

Draft Fact Sheet

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Fact Sheet
Application Number: 15DP0359
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MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION INDUSTRIAL AND GENERAL PERMITS DIVISION

SUMMARY REPORT AND FACT SHEET

The Region III EPA Permit Checklist has been used as a guide to the permit review process. The results of the review and supporting rationale for the draft permit are summarized below. Supporting documents are attached including the application status memo, the draft permit, the application, a copy of the previous fact sheet, and a copy of the previous permit's cover page and special conditions.

Permit Type:	Major	Project Type:	Industrial/Surface/Renewal
State Application No.:	15-DP-0359	EPA No.:	MD0000060
Application Received:	10/06/2014	Permit Expiration:	08/31/2015
Watershed Permitting:	Year: 2015	Quarter:	4
Basin Code:	02130304	Basin Name:	Wicomico River Headwaters
Legal Name of Applicant:	Perdue AgriBusiness Incorporated		
Mailing Address:	P.O. Box 1537 Salisbury, MD 21802		
Facility Name:	Perdue Grain and Oilseed LLC		
Location:	6906 Zion Church Road Salisbury, MD 21804		
County:	Wicomico		
Contact (Name, Title):	Martin Stewart, Environmental Manager		
Contact Address:	Perdue AgriBusiness Incorporated P.O. Box 1537 Salisbury, MD 21802		
Contact Phone:	410-543-3424	FAX:	410-543-3104
Contact Email:	Martin.stewart@perdue.com		
SIC Code(s):	0254 (poultry hatchery), 2047 (animal food mfg), 2075 (soybeen oil mills)		
Applicant discharges from:	Chicken hatchery, poultry feed manufacturer, vegetable oil manufacturer		
Via Outfall(s):	001, 002, 003, 005, 006 and 016		

RECEIVING WATER INFORMATION

Name of Receiving Water Body: (& any Comments)	Designated USE Code	Salinity?	Tidal	Discharge is to Tier II Waters?
Peggy Branch	I	No	No	No
MD Coordinates of Facility:	East:	1734.22	North:	263.84
Subject to EPA review?	Yes	Public Hearing Req'd?	?	
Application Rec'd:	10/06/2014	Assigned:	10/06/2014	
Project Mgr.:	Paul Hlavinka	Phone:	410-537-3631	
Site Visit(s) Dates:	November 10, 2014			
Date Completed:	6/24/2016	Revision Dates:		
Reviewed by:	P. Hlavinka	(Initial) PSH	Date: 9/26/16	
Accepted by:	M. Richardson	(Initial) M.R.	Date: 10/10/2016	

I. Description of Facility and Activities Generating Discharge

The Perdue Grain and Oilseed LLC Zion Church Road Complex (ZCR) is a producer of commercial poultry products, poultry feed, soybean products, soybean oil products for wholesale and retail markets. The process areas of the facility can be described as follows:

1. Grain Storage and Handling
2. Poultry Feed Production
3. Soybean Processing
4. Vegetable Oil Refining
5. Vehicle Maintenance

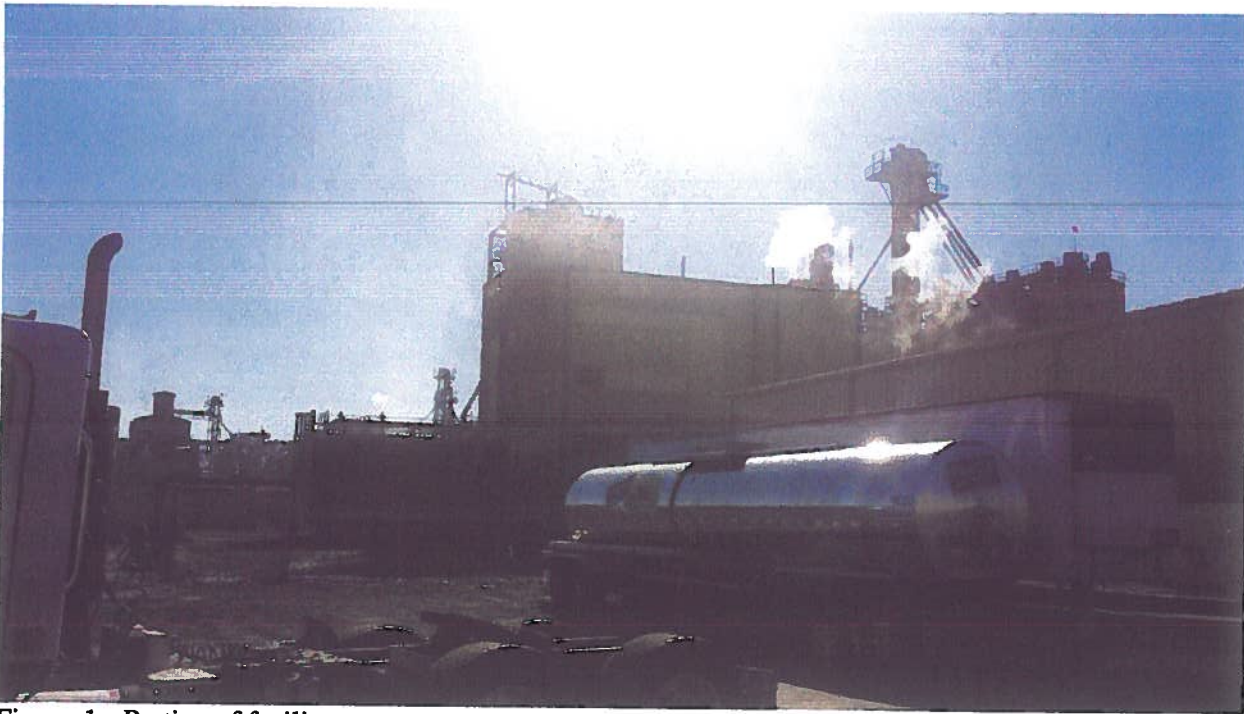


Figure 1 - Portion of facility.

In addition, the Perdue ZCR Facility has two hatcheries, a research farm and a marigold plant. As a hatchery, it isn't considered a concentrated animal feeding operation (CAFO) since it doesn't feed the resulting chickens here (40 CFR 412.40).

There have not been any major changes since last renewal.

Outfalls 001, 005 and 006

No discharges go to the municipal sanitary sewer since there is an onsite sanitary wastewater treatment facility which ultimately discharge from Outfall 001, 005 and 006 as described below.

Some of this wastewater has been recovered from soybean oil and solvent processing and treated process wastewater from chicken hatcheries and soybean processing and include wash down water from the hatchery and the soybean refinery (Figure 1). Other sources of wastewater are vehicle wash water (Figure 2), boiler slowdown, cooling tower bleed-off, print shop wastewater, sanitary wastewater and contaminated stormwater. Wastewater from the industrial facility flows by gravity to the treatment plants influent pump station, which has two pumps with one powered by a diesel

motor. The station has a flow meter and a local high level light/audible alarm. The station's wet well is cleaned weekly by CES. The contaminated stormwater is from the refinery area is also collected and discharged to the treatment plant.

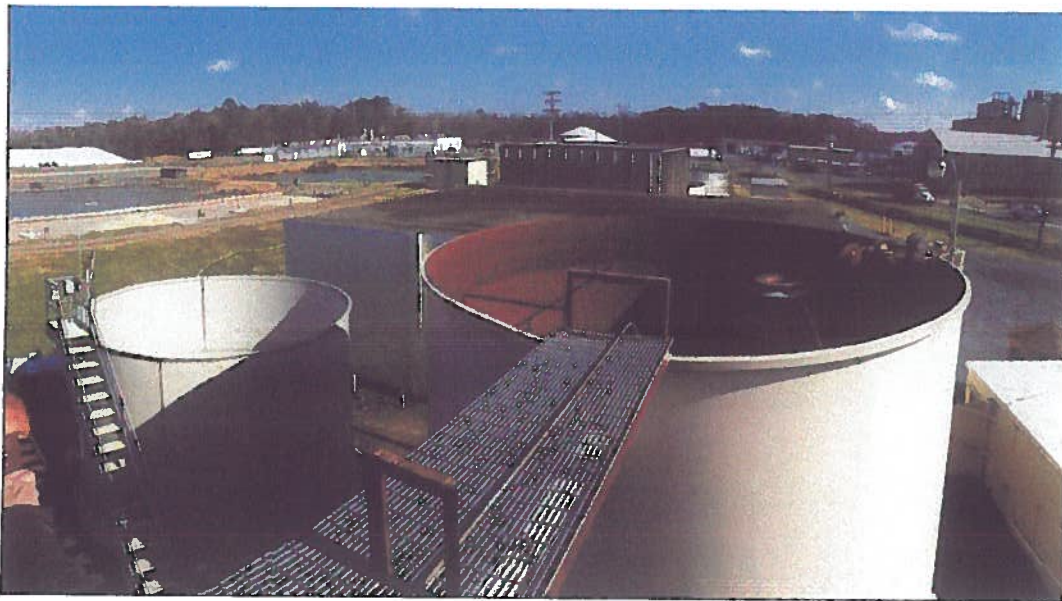
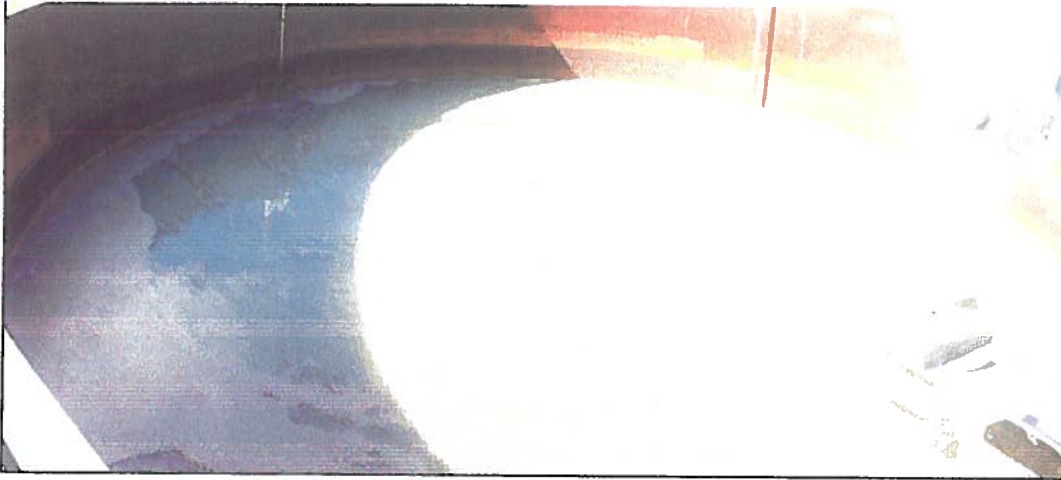


Figure 2 - Vehicle wash water occurs here.

The influent pump station pushes the flow into the facility's flow equalization tank (Figure 3), which are designed to handle the combined wastewater streams, including submerged mixers. A recent inspection show by the Department verified that the tank has several feet of freeboard with the contents adequately mixed. Further inspection shows that the tank has a high level alarm to notify the facility operators of a problem. Inspection of the emergency storage tank shows that the level also has several feet of freeboard.



Figure 3 - Equalization tank.



The combined wastewater from the equalization tank is pumped to the dissolved air floatation (DAF) unit (Figure 4). Caustic soda, aluminum chloride and a polymer are utilized at the DAF to properly control the pH and enhance the solids separation. From recent inspection records at the inlet of the DAF shows that the floc formation is good. The solids from the DAF are transported off site to the Delaware County Regional Water Quality Control Authority (DELCORA), as verified by the facility manifest forms which show that the solids are transported to DELCORA.

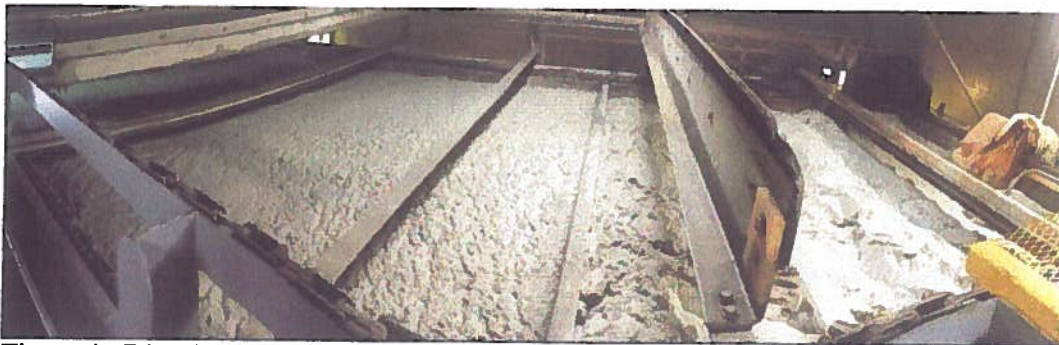


Figure 4 - Dissolved Air Floatation (DAF) treatment.

The wastewater flow from the DAF is pumped to the aerated lagoon (Figure 5) which has three mechanical aerators and two mechanical mixers. The facility's sanitary wastewater flows into and is mixed in the lagoon along with the wastewater from the industrial influent pump station. The sequential batch reactor (SBR) previously utilized to treat the sanitary wastewater remains off line. The return sludge from the #2 secondary clarifier is also being pumped to the aerated lagoon. The facility records show that several process control tests are routinely performed including sludge settleability, pH, alkalinity, dissolved oxygen, mixed liquor concentration etc. A copy of the facility's daily process control sheets utilized by the plant operators was obtained by the Department's inspector.

