3.2 Surface Water Resources

3.2.1 Existing Conditions

Surface Water Resources (Features)

No surface water resources in the form of wetlands, watercourses, or waterbodies, are present on the project site. The site's western boundary is approximately ninety feet east of the Hudson River, the most proximate water resource. The 4.4 acre project site is physically separated from the Hudson River by the Metropolitan Transit Authority Metro-North (MTA) rail line, which abuts the property's western boundary. The site is outside the limits of the Hudson River's 100 year flood plain as depicted on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Figure 3.2-1).

The Hudson River is rated as a Class C water body by the NYSDEC, indicating that the River is suitable for fish propagation and survival. Class C waters are also suitable for primary and secondary contact recreation (New York State Code Part 701), although other factors, such as accessibility and stream flows or depths, may, according to the State, limit their use for these purposes.

In 1989, the Westchester County Board adopted a local law (16-1989) pursuant to SEQRA that established the Hudson River, and its "immediate shoreline" as a Critical Environmental Area (CEA) (effective January 1990). The intent of the law is to protect areas of the County that contained, or bordered on, significant natural resources. Because the Hudson River and its immediate shoreline are a CEA, the potential impact on them from any Type I SEQRA action, such as the Waters Edge subdivision, is considered a relevant area of concern under SEQRA and must be evaluated in a determination of significance. Though the Proposed Action is separated from the Hudson River CEA by the Metro-North railway line, potential environmental impacts on the Hudson River CEA anticipated from the Proposed Action are analyzed in this DEIS in this section and further in Section 3.5, Critical Environmental Areas.

Drainage Report

Appended to this DEIS are a *Drainage Report Prepared for Subdivision Map - Waters Edge at Dobbs Ferry* (Drainage Report) and a *Stormwater Pollution Prevention Plan prepared for Subdivision Map Waters Edge at Dobbs Ferry* (SWPPP) prepared specifically for the proposed Waters Edge at Dobbs Ferry action. The contents of the Drainage Report and SWPPP are summarized below.

The Drainage Report (Appendix D) details existing stormwater characteristics and describes the stormwater management strategy for the proposed eleven 11-lot subdivision, and includes calculations of existing and post development peak rates of stormwater discharge for the 1, 2, 5, 10, 25, 50 and 100 year, twenty-four hour, statistical rainfall events.

Pre and post development runoff conditions from the site, and entire neighborhood, for the twenty-five year, twenty-four hour, storm event are as follows:

- Pre-Developed (Existing) Condition 25-Year rate of runoff = 17.05 cfs
- Post-developed Condition 25-year rate of runoff = 20.66 cfs
- Net increase in the 25-Year rate of runoff = 3.61 cfs
- Entire Neighborhood Pre-developed (Existing) Condition 25-Year rate of runoff = 33.57 cfs
- Entire Neighborhood Post-developed Condition 25-year rate of runoff = 37.51 cfs
- Net increase in the 25-Year rate of runoff = 4.14 cfs

The project site drains in a westerly direction to a steep slope towards an existing drainage flume on the abutting MTA property. The flume runs in a north-south direction along the entire length of the project site parallel with the Metro-North right-of-way (ROW) and discharges directly to the Hudson River.

The tributary drainage area includes the roads and streets servicing the existing neighborhood with approximately twenty-two single-family residences. The total drainage area tributary to the proposed stormwater discharge point is 6.137 acres.

Portions of the Village road network, including Atilda and Fairlawn Avenues, are in the same drainage area as the project site. Some stormwater that falls on, and drains to, these existing roadways and the site are collected by an ineffective stormwater infrastructure system that exists in the area. The effectiveness of the infrastructure is adversely influenced by flat topography, and results in ponding conditions and ongoing erosion and sedimentation of the area, particularly during rainfall events (See photos in Appendix D, Drainage Report).

