E.
Pretreatment Engineer/Permit Manager
Washington State Department of Ecology
3190 160th Ave SE,
Bellevue, WA 98008

Re: Application for Renewal and Modification of State Wastewater Discharge Permit No. ST0003861

Dear Ms. Hoffman:

On behalf of Perdue Foods LLC dba Draper Valley Farms (DVF), Woodard & Curran, Inc. (W&C) is submitting to the Washington State Department of Ecology the attached permit renewal and modification application for pretreatment discharge Permit No. ST0003861, which expires on August 31, 2021.

Modifications include proposed wastewater treatment plant upgrades consisting of a Moving Bed Bioreactor (MBBR) biological treatment, a second Dissolved Air Flotation (DAF), effluent flow monitoring, and additional processes for storing and transferring biological solids. This system will enable the facility to more effectively treat the facility's wastewater. The application package includes an Engineering Report that meets the requirements in WAC 173-240. The report specifically addresses the following items:

- Plant wastewater loadings and changes in process chemical usage.
- Background and justification for the proposed increase in the effluent BOD limit from 1,430 pounds per day (ppd) to 1,620 ppd as measured on a consecutive three-day average.
- Demonstration of compliance with the new proposed BOD limit and existing requirements of Ecology Permit Number ST0003861 through the upgrades.
- Demonstration that the proposed upgrades provide all known, available, and reasonable technology (AKART).

If you have any questions or need additional information, please contact Mary Miller at 484-845-5434 or by email at mbmiller@woodardcurran.com.

Sincerely,

WOODARD & CURRAN, INC.

Mary E. Miller, P.E.
Project Manager

Enclosures:

1. Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to a Publicly-Owned Treatment Works (POTW)

cc: Barney Conner (DVF)
Scott Taylor (DVF)
Richard Colvin, P.E. (W&C)
Patrick Cyr, P.E., B.C.E.E. (W&C)
Veronica Keithley (Stoel Rives LLP)

PN: 0233685.00

DEPARTMENT OF ECOLOGY
State of Washington

Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to a Publicly-Owned Treatment Works (POTW)

This application is for a state waste discharge permit for a discharge of industrial wastewater to a publicly-owned treatment works (POTW) as required by Chapter 90.48 RCW and Chapter 173-216 WAC. It is designed to provide Ecology with information on pollutants in the waste stream, materials that may enter the waste stream, and the flow characteristics of the discharge.

Ecology may request additional information to clarify the conditions of this discharge. The applicant should reference information previously submitted to Ecology that applies to this application in the appropriate section.

SECTION A. GENERAL INFORMATION

1. Applicant Name: Perdue Foods, LLC.

2. Facility Name: Draper Valley Farms
(if different from Applicant)

3. Applicant Mail Address: 1500 E. College Way Suite A PMB 449
Street

Mount Vernon, WA 98273
City/State Zip

4. Facility Location Address: 1000 Jason Lane
(if different from 3 above) Street

Mount Vernon, WA 98273
City/State Zip

5. UBI No. 603 295 360

Sometimes called a registration, tax, "C," or resale number, the Unified Business Identifier (UBI) number is a nine-digit number used to identify persons engaging in business activities. The number is assigned when a person completes a Master Business Application to register with or obtain a license from state agencies. The Departments of Revenue, Licensing, Employment Security, Labor and Industries, and the Corporations Division of the Secretary of State are among the state agencies participating in the UBI program.

6. Latitude/longitude of the facility as decimal degrees (NAD83/WGS84):
48.434167 / 122.327778

FOR OFFICE USE ONLY	Check One:	New/Renewal ☐	Modification ☐
Date Application Received _____	Date Fee Paid _____	Application/ Permit No. _____	Date Application Accepted _____

7. Person to contact who is familiar with the information contained in this application:

Barney Conner	Environmental Manager
Name	Title
360-419-7854	360-424-1666
Telephone number	Fax number

8. Check One:

☒ **Permit Renewal** (including renewal of temporary permits)

Does this application request a greater amount of wastewater discharge, a greater amount of pollutant discharge, or a discharge of different pollutants than specified in the last permit application for this facility? ☒ YES ☐ NO

For permit renewals, the current permit is an attachment, by reference, to this application.

☒ **Permit Modification**

☐ **Existing Unpermitted Discharge**

☐ **Proposed Discharge**

Anticipated date of discharge: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and/or imprisonment for knowing violations.

Signature*	3/3/21	Vice President of Operations
	Date	Title

Matt Junkel
Printed Name

*Applications must be signed as follows: corporations, by a principal executive officer of at least the level of vice-president; partnership, by a general partner; sole proprietorship, by the proprietor. If these titles do not apply to your organization, the person who makes budget decisions for this facility must sign the application.

The application signatory may delegate signature authority for submittals required by the permit, such as monthly reports, to a suitable employee. You can delegate this authority to a qualified individual or to a position, which you expect to fill with a qualified individual. If you wish to delegate signature authority, please complete the following:

Signature of delegated employee	Date	Title or function at the facility

Printed name

SECTION B. PRODUCT INFORMATION

1. Briefly describe all manufacturing processes and products, and/or commercial activities, at this facility. Provide the applicable Standard Industrial Category (SIC) and the North American Industry Classification System (NAICS) Code(s) for each activity (see *North American Industrial Classification System*, 2007 ed.). You can find the 1997 NAICS codes and the corresponding 1987 Standard Industry Category (SIC) codes at (http://www.census.gov/epcd/naics/frames3.htm).

Description: Draper Valley Farms produces processed chicken for human consumption. Live birds arrive at the plant by truck, and are unloaded for processing. All product is processed for wholesome chicken or offal waste. All production is inspected by USDA. All offal waste is removed from the facility by truck by an outside vendor. All processing, further processing, and packaging are completed inside the plant. All process wastewater is chemically and physically treated via dissolved air floatation for BOD, TSS and Oil/Grease removal. There are proposed improvements to the watewater treatment process to increase BOD removal capabilities. See attachment C.4 for a description of the improvements.

SIC Code 2015 - Chicken Processor. NAICS Code 311615 - Poultry Processing.

2. List raw materials and products used at his facility:

Type	RAW MATERIALS	Quantity
Grapes (Example)		*1,000 tons per year*
Live Chicken		Approximately 80,000 chickens per day

Type	PRODUCTS	Quantity
Grape Juice(Example)		*300,000 gallons per year*
Processed Chicken		Approximately 425,000 pounds per day

SECTION C. PLANT OPERATIONAL CHARACTERISTICS

1. For each process listed in B.1. that generates wastewater, list the process, assign the waste stream a name and an ID # and describe whether it is a batch or continuous flow.

Process	Waste Stream Name	Waste Stream ID#	Batch (B) or Continuous (C) Process
Chicken Processing	Chicken Process Water	#1	C

2. On a separate sheet, produce a schematic drawing showing production processes, water flow through the facility, wastewater treatment devices and waste streams as named above. The drawing should indicate the source of intake water and show the operations contributing wastewater to the effluent. The treatment units should be labeled. Construct a water balance by showing average flows between intakes, operations, treatment units, and points of discharge to the POTW. (*See the example on page 16 of this application form.)*

3. What is the maximum daily wastewater discharge flow? 656,000 gallons/day

   What is the maximum average monthly wastewater discharge flow (daily flows averaged over a month)? 465,000 gallons/day

4. Describe any planned wastewater treatment improvements or changes in wastewater disposal methods, and the schedule for these improvements. *(Use additional sheets, if necessary and label as attachment C4.)*

   See Attachment C.4 for improvements to the wastewater treatment.

5. If production processes are subject to seasonal variations, provide the following information. The combined value for each month should equal the estimated total monthly flow. Please indicate the proper flow unit by checking one of the following boxes:

☐ gallons per day ☐ gallons per month ☐ million gallons per month

Waste Stream ID#	MONTHS											
	J	F	M	A	M	J	J	A	S	O	N	D
Estimated Total Monthly Flow (GPD)												

6. How many hours a day does this facility typically operate? 16

How many days a week does this facility typically operate? 5-6

How many weeks per year does this facility typically operate? 52

7. List all incidental materials, such as oil, paint, grease, solvents, and cleaners, that are used or stored on site (*list only those with quantities greater than 10 gallons for liquids and 50 pounds for solids).* For solvents and solvent-based cleaners, include a copy of the material safety data sheet and estimate the quantity used. (*Use additional sheets, if necessary, and label as attachment C.7.)*

Materials/Quantity Stored: Reference Attachment C.7

8. Some types of facilities are required to have spill or waste control plans. Does Yes No

this facility have:

a.	A spill prevention, control, and countermeasure plan (40 CFR 112)?	☒	☐
b.	An Oil Spill Contingency Plan (chapter 173-182 WAC)?	☒	☐
c.	An emergency response plan (per WAC 173-303-350)?	☒	☐
d.	A runoff, spillage, or leak control plan (per WAC 173-216-110(f))?	☒	☐
e.	Any spill or pollution prevention plan required by local, state or federal authorities? If yes specify: SWPPP	☒	☐
f.	A solid waste control plan?	☐	☒
g.	A Slug Discharge Control Plan (40 CFR 403.8(f)(2)(v))?	☒	☐

SECTION D. WATER CONSUMPTION AND WATER LOSS

1. Potable water source(s):

☒ Public System (Specify) Skagit County PUD

☐ Private Well ☐ Surface Water

a. Water Right Permit Number: 79500E/Judy Reservoir

b. Legal Description of Water Source

_____ ¼S, _____ ¼E, _____, Section, _____ TWN, _____ R

2. Potable water use

a. Indicate total water use

Gallons per day (average) 486,000

Gallons per day (maximum) 693,000

b. Is water metered?

☒ YES ☐ NO

SECTION E. WASTEWATER INFORMATION

1. How are the water intake and effluent flows measured?

   Intake: Potable Water Meter

   Effluent Current: Potable Water Meter; Future once installed: Industrial Wastewater Pretreated Effluent Mag Meter

2. Describe the collection method for the samples analyzed below. (*i.e.*, grab, 24-hour composite). Applicants must collect grab samples (not composites) for analysis of pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform (including E. coli), and Enterococci (previously known as fecal streptococcus at § 122.26 (d)(2)(iii)(A)(3)),or volatile organics.

   BOD and TSS samples are collected daily via a 24 hour composite sampler owned/operated by the City of Mount Vernon. BOD and TSS samples are analyzed by the City. pH is continuously monitored and recorded by the facility. Oil & Grease grab samples are collected quarterly by the facility and analyzed by a certified laboratory.

3. Has the effluent been analyzed for any other parameters than those identified in question E.4.? ☐ YES ☒ NO
   If yes, attach results and label as attachment E.4. This data must clearly show the date, method and location of sampling. *(Note: Ecology may require additional testing.)*

4. Provide measurements or range of measurements for treated wastewater prior to discharge to the POTW for the parameters with an "X" in the left column. If you obtain the application from the internet, contact Ecology's regional office to see if testing for a subset of these parameters is permissible. All analyses (except pH) must be conducted by a laboratory registered or accredited by Ecology (WAC 173-216-125). If this is an application for permit renewal, provide data for the last year for those parameters that are routinely measured. For parameters measured only for this application, place the values under "Maximum." Report the values with units as specified in the parameter name or in the detection level.

   The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table unless Ecology approves an alternate method or the method used produces measurable results in the sample and EPA has listed it as an EPA approved method in 40 CFR Part 136. If the Permittee uses an alternative method as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

X	Parameter	Measurement Values			Number of Analyses	Analytical Method Std. Methods 19th,20th edition or EPA	Detection Limit/Quantitation Level
		Minimum	Maximum	Average			
X	BOD (5 day)	8	1072	326.9	250	SM 5210 B	/2 mg/l
	COD					SM 5220 D	/10 mg/l
X	Total suspended solids	4	179	42	253	SM 2540 D	/5 mg/l
	Fixed Dissolved Solids					SM 2540 E	
	Total dissolved solids					SM 2540 C	
	Conductivity (micromhos/cm)					SM 2510 B	
	Ammonia-N as N					SM 4500-NH_3 C	/0.3 mg/L
X	pH	4.8	11.0	7.44	253	SM 4500-H	0.1 standard units
	Fecal coliform (organisms/100 mL)					SM 9221 E or 9222 D	
	Total coliform (organisms/100 mL)					SM 9221 B or 9222 B	
	Dissolved oxygen					SM 4500-O C/G	
	Nitrate + nitrite-N as N					SM 4500-NO_3 E	100 µg/L
	Total kjeldahl N as N					SM 4500-N_{org} C/E/FG	300 µg/l
	Ortho-phosphate-P as P					SM 4500-P E/F	10 µg/l
	Total-phosphorous-P as P					SM 4500-P E/P/F	10 µg/l
X	Total Oil & grease	1.8	6.0	3.3	9	EPA 1664A	1.4/5 mg/l
	NWTPH - Dx					Ecology NWTPH Dx	250/250 µg/l
	NWTPH - Gx					Ecology NWTPH Gx	250/250 µg/l
	Calcium					EPA 200.7	10 µg/l
	Chloride					SM 4500-Cl C	0.15 µg/l
	Fluoride					SM 4500-F E	.025/0.1 mg/l
	Magnesium					EPA 200.7	10/50 µg/l
	Potassium					EPA 200.7	700/ µg/l
	Sodium					EPA 200.7	29/ µg/l
	Sulfate					SM 4500-SO_4 C/D	/200 µg/l

X	Parameter	Measurement Values			Number of Analyses	Analytical Method Std. Methods 19th,20th edition or EPA	Detection Limit/Quantitation Level
		Minimum	Maximum	Average			
	Arsenic(total)					EPA 200.8	0.1/0.5 µg/l
	Barium (total)					EPA 200.8	0.5/2 µg/l
	Cadmium (total)					EPA 200.8	.05/.25 µg/l
	Chromium (total)					EPA 200.8	0.2/1 µg/l
	Copper (total)					EPA 200.8	0.4/2 µg/l
	Lead (total)					EPA 200.8	0.1/.5 µg/l
	Mercury (total) pg/L					EPA 1631E	0.2/0.5 pg/l
	Molybdenum(total)					EPA 200.8	0.1/0.5 µg/l
	Nickel(total)					EPA 200.8	0.1/0.5 µg/l
	Selenium (total)					EPA 200.8	1/1 µg/l
	Silver (total)					EPA 200.8	.04/.2 µg/l
	Zinc (total)					EPA 200.8	0.5/2.5 µg/l

6. Does this facility use any of the following chemicals as raw materials or produce them as part of the manufacturing process, or are they present in the wastewater? ☐ YES ☒ NO

(*The number in the column next to the chemical name is the Chemical Abstract Service (CAS) reference number to aid in identifying the compound.*)

If yes, specify how the chemical is used and the quantity used or produced:

METALS, CYANIDE & TOTAL PHENOLS			
Antimony, Total	7440-36-0	Nickel, Total	7440-02-0
Arsenic, Total	7440-38-2	Selenium, Total	7782-49-2
Beryllium, Total	7440-41-7	Silver, Total	7440-22-4
Cadmium, Total	7440-43-9	Thallium, Total	7440-28-0
Chromium (hex) dissolved	18540-29-9	Zinc, Total	7440-66-6
Chromium, Total	7440-47-3		
Copper, Total	7440-50-8	Cyanide, Total	57-12-5
Lead, Total	7439-92-1	Cyanide, Weak Acid Dissociable	
Mercury, Total	7439-97-6)	Phenols, Total	

PESTICIDES			
Aldrin	309-00-2	Endrin	72-20-8
alpha-BHC	319-84-6	Endrin Aldehyde	7421-93-4
beta-BHC	319-85-7	Heptachlor	76-44-8
gamma-BHC	58-89-9	Heptachlor Epoxide	1024-57-3
delta-BHC	319-86-8	PCB-1242	53469-21-9
Chlordane	57-74-9	PCB-1254	11097-69-1
4,4'-DDT	50-29-3	PCB-1221	11104-28-2
4,4'-DDE	72-55-9	PCB-1232	11141-16-5
4,4' DDD	72-54-8	PCB-1248	12672-29-6
Dieldrin	60-57-1	PCB-1260	11096-82-5
alpha-Endosulfan	959-98-8	PCB-1016	12674-11-2
beta-Endosulfan	33213-65-9	Toxaphene	8001-35-2
Endosulfan Sulfate	1031-07-8		

VOLATILE COMPOUNDS			
Acrolein	107-02-8		
Acrylonitrile	107-13-1	1,1-Dichloroethylene	75-35-4
Benzene	71-43-2	1,2-Dichloropropane	78-87-5
Bromoform	75-25-2	1,3-dichloropropene (mixed isomers) (1,2-dichloropropylene)	542-75-6
Carbon tetrachloride	56-23-5	Ethylbenzene	100-41-4
Chlorobenzene	108-90-7	Methyl bromide (Bromomethane)	74-83-9
Chloroethane	75-00-3	Methyl chloride (Chloromethane)	74-87-3
2-Chloroethylvinyl Ether	110-75-8	Methylene chloride)	75-09-2
Chloroform	67-66-3	1,1,2,2-Tetrachloroethane	79-34-5
Dibromochloromethane	124-48-1	Tetrachloroethylene	127-18-4
1,2-Dichlorobenzene	95-50-1	Toluene (108-88-3)	
1,3-Dichlorobenzene	(541-73-1)	1,2-Trans-Dichloroethylene (Ethylene dichloride)	156-60-5
1,4-Dichlorobenzene	106-46-7	1,1,1-Trichloroethane	71-55-6
Dichlorobromomethane	75-27-4	1,1,2-Trichloroethane	79-00-5
1,1-Dichloroethane	75-34-3	Trichloroethylene	79-01-6
1,2-Dichloroethane	107-06-2	Vinyl chloride	75-01-4

