State of Utah

GARY R. HERBERT
Governor
GREG BELL
Lieutenant Governor

Department of
Environmental Quality
Amanda Smith
Executive Director
DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

MEMORANDUM

TO: Water Quality Board

THROUGH: Walter L. Baker, P.E., Director

FROM: Judy Etherington

DATE: September 10, 3013

SUBJECT: Request to Adopt the Amendments to Rules R317-1, R317-3, R317-5, R317-6, R317-7, R317-12, and R317-401 in Response to Changes to the Utah Water Quality Act Initiated by Senate Bill 21 (2012).

These amendments were published in the August 1, 2013 issue (Vol. 2013, No. 15) of the Utah State Bulletin and were available for public comment through September 3, 2013. No comments were received in support or opposition to the proposed changes, therefore no summary nor response is included. Staff is requesting that the Water Quality Board adopt attached the amendments to the following rules:

R317-1. Definitions and General Requirements.
R317-3. Design Requirements for Wastewater Collection, Treatment and Disposal Systems.
R317-5. Large Underground Wastewater Disposal Systems.
R317-6. Ground Water Quality Protection.
R317-7. Underground Injection Control (UIC) Program.
R317-12. General Requirements: Tax Exemption for Water Pollution Control Equipment.
R317-401. Graywater Systems.

Each of the Division of Water Quality's rules was reviewed by the Attorney General's office for compliance with amendments made to the Utah Water Quality Act by Senate Bill 21 (2012). The proposed changes are a result of that review. The majority of the proposed changes are non-substantive, largely consisting of changes such as replacing the term "Executive Secretary" with "Director". However, each of the above rules also contains substantive changes mandated by Senate Bill 21 which reflect the transfer of certain powers and duties from the Water Quality Board to the Director of the Division of Quality in the realm of permits, certifications and other administrative authorizations.

Attachments: Draft text for each rule

JAE:JAE:

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File: Administrative Rules/R317-1, 3, 5, 6, 7, 12, 401

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Environmental Quality, Water Quality
R317-1
Definitions and General Requirements

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37851
FILED: 07/15/2013

RULE ANALYSIS

PURPOSE OF THE RULE OR REASON FOR THE CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 passed in the 2012 General Legislative Session.

SUMMARY OF THE RULE OR CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 (2012). The majority of the proposed changes are editorial, largely consisting of replacing the term "Executive Secretary" with "Director". However, the amendments also make additional changes mandated by S.B. 21 (2012) which reflect the transfer of certain powers and duties from the Water Quality Board to the Director of the Division of Water Quality in the realm of permits, certifications, and other administrative authorizations.

STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

ANTICIPATED COST OR SAVINGS TO:
♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ LOCAL GOVERNMENTS: Enactment of these changes likely will not result in direct, measurable costs for local governments as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ SMALL BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to small businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ PERSONS OTHER THAN SMALL BUSINESSES, BUSINESSES, OR LOCAL GOVERNMENTAL ENTITIES: Enactment of these changes likely will not result in direct, measurable costs to other persons as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMPLIANCE COSTS FOR AFFECTED PERSONS: Enactment of these changes likely will not result in direct, measurable compliance costs as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMMENTS BY THE DEPARTMENT HEAD ON THE FISCAL IMPACT THE RULE MAY HAVE ON BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

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THE FULL TEXT OF THIS RULE MAY BE INSPECTED, DURING REGULAR BUSINESS HOURS, AT:
ENVIRONMENTAL QUALITY
WATER QUALITY
THIRD FLOOR
195 N 1950 W
SALT LAKE CITY, UT 84116
or at the Division of Administrative Rules.

DIRECT QUESTIONS REGARDING THIS RULE TO:
♦ Dave Wham by phone at 801-536-4337, by FAX at 801-536-4301, or by Internet E-mail at dwham@utah.gov

INTERESTED PERSONS MAY PRESENT THEIR VIEWS ON THIS RULE BY SUBMITTING WRITTEN COMMENTS NO LATER THAN AT 5:00 PM ON 09/03/2013

THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-1. Definitions and General Requirements.
R317-1-1. Definitions.

"Assimilative Capacity" means the difference between the numeric criteria and the concentration in the waterbody of interest where the concentration is less than the criterion.

"Biological assessment" means an evaluation of the biological condition of a water body using biological surveys and other direct measurements of composition or condition of the resident living organisms.

"Biological criteria" means numeric values or narrative descriptions that are established to protect the biological condition of the aquatic life inhabiting waters that have been given a certain designated aquatic life use.

"Board" means the Utah Water Quality Board.

"BOD" means 5-day, 20 degrees C. biochemical oxygen demand.

"Body Politic" means the State or its agencies or any political subdivision of the State to include a county, city, town, improvement district, taxing district or any other governmental subdivision or public corporation of the State.

"Building sewer" means the pipe which carries wastewater from the building drain to a public sewer, a wastewater disposal system or other point of disposal. It is synonymous with "house sewer".

"CBOD" means 5-day, 20 degrees C., carbonaceous biochemical oxygen demand.

"COD" means chemical oxygen demand.

"Deep well" means a drinking water supply source which complies with all the applicable provisions of the State of Utah Public Drinking Water [~~Regulations~~]rules.

"Digested sludge" means sludge in which the volatile solids content has been reduced to about 50% by a suitable biological treatment process.

"Director" means the Director of the Division of Water Quality.

"Division" means the Utah State Division of Water Quality.

"Domestic wastewater" means a combination of the liquid or water-carried wastes from residences, business buildings, institutions, and other establishments with installed plumbing facilities, together with those from industrial establishments, and with such ground water, surface water, and storm water as may be present. It is synonymous with the term "sewage".

"Effluent" means the liquid discharge from any unit of a wastewater treatment works, including a septic tank.

"Existing Uses" means those uses actually attained in a water body on or after November 28, 1975, whether or not they are included in the water quality standards.

"Human-induced stressor" means perturbations directly or indirectly caused by humans that alter the components, patterns, and/or processes of an ecosystem.

"Human pathogens" means specific causative agents of disease in humans such as bacteria or viruses.

"Industrial wastes" means the liquid wastes from industrial processes as distinct from wastes derived principally from dwellings, business buildings, institutions and the like. It is synonymous with the term "industrial wastewater".

"Influent" means the total wastewater flow entering a wastewater treatment works.

"Great Salt Lake impounded wetland" means wetland ponds which have been formed by dikes or berms to control and retain the flow of freshwater sources in the immediate proximity of Great Salt Lake.

"Large underground wastewater disposal system" means the same type of device as an onsite wastewater system except that it is designed to handle more than 5,000 gallons per day of domestic wastewater, or wastewater that originates in multiple dwellings, commercial establishments, recreational facilities, schools, or any other underground wastewater disposal system not covered under the definition of an onsite wastewater system. The [~~Board~~]Division controls the installation of such systems.

"Onsite wastewater system" means an underground wastewater disposal system for domestic wastewater which is designed for a capacity of 5,000 gallons per day or less and is not designed to serve multiple dwelling units which are owned by separate owners except condominiums and twin homes. It usually consists of a building sewer, a septic tank and an absorption system.

"Operating Permit" is a State issued permit issued to any wastewater treatment works covered under Rules R317-3 or R317-5 with the following exceptions:

A. Any wastewater treatment permitted under Ground Water Quality Protection R317-6.

B. Any wastewater treatment permitted under Underground Injection Control (UIC) Program R317-7.

C. Any wastewater treatment permitted under Utah Pollutant Discharge Elimination System (UPDES) R317-8.

D. Any wastewater treatment permitted under Approvals and Permits for a Water Reuse Project R317-13.

E. Any wastewater treatment permitted by a Local Health Department under Onsite Wastewater Systems R317-4.

"Person" means any individual, corporation, partnership, association, company, or body politic, including any agency or instrumentality of the United States government (Section 19-1-103).

"Point source" means any discernible, confined and discrete conveyance including but not limited to any pipe, ditch, channel,

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tunnel, conduit, well, discrete fissure, container, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flow from irrigated agriculture.

"Pollution" means such contamination, or other alteration of the physical, chemical, or biological properties of any waters of the state, or such discharge of any liquid, gaseous or solid substance into any waters of the state as will create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

"Sewage" is synonymous with the term "domestic wastewater".

"Shallow well" means a well providing a source of drinking water which does not meet the requirements of a "deep well".

"Sludge" means the accumulation of solids which have settled from wastewater. As initially accumulated, and prior to treatment, it is known as "raw sludge".

"SS" means suspended solids.

Total Maximum Daily Load (TMDL) means the maximum amount of a particular pollutant that a waterbody can receive and still meet state water quality standards, and an allocation of that amount to the pollutant's sources.

"Treatment works" means any plant, disposal field, lagoon, dam, pumping station, incinerator, or other works used for the purpose of treating, stabilizing or holding wastes. (Section 19-5-102).

"TSS" means total suspended solids.

"Underground Wastewater Disposal System" means a system for underground disposal of domestic wastewater. It includes onsite wastewater systems and large underground wastewater disposal systems.

"Use Attainability Analysis" means a structured scientific assessment of the factors affecting the attainment of the uses specified in R317-2-6. The factors to be considered in such an analysis include the physical, chemical, biological, and economic use removal criteria as[:] described in 40 CFR 131.10(g) (1-6).

"Wastes" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. (Section 19-5-102).

"Wastewater" means sewage, industrial waste or other liquid substances which might cause pollution of waters of the state. Intercepted ground water which is uncontaminated by wastes is not included.

"Waters of the state" means all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state" under this definition (Section 19-5-102).

R317-1-2. General Requirements.

2.1 Water Pollution Prohibited. No person shall discharge wastewater or deposit wastes or other substances in violation of the requirements of these rules.

2.2 Construction Permit. No person shall make or construct any device for treatment or discharge of wastewater (including storm sewers) without first receiving a permit to do so from the [~~Board~~]Director or its authorized representative, except as provided herein.

A. Body Politic Required. A permit for construction of a new treatment works or a sewerage system, or modifications to an existing treatment works or sewerage system for multiple units under separate ownership will be issued only if the treatment works or sewerage system are under the sponsorship of a body politic as defined in R317-1-1.

B. Submission of Plans. Any person desiring a permit shall submit complete plans, specifications, and other pertinent documents covering the proposed construction to the [~~Division~~]Director for review. Liquid waste storage facilities at animal feeding operations must be designed and constructed in accordance with Table 2a - Criteria for Siting, Investigation, and Design of Liquid Waste Storage Facilities with a water depth greater than 2 feet; Table 2b - Criteria for Siting, Investigation, and Design of Liquid Waste Storage Facilities with a water depth of 2 feet or less; and Table 2c - Criteria for runoff ponds with a water depth of 2 feet of less and a storage period less than 90 days annually, contained in the U.S.D.A. Natural Resource Conservation Service (NRCS) Conservation Practice Standard, Waste Storage Facility, Code 313, dated August 2006. This rule incorporates by reference Tables 2a, 2b, and 2c in the August 2006 U.S.D.A. NRCS Conservation Practice Standard, Waste Storage Facility, Code 313.

C. Review of Plans. The Division shall review said plans and specifications as to their adequacy of design for the intended purpose and shall require such changes as are found necessary to assure compliance with pertinent parts of these rules.

D. Approval of Plans. Issuance of a construction permit shall be construed as approval of plans for the purposes of authorizing release of federal or state funds allocated for planning or construction purposes.

E. Permit Expiration. Construction permits shall expire one year after date of issuance unless substantial and continuous construction is under way. Upon application, construction permits may be extended on an individual basis provided application for such extension is made prior to the permit expiration date.

F. Exceptions.

1. Wastewater facilities that discharge to an existing sewer system and serve only units that are under single ownership, or serve multiple units under separate ownership where the wastewater facilities are under the sponsorship of the public sewer system to which they discharge. This exception does not apply to pumping stations having the installed capacity in excess of 1 million gallons per day (3,785 cubic meters per day).

2. Onsite Wastewater Disposal Systems. Construction plans and specifications for onsite wastewater disposal systems shall be submitted to the local health authority having jurisdiction and need not be submitted to the Division. Such devices, in any

case, shall be constructed in accordance with rules for onsite wastewater disposal systems adopted by the Water Quality Board. Compliance with the rules shall be determined by an on-site inspection by the appropriate health authority.

3. Small Animal Waste (Manure) Lagoons and Runoff Ponds. Construction plans and specifications for small animal waste lagoons as defined in R317-6 (permitted by rule for ground water permits) need not be submitted to the Division if the design is prepared or certified by the U.S.D.A. Natural Resources Conservation Service (NRCS) in accordance with criteria provided for in the Memorandum of Agreement between the Division and the NRCS, and the construction is inspected by the NRCS. Compliance with these rules shall be determined by on-site inspection by the NRCS.

2.3 Compliance with Water Quality Standards. No person shall discharge wastes into waters of the state except in compliance with these rules and under circumstances which assure compliance with water quality standards in R317-2.

2.4 Operation of Wastewater Treatment Works. Wastewater treatment works shall be so operated at all times as to produce effluents meeting all requirements of these rules and otherwise in a manner consistent with adequate protection of public health and welfare. Complete daily records shall be kept of the operation of wastewater treatment works covered under R317-3 on forms approved by the Division and a copy of such records shall be forwarded to the Division at monthly intervals.

R317-1-3. Requirements for Waste Discharges.

3.1 Compliance With Water Quality Standards.

All persons discharging wastes into any of the waters of the State shall provide the degree of wastewater treatment determined necessary to insure compliance with the requirements of R317-2 (Water Quality Standards), except that the [~~Board~~]Director may waive compliance with these requirements for specific criteria listed in R317-2 where it is determined that the designated use is not being impaired or significant use improvement would not occur or where there is a reasonable question as to the validity of a specific criterion or for other valid reasons as determined by the [~~Board~~]Director.

3.2 Compliance With Secondary Treatment Requirements.

All persons discharging wastes from point sources into any of the waters of the State shall provide treatment processes which will produce secondary effluent meeting or exceeding the following effluent quality standards.

A. The arithmetic mean of BOD values determined on effluent samples collected during any 30-day period shall not exceed 25 mg/l, nor shall the arithmetic mean exceed 35 mg/l during any 7-day period. In addition, if the treatment plant influent is of domestic or municipal sewage origin, the BOD values of effluent samples shall not be greater than 15% of the BOD values of influent samples collected in the same time period. As an alternative, if agreed to by the person discharging wastes, the following effluent quality standard may be established as a requirement of the discharge permit and must be met: The arithmetic mean of CBOD values determined on effluent samples collected during any 30-day period shall not exceed 20 mg/l nor shall the arithmetic mean exceed 30 mg/l during any 7-day period. In addition, if the treatment plant influent is of domestic or municipal sewage origin, the CBOD values of effluent samples shall not be greater than 15% of the CBOD values of influent samples collected in the same time period.

B. The arithmetic mean of SS values determined on effluent samples collected during any 30-day period shall not exceed 25 mg/l, nor shall the arithmetic mean exceed 35 mg/l during any 7-day period. In addition, if the treatment plant influent is of domestic or municipal sewage origin, the SS values of effluent samples shall not be greater than 15% of the SS values of influent samples collected in the same time period.

C. The geometric mean of total coliform and fecal coliform bacteria in effluent samples collected during any 30-day period shall not exceed either 2000 per 100 ml or 200 per 100 ml respectively, nor shall the geometric mean exceed 2500 per 100 ml or 250 per 100 ml respectively, during any 7-day period; or, the geometric mean of E. coli bacteria in effluent samples collected during any 30-day period shall not exceed 126 per 100 ml nor shall the geometric mean exceed 158 per 100 ml respectively during any 7-day period. Exceptions to this requirement may be allowed by the [~~Board~~]Director where domestic wastewater is not a part of the effluent and where water quality standards are not violated.

D. The effluent values for pH shall be maintained within the limits of 6.5 and 9.0.

E. Exceptions to the 85% removal requirements may be allowed where infiltration makes such removal requirements infeasible and where water quality standards are not violated.

F. The [~~Board~~]Director may allow exceptions to the requirements of (A), (B) and (D) above where the discharge will be of short duration and where there will be of no significant detrimental affect on receiving water quality or downstream beneficial uses.

G. The [~~Board~~]Director may allow that the BOD5 and TSS effluent concentrations for discharging domestic wastewater lagoons shall not exceed 45 mg/l for a monthly average nor 65 mg/l for a weekly average provided the following criteria are met:

1. The lagoon system is operating within the organic and hydraulic design capacity established by R317-3,

2. The lagoon system is being properly operated and maintained,

3. The treatment system is meeting all other permit limits,

4. There are no significant or categorical industrial users (IU) defined by 40 CFR Part 403, unless it is demonstrated to the satisfaction of the [~~Executive Secretary~~]Director [~~to the Utah Water Quality Board~~]that the IU is not contributing constituents in concentrations or quantities likely to significantly effect the treatment works,

5. A Waste Load Allocation (WLA) indicates that the increased permit limits would not impair beneficial uses of the receiving stream.

3.3 Extensions To Deadlines For Compliance.

The [~~Board~~]Director may, upon application of a waste discharger, allow extensions to the compliance deadlines in Section 1.3.2 above where it can be shown that despite good faith effort, construction cannot be completed within the time required.

3.4 Pollutants In Diverted Water Returned To Stream.

A user of surface water diverted from waters of the State will not be required to remove any pollutants which such user has not added before returning the diverted flow to the original watercourse, provided there is no increase in concentration of

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pollutants in the diverted water. Should the pollutant constituent concentration of the intake surface waters to a facility exceed the effluent limitations for such facility under a federal National Pollutant Discharge Elimination System permit or a permit issued pursuant to State authority, then the effluent limitations shall become equal to the constituent concentrations in the intake surface waters of such facility. This section does not apply to irrigation return flow.

R317-1-4. Utilization and Isolation of Domestic Wastewater Treatment Works Effluent.

4.1 Untreated Domestic Wastewater. Untreated domestic wastewater or effluent not meeting secondary treatment standards as defined by these [~~regulations~~]rules shall be isolated from all public contact until suitably treated. Land disposal or land treatment of such wastewater or effluent may be accomplished by use of an approved total containment lagoon as defined in R317-3 or by such other treatment approved by the [~~Board~~]Director as being feasible and equally protective of human health and the environment.

4.2 Use of Secondary Effluent at Plant Site. Secondary effluent may be used at the treatment plant site in the following manner provided there is no cross-connection with a potable water system:

A. Chlorinator injector water for wastewater chlorination facilities, provided all pipes and outlets carrying the effluent are suitably labeled.

B. Water for hosing down wastewater clarifiers, filters and related units, provided all pipes and outlets carrying the effluent are suitably labeled.

C. Irrigation of landscaped areas around the treatment plant from which the public is excluded.

R317-1-5. Use of Industrial Wastewaters.

5.1 Use of industrial wastewaters (not containing human pathogens) shall be considered for approval by the [~~Board~~]Director based on a case-specific analysis of human health and environmental concerns.

R317-1-9. Electronic Submissions and Electronic Signatures.

(a) Pursuant to the authority of Utah Code Ann. Subsection 46-4-501(a), the submission of Discharge Monitoring Reports and related information may be conducted electronically through the EPA's NetDMR program, provided the requirements of subsection (b) are met.

(b) A person may submit Discharge Monitoring Reports and related information only after (1) completion of a Subscriber Agreement in a form designated by the [~~Executive Secretary~~]Director to ensures that all requirements of 40 CFR 3, EPA's Cross - Media Electronic Reporting Regulation (CROMERR) are met; and (2) completion of subsequent steps specified by EPA's CROMERR, including setting up a subscriber account.

(c) The Subscriber Agreement will continue until terminated by its own terms, until modified by mutual consent or until terminated with 60 days written notice by any party.

(d) Any person who submits a Discharge Monitoring Report or related information under the NetDMR program, and who electronically signs the report or related information, is, by providing an electronic signature, making the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

KEY: water pollution, waste disposal, industrial waste, effluent standards
Date of Enactment or Last Substantive Amendment: [~~November 7, 2011~~]2013
Notice of Continuation: October 2, 2012
Authorizing, and Implemented or Interpreted Law: 19-5

Environmental Quality, Water Quality
R317-3
Design Requirements for Wastewater Collection, Treatment and Disposal Systems

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37852
FILED: 07/15/2013

RULE ANALYSIS

PURPOSE OF THE RULE OR REASON FOR THE CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 passed in the 2012 General Legislative Session.

SUMMARY OF THE RULE OR CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 (2012). The majority of the proposed changes are editorial, largely consisting of replacing the term "Executive Secretary" with "Director". However, the amendments also make additional changes mandated by S.B. 21 (2012) which reflect the transfer of certain powers and duties from the Water Quality Board to the Director of the Division of Water Quality in the realm of permits, certifications, and other administrative authorizations.

STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

ANTICIPATED COST OR SAVINGS TO:
♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget as this amendment only changes who has authority to make

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regulatory decisions regarding permits, certifications, and other administrative authorizations.

♦ LOCAL GOVERNMENTS: Enactment of these changes likely will not result in direct, measurable costs for local governments as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

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195 N 1950 W
SALT LAKE CITY, UT 84116
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DIRECT QUESTIONS REGARDING THIS RULE TO:
♦ Dave Wham by phone at 801-536-4337, by FAX at 801-536-4301, or by Internet E-mail at dwham@utah.gov

INTERESTED PERSONS MAY PRESENT THEIR VIEWS ON THIS RULE BY SUBMITTING WRITTEN COMMENTS NO LATER THAN AT 5:00 PM ON 09/03/2013

THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-3. Design Requirements for Wastewater Collection, Treatment and Disposal Systems.
R317-3-1. Technical and Procedural Requirements.

1.1. Scope of This Rule

A. General. This rule is intended to aid the logical development, from feasibility study, through startup, to operation of a wastewater collection, treatment and disposal project.

B. Authority. Construction and operating permits and approvals are issued pursuant to the provisions of Sections 19-5-104, 19-5-107 and 19-5-108. Violation of these permit(s) or approval(s) including compliance with the conditions thereof, or beginning of construction, or modification without the [~~executive secretary's~~]Director's approval, is subject to the penalties provided in Section 19-5-115.

C. Applicability

1. This rule applies to:

a. communities, sewerage agencies, industries, and federal or state agencies (hereinafter referred to as the applicant), and

b. i. construction, installation, modification or operation of any treatment works or part thereof or any extension or addition thereto, or

ii. construction, installation, modification or operation of any establishment or any extension or modification or addition to it, the operation of which would probably result in a discharge.

2. The applicant must not advertise the project for bids and must not begin construction without receiving a construction permit.

D. Requirements

1. The design requirements in this rule are for collection, treatment and disposal of wastewater largely originating from domestic sources. These criteria are intended to be limiting values for items upon which an evaluation of such plans and specifications will be made and to establish, as far as practicable, uniformity of practice. This rule also provides for a mechanism to apply water pollution control research and recommendations for further evaluation by the design engineer.

2. Communities, and the engineering profession should discuss with the staff of the [~~executive secretary~~]Director possible combinations of wastewater treatment and disposal processes or situations not covered in detail by this rule.

E. Construction Permit and Approvals

1. When a Permit or an Approval is Issued. A construction permit or an approval is issued when the applicant has met all requirements of this rule, including any additional requirements of funding programs administered by the [~~executive secretary~~]Director. The applicant or the designee or the consultant should meet with the staff of the [~~executive secretary~~]Director to discuss the plan of study before undertaking extensive engineering studies for construction of treatment works. A permit for construction of a new treatment works or a sewerage system, or modifications to an existing treatment works or sewerage system for multiple units under separate ownership will be issued only if the treatment works or sewerage system are under the sponsorship of a body politic as defined in R317-1-1.

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2. Variance. The [~~executive secretary~~]Director may grant a variance from the minimum requirements stated in this rule, subject to site-specific consideration and justification, but not overriding safeguarding of public health or protection of water quality or engineering practice. The applicant must submit pertinent and relevant material in support of a variance from the minimum requirements.

3. Limitations

a. The issuance of a construction permit does not relieve in any way the applicant of the obligation to obtain other approvals and permits, i.e., ground water discharge permit, clearances etc., from other agencies which may have jurisdiction over the project.

b. The permit will expire at the end of one year from the date of issuance if the approved project is not under substantial construction. Plans and specifications must be resubmitted for review and reissuance of the expired permit.

F. Operating Permits

1. Scope

Permits are issued to any wastewater treatment works covered under R317-3 with the following exceptions:

a. Any wastewater treatment permitted under Ground Water Quality Protection R317-6.

b. Any wastewater treatment permitted under Underground Injection Control (UIC) Program R317-7.

c. Any wastewater treatment permitted under Utah Pollutant Discharge Elimination System (UPDES) R317-8.

d. Any wastewater treatment permitted under Approvals and Permits for a Water Reuse Project R317-13.

2. Facilities requiring operating permits that treat domestic waste will typically be issued a general permit rather than individual permits. General permits may be issued, modified, revoked and reissued, or terminated in accordance with applicable requirements of R317-8-5 and R317-8-6. General permits shall be effective for a fixed term not to exceed 5 years.

3. Facilities requiring operating permits that treat non-domestic waste will be issued individual permits. Individual permits may be issued, modified, revoked and reissued, or terminated in accordance with applicable requirements of R317-8-5 and R317-8-6. Individual permits shall be effective for a fixed term not to exceed 5 years.

4. Application requirements.

a. Facilities currently in operation shall submit to the [~~Executive Secretary~~]Director a written notice of intent to be covered by the general permit or by an individual permit no later than January 1, 2010. New facilities must submit a written notice of intent prior to commencing operation. A facility that fails to submit a notice of intent in accordance with the terms of the permit is not authorized to operate.

b. The notice of intent shall include:

i. the legal name and address of the owner.

ii. the facility name and address.

iii. design flow, actual flow, and type of waste treated.

iv. disposal method, effluent quality (if applicable).

v. location of nearest public drinking water well.

vi. diagram of system showing major components.

5. Requirements for recording and reporting monitoring results. All permits shall specify:

a. Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, (including biological monitoring methods when appropriate);

b. Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring;

c. Reporting shall be monthly in accordance with R317-1-2.4.

G. Definitions

1. The annual average daily rate of flow is defined as:

a. an average of daily rates of flow over a period of not less than one year; or

b. the rate of flow equal to or greater than 50 percent of the daily flow rate data.

2. The average design rate of flow or the average peak-monthly rate of flow is defined as:

a. a moving average of daily rates of flow over a thirty consecutive days; or over a period of month whichever produces a higher rate of flow; or

b. the rate of flow equal to or greater than 92 percent of the daily flow rate data.

3. The maximum design rate of flow or peak-daily rate of flow is defined as:

a. the maximum rates of flow over a 24 hour period; or

b. the rate of flow equal to or greater than 99.7 percent of the daily flow data.

4. The peak design rate of flow or peak-hourly rate of flow is defined as:

a. the maximum rate of flow over a 60-minute period; or

b. the rate of flow equal to or greater than 99.9 percent of the daily flow data.

5. The minimum daily rate of flow is defined as the minimum rate of flow over a twenty-four hour period.

6. Industrial waste flow is defined as the maximum rate of flow for each of industries tributary to the sewer system.

7. Other Definitions. Other definition of terms and their use in this rule is intended to be in accordance with:

a. R317-1 (Definitions and General Requirements), and

b. Glossary - Water and Wastewater Control Engineering, jointly prepared by American Public Health Association (APHA), American Society of Civil Engineers (ASCE), American Water Works Association (AWWA), and Water Pollution Control Federation (WPCF).

8. Units of Expression The units of expression used are in accordance with those recommended in WPCF Manual of Practice Number 6, Units of Expression for Wastewater Treatment.

9. Terms

a. The term shall is used where practice is standardized to permit specific delineation of requirements or where safeguarding of the public health or protection of water quality justifies such definite action.

b. Other terms, such as should, recommended, preferred, indicate desirable procedures or methods, with deviations subject to individual consideration and justification, but not overriding safeguarding of public health or protection of water quality or engineering practice.

c. Desirable procedures or methods may be mandatory requirements for projects using state or federal funds.

1.2. Engineering Report

2.8

A. The Scope of the Report

1. The applicant or the applicant's consulting engineer should submit an engineering report to the [~~executive secretary~~]Director at least 60 days before the date when action by the [~~executive secretary~~]Director is desired. The report shall be prepared under the direction of a registered professional engineer licensed to practice in the State of Utah. The report must establish the need, scope, basis and viability for:

a. all projects involving innovative treatment and disposal processes, and

b. collection and pumping systems handling flows in excess of 1 million gallons per day (3,785 cubic meters per day).

2. The documents submitted for formal approval should include all pertinent and relevant material to aid in the review of the submitted reports.

B. What is Required in the Report

1. The magnitude and complexity of the project will determine the scope of the report.

2. The report must provide basic information; criteria and assumptions; evaluation of alternate projects, with preliminary layouts and cost estimates; assessment of environmental factors; financing methods, anticipated charges for users; organizational and staffing requirements; conclusions or recommendations with a proposed project for consideration; and an outline of official actions and procedures required to implement the project.

3. The report should detail various concepts (including process description and sizing), factual data, and controlling assumptions and considerations for the functional planning of sewerage facilities. These data form the continuing technical basis for the detailed design and preparation of construction plans and specifications.

4. The report should include preliminary architectural, structural, mechanical, and electrical designs, sketches and outline specifications of process units, special equipment, etc.

5. The applicant or the consultant must address specific program and funding requirements in the report.

6. A detailed topical outline is available from the division.

C. Supplemental Requirements for Lagoons and Land Application. The engineer's report shall contain pertinent information on location, geology, hydrology, hydrogeology, soil conditions, area for expansion and any other factors that will affect the feasibility and acceptability of the proposed lagoon and land application projects.

1. Project Location. The engineer's report shall include on a 7.5-minute US Geological Survey topographic map showing the following within two mile (3.22 kilometers) radius of the proposed project site:

a. the location and direction of all residences, commercial developments, parks, recreational areas, land requirements for future additional treatment units and increased waste loadings, and land use zoning of area;

b. elevations and contours of the site and adjacent area;

c. watercourses and water supplies (including a log of each well, unless waived by the [~~executive secretary~~]Director);

d. location, depth, and discharge point of any field tile in the immediate area of the proposed site;

e. buffer zones;

f. limits of all flood plains, public drinking water supply watersheds and inland wetlands; and

g. natural site drainage zones.

2. Soil Borings and Geology. The applicant must determine representative subsurface soil characteristics and geology of the project site using a number of soil borings logged by an independent soil testing laboratory. At least one boring shall be a minimum of 25 feet (7.6 meters) in depth or into bedrock, whichever is shallower. The borings shall be filled and sealed. The report must address the following items as a minimum:

a. depth, type and texture of soil, all confirmed field data by the Soil Conservation Service (US Department of Agriculture);

b. hydraulic conductivity of the project site or the lagoon bottom as determined in the field, and lagoon bottom materials;

c. soil chemical properties such as, pH, nutrient levels, cation exchange capacity, etc.;

d. depth to bedrock;

e. bedrock type;

f. geologic discontinuities - faults, fractures, sinkholes;

g. jointing and permeability of rock.

3. Ground Water Issues

a. ground water depth confirmed by field investigations, for various seasons, including data from the period between March and May;

b. location of perched water tables;

c. ground water contours;

d. direction of ground water movement and flow;

e. ground water points of discharge;

f. available analyses of site ground water quality and drinking water wells in the vicinity, including but not limited to: coliform bacteria, pH, nitrates, total nitrogen, chlorides, sulfates, and total hardness;

g. a description of the depth and type of all water supply wells within two-mile (3.22 kilometers) radius of the proposed project site;

h. ground water monitoring needs using a system of wells or lysimeters around the perimeter of the project site; and

i. compliance with the requirements of R317-6 (Ground Water Quality Protection Rules) including securing a ground water discharge permit.

4. Climate Data

a. total precipitation for each month;

b. mean number of days per year with temperatures less than or equal to 32 degrees Fahrenheit (0 degree Centigrade);

c. wind velocities and direction;

d. evapotranspiration data.

D. Reports on Supplementary Investigations. Reports on soils, foundation, geological and hydrogeological investigations must be submitted by the applicant or the consultant, to the [~~executive secretary~~]Director. These reports are supplementary to a proposal, predesign or design report, plans and specifications for all projects. The reports must focus on any existing site conditions which may affect feasibility or constructibility of the project. If such problems do exist, mitigative and remedial measures thereto must be recommended by the applicant's consultant. The basis of conclusions reached should be supported with relevant and detailed information, graphically and narratively. The recommendations must be incorporated in the design.

1.3. Predesign Report

A. A predesign report must be prepared for the projects designed to:

1. treat domestic sewage flow in excess of 5 million gallons per day (18,900 cubic meters per day); or

2. incorporate emerging, innovative and alternative technologies.

B. The report must be submitted for review and approval by the [~~division~~]Director. The report shall include a summary of process design criteria, the basis of design, process and hydraulic profiles, outline of all appurtenant facilities, and supporting information.

C. Approval of a predesign report represents an agreement-in-principle subject to receipt, review and approval of satisfactory engineering plans and specifications. Such agreement-in-principle will be modified or revised in light of new information that may become available later. Also, an approval of prefinal documents is not an authorization to advertise the project for bids or to begin construction; but allows the applicant to proceed with preparing final engineering drawings and specifications.

1.4. Construction Plans

A. General. A complete set of construction drawings covering all disciplines shall be submitted for review in fulfillment of the requirements of this rule. The size, complexity and nature of the project will determine the extent of involvement of various disciplines. Such disciplines are, but not necessarily limited to, Civil, Structural, Mechanical, Architectural, Mechanical, Electrical, Geotechnical, Instrumentation, Heating, Ventilating and Air Conditioning etc. All designs shall be in accordance with the requirements of applicable local, state and federal rules or regulations, the latest recognized practice standards including the Uniform Building Code, the National Electrical Code, the Uniform Mechanical Code, the Uniform Plumbing Code and other industry standards. The plans shall be clear, legible and suitable for microfilming or image processing.

1. Standard Information

a. Plans shall show a suitable project title, the name of municipality, sewer district, sewerage agency, sponsoring institution or industry, current revision date, and the name of engineer in charge of the project, engineer's registration number, an imprint of registration seal and signature.

b. Plans shall be drawn to a scale which will permit all necessary information to be plainly shown. Numerical and graphical scales in foot-pound-second (FPS or English) system shall be shown. The use of the international system (metric or MKS or meter-kilogram-second) of units is encouraged.

c. All plan views shall indicate a north point, preferably in a standardized direction. A suitable geographical reference for the project shall also be shown. Topographical and elevation data should be presented on a recognized standard datum. Such datum should be clearly indicated.

2. Vicinity and Location Plans. A large scale vicinity map should be provided for a suitable geographical reference to the project. It should also indicate vehicular access to the project.

3. General Site Work Plans.

a. A site plan showing the project lay out should be included to establish a reference to the existing features. Similarly, a reduced-scale site or key plan should be drawn on all drawings to provide the context of work shown on the drawing to the site.

b. For the entire project site, information shall be provided on topography, survey data, location of test borings, limits of work, staging area for contractors, areas of project related site work, and other work that may overlap the areas of concentrated work activities. Information shall be compiled to the extent practicable on utility locations, above and below ground utilities which might interfere with the proposed construction, particularly water mains, gas mains, storm drains, and telephone and power conduits, outside piping, all known existing structures, security improvements, roads, signage, lighting, and other site improvements. Compiled information should be shown on plans.

4. Detailed Plans. Construction to be performed in areas of concentrated work such as individual installations, buildings, rooms or assemblies shall be shown on the detailed plans. Such plans shall show plan views, elevations, sections and supplementary views which, together with the specifications and general layouts, provide the working information for the contract and construction of the works. They shall also include detailed design data in all applicable disciplines, dimensions and relative elevations of structures, the location and outline form of equipment, location size of piping, water levels, water surface and hydraulic profiles, and ground elevations.

B. Plans for Sewers. Construction plans are required to be submitted for projects involving new sewer systems. Projects for substantial additions to the existing systems are required to be submitted only in fulfillment of the requirements of the funding agency. These plans must detail the following information:

1. Geographical Features

a. Topography and elevations. Existing or proposed improvements, streets, the boundaries of all streams and water impoundments, and water surfaces shall be clearly shown. Contour lines at suitable intervals should be included.

b. Streams. The direction of flow in all natural or artificial streams, and high and low water elevations of all water surfaces at sewer outlets shall be shown.

2. Boundaries. The boundary lines of the municipality or the sewer district, and the area to be sewered, shall be shown.

3. Sewers. The plan shall show the location, size and direction of flow of all existing and proposed sanitary sewers draining to the treatment works concerned.

4. Plans and Profiles. Detailed plans and profiles shall be submitted. Profiles should have a horizontal scale of not more than 100 feet to the inch and vertical scale of not more than 10 feet to the inch. Plan views should be drawn to a corresponding horizontal scale and preferably be shown on the same sheet. Plans and profiles shall show:

a. Location of streets and sewers;

b. ground surface; size of pipe; length between manholes; manhole identifiers, such as numbers etc.; invert and surface elevation at each manhole; and grade of sewer between each two adjacent manholes;

c. the elevation and location of the basement floor on the profile of the sewer, showing feasibility to serve adjacent basements except where otherwise noted on the plans; and

d. Locations of all special features such as inverted siphons, concrete encasements, elevated sewers, special construction to implement proper separation from water mains etc.

5. Detailed drawings, made to a scale to clearly show the nature of the design, shall be furnished to show the following particulars:

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a. all stream crossings and sewer outlets, with elevations of the stream bed and of normal and extreme high and low water levels;

b. details of all special sewer joints, pipeline construction or installation, and cross-sections; and

c. details of all sewer appurtenances such as manholes, inspection chambers, inverted siphons, regulators, flow measurement or control stations and elevated sewers.

C. Plans for Pumping Stations. Construction plans shall be submitted for construction or modifications of pumping stations having the installed capacity in excess of 1 million gallons per day (3,785 cubic meters per day). These plans must detail the following information besides vicinity, site and location, and engineering information required:

1. Vicinity, Site and General Site Work Plans

a. the location and extent of the tributary area;

b. any municipal boundaries within the tributary area;

c. the location of the pumping station and force main, and pertinent elevations; and

d. availability of power sources, including alternative sources.

2. Detailed Plans. Detailed plans shall be submitted showing the following:

a. topography of the site with all pertinent elevations;

b. soils or foundation report;

c. existing pumping station with all adjacent improvements;

d. proposed pumping station, including provisions for installation of future pumps or ejectors, emergency power generation, and other reliability features;

e. maximum hydraulic gradient including calculations in downstream gravity sewers when all installed pumps are in operation; and

f. elevation of high water at the site, and maximum elevation of sewage in the collection system upon occasion of power failure.

