

Site Location and Design Approval for Domestic Wastewater Treatment Works

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CWWUC – Permit Negotiations Workshop

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Colorado Facts

- ❑ Surface area = 104,247 sq. mi.
- ❑ Some 1,500 active discharge permits
- ❑ Some 2,300 active public water systems

- ❑ 10 District Engineers to cover all of Colorado

District Engineer Responsibilities

□ Planned Activities

- Inspections (WW and DW)
- Site Applications
- Design Reviews (WW and DW)
- SRF Support (WW and DW)

□ Unplanned Activities

- Public Assistance / Spill Duty
- Acute Situations (WW and DW)
- Technical Assistance (WW and DW)



Site Location and Design Approval for Domestic Wastewater Treatment Works

Reference Documents

- Colorado Water Quality Control Act
- Regulation No. 22 (Site Application Regs)
 - Effective June 30, 2004
 - Guidance Document
 - Appropriate Site Application Form
- Policy 96-1 (Wastewater Design Criteria)
- Are there any Utility Planning documents
- See the WQCD's Web-site
- ✓ www.cdphe.state.co.us/wq/wqhom.asp
- ✓ Click on Engineering Section

Colorado Water Quality Control Act

□ Section 25-8-702

- “No person shall commence the construction of any domestic wastewater treatment works or the enlargement of the capacity of an existing domestic wastewater treatment works, unless the site location and the design for the construction or expansion have been approved by the division.”

Definition

- Domestic Wastewater Treatment Works (DWWTW)
 - "...a system or facility for treating, neutralizing, stabilizing, or disposing of domestic wastewater which system or facility has a designed capacity to receive two thousand gallons of domestic wastewater per day or more."

Definition continued...

- Domestic Wastewater Treatment Works...
 - "...includes appurtenances...such as outfall sewers...pumping stations...other related equipment"
 - "...does not include industrial wastewater treatment plants..., notwithstanding the fact that human wastes generated incidentally to the industrial process are treated therein."

Discharge Permit Requirements

- ❑ See your Permit - Terms and Conditions – Expansion Requirements
- ❑ Engineering and Financial Planning for expansion when 80% of 30-day average design capacity is reached.
- ❑ Construction must commence for expansion when 95% of 30-day average design capacity is reached.

Site Location Approval Process

- ❑ Preliminary Effluent Limitations (PELs)
- ❑ Engineering Report (Utility Plan)
- ❑ Application for Site Approval
 - ❑ New DWWTW
 - ❑ Expansion of Existing DWWTW
 - ❑ Lift Station / Interceptor
 - ❑ Amendment

Local area examples

- ❑ New DWWTF on a new site – Adam's Rib Frost Creek Clubhouse, KIWA Associates Vines at Vail in Wolcott
- ❑ Expansions – Kremmling SD, Hot Sulphur Springs WWTF, Town of eagle WWTF, Frisco SD WWTF.
- ❑ Lift Stations – mostly by developers
- ❑ Amendments – includes changes to disinfection, particularly changing to UV.

PELs (New and Expansion)

- ❑ "...developed in coordination with the Division."
- ❑ Impacted by changes in:
 - ❑ water quality standards
 - ❑ stream flows
 - ❑ ambient water quality
- ❑ 18 month "shelf life"
- ❑ Capacity/Discharge point/Fees/Time?

PELs (Amendment)

- Change from “other types” of disinfection to any form of chlorination.
- A decrease or increase in design capacity as long as no construction is to take place.
- Addition of a treatment process (no increase in capacity).
- Change in the type of discharge employed where there is no change in the treatment process.

PELs

- Questions on PELs?

Contact the Water Quality Control
Division's Permits Unit at:
(303) 692-3608 (Eric Oppelt, WQCD -
Permits Unit - Denver)

Engineering Report (New)

- ❑ “...shall be considered the culmination of the planning process.”
- ❑ Content:
 - ❑ Service Area Issues
 - ❑ Site and Treatment Alternatives
 - ❑ PELs
 - ❑ Analysis of Facilities in Service Area
 - ❑ Consolidation Opportunities
 - ❑ Natural Hazards Effects

Engineering Report (New)

- Content: (continued.....)
 - Soils Testing
 - Description of Selected Alternative
 - Control of Site
 - Institutional Arrangements
 - Management Capabilities
 - Financial System
 - Implementation Plan and Schedule

Engineering Report (Expansion)

- "...documents the need for the project, consistency with local long-range comprehensive plans and any approved water quality management plans..."
- Content:
 - Changes (service area/pop./loading projections)
 - PELs
 - Analysis of Existing Treatment Works
 - Alternatives for Treatment (consolidation)
 - Changes in Financial System
 - Implementation Plan and Schedule

