

2428 McGee Avenue
Berkeley, CA 94703
510 845-8625 Land Line
510 910 3420 Cell
510 845-4606 FAX
dickson.bonneau@gmail.com

Bonneau Dickson, P.E.

Consulting Sanitary Engineer

BONNEAU DICKSON, P.E.

WASTEWATER TREATMENT EXPERIENCE

Glen Oaks Mobile Home Park, Auburn, CA. This small mobile home park is served by a sewage system that includes treatment and disposal in a facultative pond. The area was built decades ago as a railroad construction camp and had never obtained a discharge permit. The system came to the attention of the Regional Water Quality Control Board when one of the residents complained to them that her dog had become ill due to drinking from the pond. Helped the park owner obtain a discharge permit and with quarterly and annual reports.

Union Sanitary District, Union City, CA. Prepared an annual report on odor issues at or near the wastewater treatment plant. The annual report was required as part of an agreement with neighborhood groups when the plant was upgraded.

Oro Loma Sanitary District. Evaluated the reclaimed water system in the plant. This system evolved over the years as treatment facilities were added or abandoned. The work included an estimate of the peak and average flows in the system, an evaluation of whether the pumps were correctly sized, investigation of the purpose of a solenoid controlled valve, evaluation of whether better quality water was needed for some of the applications such as polymer mixing, and consideration of putting an existing hydropneumatic tank back in operation.

Wastewater Treatment Plant Reliability Study, Placer County. Reliability study of a wastewater treatment plant. Reviewed the violations of the discharge permit for the past three years. Identified which systems within the plant were contributing to the violations and how each of these systems could be made more reliable. An interesting finding of the study was that most of the "violations" were artifacts of how the discharge permit is worded.

Benicia Wastewater Treatment Plant Wraparound Pipeline. Designed a wrap around pipeline to return treated wastewater from the end of the treatment plant to a holding basin if the effluent does not meet the discharge requirements. Because the project was constructed by the treatment plant staff, only a skeleton design was prepared. The savings in design cost and by using the plant staff for construction was about \$45,000.

Placer County SMD No. 1. Prepared a preliminary engineering report for the expansion of this wastewater treatment plant. The hydraulics of the plant were investigated and various piping improvements were identified to increase the hydraulic capacity of the plant. A third train of rotating biological contactors was constructed.

This project is the fourth plant expansion designed for this wastewater treatment plant. The work has extended over a seventeen year period. The client has been so satisfied with the quality of the engineering work that the last three expansions have been sole-sourced.

Odor problems were studied and the headworks area of the plant was identified as the source of the odors. Various methods of odor control were evaluated. The report recommended that construction of odor control facilities be deferred since the nature and magnitude of the odor problems may change in the near future when pressure sewer systems are connected to the gravity sewer system and ferric chloride is applied in the sewers.

Designed the recommended facilities.

City of Stockton, CA. Assistance in drafting a Request for Qualifications (RFQ) and a Request for Proposal (RFP) to hire a consultant to conduct five different studies required by a new discharge permit. The project included studies of: mercury; viruses; temperature; mineralization; and control of discharge of pollutant-free water to the sewer system.

South San Francisco, CA Wastewater Treatment Plant Improvements Value Engineering. Served on a value engineering team for a \$5 million wastewater treatment plant expansion project.

Modesto Dissolved Air Flotation Preliminary Design. Prepared a preliminary design of a dissolved air flotation facility to remove algae from storage pond water. The facility will allow the plant to discharge to the river in several months during which the algae create an unallowable total suspended solids concentration.

Bear Valley, CA (Alpine County). Provided a peer review of a proposed wastewater tertiary filtration system. The tertiary facilities would allow periodic discharge to surface water but will be very expensive to construct and to operate. If disposal by land application can be optimized, the existing secondary treatment in ponds may suffice. The wastewater treatment and disposal possibilities are complicated by the remoteness of the site and the heavy snowfall that can exceed 30-feet in a season.

Wastewater Treatment Plant Fatal Accident, Southern California. Provided expert witness services in a case where a workman installing deck panels over a concrete channel stepped on the unsupported cantilevered end of a panel and fell to his death. Issues included the responsibilities of the owner, the contractor, the design engineer, and the construction manager.

