PHASE II NPDES STORMWATER PERMIT APPLICATION AND STORMWATER MANAGEMENT PROGRAM

Prepared for:

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EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency has published final regulations for Phase II Stormwater Permitting (40 CFR parts 122 and 123) after signing on October 29, 1999. Included in the Federal Register is a listing of municipalities, including the City of Florence, which will be required to comply with the regulations. A list of effected cities is attached in the appendix. Based on the current time schedule for implementation, the City will be expected to file its permit application with the Alabama Department of Environmental Management, on or before March 10, 2003. The permit application will give direction for the City's compliance efforts for a period of up to five years following issuance, at which time permit renewal will be required. The application for a general permit includes the NOI and the Stormwater Management Program. To address the Phase II regulations, the City of Florence has prepared this document to address the proposed regulatory requirements. The requirements include six minimum control measures designed to deal with municipal stormwater management:

1) Public Education and Outreach on Stormwater Impacts,

2) Public Involvement and Participation,

3) Illicit Discharge Detection and Elimination,

4) Construction Site Stormwater Runoff Control,

5) Post-Construction Stormwater Management in New Development and Redevelopment

6) Pollution Prevention and Good Housekeeping for Municipal Operations.

This document contains "mandatory components" that must be addressed.

There are a few "suggested components" that are deemed desirable by the USEPA and would require voluntary actions on the part of the City. These six minimum control measures are final for the present time, but may be modified by the Federal Government or the State permitting authority in the future.

The regulations also specify requirements for record keeping, and for allowing citizen access to records. Annual reporting must be filed with the State, documenting efforts in stormwater management related to the six minimum control measures and other permitting requirements during the first five years of the permit. Reports will be due in the second and fourth year of the first 5 years, and subsequent, five-year permit renewal periods. A management system will be developed for stormwater activities to facilitate completion of required reports.

This document was developed for the City by comparing mandatory components with existing and planned City stormwater activities. The results of this comparison were used to develop a listing of needed activities that will be considered by the City.

The City has made some progress in developing the stormwater management program. These include topographic mapping of the City, encouragement for developers to include erosion control measures in their plans, and other stormwater management actions that are either already in place or planned for implementation in the near future. These actions indicate the City already has or will have some of the mandatory components in operation prior to the permitting deadline of March 10, 2003. It should be noted that these mandatory components are not required to be implemented by the date of permit application, but during the first 5-year permit cycle. However, the State has not specified when these will be required during this cycle.

INTRODUCTION

The City of Florence entered into an agreement with White, Lynn, Collins and Associates, Inc. (WLC) to develop a Phase II Stormwater Permit. A part of this permit is A Stormwater Management Program. This program is to address issues of concern raised by *National Pollutant Discharge Elimination System (NPDES) Proposed Regulations for Revision of the Water Pollution Control Program Addressing Stormwater Discharges*. The proposed regulations, generally referred to as Phase II Stormwater Permitting Requirements, were initially published as 40 CFR Parts 122 and 123 in the Federal Register on January 9, 1998.

The purpose of this program is to provide minimum Stormwater Runoff control measures that can be enforced by Subdivision Regulations and Building Codes. The program also serves as a logical basis for recording detailed information that may be required to support the City's NPDES Phase II Permit process.

REGULATION OF STORMWATER COLLECTION SYSTEMS IN THE UNITED STATES

Municipal stormwater collection systems suffer the discharge of many substances as well as water. As stormwater flows over pavements, lawns, driveways, parking lots and industrial sites, it often picks up pollutants, such as oil and grease, fertilizers, pesticides, and metals. Erosion and sediment from active construction sites discharges into storm drainage systems unless there is adequate prevention.

Private discharges from residential areas may contribute to stormwater pollution by improper disposal of lawn clippings, leaves, used oil and household chemicals as well as improper use of pesticides. Industrial and commercial facilities may discharge pollutants into stormwater collection systems through cross-connections of storm drains and sanitary sewers. Floor drains are sometimes connected directly into the storm drainage system. Because of the pollution resulting from these sources, the federal government has created the National Stormwater Program for regulating stormwater discharges throughout the United States. This program and its effects on state and local government agencies and those involved in industrial and construction activities is addressed in this application.

CURRENT EXTENT OF THE NATIONAL STORMWATER PROGRAM

The National Stormwater Program originated with the federal government and is directed by the U.S. Environmental Protection Agency (EPA). The voluntary cooperation of authorized states and mandatory participation of many local government agencies will be required to implement a successful program. The program is being implemented in two major phases, with effective dates of October 1992 and March 2003, respectively. The first phase includes discharges associated with industrial activity (including construction activity) and discharges from all public stormwater collection systems serving urban populations of 100,000 or more. The second phase includes all other public stormwater collection systems within urbanized areas plus other small public stormwater collection systems meeting EPA or state criteria for designation.

Outside urbanized areas, all stormwater collection systems serving a population center of at least 10,000 people with a population density of at least 1,000 people per square mile are included in the National Stormwater Program after the full implementation of Phase II. Within urbanized areas, almost all stormwater collection systems, as well as those serving a population of fewer than 10,000 people, are included in the program.

The second phase of the National Stormwater Program also reduces the minimum size of construction projects requiring permit coverage. Whereas the minimum amount of soil disturbance that would trigger a permit requirement under Phase I was 5 acres, this minimum has been reduced to 1 acre in Phase II, for most cases.

The EPA has the authority to require stormwater discharge permits from any discharge that contributes to a violation of a water quality standard or that contributes a substantial load of pollutants to the waters of the United States. The EPA could exercise this authority to extend the National Stormwater Program as needed in the future.

Return flows from irrigated agriculture, agricultural stormwater runoff, and discharges from non-point silvicultural activities are exempt from *National Pollutant Discharge Elimination Systems* (NPDES permit requirements (40 Code of Federal Regulation (CFR) 122.2; 40 CFR 122.3 (e) and (f).

