WELCOME TO THE 2020 CONTRACTOR'S WORKSHOP

GUIDANCE FOR PROJECT DESIGNERS AND LOCAL CONTRACTORS FOR PROJECTS WHICH REQUIRE STORM WATER MANAGEMENT.

STORMWATER SERVICES
MONROE COUNTY PUBLIC WORKS

CITY OF BLOOMINGTON

INDIANA MS4 PARTNERSHIP

CONDUCTING BUSINESS WITH A MS4
MONROE COUNTY STORM WATER SERVICES

Monroe County
Highway Department
Storm Water Services
Located in the Showers building
Director-Lisa Ridge
MS4 Coordinator-Terry Quillman
MS4 Assistant-Connie Griffin
And the Storm Water Crew

Sources: IDEM Rule 5 Storm Water Run-off Associated with Construction Activity, 2007 Indiana Storm Water Quality Manual/Stormwater One/NPDES Code/Training, INDOT Storm Water Management Field Guide 2018

The Driving Force of Our Program

- 1948 The Federal Water Pollution Control Act
- 1969 Earth Day
- 1970 US EPA Agency

(Waste water treatment)

- 1972 Clean Water Act (CWA) *with amendments* made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.

Zero discharge of pollutants by 1985 and attain water quality that is both "fishable" and "swimmable" by mid 1983….

Restore and maintain the chemical, physical and biological integrity of America's Waters.

CWA 1977 with Amendments

1987 EPA Implemented the NPDES Program and Delegated the Program Management to IDEM

Title 13

The Storm Water General Permit Rule

Phase II MS4 Entities

is found in

Articles 5 and 15 of Title 327 of the

Indiana Administrative Code

IDEM is issuing this NPDES general permit to regulate discharges of storm water run-off associated with construction activities into surface waters of the State of Indiana.

MS4

MUNICIPAL SEPARATE STORM SEWER SYSTEM

WE ARE A SYSTEM OF CONVEYANCES

DESIGNED TO COLLECT AND CONVEY STORM WATER

- Roads
- Drains
- Municipal streets
- Catch basins
- Curbs
- Gutters
- Storm drains
- Piping
- Channels
- Ditches
- Tunnels
- Conduits

NPDES General Permit Rule Program

Rule 5 327 IAC 15-5-1

Storm Water Run-Off Associated with Construction Activity

The purpose of this rule is to establish requirements for storm water discharges from construction activities of one (1) acre or more to protect the public health, existing water uses, and aquatic biota.

Phase I (1990's) 5 acres or more threshold

Phase II (1999) 1 to 5 acres or less than <1 acre that is part of a larger common plan of development for sale.

1979/1983 Nationwide Urban Runoff Program (NURP)

Urban Growth Storm Water Impact

#1 Pollutant from residential, commercial and industrial construction activities is sediment.

Pollutant load

Runoff volume

Runoff velocity

Urbanization alters the natural infiltration capacity of the land.

Rule does not apply to persons who are involved in:

- **Agricultural** land disturbing activities
- **Forest harvesting** activities
- **Closed Landfills** that have been issued a certification of closure
- **Coal mining** activities
- **Municipal solid waste landfills** that are accepting waste
- **Ditch and road maintenance**
- **Landscaping projects** (minor projects)

- Tillage, planting, cultivation or harvesting operations
- Pasture renovation and ag conservation practices
- Installation of drainage tile
- Construction barns, livestock buildings, roads, waste lagoons and facilities, lakes, ponds, wetlands, and other infrastructure

Principles and Practices of Pollution Prevention

Phasing of Construction-the phasing of a construction project means sequential development of smaller portions of a larger project site.

Stabilizing each portion before beginning land disturbance on subsequent portions to <u>minimize exposure of disturbed land to erosion.</u>

Principles and Practices of Pollution Prevention

Early Construction BMPs

- **Install perimeter BMPs prior to any earth-disturbing activities**
- As construction progresses, adjust BMPs as necessary
- Stabilize
- Install traps and basins

Pre-construction meeting
Construction Plans
CP will show perimeter controls

Principles and Practices of Pollution Prevention

Fuel Storage and Hazardous Material Storage

- Secondary Containment
- Post area with signage
- Protect area from construction traffic

Secondary containment sized to contain 110% (volume plus rain event)

