

**Department of The Environment
Groundwater Discharge Permit
Summary Report and Fact Sheet**

Executive Summary

State Application No.: 14-DP-3811

Facility Name and Location: Beaver Run Mobile Home Park located at 3658 Karen Circle, Linkwood, Maryland 21835

Description of Facility: A Mobile Home Park.

Facility Discharges: Treated wastewater from a mobile home park.

Pollutants Limited: BOD < 30 mg/l, TSS <30 mg/l, and total nitrogen (TN) <8 mg/l

Changes From Previous Permit: No, this is a new permit for an existing wastewater disposal system

Controversial Provisions: Groundwater moves toward Higgins Millpond which is a eutrophic surface water body.

Summary of Wastewater Facility

The applicant has applied a permit to discharge treated wastewater to a sand lined trench/ drip dispersal application onsite system and subsequently to ground waters of the State. Significant information involving the application, additional data and determinations made by the State may be summarized as follows:

The Beaver Run Mobile Home Park wastewater facility is designed to treat and dispose of domestic wastewater from a residential community. Wastewater from 45 homes in Phases 3, 4 and 5 of this mobile home park will be treated at a wastewater treatment plant to meet the effluent quality limitations of BOD < 30 mg/l, TSS <30 mg/l, and total nitrogen <8 mg/l. Treated wastewater will be disposed of via a drip dispersal system installed on top of sand lined trenches in the repaired Trench Areas #4 and #5 shown on Map B of the permit. This is a replacement of the existing failing trench system.

Groundwater Discharge Permit
Summary Report and Fact Sheet
Page 2

Project Type: Sand Lined Trench/Drip dispersal

State Application No.: 14-DP-3811

Facility Name: Beaver Run Mobile Home Park

Address: 3658 Karen Circle, Linkwood, Maryland 21835

County: Dorchester

Contact (Name, Title): Chris Barry, Chief Operating Officer, ACG Maryland, LLC

Phone: (919) 744-1730

Applicant is engaged in: Management of A Mobile Home Park

Legal Name of Applicant: ACG Maryland, LLC

Address: 301 Felspar Way, Cary, North Carolina 27518

Basin Code: 02-13-03-III-P

Receiving Water Name (class): Groundwater, groundwater management area C, one ft treatment zone
allowed.

Latitude: 38°32'40.75", Longitude: 75°57'40.12"

Wastewater Characteristics

Design Average Flow: 6,750 gpd Design Peak Flow: 13,500 gpd

Proposed Discharge Period: yearly round

<u>Parameter</u>	<u>Design Influent Concentration</u>	<u>Effluent Quality Limitation.</u>
BOD ₅	215 mg/l *	30 mg/l
TSS	240 mg/l *	30 mg/l
Nitrogen(total as N)	40 mg/l	8 mg/l

PRETREATMENT FLOW DIAGRAM

Influent from mobile home park → Package plant* (dual trains, anoxic tank (3856 gal) + oxic tank (2214 gal) + clarifier + filters (primary & nitrate filters) ----> sand lined trench/ drip dispersal application system (Field 4 + Field 5)

Assimilative Capacity

Limiting Parameter (s) Loading Rate Land Required

Hydraulic Loading

***Drip /deep trench area provided: 13,455 ft² (Field 5) + 20,475 ft² (Field 4)**

***Loading rate at Field 5: 0.39 gal/ft²/day (5250 gpd/13,455 ft²**)**

***Loading rate at Field 4: 0.4 gal/ft²/day (8250/20,475 ft²**)**

Page 4-2 of the Hydro report recommends the loading rate be <0.19 gpd/ft² for Drainfield 4 and 0.2gpd/ft² for Drainfield 5. Exception of the above actual high loading rate (0.39& 0.4 gpd/sf in lieu of 0.19-0.2 gpd/sf) was made due to: (1) the effluent limitation of TN<8 mg/l; (2) the permeability limiting layer will be removed and replaced with sand; and (3) this proposal is for resolving existing failure.

***Burgin Engineering, Inc - Calculation Sheet 11/5/2014**

**** Total surface area of the drainfield including area between trenches.**

GROUNDWATER SYSTEM

Aquifer Name: Type: Kent Island Formation which is separated from the Columbia aquifer underneath via a clay confining layer *

Estimated Aquifer Transmissivity: 117 -164 ft²/day* or 875-1127 gpd/ft

Estimated Aquifer Permeability: N/A

Estimated Total Dissolved Solids Concentration: N/A

Projected Impact:

Minimal impact to the aquifer is expected since the TN effluent quality is limited at 8 mg/l which is lower than the drinking water standard (MCL) for nitrate (10 mg/l). The Kent Island Formation is about 18 ft thick at this location and is not used for drinking water purpose.

* Soil, and Hydrogeologic Site Evaluation, Beaver Run Mobile Home Park, Affordable Community Group LLC, Dorchester County, Maryland, Dated June 2013 by Edwin Andrews & Associates, P.C.

Rationale For Permit Conditions

(1) Condition I.A.2: BOD<30 mg/l and TSS<30 mg/l effluent limits were included for preventing solid clogging in the drip irrigation tubing. TN<8 mg/l limit was recommended in the consultant Hydro report for water quality protection.

(2) Condition I.A.3, adding groundwater discharge standards, upgradient and downgradient wells;

The standards for the groundwater monitoring parameters were defined for facilitating the compliance actions, if any, in the future.. The groundwater flow direction is from west to east toward Higgins Millpond (see Map A and Map B groundwater contour lines) MWs 1&3 are located west of the disposal fields and are upgradient well. The other two wells (MW 2 and MW4) are downgradient from the disposal field

(3) Condition I.B.1 includes the groundwater reporting requirement, DMR and the monthly operating reports in one section.

All the reporting requirements including the DMR, monthly operating reports and the groundwater monitoring reports are all centralized under Condition I.B.1.

Determining the yearly nitrogen load transported to surface water from the Beaver Run Mobile Home Park large onsite system

- (a) Determine the monthly nitrogen load (N_g , lb/month) to groundwater by multiplying the monthly accumulated discharge volume (V , million gallons per month) to the monthly average nitrogen concentration (C , mg/l) measured in the WWTP effluent with a conversion factor of 8.34 for converting mg/l to lb/ million gallons .

$$N_g = V \times C \times 8.34$$

- (b) Determine the monthly nitrogen load (N_s) to surface water by multiplying result from (a) to a delivery factor of 50% since the disposal drainfields is less than 1000 ft away from the Higgins Millpond which drains to the Transquaking River.

$$N_s = N_g \times 50\%$$

- (c) The yearly accumulated load to surface water in a calendar year is the sum of the nitrogen load (N_s) from each of the 12 months determined in item (b) above .