

7.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

This section analyzes the service impacts of wastewater collection, treatment, and disposal under the proposed City of Fortuna General Plan 2030 (proposed plan). An analysis of water quality impacts relative to wastewater discharge is discussed in Section 5.1, Hydrology and Water Resources.

This section is based, in part, on Chapter 7 of the Fortuna General Plan Update Background Report prepared by Mintier & Associates in June 2007. The Background Report is included as Appendix G of this PEIR.

Environmental Setting

Wastewater Collection

Collection System. The City's wastewater collection system serves approximately 11,000 residential, commercial, and industrial users in the Planning Area (NCRWQCB, 2009). Approximately 90 percent of these connections are residential; the rest are commercial and industrial. The City's wastewater collection system extends throughout most areas within the City Limits and is considered generally adequate to serve existing development in the City. Palmer Creek Community Services District (PCCSD) also connects into the City's treatment system. Wastewater flows are measured at the headwork's structure within the Wastewater Treatment Plant (WWTP) and include the PCCSD flows which are metered separately for billing purposes.

Main Lines. The City's collection system ultimately feeds into two main lines; one gravity main line and one force main line. The gravity main line is a 15-inch line located at Loni Drive. This main collects wastewater from two lines that flow from the northern half of Fortuna Boulevard into a ten-inch gravity line at the intersection of Newburg Road. The ten-inch line, which feeds from the north, collects into the 12-inch main line located on 12th Street. The second main line is a 12-inch force main. This force main, ties into another force main that originates at the California Conservation Corps (CCC) Wet Well Pump Station on Alamar Way. This force main transfers the flows north along Dinsmore Drive to the WWTP.

Pipe Capacities. The most significant issues with the City's collection system relate to the capacities of the existing collection system pipes. The 12- and 15-inch sewer lines located at 12th Street and Loni Drive, respectively, have flat grades and are subject to seasonal Infiltration and Inflow (I/I). The old gravity lines located along Newburg Road operate at capacity and are not suitable for handling new or increased flows. Collection system piping in currently undeveloped areas is inadequate. Sewage collection lines are not extended into the former PALCO mill site (Mill District Focus Area) or to the four annexation areas.

Pump Stations. There are eight City-owned pump stations in the collection system: Strongs Creek, California Conservation Corp (CCC), North Main Street, Rohnerville Road, Rancho Buena Vista, Rundells, Kenwood Meadows/Laurilwood and Nob Hill. These stations are equipped with pumps ranging in size from two-inch to eight-inch pumps that provide the majority of the pumping capacity for average daily flow conditions. These are augmented with secondary pumps for additional capacity during peak flow conditions.

Wastewater Treatment

The City of Fortuna's WWTP is located at 180 Dinsmore Drive along Strongs Creek near its confluence with the Eel River. The existing WWTP was originally constructed in the 1970s and was expanded in 2006/2007.

WWTP Upgrades and Expansion. Construction of the WWTP upgrades and expansion were completed in June of 2007. The improvements included upgrading the existing hydraulic capacity of the plant and adding new unit operations including; a new anaerobic digester; a secondary clarifier; a composting solids handling system; and odor control biofilters. The hydraulic capacity of the plant was increased with the addition of a new secondary clarifier and a new discharge pipe. A new operations building, and a grit handling and headwork's system were also constructed, as well as co-gen capability which converts digester gases into electricity to supplement the electrical power needed to operate the WWTP.

WWTP Treatment Process. Primary treatment consists of sedimentation and anaerobic sludge digestion. Secondary treatment is carried out by three aeration basins followed by three rectangular sedimentation basins with conventional chain and flight sludge conveyors, and finally, chlorine disinfection. Chlorine disinfection is carried out in two chlorine contact tanks. The effluent from the secondary clarifier and the sedimentation basins is chlorinated and then dechlorinated before being discharged to the Eel River.

WWTP Capacity. According to the City's discharge permit, the WWTP is currently designed to treat an average dry-weather flow of 1.5 (million gallons per day) MGD and an influent peak wet-weather flow capacity of 7.0 MGD (NCRWQCB, 2009). The wet weather capacity is achieved by diverting peak influent flows over 3.0-4.0 MGD to three holding/oxidation ponds and treating/discharging the flows during non-peak periods (Ibid).