Cheese Processing Plant, Northern California. Provided technical evaluation for a cheese processing plant where a dissolved air flotation clarifier could not be operated at the promised hydraulic capacity. Determined that the clarifier did in fact have adequate solids processing capacity but that the unit could not be operated at the high hydraulic capacity if the solids concentration of the feedstock was too high. Prepared a table showing the operating staff the correct hydraulic rates for various solids concentrations.

Hayward, CA Wastewater Treatment Plant Improvements Value Engineering. Served as the sanitary engineer on a value engineering team for a \$35 million improvement project. Significant issues included: flow control butterfly gates on the solids contact basins; sludge mixing tank size; methods for keeping the sludge mixing tank piping from clogging; odor control at the gravity belt thickener; and bypass piping arrangements. Potential savings of \$1.06 million were identified.

Oro Loma Sanitary District Capacity Restoration Project Value Engineering. Served as the sanitary engineer on a value engineering team for a \$24.6 million wastewater treatment plant improvement project. Significant issues included: alternative headworks configurations, including the use of a comminutor rather than a screen; use of a submersible rather than a vertical lineshaft pump to avoid the need for a new concrete wet well; and fine bubble aeration equipment versus chemically enhanced primary clarification. Potential savings of \$1.65 million were identified.

Modesto Dissolved Air Flotation Preliminary Design. Prepared a preliminary design of a dissolved air flotation facility to remove algae from storage pond water. The facility will allow the plant to discharge to the river in several months during which the algae create an unallowable total suspended solids concentration.

Placerville, CA Hangtown Creek Wastewater Treatment Plant Value Engineering. Served as the sanitary engineer on a value engineering team for a \$13.6 million wastewater treatment plant expansion and improvement project. Significant issues included: rehabilitation of the existing headworks versus building a new headworks; process performance that might be obtained by raising the clarifier walls; and the need for a building over the headworks. Potential savings of \$1.64 million were identified.

Oro Loma Sanitary District Influent Channel Hydraulics. Evaluated non-uniform flow in the influent channel when all four influent pumps operate. Operation of the fourth pump caused the flow to be split unequally among the three primary clarifiers.

Union Sanitary District, Fremont, CA. Prepared an audit of operations for the past year, which is a condition of a special use permit from the City of Union City.

City of Stockton. Served on a "Delphi Team" of three senior consultants to assist the City in selecting a consulting firm for a \$200 million wastewater treatment master plan and plant expansion.

City of Hollister. Conducted a conceptual review of a wastewater treatment plant master plan prepared by another consultant. The main issues dealt with the type of pond system to use and disposal by rapid infiltration. Concurred that the primary conclusions and recommendations of the master plan were sound but suggested improvements that would increase the capacity of the existing facilities and a means of producing revenue. Assignment was extended to include the provision of on-going technical review.

Wastewater Treatment Plant Claim. Evaluated proposed corrective measures in a \$5 million claim in which a wastewater treatment plant failed to perform as intended. The levees around earthen storage lagoons leaked because the design did not incorporate the recommendations of the geotechnical engineer. An innovative land-application nitrogen removal facility created an extreme mosquito problem. A gravity pipeline that was pressurized as a part of the project leaked excessively.

Wastewater Treatment Plant Claim. Served as an expert witness in a case where a sequencing batch reactor wastewater treatment plant serving an upscale subdivision has failed to meet the requirements of the discharge permit. The owner received a proposal for a very expensive completely new plant of a different design. Identified the cause of the failure and recommended corrective measures which would enable the existing facility to meet the discharge requirements at a fraction of the cost of the proposed completely new plant.

Design Engineer Suit For Payment Of Engineering Fees. Served as an expert witness in a case where a public agency cancelled a project just prior to bidding and refused to pay the consulting engineering firm its fees. The project involved a small diameter sewer system for an unsewered city of about 400 houses with treatment in a sequencing batch reactor and disposal to a leach field system. .

