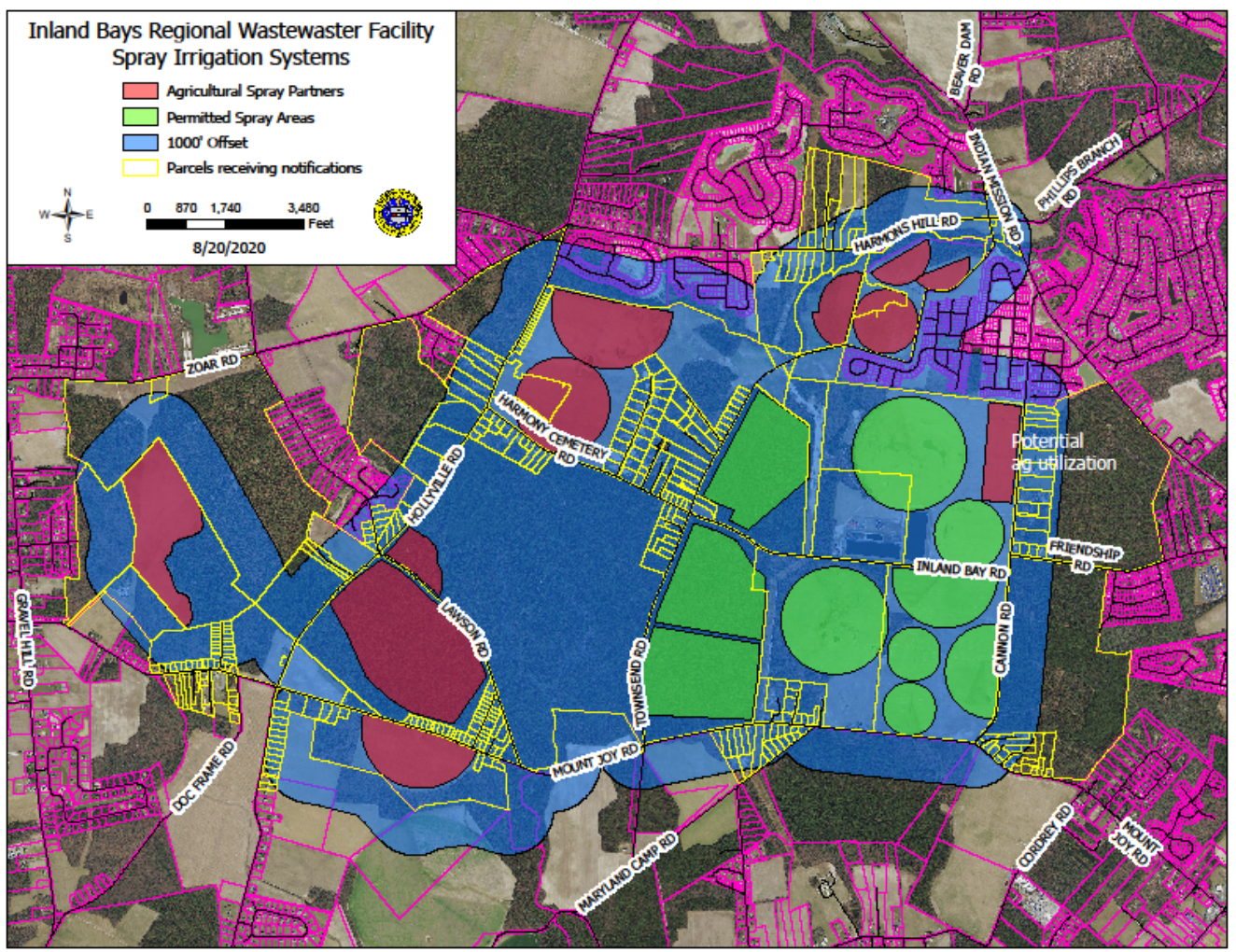
SUSSEX COUNTY | DELAWARE

Inland Bays RWF
Public Presentation 8/29/2020

Meeting Purpose & Goals



Purpose: Inform all neighbors within a 1,000 feet offset of the County's proposed facility treatment & disposal upgrades.

Goal 1: Present the County's 20-year sewer service plan.

Goal 2: Explain the difference between permitted spray sites & agricultural spray partners.

Goal 3: Affirm the County's commitment to DNREC permit compliance and full transparency.

20-Year Countywide Sewer Plan

SUSSEX COUNTY 20-Year REGIONAL SEWER PLANNING		
	8/1/2020	
Sussex County Treatment Facility	Annual Avr. Permitted Flow Capacity [MGD]	20-Year Add. Capacity Needs [MGD]*
South Coastal RWF	9.00	10.00
Piney Neck RWF	0.20	0.00
Inland Bays RWF* **	**1.50**	**5.00**
Wolfe Neck RWF	3.10	1.50
City of RB WTF Diversion **	0.495	0.50
LBPW Diversion	0.40	0.40
Artesian RIB Diversion	0.45	0.45
* 200 gpd per EDU		
** 42% capacity allocation of 3.0 mgd		
*** Incl. 2nd stage of disposal expansion		

Goal:
Match proposed & permitted facility improvements to the projected 20-year sewer capacity demand.