LEGAL BASIS FOR STORMWATER REGULATIONS

The EPA developed the National Stormwater Program in response to legislation passed by Congress. The most important item of legislation was the *Federal Clean Water Act of 1972* (CWA) (Public Law 92-500), which established the NPDES. The CWA has been amended several times. One important set of amendments was the *Water Quality Act of 1987* (Public Law 100-4) that established the phased approach for stormwater discharge regulation in the United States.

The CWA has been setting the direction of water pollution control in the United States since 1972. The CWA is built on the premise that no one has a right to pollute the waters of the United States. Anyone wishing to discharge pollutants must obtain a permit to do so, and the permit must limit the composition of the discharge and the concentrations of the pollutants in it. Some permit conditions require specified levels of control based on a consideration of technology and cost, regardless of the receiving water's ability to purify itself naturally. However, tighter limits may be imposed, if necessary, to preserve or restore the quality of the water body that receives the discharge.

THE ROLE OF STATE GOVERNMENTS IN STORMWATER PERMITTING

The CWA allows states to request EPA authorization to administer the NPDES program within their borders. The EPA must approve a state's request to operate the permit program once the EPA determines that the state has adequate legal authorities,

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procedures, and the ability to administer the program. The EPA is also obligated to adopt standard requirements for state NPDES programs, including guidelines on monitoring, reporting, enforcement, personnel, and funding, and to develop uniform national forms for use by both EPA and approved states. At all times following authorization, state NPDES programs must be consistent with minimum federal requirements, although the programs may always be more stringent.

At present, most states have chosen to assume at least some stormwater permitting authority. Within these authorized states, all permit submissions are made to the state agency that administers and enforces the stormwater program. In non-authorized states, the appropriate EPA regional office is responsible for permitting and permit enforcement.

All states are required to develop water quality standards for waters of the United States within their boundaries. States are required to review their water quality standards at least once every 3 years and, if appropriate, revise or adopt new standards. The minimum elements that must be included in a state's water quality standards include the use designation for all water bodies in the state, water quality criteria sufficient to protect those use designations, and an anti-degradation policy consistent with EPA's water quality standards (40 CFR 131.6)

ROLE OF LOCAL GOVERNMENTS IN STORMWATER REGULATION

The role of local governments in the National Stormwater Program has become very significant. As stated previously, the first phase of the program involved only municipal entities serving urban populations of 100,000 or more. The total number of Phase I municipal permits is fewer than 300. However, Phase II requires several thousand additional municipal permits to be issued. Many of the Phase II municipal dischargers are small government agencies with limited technical resources.

Municipal dischargers have a very broad set of requirements under the National Stormwater Program. <u>First</u>, they are responsible for obtaining permit coverage for the discharges from their own stormwater collection system, and in meeting various requirements regarding the operation and overseeing that system. <u>Second</u>, they are responsible for obtaining permit coverage for any industrial facilities or construction sites that they own. **Finally**, they are also responsible for recordkeeping, inspection, and enforcement of stormwater permit requirements for construction activities and certain types of industrial operations within their jurisdiction.

The two primary types of public stormwater collection systems in the United States are separate systems and combined systems. Most cities use separate systems which are designed to carry only stormwater runoff and other wet weather flows. However, over 30 of the oldest cities in the United State rely on *Combined Sewer Systems* (CSS). A CSS carries sanitary sewage under dry weather conditions, but is surcharged with runoff under storm conditions.

TECHNOLOGY-BASED REQUIREMENTS OF STORMWATER DISCHARGE PERMITS

Stormwater permits are intended to achieve improvements in water quality by reducing or eliminating pollutant loadings from stormwater sources. The exact requirements for attaining this goal depend upon the type of permit, the type of discharge, and the characteristics of the body of water that receives the discharge.

Technology-based requirements represent the minimum level of control that must be imposed by an NPDES permit. The *best conventional technology* (BCT) standard applies to the control of conventional pollutants, while the *best available technology* (BAT) standard applies to the control of all toxic pollutants and all pollutants that are neither toxic nor conventional pollutants. BCT and BAT standards are generally applied to stormwater discharges associated with industrial or construction activity. These requirements are met by the development and implementation of *Best Management Practices* (BMPs) and pollution prevention measures as a part of a stormwater pollution prevention plan for the industrial facility or construction site.

Two technology-based standards have been established for discharges from public stormwater collection systems. The first standard provides that municipal permits must contain a requirement to effectively prohibit illicit non-stormwater discharges into the system. The other standard requires that permits for discharges from public stormwater collection systems reduce

the discharge of pollutants to the *maximum extent practicable* (MEP), including management practices, control techniques, system design and engineering methods.

STORMWATER DISCHARGE PERMITS AND STATE WATER QUALITY STANDARDS

In addition to technology based controls, *NPDES permits* must include any conditions more stringent than technology based controls necessary to meet state water quality standards. *Water quality standards* establish the "goals for a water body". The CWA states the national goal of achieving "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and…recreation in and on the water," wherever attainable. These national goals are commonly referred to as the fishable/swimmable goals of the CWA. The EPA requires that water quality standards provide for fishable/swimmable uses, unless those uses have been shown to be unattainable.

Scientific studies are performed to establish the *Total Maximum Daily Load* (TMDL) of a particular pollutant that is allowable without violation of the water quality standard. If TMDL studies indicate that too much of a particular pollutant is entering the stream system, then any discharge permit within that stream system may be subject to revision in order to lower the pollutant levels to the TMDL value.

MUNICIPAL STORMWATER DISCHARGE PERMIT REQUIREMENTS

The EPA has identified six minimum control measures that are always necessary for municipal stormwater dischargers to comply with the statutory requirements of eliminating illicit non-stormwater discharges and reducing pollutant loading to the maximum extent possible:

- 1. Public education and outreach on stormwater impacts
- 2. Public involvement and participation
- 3. Illicit discharge detection and elimination
- 4. Construction site stormwater runoff control
- 5. Post-construction stormwater management in areas of new development and re-development
- 6. Pollution prevention and good housekeeping for municipal operations

Additional requirements are often imposed for larger systems. These include spill prevention and response, monitoring of wet weather flows and dry weather flows, and special inspection and enforcement requirements for high-risk industrial dischargers that contribute flows to the public drainage system.

