

# PTRT 1312

Clean Water Act & NPDES

Slide Set #3



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**Water is life's matter and matrix, mother and medium. There is no life without water.**

Albert Szent-Gyorgyi quotes (Hungarian Biochemist, 1937 Nobel Prize for Medicine, 1893-1986)

**There is the same amount of water on the earth as there was when the Earth was formed. The water that came from your faucet could contain molecules that Neanderthals drank or that dinosaurs peed in.**

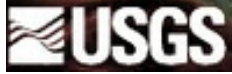
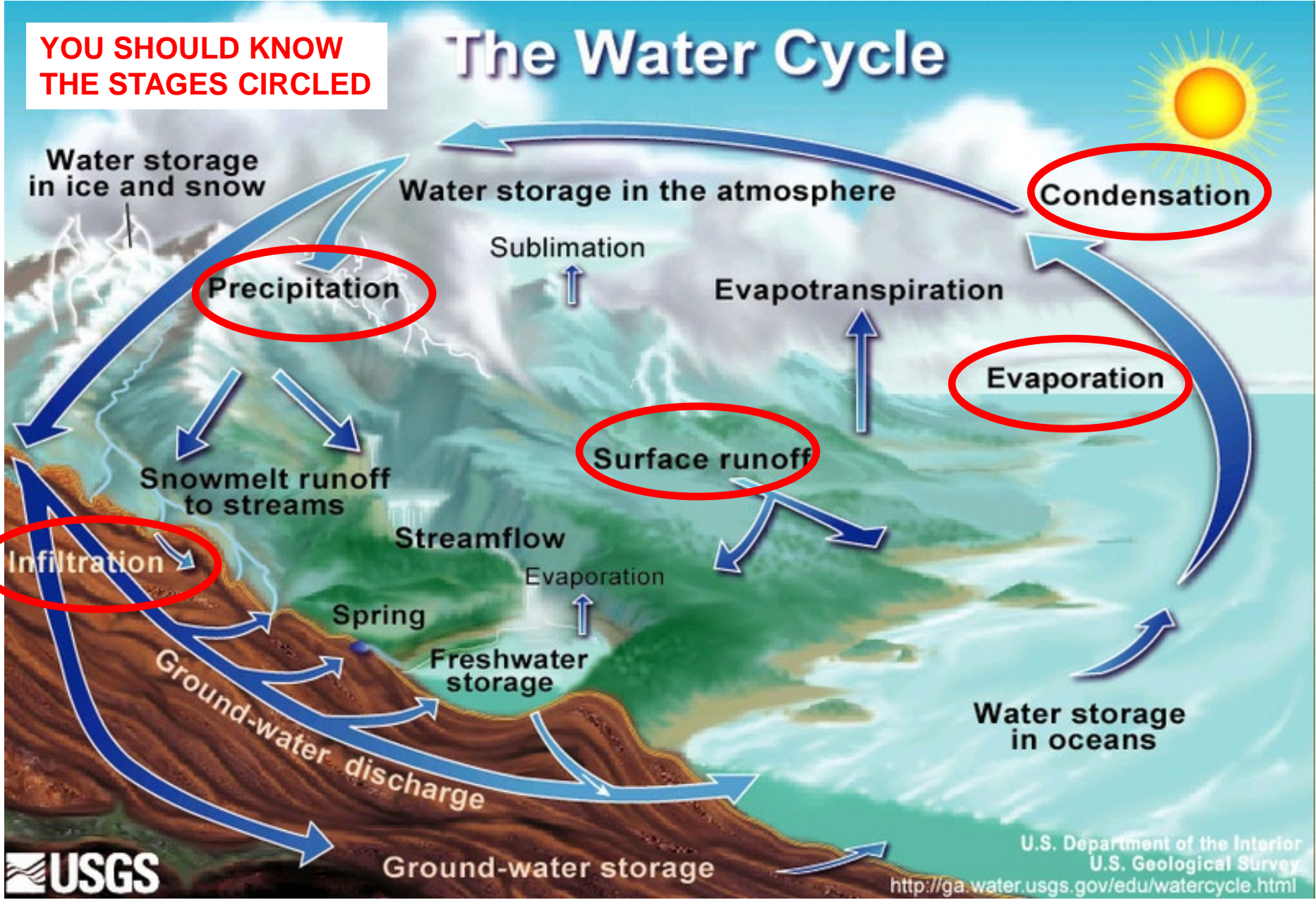
Becky Richards, TCU professor, Fall 2009