Historical Facility Development

- 1990-1991 -- Original Construction:
  Three (3) aerated lagoons w/ one effluent storage lagoon & two (2) spray fields
- 2009 Phase 1 -- Treatment & Disposal Expansion:
  2nd storage lagoon, Biological Nutrient Reduction conversion of aeration system & three (3) additional spray fields
- 2012 Phase -- 2A Disposal Expansion:
  Three (3) additional spray fields & biosolids storage
- 2014 Phase -- 2B Treatment Expansion:
  Two (2) liquid biosolids storage lagoon conversions & a dewatering facility
- 2019- 2020 --Functionality Expansion:
  Regional septage receiving station & biosolids drying/storage facilities

Historical Operating Permit Overview

- 1992 -1997-- Original Operating Permit: Annual monthly average <1.34 mgd
- 1999 - 2005-- 2nd Operating Permit: Annual monthly average <1.34 mgd
- 2006 - 2011-- 3rd Operating Permit: Annual monthly average <1.46 mgd
- 2012 - 2017-- 4th Operating Permit: Annual monthly average <1.50 mgd
  - Amended 10/16/2012 – Monitor Well corrections
  - Amended 3/14/2013 – Hettie-Lingo spray field addition
  - Amended 10/8 & 20/2015 – Observation Well corrections
  - Amended 10/17/2016 – Biosolids dewatering
- 2017 – Application for 5th Operating Permit filed w/ DNREC
  - Facility operating under administratively extended 4th permit conditions

Proposed Project Overview

- **Goal:** Provide treatment & disposal capacity in accordance with County's 20-year growth plan.

- Incremental expansion of annual monthly average treatment and disposal capacity from 1.5 to 5.0 mgd.
- Installation of new fixed head spray irrigation on +/-600 wooded acres under land application permit.
- Alternative effluent RIB disposal at Artesian's Wastewater Resources' Stonewater facility.
- Alternative effluent discharge through a series of constructed wetlands along Cannon Road.
- Installation of effluent distribution loop for agricultural utilization by independent spray partners.
- Initial connection of +/-400 Acres of crop land for alternative effluent spray on demand under agricultural partnerships.

DNREC Permitting Overview

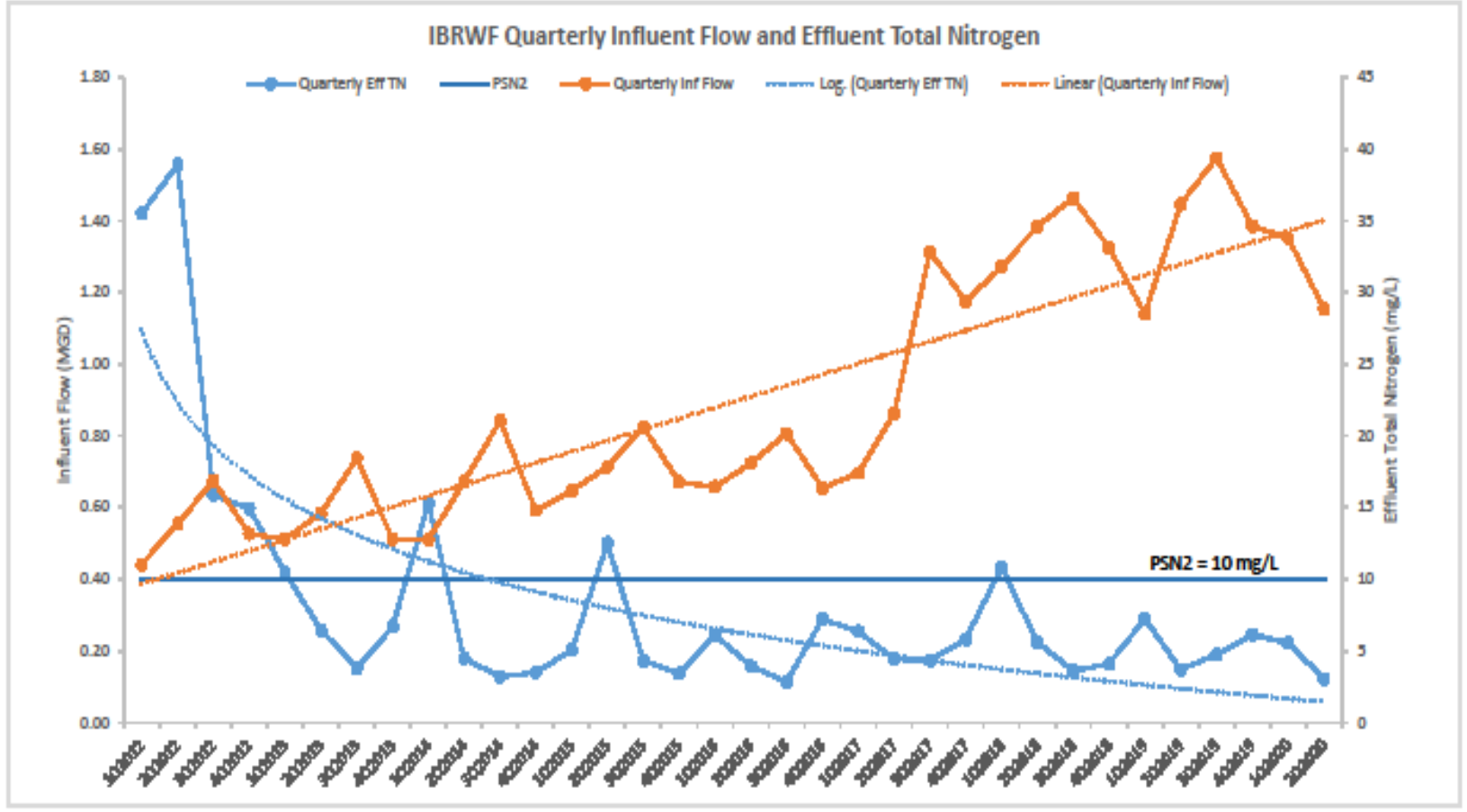
Permit	Status	Permit	Status
Operating Permit LTS DE-5004-90-12	Design Engineer Report (DER)	Treatment Expansion	Construction Documents
Constructed Wetlands	Design Engineer Report (DER) & Const. Docs.	Effluent Distribution Loop	Construction Documents
Alt. Agricultural Outlets	Design Engineer Report (DER)	Fixed Head Distribution Piping	Construction Documents
Disposal Expansion on Fields A,B,C&D	DER & Hydro-geological Report	Rapid Infiltration Beds, Stonewater & County	Permit modification & Design Engineer Report
Biosolids Distribution & Marketing Class A	Preliminary Design Report	Disposal Class B AGU 1504-S-03	Approved

