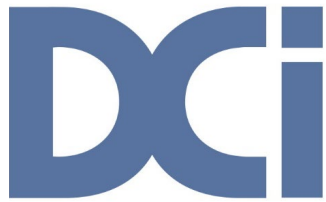


Seagate

105 High Road. Newbury, MA



Design Consultants, Inc.

Civil Engineering  
Transportation/Traffic  
Water/Wastewater  
Geotechnical  
Land Surveying  
Environmental  
Planning

April 8, 2021

Newbury Planning Board  
Town Municipal Offices  
12 Kent Way  
Byfield, MA 01922

**RE:** 105 High Road  
Updated Plans and Documents Submission  
Newbury, MA

Attn: Ms. Martha Taylor, Town Planner

Dear Martha:

Please see the enclosed updated plans and documents for the OSRD Special Permit Application at 105 High Road. We have provided 2 full size original 7 reduced size copies to the Planning Board. This application includes the following:

**OSRD Plans – Revised April 7, 2021**

Seagate Entry Perspective  
Seagate Rendered Site Plan  
C103 – OSRD Yield Plan  
C104A- OSRD Concept Sketch Plan Grading & Drainage  
C104B- OSRD Concept Sketch Plan Water & Sewer  
C105 – OSRD Concept Sketch Land Area Plan  
C106 – OSRD Site Context Plan  
CF-1 – Open Space Comparison Figure  
OS-1 – Open Space Overview Figure  
TM-1- OSRD Concept Turning Fig.

**Narrative Documents.**

1. Mann & Mann, P.C. Letter
2. Supplemental Technical Narrative - DCI
3. Landscape Narrative – Hawk Design
4. Trip Generation memorandum – DCI
5. Habitat Letter & Map – Hughes Environmental
6. Test Pit Soil Logs
7. Flow Test Results

We look forward to reviewing the updated plans at an upcoming Planning Board Meeting. If you have any questions, please email or call me at 617-776-3350.

Sincerely,  
**Design Consultants Inc.**

*Stephen Sawyer*

Stephen Sawyer, P.E.  
MA PE#38800  
Senior Project Manager

**MANN & MANN, P.C.**  
COUNSELLORS AT LAW

JILL ELMSTROM MANN†\*  
KURT P. MANN†\*  
MELISSA GNOZA OGDEN†

†Admitted to practice in Massachusetts  
\*Admitted to practice in New York

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To: Newbury Planning Board  
From: Jill Elmstrom Mann  
Owner: Mitchell Mantin and Arthur Costonis  
Petitioner: DePiero LLC  
Engineer: Design Consultants Inc. (Stephen Sawyer, P.E.)  
Landscape Architect: Hawk Design  
Date: April 6, 2021  
Regarding: Open Space Residential Development – SEAGATE

Pursuant to the requirements of Chapter 112, §112-5 and Chapter 97, §97-5.C., Petitioner has submitted various information in support of its application (the “Application”) for a Special Permit to develop the Property as an ten (10) unit<sup>1</sup> open space residential condominium development (the “OSRD”). In furtherance of its request and as a result of the public hearing process, the Petitioner is submitting additional information to assist the Board in its assessment of the Application. Set forth below is a summary of the submittal as well as additional information.

1. 8 copies of a plan set entitled “Concept Plan” prepared by a multi-disciplinary team consisting of DCI and Hawk. Such Plans were created in accordance with the Design Process and Design Standards of §§97-5C.(8) and (9) in order to address the general features of the land, and give approximate configurations of unit placements of open space, and roadways. Such plan set also includes a site context map and an existing conditions/site analysis map in accordance with § 112-2.B.

The Concept Plans were developed in compliance with the General Design Standards of §97-5C.(9)(a). The landscaped areas (including the front entrance to the condominium), the Open Space and entrance way for the Development Area have been designed to maintain the natural topography and as much of the natural tree cover and drainage as reasonable, to minimize cuts and fills, and preserve and enhance views from the public way as well as abutting properties. The site of the buildings and their architectural features have been designed to be consonant with the neighboring properties.

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<sup>1</sup> The existing home and 9 new single-family dwellings.

The Concept Plans were developed in compliance with the Site-Specific Design Standards of §97-5C.(9)(a). All of the units are single family homes with parking for more than two (2) vehicles. DCI has developed a stormwater management design that will comply with all local, state and federal requirements and to the extent possible will incorporate low impact development techniques. As shown on the artist's rendering of the front entrance drive, submitted with the Concept Plans, there will be ample screening to ensure that any impacts to the view from abutting properties and the public way will be mitigated. The Development will include the construction of sidewalks and trails will be created throughout the Open Space. To ensure the public amenity, the Development is creating an entrance point to the Open Space that will be welcoming to pedestrians and bicyclists. As noted the Development Area will consist of 23% (163,533 square feet) of the entire Property accordingly, the Petitioner has limited and minimized the areas that will be disturbed.

2. In accordance with §112-5(A)(1)(a)-(i), inclusive, DCI drafted a Yield Plan, which is included as part of the plan set identified as the Concept Plans. The Yield Plan shows the number of units that may be approved "by right" as a conventional plan in compliance with the Subdivision Rules and Regulations and the Zoning Bylaw, which is five (2) two family homes or ten (10) units. The number of units shown on the Yield plan, subject to approval by the Board, shall establish the Basic Maximum Number of Allowable Units for the OSRD. Petitioner asserts that the Basic Maximum Number is ten (10) units.

The Yield Plan identifies: name of the Owner, Petitioner, and the design team, as well as the Property's boundaries, north point, date, and scale; the names and locations of adjacent streets as well as their respective widths are shown; existing topography at 2' intervals, a map of the soils and any test results; identifies all resource area boundaries and buffer zones; the lots lines and all required dimensional information; parking, landscaping, all utilities including stormwater and wastewater systems.

3. In accordance with §97-5C.(8) the Petitioner developed a set of Sketch Concept Plans based on the following:

- a. Step One – The Sketch Concept Plans (sheet C106) identify the Primary Conservation Areas consisting of 178,359 acres of land (wetland, riverfront, flood plains) and the Secondary Conservation Areas consisting of 368,475 square feet of land (open meadow, natural landscape features)
- b. Step Two – The Sketch Concept Plans show the Development Area which consists of 163,533 square feet of land. The Sketch Concept Plans identifies the location of the 1 existing unit (the current home) and the proposed location of the 9 new Units, including the associated exclusive use areas for each Unit. The Sketch Concept Plans also show the Open Space consisting of 546,834 square feet of land.

