

**Santa Rosa County Regional Reuse Project  
Estimated Project Schedule**

<b>Milestone</b>	<b>Start Date</b>	<b>Finish Date</b>	<b>Duration (Months)</b>
Project Planning and Funding	June 1, 2016	August 31, 2016	3
Permitting & Easement Acquisition	September 1, 2016	June 30, 2017	10
Renegotiate RIB Lease with Eglin	April 1, 2016	September 30, 2016	6
Design, Bid and Construction – NVR Beach WWTP	September 1, 2016	January 31, 2018	17
Design, Bid and Construction - RIBS	October 1, 2016	May 31, 2018	20
Design, Bid, and Construction – Pipeline and Intermediate Pump Station	September 1, 2016	March 31, 2019	31
Startup and Project Closeout	April 1, 2019	June 30, 2019	3

**Assumptions:**

1. Eglin AFB has been contacted to request renewing the negotiation process. Schedule assumes the bidding/procurement process will not begin until the lease has been finalized and executed, which is assumed to be within 6 months.
2. Permitting and easement acquisition are dependent on final route selection and availability of easement, so the duration is highly variable.
3. The schedule assumes a conventional Design-Bid-Build process for each project. Alternative deliveries for the project(s) could accelerate the schedule.

## **History of the Navarre Beach Wastewater Treatment Facility and Proposed Regional Reclaimed Water Disposal Program**

- The NVR Beach WWTF was constructed on the barrier island in the 1970s and upgraded in 1984. The effluent from the plant discharges to the Santa Rosa Sound.
- In the mid to late 1990's, the FDEP began requiring that the NVR Beach Utilities sample for copper in the wastewater treatment facility effluent. The plant was unable to meet the very stringent requirement of 2.9 parts of copper per billion parts of water.
- In 1999, the County Commissioners approved moving forward with the development of a plan to remove the discharge from the sound.
- In 2000, the FDEP issued a new permit along with an administrative order that required NVR Beach Utilities to develop and implement a project to bring the plant into compliance by May 2005. The AO allowed the County to discharge higher concentrations of copper to the sound until improvements were made.
- In 2001, the County Commissioners approved a plan to eliminate discharge to the Sound by conveying the effluent to a land application site located on Eglin property. The concept was to include the other utilities within the area in the project because of their need for reliable, long term effluent disposal. The disposal on Eglin property was a regional approach. At that time, the objective of the commissioners was to cease discharge from the Sound.
- In early 2002, the county received conceptual approval from Eglin to lease 300 acres for land application at a site north of Holley.
- Starting in March 2001, the County has obtained all of the necessary permits from FDEP; performed all of the environmental and impact studies required by Eglin; performed property surveys and appraisals of the site, as required by Eglin; and developed preliminary designs of the pipeline and land application site. Essentially, all of the work was completed and the hoops have been jumped through, except for securing the lease with Eglin.
- FDEP issued a draft consent order in Sept 2007 for exceeding the lower limits for copper, even though the plant was meeting the higher limits contained in the AO. The County met several times with FDEP to contest the order and the fines. FDEP issued an updated order in April 2008. The County continued to negotiate with FDEP to allow a higher copper limit.
- An FDEP permit for the RIBs was obtained in Aug. 2005.
- A new consent order and WWTF permit was issued in Sept. 2008.

- The County upgraded the NVR Beach WWTF (placed online in Oct. 2007) and the copper removal improved significantly. The County installed chemical feed systems to reduce the copper in the water supply system, which ultimately enters the WWTF.
- Because of the delay from Eglin, the County studied other effluent disposal plans. The other options included:
  - Send the reclaimed water to Gulf Breeze (expensive and possible problem with salts in the water)
  - Reuse opportunities on the island (limited land for irrigation)
- In June 2010, a draft lease for RIB site presented to County by Eglin (\$60k/year or in-kind project for \$1,000,000). Project was put on hold due to reduction in customer base, lack of funding from utilities, and outcome of proposed NNC rule. The RIB permit was renewed.
- The County obtained an EPA grant for rehabilitating the existing clarifier to improve treatment at the WWTF, which was constructed and placed online in 2013.
- The WWTF consistently met the stringent copper limits, so FDEP closed out the consent order.
- The RIB permit was renewed in September 2015.
- The County met with HNWS to discuss the status of the RIB project and the procedures for renewing negotiations with Eglin for the RIB property lease. The County sent Eglin Real Estate a summary of the project and a request to renew negotiations.

