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ENVIRONMENTAL MANAGEMENT AND CONSTRUCTION STANDARDS AND PRACTICES FOR UNDERGROUND TRANSMISSION AND DISTRIBUTION FACILITIES IN NEW YORK STATE

(to be)
Approved by the Public Service Commission
Pursuant to Section 66(1), Section 68
and Section 121-a(1) of Article
VII of the New York State
Public Service Law

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I. INTRODUCTION

Pipeline construction can adversely affect the human and natural environment. Without comprehensive planning and construction management which are the keys to minimizing the adverse environmental impacts of pipelines and their construction. This book of Environmental Management and Construction Standards and Practices (EM&CS&P) is a tool for planning and minimizing impacts of fuel gas transmission pipelines required to be reviewed under the New York State Public Service Law (PSL). The EM&CS&P are intended to cover the range of construction conditions typically encountered in constructing pipelines in New York State.

The EM&CS&P are written primarily to address construction of smaller-scale fuel gas transmission projects as envisioned by PSL Section 121-a. These EM&CS&P may also be adopted for construction of gas distribution facilities, and have applicability for planing larger gas transmission pipelines.

Identifying specific construction measures to be used in a project will help to streamline the filing and review of small scale gas transmission projects. The measures to be used in a particular project must be identified on a "checklist" and included in a Notice of Intention (NOI) or application filed under PSL 121-a. If special construction measures not addressed in the EM&CS&P are proposed by an applicant, those measures should be described in the filing.

The format of this handbook includes a brief description of the information requirements for an NOI or application under Article VII of the PSL, Section 121-a; a short

summary of planning and routing considerations; and a detailed description of the construction methods and environmental management measures which can be used in the project. This document also includes a glossary of terms, references to other sources of information, and a set of figures and drawings showing details of many of the measures described in this book.

The applicant should refer to the Staff document entitled, "Advanced Planning for Siting Article VII Gas Transmission Facilities." This companion document discusses the preparatory steps necessary for a potential applicant to complete a docketable filing under Section 121-a of Article VII of the PSL and can be obtained by writing or calling the:

New York State Department of Public Service
Office of Electricity and Environment
3 Empire State Plaza
Albany, New York 12223
(518) 474-5368

Protection of natural and man-made resources in the proposed construction areas begins with the planning process outlined in the advance planning document and carries through into the EM&CS&P.

II. WHAT THE LAW AND REGULATIONS REQUIRE

Fuel gas transmission line construction over 125 pounds per square inch gas (psig) and between 1,000 feet and 10 miles in length is referred to in Section 121-a(1) of Article VII of the Public Service Law and requires that:

> [A]ll persons who intend to construct fuel gas transmission lines described in this section shall file with the commission for its approval the standards and practices which will be applied to environmental management and construction of all such lines or shall file a certified statement agreeing to construct such lines in accordance with standards and practices on file and

approved by the commission." (emphasis added)

Section 121-a(2)(c) of the PSL also requires the applicant to include:

> an indication of the approved environmental management and construction standards and practices that will be followed in an effort to minimize or avoid adverse environmental impact to the maximum extent practicable."

The regulations of the Department of Public Service refer to the EM&CS&P in 16 NYCRR Parts 85-1.0(c), 85-1.1(a)(b) and 85-1.2(3). Part 85-1.2(3) also identifies the resources to be protected and requires the applicant to provide:

> an indication of which measures and techniques from the approved EM&CS&P which the applicant has agreed (or any site specific modification thereof) will be followed in an effort to minimize or avoid adverse environmental impact on sensitive resources affected by the lines(s) to the maximum extent practical,..."

An applicant shall indicate which measures it intends to use by including a marked checklist with its NOI or application. Additionally, the applicant must indicate and include any measures or techniques it intends to modify or substitute for those included in the approved EM&CS&P.

Part 85-1.2 also lists land uses and natural and man-made resources to be considered when applying an EM&CS&P to a pipeline project. These resources are discussed in subsequent sections of this document.

III. GENERAL PLANNING OBJECTIVES AND PROCEDURES

1. Planning Objectives

The construction of gas pipelines can result in potentially adverse impacts to

natural or cultural resources. The EM&CS&Ps are a guide to protection of these resources and the minimization of potential adverse impacts.

Through advance planning of the pipeline construction work, application of appropriate construction techniques that consider natural and cultural resource protection with prompt action taken when problems arise, the resources would be protected and the potentially adverse impact minimized. The following are objectives to be considered:

a. limit vegetation clearing in accordance with safe construction practices in order to conserve forest resources, minimize disruption of soils, and to minimize adverse visual and ecological impacts of cutting through wooded areas;

b. confine construction activities to the right-of-way and vehicular use to designated access roads, construction paths, and staging and storage areas;

c. schedule construction for time periods when sensitive resources or land uses are least susceptible to damage or disruption;

d. select construction and pipe-laying equipment that minimizes damage and disruption of soils during wet periods or in areas with high ground-water tables, and in general, use the smallest-sized equipment needed to complete the job in an efficient and safe manner;

e. minimize construction disturbances to sensitive resources by limiting equipment movement activities in or near sensitive areas during construction and maintenance of the facility;

f. minimize topsoil loss and general soil erosion by limiting ROW grading and other soil-scarifying activities, and promptly stabilizing disturbed soils;

g. minimize traffic disruption on public roads during pipeline construction by providing adequate traffic controls; and

h. provide for pipeline right-of-way maintenance that includes-vegetation treatment, maintenance of erosion control devices and landowner improvements as detailed in individual easement agreements.

To accomplish these objectives, the applicant will maintain contact with property owners

and appropriate public agencies for the incorporation of concerns into construction and maintenance practices.

1.1 Supervision and Inspection

1.1.1 Environmental Inspection

a. At least one Environmental Inspector (EI) is required for each construction spread during construction and restoration. The number and experience of EI's should be appropriate for the length of the construction spread and the number/significance or resources affected. The name(s) of qualified Environmental Inspector's and a statements of the individuals relative project experience will be provided to the DPS staff prior to the start of construction for review and DPS staff (Staff) approval.

b. Environmental Inspectors shall have peer status with all other utility/craft inspectors.

c. Environmental Inspectors shall have stop-work authority. This entitles the EI to stop activities that violate Certificate conditions, other federal, state, local or landowner requirements and to order appropriate corrective action.

1.1.2 Responsibilities of Environmental Inspectors

At a minimum, The Environmental Inspector(s) shall be responsible for the following:

a. Ensuring compliance with the requirements of the Certificate, this EM&CS&P, and any additional mitigation measures proposed by the applicant

b. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance

c. Verifying that the ROW limits and access roads are marked prior to clearing

d. Installation of signs and flagging marking boundaries of sensitive resource areas, waterbodies, wetlands, or other areas where special requirements will be in effect

e. Locating slope breakers , driveable berms, and waterbars to ensure that they will not direct water into sensitive environmental resources such as wetlands or waterbodies

f. Verification of trench dewatering activities to ensure that they do not result in the

deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If this occurs, the EI will stop the activity and the design and/or location of the discharge will be changed

g. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and to determine the need for corrective action

h. Advising the Chief Inspector when site conditions make it advisable to restrict construction activities in areas of sensitive environmental resources

i. Ensuring restoration of pre-construction contours and topsoil

j. Determining the need of erosion control s other than those required by the Certificate and the EMCS&P and ensuring that these control are properly installed to prevent sediment flow into wetlands, waterbodies, roads, or other sensitive environmental resources

k. Inspecting and ensuring the maintenance of all temporary erosion controls at least:
    a. On a daily basis in areas of active construction
    b. On a weekly basis in areas with no construction
    c. Within 24 hours of each .5" of rainfall

l. Ensuring the repair of all ineffective temporary erosion control devices within 24 hours of identification
m. Keeping records of compliance with the environmental conditions of the Certificate, the EMCS&P, other Federal, State, or local agency requirements, and other measures as proposed by the applicant.
n. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

2. Procedures for the Identification and Protection of Resources

16 NYCRR Part 85-1.2(3) of the Rules of Procedure identifies many of the resources New York State seeks to protect. It requires that applicants provide:

> an indication of which measures and techniques from the approved EM&CS&Ps which the applicant has agreed (or any site specific modification thereof) will be followed in an effort to minimize or avoid adverse environmental impact on sensitive resources affected by the lines(s) to the maximum extent practical, which resources include:

a. existing and officially planned residential, commercial, industrial, institutional, recreational and agricultural land uses;

b. ecosystem resources including highly erodible soils, wetlands, flood plains, streams, springs, wells, unique old-growth forests, active sugarbushes, productive timber stands, trees listed in the *Registry of Big Trees in New York State* and habitats of rare, threatened and endangered species (these resources can be identified in cooperation with the landowner and the Department of Environmental Conservation);

c. officially designated visual resources, including scenic areas, roads, vistas and overlooks; and

d. officially designated cultural resources, including archaeological sites, and historic districts, places and properties."

The following sections discuss the pre-construction planning procedures for identifying and protecting these resources.

2.1 Rare, Threatened and Endangered (RTE) Species and their Habitats

Prior to applying, the applicant will ascertain if any known rare plants, threatened or endangered animal species (RTE) or their habitats are in the proposed project area by consulting with the New York State Department of Environmental Conservation (DEC), the Natural Heritage Program, the U.S. Fish and Wildlife Service (USFWS) and, if appropriate, the National Marine Fisheries Service. The applicant shall also contact landowners, private citizens or conservation groups who may have specific localized knowledge of RTE species in the project vicinity.[1]

This information will be used for pipeline routing and determining generic and site specific construction management and practices to be used in minimizing or avoiding

[1] The Location of these areas are confidential and will not be released for public review.

impacts to RTE species. The location of any RTE species, or their habitats in the project area will be clearly identified on construction drawings. A specific plan will be submitted to DPS staff, under separate cover, detailing protection measures for and RTE species encountered in the project area.

The applicant shall also instruct inspectors and construction crews on protective measures to minimize impact on these resources. Work will be halted if previously unidentified RTE species are encountered during construction. DPS staff and DEC's Natural Heritage Program will be contacted, should such an event occur, to determine if any mitigation action is required.

2.2 Cultural Resources

The applicant shall consult with the New York State Office of Parks, Recreation and Historic Preservation Office (OPRHP) to determine the locations of any cultural resources that may be affected by the proposed project. The applicant will then be able to determine whether further studies are required prior to construction, if route modifications are needed, or if special construction techniques should be employed to protect cultural resources. Any special construction techniques will be submitted to OPRHP and the Staff.

If resources of apparent archaeological or historical significance are discovered (e.g., artifacts, human remains) during construction, all work that could affect these resources will be halted and OPRHP, or an approved agent or representative, will be notified. Staff shall also be notified. Work will resume only after a determination as to the disposition of the resource has been made to the satisfaction of all parties involved.

2.3 Streams, Wetlands and other Water Resources.

To determine the nature and class of state or federal protected streams and wetlands, navigable waterways, or other waterbodies crossed by the proposed project, the applicant will consult with DEC, the U.S. Army Corps of Engineers (Corps), the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (EPA) and/or the U.S. Coast Guard as applicable.

In addition the applicant will consult with agencies, landowners and other local municipalities to determine the location of any springs or wells along the project route. This information will be used in conjunction with other sections of this EM&CS&P for project planning and construction. All water wells with 200 feet of any point of the ROW will be identified in the application or the NOI and shown on the alignment sheets. In addition, the applicant will offer to the owner of the well, free of charge, pre-construction and post-construction testing of said well. The testing will include calculation of flow rate, pH, TSS, TPP, fecal coliform, etc. Refueling and/or storage of hazardous materials will not be allowed within 200' of any private water well or 400' of any municipal water well.

2.4 Active Agricultural Lands

The applicant will consult with the New York State Department of Agriculture and Markets (Ag & Markets), the U.S.D.A. Natural Resource Conservation Service (NRCS), the Agricultural Cooperative Extension Service (ACES) and municipal agencies, as necessary, to determine the location of agricultural districts and sensitive or specialized farmlands that may be affected by the project. In addition, the applicant will identify other concerns raised by farm

owners/operators.

Prior to construction, soils and slope information (soil texture, erosion potential, depth to bedrock and water table, permeability, etc., related to agriculture) will be obtained. This information will be used in conjunction with other sections of this document for project planning and construction with an eye towards lessening adverse impacts on these resources.

2.5 Alternative/Conflicting Land Uses

The applicant will consult with regional, county, town and/or village planning boards to identify existing and or proposed land uses that may conflict with the construction and operation of the proposed facility. Sensitive land uses (hospitals, schools, churches, scenic areas, parks, and residences) that may be affected by the project will be identified and assessed for impacts. Routing modifications or mitigation measures will be developed as necessary and submitted with the NOI or application.

2.6 Steep Slopes, Highly Erodible Soils and Flood Plains

Prior to construction, the applicant will review relevant map resources of the United States Geological Survey (USGS), New York State Department of Transportation (NYSDOT), NRCS (for highly erodible soils) and the Federal Emergency Management Agency (FEMA) for floodways and flood plains.

Potential impacts and construction constraints will be assessed for possible routing modifications or mitigation measures. Erosion control will be addressed in subsequent sections of this document. Above-ground facilities will be avoided and special construction measures considered for areas designated as floodways or "100-year" flood plains. Above-ground facilities should be placed in these areas only if no other practical alternatives exist.

2.7 Timber Resources, Commercial Sugarbushes and Unique/Old Growth Forests

The applicant will consult with DEC, the Nature Conservancy, Natural Heritage Foundation, Ag & Mkts and local assessors to identify designated Forest Tax Act parcels along the route, trees listed on the NYS Registry of Big Trees, active logging and Christmas tree operations, and commercial sugarbushes. The applicant will design the pipeline to avoid or minimize impacts on old growth stands, Big Trees, nursery, and sugarbush operations. Commercial timber stands will not generally present a constraint to routing, although alternates that avoid high grade timber are preferred.

2.8 Officially Designated Visual Resources

The applicant will identify any officially designated visual resources in the vicinity of the project route and assess the resulting visual impact. An officially designated visual resource is one that has been named as such by a governmental agency or entity. These include:

a. Scenic Areas of Statewide Significance (in coastal areas), designated by the Secretary of State pursuant to Article 42 of the Executive Law;

b. Adirondack Park Scenic Vistas, designated by the Adirondack Park Agency (APA) pursuant to Article 27 of the Executive Law;

c. Scenic Roads, designated by the Commissioners of DEC or the New York State Department of Transportation (DOT) pursuant to Article 49 of the Environmental Conservation Law (ECL);

d. Scenic Districts designated by the Commissioner of DEC pursuant to Article 49 of the ECL;

e. State and National Wild and Scenic River Areas administered respectively by either

the DEC or APA pursuant to Article 15 of the ECL and by the Department of Interior, pursuant to 16 U.S.C. Section 1271, and;

f. Areas of Exceptional Scenic Beauty, acquired pursuant to the 1986 Environmental Quality Bond Act and administered by the DEC.

In addition, the applicant will assess probable visual impact on locally important sensitive sites such as parks, recreation areas, scenic views, and residential areas. Predicted visual impacts on the above resources will be evaluated for possible routing modifications or mitigation measures.

3. Land Requirements

3.1 Objectives

To avoid or minimize the potential impacts identified in Section 2.0 while providing adequate work space for safe and efficient construction and operation of the fuel gas transmission line.

3.2 Pipeline Routing

In selecting a pipeline route for a project, applicants must balance constraints and objectives, however, some general guidelines do apply. Wherever possible, the applicant will:

a. avoid unique or sensitive resources; i.e. Class I and II wetlands, RTE species and habitat, scenic vistas, historic sites, fishery streams, rivers, old growth timber, high yield crop lands, etc;

b. avoid severe topography;

c. route along the edge of adjoining land uses; for example, follow the edge of a farm field;

d. consider using existing ROW's and use forest and farm roads where practical.