Project Cost Summary

Description	Amounts*
Class A Biosolids & Septage Pre-Treatment Upgrades	$14,700,000
Effluent Distribution Loop incl. to Agricultural Partners**	$14,650,000
Permitted Spray Disposal System Expansion	$4,600,000
Permitted Treatment System Expansion	$20,250,000
Constructed Wetlands	$2,300,000
Total	**$56,500,000**

*Per Fiscal Year 2021 Enterprise Fund Capital Budget
** Includes land acquisition costs

Facility Performance Summary

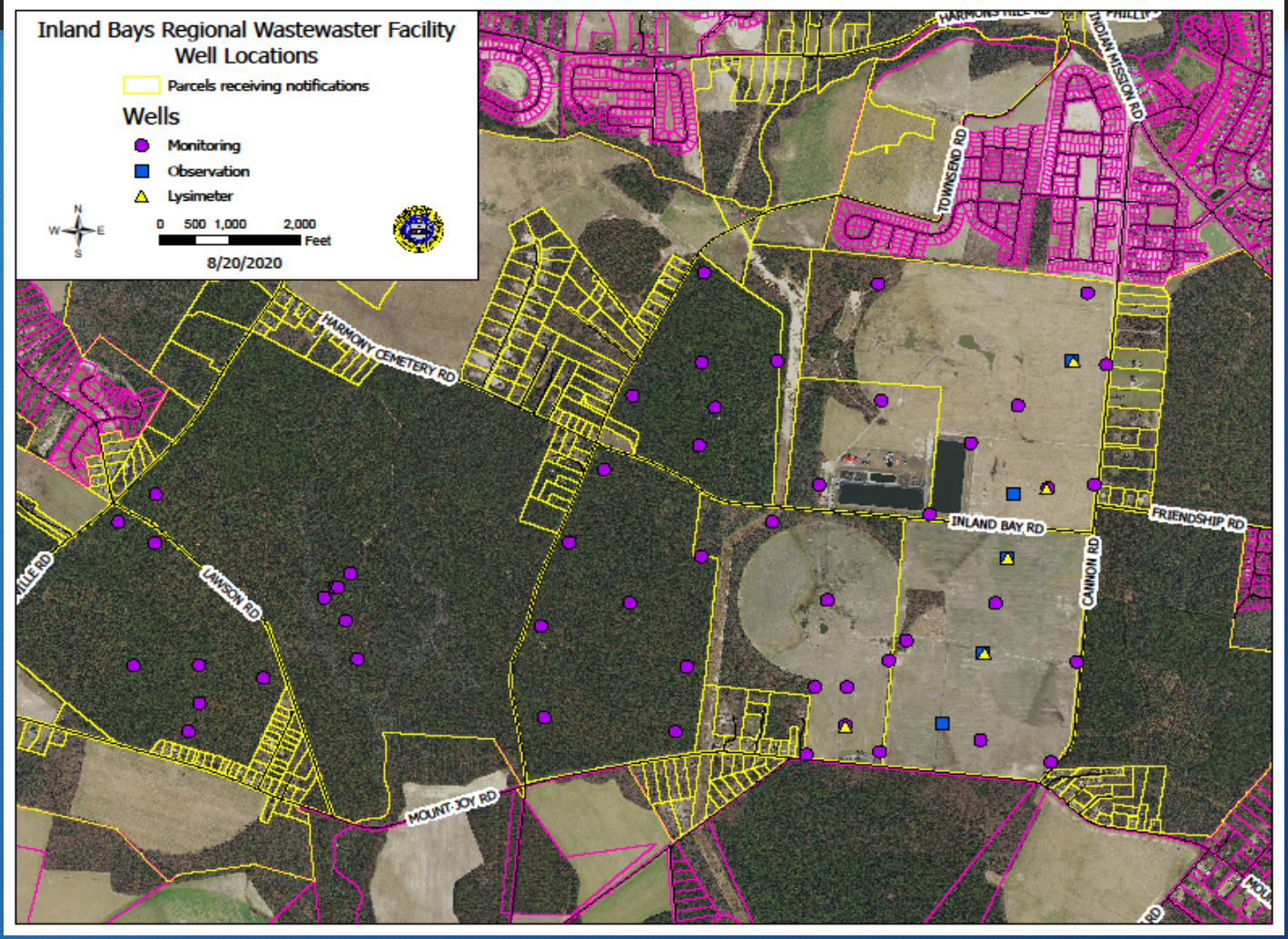


- **Permit Requirement:**
  Amount of total nitrogen (TN) per spray field acre shall not exceed 250 lbs/year

- The County is committed to exceed the Permit and provide effluent quality below the PSN3 10 mg/l TN standard.

