TOWN OF UNDERHILL, VT

Planning & Zoning Administration

P.O. Box 120, Underhill, VT 05489
E-mail: rfifield@underhillvt.gov
Phone: (802) 899-4434, x106
Fax: (802) 899-2137

MEMORANDUM

To: DRB, SB, UJFD, UCC
From: Rachel Fifield, Planning & Zoning Administrator
Date: 10/13/2015
Re: Agenda and Information for 10/19/2015

NOTICE OF PUBLIC MEETING

Town of Underhill Development Review Board (DRB)

Monday, October 19, 2015

6:35 PM Public Hearing

Underhill Town Hall, 12 Pleasant Valley Rd. Underhill, VT

The DRB will hold a Preliminary Subdivision Review hearing on the application of Richard Albertini for a proposed 5-lot PRD and boundary line adjustment of property located at 109 Pleasant Valley Road (PV109). This property is located in the Water Conservation and Rural Residential zoning districts. A site visit will be held on the property at 6:00 PM preceding the public hearing. The hearing will be held at Town Hall at 6:35 PM.

Contents (PV109- Albertini):

a) A copy of the letter provided to the Applicant after Sketch Plan Review (dated 6/3/2015)
b) A copy of the minutes from the Sketch Plan meeting (2/16/2015)
c) Cover letter from Jennifer A Desautels, P.E. of Trudell Consulting Engineers (dated 9/2/2015);
d) Richard & Barbara Albertini- Application for Subdivision: Preliminary (undated);
e) A copy of the completed Subdivision Checklist: Preliminary;
f) A copy of the proposed Albertini Subdivision Preliminary Plan prepared by Trudell Consulting Engineers (C00-00-C8-05);
g) A copy of the project review sheet

h) A copy of the hearing notice as sent to the applicant and property abutters, publicized in three locations and published in *The Seven Days* the week of 10-7-2015.
i) A copy of the ability to serve letter from the UJFD (dated 6/1/2015)
j) A copy of the ability to serve letter from the MMMUSD (dated 8/5/2015)
k) A copy of the traffic study completed by Trudell Consulting Engineers (dated 8/31/2015)
l) A copy of the correspondence regarding the independent review of the traffic study
m) A copy of the independent review letter from Lamoureaux & Dickinson (dated 10/9/2015)
n) A copy of the draft shared maintenance agreements and enforcement documents
o) A copy of the procedure checklist for this meeting.
p) A copy of the State of Vermont "Guidelines for Review and Mitigation of White-Tailed Deer Habitat"
q) Source Protection Map
r) Tax Map
s) This memo

Outstanding item: comment from the Conservation Commission. Attempts by the applicant and the Zoning administrator to get the CC to provide comment were unsuccessful

Preliminary Review
Albertini 5-lot PRD & Boundary Line Adjustment

Applicant(s):	Albertini
Consultant(s):	Trudell Consulting Engineers
Property Location:	109 Pleasant Valley Road (PV109)
Acreage:	± 24.64 Acres

Zoning District(s):

RURAL RESIDENTIAL: 3 acres
250 ft road frontage
Setbacks: Front – 30 ft
Side & Rear – 50 ft
Accessory Bldgs. – 30 ft (front)
20 ft (side & rear lines)
Max. Bldg. Coverage: 25%
Max. Lot Coverage: 50%
Max. Building Height: 35 ft

WATER CONSERVATION: 5 acres
300 ft road frontage
Setbacks: Front – 30 ft
Side & Rear – 50 ft
Accessory Bldgs. – 30 ft (front)
20 ft (side & rear lines)
Max. Bldg. Coverage: 20%
Max. Lot Coverage: 30%
Max. Building Height: 35 ft

Relevant Regulations: Unified Land Use & Development Regulations (Updated 2014), 2002 Underhill Road Policy, 2015 Road, Driveway and Trail Ordinance

- Article II, Table 2.3 – Rural Residential District (pg. 12)
- Article II, Table 2.4 - Water Conservation District (pg. 15)
- Article II, Table 2.7 – Flood Hazard Overlay District (pg. 24)
- Section 3.2 – Access (pg. 27)
- Section 3.7 – Lot, Yard & Setback Requirements (pg. 35)
- Section 3.17 – Source Protection Areas (pg. 52)

- Section 3.18 – Steep Slopes (pg. 53)
- Section 3.19 – Surface Waters & Wetlands (pg. 60)
- Section 3.22 – Water Supply & Wastewater Systems (pg. 65)
- Article VI – Flood Hazard Area Review (pg. 120)
- Article VII – Subdivision Review (pg. 132)
- Section 7.3 – Preliminary Subdivision Review (pg. 137)
- Article VIII – All (pg. 143)
- Article IX – Planned Unit Development (pg. 165)

Comments/Questions

- Access approval should be obtained from the Selectboard prior to submitting an application for final subdivision review. Since the application proposes more than four lots, it is considered a private development road which must meet town standards, including VT AOT A-76.
- Portions of the rear property are within Zone A of the FEMA Special Flood Hazard Area. This is an area where no Base Flood Elevations have been determined. Application appears to locate the building envelopes and other site improvements to be outside the SFHA.
- Portions of the property contain steep slopes. Development and construction on steep slopes (15%-25%) and very steep slopes (>25%) must follow the requirements of Section 3.18. Section 3.18 prohibits "*site disturbance and development, not limited to grading, building construction and the installation of driveways, roads, utilities or other infrastructure, on very steep slopes (>25%).*" These areas (>25%) should be indicated on subsequent plans. Proposed development should avoid these areas. Also- see Section 8.3.C. Rock Outcrops, Steep Slopes, Hillsides & Ridgelines.
- There is a stream (Crane Brook) running along rear of property. Setbacks for Crane Brook are 100 ft as measured horizontally from the top of the bank, or 50 feet if measured from top of slope. See Diagram 3.1 on page 61 of the UULDR.
- The parcel is also within a designated groundwater source protection area. Section 3.17 requires that all development within designate source protection areas, (except for agriculture, forestry, single and two family dwellings, associated accessory uses and structures, and uses that are specifically prohibited under Subsection C) be subject to conditional use review by the DRB. The Board and applicant should review the Findings listed in Section 3.17(B)(1-6). These Findings should be incorporate in the preliminary and final decisions.
- There are mapped deer wintering areas on the rear portion of the property. The Conservation Commission should review and provide comments on subsequent plans, but has yet to do so. Is there anywhere else the Board can get comment on this topic? Also see Section 8.3.D Natural Areas and Wildlife Habitat. The board has previously mentioned it would like to see language that preserves the deer yard and incorporates a buffer at the deer yard. The Fish and Wildlife Current "Guidelines" on this topic are enclosed in the packet; see pages 1-6 of the Guidelines.
- Applications should demonstrate compliance with Section 8.5 Stormwater Management & Erosion Control. Is section 4B relevant? The Independent Traffic Review also notes that:
    - The downstream level spreader: this is a key piece of the stormwater infrastructure for the entire upper half of the development. It could blow out in a heavy rain event, and more detailed plans are necessary to indicate if it could still handle water under those conditions.

    - The steep slopes in the drainage swales have high erosion potential, and the engineers at L&D recommend stone lining and check dams to mitigate this erosion.
    - The culvert across Lot's 2's driveway appears to run uphill. Without a sump, the outlet of the culvert needs to extend further downslope to prevent flooding.

- Since the application also includes a request for a boundary line adjustment, the adjacent property owners should continue to be signed applicants on future applications.
- Questions/comments in light of the Independent Traffic Review:
    - Sheet C6-03 identifies a sightline that extends north over the private property of lots 1 & 2. The southern end of this sight line needs to begin 15 feet back from the Traveled Way on Pleasant Valley. Should legal documents for the subdivision have provisions to require those areas to be cleared for sightlines of southbound Pleasant Valley Road traffic?
    - Road profiles indicate 3" of gravel cover over culverts; standard engineering practice is to maintain 24". Is there a reason Trudell is making this choice?
    - The Traffic Study from Trudell omits discussion of existing traffic conditions and potential impacts (such as crash history), does not provide information about left-turning exiting traffic, and does not account for the grade of Pleasant Valley road, treating it as flat instead. The sight lines are not constant with the proposed grading on the sheet. Are these concerns that it is necessary to address to understand the potential impacts of the development?

Underhill DRB Rules of Procedure
Hearing Checklist
Sketch Plan Review
Request of Albertini
February 2, 2015

State the following:

1) "This is a preliminary hearing on the application of Richard and Barbara Albertini for a proposed 5-lot Planned Residential Development on the land they own at 109 Pleasant Valley Road in Underhill, VT. The purpose of preliminary subdivision review is to review a draft subdivision plat and supporting documentation to determine preliminary conformance with the municipal plan, these regulations and other municipal ordinances in effect at the time of application; to identify particular issues or concerns associated with a proposed subdivision; to recommend modifications necessary to achieve conformance; and to identify any additional information required for submission for final subdivision review prior to the preparation of a final survey plat, engineering plans and legal documents for the subdivision and related site improvements.

This subdivision is subject to review under the Unified Land Use and Development Regulations and the 2015 Road, Driveway and Trail Ordinance, and was classified as a **major subdivision** after the sketch plan review.

2) Copies of the Rules of Procedure that the Board follows are available for review from the Planning & Zoning Administrator.

3) The order of speakers tonight will be:

   a. We will hear from and ask questions of Barbara and Richard and their consultant(s);
   b. Then we will hear and ask questions of the Planning & Zoning Administrator, Rachel Fifield; (*See Staff Report*)
   c. Then we will give other persons in the room a chance to speak. Under our Rules of Procedure each speaker is limited to five minutes; however, that time can be extended upon request to the Board and majority consent of the Board; then
   d. The Applicants and/or their consultant(s) will have an opportunity to respond; then;
   e. Final comments will be solicited from all parties.
   f. All speakers should address their comments to the Board, not to other parties present at the hearing.
   g. Board Members may feel free to ask questions of any speaker.

4) Are any state or municipal representatives present, and acting in their representative capacities?

5) An Interested Parties Info Sheet has been provided to all attendees. Please review it for further information.

Then state:

"Only those interested persons who have participated, either orally or through written statements in a DRB proceeding may appeal a decision rendered in that proceeding to the Environmental Division of Superior Court.

6) If you are an applicant, or an interested party who wants to participate in the hearing, we will have you come up to the witness chair and clearly state your name, residential address, and mailing address if it differs.

7) I am now going to swear in all those present who wish to speak tonight. All individuals who plan to testify must take the following oath by responding **"I do"** at the end: ***"Do you hereby swear that the evidence you give in the cause under consideration shall be the whole truth and nothing but the truth under pains and penalties of perjury?"***

8) Are there any conflicts of interest or have there been any ex parte communications on the part of the Board Members?

9) At this point I am going to enter into the record the information package that was sent by the Planning & Zoning Administrator prior to the hearing. The information included in this package relevant to this hearing is:

   a. A copy of the letter provided to the Applicant after Sketch Plan Review (dated 6/3/2015)
   b. A copy of the minutes from the Sketch Plan meeting (2/16/2015)
   c. Cover letter from Jennifer A Desautels, P.E. of Trudell Consulting Engineers (dated 9/2/2015);
   d. Richard & Barbara Albertini- Application for Subdivision: Preliminary (undated);
   e. A copy of the completed Subdivision Checklist: Preliminary;
   f. A copy of the proposed Albertini Subdivision Preliminary Plan prepared by Trudell Consulting Engineers (C00-00-C8-05);
   g. A copy of the project review sheet
   h. A copy of the hearing notice as sent to the applicant and property abutters, publicized in three locations and published in *The Seven Days* the week of 10-7-2015.
   i. A copy of the ability to serve letter from the UJFD (dated 6/1/2015)
   j. A copy of the ability to serve letter from the MMMUSD (dated 8/5/2015)
   k. A copy of the traffic study completed by Trudell Consulting Engineers (dated 8/31/2015)
   l. A copy of the correspondence regarding the independent review of the traffic study
   m. A copy of the independent review letter from Lamoureaux & Dickinson (dated 10/9/2015)
   n. A copy of the draft shared maintenance agreements and enforcement documents
   o. Source Protection Map
   p. Tax Map
   q. A copy of the procedure checklist for this meeting.
   r. This memo

10) We'll begin testimony, and hear from the Applicants and/or their consultant(s).

11) Next we will hear from the Planning & Zoning Administrator. (*See Staff Report*)

12) Are there members of the public who would like to speak?

13) Any final comments from anyone?

14) Does the Board feel that they have enough information at this time to make a decision on the application?

   a. If more information is needed to make a decision on the application, continue the hearing to a date and time certain, and outline for the Applicant(s) what is required at that continued hearing; or
   b. If, by consensus, enough information has been presented to make a decision on the application, announce that the evidentiary portion of the hearing is closed.

15) Does the Board wish to discuss the application in open or deliberative session? (After the ruling, continue with the info below.)

“Within 45 days from this hearing, the Planning & Zoning Administrator, on behalf of the DRB, will send a copy of the preliminary decision and letter to the Applicant, their consultant, and those who have participated in tonight’s hearing. A 30-day appeal period will begin on the date the decision is signed. The letter will outline the next steps in the process. If there are no other comments or questions we will close this portion of the meeting.

DEVELOPMENT REVIEW BOARD
Town of Underhill, VT

P.O. Box 120, Underhill, VT 05489
E-mail: smcshane@underhillvt.gov
Phone: (802) 899-4434, x106
Fax: (802) 899-2137

October 12, 2015

Richard & Barbara Albertini
PO Box 168
Underhill Center, VT 05490

During the meetings on February 16th and June 1, 2015, the Development Review Board reviewed your sketch plan application for a 5-lot subdivision (PRD) of property at 109 Pleasant Valley Road in Underhill, VT. This letter is provided per Section 7.3(D) of the Unified Land Use and Development Regulations, and is valid for one year. If a preliminary application is not filed within the year, another sketch plan review shall be required.

SUBDIVISION CLASSIFICATION
As you are aware, this application is being reviewed under the Unified Land Use and Development Regulations adopted March 2011, as amended through March 4, 2014. The subdivision process must distinguish between major and minor classifications. Due to the nature of your proposal, the DRB has classified this as a **major subdivision** [Section 7.2 (E)].

REGULATION CONFORMANCE
Based upon the information submitted during the sketch plan meetings, the board found that the proposed subdivision will generally conform to the regulations. However, you and your consultants should ensure that all of the subdivision review standards in Article VIII and Article IX are addressed and all of the preliminary hearing requirements in Section 7.5 are met.

REVIEW CRITERIA & ISSUES TO BE ADDRESSED
This sketch plan letter outlines "specific areas of concern to be addressed" per Section 7.3(D) and per Section 8.2, General Standards for subdivision review. Subsequent applications should include and address the following:

1) A Preliminary Plat Application submitted in accordance with the criteria listed in the Underhill Unified Land Use and Development Regulations;
2) In the absence of a Full Time Zoning administrator, the applicant shall be responsible for soliciting comments ability to serve and impact letters from the Underhill conservation commission, school district, fire department, and road foreman as outlined in the ULUDR;
3) A vicinity map drawn to a reasonable scale which includes the project area, Mountain Road, New Road, and the location of adjacent driveways on Pleasant Valley Road.
4) A traffic impact analysis prepared by a qualified consultant, of the existing conditions on this section of Pleasant Valley Road and forecasted impacts caused by the development. The traffic impact shall include but not be limited to the following:

a) A speed survey conducted over a sufficient duration to achieve representative conditions and use of Pleasant Valley Road to include AM peak hour and PM peak hour traffic flow, speed, minimum, maximum and average running speed recorded.
b) A matrix that indicates the required minimum safe stopping distance in five mph increments up from 20 mph to 75 mph.
    i) Recommendations from VAOT[1], AASHTO[2] or other recognized transportation improvement body on the comparison of minimum safe stopping distances for non-motorized vehicles who may exceed the speed limit, (i.e. bicycles).
c) Recommended intersection improvements and the maximum sight distance that will be achieved as a result of these improvements.

5) Draft shared maintenance agreements and enforcement documents;
6) A Project Review Sheet from the Agency of Natural Resources;
7) The preliminary and final applications should be signed by both the property owners and the Angelino's since the proposal includes a boundary line adjustment with the adjacent property owners;
8) A site visit will be scheduled prior to the preliminary hearing.

The above information should be included in an application for the preliminary hearing in addition to the information required on the enclosed checklists.

PRELIMINARY SUBDIVISION HEARING – PROCESS

As you are aware, the Board voted to require a preliminary hearing during the sketch plan review meeting. Therefore, the next step in the subdivision process is to hold a hearing(s) for the purpose of conducting preliminary subdivision review. The application requirements for this step are detailed in Section 7.5 and Article VIII of the Unified Land Use and Development Regulations. The following is provided as a general overview of the process.

You will be required to submit one large and twelve 11" x 17" copies of the plat and engineering drawings, a check for the base hearing fees ($400), a copy of the State Project Review Sheet, and copies of draft legal documents. Also include information addressing items above and the requirements on the enclosed checklists.

The board recognizes their lack of expertise with regards to traffic, traffic impacts and recommended improvements. As allowed by the ULUDR the board will solicit the services of an outside third party to assist in the technical review and recommendation for conformance with the regulations and the general safety concerns raised during the sketch plan review hearing.

Once I receive a completed preliminary application package, I will schedule and warn a site visit and the preliminary hearing. You will be asked to post a red "Z" sign on the lot no later than 15 days prior to the scheduled hearing. I will take care of the notice requirements, including Certified Mail to your neighbors and publication in a newspaper. The cost for notice, the third party review consultant, and the newspaper fee is borne by you and will be included in the invoice with your preliminary decision.

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[1] Vermont Agency of Transportation
[2] American Association of State Highway and Transportation Officials

An application for the Preliminary Subdivision Hearing and associated checklist(s) are also included with this letter. The checklists will aid in preparing your hearing submissions and will also aid the Board in reviewing the required documents.

After the Preliminary Subdivision Hearing, the Board will have 45 days to issue a signed, written decision. You will receive a copy of the signed decision via Certified Mail. Any interested parties who participated in the hearing will also receive a copy of the decision. A 30-day appeal period will begin from the date of the signed decision. Preliminary approval is valid for one year from the date of issuance.

FINAL HEARING

Following the preliminary hearing you may submit a complete application for a final hearing. I will include the requirements and procedure for that step in the letter accompanying your preliminary decision.

If you have any questions or need assistance with the required submissions, please call me at the number listed above.

Sincerely,

Sarah C. McShane
Planning & Zoning Administrator

cc: Trudell Consulting
Interested Party Service List
File

encl: Application for Subdivision: Preliminary
Subdivision Checklist: Preliminary Hearing
Subdivision Standards Findings Checklist

TRUDELL
Consulting Engineers

September 2, 2015

Rachel Fifield, Zoning & Planning Administrator
Town of Underhill
P.O. Box 120
Underhill, VT 05489

Subject: *Albertini Subdivision – Preliminary Subdivision Application*
Project #14-136

Dear Rachel:

I am submitting this Preliminary Subdivision Application on behalf of our client, the Albertini family. I have enclosed the application, checklists, abutter list, Speed Study Memo, State of Vermont Project Review Sheet and Ability to Serve requests and responses. We received Preliminary Access approval from the Selectboard on March 19, 2015 for our access location and Sketch Plan approval from the Development Review Board (DRB) on June 3, 2015.

Since our last submittal, we have completed a speed study on Pleasant Valley Road by using Automatic Traffic Recorder (ATR) tubes as requested by the DRB. The posted speed limit on Pleasant Valley Road is 30 mph. However, the 85th percentile speed from the study was 44 mph (we rounded up to 45 mph), and the average speed was 40 mph as determined from the study. The required sight distance for 45 mph (the 85th percentile speed) is 430'. However, we are proposing 480' which corresponds to a speed of 50 mph. We feel that the project should not have an adverse impact on traffic safety in the project vicinity. Please refer to the attached Speed Study Memo and associated charts for further details. We have also included a Sight Distance Plan in our site plan package on Sheet C6-03.

The parcel is primarily in the Water Conservation District, so for the purposes of waivers we will be using the Water Conservation District standards. We would like to request the following waivers as part of our PUD application:

1. Minimum lot size (5 ac. required). Lot 1: 2.74 ac., Lot 2: 2.50 ac., Lot 3: 2.80 ac. We feel that our lot layout is a better design which allows for Lots 4 & 5 to be significantly larger than the minimum lot size. This layout includes a large tract of the western side of the parcel that will remain undisturbed.
2. Minimum frontage (300' required). Lot 2: 0', Lot 4: 0', Lot 5: 0'. We feel that this design allows us to significantly reduce the amount of impervious area created by the new private road. This design also allows for the preservation of undisturbed land on the western side of the property.
3. Minimum principal structure side setback (50' required). Lot 1: 40' provided on north boundary line. This waiver is requested since we feel this is the best location for the house considering steep slopes, septic system location, and driveway access. There will be undisturbed woods between Lots 1 & 2 to maintain screening between the homes. Also, the house on Lot 2 is located

220'+ from the house on Lot 1 so the houses are not close in proximity to each other.

We have also added landscaping to the plans to provide screening adjacent to the Angelino and Gregson properties, since that was a concern discussed at prior hearings for this project. The site plan package includes additional information and design details for your review.

I look forward to answering any questions that you may have. Should you have any questions, please do not hesitate to contact me directly.

Kind Regards,

Jennifer A. Desautels, P.E.
Project Engineer

TOWN OF UNDERHILL

P.O. Box 32
Underhill Center, VT 05490
Phone: (802) 899-4434 x106 Fax: (802) 899-2137
Email: underhillzoning@comcast.net

APPLICATION FOR SUBDIVISION: PRELIMINARY

ZONING DISTRICT(S): PROPERTY CODE: PV109

FEES: $100 per lot hearing fee + costs

☐ Residential ☒ Rural Residential ☑ Water Conservation ☐ Scenic Preservation ☐ Soil & Water Conservation

RECORD OWNER OF PROPERTY: Richard & Barbara Albertini & Albertini Revocable Trust	MAILING ADDRESS: P.O. Box 168 Underhill Ctr, VT 05490
PHONE: (802) 899-4294	E-MAIL: ralbert315@aol.com
ACREAGE IN ORIGINAL PARCEL: 24.60+/- ac.	PROPOSED NUMBER OF LOTS: 5
DESCRIPTION OF PROJECT: This project consists of a 5-lot Planned Residential Development (PRD) located on Pleasant Valley Rd. The lots will have private wells and individual on-lot septic systems.	
DEVELOPER: same as owner	CONTACT INFORMATION: same as owner
DESIGNER / ENGINEER: Jennifer Desautels, P.E.	ADDRESS: Trudell Consulting Engineers 478 Blair Park Rd. Williston VT 05495
PHONE: (802) 879-6331 x109	E-MAIL: jenn.desautels@tcevt.com
SURVEYOR: Scott Taylor, L.S.	ADDRESS: Trudell Consulting Engineers 478 Blair Park Rd. Williston VT 05495
PHONE: (802) 879-6331 x109	EMAIL: scott.taylor@tcevt.com
APPLICANT SIGNATURE 9/4/15 09/06/15 Barbara Albertini	DATE 8-31-15 9-7-15
RECEIVED 8/31/15	DATE

Please submit a complete application with the attached checklist and preliminary plans to the Zoning Administrator. A Preliminary Hearing before the Development Review Board will be scheduled upon receipt of a complete application. For questions, please contact the Zoning Administrator at 899-4434, x106 or underhillzoning@comcast.net.

TOWN OF UNDERHILL, VERMONT

Subdivision Checklist: Preliminary Hearing

Docket #: _____ **Property ID:** _____ **Meeting Date:** _____

Applicant/Consultant: Trudell Consulting Engineers

# of Lots: 5 **Zoning District(s):** RR & WC

Is this a Planned Residential Development?	☑	Yes	☐	No
Is this a Planned Unit Development?	☐	Yes	☑	No
Is this part of a previously-approved subdivision?	☐	Yes	☑	No

Submission Requirements

The following are required prior to scheduling a hearing and/or site visit.

Required	Submitted	
☐	☑	One large and twelve 11" x 17" copies of the draft subdivision plan.
☐	☑	Engineering drawings (see attached checklist).
☐	☑	State of Vermont Project Review Sheet.
☐	☑	Draft legal documents (deeds, easements, Homeowners Associations, maintenance agreements, etc.). (in progress)
☐	☑	Fees.
☐	☑	Written disclosure of the intended use of land to be subdivided, and general plans for the subsequent development of any land to be retained by the owner/applicant (required when only a portion of an existing parcel is to be subdivided).
☐	☑	Master Plan. See Section 8.1(B)(1)(a) for specific requirements. (as shown on site plan)
☐	☑	Findings of Fact (see attached checklist).
☐	☑	Written requests for modifications or waivers, including justifications for such requests.

TOWN OF UNDERHILL, VERMONT

Subdivision Checklist: Preliminary Hearing

Required	Submitted	SURVEY
☐	☑	The name and address of the record owner and designer of preliminary plat. Survey must be done by a licensed land surveyor.
☐	☑	Date, north orientation used and basis, scale, and legend.
☐	☑	The property codes and names of owners of record of adjacent acreage, including those directly across any road adjoining proposed subdivision. Also include the names of all subdivisions immediately adjacent to the proposed subdivision.
☐	☑	The provisions of the zoning regulations applicable to the area to be subdivided.
☐	☑	Existing and proposed easements, rights-of-way, roads, driveways, pedestrian walkways, and utility corridors. Proposed utility easements will be centered on as-built utility lines.
☐	☑	Surface waters, wetlands, vernal pools, and associated buffers.
☐	☑	Mapped floodplains.
☐	☑	Open space areas.
☐	☑	Proposed lot lines with dimensions.
☐	☑	Building envelopes for all structures, parking areas, and associated site improvements. (site plan)
☐	☑	The preliminary plat shall be accompanied by a vicinity map drawn to show the relation of the proposed subdivision to the adjacent properties and to the general surrounding area. The vicinity map shall show all of the area within two thousand (2,000) feet of any property line of the proposed subdivision.

