

SPECIAL WATER RESOURCE PROTECTION AREA REQUIREMENTS (DRAFT FOR COMMENT)

Introduction

The Stormwater Management Rules establish a Special Water Resource Protection Area (SWRPA) which is defined as the area within 300 feet of a Category One water and its upstream tributaries within the HUC 14 subwatershed, including both perennial and intermittent streams depicted on either USGS Quadrangle Maps or the County Soil Surveys. The Surface Water Quality Standards (SWQS) at N.J.A.C. 7:9B designate “Category One waters” because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s).

Note: The County Soil Surveys used to establish the SWRPA is the printed County Soil Surveys since the web soil survey maps contain very limited hydrographic information.

Generally, “major development” is development that would disturb one or more acres; however, for projects that are subject to the Freshwater Wetlands Protection Act rules, the Coastal Zone Management Rules, the Flood Hazard Area Control Act Rules or the Dam Safety Standards, “major development” is development that would disturb one acre or more or increase the impervious surface by one-quarter of an acre or more. The SWRPA is established for all “major development” that triggers the water quality requirements of the Stormwater Management rules. Therefore, in order for the SWRPA to apply, the project has to trigger both the major development criteria and the water quality criteria of an increase in impervious surface of one-quarter of an acre or more.

Pursuant to N.J.A.C. 7:8-5.5(h)1ii, encroachment into the SWRPA is only allowed under limited circumstances where the applicant has demonstrated that the functional value and overall condition of the SWRPA are maintained to the maximum extent practicable. This chapter provides the methodology to analyze whether that requirement has been satisfied.

Clarifications on SWRPA Applicability

The regulations specify the criteria required for any construction in the Special Water Resource Protection Area. This portion of the SWRPA chapter provides clarification regarding how the SWRPA

applies in specific circumstances:

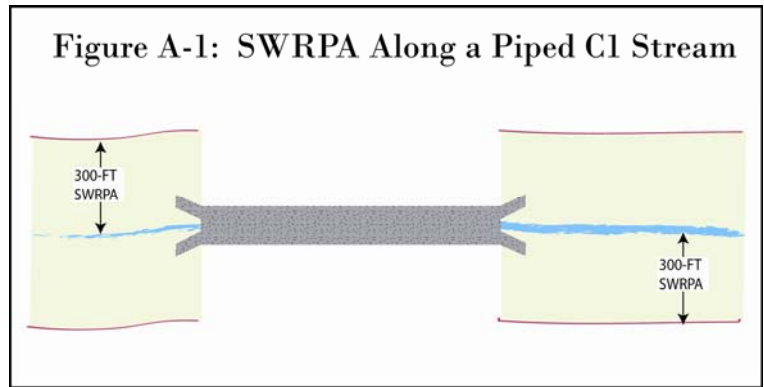
- A. Mapping Issues
- B. Reconstruction within a SWRPA
- C. Existing Discharges to a Category 1 Waters
- D. New Category One Waters

Note: The classifications of streams based on the Surface Water Quality Standards at N.J.A.C. 7:9B are available at www.nj.gov/dep/gis/. While GIS mapping is available for a quick evaluation of the location of a C1 water, the actual Category One designation is established in the Surface Water Quality Standards at N.J.A.C. 7:9B, which are available at <http://www.nj.gov/dep/wms/bwqsa/swqs.htm>. The Surface Water Quality Standards are developed by the Bureau of Water Quality Standards and Assessment, who can be reached at (609) 777-1753.

A. Mapping Issues

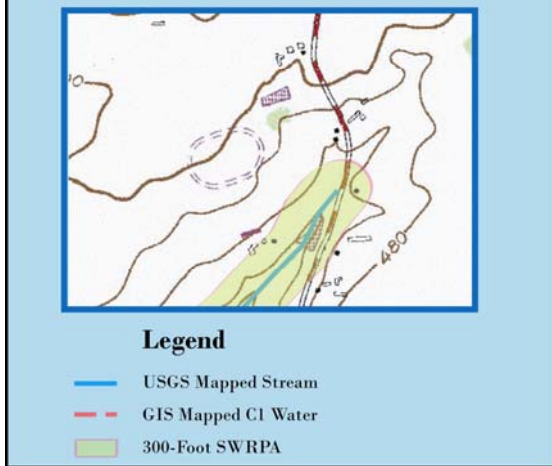
The regulations establish the SWRPA based on the location of any C1 waters and all of the upstream tributaries mapped on the County Soil Surveys or the USGS map within the same HUC14. Due to differences in site information available through the soil surveys or USGS maps, situations arise where it is unclear how the SWRPA applies.