- The Facility's quarterly aver. TN effluent concentrations, shown from 2012 -2020, is decreasing with increasing flows.

Groundwater Monitoring



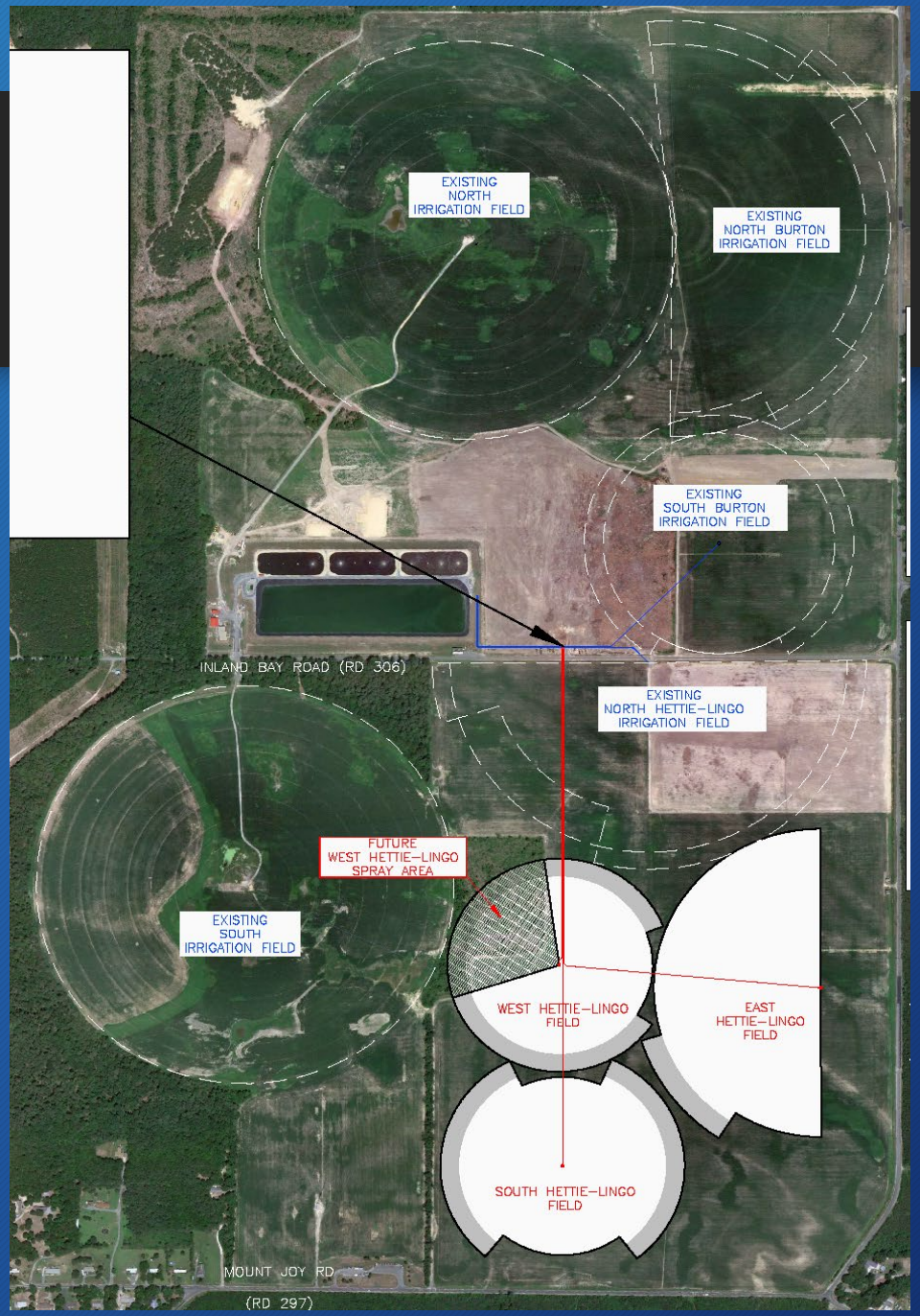
Purpose: Assurance of groundwater comprehensive monitoring in the aquifer below the Inland Bays facility.

Goal 1: Sample over 30 locations under the current Permit and over 60 after permit approval of the disposal expansion.