Principles and Practices of Pollution Prevention

Port-a-Johns

- Show Port-a-Johns on the site plan
- Away from water ways, inlets and traffic
- Schedule routine maintenance and inspections
- May require secondary containment and wind protection

Principles and Practices of Pollution Prevention

Construction Entrance

- Sediment tracking- **inspect daily**
- Construction entrance size is based on the size of the project
- Follow 2007 Indiana Storm Water Quality Manual
- Avoid citizen complaints
- Improve public perception

What a mess, who's watching this site?
I'm going to call this in right now!
Ring, ring, ring
Hello, Monroe County Storm Water Services, this is Connie

Principles and Practices of Pollution Prevention

Equipment Maintenance

- **Storm water systems can carry pollutants through city streets and straight to our watersheds**
- Keep equipment in good repair
- Clean leaks immediately and dispose of debris in a compliant manner
- Use drip pans
- Conduct equipment inspections often

Principles and Practices of Pollution Prevention

Spill Reporting/Spill Kits/MSDS Sheets

- MSDS sheets easy accessible
- Keep spill kit stocked
- Post contact information of property owner
- Follow IDEM protocol for reporting spills and contact your local MS4
- Train employees
- Accidents happen, be ready and know what to do

https://www.in.gov/idem/cleanups/2352.htm **IDEM Emergency Response**

Principles and Practices of Pollution Prevention

Concrete Washout

- Establish concrete washout areas as shown on **SWPPP**
- Locate washout areas **50' away** from creeks, wetlands, ditches, karst features and storm drains
- Mark with **signage** and orange perimeter safety fencing
- **Educate** sub-contractors; liquid concrete is a pollutant
- Include freeboard (12" below grade/4" above grade) to reasonably ensure that the structure will not overtop
- The design volume of the system must contain runoff

Principles and Practices of Pollution Prevention

Post All Permits

- Property owner information
- Contractor information
- Emergency numbers for IDEM and MC Storm Water Services
- Spill kit location
- All permits
- Completed inspections
- Construction plans
- SWPPP

Principles and Practices of Pollution Prevention

Employee Training

- **Discuss** construction sequence
- Compliant construction entrance
- Compliant concrete washout area
- Proper storage of hazardous materials
- Spill kit/MSDS sheets
- Reporting requirements
- Safety and secondary containment

Trained Individual- means an individual who is trained and experienced in the **principles of storm water quality, including erosion and sediment control** as may be demonstrated by state registration, professional certification, experience or completion of coursework that enable the individual to make judgements regarding storm water control.