Judgement is required in order to determine the best combination of control measures for a particular municipal stormwater collection system. The selection of control measures should consider such factors as the conditions of receiving waters, specific local concerns, and other aspects included in a comprehensive watershed plan. Various municipal entities may choose to cooperate in the development and implementation of the minimum control measures.

Types of Permits Required for Municipal Dischargers Separate types of stormwater discharge permits are used for municipal stormwater discharges, for *construction stormwater discharges*, and for *industrial stormwater discharges*.

Therefore, industrial facilities or construction sites that discharge into the Florence municipal separate storm sewer system are still required to obtain EPA or state permit coverage for the facility's discharge. This is true even if the industrial facility or construction site is operated by the same agency that operated the public drainage system. Therefore, many local and state government agencies should obtain two or three different types of stormwater discharge permits: one for the public drainage system as a whole, and separate permits for each industrial facility and construction site operated by the city. If Florence initiates a construction project which disturbs more than one acre, a general permit from ADEM will be required.

PUBLIC EDUCATION ABOUT MUNICIPAL STORMWATER DISCHARGES

Public education is essential to the success of a municipal stormwater pollution control effort because the actions of the public are important in determining the level of pollutants present in stormwater discharges. The public can reduce pollutant discharges by properly maintaining septic systems to reduce overflows and other discharges, by using lawn and garden chemicals sparingly and carefully, and by properly disposing of used motor oil and household hazardous wastes. However, the public generally will not be sufficiently informed or motivated to carry out these actions without public education and outreach efforts.

1. PUBLIC EDUCATION & OUTREACH

The Florence outreach program will include distribution of literature which will inform citizens as to the concerns with stormwater pollution and will encourage them to, in some way, participate in helping to keep our waters clean.

Brochures will be prepared and delivered to all city schools. These brochures will relate to students at varying age levels. Other brochures will be mailed to each home, business and industry in the city limits.

Social entities such as Boy Scouts, Girl Scouts, school clubs, etc., will be encouraged to participate in activities such as curb stenciling. Stenciling actually labels the stormwater structures in an effort to remind people to keep pollutants out of the drainage system.

Contractors will be encouraged to be especially aware of the contamination caused by erosion of construction site soil and by fuel spills.

Billboards may be used occasionally to help remind citizens of the need for protecting the environment.

2. PUBLIC INVOLVEMENT AND PARTICIPATION

An effort to clean up and protect the environment will be of little value if the public does not participate.

The City of Florence will encourage citizens to form private groups who will be watching for pollution sources and will notify the city's inspection team. The matter can then be addressed by the proper personnel.

These people will be encouraged to offer suggestions to the city as to ways in which pollution can be reduced.

ALLOWABLE NON-STORMWATER DISCHARGES

Municipal stormwater management plans must consider non-stormwater discharges. There are two basic categories of non-stormwater discharges: allowable and illicit. Allowable non-stormwater discharges may be mixed with stormwater and discharged without creating a permit violation.

Some types of non-stormwater discharges are relatively innocuous and could be allowable unless they contribute substantial quantities of pollutants. The following non-stormwater discharges are classified as allowable under the EPA's final rules for Phase 2 of the National Stormwater Program:

- □ Water line flushing
- □ Landscape irrigation
- Diverted stream flows
- Rising groundwater
- Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005 (20) to separate storm sewers
- □ Uncontaminated pumped groundwater
- Discharges from potable water sources
- **G** Foundation drains
- □ Air-conditioning condensation
- □ Irrigation water
- □ Springs
- □ Water from crawl space pumps
- □ Footing drains
- □ Lawn watering
- □ Individual residential car washing
- **□** Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- □ Street wash water
- Discharges or flows from fire fighting

The fact that these discharges are "allowable" does not imply that any pollutants present in these discharges may be disregarded. As noted previously, every discharger is obligated to reduce pollutant discharges to the maximum extent practicable. Therefore, all practicable means should be employed to reduce the pollutant levels in allowable stormwater discharges.

3. ILLICIT NON-STORMWATER DISCHARGES AND ELIMINATION

Illicit discharges include all discharges of potential pollutants to waters of the United States that are not covered by a currently effective NPDES permit. Illicit discharges are not necessarily harmful: the term describes the legal status of the discharge, not the quality or quantity.

Illicit discharges enter the system through either connections (e.g. wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g. infiltration into the storm drain system or spills collected by drain inlets).

One of the statutory requirements of the federal *Water Quality Act of 1987* is the elimination of illicit discharges from municipal separate storm sewer systems. Three major steps are generally required to deal successfully with illicit non-stormwater discharges.

(1) Proper management of the stormwater system will require maps of the city which will reflect surveys of the existing stormwater system. Major discharges will be located and mapped. These structures will then be monitored and addressed if pollution is observed coming from them. Industrial and commercial sites will be mapped and observed also.

Any verified pollution will be brought to the attention of the of the related property owner with requirements to clean up their site. (2) An ordinance will be passed by the city prohibiting illicit discharges. Each industry will be notified as to their responsibilities in properly disposing of waste.

The legal prohibition of such discharges will be executed to the full extent of available government authority. The city will pass on ordinance prohibiting illicit discharges.

(3) Informing key individuals about their responsibilities to properly dispose of wastes. These key individuals may include public employees, business owners and managers, and the general public. This will be achieved by using mail-outs, billboards and newspaper advertisement.

4. MUNICIPAL PERMIT REQUIREMENTS FOR CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Construction sites can pose special problems for municipal stormwater collection systems. In a short time, stormwater discharges from construction site activity can contribute more pollutants, including sediment, to a receiving stream than had been deposited over several decades. Stormwater runoff from construction sites can include pollutants other than sediment, such as phosphorus and nitrogen from fertilizer, pesticides, petroleum derivatives, construction chemicals and solid wastes that may become mobilized when land surfaces are disturbed.