D. Plans for Treatment Plants. Construction plans shall be submitted for construction or modifications of treatment plants. These plans must detail the following information besides vicinity, site and location, and engineering information required:

1. Location Plan. A plan shall be submitted showing the treatment plant in relation to the remainder of the system.

2. General Layout. Layouts of the proposed treatment plant shall be submitted, showing:

a. topography of the site;

b. size and location of plant structures, and adjacent improvements;

c. schematic flow diagram(s), including mass balance, showing the flow through various plant units, and showing utility systems serving the plant processes;

d. outside or yard piping, including any arrangements for bypassing individual units (Materials handled and direction of flow through pipes shall be shown.); and

e. hydraulic profiles, including calculations, showing the flow of the major liquid or solid process streams including raw or treated sewage, supernatant liquor, scum and sludge.

3. Detailed Plans. Detailed plans shall show the following:

a. location, dimensions, and elevations of all existing and proposed plant facilities;

b. elevations of a 100-year water level of the body of water to which the plant effluent is to be discharged;

c. type, size, pertinent features, and operating capacity of all pumps, blowers, motors, and other mechanical devices;

d. schematics, sectional or isometric views of all process and utility piping not shown on the General Site Work Plans;

e. hydraulic profile at the minimum, average, and maximum rate of flow; and

f. description of any features not otherwise covered by other drawings or specifications or engineer's report.

1.5. Technical Specifications. Complete technical specifications for the construction of sewers, pumping stations, treatment plants, and all other appurtenances, shall accompany the plans. The specifications accompanying construction drawings shall include all construction information not shown on the drawings which is necessary to inform the builder in detail of the design requirements for the quality of materials, workmanship and fabrication of the project. They shall also include: the type, size strength, operating characteristics, and rating of equipment; allowable infiltration; the complete requirements for all mechanical and electrical equipment, including machinery, valves, piping, and jointing of pipe; electrical apparatus, wiring, instrumentation, and meters; laboratory fixtures and equipment; operating tools, construction materials; special filter materials, such as, stone, sand, gravel, or slag; miscellaneous appurtenances; chemicals when used; instructions for testing materials and equipment as necessary to meet design standards; and performance tests for the completed work and component units. Performance tests must be conducted at design load conditions wherever practical.

1.6. Revisions to the Approved Plans and Specifications. Any changes, such as addenda, change orders, field change etc., to the approved plans or specifications affecting capacity, flow, operation of units, or point or quality of discharge shall be submitted for review and approval before any such change is made in either contract documents or construction. Plans or specifications proposed to be so revised must, therefore, be submitted at least 30 days in advance of any construction work which will be affected by such changes to permit sufficient time for review and approval. Changes under emergency conditions may be communicated verbally, and then submitted in writing. Structural revisions or other minor changes not affecting capacities, flows, or operation are to be permitted during construction without approval.

1.7. Construction Supervision. The applicant must demonstrate that adequate and competent inspection will be provided during construction. It is the responsibility of the applicant to provide frequent and comprehensive inspection of the project.

1.8. Plan of Operation

A. Submittal. A plan of operation must be prepared at the mid-point of construction, but no later than at the time of 80 percent completion of construction, unless waived by the [~~executive secretary~~]Director on the basis of funding program requirements, and the scope and the complexity of the project.

B. Contents of the Plan. The plan of operation must provide a concise, sequential description of and implementation schedule for the following activities:

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1. hiring and training of operators;
2. start-up schedules and services;
3. safety programs, plans and procedures;
4. emergency operations procedures and plan;
5. process monitoring program;
6. laboratory and testing services;
7. user charge and pretreatment program, necessary to assure cost-effective, efficient and reliable startup and operation of the facility, future expansion and upgrade; and
8. maintenance of water quality and public health.

1.9. Operation and Maintenance Manual

A. Submittal. A draft of the manual must be submitted at the mid-point of construction, unless waived by the [~~executive secretary~~]Director on the basis of funding program requirements, and the scope and the complexity of the project. Final draft must be submitted for review and approval, no later than at the 90 percent stage of construction in the final form or 30 days prior to startup, whichever occurs first.

B. Contents of the Manual

1. The manual presents procedures to facilitate operation and maintenance of the plant under all conditions, technical guidance for troubleshooting, and requirements for compliance with the permits and approvals issued. The manual must address the needs of the system being employed and must be directed toward the level of training required of the operating staff.

2. The manual must include all information pertinent for the facilities besides information from manufacturers' catalogs or brochures.

1.10. Start-up

A. Certificate of Completion. The engineer in charge of construction management or inspection of the approved project or facilities shall submit a certificate, bearing the seal of the professional engineer, to the effect that the facilities were constructed in accordance with approved plans, specifications, addenda and change orders to the owner with a copy thereof to the division.

B. Authorization to Operate. The applicant will request a final inspection the division upon receipt of the certificate of completion. No facilities may be placed in service before the final inspection by the division, and authorization to operate the facility is issued in writing by the [~~executive secretary~~]Director.

C. As-built or Record Drawings.

1. Within 30 days of acceptance by the owner of wastewater or industrial waste facilities from the contractor, a copy of such acceptance must be submitted to the division for record.

2. As-built or record drawings clearly showing the as-built project shall be submitted to the [~~executive secretary~~]Director within 120 days after the completion of the construction of the approved project or facilities.

1.11. Operation During Construction

A. Construction-related Bypass. Operation of all existing sewers, pump stations, and treatment plants must continue without interruption during the construction of new facilities or modification of existing facilities. Therefore, bypassing will not be allowed except under extenuating circumstances. If this is not possible and construction will result in the discharge of partially treated and untreated sewage into the surface waters of the state, an approval for such a discharge shall be required from the [~~executive secretary~~]Director before such discharge occurs.

B. Request for a Construction-related Bypass. A formal request for the consideration of a construction-related bypass shall be submitted to the [~~executive secretary~~]Director by the permittee not less than 90 days prior to the date of proposed bypass initiation. Such request shall contain at least the following information:

1. a detailed description of the construction work to be performed which the owner has deemed warrants a bypass;

2. an analysis of all known alternatives which would eliminate or reduce the need for plant bypassing;

3. cost-benefit and effective analysis of alternatives, including an assessment of resource damages;

4. the minimum and maximum duration of bypassing under each alternative;

5. the applicant's preferred alternative for conducting the bypass;

6. the projected date of initiation of bypass.

C. Approval or Denial of a Construction-related Bypass

1. The request for a construction-related bypass will be approved or denied following a thorough review with due consideration of compliance with the discharge permit(s); water quality standards; and all known available and reasonable methods to abate water pollution.

2. An approval issued to permit bypass will contain all restrictions necessary to minimize the duration of bypassing. A denial determination will state the reasons for the denial and will direct the permittee to initiate a plan of action to implement an alternative to bypassing.

1.12. Innovative Processes Evaluation

A. Basic requirements. The [~~executive secretary~~]Director will consider the evaluation of innovative approaches to wastewater treatment in the interest of encouraging advances in technology, processes, equipment and material not covered by this rule, provided that:

1. a favorable recommendation has been made by a professional engineer licensed to practice in Utah, following his own evaluation of developmental processes or equipment or material, for a specific project;

2. the applicant has capital and technical resources to replace or modify developmental processes, equipment and material with conventional processes, equipment and material;

3. the risk incurred with the experimentation rests solely with the proponent of processes, equipment and material as evidenced by the written acknowledgement to the [~~executive secretary~~]Director; and

4. the applicant will replace the failed processes, equipment and material with a proven conventional processes, equipment and material as evidenced by the written acknowledgement to the [~~executive secretary~~]Director.

B. Approval Limitations

1. The [~~executive secretary~~]Director may approve developmental processes, equipment and material may be approved in the form of terms and conditions to a construction permit, when reliable operating data from full scale installations are not available. The term and conditions may include such as, but not necessarily limited to, demonstration period for a successful application, requirements to submit reports on the operation of the system during the experimental period.

2. The [~~executive secretary~~]Director may limit the number of approvals for the same developmental processes,

2.12

equipment and material until reliable and valid operational experience is gained.

C. Evaluation Criteria. The evaluation of innovative processes will include the following factors:

1. anticipated performance of the system in full scale field conditions,

2. ability to consistently meet required effluent and water quality standards,

3. any evidence of equivalence to conventional technology,

4. the owner's ability to finance, and to operate and maintain the system with the level of expertise necessary, and

5. submission of process descriptions, schematics, reports, monitoring and performance data, costs, specific studies, bench scale test data and pilot plant test data, and any other information appropriate and necessary for the evaluation.

R317-3-2. Sewers.

2.1. General. Construction of a new sewer system project may not begin unless the applicant has submitted an engineering report detailing the design, and construction plans to the [~~executive secretary~~]Director for review and approval evidenced by a construction permit. The [~~executive secretary~~]Director will not normally review construction plans for extensions of the existing sewer systems to new areas or replacement of sanitary sewers in the existing sewer systems unless requested or required by state or federal funding programs. Rain water from roofs, streets, and other areas, and ground water from foundation drains must not be allowed to enter the sewer system through planning, design and construction quality assurance and control measures.

2.2. Basis of Design

A. Planning Period. Sewers should be designed for the estimated ultimate tributary population or the 50-year planning period, whichever requires a larger capacity. The [~~executive secretary~~]Director may approve the design for reduced capacities provided the capacity of the system can be readily increased when required. The maximum anticipated capacity required by institutions, industrial parks, etc. must be considered in the design.

B. Sewer Capacity. The required sewer capacity shall be determined on the basis of maximum hourly domestic sewage flow; additional maximum flow from industrial plants; inflow; ground water infiltration; potential for sulfide generation; topography of area; location of sewage treatment plant; depth of excavation; and pumping requirements.

1. Per Capita Flow. New sewer systems shall be designed on the basis of an annual average daily rate of flow of 100 gallons per capita per day (0.38 cubic meter per capita per day) unless there are data to indicate otherwise. The per capita rate of flow includes an allowance for infiltration/inflow. The per capita rate of flow may be higher than 100 gallons per day (0.38 cubic meter per day) if there is a probability of large amounts of infiltration/inflow entering the system.

2. Design Flow

a. Laterals and collector sewers shall be designed for 400 gallons per capita per day (1.51 cubic meters per capita per day).

b. Interceptors and outfall sewers shall be designed for 250 gallons per capita per day (0.95 cubic meter per capita per day), or rates of flow established from an approved infiltration/inflow study.

c. The [~~executive secretary~~]Director will consider other rates of flow for the design if such basis is justified on the basis of supporting documentation.

C. Design Calculations. Detailed computations, such as the basis of design and hydraulic calculations showing depth of flow, velocity, water surface profiles, and gradients shall be submitted with plans.

2.3. Design and Construction Details

A. Minimum Size

1. No gravity sewer shall be of less than eight inches (20 centimeters) in diameter.

2. A 6-inch (15 centimeters) diameter pipe may be permitted when the sewer is serving only one connection, or if the applicant justifies the need for such diameter on the basis of supporting documentation.

B. Depth. Sewers should be sufficiently deep to receive sewage from basements and to prevent freezing. Insulation shall be provided for sewers that cannot be placed at a depth sufficient to prevent freezing.

C. Odor and Sulfide Generation. The design shall incorporate features to control and mitigate odor and sulfide generation in sewers. Such features may include steeper slope to achieve higher velocity, reaeration through induced turbulence, etc.

D. Slope

1. The pipe diameter and slope shall be selected to obtain velocities to minimize settling problems.

2. All sewers shall be designed and constructed to give mean velocities of not less than 2 feet per second (0.61 meter per second), when flowing full, based on Manning's formula using an n value of 0.013.

3. Sewers shall be laid with uniform slope between manholes.

4. Table R317-3-2.3(D)(4) shows the minimum slopes which shall be provided; however, slopes greater than these are desirable.

E. Flatter Slopes. Slopes flatter than those required for the 2-feet-per-second (0.61 meter per second)-velocity criterion when flowing full, may be permitted by the [~~executive secretary~~]Director provided that:

1. there is no other practical alternative;

2. the depth of flow is not less than 30 percent of the diameter at the average design rate of flow;

3. the design engineer has furnished with the report the computations showing velocity and depth of flow corresponding to the minimum, average and peak rates of flow for the present and design conditions in support of the request for variance; and

4. the operating authority of the sewer system submits a written acknowledgement of the ability to provide any additional sewer maintenance required by flatter slopes.

F. Steep Slopes

1. Where velocities greater than 15 feet per second (4.6 meters per second) are attained, special provision shall be made to protect against displacement by erosion and shock.

2. Sewers on 20 percent slopes or greater shall be anchored securely against lateral and axial displacement with suitable thrust blocks, concrete anchors or other equivalent restraints, spaced as follows:

a. Not over 36 feet (11 meters) center to center on grades 20 percent and up to 35 percent;

b. Not over 24 feet (7.3 meters) center to center on grades 35 percent and up to 50 percent;

c. Not over 16 feet (4.9 meters) center to center on grades 50 percent and over.

G. Alignment. Sewers 24 inches (61 centimeters) in diameter or less shall be laid with a straight alignment between manholes. The alignment shall be checked by either using a laser beam or lamping.

H. Changes in Pipe Size. When a smaller sewer joins a large one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

I. Materials

1. The material of pipe selected should be suitable for local conditions. The material of sewer pipe should be compatible with factors such as industrial wastewater characteristics, putrecibility, physical and chemical properties of adjacent soil, heavy external loading, etc.

2. The material of pipe must withstand superimposed loads without any damage. The design of trench widths and depths should allow for loads. Special bedding, concrete cradle or encasement, or other special construction may be used to withstand extraordinary superimposed loading.

2.4. Curved Sewers. Curved sewers are permitted only under circumstances where conventional sewer construction is not feasible. A conceptual approval must be obtained before beginning the design.

A. Design

1. The minimum radius of curvature shall be greater than 200 feet or one-half of the maximum deflection angle for the material of pipe allowed by the manufacturer.

2. The design n value for the sewer pipe shall be 0.018.

3. Only one horizontal curve in the sewer alignment will be allowed between manholes. No vertical curves shall be permitted.

4. Manhole spacing shall not exceed 400 feet (122 meters).

5. Manholes must be provided at the beginning and the end of a curved alignment (i.e. change in radius of curvature).

6. The design should consider increased erosion potential due to high velocities.

B. Other Requirements

1. Maintenance equipment shall be available at all times for inspection and cleaning.

2. Horizontal and vertical alignment of the sewer after the construction must be verified and certified by a registered professional engineer.

a. Accurate record or as-built drawings must be prepared showing the physical location of the pipe in the ground, and submitted to the division in accordance with the requirements of R317-3-1.

2.5. Installation Requirements

A. Standards

1. The technical specifications shall require that installation be in accordance with the requirements based on the criteria, standards and procedures established by:

a. this rule;

b. recognized industry standards and practices as published in their technical publications;

c. the product manufacturer's recommendations and guidance;

d. Uniform Building Code, Uniform Plumbing Code, Uniform Mechanical Code and National Electrical Code;

e. American Society of Testing Materials;

f. American National Standards Institute; and

g. Occupational Safety and Health Administration (OSHA), US Department of Labor or its succeeding agencies.

2. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling thereof so as not to damage the pipe or its joints, impede cleaning operations and future tapping, nor create excessive side fill pressures or ovalation of the pipe, nor seriously impair flow capacity.

B. Identification of Sewer Lines. A clearly labelled tracer location tape shall be placed two feet above the top of sewer lines less than or equal to 24 inch (61 centimeters) in diameter, along its entire length.

C. Deflection Test

1. Deflection test shall be performed on all flexible pipes. The test shall be conducted after the final backfill has been in place at least 30 days.

2. No pipe shall show a deflection in excess of 5 percent.

3. If the deflection test is run using a rigid ball or mandrel, it shall have a diameter equal to 95 percent of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.

D. Joints and Infiltration

1. Joints. The installation procedures of joints and the materials to be used shall be included in the specifications. Sewer joints shall be designed to minimize infiltration and to prevent the entrance of roots throughout the life of the system.

2. Leakage Tests. Procedures for leakage tests shall be specified. This may include appropriate water or low pressure air testing. The leakage outward or inward (exfiltration or infiltration) shall not exceed 200 gallons per inch of pipe diameter per mile per day (0.19 cubic meter per centimeter of pipe diameter per kilometer per day) for any section of the system. An exfiltration or infiltration test shall be performed with a minimum positive head of 2 feet (0.61 meter). The air test, if used, shall, as a minimum, conform to the test procedure described in the American Society of Testing Materials standards. The testing methods selected should take into consideration the range in ground water elevations projected during the test.

E. Inspection

1. The specifications shall include requirements for inspection of manholes for water-tightness prior to placing in service, including television inspection.

2. Records of television inspection shall be retained for future reference.

2.6. Manholes

A. Location. Manholes shall be installed at:

1. the end of each line exceeding 150 feet (46 meters) in length;

2. all changes in grade, size, or alignment;

3. all intersections; and

4. distances not greater than:

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a. 400 feet (120 meters) for sewers 15 inches (38 centimeters) or less; and

b. 500 feet (150 meters) for sewers 18 inches (46 centimeters) to 30 inches (76 centimeters).

5. Distances up to 600 feet (180 meters) may be approved in cases where adequate cleaning equipment for such spacing is provided.

6. Greater spacing may be permitted in larger sewers.

7. Cleanouts shall not be substituted for manholes nor installed at the end of lines greater than 150 feet (46 meters) in length.

B. Drop Type Manholes

1. A drop pipe should be provided for a sewer entering a manhole at an elevation of 24 inches (61 centimeters) or more above the manhole invert. Where the difference in elevation between the incoming sewer and manhole invert is less than 24 inches (61 centimeters), the invert should be filleted to prevent solids deposition.

2. Drop manholes should be constructed with an outside drop connection. If an inside drop connections is necessary, it shall be secured to the interior wall of the manhole and provide access for cleaning.

3. Due to the unequal earth pressures that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in concrete.

C. Diameter. The minimum diameter of manholes shall be 48 inches (1.22 meters); larger diameter manholes are preferable for large diameter sewers. A minimum diameter of 22 inches (56 centimeters) shall be provided for safe access.

D. Flow Channel. The flow channel through manholes should be made to conform in shape and slope to that of the sewers. The depth of flow channels should be up to one-half to three-quarters of the diameter of the sewer. Adjacent floor area should drain to the channel with the minimum slope of 1 inch per foot (8.3 centimeters per meter).

E. Watertightness

1. Manholes shall be of the pre-cast concrete or poured-in-place concrete type. Manholes shall be waterproofed on the exterior.

2. Inlet and outlet pipes shall be joined to the manhole with a gasketed flexible watertight connection arrangement that allows differential settlement of the pipe and manhole wall to take place.

3. Watertight manhole covers shall be used wherever the manhole tops may be flooded by street runoff or high water. Locked manhole covers may be desirable in isolated easement locations or where vandalism may be a problem.

F. Electrical. Electrical equipment installed or used in manholes shall conform to appropriate National Electrical Code requirements.

2.7. Inverted Siphons. Inverted siphons shall consist of at least two barrels, with a minimum pipe size of 6 inches (15 centimeters) with an arrangement to exclude debris and solids. The siphon shall be provided with necessary appurtenances for convenient flushing and maintenance. The manholes shall have adequate clearances for rodding; and in general, sufficient head shall be provided and pipe sizes selected to secure velocities of at least 3.0 feet per second (0.92 meter per second) for average flows. The inlet and outlet details shall be so arranged that the normal flow is diverted to 1 barrel, and that either barrel may be cut out of service for cleaning. The vertical alignment should permit cleaning and maintenance.

2.8. Sewers In Relation To Streams

A. Location of Sewers on Streams

1. The top of all sewers entering or crossing streams shall be at a sufficient depth below the natural bottom of the stream bed to protect the sewer line. In general, the following cover requirements must be met:

a. one foot (30 centimeters) of cover is required where the sewer is located in bedrock;

b. three feet (90 centimeters) of cover is required in other material;

c. cover in excess of 3 feet (90 centimeters) may be required in streams having a high erosion potential; and

d. in paved stream channels, the top of the sewer must be placed below the bottom of the channel pavement.

2. If the proposed sewer crossing will not interfere with the future improvements to the stream channel, then reduced cover may be permitted.

B. Horizontal Location. Sewers shall be located along streams outside of the stream bed and sufficiently removed therefrom to provide for future possible stream widening and to prevent pollution by siltation during construction.

C. Structures. The sewer outfalls, headwalls, manholes, gate boxes, or other structures shall be located so they do not interfere with the free discharge of flood flows of the stream.

D. Alignment

1. Sewers crossing streams should be designed to cross the stream as nearly at right angles to the stream flow as possible, and shall be free from change in grade.

2. Sewer systems shall be designed to minimize the number of stream crossings.

E. Construction

1. Materials. Sewers entering or crossing streams shall be constructed of cast or ductile iron pipe with mechanical joints; otherwise they shall be constructed so they will remain watertight and free from changes in alignment or grade. Material used to backfill the trench shall be stone, coarse aggregate, washed gravel, or other materials which will not cause siltation.

2. Siltation and Erosion. Construction methods that will minimize siltation and erosion shall be employed. The design engineer shall include in the project specifications the method(s) to be employed in the construction of sewers in or near streams to provide adequate control of siltation and erosion. Specifications shall require that cleanup, grading, seeding, and planting or restoration of all work areas shall begin immediately. Exposed areas shall not remain unprotected for more than seven days.

F. Aerial Crossings

1. A carrier pipe shall be provided for all aerial sewer crossings. Support shall be provided for all joints in pipes utilized for aerial crossings. The supports shall be designed to prevent frost heave, overturning and settlement.

2. Precautions against freezing, such as insulation and increased slope, shall be provided. Expansion jointing shall be provided between above-ground and below-ground sewers.

3. The design engineer shall consider the impact of flood waters and debris for aerial stream crossings. The bottom of the

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pipe should be placed below the elevation of twenty-five (25) year flood. Crossings, in no case, shall block the channel.

2.9. Protection of Water Supplies. The applicant must review the requirements stated in R309-112-2 - Distribution System Rules, Drinking Water and Sanitation Rules, to assure compliance with the said rule.

A. Water Supply Interconnections. There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.

B. Relation to Water Mains

1. Horizontal Separation

a. Sewers shall be laid at least 10 feet (3.0 meters) horizontally from any existing water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten foot separation, a deviation may be allowed based on the supportive data from the design engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the sewer is laid:

(1) in a separate trench, or

(2) on an undisturbed earth shelf located on one side of the sewer trench, or

(3) in the sewer trench which has been backfilled and compacted to not less than 95 percent of the optimum density as determined by the ASTM Standard D-690, as amended, and

b. In each of the above cases, the bottom of the water main shall be at least 18 inches (46 centimeters) above the top of the sewer.

2. Crossings. Sewers crossing above water mains shall be laid to provide a minimum vertical distance of 18 inches (46 centimeters) between the outside of the water main and the outside of the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main.

3. Special Conditions. When it is impossible to obtain proper horizontal and vertical separation as stated above, the sewer shall be designed and constructed of cast iron, ductile iron, galvanized steel or protected steel pipe with mechanical joints for the minimum distance of 10 feet on either side of the point of crossing. The design engineer may use other types of joints if equivalent joint integrity is demonstrated. The lines shall be pressure tested to assure watertightness before backfilling.

R317-3-3. Sewage Pumping Stations.

3.1. General. Sewage pumping station structures, and electrical and mechanical equipment shall be protected from physical damage that would be caused by a 100-year flood. Sewage pumping stations must remain fully operational and accessible during a 25-year flood.

3.2. Design

A. Pumping Rates. The pumps and controls of main pumping stations, and especially pumping stations pumping to the treatment works or operated as part of the treatment works, should be selected to operate at varying delivery rates to permit discharging sewage at approximately its rate of delivery to the pump station.

B. System - Head Calculation

1. The design engineer shall submit system-head calculations and curves. System-head curves for C values of 100, 120 and 140 in the Hazen William's equation for calculating head loss corresponding to minimum, median and maximum water levels shall be developed.

2. A system-head curve for C value of 120 corresponding to median (normal operating) water level shall be used to make preliminary selection of motor and pump. The pump and motor must operate satisfactorily over the entire range of system-head curves for C values of 100 and 140 corresponding to minimum and maximum water levels intersected by the head-discharge relationship of a given pump.

3. Pumps and motors shall be sized for the 10-year peak flows; preferably the 20-year sewage flow requirements. These operating points shall be shown on the system-head curves.

C. Accessibility. The pumping station shall be readily accessible by maintenance vehicles during all weather conditions. The facility should be located off the traffic way of streets and alleys.

D. Grit. Where it is necessary to pump sewage before grit removal, the design of the wet well and pump station piping shall be such that operational problems from the accumulation of grit are avoided.

E. Odor and Corrosion Control. The pumping station design should incorporate measures for:

1. mitigating the effects of sulfide corrosion to structure and equipment; and

2. effective odor control when a populated area is within close proximity.

F. Structures

1. Dry wells, including their superstructure, shall be completely separated from the wet well.

2. Provision shall be made to facilitate maintenance and removal of pumps, motors, and other mechanical and electrical equipment.

3. Safe means of access and proper ventilation shall be provided to dry wells and to wet wells containing either bar screens or mechanical equipment requiring inspection or maintenance.

a. For built-in-place pump stations, a stairway with rest landings shall be provided at vertical intervals not to exceed 12 feet (3.7 meters). For factory-built pump stations over 15 feet (4.6 meters) deep, a rigidly fixed landing shall be provided at vertical intervals not to exceed 10 feet (3.0 meters). Where a landing is used, a suitable and rigidly fixed barrier shall be provided to prevent an individual from falling past the intermediate landing to a lower level.

b. Where space requirements are insufficient, the design may provide for a manlift or elevator in lieu of landings in a factory-built station if the design includes an emergency access or exit.

c. Local, state and federal safety requirements, including those in applicable fire code, the Uniform Building Code, etc., must be reviewed and complied with. Those requirements, if more stringent than the ones stated above, shall be incorporated in the design.

4. Construction Materials. The materials selected in construction and installation must be safe and able to withstand adverse operating environmental conditions caused by presence of

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hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in sewage.

3.3. Pumps and Pneumatic Ejectors

A. Multiple Units

1. At least two pumps or pneumatic ejectors shall be provided. A minimum of three pumps shall be provided for stations handling flows greater than 1 million gallons per day (3,785 cubic meters per day).

2. If only two units are provided, they should have the same capacity. Each shall be capable of handling flows in excess of the expected maximum flow. Where three or more units are provided, they should be designed to fit actual flow conditions and must be of such capacity that with any one of the largest units out of service, the remaining units shall have capacity to handle maximum sewage flows.

B. Protection Against Clogging

1. Pumps handling sewage from 30 inch (76 centimeters) or larger diameter sewers shall be protected by readily accessible bar racks from clogging or damage.

2. Bar racks should have clear openings not exceeding 1-1/2 inches (6.4 centimeters). The design shall provide for a mechanical hoist.

3. The design engineer shall consider installation of mechanically cleaned and duplicate bar racks in the pumping stations handling larger than five million gallons per day (18,900 cubic meters per day) rate of flow.

4. Small pumping stations pumping less than one million gallons per day (3,785 cubic meters per day) shall be equipped with bar racks or inline grinding devices, etc., to prevent clogging.

C. Pump Openings. Except where grinder pumps are used, pumps shall be capable of passing spheres of at least 3 inches (7.6 centimeters) in diameter, and pump suction and discharge piping shall be at least 4 inches (10.2 centimeters) in diameter.

D. Priming. The pump shall be so placed that it will operate under a positive suction head under normal operating conditions, except for submersible pumping stations.

E. Electrical Equipment. Electrical systems and components (e.g., motors, lights, cables, conduits, switchboxes, and control circuits) in raw sewage wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, shall comply with the National Electrical Code requirements for Class 1 Group D, Division 1 locations. In addition, equipment located in the wet well shall be suitable for use under corrosive conditions. Each flexible cable shall be provided with watertight seal and separate strain relief. A fused disconnect switch located above ground shall be provided for all pumping stations. When such equipment is exposed to weather, it shall as a minimum, meet the requirements of weatherproof equipment (NEMA 3R).

F. Intake. Each pump should have an individual intake. Turbulence should be avoided near the intake in wet wells. Intake piping should be as straight and short as possible.

G. Dry Well Dewatering. A separate sump pump equipped with dual check valves shall be provided in dry wells to remove leakage or drainage. Discharge shall be located as high as possible. A connection to the pump suction is also recommended as an auxiliary feature. Water ejectors connected to a potable water supply will not be approved. All floor and walkway surfaces should have an adequate slope to a point of drainage. Pump seal water shall be piped to the sump.

H. Controls

1. Type. Control systems for liquid level monitoring shall be of the air bubbler type, the capacitance type, the encapsulated float type, or the non-contact type. The selection of type of controls must be based on wastewater characteristics and other site related conditions. The [~~executive secretary~~]Director may approve the existing float-tube control systems on pumping stations being upgraded. The electrical equipment shall comply with the National Electrical Code requirements for Class I, Group D, Division 1 locations.

2. Location. The level control system shall be located away from the turbulence of incoming flow and pump suction.

3. Alternation. The design engineer must consider automatic alternation of the sequencing of pumps in use.

I. Valves

1. Suction Line. An isolation valve shall be placed on the suction line of each pump except on submersible pumps.

2. Discharge Line

a. Isolation and check valves shall be placed on the discharge line of each pump. The check valve shall be located between the isolation valve and the pump.

b. Check valves shall not be placed in the vertical run of discharge piping unless the valve is designed for that specific application.

c. Ball valves may be permitted in the vertical runs.

d. All valves shall be suitable for the material being handled, and capable of withstanding normal operating pressure and water hammer.

e. Where limited pump backspin will not damage the pump and low discharge head conditions exist, a short individual force main for each pump, may be approved by the [~~executive secretary~~]Director in lieu of a discharge manifold.

3. Location. Valves shall not be located in wet well. They shall be located in a dry well adjacent to the pumps or in an adjacent isolated pit appropriately protected from physical, weather or freezing damage, with proper access for operation and maintenance.

J. Wet Wells

1. Divided Wells. Wet well should be divided into multiple sections, properly interconnected, to facilitate repairs and cleaning, and non-turbulent hydraulic operating condition to each pump inlet.

2. Size. The wet well size and level control settings shall be appropriate to avoid heat buildup in the pump motor due to frequent starting (short cycling), and septic conditions due to excessive detention time.

3. Floor Slope. The wet well floor shall have a minimum slope of one to one to the hopper bottom. The horizontal area of the hopper bottom shall be not greater than necessary for proper installation and function of the pump inlet.

K. Ventilation. All pump stations must be ventilated to maintain safe operating environment. Where the pump pit is below the ground surface, mechanical ventilation is required, so arranged as to independently ventilate the dry well and the wet well if screens or mechanical equipment requiring maintenance or inspection are located in the wet well. There shall be no interconnection between

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the wet well and dry well ventilation systems. In pits over 15 feet (4.6 meters) deep, multiple inlets and outlets are recommended. Dampers should not be used on exhaust or fresh air ducts. Fine screens or other obstructions in air ducts should be avoided to prevent clogging. Switches for operation of ventilation equipment should be marked and located for convenient operation from outside of the enclosed environment. All intermittently operated ventilating equipment shall be interconnected with the respective pit lighting system. Automatic controls are recommended for intermittently ventilated pump stations. Fan parts should be of non-corrosive material. All parts adjacent to moving ones should be of non-sparking materials. Consideration should be given to installation of automatic heating and dehumidification equipment.

1. Wet Wells. Ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least 12 complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Ventilating equipment should force air into wet well rather than exhaust it from wet well.

2. Dry Wells. Ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least 6 complete air changes per hour; if intermittent, at least 30 complete air changes per hour.

L. Flow Measurement. Continuous measuring and recording of sewage flow shall be provided at all pumping stations with a design pumping capacity greater than one million gallons per day (3,785 cubic meters per day).

M. Water Supply. There shall be no physical connection between any potable water supply and a sewage pumping station which under any condition might cause contamination of the potable water supply. The potable water supply to a pumping station shall be protected against cross connection or backflow.

3.4. Self-Priming Pumps. Self-priming pumps shall be capable of rapid priming and repriming at the lead pump on elevation. Such self-priming and repriming shall be accomplished automatically under design operating conditions. Suction piping should not exceed the size of the pump suction and shall not exceed 25 feet (7.6 meters) in total length. Priming lift at the lead pump on elevation shall include a safety factor of at least 4 feet (1.2 meters) from the maximum allowable priming lift for the specific equipment at design operating conditions. The combined total of dynamic suction lift at the pump off elevation and required net positive suction head at design operating conditions shall not exceed 22 feet (6.7 meters).

3.5. Submersible Pump Stations. Submersible pump stations may be used for flows less than 0.25 million gallons per day (946 cubic meters per day). The [~~executive secretary~~]Director may approve submersible pump stations for flows greater than 0.25 million gallons per day (946 cubic meters per day), based on operational, reliability and maintenance considerations. The submersible pumps stations shall meet the design requirements stated above, except as modified in this section.

A. Construction. Submersible pumps and motors shall be designed specifically for raw sewage use, including totally submerged operation during a portion of each pumping cycle. An effective method to detect shaft seal failure or potential seal failure shall be provided, and the motor shall be of squirrel-cage type design without brushes or other arc-producing mechanisms.

B. Pump Removal. Submersible pumps shall be readily removable and replaceable without dewatering the wet well or disconnecting any piping in the wet well.

C. Electrical

1. Power Supply and Control. Electrical supply, control and alarm circuits shall be designed to allow for disconnection of the equipment from outside and inside of pumping station. Terminals and connectors shall be protected from corrosion by location outside of wet well or through use of watertight seals. If located outside of the pumping station, weatherproof equipment shall be used.

2. Controls. The motor control center shall be located outside of the wet well and be protected by a conduit seal or other appropriate measures meeting the requirements of the National Electrical Code, to prevent the atmosphere of the wet well from gaining access to the control center. The seal shall be so located that the motor may be removed and electrically disconnected without disturbing the seal.

3. Power Cord. Pump motor power cords shall be designed for flexibility and serviceability under severe service conditions and shall meet the requirements of the Mine Safety and Health Administration for trailing cables. Ground fault interruption protection shall be used to deenergize the circuit in the event of any failure in the electrical integrity of the cable. Power cord terminal fittings shall be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, shall be provided with strain relief appurtenances, and shall be designed to facilitate field connecting.

3.6. Valves. Valves shall be located in a separate valve pit. Accumulated water shall be drained to the wet well or the soil. If the valve pit is drained to the wet well, an effective method shall be provided to prevent sewage gases and liquid from entering the pit during surcharged wet well conditions.

3.7. Alarm Systems.

A. Alarm systems shall be provided for pumping stations. The alarm shall be activated in cases of power failure, high water level in dry or wet well, pump failure, use of the lag pump, air compressor failure, or any other pump malfunction.

B. Pumping station alarms shall be telemetered, including identification of the alarm condition, to the operating agency's facility that is manned 24 hours a day. If such a facility is not available and 24-hour holding capacity is not provided, the alarm shall be telemetered to the operating agency's facility during normal working hours and to the home of the person(s) responsible for the lift station during off-duty hours.

C. The [~~executive secretary~~]Director may approve audio-visual alarm systems with a self-contained power supply in lieu of the telemetering system outlined above, depending upon location, station holding capacity and inspection frequency.

3.8. Emergency Operation

A. Pumping stations and collection systems shall be designed to prevent bypassing of raw sewage and backup into the sewer system. For use during possible periods of extensive power outages, mandatory power reductions, or uncontrolled storm events, a controlled high-level wet well overflow or emergency power generator shall be provided. Where a high level overflow is utilized, storage or retention tanks, or basins, shall be provided having at least a 2-hour retention capacity at the anticipated overflow rate.

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B. The applicant must review the requirements of R317-6 (Ground Water Quality Protection Rule) for compliance with the said rule for earthen retention basins.

C. The operating agency shall provide:

1. an in-place or portable pump, driven by an internal combustion engine or an emergency generator capable of pumping from the wet well to the discharge side of the station for pump stations with a capacity in excess of one million gallons per day (3,785 cubic meters per day), and

2. an engine-driven generating equipment or an independent source of electrical power or emergency generators capable of pumping from the wet well to the discharge side of the station for pump stations with a capacity in excess of five million gallons per day (18,925 cubic meters per day).

3.9. Auxiliary and Emergency Equipment Requirements

A. General. The following general requirements shall apply to all internal combustion engines used to drive auxiliary pumps, service pumps through special drives, or electrical generating equipment.

1. Engine Protection. The engine must be protected from damaging operating conditions. Protective equipment shall shut down the engine and activating an alarm on site unless continuous manual supervision is planned. Protective equipment shall monitor for conditions of low oil pressure and overheating, Oil pressure monitoring is not required for engines with splash lubrication.

2. Size. The engine shall have adequate rated power to start and continuously operate all connected loads.

3. Fuel Type. The type of fuel must be carefully selected for maintaining reliability and ease of starting, especially during cold weather conditions. Unused fuel from the fuel storage tank should be removed annually, and the tank refilled with fresh fuel.

4. Engine Ventilation. The engine shall be located above grade with adequate ventilation of fuel vapors and exhaust gases.

5. Routine Start-up. All emergency equipment shall be provided with instructions indicating the need for regular starting and running of such units at full loads.

6. Protection of Equipment. Emergency equipment shall be protected from damage at the restoration of regular electrical power.

B. Engine-Driven Pumping Equipment. Where permanently installed or portable engine-driven pumps are used, the following requirements in addition to general requirements apply:

1. Pumping Capacity. Engine-driven pump(s) shall be capable of pumping at the design pumping rates unless storage capacity is available for flows in excess of pump capacity. Pumps shall be designed for anticipated operating conditions, including suction lift if applicable.

2. Operation. Provisions shall be made for automatic and manual start-up and load transfer. The pump must be protected against damage from adverse operating conditions. Provisions should be considered to allow the engine to start and stabilize at operating speed before assuming the load. Where manual start-up and transfer is justified, storage capacity and alarm system must meet the requirements stated hereinabove.

3. Portable Generating Equipment. Where portable generating equipment or manual transfer of power to the pumping equipment is provided, sufficient storage capacity shall be provided in the design of pumping station, to allow time for detection of pump station failure and transportation and connection of generating equipment. The use of special electrical connections and double throw switches are recommended for connecting portable generating equipment.

3.10. Instructions and Equipment

A. Sewage pumping stations and their operators must be supplied with a complete set of operational instructions, including emergency procedures, maintenance schedules, special tools, and necessary spare parts.

B. Local, state and federal safety requirements, including those in applicable fire code, the Uniform Building Code etc., must be reviewed and complied with. Those requirements take precedence over the foregoing requirements, if more stringent, and should be incorporated in the design.

3.11. Force Mains

A. Velocity. A velocity of not less than 2 feet per second (0.61 meter per second) shall be maintained at the average design flow, to avoid septic sewage and resulting odors.

B. Air Relief Valve. An automatic air relief valve shall be placed at high points in the force main to prevent air locking.

C. Termination. Force mains should enter the gravity sewer system at a point not more than 2 feet (30 centimeters) above the flow line of the receiving manhole.

D. Design Pressure. The force main and fittings, including reaction blocking, shall be designed to withstand normal pressure and pressure surges (water hammer).