Principles and Practices of Pollution Prevention

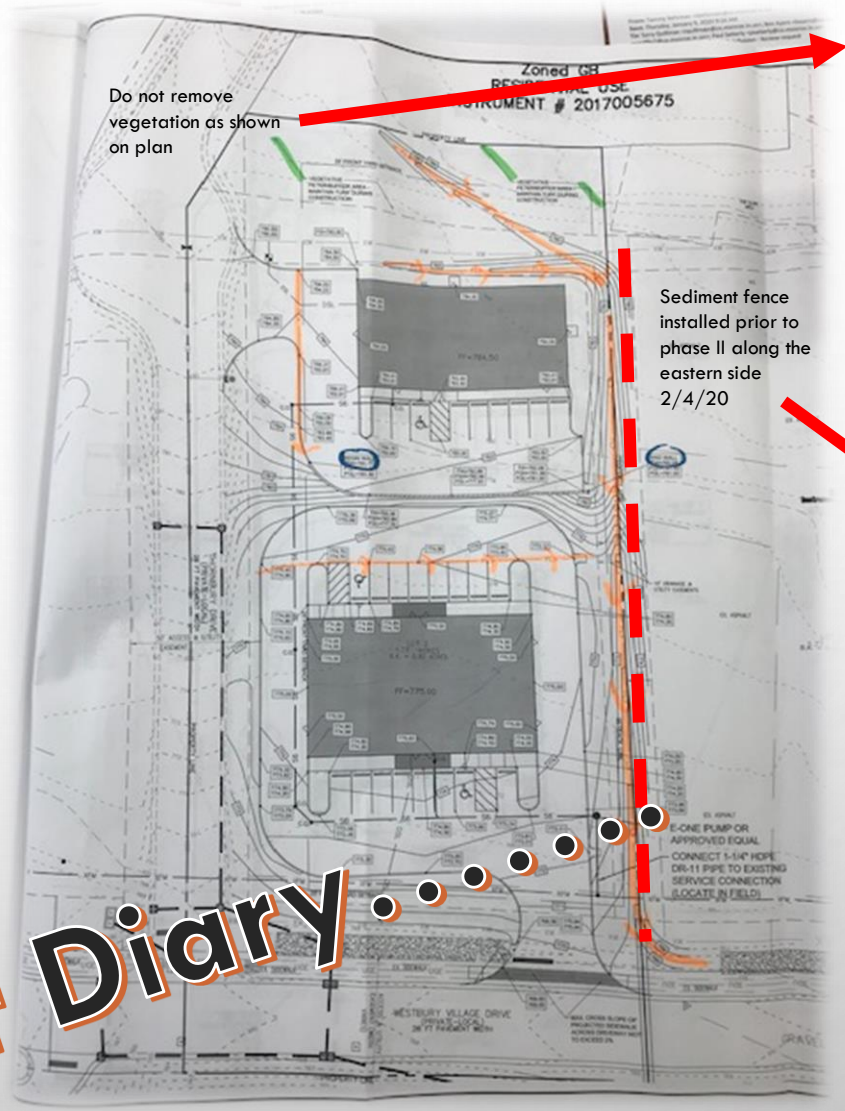
Self Monitoring Inspections

- Opportunity to **evaluate the effectiveness** of your project site BMPs
- Provide reports within **forty-eight (48) hours** of the MS4 request
- Routine **inspections** conducted weekly and by the end of the next day after each measurable rain event (0.5” of rainfall)
- Record corrective actions

Principles and Practices of Pollution Prevention

Site Map Log

- The site map is a record of soil disturbance and stabilization
- Record the dates of when BMPs are installed or removed
- Note the dates of when construction temporarily or permanently ceased and when stabilization was initiated
- Show amendments



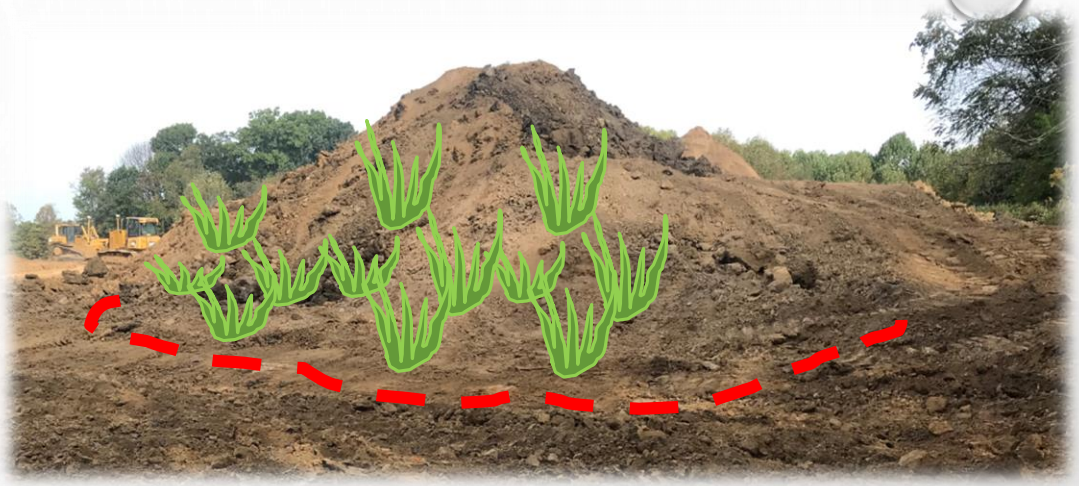
October 10, 2019 establish and maintain vegetative buffer on north side of project border

Sediment fence installed prior to phase II along the eastern side of project site-2/4/20

Dear Diary.....