## **Timeline for the Navarre Beach Wastewater Treatment Facility and Proposed Regional Reclaimed Water Disposal Program**

August 1998	Prepared Conceptual Level Evaluation – Alternative Wastewater Effluent Disposal Strategies for South Santa Rosa County, Florida
July 1999	Prepared NVR Beach Reuse Feasibility Study
May 2000	Issued Permit No. FL0023981-001-DW1P and Administrative Order AO034NW
August 2000	Submitted Preliminary Engineering Report, Proposed Copper Controls for Effluent Discharged from the Navarre Beach WWTF and implemented recommendations, which included a chemical feed system.
March 2001	Prepared Wastewater Treatment and Effluent Disposal Comprehensive Plan for the Navarre Beach WWTP, which included a review of disposal and treatment options. The plan recommended, and the County adopted, a regional project that included the construction of RIBs on the mainland and a pipeline to convey the effluent from NVR Beach WWTF and other participating utilities to the RIBs.
March 2001 – Present	Prepared permit applications, performed environmental studies, submitted conceptual designs, and pursued the necessary approvals from Department of Defense
August 2005	Began construction of \$8 mil upgrades to NVR Beach WWTF, which included additional aeration, denitrification, secondary clarifier, belt filter press, back-up power, ferric sulfate and polymer feed systems with flow-paced control, sodium hypochlorite feed system, pump upgrades, and plant monitoring and control system.
April 2006	Prepared preliminary design of RIB site, reuse conveyance pipeline, and high level disinfection processes
June 2006	Chartering meeting with South Santa Rosa County Utilities (SSRU) and Holley Navarre Water System for the Regional Reclaimed Water System
October 2007	Placed upgraded WWTF online resulting in significant reduction in, and improved reliability with, effluent copper concentrations
February 2008	Prepared conceptual design and met with SSRU regarding conveying effluent to SSRU for reuse with or without RIBs. Currently, implementation of project not economically feasible.
September 2008	Consent order executed and WWTF permit issued
June 2010	Draft lease for RIB site presented to County by Eglin. Currently, project on hold due to reduction in customer base, lack of funding from utilities, and outcome of proposed numeric nutrient criteria (NNC) rule.
January 2013	The WWTF consistently met the stringent copper limits, so FDEP closed out the consent order.

June 2014	The County obtained an EPA grant for rehabilitating the existing clarifier to improve treatment at the WWTF, which was constructed and placed online in June 2014.
September 2015	Renewed the FDEP RIB permit.
January 2016	County met with HNWS to discuss status of RIB lease.
March 2016	County contacted Eglin requesting procedures for renewing lease negotiations.

# Preliminary Design Summary for Santa Rosa County Regional Reuse System

Prepared for:



Board of County Commissioners  
Santa Rosa County, Florida

Prepared by:



**CH2MHILL**

May 2008

# Contents

---

## **Executive Summary**

### **Navarre Beach WWTF Upgrades–TM 1**

- Introduction
- Design Criteria
- Tertiary Filters
- Chlorine System Evaluation
- Effluent Pump Station
- W-3 Distribution
- Reject Effluent Storage
- Attachment to TM 1
  - Site Plan
  - Hydraulic Profile
  - Process Flow Diagram
  - Effluent Filter Layout and Plan
  - Chlorine Contact Basin and Effluent Pump Station Plan
  - Effluent Pump Station Pump Data Sheets
  - W3 Supply Pump Data Sheet

### **Reuse Water Transmission Main Route Analysis–TM 2**

- Introduction
- Design Considerations
- Evaluation of Route Alternatives
- Description of Required Trenchless Construction
- Design Concept for Intermediate Pump Station
- Access and Pipeline Easement from Gulf Power Company
- Summary
- Attachment to TM 2
  - Route Alternative 1
  - Route Alternative 2
  - Route Alternative 3
  - Route Alternative 4
  - Map Book of All Routes
  - Pipeline Route from State Road 87 to RIBs Site

---

## **Allocation of Project Disposal Capacity and Cost–TM 3**

Introduction

RIBs Capacity Allocation

Project Opinion of Cost Allocation

## **Appendix: Project Cost Comparison**

# Acronyms and Abbreviations

---

AADF	annual average daily flow
ACI	American Concrete Institute
BOD	biochemical oxygen demand
CCB	chlorine contact basin
CR	County Road
CT	contact time
EAFB	Eglin Air Force Base
EPA	U.S. Environmental Protection Agency
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FONSI	Finding of No Significant Impact
ft <sup>2</sup>	square feet
GIS	geographic information system
GPCO	Gulf Power Company
gpd	gallons per day
gpm/ ft <sup>2</sup>	gallons per minute per square feet
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HNWS	Holley-Navarre Water System
µg/L	micrograms per liter
mgd	million gallons per day
mg/L	million gallons per liter
mL	milliliter
msl	mean sea level
NBWWTF	Navarre Beach Wastewater Treatment Facility
PHF	peak hour flow
psi	pounds per square inch
RIB	rapid-rate infiltration basin
ROW	right-of-way
SCADA	supervisory control and data acquisition
SR	State Route
SRC	Santa Rosa County
SSRU	South Santa Rosa Utilities
TM	technical memorandum
TSS	total suspended solids
US	U.S. Highway
VDF	variable frequency drive
WSE	water surface elevation
WWTF	wastewater treatment facility