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# The Water Cycle

**YOU SHOULD KNOW  
THE STAGES CIRCLED**



# History of Water Regulation

- 1948 Water Pollution Control Act: focused on human health only; allotted funds to the states & local governments establishing the States role in controlling & protecting water resources
- 1956 & 1961 Amendments to the Water Pollution Control Act: provided funds for wastewater treatment systems
- 1965 Water Quality Act: required states to create water quality standards and develop waste load allocation to quantify pollutant loading to be discharged without exceeding standards



# History of Water Regulation

## 1972 Federal Water Pollution Control Act Amendments:

Set the following goals in Sec 101 (a):

- All discharges of pollutants ended by 1985
- Discharge of toxic pollutants in toxic quantities be prohibited
- Water quality which provided for the propagation of marine and wildlife and provides for recreation in and on the water achieved by July 1, 1983

Provided four important principles:

1. Discharge of pollutants in navigable waters is not right
2. Required a discharge permit to discharge pollutants into public resources
3. Wastewater must be treated with the best economically achievable treatment technology
4. Effluent limits may be more stringent if technology based limits do not prevent violations of water quality standards

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# History of Water Regulation

1977 Clean Water Act (CWA): shifted focus from controlling conventional pollutants to controlling toxic discharges

Established a list of Conventional Pollutants (Sec 304a):

- 5-day Biological Oxygen Demand (BOD)
- Total Suspended Solids (TSS)
- pH
- Fecal Coli form
- Oil and Grease (O&G)

Sec 307(a) Required the establishment of a published list of toxic pollutants or combination of pollutants called primary pollutants. Listed in 40 CFR 401.15





# History of Water Regulation

1987 Water Quality Act:  
established new  
schedule for  
industrial and  
municipal storm  
water discharges to  
be regulated by  
NPDES



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# Clean Water Act (CWA)

The CWA prohibits the discharge of any pollutant into U.S. navigable water, unless by permit.

A US “navigable water” are (Section 502 definition):

- Those waters over which the federal government has Constitutional authority
  - Waters of the United States
  - All waters, the use degradation or destruction of which, could affect interstate or foreign commerce. (Corp of Engineers definition)
  - All waters that could be used in interstate commerce