ACID COMPOUNDS			
2-Chlorophenol	95-57-8	4-nitrophenol	100-02-7
2,4-Dichlorophenol	120-83-2	Parachlorometa cresol (4-chloro-3-methylphenol)	59-50-7
2,4-Dimethylphenol	105-67-9	Pentachlorophenol	87-86-5
4,6-dinitro-o-cresol (2-methyl-4,6,-dinitrophenol)	534-52-1	Phenol	108-95-2
2,4 dinitrophenol	51-28-5	2,4,6-Trichlorophenol	88-06-2
2-Nitrophenol	88-75-5		

BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)			
Acenaphthene	83-32-9	3,3-Dichlorobenzidine	91-94-1
Acenaphthylene	208-96-8	Diethyl phthalate	84-66-2
Anthracene	120-12-7	Dimethyl phthalate	131-11-3
Benzidine	92-87-5	Di-n-butyl phthalate)	84-74-2
Benzyl butyl phthalate	85-68-7	2,4-dinitrotoluene	121-14-2
Benzo(*a*)anthracene	56-55-3	2,6-dinitrotoluene	606-20-2
Benzo(b)fluoranthene (3,4-benzofluoranthene)	205-99-2	Di-n-octyl phthalate	117-84-0
Benzo(j)fluoranthene	**205-82-3**	1,2-Diphenylhydrazine (*as Azobenzene*)	122-66-7
Benzo(k)fluoranthene (11,12-benzofluoranthene)	207-08-9	Fluoranthene	206-44-0
Benzo(r,s,t)pentaphene	**189-55-9**	Fluorene	86-73-7
Benzo(*a*)pyrene	50-32-8	Hexachlorobenzene	118-74-1
Benzo(*ghi*)Perylene	191-24-2	Hexachlorobutadiene	87-68-3
Bis(*2-chloroethoxy)*methane	111-91-1	Hexachlorocyclopentadiene	77-47-4
Bis(*2-chloroethyl*)ether	111-44-4	Hexachloroethane	67-72-1
Bis(*2-chloroisopropyl*)ether	39638-32-9	Indeno(*1,2,3-cd*)Pyrene	193-39-5
Bis(*2-ethylhexyl*)phthalate	117-81-7	Isophorone	78-59-1
4-Bromophenyl phenyl ether	101-55-3	**3-Methyl cholanthrene**	**56-49-5**
2-Chloronaphthalene	91-58-7	Naphthalene	91-20-3
4-Chlorophenyl phenyl ether	7005-72-3	Nitrobenzene	98-95-3
Chrysene	218-01-9	N-Nitrosodimethylamine	62-75-9
Dibenzo (a,j)acridine	**224-42-0**	N-Nitrosodi-n-propylamine	621-64-7
Dibenzo (a,h)acridine	**226-36-8**	N-Nitrosodiphenylamine	86-30-6
Dibenzo(a-*h*)anthracene (1,2,5,6-dibenzanthracene)	53-70-3	**Perylene**	**198-55-0**
Dibenzo(a,e)pyrene	192-65-4	Phenanthrene	85-01-8
Dibenzo(a,h)pyrene	189-64-0	Pyrene	129-00-0
		1,2,4-Trichlorobenzene	120-82-1

7. Are any other pesticides, herbicides or fungicides used at this facility? ☒ YES ☐ NO

If yes, specify the material and quantity used:

Round Up Weed and Grass Killer (super concentrate) - 2 gal/yr

Garratt/Callahan Formula 315 - 15 gal/yr

Garratt/Callahan Formula 3340 - 15 gal/yr

6321U - 15 gal/yr

6270 - 30 gal/yr

MXT - 30 gal/yr

8 Are there other pollutants that you know of or believe to be present? ☐ YES ☒ NO

If yes, specify the pollutants and their concentration if known
(attach laboratory analyses if available as Attachment E8):

9. Is the wastewater being discharged, or proposed for discharge, to the POTW designated as a dangerous waste according to the procedures in Chapter 173-303 WAC?

☐ YES ☒ NO ☐ DON'T KNOW

10. If the answer to question 9 above is yes, how did the waste designate as a dangerous waste *(check appropriate box)*?

For Listed and TCLP Characteristic Wastes only, also provide the Dangerous Waste Number(s).

Listed Waste ☐ Dangerous Waste Number(s) _____

Characteristic Wastes Dangerous Waste Number(s) _____

Ignitable ☐
Reactive ☐
Corrosive ☐
TCLP ☐

State Only Dangerous Wastes Dangerous Waste Number(s) _____

Toxicity ☐
Persistent ☐

For questions about waste designation under the *Dangerous Waste Regulations*, Chapter 173-303 WAC, contact Ecology's Hazardous Waste and Toxics Program at:

Northwest Regional Office - Bellevue	(425) 649-7000
Southwest Regional Office - Lacey	(360) 407-6300
Central Regional Office - Yakima	(509) 575-2490
Eastern Regional Office - Spokane	(509) 329-3400

SECTION F. SEWER INFORMATION

1. Is an inspection and sampling manhole or similar structure available on-site? ☒ YES ☐ NO
   If yes, attach a map or hand drawing of the facility that shows the location of these structures (Label as attachment F1 or this may be combined with map in H8, if H8 is applicable to your facility.)

SECTION G. OTHER PERMITS

1. List all environmental control permits or approvals needed for this facility; for example, air emission permits.

Industrial Stormwater General Permit coverage - WAR000552

SECTION H. STORMWATER

1. Do you have coverage under the Washington State Industrial Stormwater NPDES General Permit? ☒ YES ☐ NO
   If yes, please list the permit number here. WAR000552

   If no, have you applied for a Washington State Stormwater Industrial Stormwater General Permit? ☐ YES ☐ NO

   If you answered no to both questions above, complete the following questions 2 through 5.

2. Does your facility discharge stormwater: *(Check all that apply)*

   ☐ To storm sewer system *(provide name of storm sewer system operator:* _____

   ☐ Directly to any surface waters of Washington State *(e.g., river, lake, creek, estuary, ocean).*

   Specify waterbody name(s) _____

   ☐ Indirectly to surface waters of Washington State *(i.e., flows over adjacent properties first).*

   ☐ To a Sanitary Sewer

   ☐ Directly to ground waters of Washington State via:

   ☐ Dry well

   ☐ Drainfield

   ☐ Other

3. Areas with industrial activities at facility: *(check all that apply)*

   ☐ Manufacturing Building

   ☐ Material Handling

   ☐ Material Storage

   ☐ Hazardous Waste Treatment, Storage, or Disposal *(Refers to RCRA, Subtitle C Facilities Only)*

   ☐ Waste Treatment, Storage, or Disposal

   ☐ Application or Disposal of Wastewaters

   ☐ Storage and Maintenance of Material Handling Equipment

   ☐ Vehicle Maintenance

   ☐ Areas Where Significant Materials Remain

   ☐ Access Roads and Rail Lines for Shipping and Receiving

   ☐ Other (please specify): _____

4. Material handling/management practices

   a. Types of materials handled and/or stored outdoors: *(check all that apply)*

☐	Solvents	☐	Hazardous Wastes
☐	Scrap Metal	☐	Acids or Alkalies
☐	Petroleum or Petrochemical Products	☐	Paints/Coatings
☐	Plating Products	☐	Woodtreating Products
☐	Pesticides	☐	Other *(please list)*: _____

   b. Identify existing management practices employed to reduce pollutants in industrial stormwater discharges: *(check all that apply)*

☐	Oil/Water Separator	☐	Detention Facilities
☐	Containment	☐	Infiltration Basins
☐	Spill Prevention	☐	Operational BMPs
☐	Surface Leachate Collection	☐	Vegetation Management
☐	Overhead Coverage	☐	Other *(please list)*: _____

5. Attach a facility site map showing stormwater drainage/collection areas, disposal areas and discharge points. This may be a hand-drawn map if no other site map is available *(See example on page 16 of this application)*. *Label this as attachment H.5*.

SECTION I. OTHER INFORMATION

1. Describe liquid wastes or sludges being generated by your facility that are not disposed of in the waste stream(s) and how they are being disposed of. For each type of waste, provide type of waste and the name, address, and phone number of the hauler.

   Offal, feathers, blood, and sludge are removed from the facility by Price Trucking/Westcoast Reduction, 150 N. Commercial Drive, Vancouver, BC Canada V5L 4V7.

   Oil and parts washer fluid are removed from the facility by Safety Kleen, 1301 Gervasis Street, Suite 300, Columbia, SC 29201. 604-255-9301

2. Describe storage areas for raw materials, products, and wastes.

   Live chickens are held under a covered receiving area.

   All processed chicken products are stored in coolers or refrigerated trailers.

   All chicken waste is loaded directly into trailers for removal from the facility.

3. Have you designated the wastes described above according to the applicable procedures of Dangerous Waste Regulations, Chapter 173-303 WAC? ☐ YES ☒ NO

SECTION J. CERTIFICATIONS

1. **Approval by Publicly-Owned Treatment Works [required by WAC 173-216-070(4)(b)]**

I approve of the discharge as described in this application. The applicant is:

(Please check the appropriate box below.)

☒ A Significant Industrial User (see Definitions at the end of this Section)

☐ A Categorical Industrial User

☐ Neither of the above

Name and location of sewer system to which this project will be tributary:

City of Mount Vernon Wastewater Treatment Plant

Treatment Works Owner: City of Mount Vernon

Street: 1401 Britt Road

City/State: Mount Vernon, WA Zip: 98273

Gary Duranceau — Signature of Treatment Works Authority

3/8/21 — Date

WASTEWATER DIV MANAGER — Title

GARY DURANCEAU

Printed Name

2. **Application review by Intermediate Sewer Owner at point of discharge (if applicable)**

I hereby acknowledge that I have reviewed the application for discharge to this sewer system.

Name and location of sewer system to which this project will be tributary:

Sewer System Owner:

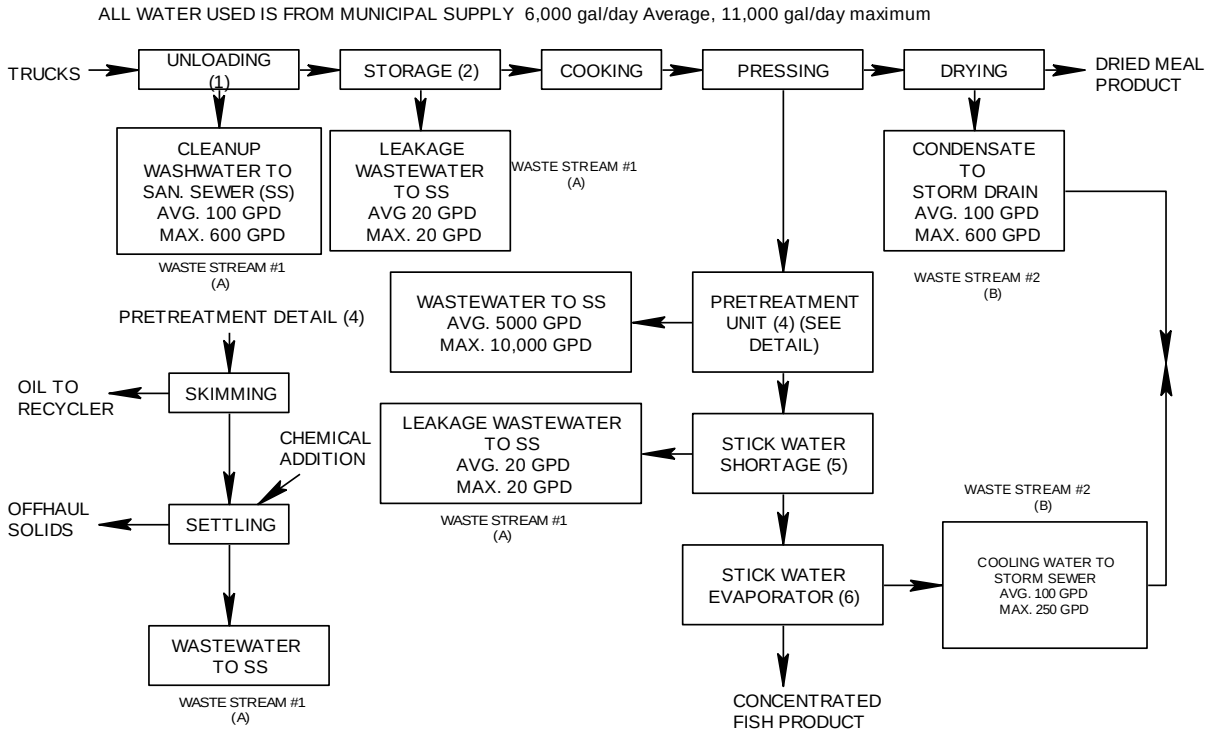
Street:

City/State: Zip:

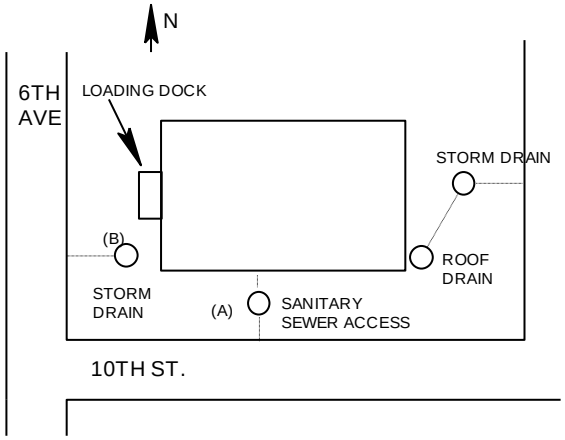
Signature of Sewer System Authority — Date — Title

Printed Name

Example 1 for application section C.2. (SCHEMATIC DIAGRAM)



Example 2 for application section F1 or H8 (FACILITY SITE MAP)



DEFINITIONS

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; and

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

   Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

Control Authority - means the Washington State Department of Ecology in the case of non-delegated POTWs or means the POTW in the case of delegated POTWs.

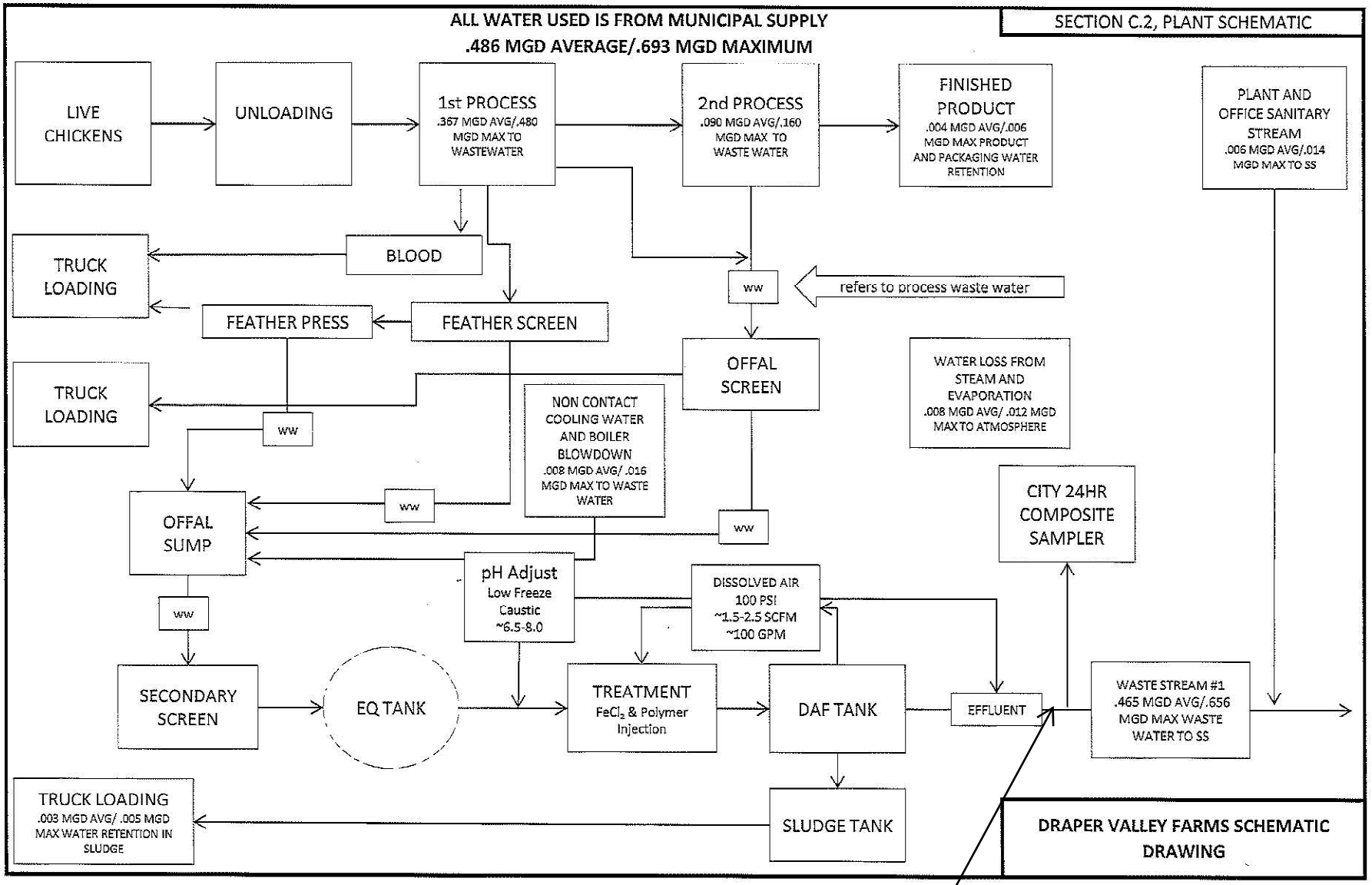
Categoric Industrial User (CIU): An industrial user subject to national categorical pretreatment standards promulgated by EPA (40 CFR 403.6 and40 CFR parts 405-471).