Principles and Practices of Pollution Prevention

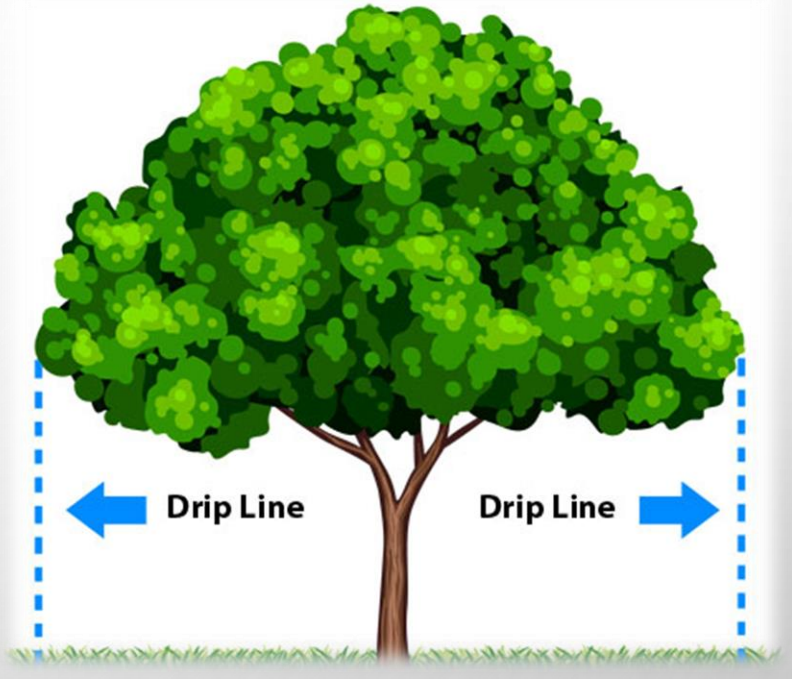
Soil Stockpiles and Staging Area



- If there is **carryover from one phase** of construction to the next, position the carryover material in a location that is accessible for the next phase
- Make sure the location **will not require the disturbance of stabilized areas** to access the stockpile
- Protect with perimeter controls and stabilize

Tree Protection

- Tree conservation areas
- Root zone protection as required
- Tree trunk armoring
- Safety fencing at the surrounding drip line



Erosion

Water Rill Channel Wind Sheet Gully

Erosion is the process by which soil particles are dislodged by water, wind, ice or gravity.

The rate of erosion
varies with each site, weather conditions and soil types.

Erosion factors: climate, soil type, topography and vegetative cover.

Sedimentation is the result of erosion.
The eroded soil is **transported** in runoff
from its site of origin and deposited in
drainage systems, other ground surfaces or in bodies of water.

Erosion Control

Eroded Soil is Captured on Site

Keep soil in place through vegetation and other measures that protect the soil from the energy of wind, rain and runoff.

Erosion control is the first Line of defense for the reduction in sediment transportation.

Erosion Control Examples

- Vegetative Perimeter Buffer
- Surface roughening/bucket teeth
- Erosion control blankets
- Temporary seed, mulching and sod
- Dust control
- Rock check dams/traversable check dam
- Inlet protection
- Vegetated swales

Surface Roughening Tracking

Tracking is defined as **driving tracked machinery up and down slopes** and leaving the cleat imprints parallel to the slope contour.

Perform tracking as soon as possible after vegetation has been removed from the slope. **Tracking reduces erosion** by just using this technique alone.

- Grouser tracks roughen the surface
- Slow the storm water flow
- Prepares the seed bed
- Increases soil surface area

Bucket teeth or slope grooving

When an excavator's bucket teeth are used to scratch or rip compacted soil to create a series of ridges and depressions that run perpendicular to the slope on the contour.

The horizontal grooves

- Prepare the seed bed
- Increases soil surface area
- Slows down storm water flow

Erosion Control Blankets/Turf Reinforcement Mat

- Used on slopes and in **concentrated flow areas**
- Temporary surface stabilization
- Biodegradable **(decomposition rate)**
- Reduces soil crusting
- Conserves soil moisture
- Increases seed germination and seedling growth
- *Be mindful of protecting **wildlife** they can become entangled in the netting*
- Straw (3-6 months), cotton (up to 6 months), coconut (up to 2 years)
- Anchor

Rip Rap Protection

Surface stabilization placed on a vegetated slope to <u>protect the soil from erosive forces by water.</u>

- Geotextile underlayment, overlapped, and secured with anchor pins
  - Sand to protect riprap and aggregate bedding
  - Place smaller stone first
  - **Don't** apply with a chute

Run Off Control- Diversions and Water Bars

- **Intercepts concentrated flow** down slopes and channels without causing erosion
- **Collects** storm water and **transports** it to a sediment control device or vegetated area
- Adjust height to prevent overtopping

Seeding and Mulching

- Permanent seeding takes place in late **April or early September**
- Mulching should take place within 24 hours after seeding operation
- Apply nitrogen after vegetation is growing
- Nitrogen is a pollutant if applied incorrectly
- Nitrogen can be leached during rain events

If a site will remain inactive for a period of 15 or more days, the site must be stabilized.
It takes 7 days for annual grains to germinate.

