

EPA's Stormwater Program

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Rain/snow is a Source of Pollution?

- Stormwater is a vector for pollutants
- Stormwater is a pollutant itself

Storm Water is a Vector

Common pollutants in storm water runoff include heavy metals, oil, grease, nutrients, toxic substances, sediment, bacteria, and temperature

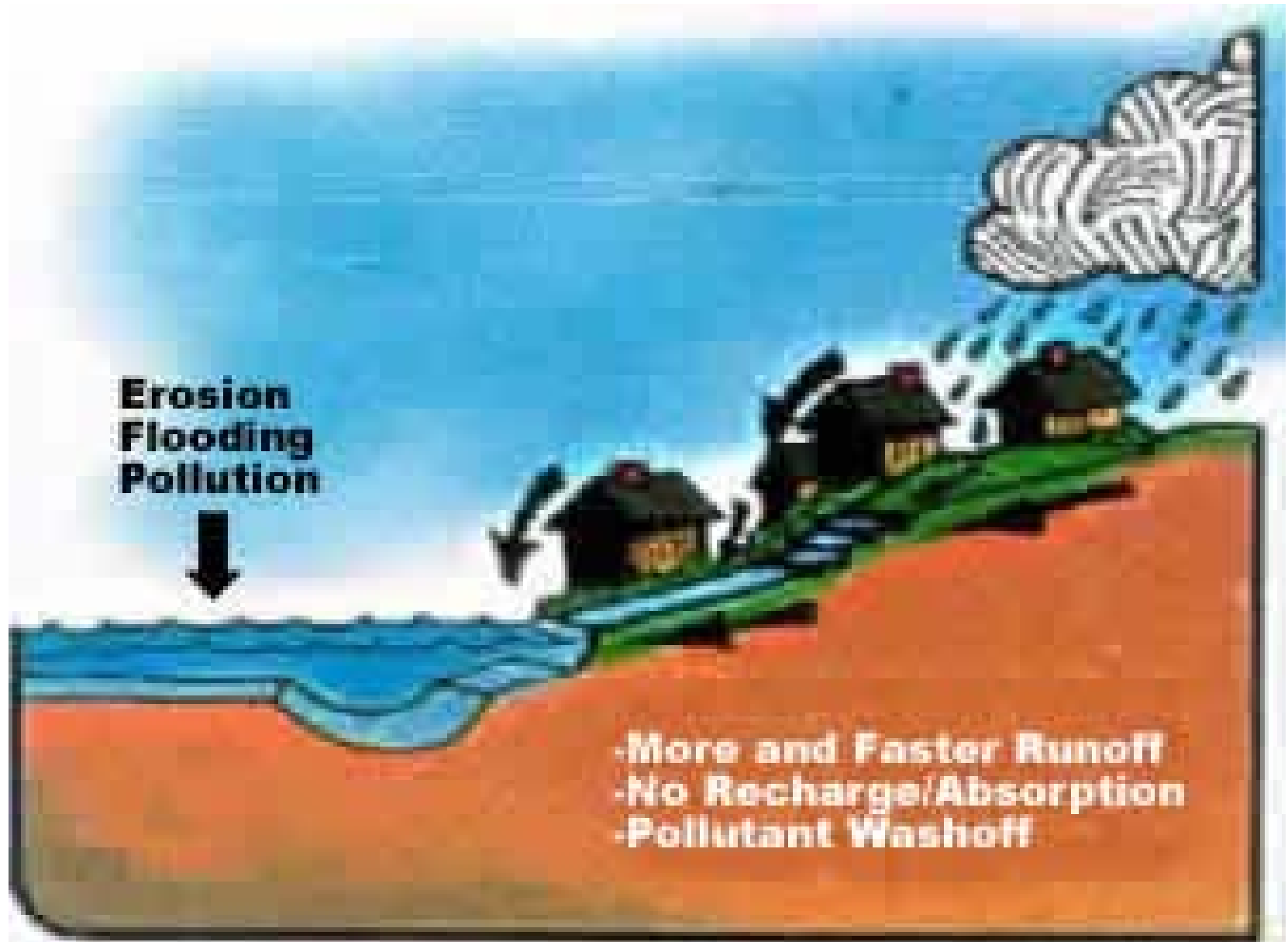
Storm Water is a Pollutant

- Increased flow from impervious surfaces causes impacts to rivers and lakes
- Increased imperviousness =
 - Increased runoff from storm events
 - Increased exposure to pollutants
 - Impacts to stream banks