The maps cited in the regulations provide a predictable location of the SWRPA; however, site-specific information supersedes



that mapped information where there is a discrepancy. For example, if the USGS map shows a tributary to a C1 water that is not actually on the site, based on a site-inspection, then the SWRPA would not be established despite the information on the maps. If a tributary has been relocated, then the SWRPA would be established based on the location of the stream, and not to the mapped location. However, if a portion of the stream has been piped, a SWRPA is established at the unpiped section as shown in Figure A-1, and the SWRPA limits are perpendicular to the stream flow.

Figure A-2: SWRPA Limits



Where the C1 water (or a mapped tributary) reaches its upstream limit, the SWRPA is established around the upstream limit and therefore “arcs” around the upstream point as shown in Figure A-2. However, where the tributary to the C1 water crosses a HUC14 line, the SWRPA remains perpendicular to the flow, similar to a Figure A-1.

There are cases where it is unclear whether or not an upstream waterbody is tributary to a C1 water based on the mapping. In Figure A-3(a), a site has a pond within the HUC14 which also has a C1 water. It is not evident whether or not the pond is tributary to the C1 water. In order to receive a SWRPA, the pond must be hydraulically connected to a C1 water. The aerial picture shows a water body connecting the pond to the location of the C1 water. Therefore, a 300-foot SWRPA is applied around the pond; however, the waterbody that connects the pond to the C1 water **does not receive a SWRPA** because it was not shown in the maps cited in the regulation.

Another mapping issue arises when the mapped stream passes through a wetlands complex. The Stormwater Management rules at NJAC 7:8-5.5(h) states that the SWRPA shall be measured outwards from the top of bank or from the centerline of the waterway where the top of bank is not defined. Figure A-4(a) shows a mapped stream and wetlands complex upstream of a waterbody designated as a C1 water. If there is no defined bed and bank, then the 300-foot SWRPA must be established from the

