## 3.2 Surface Water Resources and Stormwater Management

### 3.2.1 Existing Conditions

As per the adopted Scoping document, this section of the DGEIS addresses existing and post-development drainage conditions on and surrounding the project site. The drainage study and this section of the DGEIS focuses on the impacts associated with the construction of the proposed residential project, and associated driveways, parking areas and new areas of landscaping.

No streams or waterbodies are present on the portion of the site north of Dock Road where the residential development is proposed. Two small isolated wetlands have been delineated north of Dock Road and are further described in Section 3.3, Flora and Fauna. The two wetlands combined are approximately 0.1 acres in size. A parcel consisting of approximately 2.57 acres is located south of Dock Road. This portion of the site contains delineated wetlands and Lattintown Creek, a tributary to the Hudson River, which crosses the parcel. The project site is relatively close to the west bank of the Hudson River which is located approximately 500 feet east of the site, from its eastern border.

According to the FEMA Flood Insurance Rate Map (FIRM), the development area is located outside of the 100-year flood zone. An area of 100 year flood zone is mapped south of Dock Road, surrounding Lattintown Creek.

The NYSDEC Environmental Resource Mapper indicates that a NYSDEC regulated wetland, WP-1, is located south of Dock Road, but does not enter the project site. WP-1 and its location in relation to the project site is shown in Figure 3.2-1 New York State Freshwater Wetlands Map. The location of potential wetlands shown on the National Wetlands Inventory (NWI) maps are presented in Figure 3.2-2 National Wetlands Inventory Map.

Lattintown Creek is classified by the NYSDEC as a Class “c” stream. The New York State Department of Environmental Conservation (NYSDEC) has classified streams in New York State according to their specified “best use”. This designation is based upon such factors as stream flow, water quality and bordering lands. The designation means that water quality standards must be protected in order to maintain the best use classification, so that surrounding land uses are planned accordingly. According to the NYSDEC a “c” classification is for waters supporting fisheries and suitable for non - contact activities.

#### Existing (Pre-Development) Drainage Conditions

The project engineer, Engineering Properties PC, has analyzed the existing stormwater run-off conditions for the project site as part of the overall stormwater management study, or Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is provided in Appendix C of this DGEIS. The existing watershed including and contributing to the on-site drainage consists of four distinct drainage areas and four corresponding design points. The design points are specific locations on the property where the stormwater in a watershed will exit the property boundaries. The four contributing drainage areas and four design points are shown in Figure 3.2-3 Existing Conditions Drainage Areas.

The surface water drainage on the property is controlled by the topography and the majority of the site drains towards the south and Dock Road. Design Points A, B and C are located along Dock Road. The northwest corner of the site (Drainage Area EX-A) drains towards the north and

exits the site at Design Point D. The existing drainage areas and characteristics are summarized in Table 3.2-1 Existing Drainage Area Characteristics.

**Table 3.2-1**
**Existing Drainage Area Characteristics**

| *Drainage Area Designation* | *Drainage Area Size (acres)* | *Pervious Cover (acres)* | *Impervious Cover (acres)* |
|---|---|---|---|
| EX-A | 4.47 | 3.8 | 0.67 |
| EX-B | 2.04 | 1.36 | 0.68 |
| EX-C | 24.3 | 22.72 | 1.57 |
| EX-D | 3.42 | 3.28 | 0.14 |
| **Total** | **34.23** | **31.16** | **3.06** |

Source: Engineering Properties, PC, 2011.

It should be noted that the contributing drainage areas include off-site land where appropriate. Therefore, the total existing drainage area for the property is larger than the project site. Off-site drainage areas also include areas of impervious surface such as off-site homes adjacent to Route 9W and the Town wastewater treatment plant. These areas of impervious surface were included in the drainage analysis and the results are reflective of these conditions. Detailed data regarding existing drainage conditions are provided in Appendix C - Stormwater Pollution Prevention Plan (SWPPP). The methodology used to conduct the stormwater analysis is described in Appendix C.

Under existing conditions, stormwater is not treated and therefore contains pollutants typical of suburban stormwater runoff, including phosphorus, nitrogen, dissolved solids, and pathogens such as coliform and e. coli. A water quality volume analysis was completed by the project engineer according to the *NYS Stormwater Management Design Manual (2008).* Sizing for Water Quality volume (WQv) is used to design water quality structures (Chapter 4 of the manual). Water quality volume is directly related to the impervious cover on the site.