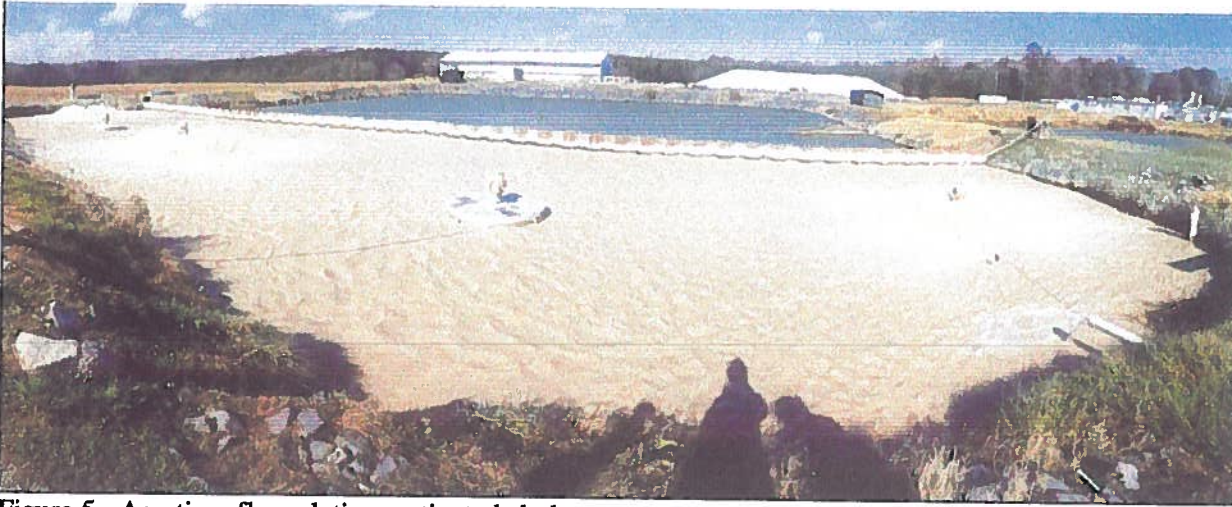


Figure 5 - Aeration, flocculation, activated sludge treatment

The waste sludge from the aerated treatment lagoon unit is pumped to the waste lagoon. The recent inspection shows that the waste sludge lagoon has about 3 foot of freeboard and the emergency storage lagoon shows that the level is down with about 8 to 10 foot of freeboard. The sludge from the waste lagoon is also transported off site to the DELCORA, as also verified by the facility manifest forms. The facility does operate with the Department's Sewage Sludge Utilization Permit 2010-STR-5545.

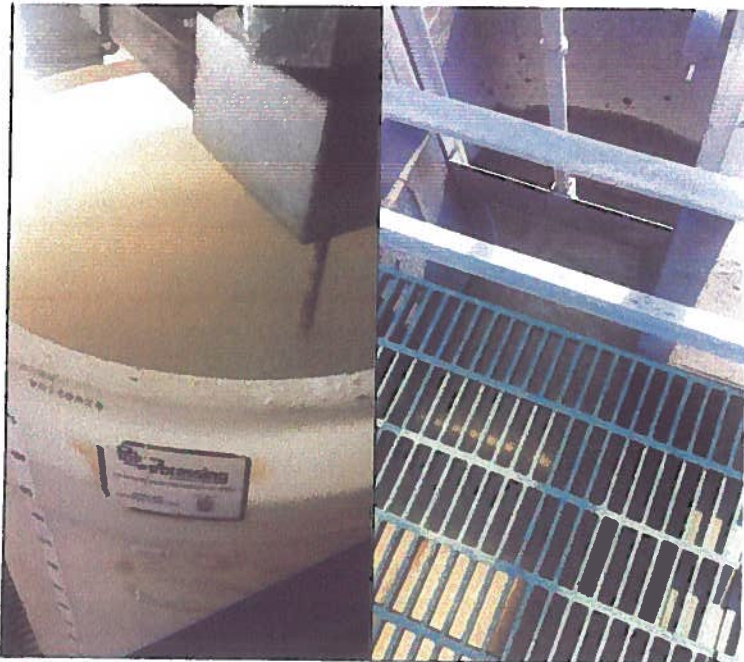


Figure 6 - Adding polymer.

The wastewater flow from the aerated lagoon is pumped to the upgrade building where aluminum chloride and a polymer are added prior to the secondary clarifier units (Figure 7). Inspection shows that the #2 east side secondary clarifier is on line with the #1 west side clarifier on standby. Further inspection shows that a turbidity meter is being utilized to monitor the effluent quality. Inspection of the #2 secondary clarifier shows that the solids separation is good and that the discharge is relatively clear.



Figure 7 - Secondary Clarifier

The wastewater flow from the #2 secondary clarifier is flowing by gravity to the chlorination/dechlorination unit (Figure 8).

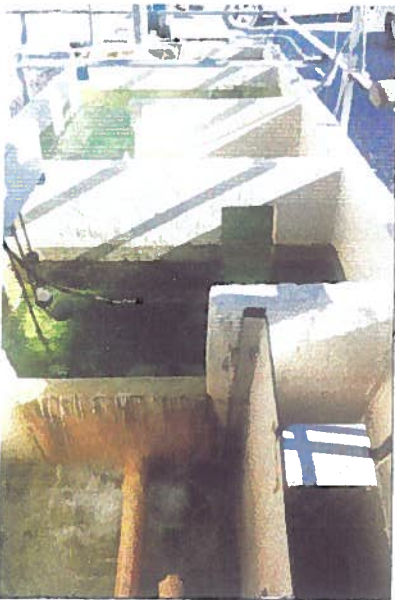


Figure 8 - Chlorination, de-chlorination and aeration.

The wastewater operator can then chose to send the same industrial process wastewater through Outfall 001, 005 or 006. Outfall 001 (Figure 9) goes directly to the Peggy Branch, Outfall 005 goes to spray irrigation of a wooded area and Outfall 006 effluent is applied to cultivated fields, typically planted in corn.



Figure 9 - Outfall 001

Inspection of the spray irrigation storage lagoon shows that it has about 10 foot of freeboard. Further inspection of the spray irrigation pump building shows that it has three variable speed pumps along with a flow meter and a pressure monitoring device that will shut down the system in the event of a problem. The spray irrigation pumps are utilized for the wooded outfall 005 and center pivot agricultural outfall 006. The spray irrigation system has a preset discharge flow monitor that is utilized to secure compliance with the hydraulic loadings listed in the facility's Discharge Permit.



Figure 10 - Outfall 006 Spray irrigation area.

Inspection noted that the center pivot agricultural outfall 006 has an established corn crop. This center pivot irrigates 40 acres. Review of the spray sites July 2, 2015 Nutrient Management Plan shows that it calls for 200 lb of nitrogen/acre. Supplemental nitrogen is added in addition to spray irrigation of the treated wastewater to meet the nutrient requirements of the corn crop. The facility maintains facility spray irrigation log, showing that the start and stop times, weather conditions, operator initials etc. They also maintain a Nutrient Management Plan, which was reviewed by our inspector July 2, 2015.

Outfall 002

Wastewater can be discharged from Outfall 002, which also goes directly to Peggy Branch, and would consist of non-contact cooling water from the cooling tower at the soybean oil extraction plant, the feed mill, and an air compressor.

Source water for the entire facility comes from a 92 foot deep well. Based on discharge monitoring reports and the application, no discharges have occurred from Outfall 002 since 2010.

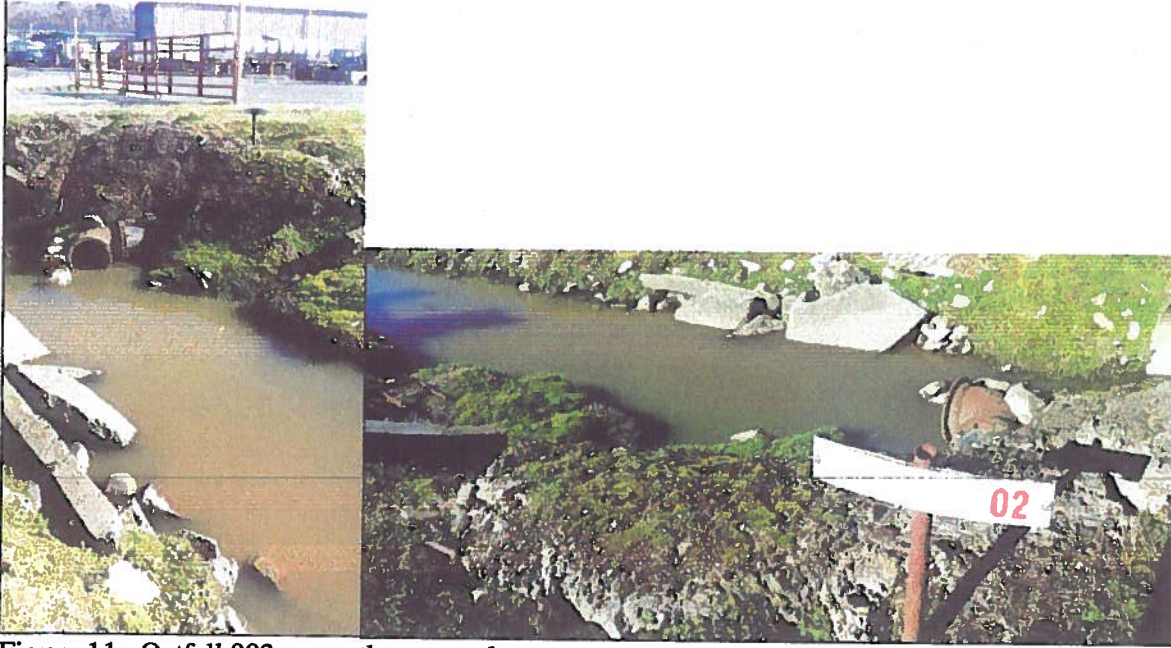


Figure 11 - Outfall 002 currently not used.

Outfall 003

Outfall 003 is a storm water-only outfall. It drains approximately three acres on the Southeast section of the production area and includes Hatchery 2, the boiler room, feed mill, purchasing, and the old wash bay. It has been shown to contain levels of BOD, TSS and Oil & Grease high enough for the Department to require monthly sampling. During the most recent inspection, discharge was observed with no sheen or visible solids. Wastewater discharges through a V-notch weir.

Outfall 016

Outfall 016 is a stormwater-only outfall. It drains approximately one acre of the service road and grassy area south of the grain tanks 26, 27 and 28. It has been shown to contain levels of BOD, TSS and Oil & Grease high enough for the Department to require monthly sampling. During the most recent inspection, discharge was observed with no sheen or visible solids. Wastewater flows through a trench and exits through a 36-inch T-trap.

Other Outfalls

The facility's vacuum truck is utilized to routinely pump out the sites stormwater catch basins and the drainage swale upstream of Outfall 016, and transported to the treatment plant for processing. Perdue recently estimated that about 90 percent of the stormwater at the site is pumped and transported to the treatment plant for processing. A recent inspection fortunately happened after the area experienced rainfall. Figure 12 indicates the approximate location for the outfalls the inspector visited. The inspector noted the following of the stormwater outfall locations:

For Outfalls 008, 010, 011, 015, 020, 023 – Minimal discharge with no sheen or visible solids

For Outfalls 012, 021 - Discharge with no sheen or visible solids

For Outfalls 013, 014, 019 – No discharge

For Outfalls 017 - Discharge relatively clear with no sheen or visible solids.

