NEVADA DEPARTMENT OF TRANSPORTATION

STORMWATER MANAGEMENT PROGRAM

8-HOUR STORMWATER TRAINING COURSE

INTRODUCTION AND HOUSEKEEPING ITEMS

- INSTRUCTOR(S)
- SIGN IN/ATTENDANCE FORMS
- BREAKS
- RESTROOMS
- EMERGENCY EXITS
- CLASSROOM ETIQUETTE

ACRONYMS

- AASHTO: AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
- BMP: BEST MANAGEMENT PRACTICE(S)
- CGP: CONSTRUCTION GENERAL PERMIT
- CFR: CODE OF FEDERAL REGULATIONS
- CWA: CLEAN WATER ACT
- EPA: ENVIRONMENTAL PROTECTION AGENCY
- FPPP: FACILITY POLLUTION PREVENTION PLAN
- IDDE: ILLICIT DISCHARGE DETECTION AND ELIMINATION
- LID: LOW IMPACT DEVELOPMENT
- MEP: MAXIMUM EXTENT PRACTICABLE
- MS4: MUNICIPAL SEPARATE STORM SEWER SYSTEM(S)
- NDEP: NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
- NOI: NOTICE OF INTENT
- NOT: NOTICE OF TERMINATION
- NPDES: NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
- NRS: NEVADA REVISED STATUTES
- SWMP: STORMWATER MANAGEMENT PLAN
- SWPPP: STORMWATER POLLUTION PREVENTION PLAN
- TMDL: TOTAL MAXIMUM DAILY LOAD

COURSE GOALS & OBJECTIVES

- TO COMPLY WITH STORMWATER TRAINING REQUIREMENTS PURSUANT TO NDOT'S STATEWIDE MS4 STORMWATER PERMIT
- TO ESTABLISH A LEVEL OF AWARENESS AND UNDERSTANDING TO NDOT EMPLOYEES REGARDING STORMWATER POLLUTION AND BEST MANAGEMENT PRACTICES
- TO PROVIDE NDOT EMPLOYEES WITH THE TOOLS NEEDED TO HELP IDENTIFY, REPORT, AND ELIMINATE ILLICIT DISCHARGES

COURSE OVERVIEW

- WHAT IS STORMWATER AND WHY IS IT A CONCERN?
- STORMWATER REGULATORY PROGRAM
- NDOT'S STORMWATER MANAGEMENT PROGRAM
- SOIL EROSION
- CONSTRUCTION SITES
- STORMWATER TREATMENT DESIGN
- MAINTENANCE FACILITIES
- MAINTENANCE OPERATIONS
- ILLICIT DISCHARGE DETECTION AND ELIMINATION
- FINAL EXAMINATION

WHAT IS STORMWATER?

- OVERLAND FLOW RESULTING FROM PRECIPITATION AND/OR SNOWMELT (I.E. WATER RUNNING DOWN THE SIDE OF THE ROAD)
- A DIRECT RESULT OF SURFACE WATER FLOWING ACROSS IMPERMEABLE OR SEMI-IMPERMEABLE SURFACES
- OFTEN DISCHARGES INTO A RECEIVING BODY OF WATER

STORMWATER RUNOFF CONCERNS

SAFETY

- STORMWATER DRAINAGE IS ESSENTIAL FOR HIGHWAY AND TRANSPORTATION NETWORKS
- NECESSARY TO PROVIDE SAFE PASSAGE OF VEHICLES DURING A DESIGN STORM EVENT
    - RAPID REMOVAL OF STORMWATER MINIMIZES HAZARDOUS CONDITIONS (E.G. HYDROPLANING)

STORMWATER RUNOFF CONCERNS

POLLUTION

- A SIGNIFICANT PORTION OF STORMWATER RUNOFF DISCHARGES INTO A NEARBY WATERWAY
- STORMWATER CARRIES POLLUTANTS FROM THE GROUND SURFACE (E.G. OILS, SEDIMENT, METALS, CHEMICALS, TRASH, ETC.)
- STORMWATER RUNOFF CAN ALTER THE HYDROLOGY OF A SYSTEM (E.G. STREAM CHANNEL EROSION)

STORMWATER RUNOFF CONCERNS

POLLUTION

- UNLIKE HOUSEHOLD WASTE WATER, STORMWATER RUNOFF IS NOT “TREATED” AT A WASTE WATER TREATMENT FACILITY
  - UNDER MOST CIRCUMSTANCES, THERE IS NO ENGINEERED SYSTEM TO REMOVE POLLUTANTS FROM STORMWATER PRIOR TO DISCHARGING INTO A RECEIVING WATERWAY
- IMPACTS TO AQUATIC SYSTEMS (CHEMICALLY AND PHYSICALLY)
- IMPACTS TO DESIGNATED BENEFICIAL USES
  - DRINKING WATER
  - RECREATION
  - WILDLIFE
- ECONOMIC IMPLICATIONS
  - WATER TREATMENT
  - HYDROLOGIC RESTORATION

STORMWATER RUNOFF CONCERNS

POLLUTION

- EPA HAS STATED THAT POLLUTED STORMWATER RUNOFF IS A LEADING CAUSE OF IMPAIRMENT TO MANY WATERBODIES THAT DO NOT MEET WATER QUALITY STANDARDS
- NEVADA HAS OVER 100 WATERBODIES LISTED AS IMPAIRED
  - 303(D) LIST
  - TOTAL MAXIMUM DAILY LOAD (TMDL) LIST
  - MANY OF THESE IMPAIRMENTS CAN BE ATTRIBUTED (TO SOME EXTENT) TO STORMWATER POLLUTION
  - IMPAIRED WATERWAYS INCLUDE TRUCKEE, CARSON, WALKER, AND HUMBOLDT RIVERS; LAKE TAHOE AND LAKE MEAD

STORMWATER CONCERNS

INCREASED STORMWATER VOLUMES

- INCREASED FLOWS INTO NATURAL DRAINAGES
  - FLOODING
  - STREAM CHANNEL MODIFICATION
  - INCREASED EROSION
  - DAMAGE TO INFRASTRUCTURE

REVIEW QUESTION

NAME TWO REASONS WHY STORMWATER RUNOFF IS A CONCERN?

POLLUTION

INCREASED STORMWATER VOLUMES

REVIEW QUESTION

NAME A STORMWATER POLLUTANT

- OILS
- CHEMICALS
- SEDIMENT
- TRASH AND DEBRIS
- NUTRIENTS
- METALS
- PATHOGENS

REVIEW QUESTION

NAME AN IMPAIRED WATERWAY IN NEVADA

- LAKE TAHOE
- TRUCKEE RIVER
- CARSON RIVER
- WALKER RIVER
- HUMBOLDT RIVER
- LAKE MEAD
- LAS VEGAS WASH
- QUINN RIVER
- JARBIDGE RIVER
- OWYHEE RIVER
- STEAMBOAT CREEK
- SPARKS MARINA
- VIRGIN RIVER
- MEADOW VALLEY WASH
- AND MANY OTHERS…..

STORMWATER REGULATORY PROGRAM

- THE CLEAN WATER ACT (CWA) IS THE PRIMARY FEDERAL LAW THAT ADDRESSES WATER POLLUTION IN THE U.S.
  - OBJECTIVE IS TO "RESTORE AND MAINTAIN THE CHEMICAL, PHYSICAL, AND BIOLOGICAL INTEGRITY OF THE NATION'S WATERS"
- STORMWATER RUNOFF IS REGULATED UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PROGRAM ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) UNDER THE CWA
  - NPDES PROGRAM REGULATES "POINT SOURCE" POLLUTANT DISCHARGES
    - ANY DISCERNIBLE, CONFINED, AND DISCRETE CONVEYANCE (40 CFR 122.2)
    - IRRIGATED AGRICULTURE OR AGRICULTURAL STORMWATER RUNOFF IS EXEMPT

STORMWATER REGULATORY PROGRAM

- NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) IS THE STATE AUTHORIZED NPDES ADMINISTRATOR; EPA ADMINISTERS THE NPDES PROGRAM ON TRIBAL LANDS IN NEVADA
  - NDEP ISSUES NPDES PERMITS FOR DISCHARGE ACTIVITIES IN ALL GEOGRAPHIC AREAS OF NEVADA ***EXCEPT*** TRIBAL LANDS
- TWO NPDES PERMITS ROUTINELY ISSUED TO NDOT:
  - MS4 (MUNICIPAL STORMWATER)
  - CONSTRUCTION GENERAL (CONSTRUCTION SITE STORMWATER)

STORMWATER REGULATORY PROGRAM

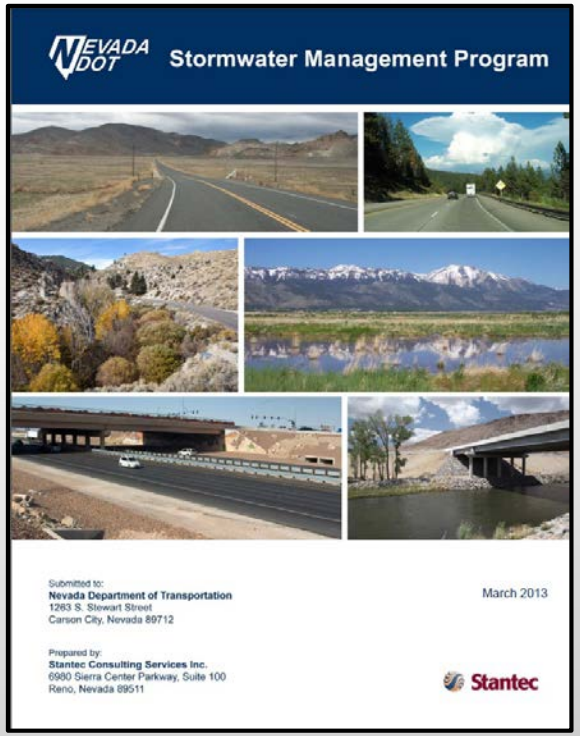
- MS4 PERMIT ISSUED TO NDOT IN 2004 AND 2010; NEW PERMIT SCHEDULED TO BE ISSUED IN 2016
- THE MS4 PERMIT REQUIRES PERMITEES TO DEVELOP AND IMPLEMENT A STORMWATER MANAGEMENT PROGRAM ADDRESSING SPECIFIC PERMIT ELEMENTS

- PERMIT ELEMENTS
  - LEGAL AUTHORITY
  - STORMWATER EDUCATION
  - MS4 MAPS AND OUTFALLS
  - DISCHARGES TO WATER QUALITY IMPAIRED WATERS AND SANITARY SEWERS
  - CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPs)
  - NEW DEVELOPMENT AND REDEVELOPMENT
  - ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)
  - INDUSTRIAL FACILITY MONITORING AND CONTROL
  - MAINTENANCE FACILITIES
  - PUBLIC STREET MAINTENANCE
  - HERBICIDE, PESTICIDE, AND FERTILIZER APPLICATION

STORMWATER REGULATORY PROGRAM

- NDOT DEVELOPED A STORMWATER MANAGEMENT PLAN (SWMP) DESCRIBING THE APPROACH FOR ADDRESSING EACH PERMIT ELEMENT, I.E. NDOT'S GAME PLAN FOR MINIMIZING STORMWATER POLLUTANT DISCHARGES
- COPY OF THE SWMP CAN BE FOUND ON NDOT'S STORMWATER MANAGEMENT PROGRAM WEBSITE

HTTP://WWW.NEVADADOT.COM/STORMWATER/RESOURCES.ASPX



REVIEW QUESTION

NAME THE FEDERAL LAW THAT REGULATES STORMWTER POLLUTION?

CLEAN WATER ACT

REVIEW QUESTION

WHO ADMINISTERS THE NPDES PROGRAM FOR NEVADA?

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

REVIEW QUESTION

NAME THE MS4 PERMIT ELEMENTS NDOT ADDRESSES IN THE SWMP?

- LEGAL AUTHORITY
- STORMWATER EDUCATION
- MS4 MAPS AND OUTFALLS
- DISCHARGES TO WATER QUALITY IMPAIRED WATERS AND SANITARY SEWERS
- CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPs)
- NEW DEVELOPMENT AND REDEVELOPMENT
- ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)
- INDUSTRIAL FACILITY MONITORING AND CONTROL
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- HERBICIDE, PESTICIDE, AND FERTILIZER APPLICATION

NDOT'S STORMWATER MANAGEMENT PROGRAM

- THE DEVELOPMENT AND IMPLEMENTATION OF A STORMWATER MANAGEMENT PROGRAM IS A MS4 PERMIT REQUIREMENT
- AT THE MINIMUM, NDOT MUST ADDRESS THE PRIMARY PERMIT ELEMENTS
- NDOT DEVELOPED A SWMP TO DETAIL HOW EACH PERMIT ELEMENT IS ADDRESSED
  - THE PRIMARY OBJECTIVE IS TO PREVENT, OR REDUCE TO THE MAXIMUM EXTENT PRACTICABLE (MEP), THE DISCHARGE OF STORMWATER POLLUTANTS.