### 3.2.2 Potential Impacts

Post-Development Drainage Conditions

The Dockside at Marlborough will result in excavation and grading for the proposed buildings, roadways and driveways, and the introduction of more impervious surface to the property. The grading necessary for the development will alter slightly stormwater drainage patterns on the site. Overall, drainage patterns and the design points (stormwater discharge locations) will remain unchanged. Post-development drainage areas are shown in Figure 3.2-4 Proposed Conditions Drainage Areas. As shown in the figure, Drainage Areas B and C have been divided into sub-drainage areas. Proposed drainage characteristics are summarized in Table 3.2-2 Proposed Drainage Area Characteristics.

**Table 3.2-2**
**Proposed Drainage Area Characteristics**

| *Drainage Area Designation* | *Drainage Area Size (acres)* | *Pervious Cover (acres)* | *Impervious Cover (acres)* |
|---|---|---|---|
| PR-A1 | 3.26 | 2.63 | 0.63 |
| PR-B1 | 1.77 | 1.18 | 0.59 |
| PR-B2 | 3.2 | 1.72 | 1.48 |
| PR-B3 | 0.64 | 0.23 | 0.41 |
| PR-C1 | 8.09 | 6.61 | 1.48 |
| PR-C2 | 13.34 | 8.39 | 4.95 |
| PR-D1 | 3.93 | 3.69 | 0.24 |
| **Total** | **34.23** | **24.45** | **9.78** |

Source: Engineering Properties, PC, 2011.

The proposed development will introduce approximately 6.72[1] acres of additional impervious surface to the site, resulting in a total impervious surface of 9.78 acres within the overall drainage area. The increase in impervious surface area has the potential to increase stormwater run-off volumes and rates. In addition, water quality is affected by the introduction of pavement and rooftops. Stormwater management facilities and practices have been designed to reduced and mitigate these potential impacts.

The Project proposes to detain stormwater on-site to ensure that pre-development stormwater quality will be maintained. Stormwater will be detained and treated in stormwater facilities according to the requirements for the NYSDEC General Permit for Stormwater discharges from Construction Activities (GP-0-10-001) and the *NYS Stormwater Management Design Manual (2008).*

The stormwater management basin proposed to be located on the south side of Dock Road will avoid disturbance to any wetland located on that property, and will be outside the 100-year floodplain.

As required by the Design Manual, the water quality volume ($WQ_v$) was calculated for areas proposed to be disturbed and contributory to the proposed stormwater management practices. The goal of the stormwater management practices is to reduce 100 percent of the water quality volume to maintain pre-development stormwater run-off rates. The stormwater improvements are designed to treat the 1-year to the 100-year storm events. The project engineer evaluated different stormwater management technologies to assess whether they were appropriate for the project setting. The following stormwater treatment practices were incorporated into the project design:

- Disconnection of rooftop run-off - roof leaders will be discharged via sheet flow prior to entering an existing vegetated buffer and filter strip.
- Infiltration practice - An infiltration basin will be used to detain and treat stormwater from Watershed PR-C2.

[1] *Note that some of the existing impervious surface area will remain impervious under the Build condition.*

- Bioretention Practice - This practice was designed to treat stormwater run-off from Watershed PR-B2.
- Dry Swale (open channel) - This practice was designed to treat run-off from Watershed PR-B3, given its small tributary area.

Proposed stormwater management infrastructure is shown on the full size concept site plan provided with this DGEIS.

### 3.2.3 Mitigation Measures

The stormwater control measures described in the project engineer's Stormwater Pollution Prevention Plan (SWPPP) are designed to satisfy the NYSDEC requirements for stormwater quality and quantity to minimize the potential for adverse impacts. The SWPPP for the Dockside at Marlborough incorporates the following objectives:

- Reduces the potential for erosion through the installation of stormwater management facilities and implementation of soil erosion control measures (see discussion below).
- Decreases non-point source pollution and degradation of water quality through the use of multiple stormwater treatment practices, including filter strips, vegetated swales, roof-leader treatment, infiltration basins and bioretention filters.

Engineering calculations to support the proposed plan for stormwater management features are presented in the SWPPP, provided in Appendix C. The SWPPP demonstrates conformance with the New York State *Stormwater Management Design Manual* and project compliance with State requirements for the protection of surface water quality as well as storm protection for downstream areas.