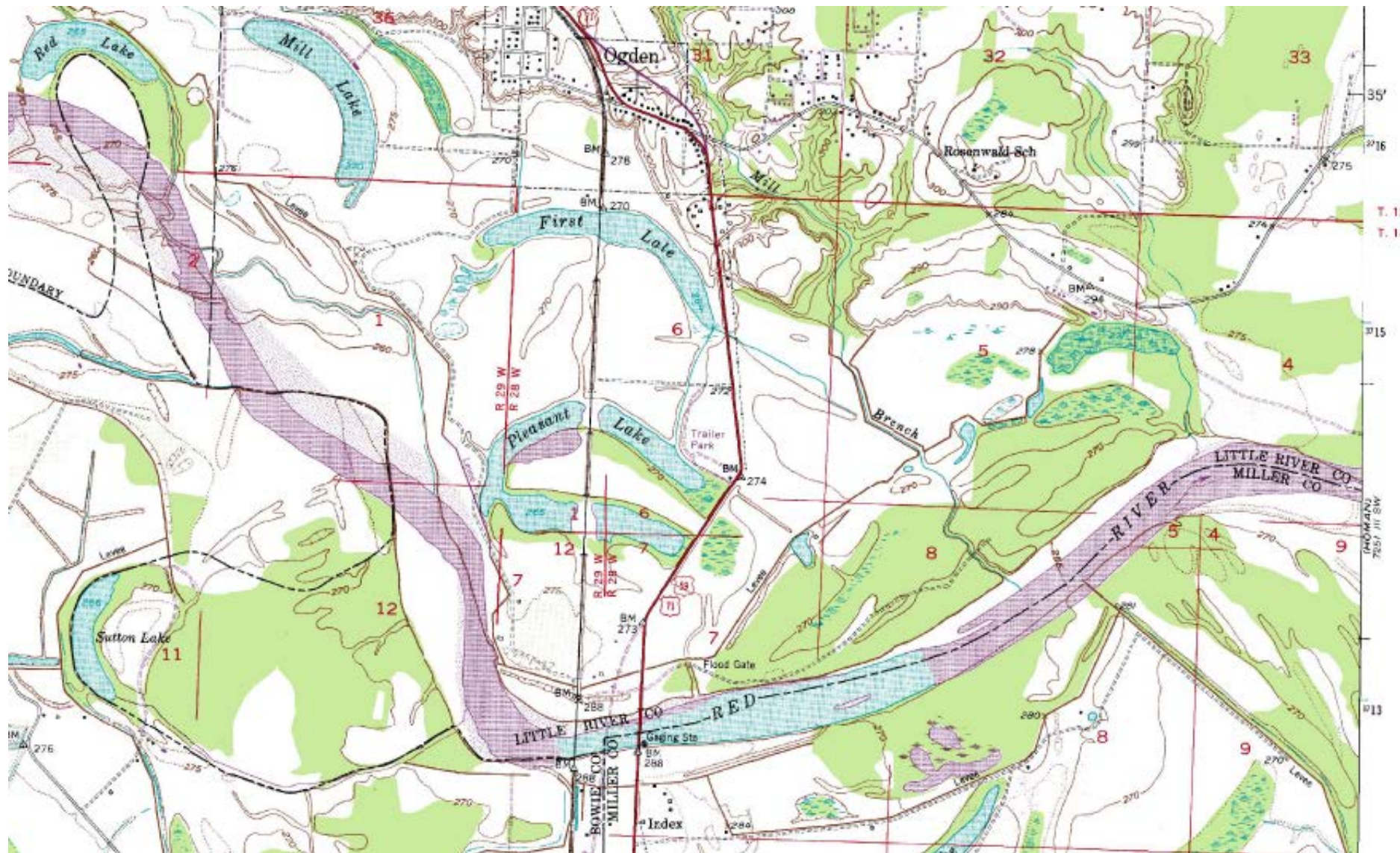




# Waters of the US

- Navigable Waters & Interstate Waters
- Lakes, streams, rivers, mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds.
- Tributaries of waters
- Territorial seas
- Adjacent wetlands





If it is a named stream or river water feature or connected in some way to a named stream or water feature then it is likely a US water.

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# Effects of the CWA

## Approximately 25 years ago:

- 1/3rd of nations water were safe for fishing & swimming
- 460 thousand acres of wetland lost annually
- Agricultural run-off resulted in the erosion of 2.25 billion tons of soil
- 85 million people were served by wastewater treatment plants served

## Currently

- 2/3rds of the nation's waters are now safe for fishing & swimming
- Annual wetland loss is estimated at 70 to 90 thousand acres
- 1.25 billion tons of soil lost to Agricultural erosion
- Over 173 million people served by wastewater treatment facilities



# National Pollutant Discharge Elimination System (NPDES)

Created by Federal Water Pollution Control Act  
(FWPCA) for permitting waste water discharges  
(Section 402).