## Executive Summary

PREPARED FOR: Santa Rosa County Board of Commissioners  
DATE: May 2008  
PROJECT NUMBER: 344732.PE.PM

### Background

Santa Rosa County, Florida (SRC) provides water and wastewater services to Navarre Beach on Santa Rosa Island (Island) through the Navarre Beach Utilities. The wastewater collection system, which serves primarily residential and small commercial customers, includes gravity sewer lines, lift stations, and force mains that convey wastewater to the Navarre Beach Wastewater Treatment Facility (NBWWTF). The NBWWTF is a 0.9-million-gallon-per-day (mgd) annual average daily flow (AADF) facility located on the Island. The flows to the facility are seasonal, with the peak flows occurring primarily during the summer months. The activated sludge facility treats the influent through screening, degritting, aeration, clarification, filtration, and disinfection before discharge to the Santa Rosa Sound. The construction of approximately \$8 million of improvements to the plant was recently completed.

In May 2000, the Florida Department of Environmental Protection (FDEP) renewed the NBWWTF's discharge permit, but issued an Administrative Order along with the permit because the plant was unable to achieve the copper discharge limit at that time of 2.9 micrograms per liter ( $\mu\text{g/L}$ ). The order, which was later amended, included an interim discharge limit for copper and a schedule of milestones that concluded with the NBWWTF eliminating its discharge to the Sound.

Various alternative discharge options were evaluated as a part of the *Wastewater Treatment and Effluent Disposal Comprehensive Plan for the Navarre Beach WWTF* (CH2M HILL, 2001). The results of this investigation showed that public-access reuse combined with effluent disposal through rapid-rate infiltration basins (RIBs) located on Eglin Air Force Basin (EAFB) property was the most viable alternative. SRC entered into discussions with the two other utilities in the area to expand the proposed concept to include the other wastewater treatment and effluent disposal systems.

In March 2001, SRC authorized CH2M HILL, under earlier task orders, to begin a preliminary investigation and to provide permitting assistance for the construction of the RIBs on EAFB. Additionally, CH2M HILL was tasked with preparing environmental assessments, boundary surveys, and the lease agreement for submission to EAFB. FDEP issued the permit to construct and operate a 7-mgd RIB system on April 4, 2005 (FLA349721-001-DW1P). Final documentation requested by EAFB for property lease was sent to EAFB's real estate office on November 29, 2007. EAFB has notified CH2M HILL that the property information submitted is complete and EAFB is proceeding with obtaining an appraisal of

the property. Once an appraisal is obtained, EAFB should be able to move forward with the preparation of the lease agreement and enter into negotiations with SRC.

The participating utilities, Holley-Navarre Water System (HNWS) and South Santa Rosa Utilities (SSRU), currently distribute reuse water from their wastewater treatment facilities to various residential and commercial users. During dry conditions, the utilities often do not have sufficient reuse water to meet demands. Supplying reuse water to these utilities from the NBWWTF would provide additional capacity to their systems. In addition, neither HNWS nor SSRU has implemented a long-term solution to effluent disposal during sustained periods of wet weather when the effluent cannot be land applied through irrigation, which is their primary source of disposal. The availability of an alternative disposal site, using SRC's RIBs, would meet this long-term need.

The purpose of this task order, Task Order 21, was to authorize CH2M HILL to proceed with preliminary engineering to better define the system components that will comprise the proposed regional reuse system. This preliminary design summary includes the proposed reclaimed water treatment processes at the NBWWTF; alternative analyses of the transmission system from the facility to the RIBs, including interconnections with the other utilities; and budget-level cost estimates and allocations for the project. The preliminary design report for the RIBs is included in a separate report, *Regional Reclaimed Water System Rapid-rate Infiltration Basin Project, Schematic Design Report* (CH2M HILL, 2008) (RIBs SD Report).

### **Navarre Beach WWTF Upgrades–TM 1**

To provide the treatment and effluent storage to meet the requirements for public access reuse and to provide the pumping capacity to convey the treated effluent to the regional reuse system, the NBWWTF will require additional processes. The major proposed upgrades to the NBWWTF include the following:

- Replacement of 4 existing tertiary effluent filters with 10 new effluent filters
- Construction of a new chlorine contact basin combined with an effluent pump station
- Installation of plant service water (W3) supply pumps and a pneumatic tank
- Construction of a new 0.9-mgd reuse reject storage basin

The preliminary design of the facilities is described in Technical Memorandum (TM) 1. The estimated cost for the upgrades is summarized below.