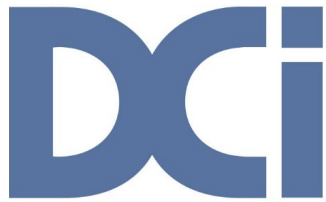
- c. Step Three<sup>2</sup> – The Sketch Concept Plans show the proposed new condominium way that will provide access from High Road to each of the Units. The Sketch Concept Plans also show the proposed trails, sidewalks and access way and parking for the Open Space.
4. In accordance with §112-5(2)(a)-(k) , inclusive, DCI and Hawk participated in the drafting of Sketch Concept Plans. The Sketch Concept Plans provide the necessary details to develop the Property as a ten (10) unit Open Space Residential Development. The Sketch Concept Plans identify: name of the Development (Seagate), Owner, Petitioner, and the design team, as well as the Property's boundaries, north point, date, and scale; the names and locations of adjacent streets as well as their respective widths are shown; existing topography at 2' intervals, a map of the soils and any test results; identifies all Primary and Secondary Conservation Areas and buffer zones; the Unit locations and applicable exclusive use areas information; Open Space, trails parking, landscaping, all utilities including stormwater and wastewater systems; and the proposed grades.
  5. In accordance with §112-5(2)(h) DCI provided a narrative explanation of the proposed amenities and publicly available features of the OSRD.
  6. In accordance with §112-5(2)(k) DCI provided a narrative explanation of the proposed shared septic system proposed for handling wastewater from the OSRD.
  7. In accordance with §112-5(2)(l) DCI provided a narrative explanation of the stormwater management system for the OSRD.
  8. In accordance with §112-5(2)(m) DCI provided a narrative explanation of the Open Space parcel for the OSRD including but not limited to an overall description of its features and how it will be held and used by the public and residents of the OSRD.
  9. In accordance with §112-5(2)(n) DCI provided a narrative explanation of the proposed amenities and publicly available features of the OSRD.
  10. In accordance with §112-5(2)(o) Hawk provided a narrative explanation of the landscaping for the OSRD.
  11. In accordance with §112-5(2)(p), the legal documents that will be provided to the Board will include the following:
    - a. Conservation Restriction. The Open Space will be owned by the Condominium Association. The Condominium will grant to the Town of Newbury under the care and custody of the Newbury Conservation Commission a Conservation Restriction on the Open Space. Under the Conservation Restriction the Open Space will be preserved in perpetuity and will be unbuildable. The uses of the Conservation Restriction will be limited to passive recreation and to the installation and

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<sup>2</sup> Step Four is not applicable because the project is proposed as a condominium and not a subdivision.

maintenance of the trails, access path and any other recreational amenities added to the Open Space.

- b. Condominium Documents. The Petitioner intends of holding the land in accordance with M.G.L. Chapter 183A. Accordingly, the Property will be submitted to Ch. 183A pursuant to a Master Deed recorded with the applicable registry of deeds. In addition, the Property as subject to Ch. 183A will be managed by a condominium association. The Petitioner will form the Association by recording a Declaration of Trust for the Condominium that will govern the management, maintenance and repair of the common space and will establish rules for the use of the units and common space.
12. In accordance with §112-5(2)(q), to the extent applicable requests for waivers have been identified by DCI.



Design Consultants, Inc.

Civil Engineering  
Transportation/Traffic  
Water/Wastewater  
Geotechnical  
Land Surveying  
Environmental  
Planning

April 7, 2021

Newbury Planning Board  
Town Municipal Offices  
12 Kent Way  
Byfield, MA 01922

**RE:** 105 High Road  
Supplemental Technical Narrative  
Newbury, MA

Attn: Ms. Martha Taylor, Town Planner

Dear Martha:

The following supplemental narrative is provided to specifically address Newbury Zoning Code Chapter 112-5. Application narrative materials.

h) – The project proposes to provide a privately owned drive open to public use. This drive will provide public access to the open space where 6 parking spaces are provided specifically for easy access to the open space. The open space will consist of a large open field with 117,375 square feet (2.7Ac.) of land area. This open field will provide a central lawn mowed regularly providing a play area for outdoor recreation such as soccer, football, frisbee etc. This lawn area will be surrounded by a pollinator meadow providing a diverse variety of wildflowers supporting bee, butterfly, bird and small mammal habitat. Behind the field open space there is a large 429,459 square feet (9.8Ac.) woodland and wetland open space area. This will be accessible via a simple hiking path with elevated boardwalk across wetland areas. This woodland area provides excellent habitat for various birds and animals. The hiking paths will provide a peaceful walking experience with ample opportunity for viewing wildlife.

k)- The development will be serviced by a common septic system. The system will consist of a collection system directing sewer flow to the septic tanks and pump chamber. The system will include 10,000-gallon and 5000-gallon tanks in series providing treatment. There will be a 6000-gallon pump chamber pumping to a 6,800 square foot leach field. Given the design flow the soil absorption system will require to be a pressure dosed distribution network. There are 4 test pits in closed proximity to the proposed and reserve leach field locations. All pits show sand material with the estimated seasonal high groundwater 100" or 8 feet below grade in the primary field location. Given this information the leach field will blend into the open field with no mounding required. Test pits showing soil information are attached with the location shown on the plans.

l)- The stormwater system will utilize a mix of Low Impact Design and standard stormwater design techniques to collect and treat stormwater. Grass lined swales, deep sump catch basins and a water quality unit will collect and provide the required 44% Total Suspended Solids pretreatment requirement prior to directing stormwater to a large subsurface infiltration system under the center island of the cul-de-sac. The sandy soils are optimal for this type of system and will be hidden from view with no surface



detention or retention basins proposed. Additionally, there will be small infiltration chambers provided for the proposed new home roof areas.

m)- The drinking water will be supplied by the City of Newburyport municipal water system. A new 8" water main will be installed to service the new development. The new water main will connect to the existing 12" water main in High Road. There is ample pressure and flow for both domestic and fire suppression needs of the new subdivision. The static water pressure is 65 pounds per square inch with a residual pressure of 58 pounds per square inch at a flow of 1186 gallon per minute. The projected available hydrant flow is 3241 gallon per minute. The results of the flow test are attached.

n)- There will be 546,834 square feet (12.55Ac.) of open space. This is 77% of the overall project development area. The open space consists of a diverse area of open field, mature woodlands and wetlands. There will be active and passive recreation opportunities provided in the open space. The open field will provide a central lawn area mowed regularly providing a play area for outdoor recreation such as soccer, football, frisbee...etc. This lawn area will be surrounded by a pollinator meadow providing a diverse variety of wildflowers supporting bee, butterfly, bird and small mammal habitat. Behind the field open space there is a large 429,459 square feet (9.8Ac.) woodland and wetland open space area. This will be accessible via simple hiking paths with elevated boardwalk across wetland areas. This woodland area provides excellent habitat for various birds and animals. The hiking paths will provide a peaceful walking experience with ample opportunity for viewing wildlife. All the open space will be owned and maintained by a homeowner's association with no maintenance expense incurred by the Town of Newbury. There will be a Conservation Restriction held by the Town to insure the open spaces is public and properly maintained in perpetuity.

o)- Please see attached landscape narrative by Tom Miner with Hawk Design Inc.

p)- Please refer to letter provided by Jill Mann the project attorney explaining the required documents,

q) – Where there is no specific right of way or lots proposed with the project to be developed as a condominium there are no property line offsets associated with the proposed design. The required 20 ft. offset between all proposed structures will be maintained. The site drive requires the following waivers to the Newbury Subdivision roadway design requirements for minor roads.

1. Center Line Radius: 200' Required / 120' Proposed.
2. Cul-de-Sac Mx. Length: 450 lf / 579 lf Proposed (Emergency Vehicle Turn-Around provided)
3. Sidewalks: Provide sidewalk one side / No sidewalks proposed.
4. Intersection Pavement Rounding: 25' Radius / 20' Radius Proposed

We look forward to reviewing the additional plan information at an upcoming Planning Board Meeting. If you have any questions, please email or call me at 617-776-3350.

