



INDUSTRIAL WASTEWATER PERMITTING

KANSAS ENVIRONMENTAL CONFERENCE

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Kansas Department of Health and Environment



Presentation Objectives - Overview

- ◆ Statutory and regulatory program framework
- ◆ Components of a permit
- ◆ Description of the permitting process
- ◆ Development of permit limits (TBELs and WQBELs)
- ◆ Developing other permit conditions
 - Monitoring and reporting requirements
 - Special conditions
 - Standard conditions

- ◆ Additional permitting considerations
 - Anti-backsliding
 - Other applicable requirements
- ◆ Administrative process for issuing, modifying, and reissuing permits



Statutory and Regulatory Framework

- ◆ January 29, 1861 – Kansas becomes a State
- ◆ April 10, 1885 – Kansas Board of Health Formed
- ◆ 1899 Rivers and Harbors Act – navigation rather than water quality
- ◆ 1907 – KSA 65-164 prohibits the discharge of sewage to waters of the State if polluting and impacting public health
- ◆ 1907 – KSA 65-167 establishes penalties for discharge of sewage without a permit
- ◆ 1965 Water Quality Act – Federal Water Pollution Control Administration. States establish WQCS.
- ◆ 1970 – President Nixon creates the U.S. EPA
- ◆ 1970 Refuse Act Permit Program (RAPP) – EPA and COE



- ◆ 1972 Federal Water Pollution Control Amendments (FWPCA)
- ◆ 1977 Clean Water Act (CWA) adjusted technology standards to reflect the shift toward controlling toxics.
- ◆ 1987 Water Quality Act Amendments – Goal of meeting state water quality standards. Required States to prepare individual control strategies to reduce toxics. Established new schedules for issuing NPDES permits for municipal and industrial stormwater discharges. Established anti-backsliding requirements.

Pollutant Categories

- ◆ “Pollutant” defined very broadly in CWA Section 501(6) and 40 CFR 122.2. Sewage defined very broadly per KSA 65-164(b). Pollutants grouped into three categories.
- ◆ “Conventional” – BOD, TSS, Fecal Coliform, pH, Oil & Grease. [CWA 304(a)(4) and 40 CFR 401.16]
- ◆ “Toxic” (priority pollutants) – 129 metals and manmade organic compounds. [CWA 307(a)(1), 40 CFR 401.15, and Appendix a of 40 CFR 423]
- ◆ “Nonconventional” – pollutants that are neither conventional or toxic. [Chlorine, ammonia, nitrogen, phosphorous, COD, whole effluent toxicity (WET), etc.]

Discharges to Groundwater

- ◆ CWA does not authorize EPA to regulate groundwater quality through NPDES permits.
- ◆ CWA would allow NPDES permitting of discharges to groundwater if pollutants directed to the groundwater would surface and enter a Water of the US via a direct hydrological connection.
- ◆ The release or discharge of “pollutants” or “sewage” to groundwater and surface water can and is regulated by State statute and regulation (i.e., “Waters of the State”). State surface water quality standards contains a groundwater recharge component of a designated use.

KANSAS WATER POLLUTION CONTROL PERMITS

- ◆ 1974 – KDHE delegated authority by EPA for issuance of State/EPA NPDES Permits.
- ◆ KDHE continues to issue State KWPC Non-Overflowing or Non-Discharge Permits.

PERMIT TYPES

- ◆ KWPC/NPDES Individual Permits
- ◆ KWPC/NPDES General Permits
- ◆ KWPC Non-Discharge Individual Permits
- ◆ KWPC Non-Discharge General Permits



INDIVIDUAL vs GENERAL PERMITS

INDIVIDUAL PERMIT

- ◆ Specifically tailored to an individual facility.

GENERAL PERMIT

- ◆ Used to cover multiple facilities conducting the same activities, requires the same limits, permit conditions, or standards
- ◆ Provides more efficient and timely issuance process than individual permits
- ◆ Can cover designated areas or provide for statewide coverage

INDUSTRIAL PERMIT PROGRAM AREAS

- ◆ Process / non-process wastewater discharges
- ◆ Process / non-process wastewater Non-Q systems (employs evaporation or land application)
- ◆ Land application of industrial wastewater and/or wastewater treatment sludge/residuals
- ◆ Industrial stormwater discharges
- ◆ Construction stormwater discharges
- ◆ Concentrated aquatic animal production facilities
- ◆ Pesticide discharge permits
- ◆ Cooling water intake structures - CWA 316(b)