E. Special Construction. Force main construction near streams or used for aerial crossings shall meet the requirements stated in Sewers.

F. Design Friction Losses

1. Friction losses through force mains shall be based on the Hazen and Williams formula or other hydraulic analysis to determine friction losses. When the Hazen and Williams formula is used, the design shall be based on the value of C equal to 120; for unlined iron or steel pipe the value of C equal to 100 shall be used.

2. When initially installed, force mains will have a significantly higher C factor. The higher C factor should be considered only in calculating maximum power requirements.

G. Separation from Water Main. The applicant or the design engineer must review the requirements stated in R309-112.2 - Distribution System rules, Drinking Water and Sanitation Rules, to assure compliance with the said rule.

H. Identification. A clearly labelled tracer location tape shall be placed two feet above the top of force mains less than or equal to 24 inch (61 centimeters) in diameter, along its entire length.

R317-3-4. Treatment Works.

4.1. Plant Location

A. The treatment plant structures and all related equipment shall be protected from physical damage by the 100-year flood. Treatment works must remain fully operational and accessible during the 25-year flood.

B. These conditions shall apply to all new facilities under construction as well as the existing facilities being expanded, upgraded or modified.

4.2. Quality of Effluent. The effluent requirements and water quality standards established in the discharge permit, R317-1 (Definitions and General Requirements), R317-2 (Standards of Quality for Waters of the State) shall be used to determine the

required degree of wastewater treatment, and unit processes and operations.

4.3. Design

A. Basis of Design. The plant design shall be based on the higher value of:

1. a moving average of daily rates of flow and wastewater strength as measured by five-day biochemical oxygen demand (BOD_5) and suspended solids determination tests over a period of 30 consecutive days; or

2. an average of values rate of flow and wastewater strength as measured by five-day biochemical oxygen demand (BOD_5) and suspended solids determination tests, over a period of month; or

3. the rate of flow and wastewater strength as measured by five-day biochemical oxygen demand (BOD_5) and suspended solids determination tests, equal to or greater than 92 percent of the daily flow rate and wastewater strength data.

B. Hydraulic Design. The hydraulic capacities of all units and conveyance structures shall be computed and checked for the maximum and average design rates of flow with one largest unit out of service. No overtopping of any structure under any condition shall be permitted.

1. New Systems. The design for sewage treatment plants shall be based upon an average daily per capita flow of 100 gallons (0.38 cubic meter) unless the applicant provides and justifies a better estimate of flow based on water use data. An allowance shall be made in the design for industrial wastewaters and rates of infiltration/inflow.

2. Existing Systems. For an existing system, the applicant may use the data based on both dry-weather and wet-weather conditions. The data over a minimum period of one year shall be taken as the basis for the design.

C. Organic Design

1. New System Design

a. Domestic waste treatment design shall be on the basis of at least 0.17 pounds (0.08 kilogram) or 200 milligrams per liter of BOD_5 per capita per day and 0.20 pounds (0.09 kilogram) or 250 milligrams per liter of suspended solids per capita per day, unless information is submitted to justify alternate designs.

b. When garbage grinders are used in areas tributary to a domestic treatment plant, the design basis may be increased to 0.22 pounds (0.10 kilogram) or 260 milligram per liter of BOD_5 per capita per day and 0.25 pounds (0.11 kilogram) or 300 milligram per liter of suspended solids per capita per day.

c. An allowance shall be made in the design for industrial wastewaters and rates of infiltration/inflow.

d. Other approved methods for measurement of organic strength of wastewater published in Standard Methods for Examination of Water and Wastewater, jointly prepared by American Public Health Association (APHA), American Society of Civil Engineers (ASCE), American Water Works Association (AWWA), and Water Pollution Control Federation (WPCF), will be accepted in lieu of the five-day biochemical oxygen demand (BOD_5) test.

2. Existing Systems

a. For an existing system, the applicant may use the data based on the actual strength of the wastewater as determined by analysis of composite samples for five-day biochemical oxygen demand (BOD_5) and suspended solids. An appropriate increment for growth shall be included in the basis of design.

b. The data over a minimum period of one year shall be taken as the basis for the design.

D. Shock Loadings. The applicant shall consider the shock loadings of high concentrations and diurnal peaks for short periods of time on the treatment process, particularly for small treatment plants.

E. Design by Analogy. The applicant may utilize the data from similar municipalities in the case of new systems, provided that the reliability and applicability of such data is established through thorough investigations and documentation.

F. Flow Conduits. All piping and channels shall be designed to carry the maximum rates of flows. The incoming sewer shall be designed for unrestricted flow. Bottom corners of the channels must be filleted. Conduits shall be designed to avoid creation of pockets and corners where solids can accumulate. Suitable gates shall be placed in channels to seal off unused sections which might accumulate solids. The use of shear gates or stop planks is permitted where they can be used in place of gate valves or sluice gates. Corrosion resistant materials shall be used for these control gates.

G. Arrangement of Process Units. The design should provide for an arrangement of component parts of the plant, for greatest operating and maintenance convenience, reliability flexibility, economy, continuity of maximum effluent quality, and ease of installation of future units.

H. Flow Division Control. The design shall provide for flow division control facilities to insure organic and hydraulic loading control to various process units. Convenient, easy and safe access, change, observation, and maintenance shall be considered in the design of such facilities. Flow division shall be measured using flow measurement devices to assure uniform loading of all unit processes and operations.

4.4. Plant Design Details

A. Mechanical Equipment. The specifications should provide for:

1. services of a representative of the manufacturer to supervise the installation and initial operation of major items of mechanical equipment; and

2. performance tests of the installed equipment before acceptance by the applicant.

B. Unit Bypasses

1. A minimum of two units in the liquid treatment process train shall be provided for all unit processes and operations in all plants rated at over 1 million gallons per day (3,785 cubic meters per day).

2. The [~~executive secretary~~]Director will approve any exceptions based on reliability and operability of the components.

3. The design shall provide for properly located and arranged bypass structures and piping so that each unit of the plant can be removed from service independently. The bypass design shall facilitate plant operation during unit maintenance and emergency repair so as to minimize deterioration of effluent quality and insure rapid process recovery upon return to normal operational mode.

C. Unit Bypass During Construction. Any bypass during construction or operation must be approved by the [~~executive~~

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~~secretary~~]Director before such bypass occurs, as provided in this rule.

D. Drains. The design shall incorporate means to completely drain each unit with a discharge to a point within the process or the plant.

E. Protection of Structures. The design shall incorporate hydrostatic pressure relief devices to prevent flotation of structures.

F. Pipe Cleaning and Maintenance. Fittings, valves, and other appurtenances shall be provided for pipes subject to clogging, to facilitate proper cleaning through mechanical cleaning or flushing. Pipes subject to clogging, such as pipes carrying sludge, shall be lined with a material which creates a smooth and nonadhering surface, thereby reducing clogging and resistance to flow.

G. Construction Materials. The materials of construction and equipment shall be resistant to hydrogen sulfide and other corrosive gases, greases, oils, chemicals, and similar constituents frequently present in sewage. This is particularly important in the selection of metals and paints. Contact between dissimilar metals should be avoided to minimize galvanic action, and consequent corrosion.

H. Painting

1. Piping within the plant shall be color coded to facilitate identification of piping, particularly in the plants rated over 5 million gallons per day (18,925 cubic meters per day). Table R317-3-4.4(H)(1) shows color and identification scheme recommended by the American National Standards Institute (ANSI 253.1 and 13.1) shall be used for the purposes of standardization.

2. The labels shall be stenciled in conformance with the ANSI standard A13.1.

3. The [~~executive secretary~~]Director may approve painting of piping with one color with a labelling scheme in conformance with the ANSI standard A13.1 provided that:

a. labels are color coded as directed above;

b. piping contents and direction of flow are legibly stenciled on the label; and

c. labels are securely on the piping at interval and all locations required in the above referenced standard.

I. Operating Equipment. A complete outfit of tools, accessories, and spare parts necessary for the plant operator's use should be provided. Readily-accessible storage space and workbench facilities should be provided, and consideration be given to provision of a garage for large equipment storage, maintenance, and repair.

J. Erosion Control During Construction. Effective site erosion control shall be provided during construction.

K. Grading and Landscaping. The site should be graded and landscaped upon completion of the plant. Concrete or gravel walkways should be provided for access to all units. Steep slopes should be avoided to prevent erosion. Surface water shall not be permitted to drain into any unit. Particular care shall be taken to protect all treatment plant components from storm water runoff.

4.5. Plant Outfall Lines

A. Discharge Impact Control. The outfall sewer shall be designed to discharge to the receiving stream in a manner not to impair the beneficial uses of the receiving stream and acceptable to the [~~executive secretary~~]Director. The outfall design should provide for:

1. Free fall or submerged discharge at the site selected;

2. Cascading of effluent to increase dissolved oxygen concentration in the effluent; and

3. Limited or complete dispersion of discharge across stream to minimize impact on aquatic life movement, and growth in the immediate reaches of the receiving stream; and

B. Protection and Maintenance. The outfall sewer shall be so constructed and protected against the effects of floodwater, ice, or other hazards as to reasonably insure its structural stability and freedom from stoppage.

C. Sampling Provisions. All outfall lines shall be designed with a safe and convenient access, preferably using a manhole, so that a sample of the effluent can be obtained at a point after the final treatment process, and before discharge to or mixing with the receiving waters.

4.6. Essential Facilities

A. Emergency Power Facilities

1. General. All plants shall have an alternate source of electric or mechanical power to allow continuity of operation during power failures. Methods of providing alternate sources include:

a. provision of at least two independent sources of power, such as feeders, grid, etc., to the plant;

b. portable or in-place internal combustion engine equipment which will generate electrical or mechanical energy; or

c. portable pumping equipment when only emergency pumping is required.

2. Power for Aeration. Standby power generating capacity normally is not required for aeration equipment used in the activated sludge type processes or aerated lagoons. In cases where a history of long-term (4 hours or more) power outages have occurred, auxiliary power for minimum aeration of the activated sludge type processes or aerated lagoon will be required. Full power generating capacity may be required when discharge is to critical stream segments to protect downstream uses identified in R317-2 (Standards for Quality for Waters of the State).

3. Power for Disinfection. Standby power generating capacity shall include the capacity needed for continuous disinfection of wastewater during power outages.

B. Plant Water Supply

1. General. An adequate supply of potable water under pressure should be provided for use in the laboratory and for general cleanliness around the plant. No piping or other connections shall exist in any part of the treatment works which, under any conditions, might cause the contamination of a potable water supply. The chemical quality of the water should be checked for suitability for its intended uses such as in heat exchangers, chlorinators, etc.

2. Direct Connections

a. Potable water from a municipal or separate supply may be used directly at points above grade for hot and cold supplies in lavatory, water closet, laboratory sink (with vacuum breaker), shower, drinking fountain, eye wash fountain, and safety shower; unless local authorities require a positive break at the property line.

b. The applicant must review the requirements stated in R309-112.2 - Distribution System Rules, Drinking Water and Sanitation Rules, to assure compliance with the said rule.

c. Hot water for any of the above units shall not be taken directly from a boiler or piping used for supplying hot water to a sludge heat exchanger or digester heating unit.

3. Indirect Connections

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a. Where a potable water supply is used for any purpose in a plant, a break tank, pressure pump, and pressure tank shall be provided. Water shall be discharged to the break tank through an air gap at least 6 inches (15.2 centimeters) above the maximum flood line or the spill line of the tank, whichever is higher.

b. A sign shall be permanently posted at every hose bib, faucet, hydrant, or sill cock located on the water system beyond the break tank to indicate that the water is not safe for drinking.

4. Separate Potable Water Supply. Where it is not possible to provide potable water from a public water supply, a separate well may be provided. Location and construction of the well shall be in accordance with the requirements of R309, Drinking Water and Sanitation Rules.

5. Separate Non-Potable Water Supply. Where a separate non-potable water supply or plant effluent is to be provided, a break tank will not be necessary, but all system outlets shall be posted with a permanent sign indicating the water is not safe for drinking.

C. Sanitary Facilities. Toilet, shower, lavatory, and locker facilities shall be provided in convenient locations to serve the expected staffing level at the plant.

D. Floor Slope. All floor surfaces shall be sloped adequately to a collection floor drain system.

E. Stairways

1. Stairways shall be installed wherever possible in lieu of ladders. Spiral or winding stairs are permitted only for secondary access where dual means of egress are provided. Stairways shall have slopes between 50 degrees and 30 degrees (preferably nearer the latter) from the horizontal to facilitate carrying samples, tools, etc. Each tread and riser shall be of uniform dimension in each flight. Minimum tread run shall not be less than 8 inches (20.3 centimeters). The sum of the tread run and riser shall not be less than 17 inches (43 centimeters) nor more than 18 inches (46 centimeters). A flight of stairs shall consist of not more than a 12-foot (3.7 meters) continuous rise without a platform.

2. Local, state and federal safety requirements, including those in applicable fire code, the Uniform Building Code, etc., must be reviewed and complied with. Those requirements take precedence over the foregoing requirements, if more stringent, and should be incorporated in the design.

4.7. Flow Measurement. Flow measurement devices, preferably of the primary type (devices which create a hydrodynamic condition that is sensed by the secondary element), shall be provided at the plant to continuously indicate, totalize and record volume of wastewater entering the plant in a unit time.

A. Flumes. Installation of flumes shall be as follows:

1. Flumes with throat widths of less than 6 inches (15 centimeters) shall not be installed. Throat width shall be selected to measure the entire range of anticipated flow rates at all measurement locations.

2. Locations close to turbulent, surging or unbalanced flow, or a poorly distributed velocity pattern shall be avoided. For super-critical upstream flow, a hydraulic jump should be forced to occur in a section upstream of the flume at a distance of at least 30 times maximum upstream operating depth of flume followed by a straight approach section of a length specified in this rule.

3. For flumes with throat width less than half the width of the approach channel, the length of approach channel - straight upstream section - shall be the greater of 20 times the throat width or ten times maximum upstream operating depth in flume.

4. For flumes with throat width greater than half the width of the approach channel, the length of approach channel - straight upstream section - shall be not less than ten times the maximum upstream operating depth in flume.

5. Parshall flumes shall be permitted only in locations where free discharge conditions exists on the downstream side at the average design flow. Submergence must not exceed 60 percent at the maximum design flow.

6. The stilling well, if used, and secondary measuring elements, such as floats, sensors, or gages, shall be protected against extreme weather conditions.

B. Other Flow Measurement Devices. Effluent discharged to receiving waters should be measured using flow measurement devices, such as weirs, sonic or capacitance type, etc.

C. Flow Recorders

1. Clock-wound mechanisms for recording of flow are not permitted.

2. Battery powered flow measurement devices may be permitted at locations where electrical power is not available, and continuous operability of flow measurement devices is demonstrated.

4.8. Safety and Hazardous Chemical Handling. Adequate provision shall be made to effectively protect the operator and visitors from hazards. Local, state and federal safety requirements must be reviewed and complied with. Typical items for consideration are fence, splash guards, hand and guard rails, labeling of containers and process piping, warning signs, protective clothing, first aid equipment, containments, eye-wash fountains and safety showers, dust collection, portable emergency lighting, etc.

4.9. Laboratory.

A. Treatment plants rated in excess of 1 million gallons per day (3,785 cubic meters per day) shall include a laboratory for making the necessary analytical determinations and operating control tests. Otherwise, the applicant shall show availability of services of state-certified laboratories on a continuous contract basis.

B. The laboratory size, bench space, equipment and supplies shall be such that it can perform analytical work for:

1. All self-monitoring parameters required by discharge permits;

2. The process control necessary for good management of each treatment process included in the design; and

3. Industrial waste control or pretreatment programs.

R317-3-7. Biological Treatment.

7.1. Trickling Filters

A. General. Trickling filters shall be preceded by effective settling tanks equipped with scum and grease collecting devices, or other suitable pretreatment facilities.

B. Hydraulics

1. Distribution. The sewage may be distributed over the filter by rotary distributors or other suitable devices which will ensure uniform wastewater distribution to the surface area. Uniform hydraulic distribution of sewage on the filters is required.

2. For reaction type distributors, a minimum head of 24 inches (61 centimeters) between low water level in the siphon chamber and center of the arms is required. Similar allowance in design shall be provided for added pumping head requirements

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where pumping to the reaction type distributor is used. The applicant should evaluate other types of drivers and drives.

3. A minimum clearance of 6 inches (15 centimeters) between media and distributor arms shall be provided. Larger clearance than 6 inches (15 centimeters) must be provided where ice buildup may occur.

C. Wastewater Application. Application of the sewage shall be continuous. The piping system shall be designed for recirculation. The design must provide for routine flushing of filters by heavy dosing at intermittent intervals.

D. Piping System. The piping system, including dosing equipment and distributor, shall be designed to provide capacity for the peak design rate of flow, including recirculation.

E. Media

1. Quality

a. The media may be crushed rock, slag, or specially manufactured material. The media shall be durable, resistant to spalling or flaking and insoluble in sewage. The top 18 inches (46 centimeters) shall have a loss by the 20-cycle, sodium sulfate soundness test of not more than 10 percent. The balance is to pass a ten-cycle test using the same criteria. Slag media shall be free from iron.

b. Manufactured media shall be resistant to ultraviolet degradation, disintegration, erosion, aging, all common acids and alkalies, organic compounds, and fungus and biological attack. Such media shall be structurally capable of supporting a man's weight or a suitable access walkway shall be provided to allow for distributor maintenance.

2. Depth. The filter design shall provide for a depth of:

a. not less than 5 feet (1.5 meters) above the underdrains, but not more than 10 feet (3 meters) when rock or slag media is used in the filters.

b. not less than 10 feet (3 meters) above the underdrains to provide adequate contact time with the wastewater, but not more than 30 feet (9 meters) unless additional structural construction and aeration are provided, when manufactured media is used in the filters.

3. Size and Grading of Media

a. Rock, Slag and Similar Media

(1) Rock, slag, and similar media shall not contain more than 5 percent by weight of pieces whose longest dimension is three times the least dimension.

(2) Media shall be free from thin, elongated and flat pieces, dust, clay, sand or fine material and shall conform to the size and grading when mechanically graded over vibrating screens with square openings, as shown in Table R317-3-7.1(E)(3(a)(2).

b. Manufactured Media. The applicant must evaluate suitability of manufactured media on the basis of experience with installations handling similar wastes and loadings.

c. Handling and Placing of Media. Material delivered to the filter site shall be stored on wood-planked or other approved clean, hard-surfaced areas. All material shall be rehandled at the filter site and no material shall be dumped directly into the filter. Crushed rock, slag and similar media shall be washed and rescreened or forked at the filter site to remove all fines. Such material shall be placed by hand to a depth of 12 inches (30 centimeters) above the tile underdrains. The remainder of material may be placed by means of belt conveyors or equally effective methods approved by the design engineer. All material shall be carefully placed so as not to damage the underdrains. Manufactured media shall be handled and placed as approved by the engineer. Trucks, tractors, and other heavy equipment shall not be driven over the filter during or after construction.

F. Underdrain System

1. Arrangement. Underdrains with semicircular inverts or equivalent should be provided and the underdrainage system shall cover the entire floor of the filter. Inlet openings into the underdrains shall have an unsubmerged gross combined area equal to at least 15 percent of the surface area of the filter.

2. Hydraulic Capacity and Ventilation.

a. The underdrains shall have a minimum slope of 1 percent. Effluent channels shall be designed to produce a minimum velocity of two (2) feet per second (0.61 meters per second) at average daily rates of application to the filter.

b. The underdrainage system, effluent channels, and effluent pipe shall be designed to permit a free passage of air preventing septicity within the filter. The size of drains, channels, and pipe should be such that not more than 50 percent of their cross-sectional area will be submerged under the design peak hydraulic loading, including proposed or possible future recirculated flows. Forced air ventilation must be provided for deep or covered filters using manufactured media. The design of filters should be compatible for the installation of odor control equipment such as covers, forced air ventilation, scrubber, etc., as a retrofit.

3. Flushing. The design should include means for flushing of the underdrains. In small filters, use of a peripheral head channel with vertical vents is acceptable for flushing purposes. Means or facilities of inspection of underdrainage should be provided.

G. Special Features

1. Flooding. Appropriate valves, sluice gates, or other structures shall be provided to enable flooding of filters comprised of rock or slag media.

2. Freeboard. A freeboard of not less than 4 feet (1.2 meters) should be provided for tall filters using manufactured media, to maximize the containment of windblown spray.

3. Maintenance. All distribution devices, underdrains, channels, and pipes shall be installed so that they may be properly maintained, flushed or drained.

4. Freeze Protection. When climatic conditions are expected to result in operational problems due to cold temperatures, the filters may be covered for protection against freezing; maintaining operation and treatment efficiencies.

5. Recirculation. The piping and pumping systems shall be designed for recirculation rates as required to achieve sufficient wetting of biofilm and the design efficiency.

6. Recirculation Measurement. Recirculation rate to the filters shall be measured using flow measurement and recording devices. Time lapse meters and pump head recording devices are acceptable for facilities treating less than 1 million gallons per day (3,785 cubic meters per day).

H. Rotary Distributor Seals. Mercury seals are not permitted. The design of the distributor support septum shall provide for convenient and easy seal replacement to assure continuity of operation.

I. Multi-Stage Filters. The foregoing standards in this rule also apply to all multi-stage filters.

J. Unit Sizing

1. Required volumes of rock or slag media filters shall be based upon the following equations: For Single or First stage of Trickling Filter: $E = 100 - ((100 / (3 + 2 (R/I))) + (0.4 \times (W / V) - 10))$. For Second stage of Trickling Filter: $E = 100 \times ((1 + (R_2 / I)) / (2 + (R_2 / I)))$ where, E = Efficiency, percent R = recirculated flow through trickling filter, mgd I = raw sewage flow, mgd W = pounds of BOD_5 per day in raw sewage V = volume of filter media in 1000 cubic feet R_2 = recirculated flow through second-stage trickling filter, mgd.

2. The required volume of media may be determined by pilot testing or use of any of the various empirical design equations that have been verified through actual full scale experience. Such calculations must be submitted if pilot testing is not utilized. Pilot testing is recommended to verify performance predictions based upon the various design equations, particularly when significant amounts of industrial wastes are present.

3. Expected performance of filters packed with manufactured media shall be determined from documented full scale experience on similar installations or through actual use of a pilot plant on site.

K. Nitrification

1. Trickling filters may be used for nitrification. The design should be based as shown in Table R317-3-7.1(K)(1).

2. Nitrification is affected by variations in flow, loadings and temperature, and other factors. Therefore, the applicant must conduct pilot studies before developing the design criteria.

L. Design Safety Factors. Trickling filters are affected by diurnal load conditions. The volume of media determined from either pilot plant studies or use of acceptable design equations shall be based upon organic loading at the maximum design rate of flow rather than the average design rate of flow.

7.2. Activated Sludge

A. General. The activated sludge process and its several modifications may be used to accomplish varied degrees of removal of suspended solids, and reduction of carbonaceous and nitrogenous oxygen demand. The degree and consistency of treatment required, type of waste to be treated, proposed plant size, anticipated degree of operation and maintenance, and operating and capital costs determine the choice of the process to be used. The design shall provide for flexibility in operation. Plants over 1 million gallons per day (3,785 cubic meters per day) shall be designed to facilitate easy conversion to various operational modes. In severe climates, protection against freezing shall be provided to ensure continuity of operation and performance.

B. Aeration

1. Capacities and Permissible Loadings

a. The design of the aeration tank for any particular adaptation of the process shall be based on full scale experience at the plants receiving wastewater of similar characteristics under similar climatic conditions, pilot plant studies, or calculations based on process kinetics parameters reported in technical literature. The size of treatment plant, diurnal load variations, degree of treatment required, temperature, pH, and reactor dissolved oxygen when designing for nitrification, influence the design. Calculations using values differing substantially from those in the table shown below must reference actual operational data.

b. The applicant must substantiate capability of the aeration and clarification systems in the processes using mixed liquor suspended solids levels greater than 5,000 milligrams per liter.

c. The applicant shall use the values shown in Table R317-3-7.2(B)(1)(c) to determine the aeration tank capacities and permissible loadings for the several adaptations of the processes, when process design calculations are not submitted. These values are based on the average design rate of flow, and apply to plants receiving peak to average diurnal load ratios ranging from about 2:1 to 4:1.

2. Arrangement of Aeration Tanks

a. Dimensions. Effective mixing and utilization of air must be the basis of dimensions of each independent mixed liquor aeration tank or return sludge reaeration tank. Liquid depths should not be less than 10 feet (3 meters) or more than 30 feet (9 meters) unless the applicant justifies the need for shallower or deeper tanks.

b. Short-circuiting. The shape of the tank and the installation of aeration equipment should provide for positive control of short-circuiting through the aeration tank.

c. Number of Units. Total aeration tank volume shall be divided among two or more units, capable of independent operation, to meet applicable effluent limitations and reliability guidelines.

d. Inlets and Outlets. Inlets and outlets for each aeration tank unit shall be suitably equipped with valves, gates, stop plates, weirs, or other devices to permit controlling the flow to any unit and to maintain reasonable constant liquid level. The hydraulic properties of the system shall permit the maximum instantaneous hydraulic load to be carried with any single aeration tank unit out of service.

e. Conduits. Channels and pipes carrying liquids with solids in suspension shall be designed to maintain self-cleaning velocities or shall be agitated to keep such solids in suspension at all rates of flow within the design limits. Drains shall be installed in the aeration tank to drain segments or channels which are not being used due to alternate flow patterns.

f. Freeboard. All aeration tanks should have a freeboard of not less than 18 inches (46 centimeters). Additional freeboard or windbreak may be necessary to protect against freezing or windblown spray.

3. Aeration Requirements

a. Oxygen requirements must be calculated based on factors such as, maximum organic loading, degree of treatment, level of suspended solids concentration (mixed liquor) to be maintained, and uniformly maintaining a minimum dissolved oxygen concentration in the aeration tank, at all times, of two milligrams per liter.

b. When pilot plant or experimental data on oxygenation requirements are not available, the design oxygen requirements shall be calculated on the basis of:

(1) 1.2 pounds 0_2 per pound of maximum BOD_5 applied to the aeration tanks (1.2 kilograms 0_2 per kilogram of maximum BOD_5), for carbonaceous BOD_5 removal in all activated sludge processes with the exception of the extended aeration process,

(2) 2 pounds 0_2 per pound of maximum BOD_5 applied to the aeration tanks (two kilograms 0_2 per kilogram of maximum BOD_5) for carbonaceous BOD_5 removal in the extended aeration process,

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(3) 4.6 pounds 0_2 per pound of maximum total kjeldahl nitrogen (TKN) applied to the aeration tanks (1.2 kilograms 0_2 per kilogram of maximum TKN), for oxidizing ammonia in the case of nitrification, and

(4) oxygen demand due to the high concentrations of BOD_5 and TKN associated with recycle flows such as, digester supernatant, heat treatment supernatant, belt filter pressate, vacuum filtrate, elutriates, etc.

c. Oxygen utilization should be maximized per unit power input. The aeration system should be designed to match the diurnal organic load variation while economizing on power input.

4. Diffused Air Systems

a. The design of the diffused air system to provide the oxygen requirements shall be done using data derived from pilot testing or an empirical approach.

b. Air requirements for a diffused air system may be determined by use of any of the recognized equations incorporating such factors as:

(1) tank depth;

(2) alpha factor of waste;

(3) beta factor of waste;

(4) certified aeration device transfer efficiency;

(5) minimum aeration tank dissolved oxygen concentrations;

(6) critical wastewater temperature; and

(7) altitude of plant.

c. In the absence of experimentally determined alpha and beta factors by an independent laboratory for the manufacturer or at the site, wastewater transfer efficiency shall be assumed to be 50 percent of clean water efficiency for plants treating primarily (90 percent or greater) domestic sewage. Treatment plants where the waste contains higher percentages of industrial wastes shall use a correspondingly lower percentage of clean water efficiency and shall submit calculations to justify such a percentage.

d. The design air requirements shall be calculated on the basis of:

(1) 1,500 cubic feet per pound of maximum BOD_5 applied to the aeration tanks (94 cubic meters per kilogram of maximum BOD_5), for carbonaceous BOD_5 removal in all activated sludge processes with the exception of the extended aeration process,

(2) 2,000 cubic feet per pound of maximum BOD_5 applied to the aeration tanks (125 cubic meters per kilogram of maximum BOD_5) for carbonaceous BOD_5 removal in the extended aeration process,

(3) 5800 cubic feet per pound of maximum total kjeldahl nitrogen (TKN) applied to the aeration tanks (360 cubic meters per kilogram of maximum TKN), for oxidizing ammonia in the case of nitrification,

(4) corresponding air quantities for satisfaction of oxygen demand due to the high concentrations of BOD_5 and TKN associated with recycle flows such as, digester supernatant, heat treatment supernatant, belt filter pressate, vacuum filtrate, elutriates, etc., and

(5) air required for channels, pumps, aerobic digesters, or other uses.

e. The capacity of blowers or air compressors, particularly centrifugal blowers, must be calculated on the basis of air intake temperature of 40 degrees Centigrade (104 degrees Fahrenheit) or higher and the less than normal operating pressure. The capacity of drive motor must be calculated on the basis of air intake temperature of -30 degrees Centigrade (-22 degrees Fahrenheit) or less. The design must include means of controlling the rate of air delivery to prevent overheating or damage to the motor.

f. The blowers shall be provided in multiple units, so arranged and in such capacities as to meet the maximum air demand with the single largest unit out of service. The design shall also provide for varying the volume of air delivered in proportion to the load demand of the plant. Aeration equipment shall be easily adjustable in increments and shall maintain solids suspension within these limits.

g. Diffuser systems shall be capable of providing for the maximum design oxygen demand or 200 percent of the average design oxygen demand, whichever is larger. The air diffusion piping and diffuser system shall be capable of delivering normal air requirements with minimal friction losses.

h. Air piping systems should be designed such that total head loss from blower outlet (or silencer outlet where used) to the diffuser inlet does not exceed 0.5 pounds per square inch (0.04 kilogram per square centimeter) at average operating conditions.

i. The spacing of diffusers should be in accordance with the oxygen requirements through the length of the channel or tank, and should be designed to facilitate adjustment of their spacing without major revision to air header piping. Removable diffuser assemblies are recommended to minimize downtime of aeration tanks.

j. Individual assembly units of diffusers shall be equipped with control valves, preferably with indicator markings for throttling, or for complete shutoff. Diffusers in any single assembly shall have substantially uniform pressure loss.

k. Air filters shall be provided in numbers, arrangements, and capacities to furnish, at all times, an air supply sufficiently free from dust to prevent damage to blowers and clogging of the diffuser system used.

5. Mechanical Aeration Systems

a. Oxygen Transfer Performance. The mechanism and drive unit shall be designed for the expected conditions in the aeration tank in terms of the power performance. The mechanical aerator performance shall be verified by certified testing.

b. Design Requirements. The design requirements of a mechanical aeration system shall accomplish the following:

(1) Maintain a minimum of 2.0 milligrams per liter of dissolved oxygen in the mixed liquor at all times throughout the tank or basin;

(2) Maintain all biological solids in suspension;

(3) Meet maximum oxygen demand and maintain process performance with the largest unit out of service; and

(4) Provide for varying the amount of oxygen transferred in proportion to the load demand on the plant.

c. Winter Protection. Due to high heat loss and the nature of spray-induced agitation, the mechanism, as well as subsequent treatment units, shall be protected from freezing where extended cold weather conditions occur.

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6. Return Sludge Equipment

a. Return Sludge Rate

(1) The minimum permissible return sludge rate of withdrawal from the final settling tank is a function of the concentration of suspended solids in the mixed liquor entering it, the sludge volume index of these solids, and the length of time these solids are retained in the settling tank. Since undue retention of solids in the final settling tanks may be deleterious to both the aeration and sedimentation phases of the activated sludge process, the rate of sludge return expressed as a percentage of the average design flow of sewage should be between the limits set forth in Table R317-3-7.2(B)(6)(a)(1).

(2) The rate of sludge return shall be varied by means of variable speed motors, drives, or timers (in plants designed for less than one million gallons per day - 3,785 cubic meters per day) to pump sludge at the above rates.

b. Return Sludge Pumps

(1) If motor driven return sludge pumps are used, the maximum return sludge capacity shall be with the largest pump out of service. A positive head should be provided on pump suctions. Pumps should have at least 3 inch (7.6 centimeters) suction and discharge openings.

(2) If air lifts are used for returning sludge from each settling tank hopper, no standby unit is required provided the design of the air lifts are such to facilitate their rapid and easy cleaning and provided standby air lifts are provided. Air lifts should be at least 3 inches (7.6 centimeters) in diameter.

c. Return Sludge Piping. Discharge piping shall not be less than 4 inches (10 centimeters) in diameter, and should be designed to maintain a velocity of not less than two (2) feet per second (0.61 meters per second) when return sludge facilities are operating at normal return sludge rates. Sight glasses, sampling ports and rate of flow controllers for return activated sludge flow from each settling tank hopper shall be provided.

7. Waste Sludge Facilities

a. The design of waste sludge control facilities should be based on a logically developed solids mass balance at the maximum design flow. Otherwise, a maximum capacity of not less than 25 percent of the average design flow shall be provided, and function satisfactorily at rates of 0.5 percent of average sewage flow or a minimum of 10 gallons per minute (0.63 liters per second), whichever is larger.

b. Sight glasses, sampling ports and rate of flow controllers for waste activated sludge flow shall be provided.

c. Waste sludge may be discharged to the concentration or thickening tank, primary settling tank, sludge digestion tank, vacuum filters, other thickening equipment, or any practical combination of these units.

7.3. Flow Measurement. Instrumentation should be provided in all plants for indicating flow rates of raw sewage or primary effluent, return sludge, and air to each tank unit. For plants designed for the average design rate of flow of 1 million gallons per day (3,785 cubic meters per day) or more, these devices should total, record, and indicate the rate of flow. Where the design provides for all return sludge to be mixed with the raw sewage (or primary effluent) at one location, then the mixed liquor flow rate to each aeration unit should be measured.

7.4. Other Biological Systems. The [~~executive secretary~~]Director may consider and approve new biological treatment processes with promising applicability in wastewater treatment. The approval will be based on the required engineering data for new process evaluation as provided in this rule.

7.5. Packaged Plants. The [~~executive secretary~~]Director may consider and approve packaged biological treatment plants only when there are no other and appropriate alternatives for waste treatment. These type of plants shall be designed for handling large flow variations and to meet all requirements contained in this rule. The applicant must consider the need for close attention and competent operating supervision, including routine laboratory control, when proposing a packaged plant.

R317-3-8. Disinfection.

8.1. General

A. All wastewaters containing pathogens or coliform bacteria must be disinfected before discharge to a water course. The disinfection procedures must consider any effect on the natural aquatic habitat and biota of the receiving water course. Effectiveness of disinfection also varies with BOD_5 and suspended solids in the effluent. If chlorination is utilized, it may be necessary to dechlorinate if the residual chlorine level would otherwise impair the receiving water course. The applicant must submit justification to the [~~executive secretary~~]Director for the determination of the acceptability of any disinfection system other than chlorination or ultraviolet irradiation.

B. If effluent to be discharged meets applicable bacteriologic standards before disinfection, the [~~executive secretary~~]Director may waive the disinfection process. However, all plants must have an ability to introduce a disinfectant in the effluent with proper reaction time before discharge. An example could be multi-celled (more than three cells) lagoon discharge following extended storage in excess of 150 days.

C. The disinfection method should be selected after due consideration of wastewater flow rates, application rates, demand rates and effects, pH of the wastewater, cost of equipment, availability, maintenance, reliability and safety problems.

D. Chlorine is the most commonly used chemical for wastewater disinfection. The forms most often used are liquid-gaseous chlorine and sodium and calcium hypochlorite. The [~~executive secretary~~]Director may review and accept other disinfection methods based on the information submitted.

8.2. Design

A. Capacity of System

1. Required disinfection capacity will vary, depending on the uses and points of application of the disinfectant, e.g., prechlorination, post chlorination, odor and process control uses, etc.

2. For disinfection of the wastewater before its discharge to a water course, the disinfection system capacity shall be sufficient to produce an effluent that will meet the coliform bacteria limits specified for that installation at all times. This condition must be attainable when maximum flow rates occur and during emergency conditions. For non-chemical disinfecting systems, an equivalent installed capacity shall be provided. Normal dosage requirements for disinfection will vary with the quality of effluent to be treated.

3. Duplicate disinfection systems shall be provided. Where only two units are installed, each shall be capable of feeding the expected maximum dosage rate.

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4. Disinfection system equipment should be provided with necessary changeable parts to permit operation of system at initial anticipated flows at mid-scale on flow meters and other devices. Spare parts shall be provided for all disinfection equipment to replace parts which are subject to wear and breakage. Operation and maintenance data for all equipment shall be furnished.

5. Dosage control based on effluent flow rate should be provided because of the diurnal variations in the disinfectant demand of the wastewater. A residual disinfectant concentration must be maintained to insure the pathogen destruction, and subsequent reactivation, if any.

B. Contact Period

1. For a chlorination system, a minimum contact period is required after a thorough mixing of disinfectant with the effluent. The minimum contact period shall be greater of:

a. 30 minutes at the maximum design rate of flow (peak daily rate of flow) or the maximum pumping rate, or

b. 60 minutes at the average design rate of flow.

2. This contact period shall normally be provided in the contact tank. Contact period in pipeline or outfalls before discharge into a water course, may be credited towards the contact time if the effluent discharge point can be sampled.

C. Contact Chambers

1. The contact chambers must be designed such that:

a. effectiveness of disinfection is maximized;

b. accumulation of solids is minimized;

c. maintenance and cleaning is facilitated; and

d. short circuiting of flow is reduced to a practical minimum by installation of baffles.

2. Two tanks are required for all plants treating more than 1 million gallons per day (3,785 cubic meters per day). Means of removal of solids from the tank bottom shall be provided. Solids and drainage water must be returned to the head end of the plant. Skimming devices should be provided in all contact tanks. Covered tanks must have means of access for maintenance and cleaning.

3. Pipelines and outfall sewers may be acceptable as effective plug-flow contact chambers.

4. The applicant must incorporate all of the above process and design features in devices using other disinfecting methods.

D. Point of Application

1. The design shall provide for application of chlorine or other disinfectants to all fully treated, partially treated, or untreated wastewater discharged from the treatment plant. Other points of application shall be incorporated in the design for process considerations such as prechlorination, odor control, control of sludge bulking, etc. All application points shall be submerged below the wastewater surface.

2. Chlorine shall be positively mixed as rapidly as possible, with a complete mix being effected in three seconds. This may be accomplished by either the use of turbulent flow regime or a mechanical flash mixer.