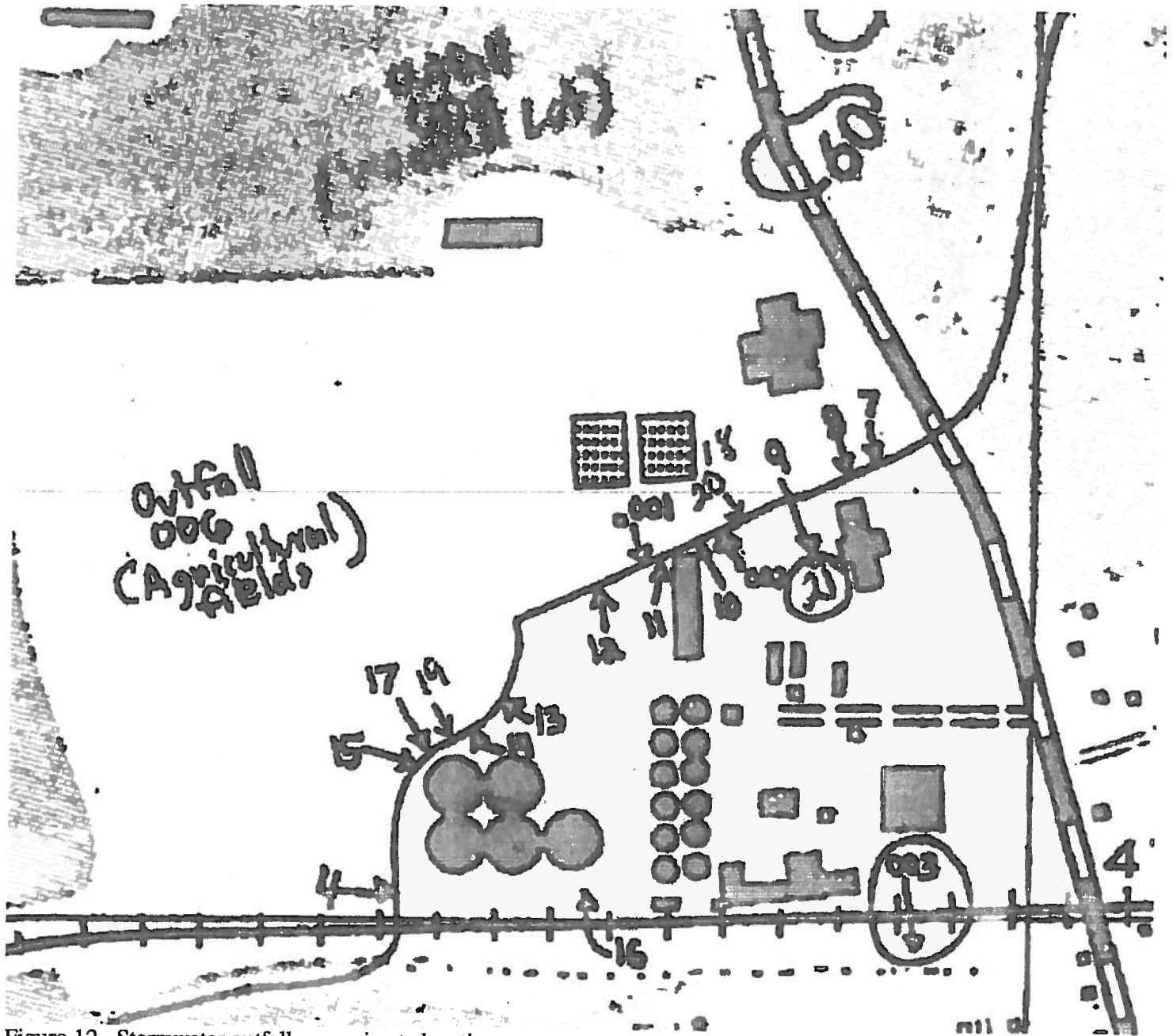


Figure 12 - Stormwater outfall approximate locations.

II. Review of SWPPP

The facility maintains an updated SWPPP based on the permit requirements. It was up to date and I could find no deficiencies when onsite. The 12-SW will require some additional additions to include visual monitoring and records of these for the stormwater outfalls. A review of compliance records indicates that the inspector does work yearly with Perdue to make sure this is the case. The following observations were made by the inspector in the inspection report. A review of the facility's June 22, 2013 Storm Water Pollution Prevention Plan showed that it was signed by Mr. Stewart and that it includes a list of the chemicals and products utilized at the site. It also included a drainage map showing the direction of storm water flow, location of the outfalls and a plan to address any spills or overflows. Notation is made that storm water outfalls 003 and 016 are required to be sampled on a monthly basis. Additional review showed that the Plan needs to be updated regarding Mr. Bill Cooper as the treatment plant operator and the current NPDES Discharge Permit number as 05-DP-0359. The inspector did check documentation required by the SWPPP, and verified inspections/work

orders include routine sweeping and cleaning of the sites impervious areas. This includes housekeeping activities in locations that the facility's sweeper cannot reach. These locations include the wash bay, maintenance garage, grain storage area, ingredient building, soy bean plant etc. The debris from the catch basins is transported to the sites storm water waste bend for dewatering prior to being transported off site to the Blue Hen compost facility located in Frankford Delaware. Review of the sites August 28, 2013 SPCC Plan shows that it was prepared by CABA Associates Inc. The Plan shows the location of the tanks located on site along with monthly and yearly inspections. The Plan also includes a SOP for draining the tanks containments. Inspection of the site does not reveal any problems regarding leakage or spills from the storage tanks.

III. Results of File Review

The main review of the file consisted detailed analysis of the Discharge Monitoring data, which is summarized later in this fact sheet.

IV. Results of Studies

Biomonitoring (acute toxicity) has been conducted in the past (2001, 2002 and two quarters in 2012), and in each case the effluent has been found to be nontoxic to aquatic organisms.

V. Compliance History

A review of inspection and compliance records show yearly visits are conducted by the Department's inspectors. The only compliance issue that led to an enforcement action was a construction project which began without a construction permit coverage in 2010, which was settled in 2011. In 2014, Perdue was requested to take immediate action to bring monitoring well #3 into compliance with the permit total dissolved solids limitation. Perdue was also requested to submit Removed Substance Forms regarding any removed substances as specified by the Discharge Permit under Special Conditions D on a yearly basis starting with calendar year 2014. The most recent (August 11, 2015) found the facility is satisfactory, with no issues. Based on this history, we will include electronic reporting of the removed substance forms as a more effective way to stay in compliance with removed substance special condition. We will also explore the total dissolved solids in more detail.

VI. Description of Receiving Stream(s)

Peggy Branch (Basin Code is 02130304) has a use class of I, or considered to be fresh water. The head waters originate on and around the facility (Figure 13). As the stream forms and flows across the property, it is approximately 15 feet wide, and 1 foot deep. This stream flows to Johnson Pond, some 3.4 miles downstream.



Figure 13 - Flow path of tributary to Peggy Branch.

VII. Outfall Details

Outfall or Monitoring Point #	Where will the Discharge be Monitored	What are the Waste Streams that contribute to the Discharge	Average Flow (MGD)	Comments	Outfall Coordinates (in 1000 ft)	
					Northing	Easting
001	10-inch pvc pipe, at treatment plant	Non-contact cooling tower, boiler blowdown, hatchery process wastewater, refinery wastewater, soybean extraction plant wastewater, vehicle wastewater, sanitary wastewater –(0.016 MGD), and print shop wastewater.	0.175	The Outfall 001 flow is to Peggy Branch. The 0.175 MGD total is distributed to three outfalls: 001, 005, and 006.	264.59	1,733.38
002	16-inch steel pipe	Non-contact cooling from soybean oil extraction plant & hatcheries	0.800	The flow is to Peggy Branch.	264.80	1733.84
005		Same as 001	Same as 001	The Outfall 005 discharge is to a forested area.	264.84	1732.34

Outfall or Monitoring Point #	Where will the Discharge be Monitored	What are the Waste Streams that contribute to the Discharge	Average Flow (MGD)	Comments	Outfall Coordinates (in 1000 ft)	
					Northing	Easting
006		Same as 001	Same as 001	The Outfall 006 discharge is to a 40 acre spray field.	266.13	1732.54
003			0.06	Industrial Stormwater Only		
016			0.10	Industrial Stormwater Only		
Total			1.135			

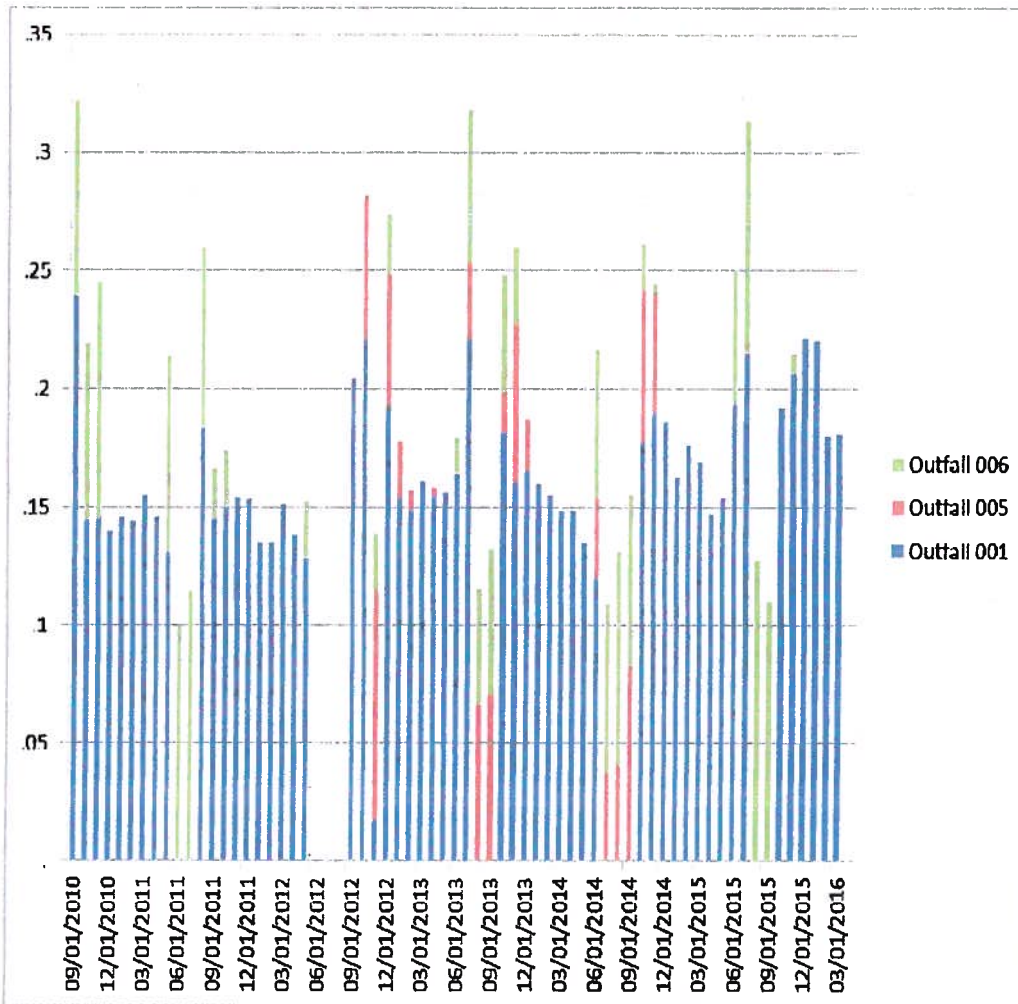


Figure 14 - Contribution of Flow to each Outfall (001, 005 and 006)

VIII. Detailed Assessment of Liquid Waste - Outfall 001, 005 and 006

Type of wastewater in Outfall 001, 005 and 006: Non-contact cooling tower bleed from refinery: extraction plant and refinery boiler blowdown; process wastewater (ww) from hatcheries; Soybean oil refinery wastewater; soybean extraction plant ww; vehicle ww; sanitary ww-0.016 MGD; print shop ww; storm water runoff.			
Treatment Unit:	Wastewater treatment plant uses a series of dissolved air floatation (DAF), aeration, polymer addition, pH adjustment, clarification, chlorination, and dechlorination.		
Discharge Type:	Continuous	Period:	The discharge is during the entire year, and they select whether it goes to a field, woods or to surface waters depending on what is allowed for in the permit.
Potential Basis for Whole Effluent Toxicity (Biomonitoring) Testing	There has been no evidence of toxicity from this outfall for the past two trials. Based on this and little changes at the plant, biomonitoring will not be recommended for this permit.		

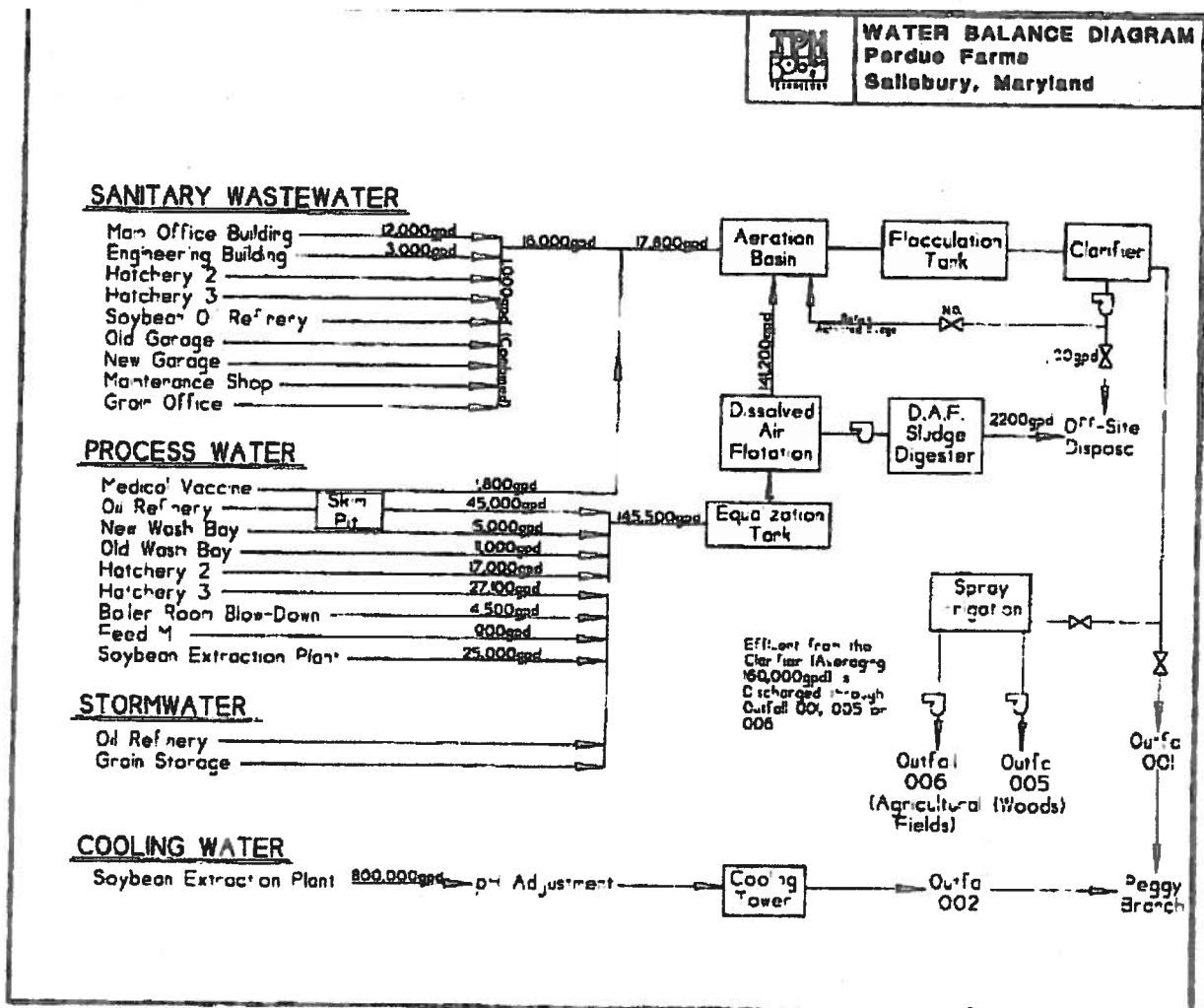


Figure 15 – Water balance diagram from permit application.