NDOT'S STORMWATER MANAGEMENT PROGRAM

LEGAL AUTHORITY

- THE AUTHORITY TO PREVENT AND ADDRESS ILLICIT DISCHARGES AND ILLEGAL DUMPINGS WITHIN NDOT'S RIGHT OF WAY
  - NDOT IS RESPONSIBLE FOR DISCHARGES ENTERING AND LEAVING THE RIGHT OF WAY
    - GENERAL PUBLIC, BUSINESSES, LOCAL GOVERNMENTS
    - CONSTRUCTION
    - OCCUPANCY PERMITS
- DEVELOP AND IMPLEMENT A PROCESS FOR APPROPRIATE ENFORCEMENT ACTION

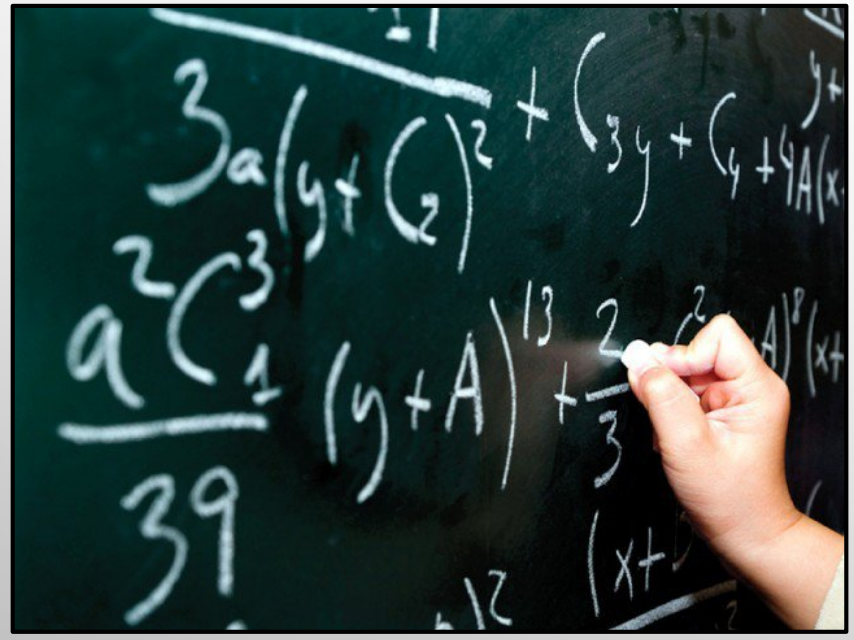
NDOT'S STORMWATER MANAGEMENT PROGRAM

LEGAL AUTHORITY

- SENATE BILL 324
  - PASSED DURING THE 2015 NEVADA LEGISLATIVE SESSION
  - "*PROVIDING CIVIL PENALTIES FOR AN UNAUTHORIZED DISCHARGE ONTO STATE HIGHWAY, WITHIN A RIGHT-OF-WAY OR INTO, ONTO, OR BY WAY OF A CONVEYANCES SYSTEM…*"
  - "DISCHARGE" MEANS THE RELEASE OF ANY POLLUTANT AS DEFINED IN NRS 445A
  - CIVIL PENALTIES UP TO $25,000 PER DAY
- NDOT IS CURRENTLY DEVELOPING THE LEGAL MECHANISM(S) TO UTILIZE THIS AUTHORITY

NDOT'S STORMWATER MANAGEMENT PROGRAM

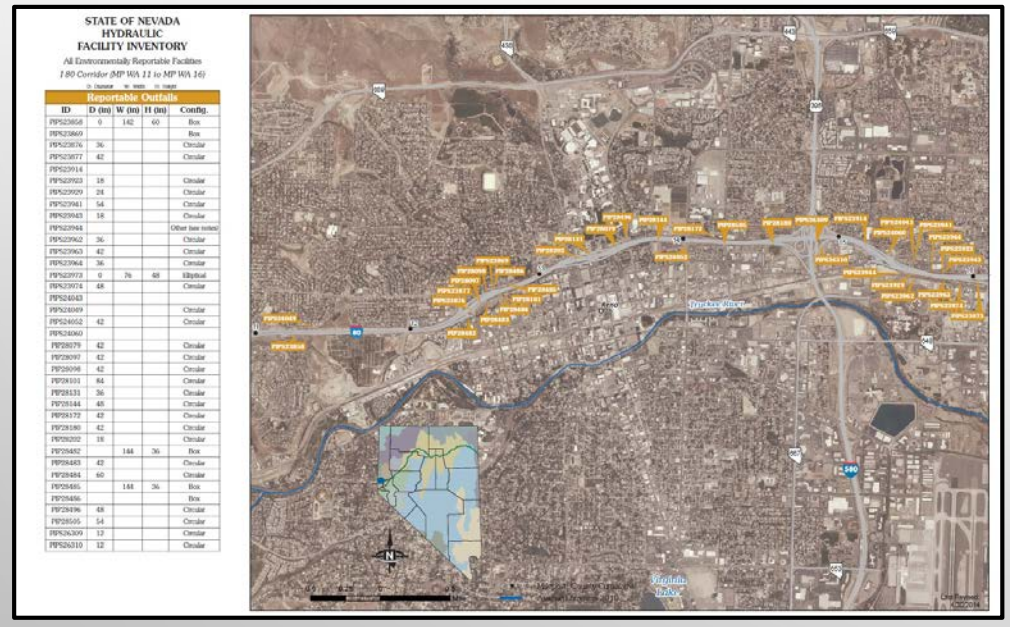
STORMWATER EDUCATION



- NDOT IS REQUIRED TO PROVIDE A LEVEL OF STORMWATER RELATED EDUCATION TO:
  - DEPARTMENT EMPLOYEES
  - CONTRACTORS
  - GENERAL PUBLIC
- THE REASON WHY YOU ARE HERE!

NDOT'S STORMWATER MANAGEMENT PROGRAM

MS4 MAPS AND OUTFALLS



STATE OF NEVADA
HYDRAULIC
FACILITY INVENTORY

All Environmentally Reportable Facilities
I 80 Corridor (MP WA 11 to MP WA 16)

Reportable Outfalls				
ID	D (in)	W (in)	H (in)	Config.
PIPS23658	0	142	60	Box
PIPS23869				Box
PIPS23876	36			Circular
PIPS23877	42			Circular
PIPS23914				
PIPS23923	18			Circular
PIPS23929	24			Circular
PIPS23941	54			Circular
PIPS23943	18			Circular
PIPS23944				Other (see notes)
PIPS23962	36			Circular
PIPS23963	42			Circular
PIPS23964	36			Circular
PIPS23973	0	76	48	Elliptical
PIPS23974	48			Circular
PIPS24043				
PIPS24049				Circular
PIPS24052	42			Circular
PIPS24060				
PIP28079	42			Circular
PIP28097	42			Circular
PIP28098	42			Circular
PIP28101	84			Circular
PIP28131	36			Circular
PIP28144	48			Circular
PIP28172	42			Circular
PIP28180	42			Circular
PIP28202	18			Circular
PIP28482		144	36	Box
PIP28483	42			Circular
PIP28484	60			Circular
PIP28485		168	36	Box
PIP28486				Box
PIP28496	48			Circular
PIP28505	54			Circular
PIP26309	12			Circular
PIP26310	12			Circular

- LOCATE AND MAP STORMWATER HYDRAULIC FACILITIES ALONG STATE ROADWAYS
  - DROP INLETS
  - CULVERTS
  - PERMANENT STORMWATER TREATMENT FACILITIES
- LOCATE AND MAP MAINTENANCE FACILITIES
  - STATIONS
  - YARDS
  - MATERIAL STOCKPILES
- TO IMPLEMENT A SUCCESSFUL STORMWATER PROGRAM, WE NEED TO KNOW WHAT STORMWATER FACILITIES WE HAVE AND WHERE THEY ARE LOCATED!

NDOT'S STORMWATER MANAGEMENT PROGRAM

DISCHARGES TO WATER QUALITY IMPAIRED WATERS AND SANITARY SEWERS

- EVALUATE STORMWATER DISCHARGING INTO IMPAIRED (I.E. 303(D) AND TMDL LISTED) WATERWAYS
- DEVELOP AND IMPLEMENT A PROGRAM TO MITIGATE STORMWATER POLLUTANT DISCHARGES INTO IMPAIRED WATERS
  - CLEAR CREEK EROSION CONTROL PROGRAM
  - LAKE TAHOE WATER QUALITY IMPROVEMENT PROGRAM
- NOT AUTHORIZED TO DISCHARGE STORMWATER INTO A SANITARY SEWER SYSTEM WITHOUT AUTHORIZATION FROM THE WASTE WATER TREATMENT FACILITY
- COMBINED SANITARY/STORM SEWER SYSTEMS NO LONGER CONSIDERED ACCEPTABLE ENGINEERING PRACTICE

NDOT'S STORMWATER MANAGEMENT PROGRAM

CONSTRUCTION SITE BMPs

- MINIMIZE THE DISCHARGE OF POLLUTANTS FROM NDOT'S CONSTRUCTION SITES
- IMPLEMENTATION OF TEMPORARY AND PERMANENT STORMWATER POLLUTION CONTROL MEASURES
  - NDOT'S CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPs) MANUAL
  - PRIMARY POLLUTANT OF CONCERN: SEDIMENT
    - MUCH OF THE BMP FOCUS DIRECTED TOWARDS SEDIMENT AND EROSION CONTROL
- ENSURE THE APPROPRIATE WATER QUALITY PERMITS ARE PROCURED FOR CONSTRUCTION ACTIVITIES

NDOT'S STORMWATER MANAGEMENT PROGRAM

NEW DEVELOPMENT AND REDEVELOPMENT

- EVALUATE THE NEED FOR STORMWATER QUALITY CONTROLS FOR ALL NDOT PROJECTS
  - NEW CONTROLS
  - RETROFITS
- ENSURE THAT STORMWATER RUNOFF IS ADEQUATELY MITIGATED FOR AT THE CONCLUSION OF CONSTRUCTION
- IMPLEMENT THE CORRECT STORMWATER CONTROL(S) FOR THE SITUATION
- EMPHASIS ON PERMANENT STORMWATER CONTROLS
  - NDOT'S PLANNING AND DESIGN GUIDE

NDOT'S STORMWATER MANAGEMENT PROGRAM

ILLICIT DISCHARGE DETECTION AND ELIMINATION

- IDENTIFY AND ELIMINATE ILLICIT DISCHARGES WITHIN THE RIGHT-OF-WAY
  - REPORTING
  - INVESTIGATION
  - COMPLIANCE
  - ENFORCEMENT
  - ELIMINATION
  - TRACKING AND FOLLOW-UP
- INTERAGENCY COORDINATION
- EDUCATION
  - NDOT'S FIELD GUIDE FOR THE DETECTION AND ELIMINATION OF ILLICIT DISCHARGES

NDOT'S STORMWATER MANAGEMENT PROGRAM

INDUSTRIAL FACILITY MONITORING AND CONTROL

- COMPONENT OF NDOT'S IDDE PROGRAM
- FIELD MONITORING OF INDUSTRIAL FACILITIES DISCHARGING INTO NDOT'S RIGHT OF WAY
  - MINES
  - LANDFILLS
  - VARIOUS INDUSTRIES

NDOT'S STORMWATER MANAGEMENT PROGRAM

MAINTENANCE FACILITIES

- IMPLEMENT POLLUTION PREVENTION PRACTICES AT MAINTENANCE FACILITIES
  - STRUCTURAL AND BEHAVIORAL
- FACILITY POLLUTION PREVENTION PLAN
  - COVERS NDOT'S MAINTENANCE STATIONS, YARDS, AND OFFSITE MATERIAL STOCKPILE/STORAGE AREAS
  - REFERENCES NDOT'S MAINTENANCE FACILITY BEST MANAGEMENT PRACTICES (BMPs) MANUAL