8.3. Disinfection Methods

A. Chlorination (Liquid or Gaseous Chlorine)

1. Equipment

a. The installed capacity of a chlorine feed system shall be sufficient to provide a dosage of 25 milligrams per liter at the maximum design rate of flow. Procedures recommended by the Chlorine Institute and the Occupational Safety and Health Administration, the US Department of Labor, and succeeding organizations should be carefully followed in handling, installation, operation and maintenance of chlorination equipment. The requirements, procedures and recommendations from these organizations take precedence over the requirements stated herein, if more stringent.

b. Liquid chlorine lines from tank cars to evaporators shall be buried and installed in a conduit and shall not be exposed in below grade spaces. Systems shall be designed for the shortest possible pipe transportation of liquid chlorine. When chlorine cylinders are used, two scales, indicating and recording type, should be used for weighing the cylinders in use. Each scale should be sized to accommodate the maximum number of cylinders required to deliver chlorine at the maximum chlorine feeding rate. Adequate means for supporting cylinders on the scales should be provided. Scales shall be of corrosion-resistant material.

c. Separate manifolds shall be provided for the bank of cylinders on each scale. The manifolds shall be properly valved so that one bank of cylinders may be replaced while chlorine is being withdrawn from the other bank of cylinders. Provision should be made for automatically changing the withdrawal of chlorine from one bank of cylinders to the second when the chlorine in the first bank of cylinders has been exhausted.

d. Gas chlorinators shall be of the solution feed type. The design capacity of evaporators must correspond to gaseous chlorine demand, where several cylinders or ton containers are manifolded to evaporate sufficient chlorine. Chlorine gas systems and piping should be of vacuum type.

2. Housing and Storage

a. Local, state and federal safety requirements, including fire code, shall be carefully followed in storing and handling of chlorine containers, cylinders or tank cars.

b. Gaseous chlorine and chlorination equipment rooms shall be isolated from other sections of the building by gas-tight partitions. Separation of the chlorine storage room and the chlorination equipment room is required for safety. All doors and rooms containing gas chlorination equipment and rooms used for chlorine gas storage should open only to the outside of the building, and all doors should be equipped with panic hardware and a viewing window. Multiple exits to the outside should be provided for each room in which chlorine gas is stored or used. Rooms housing chlorination equipment should be heated to 70 degrees Fahrenheit (21 degrees Centigrade), but never in excess of normal summer temperatures. Rooms containing chlorine cylinders from which chlorine is being withdrawn should be heated to above 60 degrees Fahrenheit (16 degrees Centigrade), but never above the temperature of the equipment room. Where chlorine containers are stored out of doors, the storage area shall be provided with a canopy. Similar precautions should be taken for tank cars. Also, if containers are stored out of doors, cylinders and containers must be allowed to reach room temperature before being placed in use. Floor drains from chlorine rooms must not be connected to floor drains from other rooms.

c. Chlorine rooms shall be at ground level, and should permit easy access to all equipment. The storage area should be separated from the feed area. Chlorination equipment should be situated as close to the application point as reasonably possible.

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3. Ventilation and Heating

a. With chlorination systems, forced, mechanical ventilation shall be installed which will provide one complete air change per minute when the room is occupied.

b. When unoccupied, facilities in the ventilation system may be provided with means to reduce the number of air changes to twenty per hour to conserve energy. Whenever such a two-speed ventilation system is used, adequate provisions shall be made to insure that one complete air change per minute is provided when the room is occupied.

c. The entrance to the air exhaust duct from the room shall be near the floor and the point of discharge shall be so located as not to contaminate the air inlet to any buildings or inhabited areas.

d. Air inlets shall be so located as to provide cross ventilation with air and at such temperature that will not adversely affect the chlorination equipment. The vent hose from the chlorinator shall discharge to the outside atmosphere above grade or to the scrubbing system.

e. Switches for exhaust fans and cylinders shall be kept at essentially room temperature.

f. Chlorine scrubbing systems should be incorporated in the design of handling and storage areas where required by the state or local codes.

4. Ancillary Services

a. Water Supply. An ample supply of water meeting a minimum of secondary effluent quality, R317-1, Definitions and General Requirements, shall be available for operating the chlorinator. All in-plant use of effluent shall be taken from downstream of the sampling point for effluent quality monitoring and permit compliance. Where a booster pump is required, a standby booster pump shall be provided, and standby power shall be available.

b. Other Equipment. All electrical fixtures and drainage conduits in chlorination equipment rooms and chlorine storage rooms shall be gas-tight to prevent the spread of chlorine gas in the event of a leak.

5. Piping and Material. Piping systems should be as simple as possible, specifically selected and manufactured to be suitable for chlorine service, with a minimum number of joints. Piping should be well supported and protected against temperature extremes. Low pressure lines made of hard rubber, saran-lined, rubber-lined, polyethylene, polyvinyl chloride (PVC), or Uscolite materials are satisfactory for wet chlorine or aqueous solutions of chlorine.

6. Reliability. The design of the system must include the necessary provisions that will either prevent failures or allow immediate corrective action to be taken. Standby power, duplicate equipment and water storage shall be incorporated in the design to prevent interruption of feed, water supply and backup to power and equipment failures.

7. Residual Monitoring

a. An indicating and recording type residual chlorine analyzer using accepted test procedures shall be installed to monitor residual chlorine as required in the discharge permit.

b. Where dechlorination is used, residual chlorine analyzers shall be equipped with audible and visual alarms to indicate discharge of chlorine in the effluent.

8. Safety

a. At least two complete sets of respiratory air-pac protection equipment, meeting the requirements of the Occupational Safety and Health Administration (OSHA), shall be available where chlorine gas is handled, and shall be stored at a convenient location, but not inside any room where chlorine is used or stored. Instructions for using the equipment shall be posted near the equipment. The equipment shall, using compressed air, have at least 30-minute capacity, and be compatible with the equipment used by the fire department responsible for the plant.

b. Where ton containers or tank cars are used, a leak repair kit approved by the Chlorine Institute shall be provided. Caustic soda solution reaction tanks for absorbing the contents of leaking ton containers must be provided where such containers are in use. The installation of automatic gas detection and related alarm equipment must be provided.

B. Ultraviolet Irradiation

1. The [~~executive secretary~~]Director will consider and approve the use of ultraviolet irradiation for disinfection of wastewater treatment plant effluent based on the information submitted. Effectiveness of this system depends upon shallowness of depth or contact volume at the point of application and relative absence of suspended solids.

a. The applicant must submit supporting data describing the proposed system and including such items as contact geometry between the ultraviolet light source and water, reliability, and suitability of the effluent for this process. Designs should be investigated for sound application of the fundamentals of UV disinfection theory.

b. The design shall be based on factors such as, plug-flow hydraulics, intimate contact with the UV light for a sufficient period, short-circuiting, illumination. Tracer test results are helpful in assessment of hydraulic characteristics.

c. Materials of construction should be consistent with the wastewater and environment.

2. The design of ultraviolet disinfection systems shall be based on on-site testing and the following considerations:

a. Wastewater characteristics. Concentration of total suspended solids (TSS), calcium, magnesium, iron, etc., should be such that UV disinfection is effective. The wastewater should contain low levels of total suspended solids, preferably 20 milligrams per liter or below, and must transmit at least 50 percent of UV light through a wastewater depth of one (1) centimeter.

b. Layout

(1) Adequate space around the UV units to accommodate maintenance activities is required.

(2) Easy removal and replacement of lamps without the use of special tools by one man should be a feature of the equipment design.

(3) The ballasts should be arranged for ready and unhindered access for removal or replacement of any ballast without having a need to remove others.

(4) The layout design must provide adequate floor space for any separate components of the UV system in addition to the UV reactor itself, including requirements for power supply cabinets or cleaning equipment.

(5) Modular design with multiple units to allow uninterrupted service when performing maintenance must be specified.

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3. Electrical Requirements

a. power consumption of this process alone should be separately metered.

b. UV lamps and ballasts must be properly matched. The proper matching of lamp and ballast will improve the lamps output and extend its useful life.

c. arrangements for shutting off banks of lamps within a single unit must be provided for lamp replacement or maintenance.

d. power controls should be provided for matching output of lamps with the rate of flow, and system maintenance by the plant staff.

e. minimum electrical standards of construction shall conform to the National Electrical Code, and other applicable codes and standards, consistent with the location or environment surrounding the UV unit and associated equipment.

4. Ventilation. Adequate ventilation to the structure housing the electrical components of the system must be provided to prevent failures from overheating.

5. Cleaning

a. The various means of chemical cleaning available must be evaluated. The evaluation must cover methods required for the unit to be drained; volume of cleansing agent required per cleaning; disposition of spent cleaning solution; manpower requirements to accomplish a cleaning cycle; capital costs of the cleaning and equipment; cleaner cost availability; and special storage and handling needs.

b. The system design must provide for complete draining and easy cleaning.

c. Ultrasonic cleaning must be considered for prevention of biofilm growth on non-illuminated quartz sleeves.

6. Monitoring and Instrumentation

i. Adequate staffing and resources to conduct the data collection and monitoring required for assessing performance must be provided.

ii. Each individual lamp output shall be measured and recorded.

8.4. Dechlorination

A. Sulfur Dioxide (SO_2)

1. Sulfur dioxide is most readily available in liquid (gaseous) form in ton containers similar to chlorine. Approximately, 1 milligram per liter of sulfur dioxide is required to dechlorinate 1 milligram per liter of chlorine residual (free or combined).

2. The dechlorination reaction between sulfur dioxide and both free and combined chlorine is a rapid reaction and requires only a few seconds of contact. The design of sulfur dioxide system must be based on the following considerations:

a. Equipment. Generally sulfur dioxide shall be fed as a gas similar to chlorine gas, as described in R317-3-8. The sulfur dioxide header should be heated to prevent re-liquefaction.

b. Housing and Storage. These requirements are same as to those for chlorine, as described in R317-3-8.

c. Ventilation. These requirements are same as to those for chlorine, as described in R317-3-8.

d. Ancillary Services. These requirements are same as to those for chlorine, as described in R317-3-8.

e. Piping and Material. Pipe material (plastics) inside the sulfonator must be compatible with continuous exposure to sulfur dioxide gas.

f. Reliability. These requirements are same as to those for chlorine, as described in R317-3-8.

g. Residual Monitoring. Control is critical when sulfur dioxide is used as the dechlorinating agent because excess sulfur dioxide consumes excess dissolved oxygen in the wastewater or receiving waters. The dechlorination reaction between sulfur dioxide and both free and combined chlorine is rapid, a few seconds at the most, so sampling can be performed immediately downstream of good mixing. The system should be monitored with a residual chlorine analyzer.

h. The design shall incorporate reaeration of the effluent to be in compliance with the dissolved oxygen requirement, if any, of the discharge permit.

i. Safety

(1) Adequate precautions must be taken for storing sulfur dioxide as it is a potentially hazardous chemical to store.

(2) Provide the same amount of air changes per hour as would be required for chlorine, together with a sulfur dioxide sensing and alarm detector.

B. Other Dechlorinating Agents. The [~~executive secretary~~]Director may review and approve other methods and chemicals for dechlorination based on the information submitted.

R317-3-9. Sludge Processing and Disposal.

9.1. Design Considerations

A. Process Selection

1. The selection of sludge handling and disposal methods must be based on the following considerations:

a. Energy requirements;

b. Efficiency of equipment for sludge thickening;

c. Complexity and costs of equipment and operations;

d. Staffing requirements;

e. Toxic effects of heavy metals and other substances on sludge stabilization and disposal alternatives;

f. Treatment and disposal of side-stream flows, such as digester and thickener supernatant;

g. Process considerations and good house keeping procedures for minimum waste stream generation;

h. A back-up method of sludge handling and disposal; and

i. The long term effects and regulatory requirements on methods of ultimate sludge disposal.

2. The selected process shall be designed to result in stabilized sludge prior to disposal. Significant reduction of odors, volatile solids and reduction or deactivation of pathogenic organisms can be achieved by chemical, physical, thermal or biological treatment processes; thereby reducing public health hazards and nuisance conditions.

B. Sludge Quantities

1. The sludge treatment system shall be designed to accommodate the quantities of sludge generated through the design period. Individual process sizing shall consider the sludge generation peaking factors appropriate for the size and type of facility, with allowance for: seasonal variations, industrial loads, and type of collection system. Reserve capacity in the form of off-line storage, standby units or use of extended hours of operation should be considered to handle peak sludge loads.

2. In plants treating less than one million gallons per day (3,785 cubic meters per day), sludge dewatering equipment may

operate for less than 35 hours per week. Sludge processing equipment must be designed to operate efficiently over the range of sludge characteristics expected from the preceding unit process. The design engineer shall submit to the [~~executive secretary~~]Director, copies of design sizing calculations and relevant information to include:

a. average and maximum sludge quantities;

b. number and size of units;

c. equipment characteristics, conditioning chemical requirements and basic sizing parameters;

d. hours of operation;

e. expected capture efficiency;

f. expected percent solids yield.

C. Recycle loads. The sludge system as well as the liquid handling system shall be designed to take into consideration the recycle BOD5, suspended solids, nitrogen and phosphorus from the solids processing units. The magnitude of such recycle loads and resulting additional sludge will normally range from 5 to 30 percent of the influent loads. Solids balances to account for the additional solids must be calculated.

D. Sludge Storage

1. Design Considerations

a. When the plant design, except for the lagoons, does not include aerobic or anaerobic digesters, or gravity thickeners, etc., a minimum sludge storage for the entire sludge production over a two week period must be provided.

b. In-line storage by increasing mixed liquor solids concentration in aeration tanks or increasing retention in settling tanks is not permitted.

c. Aerated off-line sludge storage of not less than seven days shall be provided for oxidation ditch type activated sludge plants without a sludge digestion process.

2. Equipment Design. The sludge storage system should be equipped with mixing devices to prevent separation of solids and provide a more uniform feed to dewatering devices. Provision for adding lime, chlorine or air to prevent septicity and resulting odors is desirable. Decanting systems to provide thicker solids and flushing water to clean out tankage are necessary. Covering and odor control devices should be provided to minimize nuisance conditions.

9.2. Sludge Pumps and Piping

A. Design Basis

1. Pump Capacity. Capacity shall be adequate to cover the full range of solid concentrations and sludge production. Variable speed or other rate control systems should be provided for all sludge pumps. Maximum operating pressure should be calculated to account for the high friction factor when pumping thixotropic sludges in low velocity laminar ranges.

2. Duplicate Units. Duplicate units shall be provided where failure of one unit would seriously hamper plant operation. Pump suction and discharge manifolds should be interconnected so that one pump discharge can be used to backflush other suction piping.

3. Minimum Head. A minimum positive static head of 24 inches (61 cm) shall be provided at the suction side of centrifugal type pumps and is desirable for all types of sludge pumps. Maximum suction lift should not exceed 10 feet (3 meters) for plunger or diaphragm pumps.

4. Piping

a. Size. Sludge withdrawal piping shall have a minimum diameter of 8 inches (20 cm) for gravity withdrawal and 6 inches (15 cm) for pump suction and discharge lines. Where withdrawal is by gravity, available head shall be adequate to provide sufficient velocity in pipe; thereby preventing solids deposition in pipe.

b. Slope. Gravity flow piping should be laid on a uniform grade and alignment. The slope of gravity discharge lines should not be less than 3 percent.

c. Lining. Scum and primary sludge conveying piping should be lined with a low roughness material such as, glass lining, to reduce friction and to aid in cleaning and maintenance.

B. Equipment Features

1. Plunger type, screw feed type, rotary lobe type, recessed-impeller centrifugal type, progressive cavity type or other types of pumps with demonstrated solids handling capability shall be provided for handling raw sludge. Plunger pump backup for centrifugal pumps is recommended. The abrasive nature of sludges, especially those containing grit, must be considered in the selection of pump type and materials of construction.

2. Sludge grinders should be used where downstream process equipment, such as frame and plate presses, centrifuges, heat exchangers, sludge mixing devices or progressive cavity pumps, is susceptible to rag or trash build-up.

3. Valves. The piping system shall be equipped with isolation valves to allow for repairs and replacement of equipment or metering devices.

4. Piping Layout. Provisions should be made for cleaning, draining and flushing sludge piping. Flanges tees and crosses and cleanouts to allow rodding of suction line are desirable. Provision for back flushing with positive displacement pump discharge is desirable. Provision for cleaning by hot water, steam injection, in-line pigging or chemical degreasing should be considered in long lines containing raw sludge or scum.

C. Control Devices

1. Flow meters should be provided on all process and ancillary lines such as feed, withdrawal, gas, transfer, recirculation, hot water etc. Provision should be made for equipment isolation, cleaning and calibrating.

2. Sludge pumps used on intermittent withdrawal service should be equipped with variable timer equipment.

3. Quick-closing sampling valves shall be installed at the sludge pump, unless sludge sampling is provided separately elsewhere. The size of the valve and piping shall be at least 1 1/2 inches in diameter (3.8 centimeters).

9.3. Sludge Thickeners

1. The design of thickeners (gravity, dissolved-air flotation, centrifuge, and others) should consider the type and concentration of sludge, the sludge stabilization processes, the method of ultimate sludge disposal, chemical needs, and the cost of operation. The pumping rate and piping of the concentrated sludge should be selected such that anaerobic conditions are prevented.

2. No credit towards sludge storage or digestion, if any, in thickeners shall be permitted.

A. Gravity Thickening

1. Design Basis

a. Typical loading rates and resulting solids concentration for gravity thickening are as shown in Table R317-3-9.3(A)(1)(a).

b. Equipment and piping must be designed to deliver sufficient dilution water to gravity thickeners. Flow rate of dilution

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water shall be measured and recorded. Hydraulic loading to produce overflow rates of 400 to 800 gallons per day per square foot (16-33 cubic meter per day per square meter) shall be maintained to prevent septicity.

2. Equipment Features

a. Heavy duty scrapers capable of withstanding extra heavy torque loads should be provided.

b. Sidewater depths of 10-14 feet (3-4.2 meters) are recommended.

c. Ability to add chlorine solution should be provided to prevent septicity.

d. Tank covers and odor control systems should be considered depending on adjacent land use.

B. Co-Settling. Trickling filter or activated sludge may be returned to primary clarifiers for co-settling. If this method is utilized:

1. Peak design overflow rates for the primary clarifier shall not exceed 1,500 gallons per day per square foot (61 cubic meters per day per square meter), including recirculated sludge flow, and

2. Minimum sidewater depth in the primary clarifier must not be less than 12 feet (3.7 meters).

9.4. Anaerobic Digestion

A. Design Basis

1. The anaerobic digestion system shall provide for active digestion, supernatant separation, sludge concentration and storage. Heating and gas collection systems are required. Mixing systems for primary digesters shall be provided, and are recommended for secondary digesters.

2. Multiple digestion units shall be provided in all plants designed for more than 1 million gallons per day (3,7854 cubic meter per day) rate of flow. For plants designed for less than one million gallons per day (3,785 cubic meters per day), alternative methods of sludge stabilization and emergency storage must be available if only one unit is available.

3. The total digestion tank capacity should be determined by rational calculations based upon the following factors:

a. sludge characteristics - volume and percent solids,

b. the temperature to be maintained in the digesters,

c. the degree and extent of mixing in the digesters, and

d. the degree of volatile solids reduction desired.

4. Calculations shall be submitted to justify the basis of design. Otherwise, the following assumptions shall be used:

a. sludge characteristics - domestic wastewater sludge volume generated as shown in Table R317-3-9.4(A)(4)(a).

b. the temperature to be maintained in the digesters: 90 to 100 degrees Fahrenheit (32-38 degrees Centigrade).

c. the degree and extent of mixing in the digesters: 40 horsepower per million gallons (8 watts per cubic meter).

d. volatile solids in digested sludge: 50 percent.

5. Completely-mixed systems, mixed at an intensity such that digester contents are completely turned over every 30 minutes, may be loaded at a rate up to 120 pounds of volatile solids per 1,000 cubic feet of volume per day (1.92 kilograms per cubic meter per day) in the active digestion units. When grit removal facilities are not provided, the digester volume must be increased to accommodate grit accumulation.

6. Moderately mixed digestion systems, mixed by circulating sludge through an external heat exchanger, may be loaded at a rate up to 40 pounds of volatile solids per 1,000 cubic feet of volume per day (0.64 kilograms per cubic meter per day) in the active digestion units. This loading may be modified upward or downward depending upon the degree of mixing provided.

7. For those units intended to serve as supernatant separation tanks, the depth should be sufficient to allow for the formation of a reasonable depth of supernatant liquor. A minimum sidewater depth of 20 feet (6.1 meters) is recommended.

B. Tank Covers

1. All anaerobic digestion tanks shall be covered. Primary tanks may be equipped with gas-tight, fixed steel or concrete covers or floating steel covers made gas-tight by extended rims. Secondary tank covers may be of the fixed type or floating steel type, including gas storage type units.

2. Floating covers shall be equipped with a guide rail system to prevent tipping and lower-landing ridges, and cover restraints.

C. Sludge Inlets and Outlets

1. Multiple recirculation, withdrawal and return points, should be provided, to enhance flexible operation and effective mixing, unless mixing facilities are incorporated within the digester. The returns, in order to assist in scum breakup, should discharge above the liquid level and be located near the center of the tank.

2. Raw sludge feed to the digester should be through the sludge heater and recirculation return piping, or directly to the tank if internal mixing facilities are provided.

3. Sludge withdrawal to disposal should be from the bottom of the tank. This pipe should be interconnected with the recirculation piping, if such piping is provided, to increase versatility in mixing the tank contents. Additional alternative withdrawal lines should be provided.

D. Supernatant Withdrawal

1. Supernatant piping should not be less than 6 inches (15 centimeters) in diameter. Piping should be arranged so that withdrawal can be made from three or more levels in the digester. A positive, unvalved, vented overflow shall be provided with a drop leg for a liquid seal and downstream vent.

2. If a supernatant selector is provided, provisions shall be made for at least one other draw-off level, located in the supernatant zone of the tank, in addition to the unvalved emergency supernatant draw-off pipe. High pressure back-wash facilities shall be provided.

3. Multiple supernatant draw-offs should be provided for sampling at different levels. Sampling pipes must be at least 1 1/2 inches (3.8 centimeters) in diameter, and should terminate at a suitably-sized sampling sink or basin.

E. Sampling. Sampling hatches shall be provided in all tank covers with water seal tubes extending to beneath the liquid surface.

F. Gas Collection, Piping and Appurtenances

1. General. All portions of the gas system, including the space above the tank liquor, storage facilities and piping, shall be so designed that under normal operating conditions, including sludge withdrawal, the gas will be maintained under positive pressure. All enclosed areas where any gas leakage might occur shall be adequately ventilated.

2. Safety Equipment. All safety equipment shall be provided where gas is produced. Pressure and vacuum relief valves,

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flame traps, gas detectors, and automatic safety shut off valves, shall be provided.

3. Gas Piping and Condensate. Gas piping shall be of adequate diameter for gas flow rate and shall slope to condensate traps at low points. The use of float-controlled condensate traps is not permitted.

4. Gas Utilization Equipment.

a. Gas-fired boilers for heating digesters shall be located in a separate room not directly connected to the digester gallery. Gas lines to these units shall be provided with flame traps.

b. Dual fuel engines on major pumps or blowers, should be installed with possible recovery of exhaust and jacket cooling heat for use in heating digester or building spaces. An alternate system would consist of direct electric power generation. Gas cleaning and storage may be desirable.

5. Electrical Fixtures. Electrical fixtures and controls in enclosed places where hazardous gases may accumulate shall comply with the National Electrical Code for Class I, Division I Group D locations. Digester galleries must be isolated from normal operating areas to avoid an extension of the hazardous location.

6. Waste Gas.

a. Waste gas burners shall be readily accessible and should be located at least 25 feet (7.6 meters) away from any plant structure if placed at ground level, or they may be located on the roof of the control building at a height of not less than three feet (0.9 meter) from the top of the roof.

b. All waste gas burners shall be equipped with automatic ignition, such as a pilot light or a device using a photoelectric cell sensor. Consideration should be given to the use of natural or propane gas to insure reliability of the pilot light.

c. Necessary approvals from the [~~Utah Air Conservation Committee and its succeeding authorities~~]Director, shall be obtained for burning any waste gas and any other emissions from the treatment plant.

7. Ventilation. Any underground enclosures connecting with digesters or containing sludge or gas piping or equipment shall be forced ventilated. The piping gallery for digesters should not be connected to other passages.

8. Metering. Gas meters, with by-pass, shall be provided to meter total and waste gas production.

G. Digester Heating

1. Insulation. Wherever possible, digesters should be constructed above ground water level and should be suitably insulated to minimize heat loss.

2. Heating Facilities

a. External Heating. Sludge may be heated by circulating the sludge through external heaters. Piping should be designed to provide for the preheating of feed sludge before introduction to the digesters, especially if sludge thickeners are not used, or if feed is a batch feed resulting in high intermittent feed rates. Provisions shall be made in the lay-out of the piping and valving to facilitate cleaning of these lines. Heat exchanger sludge piping should be sized for heat transfer requirements.

b. Other Heating Methods. The [~~executive secretary~~]Director may approve review other types of heating facilities based on the information submitted by the applicant.

3. Heating Capacity. Heating capacity sufficient to consistently maintain the design sludge temperature shall be provided. Where digester tank gas is used for sludge heating, an auxiliary fuel supply is required.

4. Hot Water Internal Heating Controls

a. A suitable automatic mixing valve shall be provided to temper the boiler water with return water so that the inlet water to the heat jacket can be held below a temperature at which caking will be accentuated. Manual control should also be provided by suitable by-pass valves.

b. The boiler should be provided with suitable automatic controls to maintain the boiler temperature at approximately 180 degrees Fahrenheit (82.2 degrees Centigrade), to minimize corrosion, and to shut off the main gas supply in the event of pilot burner or electrical failure, low boiler water level, or excessive temperatures.

c. Thermometers shall be provided to show temperatures of the sludge, hot water feed, hot water return, and boiler water.

H. Mixing Systems. Sludge mixing systems shall be gas recirculation, draft tube mixing, mechanical mixer or pump recirculation types. The mixing system should be designed such that routine maintenance can be performed without taking the digester out of service.

I. Operational Considerations

1. Piping Flexibility. Where two stage digestion is practiced, provision shall be made to feed and heat the secondary digester. Mixing systems should be installed in secondary digestion units.

2. Provision to pump secondary sludge to primary units for reseeding and extending sludge detention time is recommended.

3. When digested sludge is pumped to the dewatering unit, piping shall be laid out so as to prevent uncontrolled gravity flow.

4. Provisions to adjust pH and alkalinity by addition of chemicals shall be made.

J. Maintenance Features for draining, cleaning, and maintenance must be considered in the design of the digesters.

1. Slope. The tank bottom should slope to drain toward the withdrawal pipe. For tanks equipped with a suction mechanism for withdrawal of sludge, a bottom slope of 1:12 or greater is recommended. Where the sludge is to be removed by gravity alone, 1:4 slope is recommended.

2. Access Manholes. At least two 36 inch (91 centimeters) diameter access manholes should be provided in the top of the tank in addition to the gas dome. There should be stairways to reach the access manholes. A separate sidewall manhole shall be provided. The opening should be large enough to permit the use of mechanical equipment to remove grit and sand.

3. Safety. Local, state and federal safety requirements, including those in applicable fire code, the Uniform Building Code etc., must be reviewed and complied with. Those requirements take precedence over the requirements stated herein, if more stringent, and should be incorporated in the design. Nonsparking tools, safety lights, rubber-soled shoes, safety harness, gas detectors for inflammable and toxic gases, and at least two self-contained breathing units shall be provided for emergency use.

9.5. Aerobic Digestion

A. General. Aerobic digestion may be used for stabilization of primary sludge, and activated or trickling filter sludge. Digestion may take place in single or multiple tanks

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designed to provide effective air mixing, reduction of the organic matter, supernatant separation, and sludge concentration under controlled conditions.

B. Tank Capacity. The digestion tank capacity shall be based on such factors as, quantity of sludge produced, sludge concentration and related characteristics, time of aeration, sludge temperature, etc.

1. Volatile Solids Loading. Volatile suspended solids loading shall not exceed 100 pounds per 1,000 cubic feet of volume per day (1.60 kilograms per cubic meter per day) in the digestion units.

2. Detention Time. The minimum detention time of 15 days shall be provided for aerobic digestion. The detention time may vary with sludge characteristics. Where sludge temperature is lower than 50 degrees Fahrenheit (10 degrees Centigrade) additional detention time should be considered. Covering of the aerobic digesters may be considered to prevent heat losses to atmosphere.

3. Multiple Units. Multiple tanks are required for plants designed to treat more than 1 million gallons per day (3,785 cubic meters per day). Adequate provision must be made for sludge handling and storage for the plants treating less than 1 million gallons per day (3,785 cubic meters per day). When multiple units are provided, ability to utilize them in serial operation is recommended.

4. Mixing and Air Requirements

a. Aerobic sludge digestion tanks shall be designed for effective mixing. Sufficient air shall be provided to keep the solids in suspension and maintain dissolved oxygen between 1 to 2 milligrams per liter.

b. A minimum air volume of 30 cubic feet per minute per 1,000 cubic feet of tank volume (0.51 liters per cubic meter per second) shall be provided with the largest blower out of service for the mixing and aeration requirements. For the diffused aeration systems, the nonclog type air diffusers are recommended, and shall be designed to permit continuity of service.

c. A minimum of 75 horsepower per million gallon of tank volume (15 watts per cubic meter) shall be provided for mechanical aeration systems. Mechanical aerators must be protected where freezing temperatures are expected. Submerged turbine units or floating surface aerators may be considered to allow for liquid level variation.

5. Supernatant Separation. Facilities shall be provided for effective separation and withdrawal of supernatant and for effective collection and removal of scum and grease. Multiple level decant withdrawal lines should be provided.

6. Foam Spray. Foam suppression spray water piping and nozzles should be provided.

9.6. Sludge Dewatering

A. Belt Filter Press

1. Design Basis

a. Hydraulic and solids loading rates, conditioning requirements, and performance shall be based on pilot unit performance or operational results on similar sludges.

b. Multiple units are required unless storage capacity or alternate dewatering methods are available to handle sludge during prolonged power outage.

c. In plants designed for 1 million gallons per day (3,785 cubic meters per day), the operational period should not usually exceed 35 hours per week which allows one shift operation with time for chemical makeup, cleanup and delays. In plants designed for over 1 million gallons per day (3,785 cubic meters per day), the operational period may approach 20 hours per day.

2. Equipment Features

a. The facility should provide for chemical storage, feed equipment, belt wash water, and filtrate return and for conveying and loading sludge cake onto transport vehicles.

b. Belt alignment and tensioning should be regulated automatically.

c. If a single unit is provided, standby equipment should be provided for the sludge feed pump, belt wash, and chemical feed.

d. Facilities or piping for filtrate and wash water sampling should be provided.

3. Operational Considerations. Good house keeping and maintenance features should include press housing, ventilation, safe and convenient access for cleanup and maintenance, floor drains, minimum splashing of filtrate or wash water, etc.

9.7. Sludge Drying Beds

A. Design Basis

1. The area of sludge drying beds is determined by factors such as, climatic conditions, the character and volume of the sludge to be dewatered, the method and schedule of sludge removal, and other methods of sludge disposal.

2. The applicant or the design engineer must submit the basis of design including calculations for review. When the basis of design is not submitted, the drying bed area shall be determined on the basis of 4 square feet per population equivalent (0.38 square meter per population equivalent) when the drying bed is the primary method of dewatering, and 2.0 square feet per population equivalent (0.19 square meter per population equivalent) if it is to be used as a backup dewatering unit. An increase of bed area by 25 percent is required for paved beds. Sludge storage or alternate dewatering methods should be considered for winter weather.

3. A ground water discharge permit may be required for beds without an impervious base. Hydraulic conductivity shall not be greater than 1 x 10-6 centimeters per second or as required for compliance with the provisions of R317-6 (Ground Water Quality Protection Regulations).

B. Design Features

1. Gravel. The lower course of gravel around the underdrains should be properly graded and not less than 12 inches (30.5 centimeters) in depth, extending at least 6 inches (15.2 centimeters) above the top of the underdrains. It is desirable to place this in two or more layers. The top layer of at least 3 inches (7.6 centimeters) must consist of gravel 1/8 inch to 1/4 inch (3.18 to 6.35 millimeters) in size. The remaining layer of gravel below the top 3-inch (7.6 centimeters) layer may be 3/4 to 1 inch (1.9 to 2.5 centimeters) in size.

2. Sand. The top course placed above the gravel should consist of at least 6 to 9 inches (15.2 to 22.9 centimeters) of clean coarse sand. The finished sand surface should be level.

3. Underdrains. Underdrains should be clay pipe or concrete drain tile at least 4 inches (10.2 centimeters) in diameter laid with open joints. Underdrains should be spaced not more than 20 feet (6.1 meters) apart. Underdrainage should be returned to the process with raw or settled sewage.

4. Partially Paved Type. The partially paved drying bed should be designed with consideration for the space requirement to

operate mechanical equipment for removing the dried sludge. Paving must positively slope to the underdrains.

5. Containment Walls. Walls should be water-tight and extend 15 to 18 inches (38 to 46 centimeters) above and at least 6 inches (15 centimeters) below the surface of the drying bed. Outer walls should be curbed to prevent soil from washing onto the beds.

6. Sludge Removal. Not less than two beds should be provided and they should be arranged to facilitate sludge removal. Paved truck tracks should be provided for all percolation-type sludge beds.

7. Sludge Feed Line. The sludge pipe to the drying beds should terminate at least 12 inches (30.5 centimeters) above the floor surface and be so arranged that it will drain into the bed. Concrete splash blocks should be provided at sludge discharge points.

9.8. Other Sludge Treatment Methods. Other methods for sludge dewatering, treatment, and stabilization will be considered by the [~~executive secretary~~]Director based on such factors as the need, suitability of application and process, reliability and flexibility, etc.

R317-3-10. Lagoons.

10.1. Lagoon Siting

A. Distance from Habitation. A lagoon should be sited as far as practicable, with a minimum of 1/4 mile (0.4 kilometer), from areas developed for residential or commercial or institutional purposes or may be developed for such purposes within a foreseeable future. Site characteristics such as topography, prevailing wind direction, forests, etc., must be considered in siting the lagoon.

B. Prevailing Winds. The lagoon should be sited where the direction of local prevailing winds is towards uninhabited areas.

C. Surface Runoff. The lagoon should not be sited in watersheds receiving significant amounts of storm-water runoff. Storm-water runoff should be diverted around the lagoon and protect lagoon embankments from erosion.

D. Hydrology and hydrogeology. Close proximity to water supplies and other facilities subject to wastewater contamination should be avoided in siting the lagoon. A minimum separation of four (4) feet (1.2 meters) between the bottom of the lagoon and the maximum ground water elevation should be maintained.

E. Geology

1. The lagoon shall not be located in areas which may be subjected to karstification, i.e., sink holes or underground streams generally occurring in area underlain by porous limestone or dolomite or volcanic soil.

2. A minimum separation of 10 feet (3.0 meters) between the lagoon bottom and any bedrock formation is recommended.

10.2. Small Facilities. The [~~executive secretary~~]Director will review and approve the construction of a lagoon for a design rate of flow less than 25,000 gallons per day (95 cubic meters per day) only if:

A. there are no other alternatives for wastewater treatment and disposal available to the applicant;

B. there is no other appropriate technology for wastewater treatment and disposal except lagoon; and

C. the applicant has resources to satisfactorily operate and maintain the lagoon.

10.3. Basis of Design. Design variables such as lagoon depth, number of units, detention time, and additional treatment units must be based on effluent standards for BOD_5, total suspended solids (TSS), E. coli, dissolved oxygen (DO), and pH.

A. Design for Discharging and Total Containment Lagoons

1. The design shall be based on BOD_5 loading ranging from 15 to 35 pounds per acre per day (16.8-39.2 kilograms per hectare per day).

2. The design for total containment lagoons shall be based on conservative estimates of precipitation, evaporation, seepage or percolation and inflow relevant to the site. A mass diagram showing each of the foregoing factors on a month-by-month basis, shall be prepared and submitted with the design and plans for review.

B. Design Depth. The minimum operating depth should be such that growth of aquatic plants is suppressed to prevent damage to the dikes, bottom, control structures, aeration equipment and other appurtenances.

1. Discharging or Total Containment Lagoons. The maximum water depth shall be 6 feet (1.8 meters) in primary cells. Greater depth in subsequent cells may be deeper than 6 feet provided that supplemental aeration or mixing is incorporated in the design. Minimum operating depth shall be three feet.

2. Aerated Lagoons. The design water depth should range from 10 to 15 feet (three to 4.5 meters). The type of the aeration equipment, waste strength and climatic conditions affect the selection of the design water depth.

3. Sludge Accumulation. The minimum depth of 18 inches (45 centimeters) for sludge accumulation shall be provided in primary cells of facultative lagoons.

C. Freeboard. The minimum freeboard shall be three (3) feet (1.0 meter). For small systems - less than 50,000 gallons per day (190 cubic meters per day), the minimum freeboard can be reduced to two (2) feet (0.6 meter).

D. Slope

1. Maximum Dike Slope. The inner and outer dike slopes shall not be steeper than 3 horizontal to 1 vertical (3:1).

2. Minimum Dike Slope. Inner dike slope shall not be flatter than 4 horizontal to 1 vertical (4:1). A flatter slope can be specified for larger installations because of wave action, but have the disadvantages of added shallow areas, that are conducive to emergent vegetation.

E. Seepage

1. The bottom of lagoons treating domestic sewage shall be no less than 12-inch (30 centimeters) in thickness, constructed in two six-inch (15 centimeters) lifts. The selection of the type of seals using soils, bentonite, or synthetic liners for the lagoon bottom shall be based on the design hydraulic conductivity, durability, and integrity of the proposed material.

2. Hydraulic conductivity of the lagoon bottom as constructed or installed, shall be such that it meets the requirements of ground water discharge permit issued under R317-6, (Ground Water Quality Protection rules). It shall not exceed 1.0×10^{-6} centimeters per second.

3. The seepage loss may vary with the thickness of the bottom seal and hydraulic head thereon. Detailed calculations on the determination of seepage loss shall be submitted with the

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design. It shall not exceed 6,500 gallons per acre per day (60.8 cubic meters per hectare per day).

4. Results of field and laboratory hydraulic conductivity tests, including a correlation between them, shall meet the design and ground water discharge permitting requirements, before the use of lagoon can be authorized.

5. Hydraulic conductivity for the lagoon where industrial waste is a significant component of sewage, shall be based on ground water protection criteria contained in R317-6 (Ground Water Quality Protection rules).

F. Detention time

1. Discharging Lagoons. Detention time in the lagoon shall be the greater, and exclusive of the capacity provided for sludge build-up, of:

a. 120 days based on winter flow and the maximum operating depth of the entire system; or

b. 60 days based on summer flow and peak monthly infiltration/inflow.

c. The detention time shall not be less than 150 days at the mean operating depth for effluent discharge without chlorination. In order to meet bacteriologic standards in such a case, at least 5 cells shall be provided. The detention time and organic loading rate shall depend on climatic or stream conditions.