All facilities which discharge pollutants from a point  
source into waters of the US are required to  
obtain a permit.



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# What is a pollutant

Anything that can degrade the use of the water?

Includes:

Toxics – Sec 307 list; Incl. PCBs, DDT, Mercury

Conventional Pollutants – Sec 304; Incl. BOD, TSS, pH, Coli form Bacteria, Oil & grease

Nontoxic, Nonconventional Pollutants

Dredge & fill material - Sec 404

Point Source – end of a pipe or concentrated man-made flow

Nonpoint Source – Everything not point sources; farming, construction, mining, urban runoff, oil spills

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# To Obtain a Permit

- You must show that your discharge effluent concentration will not be greater than the effluent limit for that stream.
- Prior to the granting of a permit, the authorizing agency must consider the potential impact of every proposed surface water discharge on the quality of the receiving water, not just individual discharges.





# Effluent Limits

Effluent Limits are created to prevent degradation of the stream and to increase water quality.

For industrial (and other non-municipal) facilities, technology-based effluent limits are derived by:

- 1) using national effluent limitations guidelines and standards established by EPA
- 2) using best professional judgment (BPJ) on a case-by-case basis in the absence of national guidelines and standards



- The CWA requires EPA to develop specific effluent guidelines that represent the following:
  - Best conventional technology (BCT) for control of conventional pollutants and applicable to existing dischargers.
  - Best practicable technology (BPT) currently available for control of conventional, toxic and nonconventional pollutants and applicable to existing dischargers.
  - Best available technology (BAT) economically achievable for control of toxic and nonconventional pollutants and applicable to existing dischargers.
  - New source performance standards (NSPS) for conventional pollutants and applicable to new sources.
- To date, EPA has established guidelines and standards for more than 50 different industrial categories



# Oil & Gas Extraction Effluent Limitation Guideline (ELG)

The ELGs for Oil and Gas Extraction, which were published in 1979, can be found at 40 CFR Part 435. The onshore subcategory, Subpart C, is applicable to discharges associated with shale gas development and production

**§ 435.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.**

Except as provided in §§125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT): there shall be no discharge of waste water pollutants into navigable waters from any source associated with production, field exploration, drilling, well completion, or well treatment ( *i.e.* , produced water, drilling muds, drill cuttings, and produced sand).  
[60 FR 33966, June 29, 1995]



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# ***NPDES - Storm Water Discharges***

- The CWA also includes a program to control storm water discharges.
- EPA developed this program in two phases (Phase I: 1990; Phase II: 1999).
- Those regulations establish NPDES permit requirements for municipal, industrial, and construction site storm water runoff.



# NPDES Permits

Types of Permits:

Individual – Permit is designed to apply to a specific facility

General – Permit is designed to apply to a specific activity or industry

Permits are written to permit discharges of wastewater or storm water



# Who is required to obtain a permit

- Municipalities
  - Wastewater Treatment Plants or Works
    - Limits that must be met passed on to those who discharge into the plant.
    - Permits to facilities that discharge into the treatment works system are issued based on the limits that the system can handle.
    - Industrial facilities usually have to have pretreatment prior to discharging into the Publically Owned Treatment Works (POTW).
  - Municipal Separate Storm Sewer Systems (MS4s)
    - Regulates storm water discharges from all municipalities
    - MS4s must conduct education and outreach, involve public participation, illicit discharge detection elimination, develop run-off controls, perform pollution prevention and good housekeeping





# Who is required to obtain a permit

- Industrial Facilities
  - Wastewater Treatment
    - Permit discharges directly into a water body
    - Permit discharges as required into a POTW
    - Usually required to perform pretreatment
  - Storm Water
    - 10 Industry activity categories are regulated
    - Activity may meet a Multi-Sector General Permit (MSGP)
      - 29 General Permits applicability based on SIC code