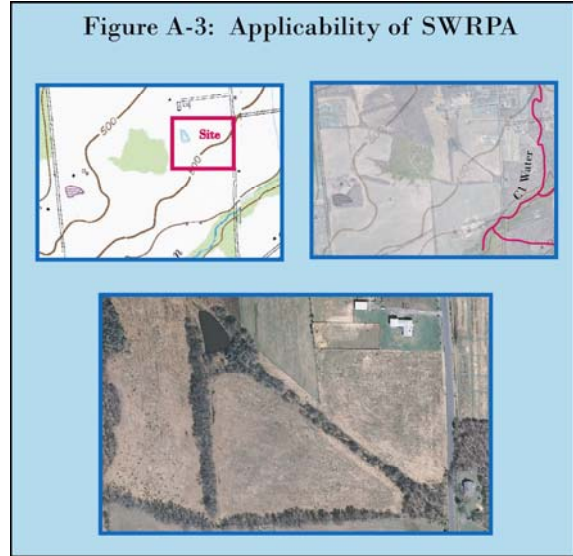


Figure A-3: Applicability of SWRPA

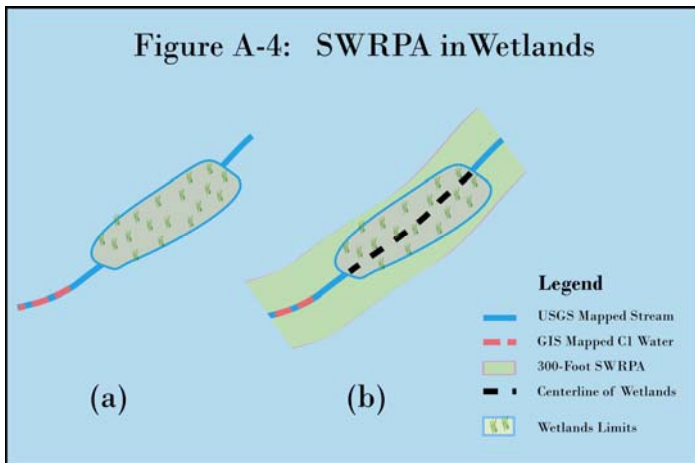


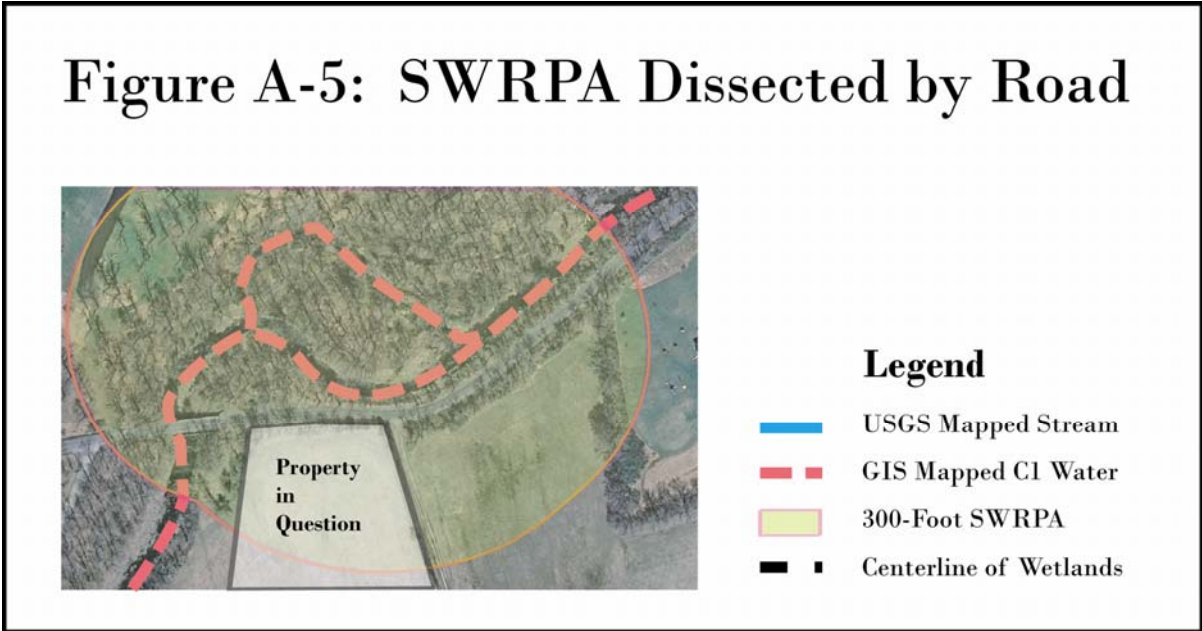
Figure A-4: SWRPA in Wetlands

centerline of the wetlands, as shown in Figure A-4(b).

The regulations establish a SWRPA based on streams designated as Category 1 Waters and their tributaries within same HUC14 as the C1 stream. However, where there is a discrepancy between the mapped areas and the site, the more detailed site information will supersede the mapped information.

B. Impacts of Previous Development on the SWRPA

The applicability of the SWRPA within developed areas discussed above are based on vegetated conditions from the site to the C1 water. However, in many cases, the project within 300-feet of a C1 water may take place on a site that has been separated from the C1 water by an existing road or on a previously developed site.