2. Aerated Lagoons

a. The detention time shall be the greater of:

(1) 30 days minimum; or

(2) the value determined using the following formula: $E = (1/(1 + (2.3 \times K_1 \times t)))$ where: t = detention time, days; E = fraction of BOD_5 remaining in an aerated lagoon; K_1 = reaction coefficient, aerated lagoon, base 10. For normal domestic sewage, the K_1 value may be assumed to be 0.12 day^{-1} at 20 degrees Centigrade, and 0.06 day^{-1} at one degree Centigrade.

b. The reaction rate coefficient for domestic sewage which includes some industrial wastes must be determined experimentally for various conditions which might be encountered in the aerated lagoons. The reaction rate coefficient based on temperature used in the experimental data, shall be adjusted for the minimum sewage temperature.

G. Aeration Requirements for Aerated Lagoons

1. The design parameters for the aerated lagoon should be based on pilot testing or validated experimental data.

2. When pilot testing is not conducted, the design should be based on two pounds of oxygen input per pound of BOD_5 applied (two kilograms of oxygen input per kilogram of BOD_5 applied). However, it may vary with the degree of treatment, and the concentration of suspended solids to be maintained. A tapered mode of aeration is permitted based on applied BOD_5 to each cell.

3. Aeration equipment shall be capable of maintaining a minimum dissolved oxygen level of 2 milligrams per liter in the lagoon at all times such that their circles of influence meet.

a. Circle of Influence. It is that area in which return velocity is greater than 0.15 feet per second as indicated by the manufacturer's certified data. Table R317-3-10.3(G)(3)(a) may be used when the manufacturer's certified data is not available.

b. Freezing. Suitable protection from weather shall be provided for aerators and electrical controls.

H. Industrial Wastes. For industrial waste treatment using lagoon, the design parameters shall be based on the type and treatability of industrial wastes using biological processes. In some cases it may be necessary to pretreat industrial waste or combine with domestic sewage.

10.4. Lagoon Construction Details

A. Cell Shape. The shape of all cells should be such that there are no narrow or elongated portions. Round, square or rectangular lagoons with a length not exceeding three times the width are most desirable. No islands, peninsulas or coves are permitted. Dikes should be rounded at corners to minimize accumulations of floating materials. Common-wall dike construction, wherever possible, is strongly encouraged.

B. Multiple Units

1. At a minimum, the lagoon system shall consist of three cells of approximately equal capacity designed to facilitate both series and parallel operations.

2. The [~~executive secretary~~]Director may approve less than three cells on the basis of review of factors such as, the rate of flow, the need, treatment reliability, etc.

3. All systems shall be designed with piping:

a. to permit isolation of any cell without affecting the transfer and discharge capabilities of the total system, and

b. to split the influent waste load to a minimum of two cells or all primary cells in the system.

C. Embankments and Dikes

1. Material. Dikes shall be constructed of relatively impervious material and compacted to no less than 90 percent Standard Proctor Density at 3 percent above the optimum moisture density to form a stable structure. The area where the embankment is to be placed shall be from vegetation and unstable organic material.

2. Top Width. The minimum dike width shall be 8 feet (2.4 meters) and shall permit access by maintenance vehicles.

D. Lagoon Bottom

1. Soil. Soil used in constructing the lagoon bottom (not including seal) and dike cores shall be incompressible and tight and compacted at a moisture content of 3 percent above the optimum water content to at least 90 percent Standard Proctor Density.

2. Uniformity. The lagoon bottom should be as level as possible at all points. Finished elevations shall not be more than three (3) inches (7.5 centimeters) from the average elevation of the bottom.

3. Prefilling. The lagoon should be prefilled to a level which protects the liner, prevents weed growth, reduces odor, and maintains moisture content of the seal. However, the dikes must be completely prepared before the introduction of any water.

E. Construction Quality Control and Assurance. A construction quality control and assurance plan showing frequency and type of testing for materials used in construction shall be submitted with the design for review and approval. Results of such testing, gradation, compaction, field permeability, etc., shall be submitted to the [~~executive secretary~~]Director.

F. Erosion Control

1. The site shall be protected from erosion. The design of control measures shall be based on factors, such as lagoon location and size, seal material, topography, prevailing winds, cost breakdown, application procedures, etc.

2. For aerated lagoons, the slopes and bottom shall be protected from erosion resulting from turbulence.

3. Exterior face of the dike slope shall be protected from erosion due to severe flooding of a water course.

4. Seeding. The outside surface of dikes shall have a cover layer of at least 4 inches (10 centimeters), of fertile topsoil to promote establishment of an adequate vegetative cover wherever riprap is not utilized. Prior to prefilling, adequate vegetation shall be established on dikes from the outside toe to 2 feet (0.6 meter) above the lagoon bottom on the interior as measured on the slope. Perennial-type, low-growing, native, spreading grasses that minimize erosion and can be mowed are most satisfactory for seeding on dikes. Alfalfa and other deep-rooted crops must not be used for seeding since the roots of this type are apt to impair the water holding efficiency of the dikes.

5. Riprap or equivalent material shall be placed from 1 foot (0.3 meter) above the high water mark to two feet (0.6 meter) below the low water mark (measured on the vertical) for protection from severe wave action.

a. Riprap. The interior face of dikes must be protected from erosion by riprap or other equivalent methods of erosion control.

(1) Riprap layer shall be of durable, angular, sound and hard, field or quarry stones, and shall be free from seams, cracks and structural defects.

(2) The thickness of riprap layer shall be at least 8 inches (20 centimeters).

(3) Stones to be used in the riprap layer shall meet the following requirements:

(a) A minimum of 50 percent of stones by weight, shall be of sizes between two-thirds and one and one-half of the layer thickness;

(b) No more than ten percent of stones by weight, shall be of a size less than one-tenth of the layer thickness;

(c) The specific weight of stones must range between 2.5 and 2.82;

(d) Durability shall be tested in accordance with ASTM Standard C-535, as amended, and stones wearing in excess of 40 percent shall not be used.

(e) Stones shall be graded and manipulated in size so as to produce a regular surface of dense and stable mass. A stable foundation for the placed riprap shall be provided at the toe of the dike.

10.5. Influent Piping

A. Influent and Effluent Structures

1. All influent and effluent structures shall be located to minimize short-circuiting within lagoons, and to avoid blocking of lagoon circulation. Such structures must have protection against freezing or ice damage under winter conditions.

2. Inlets to the primary cells shall meet the following criteria:

a. Surcharging of upstream sewer from the inlet manhole is not permitted.

b. Multiple influent discharge points for primary cells of 20 acres (8 hectares) or larger should be provided to enhance the distribution of waste load in the cell.

c. Discharge shall be in the center of a round or a square cell, or at the third point farthest from the outlet structure in a rectangular cell, or at least 100 feet (30 meters) from the toe of the dike.

d. All aerated cells shall have an influent line which distributes the load within the mixing zone of the aeration equipment. Multiple inlets may be considered for a diffused aeration system.

e. Force mains shall be valved at the lagoon, and may terminate in a vertically or horizontally discharging section. The discharge end of the vertical pipe must be located no more than one foot above the lagoon bottom. Flow velocities in the discharge section entering the lagoon must not be in excess of two feet per second.

B. Influent Discharge Apron

1. The influent line shall discharge horizontally into a shallow, saucer-shaped, depression extending below the lagoon bottom not more than the diameter of the influent pipe plus 1 foot.

2. The end of the discharge line shall rest on a suitable concrete apron large enough to prevent the terminal influent velocity at the end of the apron from causing soil erosion. A 2-foot (0.6 meter) square apron shall be provided at the minimum.

C. Flow Measurement. Influent flow to the lagoon shall be continuously indicated and recorded. Flow measurement and recording equipment shall be weatherproof.

D. Level Gauges. Level gauges with clear markings shall be provided in:

1. each cell to measure and manually record the depth; and

2. the primary flow measurement device structure to indicate the depth or the rate of flow.

E. Manhole

1. A manhole or vented cleanout wye shall be installed prior to entrance of the influent line into the primary cell and shall be located close to the dike as topography permits. Its invert shall be at least 6 inches (15 centimeters) above the maximum operating level of the lagoon and provide sufficient hydraulic head without surcharging the manhole.

2. A manhole is required for small systems to house flow measurement device. For larger systems, flow measurement device and related instrumentation must be housed in a headworks type structure.

F. Flow Distribution. Flow distribution structures shall be designed to effectively split hydraulic and organic loads equally to primary cells.

G. Material. The material for influent line to the lagoon should meet the requirements of material for underground sewer construction described in this rule. Unlined corrugated metal pipe is not permitted due to corrosion problems. The material selection shall be based on factors such as, wastewater characteristics, heavy external loadings, abrasion, soft foundations, etc.

10.6. Control Structures and Interconnecting Piping

A. Structure

1. As a minimum, control structures shall:

a. be accessible for maintenance and adjustment of controls;

b. be adequately ventilated for safety and to minimize corrosion;

c. be locked to discourage vandalism;

d. contain controls to permit water level and flow rate control, and complete shutoff;

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e. be constructed of non-corrodible materials (metal-on-metal); and

f. be located to minimize short-circuiting within the cell and avoid freezing and ice damage.

2. Recommended devices to regulate water level are valves, slide tubes or dual slide gates. Regulators should be designed so that they can be preset to stop flows at any lagoon elevation.

B. Piping. All piping shall be of cast iron or other material for installation of underground piping. The piping shall be located along the bottom of the lagoon with the top of the pipe just below average elevation of the lagoon bottom. Pipes should be anchored and protected from erosion.

10.7. Effluent Discharge Piping

A. Submerged Takeoffs. For lagoons designed for shallow or variable depth operations, submerged takeoffs are required. Intakes shall be located a minimum of 10 feet (3.0 meters) from the toe of the dike and 2 feet (0.6 meter) from the seal, and shall employ vertical withdrawal.

B. Multi-level Takeoffs. For lagoons that are designed deeper than 10 feet (3 meters), enough to permit stratification of lagoon content, multiple takeoffs are required. There shall be a minimum of three withdrawal pipes at different elevations. Adequate structural support for takeoffs shall be provided.

C. Emergency Overflow. An emergency overflow should be provided to prevent overtopping of dikes. The hydraulic capacity for continuous discharge structures and piping shall allow for a minimum of 250 percent of the design flow of the system. The hydraulic capacity for controlled-discharge systems shall permit transfer of water at a minimum rate of six (6) inches (15 centimeters) of lagoon water depth per day at the available head.

10.8. Miscellaneous

A. Fencing. The lagoon area shall be enclosed with not less than 6 feet high chain link fence to prevent entering of livestock and to discourage trespassing. Fencing must not obstruct vehicle traffic on top of the dikes. A vehicle access gate of sufficient width to accommodate all maintenance equipment shall be provided. All access gates shall be provided with locks.

B. Access. An all-weather access road shall be provided to the lagoon site to allow year-round maintenance of the facility.

C. Warning Signs. Permanent signs shall be provided along the fence around the lagoon to designate the nature of the facility and advise against trespassing. At least one sign shall be provided on each side of the site and one for every 500 feet (150 meters) of its perimeter.

D. Service Building A service building for laboratory and maintenance equipment should be considered.

10.9. Industrial Waste Lagoons. The [~~executive secretary~~]Director will review the design of lagoons for treatment of industrial wastes on the basis of such factors as treatability, operability, reliability, ground water protection levels, water quality objectives, etc.

R317-3-11. Use, Land Application and Alternate Methods for Disposal of Treated Wastewater Effluents.

11.1. General. Design requirements for effluent disposal or water reuse of municipal wastewater treatment plant effluents shall comply with the requirements of this section. Administrative and approval requirements for these land application systems are found in R317-13 and R317-14 for water reuse and effluent disposal, respectively. Land application of effluent from industrial wastewater treatment plants shall comply with the requirements of R317-1-5.

11.2 Effluent Criteria. Land application of treated effluents is permitted following treatment if standards are met as defined in this section.

11.3 Submittal of Project Plan. If a person intends to use or provide for the use of treated domestic wastewater directly for any purpose, except on the treatment plant site as described in R317-1-4.2, a Project Plan must be submitted to and approved by the [~~Division~~]Director [~~of Water Quality~~]. A copy of the plan must also be submitted to the local health department. Any needed construction of wastewater treatment and delivery systems would also be covered by a construction permit as required in section R317-1-2.2. The plan must contain the following information. At least items A, B, D and E should be provided before construction begins. All items must be provided before any water deliveries are made.

A. A description of the quantity, quality, and use of the treated wastewater to be delivered, the location of the site, an assessment of the direct hydrologic effects of the action, and how the requirements of this rule would be met. A nutrient management and agronomic uptake analysis may be required to document the proposed management of all nutrients.

B. A description of public notification and participation in the development of the Project Plan may be required.

C. An operation and management plan to include:

1. A copy of the contract with the user, if other than the treatment entity.

2. A labeling and separation plan for the prevention of cross connections between treated effluent distribution lines and potable water lines. Guidance for distribution systems is available from the Division of Water Quality.

3. Schedules for routine maintenance.

4. A contingency plan for system failure or upsets.

D. If the water will be delivered to other entities for transmission, distribution and/or use, a copy of the contract covering how the requirements of this rule will be met.

E. Requirements for ground water discharge permits, underground injection control (U.I.C.) permits, surface water discharge permits, total maximum daily load (TMDL) or nutrient loading considerations, if required, shall be determined in accordance with R317-1, R317-2, R317-6, R317-7, R317-8.

11.4 Use of Treated Domestic Wastewater Effluent Where Human Exposure is Likely (Type I)

A. Uses Allowed

1. Residential irrigation, including landscape irrigation at individual houses.

2. Urban uses, which includes non-residential landscape irrigation, golf course irrigation, toilet flushing, fire protection, and other uses with similar potential for human exposure. Internal building uses of treated effluent will not be allowed in individual, wholly-owned residences; and are only permitted in situations where maintenance access to the building's utilities is strictly controlled and limited only to the services of a professional plumbing entity. Projects involving effluent reuse within a building must be approved by the local building code official.

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3. Irrigation of food crops where the applied reuse water is likely to have direct contact with the edible part. Type I water is required for all spray irrigation of food crops.

4. Irrigation of pasture for milking animals.

5. Impoundments of wastewater where direct human contact is likely to occur.

6. All Type II uses listed in 11.5.A below.

B. Required Treatment Processes.

1.a. Treatment processes that are expected to produce effluent in which both the BOD and total suspended solids concentrations do not exceed secondary quality effluent limits as defined in R317-1-3.2.

b. Filtration, which includes passing the wastewater through filter media such as sand and/or anthracite, approved membrane processes or other approved filtration processes.

c. Disinfection to destroy, inactivate, or remove pathogenic microorganisms by chemical, physical, or biological means. Disinfection may be accomplished by chlorination, ozonation, or other chemical disinfectants, UV radiation, or other approved processes.

2. Other approved treatment processes in which any of the unit process functions of secondary treatment, filtration and disinfection may be combined, but still achieve the same secondary quality effluent limits as required above.

C. Water Quality Limits. The quality of treated effluent before use must meet the following standards. Testing methods and procedures shall be performed according to test procedures approved under R317-2-10, or as otherwise approved by the [~~Executive Secretary~~]Director. Water quality sampling requirements specified in this section shall apply to the point of compliance at all times during use of treated effluent.

1. The monthly arithmetic mean of BOD shall not exceed 10 mg/l as determined by composite sampling conducted once per week. Composite samples shall be comprised of at least six flow proportionate samples taken over a 24-hour period.

2. The daily arithmetic mean turbidity shall not exceed 2 NTU, and turbidity shall not exceed 5 NTU at any time. Turbidity shall be measured continuously. The turbidity standard shall be met prior to disinfection. If the turbidity standard cannot be met, but it can be demonstrated to the satisfaction of the [~~Executive Secretary~~]Director that there exists a consistent correlation between turbidity and the total suspended solids, then an alternate turbidity standard may be established. This will allow continuous turbidity monitoring for quality control while maintaining the intent of the turbidity standard, which is to have 5 mg/l total suspended solids or less to assure adequate disinfection.

3. The weekly median E. coli concentration shall be none detected, as determined from daily grab samples, and no sample shall exceed 9 organisms/100 ml.

4. The total residual chlorine shall be measured continuously and shall at no time be less than 1.0 mg/l after 30 minutes contact time at peak flow. If an alternative disinfection process is used, it must be demonstrated to the satisfaction of the [~~Executive Secretary~~]Director that the alternative process is comparable to that achieved by chlorination with a 1 mg/l residual after 30 minutes contact time. If the effectiveness cannot be related to chlorination, then the effectiveness of the alternative disinfection process must be demonstrated by testing for pathogen destruction as determined by the [~~Executive Secretary~~]Director. A 1 mg/l total chlorine residual is recommended after disinfection and before the treated effluent goes into the distribution system.

5. The pH as determined by daily grab samples or continuous monitoring shall be between 6 and 9.

D. Other Requirements

1. An alternative disposal option or diversion to storage must be automatically activated if turbidity exceeds the maximum instantaneous limit for more than 5 minutes, or chlorine residual drops below the instantaneous required value for more than 5 minutes, where chlorine disinfection is used.

2. Any irrigation must be at least 50 feet from any potable water well. Impoundments of treated effluent, if not sealed, must be at least 500 feet from any potable water well. The use should not result in a surface runoff and must not result in the creation of an unhealthy or nuisance condition, as determined by the local health department.

3. For residential landscape irrigation at individual homes, additional quality control restrictions may be required by the [~~Executive Secretary~~]Director. Proposals for such uses should also be submitted to the local health authority to determine any conditions they may require. When secondary residential irrigation systems are planned utilizing treated effluent in new subdivisions, it is recommended that a notification of the type of irrigation system and possible sources of irrigation waters be made on the deed for the property. Such notification could be made during the plat approval process.

11.5 Use of Treated Domestic Wastewater Effluent Where Human Exposure is Unlikely (Type II)

A. Uses Allowed

1. Irrigation of sod farms, silviculture, limited access highway rights of way, and other areas where human access is restricted or unlikely to occur.

2. Irrigation of food crops where the applied treated effluent is not likely to have direct contact with the edible part, whether the food will be processed or not (spray irrigation not allowed).

3. Irrigation of animal feed crops other than pasture used for milking animals.

4. Impoundments of wastewater where direct human contact is not allowed or is unlikely to occur.

5. Cooling water. Use for cooling towers which produce aerosols in populated areas may have special restrictions imposed.

6. Soil compaction or dust control in construction areas.

B. Required Treatment Processes

1. Treatment processes that are expected to produce effluent in which both the BOD and total suspended solids concentrations do not exceed secondary quality effluent limits as defined in R317-1-3.2.

2. Disinfection to destroy, inactivate, or remove pathogenic microorganisms by chemical, physical, or biological means. Disinfection may be accomplished by chlorination, ozonation, or other chemical disinfectants, UV radiation, or other approved processes.

C. Water Quality Limits. The quality of effluent before use must meet the following standards. Testing methods and procedures shall be performed according to test procedures approved under R317-2-10, or as otherwise approved by the [~~Executive Secretary~~]Director. Water quality sampling

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requirements specified in this section shall apply to the point of compliance at all times during use of treated effluent.

1. The monthly arithmetic mean of BOD shall not exceed 25 mg/l as determined by composite sampling conducted once per week. Composite samples shall be comprised of at least six flow proportionate samples taken over a 24-hour period.

2. The monthly arithmetic mean total suspended solids concentration shall not exceed 25 mg/l as determined by daily composite sampling. The weekly mean total suspended solids concentration shall not exceed 35 mg/l. Properly calibrated, continuous monitoring of turbidity may be substituted for the suspended solids testing.

3. The weekly median E. coli concentration shall not exceed 126 organisms/100 ml, as determined from daily grab samples, and no sample shall exceed 500 organisms/100 ml.

4. The pH as determined by daily grab samples or continuous monitoring shall be between 6 and 9.

5. At the discretion of the [~~Executive Secretary~~]Director, the sampling frequency to determine compliance with water quality limits for effluent from lagoon systems used to irrigate agricultural crops, may be reduced to monthly grab sampling for BOD, and weekly grab sampling for E. coli, TSS and pH. The [~~Water Quality Board~~]Director may also allow a relaxation of lagoon effluent BOD and suspended solids concentrations, in accordance with R317-1-3.2.

D. Other Requirements

1. An alternative disposal option or diversion to storage must be available in case quality requirements are not met.

2. Any irrigation must be at least 300 feet from any potable water well. Spray irrigation must be at least 100 feet from areas intended for public access. This distance may be reduced or increased by the [~~Executive Secretary~~]Director, based on the type of spray irrigation equipment used and other factors. Impoundments of treated effluent, if not sealed, must be at least 500 feet from any potable water well. The use should not result in a surface runoff and must not result in the creation of an unhealthy or nuisance condition, as determined by the local health department.

3. Public access to effluent storage and irrigation or disposal sites shall be restricted by a stock-tight fence or other comparable means which shall be posted and controlled to exclude the public.

11.6 Records. Records of volume and quality of treated wastewater used shall be maintained and submitted monthly in accordance with R317-1-2.7. If monthly operating reports are already being submitted to the Division of Water Quality, the data on treated effluent delivered may be submitted on the same form.

11.7 Other Uses of Effluents. Proposed uses of effluents not identified above, including industrial uses, shall be considered for approval by the [~~Board~~]Director based on a case-specific analysis of human health and environmental concerns.

11.8 Treated Effluent Water Distribution Systems. Where treated effluent is to be provided by pressure pipeline, unless contained in surface pipes wholly on private property and for agricultural purposes, the following requirements will apply. The requirements will apply to all new systems and it is recommended that the accessible portions of existing reuse water distribution systems be retrofitted to comply with these rules. Requirements for irrigation systems proposed for conversion from use of secondary water to use with treated effluent will be considered on an individual basis considering protection of public health and the environment. Any person or agency that is constructing all or part of the distribution system must obtain a construction permit from the [~~Division of Water Quality~~]Director prior to beginning construction.

A. Distribution Lines

1. Minimum Separation.

a. Horizontal Separation. Treated effluent main distribution lines parallel to potable (culinary) water lines should be installed in separate trenches. Treated effluent main distribution lines parallel to sanitary sewer lines shall be installed at least ten feet horizontally from the sanitary sewer line if the sanitary sewer line is located above the treated effluent main and three feet horizontally from the sanitary sewer line if the sanitary sewer line is located below the reuse water main.

b. Vertical Separation. At crossings of treated effluent main distribution lines with potable water lines and sanitary sewer lines the order of the lines from lowest in elevation to highest should be; sanitary sewer line, treated effluent line, and potable water line. A minimum 18 inches vertical separation between the treated effluent line and sewer line shall be provided as measured from outside of pipe to outside of pipe. The crossings shall be arranged so that the reuse water line joints will be equidistant and as far as possible from the water line joints and the sewer line joints. If the treated effluent line must cross above the potable water line, the vertical separation should be a minimum 18 inches. If the treated effluent line must cross below the sanitary sewer line, the vertical separation shall be a minimum 18 inches and the treated effluent line shall be encased in a continuous pipe sleeve to a distance on each side of the crossing equal to the depth of the treated effluent line from the ground surface.

c. Special Provisions. Where the horizontal and/or vertical separation as required above cannot be maintained, special construction requirements shall be provided in accordance with requirements in this Rule for protection of potable water lines and treated effluent lines. Existing pressure lines carrying treated effluent shall not be required to meet these requirements.

2. Depth of Installation. To provide protection of the installed pipeline, treated effluent lines should be installed with a minimum depth of bury of three feet.

3. Treated Effluent Pipe Identification.

a. General. All new buried pipe within the public domain, including service lines, valves, and other appurtenances, shall be colored purple, Pantone 522 or equivalent. If fading or discoloration of the purple pipe is experienced during construction, identification tape is recommended. A clearly labeled tracer location tape or wire shall be placed two feet above the top of treated effluent lines less than or equal to 24 inch (61 centimeters) in diameter, along its entire buried length.

b. Identification Tape. If identification tape is installed along with the purple pipe, it shall be prepared with white or black printing on a purple field, color Pantone 512 or equivalent, having the words, "Caution: Treated Wastewater-Do Not Drink". The overall width of the tape shall be at least three inches. Identification tape shall be installed 12 inches above the transmission pipe longitudinally and shall be centered.

4. Conversion of existing water lines. Existing water lines that are being converted to use with treated effluent shall first be accurately located and comply with leak test standards in

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accordance with AWWA Standard C-600 and in coordination with regulatory agencies. The pipeline must be physically disconnected from any potable water lines and brought into compliance with current State cross connection rules and requirements (R309-102-5), and must meet minimum separation requirements in section 4.8.A.1 of this rule above. If the existing lines meet approval of the water supplier and the Division, the lines shall be approved for treated effluent distribution. If regulatory compliance of the system (accurate location and verification of no cross connections) cannot be verified with record drawings, televising, or otherwise, the lines shall be uncovered, inspected, and identified prior to use. All accessible portions of the system must be retrofitted to meet the requirements of this rule.

5. Valve Boxes and Other Surface Identification. All valve covers shall be of non-interchangeable shape with potable water covers, and shall have an inscription cast on the top surface stating "Reclaimed Water" or "Treated Wastewater". Valve boxes shall meet AWWA standards. All above ground facilities shall be consistently color coded (purple, Pantone 512 or equivalent color) and marked to differentiate treated effluent facilities from potable water facilities.

6. Blow-off Assemblies. If either an in-line type or end-of-line type blow-off or drain assembly is installed in the system, the Division of Water Quality shall be consulted on acceptable discharge or runoff locations.

7. Line Drains. All distribution pipes and sprinklers must have the capability to be completely drained.

8. Flow Measurement. Main distribution headers must have flow measurement devices and pressure gages. All land applied flow must be totalized.

B. Storage. If storage or impoundment of treated effluent is provided, the following requirements apply:

1. Fencing. For Type I effluent, no fencing is required by this rule, but may be required by local laws or ordinances. For Type II effluent, see R317-3-11.5.D.2 above.

2. Identification. All storage facilities shall be identified by signs prepared according to the requirements of Section 11.8.D.6 below. Signs shall be posted on the surrounding fence at minimum 500 foot intervals and at the entrance of each facility. If there is no fence, signs shall be located as a minimum on each side of the facility or at minimum 250 foot intervals or at all accessible points.

C. Pumping Facilities.

1. Marking. All exposed and above ground piping, fittings, pumps, valves, etc., shall be painted purple, Pantone 512 or equivalent color. In addition, all piping shall be identified using an accepted means of labeling reading "Caution: Treated Wastewater - Do Not Drink." In a fenced pump station area, signs shall be posted on the fence on all sides.

2. Sealing Water. Any potable water used as seal water for reuse water pumps seals shall be protected from backflow with a reduced pressure principle device.

D. Other Requirements.

1. Backflow Protection. In no case shall a connection be made between the potable and treated effluent system. If it is necessary to put potable water into the treated effluent distribution system, an approved air gap must be provided to protect the potable water system. A reduced pressure principle device may be used only when approved by the [~~Division of Water Quality~~]Director, the local health department, and the potable water supplier.

2. Drinking Fountains. Drinking fountains and other public facilities shall be placed out of any spray irrigation area in which reuse water is used, or shall be otherwise protected from contact with the treated effluent. Exterior drinking fountains and other public facilities shall be shown and called out on the construction plans. If no exterior drinking fountains, picnic tables, food establishments, or other public facilities are present in the design area, then it shall be specifically stated on the plans that none are to exist.

3. Hose Bibs. Hose bibs on treated effluent systems in public areas and at individual residences are permitted for Type I water, with the following restrictions:

a. All exposed hose bib piping must be painted purple, Pantone 512 or equivalent color and,

b. Hose bibs shall be fitted with a valve having a non-permanently attachable operating handle. To discourage inappropriate casual use, it is recommended that each hose bib be posted with a warning label or sign, as detailed in R317 -3.11.8.D.5, and/or placed in a lockable subsurface valve box in accordance with R317-3-11.8.A.5.

In public, non-residential areas, replacement of hose bibs with quick couplers is recommended.

4. Equipment and Facilities. To ensure the protection of public health, any equipment or facilities such as tanks, temporary piping or valves, and portable pumps which have been used for conveying treated effluent may not be reused for conveying potable water.

5. Warning Labels. Warning labels shall be installed on designated facilities such as, but not limited to, controller panels and washdown or blow-off hydrants on water trucks, and temporary construction services. The labels shall indicate the system contains treated wastewater that is unsafe to drink.

6. Warning signs. Where treated effluent is stored or impounded, or used for irrigation in public areas, warning signs shall be installed and contain, as a minimum, 1/2 inch purple letters (Pantone 512 or equivalent color) on a white or other high contrast background notifying the public that the water is unsafe to drink. Signs may also have a purple background with white or other high contrast lettering. Warning signs and labels shall read, "Warning: Treated Wastewater - Do Not Drink". The signs shall include the international symbol for Do Not Drink.

7. Public Education Program. Where treated effluent is used in individual residential landscape or public landscape area irrigation systems, a public education program must be implemented prior to initial operation of the program and, as necessary, during operation of the system.

R317-3-12. Effluent Filtration.

12.1. Granular Media Filters. Granular media filters may be used as a tertiary treatment device for the removal of residual suspended solids from secondary effluents. A pretreatment process such as chemical coagulation and sedimentation or other acceptable process must precede the filter units, where effluent suspended solids requirements are less than 10 milligrams per liter, or where secondary effluent quality can be expected to fluctuate significantly, or where filters follow a treatment process and where significant amounts of algae will be present.

12.2. Design Considerations. The plant design should incorporate flow-equalization facilities to moderate filter influent

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quality and quantity. The selection of pumping equipment ahead of filter units should be designed to minimize shearing of floc particles.

A. Filter Types. Filters may be of the gravity or pressure type. Pressure filters shall be provided with ready and convenient access to the media for treatment or cleaning. Where greases or similar solids which result in filter plugging are expected, filters should be of the gravity type.

B. Filtration Rates. Filtration rates shall not exceed 5 gallons per minute per square foot. (3.4 liters per square meter per second) based on the maximum hydraulic flow rate applied to the filter units.

C. Number of Units. Total filter area shall be provided in two or more units, and the filtration rate shall be calculated on the total available filter area with one unit out of service.

D. Filter Backwash

1. Backwash Rate. The backwash rate shall be adequate to fluidize and expand each media layer a minimum of 20 percent based on the media selected. The backwash system shall be capable of providing a variable backwash rate having a maximum of at least 20 gallons per minute per square foot, (13.6 liters per square meter per second) and a minimum backwash period of 10 minutes.

2. Backwash Pumps. Pumps for backwashing filter units shall be sized and interconnected to provide the required rate to any filter with the largest pump out of service. Filtered water should be used as the source of backwash water. Waste filter backwash shall be returned to the treatment process or otherwise adequately treated.

E. Filter Media

1. Selection. Selection of proper media size will depend on the rate of filtration rate, the type of pretreatment, filter configuration, and effluent quality objectives. In dual or multi-media filters, media size selection must consider compatibility among media.

2. Media Specifications. Table R317-3-12.2(E)(2) provides minimum media depths and the normally acceptable range of media sizes. The applicant has the responsibility for selection of media to meet specific conditions and treatment requirements relative to the project under consideration.

12.3. Filter Appurtenances. The filters shall be equipped with wash water troughs, surface wash or air scouring equipment, means of measurement and positive control of the backwash rate, equipment for measuring filter head loss, positive means of shutting off flow to a filter being backwashed, and filter influent and effluent sampling points. If automatic controls are provided, there shall be a manual override for operating equipment, including each individual valve essential to the filter operation. The underdrain system shall be designed for uniform distribution of backwash water (and air if provided) without danger of clogging from solids in the backwash water. Provision shall be made to allow periodic chlorination of the filter influent or backwash water to control slime growths.

12.4. Reliability. Each filter unit shall be designed and installed so that there is ready and convenient access to all components and the media surface for inspection and maintenance without taking other units out of service. The need for enclosing filter units shall depend on expected extreme climatic conditions at the treatment plant site. As a minimum, all controls shall be protected from adverse process and climatic conditions. The structure housing filter controls and equipment shall be provided with adequate heating and ventilation equipment to minimize problems with excess humidity.

12.5. Backwash Surge Control. The rate of waste filter backwash water return to treatment units shall be controlled such that the rate does not exceed 15 percent of the design average daily flow rate to the treatment units. The hydraulic and organic loads from waste backwash water shall be considered in the overall design of the treatment plant. Where waste backwash water is returned for treatment by pumping, adequate pumping capacity shall be provided with the largest unit out of service.

12.6. Backwash Water Storage. Total backwash water storage capacity provided in an effluent clearwell or surge tank or other unit shall equal or exceed the volume required for two complete backwash cycles. Additional storage capacity should be considered for operational flexibility.

12.7. Proprietary Equipment. Where proprietary filtration equipment, not conforming to the preceding requirements is proposed, data which supports the capacity of the equipment to meet effluent requirements under design conditions shall be submitted for review and approval by the [~~executive secretary~~]Director.

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KEY: wastewater, water quality, water pollution
Date of Enactment or Last Substantive Amendment: [~~April 7, 2009~~]2013
Notice of Continuation: May 15, 2012
Authorizing, and Implemented or Interpreted Law: 19-5; 19-5-104; 40 CFR 503

Environmental Quality, Water Quality
R317-5
Large Underground Wastewater Disposal Systems

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37853
FILED: 07/15/2013

RULE ANALYSIS

PURPOSE OF THE RULE OR REASON FOR THE CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 passed in the 2012 General Legislative Session.

SUMMARY OF THE RULE OR CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 (2012). The majority of the proposed changes are editorial, largely consisting of replacing the term "Executive Secretary" with "Director". However, the amendments also make additional changes mandated by S.B. 21 (2012) which reflect the transfer of certain powers and duties from the Water Quality

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Board to the Director of the Division of Water Quality in the realm of permits, certifications, and other administrative authorizations.

STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

ANTICIPATED COST OR SAVINGS TO:
♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ LOCAL GOVERNMENTS: Enactment of these changes likely will not result in direct, measurable costs for local governments as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ SMALL BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to small businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ PERSONS OTHER THAN SMALL BUSINESSES, BUSINESSES, OR LOCAL GOVERNMENTAL ENTITIES: Enactment of these changes likely will not result in direct, measurable costs to other persons as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMPLIANCE COSTS FOR AFFECTED PERSONS: Enactment of these changes likely will not result in direct, measurable compliance costs as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMMENTS BY THE DEPARTMENT HEAD ON THE FISCAL IMPACT THE RULE MAY HAVE ON BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

THE FULL TEXT OF THIS RULE MAY BE INSPECTED, DURING REGULAR BUSINESS HOURS, AT:
ENVIRONMENTAL QUALITY
WATER QUALITY
THIRD FLOOR
195 N 1950 W
SALT LAKE CITY, UT 84116
or at the Division of Administrative Rules.

DIRECT QUESTIONS REGARDING THIS RULE TO:
♦ Dave Wham by phone at 801-536-4337, by FAX at 801-536-4301, or by Internet E-mail at dwham@utah.gov

INTERESTED PERSONS MAY PRESENT THEIR VIEWS ON THIS RULE BY SUBMITTING WRITTEN COMMENTS NO LATER THAN AT 5:00 PM ON 09/03/2013

THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-5. Large Underground Wastewater Disposal Systems.
R317-5-1. General.

1.1 SCOPE: These [~~regulations~~]rules shall apply to large underground disposal systems for domestic wastewater discharges which exceed 5,000 gallons per day (gpd) and all other domestic wastewater discharges not covered under the definition of an "Onsite wastewater disposal system" in R317-1-1.13. Usually these systems should not be designed for over 15,000 gpd. In general, it is not acceptable to dispose of industrial wastewater in an underground disposal system.

1.2 ENGINEERING REPORT: An engineering report shall be submitted which shall contain design criteria along with all other information necessary to clearly describe the proposed project and demonstrate project feasibility.

1.3 SUBMISSION OF PLANS FOR REVIEW: Plans for new large underground wastewater disposal systems or extensions of existing systems shall be submitted to the [~~Department~~]Director for review as required by R317-1. All designs shall be prepared and submitted under the supervision of a registered professional engineer licensed to practice in the State of Utah and certified pursuant to R317-11. A construction permit must be issued by the [~~Utah Water Quality Board~~]Director prior to construction of the wastewater disposal system or the building(s) to be served by the wastewater system. The system designer must, following construction of the system, certify in writing that the system was installed in accordance with the approved plans and specifications.

A. Local Health Department Requirements - it is the applicant's responsibility to ensure that the Large Underground Wastewater Disposal System (LUWDS) application to the Division is in compliance with local health department requirements reqarding the location, design, construction and maintenance of an LUWDS prior to the applicant submitting a request for a construction permit to the [~~Division of Water Quality (DWQ)~~]Director. Local Health Departments may petition the [~~Division~~]Director to require local review for compliance with local requirements prior to DWQ initiating its review. Where the petition has been approved by the [~~Executive Secretary~~]Director, the applicant is required to submit documentation that the local health department has approved the proposed LUWDS prior to issuance of a construction permit.

1.4 OPERATION AND MAINTENANCE: Operation and maintenance shall be provided by the owner to ensure the disposal system is functioning properly at all times. An operating permit will be required for all large underground wastewater disposal systems to monitor that proper operation and maintenance is occurring for the protection of the environment and public health. The operating permit shall be issued by the [~~Division of Water Quality~~]Director or, by delegated authority, by the local health

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department having jurisdiction, and shall be effective for a period not to exceed 5 years from the issuance date.

A. Operating Permit Required: The owner of a large underground wastewater disposal system shall provide a written notice of intent (NOI) to the Division of Water Quality and the local health department having jurisdiction of its intent to operate a large underground wastewater disposal facility. Those systems currently in operation must submit the NOI no later than January 1, 2010. New systems permitted under this rule must submit the NOI prior to final inspection. The notice of intent shall be specific for the operating permit and shall include the following information:

1. Facility name and address; owner name, address, and phone number.

2. List of Facility Components, e.g., septic tank, pump tank, gravel drainfield trench, gravelless chambers, pressure drainfield, etc.

3. Design flow (gallons per day) and number and type of connections.

4. Type of waste treated and disposed, i.e., residential, restaurant, other commercial establishment, etc.

5. Sketch plan of existing system showing major facility components.

B. Local Health Department Authority to Issue Operating Permits:

1. A local health department that currently has approval from the [~~Division of Water Quality~~]Director to administer an alternative systems program may obtain authority within its jurisdiction to administer operating permits for large underground wastewater disposal systems by submitting a written request to administer this program. The request must include an agreement to implement and enforce inspection, servicing, monitoring, and reporting requirements of this rule.

2. Local health departments that have been delegated authority to administer the operating permit program must submit an annual report on or before September 1 of the calendar year, to the Division of Water Quality containing:

(a) A list of LUWD systems under delegation.

(b) A summary listing the compliance status of each system, showing those systems that are currently failing, and those systems that have been repaired.

(c) A summary of any enforcement actions taken, identifying those actions that are still pending, and those that been resolved.