Ground water monitoring well locations and labeling:

NPDES Designation	county well ID	GPS Coordinates
MW #1	WI-81-3467	38.38929N 075.53574W

MW #2	WI-81-3469	38.38826N 075.53016W
MW #3	WI-81-3468	38.38641N 075.53382W
MW #4	WI-92-1140	38.38444N 075.53179W
MW #5	WI-92-1139	38.38348N 075.53382W
MW #6	None	38.38345N 075.53713W

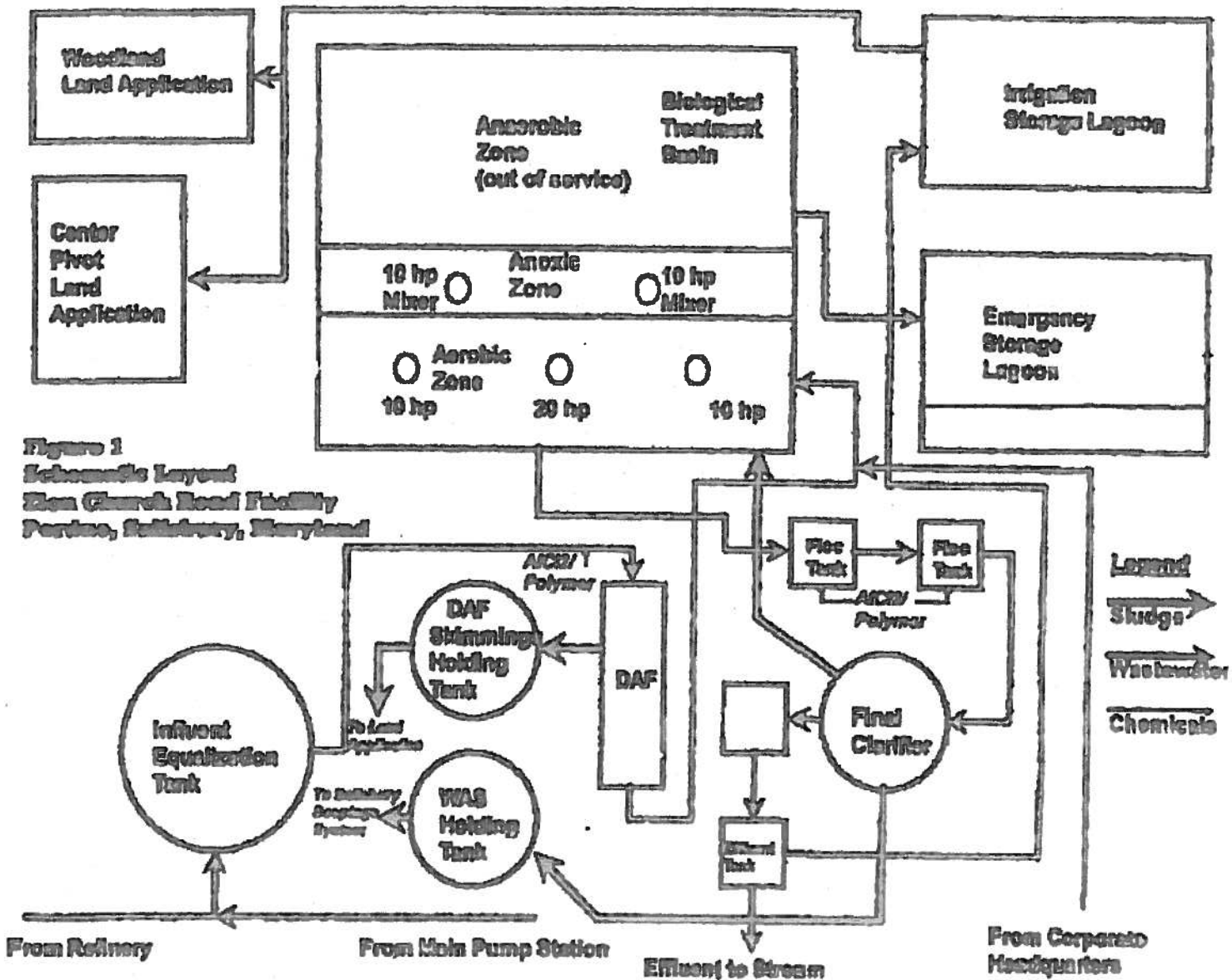


Figure 16 – Process water flow diagram from application.

Assessment of Nutrients (Total Nitrogen & Phosphorus) in the Discharge

The facility is located in a local watershed with impairments for nutrients as well as located within the Chesapeake Bay watershed. TMDLs have been established for both.

“TMDLs of Phosphorus and Sediments to Johnson Pond in the Upper Wicomico Watershed, Wicomico County, MD (Approved on February 13, 2001)”.

“Chesapeake Bay Total Maximum Daily Load (TMDL): Lower Nanticoke River Mesohaline Segment ID: NANMH”

To protect local water resources from the depletion of oxygen in Johnson Pond, several permit iterations before this revision established a limit for TKN and BOD. These were both selected to be seasonal, since the receiving waters can assimilate these at different rates based on the weather.

TKN: Months of October-March
 $0.170 \text{ MGD} * 30 \text{ ppm} * 8.34 = 42.5 \text{ lbs/day}$, monthly average
 $0.170 \text{ MGD} * 60 \text{ ppm} * 8.34 = 85.0 \text{ lbs/day}$, daily maximum

TKN: Months of April-September
 $0.170 \text{ MGD} * 11 \text{ ppm} * 8.34 = 15.6 \text{ lbs/day}$, monthly average
 $0.170 \text{ MGD} * 22 \text{ ppm} * 8.34 = 31.2 \text{ lbs/day}$, daily maximum

To protect the Chesapeake Bay, total nitrogen loading limits were established when the existing permit was issued in 2010. The total nitrogen limit for Outfall 001 established was 2070 lbs/year. The basis for this limit was that the Outfall 001, would be used approximately 8 months of the year, at a dail average flow of 0.17 MGD and land application the other 4 months, and using 6 mg/l concentration based on similar biological nutrient reduction at a minor WWTP.

For both TKN and Total Nitrogen, the permittee has demonstrated the ability to operate within the established limits (Figure 17 and Figure 18). However, with the more restrictive regulations put in place and enforced by Maryland Department of Agriculture, the operator's land application is now being restricted during certain months of the winter season. As a result an additional 1500 lbs/year of nitrogen to surface water discharge during those months is required to support the existing operations. This will be discussed further later in the fact sheet.

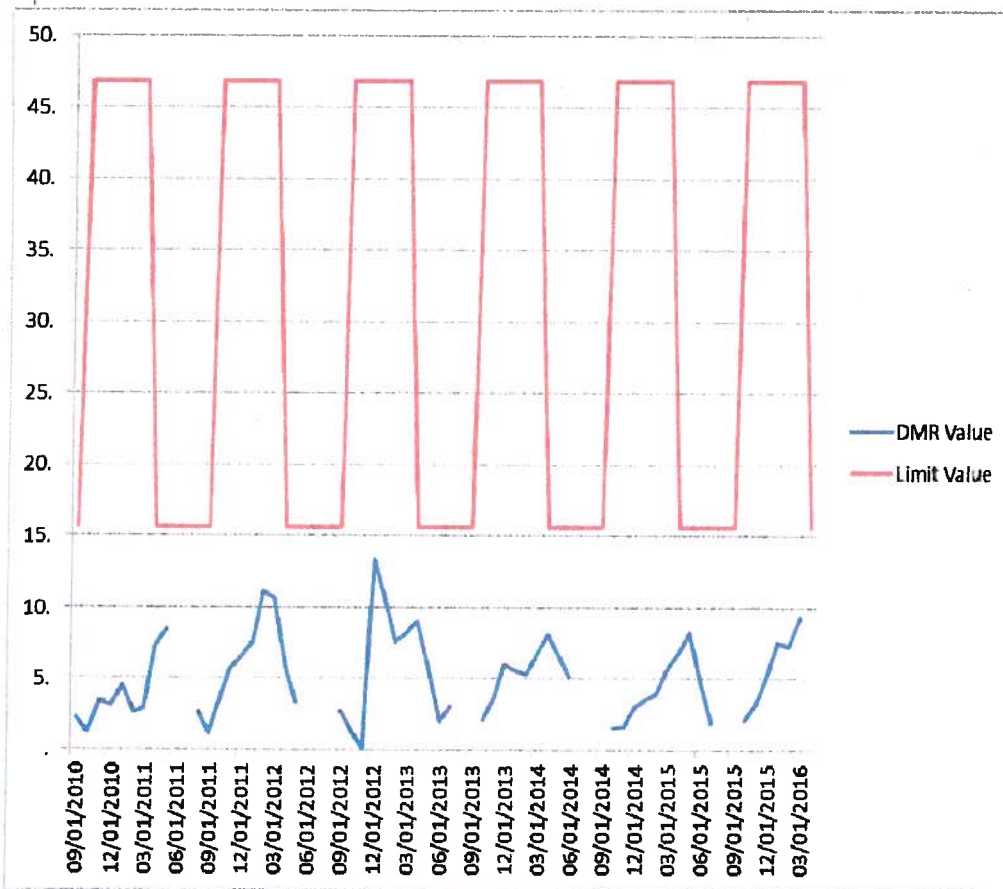


Figure 17 – Outfall 001 Total Kjeldahl Nitrogen (lbs/day) Loading

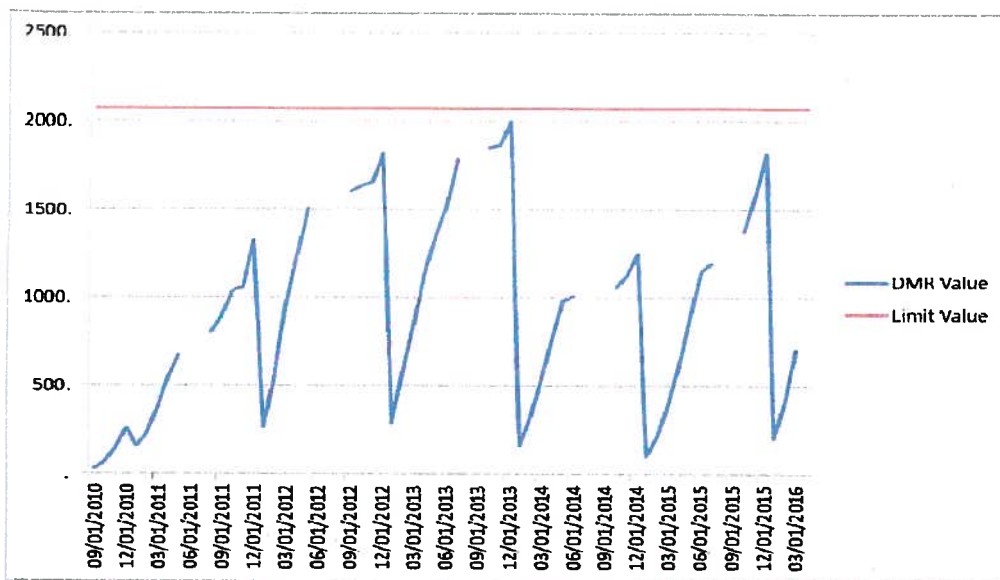


Figure 18 - Outfall 001 Total Nitrogen (lbs/year)

The facility is subject to a TMDL for Johnson Pond, Upper Wicomico River “TMDLs of Phosphorus and Sediments to Johnson Pond in the Upper Wicomico Watershed, Wicomico County, MD (Approved on February 13, 2001)”. The TMDL’s phosphorus loadings are based on 1998 DMRs or the actual discharge data, instead of the concentration allowed in the permit. The WLA for Purdue was therefore originally based on a concentration of 0.3 mg/L and a flow of 0.160 MGD ($0.3 \times 0.16 \times 8.34 \times 365 = 146 \text{ lb/year}$). The previous permits had specifically limited Outfall 001 at a lower concentration of 0.28 mg/l at a higher flow rate at 0.17 MGD ($8.34 \times 0.28 \text{ mg/l} \times 0.17 \text{ MGD} \times 365$) which still equates to 146 lbs/year. However, what the data shows is that the concentrations for phosphorus were much lower than expected, and the resulting loads don’t approach the loading limit identified in the permit (Figure 19). Based on this data, we will carry over the previous limits, which are achievable and are protective based on the TMDL.