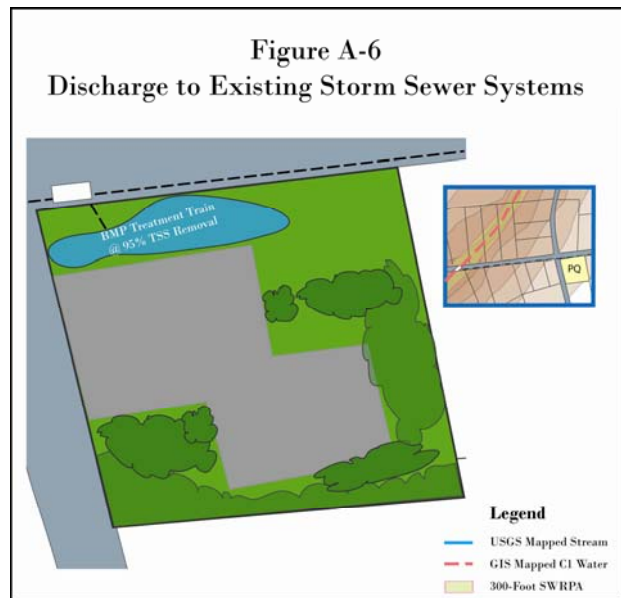


The site shown in Figure A-5 is located within the 300 feet of a Category One water. In such a case, the SWRPA crosses the existing roadway. In some cases, the entire site may have been previously developed. The SWRPA will still be established regardless of the development condition of the site. However, the rules require that the “functional value and overall condition are maintained to the maximum extent practicable.” This maintenance of value and condition requires an assessment of the existing condition. Any development that has occurred on site or within the SWRPA that impacts the existing value can be addressed through the functional value analysis, described in detail below. The functional value is generally associated with existing vegetation on site. Where there is little or no vegetation, the criteria to maintain the values are significantly reduced.

C. Existing Discharges to a Category One Water

This section discusses the applicability of the SWRPA on existing storm sewers that discharge to a C1 water. At sites where drainage goes to an existing storm sewer system that discharge to a C1 water, and the site is greater than 300 feet away from the C1 water as shown on Figure A-5, the applicability of the SWRPA is based on the runoff from the development flowing through the C1 water. The regulations state that the 300-foot SWRPA shall be established from the top of bank or centerline of a stream. However, since the site is greater than 300-feet away, this portion of the requirements do not apply. Under NJAC 7:8-5.5(h)3, it provides the following:

If stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the Standard For Off-Site Stability in the “Standards for Soil Erosion and Sediment Control in New Jersey,” established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., (see N.J.A.C. 2:90-1.3), then the stabilization measures in accordance with the requirements of the above



standards may be placed within the special water resource protection area, provided that:

- i. Stabilization measures shall not be placed within 150 feet of the waterway;
- ii. Stormwater associated with discharges allowed by this paragraph shall achieve a 95 percent TSS post construction removal rate;
- iii. Temperature shall be addressed to ensure no impact on receiving waterway;
- iv. The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;
- v. A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and
- vi. All encroachments proposed under this section shall be subject to review and approval by the Department.

In the site shown on Figure A-65, the existing drainage flows to an existing storm sewer system; therefore, under post-development condition, the drainage must discharge to the storm sewer system to provide drainage for the site. Since the discharge point is greater than 300 feet from the waterway, the requirement to be a minimum of 150 feet away from the waterway does not apply. No encroachment is proposed in the SWRPA, so the requirement at iv listed above does not apply. However, runoff from this development must provide a 95% TSS removal as well as addressing temperature impacts as required under ii and iii above.

This requirement only applies to storm sewers that are upstream of a C1 water and within the same HUC14, in the same way that SWRPA applies to mapped tributaries to C1 waters.

D. New Category One Waters

The Surface Water Quality Standards which establish the designation of the surface water classifications in New Jersey can be regularly updated. As a result of these updates, a project under review may be affected by a change in the surface water designation. A project may have received some, but not all, of the required permits. This section provides additional information on how changes in designation impact project reviews under the Stormwater Management rules for the SWRPA.

Projects that have a valid DLUR permit or an application deemed complete by the Department prior to the effective date of a C1 designation are not subject to the requirements made applicable by the new designation. Projects that have a valid DLUR permit (i.e. Flood Hazard Area Control Act Rules) prior to the effective date of a C1 designation but require another DLUR permit (i.e. Freshwater Wetlands Protection Act Rules) are exempt from requirements made applicable by the C1 designation provided that the previously approved valid permit included a stormwater management review consistent with the Stormwater Management rules effective February 2, 2004 and any subsequent amendments.