TOWN OF UNDERHILL, VERMONT

Subdivision Checklist: Preliminary Hearing

Required	Submitted	ENGINEERING DRAWINGS
☐	☑	Name and address of record owner(s) and designer of preliminary engineering plans.
☐	☑	Date, north orientation used and basis, scale, and legend.
☐	☑	Abutting neighbors identified by name and property code.
☐	☑	The provisions of the zoning regulations applicable to the area to be subdivided.
☐	☑	Natural topography (surface contours, grades) and drainage patterns.
☐	☑	Surface waters, wetlands, vernal pools, and associated buffers.
☐	☑	Mapped floodplains.
☐	☑	Natural vegetative cover (timber and orchard stands, witness and shade trees, copses, hedgerows, etc.).
☐	☑	Significant wildlife habitat areas and corridors, and rare, threatened, and endangered plant and animal communities and associated buffers.
☐	☑	Areas of forestland.
☐	☑	Outcrops, ledges, visually prominent ridgelines and peaks, or other unique topographical and geographical features. (Include tree canopy height for proposed development down-slope of ridges and hilltops).
☐	☑	Areas of steep or very steep slopes.
☐	☑	Primary agricultural soils.
☐	☑	Open space areas.
☐	☑	Common land areas.
☐	☑	Historic sites and structures.
☐	☑	Designated Source Protection Areas.
☐	☑	Existing easements, rights-of-way, pedestrian walkways, curb cuts, driveways, roads (including Class IV), parking areas, and utility corridors.
☐	☑	The location and size of existing sewerage systems and water supplies, culverts, and drains or underground cables on the property to be subdivided.
☐	☑	Existing buildings and grades.
☐	☑	Proposed new lot lines (dimensions to the nearest foot, no bearings) and acreages.
☐	☑	Proposed easements, rights-of-way, pedestrian walkways, curb cuts, driveways, roads and upgrades, parking areas and designs for each (include cuts, fills, grades, drainage, culverts, travel lane widths, shoulder widths, surfacing, etc.)

TOWN OF UNDERHILL, VERMONT

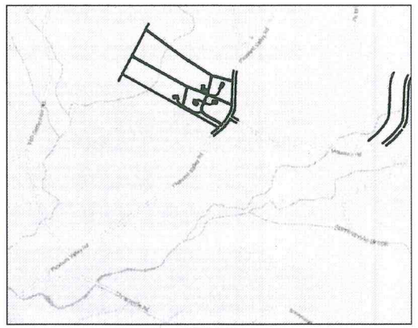
Subdivision Checklist: Preliminary Hearing

☐	☑	Proposed utility corridors.
☐	☑	Building envelopes for all structures, parking areas, and associated site improvements.
☐	☑	Locations and designs of all proposed water and wastewater disposal systems.
☐	☑	Proposed setbacks for all building envelopes to property lines and natural features, and all setbacks and isolation distances for sewage disposal systems, and water supplies.
☐	☑	Preserved open space areas, forestland, natural, cultural, and historic features.
☐	☑	Extent of site clearing and disturbance.
☐	☑	Landscaping and screening.
☐	☑	Proposed common land.
☐	☑	Grading plan and post-development contours.
☐	☑	Snow removal and management plan.
☐	☑	Temporary and permanent stormwater management and erosion control measures/plans. Include the anticipated downstream runoff from the subdivision at build-out.
☐	☑	Outdoor lighting plan.

Notes:

ALBERTINI SUBDIVISION

109 PLEASANT VALLEY ROAD
UNDERHILL, VERMONT



SITE MAP
1" = 1000'

PROJECT DESCRIPTION:
THIS PROJECT INCLUDES A 5 LOT PLANNED UNIT DEVELOPMENT (PUD) SUBDIVISION ON PLEASANT VALLEY ROAD IN UNDERHILL, VERMONT. THE SUBDIVISION INCLUDES THE CONVEYANCE OF LAND BOTH TO-AND-FROM THE NEIGHBOR TO THE NORTH, THE ANGELINOS. THE SUBDIVISION WILL CONSIST OF 25.02 ACRES WHICH WILL BE SPLIT INTO THE FOLLOWING LOTS: LOT 1 (2.7 AC.) LOT 2 (2.5 AC.) LOT 3 (2.8 AC.) LOT 4 (10.2 AC.) LOT 5 (6.8 AC.)

DRAWING INDEX

Owner/Applicant
CLIENT: RICHARD & BARBARA ALBERTINT
AND ALBERTINI REVOCABLE TRUST
ADDRESS: P.O. BOX 168
UNDERHILL CENTER, VERMONT 05490
PHONE: (802) 899-4294

Engineer:
TRUDELL CONSULTING ENGINEERS (TCE)
478 BLAIR PARK ROAD
WILLISTON, VT 05495
(802) 879-6331

PRELIMINARY SUBMISSION SET
(NOT FOR CONSTRUCTION)

BEFORE USING THESE PLANS ENSURE THAT YOU HAVE THE LATEST REVISION	
LAST REVISED:	08/19/15 ISSUED FOR CONSTRUCTION

TCE PROJECT NO: 14-136

Tax ID: PV109

TRUDELL CONSULTING ENGINEERS
478 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
802.879.6331 | WWW.TCEVT.COM

John P. Pitrowich

LEGEND

	LINE: EXISTING	LINE: PROPOSED	LINE: REMOVED/ABANDONED
SITE			
PAVED DRIVE OR ROAD			
GRAVEL DRIVE OR ROAD			
PAVED DRIVE OR ROAD WITH CURB			
TREE LINE			
TRAIL			
WETLAND LIMIT			
TOPOGRAPHIC CONTOURS	124	124	
STREAM			
GUARD RAIL			
UTILITIES			
SEWER MAINS AND SERVICES	S	S	S
SEWER FORCEMAIN	FM	FM	FM
WATER MAINS AND SERVICES	W	W	W
STORM DRAINAGE	D	D	D
CURTAIN DRAIN	CD	CD	CD
UNDERDRAIN	UD	UD	UD
ROOF DRAIN	RD	RD	RD
FOOTING DRAIN	FD	FD	FD
LIQUID PROPANE OR NATURAL GAS	G	G	G
OVERHEAD POWER	OHP	OHP	OHP
UNDERGROUND POWER	UP	UP	UP
OVERHEAD TELEPHONE	OHT	OHT	OHT
UNDERGROUND TELEPHONE	UT	UT	UT
OVERHEAD POWER & TELEPHONE	OHP&T	OHP&T	OHP&T
UNDERGROUND POWER & TELEPHONE	UP&T	UP&T	UP&T
OVERHEAD POWER, TELEPHONE & CABLE	OHP&T&C	OHP&T&C	OHP&T&C
UNDERGROUND POWER, TELEPHONE & CABLE	UP&T&C	UP&T&C	UP&T&C
CABLE TELEVISION	CTV	CTV	CTV
FIBER OPTIC	FO	FO	FO
SURVEY			
PROPERTY LINE			
RIGHT-OF-WAY LINE			
EASEMENTS			
FENCE	X	X	X
STONEWALL			
BUILDING SETBACKS			
DEER WINTERING AREA			
SPECIAL FLOOD HAZARD AREA			

OPEN SPACE AREA TO REMAIN UNDEVELOPED

SLOPES 25% AND GREATER

	SYMBOL: EXISTING	SYMBOL: PROPOSED	SYMBOL: REMOVED/ABANDONED
SITE			
SIGN			
UTILITIES			
SEWER MANHOLE (SMH)			
SEWER CLEANOUT (CO)			
PUMP STATION (PS)			
STORM DRAINAGE MANHOLE (DMH)			
CATCH BASIN (CB)			
STORM DRAINAGE CLEANOUT			
OUTLET OR END SECTION			
VALVE			
CURB STOP (CS)			
FIRE HYDRANT (HYD)			
WATER SUPPLY WELL			
END CAP			
BLOWOFF			
UTILITY POLE			
MTC OR TRANSFORMER			
TELEPHONE MANHOLE			
TELEPHONE PEDESTAL			
LUMINAIRE			
BOLLARD LIGHT			
TELEVISION PEDESTAL			
FIELD			
CALCULATED POINT			
TCE CONTROL POINT STEEL REBAR			
TCE CONTROL POINT MAG NAIL			
OBSERVATION WELL			
PERCOLATION TEST			
SOIL TEST PIT			
SOIL BORING			
BENCHMARK			
SURVEY	FOUND	TO BE SET	SET
IRON PIPE			
STEEL REBAR		○	⌀
CONCRETE MONUMENT		□	⊠
MARBLE OR STONE MONUMENT			
IRON PIN (IP)			

LEGEND NOTE:
SOME INFORMATION MAY BE PROVIDED BY OTHERS AND COULD BE SHOWN WITH A DIFFERENT SYMBOL NOT SHOWN ON THIS LEGEND. HOWEVER, THEY ARE LABELED ON RESPECTIVE PLANS. IN SOME CASES A CHANGE IN SCALE OR PRINTER CAN ALTER INFORMATION TO NOT SHOW AN EXACT MATCH ON THIS LEGEND. IF ANY QUESTIONS EXIST CONTACT THE ENGINEER TO CLARIFY. ADDITIONAL LEGEND INFORMATION IS SUPPLIED SEPARATELY ON EROSION CONTROL PLANS AND SOME SURVEY PLATS.

EPSC LEGEND

- PROJECT AREA
- PHASE LIMIT
- BARRIER TAPE
- SILT FENCE
- TEMPORARY SOIL STOCK PILE
- STONE CHECK DAM
- INLET PROTECTION
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- SEDIMENT TRAP
- FIBER ROLL
- TEMPORARY VEGETATED DIVERSION SWALE

PROJECT INFORMATION:

1.	OWNER OF RECORD:	RICHARD & BARBARA ALBERTINI AND ALBERTINI REVOCABLE TRUST P.O. BOX 168 UNDERHILL CENTER, VERMONT 05490
2.	TAX PARCEL ID:	PV109
3.	PHYSICAL ADDRESS OF PROPERTY:	109 PLEASANT VALLEY ROAD UNDERHILL, VERMONT 05489
4.	PARCEL SIZE:	24.51 ACRES (CURRENT) 25.02 ACRES (PROPOSED)
5.	ZONING DISTRICT:	WATER CONSERVATION & RURAL RESIDENTIAL

APPLICANT:
RICHARD & BARBARA ALBERTINI
AND ALBERTINI REVOCABLE TRUST
P.O. BOX 168
UNDERHILL CENTER, VERMONT 05490
PHONE: (802) 899-4294

CIVIL ENGINEER:
TRUDELL CONSULTING ENGINEERS (TCE)
ATTN: JENNIFER DESAUTELS, PE
478 BLAIR PARK ROAD
WILLISTON, VT 05495
PHONE: (802)879-6331

CONSTRUCTION NOTES FOR CONTRACTOR & CLIENT/OWNER:

1. CONTRACT DOCUMENTS:THESE PLANS WERE PREPARED BY TRUDELL CONSULTING ENGINEERS (TCE) AND ARE INTENDED TO BE USED IN CONJUNCTION WITH THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT, #C-700 PREPARED BY THE ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE (EJCDC), LATEST EDITION. COPIES ARE AVAILABLE AT WWW.NSPE.ORG/E/CDC
2. UNDERGROUND IMPROVEMENTS: THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS SHOWN ARE ASSUMED BASED ON RESEARCH, UTILITY PLANS PROVIDED BY OTHERS, AND/OR SURFACE EVIDENCE AVAILABLE AND WERE OBTAINED IN A MANNER CONSISTENT WITH THE ORDINARY STANDARD OF PROFESSIONAL CARE AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THE DESIGN ENGINEER.
3. DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS: IF CONTRACTOR BELIEVES THAT ANY SUBSURFACE OR PHYSICAL CONDITION AT OR CONTIGUOUS TO THE SITE THAT IS UNCOVERED OR REVEALED EITHER: (1) IS OF SUCH A NATURE AS TO ESTABLISH THAT ANY "TECHNICAL DATA" ON WHICH CONTRACTOR RELIED IS MATERIALLY INACCURATE; OR (2) IS OF SUCH A NATURE AS TO REQUIRE A CHANGE IN THE PLANS/ CONTRACT DOCUMENTS; OR (3) DIFFERS MATERIALLY FROM THAT SHOWN OR INDICATED IN THE PLANS/CONTRACT DOCUMENTS; OR NATURE AS TO REQUIRE A CHANGE IN THE PLANS/ CONTRACT DOCUMENTS; OR (3) DIFFERS MATERIALLY FROM THAT SHOWN OR INDICATED IN THE PLANS/CONTRACT DOCUMENTS; OR (4) IS OF AN UNUSUAL NATURE, AND DIFFERS MATERIALLY FROM CONDITIONS ORDINARILY ENCOUNTERED AND GENERALLY RECOGNIZED AS INHERENT IN WORK OF THE CHARACTER PROVIDED FOR IN THE PLANS/CONTRACT DOCUMENTS THEN CONTRACTOR SHALL PROMPTLY AFTER BECOMING AWARE THEREOF AND BEFORE FURTHER DISTURBING THE SUBSURFACE OR PHYSICAL CONDITIONS OR PERFORMING ANY WORK IN CONNECTION THEREWITH (EXCEPT IN AN EMERGENCY), NOTIFY OWNER AND ENGINEER ABOUT SUCH CONDITION. CONTRACTOR SHALL NOT FURTHER DISTURB SUCH CONDITION OR PERFORM ANY WORK IN CONNECTION THEREWITH (EXCEPT AS PREVIOUSLY UNTIL RECEIPT OF WRITTEN ORDER TO DO SO. ALL PARTIES INVOLVED (OWNER, ENGINEER, ARCHITECT, AND MUNICIPALITY IF APPLICABLE) SHALL AGREE UPON HOW TO PROCEED AND ANY RELATED COST IMPLICATIONS.
4. UTILITIES: PRIVATE AND PUBLIC UTILITIES SUCH AS ELECTRIC, TELEPHONE, GAS, CABLE, FIBER OPTIC ETC. ARE THE RESPONSIBILITY OF THE RESPECTIVE UTILITY COMPANY. ANY INFORMATION SHOWN BY TCE SHOULD BE CONSIDERED PRELIMINARY (USUALLY TO ASSIST WITH PERMITTING), FINAL DESIGN, CONSTRUCTION AND MAINTENANCE ARE THE RESPONSIBILITY OF RESPECTIVE UTILITY COMPANIES. COMPLIANCE WITH EASEMENTS AND REGULATIONS (STATE AND LOCAL) ARE THE RESPONSIBILITY OF RESPECTIVE UTILITY COMPANY.
5. DIGSAFE: IN ACCORDANCE WITH VERMONT STATE LAW (VSA TITLE 30 CHAPTER 86 AND PSB RULE 3.800) THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT DIGSAFE SYSTEMS, INC., "DIGSAFE", AT LEAST 48 HOURS , EXCLUDING SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS, BUT NOT MORE THAN 30 DAYS BEFORE COMMENCING EXCAVATION ACTIVITIES, EXCEPT IN AN EMERGENCY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRE-MARKING THE SITE AND MAINTAINING DESIGNATED MARKINGS. FOR MORE INFORMATION ON DIGSAFE REQUIREMENTS SEE WWW.DIGSAFE.COM .
6. JOBSITE SAFETY: NEITHER THE PROFESSIONAL ACTIVITIES OF TRUDELL CONSULTING ENGINEERS (TCE), NOR THE PRESENCE OF TCE OR ITS EMPLOYEES AND SUB CONSULTANTS AT A CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. TCE AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR OTHER ENTITY OR THEIR EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PRECAUTIONS. THE CLIENT AGREES THAT THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR JOBSITE SAFETY, AND WARRANTS THAT THIS INTENT SHALL BE MADE EVIDENT IN THE CLIENT'S AGREEMENT WITH THE GENERAL CONTRACTOR. THE CLIENT ALSO AGREES THAT THE CLIENT, TCE AND TCE'S CONSULTANTS SHALL BE INDEMNIFIED AND SHALL BE MADE ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S GENERAL LIABILITY INSURANCE POLICY .
7. CODES AND STANDARDS COMPLIANCE:TCE SHALL EXERCISE USUAL AND CUSTOMARY PROFESSIONAL CARE IN ITS EFFORTS TO COMPLY WITH CODES, STANDARDS, REGULATIONS, AND ORDINANCES IN EFFECT. THE OWNER ACKNOWLEDGES THAT SUCH REQUIREMENTS MAY BE SUBJECT TO VARIOUS AND CONTRADICTORY INTERPRETATIONS. TCE, THEREFORE, WILL USE ITS REASONABLE PROFESSIONAL EFFORTS AND JUDGMENT TO INTERPRET APPLICABLE REQUIREMENTS AS THEY APPLY TO THE PROJECT. TCE, HOWEVER, CANNOT AND DOES NOT WARRANT OR GUARANTEE THAT THE PROJECT WILL COMPLY WITH ALL INTERPRETATIONS OF SUCH REQUIREMENTS.
8. CONSTRUCTION OBSERVATION: TCE MAY VISIT THE PROJECT AT APPROPRIATE INTERVALS DURING CONSTRUCTION TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF THE CONTRACTOR'S WORK AND TO DETERMINE IF THE WORK IS PROCEEDING IN GENERAL ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE OWNER HAS NOT RETAINED TCE TO MAKE DETAILED INSPECTIONS OR TO PROVIDE EXHAUSTIVE OR CONTINUOUS PROJECT REVIEW AND OBSERVATION SERVICES. TCE DOES NOT GUARANTEE THE PERFORMANCE OF, AND SHALL NOT HAVE RESPONSIBILITY FOR, THE ACTS OR OMISSIONS OF ANY CONTRACTOR, SUB-CONTRACTOR, SUPPLIER OR ANY OTHER ENTITY FURNISHING MATERIALS OR PERFORMING ANY WORK ON THE PROJECT. TCE SHALL NOT SUPERVISE, DIRECT OR HAVE CONTROL OVER THE CONTRACTOR'S WORK NOR HAVE ANY RESPONSIBILITY FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF THE CONTRACTOR. IF THE OWNER DESIRES MORE EXTENSIVE PROJECT OBSERVATION OR FULL-TIME PROJECT REPRESENTATION, THE OWNER SHALL REQUEST SUCH SERVICES BE PROVIDED BY TCE AS ADDITIONAL SERVICES.
9. UTILITIES SHOWN ARE APPROXIMATE AND DO NOT NECESSARILY REPRESENT ALL UTILITIES LOCATED ON OR ADJACENT TO THE AREA SURVEYED. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY CONFLICTS. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.
10. ALL EXISTING UTILITIES NOT INCORPORATED INTO THE FINAL DESIGN ARE TO BE REMOVED OR ABANDONED AS INDICATED ON THE PLANS.
11. THE CONTRACTOR SHALL MAINTAIN AS-BUILT PLANS (WITH TIES) FOR ALL UNDERGROUND UTILITIES. THOSE PLANS SHALL BE SUBMITTED TO THE OWNER AT THE COMPLETION OF THE PROJECT.
12. THE CONTRACTOR SHALL REPAIR/RESTORE ALL DISTURBED AREAS (ON OR OFF THE SITE) AS A DIRECT OR INDIRECT RESULT OF THE CONSTRUCTION.
13. ALL GRASSED AREAS SHALL BE MAINTAINED UNTIL FULL VEGETATION IS ESTABLISHED.
14. MAINTAIN ALL TREES OUTSIDE OF CONSTRUCTION LIMITS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK NECESSARY FOR COMPLETE AND OPERABLE FACILITIES AND UTILITIES.
16. IN ADDITION TO THE REQUIREMENTS SET IN THESE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL COMPLETE THE WORK IN ACCORDANCE WITH ALL PERMIT CONDITIONS, LOCAL PUBLIC WORKS STANDARDS AND ALL CONSTRUCTION SAFETY REGULATIONS.
17. ANY DEWATERING NECESSARY FOR THE COMPLETION OF THE SITEWORK SHALL BE CONSIDERED AS PART OF THE CONTRACT , AND SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
18. IF THERE ARE ANY CONFLICTS OR INCONSISTENCIES WITH THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR VERIFICATION BEFORE WORK CONTINUES ON THE ITEM(S) IN QUESTION.
19. ALL SYSTEM COMPONENTS (TANKS, PIPES, JOINTS) SHALL BE WATERTIGHT.
20. CONTRACTOR TO ADJUST ANY POTABLE WATER LINE CROSSINGS AND CONSULT WITH ENGINEER TO MEET REQUIREMENTS SHOWN ON THE DETAIL SHEET "WATER/SEWER CROSSING" DETAIL.
21. SEWER LATERAL CONNECTIONS ARE SHOWN FOR CLARITY. CONTRACTOR TO CONSULT WITH ENGINEER AND SUPPLY BENDS, CLEANOUTS, ETC. AS NECESSARY TO FACILITATE PROPER CONNECTION BETWEEN FOUNDATION WALL AND SEWER MAIN LINE.
22. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ALL RELEVANT PARTIES (INCLUDING, BUT NOT LIMITED TO OWNER, ARCHITECT AND UTILITY COMPANIES) TO DETERMINE FINAL LAYOUT AND DESIGN.
23. CONTRACTOR TO SUPPLY DAYLIGHT PIPING FOR FOOTING DRAINS WITHIN CONSTRUCTION LIMITS. THE EXACT LOCATION IS NOT CRITICAL.
24. FOOTING DRAINS AROUND BUILDING MAY BE SHOWN BY OTHERS (BECAUSE IT IS WITHIN THE 5' ZONE AROUND BUILDING.) FOOTING DRAINS AND PIPE TO DAYLIGHT SHALL BE INCLUDED EVEN IF NOT SHOWN. DAYLIGHT PIPE LOCATION TO SWALE IS NOT CRITICAL SO LONG AS IT DOES NOT CREATE ANY CONFLICT WITH OTHER UTILITIES, OR IMPACT ENVIRONMENTALLY SENSITIVE AREAS SUCH AS WETLANDS.
25. ROCK REMOVAL WORK FOR BOULDERS UNDER 2.5 CUBIC YARDS IS INCLUDED AS PART OF EXCAVATION. ANY ROCK REMOVAL FOR 2.5 CUBIC YARDS OR GREATER SHALL BE TREATED AS LEDGE REMOVAL.
26. THE GENERAL CONTRACTOR IS REQUIRED TO CONFORM TO THE STRICTEST INTERPRETATION OF THE CONTRACT DRAWING, SPECIFICATION, PERMITS AND CONSTRUCTION CONTRACT . ALL EARTH MATERIAL RECEIVED OR DISPOSED FROM OUTSIDE SOURCES SHALL COMPLY WITH APPLICABLE PERMITS AND REGULATIONS. SHOP DRAWING SUBMITTALS SHALL INCLUDE CONTRACTOR'S CERTIFICATION STATEMENT OF COMPLIANCE AND COPIES OF RELEVANT PERMITS FOR OUTSIDE SOURCES.
27. CONTRACTOR SHALL PAY FOR ALL REQUIRED TESTING. THIS SHALL INCLUDE BUT IS NOT LIMITED TO: SOIL TESTING, COMPACTION TESTING, SIEVE ANALYSIS, CONCRETE TESTING, ASPHALT PENETRATION TESTING, BACTERIOLOGICAL TESTING FOR WATER AND OTHER TESTING AS PART OF STANDARD PRACTICE FOR A CONSTRUCTION PROJECT OF THIS NATURE, UNLESS INDICATED OTHERWISE AND APPROVED BY THE OWNER.

CONSTRUCTION PHASE:
LISTED BELOW IS A BRIEF SUMMARY OF CONSTRUCTION PHASE REQUIREMENTS. THIS LIST IS NOT INTENDED TO BE ALL-INCLUSIVE. CONSTRUCTION SPECIFICATIONS, PERMIT REQUIREMENTS AND SUBSEQUENT CONTRACTUAL AGREEMENTS FROM PARTIES INVOLVED SHALL PREVAIL

PRE-CONSTRUCTION
- OWNER TO ESTABLISH SCOPE OF SERVICES WITH PROJECT ENGINEER(S)
- OWNER TO IDENTIFY WORK SCOPE AND SCHEDULE
- UPON OWNER REQUEST, ASSIST WITH CONTRACTOR BID AND SELECTION PROCESS
- FINALIZE PLANS FOR CONSTRUCTION READINESS INCLUDING SPECIFICATIONS
- MEETING BETWEEN OWNER, ENGINEER(S), CONTRACTOR(S), ARCHITECT(S), REGULATORY AUTHORITIES AND OTHER PERTINENT PARTIES TO REVIEW AND DISCUSS THE WORK

PRE-CONSTRUCTION MEETING
- CONTRACTOR TO IDENTIFY SUBCONTRACTORS
- CONTRACTOR TO ESTABLISH SCHEDULE
- CONTRACTOR TO DESIGNATE RESPONSIBLE PERSONNEL
- CONFIRM PROCEDURE FOR RFI'S, CHANGE ORDERS, EXTRAS AND PAY REQUESTS
- CONTRACTOR TO SUBMIT SHOP DRAWINGS
- CONTRACTOR TO OUTLINE SAFETY, SECURITY, AND WORKING HOURS
- CONTRACTOR OR OWNER TO IDENTIFY TESTING COMPANY

CONSTRUCTION PHASE
- INITIAL CONTROL SUPPLIED BY OWNER AND CONTRACTOR RESPONSIBLE FOR LAYOUT
- OWNER TO PROVIDE PROJECT ENGINEER TO OBSERVE CONSTRUCTION PERIODICALLY, DURING CRITICAL PHASES AND TESTING.
- WEEKLY JOB MEETINGS DURING CONSTRUCTION
- OWNER TO PROVIDE PROJECT ENGINEER TO REVIEW AND DISCUSS PLANS, ANSWER QUESTIONS, RESPOND TO CHANGES AND OTHER BUSINESS COMMON TO CONSTRUCTION SERVICES.
- OBSERVE TESTING AND COLLECT RESULTS
- OWNER AND CONTRACTOR TO COMPLY WITH PERMITS

TRUDELL CONSULTING ENGINEERS
478 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
802 879 6331 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Tax ID: PV109

Use of These Drawings
1. Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such or marked approved by a regulatory authority.