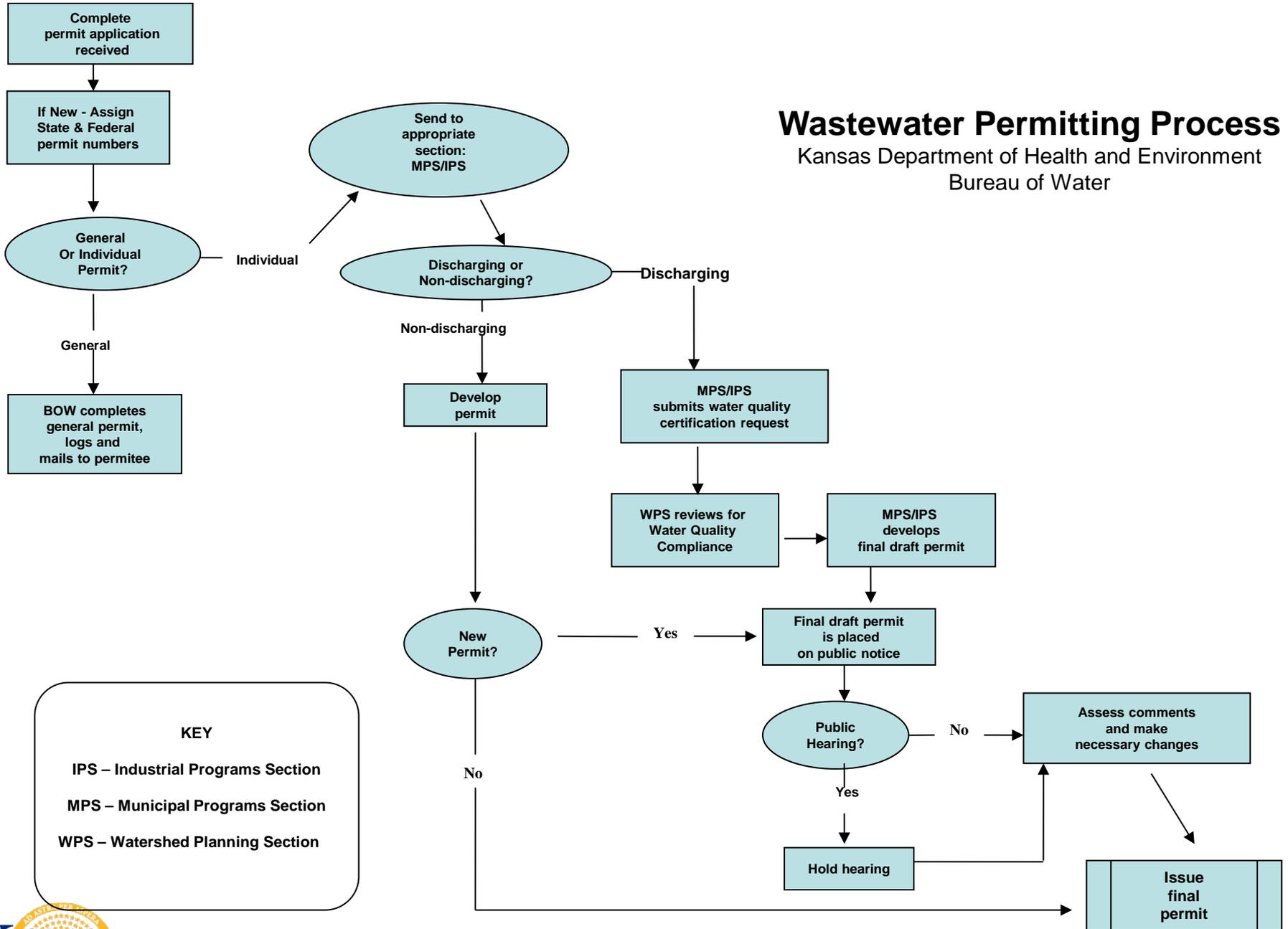
MAJOR COMPONENTS OF A PERMIT

- ◆ Cover Page
- ◆ Effluent Limits, Monitoring & Reporting Requirements
- ◆ Supplemental Conditions
- ◆ Standard Conditions
- ◆ Fact Sheet and Supporting Documentation



Wastewater Permitting Process

Kansas Department of Health and Environment
Bureau of Water



KEY

- IPS – Industrial Programs Section
- MPS – Municipal Programs Section
- WPS – Watershed Planning Section

Steps In Developing / Issuing An Individual NPDES Industrial Permit

- ◆ Receive Application.
- ◆ Review Application. Request additional information, as necessary.
- ◆ Using application information, develop Technology-Based Effluent Limitations (TBELs).
- ◆ Using application information, develop Water Quality-Based Effluent Limitations (WQBELs)
- ◆ Apply Anti-Backsliding requirements, and determine final effluent limitations.

- ◆ Develop Monitoring and Reporting requirements.
- ◆ Develop Special Conditions.
- ◆ Incorporate Standard Conditions.
- ◆ Prepare Fact Sheet and supporting documentation.
- ◆ Prepare public notice and respond to public comments.
- ◆ Public notice and conduct public hearing, if needed.
- ◆ Prepare administrative record.
- ◆ Issue final permit.
- ◆ Update computer database and develop eDMR Form.
- ◆ Prepare and process annual fee invoice.

PERMIT APPLICATIONS

- ◆ New – Individual Permits contact the Technical Services Section to obtain the appropriate form and information required. Invoice for the permit fee will be included.
- ◆ Renewals – Renewal forms will be sent to you 6-9 months prior to expiration of the permit.
- ◆ New – General Permits the forms for Hydrostatic Testing and Ready-Mix Concrete are on the Technical Services website while forms for Industrial Stormwater, Construction Stormwater, and the NPDES Pesticide permits can be found on the Industrial Programs Section website in each permit packet.