Sincerely,  
**Design Consultants Inc.**

*Stephen Sawyer*  
Stephen Sawyer, P.E.

# **Hawk Design Inc.**

## **landscape architecture - land planning**

### **Seagate 10 unit Open Space Residential Development**

#### **105 High Road, Newbury, Massachusetts**

Proposed in a 6.5 acre meadow on the east side of High Road are 10 single-family homes on a private road. The entrance runs parallel to an existing house before curving around to the back to a centrally located cul-de-sac. The first of nine new homes along with existing homes along High Road help to screen a majority of the community from High Road. Existing and proposed vegetation will provide additional screening to further maintain the rural character of the neighborhood.

Deciduous trees, evergreen trees and hedges will delineate exclusive use areas as well as provide privacy screening between residents' homes and to abutting neighbors. A 60 foot diameter landscape feature in the center of the 120 foot diameter cul-de-sac will hide an underground storm drainage storage tank.

At the rear of the community is a maintained 2.7 acre wildflower pollinator meadow accessible to the public via a seashell drive with parking for 6 vehicles. The center of the meadow will be mowed on a bi-weekly schedule, with a one-time, late summer mowing of the wildflower perimeter to allow for reseeding and prevention of woody vegetation growth. The community's septic system will occupy a small percentage of the meadow.

Beyond the pollinator meadow is a 10 acre, predominantly wooded conservation area of which about 5.75 acres is designated as secondary conservation area accessible by two 5 foot wide by 60' long boardwalks and nature walking trails. Approximately 25% the conservation parcel at the rear is part of the adjacent "Great Marsh".



**1309 Sandwich, MA 02563 - 508.833.8800 - [www.hawkdesigninc.com](http://www.hawkdesigninc.com)**

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## MEMORANDUM

DCI JOB NO. 2019-132

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**TO:** DePiero, LLC  
Attn: Mark DePiero  
3 Graf Road, Unit 14  
Newburyport, MA 01950

**FROM:** Stephen Siragusa, M.S., Transportation Department Manager  
Design Consultants, Inc. (a GM2 Company)

**SUBJECT:** **Trip Generation Memorandum**  
105 High Road  
Newbury, MA

**DATE:** March 17, 2021

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Design Consultants, Inc. (DCI) has prepared this Trip Generation Memorandum on behalf of its client, DePiero, LLC., to discuss the proposed project and corresponding trip generation for the proposed residential development located at 105 High Road ("Project") in Newbury. Currently, the site has one (1) occupied single-family house. It is our understanding that the Proponent is proposing to add nine (9) additional single-family houses to the site, as well as open space with a walking path.

### **Project Description and Overview**

Currently, the Project site includes one single-family house and open space. The Project will add nine (9) single-family homes with a common access drive (Surrey Lane) to High Road, as well as open space and a walking path. Each home will have its own driveway and parking area. There will be public open space at the north of the site, with a 20' drive and a parking area for six (6) vehicles.

### **Vehicle Trip Generation**

Trip generation calculations estimate the total number of trips that a site is expected to generate during weekday peak hours (7am to 9am and 4pm to 6pm) and a typical weekday. These estimates are presented as both person-trips and vehicle-trips to analyze the potential impact on the surrounding roadway system and public transportation system. For this site, trip generation

was estimated utilizing the *Trip Generation Manual, 10<sup>th</sup> Edition* (2017) published by the Institute of Transportation Engineers (ITE). The *ITE Trip Generation Manual* is the industry-standard manual used for estimating trip generation for new developments.

The *Trip Generation Manual* includes a land use for single-family homes (LUC 210). There will be nine (9) additional single-family homes on the property that will generate trips throughout the day. As shown in Table 1, based on the ITE trip generation rates, it is expected that the nine (9) single-family houses will generate approximately 11 trips during the Weekday AM peak hour, 10 trips during the Weekday PM peak hour, and 114 trips on an average weekday. The pages from the *Trip Generation Manual* are attached in the Appendix.

**Table 1: Vehicle-Trip Generation Calculations per ITE *Trip Generation Manual, 10<sup>th</sup> Edition***

Land Use Code: 210		Single-Family Detached Housing	
	Weekday AM Peak Hour	Weekday PM Peak Hour	Weekday Daily
Size (per dwelling unit) (X)	9	9	9
ITE Fitted Curve Equation	$T = 0.71(X) + 4.80$	$\ln(T) = 0.96* \ln(X) + 0.20$	$\ln(T) = 0.92* \ln(X) + 2.71$
Total Trips (T)	11	10	114
Entering %	25%	63%	50%
Exiting %	75%	37%	50%
Entering Vehicle-Trips	3	6	57
Exiting Vehicle-Trips	8	4	57

Typical ITE trip generation rates do not account for the use of non-vehicular modes of transportation, indicating only trips made to and from the study sites via motor vehicle. The US Journey-to-Work data for Census Tract 2691, where the site is located, was gathered to determine how many residents of the area commute to work via motor vehicle, public transportation, bicycle, walking, or telecommuting. The data shows that approximately 79% of residents commute to work via motor vehicle, 6% commute via other modes (public transportation, bicycle, walking), and approximately 15% telecommute to work. The US Journey-to-Work data is attached in the Appendix.

To offer a conservative calculation, it was assumed that all trips to and from the site during the peak hours will be via motor vehicle. This results in approximately 11 vehicle-trips during the Weekday AM peak hour, 10 vehicle-trips during the Weekday PM peak hour, and 114 vehicle-trips during a typical weekday. This corresponds to one (1) vehicle-trip every 5.5-6 minutes during each of the peak hours.

Additionally, although there will be public open space with a parking area for six (6) vehicles, it is assumed that many of the vehicle-trips to this area will not be during peak commuting times. As such, any vehicle-trips to the open space will not cause additional traffic during either of the peak hours.

## **Summary**

The project at 105 High road is proposed to construct an additional nine (9) single-family homes and public open space, with an access drive to High Road.

Trip generation was calculated using the ITE *Trip Generation Manual*, and the US Journey-to-Work data was referenced. The modal split calculated for this site shows that approximately 79% of residents commute to work via motor vehicle, 6% commute via other modes (public transportation, bicycle, walking), and 15% telecommute. To provide a more conservative estimate, it was determined that all trips during the Weekday AM and Weekday PM peak hours would be made via motor vehicle. With a 100% motor vehicle usage, it is expected that the site will generate approximately 11 vehicle-trips during the Weekday AM Peak Hour, 10 vehicle-trips during the Weekday PM Peak Hour, and approximately 114 vehicle-trips during a typical Weekday. This results in approximately one (1) vehicle-trip every 5.5-6 minutes during the weekday peak hours.

Given the minimal number of vehicle-trips that the site is expected to generate during the peak hours and a typical Weekday, DCI anticipates that the nine (9) additional single-family houses will have minimal impact on traffic operations or safety along High Road in Newbury.

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# APPENDIX

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## TRIP GENERATION

# TRIP GENERATION

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## **Land Use: 210**

### **Single-Family Detached Housing**

#### **Description**

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

#### **Additional Data**

The number of vehicles and residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it was usually readily available, easy to project, and had a high correlation with average weekday vehicle trip ends.