NDOT'S STORMWATER MANAGEMENT PROGRAM

PUBLIC STREET MAINTENANCE

- ROUTINE MAINTENANCE ACTIVITIES TO REDUCE STORMWATER POLLUTANT DISCHARGES
  - STREET SWEEPING
  - HYDRAULIC FACILITY CLEANING/MAINTENANCE

NDOT'S STORMWATER MANAGEMENT PROGRAM

HERBICIDE, PESTICIDE AND FERTILIZER APPLICATION

- PRACTICES TO MINIMIZE ENVIRONMENTAL EXPOSURE

REVIEW QUESTION

NAME THE DOCUMENT THAT SERVES AS NDOT'S "GAME PLAN" FOR ADDRESSING MS4 PERMIT REQUIREMENTS

STORMWATER MANAGEMENT PLAN

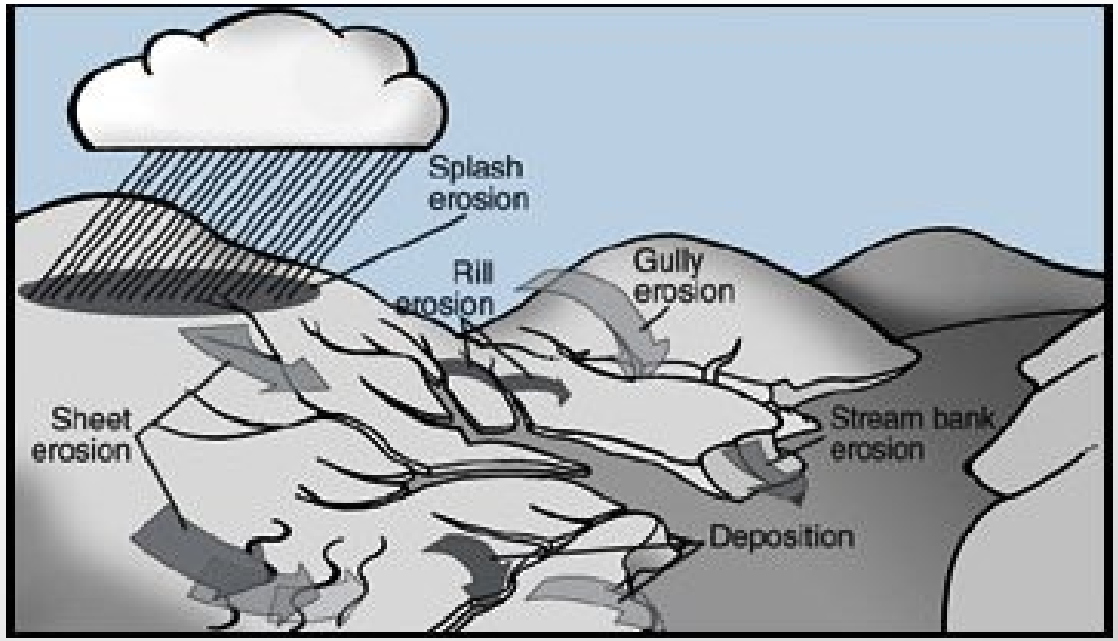
REVIEW QUESTION

NAME A GUIDANCE DOCUMENT NDOT UTILIZES TO ASSIST WITH STORMWATER POLLUTION CONTROL

- CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPs) MANUAL
- PLANNING AND DESIGN GUIDE
- FIELD GUIDE FOR THE DETECTION AND ELIMINATION OF ILLICIT DISCHARGES
- MAINTENANCE FACILITY BEST MANAGEMENT PRACTICES (BMPs) MANUAL

SOIL EROSION

- SOIL EROSION IS THE PROCESS BY WHICH SOIL PARTICLES BECOME DETACHED BY WATER, WIND, OR GRAVITY, AND ARE TRANSPORTED FROM THEIR ORIGINAL LOCATION
- INVOLVES 3 PROCESSES
  - DETACHMENT
  - TRANSPORTATION
  - DEPOSITION



SOIL EROSION

SPLASH EROSION

- RAIN DROPS STRIKE THE BARE SOIL, DETACHING SOIL PARTICLES
- ONCE DETACHED, THE SOIL PARTICLES HAVE THE POTENTIAL TO BE TRANSPORTED MORE READILY BY WIND OR WATER

SOIL EROSION

SHEET EROSION

- REMOVAL OF A UNIFORM, THIN LAYER OF SOIL
- PROCESS MAY OCCUR UNNOTICED ON EXPOSED SOILS, EVEN THOUGH RAINDROPS ARE ACTUALLY ERODING A SIGNIFICANT VOLUME OF SOIL
- OVER TIME, THE PROCESS CAN LEAD TO RILL EROSION

SOIL EROSION

RILL EROSION

- INCREASES IN WATER VELOCITY “CUTS” INTO THE SOIL, CREATING SMALL CHANNELS.
- THE RATE OF RILL EROSION CAN BE 100 X GREATER THAN SHEET EROSION
- OVER TIME, THE PROCESS CAN LEAD TO GULLY EROSION

SOIL EROSION

GULLY EROSION

- RILLS JOIN TOGETHER AND FORM GULLIES
- THE RATE OF EROSION CAN BE 100 X GREATER THAN RILL EROSION

SOIL EROSION

CHANNEL EROSION

- HIGHLY EROSIVE DISCHARGES
  - GULLIES JOINING TOGETHER
  - HIGH VELOCITY/CONCENTRATED FLOWS
- SOIL LOSS CAN BE SIGNIFICANT

SOIL EROSION

WIND EROSION

- MOST COMMON IN ARID AND SEMI-ARID REGIONS
- FINE PARTICLES BECOME SUSPENDED; COARSER PARTICLES BOUNCE AND GLIDE OVER THE UNDERLYING SURFACE
- WIND MOVES ~ 40% OF THE SOIL TRANSPORTED BY EROSION

SOIL EROSION

FACTORS TO REDUCE SOIL EROSION

- MAINTAIN ADEQUATE SURFACE COVERAGE
  - MINIMIZE DISTURBANCE AREAS
  - MINIMIZE LENGTH OF TIME AN AREA IS DISTURBED
  - IMPLEMENT APPROPRIATE STABILIZATION MEASURES
- CREATE/MAINTAIN NON-EROSIVE STORMWATER FLOWS
  - ENSURE ADEQUATE WATER ENERGY DISSIPATION
  - REDUCE CONCENTRATED FLOW PATHS

SEDIMENTATION

- DEPOSITION OF THE ERODED MATERIAL

REVIEW QUESTION

NAME A FORM OF SOIL EROSION

- SPLASH EROSION
- RILL EROSION
- GULLY EROSION
- CHANNEL EROSION
- WIND EROSION

REVIEW QUESTION

NAME THE 3 SOIL EROSION PROCESSES

DETACHMENT

TRANSPORT

DEPOSITION

MOVIE

GROUND CONTROL: STORMWATER POLLUTION PREVENTION FOR CONSTRUCTION SITES

CONSTRUCTION SITES

- OVERVIEW
- PERMITTING
- SWPPP
- STORMWATER INSPECTOR
- POTENTIAL POLLUTANTS
- BMPs
- NDOT CONSTRUCTION DOCUMENTS
- RESOURCES

CONSTRUCTION SITES

OVERVIEW

- VARIOUS CONSTRUCTION SITE ACTIVITIES CAN BE POTENTIAL SOURCES OF POLLUTANT DISCHARGES TO RECEIVING WATERWAYS AND/OR A STORM DRAIN SYSTEM.
  - LAND DISTURBANCE/GRADING
  - CONCRETE AND ASPHALT WORK
  - POOR HOUSEKEEPING
- NDOT HAS A PROGRAM IN PLACE SPECIFICALLY ADDRESSING CONSTRUCTION SITE STORMWATER POLLUTION CONTROL:
  - TRAINING
  - GUIDANCE DOCUMENTS
  - INTERNAL POLICY AND PROCEDURE

CONSTRUCTION SITES

PERMITTING

- CONSTRUCTION GENERAL PERMIT
  - NPDES PERMIT
  - REQUIRED FOR CONSTRUCTION ACTIVITIES THAT DISTURB $\geq$ 1 ACRE AND DISCHARGE INTO WATERS OF THE U.S.
    - MOST NDOT MAINTENANCE ACTIVITIES ARE EXEMPT (CONTACT STORMWATER DIVISION TO DETERMINE IF A PARTICULAR MAINTENANCE ACTIVITY REQUIRES COVERAGE)
  - COVERAGE OBTAINED BY SUBMITTING A NOTICE OF INTENT (*NOI*); CLOSED OUT BY SUBMITTING A NOTICE OF TERMINATION (*NOT*)
  - REQUIRES THE DEVELOPMENT OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PRIOR TO SUBMITTING THE *NOI*
  - ISSUED BY NDEP FOR CONSTRUCTION ACTIVITIES THAT OCCUR ON NON-TRIBAL LANDS
  - ISSUED BY EPA FOR CONSTRUCTION ACTIVITIES THAT OCCUR ON TRIBAL LANDS

CONSTRUCTION SITES

PERMITTING

- CONSTRUCTION GENERAL PERMIT (CONT'D)
  - OWNER/OPERATOR
    - OWNER
      - OWNER OR OPERATOR OF THE FACILITY OR ACTIVITY SUBJECT TO REGULATION
    - OPERATOR
      - HAS OPERATIONAL CONTROL OVER CONSTRUCTION PLANS AND SPECIFICATIONS, INCLUDING THE ABILITY TO MAKE MODIFICATIONS TO THOSE PLANS AND SPECIFICATIONS
      - THE PARTY HAS DAY-TO-DAY OPERATION CONTROL OF THOSE ACTIVITIES AT A PROJECT THAT ARE NECESSARY TO ENSURE COMPLIANCE WITH PERMIT CONDITIONS (E.G. THEY ARE AUTHORIZED TO DIRECT WORKERS AT A SITE TO CARRY OUT ACTIVITIES REQUIRED BY THE PERMIT)
      - RESPONSIBLE FOR SUBMITTING THE *NOI* AND *NOT*

CONSTRUCTION SITES

PERMITTING

- CONSTRUCTION GENERAL PERMIT (CONT'D)
  - NDOT CONTRACTS
    - NDOT IS THE "OWNER"
    - CONTRACTOR IS THE "OPERATOR"
    - NDOT'S CONTRACT NUMBER IS TO BE REFERENCED IN THE *NOI* (PROJECT OR SITE NAME)

CONSTRUCTION SITES

PERMITTING

- CONSTRUCTION GENERAL PERMIT (CONT'D)
  - THE *NOT* IS ACCEPTED WHEN THE CONSTRUCTION ACTIVITIES ARE COMPLETE AND THE SITE HAS ACHIEVED ADEQUATE FINAL STABILIZATION
    - THE USE OF VEGETATIVE AND/OR NON-VEGETATIVE COVER TO PREVENT EROSION AND SEDIMENT LOSS IN AREAS EXPOSED THROUGH THE CONSTRUCTION PROCESS
    - IF UTILIZING VEGETATION AS THE MEANS FOR FINAL STABILIZATION, MUST ACHIEVE 70% OF THE PRE-CONSTRUCTION OR ADJACENT UNDISTURBED PLANT COVER (NOTE THAT COVER IS DIFFERENT THAN DENSITY)
    - EXAMPLES OF FINAL STABILIZATION: REVEGETATION (DRILL SEED, HYDROSEED, CONTAINERIZED PLANTINGS); DECORATIVE ROCK/ROCK MULCH, LOW IMPACT DEVELOPMENT MEASURES, ETC.