Application Information Review

- ◆ Application Review
- ◆ For new, modified, or expanded operations – Engineers Report, Wastewater Treatment System Construction Plans and Specifications, and Antidegradation Study as appropriate.
- ◆ Permit File Review
- ◆ Possible Site Visit
- ◆ Request Additional Information, if Required.



TECHNOLOGY-BASED EFFLUENT LIMITATIONS

- ◆ EPA required to promulgate technology-based effluent limitations that are national in scope, establish uniform base-level treatment requirements for facilities within an industrial category or subcategory, and reduce to the potential for creating “pollution havens”/shopping.
- ◆ Requires EPA to consider the industry-wide economic achievability of implementing the technology and the incremental costs in relation to the pollutant-reduction benefits.

EFFLUENT GUIDELINE STANDARDS (ELGs)

- ◆ Can include: numeric limitations, narrative limitations, pollution prevention practices, and Best Management Practices (BMPs).
- ◆ Address 3 Classes of Pollutants:
 - Conventional Pollutants (BOD, TSS, O&G, FC, pH)
 - Toxic Pollutants – metals and manmade organic pollutants (typically referred to as the 129 Priority Pollutants)
 - Nonconventional Pollutants – neither conventional nor toxic (ammonia, phosphorous, TDS, sulfates, etc.)



ELGs ESTABLISH 4 TYPES of STANDARDS

- ◆ Best Practicable Control Technology Currently Available (BPT). Average of the best performance of facilities based on cost, age, size, processes, etc. for conventional, toxic, and nonconventional pollutants.
- ◆ Best Conventional Pollutant Control Technology (BCT). Additional levels of effluent reduction for conventional pollutants considering a two-part “cost reasonableness” test.



- ◆ Best Available Technology Economically Achievable (BAT). EPA's second level strategy for controlling toxic and nonconventional pollutants. Represents the best available economically achievable performance of facilities in an industry category. Generally, BAT = NSPS.
- ◆ New Source Performance Standards (NSPS). Best Available Demonstrated Control Technology (BADCT) that addresses all pollutants. Considers costs, non-water quality environmental impacts, and energy requirements.



- ◆ EPA ELGs addressed in 40 CFR Chapter I, Subchapter N, Parts 400 thru 471. Addresses approximately 59 categories of industrial activities.
- ◆ ELGs do not always address all pollutants present in a categorical industry discharge. May employ an “indicator” pollutant.
- ◆ ELGs typically expressed as daily maximums and monthly averages.

Daily Max = 99th percentile of daily measurements

Monthly Avg = 95th percentile of monthly averages



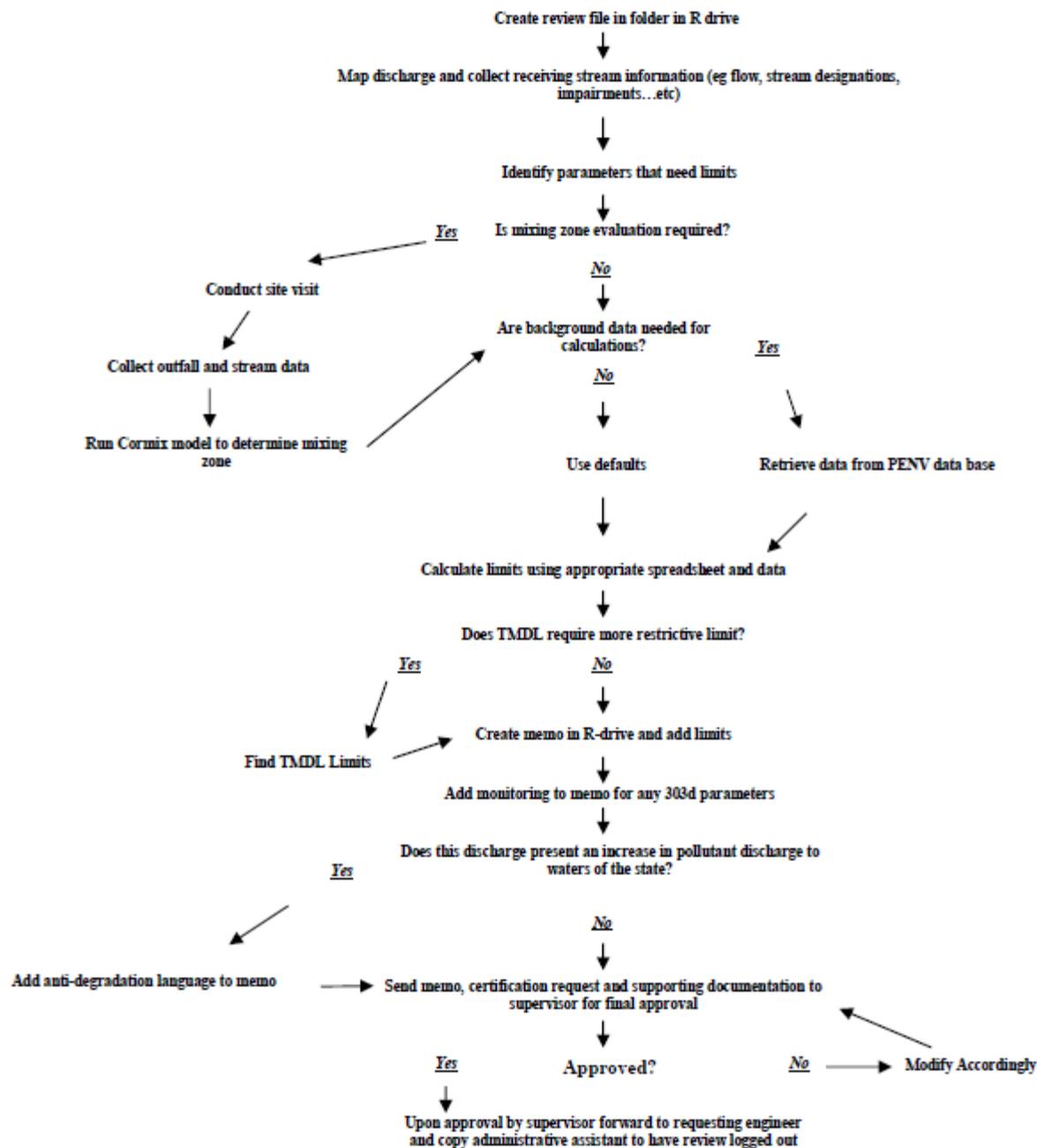
- ◆ Best Professional Judgement (BPJ) can be utilized to establish TBELs when there are no promulgated ELGs or NSPS that are applicable.
- ◆ BMPs can be required when there are no promulgated ELGs or NSPS that are applicable.
- ◆ Zero discharge of pollutants remains a goal of the CWA [CWA Section 101(a)(1)].