C. Annual Report. The owner shall summit an annual covering the period of July 1 to June 30 (the "reporting year") to the permitting agency no later than August 1 of each year. In this report, the owner shall report the following items:

1. All information required to be submitted in the NOI.

2. Checklist of inspections performed including the date of the inspection and a list of findings.

3. Packed Bed media system sampling results.

4. Signature of owner or certified operator, and date.

D. Owner Responsibility to Maintain System: The owner is responsible for maintaining its large underground wastewater disposal system and for performing periodic inspections and servicing of its system. Inspections of conventional systems (gravity, or pump to gravity) shall be not less than once each reporting year, and inspections of at-grade, pressure, mound and packed bed media systems shall be not less than twice each reporting year. At a minimum, the owner is responsible for inspecting these components of the various type of system:

1. Community septic tank or treatment unit - measure sludge and scum levels, and pump when necessary.

2. Effluent filter - clean when necessary.

3. Inspect distribution box.

4. Inspect pump, floats, alarm and control panel, and record flow or hour meter reading.

5. Disposal field - inspect for ponding or surfacing in disposal area. Flush, clean, re-adjust to equal pressure in laterals.

E. Operation and Maintenance Manual Required: New systems must have a written operation and maintenance document describing the treatment and disposal system and outlining routine maintenance procedures, including checklists and maintenance logs needed for proper operation of the system. This document must be available at the time of the final inspection on all new systems.

F. Packed Bed Media System Sampling and Monitoring Requirements:

The owner of a packed bed media system is responsible for sampling and monitoring for COD (Chemical Oxygen Demand), TSS (Total Suspended Solids) and TIN (Total Inorganic Nitrogen) at an interval not exceeding six calendar months. Additional sampling and monitoring may be required if it has been determined that there is a potential for groundwater impacts. Effluent quality of a grab sample, before discharge to a disposal method, shall not exceed 75 mg/L COD or 25 mg/L TSS.

1. Effluent COD exceeding 75 mg/L or TSS exceeding 25 mg/L shall be followed up with weekly sampling commencing within 30 days until such time as two successive results are obtained that are within these limits. Any two successive samples resulting in exceedence of either 75 mg/L COD or 25 mg/L TSS shall result in the system being deemed non-compliant requiring further evaluation and a corrective action plan.

2. For non-complying systems, the permitting agency shall require the order:

(a) all necessary steps such as maintenance servicing, repairs, and/or replacement of system components to correct the system;

(b) effluent quality testing for COD and TSS shall continue every week until two successive samples of COD and TSS are found to be in compliance;

(c) payment of fees for additional inspections, reviews and testing;

(d) evaluation of the system design including non-approved changes to the system, the wastewater flow, and biological and chemical loading to the system;

(e) investigation of household practices related to the discharge of chemicals into the system, such as photo-finishing chemicals, laboratory chemicals, excessive amount of cleaners or detergents, etc.; and

(f) additional tests or samples to troubleshoot the system malfunction.

1.5 LARGE UNDERGROUND WASTEWATER DISPOSAL SYSTEM REQUIRED:

The drainage system of any building or establishment covered herein shall receive all wastewater as required by R309-100, the Utah Plumbing Code and shall have a connection to a public sewer except when such sewer is not available for use, in which case connection shall be made as follows:

A. To an underground wastewater disposal system found to be adequate and constructed in accordance with requirements stated herein.

B. To any other type of disposal system acceptable under R317-3.

1.6 MULTIPLE UNITS UNDER SEPARATE OWNERSHIP: Multiple Units Under Separate Ownership shall not be served by a common large underground disposal system except when, based upon sound engineering judgment, other alternatives are determined infeasible. In such cases, a common subsurface system may be used provided the following requirements are met:

A. The common subsurface disposal system and conveyance sewers shall be under the sponsorship of a body politic.

B. The subsurface absorption system shall be designed and constructed to provide duplicate capacity (two independent systems). Each system shall be designed to accommodate the total anticipated maximum daily flow. The duplicate systems shall be designed with appropriate valving, etc., to allow for periodic alternation of the use of each system.

C. Sufficient land area with suitable characteristics shall be available to provide for a third absorption system capable of handling the total maximum daily wastewater flow. This area shall be kept free of permanent structures, traffic or soil modification (See Section R317-5-3.1(L)).

D. The subsurface absorption system should be used only until a more permanent system becomes available.

1.7 NEW PROCESSES AND METHODS OF DISPOSAL: Where unusual conditions exist, other methods of disposal not described herein may be employed if approved by the [~~Utah Water Pollution Control Committee~~]Director and by the local health authority having jurisdiction. The approval will be based on evidence of adequacy to meet water quality standards and other requirements of the Code.

1.8 UNITS REQUIRED IN A LARGE UNDERGROUND WASTEWATER DISPOSAL SYSTEM: The large underground wastewater disposal system shall typically consist of the following:

A. A building sewer with cleanout.

B. A septic tank.

C. An effluent filter.

D. A pressurized subsurface disposal system. This may be an absorption field, deep wall trenches, absorption beds, or, for packed bed media applications, drip irrigation dispersal, depending on location, topography, soil conditions and maximum ground water level.

E. Accessibility components to insure proper maintenance and servicing. These may include risers on tanks to the surface of the ground, with firmly secured lids; and absorption field inspection ports.

F. Pressurized systems typically require a dosing chamber or dosing tank and cleanouts at the end of pressurized laterals.

G. Additional components may also be required depending on the waste stream characteristics and the need to provide adequate protection to groundwater. These components may include pretreatment devices such as grease traps, or may involve secondary treatment using packed bed media systems.

1.9 LOCATION AND INSTALLATION: Location and installation of the wastewater disposal system shall be such that with reasonable maintenance it will function properly and will not create a nuisance, health hazard or endanger the quality of any waters of the State. Due consideration shall be given to the size and shape of the area in which the system is installed, slope of natural and finished grade, soil characteristics, maximum ground water elevation, proximity of existing or future water supplies or water courses, possible flooding and expansion potential of the disposal system.

1.10 ISOLATION: The system shall be isolated as shown in Table 5-1.

TABLE 5-1
MINIMUM HORIZONTAL SEPARATION IN FEET
(Undisturbed Earth)

	Building Sewer	Septic Tank	Absorption Field Trench	Seepage Pit or trench	Absorption Bed
Drinking Water Supply Source					
Deep Well	(a)100	100	100	100	100
Shallow Well or Spring	(b)	(b)	(b)	(b)	(b)
Domestic Water Supply Lines	(c)	10	10	10	10
Ponds, Lakes, Reservoirs and Water Courses	---	25	(d)	(d)	(d)
Foundation Walls	3	5	25	25	25
Land Drain					
Located upslope	---	10	20	20	20
Located downslope	---	25	100	100	100
Property Line	5	5	5	15	10
Seepage Pits (Trenches)	---	5	10	12(e)	10
Absorption beds	---	5	10	10	10
Absorption fields	---	5	(f)	10	10

Footnotes:

(a) Sewers may be constructed within the 100 foot protective zone, provided the sewer construction meets the requirements of R309-106-2.3.4.

(b) It is recommended that the listed concentrated sources of pollution be located at least 1,500 feet from shallow wells and springs. Any proposal to locate closer than 1,500 feet will be reviewed on a case-by-case basis, taking into account geology, topography, existing land use agreements, designated use of water system (public or non-public) and potential for pollution of water sources. It is the responsibility of the water supply owner to establish an adequate protection zone in accordance with the applicable drinking water [~~regulations~~]rules. Even separation of 1500 feet or greater from concentrated sources of pollution will not guarantee suitability of the water supply system.

(c) The requirements stated in R317-5-1.13(F) must be met.

(d) A minimum of 100 feet is desirable, but may be modified to a lesser or greater distance, depending on soil conditions or mitigating measures such as lining the water course with impervious material.

(e) Seepage pits or seepage trenches must be installed within an established absorption zone. The absorption zone will be sized based on the ratio of ground surface area "GSA" to the required sidewall area "SWA". The GSA/SWA ratio must be at least 2.5. The trenches and pits shall be installed

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within the absorption zone such that the spacing between trenches will be equal. Spacing of 12 feet (sidewall to sidewall) shall be a minimum. Distance to the edge or boundary of the established absorption zone shall be a minimum of 15 feet. The system must also conform to all other separation requirements identified in Table 5-1.

The required sidewall area "SWA" shall be computed based on the design application rate with the associated soil type depicted in Table 5-8. The ground surface area identified within the absorption zone will be a minimum of 2.5 times the required sidewall area. An example of a typical seepage trench design with variation is available from the [~~Bureau of Water Pollution Control~~]Division.

(f) See Table 5-4.

1.11 CONSTRUCTION INSPECTION: Approval to operate the constructed/installed facilities shall be issued following a final inspection by a representative of the Department of Health. The facilities must be inspected after installation but prior to backfilling.

1.12 CONSTRUCTION MATERIALS: Materials used in construction of the system shall be durable, sound, and not unduly subject to corrosion. Pipe, pipe fittings and similar materials shall comply with the requirements of R309-100.

1.13 WASTEWATER DRAINAGE LINE OR BUILDING SEWER: Wastewater drainage lines (or building sewers) shall comply with R309-100, the Utah Plumbing Code, or meet the following requirements, whichever is more restrictive.

A. Any generally accepted material will be given consideration, but material selected shall be suitable for local conditions to include soil characteristics, external loadings, abrasions and similar problems.

B. The lines shall have a minimum inside diameter of 4 inches, in which case they shall be laid on a minimum slope of 1.25 percent. For sewer lines serving more than one dwelling unit, it is recommended that the line be sized greater than 4 inches in diameter. Lines of greater sizes should be designed for a minimum velocity of 2 feet per second based on the pipe flowing full. See R317-3 for calculation of flow velocities.

C. The lines shall have cleanouts every 50 feet and at all changes in direction or grade, except where manholes are installed every 400 feet and at every change in direction or grade.

D. On 4-inch and 6-inch lines, two 45 degree bends with cleanout will be acceptable in lieu of a manhole, and 90 degree ells are not recommended.

E. The design of wastewater pump stations shall comply with the requirements contained in R317-3.

F. Lines shall be separated from water service pipes in separate trenches and by at least 10 feet horizontally. If the local conditions prevent a 10 foot separation, or when sewer lines must cross water lines, the two lines may be placed within the 10 feet of each other, provided:

1. The bottom of the water service pipe, at all points, shall be at least 18 inches above the top of the wastewater drainage line at its highest point.

2. The water service pipe shall be placed in a separate trench or the line should be placed on a shelf of undisturbed soil to one side of the sewer line trench.

3. The number of joints in the service pipe shall be kept to a minimum and the materials and joints of both the sewer line and water service line shall be of a strength and durability to prevent leakage under known adverse conditions. The joints between the two lines shall be staggered to the extent possible.

4. When it is impossible to obtain the proper horizontal and vertical separation as stipulated above, both the water and sewer line shall be constructed in accordance with the requirements of R309-112.2.

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R317-5-3. Absorption Systems.

3.1 GENERAL REQUIREMENTS:

A. Suitable soil exploration, to a depth of about 10 feet, or at least 4 feet below the bottom of the proposed absorption systems and percolation tests, shall be made to provide information on subsoil conditions. Percolation tests and soil exploration reports shall be completed and submitted as part of the engineering report for the disposal facility. After January 1, 2002, the soil evaluation and percolation tests must be done in accordance with certification requirements in R317-11. A minimum of 5 percolation tests must be conducted at different sites for each disposal system. Additional tests may be required, where necessary to adequately evaluate the total absorption system or where there is significant variability in test results. In general, the system will be sized based on the slowest stabilized percolation test rate. Soil logs should be prepared in accordance with the Unified Soil Classification System by a qualified individual. Requirements outlined in R317-5-4.1 and Table 5-8 will be helpful in developing this information.

B. Absorption devices, including seepage pits or trenches, placed in sloping ground should be so constructed that the horizontal distance between the distribution line and the ground surface is at least 10 feet.

C. Soil having excessively high permeability, such as gravel with large voids, affords little filtering and is unsuitable for absorption systems. Percolation rates (R317-5-4.1) of approximately 5 minutes per inch or less usually will not be acceptable.

The extremely fine-grained "blow sand" found in some parts of Utah is generally unsuitable for absorption systems and should be avoided. If no choice is available, systems may be constructed in such material, provided it is within the required percolation range specified in this code, and the required area is calculated on the minimum percolation rate (60 minutes per inch for absorption fields and 30 minutes per inch for absorption beds).

D. Absorption system excavations may be made by machinery provided that the soil in the bottom and sides of the excavation is not compacted. Strict attention shall be given to the protection of the natural absorption properties of the soil. Absorption systems shall not be excavated when the soil is wet enough to smear or compact easily. All smeared or compacted surfaces should be raked to a depth of one inch, and loose material removed before the filter material is placed in the absorption system excavation.

E. Effluent distribution lines or pipe shall be perforated and should consist of 4-inch diameter pipe of appropriate material which has demonstrated satisfactory results for the given application. The distribution pipe shall be bedded true to line and grade, uniformly and continuously supported on firm, stable material.

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F. The coarse material in the absorption system shall consist of crushed stone, gravel, or similar material of equivalent strength and durability. It shall be free from fines, dust, sand or clay. The top of the stone or gravel shall be covered with a pervious material such as an acceptable synthetic filter fabric, a 2-inch compacted layer of straw, or similar material before being covered with earth backfill to prevent infiltration of backfill into the stone or gravel.

G. Distribution pipes placed under driveways or other areas subjected to heavy loads shall receive special design considerations to insure against crushing or disruption of alignment. Absorption area under driveways or pavement shall not be considered in determining the minimum required absorption area.

H. Absorption systems shall be backfilled with earth that is free from debris and large rocks. The first 4 to 6 inches of soil backfill should be hand placed. Distribution pipes shall not be crushed or misaligned during backfilling. When backfilling, the earth should be mounded slightly above the surface of the ground to allow for settlement.

I. Heavy equipment shall not be driven in or over absorption systems during backfilling or after completion.

J. That portion of absorption system below the top of distribution pipes shall be in natural soil. Under unusual circumstances the [~~Utah Water Pollution Control Committee~~]Director may allow installation in acceptably stabilized earth fill. The earth fill and location will have to be evaluated on a case-by-case basis, taking into consideration the soil characteristics and degree of consolidation of the fill material.

K. Soil and Ground Water Requirements. In areas where absorption systems are to be constructed, soil cover must be adequate to insure at least 4 feet of soil between bedrock or any other impervious formation, and the bottom of absorption systems. Maximum ground water elevation must be at least 2 feet below the bottom of absorption systems and at least 4 feet below finished grade.

L. Replacement Area for Absorption System. Adequate and suitable land shall be reserved and kept free of permanent structures, traffic, or adverse soil modification for replacement of the absorption system. Suitability must be demonstrated through soil exploration and percolation tests results.

3.2 ABSORPTION FIELDS: Absorption fields are the preferred type of absorption system. They consist of a series of gravel-filled trenches provided with perforated pipes designed to distribute septic tank effluent into the gravel fill, from which it percolates through the trench walls and bottom into the surrounding sub-surface soil.

A. Design of absorption fields shall be as outlined in Tables 5-3 and 5-4.

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B. The minimum absorption area (total bottom area of trenches) of the absorption field shall be determined from the following equation but in no case the maximum allowable application rate shall exceed 2.2 gallons per square foot per day

Q = 5 / square root of t

Where Q = maximum rate of effluent application to the soil in gallons per square foot per day

t = stabilized percolation rate in minutes per inch

Percolation tests shall be performed as specified in R317-5-4.1. Rates in excess of 60 minutes per inch indicate a soil unsuitable for absorption field construction.

C. Wherever possible all trench bottoms should be constructed at the same elevation. Distribution pipes and trenches should be level and should be connected at both ends to provide a continuous system. If ground surface slope is too steep to permit a level installation, then a system of serial trenches following land contours should be used, with each trench and distribution pipe being constructed level but at a different elevation. A schematic diagram showing the recommended layout of trenches and distribution systems is available from the [~~Bureau of Water Pollution Control~~]Director.

1. The system should include drop boxes which should generally conform to the detail in Appendix 1 and should operate in such a manner that a trench will be filled with wastewater to the depth of the gravel fill before the wastewater flows to the next lower trench. The drop boxes shall be watertight and should be provided with a means of access at the top.

2. The lines between the drop boxes should be a minimum of 4 inches in diameter and should be watertight with direct connections to the distribution box. They should be laid in a trench excavated through undisturbed earth to the exact depth required. Backfill should be carefully tamped.

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KEY: water pollution, sewerage
Date of Enactment or Last Substantive Amendment: [~~April 7, 2009~~]2013
Notice of Continuation: June 18, 2012
Authorizing, and Implemented or Interpreted Law: 19-5

Environmental Quality, Water Quality
R317-6
Ground Water Quality Protection

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37854
FILED: 07/15/2013

RULE ANALYSIS

PURPOSE OF THE RULE OR REASON FOR THE CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 passed in the 2012 General Legislative Session.

SUMMARY OF THE RULE OR CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 (2012). The majority of the proposed changes are editorial, largely consisting of replacing the term "Executive Secretary" with "Director". However, the amendments also make additional changes mandated by S.B. 21 (2012) which reflect the transfer of certain powers and duties from the Water Quality

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Board to the Director of the Division of Water Quality in the realm of permits, certifications, and other administrative authorizations.

STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

ANTICIPATED COST OR SAVINGS TO:
♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ LOCAL GOVERNMENTS: Enactment of these changes likely will not result in direct, measurable costs for local governments as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ SMALL BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to small businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ PERSONS OTHER THAN SMALL BUSINESSES, BUSINESSES, OR LOCAL GOVERNMENTAL ENTITIES: Enactment of these changes likely will not result in direct, measurable costs to other persons as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMPLIANCE COSTS FOR AFFECTED PERSONS: Enactment of these changes likely will not result in direct, measurable compliance costs as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMMENTS BY THE DEPARTMENT HEAD ON THE FISCAL IMPACT THE RULE MAY HAVE ON BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

THE FULL TEXT OF THIS RULE MAY BE INSPECTED, DURING REGULAR BUSINESS HOURS, AT:
ENVIRONMENTAL QUALITY
WATER QUALITY
THIRD FLOOR
195 N 1950 W
SALT LAKE CITY, UT 84116
or at the Division of Administrative Rules.

DIRECT QUESTIONS REGARDING THIS RULE TO:
♦ Dave Wham by phone at 801-536-4337, by FAX at 801-536-4301, or by Internet E-mail at dwham@utah.gov

INTERESTED PERSONS MAY PRESENT THEIR VIEWS ON THIS RULE BY SUBMITTING WRITTEN COMMENTS NO LATER THAN AT 5:00 PM ON 09/03/2013

THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-6. Ground Water Quality Protection.
R317-6-1. Definitions.

[~~1.1~~]"Aquifer" means a geologic formation, group of geologic formations or part of a geologic formation that contains sufficiently saturated permeable material to yield usable quantities of water to wells and springs.

[~~1.2~~]"Background Concentration" means the concentration of a pollutant in ground water upgradient or lateral hydraulically equivalent point from a facility, practice or activity which has not been affected by that facility, practice or activity.

[~~1.3~~]"Best Available Technology" means the application of design, equipment, work practice, operation standard or combination thereof at a facility to effect the maximum reduction of a pollutant achievable by available processes and methods taking into account energy, public health, environmental and economic impacts and other costs.

[~~1.4~~]"Best Available Technology Standard" means a performance standard or pollutant concentration achievable through the application of best available technology.

[~~1.5~~]"Board" means the Utah Water Quality Board.

[~~1.6~~]"Class TDS Limit" means the upper boundary of the TDS range for an applicable class as specified in Section R317-6-3.

[~~1.7~~]"Community Drinking Water System" means a public drinking water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents.

[~~1.8~~]"Comparable Quality (Source)" means a potential alternative source or sources of water supply which has the same general quality as the ground water source.

[~~1.9~~]"Comparable Quantity (Source)" means a potential alternative source of water supply capable of reliably supplying water in quantities sufficient to meet the year-round needs of the users served by the ground water source.

[~~1.10~~]"Compliance Monitoring Point" means a well, seep, spring, or other sampling point used to determine compliance with applicable permit limits.

[~~1.11~~]"Contaminant" means any physical, chemical, biological or radiological substance or matter in water.

[~~1.12~~]"Conventional Treatment" means normal and usual treatment of water for distribution in public drinking water supply systems including flocculation, sedimentation, filtration, disinfection and storage.

[~~1.13~~]"Discharge" means the release of a pollutant directly or indirectly into subsurface waters of the state.

[~~1.14~~]"Existing Facility" means a facility or activity that was in operation or under construction after August 14, 1989 and before February 10, 1990.

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[~~1.15~~]"Economically Infeasible" means, in the context of a public drinking water source, the cost to the typical water user for replacement water would exceed the community's ability to pay.

[~~1.16 "Executive Secretary" means the Executive Secretary of the Utah Water Quality Board.~~

] [~~1.17~~]"Facility" means any building, structure, processing, handling, or storage facility, equipment or activity; or contiguous group of buildings, structures, or processing, handling or storage facilities, equipment, or activities or combination thereof.

[~~1.18~~]"Gradient" means the change in total water pressure head per unit of distance.

[~~1.19~~]"Ground Water" means subsurface water in the zone of saturation including perched ground water.

[~~1.20~~]"Ground Water Quality Standards" means numerical contaminant concentration levels adopted by the Board in or under R317-6-2 for the protection of the subsurface waters of the State.

[~~1.21~~]"Infiltration" means the movement of water from the land surface into the pores of rock, soil or sediment.

[~~1.22~~]"Institutional Constraints" means legal or other restrictions that preclude replacement water delivery and which cannot be alleviated through administrative procedures or market transactions.

[~~1.23~~]"Interim Action Reports For Petroleum Releases" means plans prepared specifically to document cleanup of petroleum releases resulting primarily from transportation spills not regulated by the Division of Solid and Hazardous Waste or Division of Environmental Response and Remediation that are submitted to the local health department and should include the following information: map of the location where the spill occurred, sketch of where confirmation samples were collected, quantity of fuel spilled, quantity of soil removed, soil disposal location, certified laboratory analysis report including total petroleum hydrocarbons (TPH) analyzed in the appropriate molecular weight range, and actions taken to control the source and protect public safety, public health, and water quality.

[~~1.24~~]"Lateral Hydraulically Equivalent Point" means a point located hydraulically equal to a facility and in the same ground water with similar geochemistry such that the ground water at that point has not been affected by the facility.

[~~1.25~~]"Limit of Detection" means the concentration of a chemical below which it can not be detected using currently accepted sampling and analytical techniques for drinking water as determined by the U.S. Environmental Protection Agency.

[~~1.26~~]"Local Health Department" means a city-county or multi-county local health department established under Title 26A.

[~~1.27~~]"New Facility" means a facility for which construction or modification is initiated after February 9, 1990.

[~~1.28~~]"Non Sensitive Area" means industrial and manufacturing areas previously contaminated and areas not likely to affect human health and exceed groundwater standards or background concentrations.

[~~1.29~~]"Permit Limit" means a ground water pollutant concentration limitation specified in a Ground Water Discharge Permit and may include protection levels, class TDS limits, ground water quality standards, alternate concentration limits, permit-specific ground water quality standards, or limits stipulated in the application and use of best available technology. For facilities permitted by rule under R317-6-6.2, a permit limit is a ground water pollutant concentration limitation specified in R317-6-6.2.B.

[~~1.30~~]"Person" means any individual, corporation, partnership, association, company or body politic, including any agency or instrumentality of the federal, state, or local government.

[~~1.31~~]"Point of Discharge" means the area within outermost location at which effluent or leachate has been stored, applied, disposed of, or discharged; for a diked facility, the outermost edge of the dikes.

[~~1.32~~]"Pollutant" means dredged spoil, solid waste, incinerator residue, sewage, sewage sludge, garbage, munitions, trash, chemical wastes, petroleum hydrocarbons, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into waters of the state.

[~~1.33~~]"Pollution" means such contamination, or other alteration of the physical, chemical, or biological properties of any waters of the State, or such discharge of any liquid, gaseous, or solid substance into any waters of the state as will create a nuisance or render such waters harmful or detrimental or injurious to public health, safety, or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

[~~1.34~~]"Professional Engineer" means any person qualified to practice engineering before the public in the state of Utah and professionally registered as required under the Professional Engineers and Professional Land Surveyors Licensing Act rules (UAC 156-22).

[~~1.35~~]"Professional Geologist" means any person qualified to practice geology before the public in the State of Utah and professionally registered as required under the Professional Geologist Licensing Act rules (UAC R156-76).

[~~1.36~~]"Protection Level" means the ground water pollutant concentration levels specified in R317-6-4.

[~~1.37~~]"Sensitive Area" means those areas that are located near residences, waters of the state, wetlands, or any area where exposure to humans or significant environmental impact is likely to occur.

[~~1.38~~]"Substantial Treatment" means treatment of water utilizing specialized treatment methods including ion exchange, reverse osmosis, electrodialysis and other methods needed to upgrade water quality to meet standards for public water systems.

[~~1.39~~]"Technology Performance Monitoring" means the evaluation of a permitted facility to determine compliance with best available technology standards.

[~~1.40~~]"Total Dissolved Solids (TDS)" means the quantity of dissolved material in a sample of water which is determined by weighing the solid residue obtained by evaporating a measured volume of a filtered sample to dryness; or for many waters that contain more than 1000 mg/l, the sum of the chemical constituents.

[~~1.41~~]"Radius of Influence" means the radial distance from the center of a well bore to the point where there is no lowering of the water table or potentiometric surface because of pumping of the well; the edge of the cone of depression.

[~~1.42~~]"Upgradient" means a point located hydraulically above a facility such that the ground water at that point has not been impacted by discharges from the facility.

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[~~1.43~~]"Vadose Zone" means the zone of aeration including soil and capillary water. The zone is bound above by the land surface and below by the water table.

[~~1.44~~]"Waste" see "Pollutant."

[~~1.45~~]"Water Table" means the top of the saturated zone of a body of unconfined ground water at which the pressure is equal to that of the atmosphere.

[~~1.46~~]"Water Table Aquifer" means an aquifer extending downward from the water table to the first confining bed.

[~~1.47~~]"Waters of the State" means all streams, lakes, ponds, marshes, water courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof; except bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state" under this definition.

[~~1.48~~]"Zone of Influence" means the area contained by the outer edge of the drawdown cone of a water well.

R317-6-2. Ground Water Quality Standards.

2.1 The following Ground Water Quality Standards as listed in Table I are adopted for protection of ground water quality.

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2.2 A permit specific ground water quality standard for any pollutant not specified in Table 1 may be established by the [~~Executive Secretary~~]Director at a level that will protect public health and the environment. This permit limit may be based on U.S. Environmental Protection Agency maximum contaminant level goals, health advisories, risk based contaminant levels, standards established by other regulatory agencies and other relevant information.

R317-6-5. Ground Water Classification for Aquifers.

5.1 GENERAL

A. When sufficient information is available, entire aquifers or parts thereof may be classified by the Board according to the quality of ground water contained therein and commensurate protection levels will be applied.

B. Ground water sources furnishing water to community drinking water systems with ground water meeting Class IA criteria are classified as Class IA.

5.2 CLASSIFICATION AND RECLASSIFICATION PROCEDURE

A. The Board may initiate classification or reclassification.

B. A petition for classification or reclassification must be performed under the direction, and bear the seal, of a professional engineer or professional geologist.

C. Boundaries for class areas will be delineated so as to enclose distinct ground water classes as nearly as known facts permit. Boundaries will be based on hydrogeologic properties, existing ground water quality and for Class IB and IC, current use. Parts of an aquifer may be classified differently.

D. The petitioner requesting reclassification will provide sufficient information to determine if reclassification is in the best interest of the beneficial users.

E. A petition for classification or reclassification shall include:

1. factual data supporting the proposed classification;
2. a description of the proposed ground waters to be classified or reclassified;
3. potential contamination sources;
4. ground water flow direction;
5. current beneficial uses of the ground water; and
6. location of all water wells in the area to be classified or reclassified.

F. One or more public hearings will be held to receive comment on classification and reclassification proposals.

G. The Board will determine the disposition of all petitions for classification and reclassification, except as provided in R317-6-5.2.H.

H. Ground water proximate to a facility for which an application for a ground water discharge permit has been made may be classified by the [~~Executive Secretary~~]Director for purposes of making permitting decisions.

R317-6-6. Implementation.

6.1 DUTY TO APPLY FOR A GROUND WATER DISCHARGE PERMIT

A. No person may construct, install, or operate any new facility or modify an existing or new facility, not permitted by rule under R317-6-6.2, which discharges or would probably result in a discharge of pollutants that may move directly or indirectly into ground water, including, but not limited to land application of wastes; waste storage pits; waste storage piles; landfills and dumps; large feedlots; mining, milling and metallurgical operations, including heap leach facilities; and pits, ponds, and lagoons whether lined or not, without a ground water discharge permit from the [~~Executive Secretary~~]Director. A ground water discharge permit application should be submitted at least 180 days before the permit is needed.

B. All persons who constructed, modified, installed, or operated any existing facility, not permitted by rule under R317-6-6.2, which discharges or would probably result in a discharge of pollutants that may move directly or indirectly into ground water, including, but not limited to: land application of wastes; waste storage pits; waste storage piles; landfills and dumps; large feedlots; mining, milling and metallurgical operations, including heap leach facilities; and pits, ponds, and lagoons whether lined or not, must have submitted a notification of the nature and location of the discharge to the [~~Executive Secretary~~]division before February 10, 1990 and must submit an application for a ground water discharge permit within one year after receipt of written notice from the [~~Executive Secretary~~]division that a ground water discharge permit is required.

C. No person may construct, install, or operate any new liquid waste storage facility or modify an existing or new liquid waste storage facility for a large animal feeding operation not permitted by rule under R317-6-6.2A.17, which discharges or would probably result in a discharge of pollutants that may move directly or indirectly into ground water, without a ground water

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discharge permit from the [~~Executive Secretary~~]Director. A ground water discharge permit application should be submitted at least 180 days before the permit is needed and the applicant must comply with the requirements of R317-1-2 for submitting plans and specifications and obtaining a construction permit.

6.2 GROUND WATER DISCHARGE PERMIT BY RULE

A. Except as provided in R317-6-6.2.C, the following facilities are considered to be permitted by rule and are not required to obtain a discharge permit under R317-6-6.1 or comply with R317-6-6.3 through R317-6-6.7, R317-6-6.9 through R317-6-6.11, R317-6-6.13, R317-6-6.16, R317-6-6.17 and R317-6-6.18:

1. facilities with effluent or leachate which has been demonstrated to the satisfaction of the [~~Executive Secretary~~]Director to conform and will not deviate from the applicable class TDS limits, ground water quality standards, protection levels or other permit limits and which does not contain any contaminant that may present a threat to human health, the environment or its potential beneficial uses of the ground water. The [~~Executive Secretary~~]Director may require samples to be analyzed for the presence of contaminants before the effluent or leachate discharges directly or indirectly into ground water. If the discharge is by seepage through natural or altered natural materials, the [~~Executive Secretary~~]Director may require samples of the solution be analyzed for the presence of pollutants before or after seepage;

2. water used for watering of lawns, gardens, or shrubs or for irrigation for the revegetation of a disturbed land area except for the direct land application of wastewater;

3. application of agricultural chemicals including fertilizers, herbicides and pesticides including but not limited to, insecticides fungicides, rodenticides and fumigants when used in accordance with current scientifically based manufacturer's recommendations for the crop, soil, and climate and in accordance with state and federal statutes, regulations, rules, permits, and orders adopted to avoid ground water pollution;

4. water used for irrigated agriculture except for the direct land application of wastewater from municipal, industrial or mining facilities;

5. flood control systems including detention basins, catch basins and wetland treatment facilities used for collecting or conveying storm water runoff;

6. natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining or metallurgical process;

7. leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

8. wells and facilities regulated under the underground injection control (UIC) program;

9. land application of livestock wastes, within expected crop nitrogen uptake;

10. individual subsurface wastewater disposal systems approved by local health departments or large subsurface wastewater disposal systems approved by the [~~Board~~]Director;

11. produced water pits, and other oil field waste treatment, storage, and disposal facilities regulated by the Division of Oil, Gas, and Mining in accordance with Section 40-6-5(3)(d) and R649-9, Disposal of Produced Water;

12. reserve pits regulated by the Division of Oil, Gas and Mining in accordance with Section 40-6-5(3)(a) and R649-3-7, Drilling and Operating Practices;

13. storage tanks installed or operated under [~~regulations~~]rules adopted by the Utah Solid and Hazardous Waste Control Board;

14. coal mining operations or facilities regulated under the Coal Mining and Reclamation Act by the Utah Division of Oil, Gas, and Mining (DOGM). The submission of an application for ground water discharge permit under R317-6-6.2.C may be required only if the [~~Executive Secretary~~]Director, after consideration of recommendations, if any, by DOGM, determines that the discharge violates applicable ground water quality standards, applicable Class TDS limits, or is interfering with a reasonable foreseeable beneficial use of the ground water. DOGM is not required to establish any administrative or regulatory requirements which are in addition to the rules of DOGM for coal mining operations or facilities to implement these ground water [~~regulations~~]rules;

15. hazardous waste or solid waste management units managed or undergoing corrective action under R315-1 through R315-14;

16. solid waste landfills permitted under the requirements of R315-303;

17. animal feeding operations, as defined in UAC R317-8-3.5(2) that use liquid waste handling systems, which are not located within Zone 1 (100 feet) for wells in a confined aquifer or Zone 2 (250 day time of travel) for wells and springs in unconfined aquifers, in accordance with the Public Drinking Water Regulations UAC R309-600, and which meet either of the following criteria:

a) operations constructed prior to the effective date of this rule which incorporated liquid waste handling systems and which are either less than 4 million gallons capacity or serve fewer than 1000 animal units, or

b. operations with fewer than the following numbers of confined animals:

i. 1,500 slaughter and feeder cattle,

ii. 1,050 mature dairy cattle, whether milked or dry cows,

iii. 3,750 swine each weighing over 25 kilograms (approximately 55 pounds),

iv. 18,750 swine each weighing 25 kilograms or less (approximately 55 pounds),

v. 750 horses,

vi. 15,000 sheep or lambs,

vii. 82,500 turkeys,

viii. 150,000 laying hens or broilers that use continuous overflow watering but dry handle wastes,

ix. 45,000 hens or broilers,

x. 7,500 ducks, or

xi. 1,500 animal units

18. animal feeding operations, as defined in UAC R317-8-3.5(2), which do not utilize liquid waste handling systems;

19. mining, processing or milling facilities handling less than 10 tons per day of metallic and/or nonmetallic ore and waste rock, not to exceed 2500 tons/year in aggregate unless the processing or milling uses chemical leaching;

20. pipelines and above-ground storage tanks;

21. drilling operations for metallic minerals, nonmetallic minerals, water, hydrocarbons, or geothermal energy sources when done in conformance with applicable [~~regulations~~]rules of the Utah

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Division of Oil, Gas, and Mining or the Utah Division of Water Rights;

22. land application of municipal sewage sludge for beneficial use, at or below the agronomic rate and in compliance with the requirements of 40 CFR 503, July 1, 2000 edition;

23. land application of municipal sewage sludge for mine-reclamation at a rate higher than the agronomic rate and in compliance with 40 CFR 503, July 1, 2000 edition;

24. municipal wastewater treatment lagoons receiving no wastewater from a significant industrial discharger as defined in R317-8-8.2(12); and

25. facilities and modifications thereto which the [~~Executive Secretary~~]Director determines after a review of the application will have a de minimis actual or potential effect on ground water quality.

B. No facility permitted by rule under R317-6-6.2.A may cause ground water to exceed ground water quality standards or the applicable class TDS limits in R317-6-3.1 to R317-6-3.7. If the background concentration for affected ground water exceeds the ground water quality standard, the facility may not cause an increase over background. This section, R317-6-6.2B. does not apply to facilities undergoing corrective action under R317-6-6.15A.3.

C. The submission of an application for a ground water discharge permit may be required by the [~~Executive Secretary~~]Director for any discharge permitted by rule under R317-6-6.2 if it is determined that the discharge may be causing or is likely to cause increases above the ground water quality standards or applicable class TDS limits under R317-6-3 or otherwise is interfering or may interfere with probable future beneficial use of the ground water.

6.3 APPLICATION REQUIREMENTS FOR A GROUND WATER DISCHARGE PERMIT

Unless otherwise determined by the [~~Executive Secretary~~]Director, the application for a permit to discharge wastes or pollutants to ground water shall include the following complete information:

A. The name and address of the applicant and the name and address of the owner of the facility if different than the applicant. A corporate application must be signed by an officer of the corporation. The name and address of the contact, if different than above, and telephone numbers for all listed names shall be included.

B. The legal location of the facility by county, quarter-quarter section, township, and range.

C. The name of the facility and the type of facility, including the expected facility life.

D. A plat map showing all water wells, including the status and use of each well, Drinking Water source protection zones, topography, springs, water bodies, drainages, and man-made structures within a one-mile radius of the discharge. The plat map must also show the location and depth of existing or proposed wells to be used for monitoring ground water quality. Identify any applicable Drinking Water source protection ordinances and their impacts on the proposed permit.

E. Geologic, hydrologic, and agricultural description of the geographic area within a one-mile radius of the point of discharge, including soil types, aquifers, ground water flow direction, ground water quality, aquifer material, and well logs.

F. The type, source, and chemical, physical, radiological, and toxic characteristics of the effluent or leachate to be discharged; the average and maximum daily amount of effluent or leachate discharged (gpd), the discharge rate (gpm), and the expected concentrations of any pollutant (mg/l) in each discharge or combination of discharges. If more than one discharge point is used, information for each point must be given separately.

G. Information which shows that the discharge can be controlled and will not migrate into or adversely affect the quality of any other waters of the state, including the applicable surface water quality standards, that the discharge is compatible with the receiving ground water, and that the discharge will comply with the applicable class TDS limits, ground water quality standards, class protection levels or an alternate concentration limit proposed by the facility.

H. For areas where the ground water has not been classified by the Board, information on the quality of the receiving ground water sufficient to determine the applicable protection levels.

I. A proposed sampling and analysis monitoring plan which conforms to EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5 (EPA/600/R-98/018, February 1998) and includes a description, where appropriate, of the following:

1. ground water monitoring to determine ground water flow direction and gradient, background quality at the site, and the quality of ground water at the compliance monitoring point;

2. installation, use and maintenance of monitoring devices;

3. description of the compliance monitoring area defined by the compliance monitoring points including the dimensions and hydrologic and geologic data used to determine the dimensions;

4. monitoring of the vadose zone;

5. measures to prevent ground water contamination after the cessation of operation, including post-operational monitoring;

6. monitoring well construction and ground water sampling which conform where applicable to the Handbook of Suggested Practices for Design and Installation of Ground-Water Monitoring Wells (EPA/600/4-89/034, March 1991), ASTM Standards on Ground Water and Vadose Investigations (1996), Practical Guide for Ground Water Sampling EPA/600/2-85/104, (November 1985) and RCRA Ground Water Monitoring Technical Enforcement Guidance Document (1986), unless otherwise specified by the [~~Executive Secretary~~]Director;

7. description and justification of parameters to be monitored;

8. quality assurance and control provisions for monitoring data.