Municipal stormwater discharge permits generally require that the municipal entity exercise some controls over stormwater discharges from construction sites within their jurisdiction. In Florence, these construction sites will be subject to the requirements of the ADEM stormwater discharge permit. Therefore, the responsibility of Florence is nothing more than ensuring that the construction operator is abiding by the terms of the stormwater discharge permit issued by the state or the EPA. Because of the difficulty in managing the bookkeeping, inspection, and enforcement activities required in connection with construction sites, Florence will implement a stormwater management plan that includes, at a minimum:

- Requirements for construction site owners or operators to implement appropriate BMPs, such as silt fences, temporary detention ponds, and hay bales
- D Provisions for pre-construction review of site management plans
- Procedures for receipt and consideration of information provided by the public
- **D** Regular inspections during construction
- Penalties to ensure compliance

The Appendix contains the excerpt from the subdivision regulations and building codes which address the 5 items.

Construction activities produce many different kinds of pollutants that may cause stormwater contamination problems. Grading activities remove grass, rocks, pavement, and other protective ground covers, resulting in the exposure of underlying soil to the elements. Because the soil surface is unprotected, soil and sand particles are easily picked up by wind and/or washed away by rain or snowmelt. The water carrying these particles eventually reaches a stream, river, or a lake where the water slows down, allowing the particles to fall onto the bottom of the streambed or lake. Gradually, layers of these clays and silt build up in the stream beds, choking the river and stream channels and covering the areas where fish spawn and plants grow. These particles also cloud waters, causing aquatic respiration problems, and can kill fish and plants growing in the river stream.

Sediment runoff rates from construction sites are typically 10 to 20 times those of agricultural lands and 1,000 to 2,000 times those of forest lands. Even a small amount of construction may have a significant negative impact on water quality in localized areas. Over a short time, construction sites can contribute more sediment to streams than was deposited previously over several decades.

In addition, the construction of buildings and roads may require the use of toxic or hazardous materials such as petroleum products, pesticides, fertilizers, and herbicides, and building materials, such as asphalt, sealants, and concrete, which may pollute stormwater running off the construction site. These materials can be toxic to aquatic organism and can degrade water for drinking and water contact recreational purposes.

Florence will require strict adherence to erosion control methods outlined in this permit package.

5. POST CONSTRUCTION MANAGEMENT

After construction has been completed, erosion can still occur until substantial grass has been established. Until there is substantial grass cover and erosion is under control, sedimentation ponds or depressions may be required. Vegetated swales such as sodded ditch bottoms rip rap may be employed to prevent erosion where water flow is concentrated.

Construction material and waste materials stored on site must be kept in a manner so as to prevent pollution from liquids or solid waste. Liquids such as fuel and oil must be stored within a properly designed spill prevention control and counter measure system. Any repairs that are needed shall be made prior to the next rain event.

6. MUNICIPAL OPERATION AND STORMWATER QUALITY

Municipal operations are included in the municipal stormwater management program. Their operations will include an effective operation and maintenance program, and adequate training for municipal employees and contractors, to prevent or reduce pollutant runoff from municipal operations. The plan will include at least the following elements:

- Maintenance activities, maintenance schedules, and long-term inspection procedures for structural and other stormwater controls. This will include runoff from city maintenance facilities including vehicle wash down areas and fuel storage areas.
- Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, and waste transfer stations, including programs that promote recycling. The city will promote the removal of solid waste from streets and storm sewers.
- □ Programs to promote the minimal use of pesticides
- Procedures for the proper disposal of waste removed from the separate storm sewer systems and related areas, including dredge spoil, accumulated sediments, floatables, and other debris
- Methods of ensuring that new flood management projects assess the impacts on water quality and examine existing projects for incorporation of additional water quality protection devices or practice

The regulations for municipal operations is in the Appendix. The program will include local government employee training addressing these prevention measures in government operations, such as park, golf course, and openspace maintenance; fleet maintenance; and planning, building oversight, and stormwater system maintenance.

In areas where salt is used, reduced application or alternative agents, consistent with the need for safety, will reduce pollution of area water bodies. Storage facilities can be constructed or modified to prevent salt exposure to rainfall. Additional street sweeping should be scheduled after periods of freezing weather in order to remove road salt and sand from bridges and roadways as soon as feasible.

Meetings will be held with department heads concerning these rules. Department heads will then relate the information to their employees. Posters will be placed around municipal facilities as reminders.

MANAGEMENT IN AREAS OF NEW DEVELOPMENT AND REDEVELOPMENT

This permit requires that some form of structural BMPs be applied to new development or redevelopment. These structural BMPs may include storage practices (wet ponds and extended-detention outlet structures), filtration practices (grassed swales, and filters, and filter strips), and infiltration practices (infiltration basins, infiltration trenches, and porous pavement) siltation ponds, silt fences, hay bales, etc. Because of constant improvements in these types of control measures, Florence will allow flexibility in the requirements for implementation of these BMPs.

Not all BMPs for control of pollutant discharges from new construction and redevelopment are necessarily structural BMPs. Nonstructural BMPs may also be incorporated. These may include requirements to limit growth to identified areas, protect sensitive areas such as wetlands and riparian areas, minimize imperviousness, maintain open space, and minimize disturbance of soils and vegetation.

One of the major obstacles to the implementation of long-term stormwater pollution control measures in developed areas has been the lack of an effective method of ensuring the adequate long-term operation and maintenance of BMPs. The EPA has announced its intention to develop and publish guidelines in this area (63 FR 01735.

The primary guideline for the selection of stormwater pollution control measures for new development and redevelopment is that the water quality effects of the development should not be significantly different from the water quality effects of the same site before development. Developers will be required to provide stream samples and test results at designated points on or adjacent to the construction site preferably during a rain event.

CONSTRUCTION ACTIVITIES REQUIRING STORMWATER PERMIT COVERAGE

Under Phase I of the National Stormwater Program (beginning in 1992), the EPA regulates stormwater discharges from construction sites, including clearing, grading, and excavation activities, if the disturbed land area is 5 acres or more. Construction sites with disturbed areas of fewer than 5 acres may also be regulated, if they are part of a "larger common plan of development or sale."