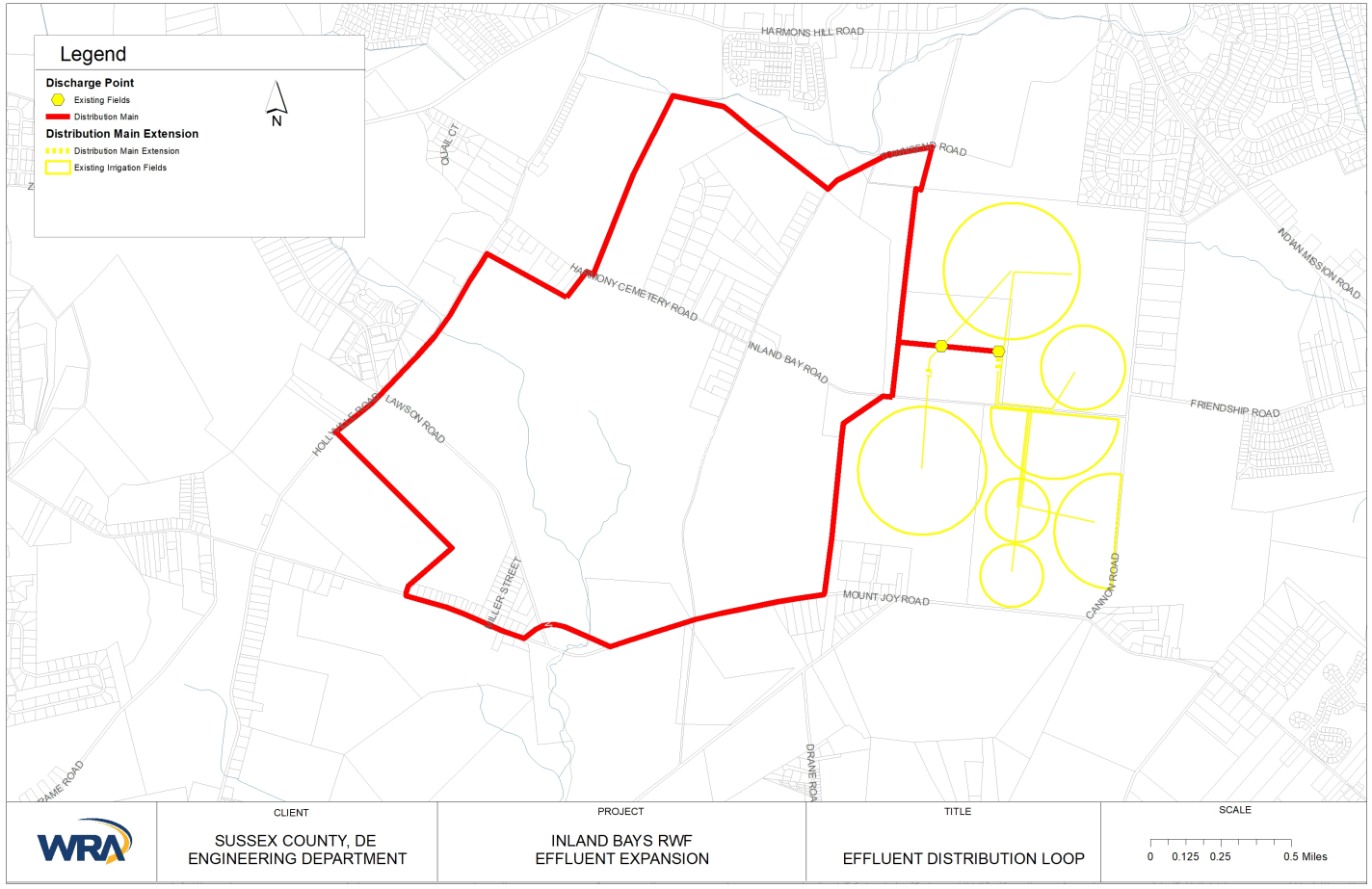
Goal 2: Analyze over **<u>7,000</u>** groundwater quality data points per year for consistent permit compliance.

Existing Spray Fields

Current State Permit Number LTS 5004-90-12 covers effluent disposal on +/-430 acres under spray