2. By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings, obtained all necessary permits, and have met with all applicable parties/disciplines including but not limited to, the Engineer and the Architect, to insure these plans are properly coordinated including, but not limited to, contract documents, specifications, owner/contractor agreements, building and mechanical plans, private and public utilities, and other pertinent permits for construction.

3. Owner and Architect, are responsible for final design and location of buildings shown, including an area measured a minimum five (5) feet around any building and coordinating final utility connections shown on these plans.

4. Prior to using these plans for construction layout, the user shall contact TCE to ensure the plan contains the most current revisions.

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STATE OF VERMONT — JOHN P. PETKOWISH — No. 8104 — CIVIL — REGISTERED PROFESSIONAL ENGINEER

Project Title

Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

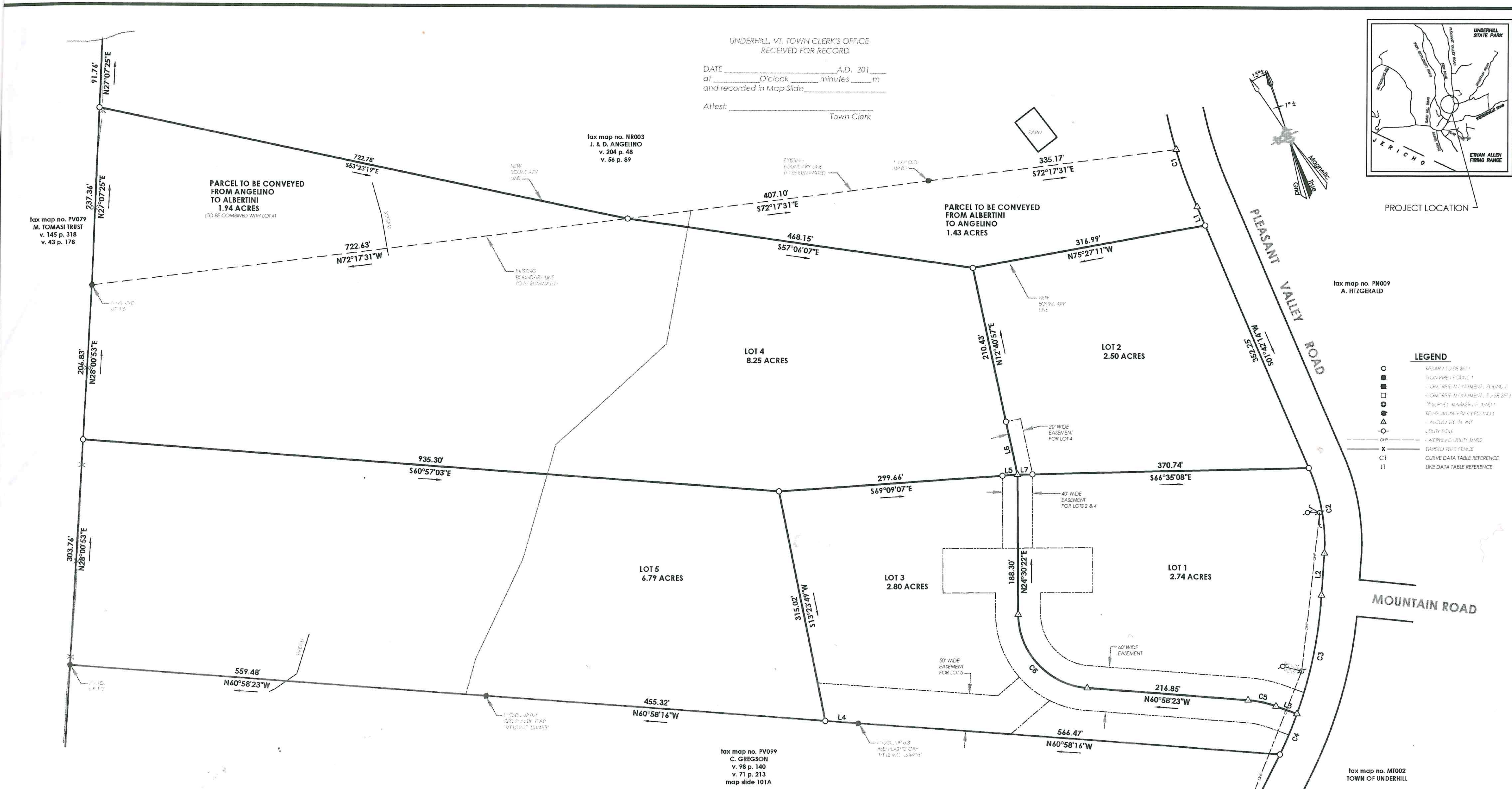
Sheet Title

Legend and Notes

Date:	08/19/15
Scale:	N/A
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C1-00

Project Reference:



LINE DATA TABLE

LINE	BEARING	DISTANCE
L1	S01°42'14"W	27.54'
L2	S28°46'35"W	56.70'
L3	N45°14'14"W	29.78'
L4	N60°58'16"W	44.19'
L5	S69°09'07"E	20.04'
L6	N12°40'57"E	72.93'
L7	S66°35'08"E	20.00'

CURVE DATA TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	597.67'	128.43'	128.18'	S06°26'11"W
C2	249.45'	117.89'	116.79'	N14°28'34"E
C3	569.08'	163.47'	162.91'	N36°20'02"E
C4	569.08'	58.81'	58.79'	N47°31'27"E
C5	139.00'	38.18'	38.06'	N53°06'18"W
C6	100.00'	149.19'	135.73'	S18°14'01"E

NOTES:

1. THIS PLAT IS BASED ON DEEDS RESEARCHED IN THE TOWN OF UNDERHILL LAND RECORDS AND A CLOSED FIELD TRAVERSE CONDUCTED WITH A TOTAL STATION ON 7/10/13. BEARINGS ARE BASED ON VERMONT STATE PLANE GRID NORTH ESTABLISHED WITH RTK OBSERVATIONS FROM VERMONT CORS STATION VTRI.
2. REBARS SET ARE NO. 5 REINFORCING BARS WITH ALUMINUM CAPS STAMPED "TRUDELL CONSULTING ENGINEERS, LS 488".
3. THIS PARCEL WAS CONVEYED TO RICHARD AND BARBARA ALBERTINI IN VOLUME 183 PAGE 309 AND VOLUME 71 PAGE 213 (1/2 INTEREST) AND THE ALBERTINI REVOCABLE DECLARATION OF TRUST IN VOLUME 211 PAGE 501 (1/2 INTEREST).
4. DISTANCES ARE SHOWN TO THE HUNDREDTH OF A FOOT AND BEARINGS ARE SHOWN TO THE SECOND FOR MATHEMATICAL CLOSURE PURPOSES ONLY.
5. AN ATTEMPT HAS BEEN MADE TO IDENTIFY OR DELINEATE EASEMENTS, RIGHTS OF WAY, LEASE LANDS, ENCROACHMENTS, ETC. OBSERVED IN THE FIELD OR READILY FOUND IN THE LAND RECORDS. ADDITIONAL ENCUMBRANCES MAY EXIST WHICH ARE NOT SHOWN ON THIS PLAT.
6. UNDERGROUND UTILITY LINES SHOWN ARE BASED ON ABOVE GROUND STRUCTURES AND PLANS OF RECORD. ACTUAL LOCATION OF UNDERGROUND LINES MAY VARY.

Graphic Scale

60 0 60 120 180 240 Feet

APPROVED BY RESOLUTION OF THE DEVELOPMENT REVIEW BOARD OF THE TOWN OF UNDERHILL, VT. ON THE _______ DAY OF _______________ 201___, SUBJECT TO ALL REQUIREMENTS AND CONDITIONS OF SAID RESOLUTION.

SIGNED THIS _______ DAY OF _______________ 201___

BY ______________________________, CHAIR

STATE OF VERMONT — SCOTT D. TAYLOR No. 488 — LICENSED LAND SURVEYOR

Revisions	#	Description	Date	By

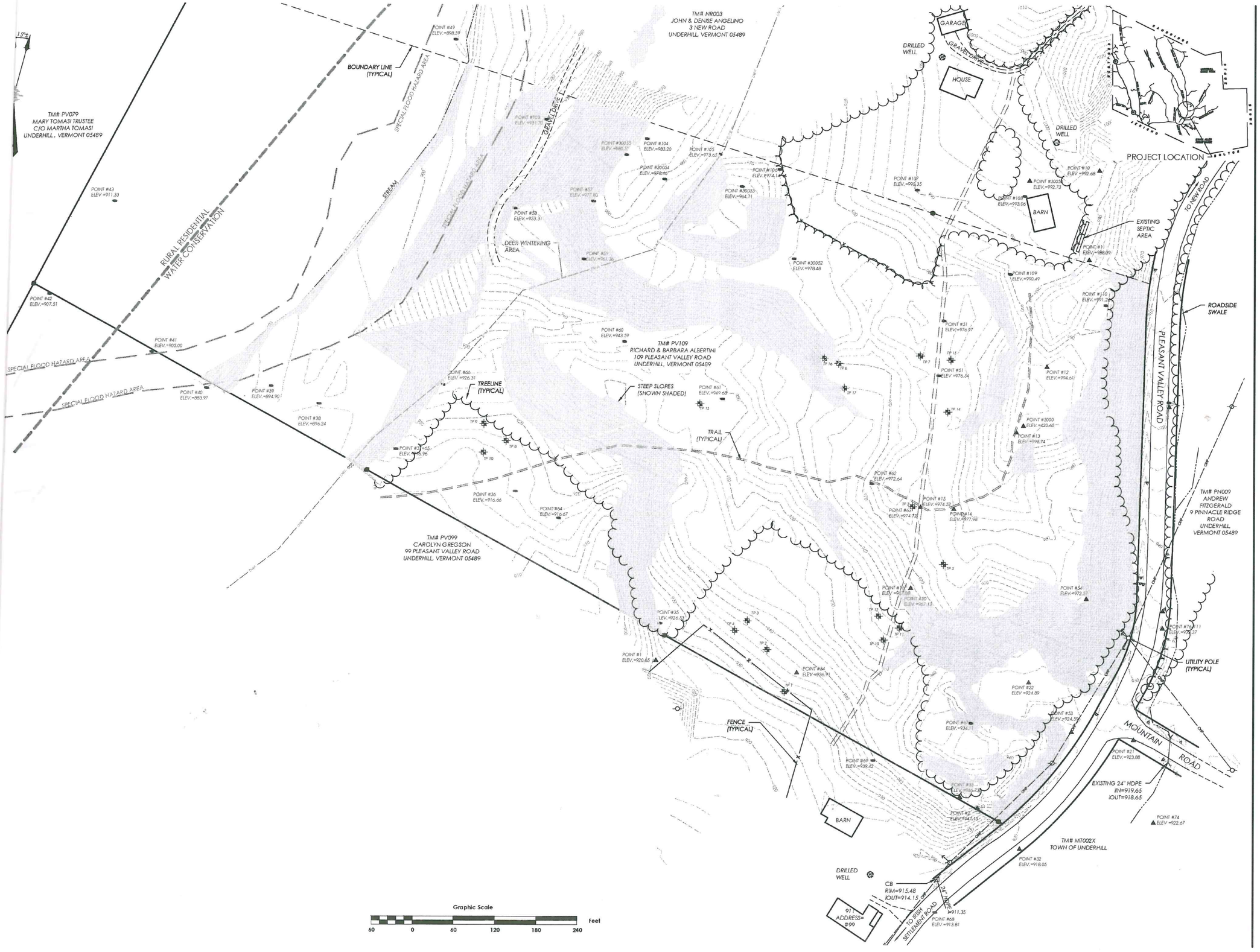
Subdivision Plat

RICHARD & BARBARA ALBERTINI

Pleasant Valley Road
Underhill, Vermont

TRUDELL CONSULTING ENGINEERS
478 BLAIR PARK ROAD | WILLISTON, VERMONT 05495 802 879 6331 | WWW.TCEVT.COM

Date:	7/13/15
Scale:	1" = 60'
Project Number:	14-136
Drawn By:	SDT
Project Manager:	JAD
Approved By:	JPP
Field Book:	236
Crd file:	2014136---
Sheet:	C1-01



TRUDELL CONSULTING ENGINEERS
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800.829.6231 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Tax ID: PV109

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STATE OF VERMONT — JOHN A. PUTNOWISH — No. 8104 — CIVIL — LICENSED PROFESSIONAL ENGINEER

Project Title

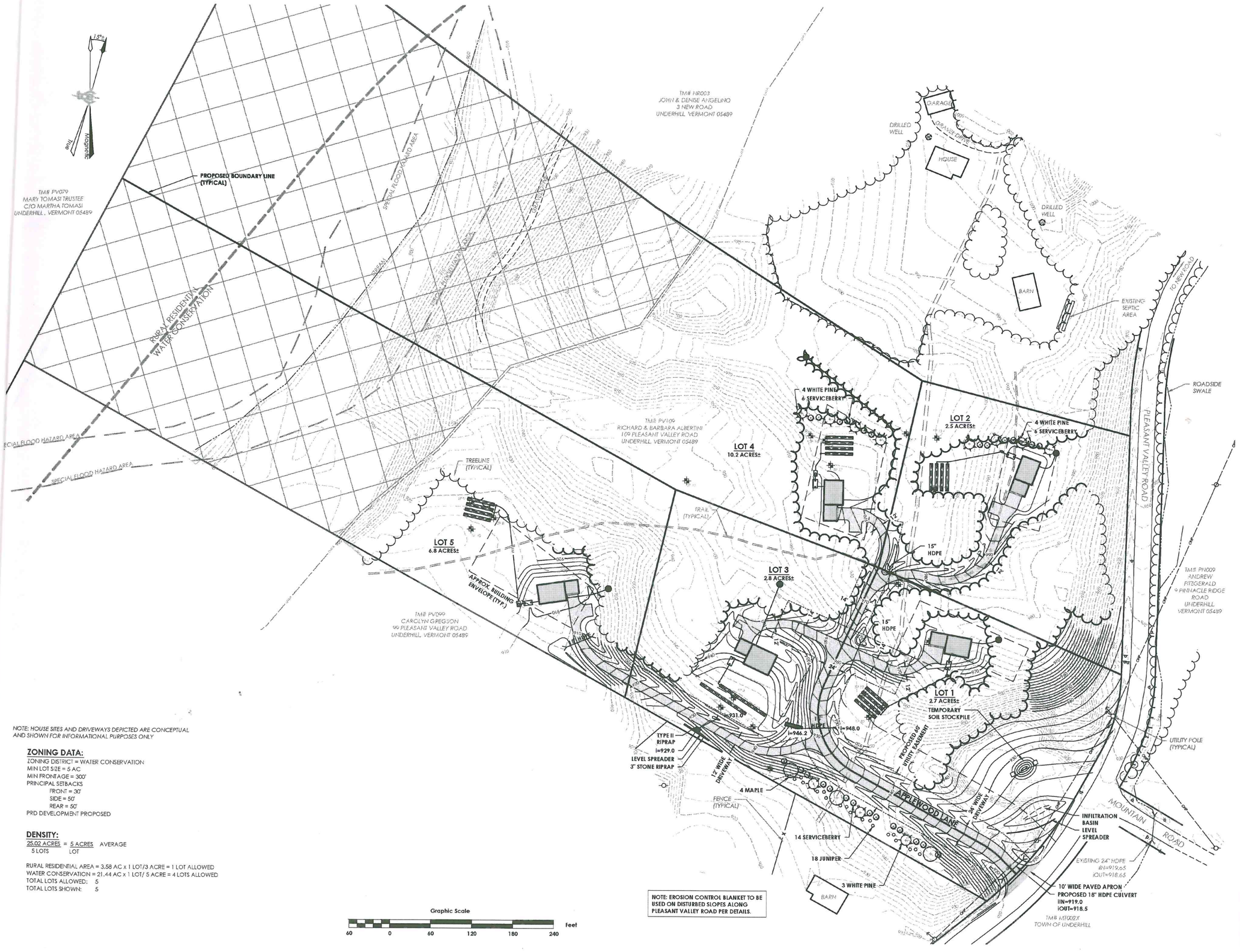
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Existing Conditions Plan

Date:	08/19/15
Scale:	1" = 60'
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C1-02



NOTE: HOUSE SITES AND DRIVEWAYS DEPICTED ARE CONCEPTUAL AND SHOWN FOR INFORMATIONAL PURPOSES ONLY

ZONING DATA:

ZONING DISTRICT = WATER CONSERVATION
MIN LOT SIZE = 5 AC
MIN FRONTAGE = 300'
PRINCIPAL SETBACKS
FRONT = 30'
SIDE = 50'
REAR = 50'
PRD DEVELOPMENT PROPOSED

DENSITY:

25.02 ACRES / 5 LOTS = 5 ACRES / LOT AVERAGE

RURAL RESIDENTIAL AREA = 3.58 AC x 1 LOT/3 ACRE = 1 LOT ALLOWED
WATER CONSERVATION = 21.44 AC x 1 LOT/ 5 ACRE = 4 LOTS ALLOWED
TOTAL LOTS ALLOWED: 5
TOTAL LOTS SHOWN: 5

TRUDELL CONSULTING ENGINEERS
478 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
802.879.4333 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

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Project Title

Albertini Subdivision

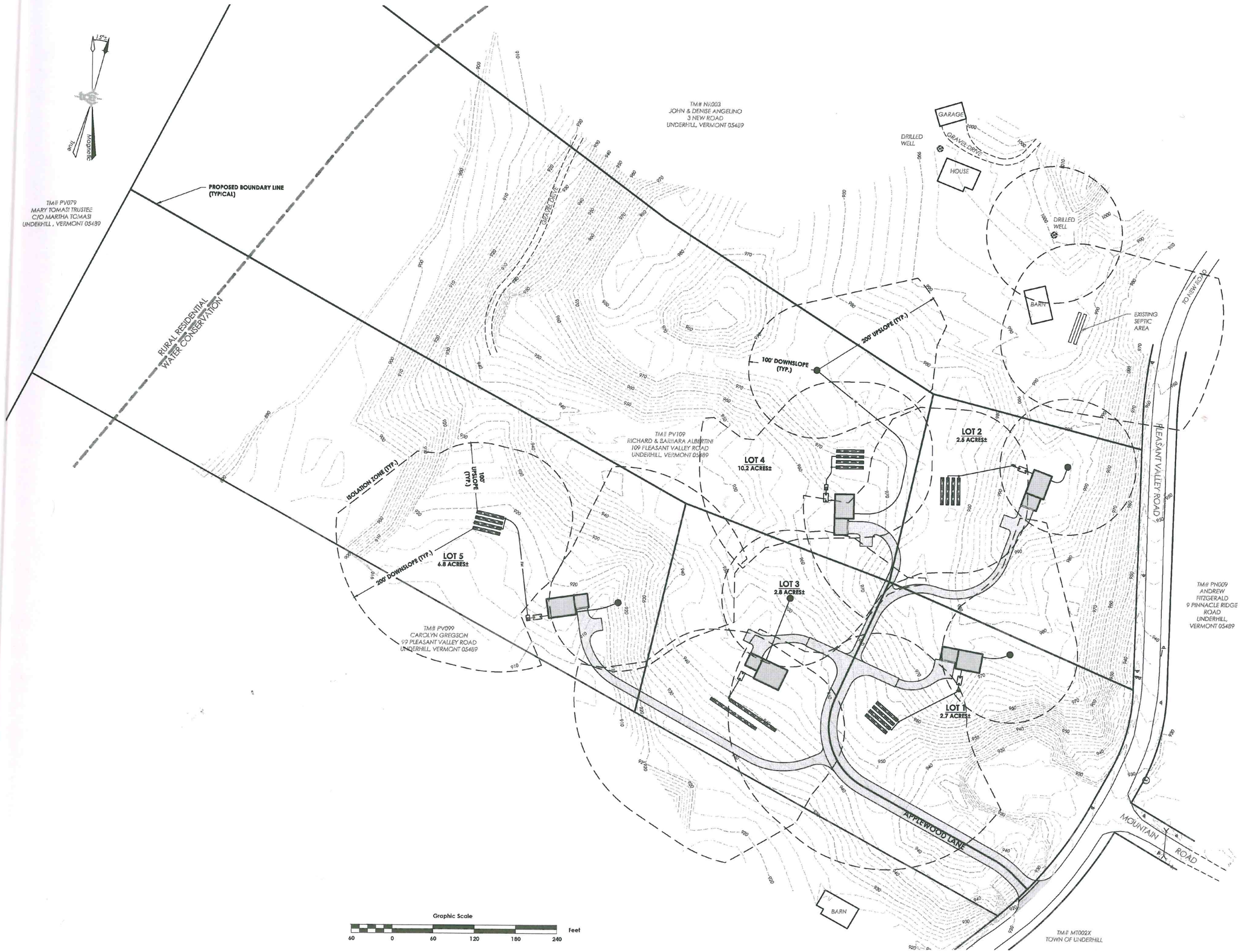
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Site Plan

Date:	08/19/15
Scale:	1" = 60'
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C2-01



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Revisions

No.	Description	Date	By

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Project Title

Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Isolation Plan

Date:	08/19/15
Scale:	1" = 60'
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C2-02

SOIL TEST PIT INFORMATION:

SOIL PROFILES WERE CONDUCTED ON 07/09/2015 BY AMANDA RAAB

TEST PIT 1
0-8" TOPSOIL SILT LOAM, MEDIUM BROWN, LOOSE DENSITY, BLOCKY SUBANGULAR
8-19" FINE SILT LOAM, BLOCKY SUBANGULAR, PEBBLES THROUGHOUT, ROOTS TO 22"
19-52" BANK RUN GRAVEL, SOME COBBLES WITH NO EVIDENCE OF WATER TABLE, DRY, LOOSE DENSITY, BLOCKY SUBANGULAR
52-67" SAME DESCRIPTION AS 19-52"
67-96" COARSE SAND
NO LEDGE TO DEPTH

TEST PIT 2
0-10" TOPSOIL, LIGHTER BROWN, COBBLES & STONES THROUGHOUT
10-30" FINE SILT LOAM WITH STONES, PEBBLES THROUGHOUT
30-55" BANK RUN GRAVEL, ROOTS TO 10", DRY TO THE TOUCH
55"-96" COARSE SAND
NO LEDGE, NO WATER TABLE

TEST PIT 3
0-10" TOPSOIL - SAME AS TEST PIT 2
10-32" SINE SILT LOAM WITH STONES AND PEBBLES THROUGHOUT
32-60" BANK RUN GRAVEL, MORE COARSE SAND THAN GRAVEL BUT SIMILAR TO OTHER PITS SO FAR
NO LEDGE, NO WATER TABLE

TEST PIT 4
0-24" FINE SILT LOAM WITH COBBLES AND STONES THROUGHOUT
24-96" BANK RUN GRAVEL WITH FINE GRAVEL MIX
DRY, NO LEDGE

TEST PIT 5
NO DATA

TEST PIT 6
0-64" ENTIRELY FINE SILT LOAM, (20%) WITH COBBLES, STONES, AND BOULDERS THROUGHOUT, BANK RUN STYLE, DRY WITH ROOTS TO 12"
NO LEDGE, NO WATER

TEST PIT 7
0-28" VERY FINE SILT LOAM, ROOTS (⅛ - ¼" DIAMETER) TO 13", REDDISH DARK BROWN ON TOP AND GREYISH BROWN ON BOTTOM, FEW STONES, (80%) STONE COBBLES
28-64" DENSE/MEDIUM BANK RUN GRAVEL WITH STONES AND PEBBLES (60%)
NO LEDGE, NO WATER

TEST PIT 8
0-10" TOPSOIL VERY FINE SILT LOAM, MEDIUM BROWN, BLOCKY SUBANGULAR, ROOTS (¼" DIAMETER) AT TOPSOIL LAYER, SOME STONE
10-24" VERY FINE SILT LOAM, STONES AND COBBLES (20%), GOOD COLOR (SEE SWAB)
24-67" COARSE GRAVEL WITH FINE GRAVEL
DRY, NO LEDGE, NO WATER TABLE

TEST PIT 9
0-9" TOPSOIL - SAME AS TEST PIT 8
9-21" BANK RUN GRAVEL, MEDIUM DENSITY
21-31" COARSE SAND/FINE GRAVEL
31-68" BANK RUN GRAVEL, STONES, COBBLES, COARSE SAND, AND FINE GRAVEL
DRY, NO LEDGE, NO WATER

TEST PIT 10
0-8" TOPSOIL
8-29" VERY FINE SILT LOAM WITH GRAVEL, STONE, AND PEBBLES THROUGHOUT
29-72" BANK RUN GRAVEL, SAME AS OTHERS
NO LEDGE, NO WATER

TEST PIT 11
0-6" TOPSOIL
6-18" FINE SILT LOAM WITH GRAVEL AND COBBLES
18-32" MEDIUM SAND WITH GRAVEL, SAND (50%)
32-44" MEDIUM SAND WITH COBBLES, THICK SAND LAYER (80%), ROOTS TO 36"
44-83" BANK RUN GRAVEL

TEST PIT 12
0-6" TOPSOIL
6-24" FINE SILT LOAM WITH GRAVEL AND COBBLES
24-72" BANK RUN GRAVEL, FINE GRAVEL WITH COBBLES AND STONES

TEST PIT 13
0-14" TOPSOIL AND FINE SILT LOAM WITH STONES AND COBBLES
14-52" BANK RUN GRAVEL
52-68" COARSE SAND WITH FINE GRAVEL, NOT MANY STONES, PEBBLES (90%)

TEST PIT 14
0-31" BANK RUN GRAVEL WITH FINE SILT LOAM, STONES AND PEBBLES, SMALL ROOTS (⅛ -¼" DIAMETER) TO 10"
31-47" MEDIUM SAND (90%), FEW STONES
47-67" FINE GRAVEL BANK RUN, FEW COBBLES, POORLY GRADED

TEST PIT 15
0-64" BANK RUN GRAVEL, COBBLES AND STONES THROUGHOUT MIXED WITH FINE SILT LOAM, ROOTS TO 6"

TEST PIT 16
0-21" VERY SANDY LOAM WITH GRAVEL THROUGHOUT (40%)
24-48" BANK RUN GRAVEL, STONES AND PEBBLES
48-65" BANK RUN GRAVEL, FINE GRAVEL (60%)

TEST PIT 17
0-64" SAME AS TEST PIT 6

BASIS OF DESIGN FOR IN-GROUND CONVENTIONAL DISPOSAL SYSTEM (LOTS 1, 2 ,4 & 5):

THE INTENT OF THIS DESIGN IS TO SHOW A STATE COMPLIANT WASTEWATER DISPOSAL SYSTEM FOR THE PROPOSED HOME(S) WITH 48 INCHES OR MORE OF NATURALLY OCCURRING SOILS BETWEEN THE GROUND SURFACE AND EVIDENCE OF THE SEASONAL HIGH GROUNDWATER TABLE AND 60 INCHES TO ANY SIGNS OF LEDGE. THE DESIGN IS BASED ON THE PRESCRIPTIVE APPROACH OF THE STATE ENVIRONMENTAL PROTECTION RULES.