Summary of Attachments That May be Required for This Application:

(Please check those attachments that are included)

- ☒ C.2. Production schematic flow diagram and water balance
- ☒ C.4. Wastewater treatment improvements
- ☒ C.7. Additional incidental materials
- ☐ E.8. Additional results of effluent testing
- ☒ F.1. Facility site map
- ☐ H.5. Stormwater drainage map

If you need this document in a format for the visually impaired, call the Water Quality Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.



IMPROVEMENTS TO THE EXISTING WASTEWATER TREATMENT ARE DESCRIBED IN ATTACHMENT C.4

ATTACHMENT C.7
Draper Valley Farms
List of Incidental Materials - March 2021

Product Name	Manufacturer Name	Avg. Quantity Stored	Est. Annual Usage	Last Verified	Revision Date
Aquaox Disinfectant 275	Aquaox LLC	5 gal	20 gal	03/02/2016	03/02/2016
CCH 3" Calcium Hypochlorite Tablets	Arch Chemicals, Inc.	1200 lbs	32000 lbs	05/27/2015	05/27/2015
CESCO NEUTRO 5045	Cesco Solutions, Inc.	700 gal	32245 gal		
CESCO PF 622CH	Cesco Solutions, Inc.	265 gal	6095 gal	10/03/2017	10/03/2017
CESCO PROTECT 1043	Cesco Solutions, Inc.	1500 gal	72,000 gal	10/03/2017	10/03/2017
Citric Acid 50% Solution Food Grade	Zee Company, Inc.	825 gal	9625 gal	10/23/2014	10/23/2014
Compresyn 250 ISO 100	COMPRESYN	5 gal	50 gal	10/08/2020	05/10/2017
Deb InstantFOAM Non-Alcohol PURE Hand Antiseptic	SC Johnson Professional, Inc.	5 gal	50 gal	11/17/2020	05/14/2019
DEF 32.5% DIESEL EXHAUST FLUID	Brenntag Northeast, Inc.	265 gal	1060 gal	06/11/2019	02/08/2018
FRICK OIL #3 (DR) 111Q0550010	CPI FLUID ENGINEERING A DIV. OF THE LUBRIZOL CORPORATION	110 gal	110 gal	05/18/2017	02/19/2016
Germ-X Hand Sanitizer	Vi-Jon	5 gal	50 gal	12/21/2020	06/10/2014
HAND-I-SAN	Zee Company, Inc.	5 gal	50 gal	03/20/2020	03/20/2020
Instant Hand Sanitizer	Kutol Products Company	5 gal	50 gal	03/10/2012	01/01/2010
JAX FGH-AW ISO 32, 46, 68, 100	JAX INC.	55 gal	110 gal	05/21/2019	07/30/2015
JAX White Mineral Oil 15	JAX INC.	55 gal	110 gal	06/19/2018	06/27/2016
KC-210 DEGREASER	Packers Chemical, Inc.	15 gal	15 gal	03/20/2017	03/20/2017
KC-262 POLYFOAM	Packers Chemical, Inc.	110 gal	1900 gal	07/18/2019	07/18/2019
KC-404	Packers Chemical, Inc.	110 gal	420 gal	06/14/2019	06/14/2019
KC-543	Packers Chemical, Inc.	450 lbs	2550 lbs	03/11/2016	03/11/2016
KC-545	Packers Chemical, Inc.	110 gal	2145 gal	07/19/2019	07/19/2019
KC-555	Packers Chemical, Inc.	55 gal	110 gal	04/12/2017	04/12/2017
KC-568	Packers Chemical, Inc.	220 gal	2935 gal	07/19/2019	07/19/2019
KC-610	Packers Chemical, Inc.	55 gal	129.5 gal	09/18/2018	06/22/2017
KC-615	Packers Chemical, Inc.	220 gal	4665 gal	10/07/2014	04/01/2014
KC-631 4 Chain Acid Quat	Packers Chemical, Inc.	110 gal	110 gal		
MICROTOX PRIME	Zee Company, Inc.	2862 gal	22578 gal		
MICROTOX ULTRA	Zee Company, Inc.	2862 gal	10176 gal	02/18/2019	02/18/2019
NEUTRACHILL	Zee Company, Inc.	1650 gal	21175 gal	06/19/2015	06/19/2015
Propane	AIR LIQUIDE	200 gal	2750 gal	11/21/2016	09/10/2013
PURELL Advanced Hand Sanitizer Aloe Gel	GOJO Industries, Inc.	5 gal	50 gal	08/18/2020	03/18/2015
PURELL Food Processing HEALTHY SOAP BAK E 2 Antimicrobial Foam	GOJO Industries, Inc.	5 gal	50 gal	12/13/2018	12/13/2018
PURELL PAL and PURELL Advanced Instant Hand Sanitizer	GOJO Industries, Inc.	5 gal	50 gal	12/02/2020	08/02/2020
SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)	Safety-Kleen Systems, Inc.	30 gal	30 gal	07/15/2020	10/29/2019
SAN-I-OX (EPA Reg : 10324-214-12446)	Zee Company, Inc.	55 gal	110 gal	04/06/2016	03/30/2016
Shell Rotella T6 5W-40	Shell Oil Products US	55 gal	110 gal	11/04/2020	07/28/2020
Shell Spirax S6 AXRME 75W-90	Shell Oil Products US	55 gal	110 gal	11/30/2020	11/30/2020
Shell Spirax S6 GME 50	Shell Oil Products US	55 gal	110 gal	09/15/2020	08/31/2018
Spirax S4 AX 80W-90	Shell Oil Products US	55 gal	110 gal	08/04/2020	01/03/2019
STOKO Refresh Moisturizing Foam Hand Cleaner	Deb USA, Inc.	5 gal	50 gal	11/14/2019	11/11/2014

SAFETY DATA SHEET

Revision Date 11-Aug-2017 **Version** 4

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name **KC-210 DEGREASER**

Other means of identification

Product Code 20068

Recommended use of the chemical and restrictions on use

Recommended Use Degreaser

Uses advised against Follow the directions for use on the label when applying this product

Details of the supplier of the safety data sheet

Manufacturer Address

Packers Chemical
3729 Peddle Hollow Road
Kieler, WI 53812 USA

Emergency telephone number

Company Phone Number 888-671-5366

Emergency Telephone Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Skin sensitization	Category 1
Aspiration toxicity	Category 1
Flammable liquids	Category 3

Label elements

Emergency Overview

Danger

Hazard statements

Causes skin irritation
Causes eye irritation
May cause an allergic skin reaction
May be fatal if swallowed and enters airways
Flammable liquid and vapor

Appearance Aqueous solution **Color** Clear to light amber **Odor** Orange

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response

Specific treatment (see Section 4 on SDS)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting
In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage

Store locked up. Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

• Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight-%
D-Limonene	5989-27-5	45-60
Petroleum distillates, hydrotreated light	64742-47-8	25-35
Trade Secret	Proprietary	6-14

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First aid measures

Eye contact Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. If eye irritation persists: Get medical advice/attention.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing and shoes before reuse. Get medical attention if irritation develops and persists.

Inhalation Remove to fresh air. Administer oxygen if breathing is difficult. Aspiration into lungs can produce severe lung damage. Call a physician immediately.

Ingestion Do NOT induce vomiting. Do not give anything by mouth. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on left side with head down. Aspiration Hazard if swallowed - can enter lungs and cause damage.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11 for symptom information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Dry chemical. Water spray (fog). Carbon dioxide (CO2). Foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Flammable. Vapors may travel to source of ignition and flash back.

Hazardous combustion products Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge May be ignited by heat, sparks or flames.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool containers with flooding quantities of water until well after fire is out.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protection recommended in Section 8. Ensure adequate ventilation, especially in confined areas.

For emergency responders Isolate area. Keep unnecessary personnel away.

Environmental precautions

Environmental precautions Prevent entry into waterways, sewers, basements or confined areas. See section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).

Methods for cleaning up Use clean non-sparking tools to collect absorbed material. May be ignited by friction, heat, sparks or flames. Collect spillage. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Following product recovery, flush area with water.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Do not handle near heat, sparks, or flame. Take precautionary measures against static discharges. Do not eat, drink or smoke when using this product. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Use only in well-ventilated areas. Avoid breathing vapors or mists. Wash thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Keep from freezing. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity).

Incompatible materials Strong oxidizing agents. Strong acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Appropriate engineering controls

Engineering Controls Showers, eyewash stations, ventilation system.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear protective Neoprene™ gloves or rubber gloves. Normal work clothing (long sleeved shirt and long pants) is recommended.

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations Wash face, hands and any exposed skin thoroughly after handling. Wash contaminated clothing and shoes before reuse. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid		
Appearance	Aqueous solution	**Odor**	Orange
Color	Clear to light amber	**Odor threshold**	No information available

Property	**Values**	**Remarks • Method**
pH	No information available	
Melting point / freezing point	-10 °C / 14 °F	Cloudy below 14°F
Boiling point / boiling range	> 176.7 °C / > 350 °F	
Flash point	56 °C / 132.8 °F	Closed cup
Evaporation rate	< 1	
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific Gravity	0.85 g/cc	
Water solubility	Emulsifiable	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	
VOC Content (%)	56.28% (3.99 lbs/gal)	

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability
Stable under recommended storage conditions.
Possibility of Hazardous Reactions
None under normal processing.
Conditions to avoid
Heat, flames and sparks.
Incompatible materials
Strong oxidizing agents. Strong acids.
Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Product Information

Inhalation Inhalation of vapors in high concentration may cause irritation of respiratory system.
Eye contact May cause slight irritation.
Skin Contact Prolonged contact may cause irritation.
Ingestion Harmful if swallowed. Potential for aspiration if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
D-Limonene 5989-27-5	= 4400 mg/kg (Rat)	> 5 g/kg (Rabbit)	-
Petroleum distillates, hydrotreated light 64742-47-8	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h
Trade Secret	= 1310 mg/kg (Rat) = 2590 mg/kg (Rat)	= 1780 µL/kg (Rabbit) = 2 mL/kg (Rabbit)	-

Information on toxicological effects
Symptoms No information available.
Delayed and immediate effects as well as chronic effects from short and long-term exposure
Sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
D-Limonene - 5989-27-5	-	Group 3	-	X

IARC (International Agency for Research on Cancer)
Group 3 - "not classifiable as human carcinogens"
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Aspiration hazard May be fatal if swallowed and enters airways.
Numerical measures of toxicity - Product Information
The following values are calculated based on chapter 3.1 of the GHS document
Oral LD50 5,094.00 mg/kg
Dermal LD50 3,707.00 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects

Chemical Name	Fish	Crustacea
D-Limonene 5989-27-5	0.619 - 0.796: 96 h Pimephales promelas mg/L LC50 flow-through 35: 96 h Oncorhynchus mykiss mg/L LC50	-
Petroleum distillates, hydrotreated light 64742-47-8	45: 96 h Pimephales promelas mg/L LC50 flow-through 2.2: 96 h Lepomis macrochirus mg/L LC50 static 2.4: 96 h Oncorhynchus mykiss mg/L LC50 static	4720: 96 h Den-dronereides heteropoda mg/L LC50

Persistence and degradability
No information available.
Bioaccumulation
No information available.
Mobility
No information available.
Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging Dispose of in accordance with federal, state and local regulations.

Chemical Name	California Hazardous Waste Status
D-Limonene - 5989-27-5	Toxic

14. TRANSPORT INFORMATION

DOT

Containers of 119 gallons or less: Combustible Liquid (49 CFR 173.120(b)(2)): This material is not regulated under 49 CFR if in a container of 119 gallon capacity or less for ground transportation. Exception 49 CFR 173.150(f)(2): Combustible liquids. This exception does not apply to transportation by vessel or aircraft.

Containers of more than 119 gallons:

- **UN/ID No.** NA1993
- **Proper shipping name** Combustible liquid, n.o.s. (contains d-Limonene)
- **Hazard Class** Comb liq
- **Packing Group** III
- **Emergency Response Guide Number** 128

IATA and IMDG

- **UN/ID No.** UN2319
- **Proper shipping name** Terpene hydrocarbons, n.o.s.
- **Hazard Class** 3
- **Packing Group** III

15. REGULATORY INFORMATION

International Inventories

TSCA Complies
DSL/NDSL Complies
EINECS/ELINCS Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

- **Acute health hazard** Yes
- **Chronic Health Hazard** No
- **Fire hazard** Yes
- **Sudden release of pressure hazard** No
- **Reactive Hazard** No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

WARNING! This product contains a chemical known to the state of California to cause cancer.
This product may contain trace amounts of: Ethylene oxide 75-21-8; 1,4-dioxane 123-91-1; Acetaldehyde 75-07-0;

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	**Health hazards**	1	**Flammability**	2	**Instability**	0	**Physical and Chemical Properties** None
HMIS	**Health hazards**	1	**Flammability**	2	**Physical hazards**	0	**Personal protection** B (safety glasses, gloves)

Prepared By	Technical Department
Issue Date	18-Mar-2014
Revision Date	11-Aug-2017
Version	4

Revision Note

Ingredient information update.
Updated DOT information.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The health hazards given on this SDS apply to this product in its concentrated form (as supplied) and may differ significantly at use dilution. The signs and symptoms of exposure apply only to negligence in handling or misuse of the concentrated product and not to the routine exposure of the diluted product under conditions of ordinary use.

End of Safety Data Sheet

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED) **SDS ID: 82658**

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

Synonyms

Safety-Kleen Premium Gold Solvent; Safety-Kleen Continued Use Product Solvent (CUP); High Flash Degreasing Solvent; Parts Washer Solvent; Petroleum Distillates; Petroleum Naphtha; Naphtha, Solvent; Mineral Spirits

Product Use

Cleaning and degreasing metal parts. If this product is used in combination with other products, refer to the Safety Data Sheets for those products.

Restrictions on Use

None known.

MANUFACTURER

Safety-Kleen Systems, Inc.
2600 North Central Expressway
Suite 200
Richardson, TX 75080
www.safety-kleen.com
Phone: 1-800-669-5740
Emergency Phone #: 1-800-468-1760

IN CANADA: SUPPLIER

Safety-Kleen Canada, Inc.
25 Regan Road
Brampton, Ontario, Canada L1A 1B2

Phone: 1-800-669-5740
Emergency # 1-800-468-1760

Issue Date

September 30, 2016

Supersedes Issue Date

June 28, 2016

Original Issue Date

January 26, 1995

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Liquids - Category 4
Aspiration Hazard - Category 1
Specific Target Organ Toxicity - Single Exposure - Category 3 (central nervous system)

GHS Label Elements

Symbol(s)

Signal Word

Danger

Hazard Statement(s)

Combustible liquid.
May be fatal if swallowed and enters airways.
May cause drowsiness or dizziness.

Precautionary Statement(s)

Prevention

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Use only outdoors or in a well-ventilated area. Wear protective gloves and eye protection/face protection. Avoid breathing vapor or mist.

Response

In case of fire: Use Class B/C or Class A/B/C fire extinguisher, carbon dioxide, regular foam, dry chemical, water spray, or water fog for extinction. IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.

Storage

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

None known.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
64742-47-8	Petroleum distillates, hydrotreated light	100

Section 4 - FIRST AID MEASURES

Inhalation

IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin

IF ON SKIN: Wash with plenty of soap and water. Remove contaminated clothing and wash it before reuse. Get medical attention if irritation develops or persists.

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.

Ingestion

Aspiration hazard. IF SWALLOWED: Do NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms/Effects

Acute

May be fatal if swallowed and enters airways. May cause drowsiness or dizziness.

Delayed

May cause damage to central nervous system.

Indication of any immediate medical attention and special treatment needed

IF exposed: Immediately call a POISON CENTER or doctor/physician. Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Media to use includes Class B/C or Class A/B/C fire extinguisher, carbon dioxide, regular dry chemical, foam, water spray, and water fog.

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

Special Hazards Arising from the Chemical

Combustible liquid and vapor. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Do not allow run-off from fire-fighting to enter drains or water courses. Closed containers may rupture violently when heated. Empty containers may retain product residue including flammable/explosive vapors. Take precautionary measures against static discharge: May cause fire or explosion.

Hazardous Combustion Products

Decomposition and combustion materials may be toxic. Burning may produce carbon monoxide and other organic compounds.