Projects that are not subject to Department review under the Stormwater Management rules and have received all other required approvals to allow construction, prior to a C1 designation, are not subject to the new C1 designation. Such approvals include, but are not limited to, projects with municipal approval, issued prior to the effective date of the C1 designation, that enables commencement of construction; projects that did not need a municipal approval and began construction before the effective date of the C1 designation as evidenced by the foundation for at least one building or structure, all of the subsurface improvements for a roadway, or the installation of all of the bedding materials for a utility line.

Assessment Of Functional Value Impact

The functional value assessment is a comparison of the value of existing conditions versus post-construction conditions. The existing conditions value must be based on the SWRPA in its best condition as of February 2, 2004. (Note: Any development within the SWRPA that has received

approval under the February 2, 2004 Stormwater Management rules, as amended and supplemented, which has been constructed at the time of application, can utilize the developed conditions as the existing condition even if it is not the best condition since February 2, 2004.)

There are four functions of a SWRPA that must be assessed for the impact of the development on its values: **Habitat, Nonpoint Source Pollutant Reduction, Temperature Modification and Channel Integrity.** If the analysis of each function shows no loss in value from existing to proposed conditions, the encroachment may be permitted under N.J.A.C. 7:8-5.5(h) without further analysis.

Note: While Stormwater BMPs may be a method to address some of the functional value losses resulting from development, the loss of functional values resulting from the installation of BMPs within the SWRPA must also be included in any functional value analysis.

I. Functional Value: Habitat

All vegetated SWRPA areas, including lawn areas and cultivated fields, provide some habitat value. Typically, the more that the existing vegetative cover approximates the natural vegetative condition for a particular location, the higher its habitat value. Human activity is another major determinant of habitat value. The degree of intrusion due to human activity affects the suitability and use of habitat for resting, feeding and breeding purposes for those species that are not tolerant of that intrusion. Further, the area that may be rendered unsuitable for a particular species is not limited to the area of human intrusion alone. Visual and audible intrusion, and pets, radiate into adjacent habitat areas rendering them unsuitable as well. Therefore, the habitat value will be assessed in terms of 1) the status of the habitat as potentially suitable for threatened and endangered species and 2) any changes in the vegetative character and degree of human activity.

In order to address this functional value, the applicant must document the existing extent and character of the SWRPA relevant to habitat value. [The Department’s Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife and Natural Heritage Program Priority Habitats (other than macro sites) shall be used as a reference for identifying higher value habitats Landscape Ranks 3 (State threatened), 4 (State endangered) or 5 (Federally endangered) patches according to the Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife and Priority Habitats, or Natural Heritage Program Priority Habitats (other than macro sites). In determining the existing habitat value of the SWRPA, the Department may also rely on recent sightings of threatened and endangered species not yet reflected on the Landscape Maps.]

Figure A-7 provides the habitat continuum. Habitat value is increased as the land cover matures and decreases with increasing human disturbance. In order to assess this functional value, the applicant must

- 1) delineate existing and proposed site conditions on a site plan and in tabular form based on the different land cover categories shown in Figure A-7, identifying activities within the inner 150 foot buffer and the outer 150 buffer; and

**Figure A-7:
Habitat Continuum**



- 2) note if the SWRPA includes potential habitat for threatened and endangered species (Rank 3, 4, or 5) as represented by the Landscape Maps.

In order to prevent a loss in habitat functional value, the applicant must demonstrate the following:

- 1) Any proposed disturbance of mapped habitats (Landscape 3, 4, or 5) in the maps described above must be restored to pre-development conditions or must be mitigated by the creation of an equivalent or greater area of higher land cover value on the habitat continuum. Created habitat must also provide a contiguous buffer and be equidistant to or closer to the stream than the proposed disturbance (Note: if the restoration area cannot be both sufficiently close to the stream and provide a contiguous buffer, the applicant shall demonstrate that the selected location provides greater benefit regarding all of the functional values as a whole); and
- 2) No impediments to habitat access (such as fences or roadways) are proposed that would prevent access to existing accessible habitat areas.