City of Tracy. Evaluated optimization of the cogeneration system. Operation of the digester gas fueled cogeneration system had been curtailed due to high repair costs. This study demonstrated that the City profited by operating the engine more because the savings in purchased power were greater than the increases in maintenance costs. The report also recommended that natural gas be purchased as supplemental fuel for the cogeneration system.

Failure of Digester Piping. Expert witness in a case involving leakage from and failure of digester piping.

Stonehurst Subdivision Wastewater Facilities Evaluation. Evaluated the condition of the entire wastewater collection, treatment and disposal facilities for a subdivision. The facilities consisted of septic tanks on each lot, small diameter pressure and gravity sewers, a recirculating gravel filter, and community leach fields. The Homeowners Association was reluctant to accept ownership of the wastewater facilities because of numerous failures that were being experienced, especially failures of the force main piping allegedly due to water hammer. Determined that the force main failures were just as frequent on low pressure piping as on high pressure piping and that water hammer apparently was not a factor. It was further found that all of the force main breaks had occurred at places where fittings or loose couplings had been used and that none of the joints with integrally molded bells had failed. Since there were relatively few fittings and loose couplings, it was concluded that most of the problems had already been fixed and that the whole piping systems did not need to be replaced.

City of Modesto. Evaluated alternatives for metering the effluent from the plant. Concluded that the existing metering system was reasonably accurate and recommended that a different meter not be installed.

City of Modesto. Provided design engineering for the City of Modesto for a design-build contract in which a supplier of primary clarifier equipment furnished and installed replacements and improvements on the sludge removal mechanisms in two 200-foot diameter primary clarifiers. The design-build approach was used to restrict the bidding to highly qualified vendor-contractor teams. Coating of the mechanisms was a major issue. Stainless steel was considered. Another issue was the grout on the bottoms of the tanks.

Monterey Regional Water Pollution Control Agency. Advised the Agency on how best to handle hauled loads of grease trap wastes from restaurants. Surveyed over 30 wastewater treatment plants about how they deal with grease and scum. Saved the Agency \$150,000 by determining that supplemental mixing of the digester which will receive the grease is unnecessary.

City of Point Arena. Was asked by the City to recommend Infiltration/Inflow improvements to the sewer system since the City's percolation ponds had nearly overflowed during the preceding winter. Determined that improvements of the percolation ponds would increase the capacity of the system at only a fraction of the cost of improving the sewer system.

Monterey Regional Water Pollution Control Agency. Hired to evaluate two innovative proposals to the Agency. The first involved thermophilic, aerobic digestion, initially of grease trap wastes in a privatized project. The second involved a demonstration project of a process that converts sewage sludge to fuel oil. The technology has been tested at pilot scale in Japan. This would be the first prototype test of the technology in the United States. The project was to be funded by grants from several federal agencies, in association with a major national research organization and a group of private investors.

Oro Loma Sanitary District. Preliminary engineering report on a belt filter press facility to be constructed in an existing vacuum filter building. Because of the relatively large press capacity and difficulty of accessing the trucks that will haul the pressed cake away, consideration was given to conveyors, shaftless screws and concrete type pumps for moving the dewatered sludge cake. Subsequent to the study, prepared specifications for separate purchase of the equipment.

Environmental Review of Wastewater Facilities for Dunnigan, CA. Reviewed the wastewater collection, treatment and disposal systems proposed in an Environmental Impact Report for the Town of Dunnigan in the Central Valley.

Monterey Regional Water Pollution Control Agency. Investigated eight different types of hauled liquid wastes that were being disposed of in a land spreading operation at the regional landfill, and seven disposal alternatives for use after the land spreading operation was phased out. Four types of food related waste were found to be compatible with the wastewater treatment plant; concentrated oils, drilling muds, and agricultural sumpage were found to be incompatible; and further study of a lined land spreading operation was recommended for dilute oily wastes.

City of Daly City. Collected information on monitoring, operating and maintenance requirements imposed on golf courses that are being irrigated with reclaimed secondary ("non-Title 22") effluent for use in evaluating stringent requirements proposed for a local project.