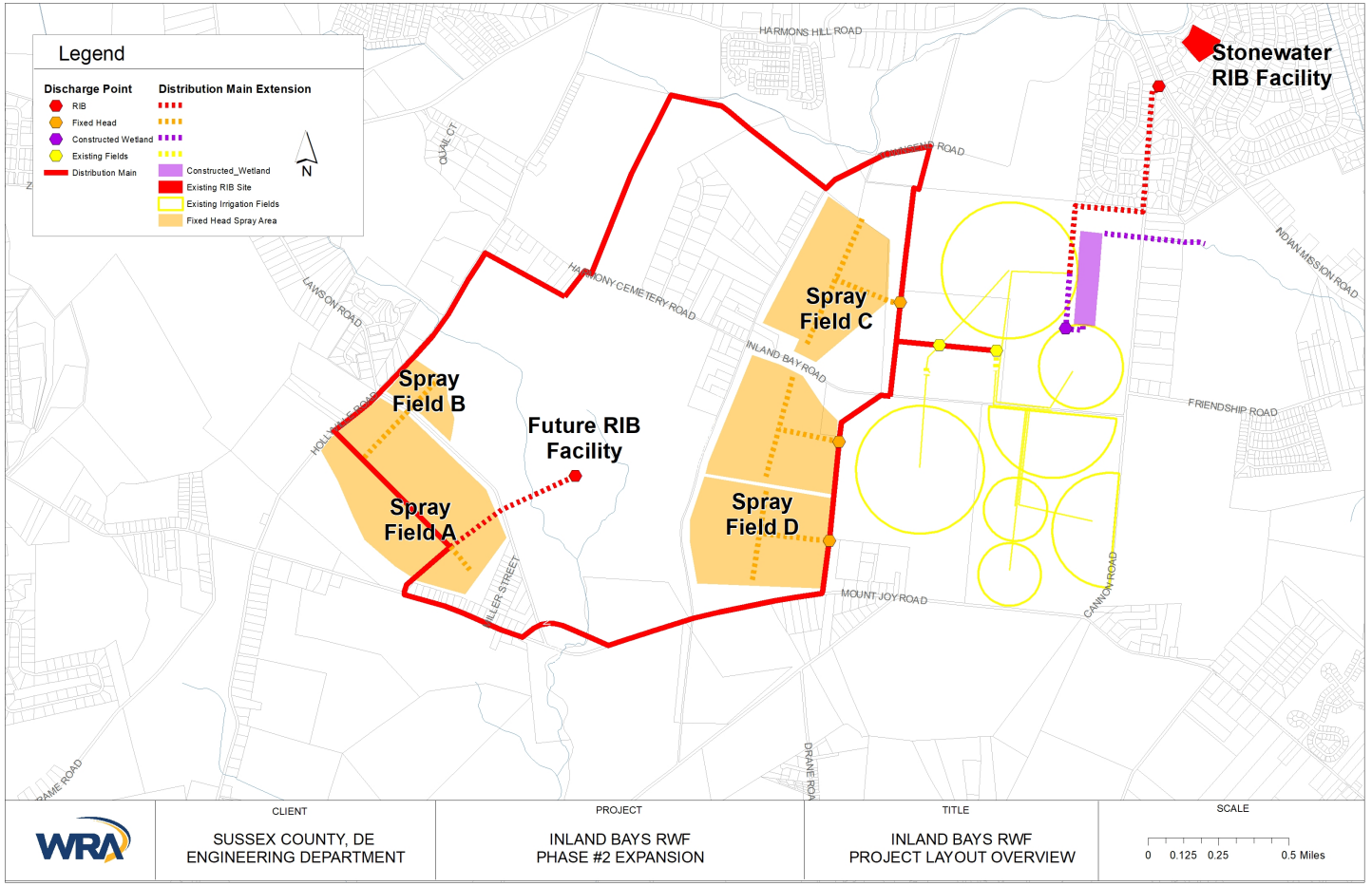
Proposed Effluent Distribution Loop



Goal 1: Creation of an effluent distribution loop to connect all permitted spray fields or RIBs or ag spray on demand in one hydraulic system

Goal 2: Installation of a fiber communication ring to direct all hydraulic flows through a single control center.

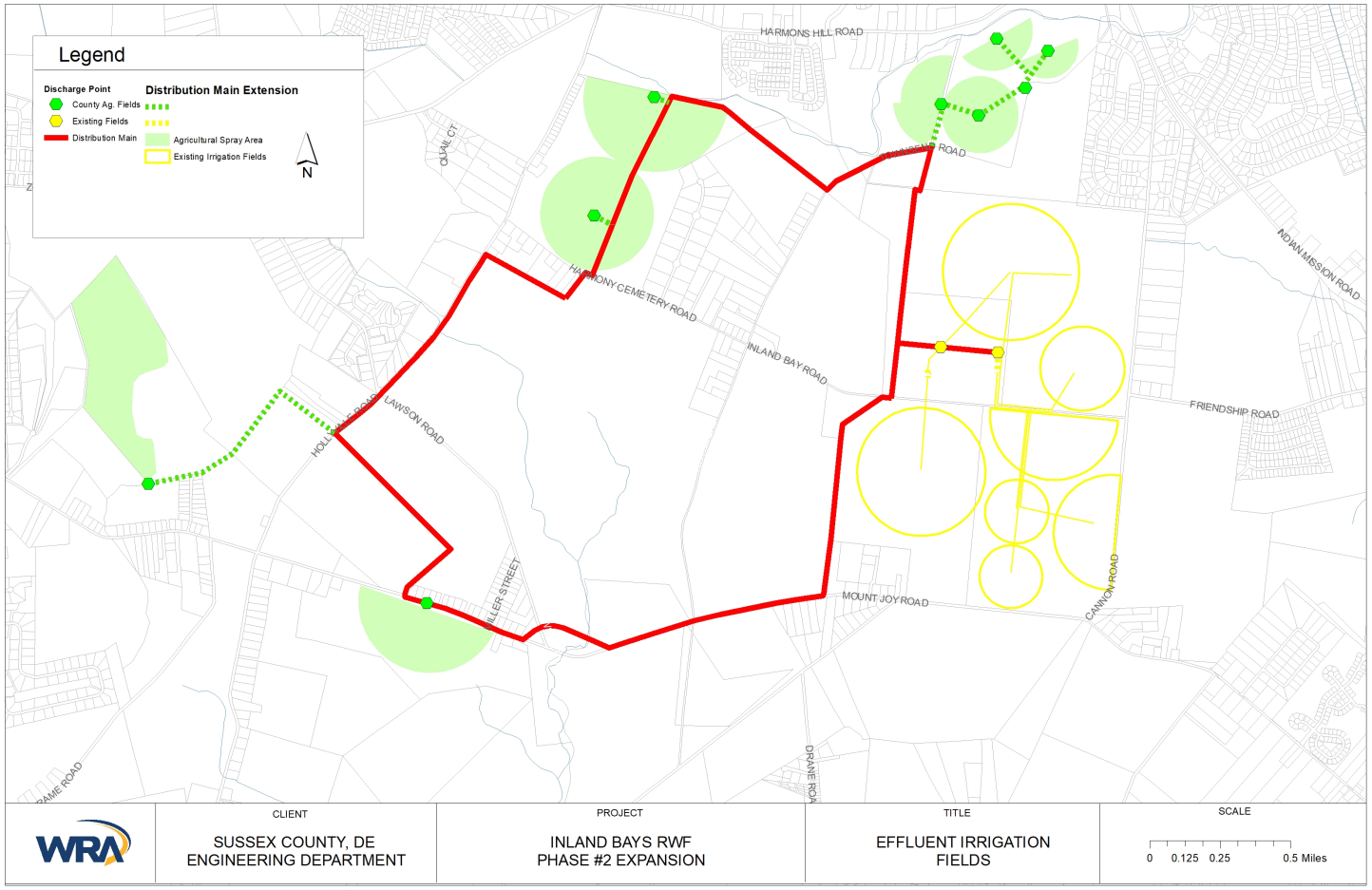
Proposed Permitted Spray Irrigation Sites