Erosion Control Measures

The Soil Erosion and Sediment Control plan portion of the SWPPP prepared for the Dockside at Marlborough has been prepared in accordance with all NYSDEC requirements. The Construction Phasing and Erosion Control Plan is provided as Drawing C-4 and is shown in Figure 3.1-6. That plan shows the six (6) construction phases as well as soil and erosion control features that will be installed and maintained during project construction. Each of the six construction phase areas is less than five acres, consistent with NYSDEC requirements. If any site disturbance exceeds five acres the waiver will be applied consistent with the NYSDEC General Permit (GP-0-01-001).

A stabilized construction entrance is proposed at the location of the primary project entrance at Dock Road. The plan shows the location of silt fencing on the down-slope side of all areas of grading and soil disturbance. Inlet protection will be installed for all catch basins, as the construction of stormwater infrastructure proceeds. The Erosion Control Plan will utilize the sediment trap as a location on the south side of Dock Road at the proposed location of the bioretention basin.


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Project Site Boundary

# Figure 3.2-1: Local Drainage Map

Dockside at Marlborough

Town of Marlborough, Ulster County, New York

Map: USGS 7.5-minute Topographic Map, Wappingers Falls Quad

Scale: 1" = 1,000'

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*Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418*

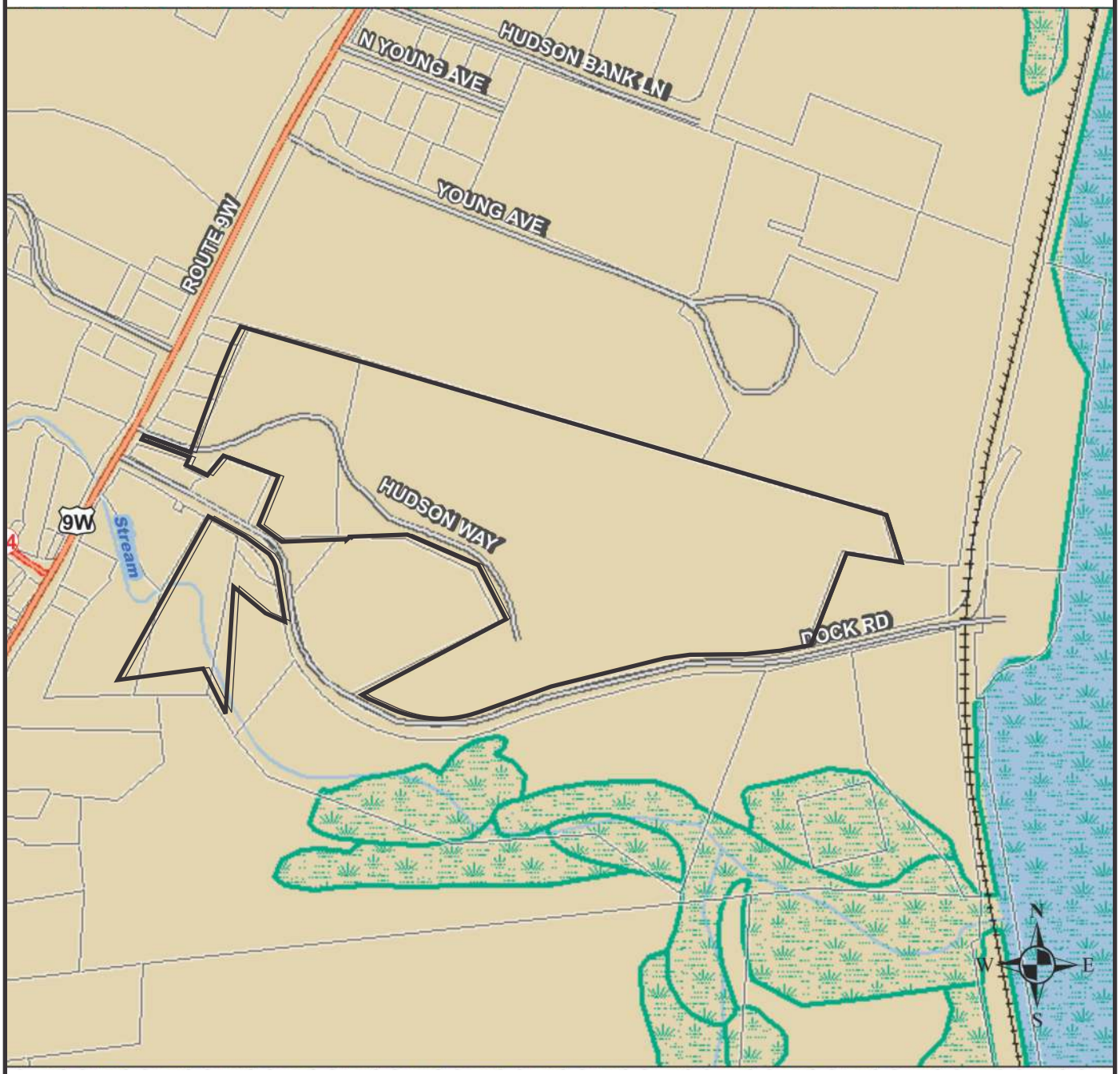


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Figure 3.2-2: National Wetlands Inventory Map
Dockside at Marlborough
Town of Marlborough, Ulster County, New York
Source: Ulster County GIS
Scale: 1" = 1,000'

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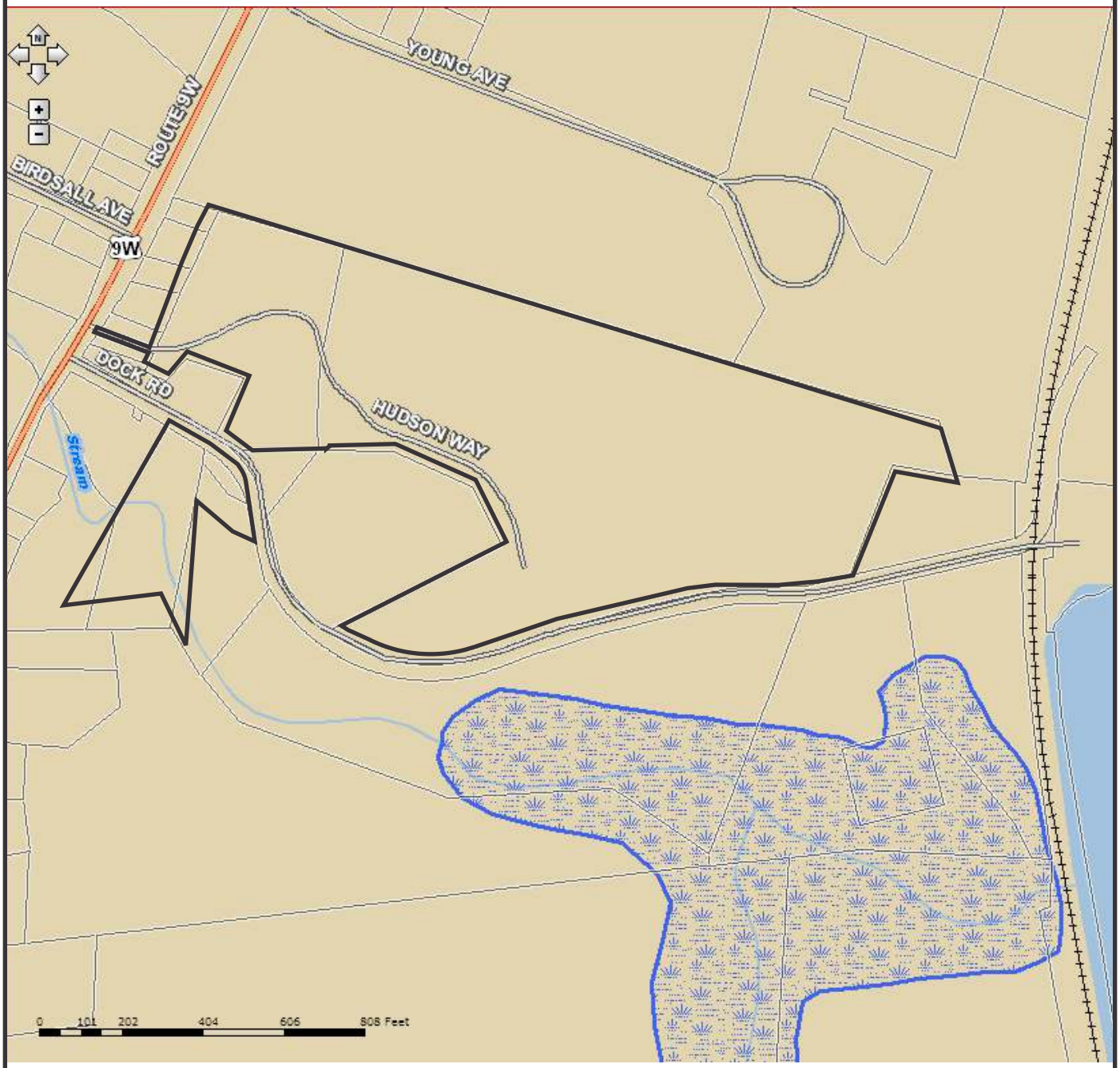