This land use included data from a wide variety of units with different sizes, price ranges, locations, and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Single-family detached units had the highest trip generation rate per dwelling unit of all residential uses because they were the largest units in size and had more residents and more vehicles per unit than other residential land uses; they were generally located farther away from shopping centers, employment areas, and other trip attractors than other residential land uses; and they generally had fewer alternative modes of transportation available because they were typically not as concentrated as other residential land uses.

Time-of-day distribution data for this land use are presented in Appendix A. For the six general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:00 and 5:00 p.m., respectively. For the two sites with Saturday data, the overall highest vehicle volume was counted between 3:00 and 4:00 p.m. For the one site with Sunday data, the overall highest vehicle volume was counted between 10:15 and 11:15 a.m.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Connecticut, Delaware, Illinois, Indiana, Maryland, Minnesota, Montana, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, and Virginia.

#### **Source Numbers**

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 903, 925, 936

# Single-Family Detached Housing (210)

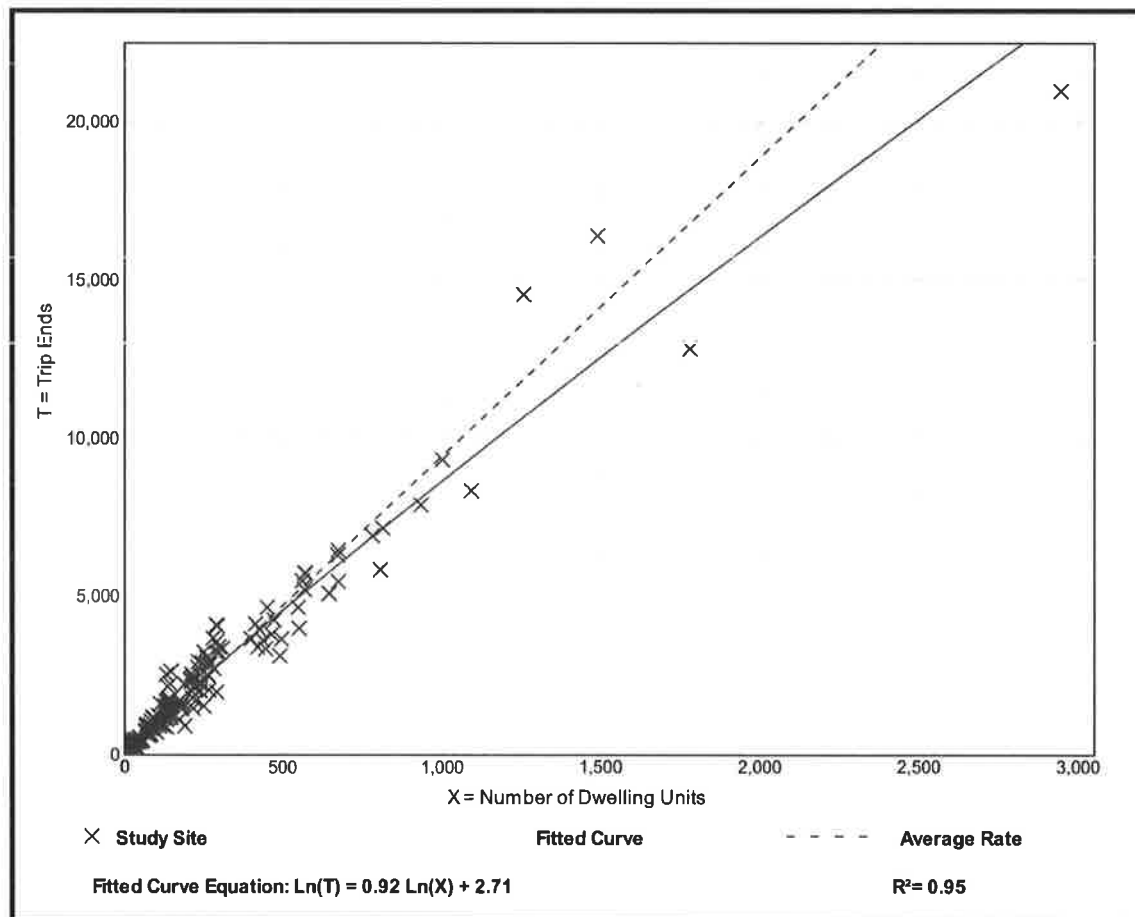
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 159  
Avg. Num. of Dwelling Units: 264  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

## Data Plot and Equation



## Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 173

Avg. Num. of Dwelling Units: 219

Directional Distribution: 25% entering, 75% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate

0.74

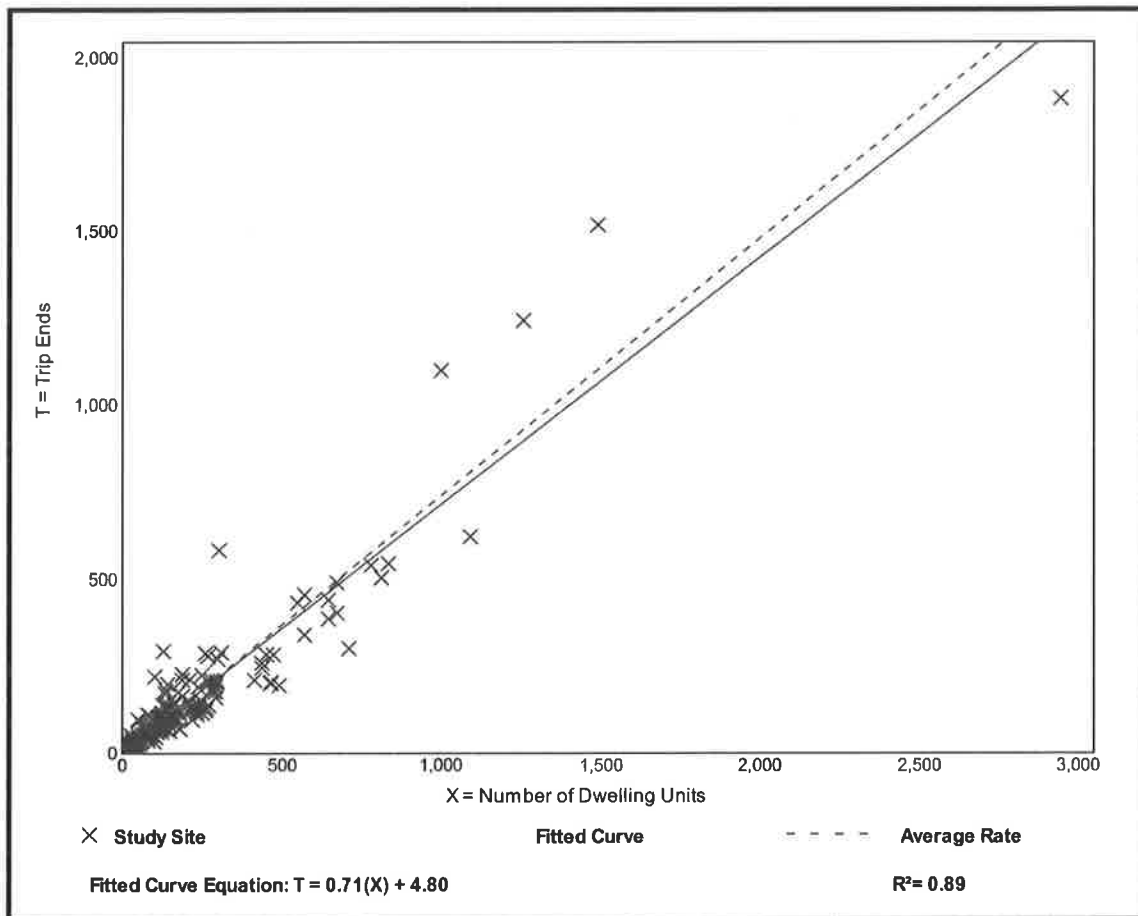
Range of Rates

0.33 - 2.27

Standard Deviation

0.27

### Data Plot and Equation



## Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 190

Avg. Num. of Dwelling Units: 242

Directional Distribution: 63% entering, 37% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate

0.99

Range of Rates

0.44 - 2.98

Standard Deviation

0.31

### Data Plot and Equation

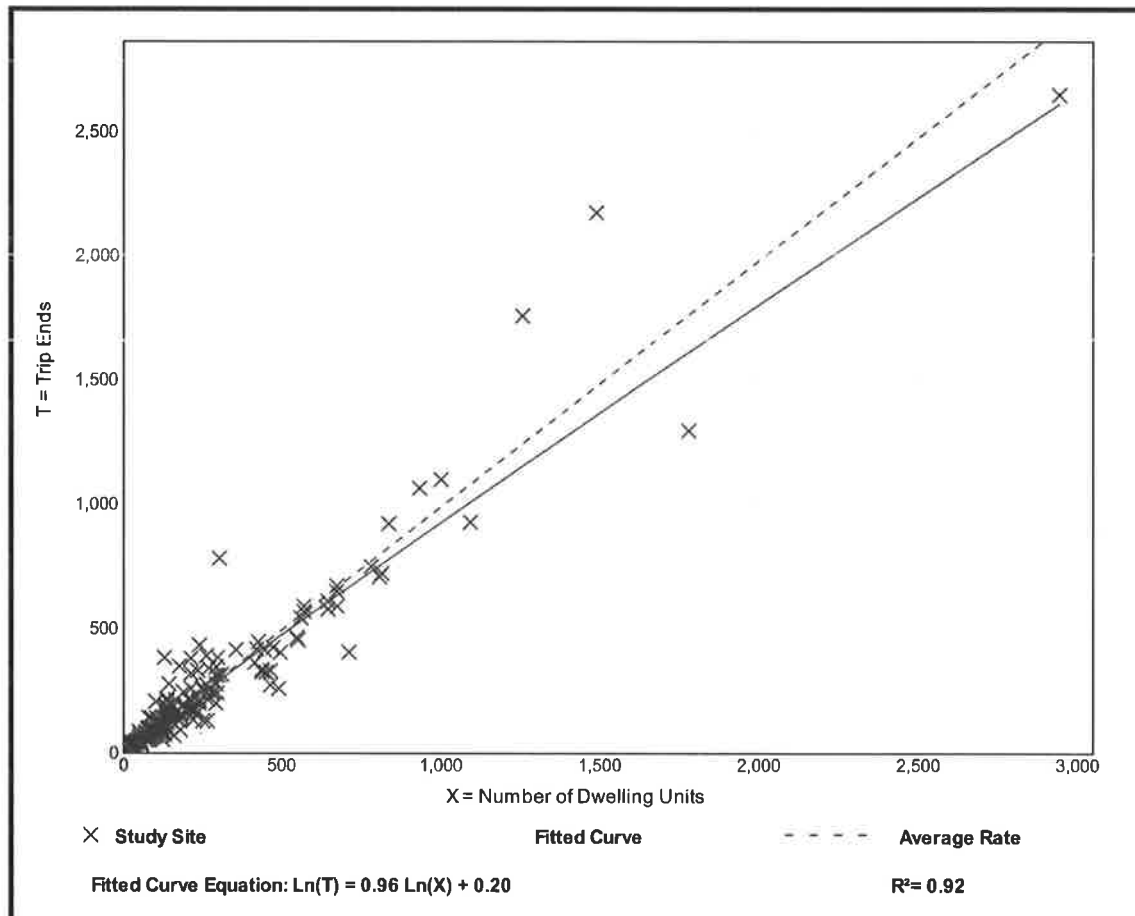


Table: ACSDT5Y2019.B08301

Census Tract 2691, Essex County, Massachusetts		
Label	Estimate	Margin of Error
Total:	3,354	±248
Car, truck, or van:	2,653	±301
Drove alone	2,495	±316
Carpooled:	158	±148
In 2-person carpool	130	±142
In 3-person carpool	0	±17
In 4-person carpool	28	±32
In 5- or 6-person carpool	0	±17
In 7-or-more-person carpool	0	±17
Public transportation (excluding taxicab):	95	±77
Bus	15	±24
Subway or elevated rail	38	±62
Long-distance train or commuter rail	42	±38
Light rail, streetcar or trolley	0	±17
Ferryboat	0	±17
Taxicab	0	±17
Motorcycle	0	±17
Bicycle	14	±23
Walked	91	±57
Other means	32	±37
Worked from home	469	±211

MEANS OF TRANSPORTATION TO WORK		United States™ <b>Census</b> Bureau
<b>Note:</b> The table shown may have been modified by user selections. Some information may be missing.		
<b>DATA NOTES</b>		
TABLE ID:	B08301	
SURVEY/PROGRAM:	American Community Survey	
VINTAGE:	2019	
DATASET:	ACSDT5Y2019	
PRODUCT:	ACS 5-Year Estimates Detailed Tables	
UNIVERSE:	Workers 16 years and over	
FTP URL:	None	
API URL:	<a href="https://api.census.gov/data/2019/acs/acs5">https://api.census.gov/data/2019/acs/acs5</a>	
<b>USER SELECTIONS</b>		
GEOS	Census Tract 2691, Essex County, Massachusetts	
<b>EXCLUDED COLUMNS</b>	None	
<b>APPLIED FILTERS</b>	None	
<b>APPLIED SORTS</b>	None	
<b>WEB ADDRESS</b>	<a href="https://data.census.gov/cedsci/table?q=b08301&amp;g=1400000US25009269100&amp;tid=ACSDT5Y2019.B08301&amp;hidePreview=true">https://data.census.gov/cedsci/table?q=b08301&amp;g=1400000US25009269100&amp;tid=ACSDT5Y2019.B08301&amp;hidePreview=true</a>	
<b>TABLE NOTES</b>	Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.	

Table: ACSDT5Y2019.B08301

	<p>Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.</p> <p>Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.</p>
	Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates
	<p>Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.</p>
	Workers include members of the Armed Forces and civilians who were at work last week.
	2019 ACS data products include updates to several categories of the existing means of transportation question. For more information, see: Change to Means of Transportation.
	The 2015-2019 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.
	Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Table: ACSDT5Y2019.B08301

	<p>Explanation of Symbols: * An "***" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.</p> <p>* An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.</p> <p>* An "-" following a median estimate means the median falls in the lowest interval of an open-ended distribution.</p> <p>* An "+" following a median estimate means the median falls in the upper interval of an open-ended distribution.</p> <p>* An "***" entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.</p> <p>* An "*****" entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.</p> <p>* An "N" entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.</p> <p>* An "(X)" means that the estimate is not applicable or not available.</p>
<b>COLUMN NOTES</b>	None



# HUGHES ENVIRONMENTAL CONSULTING

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44 MERRIMAC STREET, NEWBURYPORT, MA 01950  
PHONE 978.465.5400 • FAX 978.465.8100  
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PO Box 392, CONCORD, MA 01742  
PHONE/FAX 978.369.2100

April 8, 2021

Martha Taylor, Planning Director  
Town of Newbury  
Town Hall  
12 Kent Way  
Byfield, MA 01922

Dear Ms. Taylor:

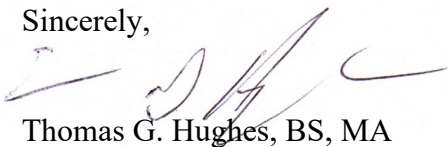
I am writing with regards to the requirements to identify the habitats of endangered or threatened species within your regulations with respect to the property at 105 High Road.