3.3 ROW Width

3.3.1 Permanent ROW

The permanent ROW is that portion of the ROW to be permanently maintained following initial construction. The company will acquire by easement or purchase a permanent ROW generally ranging in width as follows:

a. 20 to 30 feet - 2 to 8-inch diameter pipe

b. 30 to 40 feet - 8 to 16-inch diameter pipe

c. 40 to 50 feet - 16-inch diameter pipe or greater

In locations where adjacent buildings, sensitive resources, engineering or other constraints pose limitations, the permanent ROW may be narrower.

3.3.2 Temporary ROW

Adjacent to the permanent ROW, the company may seek to acquire additional land to facilitate pipeline construction and vehicle access. The width varies with pipe diameter and associated equipment size, land use, and environmental conditions. Width of the temporary ROW will generally range between 10 and 40 feet.

For example, in active agricultural land where soil segregation (topsoil stripping) will occur, a work area 10 to 30 feet wider than the permanent ROW will be needed to accommodate the stockpiled soil; reductions may occur where sensitive resources, land use or engineering constraints impose limitations.

3.3.3 Extra Work Space

At various locations, additional work space, beyond that generally used for the

temporary ROW, will be needed to accommodate construction. These areas include:

a. road crossings,

b. stream and river crossings,

c. wetlands,

d. steep and/or rocky terrain, and

e. agricultural land.

The Application/NOI will identify the specific locations and dimensions of extra work space needed. The size of these areas will depend upon specific site conditions including soil, topography, land use, and construction requirements and constraints. Any additional workspace needed during construction, which was not identified in the NOI or Application, will require a minor change submittal. In general, these extra work space areas will be located at least 50 feet from any wetland boundary or waterbody, 100' if field concrete coating of pipe is expected.

3.3.4 Appurtenant/Associated Facilities

Between the collection and delivery points, a project may require the following appurtenant facilities:

a. sales and metering or regulator stations;

b. drips;

c. yard and station piping;

d. cathodic protection equipment;

e. buildings;

f. water pumping;

g. cleaning, cooling and dehydrating equipment and;

h. valves.

The applicant should consider the potential impact of appurtenant facilities in the planning stage of the project and, where practicable, identify their locations in the NOI or application.

3.3.5 Compressor Stations

The only associated facility of a gas pipeline specifically covered under Section 120 of the PSL are **compressor stations**, which are considered part of the gas transmission facility and reviewed along with the pipeline. The following potential impacts will be considered before finalizing the location of any compressor station:

a. visual impact;

b. noise impacts to residents from venting gas or compressors;

c. impacts on vehicular or pedestrian traffic;

d. the loss of lands for agricultural, commercial or other land uses;

e. ecological impacts on critical habitat of RTE species;

f. impacts to historical or archaeological resources; and

g. impacts to water resources including wells, springs, streams, ponds and wetlands.

3.3.6 Temporary Storage, Fabrication, and Other Construction-Related Sites

During construction, temporary sites may be needed for the following:

a. pipe storage;

b. fabrication (concrete coating, pipe bending, valves, etc.);

c. equipment storage;

d. administration and parking; and,

e. temporary stump, rock and wood storage.

These sites may be located off ROW in convenient locations to facilitate construction and transportation. Land requirements will depend upon the nature of the use, engineering and environmental considerations. The same environmental review and requirements applicable to the pipeline ROW will be applied to these sites. They should be identified in the NOI or Application.

3.3.7 Permanent Disposal Sites

Waste material generated during construction (rock, unsuitable backfill) may be buried on the ROW (where environmentally appropriate and permitted by landowners) or be transported to off-ROW disposal sites. These off-ROW sites will be identified in the NOI or Application and the applicant will be responsible for evaluating each site for environmental suitability and compliance with applicable laws and regulations. Solid waste as defined under 6 NYCRR Part 360 will be disposed in a state-licensed disposal facility. Off-ROW disposal sites identified after project certification will require a Staff approval.

4. Site Preparation

4.1 Objectives

To identify the nature and impacts of site preparation activities -- primarily pipeline location staking and ROW delineation, vegetation clearing, and grubbing and terrain grading and leveling in order to minimize the adverse environmental impacts associated with these activities to the extent practicable.

4.2 Staking and ROW Delineation

When staking out or delineating the ROW for construction the following steps will be taken:

a. Pipe centerline, ROW edges, and extra work space boundaries will be surveyed and marked with stakes and colored flagging.

b. In wooded areas, any clearing needed to facilitate surveying will be minimized as much as possible. During preliminary routing, prior to certification, no trees over 6 inches dbh (diameter breast high) will be cut during survey operations.

c. Flagging may be placed on trees or wooden stakes as needed to effectively mark the ROW, and trees selected for protection will be marked.

d. Stakes and flagging will be spaced at appropriate intervals to ensure that unauthorized clearing and grading occures within approved ROW boundaries. Flagging and/or staking will be checked before construction to ensure proper alignment.

e. In populated areas, temporary construction fencing may be used to delineate the ROW. Fencing left in place during construction may also help restrict unauthorized access to the ROW.

5. Vegetation Clearing in Upland Areas

5.1 Objectives

Where the pipeline traverses wooded terrain, vegetation will be cleared to allow for grading and pipe installation. Clearing operations will be guided by the following environmental objectives:

a. avoid and protect old growth, specimen and landscape trees.

b. minimize disturbance by restricting clearing to those areas necessary for construction and using equipment appropriate to site and timber conditions;

c. utilize timber resources;

d. minimize impacts associated with forest disturbance and debris disposal;

5.2 Definitions

When discussing clearing operations and their impacts, Staff uses the following definitions:

Timber/Logs - trunks and limbs greater than 6 inches diameter at the small end, minimum 8 foot length;

Slash - shrubs, saplings, and tops of trees 4 inches diameter or less at the large end for hardwood; and 6" diameter or less at the large ends for softwoods.

Stumps - the woody stem and fibrous root mass left in the soil after removing the trunk at the butt.

Clearing - the cutting and physical removal, either by hand or mechanical means, of vegetation that would hinder pipeline construction.

Grubbing - the mechanical removal of the stump and root mass of felled woody vegetation.

5.3 Equipment

Vegetation clearing operations will be carried out with the following equipment:

a. bulldozers or crawlers equipped with forestry brush rakes or hydraulic clams;

b. bladed mowers (hydro axe or brush hog), and chain thrashers;

c. hydraulic shears or mechanized felling saws;

d. chain saws;

e. skidders or forwarders; and,

f. excavators equipped with grapple arms.

5.4 Clearing Methods and Procedures in Upland Areas

During clearing operations, crews, along with company personnel, will scout the terrain ahead for unexpected conditions, check ROW boundaries and review property-specific conditions or restrictions noted on drawings and line lists. Trees will be felled into the ROW to avoid off-ROW damage, using some or all of the various methods and equipment as described below:

Bulldozers - Bulldozers equipped with forestry brush rakes are primarily used to concentrate slash into piles for subsequent disposal. Bulldozers equipped with hydraulic clams can be used to either concentrate brush or logs on or along the ROW for proper disposal.

Bladed Mowers - Bladed mowers (i.e. "brush hogs", hydro axes or chain thrashers) may be used on stands of smaller timber and brush. They will not be used where the timber may be utilized or stacked.

Skidders and Forwarders - Skidders are specifically designed to move and concentrate larger diameter timber and are used in conjunction with chainsaws or mechanized shears and saws. Skidders are usually better suited to projects with wider ROWs and for moving timber longer distances.
Forwarders carry logs from landings, or other concentration points, to salvage yards or other work areas.

Excavators with Grapple Arms - Excavators with grapple arms concentrate timber along the ROW. Excavators are more flexible than skidders:

a. they can be used on wide or narrow ROWs;

b. due to their ability to lift and move individual stems, they can facilitate the construction of log roads across wetlands or seasonally wet areas during clearing;

c. excavators with grapples have a greater range of motion than skidders. Less vehicular movement helps to minimize rutting in wet areas; and,

d. they are better suited for directional felling of trees.

Mechanized Shears and Saws - Mechanical shears and saws may be used on trees that will be utilized for construction, salvaged for sale, made available as sawlogs or firewood, or stacked for the landowner. This equipment will not be used to clear stream buffers its size and bulk tend to damage adjacent vegetation. Once felled, trees will be limbed using chainsaws before moving, sorted and/or stacked by skidders, grapple equipped excavators, or forwarders.

Chainsaws - Chainsaws may be used on trees of any size, particularly on larger timber where restricted access limits the use of mechanized shears and saws, (i.e. wetlands, stream buffers, and steep terrain). After limbing, logs will be handled as noted above with mechanized equipment like skidders, excavators equipped with grapple arms or forestry rakes.

5.5 Log Disposal

Trees are a valuable natural resource. Logs greater than 6-inches in diameter may be useful as firewood or for pipeline construction as log rip-rap (corduroy) to support construction equipment in wet areas. Logs greater than 10-inches in diameter may be merchantable. Depending on species, size, volume, terrain, and local markets, timber resources will be utilized as follows.

5.5.1 Construction Use

Logs, having been purchased by the company from the landowner, may be utilized as needed during construction for wetland access (corduroy), cribbing, retaining walls, or other uses. Following use, broken and mud-covered logs unsuitable for firewood, saw logs or chipping, will either be transported off-ROW to approved disposal sites or, with landowner approval, stacked on the ROW.

5.5.2 Log Piles

Logs not needed for construction will be stacked along the ROW or in approved push-out areas adjacent to the ROW, or, with landowner approval, removed off ROW to an approved disposal area. Logs stacked along the ROW will be cut into tree lengths, unless

otherwise specified by the owner. Log piles will not be placed in wetlands, streams, floodplains, floodways or visually sensitive sites. Efforts will be made, in consultation with landowners, to locate them in accessible areas for salvage.

5.5.3 Sale

When market and site factors permit, merchantable logs may be sold to a third party. The company will set salvage conditions and procedures to minimize damage to the ROW and will hold third parties accountable for such damage. Where appropriate and practical, and with the agreement of landowners, unsold logs will be hauled to accessible locations for salvage by the general public.

5.5.4 Chipping

When the log disposition options detailed above are not appropriate, logs may be chipped. Resulting wood chips will be: 1) mixed into soil during grading or buried; 2) piled in environmentally appropriate, accessible locations at the edge of the ROW or in approved push-out areas for later use; and/or 3) hauled off ROW to approved disposal sites or for other uses.

Wood chips will be spread 3 to 5" thick with fertilizer spread over the chips to minimize soil nitrogen depletion due to cellulose decomposition.

5.6 Slash and Stump Disposal

Slash and stumps will be disposed of in the following manner.

5.6.1 Stacking and scattering

Slash and stumps may be stockpiled along the edge of the ROW or in approved push-out areas, with landowner approval, where they will provide wildlife habitat and decay naturally over time. Stack size will be limited to a maximum size of 6 feet high, 12 feet wide,

and 100 feet long. Piles will be separated by a minimum of 20 feet for access and fire break. Where appropriate, slash may be scattered along the ROW edge or in push-out areas.

5.6.2 Chipping

Slash may be chipped to reduce debris volumes. Chips will be handled as noted above in Section 5.5.4.

5.6.3 Burning

To minimize adverse impact to air quality, slash will be burned only in remote locations where other disposal options are not practical. A burn plan will be submitted for approval by Department staff and any other permitting agency; it will include the following information:

a. maps or drawings showing those areas proposed for burning;

b. estimated volumes of material to be burned;

c. procedures, personnel and equipment for igniting, monitoring and controlling fires; and

d. data on prevailing winds and the location and type of sensitive receptors downwind.

Following PSC staff approval of the burn plan, the company will also comply with all applicable state and local laws. Manmade non-organic materials (i.e., oil, tires, garbage) will not be burned.

5.6.4 Hauling

Slash and stumps may be hauled to a DEC approved landfill or another suitable off-site location with the approval of the landowner and applicable permitting agencies.

5.6.5 Burial

Where Landowner agreement is reached, stumps may be buried on the ROW. The areas will be sufficiently compacted and monitored after construction to assure that settling does not occur.

5.7 Vegetation Buffer Areas

A vegetation buffer area is a portion of the ROW at a sensitive resource such as a stream crossing or visual intrusion mitigation where a minimum of construction disturbance and vegetation clearing is permitted. Vegetative buffer areas will be maintained where specified in a Commission Order or in the applicant's plan. In order to prevent soil erosion along streams, vegetation (ground cover, shrubs, and tree stumps) will be left in place within a minimum 15-foot strip on each bank until the time of crossing. Tree cutting will be limited to the use of chain saws. Where vegetation grubbing and initial grading is necessary for equipment crossing along the travel-way, erosion and sediment control structures will be installed, as detailed in Section 7 of this document.

Existing vegetation buffers will be maintained at selected road and stream crossings and other visually sensitive locations, where possible, especially at directional drilling or boring sites where complete ROW grading is not needed, residential areas, and the peripheries of historic sites.

Buffer areas will be clearly marked on detailed construction drawings, indicated on line lists, and marked in the field to avoid accidental clearing. Additionally, the company's environmental inspector or construction supervisor will notify clearing and other crews of buffer

areas that will be encountered that day.

5.8 Walls and Fences

The proposed ROW may cross stone walls and fences serving as property boundaries, livestock control, and other purposes. Unless otherwise directed by the landowner, walls or fences will be restored or replaced during restoration.

5.8.1 Stone Walls

When stone walls are encountered during the construction the following will apply:

a. Improved stone walls will be photographed before construction and the landowner will be consulted regarding the level of restoration;

b. Wall stone will be carefully removed, stockpiled, and re-used, or comparable replacement stone will be used;

c. Walls will be restored to a comparable standard of material and design unless otherwise agreed to by the landowner;

d. Walls of historical or archaeological significance will be restored using original stone in accord with landowner and permitting conditions; and

e. At landowner direction, walls of lesser quality (loose piles for field separation or all-terrain vehicle control, for example) or fencing may be substituted for the original stone wall.

5.8.2 Fences

Fences (wood, wire, mesh, etc.) will be dismantled and stored for re-use where practical; new fencing material will be used if the original is damaged. During construction, temporary fencing and/or gates will be installed to control livestock, in consultation with the landowner or farm operator. Fencing will be repaired or replaced to original standards or better in consultation with the landowner.

6. Grading in Upland Locations

6.1 Objectives

Following vegetation clearing operations, the ROW may be graded where needed to create a workable and safe surface for construction activities and equipment movement. Environmental objectives during grading include: conserving natural resources; (e.g. agricultural or residential topsoil); minimizing soil erosion and stream sedimentation; and confining construction disturbance to the approved ROW limits.

6.2 Techniques and Equipment

Bulldozers, excavators, loaders and graders will be the prime equipment used for grading the ROW. The degree of grading will vary from minor--on level ground for small diameter lines, to major--on steep terrain for large diameter pipe. In severe cross slope situations, the ROW may be benched into tiers or two-toned. Where the route of the pipeline encounters steep linear slopes, earth grading (cut and fill) operations to reduce the slope steepness may be necessary. This technique can extend ROW length and width.

Also, where bedrock impedes grading a workable ROW, blasting may be undertaken. The applicant will provide the plans for blasting, the measures for meeting the requirements of applicable rules and regulations, the explosives storage location (if any) and a survey with photos of any structures proximate to the blast area. Further, where unfavorable soil and moisture conditions are present, stabilization measures will be employed (e.g. topsoil stripping, geotextile fabric, gravel or stone fill, construction mats, log rip-rap, drainage culverts, etc.). All erosion control and sedimentation control devices will be installed prior to the initiation

of the grading activities as described in Section 7.

Grading activities will be confined within approved ROW boundaries. During construction, at locations where special grading procedures require additional workspace, the company will obtain the necessary landowner and agency approvals for additional ROW prior to initiating work.

6.3 Topsoil Stripping and Segregation

In active agricultural lands, as identified in cooperation with the USDA Natural Resources Conservation Service (NRCS) and/or the NYS Department of Agriculture and Markets (Ag & Mkts), topsoil will be segregated (by stripping or double ditching) for later replacement during restoration. This measure will diminish topsoil/subsoil mixing and minimize topsoil compaction, thus assisting full restoration of agricultural productivity. (In wetlands, segregation of the organic layer over the trench will take place primarily during ditching operations, see Section 11).