CALCULATE TBELs

- ◆ Identify applicable ELGs categories and subcategories.
- ◆ Identify if existing or new source.
- ◆ Account for overlapping multiple ELGs.
- ◆ Identify appropriate permit compliance point(s).
- ◆ Identify potential for wastewater streams that may be commingled. Ensure dilution is not used as substitute for treatment.
- ◆ Determine the reasonable measure of long-term production rates.
- ◆ Determine average daily flows at point(s) of compliance.

- ◆ Calculate TBELs from ELGs.
- ◆ Determine BPJ, as needed in establishing TBELs.
- ◆ Apply BMPs, if appropriate.
- ◆ Address need for an intake allowance i.e., net/gross consideration.
- ◆ When possible express permit limits in terms of mass, otherwise use other appropriate units.
- ◆ Employ definition of secondary treatment for domestic wastewater.
- ◆ Document calculation of TBELs in the Fact Sheet.

Water Quality Certification Process



WATER QUALITY-BASED EFFLUENT LIMITATIONS (WQBELs)

- ◆ WQBELs are designed to protect water quality by ensuring that water quality standards are met in the receiving water.
- ◆ 40 CFR 125.3(a) requires additional or more stringent effluent limitations and conditions, such as WQBELs are imposed when TBELs are not sufficient to protect water quality.

- ◆ CWA Section 303(c) and 40 CFR 131 establish the framework for water quality standards.

- ◆ Components of Water Quality Standards
 - Designated Uses
 - Numeric and/or narrative water quality criteria
 - General Policies
 - Antidegradation
 - Mixing Zones
 - Critical Low Flow Volumes
 - Variances
 - Whole Effluent Toxicity (WET)



KANSAS DESIGNATED USES

- ◆ Agricultural Water Supply Use
 - Irrigation
 - Livestock Watering
- ◆ Aquatic Life Support Use (Acute & Chronic)
 - Special aquatic life use waters
 - Expected aquatic life use waters
 - Restricted aquatic life use waters
- ◆ Domestic Water Supply Use
- ◆ Food Procurement Use
- ◆ Groundwater Recharge Use

- ◆ Industrial Water Supply Use
- ◆ Recreational Use
 - Primary contact recreational use
 - Swimming beach
 - Public Access
 - Restricted access use
 - Secondary contact recreational use

WATER QUALITY CERTIFICATION PROCESS

- ◆ Map discharge location and collect receiving stream information
 - River basin, sub-basin, and segment designation
 - Stream flow data (determine critical low flow)
 - Identify applicable designated uses
 - Identify whether impairments exist [303(d) listed]
 - Identify if a TMDL exists
- ◆ Identify wastewater pollutants involved and discharge volume(s)

- ◆ Based on critical low flow volumes is a mixing zone evaluation required? May require a site visit to collect stream data for running Cormix Model to determine mixing zone.
- ◆ Determine stream background data for pollutants involved.
- ◆ Calculate WQBELs employing numeric and narrative criteria in the Water Quality Standards regulations.
- ◆ If the stream is impaired and a TMDL has been established, does TMDL require a more restrictive limit than required by the numeric and narrative criteria?
- ◆ If stream impaired but discharge does not include pollutant, routine monitoring with no limits required.



