APPROVED BY THE BOARD OF COUNTY COMMISSIONERS AT THEIR MEETING
OCT 31 1983

ORANGE COUNTY RESOLUTION NO. 83-SW-20

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF ORANGE COUNTY, FLORIDA; ADOPTING DESIGN CRITERIA FOR INTERIM WASTEWATER FACILITIES; ADOPTING MANDATORY DOCUMENTS AND GUIDELINES FOR THE PREPARATION OF PLANS AND SPECIFICATIONS FOR INTERIM WASTEWATER FACILITIES; PROVIDING FOR VARIANCES; PROVIDING AN ECONOMIC IMPACT DETERMINATION; PROVIDING FOR SEVERABILITY; PROVIDING AN EFFECTIVE DATE.

PREMISES

1. The Board has this day adopted the Orange County Water and Wastewater Facility Permit Rules to govern the location, size, and plan of public and private sewer and water facilities within Orange County, Florida.

2. The Orange County Division of Public Utilities has developed design criteria for interim wastewater facilities and mandatory documents and guidelines for the preparation of plans and specifications of interim wastewater facilities.

3. Section 7(4), Orange County Water and Wastewater Facilities Permit Rules, authorizes the County to adopt design criteria for interim wastewater facilities and guidelines for the preparation of plans and specifications for interim wastewater facilities.

BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF ORANGE COUNTY:

Section 1. Adoption. The Board hereby adopts Design Criteria for Interim Wastewater Facilities and Mandatory Documents and Guidelines for Plans and Specifications for the construction of Interim Wastewater Facilities, both of which are attached to and incorporated in this Resolution as Exhibits "A" and "B" respectively. The Board may grant variances from the provisions of the Criteria and Guidelines in accordance with §10, Orange County Water and Wastewater Facilities Permit Rules.

Section 2. Economic Impact Determination. The Board does hereby determine and find, pursuant to §1-27(2)(b), Orange County Code, that sufficient information has been provided for the Board to assess the economic impact of this Resolution and the Design Criteria and Mandatory Documents and Guidelines adopted hereby on the development of real property in Orange County. The Board does hereby determine and find that no further economic impact statement or economic impact information is required in this matter.

Section 3. Severability. If any provision of this Resolution or the application thereof to any person or circumstance is held invalid, the invalidity shall not affect other provisions or applications to this Resolution which can be given effect without the invalid provision or application, and to this end, the provisions of this Resolution are declared severable.

Section 4. Effective Date. This Resolution shall take effect on the same date that the Orange County Water and Wastewater Facilities Permit Rules take effect.

RESOLVED THIS 31 DAY OF OCTOBER, 1983.

ORANGE COUNTY, FLORIDA

By: Lou Trudwig
Chairman, Board of County Commissioners

ATTEST: THOMAS H. LOCKER,
Clerk to the Board of
County Commissioners

By: Mary Jo Garrison
Deputy Clerk

EXHIBIT "A"

DESIGN CRITERIA FOR WASTEWATER FACILITIES

A. GENERAL

The criteria contained herein are intended to assure uniformity and quality of construction of the wastewater facilities to be constructed hereunder. The wastewater facilities shall be designed to utilize the activated sludge process to provide secondary treatment. Only the extended aeration and contact stablization methods shall be considered. The method utilized shall be subject to the approval of the Orange County Public Utilities Division ("OCPUD"). All treatment plants shall employ the aerobic disgestion process for sludge stabilization. The design shall meet all the requirements set forth in Chapter 17-6, Florida Administrative Code ("FAC"). Plans and specifications shall be certified by a Professional Engineer registered in the State of Florida.

The treatment plant shall be fabricated and furnished by a reputable, recognized manufacturer engaged in the full-time business of, and with a minimum of five years experience in, the construction of packaged aeration wastewater treatment plants. The selection of the manufacturer of the plant shall be subject to Orange County approval. The plant and all appurtenant equipment and materials shall be new and unused.