According to the Community Infrastructure and Services Technical Report (County of Humboldt, 2008), the City's existing average dry-weather flows are 0.95 MGD. Hence, the City's WWTP is currently operating at approximately 63% of its dry-weather capacity.

Wastewater Disposal

Discharge Locations. The City of Fortuna currently discharges treated municipal wastewater at two discharge locations. Wastewater is discharged through Discharge Point 001 into Strongs Creek during the winter high river levels (from October 1 through May 14). During summer lower river levels (from May 15 to September 30), treated wastewater is discharged to three holding/oxidation ponds adjacent to the Eel River at Discharge Point 003, where it is stored until winter high river levels return. The holding/oxidation ponds are also used to provide flow equalization during prolonged winter storm conditions (NCRWQCB, 2009).

The City's discharge permit notes that the City had previously been permitted to discharge disinfected and dechlorinated effluent (Discharge Point 002) into Strongs Creek from the "holding/oxidation ponds" under prolonged storm conditions, but indicates that the City's permit renewal application did not specify Discharge Point 002 as a requested outfall (Ibid).

Effluent Limitations. The wastewater effluent limitations at Discharge Point 001 under the City's discharge permit are shown in Table 7.2-1.

**Table 7.2-1
Wastewater Effluent Limitations – Discharge Point 001**

Constituent	Units	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (BOD)	mg/L	30	45	---
	lb/day	375	563	---
Total Suspended Solids (TSS)	mg/L	30	45	---
	lb/day	375	563	---
Settleable Solids (SS)	ml/L	0.1	---	0.2
Coliform Bacteria	MPN/ 100 mL	23 (median)	---	230
Chlorine Residual	mg/L	---	---	0.1
pH (to the Eel River)	pH units	within 6.5 to 8.5 pH units at all times		
Copper	µg/L	6.2	---	13
Chlorodibromomethane	µg/L	0.4	---	0.8
Dichlorobromomethane	µg/L	0.6	---	1.1
<i>Source: NCRWQCB, 2009</i>				

Applicable Plans, Policies, Codes, and Regulations

Federal

Clean Water Act. In 1972, the Federal Water Pollution Control Act, also referred to as the Clean Water Act (CWA), was amended to establish that the discharge of pollutants to Waters of the United States was effectively prohibited unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES program regulates point source discharges including discharges from wastewater treatment plants and other facilities that discharge directly to surface waters, and non-point source discharges. NPDES permits for point source discharges contain limits on allowable concentrations contained in the discharge, and typically a self-monitoring and surveillance program. In California, NPDES programs are administered by the State Water Resources Control Board (SWRCB) and the local Regional Water Quality Control Boards (RWQCBs) following State Water Code procedures.

State

Water Quality Control Plan. Water quality control plans, also referred to as Basin Plans, are prepared by each local RWQCB for its respective region. The plans designate beneficial uses for specific surface and groundwater resources and establish water quality objectives, implementation plans for point source and nonpoint source discharges, prohibitions, and statewide plans and policies.

Waste Discharge Requirements. The RWQCBs issue Waste Discharge Requirements (WDRs) for major point-source discharges such as the City’s municipal wastewater treatment plant and other industrial facilities. Discharges from the City of Fortuna WWTP must meet the requirements of NPDES Permit No. CA0022730 and WDR No. R1-2007-0007, which outline discharge prohibitions, effluent limitations, and monitoring and reporting requirements.

General Waste Discharge Requirements for Sanitary Sewer Systems. The SWRCB adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Sanitary Sewer Order) on May 2, 2006 (Water Quality Order No. 2006-0003). The Sanitary Sewer Order addresses Sanitary Sewer Overflows (SSOs) in municipal systems and requires public agencies that own or operate sanitary sewer systems to develop and implement sewer system management plans and report all SSOs to the State Water Board’s online SSO database.

Septic System Regulations. Larger septic systems, including some commercial and industrial systems, are subject to the review and approval of the RWQCB. Division 7 of the California Water Code grants to the RWQCB jurisdiction over all discharges of wastes, including those individual waste treatment and disposal systems or from community collection and disposal systems, which utilize subsurface disposal.