I have reviewed the most recent Natural Heritage and Endangered Species Program Atlas, dated August 1, 2017 and the up-to-date data layers for certified and potential vernal pools and find that there is no mapped habitat on site. I have attached a map showing the nearest habitat is about 400 feet east of the rear property line.

Additionally, I have spent a great deal of time working on reviewing and updating the wetland boundaries on site and have not noted the presence of any protected species during my field work.

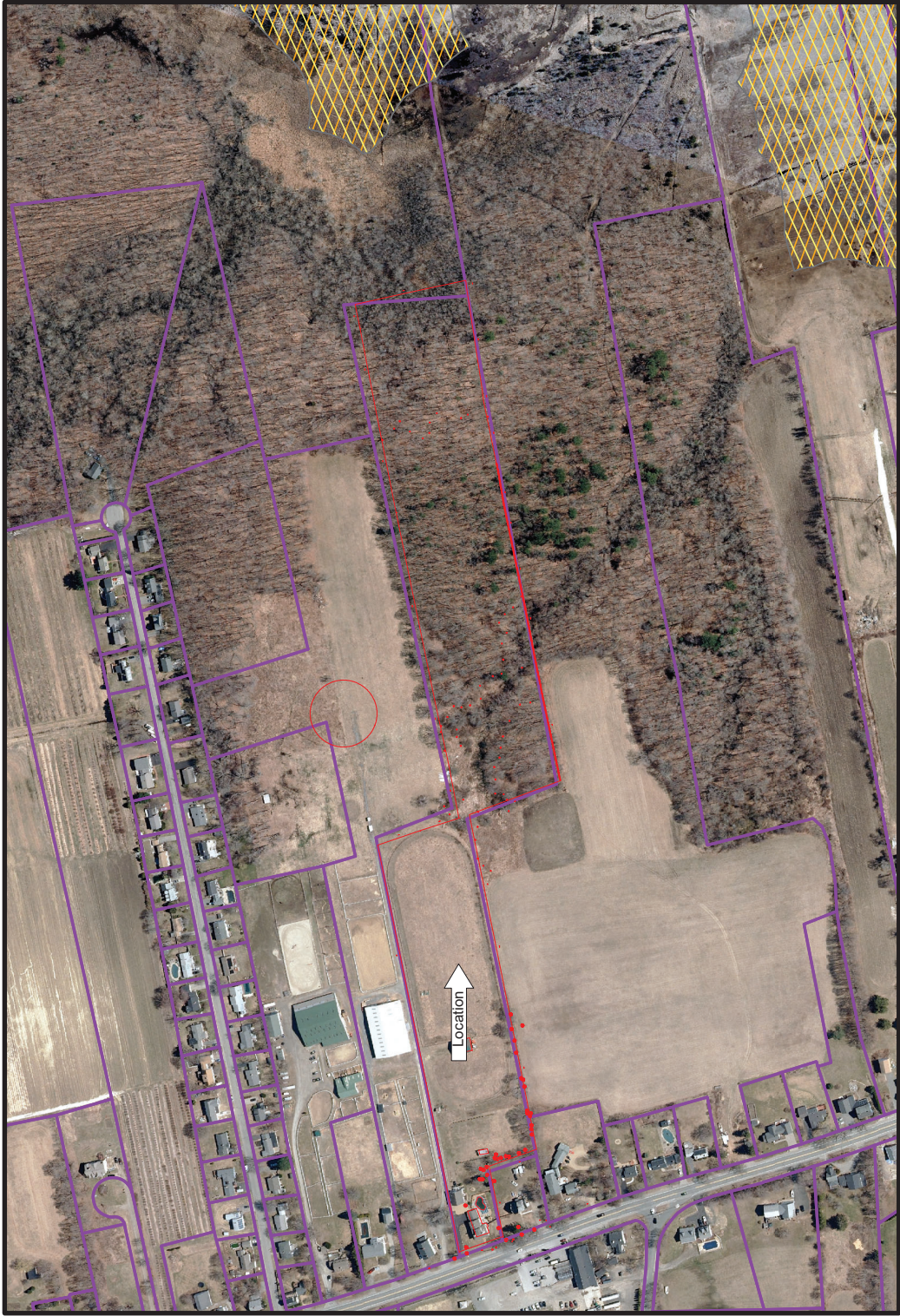
Please let me know if you have any questions or require further information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'T. Hughes', is written over the printed name.

Thomas G. Hughes, BS, MA

Enclosures: GIS map with NHESP habitat



105 High Road  
NHESP  
over  
2019 Orthophoto

Legend

- NHESP Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority Habitat
- NHESP Estimated Habitat



# TP 20-6 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

Date: Friday, July 10, 2020 Time: 09:48 Weather: Clear, ~75-80°F, calm & humid  
 Landscape: Upland Landform: Proglacial outwash terrace Position on landscape: Footslope  
 Slope aspect: Easterly Slope (%): 00-03% Slope complexity: Simple Land Cover: Meadow grass  
 Property line: 10<sup>+</sup> feet Drainage way: 50<sup>+</sup> feet Drinking water well: 100<sup>+</sup> feet Abutting septic system: 50<sup>+</sup> feet  
 Wetlands: 100<sup>+</sup> feet Public water supply reservoir: 400<sup>+</sup> feet Tributary to reservoir: 200<sup>+</sup> feet

## SOIL PROFILE ► TP 20-6

Depth below land surface (inches)	Soil Horizon/Layer	Soil Texture (USDA/ NRCS)	Soil Color (Munsell)	Redoxomorphic Features/ ESHGWT	Consistence, grade, size, structure, grain size, soil moisture state, roots, horizon boundary, clasts, stratification, artifacts, restrictive features, etc.
00" → 13"	A <sub>p</sub>	Sandy Loam	10YR 3/2 very dark grayish brown	none observed	Very friable; moderate-grade; fine-to-medium granular structure; somewhat cohesive; fine grained mineral content; slightly damp; non-sticky; non-plastic; many fine grass roots; free of clasts; clear wavy boundary.
13" → 24"	B <sub>w</sub>	Sandy Loam	10YR 5/6 dark yellowish brown	none observed	Very friable; moderate-grade, fine, sub-angular blocky structure; non-cohesive; mixed medium to mostly fine-grained mineral content; slightly damp; non-sticky; non-plastic; few fine grass roots; ~05% rounded to sub-rounded gravel content of mixed lithology; gradual wavy boundary.
24" → 122"	2C	Sand gravelly	2.5Y 5/4 light olive brown	99" (c,1-2,p) 10YR 7/1 5YR 5/8	Loose; structurless; unstable; mixed fine-to-medium grained mineral content; crudely stratified layers of sand and gravel; free of fines; damp matrix; non-sticky; non-plastic; well graded/ poorly sorted; approximately 25 - 30% angular to sub-rounded gravel and cobble content of mixed lithology; no bedrock refusal at test hole depth