Monterey Regional Water Pollution Control Agency. Prepared a report on the feasibility of treating dilute oily wastes in a biocell at the wastewater treatment plant. The proposed biocell is underlain by a double liner system such as are used at landfills. Prepared a design for a simplified skeleton system that was built by in-house staff, which reduced the cost to about one-quarter of the original estimate.

City of San Leandro On-Call Engineering Services. Project and peer review engineer. Was retained for a one year period to provide advice on various engineering matters at the City's wastewater treatment plant. The contract was renewed twice. Assignments included review of a seismic study of the wastewater treatment plant and review of a proposed design of a hypochlorite disinfection system.

Monterey Regional Water Pollution Control Agency. Evaluation of two thermophilic aerobic digestion processes for treating grease trap wastes and some or all of the sludge from the plant to provide a Class A sludge under the EPA 503 sludge regulations.

Placer County. Study of disinfection at the SMD No. 3 wastewater treatment plant. The items studied included: detention time and short circuiting in the chlorine contact basin; safety of gaseous chlorine compared to hypochlorite; high operation and maintenance costs; toxicity due to overdosing; automatic controls; and ultraviolet disinfection.

City of San Leandro. Analysis of energy conservation programs to date and recommendations on further efforts, including a review of both owned and privatized cogeneration systems.

City of Benicia. Updating of parts of the Operations and Maintenance manual for this 3-MGD wastewater treatment plant.

City of Stockton. Assisted the City in preparing a Request for Proposal for a major Sludge/Biosolids Master Planning project. During the course of the work, realized that the study was premature and persuaded the City to postpone the project.

City of Daly City. Assisted the City in evaluating the design of a hypochlorite disinfection system to replace the gaseous chlorine disinfection system. The review included the seismic stability of the equipment.

Pinecrest Permittees Association. Conducting a "repair, replace, or abandon" evaluation on the rotating biological contactor (RBC) process at this small treatment plant in the Sierras. When the shaft of the existing RBC unit broke for the second time, the Association requested an evaluation of whether it should be repaired or whether some other treatment technology should be selected. Careful attention was given to the limitations of the steeply sloping site, large differences between winter and summer flows, and severe icing problems in winter.

Placer County SMD No. 3. Prepared a listing of all foreseeable repairs, replacements and improvements needed at this wastewater treatment plant for the next twenty years so that a capital budget can be prepared. The plant was built twenty years ago with a capacity of 1 MGD to serve new development in a large area. The development did not occur and flow at the plant is only five percent of the design flow. Past expenditures on the plant have been very limited due to the small customer base.

City of San Leandro. As a part of the Peer and Project Review project, reviewed a proposed leachate treatment and disposal facility. This facility may be placed at the wastewater treatment plant to treat leachate from a nearby landfill. Noted some potential problem areas in the proposed design.

East Bay Municipal Utility District (EBMUD). Prepared training materials and Standard Operating Procedures (SOPs) for the newly constructed Dystor digester cover. The Dystor cover includes two membranes, the inner one containing the digester gas, the outer one containing air. This arrangement allows a large volume of digester gas to be stored. EBMUD will use the stored digester gas in their cogeneration system for peak-shaving of energy loads.

City of Benicia. Assisted the City in evaluating a problem of failing plastic media on their Rotating Biological Contactors (RBCs). Estimated the quantities of replacement media required, negotiated a supply contract for the media, developed a methodology for replacing the media, and assisted the City staff in starting the repairs.

City of San Leandro. Provided a technical evaluation of the feasibility of restoring a buried methane gas line to use. Due to settlement of the soft bay muds at the treatment plant site, there were numerous dips in the gas line, which formed water traps that interfered with the use of the line.

Harris & Associates, Concord, CA. Assisted in the design of a modification of the Placer County Sewer Maintenance District No. 1 wastewater treatment plant. Areas of responsibility included: redox potential control system for chlorination and dechlorination; preliminary design of a chlorine tank canopy; preliminary design of a tray aerator at the plant outfall; layout of a parts storage building; and selection and specifications for two sets of pumps.

Odor Control Study, Placer County. Prepared a preliminary design report on odor control for a wastewater treatment plant.