The extent of topsoil segregation will depend upon pipe diameter, soil type, land use and site conditions, as described below and depicted in Figures 10 through 18. Topsoil will be stripped to a maximum depth of 12 inches unless site specific conditions warrant additional depth. Additional temporary ROW will be required in some cases, particularly for full-width stripping. The following subsections address locations and the manner of topsoil protection.

6.3.1 No Stripping

Generally, topsoil will not be stripped in woodlands, abandoned or marginal non-farm uplands, or commercial and industrial areas. These areas are unlikely to be used for future crop production. Where topsoil is present in these areas, any resulting compaction or soil-mixing may

not warrant the extra expense of segregation. However, to promote restoration on difficult sites (steep terrain, sideslopes and infertile soils), the company may elect to strip topsoil to get adequate vegetative cover during restoration.

6.3.2 Ditchline

Primarily undertaken in wetlands, residential lawns, pasture and cropland where warranted. Topsoil will be stripped over the ditchline and placed on the spoil side of the ROW on top of native topsoil, offset enough to allow ditch spoil placement next to the trench. On narrow ROW, topsoil from the ditchline may be placed on the working side, next to the trench. This maximizes the area for ditch spoil storage on the spoil side of the ROW. For small diameter lines, double ditching will be employed where advised by county and state agricultural agencies.

6.3.3 Ditch and Spoil

For use in non-prime agricultural land or other locations that would benefit from topsoil segregation, such as residential lawns, parks, and golf courses where high quality turf cover must be restored. Topsoil will be stripped over both ditch and spoil areas and stored on top of native topsoil, uphill of the ditch where possible. Ditch spoil will be placed between the stored topsoil and ditch on top of subsoil. Care will be taken to prevent mixing of topsoil and ditch spoil.

6.3.4 Full Width Stripping

Primarily undertaken in active agricultural land. Topsoil will be stripped across most of the permanent and temporary ROW. It will be stored on top of native topsoil on either side of the ROW, depending on slope, dimensions, and positioning. It will be carefully segregated from exposed spoil and subsoil.

6.4 Access Roads and the Construction Paths

6.4.1 Objectives

To construct construction paths of sufficient size and in sufficient numbers to safely and efficiently move personnel and equipment to, from, and along the pipeline ROW, while minimizing impacts to resources.

6.4.2 Construction Paths

The construction path (travelway) is a linear section of the ROW, parallel to the trench where equipment and vehicles may travel the length of the project or portions of it. The width of the construction path is related to pipe diameter, equipment size, and the width of the ROW available for construction. The travelway width may vary from 8 to 30 or more feet. A single lane is recommended to minimize impacts to soil and drainage with passing lanes provided as needed in non-sensitive areas. For pipe diameters 12 inches or above, the travelway is usually wide enough to allow two side-boom tractors to pass side by side at given intervals.

In areas where the slope of the terrain is favorable and the soils are deep, stable and well-drained, little or no earth grading is needed to prepare the ROW for use as work area and travelway. Where slopes are steep (generally 15 percent or over), or when unstable soil conditions are encountered, it will be necessary to modify the construction path to make it stable enough for safe use. The following modifications should be considered and applied, as appropriate:

a. rough grading to smooth the working surface or improve drainage;

b. stripping and storing topsoil;

c. placing logs (corduroy), or crushed stone on the construction path;

d. placing geotextile fabric covered by clean fill with no shot rock over crushed stone, logs or soil in the path;

e. using prefabricated wooden or metal construction mats; or

f. employing pontoon bridges in areas of standing water.

6.4.3 Off ROW Access Roads

To facilitate delivery of materials and equipment along the ROW, particularly where site conditions interrupt a continuous travel way, off-ROW access roads will be utilized. These roads divert around obstructions or provide access to the ROW from public roads. Wherever practical, existing private roads, driveways, farm lanes, etc. will be used, with landowner and DPS approval. As necessary, these access roads will be improved to adequate standards, and restored to pre-construction conditions or better. Generally, access road width should be limited to no more than 20 feet in width.

All environmental requirements pertaining to the project apply to off-ROW access roads as well. In the event the applicant finds it necessary to construct new off-ROW access, plans will be submitted with the NOI or Application for Commission approval.

7. Erosion and Sedimentation Control

7.1 Objectives

To effectively control soil erosion and sedimentation and protect resources during pipeline construction and operation.

7.2 Measures and Devices

Erosion and sedimentation control measures will be applied as needed during all phases of construction. Erosion control devices will be placed at all stream crossings, upland/wetland boundaries immediately after initial ground disturbance. This is usually between the clearing and grading activities. ECD's will be installed prior to the initiation of any grading activity at these locations. During clearing activities, erosion control efforts will focus upon stream equipment crossings and steep slopes where stumps have been grubbed or soil has been disturbed. During grading activities, erosion control measures will be employed to control runoff.

In locations where construction adjoins an existing ROW, road crossings, etc., erosion control measures will conform to the existing drainage pattern and runoff structures. **At the end of each work day, all erosion control devices will be inspected in each work area and repaired (if necessary) to ensure proper functioning. Techniques appropriate to address site conditions will be used as detailed below.**

7.2.1 Hay Bales and Silt Fence

Used separately or together, these devices slow surface runoff and-trap sediment.

Bales will be buried or "keyed-in" at least 4 inches (10 cm) in the ground and any adjoining ditch banks. Bales will be placed so that bindings or wrappings are horizontal to the ground. The first stake should be angled toward the previously laid bale and the second stake should be driven vertically through the bale into the ground.

Hay bales are a natural material and are subject to decay and loss over time. Hay bales

should be inspected and maintained on a regular basis until they are no longer needed. Bales found to be damaged or clogged will be replaced immediately with fresh bales or other devices. Following construction, hay bales can be removed or broken up and dispersed during clean-up and/or restoration.

Silt fence comes with or without pre-attached wooden stakes. The up slope side of the fence will be "keyed" into to the ground by burial in a narrow cut at least 6 inches deep. The flap and leading edge will be buried up slope to prohibit water movement underneath the fence. Whenever possible the ends of the fence will be angled up slope and tied into a stable area to inhibit silt flowing around the fence. All silt fence will be removed from the ROW following successful restoration and/or stabilization of the permanent ROW.

7.2.2 Water Diversion Devices

Where appropriate, water diversion devices will be used to control surface runoff on the ROW and adjacent work areas, as discussed below. These measures may extend slightly off ROW by no more than 5 feet. This will prevent water returning to the disturbed construction area. Where these devices are extended off ROW, they are subject to applicable survey requirements.

7.2.2.1 Waterbars

Waterbars will be used on a sloping ROW to intercept and divert surface run-off from the work area to a stabilized location. Hay bales and/or silt fence will be installed at the down-slope outfall to prevent erosion and sedimentation into adjacent, off-ROW property. Waterbars must be checked and maintained regularly and at a minimum before and after each major rain event.

7.2.2.2 Swales and Earthen Berms

Swale and berms are designed to divert larger amounts of runoff than water bars, discussed above. Their size, angle, and spacing will depend on the soil type, slope, and other terrain features. They will be used primarily along and at the top of stream banks, at the base of slopes, on steep slopes in excess of 25%, and wherever conditions warrant a greater measure of runoff control.

7.2.2.3 Side Ditches

In areas of severe grade and unstable soils, side ditches adjacent to the ROW may be constructed to channel excess runoff not handled by other drainage structures. On long, steep slopes, periodic breaks and escapes will be constructed to slow runoff velocity and minimize channel erosion; spacing will vary according to site conditions and as recommended. Side ditches will be maintained regularly to prevent blockage and slumping, particularly after major storm events. Rock or jute-net liner should be considered on steep slopes or severe terrain and in sandy or silty soils to stabilize the ditch.

7.2.2.4 French Drains

A French drain is a stone-filled trench, with or without drain tile. It is used to intercept both surface runoff and subsurface flow, and to firm unstable soils. French drains will be installed where needed for equipment crossings or during restoration. Construction is similar to that of diversion ditches except that geotextile fabric lines the trench which is then filled with cobble or stone, size 6 inches or larger, is used to fill the ditch. During construction, if it is necessary to cross the french drain with construction equipment, the crossing will be covered with filter fabric and clean fill to prevent clogging with dirt from tires and treads.

7.2.2.5 Temporary Culverts

Temporary culverts will be installed to channel water runoff from farm ditches and road swales across the ROW, work area or construction path. They will be installed just below grade at each end, with headwalls, except where used only to equalize drainage in flat areas, such as wetlands.

Where the outfall must be above grade, large stone will be placed around the downstream pipe invert to minimize scouring and erosion. Culverts will be sized by calculating flows from the contributing watershed. In some situations, with landowner and agency approval, temporary culverts may be upgraded to permanent installations.

7.2.2.6 Sediment Retention Ponds and Filtration Devices

These structures and devices will be installed to filter sediment-laden water from trench dewatering, stream crossing, and other activities. Once filtered and/or settled, clear water will be pumped or allowed to flow onto a vegetated area. Retention structures and ponds will be constructed using hay bales, filter fabric, or other materials. Filter bags will be bought commercially. Trapped sediment will be graded into the ROW without being washed into the adjacent stream, wetland, or other sensitive resource.

7.2.2.7 Catchment Basins

Temporary catchment basins may be installed where needed to control heavy runoff near public roads, access roads, streams, adjacent land uses, and at construction and equipment sites. Trapped sediment will be disposed of or graded into the ROW. Permanent catchment basins may be installed where needed, to solve a permanent storm runoff problem.

7.2.2.8 Mulch and Other Soil Stabilizers

Straw or hay mulch, jute netting, or an erosion control blanket may be used to temporarily hold unstable soil on steep slopes. These methods are covered more thoroughly in Section 14.

7.2.2.9 Driveable Berms

Similar in construction to waterbars, these berms can be used in the travel lane to distinguish the upland/wetland boundary, thus eliminating the need for moving hay bales or siltfence each work day. This berm will be maintained throughout the construction process. This berm will also tie in to existing erosion control structures such as siltfence or staked hay bales. At all equipment crossings spanning waterbodies, only siltfence or staked hay bales will be permitted.

7.3 Fugitive Dust Emissions

Soil erosion from aeolian forces (wind) is another type of erosion that must be mitigated. Measures can range from cultural practices (controlling vehicle speed) to mechanical means such as water application or the use of dust pallatives. This is especially important in residential areas and on unpaved access roads where heavy construction traffic is present. If pallative use is proposed, the applicant shall file with DPS staff for approval those materials that are proposed for use. Covering (tarping), mulching, or temporarily seeding spoil piles that will be exposed for extended periods of time can also reduce fugitive dust emissions.

8. Trenching

8.1 Objectives

To maintain a safe and stable trench, minimize erosion, and provide suitable access

across the trench where needed.

8.2 Trenching Equipment

Trenching will be performed by rubber-tired or tracked backhoe, excavator, or other type of ditching machine. The type and size of the equipment depends upon such criteria as pipe diameter, trench size, soil conditions, and topography.

8.3 Ditch Width and Cover Requirements

Trench width at the bottom will be sufficient to ensure safe installation of the pipe and allow for padding and backfill to appropriate specifications. The trench wall will be tapered outward at an angle appropriate to soil type, moisture, and trench depth, in conformance with OSHA requirements (29 CFR 1910 et al.). In sandy or heavily saturated soils that may be subject to collapse, bank shoring will be employed as needed to prevent slumping and protect personnel.

Trench depth will be adequate to ensure cover in conformance with Gas Safety Regulations (16 NYCRR Part 255.327) as follows:

Pipe Class/Ditch Location	Pipe Cover in Soils	Pipe Cover in Rock Locations
Class 1:	30 inches (soil);	18 inches (rock)
Class 2, 3, 4:	36 inches (soil);	24 inches (rock)
Drainage ditches of public roads and railroad crossings:	36 inches (soil);	24 inches (rock)

In cultivated agricultural land, 48 inches of earth cover will be established. For special crossings (highways, railroads, large or protected streams, other utilities, etc.) cover depth will conform to requirements of the jurisdictional agency or owner of the facility. Generally, 5 feet of cover will be provided under roads, railroads, and streams.

8.4 Length of Open Trench

To minimize the potential for erosion and slumping of the open trench, impacts on cattle, wildlife and land use, efforts will be made to limit both distance and duration between ditching and pipe-laying. Limits will depend on pipe diameter, construction method, soils, topography, land use, weather and erosion control measures.

A general rule of thumb for small diameter gas pipelines is 1,000 to 1,500 feet of open trench at any given time. However, site-specific conditions may warrant leaving the trench open for greater distances as long as equipment, wildlife and livestock fencing and crossings are in place, and provided that all necessary in-trench erosion control devices have been installed and maintained (see Section 8.5). For larger diameter pipelines in upland areas, the trench should be backfilled within 5 days of being opened.

In more severe terrain, with greater chances for erosion and run-off, the amount of open trench needs to be limited so that ditch plugs are not overwhelmed by large volumes of water channeled down the trench. To alleviate water build up behind temporary ditch plugs, an associated water bar should be built in conjunction with the plug. This associated waterbar will be designed to off the soil side of the ROW through the spoil pile wherever possible. This will eliminate ditch water being carried across the disturbed soil on the travel lane. The final determination in those instances will be made by the on-site environmental inspector or other qualified personnel.

8.5 Ditch Plugs

Temporary ditch plugs will be placed in the excavated trench to impede the flow of

water down the trench. Hard plugs (unexcavated earth segments of the ditch line) will be maintained adjacent to streams and wetlands to protect those resources until pipe-laying activities occur. Soft plugs (replaced trench spoil, fill, sand bags) will be spaced in the trench in sloping areas to reduce erosion and trench slumping. Hay or straw bales **will not** be used as material for temporary ditch plugs.

After pipe-laying, permanent foam or sand bag trench breakers will be installed and spaced according to industry standard spacing before backfilling. At the request of landowners or at the discretion of the environmental inspector or construction supervisor, hard plugs will be left in place until pipelaying commences to accommodate equipment crossings. Hard plugs should be a minimum of 50 feet in length for areas where tie-ins will occur. For animal and vehicle crossings, a 25 to 30 foot plug should suffice.

8.6 Blasting

In locations where shallow bedrock cannot be excavated or chemically, hydraulically or pneumatically fractured, explosives may be used to break the rock into removable pieces. Blasting activities will conform to all applicable local and federal laws and regulations, including:

a. 27 CFR 55, (OSHA)

b. 29 CFR 1910.109, 1926.900 and 1926.914, (OSHA)

c. The U.S. Bureau of Mines Guidelines

In addition to statutory compliance, the following practices will be followed.

8.6.1 Preconstruction Studies

Where field surveys and soils data indicate the likelihood of shallow bedrock,

geologic testing shall be performed to determine those areas likely to require blasting. In these areas, the distance to sensitive receptors (e.g., residences, historic structures, wells/springs, utilities, livestock areas, underground storage) will be determined. Resources at risk will receive pre-blast baseline tests (e.g., water well location, quality and flow, structural and wall conditions including foundation condition, wall cracks).

8.6.2 Monitoring and Inspection

Blasting supervisors (shooters) will be licensed by New York State. A copy of the shooter's license(s) will be supplied to Staff before blasting operations begin. The company will employ an independent blasting consultant to monitor compliance with regulations, conduct vibration and water well testing and investigate damage claims. The consultant will have the authority to halt blasting operations when standards are not met.

8.6.3 Time Constraints and Notification

a. Explosive use will be limited to the hours of 9:00 am to dark on non-holiday weekdays, unless otherwise approved by PSC staff;

b. To control flyrock or other airborne debris, rubber tire or woven steel blasting mats will be used, unless otherwise approved by PSC staff;

c. PSC staff and local and state public safety officials will be notified at least 48 hours before blasting is initiated on a project, and each morning with planned blasting locations;

d. Inhabitants of occupied structures and farm operators within 1/4 mile of centerline will be notified at least 48 hours before blasting in that area.