1. **SEWAGE FLOWS: 3 BEDROOMS @ 140 GPD/BDR + 70 GPD/ADDITIONAL BEDROOM = 490 GPD**
2. **APPLICATION RATE: 3/√I = 3/√4.45 = 1.42 GPD/SF, WHERE I = SECOND SLOWEST PERCOLATION RATE**
3. **APPLICATION RATE = 1.42 GPD/SF (MAX. OF 1.5 GPD/SF PER SECTION 1-907(c))**
4. **REQUIRED DISPOSAL FIELD AREA: 490 GPD / 1.42 GPD / SF = 344.6 SF**
5. **INCREASE STONE BENEATH PIPE FOR 25% REDUCTION 344.6 x 0.75 = 258 SF**
6. **PRIMARY DISPOSAL AREA PROVIDED: 2 TRENCHES x 4' x 40' = 320 SF**
7. **REPLACEMENT DISPOSAL AREA PROVIDED: 2 TRENCHES x 4' x 40' = 320 SF**

BASIS OF DESIGN FOR IN-GROUND CONVENTIONAL DISPOSAL SYSTEM (LOT 3):

THE INTENT OF THIS DESIGN IS TO SHOW A STATE COMPLIANT WASTEWATER DISPOSAL SYSTEM FOR THE PROPOSED HOME(S) WITH 48 INCHES OR MORE OF NATURALLY OCCURRING SOILS BETWEEN THE GROUND SURFACE AND EVIDENCE OF THE SEASONAL HIGH GROUNDWATER TABLE AND 60 INCHES TO ANY SIGNS OF LEDGE. THE DESIGN IS BASED ON THE PRESCRIPTIVE APPROACH OF THE STATE ENVIRONMENTAL PROTECTION RULES.

1. **SEWAGE FLOWS: 3 BEDROOMS @ 140 GPD/BDR + 70 GPD/ADDITIONAL BEDROOM = 490 GPD**
2. **APPLICATION RATE: 3/√I = 3/√4.45 = 1.42 GPD/SF, WHERE I = SECOND SLOWEST PERCOLATION RATE**
3. **APPLICATION RATE = 1.42 GPD/SF (MAX. OF 1.5 GPD/SF PER SECTION 1-907(c))**
4. **REQUIRED DISPOSAL FIELD AREA: 490 GPD / 1.42 GPD / SF = 344.6 SF**
5. **INCREASE STONE BENEATH PIPE FOR 25% REDUCTION 344.6 x 0.75 = 258**
6. **PRIMARY DISPOSAL AREA PROVIDED: 1 TRENCH x 4' x 80' = 320 SF**
7. **REPLACEMENT DISPOSAL AREA PROVIDED: 1 TRENCH x 4' x 80' = 320 SF**

BASIS OF DESIGN FOR DRILLED WELL WATER SUPPLY (LOTS 1-5):

FOUR BEDROOM HOUSE = 490 GPD (140 GPD/BEDROOM x 3 AND 70 GPD FOR FOURTH BEDROOM)

MAX. DAY DEMAND IS CALCULATED BY DIVIDING THE AVERAGE DAY DEMAND BY NOT MORE THAN 720 (12 HR. DELIVERY) MINUTES. 490 GPD / 720 = .68 GPM

THE INSTANTANEOUS PEAK DEMAND IS 5 GPM MULTIPLIED BY THE NUMBER OF UNITS = 5 GPM

PERCOLATION TEST RESULTS:

P1 (@TP-12)	2.24 MIN./IN.
P2 (@TP-6)	4.25 MIN./IN.
P3 (@TP-7)	1.14 MIN./IN.
P4 (@TP-3)	4.74 MIN./IN.
P5 (@TP-8)	4.45 MIN./IN.

INVERT KEY

	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5
HOUSE FFE	974.0	976.0	948.0	967.0	911.0
HOUSE BFE	964.0	984.0	339.0	957.0	901.0
HOUSE SEWER OUT (A)	961.0	981.0	334.0	962.0	906.0
SEPTIC TANK IN (B)	960.8	980.8	933.8	961.8	905.8
SEPTIC TANK OUT (C)	960.55	980.55	933.55	961.55	905.55
PUMP STATION IN (E)	N/A	N/A	N/A	961.34	905.34
PUMP STATION OUT (F)	N/A	N/A	N/A	958.51	902.51
INVERT AT DISPOSAL FIELD (D)	956.50	976.5	932.75	969.0	917.5

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Revisions
No. Description Date By

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STATE OF VERMONT — JOHN A. PUTNAWISH — No. 8154 — CIVIL — REGISTERED PROFESSIONAL ENGINEER

Project Title

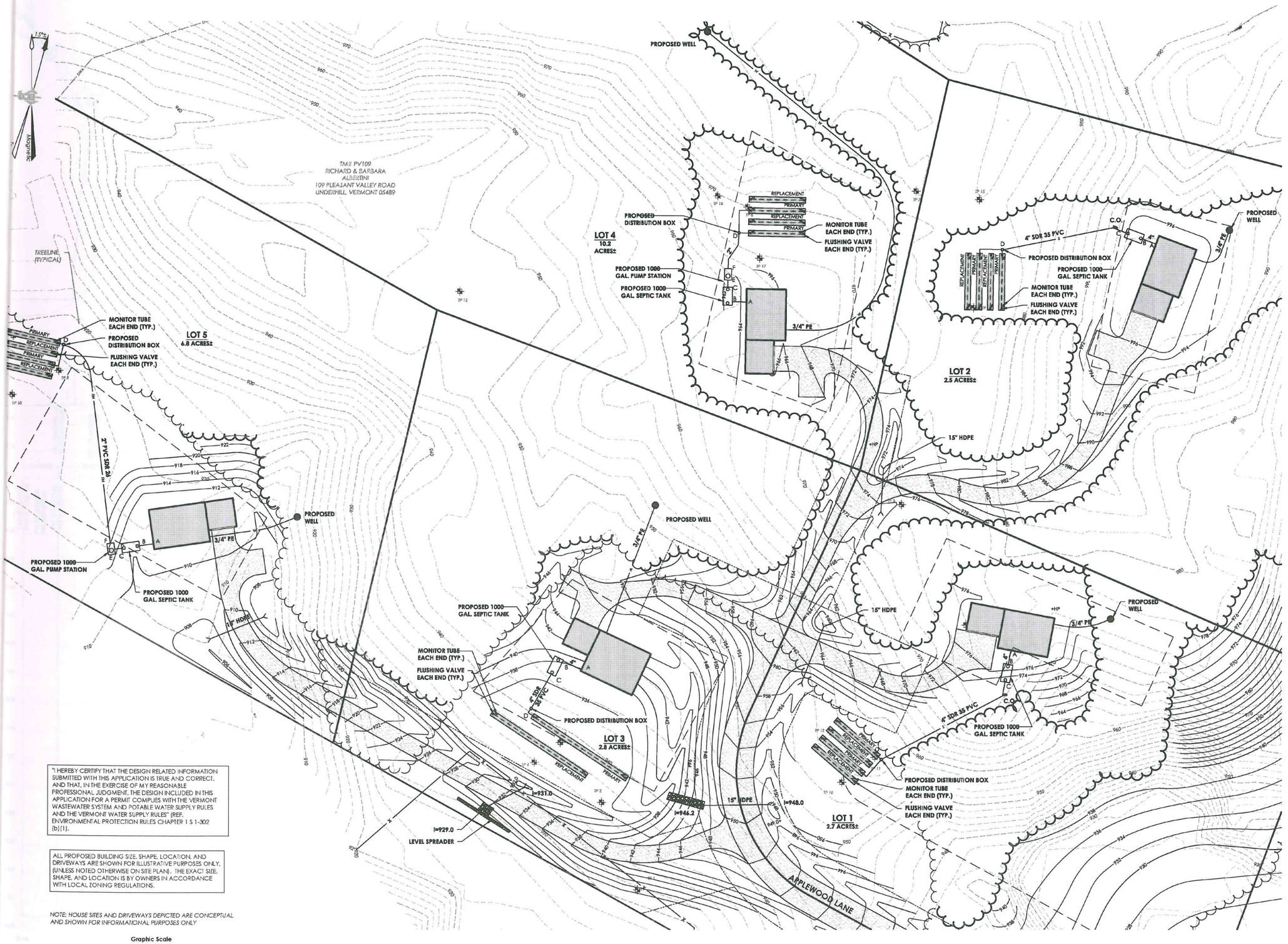
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Sanitary Notes

Date:	08/19/15
Scale:	N/A
Project Number:	14-136
Drawn By:	NPC
Project Engineer:	JAP
Approved By:	
Field Book:	236

C3-01



"I HEREBY CERTIFY THAT THE DESIGN RELATED INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT, AND THAT, IN THE EXERCISE OF MY REASONABLE PROFESSIONAL JUDGMENT, THE DESIGN INCLUDED IN THIS APPLICATION FOR A PERMIT COMPLIES WITH THE VERMONT WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES AND THE VERMONT WATER SUPPLY RULES" (REF. ENVIRONMENTAL PROTECTION RULES CHAPTER 1 S 1-302 (b)(1).

ALL PROPOSED BUILDING SIZE, SHAPE, LOCATION, AND DRIVEWAYS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. (UNLESS NOTED OTHERWISE ON SITE PLAN). THE EXACT SIZE, SHAPE, AND LOCATION IS BY OWNERS IN ACCORDANCE WITH LOCAL ZONING REGULATIONS.

NOTE: HOUSE SITES AND DRIVEWAYS DEPICTED ARE CONCEPTUAL AND SHOWN FOR INFORMATIONAL PURPOSES ONLY

Graphic Scale

30 0 30 60 90 120 Feet

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STATE OF VERMONT — JOHN A. DRUKOWICH — No. 8104 — CIVIL — REGISTERED PROFESSIONAL ENGINEER

Project Title

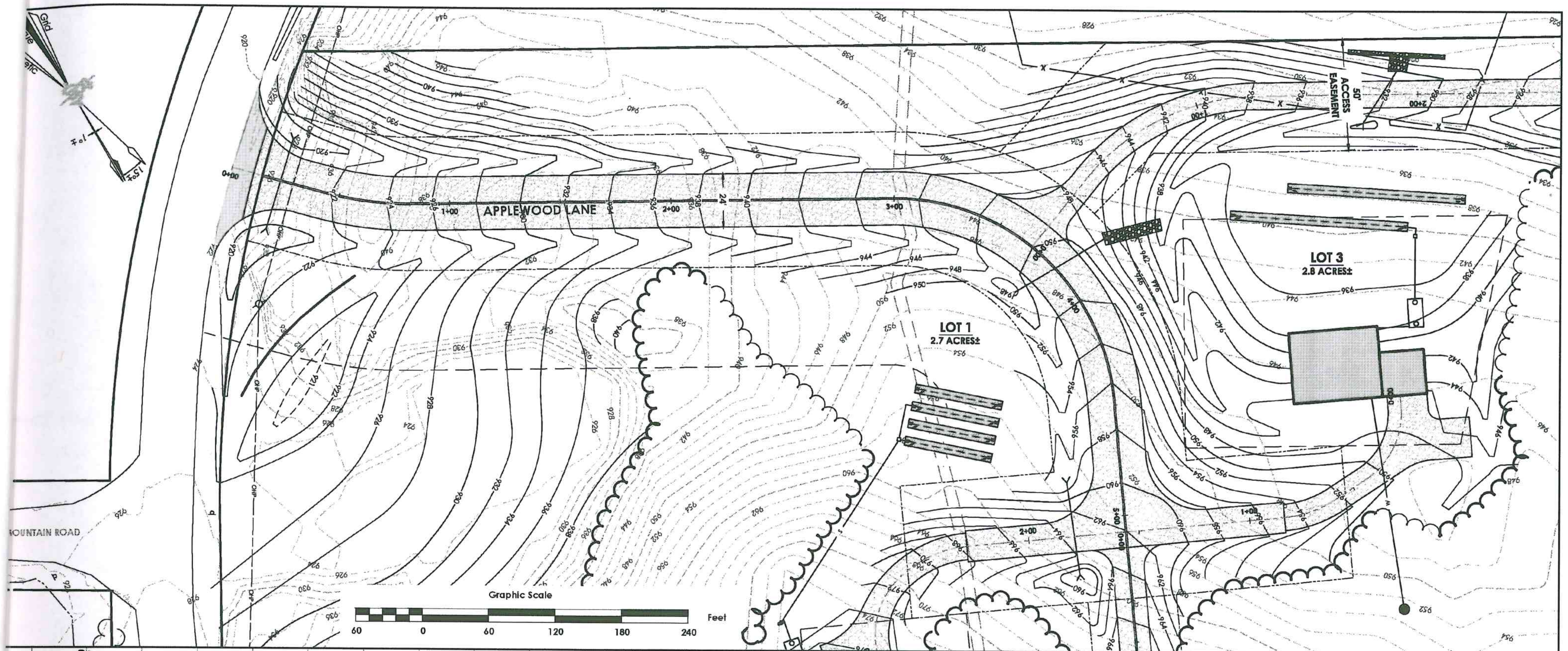
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

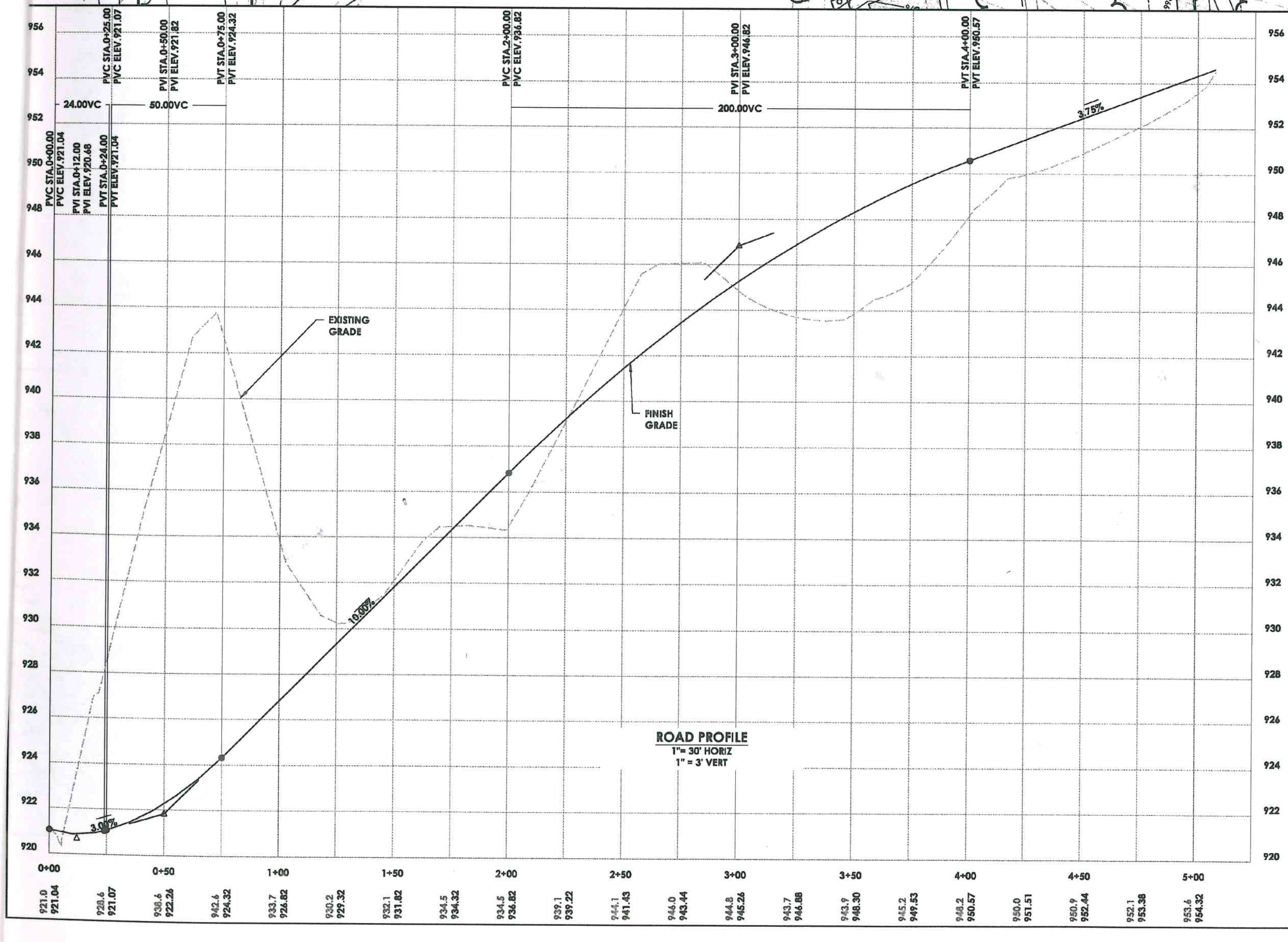
Sheet Title

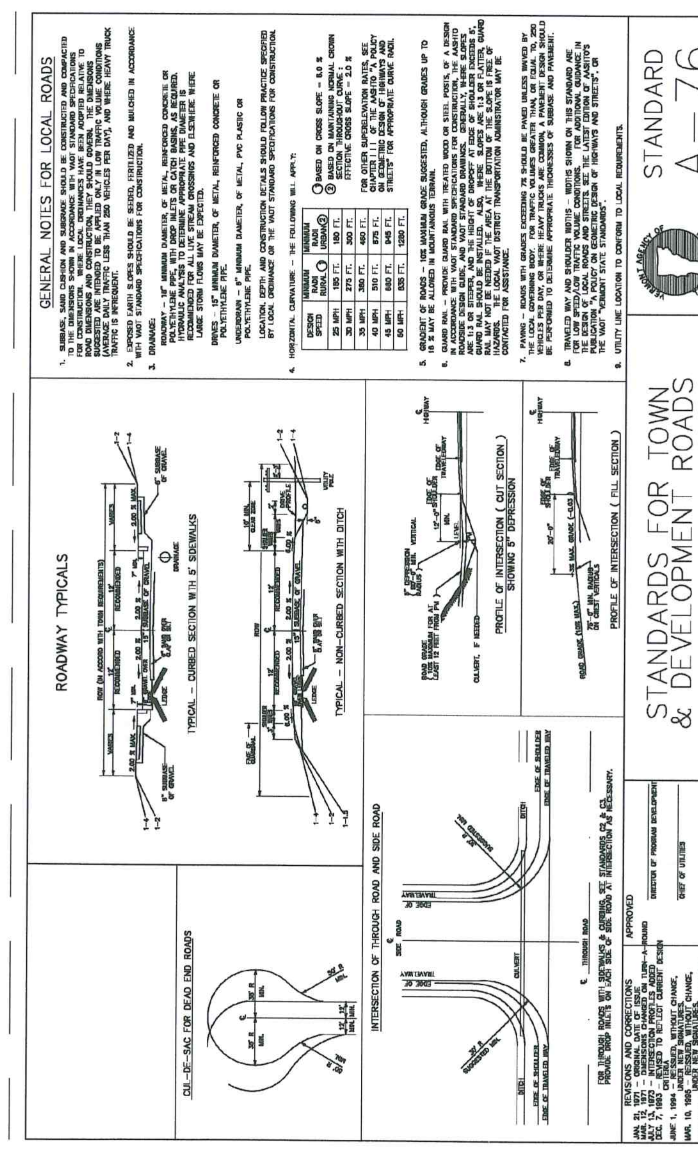
Sanitary Plan

Date:	08/19/15
Scale:	1" = 30'
Project Number:	14-136
Drawn By:	NPC
Project Engineer:	JAD
Approved By:	
Field Book:	236

C3-02







TCE

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Revisions

No.	Description	Date	By

STATE OF VERMONT
JOHN P. PITROWISKI
No. 8104
CIVIL
LICENSED
PROFESSIONAL ENGINEER

Project Title

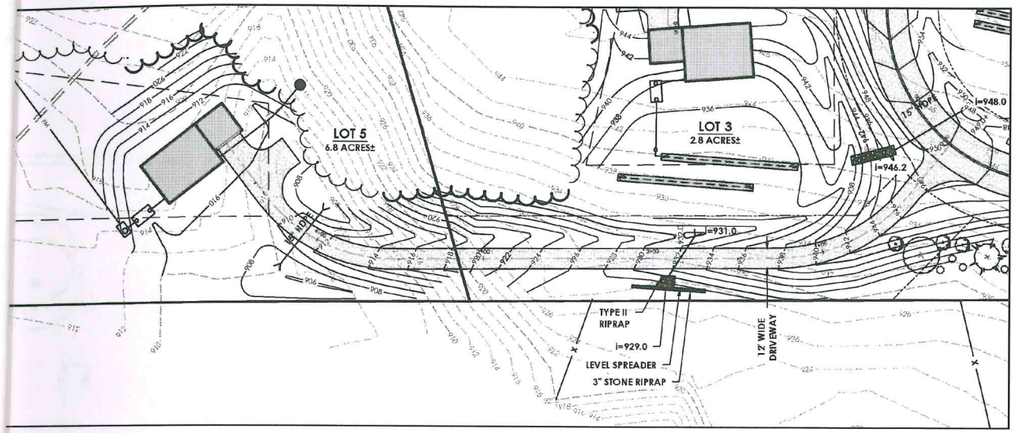
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

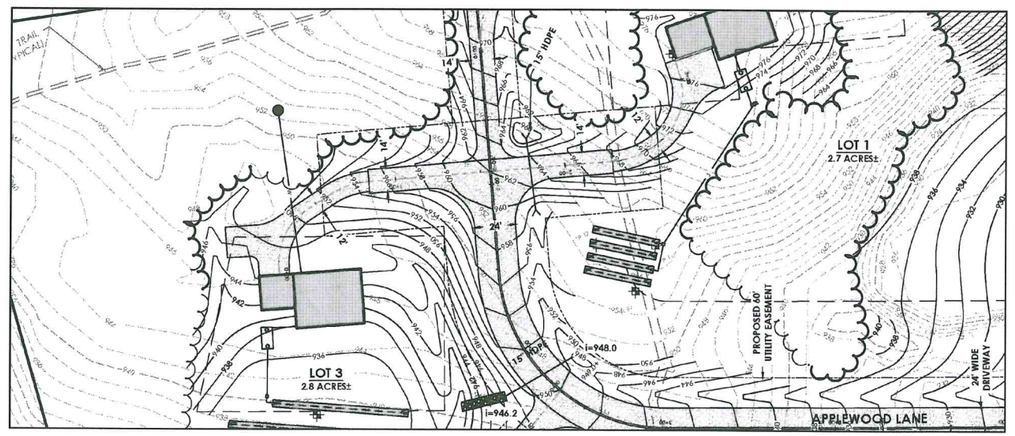
Sheet Title

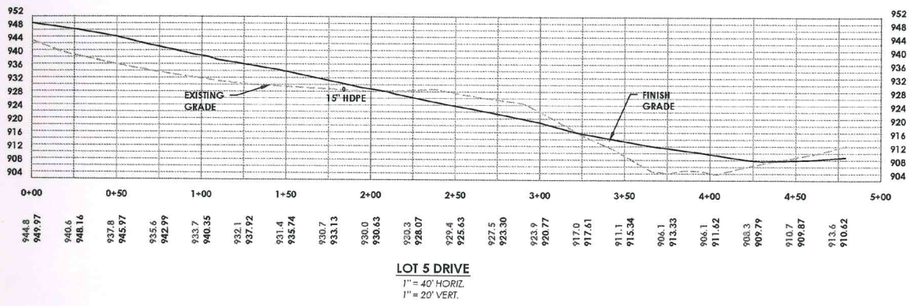
Plan & Profile
Albertini Drive

Date:	08/19/15
Scale:	Shown
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

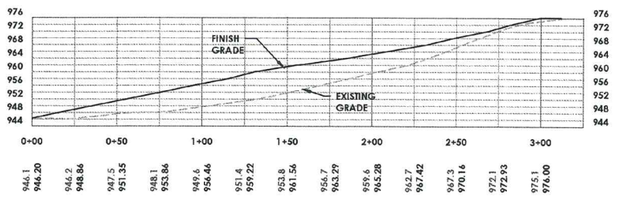
C6-01



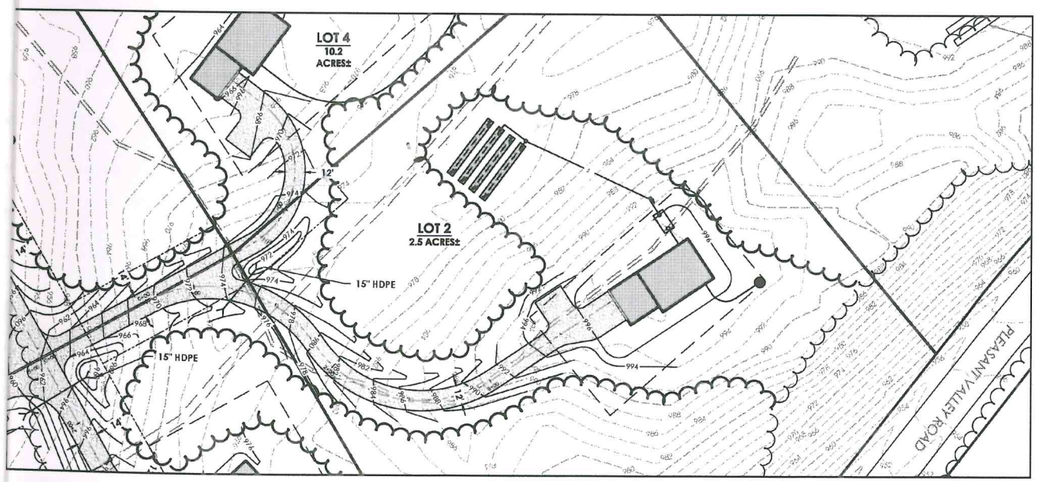


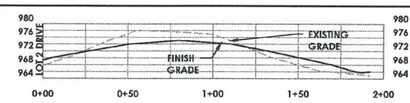


LOT 5 DRIVE
1" = 40' HORIZ.
1" = 20' VERT.

