



Ocean Outfall Hydraulic Evaluation and Risk Assessment

Hydraulic Analysis

- Analysis Driver: County and Lewes BPW capacity limitations, aging infrastructure, and plant expansion challenges
 - No alternatives considered to date were determined viable
- Developed Infowater Model based on available information
- Utilized the more conservative County outfall alignment to assess hydraulics
- CORB WWTP
 - Current Peak Design Capacity (from As-Builts): 7.2 MGD
 - Historical Peak Capacity Event: 3.4 MGD
- County WWTP
 - Requested Peak Capacity: 5.0 MGD
- 24" CORB Outfall Pipe (Ten State Standards)
 - Ultimate Peak Carrying Capacity: 11.45 MGD (Based on 8 feet per second velocity)



InfoWater Model

Hydraulic Analysis

- Remaining Ultimate Capacity Available to CORB after Tie-in of the County
 - $11.45 \text{ mgd} - (3.4 \text{ mgd} + 5 \text{ mgd}) = 3.05 \text{ MGD}$
- **Infowater Model Predictions**
 - Existing System
 - Higher CORB WWTP Design Peak Capacity 8.0 MGD (7.2 MGD from As-Builts)
 - County Impacts to CORB Tying In
 - Slightly Reduced CORB Station Design Capacity 7.2 MGD (roughly 0.8 MGD reduction)
- Even with reduced capacity from tie-in, the CORB facility can meet the existing peak demands (3.4 MGD)
- CORB WWTP Pump Station can be Upgraded to Expand Capacity to the Ultimate 11.45 MGD (6.45 MGD for CORB and 5 MGD for County)
 - The upgrade would be required to get the full 11.45 MGD regardless of where the County Tied In



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Financial Analysis – Review of Offer

- Review of Offer (and support Justification Analysis)
- Assessment performed considering an outfall capacity of 11.45 MGD (Ten-States Standards.)
- Both the “Basis” and the “Justifications” inflated/derated to present-worth valuation.
- “Basis” of Offer (Present-Worth) = \$18.63 M (calculated herein)
- “Justifications” for Offer (Present Worth) presented in proposed financial assessment.
 - Justification #1 - \$16.92 M
 - Justification #2 - \$19.59 M
- Analysis concludes that the offer of \$20.0 M for 5 MGD of capacity is considered fair.

	11.45 MGD	Outfall Capacity
\$	38,500,000	
	126%	Inflation Factor
\$	48,508,251	
\$	5,820,990	6 years depreciation
\$	42,687,261	Present-worth valuation
	11.45	MGD
\$	3,726,531.06	\$ per MGD
		5 MGD request
\$	18,632,655.28	PW value of 5 MGD

Basis of Offer – Present-Worth

Conclusions

- Potential Risks Identified – These Can Be Coordinated with Stakeholders:
 - Future DNREC Permit Capacity Limit
 - Future DNREC Permit Discharge Limits (Nutrient – TP, TN, etc.)
 - CORB Master Planning/Future Growth Potential
 - Climactic Impacts and Subsequent System Reaction
 - Operation and maintenance requirements and the associated potential issues that arise from continuous operation
- County Can Tie-In Immediately and CORB can still meet existing peak demands
- County should install VFD's and limit flow output to 5,000 gpm (7.2 MGD)
- As part of County outfall design, the complete design should be coordinated as a system (including CORB)
 - Final Alignment with Location of Air Vacuum/Release Valves
 - Surge Analysis to be performed to Verify Air Vacuum/Release Valve Locations and Quantities
 - Field calibrate the model to verify results
 - Consideration given to vault construction to allow for:
 - *Future pump tests*
 - *Bypass connection*
 - *Water quality testing for both effluent lines*
 - *Location for effluent line inspection in the future*



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Questions