The existing road grade at the Y-Intersection of Fairlawn Avenue and the intersection of Fairlawn Avenue and Constance Avenue is nearly flat, which prevents adequate collection and conveyance of stormwater by the current infrastructure in these two streets. The lack of appropriate pitch to the existing catch basins also results in the road shoulder remaining wet for sustained periods, often with standing pools of water in the street after a storm event. The road surface at these intersections also shows signs of distress as a result of the poor drainage.

At present, the majority of the surface runoff, between Broadway and the westerly limit of the existing road system within Fairmead that provide access to the project site, is collected by the existing stormwater drainage system. The system includes improperly constructed catch basins that are connected to an 18” pipe that discharges into an open channel at the base of the ravine that is located on the western portion of the project site. The ravine, which drops 20 to 25 feet below the relatively level plateau, may have been formed in part by historical two land fill operations that occurred on the site and the placement of a storm sewer outlet, which flows to the Hudson River. The ravine has eroded overtime as a result of the stormwater discharge.

Once discharged into the ravine, the stormwater flows through the ravine until it enters the flume. From the four-foot (4’) wide concrete flume the untreated stormwater discharges into the Hudson River by way of three (3) culverts under the Metro-North Railroad right of way (ROW).

These culverts include an 18" reinforced concrete pipe, a 16" steel or cast iron pipe and a 30" steel or cast iron pipe.

The flume collects all the runoff from the existing stormwater drainage system, as well as from overland flow from the site and surrounding roads located in the drainage area. The flume is pitched in a northerly direction at a slope of 0.22%, and is designed to channel the runoff into the Hudson River from the three (3) drop inlet drainage structures positioned over the three (3) above mentioned culverts. The discharge points at the shoreline of the Hudson River are protected with grated outfall structures that prevent debris from accumulating in the culverts. Almost all of the runoff from the tributary area is conveyed to the flume by the ravine.

Evidently in an effort to reduce erosion and sedimentation caused by unmanaged stormwater, Metro-North constructed a stone-lined open channel in the ravine to abate the erosion and to direct stormwater runoff from the discharge pipe in the ravine to the flume at the base of the slope. However, the channel, which crosses the County Trunk Sewer (CTS), is not adequate and the ravine continues to erode and collect debris. The accumulation of debris, including a large tree that has fallen into the ravine over the CTS, currently blocks stormwater and represents a threat to the CTS.

As noted above and by the applicant, the ravine appears to be partially man-made and is reportedly a result of fill operations dating back to the 1800's and the construction of the stormwater drainage system that serves Atilda and Constance Avenues.

Coordination with MTA

By letter on August 2, 2006, Metro-North raised several issues concerning the proposed development and stormwater discharge on its property. (See Appendix E for the August 2, 2006, MTA letter). On August 27, 2006, the project engineer met with representatives of Metro-North to discuss the issues raised by MTA. As noted above, the stormwater from the proposed project is to discharge onto the Metro North property.

The following issues where raised by the MTA in the August 2nd communication:

- Identification of the tributary (drainage area) upon which the project engineer's drainage calculations were based;
- The capacity of the existing culverts under the Metro-North rail road to convey stormwater runoff collected in the flume;
- The need for a visual inspection of the flume;
- The need to evaluate slope stability;
- The need to provide catch basins and a frame and cover for access to part of the closed drainage structure as part of the Proposed Action; and
- The need for approval of the proposed drainage plan by the Village of Dobbs Ferry Superintendent of DPW.

The project engineer responded to the above issues and addressed the concerns of MTA by letter of August 27, 2006. The letter is located in Appendix E and indicates the following:

- The entire drainage area contributing to the flumes is 136 acres, of which 11.8 acres is the drainage area of the neighborhood;
- Drainage calculations demonstrate that the 18", 16" and 30" inch culverts under the railroad line have more than enough capacity to convey the proposed stormwater flows;
- The flume was inspected by the project engineer and the requested video inspection will be performed;
- The catch basins will have deep sumps and hooded outlets which will greatly reduce the volume of sediment and eliminate the amount of debris that currently makes its way to the flume. The installation of the proposed drainage infrastructure will eliminate the open channel flow in the ravine, providing a maintenance free stormwater collection system;
- The applicant engaged Carlin-Simpson & Associates Consulting Geotechnical and Environmental Engineers to evaluate concerns related to slope stability. Further, the Drainage Report notes the project has been designed specifically to correct current stormwater management deficiencies and to protect the stability of the existing steep slope, which was understood to be a primary MTA Metro-North concern;
- Frame and cover for access to the closed drainage structure DS-1 will be provided;
- The Village has indicated that it will accept the proposed storm drainage system, if the improvements are constructed in accordance with the plans presented to MTA Metro-North. The proposed infrastructure will address the existing long-standing drainage problems and intercept stormwater runoff that is presently making its way over the existing roadbed and down the slope to the flume; and
- The Village has indicated that it recognizes the importance of addressing the existing drainage problems from the roads and streets and the Village will accept and maintain the proposed drainage improvements, which will be offered for dedication to the Village.

The applicant will continue to coordinate resolution of any outstanding issues with Metro-North and believes that Metro-North is satisfied that the Proposed Action would not impact its property, or any of the existing structures that exist on it. According to the applicant, the MTA has given verbal acceptance of the Proposed Action. Discussions between Metro-North and representatives of the applicant will continue to ensure that all issues have been resolved to Metro-North's satisfaction.

Pre and Post Construction Stormwater Quality

There is no water quality data available for stormwater runoff that presently discharges from the subject site. Such stormwater would be typically characteristic of runoff from a suburban neighborhood and include elevated levels of total suspended solids, nitrogen and phosphorus, materials applied to turf and landscaping and untreated animal wastes.

The project site lies within the Village of Dobbs Ferry, which in entirety has been designated by the New York State Department of Environmental Conservation (NYSDEC) as a Small Municipal Separate Stormwater System (MS4). As a State designated MS4, the Village is required to prepare a Stormwater Management Program (SWMP), and submit a Notice of

Intent (NOI), pursuant to New York's 2003 Pollution Discharge Elimination System *General Permit for Stormwater Discharges from Municipal Separate Stormwater Systems*, to gain authorization to discharge stormwater into "waters of the United States", in this case, the Hudson River. The specific purpose of the SWMP is to address pollution found in stormwater. The NOI "outline[s] how [the Village] will adopt appropriate measures to address stormwater within the MS4 area." The overall purpose of the designation, and preparation and implementation of the SWMP, is to reduce pollutants in stormwater that are discharged within the Village.

Visual observations during rain storm events, and dry conditions, confirm that significant quantities of particulate matter, both organic and inorganic, are generated in the vicinity of the project as a result of poor stormwater management practices. Much of this particulate matter is currently conveyed into the Hudson River by the existing stormwater drainage system that discharges to the ravine, and by overland flow that also enters the ravine (See Drainage Report, Appendix D).

The MS4 program recognizes the occurrence of improperly managed stormwater, such as that in the project site's drainage area, and the significant impact that these systems may have on suffice water resources like the Hudson River.

The stormwater infrastructure proposed as part of the action will reduce the existing pollutant load entering the Hudson River and advance the goals of the State (including NYS DEC) and Village to improve the quality of stormwater entering the Hudson River. This will include catch basins with sumps in the street system that will remove sediments.

3.2.2 Potential Impacts

The proposed project involves the temporary disturbance of some 3.9 acres of the Waters Edge site, and the discharge of stormwater following construction into the Hudson River. No surface water resources in the form of wetlands, watercourses, or waterbodies, are present on the project site. The site's western boundary is approximately ninety feet east of the Hudson River, the most proximate water resource. Potential impacts that the Proposed Action may have on the Hudson River could, if not mitigated, result from sedimentation during construction, post development increases in pollutant loading in stormwater, post development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities.

Correspondence between the project engineer and Village of Dobbs Ferry staff have confirmed that the existing ravine on project site is an ongoing maintenance concern for the Village Department of Public Works (DPW). For this reason and to implement certain aspects of the Proposed Action, including the construction of proposed residences, the proposed looped road, and the stormwater drainage system, the applicant proposes to fill the existing eroding ravine located on the western portion of the property.