# 11 Categories of Industrial Activities

- Category One (i): Facilities subject to federal storm water effluent discharge standards in 40 CFR Parts 405-471
- Category Two (ii): Heavy manufacturing (for example, paper mills, chemical plants, petroleum refineries, and steel mills and foundries)
- **Category Three (iii): Coal and mineral mining and oil and gas exploration and processing**
- Category Four (iv): Hazardous waste treatment, storage, or disposal facilities
- Category Five (v): Landfills, land application sites, and open dumps with industrial wastes
- Category Six (vi): Metal scrap yards, salvage yards, automobile junkyards, and battery reclaimers
- Category Seven (vii): Steam electric power generating plants
- Category Eight (viii): Transportation facilities that have vehicle maintenance, equipment cleaning, or airport deicing operations
- Category Nine (ix): Treatment works treating domestic sewage with a design flow of 1 million gallons a day or more
- **Category Ten (x): Construction Activities**
- Category Eleven (xi): Light manufacturing (For example, food processing, printing and publishing, electronic and other electrical equipment)



# Sectors with Multi-Sector General Permit

- Metal Mining
- Coal Mining
- **Oil & Gas Extraction**
- Mineral Mining & Dressing Facilities
- Food and Kindred Products Facilities
- Textile Mills and Apparel
- Timber Products
- Furniture & Fixtures
- Paper and Allied Products
- Printing and Publishing
- Chemical and Allied Products
- Asphalt Paving and Roofing
- Rubber and Plastic Products Mfg
- Leather Tanning
- Glass, Clay, Cement, Concrete & Gypsum Products
- Primary Metals (foundries)
- Fabricated Metals
- Transportation/Machinery Mfg
- Electronic, Electrical & Photographic goods
- Ship & Boat Building
- Land Transportation & Warehousing
- Water Transportation
- Air Transportation
- Auto Salvage/ Scrap Recycling
- Hazardous Waste Storage Facilities
- Landfills
- Steam Electric Generation
- Treatment Works



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# Who is required to obtain a permit

- Construction Activities (Category 10)
  - Storm Water
    - Disturbances greater than 1-acre in size



# CWA - Oil & Gas

- Section 402(l)(2) to the CWA specifies that the EPA and states shall not require NPDES permits for uncontaminated storm water discharges from oil and gas exploration, production, processing or treatment operations, or transmission facilities.
- This exemption applies where the runoff is not contaminated by contact with raw materials or wastes.



# CWA – Oil & Gas

- The Energy Policy Act of 2005 modified the CWA Section 402(l)(2) exemption by defining the excluded oil and gas sector operations to include all oil and gas field activities and operations, including those necessary to prepare a site for drilling and for the movement and placement of drilling equipment.
- EPA promulgated a rule that implemented this exemption
- However, on May 23, 2008, the U.S. Court of Appeals for the Ninth Circuit released a decision vacating the permitting exemption for discharges of sediment from oil and gas construction activities that contribute to violations of the CWA178.
- Thus storm water discharges contaminated with sediment resulting in a water quality violation require permit coverage under the NPDES storm water permitting program.



# CWA – Oil & Gas

- Currently EPA does not require a NPDES Permit for Oil & Gas field construction activities.
  - Unless a water standard is violated
  - **States can require coverage under non-NPDES programs** (ex - TCEQ permits under the TPDES program and NPDES)
- If a release occurs during a storm event and affects a water of the US an Industrial storm water permit will be required for a period of time.



# Oil & Gas Construction NPDES Permit (EPA Permit)

Only required when there has been a reportable discharge

**No 1-acre or 5-acre Rule**

Likely to change in the future



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# State Programs

- States can have their own PDES program and require permitting under that program.
- Programs can be more stringent than the NPDES program
- States can require Oil & Gas to permit under their state non-NPDES program.

See attached link for states with a PDES program and who they do not apply to.

<http://cfpub.epa.gov/npdes/stormwater/authorizationstatus.cfm>



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# Local State Programs

## Texas – TPDES through TCEQ

- EPA permitting Authority for O&G (Why?)