Advice for firefighters

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures

Keep away from ignition sources - No smoking. Keep unnecessary people away, isolate hazard area and deny entry. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Stay upwind and keep out of low areas. Dike for later disposal.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Remove all sources of ignition. Do not touch or walk through spilled material. Stop leak if safe to do so. Wear personal protective clothing and equipment. Appropriate engineering controls: Keep unnecessary people away, isolate hazard area and deny entry. Ventilate the area. Avoid breathing vapor or mist. Use foam on spills to minimize vapors. Keep out of water supplies and sewers. Absorb with earth, sand or other non-combustible material and transfer to container. Use non-sparking tools. Large spills: Reduce vapors with water spray. Dike for later disposal.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat, sparks and flame. Use personal protective equipment as required. When transferring product, trucks and tank cars should be grounded and bonded. Do not breathe vapor or mist. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. Keep away from heat and ignition sources. Do not cut, puncture, or weld on or near this container. Empty containers may contain product residue.

Incompatible Materials

Avoid acids, alkalies, oxidizing agents, reducing agents, halogens.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Petroleum distillates, hydrotreated light	**64742-47-8**
ACGIH:	100 ppm TWA (related to Stoddard solvent)
NIOSH:	350 mg/m^3 TWA (related to Stoddard solvent)
	1800 mg/m^3 Ceiling (15 minutes)
OSHA (US):	500 ppm TWA ; 2900 mg/m^3 TWA (Related to Stoddard solvent)
	100 ppm TWA (Related to Stoddard solvent); 525 mg/m^3 TWA (OSHA (Vacated))

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Provide general ventilation needed to maintain concentration of vapor or mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear safety glasses. Additional protection like goggles, face shields, or respriators may be needed dependent upon anticipated use and concentrations of mists or vapors. Eye wash fountain and emergency showers are recommended. Contact lens use is not recommended.

Respiratory Protection

Use NIOSH-certified P- or R- series particulate filter and organic vapor cartridges when concentration of vapor or mist exceeds applicable exposure limits. Protection provided by air purifying respirators is limited. Do not use N-rated respirators. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

Glove Recommendations

Wear appropriate chemical resistant gloves. In case of skin contact: neoprene, nitrile, as well as similar materials in protection gloves; do not use natural rubber.

Protective Materials

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to regulatory requirements. The following PPE should be considered the minimum required: Safety glasses, gloves, and lab coat or apron.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid	**Physical State**	Liquid
Odor	Mild ,hydrocarbon odor	**Color**	Colorless to pale yellow
Odor Threshold	30 ppm (based on Stoddard Solvent)	**pH**	Not applicable
Melting Point	-45 F (-43 C)	**Boiling Point**	350 F (177 C)
Boiling Point Range	Not available	**Freezing point**	Not available
Evaporation Rate	<0.1 (butyl acetate = 1)	**Flammability (solid, gas)**	Not available
Autoignition Temperature	480 F (249 C)(minimum)	**Flash Point**	148 F (64 C)
Lower Explosive Limit	0.7 VOL%	**Decomposition temperature**	Not available
Upper Explosive Limit	5 VOL%	**Vapor Pressure**	0.2 mm Hg (at 68 F)
Vapor Density (air=1)	5 (air = 1) (approximately)	**Specific Gravity (water=1)**	0.77 - 0.82 (at 60 F)
Water Solubility	Insoluble	**Partition coefficient: n-octanol/water**	Not available
Viscosity	Not available	**Solubility (Other)**	Not available
Density	6.4 - 6.7 lb/US gal	**VOC**	100 WT%; 6.4 to 6.7 LB/US gal; 770 to 800 g/l; As per 40 CFR Part 51.100(s); VOC Vapor Pressure: <1.0 mmHg @ 20°C; Product may or may not be considered photochemically reactive (100% by weight); Consult your state or local air district regulations for location specific information.
Molecular Weight	Not available		

Other Information

No additional information is available.

Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize under normal temperature and pressure conditions.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

Incompatible Materials

Avoid acids, alkalies, oxidizing agents, reducing agents, halogens.

Hazardous decomposition products

Not applicable under normal conditions of use and storage. Reference to other sections: Section 5.

Thermal decomposition products

Burning may produce carbon monoxide and other organic compounds.

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

May cause respiratory irritation, nausea, loss of appetite, headache, drowsiness, dizziness, disorientation, tremors, lung damage, convulsions, coma.

Skin Contact

May cause skin irritation.

Eye Contact

No information on significant adverse effects.

Ingestion

May cause drowsiness or dizziness, headache, loss of coordination, aspiration hazard.

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Petroleum distillates, hydrotreated light (64742-47-8)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >2000 mg/kg

Inhalation LC50 Rat >5.2 mg/L 4 h

Immediate Effects

May cause central nervous system depression. Aspiration may result in lung damage, respiratory tract irritation, May cause skin irritation.

Delayed Effects

May cause damage to central nervous system.

Irritation/Corrosivity Data

May cause respiratory tract irritation and skin irritation.

Respiratory Sensitization

No information available for the product.

Dermal Sensitization

No information available for the product.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Germ Cell Mutagenicity

No information available for the product.

Tumorigenic Data

No data available

Reproductive Toxicity

No information available for the product.

Specific Target Organ Toxicity - Single Exposure

May cause central nervous system depression.

Specific Target Organ Toxicity - Repeated Exposure

May cause damage to central nervous system.

Aspiration hazard

May be fatal if swallowed and enters airways. May cause lung damage.

Medical Conditions Aggravated by Exposure

Individuals with pre-existing respiratory tract (nose, throat, and lungs), central nervous system, kidneys, and eye and/or skin disorders may have increased susceptibility to the effects of exposure.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

According to the California Code of Regulations, a toxicity to aquatic life, specifically fish, is determined using an acute 96 hour bioassay. A material is non-hazardous if the LC50 is >500 mg/L. This product passed the bioassay and is considered non-hazardous.

Persistence and Degradability

No information available for the product.

Bioaccumulative Potential

This material is believed not to bioaccumulate.

Mobility

Expected to have high mobility in soil.

Other Toxicity

No additional information is available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of in accordance with all applicable federal, state and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal. This product, if discarded, is not expected to be a characteristic or listed hazardous waste. Processing, use, or contamination by the user may change the waste code(s) applicable to the disposal of this product.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Non-Bulk Packages (less than or equal to 119 gallons): Not regulated. Shipping Name: Cleaning compounds (Petroleum naphtha) (Not US DOT regulated)

Bulk Packages

Shipping Name: COMBUSTIBLE LIQUID, N.O.S., (Petroleum naphtha)
Hazard Class: 3 **UN/NA #:** NA1993 **Packing Group:** III **Required Label(s):** 3

IATA Information:

UN#: Not regulated as a dangerous good

TDG Information:

UN#: Not regulated as a dangerous good

Additional information

Emergency Response Guide Number: 128: Reference: North American Emergency Response Guide Book.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: yes **Chronic Health:** yes **Fire:** yes **Pressure:** no **Reactivity:** no

U.S. State Regulations

None of this product's components are listed on the state lists from MA, MN, NJ or PA

WARNING! This product can expose you to chemicals including benzene, dichlorobenzene, ethylbenzene, and naphthalene which are known to the State of California to cause cancer and benzene and toluene which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.gov.

Canada Regulations

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by the CPR.

Canadian WHMIS Ingredient Disclosure List (IDL)

The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

WHMIS Classification

B3; D2B

Component Analysis - Inventory

Petroleum distillates, hydrotreated light (64742-47-8)

US	CA
Yes	DSL

U.S. Inventory (TSCA)

TSCA: All the components of this substance are listed on or are exempt from the inventory.

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 1 Fire: 2 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Revision to meet Canadian WHMIS 2015. Clarification of language in Section 8, Protective Equipment.

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CFR - Code of Federal Regulations (US); CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CPR - Controlled Products Regulations; DOT - Department of Transportation; DSL - Domestic Substances List; EPA - Environmental Protection Agency; F - Fahrenheit; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NDSL – Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; OSHA - Occupational Safety and

Health Administration; PEL- Permissible Exposure Limit; RCRA - Resource Conservation and Recovery Act; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.

ATTACHMENT C.4

ENGINEERING REPORT

Basis of Design for Wastewater Treatment Upgrades and Permit Modification

Permit No. ST0003861

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COMMITMENT & INTEGRITY DRIVE RESULTS

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APPENDICES

ENGINEERING CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances. I further certify that the proposed wastewater treatment system defined in this document and all attachments was designed to properly treat the waste stream characteristics, as defined in these documents, from Draper Valley Farms Facility located at 1000 Jason Lane in Mount Vernon, Washington. The proposed system is designed to operate within the standards and limits as required by the Washington State Department of Ecology's sewer use ordinance and other applicable local and federal pretreatment standards. The information submitted in these documents is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

Patrick J. Cyr		3/1/2021
(Print)	(Sign)	Date

FACILITY MANAGEMENT AND OPERATIONS CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

Perdue will own, operate, and maintain the proposed system upgrades described in this document after construction.

Perdue Vice President of Operations

Matt Junkel		3/3/21
(Print)	(Sign)	Date

EXECUTIVE SUMMARY

The Design Basis Engineering Report (DB) will be used to determine the optimal scope for the wastewater treatment system upgrade project and to take the design beyond the preliminary 30% design phase into detailed design based on approved project scope. The report will also be used to provide information to support the application to the Washington State Department of Ecology (Ecology) for renewal and modification of the Facility's Industrial Pretreatment Permit Number ST0003861. The DB will develop the project scope as approved after completion of the 30% preliminary design phase. The DB defines engineering scope to facilitate a basis to carry on the detailed engineering design while providing early permitting documentation to support critical path activities. Key drawings and figures such as site and piping layout plans, Schematics/PFDs, mass balance, and hydraulic profile are included with the report.

The Project consists of wastewater treatment system upgrades including new treatment processes to the adjoining Perdue Draper Valley Farms (DVF) chicken processing facility located in Mount Vernon, Washington. At this stage of scope development, alternatives are evaluated, and the best single option is selected as the DB.

The new treatment system will be added to the existing wastewater treatment plant (WWTP). It will include Moving Bed Bioreactor (MBBR) biological treatment followed by Dissolved Air Flotation (DAF) with additional processes for storing and transferring biological solids. The new treatment system is required to meet process wastewater discharge requirements for pH, 5-day Biochemical Oxygen Demand (BOD), total Suspended Solids (TSS), and treated process effluent flow monitoring.

Major components to be included in the project include:

- Utilization of the existing process wastewater equalization tank (FEB) and primary DAF system for primary treatment;
- Addition of a primary DAF effluent pH adjustment tank;
- Addition of flow monitoring and a control valving to split primary DAF effluent flow between the discharge and the new MBBR system;
- Addition of aerobic biological treatment via MBBR to increase treatment capacity for BOD;
- Addition of a secondary DAF to remove biological solids from the MBBR effluent; and
- Addition of a biological solids tank and pumping system to store and transfer the secondary DAF float for offsite disposal.
- The system will also include better monitoring and control for pH adjustment and organic load management for the primary DAF effluent.
- Addition of a small building for climate-controlled storage of new treatment chemicals and operator work space.

The wastewater treatment plant (WWTP) upgrade will utilize the flow and load equalization of the existing WWTP along with oil & grease (O&G) and TSS treatment. The proposed MBBR and Secondary DAF will biologically remove soluble organics and remove biological solids from the MBBR effluent. The new system will provide a combined treated effluent water, comprised of treated effluent from the primary DAF and treated effluent from the new MBBR system, to meet the site's permit limits for discharge to the Mount Vernon Publicly Owned Treatment Works (POTW). The remaining sections of this BOD document provide the details related to the scope and definition of each new unit process and supporting component included in the new WWTP.

1. BACKGROUND

1.1 Site Description

The Perdue Draper Valley Farms facility (DVF) is located at 1000 Jason Lane approximately 0.7 miles southwest of the intersection of Riverside Drive and East College Way. The industrial activity at the facility is the slaughter and further processing of chicken portions. This includes slaughtering live birds, cutting and packaging operations, and sanitation activities. The facility processes approximately 80,000 live chickens per day and produces approximately 425,000 pounds of processed chicken per day. It is believed that the original facility was constructed in 1972. The industrial activity at the site has been the same since the facility was constructed. The facility discharges process wastewater and sanitary wastewater to the City of Mount Vernon sewer system under Ecology Permit Number ST-0003861. The permit expires on August 31, 2021.

1.2 Purpose and Objectives

The DVF facility processes both standard and organic chickens. In addition to wastewater organics originating from chicken meat processing, the facility utilizes peracetic acid sanitizer and citric acid for microbial intervention processing steps. Increases in the use of these chemicals has increased effluent soluble BOD, which is not removed by the existing dissolved air flotation (DAF) process. Future Food and Drug Administration (FDA) requirements could force changes in the types and amounts of microbial intervention chemicals used, and these changes may further impact the soluble BOD in the wastewater. The facility discharges its wastewater to the local Publicly Owned Treatment Works (POTW) and is under legal and regulatory pressure to reduce effluent BOD and better manage effluent pH due to exceedances and excursions that have occurred over the past few years.

The wastewater generated at DVF contains levels of contaminants that are regulated by Sewer Use Ordinance issued by Ecology. Ecology requires that DVF design, construct, operate, and maintain a wastewater pretreatment system capable of pretreating the waste stream to the parameters set forth in Permit Number ST-0003861. This document has been prepared in accordance with the City of Mount Vernon and Ecology guidelines.

The objectives of this report are to:

- Explain plant wastewater loadings and changes in process chemical usage.
- Provide background and justification for the proposed increase in the effluent BOD limit from 1,430 pounds per day (ppd) to 1,620 ppd.
- Demonstrate compliance with the new proposed BOD limit and existing requirements of Ecology Permit Number ST-0003861 through the WWTP upgrades.
- Determine the optimal scope for the WWTP upgrade project and establish a design basis to carry the project beyond the preliminary 30% design phase into detailed design.
- Provide a supplementary Engineering Report as required by Ecology to support the submittal of the "Application for State Waste Discharge Permit to Discharge Industrial Wastewater to a Publicly-Owned Treatment Works (POTW)" for permit renewal and modification. Refer to Appendix B for a crosswalk with the report requirements specified in WAC 173-240 and where each requirement is addressed in this report.

1.3 Regulatory Requirements

DVF discharges pretreated process wastewater to the Mount Vernon POTW. The existing and anticipated discharge limits are listed in Table 1-1.

Table 1-1: Discharge Limitations

Parameter	Units	Maximum Consecutive 3-day Average	Daily Maximum	Monitoring Frequency	Sample Type
Flow	gpd	760,000	-	Daily meter reading	Continuous metering
BOD_5	ppd	1,620[1]	-	Daily	Flow-proportional composite
TSS	ppd	825	-	Daily	Flow-proportional composite
O&G	mg/L	-	100	Quarterly	Grab
pH	s.u.	6.2 (min.) – 11.0 (max.)		Continuous	Continuous metering

Notes:
BOD_5 = 5-day biochemical oxygen demand
TSS = total suspended solids
O&G = oil and grease
gpd = gallons per day
ppd = pounds per day
mg/L = milligrams per liter of wastewater
s.u. = standard pH units
"-" = no limit or not applicable
[1] The city of Mount Vernon POTW has approved a limit increase from 1,430 ppd to 1,620 ppd.

1.4 Compliance Discussion

The facility is not consistently compliant with its permitted discharge limitations. The existing wastewater treatment system consists of equalization and primary solids separation via dissolved air floatation (DAF), and these processes do not remove soluble BOD or provide adequate pH control. Soluble BOD loading has increased since the primary treatment system was last upgraded. This loading is primarily driven by FDA requirements for chemical usage for microbial interventions to prevent product contamination. The chemicals currently used and required include peracetic acid and citric acid, and these have introduced increasing amounts of soluble BOD to the wastewater.

This report describes wastewater treatment plant upgrades that, when implemented, can achieve 100% compliance with the permit limits by removing soluble BOD and improving pH control. The ability to achieve 100% compliance is supported by desktop modeling and analysis, results from similar installations, and scientific evidence from literature that is described in subsequent sections of this report.

2. PLANT PROCESS DESCRIPTION (EXISTING)

2.1 Existing Wastewater Sources and Quantities

The DVF facility is divided into three process drain areas. The first is the processing or live bird offloading, hanging, and slaughter operations. The second is the processing or the eviscerating operation, chilling, cutting, and packaging operations. The third includes the exterior dock and unloading areas. The first processing area contains a series of floor drains that collect the wastewater from slaughtering and cleaning activities. From these drains, the waste stream flows by gravity through a 12-inch main feather trunk line into the offal room, where it is conveyed by gravity through an internally fed rotating feather screen that removes feathers, debris, meat particles, and large solid material. The second processing area contains floor drains that collect wastewater from the viscera, cutting, packaging, and cleaning activities. These drains convey wastewater by gravity through a 12-inch main meat trunk line into the offal room, where it is conveyed by gravity through another internally fed rotating meat screen that removes meat particles, debris, and large solids. The exterior dock areas include the live bird unloading and hanging operation, feather, viscera, and sludge byproduct truck loading, and wet dock loading and unloading. These areas, along with the existing wastewater treatment area, have a series of drains and catch basins that collect stormwater, drippings, and waste generated from cleaning and convey the mixture to the equalization tank for treatment.