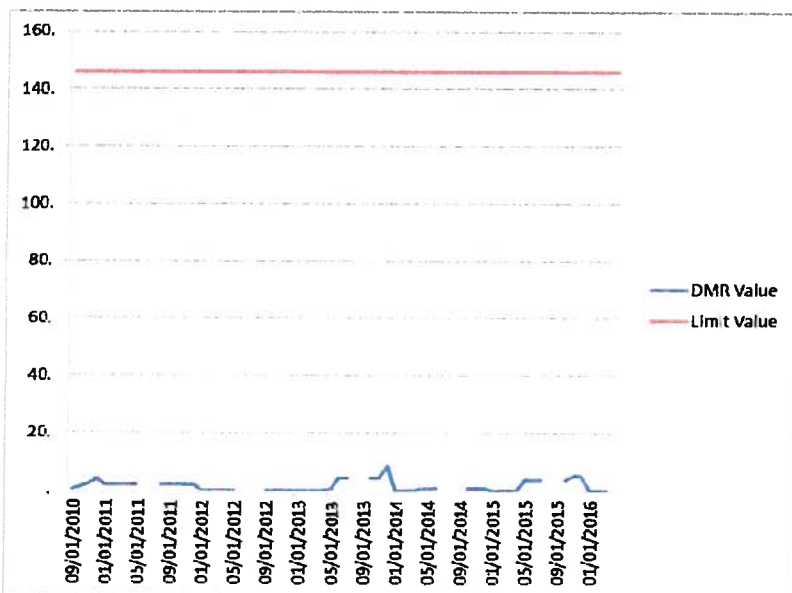


Figure 19 - Outfall 001 Total Phosphorus (lbs/month)

Final TMDLs Approved by EPA: Johnson Pond, Upper Wicomico River. TMDLs of Phosphorus and Sediments to Johnson Pond in the Upper Wicomico Watershed, Wicomico County, MD (Approved on February 13, 2001)
TSS had been limited based on a flow of 0.16 MGD of water from the sanitary waste and a maximum average concentration of TSS equal to 30 mg/l. The current loadings are based on 1998 DMRs. The TMDL identified both Delmar and Perdue as the two point sources with allocations. For Delmar's current sediment load, a concentration of 30 mg/L and a flow of 0.650 mgd were used. For Perdue's current sediment load, a concentration of 30 mg/L and a flow of 0.160 mgd were used. The calculation in the TMDL was based on $(0.16 \text{ MGD} / (0.65+0.16)) * 33.6 \text{ tons/year} = 6.64 \text{ tons/year}$ of TSS. However, the load allocated in the permit of 5.17 tons/year (6 months at 42.5 lbs/day and 6 months at 14.7 lbs/day) of TSS has now been in place for at least two permit terms, and is achievable by the facility (Figure 20).

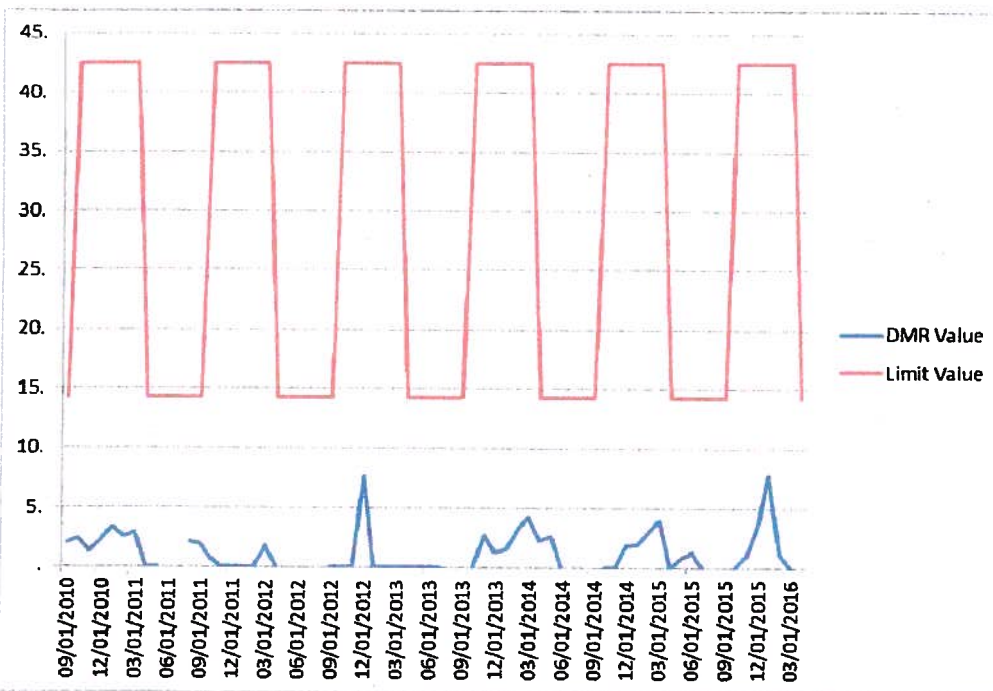


Figure 20 - Outfall 001 TSS Loading (lbs/day)

Groundwater Monitoring Wells (MW1 through MW6)

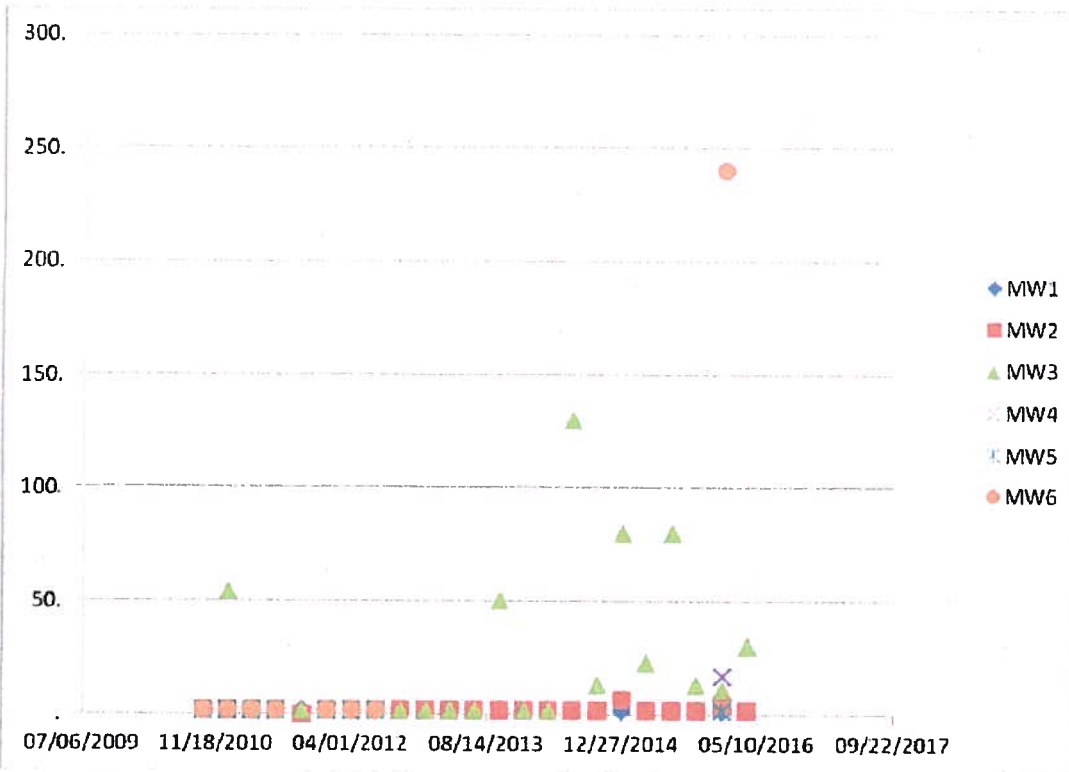


Figure 21 - Monitoring Wells Fecal Coliform

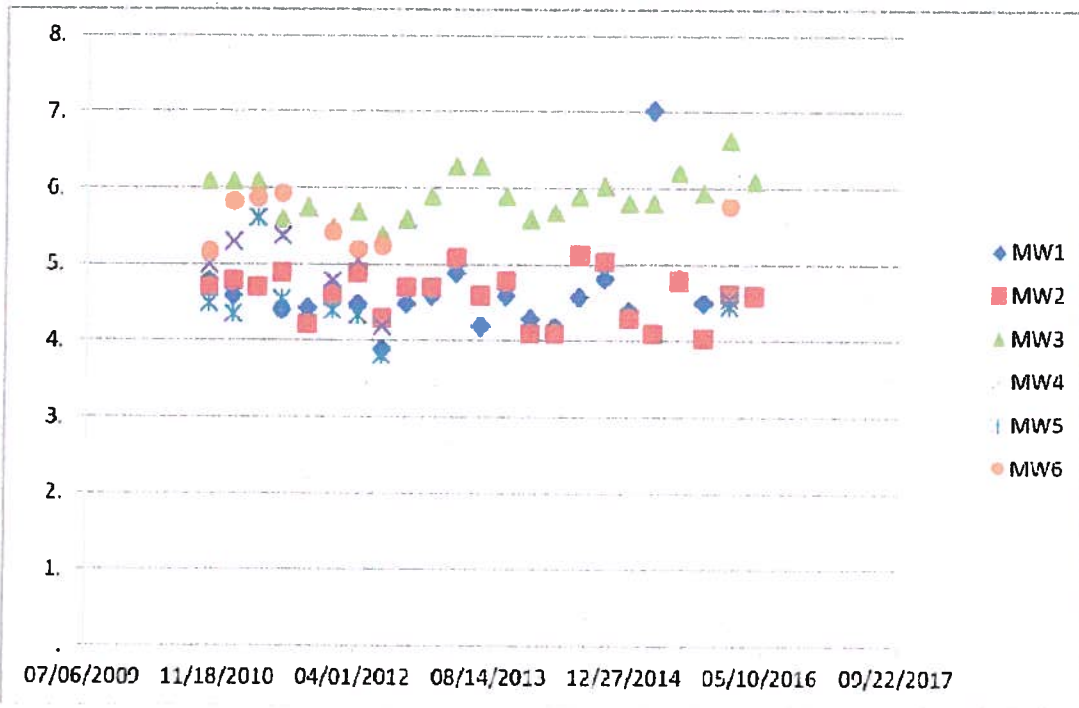


Figure 22 - Monitoring Wells pH

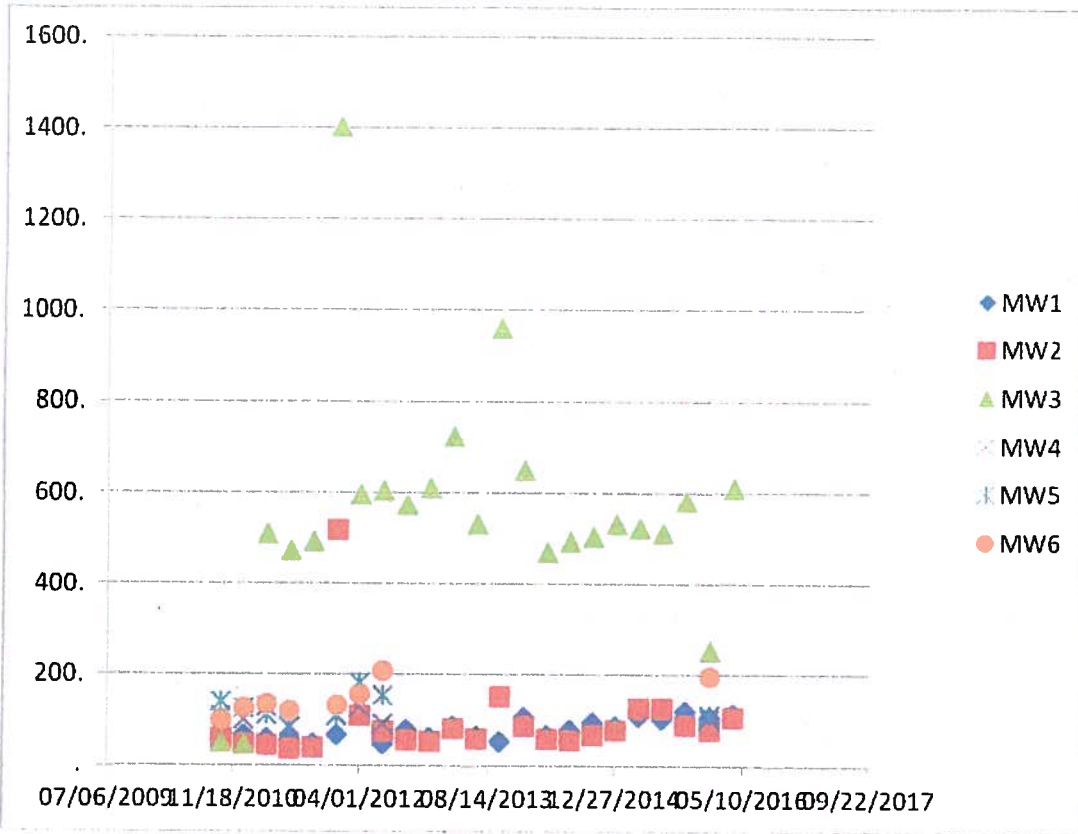


Figure 23 - Monitoring Wells (Total Dissolved Solids)