B. PLANT DESIGN DATA AND LOADING

1. Design the plant for an average BOD loading of 220 mg/l and an average suspended solids loading of 220 mg/l.

2. The design peak flow shall be determined from the following formula:

$$Q \text{ max.}/Q \text{ avg.} = \frac{14}{4 + \sqrt{P}} + 1$$

P = Population in thousands

Q max. = Peak Hourly Wastewater Flow

Q avg. = Average Daily Wastewater Flow

3. All internal tanks shall have walls capable of withstanding hydrostatic loads at operating side water depths.

7. Final Clarifier(s)

a. Weir overflow rate shall not exceed 8,000 GPD per linear foot at the design peak flow.

b. Surface loading rate shall not exceed 400 GPD per square foot at the design average flow and 800 GPD per square foot at the design peak flow. Solids peak loading rate, including sludge recycle flow shall not exceed 30 lbs./day/ft.^{2} for extended aeration and 45 lbs./day/ft.^{2} for contact stabilization.

c. The tank shall have sludge collection hopper and sludge removal device.

d. The clarifier(s) shall have a minimum side water depth of 10 feet.

e. The sludge return range shall be 0-200% of average daily flow.

f. Provide a means to skim and remove scum.

g. Provide fully adjustable weirs.

8. Chlorine Contact Tank and Chlorination System

a. Minimum detention time shall be 15 minutes at the peak flow rate, and 30 minutes at average flow rate.

b. Provide contact tank with a minimum of two baffles.

c. Discharge of effluent shall be over a fully adjustable weir.

d. Chlorinator shall be automatically controlled gas type, feeding a solution through a diffuser to the contact tank.

e. Gas chlorinators shall be Advance 200 series or equivalent and shall include all necessary accessories.

f. Chlorination system shall include dual cylinder scale, automatic switchover device, and appropriate housing mounted on a separate concrete slab.

g. Housing shall be constructed of fiberglass or other approved corrosion resistant material and shall enclose entire chlorination system.

c. Provide an adjustable air lift or multiple ports for transfer of supernatant to the head of the aeration tank or to the on-site lift station.

d. Provide a six-inch connection with valve at the bottom of the aerobic digester for withdrawal of the digester sludge to tanker or drying beds.

5. Air Distribution System

a. Provide butterfly valves and unions at each diffuser assembly.

b. Diffusers shall be non-clog type and provide a minimum clean water oxygen transfer of 10 percent.

c. Diffusers shall be removable and replaceable without plant shut down.

d. The diffusers shall be made of stainless steel, unless otherwise approved by OCPUD.

e. All air piping shall be stainless steel, hot dipped galvanized steel, or black iron.

6. Blowers

a. There shall be a minimum of two (2) blowers, each capable of providing the total required flow.

b. Each blower shall include:

(1) Weighted air relief valves

(2) Air check valves

(3) Air intake filter and silencer (Universal or approved equal)

(4) Discharge silencer (Universal or approved equal)

c. Each blower shall be driven by separate motor; 230/480 volt, 3 phase, 60 hertz.

d. A magnetic starter with a manual-off-automatic selector switch and a 60-minute adjustable percentage timer shall be installed for each blower. Blowers shall alternate.

e. The blowers shall be mounted on a separate concrete slab.

h. Provide one 30 minute self-contained respirator, of the air tank type, approved for chlorine gas service.

9. Denitrification

a. If rapid rate infiltration ponds are utilized, the treatment plant shall include a method to reduce the nitrate content of the effluent below 12 mg/l.

b. The method of nitrate removal shall be subject to the approval of the OCPUD.

10. Sludge Drying Beds

a. The need for sludge drying beds at the wastewater facilities shall be determined on a case by case basis by OCPUD.

b. Drying bed area shall be based on two square feet per capita (2 $ft.^2$/Capita).

c. Not less than two beds shall be provided and they shall be arranged to facilitate sludge removal.

d. Media and underdrains shall be in accordance with the latest edition of "GLUMRB - Recommended Standards for Sewage Works (Ten States Standards)."

11. Electrical Controls

a. All electrical controls, motor starters, and switches shall be installed in a NEMA Type 4X panel enclosure.

b. Color code all wiring and provide a written wiring diagram.

c. Provide for automatic restart of electrical motors after interruption of power.

F. EFFLUENT DISPOSAL

1. General

a. The effluent disposal method shall meet all Florida Department of Environmental Regulation (FDER) and United States Environmental Protection Agency ("USEPA") requirements.

C. PLANT SITE

1. The treatment plant structures and equipment shall be protected from physical damage that could be caused by the one hundred (100) year flood event.

2. The treatment plant should be designed to remain fully operational and accessable during the twenty-five (25) year flood event.