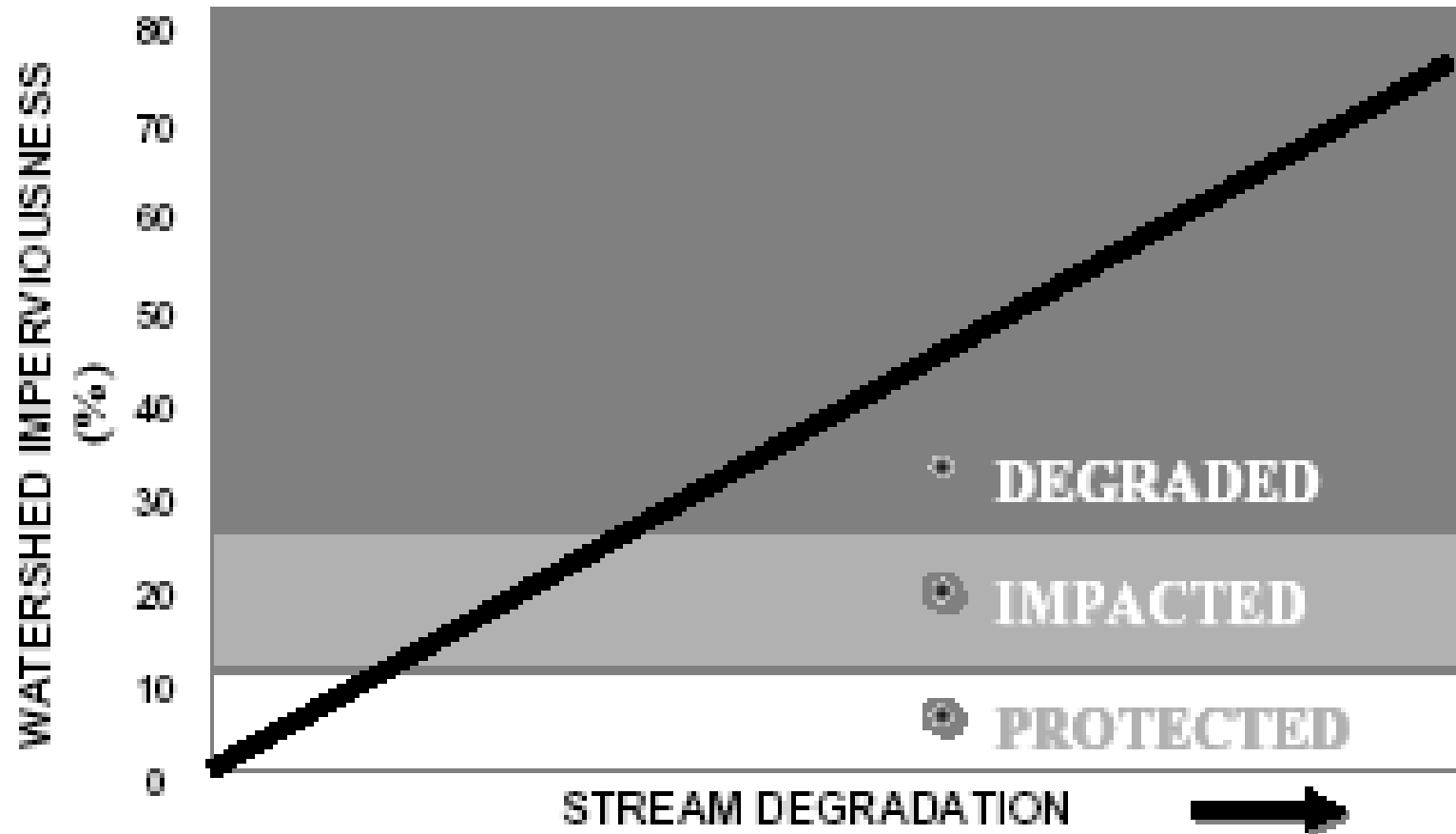
Natural Runoff Conditions



Impervious Condition



Waterway Health and Imperviousness



Stream Degradation with Imperviousness



Watershed
with less
than 5% impervious
surface

Stream Degradation with Imperviousness



10% impervious

- Stream width doubled
- Bank erosion
- Pool and riffle structure lost

Stream Degradation with Imperviousness



20% impervious

- Eroded stream banks
- Intermittent flow
- Noticeable debris

The 1987 Amendments to the CWA Established the Storm Water Program

Phase I:

- Storm Water Discharges Associated with Industrial Activity, including construction of 5 acres or more or smaller sites within a common plan of development of 5+ acres .
- Municipal Separate Storm Sewer Systems (MS4s) serving populations greater than 100,000.
- Permit coverage required since October 1992.

The 1987 Amendments to the CWA Established the Storm Water Program

Phase II:

- Storm Water Discharges Associated with construction of between 1 and 5 acres.
- Municipal Separate Storm Sewer Systems (MS4s) serving populations less than 100,000
- Permit coverage required since March 2003.

EPA's Approach

Regulate 3 types of Activities:

1. Industrial
2. Construction
3. Municipal

Permits are Required for Regulated Activities

- EPA permits define how to meet EPA's Standards
 - (BAT/BCT standard for industry)
 - (MEP standard for municipalities)
- Permits describe structural controls and practices necessary to meet EPA standards

Industry

- A permit is required for industrial activities based on Standard Industrial Classification code (SIC) code
- Operators must have secondary containment for hazardous materials, train personnel to recognize problems and deal with spills, and minimize exposure of pollutants to storm water

Regulated Industrial Activities

- Generally limited to mining, construction, manufacturing, transportation, warehousing