Application for Site Approval

□ Types/Forms

- New – Section 22.4
 - Expansion – Section 22.5
 - Lift Station/Interceptor – Section 22.7
 - Amendment – Section 22.8
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- ✓ See the Water Quality Control Division's Web-site for the newest version of the form

Regulation No. 22 Highlights

- Review Agency Recommendations
 - New/Expansion - comments from all appropriate local governments, 208 planning agencies and State agencies prior to submission to Division
 - Amendment – list the review authorities to whom the amendment proposal has been provided

Regulation No. 22 Highlights

- ❑ Posting (sign) requirements –
New DWWTW and Lift Stations
- ❑ Amendment – Regulation No. 22 is much more definitive of the types of changes and the associated application requirements

Regulation No. 22 Highlights

□ Lift Station/Interceptor

- Requires confirmation in writing from the wastewater treatment entity that it will have the capacity necessary to treat the projected discharge.
- Engineers working with developers need to work closely with the wastewater treatment entity.

Regulation No. 22 Highlights

- Guidance Document
 - Formulated by a stakeholder group
 - Intent is to help applicants and consultants
 - Approved by WQCC (November 2004)
- Policies and Procedures
 - Designed to aid in the interpretation and implementation of Regulation No. 22
 - Existing policies have been revised and are posted on WQCD's Web-site

Timing and planning

- ❑ PELs
- ❑ Engineering Report and Application preparation
- ❑ County and local agency review and comment process
- ❑ WQCD's review, comment and responses, and approval/denial process
- ❑ WQCD's Review time goal = 60 days for a complete submittal with no issues
- ❑ Plan for at least 6 months or more depending on complexity of project

Design Approval Process

See Colorado's Wastewater Design Criteria

- ❑ Process Design Report (1.3.0)
- ❑ Final Design Submittal (1.4.0)

- ❑ Lift Stations and some Amendments
 - Site Application and Design Reviews can be conducted concurrently

Process Design Report

- ❑ Prior to final design preparation of new or expanded WWTF
- ❑ Basis of design for each unit process
 - ❑ Demonstrate conformance with the “Design Criteria” or explain deviations
 - ❑ “Shall/Should/May”
 - ❑ Variance or New Technology Reviews

Process Design Report

□ Content

- General information
- Design calculations
- Technical elements
- Preliminary Operating Plan

Final Design Submittal

- ❑ Stamped and signed documents
 - ❑ Detailed plans
 - ❑ Technical specifications
 - ❑ Addenda and change orders
- ❑ Approval required before commencement of construction (WQCA 25-8-702)
- ❑ Capacity evaluation
- ❑ WQCD's Review time goal = 45 days for a complete submittal with no issues
- ❑ Permitting requirements

Questions on Site Applications or Design Reviews in Colorado?

Denver

- Tom Armitage
- Cary Pilon
- Dennis Pontius
- Jennifer Miller

Pueblo

- Dave Knope
- Tim Vrudny

Grand Junction

- Jocelyn Mullen
- Mark Kadnuck

Steamboat Springs

- Andy Poirot

Durango

- Greg Brand

- Site Application Coordinator – Kent Kuster
WQCD – Denver phone # (303) 692-3574

Compliance Issues with Lagoons

- ❑ Most common problems with lagoon type WWTFs include:
- ❑ low dissolved oxygen and poor BOD removal
- ❑ loss of wastewater solids to the final effluent by short circuiting or sludge buildup
- ❑ algal overgrowth and loss of these to the final effluent
- ❑ not very effective for ammonia reduction

Are there violations at the WWTF ?

□ Carefully read the Discharge Permit for:

- Design Capacity and Expansion requirements
- Compliance Schedules
- Influent Monitoring (frequency and type)
- Effluent Monitoring (frequency and type)
- Effluent Limitations including: Flow, BOD₅, total suspended solids, fecal coliforms, pH, oil & grease, and ammonia, others?
- Reporting and Recordkeeping
- Certified Operator requirements

How can violations be corrected?

- Can operations be improved at the existing WWTF ?
- Are physical improvements, changes or modifications, and/or expansion of the existing WWTF necessary ?

Improving Operations

- Try troubleshooting guide recommendations
- Increase monitoring (beyond permit requirements) to evaluate performance and process control
- Take compliance monitoring samples early in the month to allow time to make adjustments and additional sampling
- Try networking and asking other local Certified Operators what they do
- Also utilize WWUC Mentoring Program or Red Rocks 104G program
- Begin discussions with the money managers

Are physical changes needed ?

- Begin discussions with the money managers
- Are new effluent limitations expected?
- Is an engineering planning study needed?
- Can the existing lagoon type WWTF be modified or expanded?
- Will a new mechanical WWTF be needed to meet new effluent limitations and expected expansion needs?
- Will a Site Application be needed?