County

Septic Systems. Construction of septic system facilities in the unincorporated areas surrounding the City of Fortuna is subject to Humboldt County review for consistency with requirements of the Humboldt County Division of Environmental Health (HCDEH) and RWQCB. The HCDEH is the agency responsible for the review and permitting of individual on-site septic systems, and the HCDEH and RWQCB are the agencies responsible for commercial and some community systems that involve the use of on-site septic tanks, including the collection and disposal of effluent from several systems. Individual septic systems are granted permits provided that all relevant conditions and/or regulations are met. Some of the rules and regulations pertaining to the design and construction of on-site wastewater systems are detailed in the Humboldt County Code – Regulating the Disposal of Sewage and its revisions.

Methodology

Policy Background

The following policy background is used to assess the wastewater impacts of the proposed plan:

- In June of 2007 the City completed the WWTP upgrade and expansion to comply with waste discharge requirements.
- The WWTP is currently designed to treat an average dry-weather flow of 1.5 MGD and an influent peak wet-weather flow capacity of 7.0 MGD.
- The City will continue to comply with provisions or requirements of the City’s NPDES Waste Discharge Permit.

- The City will continue to utilize wastewater flow standards developed by the State and local governments for use in wastewater facility sizing.
- The City will continue to make public investments in the replacement and/or upgrade of wastewater treatment and collection systems.
- The City will continue to fund wastewater projects including sewer clean out programs, smoke testing, and ongoing collection system operation and maintenance through its five-year Capital Improvement Program (CIP).

Thresholds of Significance

Proposed General Plan implementation would have a significant wastewater collection, treatment and disposal impact if it would:

- Exceed wastewater treatment and/or discharge requirements of the NCRWQCB;
- Have inadequate wastewater treatment capacity to serve the plan's projected demand in addition to the City's existing commitments; or
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Implications of the Draft Land Use Diagram

Under buildout of the proposed plan, the population within the Planning Area will increase from 11,351 to 24,904 persons. New residential, commercial and industrial development will be distributed to all areas of the City, including proposed annexation and focus areas. Based on the projected growth, there will be an increase in the demand for wastewater services in currently underserved areas of the City and in areas proposed for annexation. This increase in residents has the potential to impact existing wastewater collection and treatment services in the Planning Area. The potential wastewater impacts are primarily associated with increases in wastewater flows anticipated from new urban development and redevelopment in the Planning Area.

The City's WWTP treats an estimated 0.95 of wastewater during dry- weather conditions. Based on these quantities and the City's existing population of 11,351 persons (DOF 2009), the City's existing per capita dry-weather wastewater generation is 88.1 gallons per day (GPD). Applying these rates to the projected 2030 buildout population under the proposed plan (24,904 persons), buildout under the proposed plan will generate an estimated 2.2 MGD of wastewater during dry-weather conditions.

The WWTP has experienced wet-weather flows of up to 7.0 MGD, and therefore currently operates at up to 100% capacity during large storm events. At buildout under the proposed plan, the increase in service population and impervious surfaces will increase wet-weather flows, potentially exceeding the 7.0 MGD wet-weather capacity of the WWTP during certain storm events.

General Plan Policy Response

The proposed General Plan includes the following policies and programs relevant to wastewater collection and treatment.

Policy PFS 1.1 Public Facility Monitoring. The City shall monitor water, wastewater and storm drain system capacities on an annual basis, and make capacity improvements as needed.

Policy PFS-1.2 Adequate Public Facilities to Serve New Development. The City shall ensure through the development review process that adequate public facilities and services are available to serve new development when required. The City shall not approve new development where existing facilities are inadequate to support the project, unless the applicant can demonstrate that all necessary public facilities (including water, sewer, storm drainage, transportation, police and fire protection services) will be installed or adequately financed and maintained (through fees, special taxes, assessments, or other means).

Policy PFS-1.3 Infrastructure Coordination. The City shall ensure that the provision of streets, sewer, water, drainage, and other necessary infrastructure is coordinated in a logical manner, so as to reduce design, construction, and maintenance costs.

Policy PFS-1.4 Ultimate Capacity Needs. The City shall ensure through the development review process that public facilities and infrastructure are designed and constructed to meet ultimate capacity needs, pursuant to a master plan, to avoid the need for costly retrofitting.