II. Functional Value: Nonpoint Source Pollutant Reduction

Nonpoint source pollutant loading varies by land use. For example, agricultural land uses or maintained lawns where fertilizers, pesticides and herbicides are routinely applied will tend to release those constituents to an adjacent stream through stormwater runoff. Paved parking areas generate oils, greases, polycyclic aromatic hydrocarbons and metals. The value of vegetated buffers is that they provide for pollutant removal by taking up excess nutrients, binding metals and other pollutants and allowing natural chemical and biological processes to alter the chemical composition of pollutants to render them harmless or less harmful. Natural vegetated riparian buffers often act as sinks for pollutants rather than as sources.

Filtration is provided to the extent that stormwater is allowed to flow across vegetated land, during which time some of the flow is intercepted by the vegetation or infiltrates into the ground, where various physical, chemical and biological processes act on the pollutants, reducing pollutant load. However, to the extent that land uses located within the buffer actually generate pollutant loads and/or prevent the natural processes of infiltration and amelioration, the buffer's natural functional value to reduce nonpoint source pollutants is reduced.

The functional value is maintained if the overall pollutant load for each parameter that would be generated with the proposed project remains the same or is reduced compared to the current condition of the buffer. However, as shown by the pollutant loading values in Attachment A, development that may decrease one type of pollutant will result in increases in other pollutants. Therefore, in every development that changes the vegetated cover, a loss of habitat function will occur.

In order to mitigate for the loss in the pollutant reduction functional value, the applicant must

**Figure A-8:
Pollutant Reduction
Continuum**



demonstrate the following:

1. Any proposed disturbance of vegetated area must be restored to pre-development conditions or must be mitigated by the creation of an equivalent or greater area of higher land cover value on the pollutant reduction continuum at Figure A-8. The mitigation area must provide a contiguous buffer and be equidistant or closer to the stream than the proposed disturbance (Note: If the restoration area cannot be both sufficiently close to the stream and provide a contiguous buffer, the applicant shall demonstrate that the selected location provides greater benefit regarding pollutant reduction value);
2. Stormwater runoff up to the Water Quality Design Storm from all impervious areas within the SWRPA is infiltrated or treated to 95% TSS removal rate;
3. Any area on the site designed to impound water shall incorporate goose management measures to discourage geese population;
4. Nitrogen and phosphorous cannot be applied in the SWRPA and permanent signage shall be provided to indicate the prohibition and to establish the limits of application; and
5. The requirements shall be permanently attached to the site by incorporating the criteria in the deed and any BMP maintenance plan.

III. Functional Value: Temperature Moderation

Temperature moderation is provided through direct shading of a waterbody by overhanging canopy, by ground shading from vegetation, and through the absence of structures and impoundments, which affect the microclimate. The greater the density and permanence of the vegetation, the less stormwater flowing through the area that will pick up heat from the ground or from direct sunlight. Structures and other impervious cover retain heat and artificially elevate air temperature and the temperature of stormwater runoff. In addition, impounded areas, such as water features of a golf course or swimming pools, even if they have no discharge, retain heat from solar radiation and affect microclimate.

In order to assess this functional value, the applicant must

- 1) delineate existing and proposed site conditions on a site plan map and in tabular form based on the different cover categories shown in Figure A-9; and
- 2) identify the extent of the existing and proposed leaf canopy cover over the waterbody.

In order to prevent a loss in temperature functional value, the applicant must demonstrate the following:

- 1) Any proposed disturbance of vegetated areas or of the leaf canopy described above must be restored to pre-development conditions or must be mitigated by the creation of an equivalent or

**Figure A-9:
Temperature Continuum**



greater area with a higher land cover value on the Temperature continuum. The mitigation area must that provides contiguous buffer and be equidistant or closer to the stream than the proposed disturbance (Note: if the restoration area cannot be both sufficiently close to the stream and provide a contiguous buffer, the applicant shall demonstrate that the selected location provides greater benefit regarding all of the functional values as a whole. In addition, restoration of any trees removed must be provided at a 2:1 scale to account for the possibility of failure and the time required for trees to mature);

- 2) Runoff for the Water Quality Design Storm for all impervious areas are passed vertically through a minimum of four feet of media filter, or is infiltrated prior to the stream; and
- 3) There is no direct discharge of impounded water to the waterbody up to the Water Quality Design Storm.

