

# **Attachment 1: Narrative, Location Map, and Soils Map**

## **Intensive Development, LLC – High Density Residential**

### **1. Introduction**

Robert Roberts Engineering is writing on behalf of Intensive Development, LLC to apply for a State Stormwater Discharge Permit pursuant to General Permit 3-9015 for the above referenced project.

### **2. Project Description**

Intensive Development, LLC is planning the construction of a 41-lot residential subdivision located on East Street in Anytown, Vermont. The project will involve the construction of two private roadways and associated infrastructure to serve the development. Site work is planned for early summer 2018.

The project as proposed will create more than 1 acre of new impervious surface following construction. A Stormwater Discharge Permit for this project is required by the Environmental Protection Rules Chapter 18, Subchapter 3, §18-302(a)(1).

### **3. Existing Condition**

Refer to enclosed existing site plan for the current site conditions. The site is comprised primarily of open meadow currently in agricultural use. The remainder is partially wooded and contains an area of class II wetland. There are no existing impervious surfaces on the project site.

The underlying soils are made up of Hydrologic Soils Group 'C' and 'D' soils. Refer to the enclosed soils and stormwater management plans which shows the extents of the mapped soils for the site.

### **4. Proposed Stormwater System:**

The proposed project involves the construction of single family residences, roadways and infrastructure to serve the development. The proposed stormwater system is separated into three distinct catchments each having an associated discharge point, all contributing to the same receiving water, the Class II wetland tributary to the Winooski River.

- a) **Description of Impervious Area:** The overall project is comprised of three separate drainage catchments with a total new impervious surface of 3.39 acres. The amount of

impervious surface for catchment area 1 is 1.15 acres; for catchment 2 is 0.24 acres; and for catchment 3 the impervious surface is 2.0 acres.

- b) **Receiving Water:** Wetland Tributary of the Winooski River
- c) **Fish Habitat Designation for Receiving Water:** The wetland tributary is a warm water fishery.

d) **Compliance with VSMM Standards**

- i) **Post-Construction Soil Depth and Quality Standard:** Soil disturbance will be minimized on site during construction. Those areas disturbed, other than those part of structural STPs or covered by impervious surfaces, will be restored to a minimum 4-inch depth of topsoil with 4% organic matter by one or more of the allowable options, at the discretion of the contractor. The areas subject to the standard and the allowable options for the contractor are identified on the Soil Management Plan, which also includes test locations for contractor verification as necessary.
- ii) **Groundwater Recharge Standard:** Groundwater Recharge is waived for portions of the site due to Hydrologic Soil Group 'D' Soils. The applicable Groundwater Recharge Volume (Re<sub>v</sub>) is met site-wide by use of runoff reduction practices, including Simple Disconnections and 2 Bioretention systems designed for infiltration.
- iii) **Water Quality Treatment Standard (WQ<sub>v</sub>):**
  - (1) S/N 001: The WQ<sub>v</sub> is met for catchment 1 by use of Simple Disconnection for the back portion of rooftops from residences proposed along North Street, and the remainder of the WQ<sub>v</sub> provided by an infiltrating Bioretention system, following pre-treatment by either filter strip, pre-treatment swale, or sediment forebay.
  - (2) S/N 002: The WQ<sub>v</sub> is met for catchment 2 by use of Simple Disconnection for the back portion of rooftops from residences, with the remainder of the WQ<sub>v</sub> met with infiltrating Dry Swales, with pre-treatment provided by either filter strip or pre-treatment swale.
  - (3) S/N 003: The WQ<sub>v</sub> is met for catchment 3 by use of Simple Disconnection for portions of rooftops from residences, along with an infiltrating Bioretention system, with pre-treatment provided by either filter strip or sediment forebay. Additional treatment volume credit provided through Reforestation (active reforestation) areas located within the subdivision. Additional Reforestation is planned within an area of previously impacted Class II wetland and wetland buffer. The active Reforestation work in this area is subject to separate approval (pending) from the DEC Wetlands Program and US Army Corps of Engineers. Disturbance in these areas are proposed to be limited to foot access only, to the extent necessary for completion of the proposed Reforestation.
- iv) **Channel Protection Standard (CP<sub>v</sub>):**
  - (1) S/N 001: CP<sub>v</sub> is met by the Hydrologic Condition Method with Simple Disconnection and an infiltrating Bioretention system. Since the Hydrologic Condition Method was achieved for the 1-year, 24-hour storm, both the

Groundwater Recharge and Water Quality Treatment Standards have also been met as noted above.

- (2) S/N 002: CPv is met in part by the Hydrologic Condition Method with Simple Disconnection and infiltrating Dry Swales, coupled with a Dry Pond for extended detention. The Groundwater Recharge and Water Quality Treatment Standards have also been met as noted above.
  - (3) S/N 003: CPv is met by the Hydrologic Condition Method with Simple Disconnection, Reforestation (active reforestation), and an infiltrating Bioretention system. Since the Hydrologic Condition Method was achieved for the 1-year, 24-hour storm, both the Groundwater Recharge and Water Quality Treatment Standards have also been met as noted above.
- v) Overbank Flood Protection Standard (QP10):
- (1) S/N 001: The Overbank Flood Protection Standard is met by the outlet structure of the Bioretention system.
  - (2) S/N 002: The Overbank Flood Protection Standard is met by the outlet structure of a dry pond that receives runoff from the Dry Swales.
  - (3) S/N 003: The Overbank Flood Protection Standard is met by the outlet structures in the Bioretention system and an adjoining Dry Pond.
- vi) Extreme Flood Protection Standard (QP100):
- (1) S/N 001: The Extreme Flood Protection Standard is waived for the site.
  - (2) S/N 002: The Extreme Flood Protection Standard is waived for the site.
  - (3) S/N 003: The Extreme Flood Protection Standard is waived for the site.

The following items are attached for review:

- **Complete NOI form**
- **Attachment 1: Narrative:** Narrative, Location Map, and Soils Map.
- **Attachment 2: Workbooks:** STP Selection Tool and Standards Compliance Workbook
- **Attachment 3: Worksheets:** STP and waiver worksheets, grouped by discharge point
- **Attachment 4: Modeling:** Runoff modeling and calculations demonstrating compliance with the applicable treatment standards.
- **Attachment 5: Plans:** Pertinent plan sheets with all required information outlined in Part 7 of the Application Requirements for Operational Permit Document.
- **A check** in the amount of \$ 3155.40 Payable to “State of Vermont”.

## Location Map

[Insert project specific location map here. You may download topographic map from the [Natural Resource Atlas](#). Please show the site outline, the location of the discharge point(s) and receiving waters. The scale of the location map should be between 1:20,000 and 1:40,000.]

*For purposes of this Design Example, an actual location map has not been included here. Designers shall include a location map here, per the instructions above, or alternatively may provide a location map [inset] as part of the submitted plans.*

## Soils Map

[Insert project specific soils map here. Soils information can be found at the [Web Soil Survey](#) website. Hydrologic Soil Groups— “HSGs” shall be overlaid with site outline. Soils information can also be provided as data layer on an existing or proposed condition plan sheet (if included as a data layer on one of the plan sheets please indicate that here]

*Project soils map/soils information has been included by the designer as a map layer on the Soils Management Plan (Sheet C-6).*