J. The plans and specifications relating to construction, modification, and operation of discharge systems.

K. The description of the ground water most likely to be affected by the discharge, including water quality information of the receiving ground water prior to discharge, a description of the aquifer in which the ground water occurs, the depth to the ground water, the saturated thickness, flow direction, porosity, hydraulic conductivity, and flow systems characteristics.

L. The compliance sampling plan which in addition to the information specified in the above item I includes, where appropriate, provisions for sampling of effluent and for flow monitoring in order to determine the volume and chemistry of the

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discharge onto or below the surface of the ground and a plan for sampling compliance monitoring points and appropriate nearby water wells. Sampling and analytical methods proposed in the application must conform with the most appropriate methods specified in the following references unless otherwise specified by the [~~Executive Secretary~~]Director:

1. Standard Methods for the Examination of Water and Wastewater, twentieth edition, 1998; Library of Congress catalogue number: ISBN: 0-87553-235-7.

2. E.P.A. Methods, Methods for Chemical Analysis of Water and Wastes, 1983; Stock Number EPA-600/4-79-020.

3. Techniques of Water Resource Investigations of the U.S. Geological Survey, (1998); Book 9.

4. Monitoring requirements in 40 CFR parts 141 and 142, 2000 ed., Primary Drinking Water Regulations and 40 CFR parts 264 and 270, 2000 ed.

5. National Handbook of Recommended Methods for Water-Data Acquisition, GSA-GS edition; Book 85 AD-2777, U.S. Government Printing Office Stock Number 024-001-03489-1.

M. A description of the flooding potential of the discharge site, including the 100-year flood plain, and any applicable flood protection measures.

N. Contingency plan for regaining and maintaining compliance with the permit limits and for reestablishing best available technology as defined in the permit.

O. Methods and procedures for inspections of the facility operations and for detecting failure of the system.

P. For any existing facility, a corrective action plan or identification of other response measures to be taken to remedy any violation of applicable ground water quality standards, class TDS limits or permit limit established under R317-6-6.4E. which has resulted from discharges occurring prior to issuance of a ground water discharge permit.

Q. Other information required by the [~~Executive Secretary~~]Director.

R. All applications for a groundwater discharge permit must be performed under the direction, and bear the seal, of a professional engineer or professional geologist.

S. A closure and post closure management plan demonstrating measures to prevent ground water contamination during the closure and post closure phases of an operation.

6.4 ISSUANCE OF DISCHARGE PERMIT

A. The [~~Executive Secretary~~]Director may issue a ground water discharge permit for a new facility if the [~~Executive Secretary~~]Director determines, after reviewing the information provided under R317-6-6.3, that:

1. the applicant demonstrates that the applicable class TDS limits, ground water quality standards protection levels, and permit limits established under R317-6-6.4E will be met;

2. the monitoring plan, sampling and reporting requirements are adequate to determine compliance with applicable requirements;

3. the applicant is using best available technology to minimize the discharge of any pollutant; and

4. there is no impairment of present and future beneficial uses of the ground water.

B. The [~~Board~~]Director may approve an alternate concentration limit for a new facility if:

1. The applicant submits a petition for an alternate concentration limit showing the extent to which the discharge will exceed the applicable class TDS limits, ground water standards or applicable protection levels and demonstrates that:

a. the facility is to be located in an area of Class III ground water;

b. the discharge plan incorporates the use of best available technology;

c. the alternate concentration limit is justified based on substantial overriding social and economic benefits; and,

d. the discharge would pose no threat to human health and the environment.

2. One or more public hearings have been held by the [~~Board~~]Director in nearby communities to solicit comment.

C. The [~~Executive Secretary~~]Director may issue a ground water discharge permit for an existing facility provided:

1. the applicant demonstrates that the applicable class TDS limits, ground water quality standards and protection levels will be met;

2. the monitoring plan, sampling and reporting requirements are adequate to determine compliance with applicable requirements;

3. the applicant utilizes treatment and discharge minimization technology commensurate with plant process design capability and similar or equivalent to that utilized by facilities that produce similar products or services with similar production process technology; and,

4. there is no current or anticipated impairment of present and future beneficial uses of the ground water.

D. The [~~Board~~]Director may approve an alternate concentration limit for a pollutant in ground water at an existing facility or facility permitted by rule under R317-6-6.2 if the applicant for a ground water discharge permit shows the extent the discharge exceeds the applicable class TDS limits, ground water quality standards and applicable protection levels that correspond to the otherwise applicable ground water quality standards and demonstrates that:

1. steps are being taken to correct the source of contamination, including a program and timetable for completion;

2. the pollution poses no threat to human health and the environment; and

3. the alternate concentration limit is justified based on overriding social and economic benefits.

E. An alternate concentration limit, once adopted by the [~~Board~~]Director under R317-6-6.4B or R317-6-6.4D, shall be the pertinent permit limit.

F. A facility permitted under this provision shall meet applicable class TDS limits, ground water quality standards, protection levels and permit limits.

G. The [~~Board~~]Director may modify a permit for a new facility to reflect standards adopted as part of corrective action.

6.5 NOTICE OF INTENT TO ISSUE A GROUND WATER DISCHARGE PERMIT

The [~~Executive Secretary~~]Director shall publish a notice of intent to approve in a newspaper in the affected area and shall allow 30 days in which interested persons may comment to the [~~Board~~]Director. Final action will be taken by the [~~Executive Secretary~~]Director following the 30-day comment period.

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6.6 PERMIT TERM

A. The ground water discharge permit term will run for 5 years from the date of issuance. Permits may be renewed for 5-year periods or extended for a period to be determined by the [~~Executive Secretary~~]Director but not to exceed 5 years.

B. In the event that new ground water quality standards are adopted by the Board, permits may be reopened to extend the terms of the permit or to include pollutants covered by new standards. The holder of a permit may apply for a variance under the conditions outlined in R317-6-6.4.D.

6.7 GROUND WATER DISCHARGE PERMIT RENEWAL

The permittee for a facility with a ground water discharge permit must apply for a renewal or extension for a ground water discharge permit at least 180 days prior to the expiration of the existing permit. If a permit expires before an application for renewal or extension is acted upon by the [~~Executive Secretary~~]Director, the permit will continue in effect until it is renewed, extended or denied. Permit renewals with significant changes to the original permit must be performed under the direction, and bear the seal, of a professional engineer or professional geologist.

6.8 TERMINATION OF A GROUND WATER DISCHARGE PERMIT BY THE [~~EXECUTIVE SECRETARY~~]DIRECTOR

A ground water discharge permit may be terminated or a renewal denied by the [~~Executive Secretary~~]Director if one of the following applies:

A. noncompliance by the permittee with any condition of the permit where the permittee has failed to take appropriate action in a timely manner to remedy the permit violation;

B. the permittee's failure in the application or during the permit approval process to disclose fully all significant relevant facts at any time;

C. a determination that the permitted facility endangers human health or the environment and can only be regulated to acceptable levels by plan modification or termination; or

D. the permittee requests termination of the permit.

6.9 PERMIT COMPLIANCE MONITORING

A. Ground Water Monitoring

The [~~Executive Secretary~~]Director may include in a ground water discharge permit requirements for ground water monitoring, and may specify compliance monitoring points where the applicable class TDS limits, ground water quality standards, protection levels or other permit limits are to be met.

The [~~Executive Secretary~~]Director will determine the location of the compliance monitoring point based upon the hydrology, type of pollutants, and other factors that may affect the ground water quality. The distance to the compliance monitoring points must be as close as practicable to the point of discharge. The compliance monitoring point shall not be beyond the property boundaries of the permitted facility without written agreement of the affected property owners and approval by the [~~Executive Secretary~~]Director.

B. Performance Monitoring

The [~~Executive Secretary~~]Director may include in a ground water discharge permit requirements for monitoring performance of best available technology standards.

6.10 BACKGROUND WATER QUALITY DETERMINATION

A. Background water quality contaminant concentrations shall be determined and specified in the ground water discharge permit. The determination of background concentration shall take into account any degradation.

B. Background water quality contaminant concentrations may be determined from existing information or from data collected by the permit applicant. Existing information shall be used, if the permit applicant demonstrates that the quality of the information and its means of collection are adequate to determine background water quality. If existing information is not adequate to determine background water quality, the permit applicant shall submit a plan to determine background water quality to the [~~Executive Secretary~~]Director for approval prior to data collection. One or more up-gradient, lateral hydraulically equivalent point, or other monitoring wells as approved by the [~~Executive Secretary~~]Director may be required for each potential discharge site.

C. After a permit has been issued, permittee shall continue to monitor background water quality contaminant concentrations in order to determine natural fluctuations in concentrations. Applicable up-gradient, and on-site ground water monitoring data shall be included in the ground water quality permit monitoring report.

6.11 NOTICE OF COMMENCEMENT AND DISCONTINUANCE OF GROUND WATER DISCHARGE OPERATIONS

A. The permittee shall notify the Division of Water Quality immediately upon commencement of the ground water discharge and submit a written notice within 30 days of the commencement of the discharge.

B. The permittee shall notify the Division of Water Quality of the date and reason for discontinuance of ground water discharge within 30 days.

6.12 SUBMISSION OF DATA

A. Laboratory Analyses

All laboratory analysis of samples collected to determine compliance with these [~~regulations~~]rules shall be performed in accordance with standard procedures by the Utah Division of Laboratory Services or by a laboratory certified by the Utah Department of Health.

B. Field Analyses

All field analyses to determine compliance with these [~~regulations~~]rules shall be conducted in accordance with standard procedures specified in R317-6-6.3.L.

C. Periodic Submission of Monitoring Reports

Results obtained pursuant to any monitoring requirements in the discharge permit and the methods used to obtain these results shall be periodically reported to the [~~Executive Secretary~~]Director according to the schedule specified in the ground water discharge permit.

6.13 REPORTING OF MECHANICAL PROBLEMS OR DISCHARGE SYSTEM FAILURES

The permittee shall notify the [~~Executive Secretary~~]Director within 24 hours of the discovery of any mechanical or discharge system failures that could affect the chemical characteristics or volume of the discharge. A written statement confirming the oral report shall be submitted to the [~~Executive Secretary~~]Director within five days of the failure.

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6.14 CORRECTION OF ADVERSE EFFECTS REQUIRED

A. If monitoring or testing indicates that the permit conditions may be or are being violated by ground water discharge operations or the facility is otherwise in an out-of-compliance status, the permittee shall promptly make corrections to the system to correct all violations of the discharge permit.

B. The permittee, operator, or owner may be required to take corrective action as described in R317-6-6.15 if a pollutant concentration has exceeded a permit limit.

6.15 CORRECTIVE ACTION

It is the intent of the Board that the provisions of these [~~regulations~~]rules should be considered when making decisions under any state or federal superfund action; however, the protection levels are not intended to be considered as applicable, relevant or appropriate clean-up standards under such other regulatory programs.

A. Application of R317-6-6.15

1. Generally - R317-6-6.15 shall apply to any person who discharges pollutants into ground water in violation of Section 19-5-107, or who places or causes to be placed any wastes in a location where there is probable cause to believe they will cause pollution of ground water in violation of Section 19-5-107.

2. Corrective Action shall include, except as otherwise provided in R317-6-6.15, preparation of a Contamination Investigation and preparation and implementation of a Corrective Action Plan.

3. The procedural provisions of R-317-6-6.15 shall not apply to any facility where a corrective or remedial action for ground water contamination, that the [~~Executive Secretary~~]Director determines meets the substantive standards of this rule, has been initiated under any other state or federal program. Corrective or remedial action undertaken under the programs specified in Table 2 are considered to meet the substantive standards of this rule unless otherwise determined by the [~~Executive Secretary~~]Director.

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B. Notification and Interim Action

1. Notification - A person who spills or discharges any petroleum hydrocarbon or other substance which may cause pollution of ground waters in violation of Section 19-5-107 shall notify the [~~Executive Secretary~~]Director within 24 hours of the spill or discharge. A written notification shall be submitted to the [~~Executive Secretary~~]Director within five days after the spill or discharge.

2. Interim Actions - A person is encouraged to take immediate, interim action without following the steps outlined in R317-6-6.15 if such action is required to control a source of pollutants. Interim action is also encouraged if required to protect public safety, public health and welfare and the environment, or to prevent further contamination that would result in costlier clean-up. Such interim actions should include source abatement and control, neutralization, or other actions as appropriate. A person that has taken these actions shall remain subject to R317-6-6.15 after the interim actions are completed unless he demonstrates that:

a. no pollutants have been discharged into ground water in violation of 19-5-107; and

b. no wastes remain in a location where there is probable cause to believe they will cause pollution of ground water in violation of 19-5-107, unless, in the case of diesel fuel and oil releases over 25 gallons, the responsible person demonstrates that the pollutant will not affect ground water quality by complying with the following:

(1) remove contaminated soil to the extent possible, or to established background levels, or 500 mg/kg total petroleum hydrocarbons for sensitive areas, or 5000 mg/kg total petroleum hydrocarbons for non sensitive areas as defined by R317-6-1;

(2) collect soil samples at locations and depths sufficient to document that cleanup has been achieved or as directed by the local health department;

(3) treat or dispose contaminated soil at a location approved by the local health department;

(4) submit an interim action report as defined by R317-6-1.23 or as directed by the local health department.

C. Contamination Investigation and Corrective Action Plan - General

1. The [~~Executive Secretary~~]Director may require a person that is subject to R317-6-6.15 to submit for the [~~Executive Secretary's~~]Director's approval a Contamination Investigation and Corrective Action Plan, and may require implementation of an approved Corrective Action Plan. A person subject to this rule who has been notified that the [~~Executive Secretary~~]Director is exercising his or her authority under R317-6-6.15 to require submission of a Contamination Investigation and Corrective Action Plan, shall, within 30 days of that notification, submit to the [~~Executive Secretary~~]Director a proposed schedule for those submissions, which may include different deadlines for different elements of the Investigation and Plan. The [~~Executive Secretary~~]Director may accept, reject, or modify the proposed schedule.

2. The Contamination Investigation or the Corrective Action Plan may, in order to meet the requirements of this Part, incorporate by reference information already provided to the [~~Executive Secretary~~]Director in the Contingency Plan or other document.

3. The requirements for a Contamination Investigation and a Corrective Action Plan specified in R317-6-6.15.D are comprehensive. The requirements are intended to be applied with flexibility, and persons subject to this rule are encouraged to contact the [~~Executive Secretary's~~]Director's staff to assure its efficient application on a site-specific basis.

4. The [~~Executive Secretary~~]Director may waive any or all Contamination Investigation and Corrective Action Plan requirements where the person subject to this rule demonstrates that the information that would otherwise be required is not necessary to the [~~Executive Secretary's~~]Director's evaluation of the Contamination Investigation or Corrective Action Plan. Requests for waiver shall be submitted to the [~~Executive Secretary~~]Director as part of the Contamination Investigation or Corrective Action Plan, or may be submitted in advance of those reports.

D. Contamination Investigation and Corrective Action Plan - Requirements

1. Contamination Investigation - The contamination investigation shall include a characterization of pollution, a characterization of the facility, a data report, and, if the Corrective

Action Plan proposes standards under R317-6-6.15.F.2. or Alternate Corrective Action Concentration Limits higher than the ground water quality standards, an endangerment assessment.

a. The characterization of pollution shall include a description of:

(1) The amount, form, concentration, toxicity, environmental fate and transport, and other significant characteristics of substances present, for both ground water contaminants and any contributing surficial contaminants;

(2) The areal and vertical extent of the contaminant concentration, distribution and chemical make-up; and

(3) The extent to which contaminant substances have migrated and are expected to migrate.

b. The characterization of the facility shall include descriptions of:

(1) Contaminant substance mixtures present and media of occurrence;

(2) Hydrogeologic conditions underlying and, upgradient and downgradient of the facility;

(3) Surface waters in the area;

(4) Climatologic and meteorologic conditions in the area of the facility; and

(5) Type, location and description of possible sources of the pollution at the facility;

(6) Groundwater withdrawals, pumpage rates, and usage within a 2-mile radius.

c. The report of data used and data gaps shall include:

(1) Data packages including quality assurance and quality control reports;

(2) A description of the data used in the report; and

(3) A description of any data gaps encountered, how those gaps affect the analysis and any plans to fill those gaps.

d. The endangerment assessment shall include descriptions of any risk evaluation necessary to support a proposal for a standard under R317-6-6.15.F.2 or for an Alternate Corrective Action Concentration Limit.

e. The Contamination Investigation shall include such other information as the [~~Executive Secretary~~]Director requires.

2. Proposed Corrective Action Plan

The proposed Corrective Action Plan shall include an explanation of the construction and operation of the proposed Corrective Action, addressing the factors to be considered by the [~~Executive Secretary~~]Director as specified in R317-6-6.15.E. and shall include such other information as the [~~Executive Secretary~~]Director requires. It shall also include a proposed schedule for completion.

3. The Contaminant Investigation and Corrective Action Plan must be performed under the direction, and bear the seal, of a professional engineer or professional geologist.

E. Approval of the Corrective Action Plan

After public notice in a newspaper in the affected area and a 30-day period for opportunity for public review and comment, the [~~Executive Secretary~~]Director shall issue an order approving, disapproving, or modifying the proposed Corrective Action Plan. The [~~Executive Secretary~~]Director shall consider the following factors and criteria in making that decision:

1. Completeness and Accuracy of Corrective Action Plan.

The [~~Executive Secretary~~]Director shall consider the completeness and accuracy of the Corrective Action Plan and of the information upon which it relies.

2. Action Protective of Public Health and the Environment

a. The Corrective Action shall be protective of the public health and the environment.

b. Impacts as a result of any off-site activities shall be considered under this criterion (e.g., the transport and disposition of contaminated materials at an off-site facility).

3. Action Meets Concentration Limits

The Corrective Action shall meet Corrective Action Concentration Limits specified in R317-6-6.15.F, except as provided in R317-6-6.15.G.

4. Action Produces a Permanent Effect

a. The Corrective Action shall produce a permanent effect.

b. If the Corrective Action Plan provides that any potential sources of pollutants are to be controlled in place, any cap or other method of source control shall be designed so that the discharge from the source following corrective action achieves ground water quality standards or, if approved by the [~~Board~~]Director, alternate corrective action concentration limits (ACACLs). For purposes of this paragraph, sources of pollutants are controlled "in place" even though they are moved within the facility boundaries provided that they are not moved to areas with unaffected ground water.

5. Action May Use Other Additional Measures

The [~~Executive Secretary~~]Director may consider whether additional measures should be included in the Plan to better assure that the criteria and factors specified in R317-6-6.15.E are met. Such measures may include:

a. Requiring long-term ground water or other monitoring;

b. Providing environmental hazard notices or other security measures;

c. Capping of sources of ground water contamination to avoid infiltration of precipitation;

d. Requiring long-term operation and maintenance of all portions of the Corrective Action; and

e. Periodic review to determine whether the Corrective Action is protective of public health and the environment.

F. Corrective Action Concentration Limits

1. Contaminants with specified levels

Corrective Actions shall achieve ground water quality standards or, where applicable, alternate corrective action concentration limits (ACACLs).

2. Contaminants without specified levels

For contaminants for which no ground water quality standard has been established, the proposed Corrective Action Plan shall include proposed Corrective Action Concentration Limits. These levels shall be approved, disapproved or modified by the [~~Executive Secretary~~]Director after considering U.S. Environmental Protection Agency maximum contaminant level goals, health advisories, risk-based contaminant levels or standards established by other regulatory agencies and other relevant information.

G. Alternate Corrective Action Concentration Limits

An Alternate Corrective Action Concentration Limit that

is higher or lower than the Corrective Action Concentration Limits specified in R317-6-6.15.F may be required as provided in the following:

1. Higher Alternate Corrective Action Concentration Limits

A person submitting a proposed Corrective Action Plan may request approval by the [~~Board~~]Director of an Alternate Corrective Action Concentration Limit higher than the Corrective Action Concentration Limit specified in R317-6-6.15.F. The proposed limit shall be protective of human health, and the environment, and shall utilize best available technology. The Corrective Action Plan shall include the following information in support of this request:

a. The potential for release and migration of any contaminant substances or treatment residuals that might remain after Corrective Action in concentrations higher than Corrective Action Concentration Limits;

b. An evaluation of residual risks, in terms of amounts and concentrations of contaminant substances remaining following implementation of the Corrective Action options evaluated, including consideration of the persistence, toxicity, mobility, and propensity to bioaccumulate such contaminants substances and their constituents; and

c. Any other information necessary to determine whether the conditions of R317-6-6.15.G have been met.

2. Lower Alternate Corrective Action Concentration Limits

The [~~Board~~]Director may require use of an Alternate Corrective Action Concentration Limit that is lower than the Corrective Action Concentration Limit specified in R317-6-6.15.F if necessary to protect human health or the environment. Any person requesting that the [~~Board~~]Director consider requiring a lower Alternate Corrective Action Concentration Limit shall provide supporting information as described in R317-6-6.15.G.3.

3. Protective of human health and the environment

The Alternate Corrective Action Concentration Limit must be protective of human health and the environment. In making this determination, the [~~Board~~]Director may consider:

a. Information presented in the Contamination Investigation;

b. Other relevant cleanup or health standards, criteria, or guidance;

c. Relevant and reasonably available scientific information;

d. Any additional information relevant to the protectiveness of a Corrective Action; and

e. The impact of additional proposed measures, such as those described in R317-6-6.15.E.5.

4. Good cause

An Alternate Corrective Action Concentration Limit shall not be granted without good cause.

a. The [~~Board~~]Director may consider the factors specified in R317-6-6.15.E in determining whether there is good cause.

b. The [~~Board~~]Director may also consider whether the proposed remedy is cost-effective in determining whether there is good cause. Costs that may be considered include but are not limited to:

(1) Capital costs;

(2) Operation and maintenance costs;

(3) Costs of periodic reviews, where required;

(4) Net present value of capital and operation and maintenance costs;

(5) Potential future remedial action costs; and

(6) Loss of resource value.

5. Conservative

An Alternate Corrective Action Concentration Limit that is higher than the Corrective Action Concentration Limits specified in R317-6-6.15.F must be conservative. The [~~Board~~]Director may consider the concentration level that can be achieved using best available technology if attainment of the Corrective Action Concentration Limit is not technologically achievable.

6. Relation to background and existing conditions

a. The [~~Board~~]Director may consider the relationship between the Corrective Action Concentration Limits and background concentration limits in considering whether an Alternate Corrective Action Concentration Limit is appropriate.

b. No Alternate Corrective Action Concentration Limit higher than existing ground water contamination levels or ground water contamination levels projected to result from existing conditions will be granted.

6.16 OUT-OF-COMPLIANCE STATUS

A. Accelerated Monitoring for Probable Out-of-Compliance Status

If the value of a single analysis of any compliance parameter in any compliance monitoring sample exceeds an applicable permit limit, the facility shall:

1. Notify the [~~Executive Secretary~~]Director in writing within 30 days of receipt of data;

2. Immediately initiate monthly sampling if the value exceeds both the background concentration of the pollutant by two standard deviations and an applicable permit limit, unless the [~~Executive Secretary~~]Director determines that other periodic sampling is appropriate, for a period of two months or until the compliance status of the facility can be determined.

B. Violation of Permit Limits

Out-of-compliance status exists when:

1. The value for two consecutive samples from a compliance monitoring point exceeds:

a. one or more permit limits; and

b. the background concentration for that pollutant by two standard deviations (the standard deviation and background (mean) being calculated using values for the ground water pollutant at that compliance monitoring point) unless the existing permit limit was derived from the background pollutant concentration plus two standard deviations; or

2. the concentration value of any pollutant in two or more consecutive samples is statistically significantly higher than the applicable permit limit. The statistical significance shall be determined using the statistical methods described in Statistical Methods for Evaluating Ground Water Monitoring Data from Hazardous Waste Facilities, Vol. 53, No. 196 of the Federal Register, Oct. 11, 1988 and supplemental guidance in Guidance For Data Quality Assessment (EPA/600/R-96/084 January 1998).

C. Failure to Maintain Best Available Technology Required by Permit

1. Permittee to Provide Information

In the event that the permittee fails to maintain best available technology or otherwise fails to meet best available

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technology standards as required by the permit, the permittee shall submit to the [~~Executive Secretary~~]Director a notification and description of the failure according to R317-6-6.13. Notification shall be given orally within 24 hours of the permittee's discovery of the failure of best available technology, and shall be followed up by written notification, including the information necessary to make a determination under R317-6-6.16.C.2, within five days of the permittee's discovery of the failure of best available technology.

2. [~~Executive Secretary~~]Director

The [~~Executive Secretary~~]Director shall use the information provided under R317-6-6.16.C.1 and any additional information provided by the permittee to determine whether to initiate a compliance action against the permittee for violation of permit conditions. The [~~Executive Secretary~~]Director shall not initiate a compliance action if the [~~Executive Secretary~~]Director determines that the permittee has met the standards for an affirmative defense, as specified in R317-6-6.16.C.3.

3. Affirmative Defense

In the event a compliance action is initiated against the permittee for violation of permit conditions relating to best available technology, the permittee may affirmatively defend against that action by demonstrating the following:

a. The permittee submitted notification according to R317-6-6.13;

b. The failure was not intentional or caused by the permittee's negligence, either in action or in failure to act;

c. The permittee has taken adequate measures to meet permit conditions in a timely manner or has submitted to the [~~Executive Secretary~~]Director, for the [~~Executive Secretary's~~]Director's approval, an adequate plan and schedule for meeting permit conditions; and

d. The provisions of 19-5-107 have not been violated.

6.17 PROCEDURE WHEN A FACILITY IS OUT-OF-COMPLIANCE

A. If a facility is out of compliance the following is required:

1. The permittee shall notify the [~~Executive Secretary~~]Director of the out of compliance status within 24 hours after detection of that status, followed by a written notice within 5 days of the detection.

2. The permittee shall initiate monthly sampling, unless the [~~Executive Secretary~~]Director determines that other periodic sampling is appropriate, until the facility is brought into compliance.

3. The permittee shall prepare and submit within 30 days to the [~~Executive Secretary~~]Director a plan and time schedule for assessment of the source, extent and potential dispersion of the contamination, and an evaluation of potential remedial action to restore and maintain ground water quality and insure that permit limits will not be exceeded at the compliance monitoring point and best available technology will be reestablished.

4. The [~~Executive Secretary~~]Director may require immediate implementation of the contingency plan submitted with the original ground water discharge permit in order to regain and maintain compliance with the permit limit standards at the compliance monitoring point or to reestablish best available technology as defined in the permit.

5. Where it is infeasible to re-establish BAT as defined in the permit, the permittee may propose an alternative BAT for approval by the [~~Executive Secretary~~]Director.

6.18 GROUND WATER DISCHARGE PERMIT TRANSFER

A. The permittee shall give written notice to the [~~Executive Secretary~~]Director of any transfer of the ground water discharge permit, within 30 days of the transfer.

B. The notice shall include a written agreement between the existing and new permittee establishing a specific date for transfer of permit responsibility, coverage and liability.

6.19 ENFORCEMENT

These rules are subject to enforcement under Section 19-5-115 of the Utah Water Quality Act.

KEY: water quality, ground water, cleanup standards, petroleum hydrocarbons
Date of Enactment or Last Substantive Amendment: [~~January 23, 2007~~]2013
Notice of Continuation: July 26, 2012
Authorizing, and Implemented or Interpreted Law: 19-5

Environmental Quality, Water Quality
R317-7
Underground Injection Control (UIC) Program

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37855
FILED: 07/15/2013

RULE ANALYSIS

PURPOSE OF THE RULE OR REASON FOR THE CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 passed in the 2012 General Legislative Session.

SUMMARY OF THE RULE OR CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 (2012). The majority of the proposed changes are editorial, largely consisting of replacing the term "Executive Secretary" with "Director". However, the amendments also make additional changes mandated by S.B. 21 (2012) which reflect the transfer of certain powers and duties from the Water Quality Board to the Director of the Division of Water Quality in the realm of permits, certifications, and other administrative authorizations.

STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

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ANTICIPATED COST OR SAVINGS TO:
♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ LOCAL GOVERNMENTS: Enactment of these changes likely will not result in direct, measurable costs for local governments as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ SMALL BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to small businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.
♦ PERSONS OTHER THAN SMALL BUSINESSES, BUSINESSES, OR LOCAL GOVERNMENTAL ENTITIES: Enactment of these changes likely will not result in direct, measurable costs to other persons as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMPLIANCE COSTS FOR AFFECTED PERSONS: Enactment of these changes likely will not result in direct, measurable compliance costs as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMMENTS BY THE DEPARTMENT HEAD ON THE FISCAL IMPACT THE RULE MAY HAVE ON BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

THE FULL TEXT OF THIS RULE MAY BE INSPECTED, DURING REGULAR BUSINESS HOURS, AT:
ENVIRONMENTAL QUALITY
WATER QUALITY
THIRD FLOOR
195 N 1950 W
SALT LAKE CITY, UT 84116
or at the Division of Administrative Rules.

DIRECT QUESTIONS REGARDING THIS RULE TO:
♦ Dave Wham by phone at 801-536-4337, by FAX at 801-536-4301, or by Internet E-mail at dwham@utah.gov

INTERESTED PERSONS MAY PRESENT THEIR VIEWS ON THIS RULE BY SUBMITTING WRITTEN COMMENTS NO LATER THAN AT 5:00 PM ON 09/03/2013

THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-7. Underground Injection Control (UIC) Program.
R317-7-0. Effective Date and Applicability of Rules.

The effective date of these rules is January 19, 1983 (40 C.F.R. 147.2250). Class II wells are administered by the Division of Oil, Gas and Mining, whose primacy became effective October 8, 1982 (40 C.F.R. 147.2251).

R317-7-1. Incorporation By Reference.

1.1 Underground Injection Control Program - 40 C.F.R. 144.7, 144.13(d), 144.14, 144.16, 144.23(c), 144.32, 144.34, 144.36, 144.38, 144.39, 144.40, 144.41, 144.51(a)-(o) and (q), 144.52, 144.53, 144.54, 144.55, 144.60, 144.61, 144.62, 144.63, 144.64, 144.65, 144.66, 144.70, and 144.87, July 1, 2003 ed., are adopted and incorporated by reference with the following exceptions:

A. "Director" refers to the Director of the Division of Water Quality[~~is hereby replaced with "Executive Secretary"~~].

B. "one quarter mile" is hereby replaced with "two miles".

1.2 Underground Injection Control Program - Criteria and Standards - 40 C.F.R. 146.4, 146.6, 146.7, 146.8, 146.12, 146.13(d), 146.14, 146.32, 146.34, 146.61,146.62, 146.63, 146.64, 146.65, 146.66, 146.67, 146.68, 146.69, 146.70, 146.71, 146.72, and 146.73, July 1, 2003 ed., are adopted and incorporated by reference with the following exceptions:

A. "Director" refers to the Director of the Division of Water Quality.[~~is hereby replaced with "Executive Secretary";~~]

B. "one quarter (1/4) mile" and "one-fourth (1/4) mile" are each hereby replaced with "two miles".

1.3 Hazardous Waste Injection Restrictions - 40 C.F.R. Part 148, July 1, 2003 ed., is adopted and incorporated by reference with the exception that "Director" refers to the Director of the Division of Water Quality[~~is hereby replaced with "Executive Secretary"~~].

1.4 Identification and Listing of Hazardous Waste - 40 C.F.R. Part 261, July 1, 2003 ed., is adopted and incorporated by reference.

1.5 National Primary Drinking Water Regulations - 40 C.F.R. Part 141, July 1, 2003 ed., is adopted and incorporated by reference.

1.6 Guidelines Establishing Test Procedures for the Analysis of Pollutants - 40 C.F.R. Part 136 Table 1B, July 1, 2003 ed., is adopted and incorporated by reference.

1.7 Nuclear Regulatory Commission - Standards for Protection Against Radiation - 10 C.F.R. Part 20 Appendix B, Table 2 Column 2, January 1, 2003 ed., is adopted and incorporated by reference.

1.8 Procedures for Decision Making - 40 C.F.R. 124.3(a); 124.5(a), (c), (d) and (f); 124.6(a), (c), (d) and (e); 124.8; 124.10(a)(1)ii, iii, and (a)(1)(V); 124.10(b), (c), (d), and (e); 124.11; 124.12(a); and 124.17(a) and (c), July 1, 2003 ed., are adopted and incorporated by reference with the exception that "Director" refers to the Director of the Division of Water Quality is hereby replaced by "Executive Secretary".

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R317-7-2. Definitions.

[~~2.1~~]"Abandoned Well" means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

[~~2.2~~]"Application" means standard forms for applying for a permit, including any additions, revisions or modifications.

[~~2.3~~]"Aquifer" means a geologic formation or any part thereof that is capable of yielding significant water to a well or spring.

[~~2.4~~]"Area of Review" means the zone of endangering influence or fixed area radius determined in accordance with the provisions of 40 C.F.R. 146.6.

[~~2.5~~]"Background Data" means the constituents or parameters and the concentrations or measurements which describe water quality and water quality variability prior to surface or subsurface discharge.

[~~2.6~~]"Barrel" means 42 (U.S.) gallons at 60 degrees F and atmospheric pressure.

[~~2.7~~]"Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.

[~~2.8~~]"Casing Pressure" means the pressure within the casing or between the casing and tubing at the wellhead.

[~~2.9~~]"Catastrophic Collapse" means the sudden and utter failure of overlying "strata" caused by removal of underlying materials.

[~~2.10~~]"Cementing" means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

[~~2.11~~]"Cesspool" means a "drywell" that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom and/or perforated sides.

[~~2.12~~]"Confining Bed" means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

[~~2.13~~]"Confining Zone" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone.

[~~2.14~~]"Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

[~~2.15~~]"Conventional Mine" means an open pit or underground excavation for the production of minerals.

[~~2.16~~]"Disposal Well" means a well used for the disposal of fluids into a subsurface stratum.

[~~2.17~~]"Drilling Mud" means mud of not less than 36 viscosity (A.P.I. Full Funnel Method) and a weight of not less than nine pounds per gallon.

[~~2.18~~]"Drywell" means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids.

[~~2.19~~]"Exempted Aquifer" means an aquifer or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures of 40 C.F.R. 144.7.

[~~2.20~~]"Existing Injection Well" means an "injection well" other than a "new injection well."

[~~2.21~~]"Experimental Technology" means a technology which has not been proven feasible under the conditions in which it is being tested.

[~~2.22~~]"Fault" means a surface or zone of rock fracture along which there has been a displacement.

[~~2.23~~]"Flow Rate" means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.

[~~2.24~~]"Fluid" means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

[~~2.25~~]"Formation" means a body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

[~~2.26~~]"Formation Fluid" means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as drilling mud.

[~~2.27~~]"Generator" means any person, by site location, whose act or process produces hazardous waste identified or listed in 40 C.F.R. Part 261.

[~~2.28~~]"Groundwater" means water below the ground surface in a zone of saturation.

[~~2.29~~]"Ground water protection area" refers to the drinking water source protection zones for ground water sources delineated by the Utah Division of Drinking Water according to Utah Administrative Code R309-600 - Drinking Water Source Protection For Ground-Water Sources.

[~~2.30~~]"Hazardous Waste" means a hazardous waste as defined in R315-2-3.

[~~2.31~~]"Hazardous Waste Management Facility" means all contiguous land, structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

[~~2.32~~]"Improved sinkhole" means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface.

[~~2.33~~]"Injection Well" means a well into which fluids are being injected for subsurface emplacement of the fluids.

[~~2.34~~]"Injection Zone" means a geological "formation," group of formations, or part of a formation receiving fluids through a well.

[~~2.35~~]"Large underground domestic wastewater disposal system" means a large underground domestic wastewater disposal system (as defined in R317-1-1.16) for emplacing treated domestic wastewater into the subsurface and which is designed for a capacity of greater than 5,000 gallons per day

[~~2.36~~]"Lithology" means the description of rocks on the basis of their physical and chemical characteristics.

[~~2.37~~]"Monitoring Well" means a well used to measure groundwater levels and to obtain water samples for water quality analysis.

[~~2.38~~]"New Injection Well" means an injection well which began injection after January 19, 1983.

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[~~2.39~~]"Packer" means a device lowered into a well to produce a fluid-tight seal within the casing.

[~~2.40~~]"Plugging" means the act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation.

[~~2.41~~]"Plugging Record" means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

[~~2.42~~]"Point of injection" means the last accessible sampling point prior to waste fluids being released into the subsurface environment through a Class V injection well. For example, the point of injection of a Class V septic system might be the distribution box - the last accessible sampling point before the waste fluids drain into the underlying soils. For a dry well, it is likely to be the well bore itself.

[~~2.43~~]"Pressure" means the total load or force per unit area acting on a surface.

[~~2.44~~]"Project" means a group of wells in a single operation.

[~~2.45~~]"Professional Engineer" means any person qualified to practice engineering before the public in the state of Utah and professionally registered as required under the Professional Engineers and Professional Land Surveyors Licensing Act Rules (UAC R156-22).

[~~2.46~~]"Professional Geologist" means any person qualified to practice geology before the public in the state of Utah and professionally registered as required under the Professional Geologist Licensing Act Rules (UAC R156-76).

[~~2.47~~]"Radioactive Waste" means any waste which contains radioactive material in concentrations which exceed those listed in 10 C.F.R. Part 20, Appendix B, Table II Column 2.

[~~2.48~~]"Sanitary waste" means liquid or solid wastes originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreation areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.

[~~2.49~~]"Septic system" means a "well" that is used to emplace sanitary waste below the surface and is typically comprised of a septic tank and subsurface fluid distribution system or disposal system.

[~~2.50~~]"Stratum" (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

[~~2.51~~]"Subsidence" means the lowering of the natural land surface in response to earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

[~~2.52~~]"Subsurface fluid distribution system" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground.

[~~2.53~~]"Surface Casing" means the first string of well casing to be installed in the well.

[~~2.54~~]"Total Dissolved Solids (TDS)" means the total residue (filterable) as determined by use of the method specified in 40 C.F.R. Part 136 Table 1B.

[~~2.55~~]"Transferee" means the owner or operator receiving ownership and/or operational control of the well.

[~~2.56~~]"Transferor" means the owner or operator transferring ownership and/or operational control of the well.

[~~2.57~~]"Underground Injection" means a "well injection".

[~~2.58~~]"Underground Sources of Drinking Water (USDW)" means an aquifer or its portion which:

A. Supplies any public water system, or which contains a sufficient quantity of ground water to supply a public water system; and

1. currently supplies drinking water for human consumption; or

2. contains fewer than 10,000 mg/l total dissolved solids (TDS); and

B. is not an exempted aquifer. (See Section 7-4).

[~~2.59~~]"Well" means a bored, drilled or driven shaft whose depth is greater than the largest surface dimension; or a dug hole whose depth is greater than the largest surface dimension; or an improved sinkhole; or a subsurface fluid distribution system.