WHOLE EFFLUENT TOXICITY (WET)

- ◆ When a pollutant by pollutant limitation does not address the toxic effect of a mixture of pollutants may have on aquatic organisms, a WET approach is taken and WET permit limits are calculated.
- ◆ Acute Toxicity – a wastewater concentration that exceeds 0.3 acute toxic units (TUa) where a TUa is equivalent to $100/LC_{50}$.
- ◆ Chronic Toxicity – a wastewater concentration that exceeds 1.0 chronic toxicity units (TUC) where a TUC is equivalent to $100/IC_{25}$.

Antidegradation Tiers

General Requirements	Tier/Name
<p>High quality waters such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance. Quality shall be maintained and protected.</p>	<p>3 ONRW</p>
<p>Waters of remarkable quality or of significant recreational or ecological value. Typically, maintenance of existing water quality is required. Existing water quality may be lowered only if it is necessary to accommodate important economic or social development.</p>	<p>2.5 ESW</p>
<p>High quality waters where quality exceeds levels necessary to support fishable / swimmable uses. Quality shall be maintained and protected unless the allowing of lower water quality is necessary to accommodate important economic or social development. Existing uses shall be fully protected. All new and existing point sources shall achieve the highest statutory and regulatory requirements and all nonpoint sources shall practice cost-effective and reasonable BMPs</p>	<p>2 GP2</p>
<p>Existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.</p>	<p>1 GP1</p>
<p>TMDL developed to return water to GP1 - designated uses met.</p>	<p><1 ?? Impaired</p>



- ◆ New discharge, the addition of new pollutants to existing discharges, the increase in volume or quantity of pollutants discharge requires an “Antidegradation Study” to address an alternatives analysis and economic evaluation. Alternatives analysis includes:
 - Water recycle / reuse
 - Product or raw material substitution to reduce pollutants
 - Connect to other WWTPs
 - Employ non-discharge treatment system
 - Provide for more aggressive treatment
 - Availability of alternative discharge point(s)

- ◆ Determine WQBEL for each pollutant parameter.
- ◆ Document calculation of WQBELs in the Fact Sheet.

FINAL EFFLUENT LIMITS

- ◆ Determine final effluent limits – the more stringent of:
 - TBELS - EGLs
 - BPJ – If there are no ELGs
 - WQBELs
 - BMPs
 - Pollution Prevention Practices

ANTI-BACKSLIDING

- ◆ Permit writer must compare proposed final effluent limits to any previous permit limits for the same pollutant parameter. If less than existing permit limit, must conduct an anti-backsliding analysis.
- ◆ CWA Section 402(o) and 40 CFR 122.44(l) generally prohibits backsliding from certain effluent limitations.
 - Prohibits specific forms of backsliding.
 - There are exceptions to the prohibitions.
 - Safety clause on absolute limit on backsliding.

MONITORING & REPORTING CONDITIONS

- ◆ Monitoring & Reporting Conditions Include:
 - Monitoring Locations
 - Monitoring Frequencies
 - Sample Collection Methods
 - Special Sample Requirements
 - Analytical Methods
 - Reporting & Recordkeeping Requirements

MONITORING LOCATIONS

- ◆ Influent and Source Water monitoring locations.
- ◆ Internal Monitoring Locations. Address TBELs prior to commingling with other process or non-process wastewater.
 - Compliance with ELGs.
 - Ensure compliance with secondary treatment.
 - Allow detection of pollutant.

MONITORING FREQUENCY

- ◆ Design Capacity of WWTP
- ◆ Treatment Method Used
- ◆ Compliance History
- ◆ Cost of Monitoring
- ◆ Waterbody to Which the Discharge is Directed
- ◆ Nature of Pollutants
- ◆ Frequency of Discharge
- ◆ Tiered Limitations
- ◆ Other Considerations

SAMPLE COLLECTION METHOD

- ◆ Grab
- ◆ Composite
- ◆ Continuous
- ◆ Special [316(b)]

SPECIAL SAMPLE REQUIREMENTS

- ◆ Biosolids (Wastewater Sludge)
- ◆ Wastewater Being Irrigated
- ◆ Land Application Site (Soils)
- ◆ Whole Effluent Toxicity (WET)
- ◆ Stormwater Runoff
- ◆ Groundwater Monitoring Wells
- ◆ Impermeable Synthetic Membrane Liner Leakage

ANALYTICAL METHODS, REPORTING, & RECORDKEEPING

- ◆ Analytical Methods – 40 CFR 136 or as specified.
- ◆ Reporting – Electric Discharge Monitoring Reporting (eDMR).
- ◆ Recordkeeping – Minimum of 3 years, or longer if required.