3. Buffer Zones:

   a. A minimum of 100 feet shall be maintained between plant (including effluent disposal site) and property boundary.

   b. A minimum of 500 feet shall be maintained between the periphery of the land application site and existing or approved (but not yet constructed) shallow water supply well.

   c. A minimum distance of 300 feet is required between uncovered plant processes and the boundary of developed or developable areas.

4. The plant and disposal site shall be totally enclosed with a fence and security system as specified in the latest edition of Orange County Standards and Specifications for Sewerage and Water Facilities.

5. Access to the plant and disposal sites shall be via limerock stablized or asphalt-paved roadway, to be provided by the _____ if not already constructed.

D. SAFETY

The design of the plant shall incorporate all necessary facilities to assure safe working conditions including all appropriate requirements of OSHA and the Orange County Risk Management Department. All railing and gratings shall be made of aluminum.

E. PROCESS DESIGN CRITERIA

1. Bar Screens

   a. Provide two manual bar screens each capable of handling the peak flow.

   b. Construct screens of 3/8" x 1" aluminum or stainless steel bars.

b. The _____ shall provide a complete, written soils analysis and design report for the effluent disposal system. This report shall be prepared by a competent soils expert and subject to the review and approval of the OCPUD.

c. There shall be complete access to and around the effluent disposal site.

2. Infiltration Ponds (Rapid Rate)

a. The nitrate concentration of the effluent applied to the infiltration ponds shall not exceed 12 mg/l.

b. The infiltration area shall be divided into two or more cells to allow for alternate loading and resting.

c. Ponds shall be designed so as to load each cell separately with 1-7 day loading and 5-14 day resting period. The ponds shall be designed so the pond bottom will dry out during the resting period to allow scarifying.

d. Consideration shall be given for diurnal rain periods in the calculation of the pond loadings.

e. The loading rates will be calculated on the basis of infiltration rates determined by the soils analysis.

3. Spray Irrigation (Slow Rate)

Spray irrigation fields shall be considered and approved on a case by case basis.

4. Drainfields

Drainfields shall be considered and approved on a case by case basis.

G. ESSENTIAL FACILITIES

1. Water System (Non-Potable)

a. Provide a water system with adequate capacity and pressure (min. 40 psi) for washdown, chlorination and other non-potable utilization.

b. Separate the non-potable supply from the potable supply by use of reduced pressure type backflow preventors.

c. Provide hose bibs at convenient locations to facilitate maintenance, with special large capacity units installed for plant washdown and hose provided therefore.

d. Label all hose bibs with permanent signs indicating the water is not safe for drinking.

2. Flow Measurement

a. Provide a recording, indicating and totalizing flow meter, float actuated, for use with a 90° V-notched weir.

b. The flow meter shall include a strip chart suitable for recording over a 30 day period and a 7-digit straight reading totalizer.

c. Gradations shall be in millions of gallons per day ("MGD") or thousands of gallons per day.

d. Provide surge and lightning protection.

e. Furnish one year's supply of charts and ink.

f. The flow meter shall be Stevens 61R or approved equal.

3. Groundwater Monitoring Wells

a. The number and location of monitoring wells shall be based on the hydrogeologic requirements of the site, and shall comply with all applicable requirements contained in Chapters 17-3, 17-4, and 17-6, FAC.

b. There shall be a minimum of two (2) monitoring wells.

c. The wells shall have a minimum inside diameter of two inches and minimum well point screen of three feet.

d. The casing shall be extended a minimum of 18 inches above grade and cover with a threaded cap. Provide a protective concrete collar.

4. On-site Lift Station

The on-site lift station shall meet all requirements of wastewater pumping stations as specified in the latest edition of Orange County Standards and Specifications for Sewerage and Water Facilities.

5. Lighting

Provide sufficient lighting to illuminate plant area and equipment.

6. Operating Equipment

Provide a complete outfit of tools, accessories and spare parts necessary for plant operations.

7. Painting

Paint all equipment and process units as per the latest edition of Orange County Standards and Specifications for Sewerage and Water Facilities.

8. Operation and Maintenance Manual

Provide three copies of complete operation and maintenance manuals of the plant, equipment and effluent disposal facilities.

