

Rehoboth Beach Wastewater Treatment Plant

Alternative Discharge Evaluation

November 7, 2009

Agenda

- ▶ History
- ▶ Review Previous Studies
 - Effluent Disposal Study August 2005
 - Alternative Discharge Cost Evaluation March 2009
 - County Study October 2009
- ▶ Ocean Outfall
- ▶ Land Application
- ▶ Summary of Costs
- ▶ Schedule

History

- ▶ TMDL - zero discharge Aug 1998

Negotiations with DNREC and EPA

- ▶ Effluent Disposal Study

- JPPM Presentation Jan 2002
- Kick-Off Meeting Dec 2002

Workshops and Presentations

- Final Report Aug 2005

- ▶ Update Ocean Outfall Costs Mar 2009

Various Meetings and Presentations

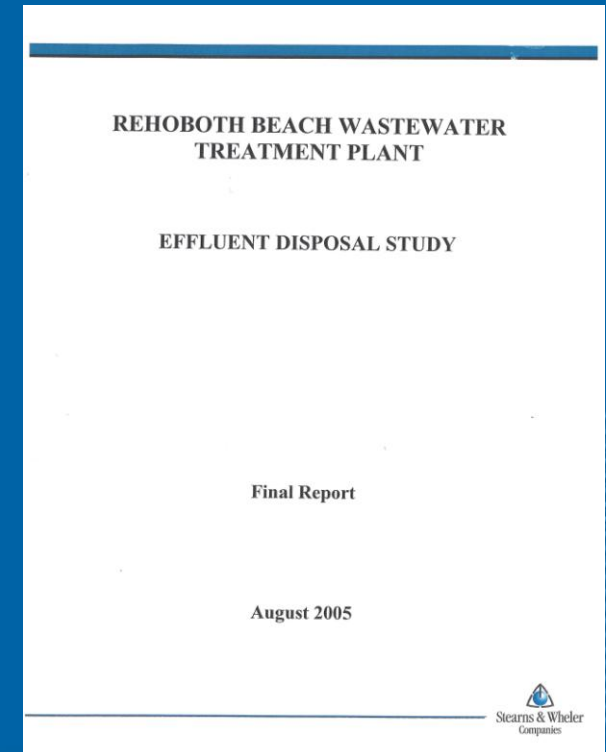
- ▶ Further Investigate Land Application Opportunities

Oct 2009³

2005 Effluent Disposal Study

Evaluated:

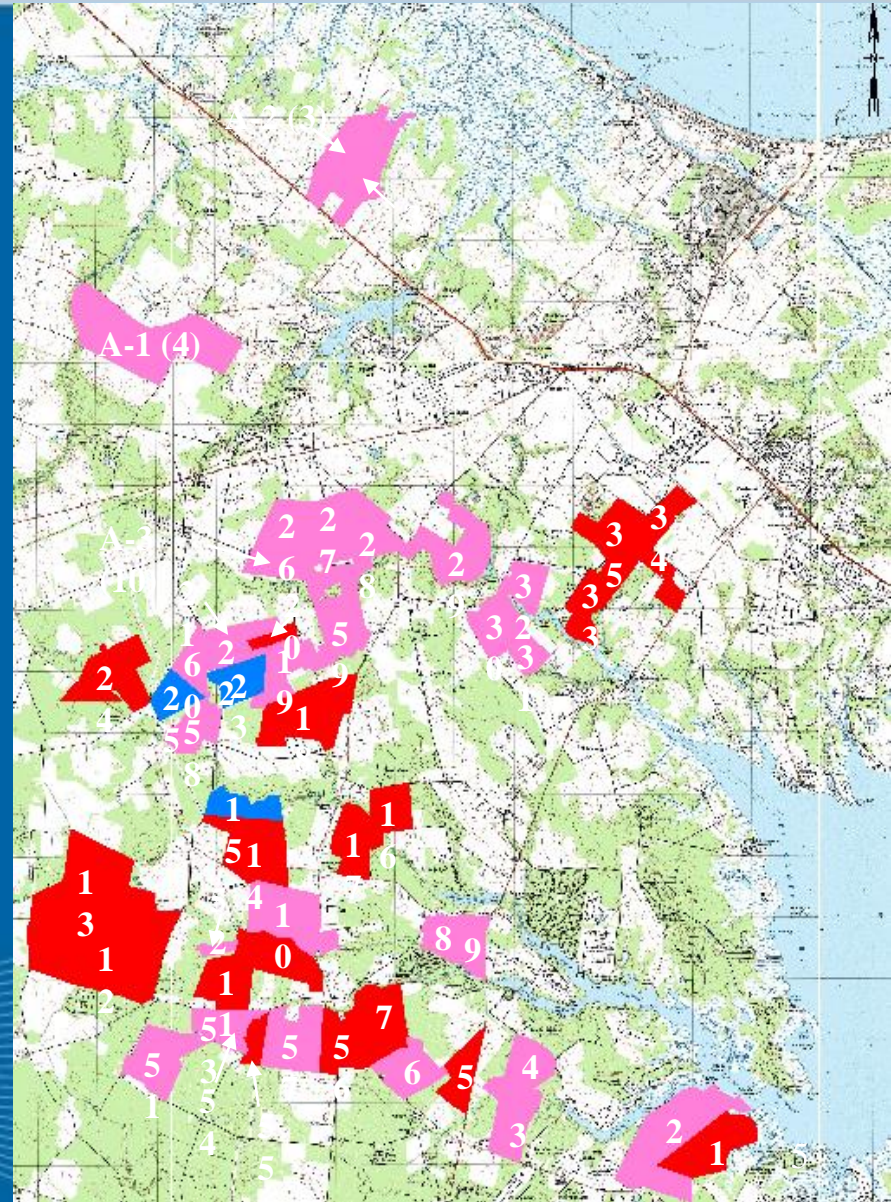
- Land Application
- Rapid Infiltration Beds
- Deep Well Injection
- Shallow Well Injection
- Ocean Outfall



Search for Land

- Not interested (17)
- No response (43)
- Interested (3)

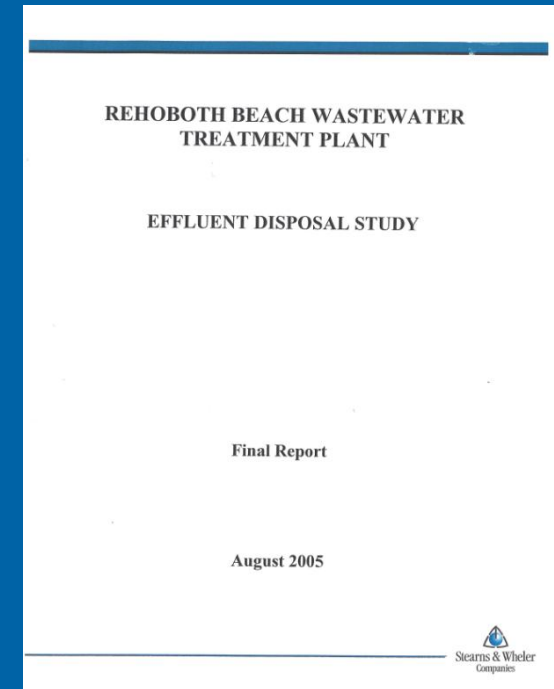
- Professional agency hired
- Took 2 years
- Several rounds of mailings and phone contacts



2005 Effluent Disposal Study

Eliminated:

- ▶ Spray Irrigation
 - Land not available
- ▶ Rapid Infiltration Beds
 - Land not available
 - Nutrient discharge to Inland Bays
- ▶ Shallow Well Injection
 - No appropriate sites or aquifers
 - Nutrient discharge to Inland Bays
- ▶ Deep Well Injection
 - Excessive risk and cost



Recommended Alternative:

- ▶ Ocean Outfall
 - Lowest PW Value
 - Regional solution

2009 Alternative Discharge Cost Evaluation

Purpose - Refine Cost Estimates:

Ocean Outfall

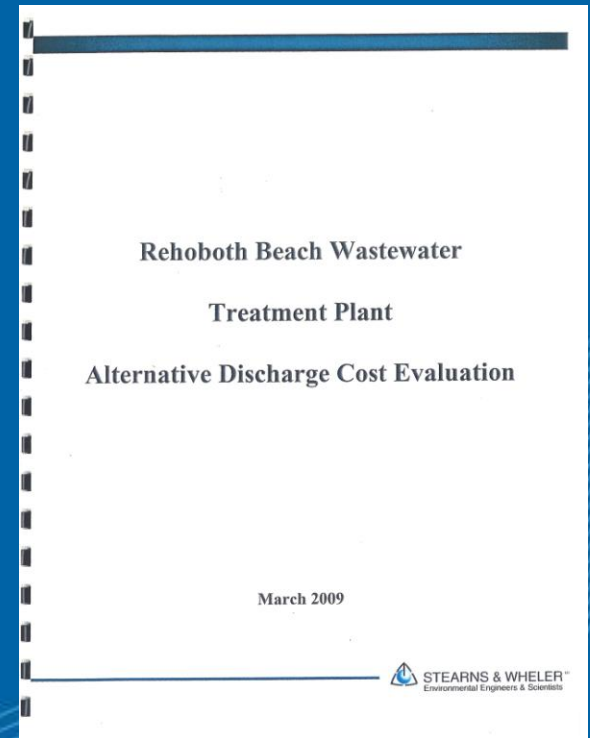
Obtain cost estimates from outfall contractors

- Weeks Marine
- Worley Parsons

Land Application

Solicit proposals from Private Utilities

- Artesian



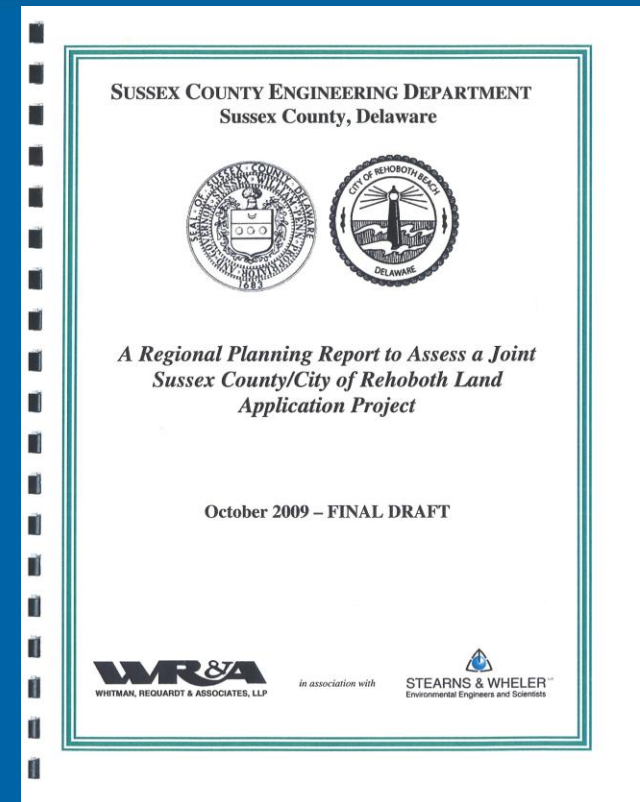
2009 County / City Report

Purpose:

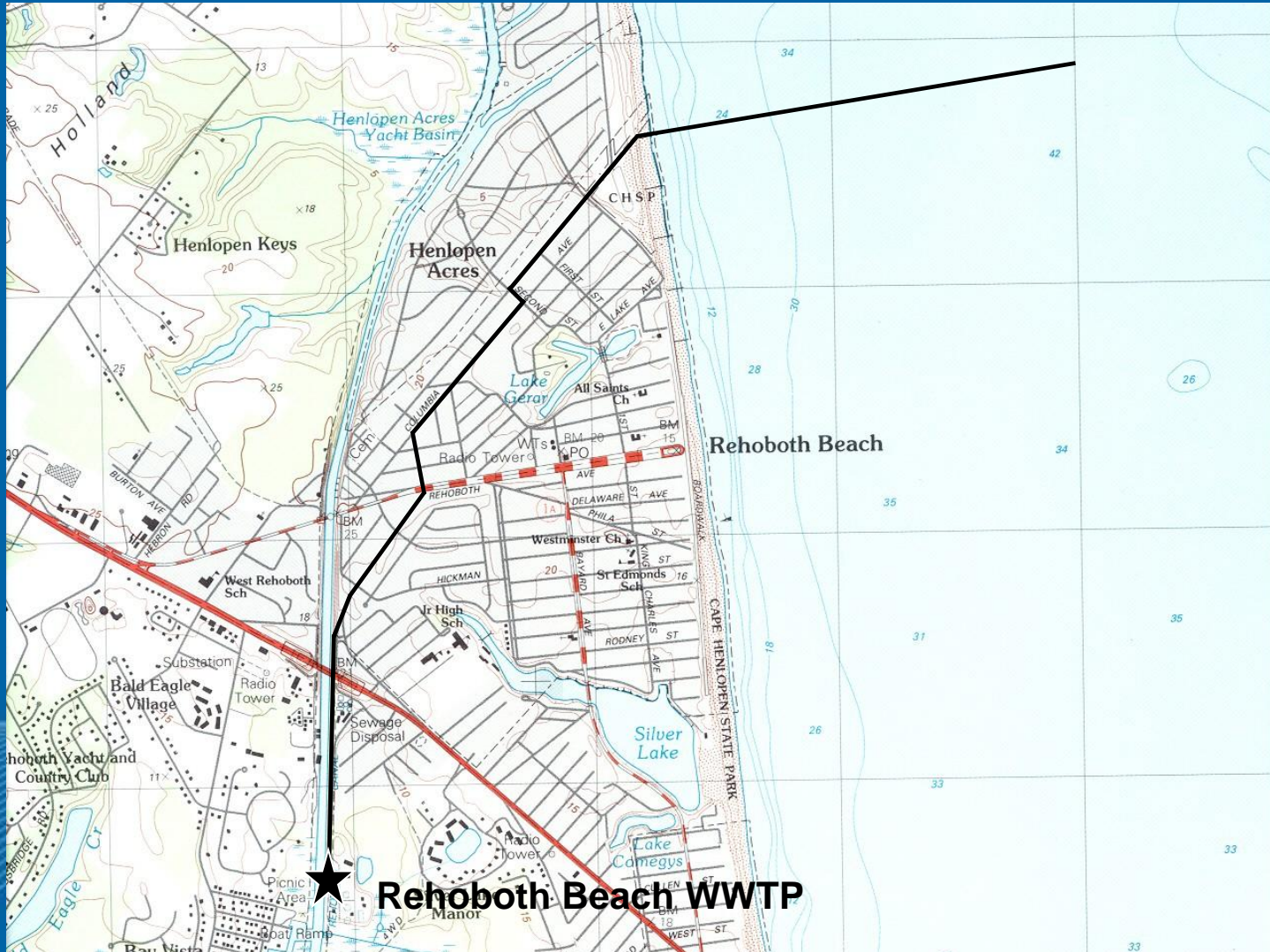
Consider joining with Sussex County for a Regional Land Application project

Refined Costs for:

- Land Application of Treated Effluent
- Ocean Outfall



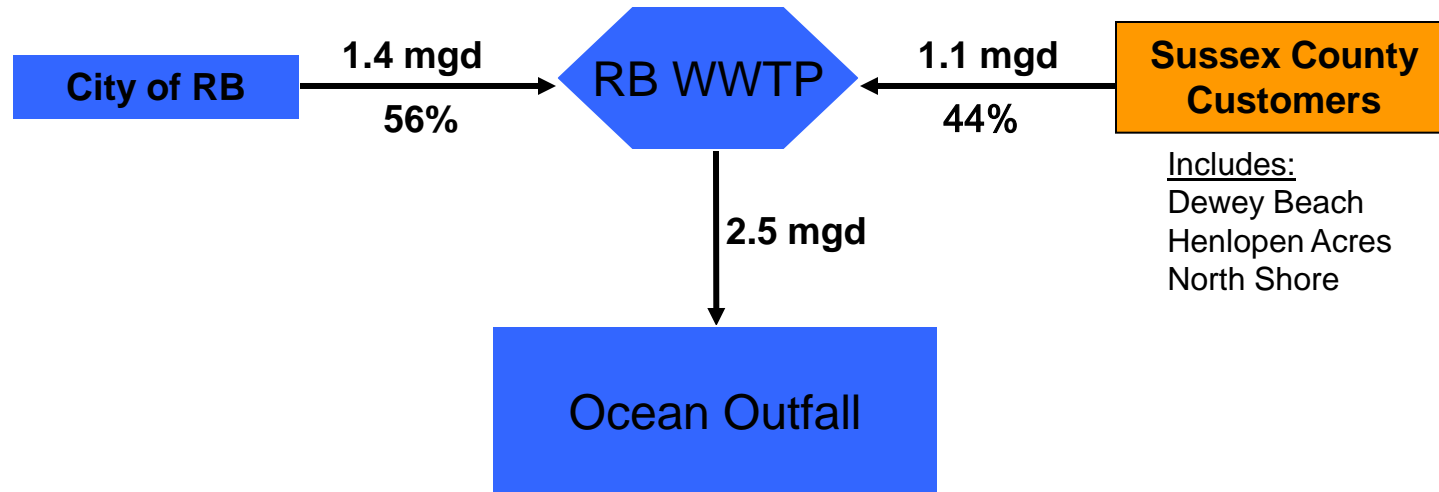
Ocean Outfall



Ocean Outfall

City of Rehoboth Beach Only

Flow Schematic



**Sussex County
Customers**

Includes:
Dewey Beach
Henlopen Acres
North Shore

Note: All flow rates refer to year 2030 Max Month treatment and disposal requirements

Ocean Outfall

City of Rehoboth Beach Only

Capital Costs

Pump Station	990,000
WWTP Upgrades	3,370,000
FM to Outfall	2,820,000
Ocean Outfall	17,020,000
Subtotal	<u>24,200,000</u>
Eng & Admin	5,320,000
Permitting (outfall)	850,000
Total Project Cost	<u>30,370,000</u>