8.6.4 Remediation

The company will compensate landowners or repair any documented damage to property, livestock, woodland resources, structural foundation and wall damage, and reductions

in water well quality and quantity, etc., resulting from blasting operations.

9. PIPELAYING

9.1 Objectives

Pipelaying activities include pipe stringing (layout), fabrication, trench dewatering, pipe-padding, pipe-lowering-in, installation of permanent trench breakers, and trench backfilling. The environmental objectives are to minimize the adverse impacts of trench dewatering, stormwater runoff, and soil erosion by the installation of permanent trench breakers on slopes, stream banks, and wetland edges, the timely backfill of the open trench, the installation of permanent erosion controls and re-establishment of vegetation cover. In addition, extra precautions will be taken when pipelaying activities occur in the vicinity of overhead electric facilities (see Section 16.5.1).

9.2 Pipeline Stringing

Stringing is the operation by which pipe sections are transported by tractor-trailers, front-end loaders, and side booms along the ROW and placed adjacent to the trench in preparation for fabrication and lowering-in. During wet weather, operations should be suspended in areas of unstable soil conditions to prevent potential rutting, erosion, and other site hazards. Rutting can be defined as the mixing of the topsoil horizon with those horizons below by unsupported construction traffic. Any erosion control devices that are moved or damaged by construction equipment will be replaced or repaired by the end of the work day. Pipe may be placed on the ground, on sandbags, wood timbers or any non-abrasive surface. Coated pipe must be elevated on wooden skids or other non-abrasive supports to prevent scratches and dents to the pipe or coating.

In all instances, steel pipe of any diameter should be considered dangerous due to its propensity to roll; precautions should be taken to guard against pipe movement and rolling. Proper ROW width and grading will provide sufficient room on the travel side to remove pipe sections from trucks and place them adjacent to the ditch. Stringing is usually accomplished by side-boom tractors. Caution will be taken when pipe is being strung beneath high voltage electric lines (See Section 16.5.1).

9.3 Fabrication:

Pipe fabrication includes bending, welding, coating, and testing. Erosion and sediment control devices will be maintained during these activities. Where concrete-coated pipe is needed for wetland and stream crossings, the best practice is for pipe to be pre-coated in an off-ROW fabrication yard. If it should become necessary for pre-coating to be done in the field, no field coating activities will be conducted in wetlands or within 100 feet of any waterbody or wetland.

When pipe is to be installed across wetlands, saturated soils or across streams, use of concrete coated pipe, saddle weights or other devices, may be required to counteract the buoyancy of a gas filled pipe (see Safety Regulations, Part 255).

9.4 Trench De-Watering

During construction, it may be necessary to pump water from the trench to expose the bottom or allow crews to work. Such dewatering can result in soil erosion, sedimentation in wetlands or other adjacent sensitive resource, or degradation of water quality as sediment-laden water flows into an adjacent waterbody or wetland. To minimize these impacts, trench water will be pumped into sediment bags, retention ponds, or retention/filtering structures

(See Section 7).

9.5 Lowering-In

Fabricated pipe will be lowered into the trench on to "foam" or sand-bag "pillows", or appropriate padding material, where necessary, to protect the pipe from the trench walls or bottom. At this stage, before padding and to impede water flow in the trench, permanent trench breakers will be installed on slopes as specified. "Lowering in" will be accomplished with sufficient equipment to minimize undue stress on the pipe or any welded sections.

9.6 Trench Breakers

Trench breakers may be constructed of sandbags or foam. Impervious materials may be used to retain water in the wetlands. Trench breakers will be installed at all wetland edges. The location of these impervious trench breakers will be determined in the field by the company and DPS staff and identified in the construction documents. Trench breakers will also be installed at the top of bank of each waterbody crossing.

9.7 Padding

To protect the pipe from loose stones or surrounding bedrock, the pipe may be padded with imported or screened on-site material. Padding, when needed, will be placed around the entire pipe. Where the pipeline trench traverses stony soil or areas of shot rock, pipe coated with concrete or rock jacket may be used in lieu of granular padding.

9.8 Backfilling

After padding, the trench will be backfilled with on-site trench spoil. No stones larger than 12 inches will be part of the backfill material; larger stones (natural boulders or shot rock) will be hauled off ROW to an approved disposal site or windrowed on the ROW with

landowner approval. In the top 12 inches of backfill, remaining stones on the ROW will match conditions on adjacent off ROW land.

In areas where concrete coated pipe has been installed, stones larger than 12 inches may be part of backfill materials. In active agricultural land, more stringent backfill and restoration practices will be utilized (see Section 12).

Backfill will either be compacted to match surrounding grade or a crown will be left over the ditch line to accommodate settling. Crowned ditches will be inspected periodically throughout the year and necessary measures will be taken to restore grade and stabilize the ROW. Backfill will be completed within 2 days if lowering-in.

10 Waterbody Crossings

10.1 Objective:

To plan and install construction paths, access roads, and pipeline waterbody crossings in ways that minimize adverse impacts on streams and water resources to the maximum extent practicable.

10.2 Definition:

A waterbody will include any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent features such as ponds and lakes. The Environmental Inspector will make the determination of perceptible flow at the time of crossing. DPS will classify streams (for construction purposes only) as follows:

a. "minor waterbody"- less than or equal to 10' wide at the crossing location as measured from water's edge to water's edge.
b. "intermediate waterbody"- greater than 10' but less than or equal to 100' at the crossing location as measured from water's edge to water's edge

c. "major waterbody"- greater than 100' at the crossing location as measured from water's edge to water's edge

10.2.1 Categories and Classifications

A preliminary table listing all waterbodys, DPS width classification, DEC classification and any imposed crossing "windows", the preferred and any alternate crossing methods will be provided to DPS staff for review prior to the start of construction. Final determination of stream class at the time of crossing, from above, may be different at the time of crossing than during pre-construction survey work. In which case, the procedures will be followed for the class designation the waterbody falls in to at the time of crossing. DPS staff should be provided with a weekly waterbody-crossing schedule. In the event that a crossing date is changed, DPS staff should have at least 48 hours notice to that effect. In addition to the above information, the following plans will be submitted for DPS staff approval prior to the start of construction:

a. plans for any extra work space areas that are to be located within 50' of a waterbody crossing or wetland
b. plans for each major waterbody crossing,
c. a contingency plan where horizontal directional drill (HDD) crossings are proposed that will mitigate for "frac-outs" or failure of the drill.

The NYS Department of Environmental Conservation (DEC) has stream classification criteria that is based on water quality and the best stream use. The primary DEC classified most likely to be crossed are:

a. Class AA and A: Suitable for drinking water
b. Class B: Primary contact recreation and any other usage except drinking or food preparation
c. Class C: Waters best used for fishing, fish propagation, primary and secondary contact recreation
d. Class D: Waters best used for fishing although conditions are not as favorable as those of Class C

The details of stream classifications as related to the DEC can be found in 6NYCRR Section 701.19 (Environmental Conservation Regulations).

Due to fishery or spawning issues, streams classified "C" or better may have a seasonal window where in-stream construction is prohibited or special constraints apply. In-stream work will be completed within hours for all waterbodies. Any requests for exceptions must be identified in the NOI or application and addressed in the Certificate.

10.3 Spill Prevention:

Where wetlands and/or waterbodies are crossed or are present within 100' of the ROW limits a SPCC plan shall be prepared to ensure that:

a. All employees and/or other hazardous material are properly trained and know the proper reporting requirements;

b. All equipment is in good operating condition and is inspected on a regular basis;

c. All equipment is refueled at least 100' from a waterbody or wetland boundary and in an upland area. Where there is no reasonable alternative, refueling may occur within these setbacks, but only after notification is made to the Environmental Inspector and proper precautions are taken to prevent spills;

d. Hazardous materials will not be stored within 100' of a wetland or waterbody. This applies to storage and does not apply to normal operation or use of equipment in these areas.

e. All equipment operating within 100' of a wetland or waterbody will have sufficient spill containment equipment on board to provide for prompt cleanup in the event of a release.

f. Pumps used for trench dewatering, dam and pump crossings, or hydrostatic testing operating within 100' of a wetland or waterbody are placed in proper sized and constructed secondary containment structures during their use.

g. Concrete coating activities are not performed within 100' of a wetland or waterbody boundary, and

h. Construction equipment is parked at least 100' from wetlands and/or waterbodies at the end of the working day.

10.4 Buffer Areas

As described in Section 5.7, a vegetation buffer area will be maintained at all waterbody crossings. Vegetation in the buffer area will include small trees (generally up to 20' in height, stumps, shrubs, and herbaceous plants. Large trees (over 20 feet in height) will be removed during initial clearing operations. The buffer area should be a minimum of 15' long and extend the entire width of the ROW, except for that portion of the bank that has been cleared for the construction path. Where HDD or conventional boring is proposed, all vegetation will be maintained within this buffer strip.

10.5 Installation

Unless specifically requested in the application, all in-stream work, except that required to install or remove the equipment crossing, will be completed within 24 hours from the start of trenching. For those streams where additional time to complete the crossing is anticipated, the applicant should identify those areas prior to the initiation of construction.

10.5.1 Equipment crossings

After determining width, depth, flow, and stream class, the applicant will indicate the appropriate method to cross the waterbody. Where a waterbody cannot accommodate a temporary equipment crossing, the pipeline construction will be moved around the stream via an

alternate access route. All equipment must use the equipment crossing with the exception of clearing equipment which may make one pass and through only minor waterbodies to clear that vegetation necessary to safely install the crossing. This one pass should only be made if it will not result in siltation that could result in a violation of water quality standards.

Equipment crossings will be constructed so as to all for unrestricted flow and to prevent soil from entering the waterbody. Crossings should also be designed and constructed to withstand and pass the highest flow anticipated while the bridge is to be in service and maintained daily, if necessary, to prevent any accumulated soil from entering the waterbody.

The following are examples of acceptable equipment crossings:

a. Timber mat with or without culverts
b. Railroad cars
c. Flexi-float or portable bridges
d. Clean rock fill and culverts (soil will not be used for fill)

Where the width of the stream to be spanned is greater than the length of the timber mats used, in-stream abutments may be used. Culverts, if used, will be aligned to prevent bank erosion or streambed scour. Downstream of the culverts, energy dissipating devices may be installed if necessary.

10.5.2 Concrete Coating

Where large diameter pipe is being installed across medium or large streams, a heavy concrete coating (3-4 inches thick) will be applied to the pipe for a distance equal to or exceeding the length of open trench at the crossing location. Concrete coating protects the pipe in the trench from rock or other obstructions and adds weight to the pipeline. Any concrete coating will be performed a minimum of 100 feet from the water's edge. All field-applied

concrete will be cured a minimum of 7 days before installation to prevent concrete leachate from entering the stream.

10.6 Dry Crossing Methods

All waterbody crossings shall be installed by one of the following dry-ditch methods outlined below, or by HDD. Open-cut crossings or wet crossings will only be allowed if requested prior to the start of constuction and approved by Staff.

10.6.1 Trenching

a. Prior to the initiation of trenching for the pipeline stream crossing, the following sequence of events will generally be followed:

b. Any sediment-laden water pooled in upland trench sections behind ditch plugs will be pumped and filtered through filter bags or basins at least 50-feet from stream banks.

c. A spoil sediment barrier retention basin or silt fence will be installed at least 10-feet back from each bank.

d. All equipment, material and construction personnel necessary for the pipeline crossing will be on-site before trenching begins.

Once trenching begins, the following guidelines will apply:

a. For minor to intermediate size waterbodies, trenching will be done with two excavators starting "bucket-to-bucket" mid-stream and working back towards the stream banks. If only one excavator is used, trenching will be done in a manner that minimizes in-stream disturbance to the extent practicable. All trench spoil will be placed at least 10' from the water's edge and behind a suitable erosion control device.

b. For major waterbodies, trenching may be done by clamshell or dragline excavation; and

c. if necessary, sheet piling will be installed to retain trench wall integrity in streams with unstable bottoms

d. The trench will be deep enough to provide a minimum of 5-feet of cover over the pipeline. If subsurface bedrock, or other stream features preclude obtaining this depth of cover, the company will notify staff as soon as possible, providing a plan for modifying the stream crossing method.

10.6.2 Lowering-In/Pipe Placement

Lowering-in, or the placement of the pipe in the trench, will take place as soon as practicable after trenching is complete. In large streams, the installation of large diameter, concrete-coated pipe may require the use of foam or compressed air floats to move the welded sections of pipe into place before setting. Floats will be removed immediately after pipeline installation.

10.6.3 Trench Backfill

Backfill operations within streambeds will commence immediately after pipe lowering-in operations have been completed and will continue until completed. Backfill material will consist of imported clean stone or approved excavated streambed material. The upper one-foot area of the trench will be filled with stone large enough to prevent streambed scouring during high water flow conditions.

10.6.4 Cleanup and Restoration

Upon completion of backfilling operations, clean-up and restoration of the stream crossing, banks and bank approaches (at least 50 feet adjacent to each bank) will be completed within 24-hours and accomplished sequentially as follows:

a. Remove all in-stream structures (i.e. dams, flumes, sediment barriers, etc.);

b. Return streambed and lower banks to the original grade unless otherwise authorized;

c. Final grade adjacent banks and slopes and remove any retention or settling basins on the banks; and

d. Permanently stabilize banks with seed, mulch and/or other appropriate erosion control devices (See Section 7).

As the project nears completion, final restoration of equipment crossing access on adjacent upland staging areas will be accomplished in the following sequence:

a. Removal of any equipment access crossing material including approach abutments, need boards, stone or dirt, flumes, culverts, timber mats or other related structures;

b. Final grade stream banks and adjacent ROW where stream access crossing was removed;

c. Install appropriate erosion control devices (permanent rip-rap, jute mesh, rock or earth berms); and,

d. Seed and mulch disturbed areas. Additional planting may be required upon on-site review with the applicant and staff.

10.7 Dry Stream Crossing Techniques

10.7.1 Boring and Pipe Push

Conventional or slip bores may be used to minimize or avoid impacts on sensitive resources or areas of difficult topography. The following apply when using this method;

a. The jacking (push) and receiving pit will be at least 20 feet from the water's edge.

b. Any accumulated water in the pits will be filtered treated to remove silt and sediment before it is returned into any watercourse.

c. Within the stream channel, the pipe will be installed with a minimum of 5 feet of cover

10.7.2 Directional Drilling

Directional drilling is the pulling of the welded pipe sections beneath the ground

through an enclosed trench guided by remote-controlled drill heads. Setbacks from the streambank will be dependent upon the length of the crossing. Within the stream channel, a minimum 5-foot depth of cover will be maintained unless site conditions dictate otherwise. The following guidelines will apply when using this method.

a. Where noise may be an issue, noise measurements will be taken to assess impacts of drilling equipment on nearby sensitive receptors (see Section 15). Measures to reduce noise impacts will be taken prior to the initiation of drilling.

b. Drilling mud and related recycling and mixing equipment will be positioned and bermed in such a manner as to prevent spills in streams or other waters.

c. All used or excess drilling mud will be disposed of at a Commission- or DEC-approved disposal site.

d. Staff will be informed immediately of any spill or "frac-outs" of drilling mud into the waters being crossed.

e. A contingency plan will be completed and filed with the commission for approval that details what procedures would be followed should a HDD fail and procedures for mitigating frac outs.

10.7.3 Other Dry Crossing Methods

The primary objective of these methods is to isolate in-stream work and spoil areas from stream flow by damming and diversion techniques. Stream flow is interrupted up-stream and pumped or otherwise moved around the work area. Prior to construction, a re-assessment will be performed to ensure that the proposed crossing method is still applicable, given on-site streamflow conditions.