CONSTRUCTION SITES

PERMITTING

- CONSTRUCTION GENERAL PERMIT (CONT'D)
  - WHAT HAPPENS WHEN NDOT'S CONTRACTOR IS GRANTED RELIEF FROM MAINTENANCE, BUT THE SITE HAS NOT ACHIEVED FINAL STABILIZATION?
    - THE CGP IS TRANSFERRED ENTIRELY TO NDOT (I.E. NDOT IS NOW THE "OWNER" AND "OPERATOR") WITH DISTRICT MAINTENANCE OVERSEEING THE SITE UNTIL FINAL STABILIZATION IS ACHIEVED (REFER TO INTER-DEPARTMENT MEMO ISSUED JULY 14, 2015).
      - ROUTINE CONSTRUCTION SITE STORMWATER INSPECTIONS STILL OCCUR (REDUCED FREQUENCY)
      - APPROPRIATE BMP MAINTENANCE/INSTALLATION STILL OCCURS
      - MAY TAKE SEVERAL YEARS FOR THE SITE TO STABILIZE IF UTILIZING REVEGETATION

CONSTRUCTION SITES

PERMITTING

- OTHER WATER QUALITY PERMITS THAT MAY BE REQUIRED FOR CONSTRUCTION ACTIVITIES
  - DEPARTMENT OF ARMY DREDGE AND FILL SECTION 404 PERMIT (U.S. ARMY CORPS OF ENGINEERS)
  - SECTION 401 WATER QUALITY CERTIFICATION (NDEP)
  - TEMPORARY WORKING IN WATERWAYS PERMIT (NDEP)
  - DEMINIMIS DISCHARGE PERMIT (NDEP)
  - INDIVIDUAL TEMPORARY DISCHARGE PERMIT (NDEP)
- ALL THESE PERMITS HAVE ONE THING IN COMMON: ENSURE CONSTRUCTION SITE STORMWATER POLLUTANT DISCHARGES ARE PREVENTED OR APPROPRIATELY MITIGATED FOR!

CONSTRUCTION SITES

SWPPP

- A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED PER THE CGP
- NDOT'S POLICY IS THAT A SWPPP IS REQUIRED FOR ALL NDOT CONTRACTS REGARDLESS OF CGP COVERAGE
- SWPPP REQUIRED FOR MAINTENANCE PROJECTS (OCCASIONALLY)
- DEVELOPED BY THE "OPERATOR"
  - NDOT REVIEWS FOR COMPLETENESS
  - REGULATORY AGENCIES DO NOT REVIEW AND APPROVE
- COPY OF **CURRENT** SWPPP SHALL BE RETAINED AT THE SITE OR AT AN EASILY ACCESSIBLE LOCATION SHOULD NDOT OR A REGULATING OFFICIAL NEED TO REVIEW IT.

CONSTRUCTION SITES

SWPPP

- WHAT EXACTLY IS A SWPPP?
  - A DOCUMENTED GAME-PLAN FOR ADDRESSING POTENTIAL STORMWATER DISCHARGES FROM THE CONSTRUCTION SITE
  - DOCUMENTS CONSTRUCTION ACTIVITIES AND WHAT POLLUTION CONTROL MEASURES WILL BE IMPLEMENTED
  - A "LIVING DOCUMENT" THAT REQUIRES UPDATING WITHIN 7 CALENDAR DAYS; CRITERIA INCLUDES:
    - SIGNIFICANT CHANGES IN DESIGN, CONSTRUCTION, OPERATIONS, OR MAINTENANCE
    - DURING AN INSPECTION IT IS OBSERVED THAT DISCHARGES ARE CONTRIBUTING TO A WATER QUALITY EXCEEDANCE
    - CHANGES TO THE STORMWATER TEAM

CONSTRUCTION SITES

SWPPP

- IDENTIFICATION OF OPERATOR(S)
- STORMWATER TEAM
- NATURE OF CONSTRUCTION ACTIVITIES
- SEQUENCE AND ESTIMATED DATES OF CONSTRUCTION ACTIVITIES
- SITE DESCRIPTION
- SITE MAP(S)
- RECEIVING WATERS
- STORMWATER CONTROL MEASURES
- POTENTIAL POLLUTANT SOURCES
- SPILL PREVENTION AND RESPONSE PROCEDURES
- WASTE MANAGEMENT PROCEDURES
- VARIOUS INSPECTION, MONITORING, AND CERTIFICATION RECORDS
- POST CONSTRUCTION STORMWATER MANAGEMENT DOCUMENTATION

CONSTRUCTION SITES

SWPPP

- MINOR DIFFERENCES BETWEEN EPA AND NDEP CGP SWPPP REQUIREMENTS, HOWEVER BOTH REQUIRE THE SAME CORE ELEMENTS

CONSTRUCTION SITES

STORMWATER INSPECTOR

- ROLES AND RESPONSIBILITIES
  - PERFORMS CONSTRUCTION SITE STORMWATER INSPECTIONS AT REGULARLY SCHEDULED FREQUENCIES
    - CGP DICTATES MINIMUM INSPECTION FREQUENCIES (SLIGHT DIFFERENCES BETWEEN NDEP AND EPA CGP REQUIREMENTS); HOWEVER CONTRACT SPECS COULD BE MORE STRINGENT
  - MONITORS AND PROPERLY DOCUMENTS CONSTRUCTION SITE CONDITIONS WITH REGARDS TO STORMWATER POLLUTION CONTROL
    - ENSURING PROPER BMP IMPLEMENTATION (BMP FAILURES, BMP MAINTENANCE NEEDS, ETC.)
  - NDOT'S CONSTRUCTION INSPECTORS PERFORM OVERSIGHT INSPECTIONS TO ENSURE CONTRACTOR COMPLIANCE

REVIEW QUESTION

NAME THE NPDES PERMIT REQUIRED FOR LAND DISTURBANCE ACTIVITIES $\geq$ 1 ACRE

CONSTRUCTION GENERAL PERMIT

REVIEW QUESTION

WHAT IS THE DOCUMENT THAT SERVES AS A GAME-PLAN FOR ADDRESSING CONSTRUCTION SITE STORMWATER POLLUTION CONTROL?

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

CONSTRUCTION SITES

POTENTIAL POLLUTANTS

PETROLEUM PRODUCTS

PAINT, SOLVENTS, AND THINNERS

CONSTRUCTION SITES

POTENTIAL POLLUTANTS

TRASH AND DEBRIS

TREATED WOOD PRODUCTS

CONSTRUCTION SITES

POTENTIAL POLLUTANTS

CONCRETE WASTE

ASPHALT MATERIAL

CONSTRUCTION SITES

POTENTIAL POLLUTANTS

SANITARY WASTE

METALS

CONSTRUCTION SITES

POTENTIAL POLLUTANTS

SAW CUTTING DISCHARGE

SEDIMENT

CONSTRUCTION SITES

CONSTRUCTION SITE POLLUTANTS

- IMPACTS TO WATERWAYS FROM CONSTRUCTION SITE STORMWATER POLLUTANTS
  - SEDIMENT DEPOSITION: DEGRADE FISH SPAWNING AREAS
  - NUTRIENTS: REDUCE OXYGEN LEVELS
  - METALS: TOXIC TO AQUATIC LIFE (BIO-ACCUMULATION)
  - LITTER AND DEBRIS: HABITAT DEGRADATION
  - PETROLEUM PRODUCTS: SLOW RE-AERATION RATES
  - PESTICIDES AND HERBICIDES: TOXIC TO AQUATIC LIFE (BIO-ACCUMULATION)
  - PATHOGENS: DRINKING WATER CONTAMINATION
  - pH: CAN INFLUENCE THE MOBILIZATION OF TOXINS AND METALS

CONSTRUCTION SITES

BMPs

- WHAT IS A BMP?

SCHEDULES OF ACTIVITIES, PROHIBITIONS OF PRACTICES, MAINTENANCE PROCEDURES, AND OTHER MANAGEMENT PRACTICES TO PREVENT OR REDUCE THE POLLUTION OF "WATERS OF THE UNITED STATES." BMPs ALSO INCLUDE TREATMENT REQUIREMENTS, OPERATING PROCEDURES, AND PRACTICES TO CONTROL PLANT SITE RUNOFF, SPILLAGE OR LEAKS, SLUDGE OR WASTE DISPOSAL, OR DRAINAGE FROM RAW MATERIAL STORAGE (40 CFR 122.22)

AKA: DOING THE BEST YOU CAN TO PREVENT AND/OR MINIMIZE THE DISCHARGE OF POLLUTANTS

CONSTRUCTION SITES

BMPs

- BMPs CAN BE PLACED INTO TWO GENERAL CATEGORIES
  - NON-STRUCTURAL BMPs
    - PHASING
    - SCHEDULING
    - MINIMIZING LAND DISTURBANCE
    - TRAINING
    - ROUTINE INSPECTIONS
  - STRUCTURAL BMPs
    - TEMPORARY POLLUTION CONTROL MEASURES (SILT FENCE, SEDIMENT LOGS, ETC.)
    - PERMANENT POLLUTION CONTROL MEASURES (REVEGETATION, ROCK MULCH, ETC.)

CONSTRUCTION SITES

BMPs

- SEDIMENT IS CONSIDERED TO BE THE LARGEST POTENTIAL CONSTRUCTION SITE POLLUTANT, CONSEQUENTLY BMP EFFORTS ARE MOSTLY DIRECTED TOWARDS SEDIMENT CONTROL
- TWO BMP CATEGORIES FOR CONTROLLING SEDIMENT DISCHARGES
  - EROSION CONTROL: PREVENTING EROSION FROM OCCURRING
    - PRIMARY MEANS (MOST EFFECTIVE)
  - SEDIMENT CONTROL: REMOVING SEDIMENT AFTER IT HAS BEEN ERODED
    - SECONDARY MEANS (LESS EFFECTIVE)

CONSTRUCTION SITES

BMPs-EROSION CONTROL

PRESERVATION OF VEGETATION

REVEGETATION

CONSTRUCTION SITES

BMPs-EROSION CONTROL

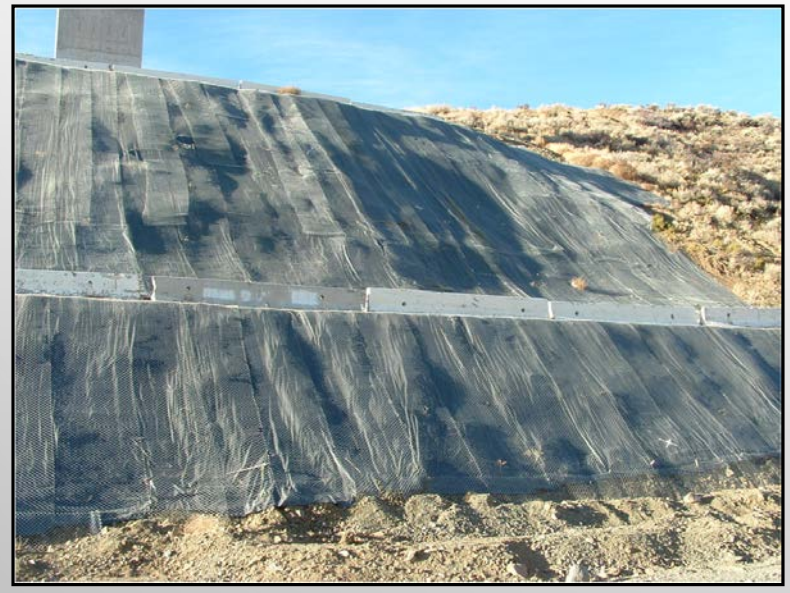
SOIL STABILIZERS/DUST PALLIATIVE

MULCH

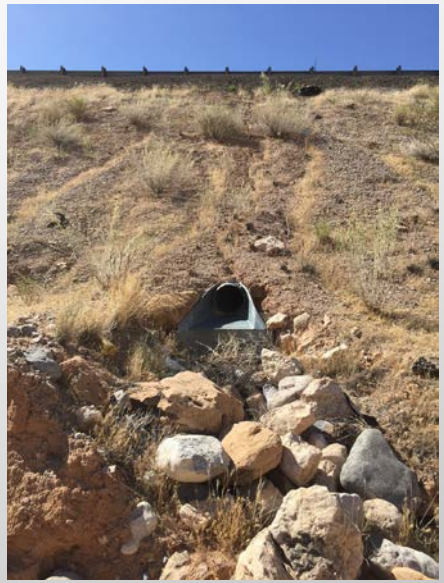
CONSTRUCTION SITES

BMPs-EROSION CONTROL

GEOTEXTILES/EROSION CONTROL BLANKET



SLOPE DRAIN



CONSTRUCTION SITES

BMPs-EROSION CONTROL

ENERGY DISSIPATER

TEMPORARY STREAM CROSSING

CONSTRUCTION SITES

BMPs-EROSION CONTROL SUMMARY

- PRESERVATION OF EXISTING VEGETATION
- SCHEDULING
- REVEGETATION
  - DRILL SEEDING
  - HYDROSEEDING
  - CONTAINERIZED PLANTINGS
- MULCH
  - PAPER/WOOD/BLENDED FIBER
  - WOOD/BARK
  - ROCK
  - STRAW
- GEOTEXTILE/EROSION CONTROL BLANKET
- SLOPE DRAIN
- ENERGY DISSIPATER
  - RIPRAP
  - “DRAGON TEETH”
- TEMPORARY STREAM CROSSING
- SOIL STABILIZERS/DUST PALLIATIVE
  - GYPSUM
  - PLANT
  - POLYMER