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Figure 3.2-3: NYSDEC Freshwater Wetlands Map
Dockside at Marlborough
Town of Marlborough, Ulster County, New York
Source: Ulster County GIS
Scale: 1" = 380'

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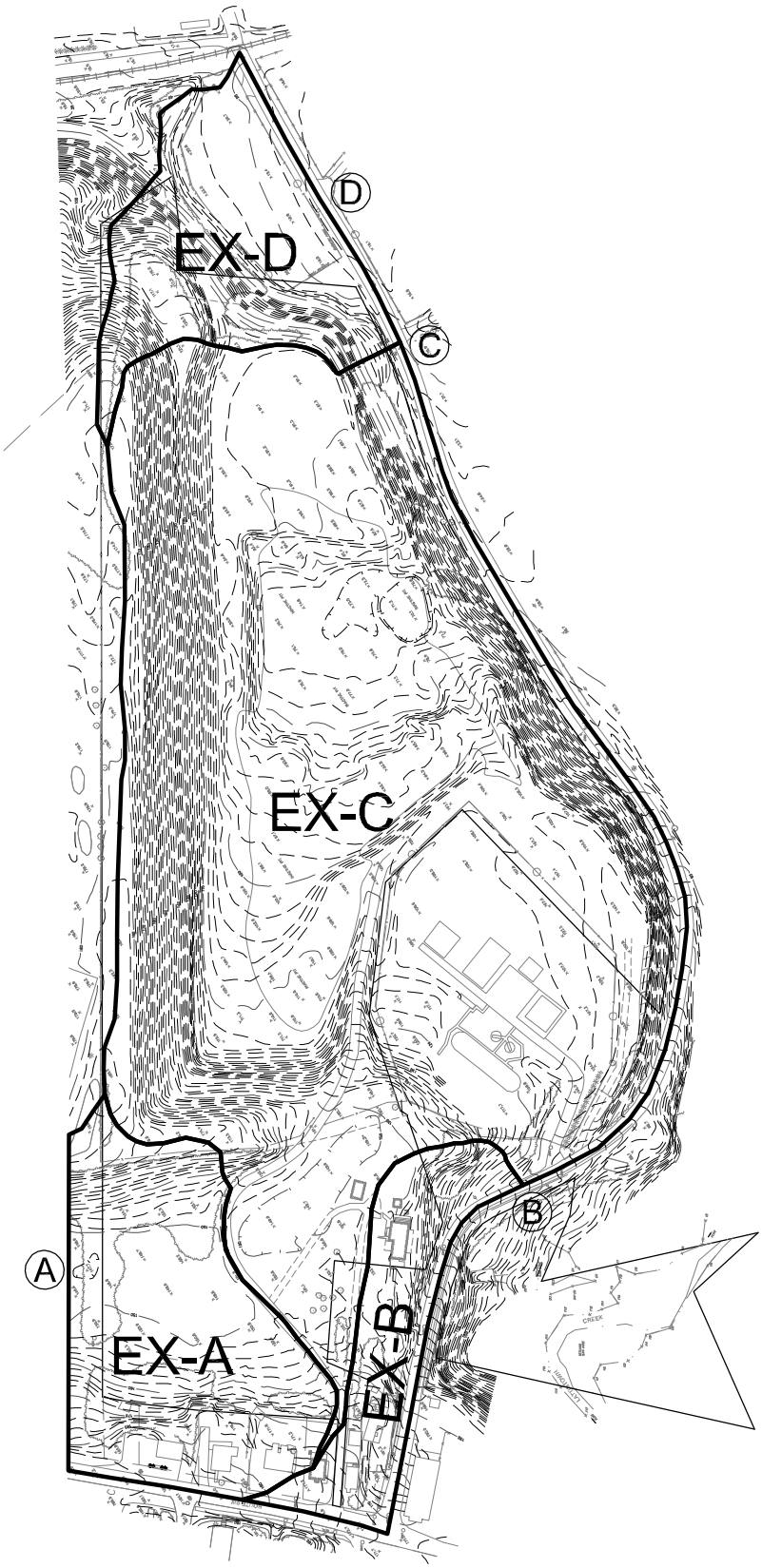


