THE $10,000 POPSICLE STICK
City of Fort Bragg Municipal Improvement District I:
Waste Water and Storm Water Collection and Treatment System

April 24, 2008

Summary

The 2007-2008 Grand Jury reviewed operation of the City of Fort Bragg Municipal Improvement District I (MID/*the District*) which collects and treats the wastewater for the City and designated surrounding areas. As a City-owned Enterprise within the Division of the Public Works Department, the District generates its own revenue from user and development impact fees, grants, and loans. Fort Bragg City Council members also comprise the Municipal Improvement District I Board of Directors.

Those interviewed expressed significant concern about the condition of Fort Bragg's aging wastewater collection and treatment system. Repeated discharges onto Pudding Creek Beach, together with other sanitary sewer overflows (SSOs) and violations of effluent discharge limitations (exceedances), have raised awareness that the system's condition is unacceptable to residents, city officials, and to regulatory agencies.

Of 23 discharge incidents between May 2004 and October 2007, half were due to the deterioration of the Pudding Creek Force Main[1] and other equipment failures. The other half were caused by blockages due to improper disposal of grease, paper products and other foreign objects. These incidents created the potential for $1,483,440 in fines by the California Regional Water Quality Control Board (RWQCB).[2] The RWQCB credited the District for prompt clean-up and for investments it has made in repairs and capital improvements. To clear these fines, the District must still complete a compliance project of at least $35,500 and pay a fine of $20,500.

The Jury was impressed by the apparent knowledge, commitment and candor of the Superintendents responsible for wastewater collection and treatment. Carefully prioritized upgrades are strengthening the aging system, but it remains vulnerable to costly failures. A full complement of certified operators is essential to keep pace with required maintenance.

Most of the 26.5 miles of sewer lines are made of fragile vitrified clay. Some essential equipment has operated continuously for 37 years, since the plant opened in 1971. The recently completed *Wastewater Treatment Facility Study* itemizes

[1] Waste water moves through the system by gravity flow or by being pumped through "force mains". In the latter case, the flow is under pressure, hence the name, "force main."
[2] California Regional Water Quality Control Board, North Coast Region: Administrative Civil Liability Complaints Numbers R1-2005-0095 and R1-2007-0102.

needed basic improvements to the Treatment Plant at an estimated cost of more than $5 million. Estimated long-range costs total more than $20 million.[3] Immediate priorities include: back-up generators to ensure continuous operation; and achieving redundancy to permit critical system components to be taken off line for servicing.

Methods

The Grand Jury interviewed Fort Bragg City officials and employees responsible for collecting and treating the community's wastewater. Jurors also reviewed budgets, planning documents and websites and toured the wastewater treatment facility.

Background

Completed in 1971, Fort Bragg's original sewer plant was funded by a grant from the Environmental Protection Agency (EPA) and the 1970 Sewer Revenue Bond. Wastewater facilities include 26.5 miles of collection pipes, six pump stations, a treatment plant and an outfall pipe that extends 690 feet into the Pacific Ocean. A number of plant upgrades have been constructed, but there was no regularly scheduled maintenance until after 1999. The City purchased a second digester in 2005 that will permit cleaning and rehabilitation of the primary digester for the first time since it went online.

The Wastewater Enterprise serves approximately 2,850 connections, including some beyond the Fort Bragg City limits. It is under contract to serve nearby State parks. A few sites within the District's service area maintain private septic systems.

Wastewater treatment capacity is adequate for current needs and for limited development, but the aging system is highly vulnerable to blockages and equipment failures. Increasingly stringent regulations combined with deferred maintenance have resulted in costly and environmentally harmful SSOs and exceedances.

The *Water/Wastewater Collection and Distribution Superintendent* and the *Water/Wastewater Treatment Superintendent* share direct responsibility for operating both the (potable) Water and Waste Water Enterprises. Their work is overseen by the Director of Public Works who reports to the Fort Bragg City Council. *The California State Water Resources Control Board* (SWRCB)[4] certifies Wastewater Collection and Treatment Operators. Certification is based on satisfactory completion of coursework, a written examination, and supervised experience as an "Operator-in-Training."