10.7.3.1 Flume Method

Flumed crossings may be installed minor and intermediate waterbodies during

low flow conditions. Pipes will be sized to handle expected flows and be long enough to cross the entire work zone, including the travel lane and the swing radius of the bucket on the excavator. When using this method, the following specifications will apply.

a. Once the flume pipe is installed, headwalls or dams will be constructed up- and down-stream to channel water into the flume pipe. Where necessary, to ensure a water-tight barrier, a metal flange or other appropriate material will be attached to the upstream end of the flume. This flange should be buried into the substrate and secured with sandbags. This will be accomplished prior to any other instream activity.

b. Flume(s) will be adequately sized to accommodate the flow at the time of crossing and installed to prevent bank erosion and streambed scour.

c. Water will be pumped from the area between the dams, and filtered in an appropriate filtration or settling device prior to the initiation of trenching.

d. Once the trench is excavated across the stream channel and under the flumes, the pipe will be installed and backfilled immediately (see section 10.6.3). The flume pipes will not be removed during trenching, pipelaying, backfilling, or initial restoration efforts.

e. All flume pipes and dams will be removed as soon as stream bed and bank restoration is complete

f. Stream bed and banks for a distance of at least 50 feet from the water's edge will be permanently restored wit the exception of the equipment crossing if essential for the remaining construction activities. The "drag section" to be installed will be sufficient in length so that tie-ins can be made outside of this restored 50' area.

10.7.3.2 Dam and Pump Around Method

This method may be used on minor and intermediate waterbodies. The following specifications will apply to this method. The dam and pump method may be used for crossings where it is determined by the applicant and in consultation with staff that pumps can adequately transfer stream flow volumes around the work area. Implementation of the dam and pump crossing method must meet the following criteria:

a. pumps and hoses will be set-up as appropriate to address on-site conditions.

b. pumps will have twice the capacity (cubic feet per second) of the measured streamflow. A spare pump and extra hose will be kept on site at all times. Depending on stream flow, it may be necessary to excavate a sump hole in the stream bed to move water to the pump head.

c. the up-stream dam will be composed of sandbags, metal plating or a combination of both. A down-stream dam will be installed, if necessary, to keep the work-zone streambed dry.

d. The hose will have sufficient slack so that it can be moved to facilitate pipeline installation during lowering-in.

e. Backfill operations will commence immediately after lowering-in and be accomplished per section 10.6.3.

f. Stream banks and approaches will be restored per section 10.6.4.

g. Use of sufficient pumps, and on-site back up pumps, to maintain adequate downstream flows;

h. Construct dams with materials that prevent sediment and other pollutants from entering the waterbody;

i. Screen pump intakes;

j. Prevent streambed scour at pump discharge;

k. Monitor both the dam and the pumps to ensure the proper operation throughout the crossing;

l. Properly constructed and sized secondary containment for the pumps if within the 100' setback requirements for wetlands and waterbodies; and

m. Installation of an oil absorbent boom across the stream prior to in-stream activity.

11. Wetland Crossings

11.1 Objectives

To plan and execute pipeline wetland crossings in a manner that reduces or

minimizes adverse impacts on these resources to the maximum extent practicable while still facilitating pipeline installation.

11.2 Regulatory Agencies and Requirements

All wetlands are federally regulated by the US Army Corps of Engineers (U.S.ACOE or Corps) pursuant to Sections 401 and 404 of the Federal Clean Water Act. In addition, NYS DEC regulates all wetlands over 12.4 acres. The issuance of Section 401 Permits is often delegated to the Commission on smaller projects. Both agencies will be contacted as early in the planning stages as practicable.

The Corps periodically revises Section 404. Recent revisions have dealt with modifications to the "Nation Wide Permit" (NWP) process for actions in wetlands. Any action in or through a wetland will require federal approval either under a "nationwide" permit or an "individual" project specific permit.

Relevant DEC comments in Article VII cases will be incorporated in the case certificates. Separate permits must be obtained from DEC for Article VII projects under Part 121 unless the applicant requests a waiver. In this instance the applicant has formally requested that the PSC waives the DEC permit requirement and use the Certificate in its stead.

11.3 Wetlands Identification and Delineation

The applicant will identify and delineate all wetlands crossed by their proposed project during preparation of an application or NOI by consulting with the following agencies:

a. U.S. Corps of Engineers;

b. New York State DEC;

c. The U.S. Fish and Wildlife Service, and;

d. The New York State Department of State (if coastal zone areas are crossed).

DEC has maps of jurisdictional wetlands over 5 hectares or 12.4 acres in size. The U.S. Fish and Wildlife Service (USFWS) uses the National Wetlands Inventory. These maps offer are good resources for applicants seeking to identify and delineate wetlands in the proposed project area. An on site wetland survey performed along the proposed project route prior to the filing of the Application or NOI.

Once wetlands in the project area have been identified and located, the NOI or Application **may** need modification to completely avoid these resources or to minimize adverse impacts on them to the maximum extent practicable. Wetlands in the project area will be flagged and staked prior to the initiation of construction.

11.4 Timing and Scheduling Constraints

The Corps, DEC, USFWS or the Commission may require construction to occur during specific site conditions or seasonal periods. This may be done to protect a particular species or habitat. The applicant will inform Staff of any permit conditions or constraints required by other agencies. For these areas, staff will be notified 48 hours prior to the initiation of construction.

11.5 Clearing Methods

Any clearing proposed in wooded wetlands must be consistent with permit requirements from the appropriate jurisdictional agencies. If high soil moisture content or

standing water exist in a wetland prior to clearing, the use of heavy equipment will be limited so as to prevent rutting and soil profile mixing. Trees will be felled by hand and either used on-site, stored on the ROW or moved off ROW.

In wooded wetlands, when soil conditions permit, trees maybe felled via mechanical clearing methods described in Section 5. When conditions warrant, the following specialized equipment may be used to further reduce adverse impacts:

a. swamp-tracked excavators with hydraulic shears or grapples;

b. forwarders; and,

c. swamp tracked bulldozers.

During clearing and disposal operations, precautions shall be taken to avoid soil profile mixing or rutting.

11.6 Construction Path and Access Road Construction

The applicant will consider the following in determining the method of equipment access in wetlands:

a. moisture content and substrate composition;

b. pipeline diameter and class, and;

c. the type and size of construction equipment to be used.

All access roads will be considered **temporary** and as such, designed for installation **and** removal. The primary methods of wetland crossings are described below.

11.6.1 No Road or Pathway

No road or pathway is built to facilitate construction or vehicular access through a wetland. Specialized machinery or trenching methods obviate the need for surface

improvements.

11.6.2 Bridges and Flotation Devices

When the depth of water in a wetland exceeds 12 inches, temporary pontoon or floatation bridges may be used. If bridging is used, the following specifications should apply:

a. On smaller wetlands that can be spanned, banks must be sufficiently stable to support both bridge and equipment.

b. All previously used flotation equipment should be cleaned prior to re-use.

c. Trees should not be used for guying bridges if practicable, if trees are used, protective measures (pipe slings or skid ropes) should be used to prevent damage to trunks.

11.6.3 Timber Mats

In wetlands with high soil moisture content or standing water, prefabricated wooden mats may placed on the wetland surface to provide support and stability. When timber mats are used in wetlands the following standards apply:

a. Sufficient mats will be on site to sufficiently span the wetland to be crossed.

b. The mats to be used must be sufficiently wide, free from decay and sturdy enough to support the necessary equipment.

c. Previously used mats will be cleaned to prevent introduction of non-native species to the wetland.

d. Mats will be installed perpendicular to the trenchline to provide adequate weight distribution for the construction equipment.

e. Once construction is complete, all mats will be removed from the wetland unless retention has been authorized by the appropriate jurisdictional agencies.

11.6.4 Log Rip Rap (corduroy) Roads

Where native woody material is available, logs may be placed in wetlands to

support construction equipment. When constructing corduroy roads, the following construction standards will apply:

a. Logs used will be at least 4 inches or greater (small end diameter) and 12 feet long and placed perpendicular to direction of travel.

b. Flume pipes will be installed where necessary to maintain cross drainage.

c. Access will be restricted to vehicles essential for construction and the roads inspected and repaired on a regular basis.

d. An attempt will be made to use no more than 2 layers or timber rip-rap for the construction of the travel lane.

e. Brush, stumps, rock, soil from outside of the wetland will not be used to stabilize the construction ROW.

f. Once construction is complete, all log rip rap or corduroy materials will be removed and either stacked in upland areas along the edge of the ROW or taken off ROW to and approved disposal or storage site. Retention of the road in the wetland must be authorized by the appropriate state and federal agencies.

11.6.5 Filter Fabric and Stone Roads

In instances where suitable woody materials or mats are unavailable, a fabric and fill roadway may be installed using the standards listed below:

a. Prior to placing geotextile material in the wetland, all tree stumps will be cut flush with the ground as much as practicable. If stumps are to be removed then two to three feet of stem should be left to facilitate grubbing operations. In most instances, only the stumps over the ditchline will be removed unless otherwise specifically approved.

b. The road will be built to the minimum width necessary for the safe and efficient construction of the pipeline.

c. A stone or base will be laid on top of the filter fabric. The road will be of sufficient depth to hold material in place and support equipment.

d. Suitable cross drainage will be provided across the road for stream channels

and surface flow.

e. All vehicular and construction equipment access will be confined to the road.

f. Upon completion of construction, all stone and filter fabric will be removed from the wetland unless otherwise approved for retention.

11.7 Grading

Grubbing and grading activities will be limited to directly over the trenchline. Trees stumps will be left in place except over the trenchline. Tree stumps and minor grading activities may be allowed if in consultation with DPS staff, that tree stumps and/or severe terrain pose a safety related issues. Only then can tree stumps and root systems be removed from the working side of the ROW.

11.8 Trenching

When excavating trenches in wetlands, the following methods may be used.

11.8.1 Standard Trenching

Depending upon the characteristics of the wetland and the physical parameters of the pipeline to be installed, trenching is accomplished in more or less the standard manner used in other upland areas. Wide or flotation track excavators will be used to excavate the trench from the working side of the ROW. Spoil will be stored on the other side of the trench.

In instances where there is insufficient work room to store spoil on the far side of the ROW, spoil may be temporarily stored on the travel lane. Spoil placed in the travel lane will be allowed to dry before equipment can travel. When the pipe is installed the spoil is placed back into the trench.

11.8.2 Trenching off Timber Mats

When timber mats are used, the mats are moved forward and the excavator trenches behind itself. Excavation is done in one pass and backfill accomplished in a subsequent pass. This technique requires a skilled operator and care must be taken to ensure the mats are stable before driving onto them (see section 11.6.3). All mats used must be retrieved following construction.

11.8.3 One pass in-line Excavation

In wetlands with standing water, a "swamp hoe", excavators designed to operate and float on wetlands, will excavate the trench in a single pass. No additional support for the machine should be necessary. Topsoil and subsoil are usually placed on opposite sides of the trench. After the pipe has been installed, backfill is done in the reverse manner of excavation with the excavator first pulling subsoil back into the trench followed by topsoil. The applicant will ensure that the excavator has sufficient fuel to finish the excavation in one pass. Refueling restrictions in wetlands may require the machine to be walked out for refueling.

11.8.4 Modified One Pass in-line Method

This method utilizes the same trenching technique discussed above, except that the pipeline installation operation occurs concurrently with trenching. This method is used in severely unstable soils where the integrity of trench walls are hard to maintain.

Pre-welded sections of pipe are prepared prior to start of trenching. A "pull head" is welded to the end of the pipe string and a cable is then attached to the pull head strung across the wetland. Then cable is threaded between the tracks of the excavator, and attached to

bulldozer(s) or other pulling device. Prior to excavation the cable is slackened, moved to one side and a short section of trench is excavated. Next the cable is then tightened and the concrete coated pipe is immediately pulled into the trench. This process is repeated until the wetland is crossed.

11.9 Directional Drill & Conventional Bore

A conventional bore or directional drill may be employed to avoid disturbance of wetlands.

11.10 Spoil placement and control

11.10.1 Topsoil Stripping

In order to prevent the mixing of organic material and subsoil, topsoil should be stripped and stockpiled separate from subsoil. It may be necessary to install silt fence or other siltation control barriers to ensure separation and prevent topsoil loss.

Topsoil segregation may require the acquisition of additional temporary workspace. In areas with surface water, gaps may have to be left in spoil piles to allow for surface drainage. In areas of high flow and unstable soils, temporary culverts may have to be installed in spoil piles to allow for cross drainage.

In wetlands with saturated soils or standing water, topsoil stockpiling may not be possible. In these instances, topsoil and trench spoil have to be controlled to prevent movement off-site. Silt fence or other sediment retention devices may be necessary to prevent soil movement. In severe cases, additional temporary workspace may have to be used to accommodate soil movement.

11.11 Ditch Plugs in wetlands

In wetlands crossed by mainline trenching, soft plugs shall be installed at the wetland edge and maintained until lowering operations commence. For wetlands crossed by tie-in construction, a hard plug shall be maintained at the wetland edge until tie-in operations are commenced.

11.12 Pipe Fabrication

11.12.1 Concrete-Coated Pipe

When installing pipe 8 inches in diameter or larger, in wetlands where the trench consistently fills with water, heavy concrete coating will be used for a distance equal to, or greater than, the length of the water-filled trench. The concrete coated pipe will reduce the amount of trench dewatering necessary for pipe installation. Once sufficient trench depth has been achieved, the pipe can then be dragged or lowered-in **without** having to dewater the trench to inspect it for depth of cover or obstructions.

Also, concrete-coated pipe will preclude the use clamp-on or saddle weights or other weighting devices. When possible, the pipe used will be "factory coated". If the coating process must be done in the field, it will not be done within 100 feet of any wetland or 100-foot adjacent buffer zone.

11.12.2 Fabrication

Stringing, welding and other pipeline fabrication activities should take place **outside** wetland boundaries and buffer zones to the maximum extent practicable. When sections of pipe are ready for installation, only then should they be carried out to or pulled into the trench.

11.13 Trench Dewatering

Trench dewatering may be necessary to ensure sufficient depth of cover, to visually inspect the trench bottom for obstructions and allow crews to safely and efficiently construct the pipeline. If trench dewatering is necessary:

a. Water will be pumped into filterbags, sediment retention ponds, or other devices in to well vegetated upland area so it can be filtered. Refer to sections 7.2.2.6 and 7.2.2.7 for details. Dewatering will occur in a manner that does not result in heavily silt-laden water flowing in to a wetland.

b. Under no circumstances will trench water be pumped or otherwise directed into a classified wetland unless free of suspended solids.

11.14 Backfill

Backfill operations will commence immediately after lowering-in operations and will continue until completed. When backfilling the trench the following will apply:

a. Only on-site, native material will be used in backfill operations unless the native material does not meet specifications, or ledge rock is encountered in the trench. Imported material may be brought in to protect the pipe and achieve depth of cover requirements. Use of imported backfill must be approved by the appropriate agencies.

b. Where topsoil has been segregated from trench spoil, backfill will be done in reverse order with trench spoil returned first.

c. Excess spoil will be removed off-site. Under no circumstances will excess spoil be spread along the ROW or stockpiled in a manner that permanently changes the soil profile.

d. Trench breakers made of foam or sandbags shall be installed at the edge of all wetlands. For those areas where conditions and topography warrant and the applicant identifies prior to the start of construction, the installation of trench breakers at the upland/wetland boundaries in those locations.

11.15 Clean-up and Restoration

Upon completion of backfilling, restoration and clean up will begin in compliance with any specific permit requirements

11.15.1 Restoration

a. Immediately after backfill, wetlands will be restored to their original contour and relief. Surface and subsurface drainage patterns shall be restored to pre-construction conditions.

b. Restoration of the wetland banks other than the travelway, will be completed within 24 hours after the wetland profile has been restored. This will be done for a minimum distance of 50 ft from the wetland edge. Restoration of the wetland banks will include but is not limited to: final grading, seeding, liming, fertilizing, mulching.

c. A waterbar, driveable berm, or siltfence will be installed at the upland/wetland boundary upon the restoration.

11.15.2 Clean-up

a. All materials placed in the wetland to facilitate travel and construction must be removed unless otherwise authorized for retention.

b. All man made objects (i.e., excess pipe, skids etc.) particularly prefabricated wooden mats, will be removed from the wetland and disposed of at an approved storage or disposal site.

c. Following cleanup, the wetland and its banks will be evaluated for possible vegetative plantings. This will be done in consultation with the appropriate agencies.