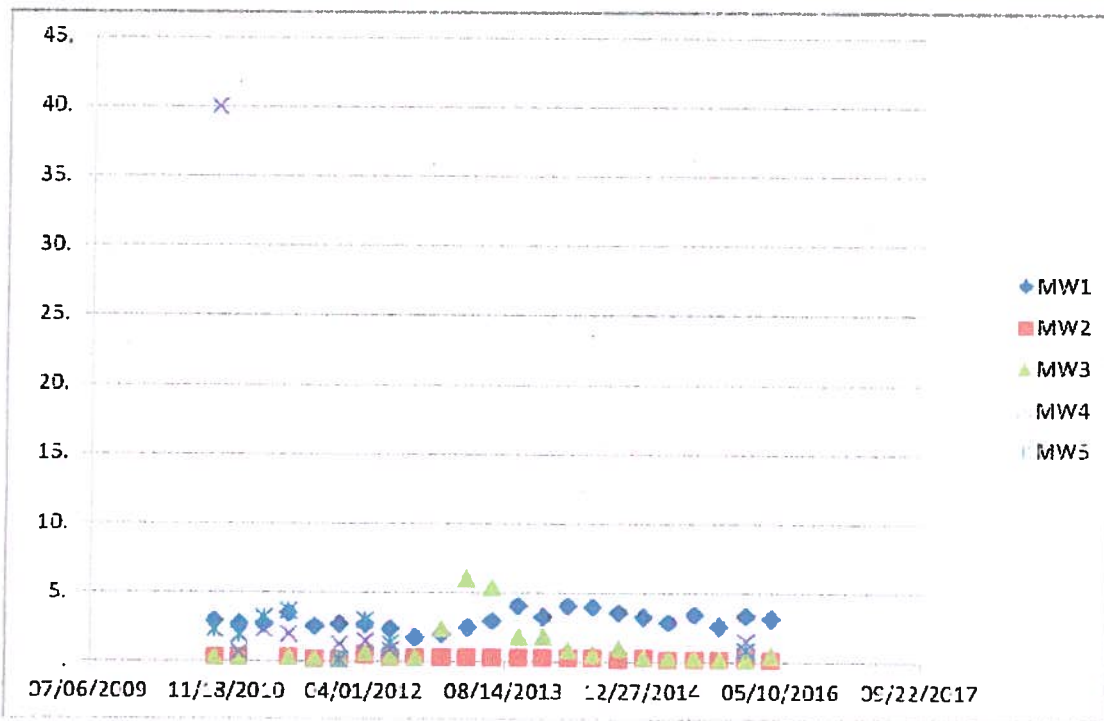


Figure 24 - Monitoring Wells Nitrate plus Nitrite (mg/l)

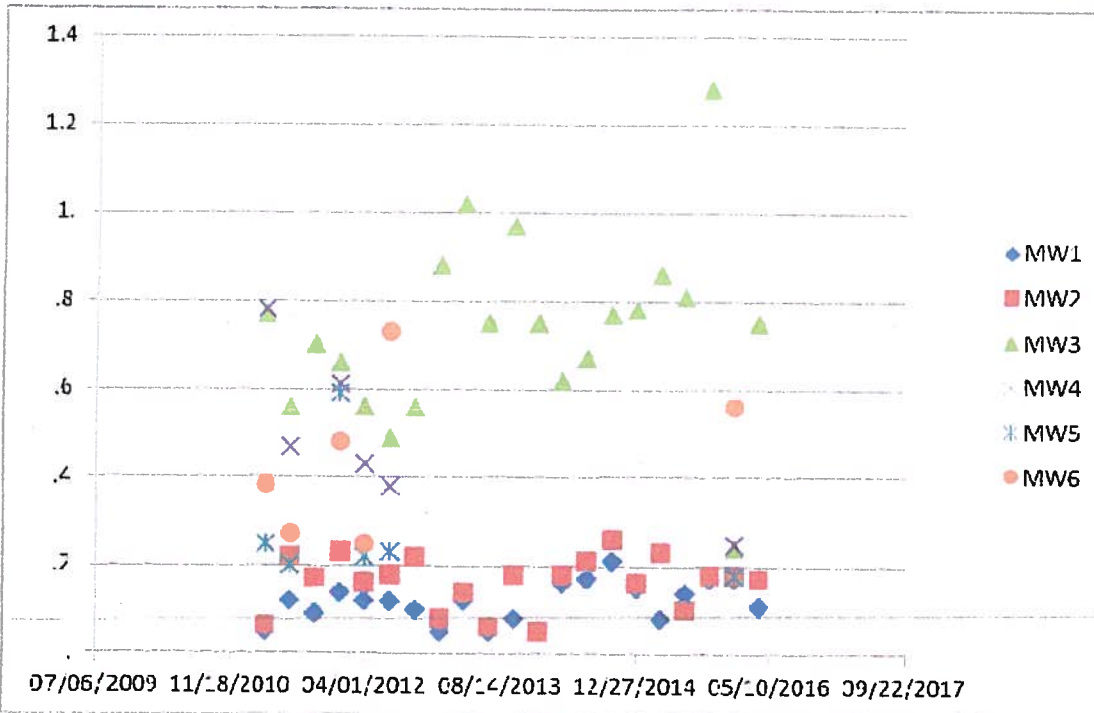


Figure 25 - Monitoring Wells Total Kjeldahl Nitrogen (mg/l)

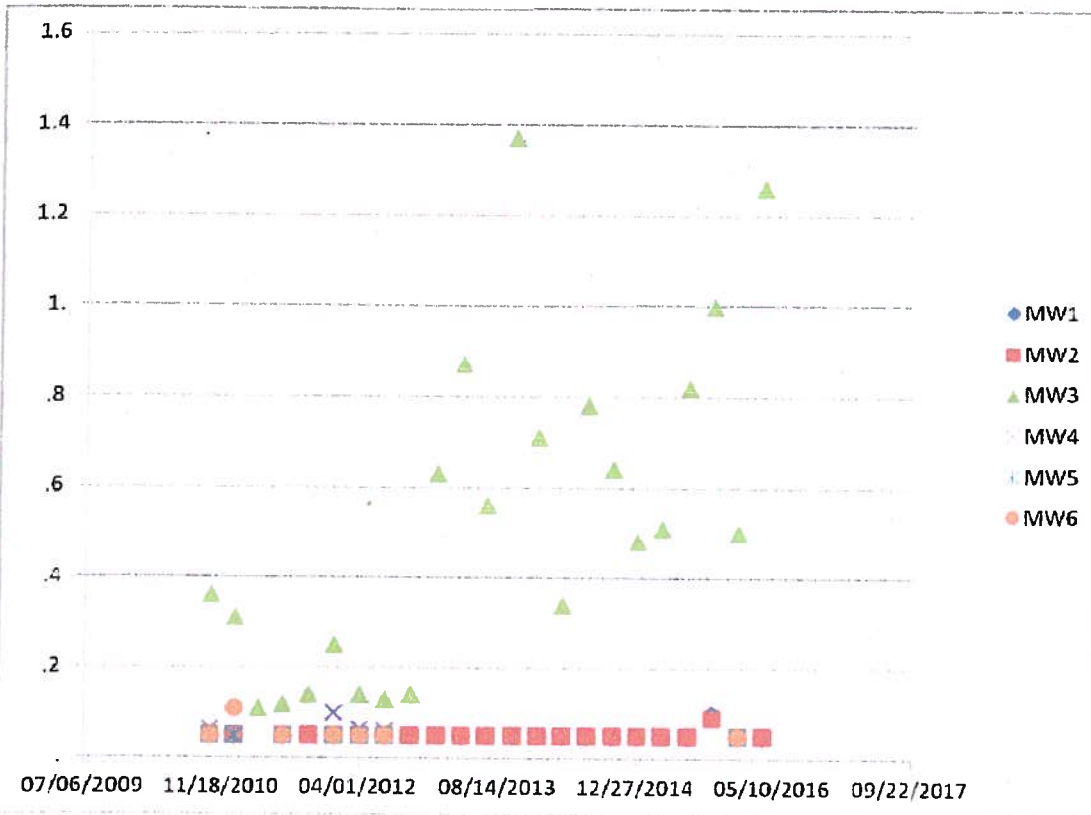


Figure 26 – Monitoring Wells Total Phosphate

IX. Total Maximum Daily Load (TMDL) Status of the Receiving Water

Other than the Nutrient and Sediment TMDLs described above in the assessment of Nutrients there is one more TMDL impacting this watershed and is applicable for this facility.

“Total Maximum Daily Loads of Fecal Bacteria for the Non-Tidal Wicomico River Headwaters Basin in Wicomico County, Maryland (Approved on September 2007).” The TMDL allocated 0.8 Billion MPN/day E.coli bacteria. The previous permit limited E.coli load to 0.80 billion MPN/day. This was based on a concentration of 126 MPN/100ml and a flow of 0.1668 MGD.

X. Antidegradation Review and Tier II Status of the Receiving Stream

This facility doesn't discharge to a Tier II stream and therefore isn't subject to an antidegradation review.

XI. Overall Rationale for Effluent Limitations and Monitoring in the Draft Permit

There are no EPA effluent limitation guidelines (ELGs) for a facility of this type. So all parameters and pollutants in the discharges were compared with technology standards and/or water quality criteria to determine if any discharge would be likely to violate these standards. Then the limits, monitoring and special conditions of the previous permit and potential use of General Permits for Stormwater were reviewed to determine if updates or modifications to the monitoring, limits, and/or conditions were needed. The review resulted in the limitations, monitoring and monitoring frequencies, from the previous permit, being continued. The details of these decisions are detailed below.

XII. Outfall 001, 005 and 006 Rationale for Effluent Limitations and Monitoring

These outfalls represent the discharges of the majority of the process and wastewater from this facility. This section will be broken down into the limits for surface water (Outfall 001) and the land application (Outfall 005 and Outfall 006).

Outfall 001

Nutrients: The limit for surface water discharge of 2070 lb/year nitrogen is being increased by 1500 lb/year, or to 3570 lb/year, to address the MDA restrictions of land disposal, as discussed in the assessment for nutrients above. The additional 1500 lb/year is available in this Chesapeake Bay Segment from an inactive facility, MD0024716 NUSTAR TERMINALS OPERATIONS PARTNERSHIP L.P. The allocation will be considered temporary, and must be offset by trading which will be further described in Special Condition T.

There is no corresponding increase for phosphorus. The other nutrient limits are unchanged, and are achievable and are protective based on the TMDL.

TKN: Months of October-March, 42.5 lbs/day, monthly average and 85.0 lbs/day, daily maximum.

TKN: Months of April-September, 15.6 lbs/day, monthly average, 31.2 lbs/day, daily maximum.

Phosphorus: 146 lbs/year.

Total Suspended Solids (TSS): There are no limits for TSS when land application is used. However, previous permits for Perdue have allowed for seasonal TSS limits to surface waters, and applied those as both concentration (mg/l) and as loading limits (lbs/day). The seasonal concentration based limits were an average 10mg/l, and maximum 20mg/l during summer months and average 30 mg/l, and maximum 60 mg/l in the winter. This accounted for a total load of sediments of 5.17 tons/year of TSS, which was more conservative than required by the TMDL 6.64 tons/year. Reviewing the data, this facility discharge concentrations are consistently less than 10 mg/l year around. For this renewal we will be implementing concentration based limits of average 10mg/l, and maximum 20mg/l for the entire year. This permit change supports loading limits that are more conservative than the TMDL.

Biochemical Oxygen Demand (BOD5): Process and wastewater discharge volume and constituents continue to be consistent with previous permit revisions. The limits established have been based on the Streeter-Phelps model (91-

DP-0359, page 21). Based on the discharge monitoring data, the facility routinely meets this loading (Figure 27 and 28). No change has been made in loading limits or monitoring for BOD.