SPECIAL CONDITIONS

- ◆ Special Conditions added to permits typically address:
 - Additional Monitoring
 - Special Studies
 - Best Management Practices (BMPs)
 - Compliance Schedules

EXAMPLES OF SPECIAL CONDITIONS

- ◆ Detailed WET monitoring requirements.
- ◆ Detail land application monitoring and reporting requirements. Annual land application summary and plan for next year.
- ◆ Detailed requirements addressing Industrial Stormwater Pollution Prevention Plans.
- ◆ Specific BMPs and/or pollution prevention plan requirements.
- ◆ Compliance schedules for completing activities.



- ◆ Studies on adequacy of WWTP serving facility.
- ◆ Enhanced stream monitoring to address WQCS or TMDL issues.
- ◆ Mixing Zone Studies.
- ◆ TIE / TRE Studies
- ◆ Data to implement CWA 316(b) cooling water intake structure requirements.
- ◆ Groundwater monitoring requirements.
- ◆ Lagoon liner inspection / leakage monitoring requirements.

STANDARD CONDITIONS

- ◆ Duty to comply
- ◆ Duty to reapply
- ◆ Need to halt activity not a defense
- ◆ Duty to mitigate
- ◆ Proper operation and maintenance
- ◆ Permit actions (modify, revoke, reissuance, terminate)
- ◆ Property rights
- ◆ Duty to provide information
- ◆ Inspection and entry
- ◆ Monitoring and records

- ◆ Signatory requirements (applications & reports)
- ◆ Planned changes
- ◆ Anticipated noncompliance
- ◆ Permit transfers
- ◆ Monitoring reports
- ◆ Compliance schedules
- ◆ Twenty-four hour reporting
- ◆ Other noncompliance
- ◆ Other information
- ◆ Bypass