The existing wastewater sources originate from and drain to the three process wastewater drain systems described above. The wastewater contains suspended solids (TSS), Oil and Grease (O&G), particulate and soluble Biochemical Oxygen Demand (BOD), and Chemical Oxygen Demand (COD). The wastewater constituents are introduced by chicken and chicken part processing and the microbial intervention chemicals required by FDA. Table 2-1 summarizes the average and 95th percentile values for the facility wastewater based on 2019 process control sampling data. The 95th percentile loadings were calculated using the 95th percentile concentrations and average flow. This summary is representative of wastewater treated through the existing primary wastewater treatment system prior to discharge to the sanitary sewer.

Table 2-1: Process Wastewater (Primary DAF Influent) Characterization

Parameter		Data Points	Average	95th Percentile
Flow	MGD	332	0.315	0.461
pH	s.u.	-	Approximate Range: 4.5 to 5.5	
TSS	mg/L	6	689	962
	ppd		1,813	2,531
Total COD	mg/L	24	2,700	5,219
	ppd		7,103	13,729
Soluble COD	mg/L	-	897	1,733
	ppd		2,360	4,562
Total BOD	mg/L	33	2,163	3,014
	ppd		5,691	7,928
Soluble BOD	mg/L	20	624	842
	ppd		1,642	2,215
FOG	mg/L	6	557	725

The facility typically runs for 16 hours per day, 5 to 6 days per week, 52 weeks per year. Wastewater flows typically peak at the beginning of cleaning operations when scalders and other batch tanks are drained. Although the peak

flows occur during clean up, most of the daily wastewater flow is generated during the killing and viscera operations. Typically, two thirds of the flow occur during plant processing operations. The average wastewater pretreatment influent flow and 95th percentile influent flow that correspond to the data in Table 2-1 are 315,000 gpd and 461,000 gpd, respectively, as based on city water meter data, which is the flow currently approved and used for discharge permit monitoring and reporting.

It should be noted that in addition to process wastewater, the facility water balance includes sanitary wastewater, non-contact cooling water, boiler blowdown, evaporative losses, and water loss through the finished product and primary DAF sludge. These quantities are estimated in Table 2-2 and represent approximately 4-5% of the average plant influent flow. At the time these estimates were made, for DVF's 2015 permit renewal, the average plant influent was reported to be 0.486 MGD.

Table 2-2: Other Wastewater Sources and Water Loss

Parameter		Average	Maximum	Method of Disposal or Discharge Outlet
Non-Contact Cooling Water and Boiler Blowdown	MGD	0.008	0.016	Primary WWTP
Sanitary wastewater	MGD	0.006	0.014	Sanitary sewer
Evaporative losses	MGD	0.008	0.012	Evaporation to Atmosphere
Water in finished product	MGD	0.004	0.006	Product
Water in Primary DAF Sludge	MGD	0.003	0.005	Hauled offsite for anaerobic digestion

The non-contact cooling water and boiler blowdown combines with the process wastewater for treatment in the primary WWTP prior to discharge to the sanitary sewer. The site sanitary or domestic waste sewer has a separate tie in to the City of Mount Vernon sewer system which is located downstream of the treated process water tie in and compliance point. The primary DAF sludge is hauled offsite by a licensed hauler and permitted end user for anaerobic digestion.

2.2 Existing Pretreatment System

2.2.1 Primary Screening

The existing primary treatment system includes screening for feathers, meat, bones, and other debris generated during processing. This occurs in the two internally fed rotary drum screens mentioned in Section 2.1. Each of these he screens are gravity fed and include 0.03-inch openings. They are sized to process surge flows of up to 500 gpm each. The meat and feather screening byproducts are conveyed by separate screw augers to separate byproduct trailers located adjacent to the offal room.

2.2.2 Offal Wet Well and Transfer Pumps

Screened wastewater flows by gravity to a 2,000-gallon wet well located to the east of the screens. Wastewater is pumped from the wet well by two Gorman-Rupp GP-6 centrifugal pumps in duty/spare configuration. Both pumps can run if needed during peak flow conditions. The pump discharge includes a recirculation line back to the wet well to limit frequent stops and starts.

2.2.3 Equalization Tank and DAF Feed Pumps

The Offal Wet Well Transfer Pumps convey wastewater from the wet well to an aboveground 75,000-gallon working volume equalization tank. The tank is 24'7" in diameter and 23'7" high. The tank is constructed of stainless steel and

located outside adjacent to the south wall of the processing plant. The tank includes a coarse bubble diffuser manifold and a blower for mixing. An ultrasonic level indicator performs continuous tank level measurements and alerts the operators if the tank reaches the high-level set point. In the event of a tank overflow, an overflow pipe directs the flow back to the offal wet well. The equalization tank improves the consistency of the wastewater flow and characteristics fed to the primary DAF. Two T-4 Gorman-Rupp 500 gpm pumps in a duty/standby configuration are used to pump the equalized wastewater to the primary DAF flocculation chamber, which is installed inside the offal building against the southeast wall.

2.2.4 Primary DAF

The Primary DAF is sized to process 800 gpm. Main components include the main floatation chamber, a smaller flocculation chamber, and two Edur multiphase centrifugal pumps. Each pump is rated for 100 gpm at 100 PSI with 44 liters per minute of air delivery.

Wastewater first enters the flocculation chamber, where ferric chloride and cationic polymer are automatically injected to aid in solids coagulation and flocculation. Wastewater flows from the flocculation chamber into the DAF tank, where the release of hydraulic pressure causes the solids to float to the surface. These floated solids are skimmed by a rotating paddle skimmer and then transferred to the sludge holding tank. DAF float (sludge) is pumped from the sludge holding tank to a closed top tanker located adjacent to the feather and meat trailers. The sludge is hauled offsite by a licensed hauler and permitted end user.

DAF effluent water is monitored for pH and turbidity. Effluent overflows into the Primary DAF Effluent Trough where it is injected with sodium hydroxide to increase pH and satisfy the discharge range, and then it is discharged to the sewer. Sodium hypochlorite is occasionally injected into the Primary DAF Effluent Trough to provide a small amount of chemical polishing for soluble BOD when high loadings occur. The primary treatment system is typically shut down between Saturdays at 8 AM through Mondays at 4 AM following facility shutdowns. When the treatment process restarts, DAF effluent is recirculated to the equalization tank via the secondary screen tank until flows and turbidity readings stabilize.

The DAF operation effectively removes the TSS, O&G, and particulate BOD. Analysis of primary influent data (Table 2-1) and DAF effluent data (Table 3-1) shows that TSS and O&G are reduced to levels well below the permitted discharge limits. The DAF also removes most of the particulate BOD in the wastewater; however, the DAF is not an effective technology for removing soluble organic BOD and COD. The proposed wastewater upgrades are designed to reduce soluble organic contamination in the wastewater discharge.

2.2.5 Chemical Usage

Table 2-3 lists primary wastewater treatment chemicals and usage rates.

Table 2-3: Primary Treatment Chemical Usage

Chemical	Usage Rate (gpd)
50% Sodium hydroxide	150
Cationic polymer	26.5
Ferric chloride	200
Sodium hypochlorite	50

2.3 Stormwater Runoff Requirements

Stormwater that falls on site buildings and parking lots surrounding the site is collected and conveyed to the stormwater system and discharged to the permitted outfall location per Industrial Stormwater General Permit WAR000552. This stormwater includes runoff from the main parking areas, building roof drains, and rear storage areas. Stormwater that

encounters the exterior dock areas, byproduct truck loading, wet dock loading and unloading, and the wastewater treatment area is contained by curbing and site grading and collected in a series of drains and catch basins. This stormwater is conveyed to a sump where it is pumped to the equalization tank for treatment in the primary DAF. All proposed WWTP upgrades will be located within this existing curbed and graded containment area. Site resurfacing and stormwater conveyance improvements were implemented in 2017. Those improvements are not addressed herein.

2.4 Existing Pretreatment Permit and Receiving POTW

Perdue and the City of Mount Vernon have discussed increasing the facility's effluent BOD limit from a three-day moving average of 1,430 ppd to 1,620 ppd. The City has indicated that the POTW has available capacity to treat the additional BOD loading. The City of Mount Vernon Wastewater Treatment Plant discharges treated wastewater to the Skagit River under National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. WA0024074. The permit lists the design criteria for the plant, including the maximum month design flow and the maximum month BOD and TSS loadings. The permit specifies that if the flow or waste load into the system reaches 85% of any one of the design criteria for three consecutive months, or if the plant is projected to reach its design capacity within five years, the permittee must submit a plan and schedule to Ecology for maintaining treatment capacity.

An analysis of publicly available monthly Discharge Monitoring Report (DMR) data for October 2018 through September 2020 was conducted to compare influent loadings at the POTW with the action levels defined in the NPDES permit. The maximum monthly flow, BOD load, and TSS load were each calculated from the data set. Table 2-4 shows a comparison of the maximum monthly DMR values, design criteria, and capacity action threshold (85% of design). The percent of design capacity currently utilized and available capacity up to the 85% threshold are listed. The current maximum month values are well below the 85% action threshold. The proposed BOD limit increase of 190 ppd represents approximately 5.5% of the remaining BOD capacity (4,238 ppd) and is expected to have minimal impact on the POTW. Because the nature of the discharge remains unchanged, there will be no impact to the POTW's use or disposal of municipal biosolids.

Table 2-4: Mount Vernon POTW Capacity Summary

Parameter	Units	Influent Design Criteria	Capacity Action Threshold (85% of design value)	Oct. 2018 – Sept. 2020 Max. Month Value	% of Design	Available Capacity (up to 85% Threshold)
Max. Month Flow	MGD	15	12.75	6.33	42	6.42
Max. Month BOD	ppd	17,300	14,705	10,468	61	4,238
Max. Month TSS	ppd	18,300	15,555	10,272	56	5,283

Sources: The State of Washington Department of Ecology Water Quality and Reporting Information System (PARIS) and NPDES Waste Discharge Permit No. WA0024074

3. WWTP UPGRADES (PROPOSED)

3.1 General Discussion

This section details recent changes in plant process chemical usage, resulting impacts on wastewater loadings, and proposed upgrades to the treatment system. Proposed upgrades will address soluble BOD treatment to demonstrate compliance with the new proposed BOD limit and the existing requirements of Ecology Permit Number ST-0003861. The proposed upgrades include an MBBR and a secondary DAF that will process a side stream of the existing DAF effluent. Secondary DAF effluent will be combined with Primary DAF effluent that bypasses the new treatment processes. The BOD of the combined effluents will remain below the discharge limits listed in Table 1-1.

3.2 Existing Effluent Data

Table 3-1 provides a summary of the primary DAF effluent DMR and process control data collected in 2019. This data characterizes the future MBBR influent. 2019 was selected as the baseline data set because BOD levels were generally higher than what was observed in 2020 due to the amount of peracetic acid used, the type of peracetic acid chemistry, and the citric acid use for microbial interventions. The 2019 data is considered "worst case" for design and provides flexibility for Perdue if there is a future need to change the chemical selection or usage rates for microbial intervention chemicals to maintain compliance with FDA requirements.

Table 3-1: Process Wastewater (Primary DAF Effluent) 2019 Baseline Data

Parameter		Data Points	Average	95th Percentile
Flow	MGD	332	0.315	0.461
pH	s.u.	331	Range: 4.8 to 10.1	
TSS	mg/L	331	41	101
	ppd		109	267
Total COD	mg/L	238	718	1,033
	ppd		1,890	2,718
Soluble COD	mg/L	-	718	1,033
	ppd		1,890[1]	2,718
Total BOD	mg/L	331	385	680
	ppd		1,015	1,791
Soluble BOD	mg/L	8	385	556
	ppd		1,015[1]	1,462
Peracetic Acid	mg/L	35	8.6	22.5
	ppd		23	59
O&G	mg/L	9	3	6

[1] Primary DAF effluent soluble BOD results are based on a limited sample set of eight results which were paired with total BOD results collected on the same days. The soluble BOD results consistently exceeded the total BOD in these samples. Theoretically, soluble BOD cannot be higher than total BOD; therefore, the soluble to total BOD ratio was assumed to be 1 for the purposes of this analysis. Limitations in the analytical measurements are likely the cause for this discrepancy. Soluble COD was estimated by multiplying the total COD results by the soluble BOD to total BOD ratio of 1.

The primary DAF effluent average and 95th percentile values for flow, pH, BOD, and TSS represent all DMR data for 2019. COD was collected for internal process control purposes. O&G values were calculated from nine samples collected between March and October 2019. Mass loading in ppd or concentrations in mg/L were calculated for each constituent using the formula mass loading (ppd) = concentration (mg/L) x average flow (MGD) x 8.345. Peracetic acid (PAA) average and 95th percentile values were calculated using 35 data points collected between May and July 2019.

DAF effluent soluble BOD average and 95th percentile values were calculated using eight data points collected between July and October 2019. Soluble COD was estimated by multiplying total COD by the soluble BOD to total BOD ratio. The limited sampling results for soluble BOD indicate that the majority, if not all, particulate BOD present in the wastewater is removed by the primary DAF.

3.3 Microbial Interventions and Associated Chemical Use

Chemicals used for microbial intervention during processing operations such as sprays and dip tanks include peracetic acid sanitizer and citric acid. The typical pH range of these chemicals is 4.5 to 5.5 s.u., and they are major sources of acidity and soluble BOD and COD in the wastewater. Table 3-2 outlines the average and peak (maximum) usage rates of peracetic acid and citric acid sanitizer during 2019 and the anticipated future usage rates. The anticipated future usage rates have been considered in the design basis for the wastewater treatment upgrades presented in Section 3-83.4.

Table 3-2: Chemical Use Rates for Microbial Intervention Chemicals

	25% Peracetic Acid Sanitizer (gpd)*		50% Citric Acid (gpd)*	
	Average	*Maximum*	*Average*	*Maximum*
2019 Baseline	97	219	57	-
Future Design Basis	140	250	65	90

*Or equivalent formulation.

Table 3-3 shows the equivalent soluble BOD and soluble COD for each chemical. PAA calculations are based on the acetic acid content of a 25% PAA formulation which is estimated to be a minimum of 45% acetic acid by weight. Acetic acid has a COD value of 1.07 lb. per lb. of chemical and a BOD value of 0.7 lb. per lb. of acetic acid COD. While PAA is a strong oxidant, by the time it leaves the Primary DAF the majority of PAA is dissociated into acetic acid and hydrogen peroxide due to a combination of contact with chicken, oxidation by wastewater organics, increased temperatures, and increased pH conditions. Citric acid is readily biodegradable in aerobic biological treatment systems. 50% citric acid has a BOD of 0.528 lb. per lb. chemical and a COD of 0.728 lb. per lb. of chemical.

Table 3-3: Future BOD and COD Loading from Microbial Intervention Chemicals

	Density (lb/gal)	Lb. BOD / gal. of Chemical	Lb. COD / gal. of Chemical	Soluble BOD Loading (ppd)		Soluble COD Loading (ppd)	
				Average	*Maximum*	*Average*	*Maximum*
25% Peracetic Acid*	9.44	3.18	4.54	445	795	636	1,136
50% Citric Acid*	10.33	5.45	7.52	355	491	489	677

*Or equivalent formulation.

3.4 Design Criteria

3.4.1 Influent Flows and Loads

Table 3-4 outlines the design basis data for the proposed WWTP upgrade. The design basis incorporates the 2019 DMR and process control data as a baseline. Adjustments were made to the data to account for possible future increases in chemical usage or changes in the types of chemicals used, and to account for future effluent flow monitoring and allow for flexibility in future processing operations. These adjustments were based on the following system attributes:

- The measured Primary DAF effluent flow is expected to be approximately 5% lower than the total plant influent currently measured by the city potable water meter. The reasons for this are discussed in Section 2.1. This reduction was further confirmed by preliminary effluent flow data collected at the plant. The WWTP upgrades will include a new flowmeter for direct monitoring of the treated process water effluent.
- The projected future increases in PAA and citric acid usage discussed in Section 3.3 are expected to result in increases of 129 ppd in the average BOD load and 147 ppd in the peak BOD load (95th percentile) as compared to the 2019 baseline.
- Projected future increases in PAA and citric acid usage are expected to result in increases of 160 ppd in the average COD load and 195 ppd in the peak COD load (95th percentile) as compared to the 2019 baseline.
- The instantaneous peak design flow is 850 gpm based on the existing pump capacities. This flow would be a rare and short-lived occurrence.

Table 3-4: WWTP Upgrade Design Basis (Primary DAF Effluent)

Parameter	Units	Future Average	Future Peak (95th Percentile)
Flow	MGD	0.300	0.438
pH	S.U.	Range: 4.8 to 10.1 Average: 7.0	
Temperature	ºF	Range: 50 to 90 Average: 75	
Total Suspended Solids (TSS)	mg/L	41	101
	ppd	103	253
Total COD	mg/L	820	1,165
	ppd	2,050	2,913
Soluble COD	mg/L	820	1,165
	ppd	2,050	2,913
Total BOD	mg/L	457	775
	ppd	1,144	1,938
Soluble BOD	mg/L	437	621
	ppd	1,093	1,552
Oil & Grease	mg/L	< 10	

3.4.2 Treatment Performance Criteria

The treatment performance criteria for the WWTP are to meet or exceed the existing discharge limits included in upgrade are the facility Table 3-5.