At the time of the Grand Jury inquiry, all Fort Bragg waste water operators held certifications consistent with their responsibilities. One employee was an Operator-in-Training. Several others were also involved in continuing education, supported by the City. At the current staffing level, operators are stretched to accomplish the highest priorities and must work independently without the support of a foreman.

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[3] Fort Bragg Municipal Improvement District No. 1: Wastewater Treatment Facility Study completed in 2007 by Nute Engineering, Civil and Sanitary Consultants, 907 Mission Avenue, San Rafael, CA 94901.

[4] www.swrcb.ca.gov. Under "Programs" on the Home Page, click on "Operator Cert"

In 2004, a District commissioned study recommended that an additional operator be added above the current number of funded positions.[5] Salaries and benefits were described as competitive with comparable rural cities. Any further reduction in staff would put the system at risk. Managers conduct annual performance reviews and provide employees with written feedback. Local housing cost was cited as a concern, should it become necessary to recruit operators from outside the area.

Findings

Deferred Maintenance

1. Before 1999, there was no planned maintenance of the wastewater collection system. Recommendations for depreciation and replacement reserves were rejected repeatedly by the MID Board.
2. Since 1999 the Public Works Division maintains the system in response to blockages and failures and makes repairs that do not require capital expenditures. Staffing is minimally adequate for this level of maintenance.
3. Storm drains were separated from the sanitary sewer in the late 1970s although some cross connections continue to be discovered. The City adopted a master plan for storm drainage in 1985 and updated it in 2004.
4. A few of Fort Bragg's sewer pipes date to the 19th century. Seventeen of the 26.5 miles of collection lines are original clay pipes installed from 1920 to 1940. An additional six miles are asbestos/cement, installed in the 1960s.
5. Clay pipes have an estimated life span of 50-100 years. Their grouted concrete connections break down sooner.
6. Aging pipes, broken seals, and cross connections with storm drains allow large amounts of water to enter the treatment plant during wet weather. This *infiltration* and *in-flow* of storm water overloads the plant. When the incoming sewage stream is diluted by storm water, State effluent limitations for secondary treatment are exceeded and fines are incurred.[6]
7. Weak and damaged pipes also result in *diffusion* of wastewater into soil and in SSOs that are hazardous and result in costly cleanup efforts and fines.
8. The original treatment plant was designed to treat 1.0 million gallons/day of dry weather flow; upgrades brought capacity to 2.2 million gallons/day of wet weather flow.
9. During dry weather, the treatment plant currently operates within 65% of capacity. Fines result when the Average Daily Flow exceeds the wet weather load of 2.2 million gallons per day (m/gpd) and partially treated sewage is discharged into the ocean. These "reportable events" occurred six times in 2005 and five times in 2004. The most recent reportable events occurred during the torrential storms of January 2008.

[5] February 20, 2004 review by Tetra Tech to support NPDES application.

[6] State standards for secondary treatment require 85% reduction of the Bio Oxygen Demand (BOD) and Total Suspended Solids (TSS) between incoming and outgoing sewage flow.

What's Been Done

10. To check for leaks, in 2005, MID contracted for smoke and dye testing, videotaped the mains and ranked repair priorities one to five. To date, repairs with priorities of one or two have been completed.
11. The District slip-lined about one mile of the sewer collection pipes with a blown-in plastic sleeve. It replaced damaged sections, and disconnected storm drains from the sewer lines. The total project cost was $750,000.
12. Acquisition of a $250,000 vacuum rig and a $40,000 underground video camera makes it possible for crews to explore mains and laterals. One sewer truck was also replaced in 2007. Appropriate equipment reduces the amount of time and excavation required to clear a blockage and prevent spills.
13. The storm-damaged Pudding Creek Force Main has been re-anchored pending permanent repairs.
14. A diver inspected the ocean out-fall pipe from the treatment plant and checked diffusers and flaps in the fall of 2007.
15. Manholes are essential to allow crews to inspect pipes and to locate and clear blockages. The District has been adding several manholes each year at a cost of $3,000 to $6,000 each. More than 350 manholes are in place; twelve more are planned.
16. The District regularly cleans each of its 350+ manholes and inspects both the water and wastewater pipes. Crews are able to complete 10-30% of this work each year.
17. The District completed a headworks project at the wastewater treatment plant in 2007. This equipment collects and processes trash that has been improperly discarded into the sewers. Removing this material protects the treatment equipment and greatly reduces odors at the plant.
18. After the debris has been washed, disinfected, greatly compressed and bagged, 9 to 12 cubic feet of material per week is collected for transfer to sanitary landfill.
19. The large amount of trash and grease discarded into the sewer remains a leading cause of sanitary sewer overflows and the resulting fines.
20. The City established a grease trap inspection program in 2005 which requires all commercial and institutional food handlers to install and maintain grease traps. Enforcement of this program will be ramped up as staffing permits.