Permanent Stabilization means the establishment, at a uniform density of seventy percent (70%) across the disturbed area, of vegetative cover or permanent non-erosive material that will ensure the resistance of the soil to erosion, sliding, or other movement.

Sod

- Provides **immediate vegetative cover** on critically sloping areas and channels
- Install within 36 hours of cutting
- **Prepare** soil surface and apply soil amendments
- Irrigate as necessary to ensure rooting

Sediment Control

- Is the **trapping of suspended soil particles**
- Slow or pond overland flow so sediment will have time to settle out
- **Energy dissipater** from flowing storm water

Sediment Control Examples

- Construction entrance
- Sediment fence
- Sediment traps/basins
- Filter berm
- Filter sock
- Inlet protection
- Wattles
- Dewatering

- Check dams
- Level spreaders
- Flocculate fine clays and silts
- Slope drains
- Skimmers

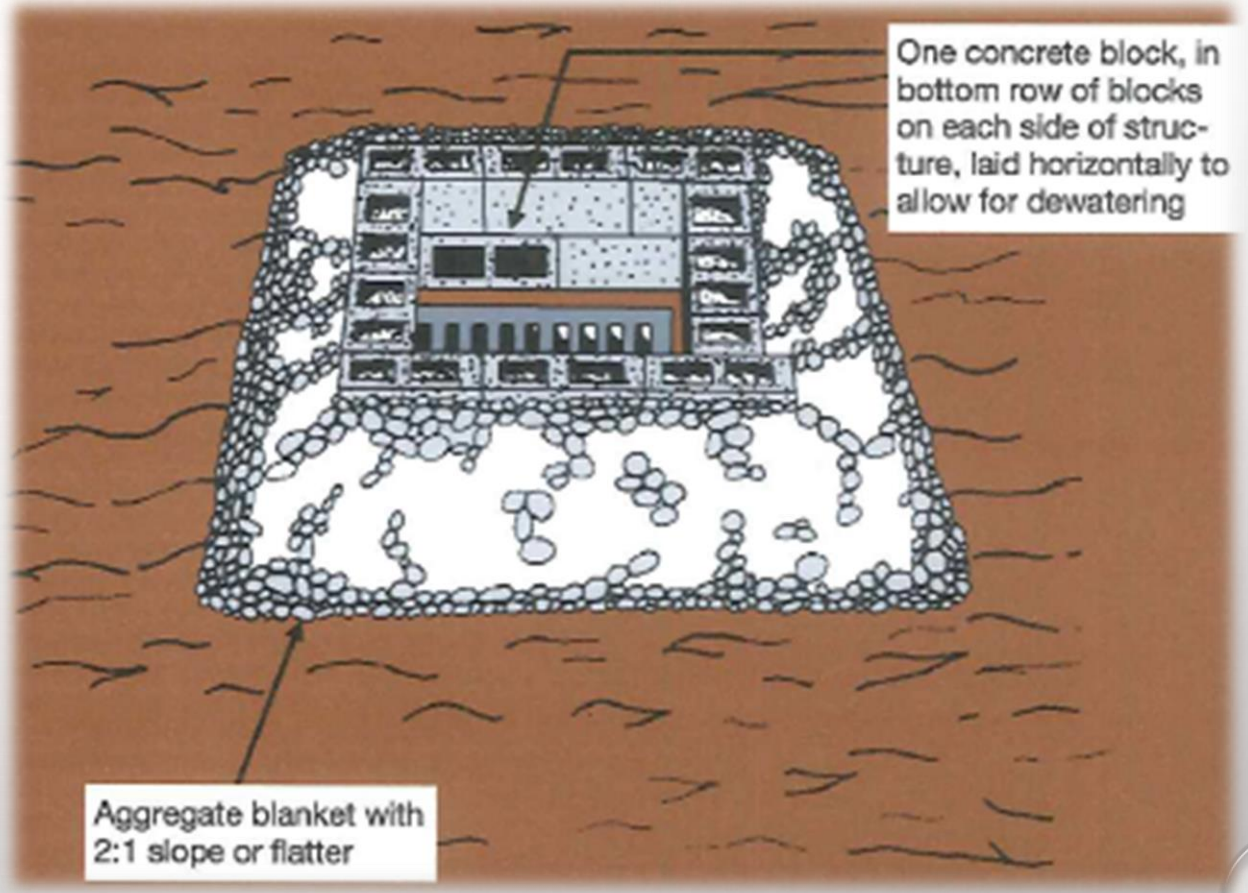
Inlet protection, when installed correctly, is the last line of defense in protecting receiving waters from pollutants.