Table 3-5: Treatment Performance Criteria

Parameter	Units	Maximum Consecutive 3-day Average	Daily Maximum
BOD_5	ppd	< 1,620[1]	-
TSS	ppd	< 825	-
O&G	mg/L	-	< 100
pH	s.u.	6.2 (min.) – 11.0 (max.)	

[1] The City of Mount Vernon POTW has approved a limit increase from 1,430 ppd to 1,620 ppd.

3.5 Treatment Alternatives Discussion

Several wastewater treatment upgrade alternatives were considered by Perdue to achieve consistent compliance with the discharge limits. The proposed upgrade, which consists of an MBBR and a secondary DAF to treat a portion of effluent from the site's existing primary DAF, was selected as the preferred option because it offers the ideal balance of treatment performance, footprint, flexibility for future operations and expansion, cost, and operability. The preferred option meets the requirement to provide all known, available, and reasonable methods of treatment (AKART). This conclusion is supported by the following comparison of the preferred option to other treatment systems designed to address the type of pollutant loading found at DVF.

Table 3-6 provides a high-level summary of the advantages and disadvantages of the compliance measures and treatment technologies considered for DVF.

Table 3-6: Compliance Alternatives Comparison

Process	Advantages	Disadvantages
MBBR and Secondary DAF Treatment (Optimized treatment expansion design to meet discharge limits) **SELECTED**	• Effluent meets discharge limits • Proven technology for food processing wastewater treatment including poultry processing • Operators familiar with technology • Offers moderate additional capacity for future expansion of flows and loads • Optimized system sizing allows for compliance while minimizing capital and O&M costs and footprint as compared to full-flow treatment	• Moderate footprint • Moderate O&M cost • Moderate capital cost
MBBR and Secondary DAF Treatment of the Full Flow	• Effluent meets discharge limits • Proven treatment technology for food processing wastewater treatment • Proven treatment technology within Perdue • Offers high additional capacity for future expansion of flows and loads • Operators familiar with technology	• Large footprint – would eliminate site area that is needed for processing plant upgrades • Higher O&M cost • Higher capital cost
Increased Equalization Capacity for Load Leveling of Primary DAF Effluent to the City POTW	• Could achieve discharge limits but would require a 7-day moving average BOD limit • No new treatment technology is introduced	• Modification of the permit limit from a 3-day average to a 7-day average is not possible • Large footprint – a much larger EQ tank would be required • Substantial monitoring and sampling effort required to size tank
Advanced oxidation process using Ozone or Electrochemical Oxidation Technology	• Effluent meets discharge limits • Moderate footprint	• High capital cost • High O&M cost • Operators unfamiliar with technology • Safety upgrades required for ozone

3.6 Mass Balance and Process Calculations

Mass balances were developed to show the anticipated treatment performance for average and peak loading conditions. The discharge limits allow for some flexibility in the proposed treatment. As shown in the design basis (Table 3-4), the average BOD loading in the Primary DAF effluent (1,144 ppd) is less than the proposed discharge limit of 1,620 ppd; however, the BOD loading under peak (95th percentile) conditions is 1,938 ppd. Secondary treatment will be required to remove a minimum of 318 ppd of BOD about 5% of the time. The proposed MBBR and Secondary DAF treatment system will provide biological treatment for a portion of the Primary DAF effluent. The flow proportion sent through secondary treatment will be set on a daily basis by the operator based on COD sampling results performed onsite. The operating bounds for Primary DAF effluent that will undergo secondary treatment have been defined by the average and peak design conditions. The mass balance tables are included on the Process Flow Diagram (PFD) for the proposed upgrades. The PFD is included in Appendix A.

- Under average loading conditions or below, the MBBR and Secondary DAF will treat up to 80% of the flow leaving the Primary DAF or 240,000 gpd. Under this condition the system will be hydraulicly limited by the secondary DAF, which is sized to handle up to 180 gpm. The anticipated treatment performance and design assumptions at this condition are:

    - 915 ppd BOD loading to the MBBR
    - Minimum COD removal of 60%
    - Minimum BOD removal of 80%
    - Minimum TSS removal of 80%
    - Biomass yield of 0.51 g VSS per g per g COD removed
    - VSS/TSS Ratio = 0.85
    - Secondary DAF float solids concentration of 4%

- Under peak loading conditions the MBBR and Secondary DAF will treat up to 55% of the flow leaving the Primary DAF or 165,000 gpd. Under this condition the system will be limited by the organic treatment capacity in the MBBR. The anticipated treatment performance at this condition is:

    - 1,066 ppd BOD loading to the MBBR
    - Minimum COD removal of 60%
    - Minimum BOD removal of 70%
    - Minimum TSS removal of 80%
    - Biomass yield of 0.51 g VSS per g per g COD removed
    - VSS/TSS Ratio = 0.85
    - Secondary DAF float solids concentration of 4%

The MBBR will treat similar organic loading under both conditions. The treatment system will be designed to produce a combined Primary and Secondary DAF effluent for discharge that exceeds the effluent limitations under these circumstances. Perdue will have the ability to direct more flow to the MBBR if necessary, to compensate for higher loading coming from the primary DAF effluent wastewater up to the hydraulic capacity of the secondary DAF.

3.7 Process Description

The proposed WWTP upgrades will be designed and built to service wastewater flow from processed chicken production at the facility. The design basis, including expected influent characteristics and flows to the upgrades, are described in Section 3.4. The upgraded WWTP effluent discharged to the Mount Vernon POTW must meet discharge permit limits described in Section 3.4.2.

The proposed upgrades will be installed downstream of the existing DAF. Key components of the WWTP upgrades are listed below. Each component is shown in the drawings provided in Appendix A. Detailed descriptions are provided in Sections 3.7 and 3.8 below, including:

- Primary DAF Effluent pH Adjustment System
- MBBR System
- Secondary DAF
- Effluent Handling
- Secondary Sludge Handling

3.7.1 Overall Process Flow Description

Process Flow Diagrams depicting the process equipment and process flow are presented in Appendix A. General arrangement drawings depicting the treatment system layout are also provided in Appendix A. Proposed plant upgrades include the addition of Primary DAF effluent neutralization, aerobic wastewater treatment by an MBBR, biological solids separation through a Secondary DAF, effluent handling, and sludge handling. The general treatment process flow is explained below.

Process wastewater will be treated through the existing WWTP as described in Section 2.2. Effluent from the existing Primary DAF will flow via gravity to the proposed Primary DAF Effluent pH Adjustment Tank (TK-10301), where mixing and pH neutralization via sodium hydroxide or ferric chloride addition will occur. The Primary DAF Effluent Trough will be modified to convey effluent flow to the proposed pH Adjustment Tank. in this tank. Primary DAF Effluent Pumps (P-10301A & B) will be used to transfer neutralized process wastewater from the Primary DAF Effluent pH Adjustment Tank to the MBBR (TK-10401), the Combined Effluent Tank (T-10501), or back to the existing Secondary Screen Tank. Process wastewater with an out of spec pH will be directed to the existing screen tank. If the pH is in compliance with discharge limits, the process wastewater flow will be split between the MBBR and the Combined Effluent Tank via flow setpoints.

The process wastewater BOD will be consumed by aerobic bacteria in the MBBR (TK-10401) and create activated sludge. Wastewater and the suspended activated sludge will flow by gravity into the Secondary DAF (DAF-10501). Secondary DAF effluent will flow to the Combined Effluent Tank via gravity. Treated effluent will be pumped from the Combined Effluent Tank to the sewer via the Combined Effluent Pumps. DAF float will be conveyed to the Secondary DAF Sludge Tank (TK-10601).

A detailed description of each unit process in the proposed WWTP upgrades are presented below.

3.8 Treatment Unit Sizing

3.8.1 Modifications to the Existing Primary DAF

Minimal modifications will be made to the existing treatment system. A new 10-inch diameter pipe flange and control valve will be added to the south end of the Primary DAF Effluent Trough to allow wastewater to flow by gravity to the DAF Effluent pH Adjustment Tank. A control valve will be added to the existing trough outlet on the north side of the Trough to direct effluent to the existing Secondary Screen Tank. This valve will allow wastewater to flow back to the EQ Tank via the Secondary Screen Tank if the Primary DAF effluent turbidity is out of spec.

3.8.2 Primary DAF Effluent pH Adjustment System

The Primary DAF Effluent pH Adjustment Tank will be required to provide pH neutralization of primary DAF effluent prior to further treatment through the MBBR or discharge to the sewer. The pH Adjustment Tank will be sized for a minimum retention time of 12 minutes at the peak design flow of 500 gpm; therefore, the tank volume will be 6,000 gallons. The tank side water depth will be limited to about 6 feet to allow for gravity overflow from the Primary DAF Effluent Trough to the pH Adjustment Tank. The tank will be an open top, cylindrical tank constructed of HDPE with approximate dimensions of a 14-foot diameter by 8-foot height. The tank will be operated with 2 feet of freeboard.

A vertical turbine mixer with a 3 HP motor will be used to agitate the contents of the pH Adjustment Tank. pH will be measured via two in-tank pH sensors. Sodium hydroxide (50%) and ferric chloride (40%) will be added to the tank as necessary to adjust pH. The pH of the Primary DAF effluent is typically low; thus, it is expected that only sodium hydroxide addition will be required to raise the pH. Ferric chloride will be routed to the tank to act as an acid in the event that the pH needs to be reduced. The existing facility uses ferric chloride, so it is already onsite and available for use. The tank will contain two redundant pH sensors.

Primary DAF Effluent Transfer Pumps will convey process wastewater from the pH Adjustment Tank to the MBBR, Combined Effluent Tank, or the Secondary Screen Tank. The Primary DAF Effluent Transfer Pumps will be end-suction centrifugal pumps with a capacity of 500 gpm at 34 feet total dynamic head (TDH). The pumps will be operated with variable frequency drives (VFDs) and will be controlled by the pH Adjustment Tank level. A constant level setpoint is maintained in the tank.

Wastewater with a pH outside of the specified range as measured by the in-tank pH sensors will be automatically diverted to the Secondary Screen Tank. Wastewater with a pH within the desired operating range and compliant with City discharge requirements will be pumped either to the MBBR or the Combined Effluent Tank. The flow rate directed to the MBBR will be an operator adjustable set point to be set as needed based on COD sample results of the Primary DAF effluent. COD test results will be correlated to BOD using the typical BOD to COD ratio for the wastewater. The historical ratio is 0.5 to 0.6. The COD results, coupled with flowrate data, will be used to set the portion of flow directed to the MBBR to ensure sufficient BOD removal to maintain compliance with effluent BOD limits.

3.8.3 Moving Bed Bioreactor (MBBR)

A portion of the process wastewater, up to 80% of flow under average loading conditions and as low as 55% under peak loading conditions, will be pumped from the Primary DAF Effluent pH Adjustment Tank to the MBBR. The MBBR will provide BOD reduction through aerobic biological treatment. The MBBR will consist of a tank (bioreactor) filled with media and aerated using aeration blowers. The media (biofilm carriers) will provide the required fixed film surface area to facilitate and support the growth of aerobic bacteria. The aeration blowers will supply aeration air to the tank through a coarse bubble aeration grid to provide the required concentration of dissolved oxygen to support aerobic bacteria growth to treat the incoming BOD. Aeration blowers will also provide media suspension and agitation to facilitate adequate contact with wastewater and the biomass on the carriers. Aerobic bacteria will biologically oxidize BOD through cellular functions and yield activated sludge. The capability to add nitrogen and phosphorus will be provided to ensure adequate nutrients for cell growth. A supplemental carbon source will be available to add to the MBBR tank over the weekend to maintain cell growth during periods of low to no process wastewater flow. The MBBR tank discharge will be equipped with a sieve that will allow wastewater and suspended solids to pass through and retain the biofilm carriers in the MBBR tank. MBBR effluent will flow via gravity to the Secondary DAF.

The MBBR tank will be a field erected, open top, carbon steel tank with approximate dimensions of 16-foot diameter by 32-foot height. The working volume of the tank will be approximately 36,000 gallons with a side water depth of 28 feet. The proposed media fill fraction is 57% of the reactor volume with 83 m^3 of media. An MBBR fixed film surface area of about 53,950 m^2 will be provided by 650 m^2/m^3 carriers; therefore, the design peak Surface Area Loading Rate

(SALR) for the peak BOD loading of 1,066 ppd is 9 g BOD/ m^2/d. This loading rate is representative of average SALR for normal rate MBBR rectors based on literature values[1].

The design BOD removal of the MBBR is oxygen transfer limited. The proposed design currently contains two MBBR Aeration Blowers operating in a duty/duty-assist configuration. The aeration blowers are described in more detail in Section 3.8.4.

The maximum hydraulic capacity through the MBBR will be limited by the hydraulic capacity of the Secondary DAF. The Secondary DAF will be sized for a flow of 180 gpm, which is adequate for processing both average and peak design conditions. As noted in Section 3.8.2, the flow rate directed to the MBBR is an operator adjusted set point that can be changed as needed based on Primary DAF effluent COD measurements collected during the day. The existing primary treatment system shuts down when the processing operations shut down. Shutdowns typically last from Saturdays at 8 AM through Mondays at 4 AM. The MBBR tank will not receive process wastewater flow during this period, therefore a supplemental carbon source (glycerin or chicken blood) can be added to feed the aerobic bacteria, keeping the biological solids healthy and activated over the weekend. When the treatment process restarts the MBBR will be able to provide the designed BOD removal.

Dissolved oxygen (DO) concentration, pH, and foam level will be monitored in the MBBR Tank. The MBBR Aeration Blowers will be controlled by the DO to target a set point of 2.0 mg/L. The defoamer injection will be triggered by a foam level alarm. The injection rate will be set by the operator and controlled by a timer that will cycle the metering pump on and off until the alarm clears. If after three consecutive feeding cycles the foam has not dissipated, then an alarm will be activated notifying the operator to investigate the issue and to consider increasing the defoamer addition rate and re-start the feed cycle. The target average dosage of defoamer is 10 mg/L and the peak dosage is 50 mg/L based on the MBBR reactor size.

3.8.4 Aeration

The MBBR tank will require aeration to supply oxygen to oxidize the BOD and to mix and suspend the biofilm carriers in the tank. The MBBR system will have two MBBR Aeration Blowers, one duty and one duty/assist. The blowers will be 40 HP rotary lobe, positive displacement blowers, each with a capacity of 270 scfm at 12.5 psig. The blowers will be operated on VFDs controlled by the DO of the MBBR Tank. The aeration air will be supplied to the MBBR tank through a 304 stainless steel coarse bubble diffused aeration grid located approximately 12 inches from the bottom of the tank.

As described in Section 3.8.3, the MBBR BOD removal will be oxygen limited. One blower will be required to be online and the other blower will be on standby under average design conditions. Both blowers will operate during peak loading conditions. If BOD loading increases in the future to a point where two blowers are required under normal operating conditions, then both aeration blowers will serve as duty blowers and a future standby blower will be installed to serve as an online spare. Two blowers at 100% air flow can transfer up to 1,374 ppd of oxygen used for BOD treatment.

3.8.5 Secondary DAF

The Secondary DAF will separate suspended solids from the MBBR effluent prior to discharge to the Combined Effluent Tank to maintain compliance with TSS discharge limits. The Secondary DAF will be sized to process up to 180 gpm at a TSS loading of less than 2,500 mg/L and it will be constructed of polypropylene. High molecular weight cationic polymer will be added to flocculate the secondary sludge. The specific cationic polymer will be determined during

[1] SALR for Normal Rate Biofilm Reactors from *Biofilm Reactors* Published by the Water Environment Federation in 2010. WEF Manual of Practice No. 35. 2010.

detailed design and verified during start-up. The capability to add ferric chloride as a coagulant to the Secondary DAF will be built into the design, however, coagulation of secondary sludge is not expected during normal operation. Flocculated secondary sludge will be floated using dissolved air injection and skimmed off the surface of the DAF tank.

Polymer will be injected into the DAF influent box through flow-paced dosing. A dissolved air pump will recirculate DAF effluent to the DAF influent box. The pump will dissolve compressed air into the recirculated flow and generate 5-to-12-micron diameter bubbles at high saturation efficiencies. The micro air bubbles will adhere to the flocculated solids in the DAF and float the solids to the surface of the Secondary DAF tank. Treated Secondary DAF effluent will flow from the effluent box to the Combined Effluent Tank via gravity.

Floated solids will be periodically skimmed from the top into the sludge hopper by a skimming rake. The skimming rake will operate on a timer. The Secondary DAF Sludge Transfer Pumps will transfer sludge from the hopper at regular intervals. The pumps will also transfer settled sludge from the bottom cones of the DAF to the Secondary DAF Sludge Tank to capture any dense solids that settled out in the DAF. This transfer will be manually performed by the operators as needed to prevent the build-up of solids in the bottom of the DAF. The Secondary DAF will be shut down when there is no process wastewater flow, typically from Saturday at 8 AM until Monday morning at 4 AM.

3.8.6 Effluent Monitoring and Handling

Secondary DAF effluent will combine with neutralized Primary DAF effluent in the Combined Effluent Tank. The Combined Effluent Tank will be sized for a minimum retention time of five minutes at the peak design flow of 500 gpm; therefore, the tank volume will be 2,900 gallons. The tank height will be limited to 8 feet to allow for gravity overflow from the Secondary DAF effluent box to the Combine Effluent Tank. The tank will be an open top, cylindrical tank constructed of HDPE with approximate dimensions of a 9-foot diameter by 8-foot height. The tank will be operated with 2 feet of freeboard.