12. Agricultural Lands

12.1 Objective

To facilitate pipeline construction through and across agricultural lands while

minimizing adverse impacts to this resource.

12.2 Types of Agricultural Lands and Facilities

Staff of the New York State Department of Agriculture and Markets (Ag&Mkts) has divided agricultural lands into three basic types.

A Pasture/Grazing

1. Unimproved grazing areas (bushy or wooded land used by livestock).

2. Permanent open pasture (land devoted only to pasture use, not suited to tillage or rotation).

3. Improved pasture (including tillable rotation pasture/hayland).

4. Livestock fencelines.

B. Cropland

1. Hayland

2. Rotation cropland.

3. Long-term cropland. Such lands will be identified through consultation with the offices of the Consolidated Farm Service Agency and the County Soil and Water Conservation District.

C. Unique Agricultural Lands

1. Specialty cropland (vegetables, berries, Christmas trees, Nursery).

2. Orchards.

3. Vineyard.

4. Maple sugarbush.

5. Organic muckland.

6. Permanent irrigation systems.

All attempts shall be made to avoid routing facilities through unique agricultural

lands. In the event these resources cannot be avoided, the applicant will consult with appropriate agricultural agencies to minimize impacts.

12.3 Clearing

Farmlands often have shrubs, hedgerows and other woody vegetation that may require clearing. In those instances, normal clearing procedures will be followed. Logs, stumps, brush, or chips will not be piled or buried in active agricultural fields or improved pasture in any manner that would interfere with the intended land use unless landowner permission is acquired. Black cherry trees (Prunus serotina) are toxic to livestock if cut while in foliage and ingested. All felled trees of this species will be removed from areas accessible to livestock.

12.4 Grading and Topsoil Segregation

12.4.1 Grading

Grading operations in agricultural lands will vary with soil type, land use and topography. Construction practices in agricultural lands are designed with the goal of protecting farm soils from adverse impacts (soil mixing, compaction, erosion). The primary means to achieve these goals is topsoil segregation.

The various topsoil segregation techniques described in Section 6.3 of this document will be applied. The decision of whether a particular field will require topsoil stripping and which method will be used will be made in consultation with the landowner/tenant farmer, Ag & Mkts and Staff.

12.4.2 Topsoil Segregation

12.4.2.1 Cropland

The decision to strip top-soil on the ROW will be made in consultation with staff,

the landowner or tenant farmer and Ag & Mkts personnel. Factors to consider include: "current use, best use, fertility, tillability, soil profile characteristics, fragility, subsurface drainage and existing water control systems. Based upon the above information, a determination will be made as to whether "ditchline", "ditch and spoil" or "full width" stripping will be done. If topsoil stripping is to be done the following will apply.

a. Stripping will be done **prior** to grading.

b. Stripping will be done generally to a maximum depth of 12 inches or to the horizon change depending on site specific conditions.

c. On side slopes stripped soil should be placed on the uphill side to minimize mixing with subsoil.

d. Breaks shall be provided in topsoil to prevent ponding and provide for livestock and equipment access.

e. If topsoil must remain stockpiled over winter it will be seeded, mulched or otherwise protected from erosion no later than September 1. Erosion control techniques will be employed where necessary to prevent the loss of topsoil from rain or runoff.

12.4.2.2 Pasture/Grazing

In most instances, improved pasture will be treated in the same way as cropland. Special attention should be paid to livestock access to fields cut off by grading and topsoil storage. After consultation with farmer owner, tenant and Ag & Mkts, it may not be necessary to strip topsoil on unimproved pasture.

12.5 Drain Tiles

a. The applicant will consult with the farm owner/operator and the NRCS or Soil & Water Conservation District to determine if plans or recommendations exist for the installation of future drainage. If so, the project should be designed to accommodate future drainage installation.

b. Whenever possible or practical, drain tiles should be denoted on project maps where they cross the ROW.

c. Attempt to mark exposed or damaged tiles after grading or topsoil stripping has occurred.

12.6 Trenching

Trenching operations will proceed in much the same manner as in other upland areas except in instances where topsoil stripping has occurred.

a. In areas that have been stripped, trench spoil and sub-soil will be segregated from the topsoil piles to prevent mixing.

b. In croplands, pipe will be buried with a minimum depth of cover to the top of the pipe of 4 feet. 40 inches of cover maybe acceptable in special circumstances with prior approval.

c. In areas of shallow bedrock and thin soils, subsoil will be stripped down to bedrock and stockpiled separately for replacement.

d. At landowner request, soft or hard plugs will be constructed to provide access across the trench for livestock and equipment. Temporary fencing may be necessary adjacent to these accessways, to control livestock movement.

e. Drain tiles uncovered and/or broken by trenching should be marked by stakes on or near the edge of the trench for future permanent repair. If necessary to maintain field drainage, temporary crossovers will be installed.

12.7 Backfilling and Grading

The objective of backfilling and grading operations in agricultural lands is to ensure that once stringing, fabrication and pipelaying operations are completed, topsoil and subsoil are uniformly returned so as to restore the soil profile. When backfilling and grading in agricultural lands the following standards will apply:

a. Permanent repair and replacement of drain tiles damaged or moved during construction will occur

b. Six to 12 inches of sand padding or suitable subsoil material should be used to pad the pipeline. **Under no circumstances** is native topsoil to be used as padding.

c. Subsoil will be returned to the trench.

d. Shot rock and rock backfill will be kept out of the top two feet of backfill material. Excess subsoil can be graded over the exposed subsoil prior to topsoil replacement.

12.8 Cleanup and Restoration

After backfilling is complete and the rough grading of the ROW has been done, final grading is initiated to return the ROW to its original contour. The applicant shall consult with the farm owner/operator, Ag & Mrkts and Department Staff to determine if suitable weather and soil moisture content conditions exist to allow for final restoration activities. If on site conditions permit clean up and final restoration the following conditions will apply:

a. If subsoil decompaction has been called for, it will be done at this time, as will rock picking (stones 4 inches or larger). Stockpiled topsoil will be used after that until the trench has been restored to pre-construction grade.

b. If topsoil has been lost, replacement topsoil will be imported and used if necessary.

c. In some areas a crown of soil 6 to 12 inches may be left over the trench to allow for soil subsidence.

d. Where necessary the ROW will be deep chiseled and stones larger than 4 inches picked from its surface.

12.9 Revegetation

12.9.1 Seed Mixtures

Seed mixtures for use on agricultural lands will be determined in consultation with the landowner/operator, the company, the NRCS and other interested parties. Lime and

fertilizer rates will be chosen in the same manner.

12.9.2 Timing

If the timing of construction precludes the reestablishment of crops for a given year an annual cover crop should be planted to protect the disturbed area, with landowner/operator approval. Plantings will be done in the appropriate season for the particular seed mixture proposed.

12.9.3 Mulching

If mulching is necessary, only straw mulch will be used over seed beds.

12.9.4 Temporary Diversion Berms

On steep active Ag slopes temporary diversion berms, dirt or straw bales may be used to control erosion. If dirt is used it should be made with topsoil and on a scaled-down version than the typical diversion berm. The dirt diversion berm should be no higher than 6 to 8 inches so that it can easily be worked by the farmer during planting time. If straw bales are used, the area under the bales will need to be reseeded with the appropriate seed mix upon removal.

12.10 Remediation and Monitoring

The applicant may engage the services of an experienced agricultural specialist for pipelines that cross unique agricultural resources and/or require special construction techniques. This person must have expertise in amelioration and remediation of construction impacts on agricultural lands and may be required to be on site throughout all phases of construction. Following pipeline construction and restoration:

a. All affected agricultural lands will be monitored for signs of construction related damage or alteration of productive agricultural resources during the first 2 years after the line is in service. During this time particular attention

should be paid to changes in soil moisture content due to construction related impacts on surface and subsurface drainage.

b. Where a crown has been left over the trench, if subsidence has not occurred one year following restoration, this crown may have to be regraded.

c. Properties crossed will be evaluated for the need for parallel drain tiles or other water control devices after restoration and revegetation.

d. Any proposed measures should be reviewed by a qualified agricultural specialist, Ag and Mrkts and approved by staff.

13. Testing

Hydrostatic testing can result in soil erosion, as well as adverse water quality, ecological, and noise impacts. The environmental objective is to minimize these potential impacts. When planning and carrying out hydrostatic testing the following will be done:

a. Before choosing a source for test water, an assessment will be made of the effect of the test on the natural water body. At the point of withdrawl, the rate of pipeline filling will not exceed 50% of the actual stream flow. The proposed water source(s) will be identified in the application or NOI for DPS staff review.

b. DPS staff and the DEC Regional Water Engineer shall be notified 48 hours prior to a discharge of hydrostatic test water. In addition, all owners of property to which hydrostatic test water will be discharged shall be notified within the same time period.

c. Hydrostatic test water discharge will be continually monitored. A positive means of controlling the rate of discharge and, if necessary, terminating the discharge shall be provided.

d. No corrosion/scale inhibitors or biocidal type compounds will be discharged in any hydrostatic test water.

e. Noise impacts during pumping or discharge will be minimized for noise-sensitive receptors (see section 15) and land uses. Mufflers will be used on all pumping equipment. Noise producing activities will be scheduled to avoid late night/early morning hours. Where noise impacts are expected to be

significant, public safety officials will be notified at least 24 hours prior to such discharges, and efforts will be made to inform the local public of the nature of this noise

f. If requested, hydrostatic test water will be tested for harmful contaminants, and the company will cooperate with jurisdictional agencies to develop a plan for environmentally sound use and discharge of waters.

g. Test water will be discharged within the same immediate drainage or wateshed from which it was drawn to help check the spread of exotic pest species, such as Zebra Mussels (Dreissena polymorpha).

h. Hydrostatic Test water shall not be discharged to any waterbody or wetland. All discharges will be located in a well-vegetated upland area to prevent the entry of silt and suspended solids into any sensitive environmental resource. Discharged test water will be directed into a retention/filtering structure of sufficient size and constructed to adequately handle the volumes anticipated in the discharge.

i. All necessary precautions will be taken to preclude the contamination of any waterbodies or wetlands by suspended solids, sediment, fuels, solvents, lubricants, epoxy coatings, paints, concrete leachate, or other environmentally deleterious materials associated with the project work

14. General Cleanup and Restoration

14.1 Objectives

To effect the removal and proper disposal of all construction waste and debris resultant from pipeline construction and restore the ROW to a condition that will promote longterm stability.

14.2 Cleanup

At the conclusion of construction, all man made and natural debris not specifically approved to remain on the ROW must be removed and properly disposed of. This debris

includes but is not limited to:

a. spent welding rods;

b. skids;

c. straps;

d. nylon pipe ropes;

e. plastic pipe end-covers;

f. short cut sections of pipe and any "pups";

g. plastic backing from shrink wraps;

h. blasting materials; and,

i. any other man made materials used during construction.

All this debris will be collected, and, if not slated for further use, disposed of at an authorized waste disposal area. Under no circumstances will any of this material be buried on or off ROW.

Cleanup will be done in a methodical manner. In remote areas, crews should work from the interior towards any roads. Unless being done concurrently with final restoration, all erosion devices should be replaced and/or repaired before cleanup crews leave an area.

Cleanup activities will include the removal of any natural materials disturbed or moved during the course of construction. This includes, but is not limited to:

a. rocks or stones from excavation or demolished walls;

b. slash, stumps or other woody debris;

c. excess subsoil or surface soil; and,

d. drilling mud or tailings.

All materials designated for removal will be disposed of at waste disposal or storage sites approved by either DEC or the Public Service Commission.

Cleanup and restoration will be done in a timely and effective manner to prevent the deterioration of erosion control devices and the eventual destabilization of the ROW. The specific work necessary will depend on the land uses, terrain, natural resources and other project specific factors.

14.3 Restoration

Restoration is the final stage of pipeline construction. Restoration activities may vary with the specific area to be restored.

14.3.1 Restoration in Wooded and Non-Agricultural Uplands

Once cleanup activities have been finished, areas not covered by site-specific clauses or conditions will be graded, limed, fertilized, disced and seeded. The local Natural Resource Conservation Service (NRCS) office or Cooperative Extension office will be consulted for guidance as to the appropriate rates per acre for lime and fertilizer, as well as the pounds per acre and make up of seed mixtures applied. Additional specifics on these operations are provided below. Lime, fertilizer, seed and mulch application will be made within six days of the completion of grading at a given location on the ROW.

14.3.1.1 Grading

Where pipeline construction has changed grade and contour along the ROW, the area will be restored to original grade. Ruts and rills will be filled during grading. Only when changes in grade are desired and requested by the landowner to improve the area or are necessary

for the safe and efficient maintenance and operation of the facility will exceptions be made. Where the trench has settled below ground level, it may be necessary to import topsoil to return an area to grade, especially in crop fields.

All permanent drainage and erosion control measures should be installed on the ROW. These devices are detailed in Section 7 above. Where needed for ongoing drainage and erosion control, permanent devices will replace temporary devices installed during construction. Changes in surface and subsurface hydrology resulting from construction will be addressed at this time also.

14.3.1.2 Lime Applicaiton

Lime will be applied to the soil surface where necessary to achieve conditions favorable for seed establishment and development. The local NRCS county office will be consulted regarding appropriate lime application rates. If local expertise or information is not available, all major disturbed areas will be field-tested for pH using any of the commercially available kits.

After measurements are taken, lime will be added to the soil to bring the area pH to a minimum level of 6.5. The rule of thumb for sites with a pH of 6.0 or lower, is to apply lime at a rate of 2 tons/acre. Lime will be either drilled into the soil or broadcast over the affected area and disced in at least 4 to 6 inches below the surface.

14.3.1.3 Fertilizing

In areas where construction has affected the soil nutrient levels (particularly in instances of topsoil stripping), fertilizer will be applied to restore soil productivity. As with

liming, the local NRCS will be consulted about the appropriate formula and application rates for the affected areas. Testing will be conducted to determine the existing post-construction levels of nitrogen, phosphorus and potassium (N.P.K.).

In areas exhibiting nutrient deficiencies, fertilizer will be added to bring nutrient levels up to normal. A general rule of thumb is to use a mixture of "10:6:4", that is ten parts nitrogen, to six parts phosphorus and four parts potassium. This mixture should be applied at a rate of 600 lbs/acre. If higher N.P.K. ratios are used in the fertilizer, the application rate can be decreased resulting in fewer trips over the same ground. Fertilizer will be either drilled into the soil or broadcast over the ROW and disced into it at least 4-inches below the surface. (application rates for agricultural lands will be covered in later sections)

14.3.1.4 Discing and Raking

These operations will be needed on all sites that have undergone heavy soil compaction as a result of construction in order to prepare an adequate seed bed. Discs and rakes are used to break up clods and scarify the soil, particularly on sites with a heavy clay or shale content. It may be possible to avoid raking if discing operations are thorough enough to accomplish both soil loosening and scarification.

14.3.1.5 Seeding and Planting

Once an acceptable seedbed is established, seeding operations can commence. Seed rates and mixtures vary with the land use encountered and type of cover desired. In forested areas and non-agricultural uplands the primary objective of seeding operations is to establish a plant community that can rapidly and permanently stabilize disturbed areas.

The seed mixture and rate of application on any site depends on the soil type, land

use, available moisture and the season of application. In developing seeding plans the local NRCS will be consulted on the applicability of mixtures and rates. Seed will be applied by drill, cyclone seeder, mechanical hydroseeder or similar application methods.

Seeding operations will be performed between May 1 and June 1 and August 20 through September 15. This window is extended to October 30, for Long Island. Seeding done outside these windows will only be done on the advice of a restoration expert. Seeding can be done over snow if construction runs late into the year. Seed sown over snow may germinate the following spring.

The ROW should have 90 percent permanent ground cover one growing season following construction. Seeded areas will be evaluated and reseeded as necessary to achieve 90% cover at the first optimum time; or by the following growing season.