◆ Upset

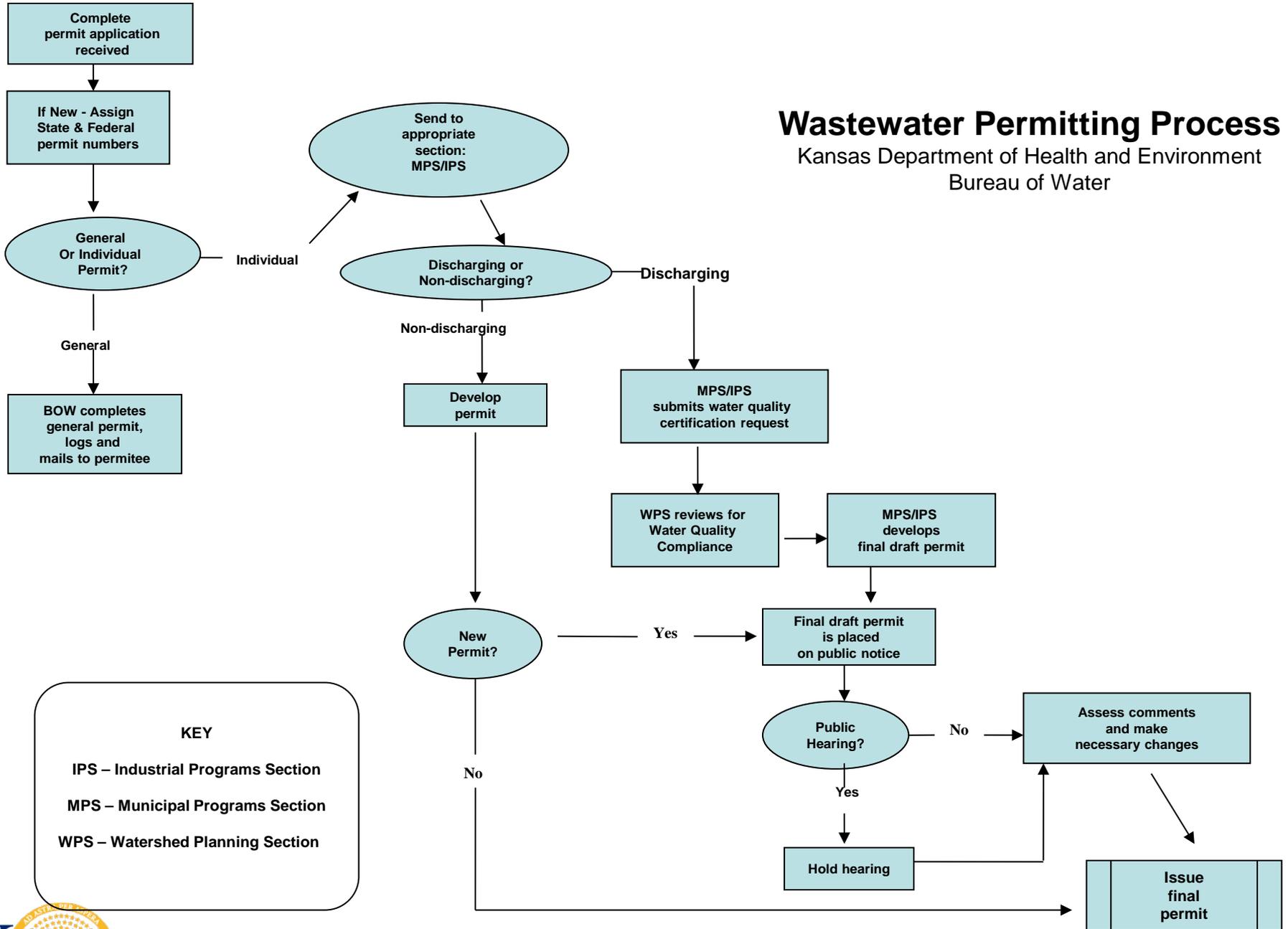
PERMIT ADMINISTRATION

- ◆ Administrative Record
 - Permit application and supporting data
 - Draft permit
 - Statement of basis or fact sheet and referenced materials
 - Meeting reports
 - Correspondence on permitting activities
 - PN & PH comments and responses
- ◆ Public Notice
- ◆ Public Hearing
- ◆ Jointly Published PN / PH Notice



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KDHE's Bureau of Water Homepage

<http://www.kdheks.gov/water/index.html>

KDHE's Technical Services Section

<http://www.kdheks.gov/water/tech.html>

Kansas Implementation Procedures –
Wastewater Permitting

KDHE WATERSHED PLANNING, MONITORING, and ASSESSMENT SECTION

<http://www.kdheks.gov/tmdl/index.htm>

303d list of Impaired Waters

Current Kansas Surface Water Map

Current Kansas Surface Water Register

Total Maximum Daily Loads

Kansas Surface Water Quality Standards

Kansas Surface Water Quality Regulations

Kansas Surface Water Quality Standards – Numeric Criteria

Kansas Antidegradation Policy

Kansas Implementation Procedures – Surface Water

Quality Standards

Electronic Code of Federal Regulations

<http://www.ecfr.gov/cgi-bin/text-idx?tpl=%2Findex.tpl>

EPA NPDES Permit Writers Manual

<http://water.epa.gov/polwaste/npdes/basics/NPDES-Permit-Writers-Manual.cfm>

EPA Industrial Effluent Guidelines

<http://water.epa.gov/scitech/wastetech/guide/industry.cfm>

EPA Effluent Guideline Expert Contact List

<http://water.epa.gov/scitech/wastetech/guide/contact.cfm>

QUESTIONS



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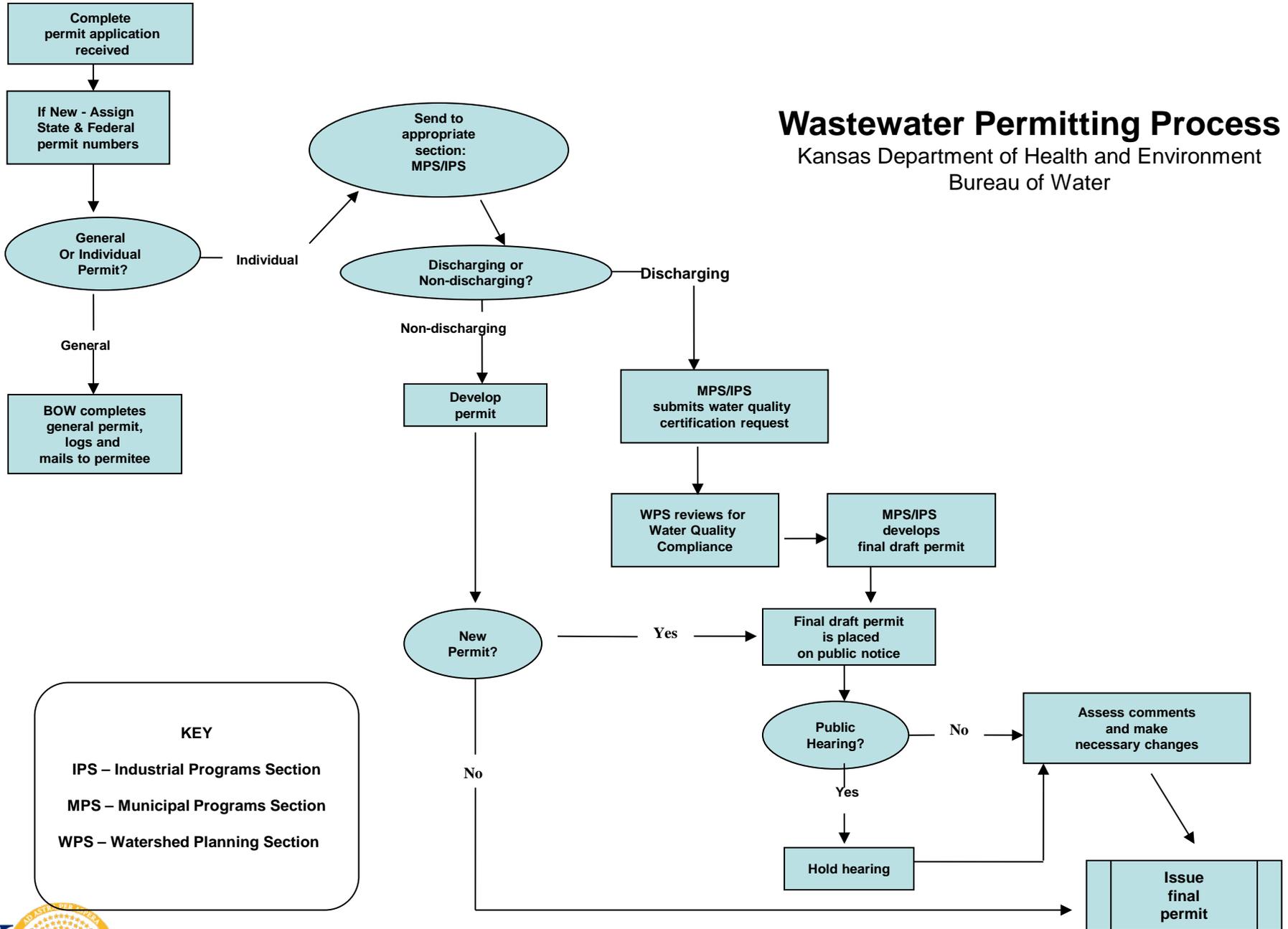
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Wastewater Permitting Process