Under Phase II of the National Stormwater Program (beginning in 2003), the EPA will regulate stormwater discharges from construction sites, if the disturbed land area is 1 acre or more.

Regulated construction activities may include road building; construction of residential houses, office buildings, or industrial buildings; demolition; and other activities. The key factor is the surface area of disturbed soil. At a demolition site, disturbed areas might include where building materials, demolition equipment, or disturbed soil is situated, which may alter the surface of land (EPA, 1993).

All sites 1 acre and larger are to be permitted prior to construction start up.

AVOIDING CONSTRUCTION STORMWATER PERMIT REQUIREMENTS

Stormwater discharge permits are not required for construction sites under 1 acre if there is not significant risk of erosion during period of construction. Research by the US Department of Agriculture has established a relationship between rainfall characteristics and erosion potential. The "*rainfall erosivity factor*," or R-value, has been developed, The R-value reflects the total amount of kinetic energy available in rainfall. Therefore, the R-value increases with the average annual rainfall. However, it also increases for areas in which the average raindrop size and speed increase. In many locations, rainfall erosivity is highly seasonal. In the North Alabama area, this is not a factor as the soils usually are not permeable enough to prevent significant run off.

INDUSTRIAL AND CONSTRUCTION PERMIT COVERAGE

If a construction activity is undertaken at an industrial facility that already holds a permit for industrial stormwater discharges, a separate permit must be obtained for the construction activity (unless the construction activity falls below the minimum acreage requirement). Maintenance activities for flood control channels or roadside ditches (such as removal of vegetation) require stormwater discharge permit coverage if they involve grading, clearing, or excavation activities that exceed the minimum acreage cutoff, either individually or as part of a long-term maintenance plan (EPA, 1993).

TYPES OF CONSTRUCTION PERMITS AVAILABLE

In Alabama, two types of NPDES permits are available for stormwater discharges from construction sites: an individual permit and a general permit. An individual permit is specifically developed for only one discharger at one location. A general permit is developed for an entire class of dischargers at many locations. Most traditional NPDES permits have been individual permits. The EPA has used general permits as a tool to accommodate the large number of dischargers included in the National Stormwater Program.

Most general permits require the submission of a Notice of Intent (NOI), which states the permittee's desire to discharge according to the terms and provisions of the general permit. Florence will comply with the provisions of the general permit by preparing and maintaining a *stormwater management program*.

Almost all construction activities that require NPDES permit coverage for stormwater discharges can be covered under a general permit. However, the EPA or state government administering the NPDES permit program has the right to require that a construction project submit an application for an individual permit under certain conditions. General permit coverage will be unavailable for projects that have adverse effects on endangered species or on historic properties. Individual permits will be required.

IDENTIFYING THE OPERATOR OF A CONSTRUCTION FACILITY

The "operator" of a discharge of stormwater associated with construction activity is required to obtain coverage under an NPDES permit. Therefore, it is important to understand that EPA defines *operator* to mean any party associated with a construction project that meets either of the following two criteria:

- 1. Anyone who has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications, is an operator. Since the owner of the site generally has the ability to change the construction specifications, this definition tends to include the owner. This definition does not include government agencies or other organizations that develop or enforce building codes or other common design standards. In general, the owner is considered to be the party that owns the structure being built, but not necessarily the land on which the construction is occurring.
- 2. Anyone who has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other permit conditions. Since the general contractor usually maintains day-to-day control of the site activities, this definition tends to include the general contractor. Sub-contractors and utility service companies and their subcontractors are not generally required to obtain stormwater permit coverage because they do not generally have enough operational control of site activities.

Most construction projects are covered by a general permit. The operators of the permit (for a particular construction site) are the project owner and the general contractor, and these operators are "co-permittees" who share permit obligations, at least in the view of the EPA. Florence hereby names the owner of the development as the operator. The land owner is not an operator unless he is the developer of the site. However, an owner can avoid permit requirements only by negotiating a "turnkey design-build" contract in which the general contractor develops and implements all design features and specifications. In such a project, the owner must effectively give up all operational control over site plans and specifications, including the ability to

modify the plans and specifications during construction. However, most owners are involved in the construction process, at least to a certain extent. The involvement may be minimal, consisting of occasional site visits and review of submissions from the general contractor.

THE "COMMON PLAN OF DEVELOPMENT OR SALE"

For sites disturbing fewer than 1 acre, the first two steps in deciding whether a permit is needed for stormwater discharges associated with construction activity are to determine the following:

- Is there a "common plan of development or sale" tying individual sites together? For example, if the lots are part of a subdivision plat filed with the planning Commission or Building Department, then this would be a "common plan."
- 2. Will the total area disturbed by all the individual sites (including the cumulative total disturbance necessary to completely build out the subdivision) come to 1 acre or more?

If the answer to both questions is no, a stormwater discharge permit is not needed unless the EPA determines that discharges contribute to a violation of water quality standards or are a significant contributor of pollutants to waters of the United States and specifically requests a permit application.

The plan in a common plan of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) for physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that construction activities may occur on a specific plot.

FUTURE CONSTRUCTION

Once a residence or commercial building has been completed and occupied by the owner (or tenant), future activities by the owner on the individual's property are not considered part of the original common plan of development. For example, after a home is occupied by the homeowner or tenant, future construction activity on that particularly lot is considered a new and distinct project and is compared to applicable disturbed area limits for permit applicability.

SUPPORT ACTIVITIES AT OFF-SITE AREAS

Off-site areas are commonly used for storage of fill material or soil excavated from the construction site, borrow areas to obtain fill material, storage of building materials, or storage of construction equipment. Where activities at off-site locations would not exist without the construction project, discharges of pollutants in stormwater from these areas must be controlled. The pollution prevention plan for the construction project must include controls for all temporary off-site areas directly supporting the construction project whether they are adjacent or not. For instance, a borrow pit used generally by the public should have its own permit. A borrow area disturbed for a single project would be included in the project permit.