Layout of the following outlets:

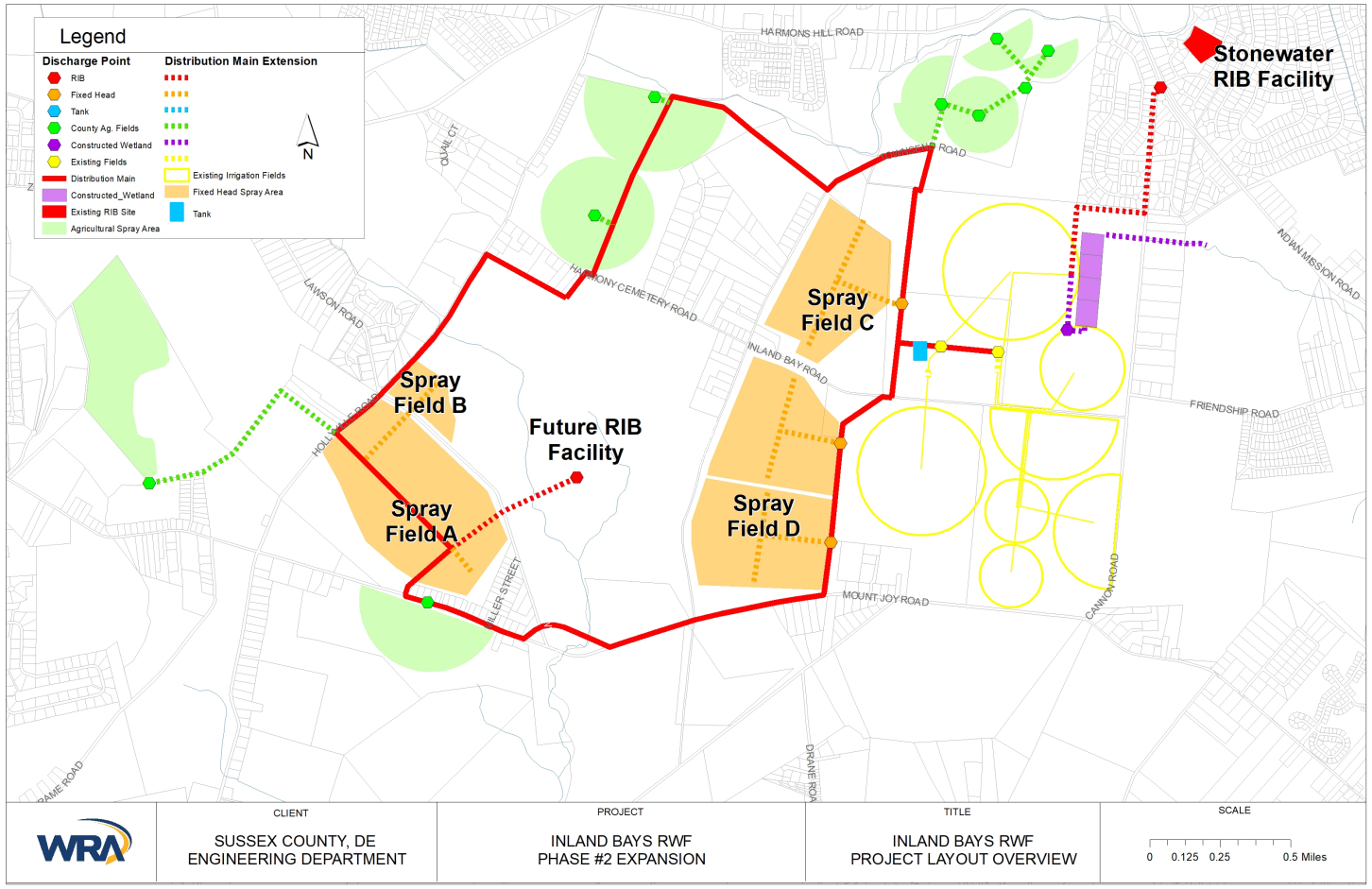
- County's fixed head spray fields A, B, C & D in a forested setting
- County's rapid infiltration basin (RIB)
- County's constructed wetlands, shown in "blue"
- Artesian's Stonewater RIB