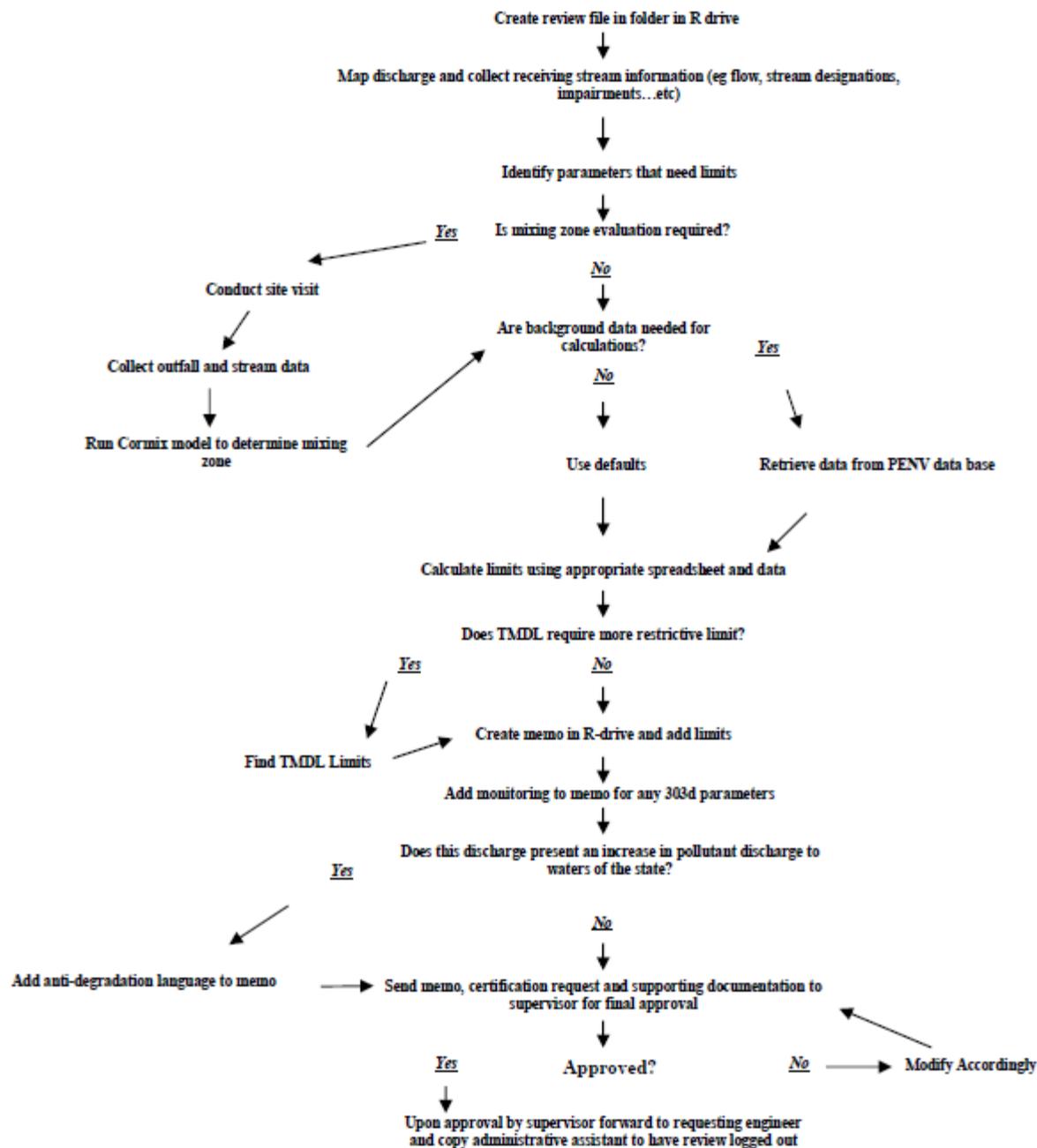
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