NOTICE OF INTENT (NOI) SUBMISSION REQUIREMENTS

The EPA required that the *notice of intent* (NOI) be postmarked at least 2 days before permit coverage is required. Only one NOI is required to cover all the activities of one operator on any one common plan of development or sale.

Prior to the NOI form being submitted, the SWPP will be completed to ensure that appropriate controls to meet *Endangered Species Act* (ESA) and *National Historic Preservation Act* (NHPA) certification requirements are in place, if needed, to avoid or mitigate adverse effects to listed endangered or threatened species, critical habitat, or historic properties.

AUTHORIZED SIGNATORIES OF CERTIFICATION FORMS

The NOI and most other forms used in the National Stormwater Program have specific requirements concerning the requirements for the person signing the form.

In general, the person signing the NOI must have a sufficient level of authority and responsibility within the organization to help ensure compliance with the terms and conditions of the permit. For a sole proprietorship, the proprietor must sign the NOI. For a partnership, a general partner must sign.

For a corporation, the person signing the NOI must be a responsible corporate officer, which includes the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function or any other person who performs similar policy-or decision-making functions for the corporation.

A corporate plant or facility manager may sign the NOI only under certain conditions. The plant or facility must employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars). In addition, the authority to sign documents must have been assigned or delegated to the plant or facility manager in accordance with corporate procedures.

For a municipality, state, federal, or other public agency, the person signing the NOI must be a principal executive officer or ranking elected official. The designated person must be authorized by the City Council and must be someone who is generally reachable by phone.

ENDANGERED SPECIES ACT (ESA) REQUIREMENTS

The EPA is required to comply with the *Endangered Species Act* (ESA) of 1966. Part of the EPA's obligations under the ESA is to consider the effects of any permits that are issued by the EPA on endangered or threatened species (known as listed

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species) and their critical habitat. This type of consideration must be done on a site-specific basis. Therefore, anyone who applies for coverage of a stormwater discharge under the EPA construction general permit must supply the EPA with site-specific information that will provide some assurance that the possible effects of the discharge on listed species and their critical habitat have been adequately considered. Impacts to listed species and critical habitat can occur from development and construction even on fully developed sites. Often, the impacts occur at the point of discharge into surface waters.

In cooperation with the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), the EPA has developed a six-step procedure for addressing the possible effects of a construction project on listed species and their critical habitat:

- 1. Is the construction site within a critical habitat area?
- 2. Are there listed species in the project county or counties?
- 3. Are listed species present in the project area?
- 4. Are listed species or critical habitat likely to be adversely affected?
- 5. Can adverse effects be avoided?
- 6. Can the proposed project meet minimum eligibility requirements?

The assistance of a qualified biologist is often essential in order to properly deal with these issues. The permittee is required to submit their information with his permit application.

There is the possibility that several operators may apply for and receive permit coverage for stormwater discharges from the same construction project. In this case, the first operator (often the owner, developer, or general contractor) may have performed all the work necessary to allow ESA certification of all the stormwater discharges from the entire project, even those stormwater discharges that are under the authority of a different operator later in the construction process. If this is the case, then the later operator may achieve ESA certification by simply agreeing to comply with any measures or controls upon which the initial operator's certification was based. However, the initial operator's certification must apply to the later operator's project area and must address the effects from the stormwater discharges and stormwater discharge-related activities on listed species and critical habitat.

Later applicants or permittees may be liable for inadequacies or falsehoods in that certification. Thus, it is important for those applicants who choose to rely on another operator's certification to carefully review that certification and its SWPPP for accuracy and completeness.

MAPS

The property developers will submit as a part of their BMP, a map complete with drainage patterns, slopes, areas of disturbance, location of erosion control, material storage, borrow areas, surface waters, wetlands and discharge points. The location of the site will be clearly understood from the map information.

EROSION AND SEDIMENT CONTROLS

Erosion and sediment controls must include interim and permanent stabilization practices including temporary vegetation, permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, and preservation of mature vegetation. In each case, the selected stabilization practices should be described along with the reasons for selection.

Structural practices are used to divert flows from exposed soils and to recapture a portion of the sediment carried by runoff. These practices include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe, slope drains, level spreaders, storm drain inlet protection and outlet protection, reinforced soil retaining systems, and temporary or permanent sediment basins.

INSPECTIONS

Inspections are crucial to stormwater compliance and it is very important to perform all inspections on schedule and maintain full, written records of the inspection and all follow-up actions. Inspections are required every 14 calendar days and within 24 hours of .5 in or greater rainfall. Inspections should include all the following areas:

- Disturbed areas and storage areas exposed to precipitation
- Sediment and erosion controls
- Discharge points (looking for visible signs of erosion and impact to receiving waters)
- Entrances and exits (looking for evidence of off-site sediment tracking)
 After each inspection, the SWPPP should be modified as necessary, including the following information on the inspection form.
- **D** Date of inspection and major observations
- □ Location of any discharge off-site
- **D** Location of BMPs that need maintenance
- **D** Location of BMPs that failed to work
- □ Location where new BMPs are needed
- Certification of compliance or non-compliance
- □ Inspector's signature

Florence will employee a person to be responsible for all inspecting, reports and reporting.

CONSTRUCTION PERMIT NOTICE OF TERMINATION

In most states, a permittee must submit a *Notice of Termination* (NOT) form after project completion. The NOT certifies that specific activities in the SWPPP have ended and either (1) final stabilization is complete, and temporary erosion and sediment controls have been removed from this operator's portion of the site, or (2) the operator has changed, and the new operator is responsible for compliance in all portions of the project area that had been the responsibility of the earlier operator. The new operator is responsible for submitting an NOI if activities continue.

Final stabilization occurs when all soil-disturbing activities at the site have been completed and a uniform, evenly distributed, without large bare areas, perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures. As an alternative, equivalent permanent stabilization measures (such as the use of rip rap, gabions, or geotextiles) may be employed.

STORMWATER ASSOCIATED WITH INDUSTRIAL ACTIVITY

For industrial stormwater discharge permits, only stormwater discharges associated with industrial activity are required to have permits. The definition of this term is lengthy and detailed. It includes "the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant." The term does not include discharge from facilities or activities excluded from the NPDES program" (40 CFR 122.26(b)(14).