On flat areas, mulch (i.e., hay, straw, burlap, chips, etc.) can be applied to aid temporary and permanent restoration and soil stabilization. All mulch will be mechanically crimped to reduce aeolian losses. On steeper slopes, mulch, jute net or excelsior will be used to provide temporary soil and site stabilization. In all cases these materials are placed to minimize soil erosion on disturbed sites by disrupting rainfall impact and slowing surface flow.

Straw or hay mulch will be applied at the rate of 1.5 to 2.0 tons/acre. On slopes of 30 percent or more, stream banks and high wind areas, mulch will be tied down and pegged with twine. Burlap, jute net or similar erosion control fabrics will be installed cross slope on short hills and stream banks. On long steep grades or in runoff ditches, erosion control fabrics will be installed running up and down slope with the edges of adjacent sheets overlapped and secured with pegs or stapled to the ground as per manufacturers specifications. Metal staples will not be

used in pastured areas.

14.3.2 Restoration Urban/Residential

Construction in urban or residential areas will present a wide variety of restoration activities. Above- and under-ground structures (ie., pools, water and gas service, etc..), street pavements, curbs and sidewalks and numerous other resources may all require replacement or repair as a result of pipeline construction.

Curbs, sidewalks and streets damaged by construction should be restored to a condition "as good if not better" than that prior to construction. The applicant will consult, where applicable, the municipal Road or Highway Department; Regional Office or County Engineer of the New York State Department of Transportation (DOT). The applicant will incorporate applicable specifications for curb, sidewalk or street restoration in the project design.

Shade Trees and ornamental shrubs disturbed or damaged by construction will be replaced or repaired following construction by an arboriculturist, except in instances where replacement would inhibit or impair safe operation of the pipeline. All vegetation replaced should have a minimum one year guarantee. Limbs damaged by construction activities should be pruned to arboricultural specifications. Root loss or damage due to construction or related soil compaction will be addressed by a trained arboriculturist and any prescribed treatments followed.

15. Noise Impact and Mitigation

15.1 Objectives

To control and reduce noise impacts associated with pipeline construction and operation as much as practicable. Pipeline construction involves many activities that can produce large, localized increases in the noise levels. Noise generated by general ROW clearing

and construction is transitory in nature. Noise impacts of directional drilling or pumping operations are stationary and of longer duration.

Permanent compressor stations are stationary and require permanent, long-term noise control. Noise control methods or remediation will vary with the source of the noise and the nature and proximity of sensitive receptors.

15.2 Noise Sensitive Receptors

Likely noise sensitive locations are:

a. Nursing homes

b. Retirement communities

c. Houses of worship

d. Hospitals

e. Recreational areas and cultural centers

f. Some residential areas

g. Schools

15.3 Remediation and Control

There are several methods of reducing or controlling construction related increases in noise levels. Their applicability and effectiveness will vary with the size of the equipment used, the topography crossed and the nature of the receptor.

15.3.1 Noise Control Measures for Equipment and Linear Construction

a. Equipment yards and marshalling areas will be located away from noise sensitive receptors.

b. Install improved or "Hospital" grade mufflers on all heavy equipment used in noise sensitive areas (particularly on cranes, sidebooms and bulldozers which may idle for extended periods).

c. High noise producing activities, identified below are restricted to the hours between 8:30 a.m. and sunset within 500 feet of any noise sensitive receptor. These activities include:

   (a) rock drilling for blasting operations;

   (b) use of pneumatic hammers for ditching in bedrock areas and warning beepers;

   (c) blasting operations, pile driving, the installation of sheet piles, sheeting or shoring;

   (d) clearing operations, wood chipping machinery;

   (e) conventional bore and directional drilling operations;

   (f) the construction and operation of compressor facilities, pumping operations; and,

   (g) the operation of valves and aboveground piping, and other appurtenant facilities.

d. No heavy equipment operation within 300 feet of a noise sensitive receptor before 7:30 a.m. on weekdays, 9:00 a.m. on weekends.

e. In extreme cases, temporary sound barriers may have to be erected to reduce, deflect or control noise from construction activities.

f. In extreme cases, individuals may have to be temporarily housed in off-site locations until construction is finished, at the company's expense.

15.3.2 Noise Control Measures for Point Source Producers

Large scale pumping or directional drilling operations where equipment will probably remain in operation for extended periods can be a major intrusion on nearby receptors. Detailed sound measurements will be taken prior to the initiation of drilling operations by a

licensed acoustic engineer. A remediation plan will be developed included mitigation measures such as:

a. Construction of full or partial sound enclosures;

b. Restricted drilling hours;

c. Extensive additional muffling of cranes and other pipe moving equipment; and,

d. Temporary relocation of nearby residents or occupants.

15.4 Compressor Stations

Every compressor station site will have detailed noise and proximity measurements taken prior by an acoustic engineer **prior** to the initiation of construction. This data will be used to determine the proposed facilities' effect on the ambient noise level. For permanent compressor sites or other noise producing above ground appurtenant facilities, remediation may require:

a. Construction of full or partial sound enclosures made of natural or manmade materials.

b. The use of the best noise muffling technology available.

16. Transportation and Utility Crossings

16.1 Objectives

Pipeline construction may have adverse impacts on roads, highways, canals, railroads and other existing utilities. The objective of this section is to encourage and facilitate cooperative construction and maintenance practices and schedules between pipeline builders and those responsible for the other infrastructure. The project must not become a hazard to vehicular, pedestrian or rail traffic.

Applicants will use the following standards and practices for planning, construction and maintenance

16.2 Road and Highway Crossings

16.2.1 Permitting

Where a road or highway ROW will be occupied by a proposed pipeline, the applicant will contact the jurisdictional municipality or regulatory agency. This could be the town, village, or County highway departments, the New York State Thruway Authority or the New York State Department of Transportation (DOT). Where New York State highway ROW is to be occupied, the applicant will refer to Part 131 of the Highway Law covering Accommodation of Utilities Within State Highway ROW.

Applicants proposing to construct gas transmission lines certified under, Article VII, Section 121-a have the choice of getting highway work permits from the jurisdictional highway agency or they may request, under Article VII, Section 126(1)(f) of the PSL and 16 NYCRR Part 85-1.2 (c)(1- 3) of the regulations, that the Commission preempt said permitting agency. Applicants will report in the NOI or application the result of consultations with jurisdictional agencies.

16.2.2 Preconstruction Planning

Before any in-street work can take place, other underground utilities that will be crossed or paralleled by the proposed pipeline must be identified and marked in the field. Owners of these other utilities will be notified in accordance with the requirements of 16 NYCRR Part 753 so that all underground utilities are located and clearly marked prior to new construction.

In addition, the Applicant will examine existing conditions and traffic flow and volume patterns to determine the best construction methods for the area. All necessary materials (i.e., steel plating, cold patch, repaving equipment, etc.) will be on hand prior to the initiation of any in-road construction. Where in-road work will be extensive enough to require detours or road closings, planning will be done well in advance of construction and in consultation with all affected agencies.

16.2.3 Road Crossing Methods

One of two basic road crossing methods will be used for underground gas line construction: trenched ("open cut") or trenchless ("boring", or "directional drilling"). All crossings will be done perpendicular (or as close to perpendicular as feasible) to the roadway.

16.2.3.1 Trenched or Open Cut:

a. Owners/operators of other underground utilities in the area will be notified no less than 48 hours prior to the start of construction.

b. All existing underground facilities will be marked prior to the initiation of cutting or excavation.

c. All materials needed to complete the installation shall be on site prior to starting cutting or excavation.

d. Tree limbs, shrubs, cobble stones or any other natural or man-made features that are at risk of damage will be temporarily moved, tied back or removed and stored.

e. Detours, signage and public notice shall be done no later than 24 hours prior to the initiation of construction.

f. Traffic flow in at least one lane of the road at all times or a detour will be provided. Flaggers or temporary traffic lights will be used where necessary to control traffic flow.

g. Any water control devices (roadside ditches, culverts, etc.) disturbed during

excavation or construction will be restored immediately after pipeline installation.

h. Temporary restoration of the roadway will occur immediately after the pipe is installed.

16.2.3.2 Trenchless - Bore or Directional Drill:

Conventional boring and directional drilling operations install the pipe beneath the road without having to disturb the road surface. Traffic flow and patterns can be maintained throughout pipeline installation. Construction should proceed as follows:

a. Owners/operators of other underground utilities in the area will be notified no less than 48 hours prior to the start of construction.

b. All existing underground facilities will be marked prior to the initiation of drilling or boring.

c. All materials needed to complete the installation will be on site prior to the start drilling or boring.

d. Jacking and receiving pits adjacent to the road shoulder will be clearly identified and barricaded to prevent them being a hazard to pedestrian or vehicular traffic.

e. Bore or drill pits will be fenced and marked if left open overnight.

16.2.4 Longitudinal Highway Occupation

In some instances a pipeline may be routed longitudinally in or adjacent to a road surface. Instead of a single crossing the pipeline will be installed in the roadbed or its shoulder. Facilities proposed to be located longitudinally in NYS DOT highway ROW are subject to Parts 131 and 133 of the state highway law as well. Construction should proceed as follows:

a. Owners/operators of other underground utilities in the area will be notified no less than 48 hours prior to the start of construction.

b. All existing underground facilities will be marked prior to the initiation of

cutting or excavation.

c. Tree limbs, shrubs, cobble stones or any other natural or man-made features that are at risk of damage will be temporarily moved, tied back or removed and stored.

d. Detours, signage and public notice will be done no later than 24 hours prior to the initiation of construction.

e. The applicant will reduce the amount of open trench at the end of the work day to the minimum practicable.

f. All areas of open trench unable to be plated will be barricaded and lit with warning lights prior to the end of the construction day.

g. Driveways and drainage ditches will be temporarily restored at the end of each working day.

h. Access to driveways will be maintained to the maximum extent practicable.

i. Temporary patch of asphalt road cuts will begin immediately after backfill.

j. Temporary patch of major road damage (ie, ruts, potholes, grade loss, etc.) will begin immediately after backfill.

16.2.5 Signs

All signs utilized will comply with the New York State DOT's Manual of Uniform Traffic Control Devices (Manual No. 7155). Placement of signs will be determined in consultation with the jurisdictional agency. At a minimum, signs will be placed at the following distances:

a. Signs announcing construction at 1,000 and 500 feet.

b. Signs picturing workers at 300 feet.

c. Blast warning signs at 1,000 feet if blasting is to take place within 50 feet of the road.

Flaggers will be present at all times when equipment is crossing any road, when

equipment is being loaded or unloaded and where two lane traffic has been reduced to one lane. All flagging operations shall comply with DOT 17 NYCRR 131.

16.2.6 Repairs and Restoration

Restoration of any road surface will follow the sequence outlined below.

a. Return of road shoulders (maximum 15 feet) to original grade immediately following backfill.

b. Placement of a temporary road surface will take place immediately after backfill in accordance with state or municipal standards or permit requirements.

c. Permanent repair of asphalt roads as soon as practicable, but in any event within 6 months of backfill.

d. Permanent repair of other road damage during final restoration of the project.

e. Permanent repair of dirt and gravel roads (ruts, potholes and loss of grade) during final restoration.

16.3 Canal Crossings

Navigable canals come under the jurisdiction of the New York State Thruway Authority and the US Coast Guard. Canals are crossed in much the same manner as streams and rivers, however greater precautions must be taken regarding boat traffic.

16.3.1 Scheduling

Due to intense use of these waterways at certain times of the year, all in-water work will be restricted to "off-season"; generally from mid-October to May. The jurisdictional agencies will be consulted during project planning and the recommendations reported in the NOI or application. If scheduling constraints require "in-season" construction, serious consideration would must be given to non-disruptive crossing methods, primarily push bore or directional

drilling.

16.3.2 Construction

a. Open-Cut: Construction across a canal is effected in much the same manner as any stream crossing, particularly for those portions of the canal system that use existing natural waterways. For man-made portions of the system where rock or concrete floors and walls exist, "open-cut" crossings may entail significant rock removal or blasting. Seasonal use of the waterway's may entail restrictions on construction activities (nighttime construction and maritime traffic control).

b. Dry Crossing: All dry stream crossing techniques that are available for ordinary stream crossings are applicable for canals. The steep banks of some portions of the canal system or large water volumes may preclude the use of some dry crossing methods, however directional drilling or conventional bores may be viable.

16.3.3 Restoration

Restoration of canals takes place in much the same manner as stream restoration and is subject to all the same restrictions. The applicant will comply with any additional requirements imposed by the Department of Public Service, the Thruway Authority or the Coast Guard.

If the portion of the canal system crossed by the project requires the removal and replacement of concrete channel or banks, special construction techniques may be required. Measures to avoid poured concrete leachate from entering waterways will be developed in consultation with staff and DEC personnel.

16.4 Rail Road Crossings

In the event a proposed pipeline will cross an active or inactive railway:

a. The applicant will contact the owner/operator of the railroad property and explain fully the nature and extent of the proposed project.

b. Railway ROW will be surveyed for the presence of underground water storage structures.

c. Active rail lines will be crossed by conventional bore or directional drilling, not by open cut trenching.

d. The applicant will coordinate all work with the owner/operator of the rail line to ensure the safety and integrity of the pipeline and railroad facilities crossed.

e. In the event that the railway is abandoned or the operator has no specifications, the applicant will refer to and apply construction specifications provided by the American Railroad Engineers Association.

f. Depth of cover requirements outlined in the Gas Safety Regulations (16 NYCRR Part 255.327) will be complied with.

16.5 Utility Crossings

Special precautions, as detailed below, must be taken where new gas transmission facilities cross or parallel existing utilities to prevent damage to either facility and to ensure the safety of workers.

16.5.1 Overhead Electric Facilities

16.5.1.1 Perpendicular Crossings

When crossing an existing overhead electric line ROW the following specifications will apply:

a. The utility responsible for the up-keep and maintenance of the overhead electric line will be contacted and consulted concerning the proposed crossing.

b. The responsible utility will be consulted concerning "safe minimum clearance" for construction machinery.

c. All guy wires, ground lines and other surface or subsurface supports or facilities will be located prior to the initiation of construction.

d. Depending on the length of the pipeline facility to be installed, the voltage of the electric line to be crossed and existing weather and topography, the pipe

and the construction equipment installing it may need to be temporarily grounded. This activity will be performed in compliance with the National Electrical Safety Code (NESC) as applicable to pipeline construction.

16.5.1.2 Linear ROW Co-occupation

In instances where pipeline construction will parallel existing overhead electric facilities, the applicant will refer to Title 16 NYCRR Sections 255.45 (f) and (g). In addition, the following specifications will apply.

a. An "Electrical Safety Inspector" (ESI) will be hired by, or services contracted for by the applicant. The ESI will be in the chain of command for the project and will have "stop work authority".

b. The ESI will:

   1) Supervise grounding equipment and materials.

   2) Provide safety training of all individuals expected to work in or visit the project area adjacent to electric lines.

   3) Ensure compliance with minimum clearance requirements for machinery and personnel.

   4) Require all workers and others on-site to wear insulated boots, gloves and other protective equipment where circumstances warrant.

   5) Act as liaison between the company and the owner of the electric facilities.

c. The induced voltage from the pipe to ground, will be measured and recorded for all welded pipe strings each day prior to the commencement of construction.

d. If the induced voltage exceeds 15 volts AC, additional ground rods will be added until the voltage is reduced below this level.

e. Ground rods will be attached and connected in the following manner:

   1. Connect grounding clamp to pipe.

   2. Connect grounding cable to imbedded grounding rod.

3. Connect grounding cable to pipe grounding clamp.

f. Ground rods will be removed in the following manner:

1. Disconnect ground cable from clamp.

2. Disconnect ground cable from rod.

3. Remove grounding clamp from pipe.

g. If the ESI believes that pipe is apt to be charged due to proximity of overhead electric lines, the ESI will require the grounding (primarily through use of grounding straps) of each piece of equipment handling pipe at that time.

h. Pipe joints will be stacked in groups of ten or less. Each stack will be grounded with a 1/2" diameter ground rod driven to a depth of at least 4 feet and at a distance of at least 4 feet from the stack.

i. Each pipe in the stack will be daisy-chained to ensure that the entire stack is grounded.

j. Stringing is permitted but each individual piece of pipe must be grounded.

k. As pipe strings are welded an additional ground rod will be placed every 1,000 feet.

l. If voltages warrant, no ungrounded vehicle will be allowed within 200 feet of the electric line.

m. All vehicles on the ROW will be grounded by use of grounding strips or chain devices.

n. Vehicles parked overnight on the ROW will be grounded to an embedded ground rod by a cable.

o. Fuel trucks will have sufficient ground cables and clamps to complete an electrical bond with every vehicle to be refueled.

p. "Spotters" will monitor construction equipment and warn operators if the safe minimum clearance zone is entered.