Depth to bedrock: >122" Seasonal High Groundwater Table: 99" Apparent water: 111"

# TP 20-6 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

## DEPTH TO APPARENT/ PHREATIC GROUNDWATER TABLE:

Apparent water seeping from pit face: 111" (below land surface)      Depth to stabilized apparent water: 111" (below land surface)

Soil moisture state: Damp

## DEPTH TO ESTIMATED SEASONAL HIGH GROUNDWATER TABLE:

Depth of Estimated Seasonal High Groundwater Table: 99" (below land surface)

Kind: Iron concentrations; noncemented iron masses and reduction spots – iron coatings on sand grains

Location: In 2C matrix surrounding redox depletions      Shape: Irregular/ spherical

Hardness: Soft      Boundary: Clear      Abundance: Common      Size: Fine to medium      Contrast: Prominent

Concentration color: 5YR 5/8 yellowish red      Reduction color: 10YR 7/1 light gray      Moisture state: Damp

## DETERMINATION OF HIGH GROUNDWATER ELEVATION

Observed depth to redoximorphic features: 99" inches below grade

Observed water weeping from side of deep hole: 111" inches below grade

Observed depth to stabilized phreatic water: 111" inches below grade

## DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL: ► 9.08 feet

Depth of naturally occurring pervious material in TP 20-6      Upper boundary: 13"

Lower boundary: 122"

### Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.017.

Alexander F. Parker #1848

Massachusetts Evaluator & Certification number

Unofficial soil testing

Newbury Town Witness

June 1998

Date of Soil Evaluator Certification

07/10/20

Date of soil testing



# TP 20-7 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

Date: Friday, July 10, 2020 Time: 10:11 Weather: Clear, ~75-80°F, calm & humid  
 Landscape: Upland Landform: Proglacial outwash terrace Position on landscape: Footslope  
 Slope aspect: Easterly Slope (%): 00-03% Slope complexity: Simple Land Cover: Meadow grass  
 Property line: 10<sup>+</sup> feet Drainage way: 50<sup>+</sup> feet Drinking water well: 100<sup>+</sup> feet Abutting septic system: 50<sup>+</sup> feet  
 Wetlands: 100<sup>+</sup> feet Public water supply reservoir: 400<sup>+</sup> feet Tributary to reservoir: 200<sup>+</sup> feet

## SOIL PROFILE ► TP 20-7

Depth below land surface (inches)	Soil Horizon/Layer	Soil Texture (USDA/ NRCS)	Soil Color (Munsell)	Redoxomorphic Features/ ESHGWT	Consistence, grade, size, structure, grain size, soil moisture state, roots, horizon boundary, clasts, stratification, artifacts, restrictive features, etc.
00" → 12"	A <sub>p</sub>	Sandy Loam	10YR 3/2 very dark grayish brown	none observed	Very friable; moderate-grade; fine-to-medium granular structure; somewhat cohesive; fine grained mineral content; slightly damp; non-sticky; non-plastic; many fine grass roots; free of clasts; clear wavy boundary.
12" → 22"	B <sub>w</sub>	Sandy Loam	10YR 5/6 dark yellowish brown	none observed	Very friable; moderate-grade, fine, sub-angular blocky structure; non-cohesive; mixed medium to mostly fine-grained mineral content; slightly damp; non-sticky; non-plastic; few fine grass roots; ~05% rounded to sub-rounded gravel content of mixed lithology; gradual wavy boundary.
22" → 121"	2C	Sand gravelly	2.5Y 5/4 light olive brown	102" (c,1-2,p) 10YR 7/1 5YR 5/8	Loose; structurless; unstable; mixed fine-to-medium grained mineral content; crudely stratified layers of sand and gravel; free of fines; damp matrix; non-sticky; non-plastic; well graded/ poorly sorted; approximately 25 - 30% angular to sub-rounded gravel and cobble content of mixed lithology; no bedrock refusal at test hole depth

Depth to bedrock: >121" Seasonal High Groundwater Table: 102" Apparent water: 113"

# TP 20-7 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

## DEPTH TO APPARENT/ PHREATIC GROUNDWATER TABLE:

Apparent water seeping from pit face: 113" (below land surface)      Depth to stabilized apparent water: 113" (below land surface)

Soil moisture state: Damp

## DEPTH TO ESTIMATED SEASONAL HIGH GROUNDWATER TABLE:

Depth of Estimated Seasonal High Groundwater Table: 102" (below land surface)

Kind: Iron concentrations; noncemented iron masses and reduction spots – iron coatings on sand grains

Location: In 2C matrix surrounding redox depletions      Shape: Irregular/ spherical

Hardness: Soft      Boundary: Clear      Abundance: Common      Size: Fine to medium      Contrast: Prominent

Concentration color: 5YR 5/8 yellowish red      Reduction color: 10YR 7/1 light gray      Moisture state: Damp

## DETERMINATION OF HIGH GROUNDWATER ELEVATION

Observed depth to redoximorphic features: 102" inches below grade

Observed water weeping from side of deep hole: 113" inches below grade

Observed depth to stabilized phreatic water: 113" inches below grade

## DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL: ► 9.08 feet

Depth of naturally occurring pervious material in TP 20-7      Upper boundary: 12"  
Lower boundary: 121"

### Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.017.

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Unofficial soil testing

Newbury Town Witness

June 1998

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07/10/20

Date of soil testing

# TP 20-8 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

Date: Friday, July 10, 2020 Time: 10:39 Weather: Clear, ~75-80°F, calm & humid  
 Landscape: Upland Landform: Proglacial outwash terrace Position on landscape: Footslope  
 Slope aspect: Easterly Slope (%): 00-03% Slope complexity: Simple Land Cover: Meadow grass  
 Property line: 10<sup>+</sup> feet Drainage way: 50<sup>+</sup> feet Drinking water well: 100<sup>+</sup> feet Abutting septic system: 50<sup>+</sup> feet  
 Wetlands: 100<sup>+</sup> feet Public water supply reservoir: 400<sup>+</sup> feet Tributary to reservoir: 200<sup>+</sup> feet

## SOIL PROFILE ► TP 20-8

Depth below land surface (inches)	Soil Horizon/Layer	Soil Texture (USDA/ NRCS)	Soil Color (Munsell)	Redoxomorphic Features/ ESHGWT	Consistence, grade, size, structure, grain size, soil moisture state, roots, horizon boundary, clasts, stratification, artifacts, restrictive features, etc.
00" → 11"	A <sub>p</sub>	Sandy Loam	10YR 3/2 very dark grayish brown	none observed	Very friable; moderate-grade; fine-to-medium granular structure; somewhat cohesive; fine grained mineral content; slightly damp; non-sticky; non-plastic; many fine grass roots; free of clasts; clear wavy boundary.
11" → 23"	B <sub>w</sub>	Sandy Loam	10YR 5/6 dark yellowish brown	none observed	Very friable; moderate-grade, fine, sub-angular blocky structure; non-cohesive; mixed medium to mostly fine-grained mineral content; slightly damp; non-sticky; non-plastic; few fine grass roots; ~05% rounded to sub-rounded gravel content of mixed lithology; gradual wavy boundary.
23" → 120"	2C	Sand gravelly	2.5Y 5/4 light olive brown	75" (c,1-2,p) 10YR 7/1 5YR 5/8	Loose; structurless; unstable; mixed fine-to-medium grained mineral content; crudely stratified layers of sand and gravel; free of fines; damp matrix; non-sticky; non-plastic; well graded/ poorly sorted; approximately 25 - 30% angular to sub-rounded gravel and cobble content of mixed lithology; no bedrock refusal at test hole depth