This element of the project will involve the elimination of the existing outfall from the stormwater drainage system, and conveyance piping that now connects the outfall to the drainage system in the existing roads. A new outfall and piping to connect it to the proposed drainage system, will be constructed during the filling process (See Plan Set attached to DEIS). The final slope will be reinforced and stabilized with a synthetic slope reinforcement mat.

The Proposed Action includes the construction of a stormwater drainage system that would include a series of hooded catch basins with sumps in the new road system and piping to convey stormwater from the road to the Metro North flume. This construction, which includes the filling of the existing ravine, will eliminate the eroding channel at the base of the ravine that now coveys stormwater to the flume. This component of the Proposed Action would eliminate the major source of debris, and sedimentation that is currently conveyed from the ravine to the Hudson River by way of the flume. This element of the Proposed Action would reduce the annual sediment load that discharges into the flume and eventually the Hudson River.

Consistent with the intent of the MS4 program requirements, the Proposed Action includes elements that address existing pollutant loads in stormwater discharging from the drainage area in which the project site is located to the Hudson River. In addition, a Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the project in accordance with NYSDEC GP-02-01 and design guidelines to control erosion and prevent off-site sedimentation during construction.

Since the Proposed Action is a residential subdivision that results in the disturbance of less than five acres, and that is neither in a Total Maximum Daily Load watershed or discharges to a water segment on the NYSDEC 303d list, the State presumes that the project will not result in significant increases in pollutant loads in stormwater and that post construction changes in stormwater characteristics will not have a significant impact. Accordingly, NYSDEC does not require the SWPPP to include post construction practices to detain post construction increase in the rate and volume of stormwater nor increased pollutant loading in stormwater. The SWPPP appended to this DEIS includes NYSDEC's April 28, 2006 confirmation that the Proposed Action has gained coverage under GP-02-01.

Sedimentation During Construction

As noted above, the Proposed Action involves the temporary disturbance of some 3.9 acres of the 4.4 acre Waters Edge site, and the discharge of stormwater following construction into the Hudson River. Potential impacts that the Proposed Action may have on the Hudson River could, if not mitigated, result from sedimentation during construction, post development increases in pollutant loading in stormwater, post development flooding from increased peak rates of stormwater discharge.

Without appropriate mitigation incorporated into the Proposed Action, it would have the potential to increase the volume and velocity of stormwater through land clearing and conversion of existing land forms into impervious surfaces and landscaped areas. If not controlled, these activities may lead to accelerated erosion and sedimentation both during and after construction. Sedimentation of the receiving water bodies would likely result in decreased light penetration and nutrient enrichment, increased turbidity, increased transport of pollutants that are adsorbed to the sediment particles, shielding of pathogens from disinfection, and clogging of gills and filters in aquatic organisms. Accordingly, an Erosion and Sediment Control Plan, that includes construction sequencing, has been included in the Stormwater Pollution Prevention Plan (SWPPP) prepared for the Waters Edge project.

The purpose of the Erosion and Sediment Control Plan is to minimize the erosion of disturbed soil to prevent the migration of sediment into surface waters and off site properties during construction and until the site has received final stabilization. The Erosion and Sediment Control Plan included with the SWPPP (Appendix B) contains Construction Notes, Soil Erosion and Sediment Control Notes, specifications of Stabilization Materials, a Sequence of Construction, and associated construction details and notes designed to provide a maximum level of mitigation for potential erosion and sedimentation. The Erosion and Sediment Control Plan complies with NYSDEC guidelines and the New York State Standards and Specifications for Erosion and Sediment Control .

As specified in the Waters Edge SWPPP, all soil erosion and sedimentation measures such as silt fencing will be installed following a pre construction conference with appropriate agency staff, and prior to any construction activities. In addition, the applicant will engage a Certified Professional in Stormwater Quality/Erosion and Sediment Control to oversee implementation of the SWPPP for the project, including its site specific Erosion and Sediment Control Plan component. Refer to SWPPP in Appendix B of this DEIS for erosion and sediment control practices to be implemented.