CONSTRUCTION SITES

BMPs-SEDIMENT CONTROL

SEDIMENT LOG

SILT FENCE

CONSTRUCTION SITES

BMPs-SEDIMENT CONTROL

ROCK CHECK DAM

GRAVEL BAG

CONSTRUCTION SITES

BMPs-SEDIMENT CONTROL

SEDIMENT TRAP/BASIN

RIPRAP

CONSTRUCTION SITES

BMPs-SEDIMENT CONTROL

ROCK LINED CHANNEL

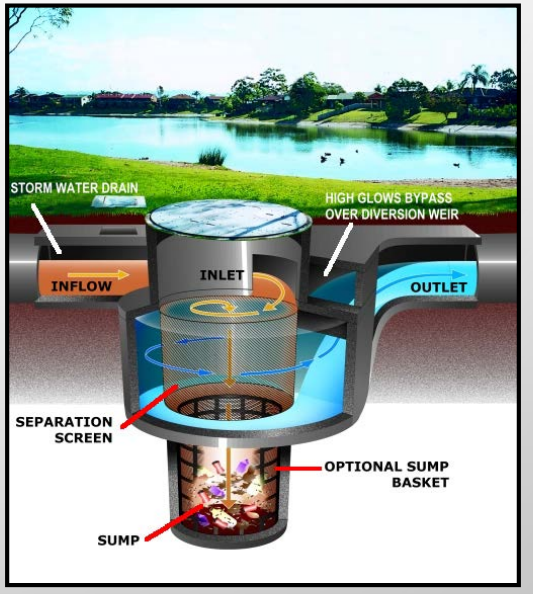
TRACK-OUT CONTROL

CONSTRUCTION SITES

BMPs-SEDIMENT CONTROL

DETENTION/INFILTRATION BASINS

STORMWATER TREATMENT DEVICES



CONSTRUCTION SITES

BMPs-SEDIMENT CONTROL SUMMARY

- SEDIMENT LOG
- SILT FENCE
- LINED CHANNEL
  - VEGETATION
  - ROCK
- TRACK OUT CONTROL
  - ROCK
  - “GRIZZLY”
  - WASH STATION
  - STREET SWEEPING
- RIPRAP
- ROCK CHECK DAM
- GRAVEL BAG
- SEDIMENT TRAP/BASIN
- DETENTION/INFILTRATION BASINS
- MANUFACTURED STORMWATER TREATMENT DEVICES
  - SAND/OIL INTERCEPTOR
  - VAULT
  - MEDIA FILTRATION

CONSTRUCTION SITES

BMPs-GENERAL HOUSEKEEPING

CONCRETE WASHOUT

SPILL PREVENTION/CONTROL

CONSTRUCTION SITES

BMPs-GENERAL HOUSEKEEPING

TRASH/DEBRIS DISPOSAL

SANITARY WASTE MANAGEMENT

CONSTRUCTION SITES

BMPs-GENERAL HOUSEKEEPING

MATERIAL STORAGE

EQUIPMENT LEAK MANAGEMENT

CONSTRUCTION SITES

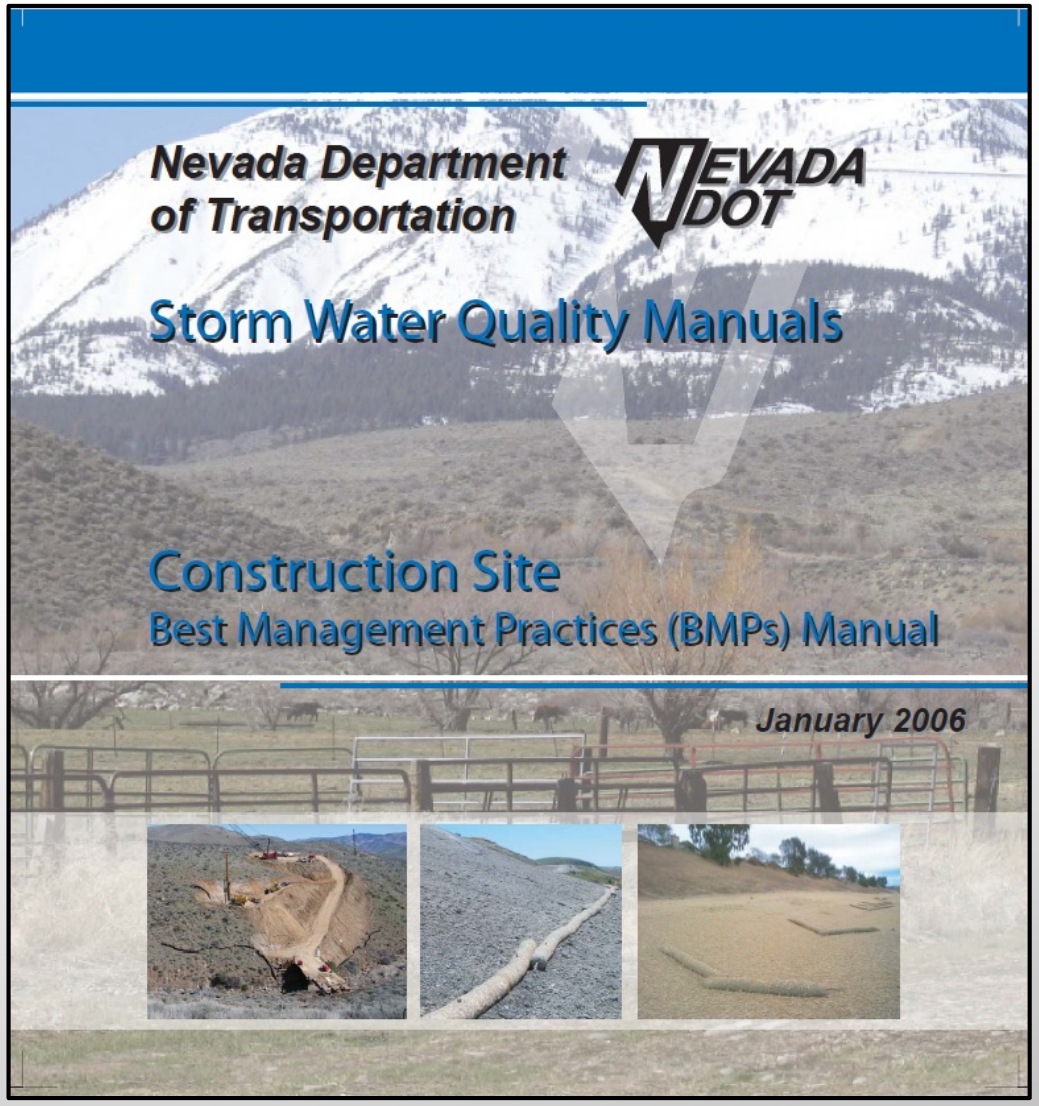
BMPs-GENERAL HOUSEKEEPING SUMMARY

- CONCRETE WASHOUTS
  - PROPERLY SIGNED
  - APPROPRIATE DISPOSAL
- SPILL PREVENTION/CONTROL
  - SECONDARY CONTAINMENT
  - SPILL RESPONSE CLEANUP PROCEDURES
- TRASH AND DEBRIS DISPOSAL
  - FREQUENT DISPOSAL AND COLLECTION
- SANITARY WASTE MANAGEMENT
  - PROPERLY SECURED
  - SERVICED REGULARLY
- MATERIAL STORAGE
  - UTILIZE STORAGE CONTAINERS AND OVERHEAD PROTECTION WHEN POSSIBLE
- EQUIPMENT LEAK MANAGEMENT
  - CONTAIN AND CLEANUP LEAKS AND SPILLS
  - INSPECT EQUIPMENT REGULARLY

CONSTRUCTION SITES

NDOT CONSTRUCTION DOCUMENTS

- SECTION 637 OF THE STANDARD SPECIFICATIONS
- CONSTRUCTION SITE BEST MANAGEMENT PRACTICES MANUAL
- CONSTRUCTION SITE STORMWATER INSPECTION FORM



CONSTRUCTION SITES

RESOURCES

- NDOT - STORMWATER DIVISION
- NDOT - STORMWATER MANAGEMENT PROGRAM WEBSITE

  HTTP://WWW.NEVADADOT.COM/STORMWATER/STORMWATER_MANAGEMENT_PROGRAM.ASPX
- NDEP - BUREAU OF WATER POLLUTION CONTROL WEBSITE

  HTTP://NDEP.NV.GOV/INDEX.HTM
- EPA - NPDES STORMWATER PROGRAM WEBSITE

  HTTPS://WWW.EPA.GOV/NPDES/NPDES-STORMWATER-PROGRAM

REVIEW QUESTION

WHAT ARE THE TWO GENERAL BMP CATEGORIES?

STRUCTURAL

NON-STRUCTURAL

REVIEW QUESTION

WHAT IS THE PRIMARY POLLUTANT OF CONCERN FROM CONSTRUCTION SITES?

SEDIMENT

REVIEW QUESTION

WHAT IS A MORE EFFECTIVE MEANS FOR REDUCING SEDIMENT DISCHARGES: EROSION CONTROL OR SEDIMENT CONTROL?

EROSION CONTROL

STORMWATER TREATMENT DESIGN

- OVERVIEW
- EXAMPLES
- LOW IMPACT DEVELOPMENT (LID)
- RESOURCES

STORMWATER TREATMENT DESIGN

OVERVIEW

- ENGINEER MITIGATION MEASURES THAT WILL REDUCE POLLUTANT DISCHARGES WITH STORMWATER RUNOFF TO THE MEP
- EVALUATE PROJECTS ON A PROJECT BY PROJECT BASIS (NO TWO PROJECTS ARE ALIKE)
  - NEW TREATMENT FACILITIES, MODIFICATION TO EXISTING FACILITIES, OR RETROFITS
  - POLLUTANT SPECIFIC
- CRITICAL THAT STORMWATER TREATMENT IS EVALUATED DURING THE DESIGN OF A PROJECT, RATHER THAN DISCOVER THE NEED DURING CONSTRUCTION

STORMWATER TREATMENT DESIGN

OVERVIEW

- DESIGN CONSIDERATIONS:
  - STORMWATER EVENT(S), I.E. RAINFALL INTENSITY AND DURATION
  - TOPOGRAPHY
  - SOILS
  - TARGET POLLUTANT(S)
    - WATERSHED AREAS
    - RECEIVING WATERWAYS
  - TREATMENT EFFECTIVENESS
  - COST
    - CONSTRUCTION
    - MAINTENANCE

STORMWATER TREATMENT DESIGN

OVERVIEW

- REGULATORY REQUIREMENTS
  - POST-CONSTRUCTION STORMWATER TREATMENT
    - MITIGATE LAND DISTURBANCE AREAS
  - IMPAIRED WATERWAY AND TMDL CONSIDERATIONS
    - LAKE TAHOE TMDL (FINE SEDIMENT PARTICLES)
  - PROMOTE LID TECHNIQUES WHEN POSSIBLE
  - MAINTENANCE FACILITY STORMWATER TREATMENT

STORMWATER TREATMENT DESIGN

OVERVIEW

- IF A CONSTRUCTION GENERAL PERMIT WAS PROCURED, LAND DISTURBANCE AREAS MUST ACHIEVE APPROPRIATE FINAL STABILIZATION
  - 70% OF PRE-CONSTRUCTION VEGETATION COVER OR ACCEPTABLE EQUIVALENT
    - ROCK MULCH
    - HARDSCAPE
    - VEGETATION/ROCK COMBINATION
  - UNIFORM COVERAGE (NO LARGE AREAS VOID OF TREATMENT)
  - SOIL STABILIZER IS NOT AN ACCEPTABLE MEANS OF PERMANENT STABILIZATION

STORMWATER TREATMENT DESIGN

EXAMPLES

ENGINEERED SOIL SLOPE

REVEGETATION OVER RIPRAP

STORMWATER TREATMENT DESIGN

EXAMPLES

ROCK MULCH

RIPRAP ARMOR

STORMWATER TREATMENT DESIGN

EXAMPLES

BIOENGINEERING

STREAM CHANNEL RESTORATION

STORMWATER TREATMENT DESIGN

EXAMPLES

STORMWATER QUALITY TREATMENT WETLANDS

DETENTION BASINS

STORMWATER TREATMENT DESIGN

EXAMPLES

HYDROSEED

BROADCAST SEED

STORMWATER TREATMENT DESIGN

EXAMPLES

DRILL SEED

CONTAINERIZED PLANTINGS

STORMWATER TREATMENT DESIGN

EXAMPLES

RIPRAP LINED CHANNELS

STORMWATER QUALITY BASINS

STORMWATER TREATMENT DESIGN

EXAMPLES

MANUFACTURED STORMWATER TREATMENT DEVICE

The Jellyfish Filter.