Sediment Fencing

- **Installation-** Trenching or Slicing Methods
- Locate fence back from toe of slope, increases storage capacity
- Wrap joint
- J Hooking-Create small sediment traps
- Maintenance is conducted when the sediment reaches 1/3 barrier height
- Turn up gradient at the ends
- Never place in concentrated flow areas

Storm Drain Block and Gravel Drop Inlet

- Temporary sediment control device placed around a drop inlet, the use of this practice, **allows early use of the storm drain system**
- Less than one acre maximum runoff
- Height at least 12”, limit the height to prevent excess ponding and bypass flow



Rock Check Dams

- A small rock dam constructed across a drainage way, swale or road ditch
- Used in concentrated flow areas
- Reduces erosion and **trap** sediment

Inlet Protection

Block out water

Slow, settle, filter, weir

Or a combination of the two

- Sediment fence
- Dandy bag
- Gutter buddy
- Catch basin filter
- Flexstorm inlet filter

Geotextile fabric not recommended for paved surfaces, inability to entrench the fabric and lack of anchoring system.

What kind of traffic will it need to withstand?

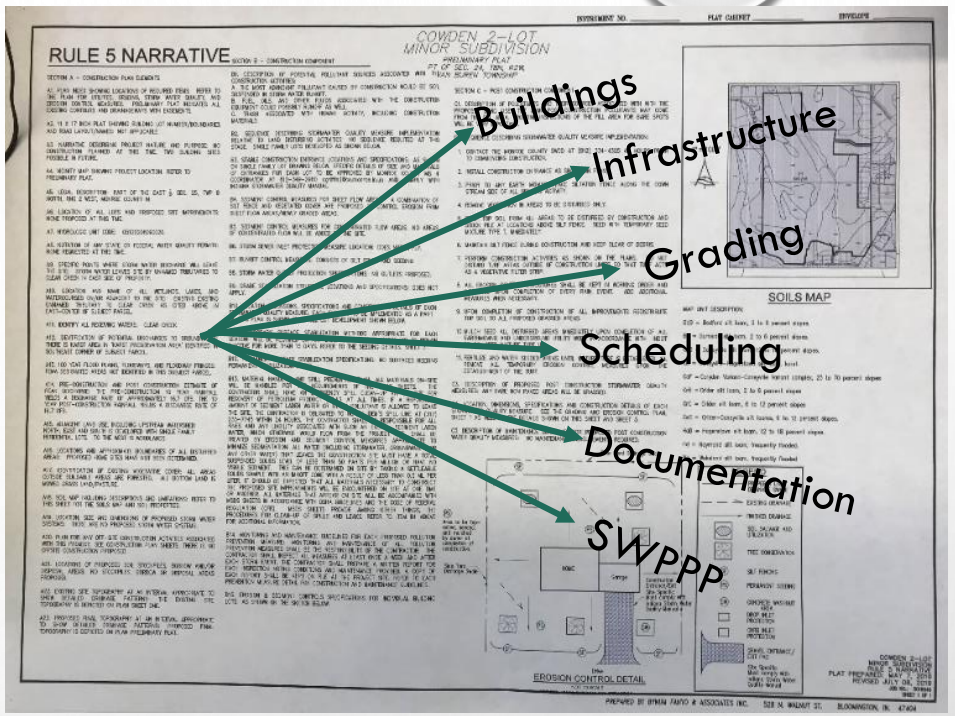
Section 6 Submittal of NOI and Construction Plan