Depth to bedrock: >120" Seasonal High Groundwater Table: 75" Apparent water: 98"

# TP 20-8 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

## DEPTH TO APPARENT/ PHREATIC GROUNDWATER TABLE:

Apparent water seeping from pit face: 98" (below land surface)      Depth to stabilized apparent water: 114" (below land surface)

Soil moisture state: Damp

## DEPTH TO ESTIMATED SEASONAL HIGH GROUNDWATER TABLE:

Depth of Estimated Seasonal High Groundwater Table: 75" (below land surface)

Kind: Iron concentrations; noncemented iron masses and reduction spots – iron coatings on sand grains

Location: In 2C matrix surrounding redox depletions      Shape: Irregular/ spherical

Hardness: Soft      Boundary: Clear      Abundance: Common      Size: Fine to medium      Contrast: Prominent

Concentration color: 5YR 5/8 yellowish red      Reduction color: 10YR 7/1 light gray      Moisture state: Damp

## DETERMINATION OF HIGH GROUNDWATER ELEVATION

Observed depth to redoximorphic features: 75" inches below grade

Observed water weeping from side of deep hole: 98" inches below grade

Observed depth to stabilized phreatic water: 114" inches below grade

## DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL: ► 9.08 feet

Depth of naturally occurring pervious material in TP 20-8

Upper boundary: 11"

Lower boundary: 120"

### Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.017.

Alexander F. Parker #1848

Massachusetts Evaluator & Certification number

Unofficial soil testing

Newbury Town Witness

June 1998

Date of Soil Evaluator Certification

07/10/20

Date of soil testing



# TP 20-9 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

Date: Friday, July 10, 2020 Time: 10:50 Weather: Clear, ~75-80°F, calm & humid  
 Landscape: Upland Landform: Proglacial outwash terrace Position on landscape: Footslope  
 Slope aspect: Easterly Slope (%): 00-03% Slope complexity: Simple Land Cover: Meadow grass  
 Property line: 10<sup>+</sup> feet Drainage way: 50<sup>+</sup> feet Drinking water well: 100<sup>+</sup> feet Abutting septic system: 50<sup>+</sup> feet  
 Wetlands: 100<sup>+</sup> feet Public water supply reservoir: 400<sup>+</sup> feet Tributary to reservoir: 200<sup>+</sup> feet

## SOIL PROFILE ► TP 20-9

Depth below land surface (inches)	Soil Horizon/Layer	Soil Texture (USDA/ NRCS)	Soil Color (Munsell)	Redoxomorphic Features/ ESHGWT	Consistence, grade, size, structure, grain size, soil moisture state, roots, horizon boundary, clasts, stratification, artifacts, restrictive features, etc.
00" → 14"	A <sub>p</sub>	Sandy Loam	10YR 3/2 very dark grayish brown	none observed	Very friable; moderate-grade; fine-to-medium granular structure; somewhat cohesive; fine grained mineral content; slightly damp; non-sticky; non-plastic; many fine grass roots; free of clasts; clear wavy boundary.
14" → 24"	B <sub>w</sub>	Sandy Loam	10YR 5/6 dark yellowish brown	none observed	Very friable; moderate-grade, fine, sub-angular blocky structure; non-cohesive; mixed medium to mostly fine-grained mineral content; slightly damp; non-sticky; non-plastic; few fine grass roots; ~05% rounded to sub-rounded gravel content of mixed lithology; gradual wavy boundary.
24" → 120"	2C	Sand gravelly	2.5Y 5/4 light olive brown	63" (c,1-2,p) 10YR 7/1 5YR 5/8	Loose; structurless; unstable; mixed fine-to-medium grained mineral content; crudely stratified layers of sand and gravel; free of fines; damp matrix; non-sticky; non-plastic; well graded/ poorly sorted; approximately 25 - 30% angular to sub-rounded gravel and cobble content of mixed lithology; no bedrock refusal at test hole depth

Depth to bedrock: >120" Seasonal High Groundwater Table: 63" Apparent water: 80"

# TP 20-9 DEEP OBSERVATION HOLE

105 High Road, Newbury, Massachusetts

## DEPTH TO APPARENT/ PHREATIC GROUNDWATER TABLE:

Apparent water seeping from pit face: 80" (below land surface)      Depth to stabilized apparent water: 111" (below land surface)

Soil moisture state: Damp

## DEPTH TO ESTIMATED SEASONAL HIGH GROUNDWATER TABLE:

Depth of Estimated Seasonal High Groundwater Table: 63" (below land surface)

Kind: Iron concentrations; noncemented iron masses and reduction spots – iron coatings on sand grains

Location: In 2C matrix surrounding redox depletions      Shape: Irregular/ spherical

Hardness: Soft      Boundary: Clear      Abundance: Common      Size: Fine to medium      Contrast: Prominent

Concentration color: 5YR 5/8 yellowish red      Reduction color: 10YR 7/1 light gray      Moisture state: Damp

## DETERMINATION OF HIGH GROUNDWATER ELEVATION

Observed depth to redoximorphic features: 63" inches below grade

Observed water weeping from side of deep hole: 80" inches below grade

Observed depth to stabilized phreatic water: 111" inches below grade

## DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL: ► 8.83 feet

Depth of naturally occurring pervious material in TP 20-9

Upper boundary: 14"

Lower boundary: 120"

### Certification

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Alexander F. Parker #1848

Massachusetts Evaluator & Certification number

Unofficial soil testing

Newbury Town Witness

June 1998

Date of Soil Evaluator Certification

07/10/20

Date of soil testing

# Arthur Pyburn & Sons Inc.

## Technical Services

564 Haverhill Street ♦ Rowley, MA 01969

617-529-3646

[apandsons@hotmail.com](mailto:apandsons@hotmail.com)

## Hydrant Flow Test Report

**Date: July 10, 2020**

**Time of test: 1:14pm**

**Weather: 84 degrees, Cloudy**

**Present at test: Greg Pyburn, (APSITECH), Mike and Scott (City of Newburyport)**

**Pressures were recorded from the hydrant by #97 High Rd. Newbury, MA.**

**Flow hydrant is located 105 High Rd. Newbury, MA.**

**Water Main Size: 12"**

**Static: 65psi before flowing**

**Residual: 58psi while flowing**

**Pitot: 50 pitot gage reading**

**Diameter: 2.5 size of opening tested**

**This hydrant is flowing: 1186 GPM from the test outlet**

**Projected available hydrant flow: 3241 GPM**

### NOTES

Projected available flows calculated at 20 psi residual

Respectfully Submitted by,  
Gregory Pyburn