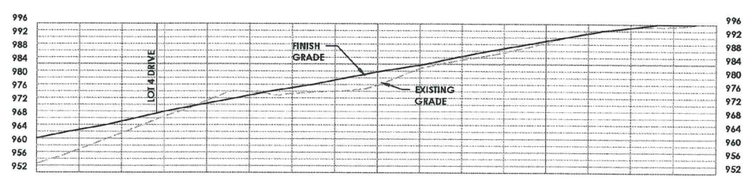


LOTS 1 & 3 DRIVE
1" = 40' HORIZ.
1" = 20' VERT.





LOT 4 DRIVE
1" = 40' HORIZ.
1" = 20' VERT.



LOT 2 DRIVE
1" = 40' HORIZ.
1" = 20' VERT.

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Revisions

No.	Description	Date	By

Tax ID: PV109

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Project Title

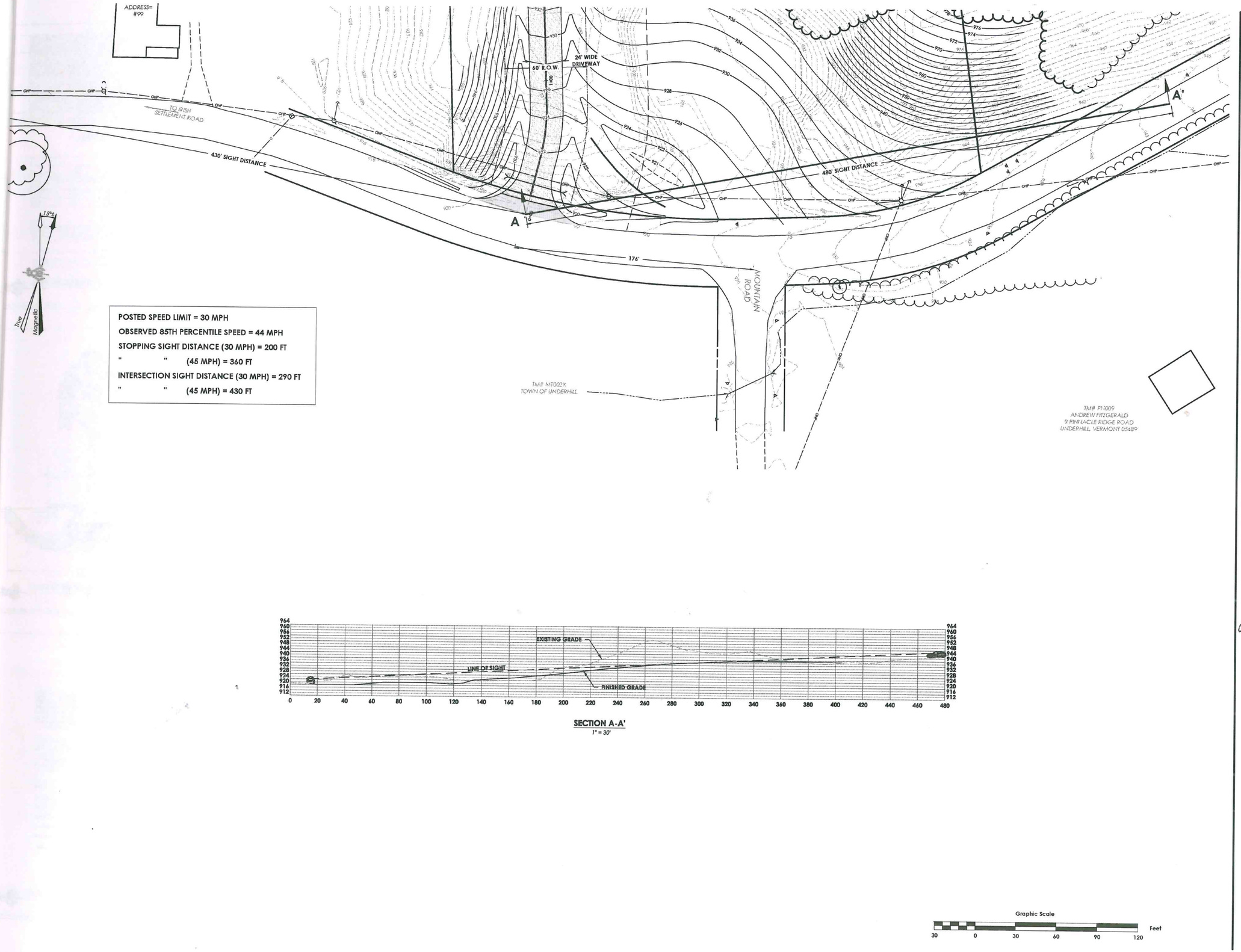
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Driveway Profiles

Date:	08/19/15
Scale:	---
Project Number:	14-136
Drawn By:	NPC
Project Engineer:	JAD
Approved By:	
Field Book:	236

C6-02



SECTION A-A'
1" = 30'

Graphic Scale
30 0 30 60 90 120 Feet

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428 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
802 879 6521 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Tax ID: FV109

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STATE OF VERMONT — JOHN A. DUDLEY — No. 8104 — CIVIL — REGISTERED PROFESSIONAL ENGINEER

Project Title

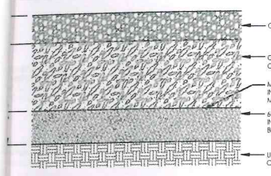
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Sight Distance Plan

Date:	08/19/15
Scale:	1" = 30'
Project Number:	14-136
Drawn By:	NPC
Project Engineer:	JAD
Approved By:	
Field Book:	236

C6-03



SECTION

	THICKNESS (INCHES)				
	ROADS		PARKING LOTS		PRIVATE
	RESIDENTIAL	COMMERCIAL	RESIDENTIAL	COMMERCIAL	DRIVEWAYS
A	8	6	6	6	4
B	12	18	12	18	12
C	6	6	6	6	6

NOTES:
1. SUBBASE, SAND CUSHION AND SUBGRADE SHOULD BE CONSTRUCTED AND COMPACTED TO THE DIMENSIONS SHOWN IN ACCORDANCE WITH VERMONT AGENCY OF TRANSPORTATION SPECIFICATIONS, STANDARD A-76. WHERE MORE STRINGENT LOCAL ORDINANCES HAVE BEEN ADOPTED RELATIVE TO ROAD DIMENSIONS AND CONSTRUCTION, THEY SHOULD GOVERN.

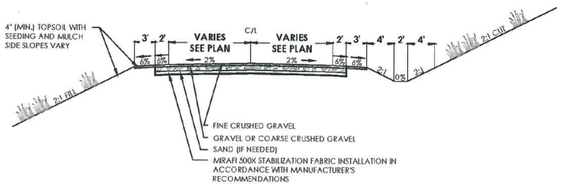
2. COMPACT ALL SUBBASE MATERIALS TO 95% MAXIMUM DENSITY (STANDARD PROCTOR)

3. IF GROUNDWATER OR SOFT SPOTS ARE ENCOUNTERED CONTACT THE ENGINEER TO DISCUSS ADDED MEASURES SUCH AS UNDERDRAIN.

TYPICAL GRAVEL ROAD OR PARKING SECTION

1"=1'

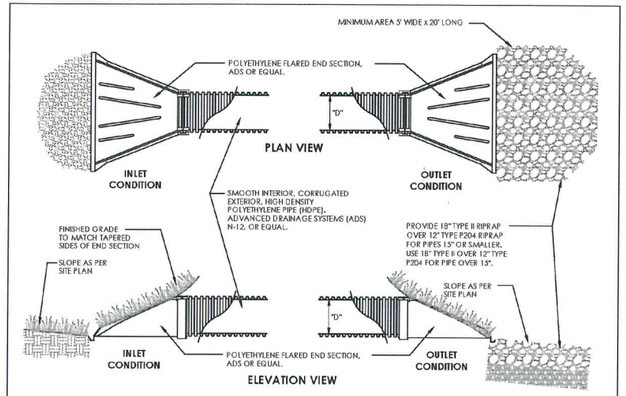
TRUDELL CONSULTING ENGINEERS | LAST REVISED 12/08/2014 | SD-002



NOTES:
1. DITCH DEPTH & LOCATION MAY VARY (SEE SITE PLAN).
2. IF GROUNDWATER OR SOFT SPOTS ARE ENCOUNTERED CONTACT THE ENGINEER TO DISCUSS ADDED MEASURES SUCH AS UNDERDRAIN.
3. REFER TO SITE PLAN FOR ROAD GRADING.

TYPICAL GRAVEL DRIVE

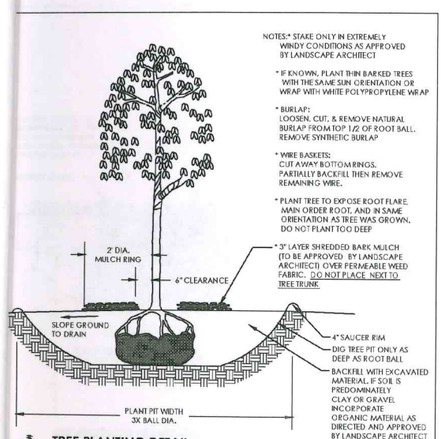
2015 TRUDELL CONSULTING ENGINEERS | LAST REVISED 08/06/2015 | SD-031



POLYETHYLENE (HDPE) END SECTION

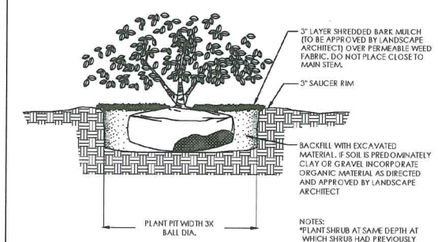
1/2"=1'

2014 TRUDELL CONSULTING ENGINEERS | LAST REVISED 12/09/2014 | SW-002



TREE PLANTING DETAIL

13 TRUDELL CONSULTING ENGINEERS | LAST REVISED 03/15/2013 | L-001



NOTES:
*PLANT SHRUB AT SAME DEPTH AT WHICH SHRUB HAD PREVIOUSLY GROWN

*LOOSEN, CUT, & REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL

*SHREDDED BARK MULCH AND WEED BARRIER FABRIC TO BE CONTINUOUS WHEN USED IN BEDS.

BALL AND BURLAP SHRUB

2013 TRUDELL CONSULTING ENGINEERS | LAST REVISED 03/15/2013 | L-002

AFTER THE FINISHED GRADE HAS BEEN ESTABLISHED AND THE FERTILIZER SPREAD, PLANT THE SPECIFIED SEED MIXTURE AT A RATE OF 4 POUNDS PER 1000 SQUARE FEET AND WORK FIRMLY INTO THE SOIL. APPLY SEED ON THE PREPARED SEED BED WITH APPROVED MECHANICAL SEEDERS OR HYDROSEEDING EQUIPMENT. UPON COMPLETION OF THE ABOVE PLANTING OPERATIONS, ROLL ALL AREAS WITH A WATER FILLED GARDEN ROLLER, LEAVING THE SURFACE OF ALL AREAS TRUE TO GRADE, SMOOTH, AND FREE FROM HOLLOWS OR OTHER IRREGULARITIES. THOROUGHLY WATER ALL NEWLY PLANTED LAWNS IMMEDIATELY AFTER PLANTING, USING A FINE SPRAY.

PROTECT BANKS AND SWALES, AND PREVENT OR REPAIR EROSION THAT OCCURS. BANKS, SWALES OR OTHER GRADED AREAS THAT HAVE BEEN WASHED OUT OR HAVE BECOME DAMAGED SHALL BE REPAIRED IMMEDIATELY. UNLESS APPROVAL IS GRANTED BY THE ENGINEER TO PLANT OFF SEASON, SEEDING WILL BE CONDUCTED ONLY DURING THE PERIOD FROM APRIL 15 TO JUNE 1 OR AUGUST 15 TO OCTOBER 15, SO AS NOT TO CAUSE INTERFERENCE. NO SEEDING IS TO PROCEED BEFORE OTHER PHASES OR THE WORK HAS PROGRESSED SUFFICIENTLY.

SEED SHALL BE FRESH, CLEAN, NEW SEED. SEED WHICH HAS BECOME WET AND/OR MOLDY WILL NOT BE ACCEPTABLE. THE FOLLOWING SEED MIXTURE SHALL BE USED:

COMMON NAME	WEIGHT (POUNDS PER ACRE)	GERMINATION
CREEPING RED FESCUE	30-40	85
KENTUCKY BLUEGRASS	30-40	80
PERENNIAL RYE	25-30	90
RED TOP	0-5	85
WHITE CLOVER	0-5	-

SEEDING

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A. GENERAL: UNIFORMLY GRADE AREAS WITHIN THE LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. SMOOTH FINISHED SURFACES WITHIN THE SPECIFIED TOLERANCES, COMPACT WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE INDICATED, OR BETWEEN SUCH POINTS AND EXISTING GRADES.

B. GRADING OUTSIDE BUILDING LINES: GRADE AREAS ADJACENT TO BUILDING LINES TO DRAIN AWAY FROM THE STRUCTURES AND TO PREVENT PONDING.

FINISH SURFACES FREE FROM IRREGULAR SURFACE CHANGES, AND AS FOLLOWS:

1. LAWN OR UNPAVED AREAS: FINISH AREAS THAT ARE TO RECEIVE TOPSOIL TO WITHIN 0.10 FEET ABOVE OR BELOW THE REQUIRED SUBGRADE ELEVATIONS. LAWNS SHALL BE GRADED SO THAT NO PONDING OCCURS. THE GRADING OF LAWNS WILL BE UNACCEPTABLE IF PONDING OCCURS.
2. WALKS: SHAPE THE SURFACE OF AREAS UNDER WALKS TO LINE, GRADE AND CROSS-SECTION, WITH FINISH SURFACES NOT MORE THAN 0.10 FEET ABOVE OR BELOW THE REQUIRED SUBGRADE ELEVATION.
3. PAVEMENTS: SHAPE THE SURFACE OF AREAS UNDER PAVEMENTS TO LINE, GRADE AND CROSS-SECTION, WITH THE FINISH SURFACE NOT MORE THAN 0.10 FEET ABOVE OR BELOW THE REQUIRED SUBGRADE ELEVATION. PAVEMENTS MUST DRAIN SO THAT NO WATER PONDING OCCURS. IF PONDING OCCURS, THE PAVING WILL BE UNACCEPTABLE.

C. GRADING SURFACE OF FILL UNDER BUILDING SLABS: GRADE SMOOTH AND EVEN, FREE OF VOIDS, AND COMPACT AS SPECIFIED TO THE REQUIRED ELEVATION. PROVIDE FINAL GRADES WITHIN A TOLERANCE OF 1/2 INCH WHEN TESTED WITH A 10 FOOT STRAIGHTEDGE.

GRADING

2013 TRUDELL CONSULTING ENGINEERS | LAST REVISED 06/13/2013 | EN-010

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Revisions

No.	Description	Date	By

STATE OF VERMONT — JOHN A. PUTKOWSKI — No. 810 CIVIL — REGISTERED PROFESSIONAL ENGINEER

Project Title

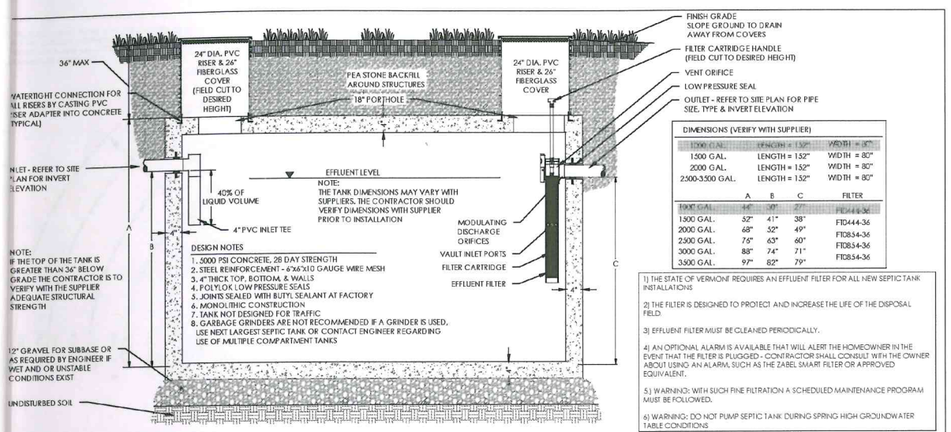
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Site Details

Date:	08/19/15
Scale:	Shown
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

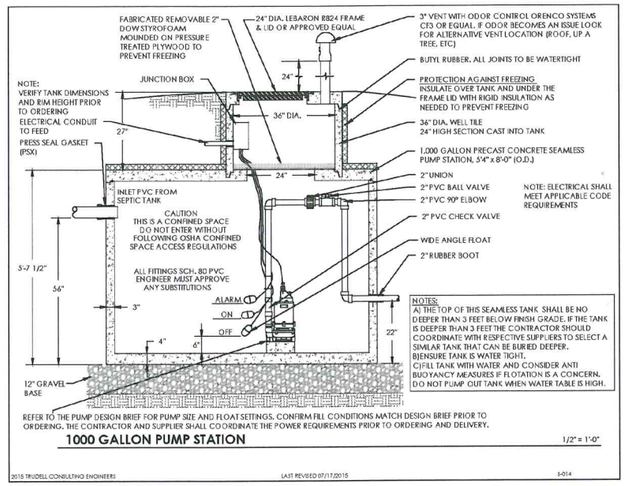
C8-01



1000-3500 GALLON PRECAST SEPTIC TANK WITH FILTER

1/2" = 1'-0"

LAST REVISED 04/22/2014 S-032



1000 GALLON PUMP STATION

1/2" = 1'-0"

LAST REVISED 07/17/2015 S-014

WATER PRESSURE TEST

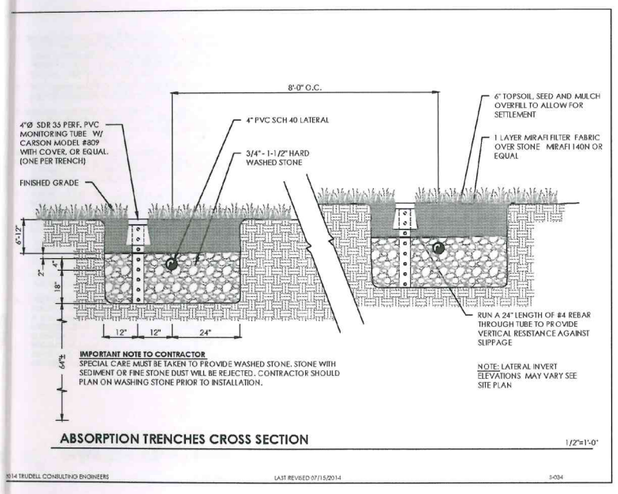
UPON COMPLETION OF INSTALLATION ALL TANKAGE SHALL BE TESTED WITH CLEAN WATER TO DEMONSTRATE THAT THE STRUCTURES ARE WATERTIGHT. THE TESTING SHALL BE CONDUCTED BEFORE THE TANKAGE AND STRUCTURES ARE BACKFILLED. THE TEST SHALL BE CONDUCTED BY COMPLETELY FILLING THE TANKAGE TO THE TOP OF THE STRUCTURES AND PROVIDING A HYDROSTATIC HEAD OF AT LEAST TWO FEET ABOVE THE SURROUNDING GROUNDWATER LEVEL AT THE TIME OF TESTING. THE TEST SHALL BE AT LEAST 24 HOURS, WITH NO LEAKAGE RESULTING. IF ANY LEAKAGE OCCURS DURING THE TEST PERIOD THE TANKS SHALL BE REPAIRED AND RETESTED (PER ASTM C1227-9.2.2 STANDARDS).

VACUUM TEST

UPON COMPLETION OF INSTALLATION ALL TANKAGE SHALL BE TESTED TO DEMONSTRATE THAT THE STRUCTURES ARE WATERTIGHT. THE TESTING SHALL BE CONDUCTED BEFORE THE TANKAGE AND STRUCTURES ARE BACKFILLED. THE TEST SHALL BE CONDUCTED BY SEALING THE EMPTY TANK AND APPLYING A VACUUM TO 2 INCHES (50MM) OF MERCURY. THE TANK IS APPROVED IF 90% OF THE VACUUM IS HELD FOR A MINIMUM OF 2 MINUTES (PER ASTM C1227-9.2.1 STANDARDS).

TANK LEAKAGE TESTING

LAST REVISED 2/4/2013 WW-004

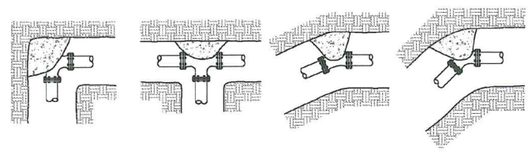


ABSORPTION TRENCHES CROSS SECTION

1/2"=1'-0"

LAST REVISED 07/15/2014 S-004

USE CLASS D (2500 PSI) CONCRETE FOR THRUST BLOCKS. PLACE 4 MIL. POLYETHYLENE BETWEEN FITTING AND THRUST BLOCK. PLACE THRUST BLOCK AGAINST UNDISTURBED TRENCH WALL - CONCRETE BEARING AREA ON FITTING TO BE A MINIMUM OF 1/2 SQUARE FOOT. THRUST BLOCKS BASED ON 50 PSI TEST PRESSURE IF CHANGE IN ELEVATION BETWEEN ANY 2 POINTS IN THE LINE IS GREATER THAN 11.0' THRUST BLOCKS WILL HAVE TO BE ENLARGED.



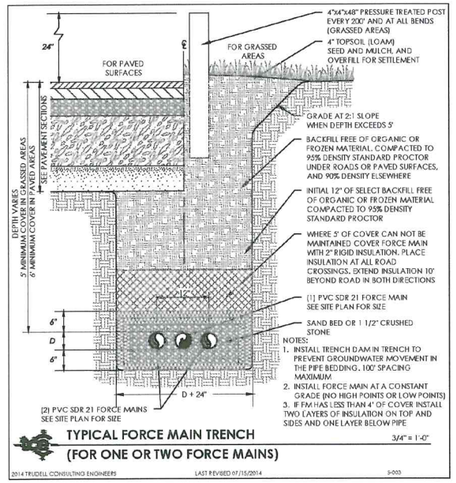
MINIMUM BEARING AREA IN SQUARE FEET ON UNDISTURBED TRENCH WALL

SOIL TYPE	SAFE BEARING LOAD LBS/FT. 2	2" TEE	2" 90°	2" 45°	2" 22.5°	2 1/2" TEE	2 1/2" 90°	2 1/2" 45°	2 1/2" 22.5°	3" TEE	3" 90°	3" 45°	3" 22.5°	4" TEE	4" 90°	4" 45°	4" 22.5°	6" TEE	6" 90°	6" 45°	6" 22.5°
CLAY	1000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.9	0.7	0.5	1.8	2.0	1.5	0.8
SAND	2000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.9	1.0	0.8	0.5
GRAVEL	3000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TILL	4000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SHALE	10000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

NOTE : ENGINEER TO OBSERVE ALL THRUST BLOCKS PRIOR TO BACKFILL.

FORCE MAIN THRUST BLOCK SPECIFICATIONS

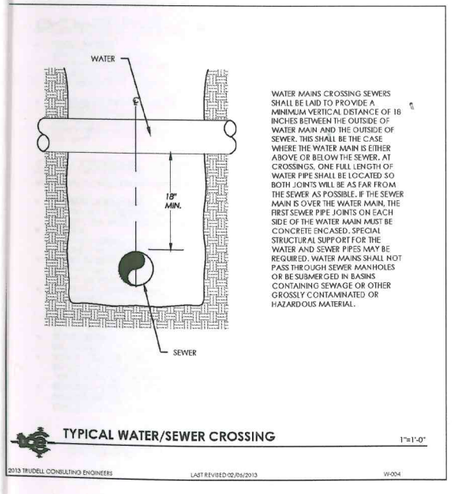
LAST REVISED 03/08/2013 S-015



TYPICAL FORCE MAIN TRENCH (FOR ONE OR TWO FORCE MAINS)

3/4" = 1'-0"

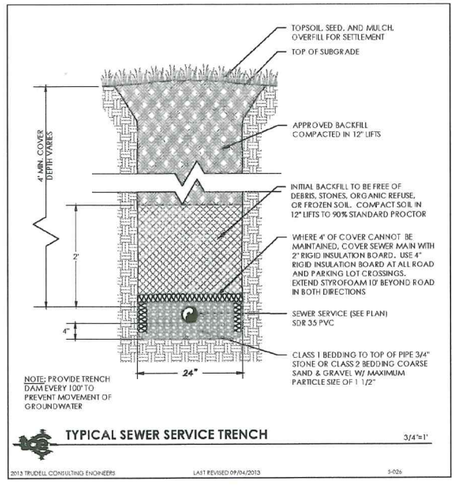
LAST REVISED 07/15/2014 S-003



TYPICAL WATER/SEWER CROSSING

1"=1'-0"

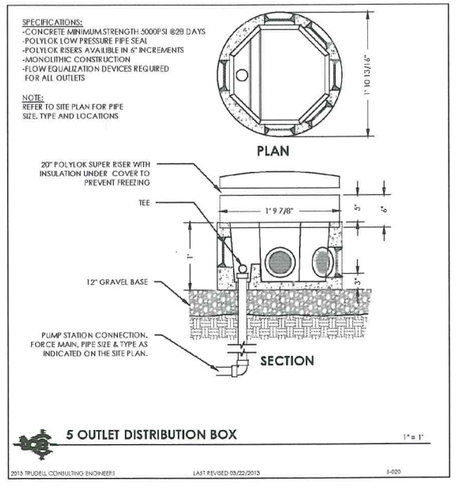
LAST REVISED 02/06/2013 W-004



TYPICAL SEWER SERVICE TRENCH

3/4"=1'

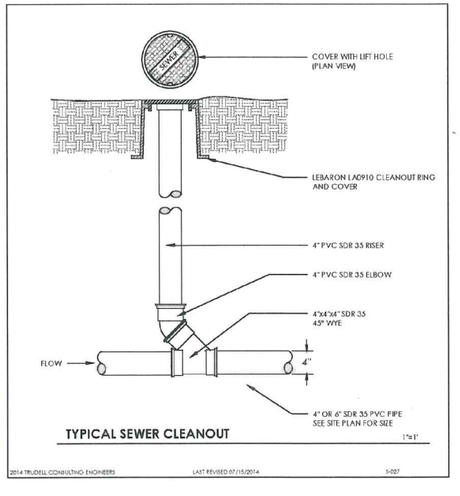
LAST REVISED 09/04/2013 S-026



5 OUTLET DISTRIBUTION BOX

1" = 1'

LAST REVISED 03/22/2013 S-020



TYPICAL SEWER CLEANOUT

1"=1'

LAST REVISED 07/15/2014 S-027

tce
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802 879 6331 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Use of These Drawings

1. Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such or marked approved by a regulatory authority.