Effluent will be pumped from the Combined Effluent Tank to the city sewer via the Combined Effluent Pumps. The Combined Effluent Pumps will be duty/duty-assist, end-suction centrifugal pumps, each with a capacity of 500 gpm at 20 feet TDH. The pumps will be operated with VFDs and will be controlled by the Combined Effluent Tank level. A constant level setpoint will be maintained in the tank.

Effluent monitoring for pH and flow will be conducted with a pH meter and a flow meter installed on the discharge line of the Combined Effluent Tank. These meters will be located to provide continuous, accurate pH and flow effluent measurements for permit compliance. Effluent flow from the Combined Effluent Tank will be piped and tied into the existing city sewer discharge point. Effluent will flow from this point to the existing Wastewater Sampling Manhole. Compliance sampling will continue to be conducted as it has in the past at the existing Wastewater Sampling Manhole. The proposed upgrades have been designed to maintain compliance with discharge permit limits shown in Section 3.4.2.

3.8.7 Sludge Handling

Secondary activated sludge will be produced in the MBBR. Excess sludge will slough off the biofilm carriers and be discharged with the MBBR effluent to the Secondary DAF. Secondary waste activated sludge will be thickened to 4% dry solids in the Secondary DAF and this thickened sludge will be pumped to the Secondary DAF Sludge Tank via the Secondary DAF Sludge Transfer Pumps. Under average MBBR loading, about 2,000 GPD of 4% Secondary DAF Sludge will be generated.

The Secondary DAF Sludge Transfer Pumps will be air-operated diaphragm pumps sized for 50 gpm each. Two pumps will be provided for redundancy. These transfer pumps will be configured to pump Secondary DAF float to the Secondary DAF Sludge Tank, and to transfer sludge from the Secondary DAF Sludge Tank to the Primary DAF Sludge Tanker. The pumps will transfer DAF float to the Secondary DAF Sludge Tank automatically as controlled by a high-

level switch in the DAF sludge hopper. The operators will manually configure the pumps to transfer sludge from the Secondary DAF Sludge Tank to the Primary Sludge Tanker. An operator will be present for the duration of the transfer to the Tanker, and they will set the Secondary DAF Sludge Transfer Pumps back to automatic operation after the transfer is complete.

The Secondary DAF Sludge Tank will be a 6,000-gallon, closed top, cone bottom tank constructed of HDPE. This tank will be sized for a 3-day retention time to store peak MBBR solids generation conditions. Secondary sludge will be transferred to the existing Primary DAF Sludge Tanker, which is a closed top tanker located next to the feather and meat trailers, at a minimum of once every three days. The sludge will be hauled offsite by a licensed hauler and permitted end user. Perdue plans to dispose of the Secondary DAF sludge with the existing stream of Primary DAF sludge. The material is currently hauled offsite for anaerobic digestion at a licensed third-party treatment facility.

3.8.8 Chemical Feed Systems

Chemical feed systems will include sodium hydroxide, phosphoric acid, urea, food grade defoamer, a supplemental carbon source, ferric chloride, and cationic polymer. Sodium hydroxide and ferric chloride already exist onsite and will be used to neutralize pH in the Primary DAF Effluent. Phosphoric acid and urea will be new chemical nutrients that will be used to supplement nutrients in the wastewater to support bacterial growth in the aerobic treatment system. Defoamer will be used in the MBBR system to prevent/minimize foaming. Polymer will be used to thicken the secondary sludge processed through the Secondary DAF. There will be an option to add ferric chloride as a coagulant to the Secondary DAF, however ferric chloride is not expected to be needed. A summary of expected chemical usage rates is provided in the table below.

Table 3-7: Proposed Chemical Storage and Usage Rates[1]

Chemical	Storage Container	Maximum Volume Stored Onsite	Usage Rate (gpd)
Urea (50%)[2]	55-gallon drums	110 gal	16 to 37
Phosphoric Acid (75%)[3]	55-gallon drums	110 gal	2 to 6
Defoamer (100%)	55-gallon drums	110 gal	2 to 11
Neat Cationic Polymer	55-gallon drums	110 gal	8 to 12
Supplemental Carbon[4]	55-gallon drums	110 gal	7

[1]Sodium hydroxide and ferric chloride usage rates are not expected to change as a result of the upgrades. The existing usage rates can be found in Section 2-5.
[2] Urea addition rate is based on a nutrient demand of 5 lb. nitrogen per 100 lb. BOD
[3] Phosphoric acid addition rate is based on a nutrient demand ratio of 1 lb. phosphorus per 100 lb. BOD.
[4]Supplemental carbon is available over the weekend to feed the biomass when there is no process wastewater flow.

Sodium hydroxide and ferric chloride are currently used in the existing WWTP. Sodium hydroxide is currently added to the existing Primary DAF Effluent Trough for pH adjustment. Additional sodium hydroxide will be added to the Primary DAF Effluent pH Adjustment Tank as needed for supplemental pH adjustment. The proposed modifications will allow for pH trimming in the Primary DAF Effluent pH Adjustment Tank. The existing sodium hydroxide usage rate is not expected to change as a result of these upgrades.

Ferric chloride is currently used as a coagulant in the Primary DAF. The proposed upgrades will include provisions to add ferric chloride to the Primary DAF Effluent pH Adjustment Tank for pH trimming and to the Secondary DAF as a coagulant. The existing ferric chloride usage rate is not expected to change as a result of these upgrades because the Primary DAF effluent is acidic, and coagulation is not expected to be required to thicken sludge in the Secondary DAF. Proposed ferric chloride feed pumps will match the existing ferric chloride feed pumps used onsite.

All other proposed chemical feed systems will be designed to provide the maximum daily chemical usage. All chemical storage drums will be housed on secondary containment pallets and located to allow access for chemical deliveries and protection against severe weather conditions.

3.8.9 Location of WWTP Upgrades

Limited footprint is available for the proposed WWTP Upgrades at the existing facility. Multiple options were evaluated to select the site for the proposed WWTP upgrades. The selected site is shown on the General Arrangement drawings provided in Appendix A. This location has been selected for the following reasons:

- The site is within close proximity to the existing WWTP, which offers the following benefits:
    - Minimized proposed piping runs.
    - Easy management of secondary sludge. Existing infrastructure for primary sludge disposal can be used for the secondary sludge.
    - The effluent can be discharged to the existing city sewer. The existing Wastewater Sampling Manhole can continue to be used for compliance sampling.
- The site is located within a contained area. Stormwater improvements will not be required due to the WWTP upgrades.
- The site is not restricted by other limitations such as:
    - Footprint needs for future projects, such as the receiving area upgrades.
    - It is not located within 150 feet from the property boundary or Kulshan Creek.

The selected site is suitable for the proposed WWTP upgrades. This location also minimizes the impact on truck traffic and waste disposal. The orientation of the existing feather and blood trailer, offal trailer, and Primary DAF Sludge Trailer will be rotated 90 degrees as shown on the general arrangement drawing. Bollards will be installed around the proposed equipment to protect it from truck traffic.

3.9 Additional Design Considerations

The additional details on the site/civil, structural, mechanical, electrical, and instrumentation and controls design will be provided to Ecology in subsequent submittals as the design progresses. All components will be designed in accordance with the latest editions of relevant federal, state, and local standards.

3.10 Implementation Schedule

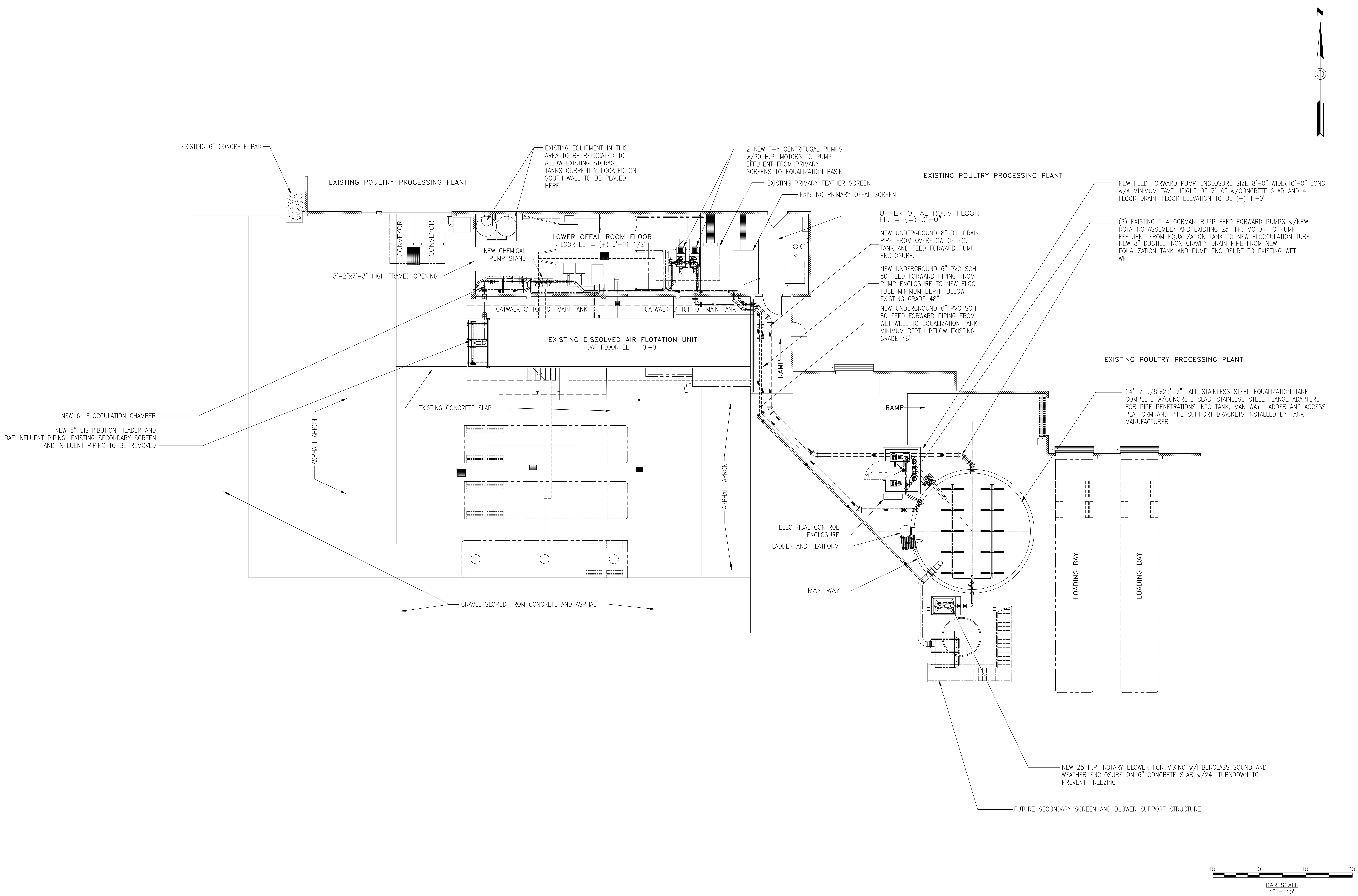
An estimated implementation schedule for the WWTP upgrades is defined in Table 3-8. The anticipated project timeline is 70 weeks following the completion of the 30% design and approval from Ecology to move forward with the proposed upgrades.

Table 3-8 Implementation Schedule (Months)

	Major Project Phases	Phase Duration (Months)	Total (Months)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Detailed Design (90% Design Packages): - Specifications - Construction Drawings - Contracts	6	6																
2	Equipment Procurement and Delivery to Site	4	9																
3	Installation	4	13																
4	Commissioning, Startup, and Operator Training	3	16																

APPENDIX A: DRAWINGS

22x34 SHEET
1:1



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Canton, Massachusetts 02021
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COMMITMENT & INTEGRITY DRIVE RESULTS

REV	DESCRIPTION	DATE

DESIGNED BY: RC/MBM
CHECKED BY: RC
DRAWN BY: MB
0233685.00-C-101.dwg

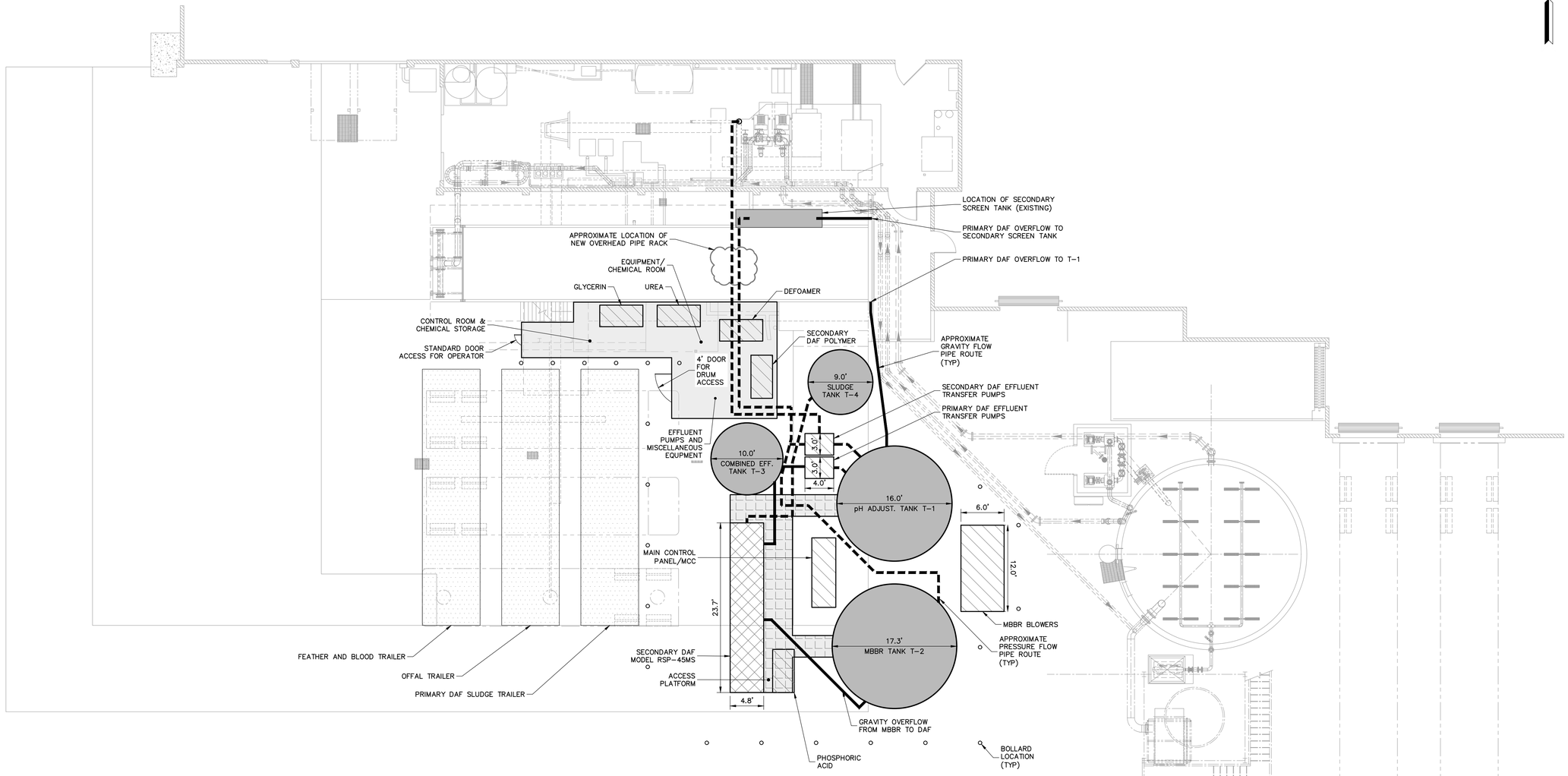
EXISTING CONDITIONS SITE PLAN

PERDUE DRAPER VALLEY FARMS
MOUNT VERNON, WASHINGTON

30% DESIGN WWTP UPGRADE

JOB NO: 233685.00
DATE: XXX
SCALE: AS SHOWN
SHEET: 3 OF XXX

C-101



16' 0 8' 16'

BAR SCALE
1" = 8'
CHECK GRAPHIC SCALE BEFORE USING

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COMMITMENT & INTEGRITY DRIVE RESULTS