16.5.2 Underground Utility Crossings

When building an underground pipeline in close proximity to other underground utilities the applicant will refer to Title 16 NYCRR Section 255.3-25. In addition, the following specifications will apply:

a. The proposed project area will be surveyed for the presence of existing underground utilities to be crossed or paralleled.

b. Owners of these other utilities will be notified in accordance with the requirements of 16 NYCRR Part 753 so that their facilities will be clearly marked prior to construction.

c. Owners of the facilities crossed will be contacted no later than 24 hours prior to the initiation of construction and will be given all reasonable opportunity to be present during excavation and construction.

17. HAZARDOUS MATERIALS/SPILL CONTAINMENT AND CONTROL

17.1 Objectives

The loss or spillage of hazardous materials used during the construction of gas lines will be minimized by planning and acting in accordance with the following spill control measures.

17.2 Regulatory Concerns

In addition to any prohibitions or specifications contained in this document or other Commission approved EM&CS&Ps the actions of any applicant are covered by the sections of the Clean Water Act (33 USC 11251). Section 311 of the Act identifies 300 substances identified as hazardous if spilled or accidentally discharged and specifies what quantities constitute a "spill". Spills must be reported to the National Response Center (NRC).

At the state level, NYS DEC has stricter laws and regulations covering the handling and loss of fuels and other hazardous materials. Article 27 of the ECL covers the

handling and disposal of waste and refuse; Article 33 of the ECL deals with the use, storage and handling of herbicides; and Article 17 covers water pollution control and the bulk storage of petroleum.

DEC regulations (6 NYCRR Article 597) lists those substances and chemicals **other** than petroleum and petroleum based products that are regulated. It also lists what volumes of these substances constitutes a reportable spill.

Article 12 of the New York State Navigation Law, Section 175, covers spills of petroleum products. According to this document "all spills of petroleum based products, either upland or water borne, must be reported." The primary substances of concern during construction are motor fuels, lubricating oils and hydraulic fluids.

If the applicant is unsure as to the severity of a spill or actions to take they should call the appropriate spill response numbers.

DEC
Spills Unit Chemical and Petroleum
24-Hour Helpline (1-888-457-4351)
Central Office
50 Wolf Road
Albany, NY 12233-1750

DEC Region 1
Building 40
SUNY at Stony Brook
Stony Brook, NY 11790
Telephone: (516) 751-7900
(Nassau and Suffolk)

DEC Region 2
2 World Trade Center
Room 6126
New York, NY 10047
(NYC, five Boroughs)

DEC Region 3
21 South Putt Corners Blvd
New Paltz, NY 12561
Telephone: (914) 255-5453
(Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester)

DEC Region 4
2176 Guilderland Ave
Schenectady, NY 12306
Telephone: (518) 382-0680
(Albany, Greene, Montgomery, Rensselaer and Schenectady)

DEC Region 4 sub-office
Rte. 10
Stamford, NY 12167
Telephone (607) 652-7644
Delaware, Otsego and Schoharie)

DEC Region 5
Rte. 86
Ray Brook, NY 12977
Telephone (518) 891-1370
(Clinton, Essex, Franklin and Hamilton)

DEC Region 5 sub-office
Hudson St.
Warrensburg, NY 12885
Telephone (518) 623-3671
(Fulton, Saratoga, Warren and Washington)

DEC Region 6
317 Washington St.
Watertown, NY 13601
Telephone (315) 785-2513
(Jefferson, Lewis and St. Lawrence)

DEC Region 6 sub-office
207 Genesee St
Utica, NY 13501
Telephone (315) 785-2513
(Herkimer and Oneida)

DEC Region 7
PO Box 5170
Fisher Ave
Cortland, NY 13405
Telephone: (607) 753- 3095
(Broome, Cauga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins)

DEC Region 7 sub-office
7481 Henry Clay Blvd
Liverpool, NY 13088
Telephone: (315) 428-4697

DEC Region 8
6274 East Avon Lima Rd
Avon, NY 14414
Telephone: (716) 226-2466
(Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne and Yates)

DEC Region 9
600 Delaware Ave
Buffalo, NY 14202
Telephone: (716) 851-7000
(Allegany, Cattaraugus, Chautaugua, Erie, Niagara, Wyoming)

State of New York
Department of Public Service
3 Empire State Plaza
Albany, NY 12223
Telephone: (518) 474-5368 (normal business hours)

17.3 Recommended Spill Control Equipment

The applicant will have equipment on-site adequate to control spills of hazardous materials which will be used in construction of the facility.

17.3.1 Upland

a. Sorbents, including pillows, wipe sheets and sawdust for containment and pick up of spilled liquids.

b. Commercially available spill kits (or any functional equivalent), self contained and prepackaged with a sufficient amount and variety of materials to handle spills of varying size.

c. In-ground or above-ground containment structures such as berms, gutters, dikes, culverts and holding tanks and sumps and collection systems.

d. Shovels or small backhoes for the excavation of contaminated soils or materials.

e. Drums, barrels and temporary storage bags for the clean-up and transport of contaminated materials.

f. Absorbent pads for placement under static machinery, cranes, booms, etc. large enough to handle a complete loss of engine oil or hydraulic fluid.

g. Small sorbent kits for all vehicles and machinery.

17.3.2 Waterborne equipment

a. Rapid deployment oil containment floats and booms. Minimum length of booms should be twice the length of the longest stream crossing to be made.

b. Oil removal or skimming equipment should be on hand or on call. These may include but not be limited to olephilic and hydrophobic absorbent booms or mats and/or mechanical skimmers.

c. Sampling equipment of sufficient amounts to enable 24-hour monitoring if necessary.

17.4 Storage and Handling

17.4.1 Storage

For the storage of fuels and other hazardous materials, the applicant will apply the following standards:

a. The material safety data sheets (MSDS) for all chemicals used in construction will be available for inspection.

b. In addition, the applicant will comply with all applicable state, local and federal regulations covering the transport, storage and handling of hazardous materials.

c. Fuels and other controlled materials will be stored in designated equipment or marshalling yards. All such areas will be at a minimum, 100 feet from any waterbody, watercourse, wetland or known spring or well.

d. All above ground tanks will be equipped with secondary containment devices (e.g. berms or other appropriate retention materials). Hazardous materials will be kept in restricted access areas and kept separate from other construction activities.

e. All yards and storage areas shall be equipped with sufficient supplies of spill control and absorbent materials for the volumes present.

f. Spill control supplies will be clearly marked, readily accessible and personnel will be instructed on their use prior to the initiation of construction.

17.4.2 Refueling of Equipment

When refueling equipment during construction (either in yards or along the ROW) the following standards shall be applied.

a. Equipment refueled in yards shall be refueled in a clearly marked and designated refueling area.

b. This refueling area shall be surrounded on at least 2 sides by a combination of dikes, berms, or retaining walls sufficiently impervious to contain spilled oil, fuels or lubricants.

c. Care will be exercised at all times to prevent "overfilling".

d. When refueling on the ROW all fuel trucks, portable drums and tanks will be inspected daily for leaks or signs of wear.

e. All refueling trucks will carry spill containment materials and the driver/operator will be trained in their use and responsible for their employ after spills.

f. No refueling will be done within 100 feet of any water body or wetland. No refueling will occur within 200' of any private water well or 400' from any municipal water well. The only exception to this prohibition will be fill water pumps for hydrostatic testing and those pumps engaged in a dam and pump operation, and this will be done only with prior Commission approval.

g. Fill pumps will be set on metal catch pans of sufficient volume to hold any leaks of lubricants or fuels. A containment area constructed of thick sheet plastic, bermed with sandbags may also be used.

17.5 Spill Response Procedures

a. In the event of a spill the applicant will do the following.

b. The applicant will develop a list of approved waste clean-up contractors in the project area and provide this information to the Environmental Inspector prior to the initiation of construction. The same will be done for approved waste disposal sites in the project area. Both lists will be maintained in the project office for reference.

c. All company personnel on hand who have been trained and equipped for spill emergency response will immediately take steps to contain any spills at the source.

d. The Environmental Inspector for the project will be notified immediately, and will coordinate spill containment and clean-up measures.

e. The environmental inspector will determine if a spill is reportable. If so, the inspector will report the spill to the DEC, DPS (see numbers listed above) and if necessary the NRC (National Response Center 1-800 424-8802).

f. If a spill has taken place in a waterbody, sampling will begin immediately to determine the nature and effect of the spill.

17.6 Excavation and Disposal

a. Small spills (dependent upon the nature of the substance spills on land)- May be handled by construction crews if sufficient materials and equipment are on hand to excavate and containerize spilled materials and contaminated soils and absorbent material in an appropriate manner.

b. Large spills - If the Environmental inspectors believes that a spill cannot be adequately excavated and properly disposed of by construction crews, a licensed waste specialist will be called in. The Environmental Inspector will coordinate all activities and ensure that all containerized wastes are properly labeled for shipment to licensed facilities able to accept said materials.

17.7 Hazardous Waste Contact

Contact with contaminated soils or other hazardous waste may occur during the course of trenching or other excavation for a gas line. If this occurs, the following will apply.

a. If the odor, color, sheen or content of excavated material leads construction personnel to believe that the material being excavated from the trench or other appurtenant construction sites is contaminated, work will be halted immediately.

b. The applicant should then contact the New York State Department of Environmental Conservation's "Environmental Quality Programs" or Oil or Chemical Spill 24 hour Hotline.

c. Until the arrival of state personnel, any and all actions necessary should be taken to prevent contaminated soil or materials from traveling off-site, contacting waterbodies of any kind or furthering contamination in any manner.

18. Pipeline Operation, ROW Management and Maintenance

18.1 Objectives

Measures will be taken to ensure the safe and environmentally compatible maintenance and operation of completed pipeline facilities.

18.2 ROW Maintenance

After completion of restoration and pressurization of the facility, the construction of the project can be considered complete. Any further work on the facility should be considered as part of facility operation and maintenance or ROW management.

For ease of inspection, pipeline safety and access, most gas pipeline ROW are maintained in desirable landuses and vegetative cover, often low grass or shrub cover. The primary objectives of ROW maintenance are:

a. the maintenance of drainage on and across the ROW;

b. the maintenance of erosion control devices;

c. the maintenance of all permanent access roads and installed gates and fences, and;

d. the establishment and maintenance of grass or low shrub vegetative cover on the ROW as a protection against soil erosion.

18.3 Inspection

a. All ROW's will be inspected at least once a year to determine:

b. the condition of all permanent erosion control devices installed during construction;

c. the stability of pipeline cover and adjacent revegetated ROW areas;

d. the condition of installed access roads and associated access control installations and associated drainage devices; and

e. review of adjacent land use and its compatibility with ROW management objectives for the facility.

Any observed problems with any of the above features will be immediately corrected.

18.4 Vegetation Maintenance

The maintenance of a mature and stable vegetative community on the pipeline ROW is integral to the safety and integrity of the facility. The following specifications will apply to vegetation maintenance activities on the ROW.

a. A minimum of 90% permanent ground cover will be established and maintained on the permanent and temporary ROW, one year after permanent restoration.

b. The growth and propagation of all woody species on the permanent ROW will be controlled by mechanical, vegetative, chemical or biological means. Trees retained as aesthetic or buffer zones will not be cleared during maintenance activities.

c. Adjacent landowners will be informed of all scheduled ROW maintenance **prior** to the commencement of activities. The applicant should coordinate vegetation maintenance activities with affected landowners whenever practical.

d. Appropriate buffers will be maintained at all streams and wetlands.

18.4.1 Mechanical Treatment

a. Mechanical maintenance (mowing, hand cutting, etc..) shall be scheduled so as to facilitate visual inspection of the ROW and enable the access for maintenance and emergency equipment.

b. The methods and techniques for mechanical removal of woody vegetation used will be the same as those in Section 5 of this document.

c. The applicant will inform any 3rd party contractors involved in vegetative maintenance activities of any plantings, visual screens or other woody vegetation slated for retention **prior** to the initiation of activities.

18.4.2 Chemical Treatment

The applicant or contractors in their employ shall comply with the applicable provisions of Articles 15, 71 and 33 of the ECL governing the application, use and control of herbicides. In addition, the applicant shall inform Staff of the DPS of scheduled chemical applications by March 31st of that year. Chemical applications can be specific or non-specific as discussed below. Following sections discuss typical techniques and specifications for their use.

18.4.2.1 Stem Specific

Several stem-specific methods of herbicide application are designed to target specific undesirable vegetation (woody species) on the ROW.

18.4.2.1.1 Basal Treatments

Basal applications of herbicides are made by low pressure hand held devices to

the lower stem of target species. This technique is most frequently used in areas with low densities of undesirable stems, areas inaccessible to equipment, along ROW edges or in sensitive areas where other methods of chemical treatment are discouraged. Cycles of treatment will vary with species and terrain crossed. Oil may be used as a carrier. Backpacks or all terrain vehicles may be used depending on existing terrain and soil conditions.

18.4.2.1.2 Stem Injection

Hand-held devices are used to directly inject a specified amount of herbicides in to the cambium of trees. This technique is primarily used in inaccessible areas and where control of a small number of large stems is needed. A number of commercial devices exist on the market for this technique.

18.4.2.1.3 Cut and Treat Methods

These methods are used when there is a need to remove woody vegetation and control stump-sprouting or root suckering revegetation. In pre-spray and cut treatments, herbicides are applied to the target vegetation either through foliar or basal applications. A minimum of 2 weeks should pass before stems are severed.

In cut-stump treat control, trees are cut first and herbicides applied to the stumps directly to control sprouting. This method is expensive and it is often hard to find and treat all stumps. Applications are best made after spring sap flow to avoid dilution of the herbicide.

18.4.2.2 Non-Stem specific Herbicide Applications

The primary method of application of herbicides in this category is "ground foliar". Herbicides are sprayed onto the leaves and crown of the target plant. Since sprays are subject to drift and gravity, the following precautions will apply:

a. Wind conditions will be monitored and broadcast spraying will not be done when drift cannot adequately be controlled.

b. Surfactants and or other adjuvents will be used as needed to increase chemical retention on target, increase particle size and reduce drift.

c. No spraying with high pressure nozzles will be done from the back of spray vehicles.

d. Broadcast spray applications will be made from the edge of the ROW toward target vegetation within the ROW and no further than 10 feet from the target plant.

19. COMMUNICATIONS AND COMPLIANCE

19.1 Communication With Staff:

19.1.1 Prefiling Contact

Applicants are encouraged to seek Staff input on various aspect of proposed construction projects **prior** to the filing of an Application or an NOI.

19.1.2 Post-filing Contact

Once an NOI or Application has been filed, a staff member from the OEE Environmental Compliance and Operations Section will be assigned to the project. That person will determine whether or not the filing contains all information required by law. The applicant will be contacted directly if any deficiencies exist in the document.

In Article VII cases filed under Section 120 formal proceedings are scheduled. If evidentiary hearings are initiated, staff and company personnel may find their contact governed by the Commission Rules of Procedure.

19.2 Compliance with Commission Orders and Certificates

All Commission issued Certificates contain Ordering Clauses, stipulations or

other conditions the applicant as certificate holder has agreed to comply with as a condition acceptance. The applicant as certificate holder is **fully** expected to comply with the terms and conditions included in these documents. Staff will monitor construction to help ensure compliance with Commission Orders.

February 4, 2000