2. By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings, obtained all necessary permits, and have met with all applicable parties/disciplines, including but not limited to, the Engineer and the Architect, to insure these plans are properly coordinated including, but not limited to, contract documents, specifications, owner/contractor agreements, bidding and mechanical plans, private and public utilities, and other pertinent permits for construction.

3. Owner and Architect, are responsible for final design and location of buildings shown, including an area measured a minimum five (5) feet around any building and coordinating final utility connections shown on these plans.

4. Prior to using these plans for construction layout, the user shall contact TCE to ensure the plan contains the most current revisions.

5. These Drawings are specific to the Project and are not transferable. As instruments of service, these drawings, and copies thereof, furnished by TCE are its exclusive property. Changes to the drawings may only be made by TCE. If errors or omissions are discovered, they shall be brought to the attention of TCE immediately.

6. It is the User's responsibility to ensure this copy contains the most current revisions. If unsure, please contact TCE.

STATE OF VERMONT — No. 8178 — CIVIL — PROFESSIONAL ENGINEER

Project Title

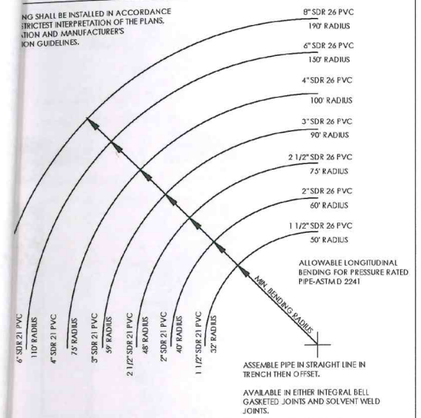
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Sanitary Details

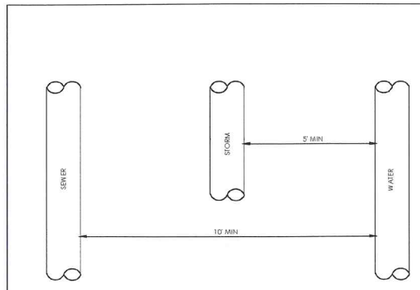
Date:	08/19/15
Scale:	Shown
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C8-02



ALLOWABLE BENDING FOR SDR 21 OR 26 PVC PIPE

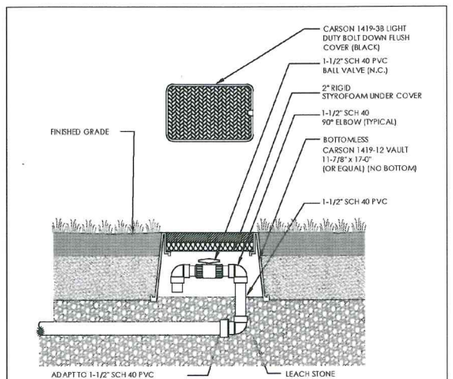
ELL CONSULTING ENGINEERS LAST REVISED 7/17/2015 S-006



WATER MAINS SHALL BE LAID AT LEAST 10' HORIZONTALLY FROM ANY EXISTING OR PROPOSED MANHOLE OR SANITARY SEWER. THIS DISTANCE CAN BE REDUCED TO 5' FOR STORM SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. CONSULT WITH ENGINEER IF THESE SEPARATIONS ARE NOT AVAILABLE.

PARALLEL WATER INSTALLATION
WSR APPENDIX SUBSECTION 8.6.2

2013 TRUDELL CONSULTING ENGINEERS LAST REVISED 02/28/2013 W-010



FLUSHING VALVE DETAIL

NOTE: FITTINGS TO BE SOLVENT WELD

2014 TRUDELL CONSULTING ENGINEERS LAST REVISED 07/15/2014 S-016

PRESSURE TEST

UPON COMPLETION OF CONSTRUCTION OF A FORCE MAIN, THE LINE SHALL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH THE FOLLOWING PROCEDURE:

AFTER THE PIPE HAS BEEN LAID, ALL NEWLY LAID PIPE OR ANY VALVED SECTION THEREOF SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE OF AT LEAST 1.5 X THE HIGHEST WORKING PRESSURE IN THE SECTION.

1. TEST PRESSURE RESTRICTIONS. TEST PRESSURES SHALL:
   - A. NOT BE LESS THAN 50 PSI AT THE HIGHEST POINT ALONG THE TEST SECTION.
   - B. NOT EXCEED PIPE OR THRUST RESTRAINT DESIGN PRESSURES.
   - C. BE OF AT LEAST 2 (TWO) HOUR DURATION.
   - D. NOT VARY BY MORE THAN ± 5 PSI.
   - E. NOT EXCEED TWICE THE RATED PRESSURE OF THE VALVES WHEN THE PRESSURE BOUNDARY OF THE TEST SECTION INCLUDES CLOSED GATE VALVES.
2. PRESSURIZATION.
   - A. EACH VALVED SECTION OF PIPE SHALL BE FILLED WITH WATER SLOWLY AND THE SPECIFIED TEST PRESSURE, BASED ON THE ELEVATION OF THE LOWEST POINT IN THE LINE OR SECTION UNDER TEST AND CORRECTED TO THE ELEVATION OF THE TEST GAUGE, SHALL BE APPLIED BY MEANS OF A PUMP CONNECTED TO THE PIPE.
   - B. AIR REMOVAL. BEFORE APPLYING THE SPECIFIED TEST PRESSURE, AIR SHALL BE EXPELLED COMPLETELY FROM THE PIPE VALVES.
   - C. EXAMINATION. ALL EXPOSED PIPE, FITTINGS, VALVES, AND JOINTS SHALL BE EXAMINED CAREFULLY DURING THE TEST. ANY DAMAGED OR DEFECTIVE PIPE, FITTINGS, OR VALVES, THAT ARE DISCOVERED FOLLOWING THE PRESSURE TEST SHALL BE REPAIRED OR REPLACED WITH SOUND MATERIAL AND THE TEST SHALL BE REPEATED AT NO EXPENSE TO OWNER.

LEAKAGE TEST

A LEAKAGE TEST SHALL BE CONDUCTED CONCURRENTLY WITH THE PRESSURE TESTS.

1. LEAKAGE SHALL BE DEFINED AS THE QUANTITY OF WATER THAT MUST BE SUPPLIED INTO THE NEWLY LAID PIPE, OR ANY VALVED SECTION THEREOF, TO MAINTAIN PRESSURE WITHIN 5 PSI OF THE SPECIFIED TEST PRESSURE AFTER THE AIR IN THE PIPELINE HAS BEEN EXPELLED AND THE PIPE HAS BEEN FILLED WITH WATER.
2. ALLOWABLE LEAKAGE. NO PIPE INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE IS GREATER THAN THAT DETERMINED BY THE FOLLOWING FORMULA:

$$L = \frac{ND\sqrt{P}}{7400}$$

WHERE:
L IS THE ALLOWABLE LEAKAGE, IN GALLONS PER HOUR;
N IS THE NUMBER OF JOINTS IN THE LENGTH OF PIPELINE TESTED;
D IS THE NOMINAL DIAMETER OF THE PIPE, IN INCHES; AND
P IS THE AVERAGE TEST PRESSURE DURING THE LEAKAGE TEST, IN POUNDS PER SQUARE INCH GAGE.

NOTE: IN THE EVENT THAT THE FORCE MAIN IS RELATIVELY SHORT (100 FEET OR LESS), THE PROJECT ENGINEER CAN UTILIZE DISCRETION IN TEST REQUIREMENTS.

TESTING FORCE MAINS
(ENVIRONMENTAL PROTECTION RULES CH1, EFFECTIVE 9/29/07 SECTION 1-A-05(g))

2013 TRUDELL CONSULTING ENGINEERS LAST REVISED 3/6/2013 SN-001

E ENGINEER HAS DETERMINED A LOCATION FOR ON SITE SANITARY DISPOSAL ON THE PROPERTY, BASED ON A SITE INVESTIGATION AND SOIL TESTS. THE REQUIRED DISPOSAL AREA AND SYSTEM DESIGN WERE DETERMINED BY CODE REQUIREMENTS AND SUBMITTED TO APPROVING AUTHORITIES. UPON APPROVAL, THE OWNER ASSUMES RESPONSIBILITY FOR PROPER CONSTRUCTION AND CONTINUED PROPER OPERATION OF THE SYSTEM.

THE OWNER IS RESPONSIBLE FOR OPERATING THE DISPOSAL SYSTEM IN A MANNER WHICH WILL PROTECT THE PUBLIC HEALTH AND PREVENT POLLUTION.

EW DISPOSAL SYSTEMS REQUIRE ADJUSTMENTS OR MODIFICATIONS DURING START UP, AND DURING THE LIFE OF THE SYSTEM. THESE ADJUSTMENTS INCLUDE LEVELING UP THE DISTRIBUTION BOX, SEPTIC TANK, AND PUMP STATION, DUE TO SETTLEMENT OR FROST ACTION. FILL MAY BE ADDED TO REPAIR EROSION OR LEVEL SETTLED AREAS.

ON SITE SANITARY DISPOSAL SYSTEMS REQUIRE REGULAR INSPECTION AND MAINTENANCE. THE SEPTIC TANK, BIO-FILTER AND DISTRIBUTION BOX SHOULD BE INSPECTED ANNUALLY AND PUMPED OUT AND CLEANED EVERY 3 YEARS. THE PLUMBING AND ELECTRICAL SYSTEMS, IF APPLICABLE, SHOULD BE CHECKED FOR PROPER OPERATION AND LEAKS.

THE LIFE OF THE DISPOSAL SYSTEM CAN BE AFFECTED BY A VARIETY OF OPERATIONAL AND ENVIRONMENTAL FACTORS. THE PRESENCE OF EXCESS GROUNDWATER, RAINWATER, INTRODUCTION OF MATERIAL OTHER THAN HUMAN WASTES, OR EXCESSIVE SEWAGE FLOWS WILL ADVERSELY AFFECT OPERATION OF ANY DISPOSAL SYSTEM. SOIL SETTLEMENT, FREEZING OF COMPONENTS, AND CLOGGING DUE TO ORGANIC SOLIDS ACCUMULATION WILL REQUIRE REPAIRS.

THE OWNER IS RESPONSIBLE FOR COMPLIANCE WITH STATE AND LOCAL OPERATION AND MAINTENANCE REQUIREMENTS. THE ENGINEER AND CONTRACTOR ASSUMES NO RESPONSIBILITY FOR THE IMPROPER USE AND/OR MAINTENANCE OF THE SYSTEM.

WARNING: WITH SUCH FINE FILTRATION (SEPTIC TANK EFFLUENT FILTER), A SCHEDULED MAINTENANCE PROGRAM MUST BE FOLLOWED.

THE OWNER IS RESPONSIBLE FOR ALL STATE AND LOCAL PERMITS AND REQUIRED CONDITIONS OF SAID PERMITS. THIS INCLUDES BUT IS NOT LIMITED TO ANNUAL INSPECTIONS AND REPORTING. THE OWNER IS ALSO RESPONSIBLE FOR RECORDING PERMITS IN THE TOWN LAND RECORDS OFFICE. IF CONSTRUCTION DOESN'T OCCUR IN THE TIME FRAMES ESTABLISHED BY SAID PERMITS THEN THE OWNER IS RESPONSIBLE FOR REVISING DESIGN PLANS AS NEEDED AND RE-PERMITTING. IF CHANGES IN THE REGULATIONS OCCUR ONCE THE PERMITS HAVE EXPIRED, TRUDELL CONSULTING ENGINEERS DOES NOT OFFER ANY GUARANTEES THAT THE PERMIT WILL BE RE-ISSUED. CHANGING REQUIREMENT MAY PREVENT COMPLIANCE AND CAUSE CERTAIN PROPERTIES TO BE UN-DEVELOPABLE.

SUBSURFACE DISPOSAL FIELD
OPERATION AND MAINTENANCE

R TRUDELL CONSULTING ENGINEERS LAST REVISED 07/16/2014 SN-010

1. CONTACT THE DESIGN ENGINEER PRIOR TO CONSTRUCTION FOR AN ON SITE MEETING WITH THE CONTRACTOR TO STAKE OUT AND DISCUSS THE CONSTRUCTION OF THE PROPOSED DISPOSAL SYSTEM. CONTACT OTHER STATE AND LOCAL AUTHORITIES AS APPROPRIATE.
2. REMOVE ALL ABOVE GROUND VEGETATION AND TOPSOIL FROM THE DISPOSAL FIELD AREA. THE TOPSOIL SHALL BE CLEANED OF ALL DEBRIS AND STOCKPILED FOR LATER USE.
3. STARTING ON THE UPHILL SIDE OF THE DISPOSAL FIELD, EACH ABSORPTION TRENCH AND/OR SEEPAGE BED SHALL BE EXCAVATED TO THE RESPECTIVE SUBGRADE ELEVATION. THE SIDES AND BOTTOM OF EACH TRENCH AND/OR BED SHALL THEN BE RAKED.
4. ONCE RAKED, A MINIMUM 12" OF 3/4" - 1 1/2" HARD WASHED STONE IS PLACED IN THE BOTTOM OF THE TRENCH AND/OR BED. USE THE BUCKET OF A CRAWLER TO INSTALL THE STONE. COMPLETE ONE ABSORPTION TRENCH AT A TIME. SPECIAL CARE MUST BE TAKEN TO PROVIDE CLEAN STONE. STONE WITH DIRT OR STONE DUST MIXED IN WILL BE REJECTED.
5. IN THE CENTER OF EACH TRENCH AND/OR BED, USE SHOVELS TO EXCAVATE 2" DEEP CHANNELS. LAY THE DISTRIBUTION PIPE LEVEL IN THE CHANNELS. LINE SHALL BE CAPPED UNLESS CONNECTED BY A REAR MANIFOLD.
6. CONTACT DESIGN ENGINEER UPON THE COMPLETION ON ALL TRENCHES AND/OR BEDS AND PRIOR TO BACKFILLING TO INSPECT THE DISTRIBUTION PIPING. CONTACT OTHER AUTHORITIES AS APPROPRIATE.
7. EACH TRENCH AND/OR BED SHALL BE FINISHED BY PLACING 2" OF STONE OVER THE DISTRIBUTION PIPE AND THEN ONE LAYER OF FILTER FABRIC OVER THE STONE.
8. THE STOCKPILED TOPSOIL SHALL THEN BE USED TO COVER THE DISPOSAL FIELD, OVERFILL EACH TRENCH AND/OR BED TO ALLOW FOR SETTLEMENT. SEED AND MULCH THE TOPSOIL UPON PLACEMENT.
9. UPON COMPLETION OF CONSTRUCTION, CONTACT THE DESIGN ENGINEER. IF THE DISPOSAL FIELD IS SATISFACTORY, THE DESIGN ENGINEER WILL PROVIDE WRITTEN CERTIFICATION THAT THE CONSTRUCTION WAS DONE IN GENERAL ACCORDANCE WITH THE APPROVED PLANS. THIS CERTIFICATION WILL BE SPECIFIC TO THE AMOUNT OF OBSERVATION BY THE ENGINEER AND WILL IN NO WAY RELIEVE THE CONTRACTOR OF THEIR WARRANTY OBLIGATIONS.
10. SINCE THE DESIGN ENGINEER DOES NOT CUSTOMARILY OBSERVE ALL CONSTRUCTION, THE DESIGN ENGINEER WILL REQUIRE THE CONTRACTOR TO CERTIFY THEY BUILT AND TESTED THE SYSTEM PER THE DESIGN PLANS AND PERMIT CONDITIONS.

SUBSURFACE DISPOSAL FIELD
CONSTRUCTION SPECIFICATIONS

2013 TRUDELL CONSULTING ENGINEERS LAST REVISED 05/31/2013 SN-006

CONTRACTOR'S CERTIFICATION REQUIRED

PRIOR TO THE DESIGN ENGINEER CERTIFYING THAT THE INSTALLATION HAS BEEN INSTALLED IN ACCORDANCE WITH THE PERMITTED DESIGN, THE CONTRACTOR SHALL PROVIDE A CERTIFICATION THAT THE WASTEWATER SYSTEM WAS INSTALLED AND TESTED IN ACCORDANCE WITH THE APPROVED DESIGN PLANS. STATE PERMITS REQUIRE THERE SHALL BE NO DEVIATIONS FROM THE APPROVED PLANS WITHOUT PRIOR APPROVALS. THE DESIGN ENGINEER SHALL BE NOTIFIED AND ALLOWED TO OBSERVE THE CRITICAL PHASES OF CONSTRUCTION INCLUDING ANY REQUIRED TESTS. LIKEWISE, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATIONS FROM THE APPROVED PLANS. SINCE THE DESIGN ENGINEER DOES NOT CUSTOMARILY OBSERVE ALL PHASES OF THE WORK, OR ALL TESTING, HE MAY RELY ON THE CONTRACTOR'S CERTIFICATION AS THE BASIS FOR FINAL CERTIFICATION. THE CONTRACTOR SHALL THEREFORE SIGN AND RETURN A COPY OF THE FOLLOWING CERTIFICATION UPON COMPLETION OF THE WORK:

"I HEREBY CERTIFY THAT I HAVE INSTALLED, PROPERLY TESTED, AND SUCCESSFULLY PASSED THOSE TESTS, AND THE WASTEWATER DISPOSAL AND COLLECTION SYSTEM(S) ARE BUILT IN ACCORDANCE WITH THE APPROVED DESIGN PLANS AND APPLICABLE PERMIT CONDITIONS."

CONTRACTOR NAME

AUTHORIZED AGENTS NAME

SIGNATURE DATE

NOTE ANY DEVIATIONS FROM APPROVED PLANS HERE:

CONTRACTOR CERTIFICATION FOR WASTEWATER SYSTEM

2013 TRUDELL CONSULTING ENGINEERS LAST REVISED 3/6/2013 SN-002

DON'T PUT THESE ITEMS DOWN THE DRAIN

- **FOOD WASTES**
  ANIMAL BONES / EGG SHELLS
  COFFEE GROUNDS / CORN COBS
  MELON RINDS / FRUIT PEELS
  SKIN / HOME BREWERY WASTE
- **PERSONAL CARE PRODUCTS**
  BANDAGES / CONDOMS
  DISPOSABLE DIAPERS
  FEMININE HYGIENE PRODUCTS
  WET WIPES
- **CHEMICALS/TOXINS**
  AUTOMOTIVE FLUIDS
  CAUSTIC CLEANERS
  HARSH DETERGENTS
  FLOOR STRIPPERS
  HERBICIDES / PESTICIDES
  MEDICATIONS / DRUGS
  PAINTS - OIL-BASED
  QUATERNARY AMMONIA
  SOLVENTS / THINNERS
- **OTHER PRODUCTS**
  CAT LITER
  CIGARETTE BUTTS
  CLOTH TOWELS / RAGS
  FILM DEVELOPING WASTE
  METAL / PLASTIC OBJECTS
  MODELING CLAY
  PAPER TOWELS / SCRAPS
  PLASTIC BAGS
  RV WASTE
  STRING / YARN / NYLONS
  STICKS / YARD WASTE

OUTSIDE DO'S & DON'TS - YARD SAFETY

REGULAR MAINTENANCE SHOULD BE PERFORMED BY A QUALIFIED SERVICE COMPANY FOR ENSURING THE LONG LIFE OF YOUR SYSTEM.

- **BLOWER OPERATION**
  DO NOT TURN OFF BLOWER. **DO** NOTIFY YOUR MAINTENANCE OR SERVICE PROVIDER IF YOU DETECT PROBLEMS WITH SYSTEM OR LEAVING THE PROPERTY FOR AN EXTENDED PERIOD OF (>3 WEEKS)
- **ALARM**
  IF ALARM SOUNDS, **DO** PRESS THE **"RESET"** BUTTON ON THE FRONT OF THE PANEL. CONTACT YOUR SERVICE PROVIDER (INFO SHOULD BE ON THE CONTROL PANEL AND/OR THE BLOWER).
- **DOWN SPOUTS**
  DO DIVERT WATER AWAY FROM ANYWHERE IT IS COLLECTED, I.E. ROOF DOWNSPOUTS, PAVEMENT RUNOFF, OR SUMP PUMP / HOUSE FOOTING DRAINS. THE WATER SHOULD BE ALLOWED TO DISCHARGE OVER BURIED TANK(S) OR DRAIN FIELD
- **TRAFFIC / LANDSCAPING**
  DO NOT DRIVE OVER ANY PORTION OF YOUR SYSTEM (TANK, PIPING, DRAIN FIELD) EXCEPT FOR NORMAL YARD TRAFFIC, I.E. MOWERS. BURIED TANKS (H-20) CAN BE MADE FOR UNDER ROADWAYS, DRIVEWAYS, IF POSSIBLE, DETER TRAFFIC BY USING A FENCE OR CREATE A LANDSCAPED AREA WITH SHALLOW ROOT PLANTS (ORNAMENTALS, SHRUBBERY, BUSHES, DECORATIVE GRASSES, AND/OR FLOWERS). DO NOT PLANT TREES NEAR ANY PORTION OF YOUR SYSTEM (WITHIN 30 FEET)
- **STRUCTURES**
  DO NOT BUILD PATIOS, CARPORTS, OR OTHER STRUCTURES OVER ANY PART OF YOUR SEPTIC SYSTEM AS THIS MAY CAUSE DAMAGE.
- **VENTS / ODORS / INTAKE**
  DO KEEP VENT AND BLOWER HOUSING CLEAR OF DEBRIS, SUCH AS LEAVES OR SNOW. CONTACT YOUR SERVICE PROVIDER IF YOU DETECT SEPTIC ODORS, AS THIS MAY INDICATE A PROBLEM WITH THE SYSTEM.
- **BIOSOLIDS (SLUDGE) REMOVAL**
  DO DETERMINE WHEN A PUMP OUT OF YOUR TANK IS REQUIRED; A MAINTENANCE PROVIDER SHOULD MEASURE THE BIOSOLIDS LEVEL(S) IN THE TANK(S) ON A REGULAR BASIS. PLEASE SEE THE SERVICE MANUAL FOR SPECIFIC PROCEDURES.

REFER TO THIS LIST TO HELP KEEP SYSTEM PERFORMING PROPERLY

- **RECORD KEEPING**
  KEEP COPIES OF ALL SYSTEM MANUALS, DRAWINGS, AND SITE PLANS, AS WELL AS OTHER INFORMATION ABOUT INSTALLED EQUIPMENT AND SERVICE/MAINTENANCE RECORDS WITH ALL OTHER HOME APPLIANCE DOCUMENTS. DO KEEP RECORD ON ALL SYSTEM AND SITE EVALUATIONS.
- **LAUNDRY/WATER USAGE**
  SPREAD WASH LOADS THROUGHOUT THE WEEK, INSTEAD OF LIQUID FABRIC SOFTNER, DRYER SHEETS SHOULD BE USED. USE A LOW-SUD, BIODEGRADABLE DETERGENT.
- **LEAKY FIXTURES**
  LARGE QUANTITIES OF WATER ARE ADDED TO YOUR WASTEWATER SYSTEM WHEN YOU HAVE LEAKING FIXTURES. TIMELY DETECTION AND REPAIR CAN HELP TO MAXIMIZE THE LIFE OF YOUR SYSTEM, ESPECIALLY THE DRAIN FIELD.
- **WATER SOFTENERS**
  IF ALLOWED BY YOUR LOCAL REGULATORY AUTHORITY, THE FAST® PROCESS MAY TOLERATE DISCHARGE FROM PROPERLY OPERATING SOFTENERS THAT BACKWASH (AS NEEDED) BASED ON WATER USAGE (DIR) VS. TIMER OPERATED SYSTEM. HOWEVER, PLEASE BE AWARE THAT THESE DISCHARGES CAN POSSIBLY DAMAGE OTHER PARTS OF THE SEPTIC SYSTEM.
- **FOOD WASTES**
  GARBAGE DISPOSAL WASTE IS ACCEPTABLE - IF ALLOWED BY YOUR LOCAL REGULATORY AUTHORITY. HOWEVER, IT MAY LEAD TO MORE FREQUENT REMOVAL OF SOLIDS FORM YOUR SEPTIC TANK. FOR LARGE QUANTITIES OF FOOD, PLEASE DISPOSE OF IT IN THE GARBAGE.
- **FATS, OILS, AND GREASE**
  BE AWARE TOO MUCH GREASE (I.E. ANIMAL FATS, VEGETABLE OILS, LARD, ETC) DOWN THE DRAIN MAY OVERLOAD OR PREVENT THE BACTERIAL FROM FULLY BREAKING DOWN THE WASTE.
- **DISINFECTANTS / CLEANERS**
  USE CITRIC ACID, CHLORINE, AND/OR OTHER BIODEGRADABLE CLEANERS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. PRODUCTS CONTAINING QUATERNARY AMMONIA OR PINE OIL-BASED CLEANERS SHOULD NOT BE USED. USE DRAIN CLEANERS AS A LAST RESORT TO UNCLOG PIPES.
- **MEDICINES**
  DO NOT FLUSH THEM DOWN ANY DRAIN. ALL ANTIBIOTIC MEDICINES ARE HARMFUL TO TREATMENT QUALITY. UNUSED MEDICATIONS SHOULD BE RETURNED TO THE PHARMACY, DOCTOR, OR THROWN AWAY IN THE TRASH.