Food Processing Company, Lathrop, California. Assisted a food processing company in planning immediate, intermediate-term, and long-term wastewater treatment capacity. Assisted in negotiations with the City for temporary use of allocated, but currently unused, capacity in an existing municipal wastewater treatment plant.

In a continuing assignment, estimated the disposal capacity created by converting a slow rate land application system into a rapid infiltration system. Assisted the company in preparing a long term capacity plan and applying for a revised discharge permit.

Food Processing Company, Stockton, CA. Evaluated the capacity and reliability of the wastewater pretreatment plant at a poultry processing facility to assist in reducing the probability of future violations of their wastewater discharge permit. Evaluated opportunities for reducing sewer use charges by improving pretreatment and by reducing violations. The company installed a plate and frame press to remove solids from the treatment process. As production and sewage flows increased at the plant, further improvements to the wastewater facilities became necessary. These included an increase in the permitted discharge, replacement of the existing flow meter flume, and a dissolved air flotation clarifier.

Winery, Santa Cruz County. Evaluated odor problems that were coming from a stabilization pond that treated the winery wastewater. Helped the winery staff define the odor problem. Recommended thirteen different approaches to abating the odor problem, most of which were low-cost or no-cost. In a second assignment, identified alternatives for improving wastewater facilities to comply with the discharge permit.

Oro Loma Sanitary District. Designed modifications to the digester gas piping system to separate it from electrical facilities and thus bring it into compliance with National Fire Protection Association Standard 820 and the National Fuel Gas Code.

Port Costa. Provided technical advice to a small community served by a community septic tank and recirculating sand filter. The District had initially viewed the problem as clogging of the filter. Further evaluation determined that the focus should first be on repairing and systematically pumping the septic tank.

Stonehurst Subdivision. Served as District Engineer for a subdivision which has its own wastewater treatment and disposal system.

Point Arena Disposal Capacity Expansion. Assisted the City in permitting additional disposal areas to provide greater capacity. Several different sites and both intermediate and long-term capacity were addressed. Interacted with the Regional Water Quality Control Board on the permitting process.

City of Ceres Wastewater Regionalization Study. Analyzed various alternatives for increasing the treatment and disposal capacity by directing part of the flow to the City of Modesto sewerage facilities. Determined that a proposed \$3.5 million secondary treatment plant at Ceres was not cost effective compared to discharging to the Modesto secondary treatment plant.

Clos La Chance Winery, Morgan Hill, CA. Provided the conceptual design for facilities to treat and recycle winery wastewater.

City of Point Arena. Capacity study of the wastewater system to determine whether it is sufficient to handle the growth envisioned in the General Plan. The study compared the cost and probability of success of reducing infiltration/inflow into the sewer system versus treating and disposing of the excess flows. The capacities of the sewer system, treatment plant, and percolation pond disposal areas were analyzed to determine which was the controlling factor in the overall capacity of the system.

Handicapped Housing Development, Monterey County. Provided a conceptual design for an on-site wastewater collection, treatment and disposal system for a 129-unit garden apartment complex for handicapped persons. The design called for a septic tank for each cluster of apartments with a variable grade effluent sewer (VGES) system to convey the septic tank effluent to a package treatment plant. The treatment plant was designed to achieve a high degree of nitrogen removal since nitrate concentrations in the groundwater were an issue in this location. A grinder pump station with a small diameter force main was used. Disposal was designed to include sub-surface drip irrigation and a conventional leach field. The estimated total cost of the system was approximately \$750,000.

Placerville, CA Hangtown Creek Wastewater Treatment Plant Value Engineering. Served as the sanitary engineer on a value engineering team for a \$13.6 million wastewater treatment plant expansion and improvement project. Significant issues included: rehabilitation of the existing headworks versus building a new headworks; process performance that might be obtained by raising the clarifier walls; and the need for a building over the headworks. Potential savings of \$1.64 million were identified.

Bear Valley, CA (Alpine County). Provided a peer review of a proposed wastewater tertiary filtration system. The tertiary facilities would allow periodic discharge to surface water but will be very expensive to construct and to operate. If disposal by land application can be optimized, the existing secondary treatment in ponds may suffice. The wastewater treatment and disposal possibilities are complicated by the remoteness of the site and the heavy snowfall that can exceed 30-feet in a season.

