Public Water Supply Well Requirements

Plan Review Team
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Plan Review Team (PRT)
Protection Strategy
Multi-Barrier Approach

• Site restrictions
• Well construction
• Disinfection - Treatment
• Monitoring
TCEQ Rules

- Public Water System (PWS) definition
  - 15 or more connections
  - 25 or more individuals at least 60 days
    [30 TAC §290.38(63)]

- PWS well
  - 30 TAC §290.41(c) Groundwater sources and development
  - 30 TAC §290.42(b) Groundwater Treatment

Other Rules

• Domestic Wells
  • 16 TAC §76 Texas Department of Licensing and Regulation

• Both PWS and Domestic Wells
  • Local Groundwater Conservation Districts
  • Texas Water Development Board

http://www.twdb.state.tx.us/groundwater/conservation_districts/index.asp
Public Drinking vs. Domestic Water Wells

Borehole Min. 3” larger than casing diameter

Min. 2’ above 100 year flood plain (.25 inches/foot)

Annular cement to developed aquifer

Min. 10’ Annular Cement

Borehole Min. 1.5” larger than casing diameter

Min. 8’ Bentonite

Recommended 10’ annular cement or bentonite

Min. 2’ Cement
Well Proposal to TCEQ

TCEQ Approves Construction or Request Information

Upon Approval, Well is Constructed. Well Data is Gathered and Submitted to TCEQ

Official Sampling and Results. Continuous Monitoring

Interim Use Granted or Denied
Forms and Checklists

• Plan Review Websites:
  https://www.tceq.texas.gov/drinkingwater/planrev.html
  https://www.tceq.texas.gov/drinkingwater/udpubs.html

• Plan Submittal information
• Checklists
• Forms
• TCEQ Standard Construction Notes
• Links to Public Drinking Water Staff Guidance Documents
• Check Plan Review Status
Proposed Well Submittal Documents

- Cover letter
- Form TCEQ-10233
- Engineering report
- Pollution hazard survey
- Draft sanitary control easement
- Scalable map
- Engineering plans & specifications
Proposed New Systems
Additional Documents

• Business plan
• Core Data Form TCEQ-10400
• Water systems within ½ mile and evidence of attempt to connect
• Two copies of submittal
Engineering Report

- Area Served
- PWS classification
- Capacity Requirements
- Proposed Facilities
  - Disinfection system
  - Pressure tank
  - Storage tank
  - Pumps
Pollution Hazards Survey

- Abandoned or inoperative wells
- Landfill and dump sites
- Animal feedlots
- Military, industrial or wood treatment facilities
- Liquid petroleum and petrochemical production, storage and transmission facilities
- Class 1, 2, 3 and 4 injection wells
- Pesticide storage and mixing facilities

[§290.41(c)(1)(E)]
Set Back Distances

• 50 feet
  • Sanitary sewer, septic tank, storm sewer
  • Livestock in pasture

• 150 feet
  • Septic tank drain-field, low dosage irrigation, low angle OSSF
  • UG petroleum or chemical storage tank
  • Improperly constructed well

[§290.41(c)(1)(A)-(D)]
Set Back Distances cont.

- 300 feet
  - Sewage wet well, lift station, drainage ditch
- 500 feet
  - Sewage treatment plant, animal feed lots, solid waste disposal sites
  - Properties treated with sewage

[§290.41(c)(1)(A)-(D)]
Site Map
Sanitary Control Easement

- Use restrictions within 150 feet of well
- New Easement Form TCEQ -20698
- Easements must record by landowners within 150 foot of well (draft until well completion)
- No easement required for PWS owned property (property deed)
- Improperly constructed wells must be plugged
Proposed Well Construction

Site Requirements:

- Premises, materials, tools and drilling equipment minimize contamination
- Water used for operations safe sanitary quality
- Drilling mud shall contain a chlorine residual of at least 0.5 milligrams per liter (mg/L)
- Slush pit - minimize contamination
- Temporary toilet facilities within 150 feet
- Safeguards from trespassers
Proposed Well Construction