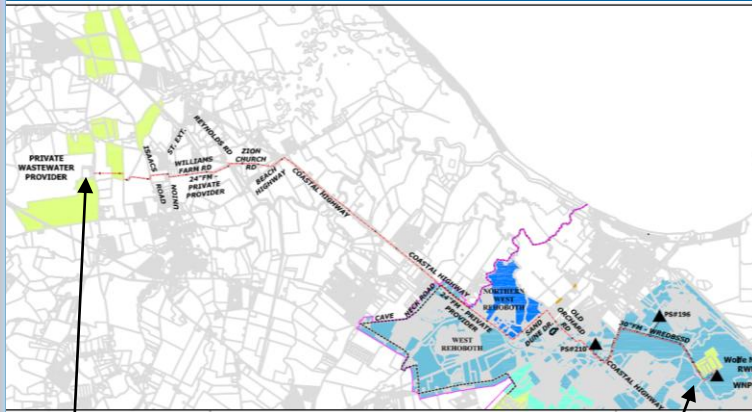
O&M Costs

Rehoboth Beach	
Existing	1,040,000
Additional	<u>90,000</u>
Total	1,130,000

Estimated User Charges

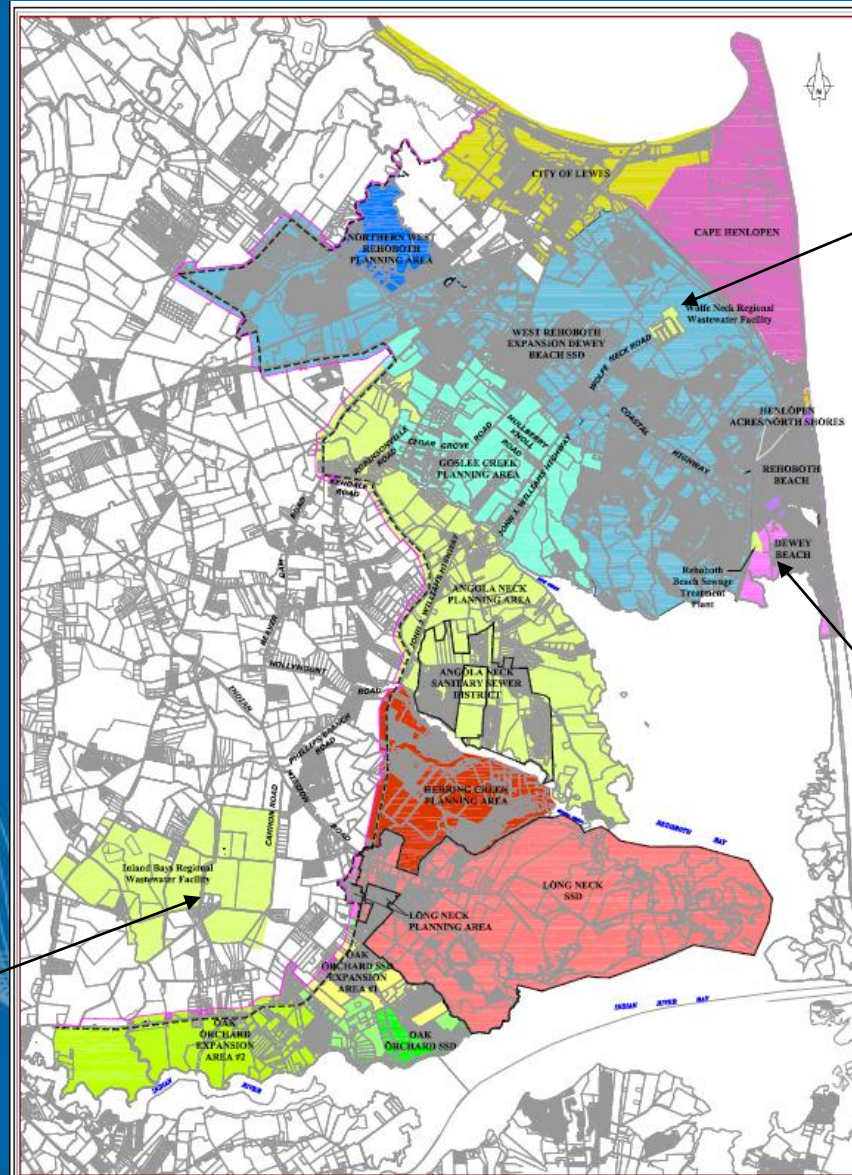
Annual Capital Cost	\$ 1,300,000
O&M Cost	1,130,000
Total	<u>\$ 2,430,000</u>
User Charge	\$ 640 / year