Post-Construction Increases in Pollutant Loading in Stormwater

Conversion of existing vegetated areas into impervious and landscaped areas in some cases may, without appropriate mitigation, increase levels of certain pollutants in stormwater following development of the site. The discharge of these post construction increases in pollutants may have a adverse impact on water quality in receiving waters. Stormwater discharges such as proposed with the Waters Edge at Dobbs Ferry project are regulated by the NYSDEC under the State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Construction Activities (GP-02-01).

At present, untreated stormwater from the largely developed drainage area in which the project site is located currently discharges directly onto the site. From there the stormwater is conveyed to the culverts under the MTA rail line, and into the Hudson River, by either overland flow, or by the existing stormwater drainage system that discharges into the ravine. With the exception of catch basin and the improperly constructed, and largely ineffective, conveyance system, no constructed stormwater controls or treatment facilities, such as detention basins exist on the site, or in the drainage area. Nor is any stormwater that discharges onto the site treated prior to entering the site.

As part of the Proposed Action, the applicant proposes to correct the existing stormwater infrastructure and has designed, and proposes to construct, a new, functional stormwater infrastructure system in the proposed road network. Construction of this system, which includes filling the existing eroding ravine, will eliminate existing sources of sediment, and other pollutants, being discharged to the Hudson River, and will eliminate the existing erosion in the ravine and the resultant sedimentation of the Hudson River. The system will include hooded catch basins with sumps that will further reduce current pollutant loading to the river by retaining suspended pollutants and sediment in stormwater.

Pesticide and fertilizer applications by future homeowners will meet the same State, County and local regulations as must be met by other developments in the community. Current data indicates that, if applied correctly, contemporary pesticides will not migrate to any great extent, and will break down rather quickly after application. Similarly, the future use of herbicides and

insecticides at the site in the future is not expected to represent an adverse impact on surface water quality. Because of treatment of stormwater flows and the low anticipated levels of these substances, no significant adverse impacts on water bodies or watercourses is anticipated.

Potential impacts on the Hudson River associated with fecal coliform bacteria (FCB) are not anticipated as a result of this proposal either. The disposal of wastewater by a sewer system approved by the County Health Department will reduce the potential for increased coliform levels. Other possible FCB sources, including pets and waterfowl, will not be significantly greater than the existing wildlife population on site and therefore should not cause increased FCB loading.

Potential Downstream Flooding and Flood Plain Impacts

No activities are proposed as part of the action in any area designated as a Flood Plain. Further, as concluded in Appendix B, and summarized below, post construction peak rates of stormwater discharge will be substantially the same as they are in pre-construction conditions. As such, no downstream flooding impacts, or impacts on any flood plains, are anticipated to result from the Proposed Action.

Bed and Bank Erosion in Receiving Watercourses

The SWPPP that accompanies this DEIS in Appendix B summarizes pre and post development stormwater discharge rates at each design point. As indicated, post construction peak rates of stormwater discharge will be generally maintained for each of the storm events analyzed. These reductions will be accomplished with the proposed stormwater management practices included in the project specific SWPPP. Therefore, bed and bank erosion in receiving watercourses from the Proposed Action is not anticipated.

3.2.3 Mitigation Measures

The Proposed Action includes a SWPPP with an Erosion and Sediment Control Plan to prevent erosion and sedimentation during construction. By implementing the measures specified in the proposed Erosion and Sediment Control Plan, the applicant will reduce potential adverse impacts on the Hudson River, and off site properties, and realize a project that will result in beneficial impacts on the water quality in the receiving waters.

Stormwater Mitigation

To mitigate potential adverse impacts on the Hudson River from the effects of post development stormwater, the Proposed Action includes the implementation of a project specific SWPPP. The SWPPP, included in this DEIS as Appendix B, and as regulated by the NYSDEC, includes an Erosion and Sediment Control Plan to prevent sedimentation during construction. Because the Proposed Action is a residential project involving less than five acres of disturbance, and does not discharge to a waterbody on NYSDEC's Priority Waterbody List, and because the site is not in a Total Maximum Daily Load (TMDL) watershed, no post construction stormwater controls are required by NYSDEC to mitigate potential impacts associated with post construction changes in stormwater. As such, no significant adverse impacts associated with post construction changes in the volume, rate of discharge, or increased pollutant loading in stormwater are anticipated.