BOD5: Months October-March

$0.170 \text{ MGD} * 30 * 8.34 = 42.5 \text{ lbs/day}$ monthly average

$0.170 \text{ MGD} * 60 * 8.34 = 85.0 \text{ lbs/day}$ daily maximum

BOD5: Months of April-September

$0.170 \text{ MGD} * 10 * 8.34 = 14.2 \text{ lbs/day}$ monthly average

$0.170 \text{ MGD} * 20 * 8.34 = 28.4 \text{ lbs/day}$ daily maximum

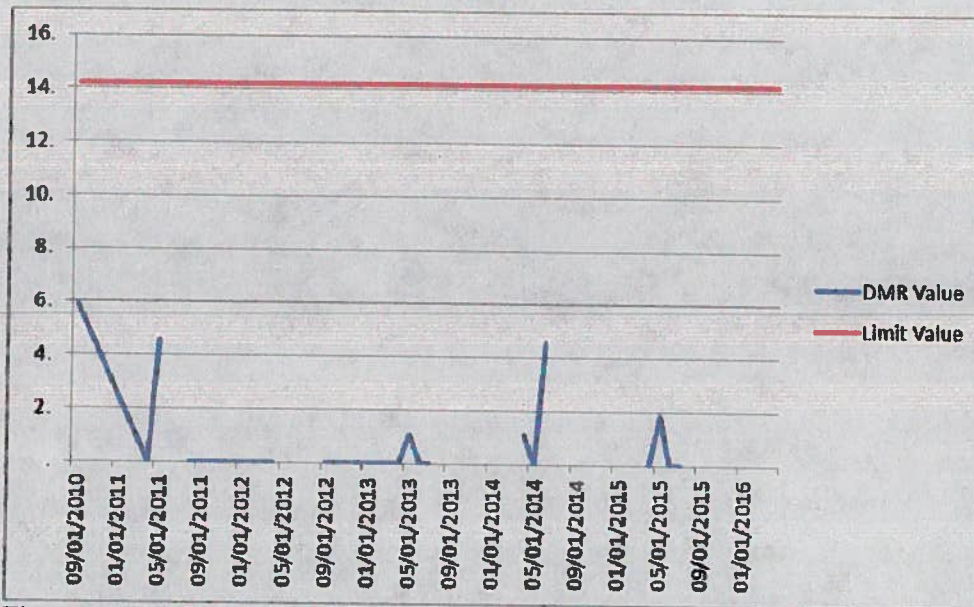


Figure 27 - Outfall 001 BOD (lbs/day) - Summer

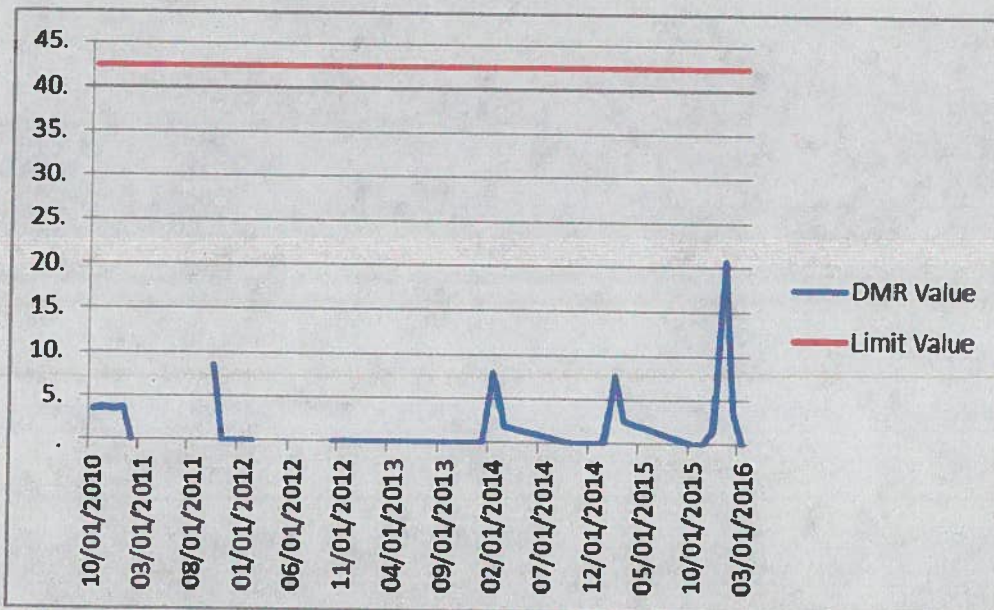


Figure 28 - Outfall 001 BOD (lbs/day) - Winter

Oil & Grease: This parameter and limit is continued from the previous permit. The maximum limit is BAT for treatment of this constituent. The permittee has demonstrated the ability to meet both the average and maximum limits (Figure 29). Best professional judgment for treatment of water containing oil & grease is 15 mg/l maximum

and 10 mg/l average.

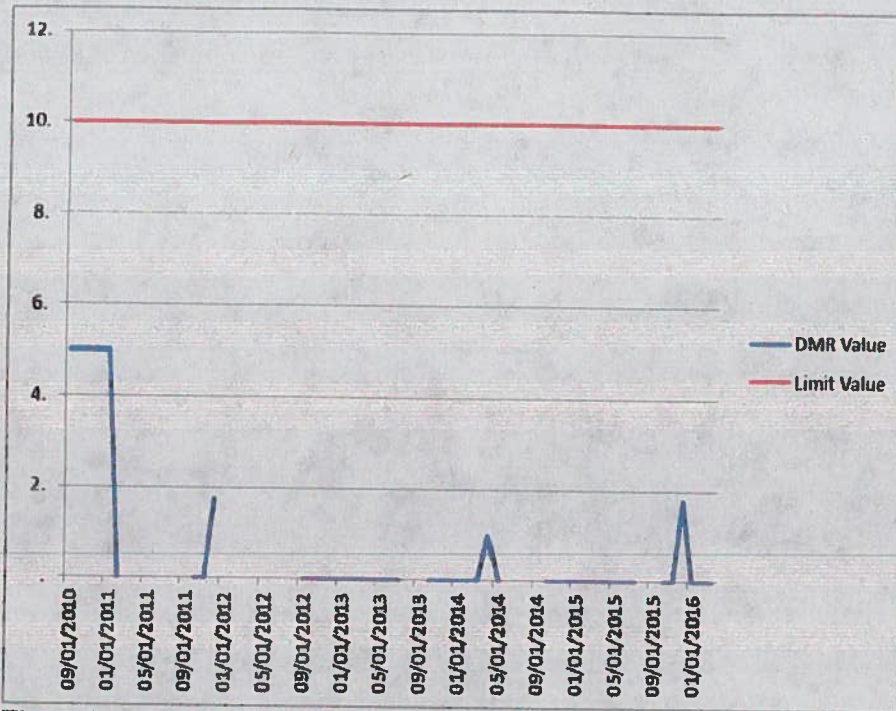


Figure 29 - Outfall 001 Oil & Grease (mg/l)

Fecal Bacteria was limited in the TMDL with the allocated 0.8 Billion MPN/day E.coli bacteria. From the data collected and presented in Figure 30, they are able to easily meet the limit. No changes from previous permit for monitoring or limits.



Figure 30 - Outfall 001 E.coli (MPN/100 ml)

Dissolved oxygen is one of the parameters limited in the permit since the facility does dechlorinate. They have

successfully maintained above the 5 mg/l permit requirement (Figure 31). No changes from previous permit for monitoring or limits.

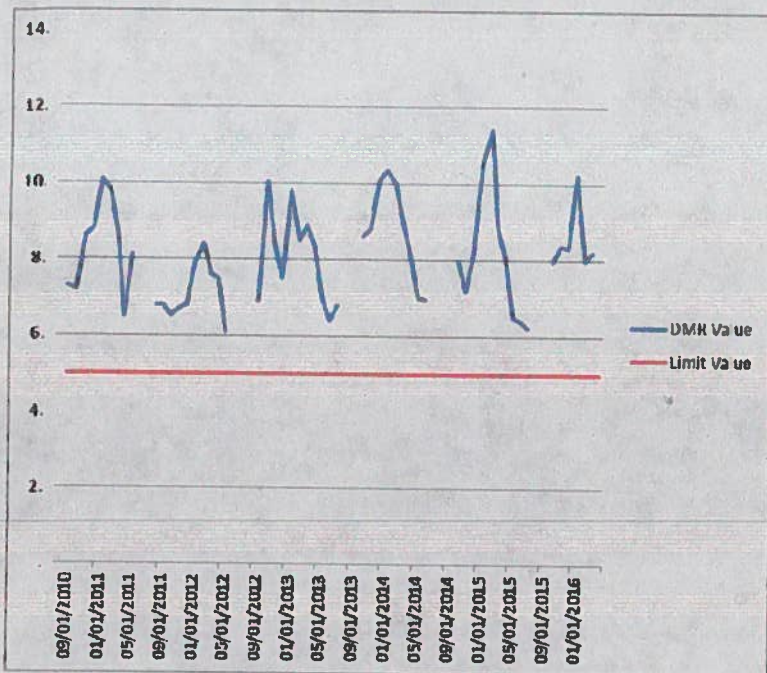


Figure 31 - Outfall 001 Dissolved Oxygen (mg/l)

pH is limited based on water quality criteria (6.5 to 8.5) and they consistently maintain the discharge within those limits (Figure 32). No changes from previous permit for monitoring or limits.

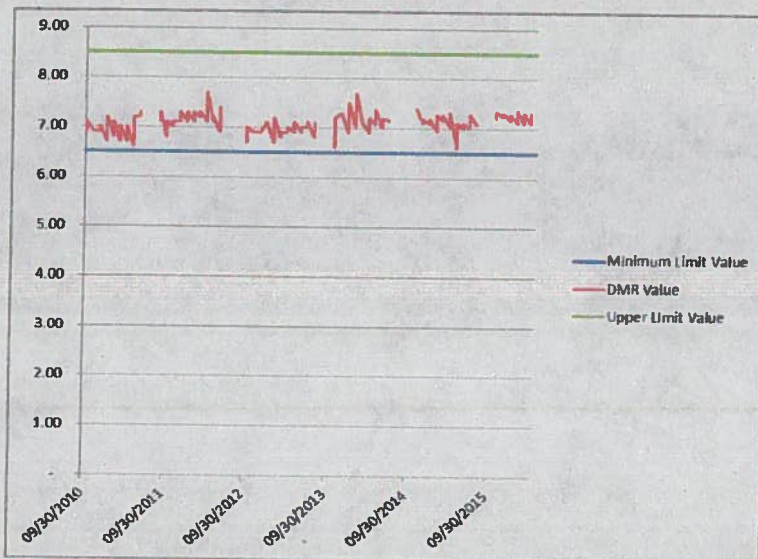


Figure 32 - Outfall 001 pH

Outfall 005

With this renewal, monthly flow limits have been eliminated. This is necessary because changes to nutrient management regulations now prohibit land application during the winter. Winter is defined in COMAR 15.20.07.02 (Supplement 7 May 2012) as between November 2 and February 28 of the following year. Nutrient application

rates will be governed by a required nutrient management plan written by a nutrient management consultant licensed in the State of Maryland.

Outfall 006

As with Outfall 005, with this renewal, monthly flow limits have been eliminated. This is necessary because changes to nutrient management regulations now prohibit land application during the winter. Winter is defined in COMAR 15.20.07.02 (Supplement 7 May 2012) as between November 2 and February 28 of the following year. Outfall 006 is a center pivot which irrigates 40 acres. This field is typically planted in corn.

Nutrient application rates will be governed by a required nutrient management plan written by a nutrient management consultant licensed in the State of Maryland.

XIII. Detailed Assessment of Liquid Waste - Outfall 002

Type of wastewater in Outfall 002: Non-contact cooling from soybean oil extraction plant & hatcheries.			
Treatment Unit:	<u>None</u>		
Discharge Type:	<u>Intermittent</u>	Period:	Application indicates no water has discharged since 2010
Potential Basis for Whole Effluent Toxicity (Biomonitoring) Testing	There is no potential for toxicity or reason to require biomonitoring at this outfall.		

XIV. Outfall 002 Rationale for Effluent Limitations and Monitoring

The discharge does have potential to have elevated temperature discharges, due to the use as non-contact cooling water. As a result temperature is monitored and limited. The previous permit limits and monitoring will be carried forward for Temperature Difference of 0 degrees.

The source of this water is groundwater. The previous permit had addressed potential for low pH by limiting the discharge for pH of 6.5 to 8.5. This will be carried.

Since they did not discharge over the past 5 years and as a result didn't monitor for nutrients, we don't have a definitive assessment from this site. However, we do have nutrients as gathered by monitoring wells around the facility, which averaged to 1.81 mg/L Nitrate plus Nitrite. We can use this as an estimate of nutrients discharged if a discharge volume is reported in the future, so we will discontinue additional monitoring. We will continue the requirement for notification if they discharge and if they use any antifoulants.

XV. Detailed Assessment of Liquid Waste - Outfall 003, 016 and others identified for Industrial Stormwater

Type of wastewater in Outfall 003, 016 and many others: Stormwater associated with industrial activity (Industrial Stormwater)			
Treatment Unit:	<u>Pollution Prevention</u>		
Discharge Type:	<u>Intermittent</u>	Period:	<u>Discharge during or immediately after rain or snow events.</u>
Potential Basis for Whole Effluent Toxicity (Biomonitoring) Testing	There is no potential for toxicity or reason to require biomonitoring at this outfall.		

XVI. Outfall 003, 016 and other Industrial Stormwater Outfall Rationale for Effluent Limitations and Monitoring

The previous permit had correctly identified the potential for stormwater discharges with elevated concentrations of pollutants associated with industrial activity. The previous permit had identified certain constituents to monitor for potential limits in permits.