  NOTE: AS THE HUMAN BODY ABSORBS ≤20% OF THESE MEDICATION. PLEASE NOTIFY YOUR SERVICE PROVIDER OF MEDICINES IN THE HOUSE. THIS COULD REDUCE TROUBLESHOOTING EFFORT AND POSSIBLE YOUR MAINTENANCE BILL.
- **FLOOR DRAINS FROM GARAGE AND WORKROOMS**
  SHOULD BE DIVERTED AWAY FROM YOUR SEPTIC SYSTEM. ITEMS LIKE PETROLEUM-BASED OILS, GAS, AND SAWDUST SHOULD NEVER ENTER THE SYSTEM.
- **SEPTIC TANK ADDITIVES / ENZYMES**
  THE WASTEWATER IN THE SYSTEM CONTAINS ALL THE REQUIRED BACTERIA FOR PROPER OPERATION. ADDITIVES ARE **UN**NECESSARY; AND MAY DO MORE HARM THAN GOOD.
- **PAPER PRODUCTS**
  USE SINGLE- OR DOUBLE-PLY, NON-QUILTED, WHITE TOILET PAPER PRODUCTS. SOME COLOR DYES IN THE PAPER CANNOT BE EATEN BY NATURAL BACTERIA. NON-BLEACHED PAPER (BROWN IN COLOR) TAKES LONGER TO BREAK DOWN AND CAN THEREFORE INCREASE YOUR BIOSOLIDS PUMP OUT FREQUENCY. AVOID FLUSHING PAPER TOWELS, NAPKINS, WIPES, OR OTHER THICKER PAPER MATERIAL.

PLEASE BE AWARE OF THE FOLLOWING:

- ONLY QUALIFIED SERVICE PERSONS SHOULD OPEN ANY ACCESS PORT ON A SEPTIC SYSTEM. ALWAYS SECURE ALL ACCESS COVERS FOR THE TANK, CONTROL PANEL AND BLOWER TO ENSURE NO ONE CAN ENTER WITHOUT THE USE OF PROPER TOOLS.
- **DO NOT** USE FLAME OF SPARK NEAR A SEPTIC TANK ACCESS POINT(S). GASES EMANATING FROM SEPTIC TANKS CAN EXPLODE IF IGNITED; OR DEADLY IF INHALED.
- INFECTIOUS ORGANISMS EXIST IN A SEPTIC TANK. IF IN DIRECT CONTACT WITH WASTEWATER, IMMEDIATE WASH AND DISINFECT ALL EXPOSED AREAS. PLEASE CONTACT PERSONAL PHYSICIAN(S).

SERVICE PROVIDER:

SEPTIC SYSTEM DO'S & DON'TS
TAKE CARE OF YOUR SEPTIC SYSTEM FOR YOUR HEALTH, FINANCES, AND THE ENVIRONMENT

2014 TRUDELL CONSULTING ENGINEERS LAST REVISED 11/21/2013 SN-013

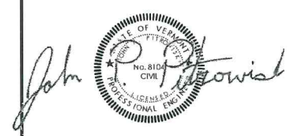
TRUDELL CONSULTING ENGINEERS
428 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
800.879.4331 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Use of These Drawings

1. Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such or marked approved by a regulatory authority.
2. By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings, obtained all necessary permits, and have met with all applicable parties/disciplines, including but not limited to, the Engineer and the Architect, to insure these plans are properly coordinated including, but not limited to, contract documents, specifications, owner/contractor agreements, building and mechanical plans, private and public utilities, and other pertinent permits for construction.
3. Owner and Architect, are responsible for final design and location of buildings shown, including an area measured a minimum five (5) feet around any building and coordinating final utility connections shown on these plans.
4. Prior to using these plans for construction layout, the user shall contact TCE to ensure the plan contains the most current revisions.
5. These Drawings are specific to the Project and are not transferable. As instruments of service, these drawings, and copies thereof, furnished by TCE are its exclusive property. Changes to the drawings may only be made by TCE. If errors or omissions are discovered, they shall be brought to the attention of TCE immediately.
6. It is the User's responsibility to ensure this copy contains the most current revisions. If unsure, please contact TCE.



Project Title

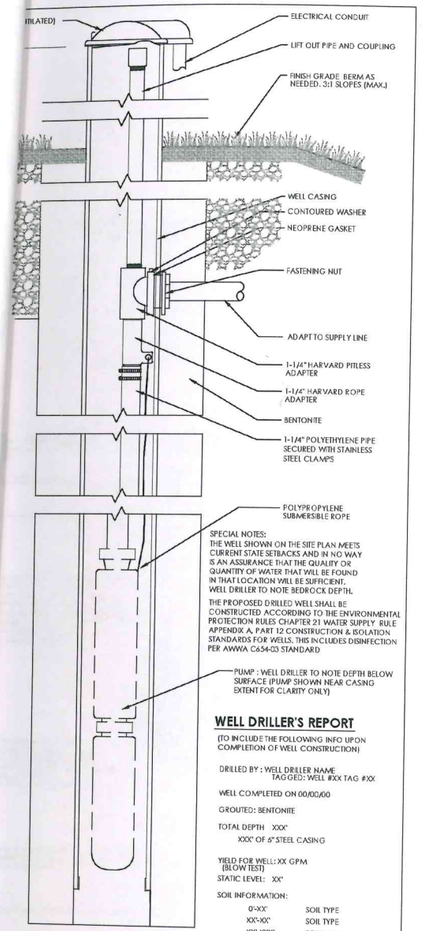
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Sanitary Details

Date:	08/19/15
Scale:	Shown
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C8-03



SPECIAL NOTES:
THE WELL SHOWN ON THE SITE PLAN MEETS CURRENT STATE SETBACKS AND IN NO WAY IS AN ASSURANCE THAT THE QUALITY OR QUANTITY OF WATER THAT WILL BE FOUND IN THAT LOCATION WILL BE SUFFICIENT.
WELL DRILLER TO NOTE BEDROCK DEPTH.

THE PROPOSED DRILLED WELL SHALL BE CONSTRUCTED ACCORDING TO THE ENVIRONMENTAL PROTECTION RULES CHAPTER 21 WATER SUPPLY RULE APPENDIX A, PART 12 CONSTRUCTION & ISOLATION STANDARDS FOR WELLS. THIS INCLUDES DISINFECTION PER AWWA C654-03 STANDARD

PUMP : WELL DRILLER TO NOTE DEPTH BELOW SURFACE (PUMP SHOWN NEAR CASING EXTENT FOR CLARITY ONLY)

WELL DRILLER'S REPORT

(TO INCLUDE THE FOLLOWING INFO UPON COMPLETION OF WELL CONSTRUCTION)

DRILLED BY : WELL DRILLER NAME
TAGGED: WELL #XX TAG #XX

WELL COMPLETED ON 00/00/00

GROUTED: BENTONITE

TOTAL DEPTH XXX'
XXX' OF 6" STEEL CASING

YIELD FOR WELL: XX GPM
(BLOW TEST)
STATIC LEVEL: XX'

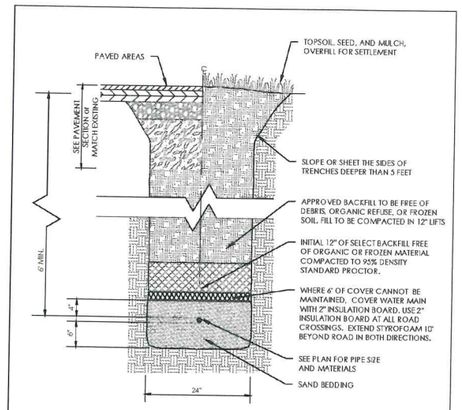
SOIL INFORMATION:

0'-XX'	SOIL TYPE
XX'-XX'	SOIL TYPE
XX'-XXX'	SOIL TYPE

PROPOSED WELL DETAIL

1"=1/2'

TRUDELL CONSULTING ENGINEERS — LAST REVISED 05/29/2015 — W-021



TYPICAL WATER SERVICE TRENCH

1"=1'

2013 TRUDELL CONSULTING ENGINEERS — LAST REVISED 09/04/2013 — W-003

CONTRACTOR'S CERTIFICATION REQUIRED

PRIOR TO THE DESIGN ENGINEER CERTIFYING THAT THE INSTALLATION HAS BEEN INSTALLED IN ACCORDANCE WITH THE PERMITTED DESIGN, THE CONTRACTOR SHALL PROVIDE A CERTIFICATION THAT THE WATER SYSTEM WAS INSTALLED AND TESTED IN ACCORDANCE WITH THE APPROVED DESIGN PLANS. STATE PERMITS REQUIRE THERE SHALL BE NO DEVIATIONS FROM THE APPROVED PLANS WITHOUT PRIOR APPROVALS. THE DESIGN ENGINEER SHALL BE NOTIFIED AND ALLOWED TO OBSERVE THE CRITICAL PHASES OF CONSTRUCTION INCLUDING ANY REQUIRED TESTS. LIKEWISE, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATIONS FROM THE APPROVED PLANS. SINCE THE DESIGN ENGINEER DOES NOT CUSTOMARILY OBSERVE ALL PHASES OF THE WORK, OR ALL TESTING, HE MAY RELY ON THE CONTRACTOR'S CERTIFICATION AS THE BASIS FOR FINAL CERTIFICATION. THE CONTRACTOR SHALL THEREFORE SIGN AND RETURN A COPY OF THE FOLLOWING CERTIFICATION UPON COMPLETION OF THE WORK:

"I HEREBY CERTIFY THAT I HAVE INSTALLED, PROPERLY TESTED, AND SUCCESSFULLY PASSED THOSE TESTS, AND THE WATER SYSTEM(S) ARE BUILT IN ACCORDANCE WITH THE APPROVED DESIGN PLANS AND APPLICABLE PERMIT CONDITIONS."

CONTRACTOR NAME: _____

AUTHORIZED AGENTS NAME: _____

SIGNATURE: _____ DATE: _____

NOTE ANY DEVIATIONS FROM APPROVED PLANS HERE:

_____

_____

_____

_____

CONTRACTOR'S CERTIFICATION FOR POTABLE WATER SYSTEMS

2013 TRUDELL CONSULTING ENGINEERS — LAST REVISED 3/4/2013 — WH-002

IMPORTANT NOTE

CHECK WITH STATE OR ENGINEER TO VERIFY SETBACK DISTANCES. SETBACK DISTANCES CAN VARY FROM WHAT IS SHOWN HEREON BASED ON THE SIZE AND SCOPE OF THE PROJECT OR NEWLY PUBLISHED RULES FROM OTHER STATE AGENCIES.

ITEM	HORIZONTAL DISTANCE (FEET) * DISPOSAL FIELD	SEPTIC TANK	SEWER
DRILLED WELL	b	50	50
GRAVEL PACK WELL, SHALLOW WELL OR SPRING	b	75	75
LAKES, PONDS, IMPOUNDMENTS	50	25	25
RIVERS AND STREAMS	50	25	10
DRAINAGE SWALES, ROADWAY DITCHES	25	--	--
MAIN OR MUNICIPAL WATER LINES	50	50	d
ATMOSPHERIC WATER STORAGE TANKS	50	50	50
SERVICE WATER LINES	25	25	d
ROADWAYS, DRIVEWAYS, PARKING LOTS	10	5	c
TOP OF EMBANKMENT OR SLOPE GRATER THAN 30%	25	10	--
PROPERTY LINE (a)	25 [2]	10	10
TREES	10	10	10
OTHER DISPOSAL FIELD OR REPLACEMENT SYSTEM	10 [3]	--	--
FOUNDATION DRAINS, FOOTING DRAINS, CURTAIN DRAINS	35 [4]	10	--
PUBLIC WATER SUPPLY (a)	f	f	f
SUCTION WATER LINE	100	50	50

* THESE DISTANCES MAY BE REDUCED WHEN EVIDENT THAT THE DISTANCE IS UNNECESSARY TO PROTECT AN ITEM, OR INCREASED IF NECESSARY TO PROVIDE ADEQUATE PROTECTION.
* INDIRECT DISCHARGE REQUIREMENTS SUPERSEDE THIS IF DIFFERENT.
* WATER SUPPLY RULES SUPERSEDE THIS IF DIFFERENT.

GENERAL CRITERIA REGARDING ISOLATION DISTANCES

a. ISOLATION DISTANCES APPLY REGARDLESS OF PROPERTY LINE LOCATION AND OWNERSHIP.
b. SEPARATION BETWEEN POTABLE WATER SUPPLIES AND LEACHFIELDS SHALL BE DETERMINED BY THE METHODS IN THE VERMONT WATER SUPPLY RULE, APPENDIX A, PART 11, SECTION 11.4.
c. SEWERS UNDER ROADS, DRIVEWAYS, OR PARKING LOTS MAY REQUIRE PROTECTIVE CONDUITS OR SLEEVES.
d. SEPARATION OF PRESSURE WATER LINES CONSIDERED AS "SERVICE CONNECTIONS" AND SEWER LINES SHALL ADHERE TO THE VERMONT PLUMBING RULES. SEPARATION OF PRESSURE WATER LINES (CONSIDERED TO BE PART OF A PUBLIC WATER SYSTEM AS DEFINED BY THE VERMONT WATER SUPPLY RULE) AND SEWER LINES SHALL ADHERE TO THE REQUIREMENTS OF THE VERMONT WATER SUPPLY RULE.
e. THIS REFERS TO PUBLIC COMMUNITY WATER SYSTEMS, AS DEFINED IN THE VERMONT WATER SUPPLY RULE.
f. CONTACT THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S WATER SUPPLY DIVISION, 103 SOUTH MAIN STREET, WATERBURY, VERMONT.

SPECIFIC CRITERIA FOR ISOLATION DISTANCES

2. FOR MOUND WASTEWATER DISPOSAL SYSTEMS, THE UNIT OF FILL MUST BE 25 FEET FROM ANY DOWNHILL PROPERTY LINE AND 10 FEET FROM ALL PROPERTY LINES ON THE SIDE OR UPHILL.
3. NO DISPOSAL FIELD OR REPLACEMENT AREA SHALL BE CLOSER THAN 10 FEET TO ONE ANOTHER EXCEPT AS ALLOWED FOR TRENCH SYSTEMS IN SECTION 1-907(M).
4. IF A CURTAIN OR FOUNDATION DRAIN IS DOWNSLOPE OF THE DISPOSAL FIELD, THE DISPOSAL FIELD CANNOT BE CLOSER THAN 75 FEET TO THE DRAIN. IF THE CURTAIN OR FOUNDATION DRAIN IS UPSLOPE OF THE DISPOSAL FIELD, IT SHALL BE 35' IF POSSIBLE, AND A MINIMUM OF 20 FEET TO THE DISPOSAL FIELD. THE ISOLATION DISTANCES FOR MOUND SYSTEMS SHALL BE FROM THE EDGE OF THE MINIMUM BASAL AREA OR THE EDGE OF THE ABSORPTION TRENCH OR BED WHICHEVER IS CLOSER. THIS DISTANCE MAY BE REDUCED IF THE CONSULTANT PROVIDES ADEQUATE DATA AND ANALYSIS TO SHOW THAT EFFLUENT FROM THIS SOIL BASED SYSTEM WILL NOT ENTER THE DRAIN OR INCREASED IF EFFLUENT WILL ENTER THE DRAIN.

ISOLATION DISTANCES

ENVIRONMENTAL PROTECTION RULES, CHAPTER 21, EFFECTIVE 9/29/07 SECTION 1-807

2013 TRUDELL CONSULTING ENGINEERS — LAST REVISED 2/6/2013 — SN-003

DISINFECTING WATER MAINS AND SYSTEMS

*ALL TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE TOWN ENGINEER OR PUBLIC WORKS DEPARTMENT AND PROJECT ENGINEER (AS DESIGNATED BY OWNER).

A. PRIOR TO BEING PUT INTO SERVICE, WATER MAINS SHALL BE DISINFECTED ACCORDING TO THE LATEST EDITION OF AWWA SPECIFICATION C-651. THE TABLET METHOD IN AWWA STANDARD 651 IS NOT ACCEPTABLE.

B. THE NEW LINE SHALL BE FLUSHED AT A VELOCITY OF NOT LESS THAN 2.5 FEET PER SECOND (OPEN 2-1/2 INCH HYDRANT CONNECTION). FLUSH FOR A PERIOD DETERMINED BY THE PROJECT ENGINEER FOR THE LENGTH OF MAIN TO BE DISINFECTED.

C. CHLORINATION SHALL BE ACCOMPLISHED BY INTRODUCING A SODIUM HYPOCHLORITE SOLUTION FOR A RESULTANT CONCENTRATION OF GREATER THAN 25 PARTS PER MILLION OF FREE CHLORINE.

D. USING A NOZZLE AT EACH END HYDRANT, CONTROL THE RATE OF FLOW INTO THE NEW MAIN AND PROPORTIONALLY FEED THE SODIUM HYPOCHLORITE SOLUTION INTO THE MAIN. AFTER THE SOLUTION HAS REACHED ALL POINTS IN THE SYSTEM, CLOSE THE VALVE SUPPLYING WATER FROM THE EXISTING MAIN AND THE END HYDRANTS, MAINTAIN THE HEAVILY CHLORINATED WATER IN THE MAIN FOR 24 HOURS DURING WHICH TIME ALL MAIN LINE VALVES SHOULD BE OPERATED. AFTER 24 HOURS THE MINIMUM CHLORINE RESIDUAL MUST BE AT LEAST 10 PARTS PER MILLION.

E. FLUSH HEAVILY CHLORINATED WATER FROM THE LINE AND REFILL THE LINE FOR SERVICE (USE CHLORINE DIFFUSER). TAKE AND SUBMIT TWO BACTERIOLOGICAL SAMPLES (TAKEN 24 HOURS APART) OF THE WATER TO THE STATE OF VERMONT OR A STATE APPROVED TESTING LABORATORY. IF THE RESULTS ARE UNSATISFACTORY, THE DISINFECTION PROCEDURE WILL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.

F. FINISHED WATER STORAGE STRUCTURES SHALL BE DISINFECTED IF APPLICABLE, IN ACCORDANCE WITH CURRENT AWWA STANDARD C652. TWO OR MORE SUCCESSIVE SETS OF SAMPLES, TAKEN AT 24 HOUR INTERVALS, SHALL INDICATE MICROBIOLOGICALLY SATISFACTORY WATER BEFORE THE FACILITY IS PLACED INTO OPERATION.

G. DISPOSAL OF HEAVILY CHLORINATED WATER FROM THE DISINFECTION PROCESS SHALL BE DE-CHLORINATED OR OTHERWISE HANDLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VERMONT AGENCY OF NATURAL RESOURCES.

H. THE DISINFECTION PROCEDURE (AWWA CHLORINATION METHOD 3, SECTION 4.3 C652) WHICH ALLOWS USE OF THE CHLORINATED WATER HELD IN THE STORAGE TANK FOR DISINFECTION PURPOSES IS NOT RECOMMENDED. WHEN THAT PROCEDURE IS USED, IT IS REQUIRED THAT THE INITIAL HEAVILY CHLORINATED WATER BE PROPERLY DISPOSED IN ORDER TO PREVENT RELEASE OF WATER WHICH MAY CONTAIN VARIOUS CHLORINATED ORGANIC COMPOUNDS INTO THE DISTRIBUTION SYSTEM.

DISINFECTION OF WATER SYSTEM

2013 TRUDELL CONSULTING ENGINEERS — LAST REVISED 7/12/2013 — WH-003

TESTING WATER MAINS

*ALL TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE TOWN ENGINEER OR PUBLIC WORKS DEPARTMENT IF APPLICABLE OR PRIVATE OWNER/OPERATOR AND PROJECT ENGINEER (AS DESIGNATED BY OWNER). CONTRACTOR SHALL PRE-TEST SUCCESSFULLY PRIOR TO CONTACTING PROJECT ENGINEER. THE PRE-TEST IS TO ENSURE PASSING RESULTS PRIOR TO OFFICAL TESTING OBSERVATION.

A. AFTER THE PIPE HAS BEEN LAID AND 7 DAYS AFTER THE CONCRETE THRUST BLOCKS AND ANCHORS HAVE BEEN PLACED, THE WATER MAIN SHALL BE HYDROSTATICALLY TESTED ACCORDING TO THE LATEST EDITION OF THE AWWA SPECIFICATION C-600.

B. CONTRACTOR SHALL SUPPLY ALL NECESSARY APPARATUS TO PERFORM THE HYDROSTATIC TEST.

C. TEST PRESSURE SHALL BE 200 POUNDS PER SQUARE INCH OR 1.5 TIMES THE WORKING PRESSURE MEASURED AT OR NEAR THE HIGH POINT IN THE SYSTEM, WHICHEVER IS GREATER. TEST SHALL BE A MINIMUM OF 2 HOURS IN DURATION. TESTING ALLOWANCE SHALL BE DEFINED AS THE QUANTITY OF MAKEUP WATER THAT MUST BE SUPPLIED INTO THE NEWLY LAID PIPE OR ANY VALVED SECTION THEREOF TO MAINTAIN PRESSURE WITHIN 5 PSI (34.5 kPa) OF THE SPECIFIED TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR HAS BEEN EXPELLED. TESTING ALLOWANCE SHALL NOT BE MEASURED BY A DROP IN PRESSURE IN A TEST SECTION OVER A PERIOD OF TIME. REFER TO PIPE MANUFACTURERS RECOMMENDED TESTING PROCEDURE INCLUDING PIPE STABILIZATION PRIOR TO START OF TEST.

D. THE PROJECT ENGINEER AND THE MUNICIPALITY SHALL BE CONTACTED 48 HOURS PRIOR TO TESTING.

E. ALL VALVES SHOULD BE VERIFIED AS BEING OPEN OR CLOSED AS APPROPRIATE FOR THE PORTION OF THE WATER MAIN BEING TESTED.

F. ALLOWABLE LEAKAGE SHALL BE COMPUTED BY THE FORMULA: $L=(S \times D \times P^{1/2})/148{,}000$ WHERE L IS LEAKAGE IN GALLONS PER HOUR, S IS THE LENGTH OF PIPE TESTED IN FEET, D IS THE NOMINAL DIAMETER OF THE PIPE IN INCHES AND P IS THE AVERAGE TEST PRESSURE IN POUNDS PER SQUARE INCH DURING THE TEST.

G. REPLACE AND RETEST ANY WORK FOUND TO BE DEFECTIVE AT NO EXPENSE TO OWNER.

TESTING HYDRANTS (IF APPLICABLE)

A. AFTER TESTING THE WATER MAINS, OPEN THE HYDRANT FULLY AND FILL WITH WATER. TO PREVENT CAPS FROM BEING BLOWN OFF, VENT AIR FROM ONE OF THE CAPS WHILE IT IS BEING FILLED. WHEN ALL THE AIR HAS ESCAPED, TIGHTEN THE CAP.

B. ALLOW THE PRESSURE TO BUILD UP TO MAIN LINE PRESSURE AND CHECK FOR LEAKAGE AT FLANGES, NOZZLES AND THE OPERATING STEM.

C. CLOSE THE HYDRANT. REMOVE ONE NOZZLE CAP AND PLACE THE PALM OF YOUR HAND OVER THE OPENING. DRAINAGE SHOULD CREATE A NOTICEABLE SUCTION. IF NO SUCTION OR HYDRANT DOESN'T HAVE DRAIN, MANUALLY PUMP WATER OUT OF BARREL.

D. AT PROJECT ENGINEER DISCRETION ASSIST WITH FLOW TESTING. ENGINEER TO RECORD STATUS AND RESIDUAL PRESSURE AS WELL AS FLOW RATE.

TESTING WATER MAINS AND HYDRANTS

2013 TRUDELL CONSULTING ENGINEERS — LAST REVISED 11/08/2013 — WH-001

TRUDELL CONSULTING ENGINEERS
428 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
800.879.4331 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Use of These Drawings

1. Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such or marked approved by a regulatory authority.

2. By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings, obtained all necessary permits, and have met with all applicable parties/disciplines, including but not limited to, the Engineer and the Architect, to insure these plans are properly coordinated including, but not limited to, contract documents, specifications, owner/contractor agreements, building and mechanical plans, private and public utilities, and other pertinent permits for construction.

3. Owner and Architect, are responsible for final design and location of buildings shown, including an area measured a minimum five (5) feet around any building and coordinating final utility connections shown on these plans.

4. Prior to using these plans for construction layout, the user shall contact TCE to ensure the plan contains the most current revisions.

5. These Drawings are specific to the Project and are not transferable. As instruments of service, these drawings, and copies thereof, furnished by TCE are its exclusive property. Changes to the drawings may only be made by TCE. If errors or omissions are discovered, they shall be brought to the attention of TCE immediately.

6. It is the User's responsibility to ensure this copy contains the most current revisions. If unsure, please contact TCE.