[~~2.60~~]"Well Injection" means the subsurface emplacement of fluids through a well.

[~~2.61~~]"Well Monitoring" means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

[~~2.62~~]"Well Plug" means a watertight and gas-tight seal installed in a borehole or well to prevent movement of fluids.

[~~2.63~~]"Well Stimulation" means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, and includes:

(1) surging;
(2) jetting;
(3) blasting;
(4) acidizing; and
(5) hydraulic fracturing.

R317-7-3. Classification of Injection Wells.

Injection wells are classified as follows:

3.1 Class I

A. Hazardous Waste Injection Wells: wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing, within two miles of the well bore, an underground source of drinking water;

B. Nonhazardous Injection Wells: other industrial and municipal waste disposal wells which inject nonhazardous fluids beneath the lowermost formation containing, within two miles of the well bore, an underground source of drinking water; this category includes disposal wells operated in conjunction with uranium mining activities.

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C. Radioactive waste disposal wells which inject fluids below the lowermost formation containing an underground source of drinking water within two miles of the well bore.

3.2 Class II. Wells which inject fluids:

A. which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with wastewaters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection;

B. for enhanced recovery of oil or natural gas; and

C. for storage of hydrocarbons which are liquid at standard temperature and pressure.

Class II injection wells are regulated by the Division of Oil, Gas and Mining under Oil and Gas Conservation General Rules, R649-5.

3.3 Class III. Wells which inject for extraction of minerals, including:

A. mining of sulfur by the Frasch process;

B. in situ production of uranium or other metals. This category includes only in situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V; and

C. solution mining of salts or potash.

3.4 Class IV

A. Wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous wastes or radioactive wastes into a formation which, within two miles of the well, contains an underground source of drinking water;

B. wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous wastes or radioactive wastes above a formation which, within two miles of the well, contains an underground source of drinking water;

C. wells used by generators of hazardous wastes or by owners or operators of hazardous waste management facilities, to dispose of hazardous wastes which cannot be classified under Section 7-3.1(A) or 7-3.4(A) and (B) of these rules (e.g. wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been exempted).

3.5 Class V. Injection wells not included in Classes I, II, III, or IV. Class V wells include:

A. air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;

B. large capacity cesspools, including multiple dwelling, community or regional cesspools, or other devices that receive untreated sanitary wastes, containing human excreta, which have an open bottom and sometimes have perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non-residential cesspools which receive solely sanitary wastes and have a design flow rate of less than or equal to 5,000 gallons per day;

C. cooling water return flow wells used to inject water previously used for cooling;

D. drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;

E. dry wells used for the injection of wastes into a subsurface formation;

F. recharge wells used to replenish the water in an aquifer;

G. salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water;

H. sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines, whether what is injected is radioactive waste or not;

I. large underground domestic wastewater disposal systems (as defined in R317-1-1.16) used to inject effluent from a domestic wastewater treatment system associated with a multiple family dwelling, business establishment, community, or regional business establishment. The UIC requirements do not apply to single family residential onsite wastewater systems (as defined in R317-1-1.13), nor to non-residential onsite wastewater systems which are used solely for the disposal of treated domestic waste and have a design flow rate of less than or equal to 5,000 gallons per day. Any subsurface fluid distribution system or other type of injection well designed for any flow rate and used to dispose of industrial wastewater is not an underground wastewater disposal system as defined by R317-1-1.32.

J. subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water;

K. stopes leaching, geothermal and experimental wells;

L. brine disposal wells for halogen recovery processes;

M. injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power; and

N. injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.

O. motor vehicle waste disposal wells that receive or have received fluids from vehicular repair or maintenance activities, such as an auto body repair shop, automotive repair shop, new and used car dealership, specialty repair shop (e.g., transmission and muffler repair shop), or any facility that does any vehicular repair work. Fluids disposed in these wells may contain organic and inorganic chemicals in concentrations that exceed the maximum contaminant levels (MCLs) established by the primary drinking water [~~regulations~~]rules (see 40 CFR Part 141 and Utah Primary Drinking Water Standards R309-200-5). These fluids also may include waste petroleum products and may contain contaminants, such as heavy metals and volatile organic compounds, which pose risks to human health.

R317-7-4. Identification of USDW'S and Exempted Aquifers.

The [~~Executive Secretary~~]Director shall identify USDW's and exempt aquifers following the procedures and based on the requirements outlined in 40 C.F.R. 144.7 and 40 C.F.R. 146.4.

R317-7-5. Prohibition of Unauthorized Injection.

5.1 Any underground injection is prohibited except as authorized by permit or as allowed under these rules.

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5.2 No authorization by permit or by these rules for underground injection shall be construed to authorize or permit any underground injection which endangers a drinking water source.

5.3 Underground injections are prohibited which would allow movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation (40 C.F.R. Part 141 and Utah Primary Drinking Water Standards R309-200-5), or which may adversely affect the health of persons. Underground injections shall not be authorized if they may cause a violation of any ground water quality rules that may be promulgated by the Utah Water Quality Board. Any applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

5.4 For Class I and III wells, if any monitoring indicates the movement of injection or formation fluids into underground sources of drinking water, the [~~Executive Secretary~~]Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting, including closure of the injection well, as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit or the permit may be terminated, or appropriate enforcement action may be taken if the permit has been violated.

5.5 For Class V wells, if at any time the [~~Executive Secretary~~]Director determines that a Class V well may cause a violation of primary drinking water rules under R309-200, the [~~Executive Secretary~~]Director shall:

A. require the injector to obtain an individual permit;

B. order the injector to take such actions, including closure of the injection well, as may be necessary to prevent the violation; or

C. take appropriate enforcement action.

5.6 Whenever the [~~Executive Secretary~~]Director determines that a Class V well may be otherwise adversely affecting the health of persons, the [~~Executive Secretary~~]Director may require such actions as may be necessary to prevent the adverse effect.

5.7 Class IV Wells

A. Prohibitions. The construction, operation or maintenance of any Class IV well is prohibited except as specified in 40 C.F.R. 144.13 (c) and 144.23(c) as limited by the definition of Class IV wells in Section 7-3.4 of these rules.

B. Plugging and abandonment requirements. Prior to abandoning a Class IV well, the owner or operator shall close the well in a manner acceptable to the [~~Executive Secretary~~]Director. At least 30 days prior to abandoning a Class IV well, the owner or operator shall notify the [~~Executive Secretary~~]Director of the intent to abandon the well.

5.8 Notwithstanding any other provision of this section, the [~~Executive Secretary~~]Director may take emergency action upon receipt of information that a contaminant which is present in, or is likely to enter a public water system, may present an imminent and substantial endangerment to the health of persons.

5.9 Records. The [~~Executive Secretary~~]Director may require, by written notice on a selective well-by-well basis, an owner or operator of an injection well to establish and maintain records, make reports, conduct monitoring, and provide other information as is deemed necessary to determine whether the owner or operator has acted or is acting in compliance with these rules.

R317-7-6. Permit and Compliance Requirements - New and Existing Wells.

6.1 The owner or operator of any new injection well is required to obtain a permit from the [~~Executive Secretary~~]Director prior to construction unless excepted by R317-7-6.3. Compliance with construction plans and standards is required prior to commencing injection operations. Changes in construction plans require approval of the [~~Executive Secretary~~]Director.

6.2 Owners or operators of existing underground injection wells are required to obtain a permit from the [~~Executive Secretary~~]Director unless specifically excepted by Section 7-6.3 of these rules.

6.3

A. Existing and new Class V injection wells are authorized by rule, subject to the conditions in Section 7-6.5 of these rules.

B. Well authorization under this Section 7-6.3 expires upon the effective date of a permit issued in accordance with these rules or upon proper closure of the well.

C. An owner or operator of a well which is authorized by rule under this Section 7-6.3 is prohibited from injecting into the well:

1. Upon the effective date of a permit denial.

2. Upon failure to submit a permit application in a timely manner if requested by the [~~Executive Secretary~~]Director under Section 7-6.4 of these rules.

3. Upon failure to submit inventory information in a timely manner in accordance with Section 7-6.4(C) of these rules.

6.4

A. The [~~Executive Secretary~~]Director may require any owner or operator of a Class I, III or V well authorized under Section 7-6.3 to apply for and obtain an individual or area permit. Cases where permits may be required include:

1. The injection well is not in compliance with the applicable rules.

2. The injection well is not or no longer is within the category of wells and types of well operations authorized by Section 7-6.3.

3. Protection of an USDW.

B. Any owner or operator authorized under Section 7-6.3 may request a permit and hence be excluded from coverage under Section 7-6.3.

C. Owners or operators of all injection wells regulated by Section 7-6.3 shall submit the following inventory information to the [~~Executive Secretary~~]Director:

1. facility name and location;
2. name and address of legal contact;
3. ownership of facility;
4. nature and type of injection wells; and
5. operating status of injection wells.

Inventory information shall be submitted no later than January 19, 1984 for existing injection wells and before injection begins for new injection wells.

6.5 Additional requirements for large-capacity cesspools and motor vehicle waste disposal wells (see Class V well descriptions in Sections 7-3.5(B) and 7-3.5(O), respectively).

A. All existing large-capacity cesspools (operational or under construction by April 5, 2000) must close by April 5, 2005. See closure requirements in Section 7-6.6.

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B. All new or converted large-capacity cesspools (construction not started before April 5, 2000) are prohibited.

C. All existing motor vehicle waste disposal wells (operational or under construction by April 5, 2000) must either be closed or their owners or operators must obtain a UIC permit.

1. For those wells located within a ground water protection area as designated by the Utah Division of Drinking Water (DDW), closure or permit application submittal must take place within one year of completion of DDW's ground water protection area assessment for the pertinent area.

2. All motor vehicle waste disposal wells statewide located outside a ground water protection area must either be closed or their owners or operators must submit a UIC permit application by January 1, 2007.

3. If well closure is the option chosen, the closure requirements in Section 7-6.6 must be followed. The closure deadline may be extended by the [~~Executive Secretary~~]Director for up to one year under certain conditions, such as intent to connect to a sanitary sewer.

4. If obtaining a UIC permit is the option chosen, Utah Drinking Water Maximum Contaminant Levels (MCL's), Utah Ground Water Quality Standards, and EPA Adult Lifetime Health Advisories must be met at the point of injection while the permit application is under review. These standards must also be met at the point of injection under the terms of the permit, when issued. Utah Ground Water Protection Levels may be required to be met at downgradient ground water monitoring wells, if required to be installed. Such a permit may require pretreatment of the wastewater, and will require adherence to best management practices and monitoring of the quality of the injectate and any sludge generated.

D. All new or converted motor vehicle waste disposal wells (construction not started before April 5, 2000) are prohibited.

6.6 Class V well plugging and abandonment requirements.

A. Prior to abandoning a Class V well, the owner or operator shall close the well in a manner that prevents the movement of fluid containing any contaminant into an underground source of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 141 or Utah Primary Drinking Water Standards R309-200-5, or may otherwise adversely affect the health of persons.

B. The owner or operator shall dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements.

C. The owner or operator must notify the [~~Executive Secretary~~]Director of intent to close the well at least 30 days prior to closure.

6.7 Conversion of motor vehicle waste disposal wells. In limited cases, the [~~Executive Secretary~~]Director may authorize the conversion (reclassification) of a motor vehicle waste disposal well to another type of Class V well. Motor vehicle wells may only be converted if: all motor vehicle fluids are segregated by physical barriers and are not allowed to enter the well; and, injection of motor vehicle waste is unlikely based on a facility's compliance history and records showing proper waste disposal. The use of a semi-permanent plug as the means to segregate waste is not sufficient to convert a motor vehicle waste disposal well to another type of Class V well.

6.8 Time for Application for Permit. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit a complete application to the [~~Executive Secretary~~]Director in accordance with Section 7-9 a reasonable time before construction is expected to begin, except for new wells covered by an existing area permit.

6.9 All applications for a Utah UIC permit, including any required Technical Report that addresses the technical requirements of R317-7-10 or R317-7-11, any technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a professional geologist or professional engineer.

R317-7-7. Area Permits.

A. The [~~Executive Secretary~~]Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:

1. described and identified by location in permit application, if they are existing wells, except that the [~~Executive Secretary~~]Director may accept a single description of wells with substantially the same characteristics;

2. within the same well field, facility site, reservoir, project, or similar unit in the State;

3. operated by a single owner or operator; and

4. used to inject other than hazardous waste.

B. Area permits shall specify:

1. the area within which underground injections are authorized; and

2. the requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.

C. The area permit may authorize the permittee to construct and operate, convert, or plug and abandon injection wells within the permit area provided that:

1. the permittee notifies the [~~Executive Secretary~~]Director at such time as the permit requires, when and where the new well has been or will be located;

2. the additional well meets the area permit criteria; and

3. the cumulative effects of drilling and operation of additional injection wells are considered by the [~~Executive Secretary~~]Director during evaluation of the area permit application and are acceptable to the [~~Executive Secretary~~]Director.

D. If the [~~Executive Secretary~~]Director determines that any additional well does not meet the area permit requirements, the [~~Executive Secretary~~]Director may modify or terminate the permit or take appropriate enforcement action.

E. If the [~~Executive Secretary~~]Director determines the cumulative effects are unacceptable, the permit may be modified.

F. The requirements of R317-7-6.9 apply to area permits.

R317-7-8. Emergency Permits.

A. Notwithstanding any provision in this Part 7, the [~~Executive Secretary~~]Director is authorized to issue emergency permits for specific underground injections provided the conditions and requirements of 40 C.F.R. 144.34 are met.

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B. The requirements of R317-7-6.9 apply to emergency permits.

R317-7-9. Permitting Procedures and Conditions.

9.1 Application for a Permit

A. Any person who is required to have a permit shall complete, sign and submit an application to the [~~Executive Secretary~~]Director.

B. When the owner and operator are different, it is the operator's duty to obtain a permit.

C. The application must be complete before the permit is issued.

D. All applicants shall provide the following information:

1. activities conducted by the applicant which require a permit;

2. name, mailing address and location of facility;

3. up to four Standard Industrial Code (SIC) codes which best reflect the principal products or services provided;

4. operator's name, address, telephone number, ownership status, and status as Federal, State, private, public or other entity;

5. whether the facility is located on Indian lands;

6. list of State and Federal environmental permits or construction approvals received or applied for and other relevant environmental permits;

7. topographic map (or other map if the topographic map is unavailable) extending one mile beyond the property boundary; depicting the facility and its intake and discharge structures, any hazardous waste, treatment, storage and disposal facilities; each injection well; and wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known;

8. a brief description of the nature of the business;

9. a map showing the injection well for which a permit is sought and the applicable area of review. Within the area of review, the map must show a number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines, (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;

10. a tabulation of data on all wells within the area of review which penetrates into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, any available water quality data, and any additional information the [~~Executive Secretary~~]Director may require;

11. maps and cross sections indicating the vertical limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

12. maps and cross sections detailing the geologic structure and lithology of the local area;

13. generalized maps and cross sections illustrating the regional geologic and hydrologic setting;

14. proposed operating data:

(a) average and maximum daily rate and volume of the fluid to be injected;

(b) average and maximum injection pressure; and

(c) source and an appropriate analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

15. proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation;

16. proposed stimulation program;

17. proposed injection procedure;

18. schematic or other appropriate drawings of the surface and subsurface construction details of the system;

19. contingency plans to cope with all shut-ins or well failures to prevent migration of fluids into any underground source of drinking water;

20. plans (including maps) for meeting the monitoring requirements;

21. for wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken;

22. construction procedures, as follows:

(a) For Class I Nonhazardous Wells: a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program, which comply with Section 7-10.1(A) or 40 C.F.R. 146.12;

(b) For Class I Hazardous Waste Wells: cementing and casing program, well materials specifications and their life expectancy, logging procedures, deviation checks, and a drilling, testing and coring program, which comply with 40 C.F.R. 146.65 and 146.66;

(c) For Class III wells: cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program, which comply with section 7-10.1(B) or 40 C.F.R. 146.32.

23. A plan for plugging and abandoning the well, as follows:

(a) Class I Nonhazardous Well plans shall include information required by 40 C.F.R. 146.14(c) and Section 7-10.5 of these rules;

(b) Class I Hazardous Waste Well plans shall include information required by 40 C.F.R. 146.71(a)(4) and 146.72(a);

(c) Class III well plans shall include information required by 40 C.F.R. 146.34(c) and Section 7-10.5 of these rules.

24. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well. Class I Hazardous Waste wells shall also demonstrate financial responsibility pursuant to 40 C.F.R. 144.60 through 144.70;

25. such other information as may be required by the [~~Executive Secretary~~]Director.

9.2 Applicants shall keep records of all data used to complete permit applications and supplemental information for at least three years from the date of permit approval.

9.3 Permit applications and reports required under these [~~regulations~~]rules shall be signed in accordance with 40 C.F.R. Section 144.32.

9.4 Permit Provisions, Conditions and Schedules of Compliance.

Any permit issued by the [~~Executive Secretary~~]Director is subject to the conditions and requirements and shall be issued in

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accordance with the procedures outlined in 40 C.F.R. 144.51 (a)-(o) and (q), 144.52, 144.53, 144.54, 144.55 and 146.7, and 40 C.F.R. 124.3(a), 124.5(a),(c),(d) and (f), 124.6(a),(c),(d) and (e), 124.8, 124.10(a)(1)ii, and iii, (a)(1)(v), 124.10(b),(c),(d) and (e), 124.11, 124.12(a) and 124.17(a) and (c). The permit may specify schedules of compliance which require compliance not later than three years after the effective date of the permit.

9.5 Duration of Permits. Permits for Class I and Class V wells shall be effective for a fixed term not to exceed ten years. Permits for Class III wells shall be issued for a period up to the operating life of the facility. Each issued Class III well permit shall be reviewed by the [~~Executive Secretary~~]Director at least once every five years to determine whether it should be modified, revoked and reissued, or terminated. The [~~Executive Secretary~~]Director may issue any permit for a duration that is less than the full allowable term under this section.

9.6 Transfer, Modification, and Termination. Permits may be transferred, modified, revoked, reissued, or terminated by the [~~Executive Secretary~~]Director under the conditions and following the procedures outlined in 40 C.F.R. 144.36, 144.38, 144.39, 144.40, and 144.41.

9.7 Confidentiality of Information. The following information when submitted as required by these rules cannot be claimed confidential:

A. name and address of permit applicant or permittee; and

B. information which deals with the existence, absence or level of contaminants in drinking water.

9.8 Waivers of Requirements

A. The [~~Executive Secretary~~]Director may waive the requirements of these rules only under the conditions and circumstances outlined in 40 C.F.R. Section 144.16.

B. The "two mile" distance provisions in Sections 7-3.1(B), 7-3.4, 7-10.1(A)(1), and 7-11 of these rules may be reduced by the [~~Board~~]Director on a case-by-case basis to less than two miles but in no event to less than 1/4 mile upon a finding by the [~~Board~~]Director that the distance reduction will not pose a threat to any USDW. The burden shall be on the applicant to demonstrate that hydrogeologic conditions, ground water quality in the area, and other environmental studies and information support the finding.

R317-7-10. Technical Requirements for Class I Nonhazardous and Class III Wells.

10.1 Construction Requirements

A. Class I Nonhazardous Well Construction Requirements

1. All Class I Nonhazardous wells as defined in Section 7-3.1(B) shall be sited so they inject beneath the lowermost formation containing, within two miles of the well bore, an USDW.

2. All Class I Nonhazardous wells shall be cased and cemented to prevent the movement of fluids into or between USDW's. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements the following factors shall be considered:

a. depth to the injection zone;

b. injection pressure, external pressure, internal pressure, and axial loading;

c. hole size;

d. size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

e. corrosiveness of injected fluid, formation fluids, and temperatures;

f. lithology of injection and confining intervals; and

g. type or grade of cement.

3. All Class I Nonhazardous injection wells (except for municipal wells injecting noncorrosive wastes) shall inject through tubing with a packer set immediately above the injection zone or tubing with an approved fluid seal. Alternatives may be used with the written approval of the [~~Executive Secretary~~]Director if they provide a comparable level of protection.

The following factors shall be considered in determining and specifying requirements for tubing, packer or alternatives:

a. depth of setting;

b. characteristics of injected fluid;

c. injection pressure;

d. annular pressure;

e. rate, temperature and volume of injected fluid; and

f. size of casing.

4. Appropriate logs and other tests shall be conducted during the drilling and construction of new wells and a descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the [~~Executive Secretary~~]Director. At a minimum, such logs and tests shall include:

a. deviation checks on holes constructed by drilling a pilot hole, and then enlarging the pilot hole;

b. Such other logs and tests as may be required by the [~~Executive Secretary~~]Director. In determining which logs and tests shall be required, the following shall be considered for use in the following situations:

(1) for surface casing intended to protect USDW's:

(a) electric and caliper logs (before casing is installed);

(b) cement bond, temperature or density log (after casing is set and cemented);

(2) for intermediate and long strings of casing intended to facilitate injection:

(a) electric, porosity and gamma ray logs (before casing is installed);

(b) fracture finder logs;

(c) cement bond, temperature or density log (after casing is set and cemented).

5. At a minimum, the following information concerning the injection formation shall be determined or calculated for new wells:

a. fluid pressure;

b. temperature;

c. fracture pressure;

d. physical and chemical characteristics of the injection matrix; and

e. physical and chemical characteristics of the formation fluids.

B. Class III Construction Requirements

1. All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The [~~Executive Secretary~~]Director may waive the cementing requirement for new wells in existing projects or

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portions of existing projects where he has substantial evidence that no contamination of underground sources or drinking water would result. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

a. depth to the injection zone;

b. injection pressure, external pressure, internal pressure, and axial loading;

c. hole size;

d. size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

e. corrosiveness of injected fluids and formation fluids;

f. lithology of injection and confining zones; and

g. type and grade of cement.

2. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the [~~Executive Secretary~~]Director. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site, and the need for additional information that may arise from time to time as the construction of the well progresses. Deviation checks shall be conducted on all holes where pilot holes and reaming are used, unless the hole will be cased and cemented by circulating cement to the surface. Where deviation checks are necessary they shall be conducted at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

3. Where the injection zone is a formation which is naturally water-bearing the following information concerning the injection zone shall be determined or calculated for new Class III wells or projects:

a. fluid pressure;

b. fracture pressure; and

c. physical and chemical characteristics of the formation fluids.

4. Where the injection zone is not a water bearing formation, only the fracture pressure must be submitted.

5. Where injection is into a formation which contains water with less than 10,000 mg/l TDS, monitoring wells shall be completed into the injection zone and into any USDW above the injection zone.

6. Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.

7. Where the injection wells penetrate an USDW in a area subject to subsidence or catastrophic collapse, an adequate number of monitoring wells shall be completed into the USDW.

10.2 Operation Requirements

A. For Class I Nonhazardous and Class III wells it is required that:

1. Except during stimulation, the injection pressure at the wellhead shall not exceed a maximum which shall be calculated to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall the injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an USDW.

2. Injection between the outermost casing protecting USDW's and the well bore is prohibited.

B. For Class I Nonhazardous wells, unless an alternative to tubing and packer has been approved, the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the [~~Executive Secretary~~]Director and a pressure approved by the [~~Secretary~~]Director shall be maintained on the annulus.

10.3 Monitoring. The permittee shall identify types of tests and methods used to generate the monitoring data:

A. Class I Nonhazardous well monitoring shall, at a minimum, include:

1. the analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics;

2. installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between tubing and the long string of casing;

3. a demonstration of mechanical integrity pursuant to 40 C.F.R. 146.8 at least once every five years during the life of the well; and

4. the type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the USDW, the parameters to be measured and the frequency of monitoring.

5. Ambient monitoring requirements for Class I Nonhazardous wells found in 40 C.F.R. 146.13(d).

B. Class III monitoring shall, at a minimum, include:

1. the analyses of the physical and chemical characteristics of the injected fluid with sufficient frequency to yield representative data on its characteristics;

2. monitoring of injection pressure and either flow rate or volume semi- monthly, or metering and daily recording of injected and produced fluid volumes as appropriate;

3. demonstration of mechanical integrity pursuant to 40 C.F.R. 146.8 at least once every five years during the life of the well for salt solution mining;

4. monitoring of the fluid level in the injection zone semi-monthly, where appropriate and monitoring of the parameters chosen to measure water quality in the monitoring wells required by Section 7-10.2 of these rules, semi-monthly;

5. quarterly monitoring of wells required by Section 7-10.1(B)(7).

6. All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required, provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

7. In determining the number, location, construction and frequency of monitoring of the monitoring wells, the criteria in 40 C.F.R. 146.32(h) shall be considered.

10.4 Reporting Requirements

A. For Class I Nonhazardous injection wells reporting shall, at a minimum, include:

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1. quarterly reports to the [~~Executive Secretary~~]Director on:

a. the physical, chemical and other relevant characteristics of injection fluids;

b. monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and

c. the results of monitoring of wells in the area of review.

2. Reporting the results, with the first quarterly report after the completion of:

a. periodic tests of mechanical integrity;

b. any other test of the injection well conducted by the permittee if required by the [~~Executive Secretary~~]Director; and

c. any well work over.

B. For Class III injection wells reporting shall, at a minimum, include:

1. quarterly reporting to the [~~Executive Secretary~~]Director on required monitoring;

2. results of mechanical integrity and any other periodic test required by the [~~Executive Secretary~~]Director reported with the first regular quarterly report after the completion of the test; and

3. monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

10.5 Plugging and Abandonment Requirements

A. Prior to abandoning Class I Nonhazardous and Class III wells, the well shall be plugged with cement in a manner which will not allow the movement of fluid either into or between underground sources of drinking water. The [~~Executive Secretary~~]Director may allow Class III wells to use other plugging materials if he is satisfied that such materials will prevent movement of fluids into or between underground sources of drinking water.

B. Placement of the cement plugs shall be accomplished by one of the following:

1. the Balance Method;

2. the Dump Bailer Method;

3. the Two-Plug Method; or

4. an alternative method approved by the [~~Executive Secretary~~]Director which will reliably provide a comparable level of protection to USDW's.

C. The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once, or by a comparable method prescribed by the [~~Executive Secretary~~]Director, prior to the placement of the cement plug.

D. The plugging and abandonment plan required in Section 7-9 shall, in the case of a Class III well field which underlies or is in an aquifer which has been exempted, also demonstrate adequate protection of USDW's. The [~~Executive Secretary~~]Director shall prescribe aquifer cleanup and monitoring where he deems it necessary and feasible to insure adequate protection of USDW's.

10.6 Information to be Considered by the [~~Executive Secretary~~]Director. Requirements for information from well owners or operators and evaluations by the [~~Executive Secretary~~]Director for the issuance of permits, approval of well operation or well plugging and abandonment of Class I Nonhazardous injection wells are found in 40 C.F.R. 146.14 and Class III injection wells are found in 40 C.F.R. 146.34.

R317-7-11. Technical Requirements for Class I Hazardous Waste Injection Wells.

11.1 Applicability. Statements of applicability and definitions are described in 40 C.F.R. 146.61.

11.2 Minimum Siting Criteria. Minimum siting requirements for Class I hazardous waste wells are described in 40 C.F.R. 146.62.

11.3 Area of Review. The area of review is defined for Class I hazardous waste injection wells in 40 C.F.R. 146.63.

11.4 Corrective Action for Wells in the Area of Review. Corrective action requirements for wells found within the area of review are located in 40 C.F.R. 146.64.

11.5 Construction Requirements. Construction requirements for all Class I hazardous waste injection wells are found in 40 C.F.R. 146.65.

11.6 Logging, Sampling, and Testing Prior to New Well Operation. Pre-operation requirements for logging, sampling, and testing of new wells are found in 40 C.F.R. 146.66.

11.7 Operating Requirements. Operation requirements for Class I hazardous waste injection wells are found in 40 C.F.R. 146.67.

11.8 Testing and Monitoring Requirements. Testing and monitoring requirements are found in 40 C.F.R. 146.68.

11.9 Reporting Requirements. Reporting requirements are found in 40 C.F.R. 146.69.

11.10 Information to be Evaluated by the [~~Executive Secretary~~]Director. Requirements for information from well owners or operators and evaluations by the [~~Executive Secretary~~]Director for the issuance of permits, approval of well operation or well plugging and abandonment are found in 40 C.F.R. 146.70.

11.11 Closure. Well closure requirements are found in 40 C.F.R. 146.71.

11.12 Post-closure Care. Post-closure care requirements for Class I hazardous waste injection wells and facilities are found in 40 C.F.R. 146.72.

11.13 Financial Responsibility for Post-closure Care. Financial responsibility requirements for care of a Class I hazardous waste injection well during post-closure are found in 40 C.F.R. 146.73.

11.14 Requirements for Wells Injecting Hazardous Waste. Requirements for injection of waste accompanied by a manifest are found in 40 C.F.R. 144.14.

R317-7-12. Hazardous Waste Injection Restrictions.

12.1 Purpose, Scope, and Applicability. Standards are found in 40 C.F.R. 148.1.

12.2 Definitions. Definitions are found in 40 C.F.R. 148.2.

12.3 Dilution Prohibited as a Substitute for Treatment. The prohibition is found in 40 C.F.R. 148.3.

12.4 Procedures for Case-by-case Extensions to an Effective Date. Requirements are found in 40 C.F.R. 148.4.

12.5 Waste Analysis. Requirements are found in 40 C.F.R. 148.5.

12.6 Waste Specific Prohibitions - Solvent Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.10.

12.7 Waste Specific Prohibitions - Dioxin - Containing Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.11.

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12.8 Waste Specific Prohibitions - California List Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.12.

12.9 Waste Specific Prohibitions - First Third Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.14.

12.10 Waste Specific Prohibitions - Second Third Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.15.

12.11 Waste Specific Prohibitions - Third Third Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.16.

12.12 Waste Specific Prohibitions - Newly Listed Wastes. Prohibitions and requirements are found in 40 C.F.R. 148.17.

12.13 Petitions to Allow Injection of a Waste Prohibited Under Sections 7.11 and 7.12. Requirements for petitions to allow injection of prohibited wastes are found in 40 C.F.R. 148.20.

12.14 Information to be Submitted in Support of Petitions. Requirements are found in 40 C.F.R. 148.21.

12.15 Requirements for Petition Submission, Review and Approval or Denial. Requirements are found in 40 C.F.R. 148.22.

12.16 Review of Exemptions Granted Pursuant to a Petition. Requirements are found in 40 C.F.R. 148.23.

12.17 Termination of Approved Petition. Petition termination requirements are found in 40 C.F.R. 148.24.

R317-7-13. Public Participation.

[~~In addition to adjudicatory hearings required under the State Administrative Procedures Act 63-46b, et seq. and proceedings otherwise outlined or referenced in these regulations, the Board or its duly appointed representative~~]The Division will investigate and provide written response to all citizen complaints duly submitted. In addition, the [~~Board~~]Director shall not oppose intervention in any civil or administrative proceeding by any citizen where permissive intervention may be authorized by statute or rule. The [~~Board~~]Director will publish notice of and provide at least thirty (30) days of public comment on any proposed settlement of any enforcement action.

KEY: water quality, underground injection control
Date of Enactment or Last Substantive Amendment: [~~August 25, 2006~~]2013
Notice of Continuation: June 20, 2011
Authorizing, and Implemented or Interpreted Law: 19-5

Environmental Quality, Water Quality
R317-12
General Requirements: Tax Exemption for Water Pollution Control Equipment

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37856
FILED: 07/15/2013

RULE ANALYSIS

PURPOSE OF THE RULE OR REASON FOR THE CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 passed in the 2012 General Legislative Session.

SUMMARY OF THE RULE OR CHANGE: The proposed amendments update the rule to conform with changes to the Utah Water Quality Act initiated by S.B. 21 (2012). The majority of the proposed changes are editorial, largely consisting of replacing the term "Executive Secretary" with "Director". However, the amendments also make additional changes mandated by S.B. 21 (2012) which reflect the transfer of certain powers and duties from the Water Quality Board to the Director of the Division of Water Quality in the realm of permits, certifications, and other administrative authorizations.

STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

ANTICIPATED COST OR SAVINGS TO:

♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

♦ LOCAL GOVERNMENTS: Enactment of these changes likely will not result in direct, measurable costs for local governments as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

♦ SMALL BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to small businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

♦ PERSONS OTHER THAN SMALL BUSINESSES, BUSINESSES, OR LOCAL GOVERNMENTAL ENTITIES: Enactment of these changes likely will not result in direct, measurable costs to other persons as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMPLIANCE COSTS FOR AFFECTED PERSONS: Enactment of these changes likely will not result in direct, measurable compliance costs as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

COMMENTS BY THE DEPARTMENT HEAD ON THE FISCAL IMPACT THE RULE MAY HAVE ON BUSINESSES: Enactment of these changes likely will not result in direct, measurable costs to businesses as this amendment only changes who has authority to make regulatory decisions regarding permits, certifications, and other administrative authorizations.

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THE FULL TEXT OF THIS RULE MAY BE INSPECTED, DURING REGULAR BUSINESS HOURS, AT:
ENVIRONMENTAL QUALITY
WATER QUALITY
THIRD FLOOR
195 N 1950 W
SALT LAKE CITY, UT 84116
or at the Division of Administrative Rules.

DIRECT QUESTIONS REGARDING THIS RULE TO:
♦ Dave Wham by phone at 801-536-4337, by FAX at 801-536-4301, or by Internet E-mail at dwham@utah.gov

INTERESTED PERSONS MAY PRESENT THEIR VIEWS ON THIS RULE BY SUBMITTING WRITTEN COMMENTS NO LATER THAN AT 5:00 PM ON 09/03/2013

THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-12. General Requirements: Tax Exemption for Water Pollution Control Equipment.
R317-12-5. Limitations on Certification.

Applications for certification shall be certified by the executive secretary of the Water Quality Board after consultation with the State Tax Commission and only if:

(1) plans for the water pollution control facility in question require review and approval by the [~~Water Quality Board~~]Director and have been so approved, or

(2) the water pollution control facility is specifically required by the Water Quality Board, including facilities constructed for pretreatment of wastes prior to discharge to a public sewerage system in accordance with R317-8-8.1, but excluding facilities which are permitted by rule under R317-6-6.2 (Ground Water Discharge Permit by Rule) unless required to obtain an individual permit by the [~~Water Quality Board~~]Director, or

([~~e~~]3) the water pollution control facility is required and permitted by another [~~statutory board~~]Division within the Department of Environmental Quality, or

([~~d~~]4) the water pollution control facility eliminates or reduces the discharge of pollutants which would be regulated by the [~~Water Quality Board~~]Division, if such pollutants were discharged.

R317-12-6. Exemptions from Certification.

The following items are specifically not eligible for certification:

(1) materials and supplies used in the normal operation or maintenance of the water pollution control facilities;

(2) materials, equipment, and services used to monitor water, unless required for a permit or approval from a [~~statutory board~~]Division within the Department of Environmental Quality;

(3) materials, equipment, and services for collection, treatment, and disposal of human wastes, unless the primary purpose of such materials, equipment and services is the treatment of industrial wastes;

(4) materials, equipment and services used in removal, treatment, or disposal of pollutants from contaminated ground water, if the applicant caused the ground water contamination by failing to comply with applicable permits, approvals, rules, or standards existing at the time the contamination occurred.

R317-12-8. Appeal and Revocation.

(1) A decision of the executive secretary of the Water Quality Board may be reviewed by filing a Request for Agency Action as provided in R305-7.[~~the administrative rules for Water Quality, R317.~~]

(2) Revocation of prior certification shall be made for any of the circumstances prescribed in Section 19-2-126, after consultation with the State Tax Commission.

KEY: water pollution, tax exemptions, equipment
Date of Enactment or Last Substantive Amendment: [~~March 9, 2007~~]2013
Notice of Continuation: January 25, 2012
Authorizing, and Implemented or Interpreted Law: 19-2-123; 19-2-124; 19-2-125; 19-2-126; 19-2-127

Environmental Quality, Water Quality
R317-401
Graywater Systems

NOTICE OF PROPOSED RULE
(Amendment)
DAR FILE NO.: 37857
FILED: 07/15/2013

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STATUTORY OR CONSTITUTIONAL AUTHORIZATION FOR THIS RULE: Section 19-5-104

ANTICIPATED COST OR SAVINGS TO:
♦ THE STATE BUDGET: Enactment of these changes likely will not result in direct, measurable costs to the state budget

2.69

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THIS RULE MAY BECOME EFFECTIVE ON: 09/10/2013

AUTHORIZED BY: Walter Baker, Director

R317. Environmental Quality, Water Quality.
R317-401. Graywater Systems.
R317-401-2. Definitions.

(a) "Graywater" is untreated wastewater, which has not come into contact with toilet waste. Graywater includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, laundry tubs, etc., and does not include wastewater from kitchen sinks, photo lab sinks, dishwashers, garage floor drains, or other hazardous chemicals.

(b) Surfacing of graywater means the ponding, running off, or other release of graywater to or from the land surface.

(c) "The local health department" means a city-county or multi-county local health department established under Title 26A, which has been given approval by the [~~Utah Water Quality Board~~]Director to issue permits for graywater systems within its jurisdiction.

(d) "Bedroom" means any portion of a dwelling which is so designed as to furnish the minimum isolation necessary for use as a sleeping area. It may include, but not limited to, a den, study, sewing room, sleeping loft, or enclosed porch. Unfinished basements shall be counted as a minimum of one additional bedroom.

R317-401-3. Administrative Requirements.

(a) The local health department having jurisdiction must obtain approval from the [~~Utah Water Quality Board~~]Director to administer a graywater systems program, as outlined in this section, before permitting graywater systems.

(b) The local health department request for approval must include a description of its plan to properly manage these systems to protect public health. This plan must include:

(i) Documentation of:

(1) the adequacy of staff resources to manage the increased work load;

(2) the technical capability to administer the new systems including any training plans which are needed;

(3) the Local Board of Health and County Commission support this request; and

(4) the county's legal authority to implement and enforce correction of malfunctioning systems and its commitment to exercise this authority.

(ii) An agreement to:

(1) advise the owner of the system of the type of system, and information concerning risk of failure, level of maintenance required, financial liability for repair, modification or replacement of a failed system and periodic monitoring requirements;

(2) advise the building permitting agency of the approved graywater system on the property;

(3) provide oversight of installed systems;

(4) record the existence of the system on the deed of ownership for that property;

(5) issue a renewable operating permit at a frequency not exceeding five years with inspection of the permitted systems before renewal; or, inspect annually the greater of 20 per cent of all installed system or the minimum of ten installed systems; and

(6) maintain records of all installed systems, failures, modifications, repairs and all inspections recording the condition of the system at the time of inspection such as, but not limited to, overflow, surfacing, ponding and nuisance.

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KEY: wastewater, graywater, drip irrigation
Date of Enactment or Last Substantive Amendment: [~~July 2, 2004~~]2013
Notice of Continuation: July 1, 2009

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