Policy PFS-1.5 Necessary Infrastructure. The City shall require all new development and major modifications to existing development to construct necessary on-site infrastructure to serve the project in accordance with City standards.

Policy PFS-1.6 Project Impacts on Infrastructure. When reviewing applications for land use designation changes (i.e., General Plan amendments, specific plan amendments), the City shall analyze the impacts of the proposed land use designation changes on all aspects of the infrastructure system within the City and require mitigation as legally required. This shall include consultation with other service providers who have infrastructure within the City.

Policy PFS-1.9 City Service Extensions to Annexation Areas. Upon LAFCo approval, City water, wastewater conveyance and treatment, storm drainage and police service shall be extended to the Riverwalk, Strongs Creek, Carson Woods, and Rohnerville annexation areas. The City shall not approve new development in these areas until services are available.

Policy PFS-4.1 Public Sewer Infrastructure. The City shall require all new urban development to construct sewer infrastructure according to the City's municipal standards and incorporate it into the City's sewer collection system.

Policy PFS-4.2 Gravity-Flow Collection. The City shall require that wastewater collection systems be designed on a gravity-flow basis, except where a site-specific engineering analysis clearly demonstrates the long-term cost-effectiveness or need for pumping facilities.

Policy PFS-4.3 Clean Water Act Compliance. The City shall comply with the requirements of the Federal Clean Water Act to minimize the discharge of pollutants to surface waters, as required by the City's National Pollutant Discharge Elimination System (NPDES) permit.

Policy PFS-4.4 Sewer Capacity. The City shall maintain sufficient wastewater collection, treatment and disposal capacity to serve the residents of Fortuna.

Policy PFS-4.5 Wastewater System Collection and Treatment Facilities and Components. The City shall continue to identify, through the Capital Improvements Program, all significant components of the wastewater system that will need to be replaced or improved during the useful life cycle.

Policy PFS-4.6 Wastewater System User Rate Structure. The City shall continue to review and analyze the full operational, maintenance, and capital improvement costs, as well as the cost of developing future capacity of the City's wastewater system. The City shall maintain a rate and fee structure that is sufficient to generate revenues to offset these costs, thereby assuring future viability of the municipal wastewater system.

Policy PFS-4.7 Alternative Private Wastewater Treatment Systems. The City shall consider the use of alternative private wastewater treatment systems (i.e., septic) on individual parcels located in very low density areas of the City that are not served by the City's public sewer collection system. Such consideration would be predicated on a site-specific engineering analysis that clearly demonstrates that connection to the public sewer system is financially not feasible. The alternative system must meet and comply with the requirements of the Humboldt County Department of Environmental Health and the North Coast Regional Water Quality Control Board.

Policy PFS-4.8 Septic System Compliance. The City shall require that sewage disposal (septic) systems comply with all requirements of the Humboldt County Department of Environmental Health and the North Coast Regional Water Quality District.

Policy PFS-4.9 Regulatory Compliance. The City shall construct, operate, and maintain the City's municipal wastewater system to meet all of the regulatory requirements of the North Coast Regional Water Quality Control Board and the City's NPDES permit, including the employment of appropriately certified operators.

Program PFS-1 The City shall prepare and annually review public facility master plans (e.g., water, wastewater, drainage). Every five years, the City shall update those plans to ensure compliance with appropriate State and Federal laws, use of modern and cost effective technologies, and compatibility with current land use policy.

Program PFS-2 The City shall continue to update its Capital Improvement Program to address the City's existing and projected public facility needs.

Program PFS-3. At such time as any water, wastewater or storm drain element (pipes, pump stations, treatment facilities, etc.) reaches 90% of capacity, increased capacity shall be programmed.

Program PFS-4. New subdivisions, PUDs, and other large development projects (e.g., residential projects over 20 units, commercial/ office/industrial projects over 10,000 sq. ft.) shall demonstrate that adequate water, fire flow, wastewater collection, wastewater treatment/disposal, and storm drainage can be provided without adversely impacting service to existing uses.

Program PFS 6. The Fortuna Public Works Department shall establish and implement a fair-share fee program applicable to new development to help pay for system-wide water, wastewater conveyance, wastewater treatment, and storm drainage

Program PFS-11. The City shall prepare and periodically update a wastewater facilities master plan that identifies treatment facilities and collection system locations and sizes to serve the needs of the expanding City.