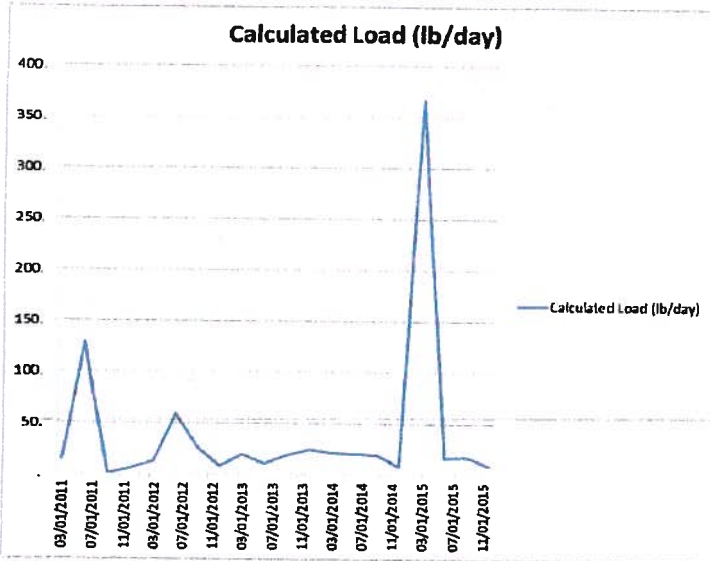


Figure 33 - Outfall 003 Calculated BOD Loading

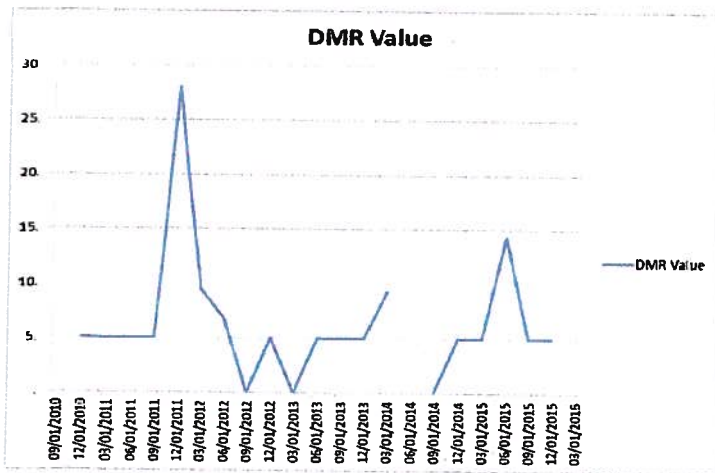


Figure 34 - Outfall 003 Oil & Grease (mg/l)

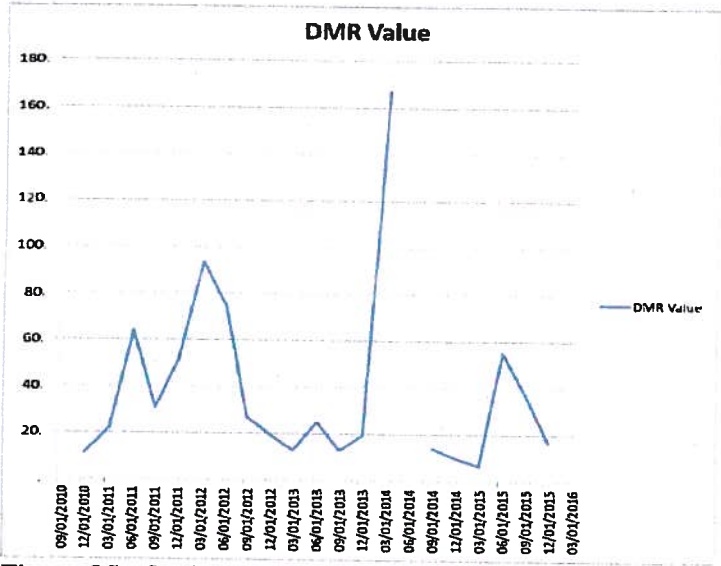


Figure 35 - Outfall 003 TSS (mg/L)

Outfall 016

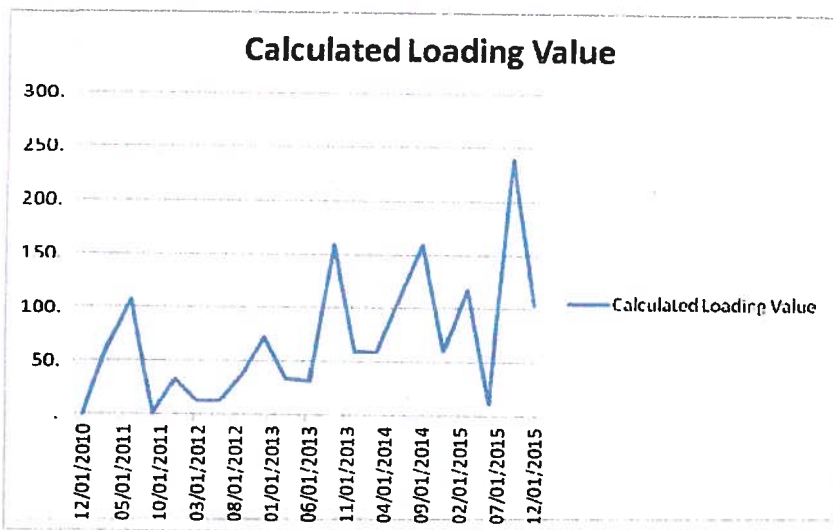


Figure 36 - Outfall 016 BOD Loading

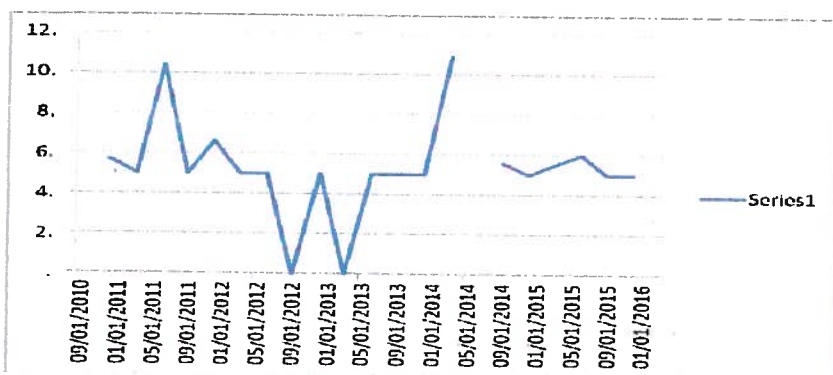


Figure 37 - Outfall 016 Oil & Grease (mg/l)

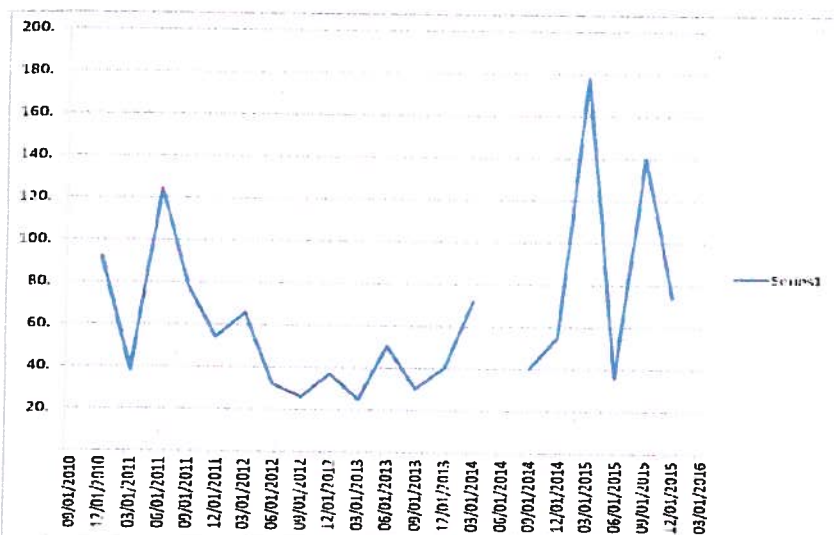


Figure 38 - Outfall 016 TSS (mg/L)

However, in the past the previous stormwater permit didn't address monitoring of stormwater. In the past we may have required specific limits in an individual permit for stormwater because of this weakness. The pollutants evaluated are the similar to the constituents where benchmarks are required in the Department's latest General Permit for Stormwater Associated with Industrial Activity (12-SW). The benchmarks in the 12-SW are provided in the following tables.

Table 7 - Subsector U1. Grain Mill Products (SIC 2041-2048)

PARAMETER	Benchmark	Units	Frequency	Sample Type
Total Suspended Solids (TSS)	100	mg/L	1/quarter	Grab

Table 8 - Subsector U2. Fats and Oils Products (SIC 2074-2079)

PARAMETER	Benchmark	Units	Frequency	Sample Type
Biochemical Oxygen Demand (BOD ₅)	30	mg/L	1/quarter	Grab
Chemical Oxygen Demand (COD)	120	mg/L	1/quarter	Grab
Nitrate plus Nitrite Nitrogen	0.68	mg/L	1/quarter	Grab
Total Suspended Solids (TSS)	100	mg/L	1/quarter	Grab

The permit will address these outfalls in the stormwater special condition. Based on these benchmarks, Perdue will be evaluating future monitoring and implementing corrective actions to ensure that they are effectively minimizing any pollutants associated with industrial stormwater at all the stormwater outfalls (including 003 and 016). These outfalls and monitoring will be removed from this permit in lieu of stormwater coverage under the 12-SW.

XVII. Rationale for Special Conditions in the Draft Permit

- B. **DEFINITIONS** - The included definitions have been edited from the standard list of definitions so that only the one relevant to this permit are included.
- C. **TOXIC POLLUTANT REPORTING** - This condition has been continued from the previous permit. The requirement is to address the release of any toxic pollutants not anticipated in the permit review process. Standard inclusion.
- D. **REMOVED SUBSTANCES** - This condition has been continued from the previous permit. This requirement is to assure that pollutants do not reach State waters by some other route. Standard inclusion, but only activated if we determine a potential need for this information.
- E. **ANALYTICAL LABORATORY** - This condition has been continued from the previous permit. This requirement is included because the Department may need to know who is doing the testing. Standard inclusion.
- F. **WASTEWATER OPERATOR CERTIFICATION** - Based on COMAR 26.06.01. This requirement is to assure that a properly trained person is operating the wastewater treatment system (Class 5).
- G. **FLOW MONITORING** - This requirement is to increase the probability that flow is being monitored competently. Standard inclusion.

- H. **FLOW BASIS FOR ANNUAL DISCHARGE PERMIT FEE** – This condition was added to all new/renewal permits to improve fee determinations. This requirement is to assure that we have the correct flow on which to base the annual fee.
- I. **REAPPLICATION FOR A PERMIT** – This condition and language was added to all new/renewal permits to comply with current watershed permitting requirements. This requirement is normally to assure that we have the application in time to reissue the permit by its watershed schedule.
- J. **PERMIT REOPENER FOR TOTAL MAXIMUM DAILY LOAD (TMDL)** – This condition allows the permit to be reopened if a TMDL is issued or approved for the watershed in which this facility resides. This requirement is to alert the permittee that the finalization of a TMDL is cause to reopen the permit.
- K. **BIOMONITORING PROGRAM** - This requirement is automatically required for major permits when it is not certain that the numerical limits address all pollutants or conditions that would cause aquatic toxicity.
- L. **TOXICITY REDUCTION EVALUATION** - This condition has been continued from the previous permit. This requirement defines the steps necessary to determine the cause of toxicity, once toxicity has been identified. Standard inclusion.
- M. **MIXING ZONES AND POLLUTION PREVENTION** - This condition was added to all new/renewal permits to provide an opportunity for the permittee to implement the goals of the “Chesapeake 2000 Bay Agreement”. It has been marked [Reserved] in the permit since there are not any toxics that require a mixing zone to meet water quality standards.
- N. **PROTECTION OF WATER QUALITY** – This condition puts the permittee on notice that there are occasions where they may be held accountable for failure to comply with state water quality standards regardless of whether there is a specific limit in the permit.
- O. **SPRAY IRRIGATION REQUIREMENTS** – Wastewater is spray applied to a wooded area (Outfall 005) and to agricultural fields (Outfall 006). The maximum hydrologic loading rate permitted is up to 2.0 inches per week of irrigation. In addition, the permit requires compliance with Maryland’s nutrient management regulations. These regulations include that these plans must be written by a nutrient management consultant licensed by the State of Maryland and prohibit land application during the winter (November 2 to February 28 of the following year).
- P. **GROUNDWATER MONITORING REQUIREMENTS** – Groundwater monitoring is being continued from the previous permit of upgradient and downgradient monitoring wells.
- Q. **GROUNDWATER STUDY** – In addition, a groundwater direction flow study will be required to differentiate between upgradient and downgradient wells. Compliance with groundwater quality limitations as measured in the monitoring wells, is based on an annual average. This is the standard that is applied for monitoring well compliance in municipal land application discharge permits.
- R. **WATER TREATMENT CHEMICALS** – Since COMAR 26.08.03.01A(2) prohibits the discharge of any pollutant in toxic amounts, this is required. The Department must be informed of any change in chemicals used that will be present in the discharge for Outfall 001, 002, 005 or 006. In order to

maintain the TMDLs, water treatment chemicals containing phosphorus have been prohibited from Outfall 002. This condition is continued from the previous permit.

- S. **PRINT SHOP CHEMICALS** – Since COMAR 26.08.03.01A(2) prohibits the discharge of any pollutant in toxic amounts, this is required. The Department must be informed of any change in the chemicals used in the print shop. This condition is continued from the previous permit.
- T. **NUTRIENT TRADING REQUIREMENTS** – The additional nitrogen allocated in this permit are provided on an interim basis and provide two options to comply. One option is based on a trading credit generation on the property owned by Perdue, and the other option is based on trading facilitated by Perdue with farms and agricultural lands.
- U. **STORMWATER ASSOCIATED WITH INDUSTRIAL ACTIVITIES** – This condition requires the permittee to apply for and maintain coverage under the 12-SW General Stormwater Associated with Industrial Activity (and any predecessor) , including implementing required stormwater controls and abiding by applicable benchmarks, and updating the existing storm water pollution prevention plan. This requirement is included because 40 CFR 122.26 identifies this activity for storm water regulation.

XVIII. Changes from the Previous Permit

- Requiring the more restrictive TSS 10 mg/l average, 20 mg/l daily maximum limits year around, and removing loading limits.
- Adopted new requirements for nutrient management plans for land application of wastewater, as required by new Department of Agriculture Regulations.
- Provided temporary allocation of 1500 lbs/year of nitrogen, and a requirement to offset this through nutrient trading either by credits on their own property or as an aggregator of credits.
- Requiring coverage under 12-SW for all stormwater outfalls, , including implementing required stormwater controls and abiding by applicable benchmarks, which will remove Outfall 003 and Outfall 016 from this permit.