Land Application Treated Effluent



Private Wastewater
Provider

Wolfe Neck
RWF



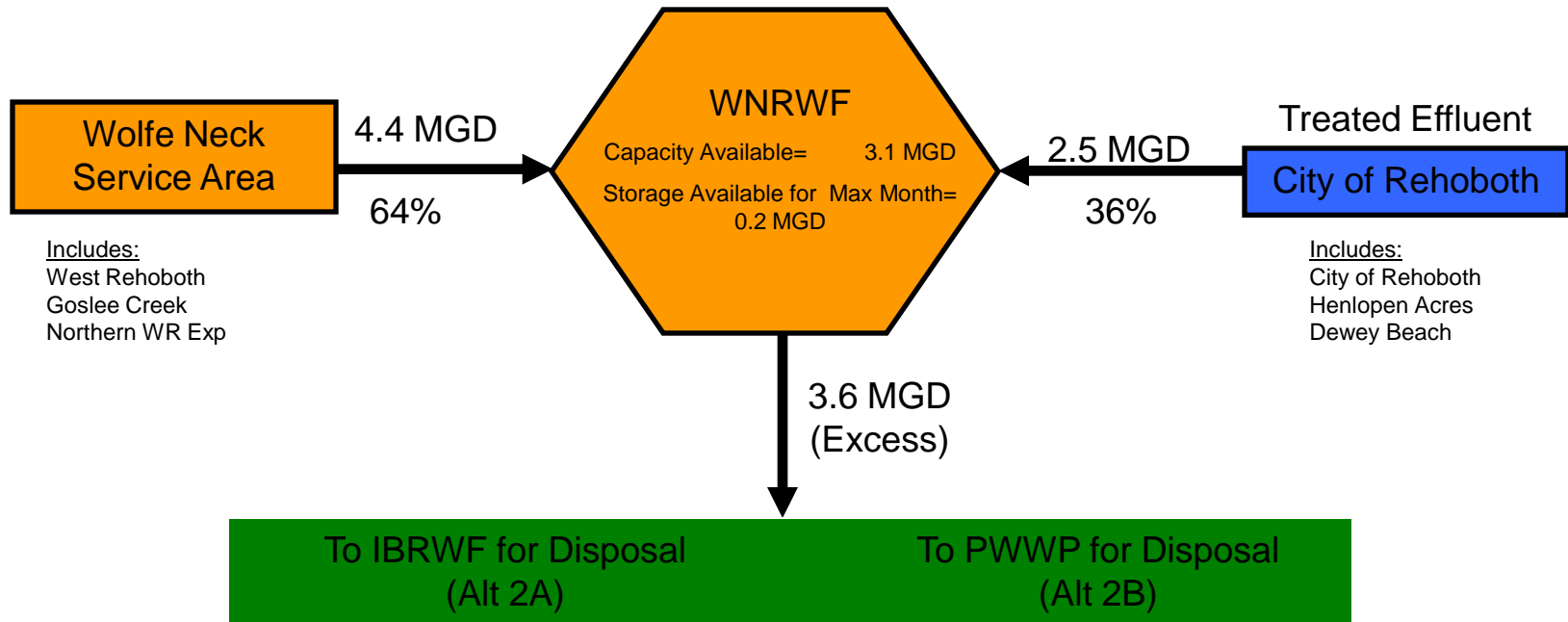
Wolfe
Neck
RWF

Rehoboth
Beach
WWTP

Inland Bays RWF

Land Application Treated Effluent

Flow Schematic



- The Rehoboth Beach WWTP would continue to operate and send treated wastewater to Wolfe Neck RWF for disposal
- Excess wastewater will be sent to Inland Bays RWF (or a private provider)
- A new treated effluent pump station & force main would be constructed by the City
- A force main to Inland Bays RWF or the private provider will be shared by the City & the County

Land Application Treated Effluent

Capital Cost

RB Pump Sta.	990,000
FM to WNRWF	3,850,000
WWTP Upgrades	3,370,000
WNRWF Pump Sta.	1,040,000
FM to IBRWF	5,970,000
IBRWF Upgrades	20,010,000
Land / Easements	<u>11,250,000</u>
Subtotal	46,480,000
Eng & Admin	7,750,000
Total Project Cost	<u>54,230,000</u>

O & M Cost

Rehoboth Beach	
Existing	1,040,000
Additional	20,000
Sussex County	<u>510,000</u>
Total	1,570,000

Estimated User Charges

Annual Capital Cost	\$ 2,330,000
O&M Cost	<u>1,570,000</u>
Total	\$ 3,900,000

User Charge **\$ 1,010 / year**

Alternative Summary

<u>Alternative</u>	<u>Estimated User Charges</u>
Land Application	(\$/Yr)
Raw Wastewater	
County	1,160
Private	1,430
Treated Effluent	
County	1,010
Private	1,420
Ocean Outfall	
Rehoboth Beach only	640
Regional (City + County)	550 (2030 Flow)
Regional (City + County)	500 (Buildout Flow)

Schedule