Figure 3.2-4: Existing Conditions Drainage Areas

Dockside at Marlborough

Town of Marlborough, Ulster County, New York

Source: Engineering Properties

Drawing Date: 06/24/11

Scale: 1" = 300'

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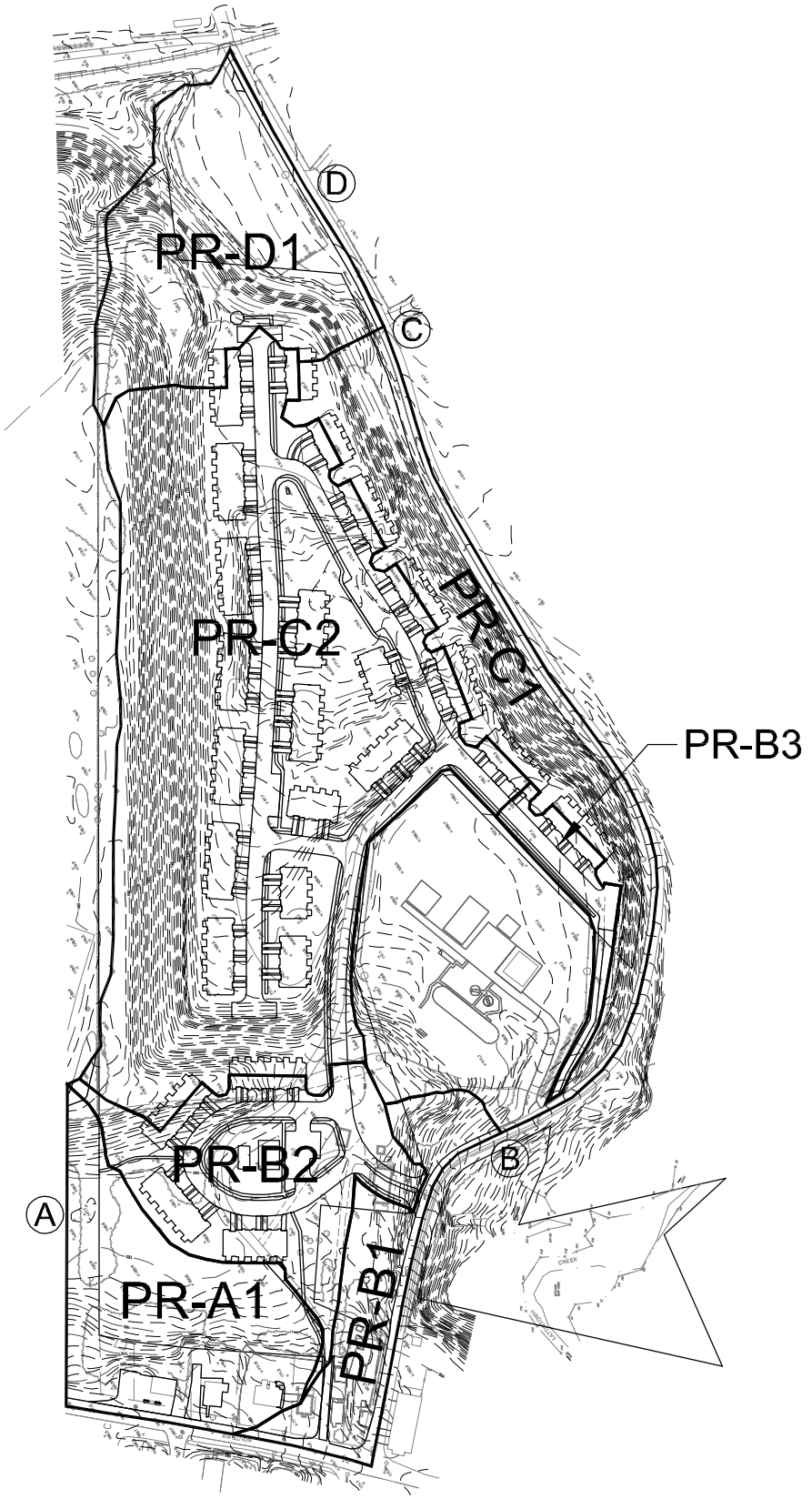


Figure 3.2-5: Proposed Conditions Drainage Areas

Dockside at Marlborough

Town of Marlborough, Ulster County, New York

Source: Engineering Properties

Drawing Date: 06/24/11

Scale: 1" = 300'

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