STORMWATER TREATMENT DESIGN

LOW IMPACT DEVELOPMENT

- RATHER THAN COLLECTING STORMWATER RUNOFF IN PIPED AND CHANNELIZED SYSTEMS AND TRYING TO MANAGE RUNOFF AT SOME CENTRALIZED POINT DOWNSTREAM, LID FOCUSES ON DISPERSING FLOWS AND MANAGING RUNOFF NEAR THE SOURCE
- PRIMARY GOAL IS TO RESTORE THE PRE-DEVELOPMENT HYDROLOGY
  - PREVENT ANY INCREASES IN STORMWATER RUNOFF VOLUMES BY PROMOTING STORMWATER INFILTRATION
- INTEGRATES A SERIES OF SMALL-SCALE MEASURES TOGETHER TO CREATE A DECENTRALIZED STORMWATER SYSTEM THAT MINIMIZES RUNOFF VOLUME AND PRESERVE EXISTING FLOW PATHS

STORMWATER TREATMENT DESIGN

LOW IMPACT DEVELOPMENT

- EXAMPLES OF LID SITE DESIGN STRATEGIES (PER AASHTO)
  - GRADE TO ENCOURAGE SHEET FLOW AND LENGTHEN FLOW PATHS
  - MAINTAIN NATURAL DRAINAGE DIVIDES AND KEEP FLOW PATHS DISPERSED
  - DISCONNECT IMPERVIOUS AREAS FROM THE STORM DRAIN NETWORK, ALLOWING RUNOFF TO BE CONVEYED OVER PERVIOUS AREAS INSTEAD
  - PRESERVE NATURALLY VEGETATED AREAS AND SOIL TYPES THAT SLOW RUNOFF, FILTER OUT POLLUTANTS, AND FACILITATE INFILTRATION

STORMWATER TREATMENT DESIGN

LOW IMPACT DEVELOPMENT

- EXAMPLES OF LID SITE DESIGN STRATEGIES (CONT'D)
  - DIRECT RUNOFF INTO OR ACROSS VEGETATED AREAS TO HELP FILTER RUNOFF AND ENCOURAGE SUBSURFACE RECHARGE
  - PROVIDE SMALL-SCALE DISTRIBUTED FEATURES AND DEVICES
  - TREAT POLLUTANT LOADS WHERE THEY ARE GENERATED, OR PREVENT THEIR GENERATION

STORMWATER TREATMENT DESIGN

LOW IMPACT DEVELOPMENT - TECHNIQUES

SOIL AMENDMENTS (E.G. COMPOST)

CURB EXTENSIONS

STORMWATER TREATMENT DESIGN

LOW IMPACT DEVELOPMENT-TECHNIQUES

SIDEWALK PLANTERS

PERVIOUS PAVEMENT

STORMWATER TREATMENT DESIGN

LOW IMPACT DEVELOPMENT-TECHNIQUES

BIOSWALES

RAINWATER CATCHMENT SYSTEMS

STORMWATER TREATMENT DESIGN

RESOURCES

- NDOT - STORMWATER DIVISION AND LANDSCAPE & ARCHITECTURE SECTION
- NDOT - STORMWATER MANAGEMENT PROGRAM WEBSITE

  HTTP://WWW.NEVADADOT.COM/STORMWATER/STORMWATER_MANAGEMENT_PROGRAM.ASPX
- EPA-URBAN RUNOFF: LID WEBSITE

  HTTPS://WWW.EPA.GOV/POLLUTED-RUNOFF-NONPOINT-SOURCE-POLLUTION/URBAN-RUNOFF-LOW-IMPACT-DEVELOPMENT
- DOCUMENTS
  - NDOT - PLANNING AND DESIGN GUIDE
  - DEPARTMENT OF DEFENSE - UNIFIED FACILITIES CRITERIA (UFC) – LOW IMPACT DEVELOPMENT

MOVIE

STORM WATCH: MUNICIPAL STORM WATER POLLUTION PREVENTION

MAINTENANCE FACILITIES

- OVERVIEW
- POTENTIAL POLLUTANTS
- FACILITY POLLUTION PREVENTION PLAN
- RESOURCES

MAINTENANCE FACILITIES

OVERVIEW

- SEVERAL MAINTENANCE FACILITIES DISCHARGE INTO A RECEIVING WATERWAY AND/OR STORM SEWER SYSTEM
- VARIOUS MAINTENANCE FACILITY OPERATIONS CAN BE POTENTIAL SOURCES OF POLLUTANT DISCHARGES
  - MATERIAL AND EQUIPMENT STORAGE
  - EQUIPMENT MAINTENANCE
- NDOT HAS A PROGRAM IN PLACE SPECIFICALLY ADDRESSING STORMWATER POLLUTION PREVENTION EFFORTS AT MAINTENANCE FACILITIES
  - TRAINING
  - GUIDANCE DOCUMENTS
  - INTERNAL POLICY AND PROCEDURE

MAINTENANCE FACILITIES

OVERVIEW

- THREE CATEGORIES OF MAINTENANCE FACILITIES
  - MAJOR: STATIONS THAT HOUSE MORE THAN ONE MAINTENANCE CREW AND PERFORM MAJOR EQUIPMENT SERVICING
  - MINOR-A: STATIONS AND YARDS THAT ARE NOT CONSIDERED MAJOR
  - MINOR-B: ACTIVE OFFSITE MATERIALS STORAGE/STOCKPILE AREAS
- ALL FACILITIES HAVE A COMMON CORE OF BMPs TO IMPLEMENT
- SOME BMPs ARE CATEGORY AND FACILITY SPECIFIC

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

EQUIPMENT FLUIDS

FUEL

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

BRINE AND MAG CHLORIDE

SALT

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

SEDIMENT

SPENT LIGHT BULBS

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

ASPHALT GRINDINGS

USED TIRES

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

USED OIL

SCRAP METAL

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

USED BATTERIES

VARIOUS STOCKPILE MATERIALS

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

PAINT

LIQUID ASPHALT

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

STRIPING PAINT/GLASS BEADS

TRASH AND DEBRIS

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

EQUIPMENT WASH WATER

HYDRAULIC LINE FLUID

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

SWEEPER WASTE

"DUMPSTER JUICE"

MAINTENANCE FACILITIES

POTENTIAL POLLUTANTS

STEAM CLEANING DISCHARGE

UNKNOWN SUBSTANCE

MAINTENANCE FACILITIES

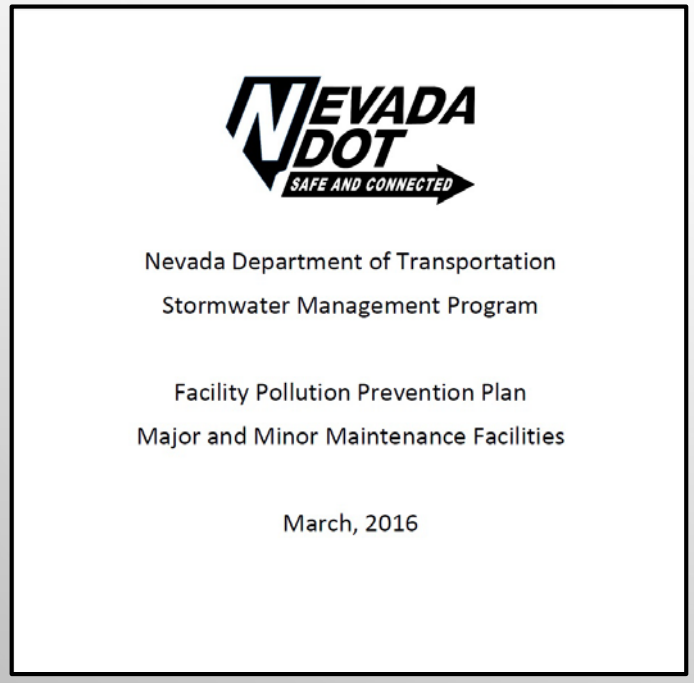
POTENTIAL POLLUTANTS

SPREADER SAND/SALT

WASH PAD SEDIMENT BASIN DISCHARGE

MAINTENANCE FACILITIES

FPPP


Nevada Department of Transportation

Stormwater Management Program

Facility Pollution Prevention Plan

Major and Minor Maintenance Facilities

March, 2016

- GUIDANCE DOCUMENT FOR IMPLEMENTING STORMWATER POLLUTION CONTROL PRACTICES AT MAINTENANCE FACILITIES
- REFERENCES NDOT'S *MAINTENANCE FACILITY BEST MANAGEMENT PRACTICES (BMPs) MANUAL*
- DEVELOPED BY THE STORMWATER DIVISION
- IMPLEMENTED BY DISTRICT MAINTENANCE PERSONNEL
- FPPP ADMINISTRATOR
  - MAJOR FACILITIES: APPOINTED BY DISTRICT/ASST. DISTRICT ENGINEER
  - MINOR FACILITIES: APPROPRIATE SUPERVISOR I
  - OVERSEES BMP EFFORTS AT THEIR RESPECTIVE FACILITY AND ROUTINE FACILITY STORMWATER INSPECTIONS
  - MAINTAINS APPROPRIATE DOCUMENTATION AND IS THE PRIMARY POINT OF CONTACT WITH THE STORMWATER DIVISION

MAINTENANCE FACILITIES

BMPs

SPILL CLEANUP

SPILL RESPONSE

MAINTENANCE FACILITIES

BMPs

SECONDARY CONTAINMENT

WASTE FLUID DISPOSAL

MAINTENANCE FACILITIES

BMPs

TIRE STORAGE

PERIMETER CONTROL

MAINTENANCE FACILITIES

BMPs

MATERIALS STORAGE LOCATION

(NO DISCHARGE INTO A RECEIVING WATERWAY)

NEAT AND TIDY MATERIAL STORAGE

MAINTENANCE FACILITIES

BMPs

EQUIPMENT WASH WATER CONTAINMENT

WASTE DISPOSAL/RECYCLING

MAINTENANCE FACILITIES

BMPs

HYDRAULIC HOSE STORAGE

BRINE AND MAG CHLORIDE CONTAINMENT

MAINTENANCE FACILITIES

BMPs

USED BATTERY STORAGE

STEAM PAD DISCHARGE CONTAINMENT

MAINTENANCE FACILITIES

BMPs

EQUIPMENT STORAGE

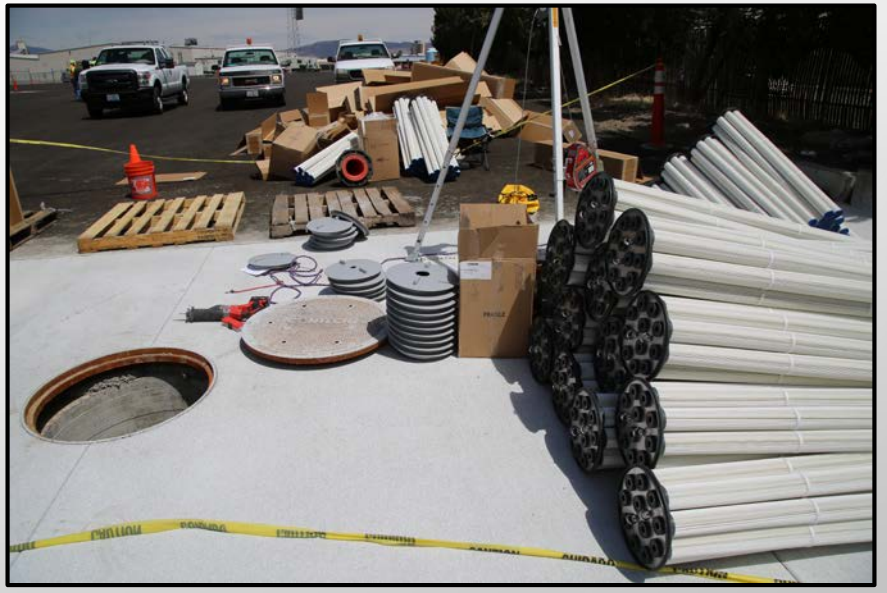
SAND/SALT STORAGE

MAINTENANCE FACILITIES

BMPs

INLET PROTECTION

MANUFACTURED STORMWATER TREATMENT DEVICE



MAINTENANCE FACILITIES

BMPs

INLET STENCILS

INLET STAMPS/MARKERS

MAINTENANCE FACILITIES

BMPs SUMMARY

- TEMPORARY POLLUTION CONTROL MEASURES
  - INLET PROTECTION
  - PERIMETER CONTROL
- MANUFACTURED STORMWATER TREATMENT DEVICES
- PLANNING
  - MINIMIZING OPPORTUNITIES FOR POTENTIAL POLLUTANT DISCHARGES
- GOOD HOUSEKEEPING PRACTICES
  - WASTE DISPOSAL
  - SPILL PREVENTION AND CLEANUP
  - MATERIALS STORAGE
  - ROUTINE CLEANUP

MAINTENANCE FACILITIES

RESOURCES

- NDOT - STORMWATER DIVISION
- NDOT - STORMWATER MANAGEMENT PROGRAM WEBSITE

  HTTP://WWW.NEVADADOT.COM/STORMWATER/STORMWATER_MANAGEMENT_PROGRAM.ASPX
- DOCUMENTS
  - NDOT - FACILITY POLLUTION PREVENTION PLAN(S)
  - NDOT - MAINTENANCE FACILITY BEST MANAGEMENT PRACTICES (BMPs) MANUAL

REVIEW QUESTION

NAME THE THREE MAINTENANCE FACILITY CATEGORIES

- MAJOR
- MINOR-A
- MINOR-B

REVIEW QUESTION

WHICH OF THE FOLLOWING IS CONSIDERED A MAINTENANCE FACILITY BMP?