Regulatory Environment and Fines

21. Since 2000, government regulatory agencies have raised water quality standards and become more vigilant in enforcing regulations. Private environmental organizations exert additional pressure through legal action and negative publicity.
22. The RWQCB imposes minimum mandatory fines of $10,000 for SSOs.
23. Effluent discharge limits are established under the Federal Clean Water Act and are set forth in the District's National Pollution Discharge Elimination System (NPDES) permit. When discharged effluent fails to meet quality standards, the minimum fine per exceedance is $3,000.
24. The RWQCB issued fines totaling $110,000 as a result of 11 SSOs between 1/1/03 and 10/31/07. Seven of these were due to blockages caused by grease.

25. Sanitary Sewer Overflows are also triggered by items as small as a child's toy or a popsicle stick. Plastic bottles, fabric and paper towels are common culprits.
26. In June 2006, 3200 gallons of raw sewage were discharged onto Pudding Creek beach from the deteriorated Pudding Creek Force Main. The RWQCB issued a Cleanup and Abatement order on January 29, 2007 followed by a Cease and Desist order on April 26, 2007. The District has secured a $1.5 million Clean Beaches grant to replace the Pudding Creek Force Main and will put the project out to bid in late spring of 2008. The RWQCB deadline for project completion is October 2009.
27. After wastewater is treated with gaseous chlorine and then de-chlorinated, the effluent is discharged through a 690' long ocean out-fall pipe, 30' below the surface. Chronic Toxicity Reports are submitted twice a year to measure long-term risk to specific marine species in the area of the out-fall pipe.
28. The RWQCB may allow an agency to complete a *supplemental environmental project* or *compliance project* if it has been diligent in filing required RWQCB reports and has made bona fide efforts to prevent and to respond quickly to SSOs and exceedances.
29. The District invested nearly a million dollars in 2007 to install a new headworks screen at the treatment plant as a compliance project to satisfy discharge exceedance fines incurred between 1/1/2000 and 5/13/04.
30. An electrical circuit failed in April 2007, causing the discharge of chlorinated water that had not yet been de-chlorinated. All other 2006-07 test results were within the permitted range.
31. The fine initially assessed for this incident was $1,240,000.
32. Negotiated reductions and a proposed $35,500 compliance project greatly reduced the amount of fines to be paid for this and several other incidents reported between 1/1/03 and 10/31/07. The remaining fine of $20,500 will be paid in two installments.

Finance

33. Fines are paid from ratepayer sewer fees.
34. The 2007 *Wastewater Management Plan* identifies $22 million to $40 million for maintenance needs, replacements and upgrades over the next twenty years.
35. The cost of replacing all of Fort Bragg's water, sewer and storm water pipes and laterals has been estimated to be $58 million. An alternative is vigilant maintenance.
36. For many years prior to 1999, the City chose to keep user rates low. Current user fees, Connection, Capacity, and Development Impact Fees will not meet the costs of required maintenance and capital improvements.
37. For FY 2006-07 (ending June 30) the District included as non-operating income a loan advance from the General Fund of $550,000 toward the headworks project. Payback is over a five-year period.
38. Payments are already being made on the 1970 Sewer Bond, the 1998 Wastewater Bond and a ten-year lease/purchase contract on the sewer vacuum truck and new water meters.
39. For FY 2007-08 the Wastewater Enterprise maintenance budget was *decreased* by $67,622 from the prior year.

40. Loans and bonds require evidence of ability to repay from user revenue. A rate study, which is required in order to raise user fees, is underway.
41. Grants are the primary source of capital funding and most grant applications require costly studies. Fort Bragg currently employs a grant writer who submits 3-4 grants per month on behalf of City.