9. Landscaping

The plant site shall be seeded with Bahia grass and landscaped so as to screen the plant tankage and equipment from adjacent properties and right-of-ways.

c. The screens shall be set at an angle of 45 degrees and have 3/4-inch to 1-inch clear openings.

d. Provide a perforated drainage rack for temporarily storing screenings.

2. Flow Equalization

a. The need for flow equalization shall be determined by the design engineer, subject to the approval of the OCPUD.

b. Notwithstanding E.2.a. above, flow equalization shall be required for all contact-stabilization treatment plants.

c. The equalization basin shall have sufficient capacity to reduce the expected peak flows to the design average flow.

d. Provide aeration to maintain adequate mixing and a minimum of 1.0 mg/l of dissolved oxygen. Minimum air supply rates shall be 1.25 cfm per 1000 gals. of basin volume.

3. Aeration Tanks

a. Aeration tanks shall have an adequate air system for mixing and aerating the wastewater.

b. The aeration tanks and air system shall be sized as follows:

PROCESS	LOADING lbs. BOD per Day Per 1000 cu ft.	Hydraulic Detention Periods Hours	Air Flow SCFM/1000 ft^3 Vol.
Extended Areation	12.5	24	30
Contact Stab.	30-50	0.3-0.7 (Contact Zone) (3-6) (Reaeration Zone)	20

4. Aerobic Digester

a. Provide a minimum one cubic foot of volume per capita.

b. Provide a minimum 30 CFM of air per 1000 cubic feet of digester volume.

4. Piping, including any arrangements for by-passing individual units. Materials handled and direction of flow through pipes shall be shown.

5. Hydraulic profiles showing the flow of wastewater, supernatant liquor and sludge.

6. Test borings and ground water elevations.

D. DETAIL PLANS

Detail plans shall be submitted showing the following:

1. Location, dimensions, and elevations of all existing and proposed plant facilities.

2. Elevations of high and low water level of the plant effluent disposal system.

3. Type, size, pertinent features, and manufacturer's rated capacity of all pumps, blowers, motors, and other mechanical devices.

4. Complete schematic diagrams for all sludge and chemical piping systems.

5. Minimum, average and maximum hydraulic flow in profile.

6. Adequate descriptions of any features not otherwise covered by specifications.

7. All future plant expansions shall be shown on the drawings including all major piping, unit locations and areas reserved for the expansion.

SPECIFICATIONS

Complete technical specifications for the construction of the wastewater facilities and all appurtenances, shall accompany the plans. The specifications accompanying construction drawings shall include, but not be limited to, all construction information not shown on the drawings which is necessary to inform the builder in detail of the design requirements as to the quality of materials, workmanship and fabrication of the project. The specifications shall include: the type, size, strength, operating characteristics, and rating of equipment; allowable infiltration including allowable methods of measuring infiltration; the complete requirements for all mechanical and electrical apparatus, wiring and meters, pipes, valves and couplings; operating tools; construction materials, special filter materials such as stone, sand or gravel; installation specifications for sewers;

EXHIBIT "B"

PLANS AND SPECIFICATIONS
MANDATORY DOCUMENTS AND GUIDELINES

PLANS

A. GENERAL

1. All plans for treatment works shall bear an appropriate title showing the name, scale in feet, a graphical scale, the north point, date, and the name of the engineer and imprint of his registration seal.

2. The plans shall be clear, legible, and drawn to a scale which will permit all necessary information to be plainly displayed. The size of the plans, generally, should not be larger than 24" x 36". Datum used and its relation to mean sea level datum should be indicated. Locations and logs of test borings, when made, shall also be shown on the plans.

3. Detain plans shall consist of plan views, elevations, sections and supplementary view which, together with the specifications and general layouts, provide the working information for the contract and construction of the project. Dimensions and relative elevations of structures, the location and outline form of equipment, location and size of piping, water levels, and ground elevations shall also be included.

B. LOCATION PLAN

A plan shall be submitted showing the wastewater treatment facility in relation to other elements of the system. Sufficient topographic features shall be included to indicate its location with relation to streams, existing and proposed wells, and to the effluent disposal system.

C. GENERAL LAYOUT

Layouts of the wastewater treatment facility shall show:

1. Topography of the site.

2. Size and location of plant structures.

3. Schematic flow diagram showing the flow through various plant units.

miscellaneous appurtenances; chemicals when used; instructions for testing materials and equipment as necessary to meet design standards; and operating tests for the completed works and component units.