- COVERING EXPOSED MATERIAL STOCKPILES
- INSTALLING PERIMETER CONTROL MEASURES
- ENSURING EQUIPMENT WASH WATER DOES NOT DISCHARGE INTO THE MS4
- CLEANING UP SPILLED MATERIALS
- ALL OF THE ABOVE

REVIEW QUESTION

WHAT IS THE PRIMARY GUIDANCE DOCUMENT FOR MAINTENANCE FACILITY STORMWATER POLLUTION CONTROL?

FACILITY POLLUTION PREVENTION PLAN

MAINTENANCE OPERATIONS

- OVERVIEW
- STREET SWEEPING
- APPLICATION OF HERBICIDES AND PESTICIDES
- HYDRAULIC FACILITY CLEANING
- APPLICATION OF ABRASIVES, ANTI-ICING, AND DE-ICING AGENTS
- VARIOUS ROADWAY WORK
- SUMMARY
- RESOURCES

MAINTENANCE OPERATIONS

OVERVIEW

- THE MISSION OF THE MAINTENANCE DIVISION IS TO ASSURE THE DEPARTMENT MAINTAINED SYSTEM IS MAINTAINED TO AS HIGH A LEVEL AS POSSIBLE CONSISTENT WITH THE BUDGET, WORK PLAN, POLICIES, AND PROGRAM OBJECTIVES
- MAINTENANCE IS A NECESSITY NOT ONLY FOR THE CONTINUED FUNCTIONALITY OF THE STATE HIGHWAY SYSTEM, BUT FOR EFFECTIVE STORMWATER POLLUTION CONTROL AS WELL
  - SOURCE CONTROL
  - TREATMENT

MAINTENANCE OPERATIONS

OVERVIEW

- WITH SO MUCH INFRASTRUCTURE TO MAINTAIN (5500+ MILES STATEWIDE), PRIORITIES NEED TO BE ESTABLISHED
- PRIORITIES CAN BE BASED ON SEVERAL FACTORS
  - URBANIZED VS. RURAL AREAS
    - MORE POLLUTION POTENTIAL IN HIGH DENSITY VS. LOW DENSITY AREAS
  - WATERSHED ASSESSMENTS
    - LAKE TAHOE AND CLEAR CREEK
  - MS4 PERMIT DICTATED
  - MUNICIPAL JURISDICTION INFLUENCED
  - OTHERS…..

MAINTENANCE OPERATIONS

STREET SWEEPING

- EFFECTIVE REMOVAL OF SEDIMENT AND OTHER POLLUTANTS PRIOR TO DISCHARGING INTO A WATERWAY
  - NOT AS EFFECTIVE AS SOURCE CONTROL
  - EFFECTIVENESS DEPENDENT UPON SWEEPING FREQUENCY
- SPECIFIC MS4 PERMIT REQUIREMENTS
  - SWEEP SANDED AREAS IN URBANIZED AREAS AS SOON AS POSSIBLE, BUT NO LATER THAN 4 DAYS AFTER THE LAST SNOWFALL
  - URBANIZED STREETS SHALL BE SWEPT A MINIMUM OF TWO TIMES PER YEAR (ONCE IN THE SPRING AND ONCE IN THE FALL)

MAINTENANCE OPERATIONS

STREET SWEEPING

- RECYCLING OF THE SWEEPER MATERIAL IS APPROPRIATE UNDER CERTAIN CIRCUMSTANCES
- IF REUSE IS NOT POSSIBLE, DISPOSE OF SWEEPER MATERIAL IN A LANDFILL
- RECORD KEEPING
  - ROUTES SWEPT
  - DATES SWEEPING OCCURRED
  - ESTIMATED VOLUME OF MATERIAL COLLECTED
  - DOCUMENTATION DEMONSTRATING APPROPRIATE MATERIAL DISPOSAL

MAINTENANCE OPERATIONS

PESTICIDE AND FERTILIZER APPLICATION

- INTRODUCTION OF A POTENTIAL POLLUTANT TO THE ENVIRONMENT, MINIMIZE THE DISCHARGE TO THE MEP
- SPECIFIC MS4 PERMIT REQUIREMENTS
  - ONLY USE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT APPROVED PRODUCTS
  - UTILIZE “WATER LABEL” PRODUCTS WHEN APPLYING NEAR OR IN A WATERWAY
  - CERTIFICATION/LICENSURE FROM THE DEPARTMENT OF AGRICULTURE (MAINTENANCE AND CONTRACTORS)

MAINTENANCE OPERATIONS

PESTICIDE AND FERTILIZER APPLICATION

- FOLLOW MANUFACTURER'S APPLICATION RECOMMENDATIONS (AVOID OVER APPLICATION- MORE IS NOT NECESSARILY BETTER!)
- DO NOT APPLY WITHIN 12 HOURS OF A FORECASTED STORM EVENT
- TO MINIMIZE "DRIFT", DO NOT SPRAY DURING WINDY CONDITIONS OF 15 MPH OR GREATER
- AVOID APPLICATION WITHIN OR NEAR A WATERWAY
  - IF NECESSARY, UTILIZE A "WATER LABEL" PRODUCT
- CLEAN UP SPILLED MATERIALS

MAINTENANCE OPERATIONS

PESTICIDE AND FERTILIZER APPLICATION

- APPLY USING SPOT OR SELECTIVE SPRAYING WHEN POSSIBLE; AVOID BROADCAST-BLANKET APPLICATION
- RECORD KEEPING
  - APPLICATOR NAME OR COMPANY
  - ROUTES APPLICATION OCCURRED
  - DATES PRODUCT WAS APPLIED
  - PRODUCT(S) UTILIZED (NAME AND ESTIMATED QUANTITIES)

MAINTENANCE OPERATIONS

HYDRAULIC FACILITY MAINTENANCE

- REMOVAL OF SEDIMENT AND OTHER POLLUTANTS
  - NOT AS EFFECTIVE A SOURCE CONTROL
  - EFFECTIVENESS DEPENDENT UPON MAINTENANCE FREQUENCY
- SPECIFIC MS4 PERMIT REQUIREMENTS
  - INSPECTIONS
  - DEVELOP MAINTENANCE SCHEDULES AND PRIORITIES
  - REPAIR AND MAINTAIN
  - IMPLEMENT APPROPRIATE BMPs

MAINTENANCE OPERATIONS

HYDRAULIC FACILITY MAINTENANCE

- INSPECT INFRASTRUCTURE ON A ROUTINE FREQUENCY
- GENERAL RULE OF THUMB, CLEANOUT IS REQUIRED WHEN FLOW CAPACITY IS RESTRICTED BY 50%
    - FOR MANUFACTURED STORMWATER TREATMENT DEVICES, MAINTAIN PER MANUFACTURER'S RECOMMENDATIONS
- UTILIZE SEDIMENT CONTROL BMPs AS APPROPRIATE
- PREVENT UNAUTHORIZED DISCHARGES

MAINTENANCE OPERATIONS

HYDRAULIC FACILITY MAINTENANCE

- DECANT VACTOR TRUCK WATER IN A LINED BASIN FACILITY OR THE SANITARY SEWER SYSTEM
  - FOR SANITARY SEWER DISPOSAL, **WRITTEN APPROVAL** FROM THE APPROPRIATE MUNICIPALITY IS REQUIRED
- HYDRO-FLUSHING OF SEDIMENT PLUGGED FACILITIES IS AUTHORIZED PROVIDED SEDIMENT CONTROL BMPs ARE UTILIZED DOWNSTREAM, MATERIAL IS REMOVED FROM THE WATERWAY, POTABLE WATER IS USED, AND THE AMOUNT OF WATER APPLIED IS MINIMIZED TO THE EXTENT NECESSARY TO PERFORM THE WORK
  - APPLIES TO CROSS CULVERTS, DOES NOT APPLY TO DROP INLETS OR FACILITIES WHERE THE POTENTIAL FOR POLLUTANT DISCHARGES IS HIGH

MAINTENANCE OPERATIONS

HYDRAULIC FACILITY MAINTENANCE

- RECYCLING OF THE MATERIAL IS APPROPRIATE UNDER CERTAIN CIRCUMSTANCES
- IF RECYCLING IS NOT POSSIBLE, DISPOSE OF MATERIAL AT A LANDFILL
- REPORT CONFIRMED OR SUSPECTED ILLICIT DISCHARGES TO THE STORMWATER DIVISION
- RECORD KEEPING
  - ROUTE AND FACILITY ID MAINTENANCE OCCURRED
  - DATES MAINTENANCE OCCURRED
  - ESTIMATED VOLUME OF MATERIAL REMOVED
  - DOCUMENTATION DEMONSTRATING APPROPRIATE MATERIAL DISPOSAL
  - ILLICIT DISCHARGE AND FACILITY CONDITION CONCERNS

MAINTENANCE OPERATIONS

APPLICATION OF ABRASIVES, ANTI-, AND DE-ICING AGENTS

- INTRODUCTION OF A POTENTIAL POLLUTANT TO THE ENVIRONMENT, MINIMIZE THE DISCHARGE TO THE MEP
- SPECIFIC MS4 PERMIT REQUIREMENTS
  - APPLICATION SHALL BE CONSISTENT WITH NDOT'S POLICIES AND GUIDELINES
  - PRODUCT TESTING
    - SALT: TOTAL PHOSPHORUS, TOTAL NITROGEN, TOTAL IRON, AND % SODIUM CHLORIDE
    - ALTERNATIVE DE-ICERS (E.G. POTASSIUM ACETATE): TOTAL NITROGEN AND TOTAL PHOSPHORUS
    - ABRASIVES: GRADATION, % ORGANIC MATTER, VOLATILE SOLIDS, TOTAL IRON, TOTAL NITROGEN, TOTAL PHOSPHORUS, AND TOTAL REACTIVE PHOSPHORUS.