REV	DESCRIPTION	DATE
DESIGNED BY:	MBM/MB	CHECKED BY: BCA/BM
DRAWN BY:	MN	02388.00-C-102.dwg

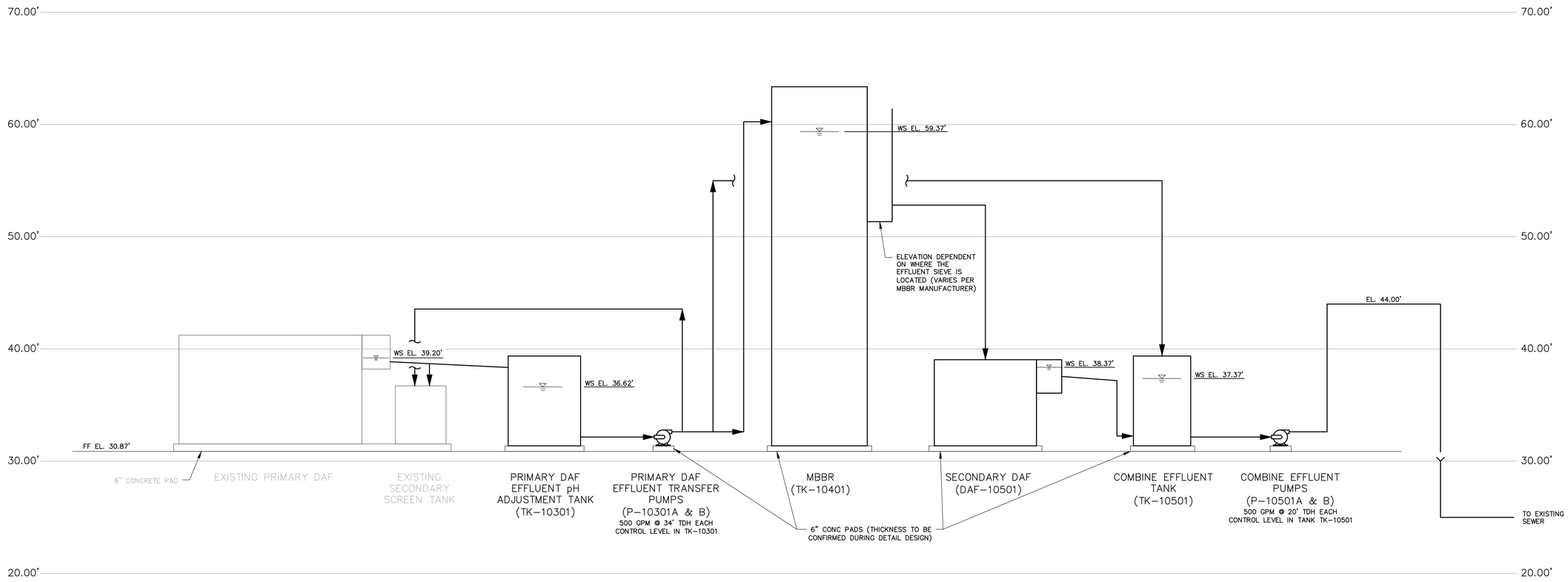
GENERAL ARRANGEMENT

PERDUE DRAPER VALLEY FARMS
MOUNT VERNON, WASHINGTON

30% DESIGN WWTP UPGRADE

JOB NO:	233685.00
DATE:	2021
SCALE:	NA
SHEET:	4 OF XXX

C-102



HYDRAULIC PROFILE OF WWTP UPGRADES

NOT FOR CONSTRUCTION

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COMMITMENT & INTEGRITY DRIVE RESULTS

REV	DESCRIPTION	DATE
DESIGNED BY: XXX	CHECKED BY: XXX	
DRAWN BY: XXX	P:\...\P-101.dwg	

HYDRAULIC PROFILE

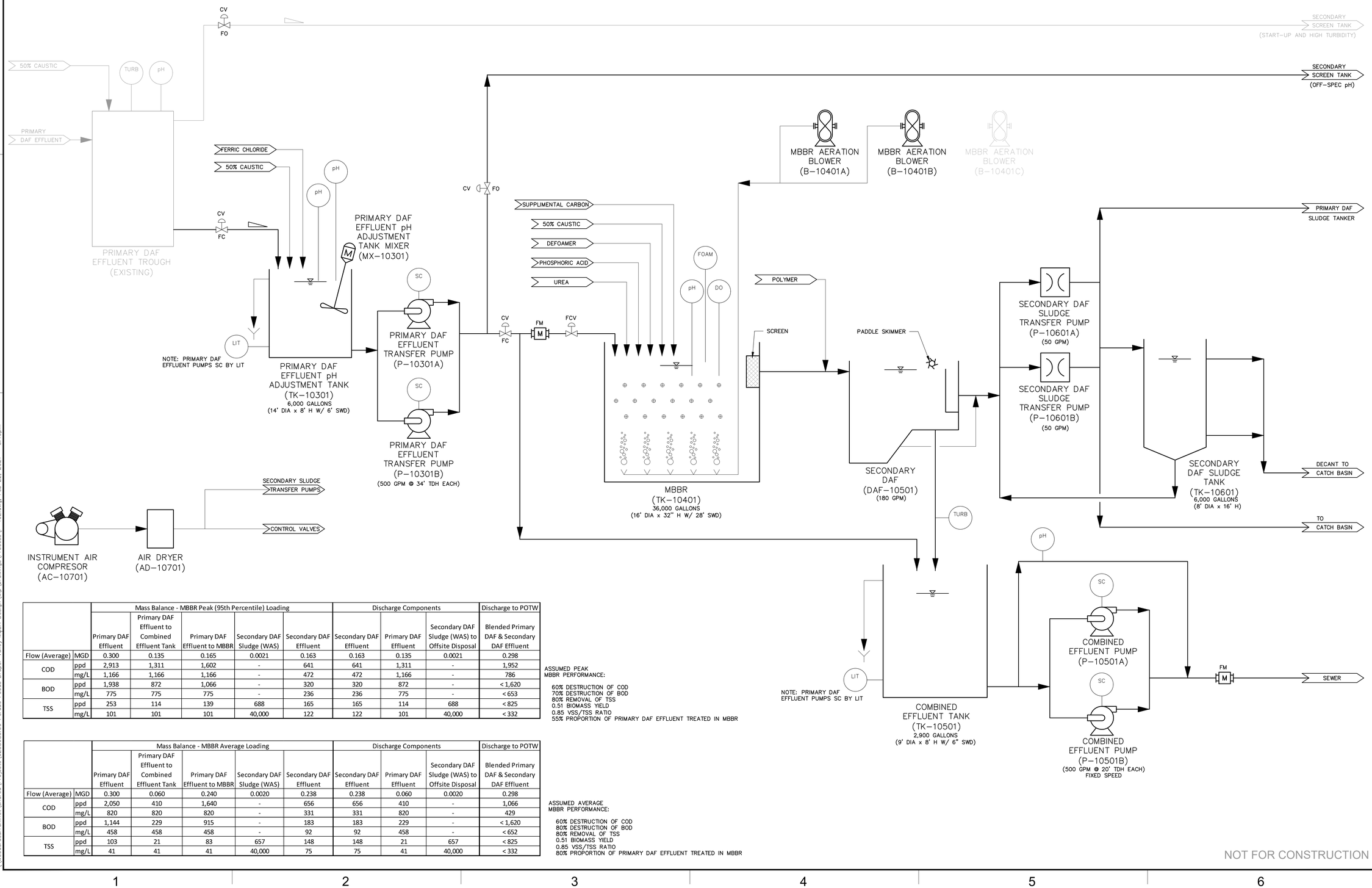
PERDUE DRAPER VALLEY FARMS
MOUNT VERNON, WASHINGTON

30% DESIGN WWTP UPGRADE

JOB NO:	233685.00
DATE:	2021
SCALE:	NA
SHEET:	---- OF XXX

P-101

DAF EFFLUENT TROUGH | pH ADJUSTMENT | DAF EFFLUENT PUMPS | MBBR | SECONDARY DAF | EFFLUENT TANK AND PUMPS | MBBR SLUDGE PUMPS AND TANK



		Mass Balance - MBBR Peak (95th Percentile) Loading					Discharge Components			Discharge to POTW
		Primary DAF Effluent	Primary DAF Effluent to Combined Effluent Tank	Primary DAF Effluent to MBBR	Secondary DAF Sludge (WAS)	Secondary DAF Effluent	Secondary DAF Effluent	Primary DAF Effluent	Secondary DAF Sludge (WAS) to Offsite Disposal	Blended Primary DAF & Secondary DAF Effluent
Flow (Average)	MGD	0.300	0.135	0.165	0.0021	0.163	0.163	0.135	0.0021	0.298
COD	ppd	2,913	1,311	1,602	-	641	641	1,311	-	1,952
	mg/L	1,166	1,166	1,166	-	472	472	1,166	-	786
BOD	ppd	1,938	872	1,066	-	320	320	872	-	< 1,620
	mg/L	775	775	775	-	236	236	775	-	< 653
TSS	ppd	253	114	139	688	165	165	114	688	< 825
	mg/L	101	101	101	40,000	122	122	101	40,000	< 332

ASSUMED PEAK MBBR PERFORMANCE:

60% DESTRUCTION OF COD
70% DESTRUCTION OF BOD
80% REMOVAL OF TSS
0.51 BIOMASS YIELD
0.85 VSS/TSS RATIO
55% PROPORTION OF PRIMARY DAF EFFLUENT TREATED IN MBBR

		Mass Balance - MBBR Average Loading					Discharge Components			Discharge to POTW
		Primary DAF Effluent	Primary DAF Effluent to Combined Effluent Tank	Primary DAF Effluent to MBBR	Secondary DAF Sludge (WAS)	Secondary DAF Effluent	Secondary DAF Effluent	Primary DAF Effluent	Secondary DAF Sludge (WAS) to Offsite Disposal	Blended Primary DAF & Secondary DAF Effluent
Flow (Average)	MGD	0.300	0.060	0.240	0.0020	0.238	0.238	0.060	0.0020	0.298
COD	ppd	2,050	410	1,640	-	656	656	410	-	1,066
	mg/L	820	820	820	-	331	331	820	-	429
BOD	ppd	1,144	229	915	-	183	183	229	-	< 1,620
	mg/L	458	458	458	-	92	92	458	-	< 652
TSS	ppd	103	21	83	657	148	148	21	657	< 825
	mg/L	41	41	41	40,000	75	75	41	40,000	< 332

ASSUMED AVERAGE MBBR PERFORMANCE:

60% DESTRUCTION OF COD
80% DESTRUCTION OF BOD
80% REMOVAL OF TSS
0.51 BIOMASS YIELD
0.85 VSS/TSS RATIO
80% PROPORTION OF PRIMARY DAF EFFLUENT TREATED IN MBBR

NOT FOR CONSTRUCTION

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COMMITMENT & INTEGRITY DRIVE RESULTS

REV	DESCRIPTION	DATE
	DESIGNED BY: XXX	CHECKED BY: XXX
	DRAWN BY: XXX	P-102.dwg

PROCESS FLOW DIAGRAM MBBR AND SECONDARY DAF

PERDUE DRAPER VALLEY FARMS
MOUNT VERNON, WASHINGTON

30% DESIGN WWTP UPGRADE

JOB NO:	233685.00
DATE:	2021
SCALE:	NA
SHEET:	---- OF XXX

P-102

APPENDIX B: CROSSWALK WITH WAC 173-240-130 REQUIREMENTS

WAC 173-240-130	Summary of Requirement	Section in Engineering Report
a	Type of industry or business	1.1
b	The kind and quantity of finished product	1.1
c	The quantity and quality of water used by the industry and a description of how it is consumed or disposed of	2.1
d	The amount and kind of chemicals used in the treatment process	2.2.5 (existing) 3.8.8 (proposed)
e	The basic design data and sizing calculations of the treatment units	3.6 & 3.8
f	A discussion of the suitability of the proposed site for the facility	3.8.9
g	A description of the treatment process and operation, including a flow diagram	3.1 – 3.8 & Appendix A
h	All necessary maps and layout sketches	Appendix A
i	Provisions for bypass	3.8.2
j	Physical provision for oil and hazardous material spill control or accidental discharge prevention or both	2.3
k	Results to be expected from the treatment process including the predicted wastewater characteristics, as shown in the waste discharge permit, where applicable	3.6 & Appendix A
l	A description of the receiving water, location of the point of discharge, applicable water quality standards, and how water quality standards will be met outside of any applicable dilution zone;	Not Applicable
m	Detailed outfall analysis	Not Applicable
n	The relationship to existing treatment facilities if any	1.2 & 1.3
o	Where discharge is to a municipal sewerage system, a discussion of that system's ability to transport and treat the proposed industrial waste discharge without exceeding the municipality's allocated industrial capacity. Also, a discussion on the effects of the proposed industrial discharge on the use or disposal of municipal sludge;	2.4
p	Where discharge is through land application, including seepage lagoons, irrigation, and subsurface disposal, a geohydrologic evaluation is required.	Not Applicable
q	A statement expressing sound engineering justification through the use of pilot plant data, results from other similar installations, or scientific evidence from the literature, or both, that the effluent results from the proposed facility will meet applicable permit effluent limitations or pretreatment standards or both	1.4

WAC 173-240-130	Summary of Requirement	Section in Engineering Report
r	A discussion of the method of final sludge disposal selected and any alternatives considered with reasons for rejection	3.8.7
s	A statement regarding who will own, operate, and maintain the system after construction;	Facility Management and Operations Certification
t	A statement regarding compliance with any state or local water quality management plan or any plan adopted under the Federal Water Pollution Control Act as amended	Not Applicable
u	Provisions for any committed future plans	3.4.1
v	A discussion of the various alternatives evaluated, if any, and reasons they are unacceptable	3.5
w	A timetable for final design and construction	3.10
x	A statement regarding compliance with the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA), if applicable	Not Applicable
y	Additional items to be included in an engineering report for a solid waste leachate treatment	Not Applicable

ATTACHMENT C.4

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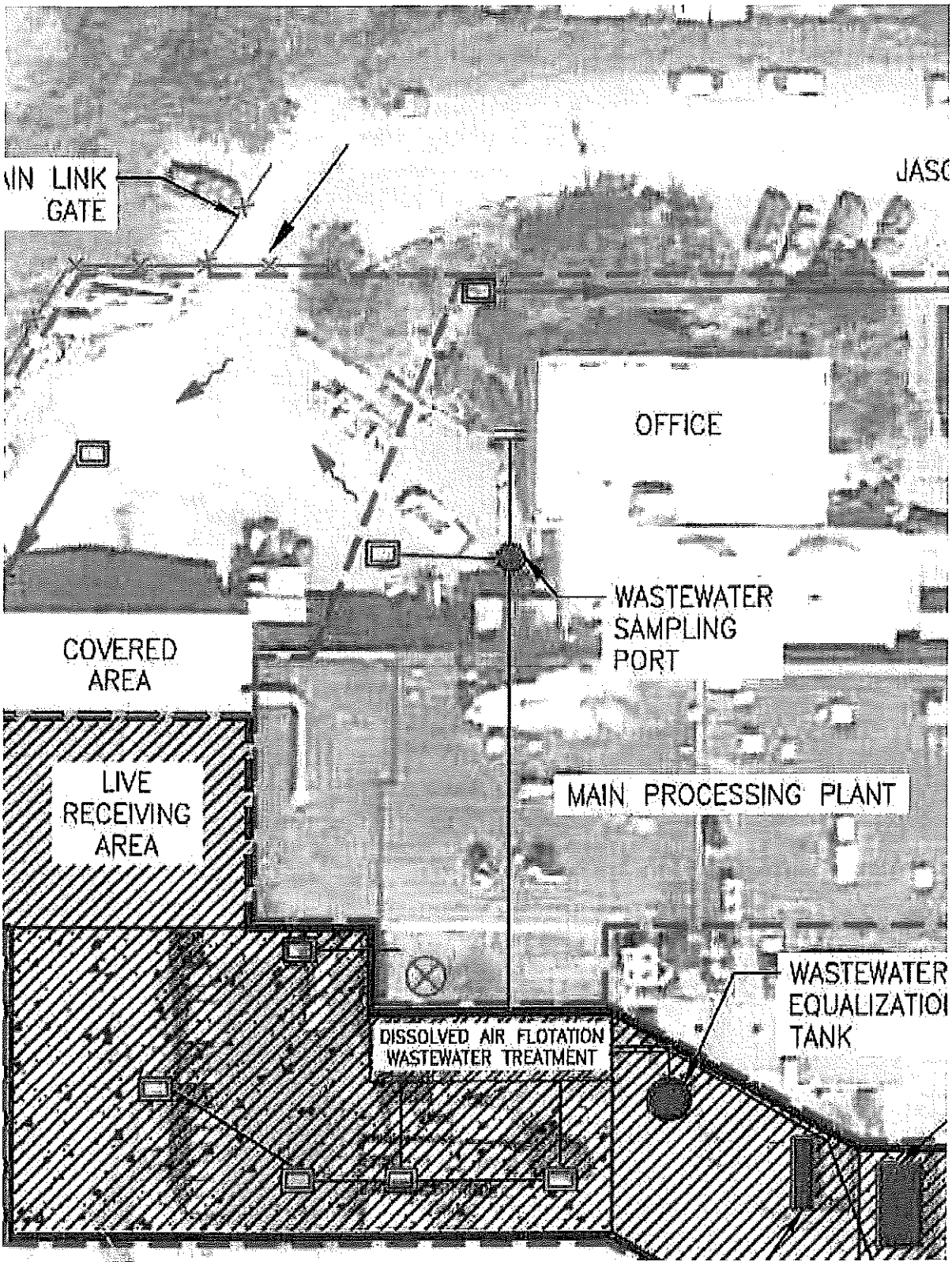
COMMITMENT & INTEGRITY DRIVE RESULTS



PROPOSED IMPROVEMENTS TO THE EXISITNG WASTEWATER TREATMENT SYSTEM WILL OCCUR UP STREAM OF THE WASTEWATER SAMPLING PORT. IMPROVEMENTS ARE DESCRIBED IN ATTACHMENT C.4