Committed Agricultural Partners

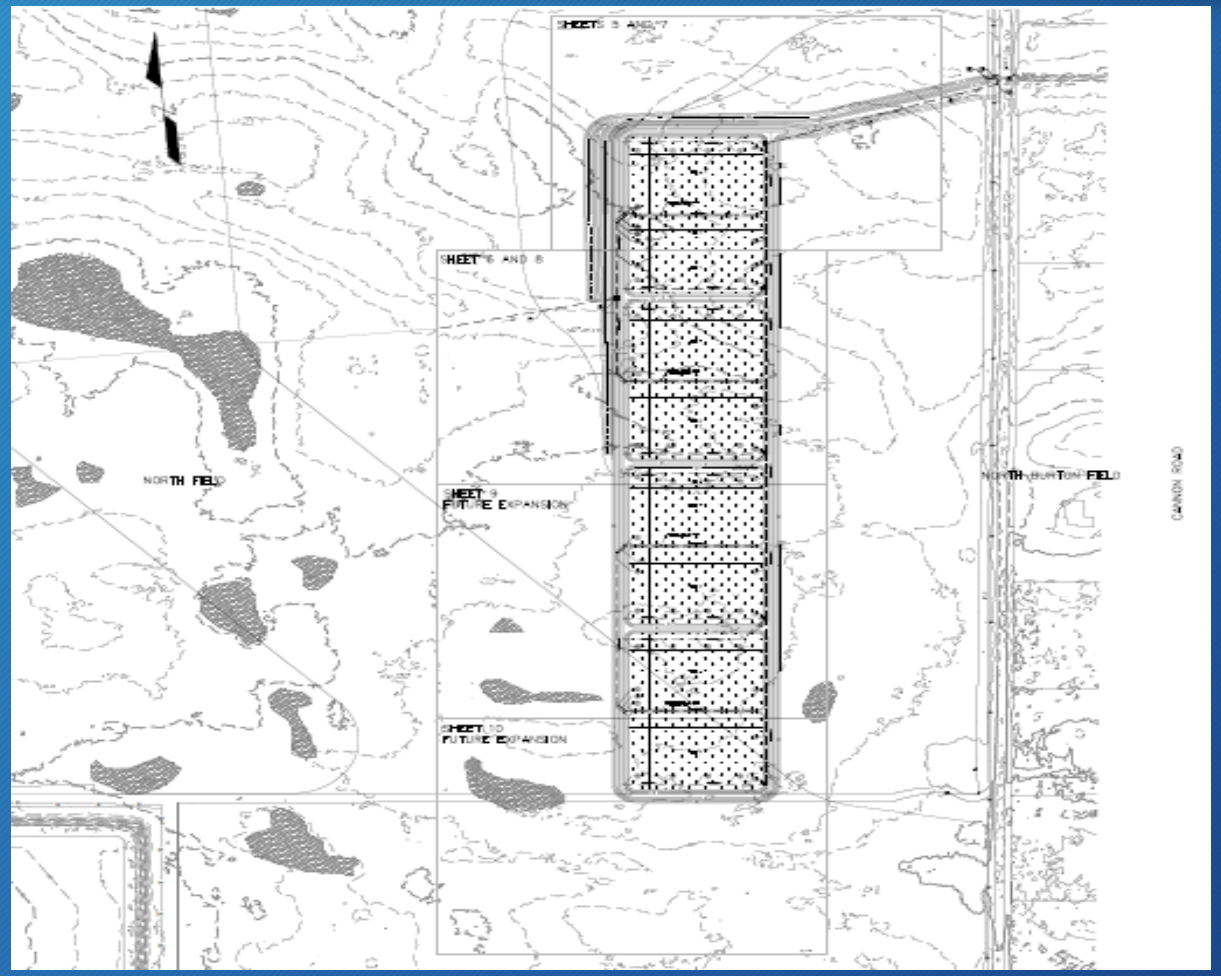


Location of the four (4) agricultural center pivot type spray irrigation partners.

Overall Depiction of Proposed Disposal Expansion



Constructed Wetlands Component



Goal 1: Increase the Facility's year-round, all-weather alternate outlet capacity.

Goal 2: Decommission the Facility's current North Burton spray irrigation rig and replacement with limited number of fixed head nozzles.

Goal 3. Construct a bioswale connected to the existing culvert under Cannon Road improving water quality of stormwater field runoff.

Class A Biosolids Overview

- The wastewater treatment process digests (breaks down) the organic compounds and the remaining solids are thermally heat treated, producing fine particles ultimately considered Class A biosolids.

- Class A Biosolids are a nutrient-rich slow release organic fertilizer product that can be utilized like animal manure but with minimal odor.

- Sussex County has applied for a Class A Biosolids distribution and marketing (D&M) permit from DNREC which would allow an unlimited agricultural use under an agricultural nutrient management plan.

Class A Biosolids Treatment Process

- Wastewater enters the facility and trash/plastic/grit are removed.
- Wastewater undergoes aerated digestion, where solids are broken down and odor is reduced.
- Treated wastewater flows through clarifiers settling out solids.
- Solid slurry is transferred to a filter press concentrating the solids up to +/-20%.
- The solids then undergo a “Process to further reduce Pathogens” (PFRP) to achieve the Class A biosolids designation. This facility uses the time-temperature method, heating the solids to at least 158° F for a minimum of 30 minutes.
- Product must contain a > 90% solids content to meet the proposed permit requirements.

ClassA Biosolids Distribution & Marketing (D&M) Process

- Currently, the Inland Bay Facility's biosolids only meet the Class B standard and are mostly disposed of in a DSWA landfill or utilized in one of the two permitted land applications sites.
- The purpose of Sussex County's D & M permit application is to allow the distribution of the Class A biosolids product in Delaware.
- The product would be utilized for agricultural use and other DNREC approved purposes such as golf courses.
- The heat drying process is closely monitored and any end products not meeting Class A standards cannot be land applied in Delaware.

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Public & County Questions???