The EPA definition also provides several examples of industrial activity: the term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility: material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater (40 CFR 122.26(b)(14). One important aspect of the EPA definition is the exclusion of stormwater discharges from those portions of the industrial facility that are not actively involved in industrial activities; the term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots, as long as the drainage from the excluded areas is not mixed with stormwater drained from the above-described areas (40 CFE 133.36(b)(14). In addition, off-site stockpiles of final product from an industrial facility do not require permit coverage because they are not located at the site of the industrial facility (EPA, 1992).

Areas associated with industrial activity do not include commercial or retail facilities. This is an important distinction; in some cases (such as construction), the EPA has chosen to regulate only those activities that are significant enough to be inherently industrial in nature.

INDUSTRIES REQUIRED TO OBTAIN NPDES STORMWATER DISCHARGE PERMIT COVERAGE

The EPA requires stormwater discharge permits only for specific types of industrial activities. The activities requiring permits are defined in two ways; by a narrative description or by a Standard Industrial Classification (SIC) code. SIC codes are standard numeric codes assigned to each type of industrial process in the United States by the President's Office of Management and Budget (Office of Management and Budget, 1987).

There is an important distinction between these two types of categories; industrial sites identified by a SIC code are required to obtain permit coverage only if the primary site activity is within the SIC codes listed. If the listed activity is not the primary site activity, it is considered an auxiliary activity, which does not require permit coverage. For categories defined by a narrative description, however, a permit is required if any of the described activity occurs on-site. Therefore, the narrative categories are more inclusive.

Seven categories of industrial activity are defined by narrative description:

- 1. Subchapter N industries
- 2. Hazardous waste treatment, storage, or disposal facilities
- 3. Landfills
- 4. Power generation facilities
- 5. Sewerage treatment plants
- 6. Construction activities
- 7. Water quality violators or significant polluters

There are five main categories of industrial activity defined by SIC codes:

- 1. Heavy manufacturing
- 2. Light manufacturing
- 3. Mining
- 4. Recyclers
- 5. Industrial transportation

SUBCHAPTER INDUSTRIES

Subchapter N of Title 40 of the CFR includes all the effluent guidelines and standards for various types of industrial facilities. Subchapter N contains 40 CFR sections 401 through 471. Facilities subject to any of the following types of limitations or guidelines under 40 CFR subchapter N (except facilities that are exempt under the light industry exclusion) must obtain NPDES permits to discharge stormwater:

- **D** Stormwater effluent limitation guideline
- □ New source performance standards (NSPSs)
- **D** Toxic pollutant effluent standards

According to the EPA, the industries in these categories have generally been identified by EPA as the most significant dischargers of process wastewaters in the country. As such, these facilities are likely to have stormwater discharges associated with industrial activity for which permit applications should be required (55 FR 47989 November 16, 1990). An industry submitting a permit request, must supply information as to its status as a Sub-chapter Industry.

HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES

Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim statue or permit under subtitile C of the *Resource Conservation Recovery Act* (RCRA), must obtain NPDES stormwater discharge permits. A facility that stores hazadous waste for less than 90 days is not considered to be a treatment, storage, or disposal facility and therefore is not required to submit a stormwater discharge permit application (EPA, 1992). Because these industries are described as a narrative category, a permit is required if any of the described activity occurs on-site.

POWER GENERATION FACILITIES

Steam electric power generating facilities, including coal handling sites, must obtain NPDES stormwater discharge permits. This would include single-user facilities, such as a steam electric power generating facility for a university campus. However, steam production for heating and cooling is not covered by permit requirements. Co-generation facilities are regulated if they are based on the use of dual fuels. However, co-generation facilities based on heat capture only are not regulated.

SEWAGE TREATMENT PLANTS

Sewage treatment plants have been required to obtain NPDES permits to discharge treated sewage effluent since the passage of the CWA. The *Water Quality Act of 1987*, however, now requires permit coverage for stormwater discharges from such facilities.

Sewage facilities with a design flow of 1.0 million gallons per day (MGD) or more, or which are required to have an approved pre-treatment program under 40 CFR part 403, are included. Farm lands, domestic gardens, and lands used for sludge management where sludge is beneficially reused and that are not physically located within the confines of the sewage treatment facility, or areas that are in compliance with section 405 of the CWA, are not included. (Section 405 of the CWA regulates the disposal of sewage sludge.) If the facility collects all stormwater from the plant site and treats it as part of the normal inflow that is processed through the treatment plant, no stormwater discharge permit is required.

HEAVY INDUSTRIES

The SIC code categories include the following:

SIC code 24: lumber and wood products (except 2434: wood kitchen cabinets). These facilities are engaged in operating sawmills, planing mills, and other mills engaged in producing lumber and wood basic materials.

SIC code 26: paper and allied products (except 265: paperboard containers and boxes. and 267: converted paper and paperboard products).

SIC code 28: chemicals and allied products (except 28.3: drugs, and 285: paints, varnishes, lacquers, enamels, etc.)

SIC code 29: petroleum refining and related activities.

SIC code 311: leather tanning and finishing. Such processes use chemicals such as sulfuric acid and sodium dichromate; detergents; and a variety of raw and intermediate materials.

SIC code 32: stone, clay, glass, and concrete products (except 32.3: glass products made of purchased glass). These facilities manufacture glass, clay, stone, and concrete products from raw materials in the form of quarried and mined stone, clay, and sand.

SIC code 33: primary metal industries, including facilities that smelt and refine ferrous and nonferrous metals from ore, pig, or scrap, and manufacturing related products

SIC code 3441: structural metal fabricating

SIC code 373: ship and boat building and repair

LIGHT INDUSTRIES

SIC code 20: food and kindred products, including process foods such as meats, dairy food, fruit, and flour

SIC code 21: tobacco products, including cigarettes, cigars, chewing tobacco, and related products

SIC code 22: textile mill products, producing yarn, and so on, and/or dye and finish fabrics

SIC code 23; apparel and other textile products, which produce clothing by cutting and sewing purchased woven or knitted textile products.