Recommendations

The Grand Jury recommends that the Fort Bragg Municipal Improvement District I:

1. Produce an annual wastewater management report to inform the public about:

    - the condition of the system;
    - the amount of untreatable debris being captured and treated by the treatment plant headworks;
    - the number and cause of SSOs and discharge exceedances resulting in fines;
    - priorities for repairs and improvements in the coming year;
    - the District's income and expenses;
    - the amount and purpose of all long-term obligations

    (Findings 4, 6, 7, 9, 10, 15, 16, 24, 26 and 29-39).

2. Publish the report on the City of Fort Bragg Website, enclose it in billing statements and announce it through press releases (Findings 4, 6, 7, 9, 10, 15, 16, 24, 26 and 29-39).

3. Conduct a District-wide public awareness campaign educating ratepayers about what they can do to reduce the volume of untreatable material that enters the sanitary sewer system, thereby reducing overflows and the resulting fines (Findings 6, 9, 17-20, 22-26, 29 and 33).

Comments

Since 1999 Fort Bragg has begun the massive undertaking of tackling deferred maintenance and upgrading its wastewater treatment and collection system. The District staff has had to defend not only against the inevitable breakdowns of an aging system but also the annual onslaught by Mother Nature. While there are no immediate solutions, public education can help build support for necessary expenditures and reduce stress on the existing wastewater system by encouraging users to:

- maintain the privately owned laterals that connect to the public sewers;
- avoid routing storm water into private laterals or directly into public sewer lines;
- use the system only to dispose of human waste and related sanitary products;
- employ composting to dispose of food and plant waste;
- avoid cleaning products labeled "flushable;" many are not treatable;
- keep oil and grease, medicines and other chemicals, hair, floss, paper, fabric and all other non-soluble materials out of the sewer system.

Human health and environmental risks and economic pressures from regulatory agencies underscore the urgent need for vigilant maintenance and capital improvements to Fort Bragg's sewer system and treatment plant. Staffing is minimally adequate to meet current needs; any reduction will create added risks of sewer overflows and effluent limitation exceedances.

The Public Works Superintendents and staff members responsible for collection and treatment of the City's wastewater are to be commended for their professionalism and commitment to maintaining systems that are essential to the well-being of all who live, work, or visit in the area they serve.

Required Responses

Fort Bragg Municipal Improvement District I Board of Directors/Fort Bragg City Council (All Findings; All Recommendations)

Fort Bragg City Manager (All Findings; All Recommendations)

Fort Bragg Director of Public Works (All Findings; All Recommendations)

Requested Responses

Mendocino County Local Agency Formation Commission (LAFCO)
(All Findings; All Recommendations)

The Grand Jury Report Process

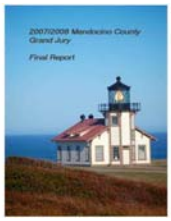
The role of the Mendocino County Civil Grand Jury is to oversee and shed light on local and County government. Jurors conduct oversight inquiries and investigate matters of public interest. Any individual can file a complaint with the Grand Jury using forms available online at **www.co.mendocino.ca.us/grandjury**.

A Grand Jury inquiry begins when a topic is approved by a minimum of 12 of the 19 seated Jurors. A committee then undertakes extensive research and drafts the report. Findings are verified against documents and interview notes and are reviewed for accuracy with key individuals in the agency of interest. The draft is then reviewed by an internal Edit committee and must receive approval by the Full Panel. It is then sent to County Counsel and to the Presiding Judge for final review before public release.

Members of the 2007/2008 Grand Jury

Bob Coppock
Brad Hunter
Kathy Johnson
Nancy Kleiber
Lois Lockart
Chas Moser
George Pacheco
Lillian Pacini
Carolyn Pavlovic
Barbara Reed
Wendy Roberts
James Schweig
Dennis Scoles
Bill Stambaugh
Sherry Stambaugh
Finley Williams

Partial Year
Thomas Clay, Al Pierce, Brent Rusert, Pamela Shilling, Thelma Thompson



The cover photo for this report was taken at Point Cabrillo Light Station Historic Park by Donald F. Roberts. This report was produced with the generous assistance of Tony and Maureen Eppstein. Information on Point Cabrillo State Historic Park and the Lighthouse Inn is available at www.pointcabrillo.org