- Industrial stormwater permits are required for the following activities (by SIC-code): 13, 20, 21, 22, 23, 24 (except 2491), 25, 26, 27, 2951 (Asphalt batch Plants), 31, 32 (except 3241, 3274), 34, 35, 36, 37, 38, 39, 4221, 4222, 4225, 4952 (**Wastewater treatment plants with a design flow of 1.0 MGD or more, or required to have an approved pretreatment program under 40 CFR 403**), and Transportation Facilities which have vehicle maintenance, fueling, equipment cleaning or airport deicing including 40 41, 42 (except 4221, 4222, 4225), 43, 44, 45 (air transportation facilities that use less than 1000 gallons of deicer(s) annually, and/or that have annual fuel sales of less than one million gallons/year), and 5171.

Industrial Stormwater Requirements

- Development of a SWPPP
- Identification of Pollutant Sources and Best Management Practices
- Preventive Maintenance
- Good Housekeeping
- Spill Prevention and Response Procedures
- Employee Training
- Illicit Discharge Detection and Elimination

Stormwater Pollution Prevention Plan

- Also called a “Stormwater Management Plan”, “SWPPP”, or “SWMP”
- A SWPPP identifies structural and non-structural controls that will be put in place to minimize negative impacts caused by storm water discharges, to the environment. The purpose of these controls is to minimize erosion and run-off of pollutants and sediment.
- SWPPP requirements are defined in the permit

Preventative Maintenance

- Inspection and maintenance of stormwater management devices (cleaning oil/water separators, catch basins, etc.) and other BMPs



Spill Prevention and Response

- Identify personnel and response procedures as well as locations where spills could occur



Illicit Discharge Detection and Elimination

- Evaluate the stormwater conveyance system for presence of discharges other than stormwater.