### **Reuse Water Transmission Main Route Analysis–TM 2**

Four primary alternatives for routing the proposed reuse transmission main and locating an intermediate pump station were evaluated. The transmission system will convey effluent from the participating utilities to the proposed RIBs, as well as from the intermediate pump station to HNWS and SSRU reuse systems. An additional alternative investigates routing effluent reuse water directly to SSRU's reuse distribution system. TM 2 addresses five alternative routes and includes design considerations, an evaluation of route alternatives, a description of the required trenchless construction, and design concepts for the intermediate pump station. Once a route is selected, a more detailed design will be performed on the transmission system and intermediate pump station, including preliminary drawings,

selection of pipe materials, hydraulic analyses, and easement and right-of-way requirements.

The proposed reuse and effluent disposal main from NBWWTF to the SSRU and HNWS reuse systems and to the RIBs site will include the following components:

- Reuse transmission main from NBWWTF to Intermediate Pump Station
- Reuse transmission main from Intermediate Pump Station to RIBs site
- Intermediate Pump Station, which will collect reuse-quality water from NBWWTF, HNWS, and SSRU for transmission to RIBs during low reuse demand periods, and distribute reuse-quality water from NBWWTF to HNWS and SSRU reuse water system.
- Connections between HNWS and SSRU and the Intermediate Pump Station

The estimated cost for each of the primary route alternatives is described below.

### **Allocation of Project Disposal Capacity and Cost–TM 3**

The purpose of TM 3 is to compile all of the costs for the components of the proposed regional reuse water system, as described in TMs 1 and 2, and to allocate these costs among the participating utilities, including Navarre Beach Utilities, SSRU, and HNWS. The cost allocation was applied to the four primary route alternatives described in TM 2. TM 3 also summarizes the project costs if SRC chooses to convey all of the effluent to the RIBs site without participation from the other utilities as well as for the alternative of pumping effluent reuse water directly to SSRU distribution system.

### **Summary of Opinion of Costs**

The opinions of cost for the three major project components, including the WWTF upgrades, reuse transmission mains and intermediate pump station, and RIBs, are summarized in Table ES-1. The opinion of cost assumes a construction start date of August 2009, with a 16-month project duration. The primary variable in the opinion of cost is the reuse transmission main route and the location of the intermediate pump station. Each of the alternatives assumes that SSRU and HNWS are participating in the regional reuse water system.

As shown in Table ES-1, the total project costs are estimated to range from \$31.1 to \$34.1 million, a difference of about 10 percent. Because the estimated costs at this level of design are accurate to within +50 percent to -30 percent, the actual anticipated costs of the four primary alternatives should be considered equal for comparison purposes. Factors influencing the decision regarding the preferred route should include other factors such as availability of easement and right-of-way, construction permits required, constructability, construction duration, and input from other stakeholders. Furthermore, SRC can choose to phase or partially construct the RIB site to reduce the initial cost. The *Regional Reclaimed Water System Rapid-rate Infiltration Basin Project, Schematic Design Report, May 2008*, outlines a phased approach to provide effluent disposal capacity in increments of 1.2, 5, or 7 mgd.

**TABLE ES-1**  
Santa Rosa County Regional Reuse Water System Opinion of Cost

<b>Component</b>	<b>Alternative I</b>	<b>Alternative II</b>	<b>Alternative III</b>	<b>Alternative IV</b>
NBWWTF Upgrade	\$3,300,000	\$3,300,000	\$3,300,000	\$3,400,000
Force Main and Intermediate Pump Station	\$12,000,000	\$12,200,000	\$13,600,000	\$14,100,000
RIBs	\$7,000,000	\$7,000,000	\$7,000,000	\$7,000,000
Engineering Cost to Date	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Engineering, Legal and Admin (15%)	\$3,300,000	\$3,400,000	\$3,600,000	\$3,700,000
Contingency (20%)	\$4,500,000	\$4,500,000	\$4,800,000	\$4,900,000
<b>Total Opinion of Cost</b>	<b>\$31,100,000</b>	<b>\$31,400,000</b>	<b>\$33,300,000</b>	<b>\$34,100,000</b>

1. Present Worth Analysis for RIBs Lease based on \$30,000/yr payments (per land appraisal of RIB site) at 5% escalation.
2. Operation and maintenance costs are not included.
3. Opinion of cost has a range of accuracy of +50% to -30% based on the current level of design.
4. Engineering costs incurred to date include those associated with the permitting of the RIBs site, RIBs site procurement process, and preliminary design.