Erosion and Sediment Control Plan

As noted, sedimentation resulting from erosion of disturbed soil during construction represents to potential to impact receiving surface waters. Accordingly, the Erosion and Sediment Control Plan component of the Waters Edge SWPPP has been developed in accordance with New York State Guideline for Urban Erosion and Sediment Control and New York State Standards and Specifications for Erosion Control. The plan design also incorporates applicable elements of the New York State Standards and Specifications for Erosion and Sediment Control. All erosion and sediment controls will be installed and maintained in accordance with the SWPPP.

The purpose of the SWPPP is to minimize the potential for soil erosion from areas exposed during construction, prevent sediment from entering the Hudson River, or impacting adjacent properties, and to provide for permanent stabilization of steep slopes. Prior to the commencement of any construction or disturbance of any soils, erosion and sediment control measures will be installed in accordance with the specifications in the SWPPP. These measures will be maintained until the site has been permanently stabilized in accordance with NYSDEC standards and specifications.

The construction contractor will be responsible for complying with all specifications and conditions of the project specific SWPPP. In addition, the applicant will engage a Certified Professional in Erosion and Sediment Control/Certified Professional in Stormwater Quality to oversee implementation of the SWPPP.

The proposed Erosion and Sediment Control Plan component of the SWPPP will minimize the area of soil exposed at any one time to the greatest extent practicable in accordance with the conditions of the NYSDEC SPDES General Permit (GP-02-01) for Stormwater Discharges from Construction Activities and further mitigate potential impacts on the Hudson River. Erosion and sediment control measures specified on the Erosion and Sediment Control Plan are developed specifically for this project to provide both temporary controls during the construction period and permanent controls to be in place and functioning upon final stabilization of the site.