Construction

- A permit is required for construction activities that disturb greater than one acre of land
- Operators must minimize sediment runoff, include secondary containment for hazardous materials, minimize exposure of pollutants to storm water, and avoid damaging critical habitat

Construction: Site Planning

NO



Construction: Site Planning

BETTER



Construction: Prevent Erosion

- Divert upland runoff around exposed soil
- Install erosion control devices
- Use soil stabilizers as appropriate
- Use temporary seeding and planting to reduce erosion potential
- Remove existing vegetation only when absolutely necessary
- Roughen or terrace slopes when grading

Construction: Good Housekeeping

- Construct stabilized access/entrance
- Utilize entrance/exit tire wash
- Use dry sweeping methods where possible
- Filter sediments in process water
- Check sites frequently (prevention)
- Minimize exposure to rain
- Train employees to recognize problems
- Use a concrete washout area

Construction: Good Housekeeping



Construction: Structural BMPs

- Flow barrier (e.g., silt fence)
- Inlet protection
- Settling (e.g., detention/retention)
- Velocity reduction (e.g., check dam)

Construction: Structural BMPs



Municipal

- A permit is required for municipalities with greater than 10,000 people
- Municipalities must address the six minimum measures for stormwater runoff

Six Minimum Measures

1. Public education and outreach
2. Public involvement and participation
3. * Illicit discharge detection and elimination
4. Pollution prevention/ good housekeeping
5. Construction site runoff control
6. Post-construction runoff control

Illicit Discharge Detection and Elimination

IDDE Guidance Manual 8 Program Components

1. Audit Existing Resources & Programs
2. Establish Responsibility, Authority & Tracking
3. Complete a Desktop Assessment of Illicit Discharge Potential
4. Develop Program Goals & Implementation Strategies
5. Search for Illicit Discharge Problems in the Field
6. Isolate & Fix Individual Discharges
7. Prevent Illicit Discharges
8. Evaluate the Program

Auditing Resources

- Desired Outcome: Develop IDDE Program Potential and Resources
- Audit Elements:
 - Legal Authority
 - Available Mapping
 - Field Staff
 - Access to Lab Services
 - Outreach
 - Program budget & financing

Establishing Responsibility and Authority

Purpose:

- Establish authority to regulate, respond to & enforce discharges
- Identify & prohibit inappropriate connections through plumbing code updates
- Develop reporting & tracking system

Desktop Assessment of Illicit Discharge Potential

- Purpose: Determine the potential severity for illicit discharges
- Identify which subwatersheds or generating land use merit priority investigation

Develop Program Goals & Implementation Strategies

- Purpose: Define milestones to measure progress during 1st permit cycle
- Make sure resources allocated to address real problems
- Choose most appropriate & cost-effective methods to find discharges

Sample MS4 Measureable Goals

- Define & characterize drainage areas or sewer sheds
- Walk all stream miles
- Develop digital map of all outfalls, land use, infrastructure
- Secure analytical laboratory services
- Sample & trace source of % of flowing outfalls each year
- Expand & enhance where problems are observed
- Conduct regular in-stream assessments
- Integrate collected data & citizen complaints into GIS