SIC code 243.4: wood kitchen cabinets

SIC code 25: furniture and fixtures

SIC code 265: paperboard containers and boxes

SIC code 267: converted paper and paperboard products (except containers and boxes)

SIC code 27: printing and publishing, including bookbinding and plate making

SIC code 283: drugs (pharmaceuticals)

SIC code 285: paints, varnishes, lacquers, enamels, and allied products

SIC code 30: rubber and miscellaneous plastic products

SIC code 31: leather and leather products (except 311: leather tanning and finishing)

SIC code 323: glass products made of purchased glass

SIC code 34: fabricated-metal products (except 3441: structural metal fabricating)

SIC code 35: industrial and commercial machinery and computer equipment

SIC code 36: electronic and other electric equipment and components

SIC code 37: transportation equipment (except 373: ship and boat building and repair)

SIC code 38: instruments and related products, including measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; and watches and clocks

SIC code 39: miscellaneous manufacturing industries, including jewelry, silverware, plated ware, musical instruments, dolls, toys, games, sporting and athletic goods, pens, pencils, artist's materials, novelties, button, notions, brooms, brushes, signs, burial caskets, and hard surface floor coverings.

SIC code 4221: farm products warehousing and storage

SIC code 4222: refrigerated warehousing and storage

SIC code 4225: general warehousing and storage

MINING INDUSTRIES

SIC code 10: metal mining

SIC code 11: anthracite mining

SIC code 12: coal mining

SIC code 13: oil and gas extraction

SIC code 14: nonmetallic minerals, except fuels

RECYCLING INDUSTRIES

SIC code 5015: motor vehicle parts, used-wholesale or retail

SIC code 5093: scrap and waste materials, including the following wholesale businessesautomotive wrecking for scrap, bag reclaiming, waste bottles, waste boxes, fur cuttings and scraps, iron and steel scrap, general junk and scrap, metal and waste scrap, nonferrous metals scrap, waste oil, plastics scrap, rags, rubber scrap, scavenging, scrap and waste materials, textile waste, wastepaper (including paper recycling), and wiping rags (including washing and reconditioning)

TRANSPORTATION INDUSTRIES

SIC code 40: railroad transportation

SIC code 41: local interurban highway passenger transit

SIC code 42: trucking and warehousing (except 4221: farm products warehousing and storage, 4222; refrigerated trucking and warehousing and storage, and 4225; general warehousing and storage)

SIC code 43: US Postal Service

SIC code 44: water transportation

SIC code 45: transportation by air

SIC code 5171: petroleum bulk stations and terminals

INDUSTRIAL FACILITIES THAT DO NOT DISCHARGE CONTAMINATED STORMWATER

Under current EPA regulations, industrial facilities can operate without obtaining a stormwater discharge permit, if no material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery is exposed to stormwater (40 CFR 122.26(b)(14). City inspectors will on occasions visit industrial sites in this category and will report as to the compliance.

Some industrial facilities handle oil drums or other contained materials that are exposed during loading and unloading operations. If there is a reasonable potential for leaks and spills from these containers which could be exposed to stormwater, discharges from the exposed area would be subject to stormwater permitting requirements (EPA, July 1993).

If material handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts, or industrial machinery is stored outside in a structure with a roof, but with no sides, and if wind-blown rain, snow, or runoff comes into contact with the equipment, material, or activities, then discharges from the area will be subject to stormwater permitting requirements (EPA, July 1993) Gas stations and commercial automotive repair facilities are not included in the definition of industrial transportation because these facilities are commercial or retail in nature.

Stormwater Discharge Permit Requirements for Airports.

Airports or airline companies must apply for a stormwater discharge permit for locations where de-icing chemicals are applied. This includes, but is not limited to, runways, taxiways, ramps, and areas used for the de-icing of airplanes. The operator of the airport should apply for the stormwater discharge permit, while the individual airline companies should be included as co-applicants. The EPA has the discretion to issue individual permits to each discharger or to issue an individual permit to the airport operator and have other dischargers to the same system act as co-permittees.

PENALTIES FOR STORMWATER VIOLATIONS

The *Clean Water Act* provides severe penalties for those who fail to obtain permit coverage for discharges and for those who do not comply with the terms and conditions of an NPDES permit. Section 309 of the *Clean Water Act* gives the EPA broad enforcement authority. In a state with an approved program (one with NPDES permitting and enforcement authority), the EPA notifies the state whenever a violation comes to the EPA's attention. The approved state must have the same or similar enforcement authority as the EPA has in states without approved programs. EPA retains its authority and exercises oversight of the approved state program. Operating agreements with approved states generally allow that if the state fails to take timely and appropriate action, the EPA can commence enforcement action (Stimson et al., 1993). In states with unapproved programs, the EPA regional offices are the primary enforcement agencies.

Violations may include actions that are inconsistent with provisions of the law itself, (for example, discharges without the required permit), or actions that are inconsistent with conditions of permits issued by the EPA or states under the Act. Violations may be cited where the discharge or potential to discharge is to waters of the United States or in some situations of sewer systems. Violations of recordkeeping, reporting, and inspection requirements may also be cited.

EPA STORMWATER ENFORCEMENT AUTHORITY

The CWA gives to the EPA three broad categories of enforcement authority; civil administration authority, civil judicial authority, and criminal enforcement authority. Civil administrative authority is used to issue compliance orders and levy civil penalties for alleged violators of any of the law or permit requirements. Class I penalties are limited under section 309(g)(2)(A) of the *Clean Water Act* to \$11,000 per violation or \$27,500 total. To propose a class I penalty, the EPA issues an administrative complaint to the violator, giving notice of the violations alleged and the amount of the penalty proposed. The violator has 30 days to request a hearing and to directly contest any allegation the violator intends to raise as an issue in a hearing.

Class II penalties may be up to 11,000 per day with a 137,500 maximum under section 309(g)(2)(B) of the Act.