• Well Casing Requirements;
  • AWWA Casing extends 18 inches above floor
  • **Pressure** cemented per AWWA Appendix C
  • Pressure cemented extends to developed formation
  • Contains no more than 0.25% lead
Proposed Well Construction

Well Head Requirements:
- Two feet above 100-year flood elevation
- Slab edge three feet from the outside wall of well casing in all directions with slope
- Sealed by a gasket or sealing compound
- Blow-off line points downward
- Sampling cock
- Flow measuring devices
Proposed Well Construction

• Other Requirements;
  • Well gravel pack disinfected
  • Well disinfected per AWWA for six hours
  • All weather access road
  • Intruder resistance fence
Disinfection

- Disinfection facilities shall be provided for all groundwater supplies
  - Chlorine Gas
  - Sodium Hypochlorite
  - Chloramines (now in the rules)
    - No exception needed except…
Treatment

- Treatment facilities required if water does not meet drinking water standards.
  - Arsenic
  - Iron and manganese
  - TDS
  - 4-log removal or inactivation of viruses based on raw water sampling results
  - Corrosive water
Ground Water Under the Direct Influence of Surface Water (GUI)

• Potential GUI if:
  • Drilled and/or pressure cemented less than 100 feet
  • Close influence to surface water
  • Will require microbiological sampling twice a month for 24 months

• If well is determined to be a GUI:
  • 2,3,4 log treatment required
  • Surface water rules apply
Rule Exceptions

- Must precede the submission of plans
- Submit to Technical Review & Oversight Team (TROT)
  - Written request with documentation
  - Cite regulations for exception
  - Cannot compromise public health
Exception Flow Chart

Well proposal submittal exceptions submitted to Technical and Review Team (TROT) §290.39(c)(1) or §290.39(l)(1)

**TROT Approves**

Well plans and specifications submitted to PRT

Upon Approval, well data used for source water assessments, sampling, and monitoring

**TROT Disapproves**

Revise and resubmit if applicable
Common Exceptions

- Setbacks
- Sanitary control easement
- Improper pressure cementation
- Treatment technologies
Construct Well

- TCEQ Approval Letter
- Construct in Accordance with the approved plans and specifications
- 48 hours notice to TCEQ before cementing
- Unforeseen circumstances, call TCEQ
Well Completion Submittal

- Map with final well location
- Well construction data
- State of Texas well report
- Cementing Certificate
- Recorded sanitary control easement(s)
- Final property deed
- Well location – USGS 7.5 Min topographic map
- 36-hour pump test
- Raw water chemical analysis
- Bacteriological tests
Water Corrosivity
Corrosive Saturation Indices for Determination of Corrosiveness

• Langelier Saturation Index
• Ryznar Stability Index
• Aggressive Index

TCEQ currently uses Tetra Tech Corrosion Model for calculations.
New Constituents Required

- Lead
- Total Alkalinity (as CaCO3)
- Calcium (as CaCO3)
- Sodium
Determination of Corrosiveness

- Three scenarios based upon two temperatures (10 and 25 degree Celsius)
  - Noncorrosive
  - Slightly Corrosive
  - Corrosive
New Systems

• Noncorrosive: Use no Problem
• Slightly Corrosive: Use granted with follow-up engineering report or proposed corrosion control treatment required
• Corrosive: No use until follow-up engineering report or corrosion control treatment approved
Existing Systems

- Lead and Copper tap sampling is reset to routine vs. reduced.
- Noncorrosive: Use no Problem
- Slightly Corrosive: Use granted with follow-up engineering report or proposed corrosion control treatment required
- Corrosive: No use until follow-up engineering report or corrosion control treatment approved
Final Steps

- Receive interim use
- Arrangement of official samples to be taken by TCEQ contractor
- Continuous monitoring as PWS
Questions?

TCEQ
Plan Review Team

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