## Oklahoma – OPDES;

- Permit required for reportable discharge or violation of water quality standard

## New Mexico – EPA is the permitting authority

## Arkansas – NPDES

- State does not have a separate PDES permit

## Louisiana – LPDES

- Permit required for reportable discharge or violation of water quality standard



# NPDES PERMITS



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# Normal Requirements for Discharge Permits

- Application for Permit
  - Identify responsible party and project contacts
  - Identifies reason for permit
  - Project description
  - Identify potential contaminants and source of contaminant
  - Describe controls & best management practices to be used
  - Description of area to be discharged & discharge points
  - Map of discharge points and area to be discharged
  - Description of waters being discharged into
  - Map of area being discharged into
  - Sampling of discharge (If required)
- File Notice of Intent (NOI) – Prior to first discharge
- Prepare Storm Water Pollution Prevention Plan (SWPPP)
- Perform Inspections
- Perform sampling & reporting as required
- File Notice of Termination – When permitted discharge will end

# Normal Requirements for Individual Construction Storm Water Discharge Permits

- Prepare A Storm Water Pollution Prevention Plan per the permit
- File Notice of Intent (NOI) – Prior to first discharge
- Perform Inspections
- Perform sampling & reporting as required
- Notice of Termination – When permitted discharge will end



[www.kaelepulupond.org/environment/stormwater.htm](http://www.kaelepulupond.org/environment/stormwater.htm)



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# Notice of Intent (NOI)

- Identifies responsible party (ies)
- Identifies responsible official
- Identifies project contacts
- Identifies when project or activity will begin
  - Construction to begin
  - Activity requiring permit begins
  - Discharge to begin
- Identifies project location
- Identifies project size
- General scope of project and / or reason for permit



Review the EPA NOI Form and Instructions included with lesson.



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#### References:

- Ms. Becky J. Richards Power Point Slides, Environmental Compliance, Texas Christian University, 2006
- Dr, Douglas Capone, Power Point Slides, Oil & Gas Regulation, Navarro College, 2010
- Environmental Protection Agency Website, 2010, [www.epa.gov](http://www.epa.gov)
- EPA Stormwater Program, website, 2010, [http://cfpub.epa.gov/npdes/home.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/home.cfm?program_id=6)
- EPA Region 6, Website, <http://www.epa.gov/region6/index.htm>
- Texas Commission on Environmental Quality, website, 2010, <http://www.tceq.state.tx.us/>
- Oklahoma Department of Environmental Quality, website, 2010, <http://www.deq.state.ok.us/>
- Louisiana Department of Environmental Quality, website, 2010, <http://www.deq.louisiana.gov/portal/>
- New Mexico Environmental Department, website, 2010, <http://www.nmenv.state.nm.us/>

#### Helpful Links:

Google Maps Latitude, Longitude, Popup - <http://www.gorissen.info/Pierre/maps/googleMapLocationv3.php>

USGS Store Map Locator -

[http://store.usgs.gov/b2c\\_usgs/usgs/maplocator/\(xcm=r3standardpitrex\\_prd&layout=6\\_1\\_61\\_48&uiarea=2&ctype=areaDetails&carearea=%24ROOT\)/.do](http://store.usgs.gov/b2c_usgs/usgs/maplocator/(xcm=r3standardpitrex_prd&layout=6_1_61_48&uiarea=2&ctype=areaDetails&carearea=%24ROOT)/.do)

Lat / Long Converter - <http://www.fcc.gov/mb/audio/bickel/DDDMSS-decimal.html>

Microsoft Research Maps (Topos) - <http://msrmaps.com/default.aspx>

Topographic Mapping & Reading USGS Topographic Maps - <http://www.geomart.com/products/topo/generaltopo.htm>

Topo Map Skills - <http://www.compassdude.com/topographic-maps.shtml>

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