Wastewater Treatment Plant Fatal Accident, Southern California. Provided expert witness services in a case where a workman installing deck panels over a concrete channel stepped on the unsupported cantilevered end of a panel and fell to his death. Issues included the responsibilities of the owner, the contractor, the design engineer, and the construction manager.

Cheese Processing Plant, Northern California. Provided technical evaluation for a cheese processing plant where a dissolved air flotation clarifier could not be operated at the promised hydraulic capacity. Determined that the clarifier did in fact have adequate solids processing capacity but that the unit could not be operated at the high hydraulic capacity if the solids concentration of the feedstock was too high. Prepared a table showing the operating staff the correct hydraulic rates for various solids concentrations.

City Of Hollister Wastewater Treatment Plant Staffing Study. Evaluated the amount of staff required, the wastewater certificate grades, and the labor cost for a new membrane biological reactor wastewater treatment plant that was nearing completion. Noted that there is a shortage of Grade III operators and that the salaries for the plant operators would be disruptive to the City's salary system. Recommended that the City contract out the operation of the new wastewater treatment plant for at least the first year.

Hayward, CA. Peer Review Of Wastewater Treatment Plant Improvement Project.

Assisted the City in reviewing the design of major improvements to the City's wastewater treatment plant. Went through the design with selected City staff. The design included: sludge mixing tanks; belt filter presses; polymer feed systems; odor control facilities; lobe pumps; and a trickling filter/solids contact process that included an innovative snail control system. Emphasized how the operation and maintenance of the proposed facilities could be optimized.

City Of Gilroy. Assisted in the design of various upgrades to the City's wastewater treatment facilities.

Placer County SMD 1. Was project manager on a project involving replacement of the rock media in two trickling filters with plastic media.

Claim Against Design Consultant For Failure Of A Wastewater Treatment Plant To Perform After An Improvement Project, Northern California.

Served as an expert witness helping defend a design consultant who was being sued because a wastewater treatment plant failed to meet its discharge requirements after an improvement project was constructed. Determined that the facilities that were included in the improvement project had nothing to do with the plant failing to meet its discharge permit and that the plant probably had not been meeting its permit before the construction project. The arbitrators awarded the City not a single penny.

Reclaimed Water System, Soledad, CA. Evaluated the recommended storage basin and pump station for reclaimed water. Determined that the existing plant water pump station could be used and that a storage basin was unnecessary. The savings to the City was about \$350,000. Designed the connection of the new reclaimed water system to the existing plant water system.

Claim Against A Wastewater Treatment Vendor, Monterey County, CA.

Provided technical advice and expert witness testimony in a case where the owners of a shopping center refused to pay a company that had furnished equipment for an on-site wastewater treatment system. Determined that many of the officers of the shopping center were also officers of the construction company that built the wastewater facility. Discovered that the wastewater treatment plant was "designed" by a local equipment representative who was a close friend of the officers of the shopping center and construction company. The representative who "designed" the system failed to learn that there was a nitrogen reduction requirement which the furnished equipment was not capable of meeting. Prunedale

Claim Against A Design Consultant For Failure Of A Water Treatment Plant Improvement Due To Large Amounts Of Sand Entering From An Existing Shallow River Intake System, Western State. Providing technical advice to an attorney who is defending a design consultant where parts of a water treatment plant improvement project failed due to excessive amounts of sand entering the system from a shallow river intake. Kamiah, ID. 2016.

Design Of Septage Receiving Stations, Several California Locations. Designed or analyzed several septage receiving stations in California. The septage receiving stations generally consisted of concrete slabs sloping down to a screen and an intake into a liquid transport pipe. For the Kalamazoo resume.

Poultry Processing Plant, Georgia. Conducted a waste characterization study at a poultry processing plant. Measured flow rates and gathered and analyzed samples of the waste streams.

Failure Of A Membrane Wastewater Treatment System, Michigan. Serving as an expert witness in a case where a membrane wastewater treatment system for an industrial application was abandoned by the owner. Issues in the case include whether the proper upstream facilities were provided for the membrane system.