MAINTENANCE OPERATIONS

APPLICATION OF ABRASIVES, ANTI-, AND DE-ICING AGENTS

- PERFORM THE NECESSARY SPREADER CALIBRATIONS
- PERFORM PRE-SEASON DRY RUNS TO GAIN A BETTER UNDERSTANDING OF THE TERRAIN AND WHERE SENSITIVE AREAS AND NEARBY WATERWAYS RESIDE
- DO NOT OVER APPLY MATERIALS
  - MINIMIZE THE QUANTITIES APPLIED TO THE EXTENT THAT MOTORIST SAFETY IS NOT COMPROMISED
- UTILIZE WEATHER FORECASTING CAPABILITIES TO ASSIST WITH DETERMINING THE RIGHT PRODUCTS TO BE USED; THE RIGHT AMOUNTS TO BE APPLIED; AND THE CORRECT TIMING FOR APPLICATION

MAINTENANCE OPERATIONS

APPLICATION OF ABRASIVES, ANTI-, AND DE-ICING AGENTS

- ONCE CONDITIONS ARE CONDUCIVE ENOUGH, REMOVE MATERIALS VIA MECHANICAL SWEEPING TO MINIMIZE POTENTIAL DISCHARGES
- CONTINUE TO SEEK AND EVALUATE NEW TECHNOLOGIES TO HELP REFINE APPLICATION RATES AND IMPROVE DISPERSAL CONTROL
- RECORD KEEPING
  - ROUTE MATERIAL WAS APPLIED
  - DATES MATERIAL WAS APPLIED
  - PRODUCT(S) UTILIZED (NAME AND ESTIMATED VOLUMES)

MAINTENANCE OPERATIONS

VARIOUS ROADSIDE WORK

- MOST MAINTENANCE PROJECTS ARE EXEMPT FROM CGP PERMITTING, HOWEVER CONSTRUCTION SITE BMPs STILL APPLY
- NDOT'S CONSTRUCTION SITE BMPs MANUAL
  - TEMPORARY SEDIMENT CONTROL
  - EROSION CONTROL
  - INLET PROTECTION
  - GENERAL HOUSEKEEPING
    - SPILL PREVENTION AND CLEANUP
    - WASTE CLEANUP
  - AND OTHERS…..

MAINTENANCE OPERATIONS

SUMMARY

- SEVERAL MS4 PERMIT REQUIREMENTS TIED TO SEVERAL ROUTINE MAINTENANCE ACTIVITIES
  - SWEEPING
  - HYDRAULIC FACILITY MAINTENANCE
  - APPLICATION OF PESTICIDES & FERTILIZERS
  - APPLICATION OF ABRASIVES, ANTI-, AND DE-ICING AGENTS
- FOR MANY TASKS, NDOT IS INTRODUCING A POTENTIAL POLLUTANT
  - RESPONSIBLE APPLICATION PRACTICES NEED TO OCCUR TO MINIMIZE IMPACTS
- FOR MANY TASKS, NDOT IS REMOVING A POTENTIAL POLLUTANT
  - FREQUENCY IS AN IMPORTANT FACTOR IN DETERMINING EFFECTIVENESS
- BMPs ARE TO BE IMPLEMENTED FOR ALL MAINTENANCE ACTIVITIES

MAINTENANCE OPERATIONS

RESOURCES

- NDOT - STORMWATER DIVISION
- NDOT - STORMWATER DIVISION WEBSITE

  HTTP://WWW.NEVADADOT.COM/STORMWATER/STORMWATER_MANAGEMENT_PROGRAM.ASPX
- NDOT - STORMWATER DIVISION SHAREPOINT SITE
- DOCUMENTS
  - AASHTO - MAINTENANCE STORMWATER FIELD GUIDE
  - NDOT - CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPs) MANUAL
  - NDOT - MAINTENANCE FACILITY BEST MANAGEMENT PRACTICES (BMPs) MANUAL

REVIEW QUESTION

NAME TWO MAINTENANCE ACTIVITIES THAT ARE EFFECTIVE IN REMOVING POTENTIAL POLLUTANTS FROM THE ROADWAY?

STREET SWEEPING

HYDRAULIC FACILITY CLEANING

REVIEW QUESTION

WHICH MAINTENANCE ACTIVITIES REQUIRE BMP IMPLEMENTATION

ALL OF THEM!

MOVIE

IDDE: ILLICIT DISCHARGE DETECTION AND ELIMINATION

ILLICIT DISCHARGE DETECTION AND ELIMINATION

- OVERVIEW
- WHAT IS AN ILLICIT DISCHARGE?
- EXAMPLES OF ILLICIT DISCHARGES
- EXAMPLES OF ALLOWABLE NON-STORMWATER DISCHARGES
- INDICATORS OF AN ILLICIT DISCHARGE
- HOW TO REPORT AN ILLICIT DISCHARGE
- ILLICIT DISCHARGE TRACKING AND FOLLOW-UP
- RESOURCES

ILLICIT DISCHARGE DETECTION AND ELIMINATION

OVERVIEW

- NDOT IS REQUIRED TO DEVELOP AND IMPLEMENT A PROGRAM THAT ADDRESSES ILLICIT DISCHARGES WITHIN THE RIGHT-OF-WAY
  - ESSENTIAL COMPONENTS OF THE PROGRAM INCLUDE
    - IDENTIFICATION/DETECTION
    - INVESTIGATION
    - ELIMINATION
    - CORRECTIVE ACTION
    - DOCUMENTATION AND TRACKING

ILLICIT DISCHARGE DETECTION AND ELIMINATION

WHAT IS AN ILLICIT DISCHARGE?

- *ANY DISCHARGE TO A MUNICIPAL SEPARATE STORM SEWER THAT IS NOT COMPOSED ENTIRELY OF STORMWATER, EXCEPT DISCHARGES PURSUANT TO A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT (OTHER THAN THE NPDES PERMIT FOR DISCHARGES FROM THE MS4) AND DISCHARGES RESULTING FROM FIREFIGHTING ACTIVITIES* (40 CFR 122.26(B)(2))
- IN MOST INSTANCES, IF THE DISCHARGE INTO THE STORM DRAIN SYSTEM IS NOT RUNOFF FROM PRECIPITATION OR SNOWMELT, IT SHOULD BE CONSIDERED A POTENTIAL ILLICIT DISCHARGE

ILLICIT DISCHARGE DETECTION AND ELIMINATION

EXAMPLES OF ILLICIT DISCHARGES

- DISCHARGES FROM SANITARY SEWER LINES
- AUTOMOBILE AND HOUSEHOLD CHEMICALS
- DISCHARGES FROM DRY CLEANERS, LAUNDROMATS, AND MUNICIPAL CAR WASHES
- DISCHARGES FROM EQUIPMENT WASH PADS
- INDUSTRIAL WASTEWATERS
- SEDIMENT FROM NON-STABILIZED CONSTRUCTION AREAS
- CHLORINATED POOL WATER

ILLICIT DISCHARGE DETECTION AND ELIMINATION

EXAMPLES OF ALLOWABLE NON-STORMWATER DISCHARGES

- DISCHARGES FROM FIREFIGHTING ACTIVITIES
- WATER FROM SPRINGS OR RISING GROUND WATERS
- AIR CONDITIONING CONDENSATE
- IRRIGATION WATER FROM LAWNS AND LANDSCAPING
- WATER INCIDENTAL TO STREET SWEEPING ACTIVITIES
- INDIVIDUAL RESIDENTIAL CAR WASHING
- DISCHARGES COVERED UNDER A SEPARATE NPDES PERMIT

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

DRY WEATHER FLOWS: DISCHARGES OCCURRING DURING DRY WEATHER CONDITIONS

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

COLOR: STORMWATER DISCHARGES SHOULD BE CLEAR AND FREE FROM ABNORMAL COLORATION. ODD COLORS COULD BE SIGNS OF CHEMICALS OR DYES

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

ODOR: STORMWATER RUNOFF SHOULD BE RELATIVELY ODOR FREE. STRONG ODORS COULD BE SIGNS OF CHEMICALS OR WASTE PRODUCTS

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

TURBIDITY: HIGHLY TURBID RUNOFF COULD BE A RESULT OF SEDIMENT DISCHARGING FROM POORLY STABILIZED CONSTRUCTION AREAS

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

FLOATABLES: FOAMS AND SUDS ARE TYPICALLY SIGNS OF SOAPS, SURFACTANTS, OR CHEMICALS

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

STAINING: MAY BE AN INDICATOR OF A CHEMICAL OR WASTE DISCHARGE

ILLICIT DISCHARGE DETECTION AND ELIMINATION

INDICATORS OF AN ILLICIT DISCHARGE

FISH KILL: MAY BE AN INDICATOR OF CHEMICAL OR LARGE NUTRIENT/ORGANIC INPUTS

ILLICIT DISCHARGE DETECTION AND ELIMINATION

HOW TO REPORT AN ILLICIT DISCHARGE

- NDOT'S STORMWATER DIVISION: *775-888-7013*
- NDOT'S STORMWATER MANAGEMENT PROGRAM WEBSITE (*REPORT AN ILLICIT DISCHARGE* WEB PAGE)

  HTTP://WWW.NEVADADOT.COM/STORMWATER/ILLICIT_DISCHARGE_FORM.ASPX
- NDEP'S SPILL REPORTING HOTLINE: 1-888-331-6337
- EPA WEBSITE (*REPORT ENVIRONMENTAL VIOLATIONS* WEB PAGE)

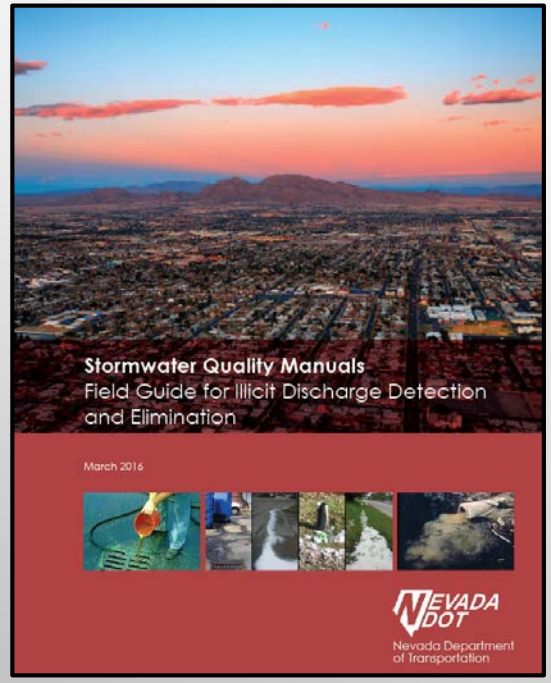
  HTTPS://WWW.EPA.GOV/ENFORCEMENT/REPORT-ENVIRONMENTAL-VIOLATIONS

ILLICIT DISCHARGE DETECTION AND ELIMINATION

TRACKING AND FOLLOW-UP

- ALL ILLICIT DISCHARGE REPORTS ARE FORWARDED TO THE STORMWATER DIVISION'S ENFORCEMENT AND COMPLIANCE GROUP.
  - FIELD INVESTIGATIONS ARE PERFORMED BY THE ENFORCEMENT AND COMPLIANCE GROUP
  - LOCAL GOVERNMENTS AND JURISDICTIONS ARE CONTACTED AS APPROPRIATE
  - ALL INCIDENT RELATED INFORMATION IS LOGGED INTO THE *IDDE DATABASE*
    - DOCUMENTATION AND CONTACT INFORMATION
    - TRACKING AND FOLLOW-UP
    - CORRECTIVE ACTION
  - FILES CREATED TO HOUSE SUPPORTING DOCUMENTATION (E.G. PICTURES, SPILL REPORTS, ETC.)

ILLICIT DISCHARGE DETECTION AND ELIMINATION



RESOURCES

- NDOT - STORMWATER DIVISION
- NDOT - FIELD GUIDE FOR THE DETECTION AND ELIMINATION OF ILLICIT DISCHARGES
- NDOT - STORMWATER MANAGEMENT PROGRAM WEBSITE

  HTTP://WWW.NEVADADOT.COM/STORMWATER/STORMWATER_MANAGEMENT_PROGRAM.ASPX
- EPA - STORMWATER DISCHARGES FROM MUNICIPAL SOURCES WEBSITE

  HTTPS://WWW.EPA.GOV/NPDES/STORMWATER-DISCHARGES-MUNICIPAL-SOURCES#ILLICITDISCHARGE

REVIEW QUESTION

WHAT IS AN ILLICIT DISCHARGE?

BASICALLY ANY DISCHARGE INTO THE STORM DRAIN SYSTEM THAT IS NOT ENTIRELY COMPRISED OF PRECIPITATION OR SNOWMELT RUNOFF

REVIEW QUESTION

WHAT ARE SOME KEY INDICATORS OF AN ILLICIT DISCHARGE?

- DRY WEATHER FLOWS
- ODD COLORATION
- STRONG ODORS
- TURBIDITY
- FLOATABLES
- STAINING
- FISH KILL

REVIEW QUESTION

WHAT IS NDOT'S PRIMARY IDDE GUIDANCE DOCUMENT?

NDOT'S FIELD GUIDE FOR THE DETECTION AND ELIMINATION OF ILLICIT DISCHARGES

FINAL EXAM

- 50 QUESTIONS
- SCORE OF 80% OR BETTER IS CONSIDERED PASSING
- OPEN BOOK