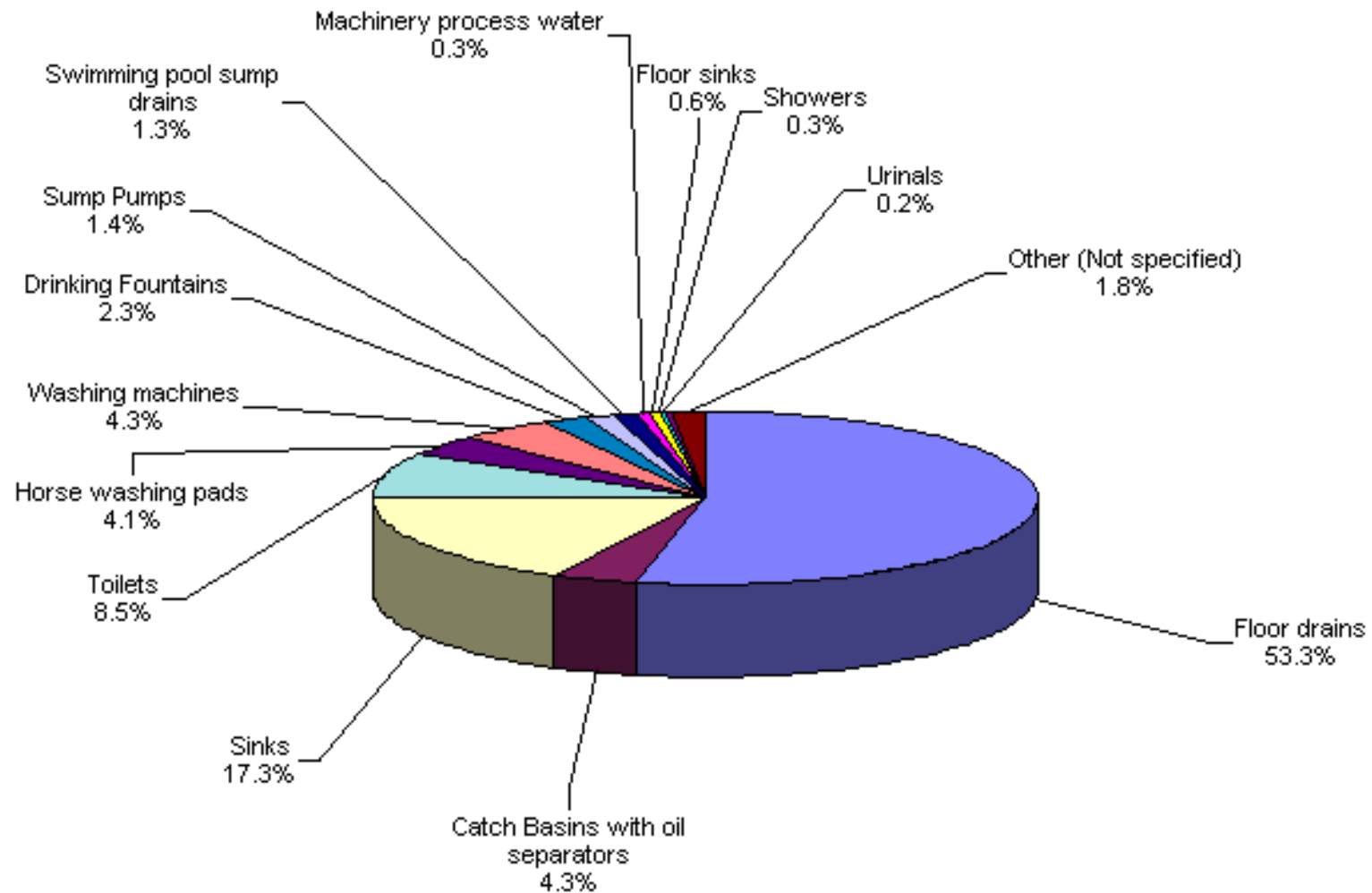
Search for Illicit Discharge Problems in the Field

Purpose:

- Conduct rapid field screening to identify & track suspected outfalls & stream segments
- Conduct investigatory sampling & analysis to establish flow types & likely sources

Type of Violations

October 1987 through November 2000



Summary of Violations
Rouge River





Isolate & Fix Individual Discharges

Purpose:

- Use a variety of tools & techniques to narrow down the source of illicit discharges & correct the problem
- Establish an appropriate & effective enforcement program to ensure repair

Prevent Illicit Discharges

- Purpose:

- Identify location & regulatory status of generating sites
- Screen for bad actors
- Target appropriate education & enforcement efforts

- Desired Outcome:

- Education programs that target the most common intermittent and transitory discharges

Opportunities for Overlap

- Sharing G.I.S. system data
- SSO Reporting
- Recognizing industrial/construction sites
- Sharing of outreach materials
- “Eyes and ears” for the WWTP

Additional Resources

- EPA's web site – www.epa.gov/npdes
- The Stormwater Manager's Resource Center - <http://www.stormwatercenter.net/>
- The Center for Watershed Protection <http://www.cwp.org/>

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www.epa.gov/region8/water/stormwater