Program PFS-12. The City shall require that proposed subdivisions, PUDs and other large development projects shall route urban runoff through onsite grassy swales, infiltration/sedimentation basins, and oil/grit separators prior to discharging to the City's municipal storm water drainage system.

Program PFS-13. The City shall require that proposed new industrial and manufacturing projects of greater than 5 acres include wastewater studies that: (1) quantify the constituents of the potential wastewater stream to be generated by the proposed development; (2) evaluate the impacts of adding the new stream to the City's ability to comply with its wastewater WDRs, NPDES permits and TMDL discharge requirements for discharges of treated effluent to the Eel River; and (3) identify mitigation measures, if required, if the additional waste stream will compromise the City's ability to comply with its discharge requirements.

Program PFS-14. The City shall require that, prior to operating any proposed new industrial or manufacturing uses of greater than 5 acres, a Notice of Intent to comply with the California General Permit for Discharges of Storm Water Associated with Industrial Activities adopted by the State Water Resources Control Board shall be filed.

Impacts and Mitigation

Impact 7.2-1: Waste Treatment or Waste Discharge Requirements

Proposed General Plan implementation could result in the violation of wastewater treatment or discharge requirements of the NCRWQCB.

Discussion

The proposed plan will increase residential, commercial, and industrial development within the Planning Area. This new development increase discharges into the City's municipal WWTP and increase point-source discharges of treated wastewater from the WWTP to the Eel River. The City is currently subject to waste discharge requirements under the City's NPDES discharge permit No.

CA0022730. The discharge permit sets quantity, pollutant and temperature limitations for the discharge.

Because City stormwater and treated wastewater discharges to the Eel River currently occur under the existing City NPDES permits, any future increases in City discharges to the river will occur consistent with these permits or amended versions thereof, and these permits are/will be formulated by the NCRWQCB consistent with the discharge requirements of the Basin Plan and Eel River TMDLs. Thus, the increased municipal treated wastewater discharges under the proposed plan will not violate water quality standards or waste discharge requirements.

In addition, the proposed plan includes policies and programs designed to minimize wastewater flows and pollutants in these flows.

- Policy PFS-4.1 requires all new urban development to construct sewer infrastructure according to the City's municipal standards and incorporate it into the City's sewer collection system;
- Policy PFS-4.3 requires the City to comply with the requirements of the Federal Clean Water Act to minimize the discharge of pollutants to surface waters, as required by the City's NPDES permit;
- Program PFS-12 requires that all new subdivisions, PUD's and other large development project route urban runoff through onsite grassy swales, infiltration/sedimentation basins, and oil/grit separators prior to discharging to the City's municipal storm drain system;
- Program PFS-13 requires that proposed new industrial and manufacturing projects greater than 5 acres in size include wastewater studies that quantify the pollutant to be generated, evaluate the impacts of adding the new wastewater stream to the City's wastewater stream (including impacts on the City's ability to comply with its wastewater WDRs, NPDES permits and TMDL discharge requirements for discharges to the Eel River), and identify mitigation measures if the additional stream would compromise the City's ability to comply with its discharge requirements; and
- Program PFS-14 requires that proposed new industrial or manufacturing uses of greater than 5 acres file a Notice of Intent to comply with the California General permit for Discharges of Storm Water Associated with Industrial Activities adopted by the SWRCB.

With compliance with the aforementioned discharge permits and federal, state and local regulations, and with implementation of the proposed policies and programs listed above, this impact will be less-than-significant.

Determination of Level of Significance

Less-Than-Significant

Mitigation

No mitigation required

Impact 7.2-2: Wastewater Treatment Capacity

Proposed General Plan implementation could generate increased wastewater flows, but these increased flows will not exceed the treatment capacity of the WWTP.

Discussion

The City's WWTP treats 0.95 MGD of wastewater during dry-weather conditions and has a dry-weather capacity of 1.5 MGD. Therefore the treatment facility is operating at approximately 63 percent of its dry-weather flow capacity. At buildout under the proposed plan, the service population will increase from 11,351 to 24,904 persons, generating an estimated 2.2 MGD of wastewater during dry-weather conditions. This will exceed the dry-weather capacity of the WWTP by 0.7 MGD or 47 percent.