IV. Functional Value: Channel Integrity

Channel integrity captures both the physical and biological characteristics of a stream. Protection of the physical and biological integrity of the stream requires that the surface and subsurface (groundwater) hydrology of the site be maintained both during storm and dry weather periods. Increases in storm flow within a stream channel increase the likelihood of stream bank and stream bed erosion which can remove essential aquatic habitat structure in some places, bury critical aquatic habitat where the eroded material eventually settles out of the water column, and cause loss of near stream vegetation that shades the waterbody. The failure to maintain groundwater recharge reduces base flows in the stream so that during dry or drought conditions, the stream channel has no water which increases the chances for stream bank erosion when again subjected to stream flows. This change in hydrology would extirpate various species (such as finfish) thereby changing the aquatic community.

In general, the most erosive force acting to disrupt channel integrity is based on the elevation and the velocity of water within the channel for bank-full flow, which is approximated by the two-year storm event. The maintenance of base flows is reliant on maintaining groundwater recharge. The vegetation adjacent to a stream not only provides bank stabilization but also reduces the velocity of the runoff as it passes through the riparian area and influences the amount of infiltration or recharge of stormwater that occurs. Therefore, where an encroachment increases the volume or velocity of runoff or reduces infiltration by changing the vegetation or imperviousness of the SWRPA, the channel integrity function of the buffer is reduced.

In order to prevent a loss in the channel integrity functional value, the applicant must demonstrate that there is no increase in runoff volume for the 2-year storm for any proposed activity within the SWRPA, that the project, as a whole, maintains 100% of pre-development groundwater recharge, and that there is no increase for the peak runoff rates from the project site for the 2-year storm..

Proposed Disturbance in the SWRPA

The Stormwater Management Rules only allow encroachment of the SWRPA under limited circumstances: where the project is exempt under N.J.A.C. 7:8-5.2(d), where previous development or disturbance has occurred more than 150 feet away from the top of bank (or the stream centerline where there is no top of bank) and the functional value and overall condition is maintained to the maximum extent practicable; where stabilization measures are required by the Standards for Soil Erosion and Sediment Control in New Jersey; where the project complies with the requirements for a linear development waiver NJAC 7:8-5.2 (e); and where an encroachment has no feasible and prudent

alternative to the proposed project.

Specific waiver and exemption provisions are provided for linear development projects at N.J.A.C. 7:8-5.2(d) and (e). If the proposed project complies with the waiver or exemption provisions for linear development projects, no functional value analysis is required.

A developed or disturbed SWRPA exists only if there are structures or other impervious cover (development) or a lack of woody vegetation (disturbance), unless herbaceous-only vegetation is the natural condition as in an emergent wetland. A disturbed condition could be an active agricultural field, lawn or other maintained grassy area. An active agricultural area is intended to include any area where **all** woody vegetation (trees and shrubs) has been removed for the purposes of raising food, fiber or livestock. Where a previously developed or disturbed area has allowed the growth of woody vegetation, which takes several years, the area is not considered to be previously developed.

Under N.J.A.C. 7:8-5.5(h)1ii, encroachment is allowed if the functional value and overall condition is maintained to the maximum extent practicable. The methods for preserving each functional value has been discussed above. If there is a loss in functional value, then the applicant must demonstrate that such a loss complies with one or more of the following three criteria in order to demonstrate that the loss of function has been minimized to the maximum extent practicable:

1. Stabilization measures may be required to be placed in the outer 150 – foot portion of the SWRPA to ensure compliance with the Standards for Soil Erosion and Sediment Control in New Jersey, as provided in N.J.A.C. 7:8-5.5(h)3. Where such measures are necessary, coordination must occur between the local Soil Conservation District (SCD) and the NJDEP reviewer to clarify that such stabilization measures is necessary. A meeting between the NJDEP reviewer and the SCD, or a letter from the local SCD to indicate the necessity for the placement of the stabilization and that the stabilization has been minimized within the SWRPA is sufficient to demonstrate compliance with this criteria. If the only encroachment in the SWRPA is for stabilization purposes, no additional demonstration that the disturbance has been minimized is required.
2. If the project qualifies for a linear development waiver under the N.J.A.C. 7:8-5.2(e), the alternatives analysis requires a demonstration of compliance with the design and performance standards to the maximum extent practicable, including the functional values provided by the SWRPA.
3. Where a proposed encroachment has no feasible and prudent alternative to the proposed project, including not pursuing the project, which would avoid or substantially reduce the anticipated adverse effects of the project, the Department may permit the encroachment under the following criteria:
 - If the project is subject to the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13, the project review included an alternatives analysis that demonstrates that the encroachment is unavoidable and that the loss of functional value has been minimized under the Hardship Exception for an Individual Permit found at N.J.A.C. 7:13-9.8;
 - If the project is subject to neither the Flood Hazard Area Control Act Rules nor the Freshwater Wetlands Protection Act, it has been demonstrated to the Division of Water Quality – Bureau of Nonpoint Pollution Control that the proposed encroachment is necessary to accomplish the project’s purpose and cannot be avoided by project redesign, reduction in scope or alternative means of access.

Where an encroachment into an undisturbed SWRPA or within 150 feet of a protected stream is permitted that results in a loss of any of the four assessed functional values, the loss of functional value must be mitigated by planting other disturbed areas of the SWRPA with native trees on a 2:1 area basis unless a grassland species is the basis for a designation as high value habitat; in such a case, revegetation shall be with meadow species. The planting or establishment of vegetation shall be performed in the following hierarchical order:

- 1) Portions of the inner 150 feet of the SWRPA that are unvegetated on-site
- 2) Portions of the outer 150 feet of the SWRPA that are unvegetated on-site
- 3) Portions of the inner 150 feet of the SWRPA that are unvegetated off-site within the same HUC
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- 4) Portions of the outer 150 feet of the SWRPA that are unvegetated off-site within the same HUC
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Attachment A

Type	Landuse Code	SubType	Total Phosphorus	Total Nitrogen	Total Suspended Solids	Biological Oxygen Demand	Lead	Zinc	Copper	Fecal Coliform
Agriculture	2100	Crop/Pasture	2.17	10.78	1,378	16.0	0.062	0.089	0.027	1.4E+10
	2120	Pasture	0.43	3.68	448	14.9	0.009	0.089	0.027	1.4E+10
Barrenland	1700	Barrenland	40.08	2.32	20,007	3.1		0.002		
Forest	4200	Coniferous	0.30	3.72						
	4100	Deciduous	0.07	2.43						
	4300	Mixed Forest	0.13	2.43	45	4.5	0.009	0.018	0.027	1.2E+10
Urban	1300	Industrial	2.68	20.63	1,985	31.4	1.409	1.598	0.930	1.8E+04
	1200	Commercial & Services	1.78	11.33	734	42.1	0.955	0.873	0.784	5.0E+09
	1150	Mixed Residential	0.50	5.03	143		2.067	1.264	0.994	4.1E+10
	1600	Mixed Urban	1.17	9.76	1,029		5.657	3.102	3.450	2.0E+04
	1110	Residential (High density)	2.13	5.99	343	35.1	0.447	0.527	0.313	1.6E+10
	1130	Residential (Low density)	0.47	2.77	81	8.5	0.217	0.172	0.190	8.3E+09
	1120	Residential (Medium density)	0.73	5.65	191	16.1	0.123	0.143	0.140	
	1400	Transportation	1.12	5.35	667	67.2	1.922	0.863	0.144	1.6E+08
Wetlands	6000	Wetlands	0.22	4.90	24	24	13.9			

* All units expressed in lbs/acre/year, except fecal coliform which is expressed as CFU.

* For parameters where no value is provided for coniferous or deciduous forest, use mixed forest value for all forest types. For BOD, where land use is best described as mixed residential or mixed urban, defer to the next closest land use type: residential-high, medium or low, commercial or industrial. For Wetlands and Barrenland, some metals and fecal coliform lack values: if these land uses are part of the conversion comparison, omit the analysis of parameter(s) for which values are missing.