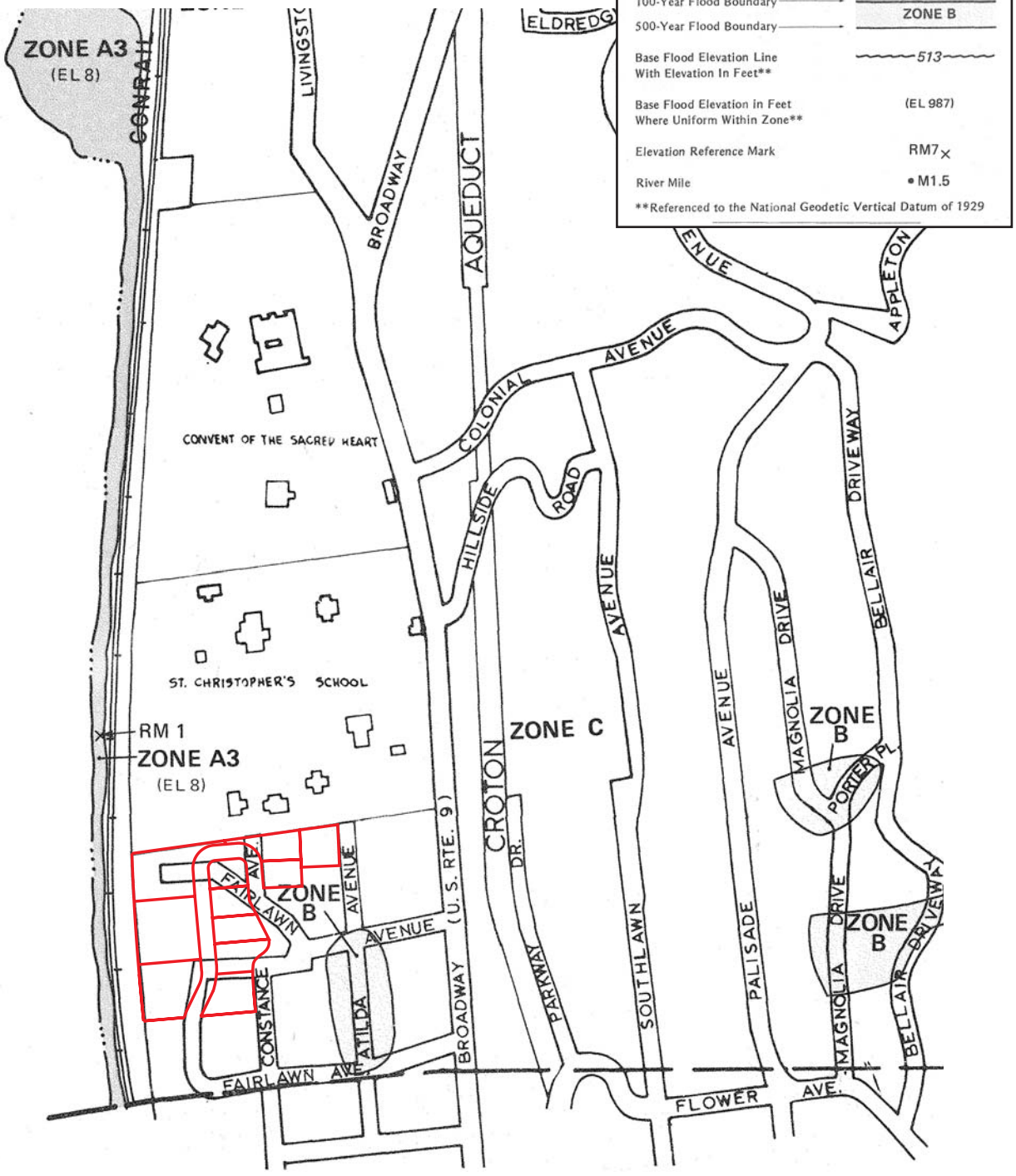
The Erosion and Sediment Control Plan included in the project specific SWPPP includes the following elements:

- A Detailed Construction Sequence;
- Limiting Disturbed Soils During Construction;
- Installation of protective fencing around trees and other features to be preserved;
- Installation of a stabilized construction entrance and temporary perimeter silt fencing around the construction area;
- Diversion of clean runoff around disturbed soils during construction
- Provisions to provide temporary sediment protection at all stormwater inlets
- Provisions to maintain silt fence barriers and other erosion control measures in working order throughout the construction period;
- Provisions to plant, seed or pave all disturbed areas in a timely manner to prevent erosion; and

- Provisions to monitor the site during construction to ensure establishment of all landscape plantings and other permanent erosion control measures at the site and to promptly stabilize and restore damage to plantings and seeded areas.

To further mitigate potential impacts on the Hudson River, the applicant also proposes improvements on Atilda Avenue that would correct an existing off-site drainage problem as part of the Proposed Action. The improvements will eliminate a low spot in the road, just south of the intersection of Atilda Avenue and Fairlawn Avenue, which collects runoff and is known to be problematic. To drain the low spot, a catch basin will be installed on the easterly side of Atilda Avenue and a drain line be will extended in Fairlawn and Atilda Avenues to the low spot. To accomplish this, the existing drainage system in Fairlawn Avenue will be lowered to provide adequate pitch for the new piping and to pass under existing utility lines in Fairlawn Avenue. The stormwater collected from Atilda Avenue will be discharged by the proposed drainage system to be created for the subdivision and will eventually discharge into the Hudson River.

Finally, the Proposed Action will mitigate the existing sediment load being discharged to the Hudson River by the eroding ravine. By replacing the existing stormwater discharge outfall in the ravine, installing the proposed stormwater infrastructure, and backfilling the ravine, the ongoing source of sediment will be eliminated.



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Site Property Boundary

Figure 3.2-1: FEMA Flood Plain Map
Waters Edge
Village of Dobbs Ferry, Westchester County, New York
Source: Federal Emergency Management Agency
Scale: 1" = 400'

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