During wet-weather conditions, the WWTP has a peak wet-weather flow capacity of 7.0 MGD. Peak flows over 3.0 to 4.0 MGD are bypassed to holding ponds and returned for treatment during low flow periods. The holding ponds essentially provide flow equalization, which assists operations during the storm season (NCRWQCB, 2009). The WWTP has experienced wet-weather flows of up to 7.0 MGD, and therefore currently operates at up to 100% capacity during large storm events. In addition, at buildout under the proposed plan, the increase in service population and impervious surfaces will increase wet-weather flows, potentially exceeding the 7.0 MGD wet-weather capacity of the WWTP during certain storm events.

The proposed plan includes the following policies and programs designed to minimize wastewater treatment capacity impacts.

- Policy PFS 1.1 requires the City to monitor wastewater system capacities on an annual basis, and make capacity improvements as needed;
- Policy PFS-1.2 requires the City to ensure that adequate public facilities and services are available to serve new development prior to approval;
- Policy PFS-1.9 requires the City to ensure new development in the Annexation Areas have available wastewater conveyance and treatment services before development is approved;
- Policy PFS-4.4 requires the City to maintain sufficient wastewater treatment capacity;
- Policy PFS-4.5 requires the City to identify, through the CIP, all significant components of the wastewater system that will need to be replaced or improved during the useful life cycle;
- Policy PFS-4.7 requires the City to consider the use of septic systems on individual parcels located in very low density areas of the City that are not served by the City's public sewer collection system;
- Program PFS-3 requires the City to increase wastewater treatment and disposal capacity when existing capacity reaches 90 percent;

- Program PFS-4 requires large development projects to demonstrate that adequate wastewater treatment services can be provided without adversely impacting service to existing uses;
- Program PFS-11 requires the City to prepare and periodically update a wastewater facilities master plan;
- Program PFS-13 requires proposed new industrial and manufacturing projects provide wastewater studies that evaluate the impacts of adding the new stream to the City's wastewater system.

The above policies and programs will ensure that: (1) the City begins planning for increasing WWTP capacity immediately after adoption of the proposed General Plan Update (per Program PFS-3); and (2) new development under the proposed plan must demonstrate there is sufficient wastewater treatment and disposal capacity. In addition, implementation of the policies and programs listed in this section and in Section 7.3 of this PEIR (Storm Drainage) will reduce per capita wet-weather flows to the WWTP over time through the provision of more on-site percolation, on-site detention, requirements to connect to the City's storm drain system, and other measures. Therefore, a less-than-significant impact will occur.

Determination of Level of Impact

Less-Than-Significant

Mitigation

No mitigation required

Impact 7.2-3: Impacts of Constructing New or Expanded Wastewater Facilities

Proposed General Plan implementation will require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Discussion

The proposed plan will facilitate new development within the Planning Area. Some of this development will require the construction of new or expanded wastewater facilities, the construction of which could cause environmental effects. However, no specific development projects or wastewater facility improvements are proposed under the proposed plan, so the specific environmental effects associated with constructing any new or expanded wastewater facilities cannot be identified at this time. Not speculating with respect to potential environmental effects is permitted under the State CEQA guidelines. §15145 states that, if after evaluation a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact. §15146(b) states that a programmatic EIR should focus on the secondary effects that can be expected to follow from its adoption, but that the EIR need not be as detailed as an EIR on a specific construction project

that might follow. At the time that specific improvements are proposed, the environmental effects of those improvements will be evaluated by the City in accordance with CEQA. For these reasons, the proposed plan will not cause significant environmental effects associated with construction of wastewater facilities. A less-than-significant impact will occur.

Determination of Level of Significance

Less-Than-Significant

Mitigation

No mitigation required

References Cited

California Regional Water Quality Control Board, North Coast Region (NCRWQCB). 2009. Waste Discharge Requirements for the City of Fortuna Municipal Wastewater Treatment Plant. URL: http://www.waterboards.ca.gov/northcoast/board_decisions/adopted_orders/pdf/2007/070926_07_0007_NPDES_Fortuna.pdf

County of Humboldt. 2008. Community Infrastructure and Services Technical Report. Prepared by Winzler & Kelly Consulting Engineers. URL: <http://co.humboldt.ca.us/gpu/documentsBackground.aspx>