NOI's (Permit period starting date-5 Years)

Section 6.5 Requirements for Construction Plan

Section 7 General Requirements for Storm Water Quality Control

Section 7.5 General Requirements for Individual Building Lots within a Permitted Project



- Erosion and sediment control
- Stable construction entrance
- Perimeter erosion and sediment control

Determination of Land Disturbance Multifamily Lots

A determination of the area of land disturbance shall be calculated by adding the total area of land disturbance for improvements, such as roads, utilities, or common areas, and the expected total disturbance on each individual lot as determined by the following;

Single-family residential project site (0.5) acre or more = one-half (0.5) acre of land

Single-family residential project site less than one-half (0.5) acre in size, the total lot must be calculated

Industrial and Commercial and All Other Projects Lot Disturbance Shall be Calculated as Follows

- 1 acre or more, a minimum of 1 acre of land disturbance shall be the expected lot disturbance
- Less than 1 acre, the total lot must be calculated as disturbed

Strip Developments

For purposes of this rule, strip developments:

- Are considered one (1) project site

- Must comply with this rule unless the total combined disturbance on all individual lots is less than one (1) acre
- and is not part of a larger common plan of development or sale.

Individual Lot
You Must Meet the General Rule
1 Acre or More

- Complete Notice of Intent (Section 6)
- Construction Plan (Section 6.5)

Individual Lot
<One (1) Acre Project Site Permitted Under this Rule

- Follow the provisions and requirements of the plan developed by the project site owner
- Section 7.5 of this rule

A separate NOI and construction plan are not required.

Single Family Residential <Five (5) acres

The lot is not part of a larger common plan of development for sale

NOI and construction plans are not required

Provisions in section 7b shall be complied with throughout construction activities and until permanently stabilized.

- 7(b)(1) - 7(b)(5),
- 7(b)(10) - 7(b)(17),
- 7(b)(19),

and

- 7(b)(20)

Section 7b General Requirements for Storm Water Quality Control

- **Sediment-laden run-off shall be treated by erosion and sediment control measures**
- Storm water run-off must be discharged in a manner that is consistent with applicable laws
- Phasing shall be used
- During construction activities, **all storm water quality measures shall be maintained**
- Proper storage and handling of materials
- **Final stabilization**
- Construction projects on land used for agricultural purposes are returned to its preconstruction agricultural use

Conducting Business in Monroe County with Your Local MS4

You will work with me
on both small and large projects
which will disturb one acre or more
or on projects which are part of
a larger common plan of
development for sale.

- Notice of Intent
- Construction Plan
- Notice of Termination

- ❑ Erosion Control Sequence
- ❑Rule 5 Narrative
- ❑Erosion Control Details, include spill kit inventory
- ❑Written Notice of Deficiencies/Re-print plans
- ❑Pre-construction Meeting/Forms Provided
- ❑Post All Permits with Required Information
- ❑Supply Letter of Sufficiency to MS4
- ❑MS4 Inspections & Self Monitoring Inspections Requirements
- ❑Follow SWPPP and Approved Construction Plan
- ❑File Extension 90 Days Prior to Expiration
- ❑Post Construction/Transfer of Permanent BMP Operations
- ❑Notice of Termination/Close Out Inspection-Certification by MS4
- ❑Document Retention 3 Years

The Review Process

10 days for <1 Acre to 1-5 Acres

14 days for >5 Acres

Notice of Termination

- ❑ No active erosion is evident on the project
- ❑All bare areas have been dressed and
- ❑Vegetation is re-established to 70% uniform density
- ❑All post construction measures are installed and functioning
- ❑The transfer of project site permanent BMPs has been completed and property owner or HOA is ready to take over the responsibility
- ❑Call me within 30 days of project completion

Monroe County requires operators to plan and implement appropriate pollution prevention and control practices for storm water runoff.

The project site owner must comply with all appropriate ordinances and regulations within the MS4 area related to storm water discharges.

- To take corrective actions immediately if discharge is detected,
- By the end of the day for sediment tracking (*fine line* tracking may need immediate attention),
- Larger compliance repairs one week

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I LOOK FORWARD TO WORKING WITH YOU

ON YOUR NEXT PROJECT