Project Title

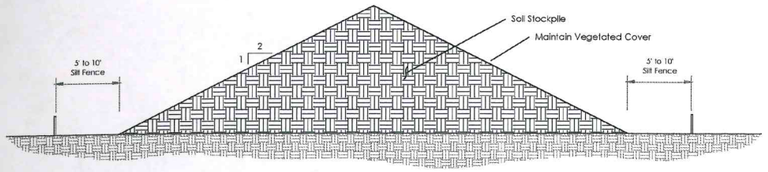
Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

Water Details

Date:	08/19/15
Scale:	Shown
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C8-04

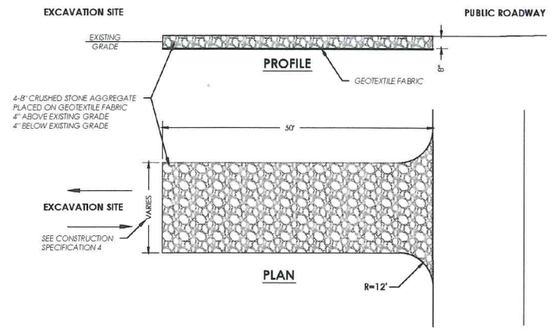


NOTES:
1. INSTALL SILT FENCE ALONG CONTOUR ON DOWNSLOPE SIDE OF STOCKPILE. COMPLETELY ENCLOSE STOCKPILE ON FLAT SITES. SILT FENCE TO REMAIN IN PLACE UNTIL MATERIAL IS REMOVED AND AREA IS STABILIZED.
2. A MINIMUM OF 5' SEPARATION BETWEEN THE TOE OF THE STOCKPILE SLOPE AND THE SILT FENCE IS REQUIRED AT ALL TIMES

TEMPORARY SOIL STOCKPILE EROSION PROTECTION

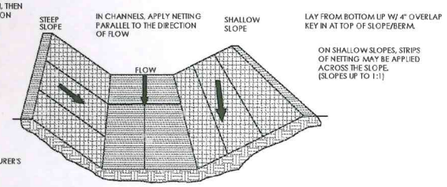
N.T.S.

CONSTRUCTION SPECIFICATIONS
1. STONE SIZE - USE 4-8" CRUSHED STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS - NOT LESS THAN 8".
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILES MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARDS CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE, IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY AND DISPOSED OF IN ACCORDANCE WITH THE EPSC PLANS. (i.e. PLACED IN A SOIL STOCKPILE OR AREA WHERE IT CAN BE STABILIZED PER EPSC DETAILS). IF SWEEPING IS THE CHOSEN METHOD FOR REMOVAL THE SWEPT MATERIAL MUST BE COLLECTED AND DISPOSED OF AS STATED ABOVE.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS BASED ON SITE CONDITIONS, WEATHER AND FLOW OF TRAFFIC.

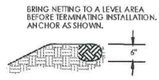


STABILIZED CONSTRUCTION ENTRANCE

NOTE: EROSION CONTROL BLANKETS SHALL BE INSTALLED PRIOR TO GROUND FREEZING TO ENSURE PROPER INSTALLATION. IF GROUND FREEZES PRIOR TO INSTALLATION, THEN OTHER METHODS OF STABILIZATION MAY HAVE TO BE EMPLOYED (CONTACT ENGINEER).

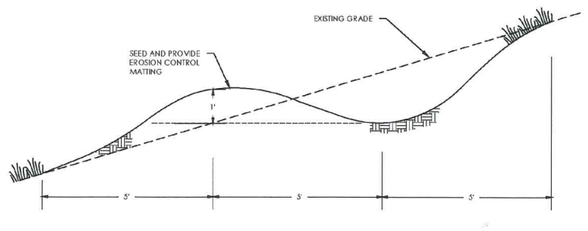


WHERE THERE IS A BERM AT THE TOP OF THE SLOPE, BRING THE NETTING OVER THE BERM AND ANCHOR IT BEHIND THE BERM.



USE EROSION CONTROL BLANKET SPECIFIED ON THE EROSION CONTROL PLAN, OR EQUAL.

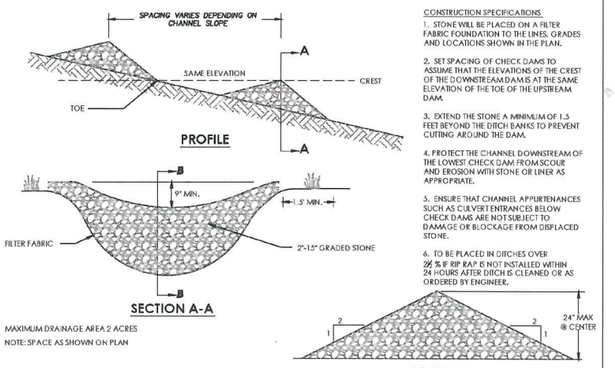
EROSION CONTROL BLANKET (SLOPES & CHANNELS)



NOTES:
1. PROVIDE CHECK DAM FOR EACH 2 FOOT DROP OR AS SHOWN ON PLANS.
2. PROVIDE CHECK DAM AND 5' x 5' SPLASH PAD ON DISCHARGE END OF EACH WATER BAR FOR FLOW SEDIMENT CONTROL.

TYPICAL WATER BAR

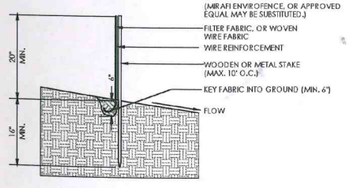
1"=2'



MAXIMUM DRAINAGE AREA 2 ACRES
NOTE: SPACE AS SHOWN ON PLAN

CONSTRUCTION SPECIFICATIONS
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAMS IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
6. TO BE PLACED IN DITCHES OVER 2% IF RIP RAP IS NOT INSTALLED WITHIN 24 HOURS AFTER DITCH IS CLEANED OR AS ORDERED BY ENGINEER.

STONE CHECK DAM



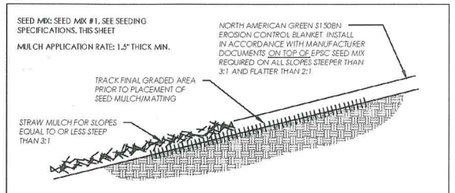
CONSTRUCTION SPECIFICATION FOR SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. WIRE FENCE REINFORCEMENT REQUIRED WITHIN 100 FT UPSLOPE OF RECEIVING WATERS.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 4" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHED HALF OF FABRIC HEIGHT.

SILT FENCE

SEED MIX: SEED MIX #1, SEE SEEDING SPECIFICATIONS, THIS SHEET

MULCH APPLICATION RATE: 1.5" THICK MIN.



SEEDING DURING CONSTRUCTION
THE SEED MIX SPECIFIED BELOW IS FOR ALL AREAS THAT ARE STABILIZED TEMPORARILY PER THIS DETAIL DURING CONSTRUCTION. FOR ALL AREAS WITH FINAL GRADE AND TOPSOIL ESTABLISHED REFER TO THE "FINAL SEEDING SPECIFICATIONS" FOR SEEDING REQUIREMENTS
1. SEED MIX:
30% RED FESCUE
30% ANNUAL RYEGRASS
30% PERENNIAL RYEGRASS
10% TALL FESCUE
[*or APPROVED EQUIVALENT]
2. APPLICATION RATE:
60lb/acre (1.4 lb/1000 s.f.)
3. MULCH APPLICATION RATE:
1.5" THICK MINIMUM
90-100% COVERAGE

NOTES:
1. SOIL SURFACE AND FILL COMPONENTS MUST NOT BE FROZEN WHEN PLACED.
2. SLOPES STEEPER THAN 2:1 MUST BE MECHANICALLY STABILIZED WITH A RETAINING STRUCTURE OR APPROPRIATE GEOTEXTILE (AS SPECIFIED BY ENGINEER).
3. STRAW MULCH or EROSION CONTROL BLANKET CAN BE USED ON AREAS WITH SLOPES EQUAL TO OR LESS STEEP THAN 2:1.
4. HAY MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED STEMS OF CEREAL GRAINS (WHEAT, OATS, BUCKWHEAT, ETC.) REASONABLY FREE OF WEEDS, TWIGS, DEBRIS OR OTHER OBJECTIONABLE MATERIAL. IT SHALL BE FREE FROM ROT OR MOLD AND SHALL BE ACCEPTABLE TO THE ENGINEER.
5. BANKS, SWALES OR OTHER GRADED AREAS THAT HAVE BEEN WASHED OUT OR HAVE BECOME DAMAGED SHALL BE REPAIRED IMMEDIATELY.

TYPICAL SOIL STABILIZATION DETAIL

N.T.S.

tce
TRUDELL CONSULTING ENGINEERS
478 BLAIR PARK ROAD | WILLISTON, VERMONT 05495
802 879 6331 | WWW.TCEVT.COM

Revisions

No.	Description	Date	By

Project Title

Albertini Subdivision
109 Pleasant Valley Road
Underhill, Vermont

Sheet Title

EPSC Details

Date:	08/19/15
Scale:	Shown
Project Number:	14-136
Drawn By:	RMP
Project Engineer:	JAD
Approved By:	
Field Book:	236

C8-05

Department of Environmental Conservation & Natural Resources Board

THIS IS NOT A PERMIT

Project Review Sheet

Date Initiated: 8/21/2015 | ANR PIN#: | WW Project#: | Pre-application Review: ☐

Project Information

General Information

PROJECT NAME (if applicable)	PROJECT TOWN
109 Pleasant Valley Road PUD	Underhill

PROJECT LOCATION (911 address if available)
109 Pleasant Valley Road

Contact(s)

CONTACT TYPE	NAME	ORGANIZATION NAME (if applicable)
Landowner	Richard and Barbara Albertini	Albertini Revocable Trust

ADDRESS	TOWN	STATE	ZIP
P.O. Box 168	Underhill	VT	05446

PHONE	CELL PHONE	EMAIL
(802)899-4294		jjalbertini@suddenlink.net

CONTACT TYPE	NAME	ORGANIZATION NAME (if applicable)
Consultant	Jennifer Desautels	Trudell Consulting Engineers

ADDRESS	TOWN	STATE	ZIP
478 Blair Park Road	Williston	VT	05495

PHONE	CELL PHONE	EMAIL
(802)879-6331, ext. 109		Jennifer.Desautels@tcevt.com

Project Description

ENTERED BY	INFORMATION SOURCE	DATE ENTERED
Jeffrey McMahon	Individual	8/21/2015 9:11 AM

PROJECT DESCRIPTION

A Planned Urban Development on 25.14 acres: 5 lots each for a proposed single family residence to be served by individual onsite water supplies and individual wastewater disposal systems.

DEC Prior Permits

PERMIT TYPE	PERMIT NUMBER

Jurisdictional Opinion(s) for permits that may be needed from the District Environmental Office ***PRIOR TO COMMENCEMENT OF CONSTRUCTION***

Act 250 Jurisdictional Opinion

This is a jurisdictional opinion issued pursuant to 10 V.S.A.§ 6007(c) and Act 250 Rule 3(A). A request for reconsideration by the district coordinator, pursuant to Act 250 Rule 3(B), must be sent to the district coordinator at the address below within 30 days of the mailing of this opinion. Effective July 1, 2013, no appeal may be taken from a jurisdictional opinion or coordinator's decision on reconsideration without reconsideration by the Natural Resources Board. Requests for reconsideration by the Board must be submitted to the Board within 30 days of the mailing of this decision or a coordinator's decision on reconsideration.

PERSON REQUESTING JURISDICTIONAL OPINION	REQUESTOR TYPE	ACT 250 PERMIT NUMBER (if any)	HAS THE LANDOWNER SUBDIVIDED BEFORE?
Jeffrey McMahon	Permit Specialist		☐ Yes ☐ No

TYPE OF PROJECT (check all that apply)

☐ Commercial ☒ Residential ☐ Agricultural ☐ Municipal ☐ State ☐ Federal

IS AN ACT 250 PERMIT REQUIRED?	COPIES SENT TO STATUTORY PARTIES?
☐ Yes ☒ No	☐ Yes ☐ No

BASIS FOR DECISION

Provided the principals have not partaken in any other subdivisions within the environmental district or within five miles and within the last five years, lot count is less than 10, not a subdivision pursuant to 10 VSA 6001(19)

DISTRICT COORDINATOR SIGNATURE

Peter E. Keibel
2015.08.24 13:53:34 -04'00'

Peter Keibel, *Coordinator* VERMONT

[phone] 802-879-5658 [email] peter.keibel@vermont.gov

Natural Resources Board
District 4 Environmental Commission
111 West Street, Essex Junction, VT 05452

Wastewater System & Potable Water Supply Permit Jurisdictional Opinion

IS A WASTEWATER SYSTEM & POTABLE WATER SUPPLY PERMIT/APPROVAL REQUIRED?

- ☒ Yes
- ☐ No
- ☐ Permit application currently under review
- ☐ Permit issued on _____

PERMIT NOT REQUIRED?

- ☐ Boundary Line Adjustment
- ☐ Home Occupation
- ☐ Clean Slate
- ☐ Notice of Permit Requirement

BASIS FOR DECISION

Proposed subdivision and construction of residences, water supplies, and wastewater systems.

REGIONAL OFFICE STAFF SIGNATURE

2015.08.21
10:42:46 -04'00'

Jessanne Wyman, *Regional Engineer* VERMONT

[phone] 802-557-1680 [email] jessanne.wyman@vermont.gov

Department of Environmental Conservation
Drinking Water & Groundwater Protection Division - Essex Regional Office
111 West Street, Essex Junction, VT 05452

The following are preliminary, non-binding determinations made by DEC Permit Specialists identifying other permits that may be needed
PRIOR TO COMMENCEMENT OF CONSTRUCTION

Preliminary, Non-binding Determination of the Applicability of Other State Permits

Note: Fact Sheet numbers below refer to permit fact sheets available at: http://www.anr.state.vt.us/dec/permit_hb/tableofcontents.htm

Agency of Natural Resources - Department of Environmental Conservation

WATERSHED MANAGEMENT DIVISION

☒ Stormwater: Developments [Fact Sheets #6.2 & 6.3]

☒ Contact: Jenna Calvi Email: jenna.calvi@vermont.gov Phone: 802-490-6166

Vermont Energy Code Assistance Center

☒ Vermont Building Energy Standards [Fact Sheet #47.2]

Contact: Kelly Launder Email: kelly.launder@vermont.gov Phone: 802-828-4039

Local Permits

☒ See your Town Clerk, Zoning Administrator, Planning Commission or Public Works

PERMIT SPECIALIST SIGNATURE

2015.08.25
08:26:07 -04'00'

Jeff McMahon, *Permit Specialist* VERMONT

[phone] 802-879-5676 [email] jeff.mcmahon@vermont.gov

Department of Environmental Conservation
Environmental Assistance Office - Essex Regional Office
111 West Street, Essex Junction, VT 05452

Town of Underhill

P.O. Box 120, Underhill, VT 05489
www.underhillvt.gov
Phone: (802) 899-4434, x106
Fax: (802) 899-2137

NOTICE OF PUBLIC MEETING

Town of Underhill Development Review Board (DRB)
Monday, October 19, 2015
6:00 PM Site Visit
6:35 PM Public Hearing
Underhill Town Hall, 12 Pleasant Valley Rd. Underhill, VT

The DRB will hold a Preliminary Subdivision Review hearing on the application of Richard Albertini for a proposed 5-lot PRD and boundary line adjustment of property located at 109 Pleasant Valley Road (PV109). This property is located in the Water Conservation and Rural Residential zoning districts. A site visit will be held on the property at 6:00 PM preceding the public hearing. The hearing will be held at Town Hall at 6:35 PM.

Additional information may be obtained at the Underhill Town Hall. The meeting and hearing are open to the public. Pursuant to 24 VSA §§4464(a)(1)(C) and 4471(a), participation in this local proceeding, by written or oral comment, is a prerequisite to the right to take any subsequent appeal. If you cannot attend the hearing, comments may be made in writing prior to the meeting and mailed to: Zoning & Planning Administrator, P.O. Box 120 Underhill, VT 0589 or to rfifield@underhillvt.gov

UNDERHILL NO. 1 FIRE DEPT. JERICHO ORGANIZED 1913

June 1, 2015

Richard and Barbara Albertini
109 Pleasant Valley Road
Underhill Vermont 05489

RE: 5 Lot Subdivision with the addition of a 5 single-family residences at 109 Pleasant Valley Road

Dear Mr. and Mrs. Albertini

We have reviewed your request to subdivide into 5 Lots and add 5 new single family residences located at 109 Pleasant Valley Road in Underhill. After reviewing the sketch plans C10-01 and C10-02 that I was provided with, the addition of the 5 single-family homes would not add any undo burden on the fire department's ability to provide reasonable fire protection to the new homes or the community.

I have attached a copy of our criteria checklist for one or two family residences for you to have. Your proposed driveway must be a minimum width of 24 feet if leading to 5 residences, **the driveway should not have a slope greater than 10% at any point**, and there should be an unobstructed height of 13'6" above the driveway. Lastly I would recommend having turnarounds at a point of each driveway near each residence to allow for large vehicles to be able to turn around without trying too back all the way to the road, especially if there are some steep grades. Depending on the design chosen, pull offs should be considered.

Please note that the property is located in area where water supply is limited to what we bring with us. We suggest you consider installing a dry hydrant in the pond located on the property.

We would also like to remind everyone that 911 address numbers are to be posted at the driveway entrance and must be a minimum of 4" in height and of contrasting colors, i.e. white on green.

If you have any questions you may contact me at 899-4025 or by e-mail at ***Harry@ujfd.org***

Sincerely,

Harry Schoppmann III
Duty Captain

Cc: Sarah McShane, Town of Underhill

Administrative Offices
PO Box 282, 211 Bridge Street
Richmond, Vermont 05477
(802) 434-2128
(802) 434-2196 (fax)
www.cesu.k12.vt.us

Mt.Mansfield Modified Union School District

August 5, 2015

Jennifer Desautels, P.E.
Project Engineer
Trudell Consulting Engineers
478 Blair Park Road
Williston, VT 05495

RE: Albertini Proposed Subdivision

Dear Sarah:

I am writing regarding the Albertini's proposed 5-lot subdivision on Pleasant Valley Road in Underhill. Mt. Mansfield Modified Union School District will be able to provide services for students this subdivision may generate at Underhill Central School, Browns River Middle School or Mt. Mansfield Union High School.

If you have any questions or concerns, contact me at your convenience.

Sincerely,

John R. Alberghini
Superintendent

cc: Underhill Town Zoning Administrator

TRUDELL
Consulting Engineers

MEMO

To: Jennifer Desautels, P.E.

From: Abigail Dery, P.E.

Date: August 31, 2015

Re: Albertini Project Access

Introduction

The proposed project consists of a 5-lot Planned Residential Development (PRD) served by a shared 24-ft wide private road within a 60' right-of-way off of Pleasant Valley Road in Underhill, Vermont. The new access will be on the west side of Pleasant Valley Road, approximately 175-ft (measured centerline to centerline) south of Mountain Road. The positioning of the project access is based on the providing the required sight distance for exiting vehicles, while minimizing bank disturbance on the west side of Pleasant Valley Road.

Project-Generated Traffic

Estimated project-generated traffic is calculated using the "Single-Family Detached Housing" land use from Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. Using the fitted curve equations, the five single family residences will generate approximately 14 trips during the AM peak hour and 8 trips during the PM peak hour.

Table 1: *Project-Generated Traffic*

Time Period	Trip Gen. Rate	Vehicle Trips
Weekday	Ln(T) = 0.92 Ln(X)+2.72	67
AM Peak Hour*	T = 0.70(X) +9.74	14
PM Peak Hour	Ln(T) = 0.90 Ln(X)+0.51	8

*actual AM trips generated will likely be lower.

Speed Study

A speed study was conducted during the one week period from 6/8/2015 to 6/15/2015 using an automatic traffic recorder (ATR) that measures speed, volume, and vehicle class. The purpose of the study was to identify a travel speed on which to base the design of the project access such that safe sight distance is available to drivers. The ATR was placed to the south of the proposed project driveway, approximately 380 feet to the south of Mountain Road. The study indicated that the 85th percentile speed along this stretch of road is 44 miles per hour (MPH), which means that 85% of all

vehicles traveled at or lower than 44 MPH during the study period. The table below outlines the results of the speed study. Additional graphs are attached to illustrate speed study results.

Table 2: *Speed Study & Traffic Volume Count*

Average Speed	40 mph
85th Percentile Speed	44 mph
Average Daily Traffic Volume	1400 vpd
AM Peak Hour – 7:00-8:00 AM	120 vph
PM Peak Hour – 4:00-5:00 PM	130 vph

Sight Distance

The measured sight distance to the north of the proposed project access is 195 ft. The proposed sight distance will be approximately 480 ft with the proposed site grading in placed.

Two measures of sight distance are used in determining intersection location. Stopping sight distance, the minimum required for safety, takes into account perception/reaction time as well as braking distance. Intersection sight distance is based on a 7.5 second gap in the traffic stream on the major road. Where this recommended gap is provided, most major-road drivers should not need to reduce speed to less than 70% of their initial speed to accommodate a turning vehicle.

The table below outlines the required stopping sight distance, recommended intersection sight distance, and proposed available sight distance for both the posted speed limit and the measured 85th percentile speed, which is used as the design speed. As identified in the table, the proposed sight distance at the driveway meets or exceeds recommended intersection sight distance.

Table 2: *Sight Distance Overview – Stopping and Intersection*

	Speed	Per AASHTO	Measured Distance	Proposed Measured Distance
Stopping Sight Distance	30 mph	200 ft	195 ft	480 ft
	45 mph	360 ft		
Intersection Sight Distance – Right Turn from Stop	30 mph	290 ft	195 ft	480 ft
	45 mph	430 ft		

The minimum safe stopping distance in five mph increments from 20 mph to 75 mph is outlined in the table below. The project access is located such that a safe stopping sight distance is provided for vehicle speeds up to 50 mph.

Table 3: Stopping Distance

Speed	Stopping Sight Distance (ft)
20	115
25	155
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

Recommended Improvements

The attached Sight Distance Plan C2-03 identifies the proposed sight lines from the new project road toward oncoming vehicles traveling on Pleasant Valley Road. Recommendations for improving sight distance include grading the bank on the west side of Pleasant Valley Road to allow for an increased intersection sight distance

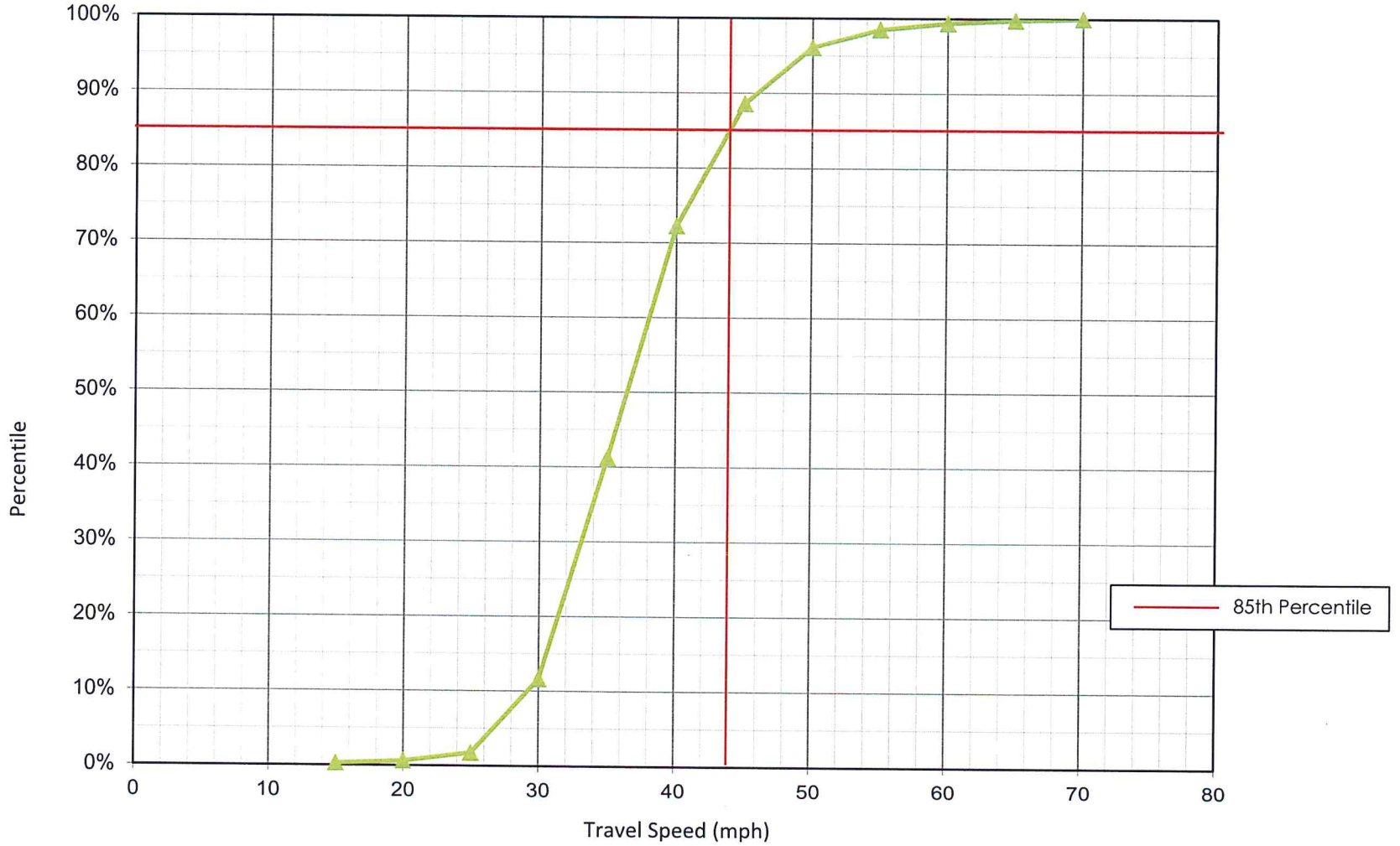
toward the north, and maintaining brush that encroaches in the Right-Of-Way on the east side of Pleasant Valley Road to the south of the project.

Conclusion

The access road for the proposed 5-lot PRD has been designed to provide intersection sight distance for a design speed of 45 mph, which is the 85th percentile speed measured during a speed study conducted on Pleasant Valley Road near the access intersection. The posted speed limit on Pleasant Valley Road is 30 mph. Based on the low volume of traffic generated by the project and the adequate sight distance at the access intersection, the project should not have an undue adverse impact on traffic safety in the project vicinity.

Albertini
14-136
8/31/2015

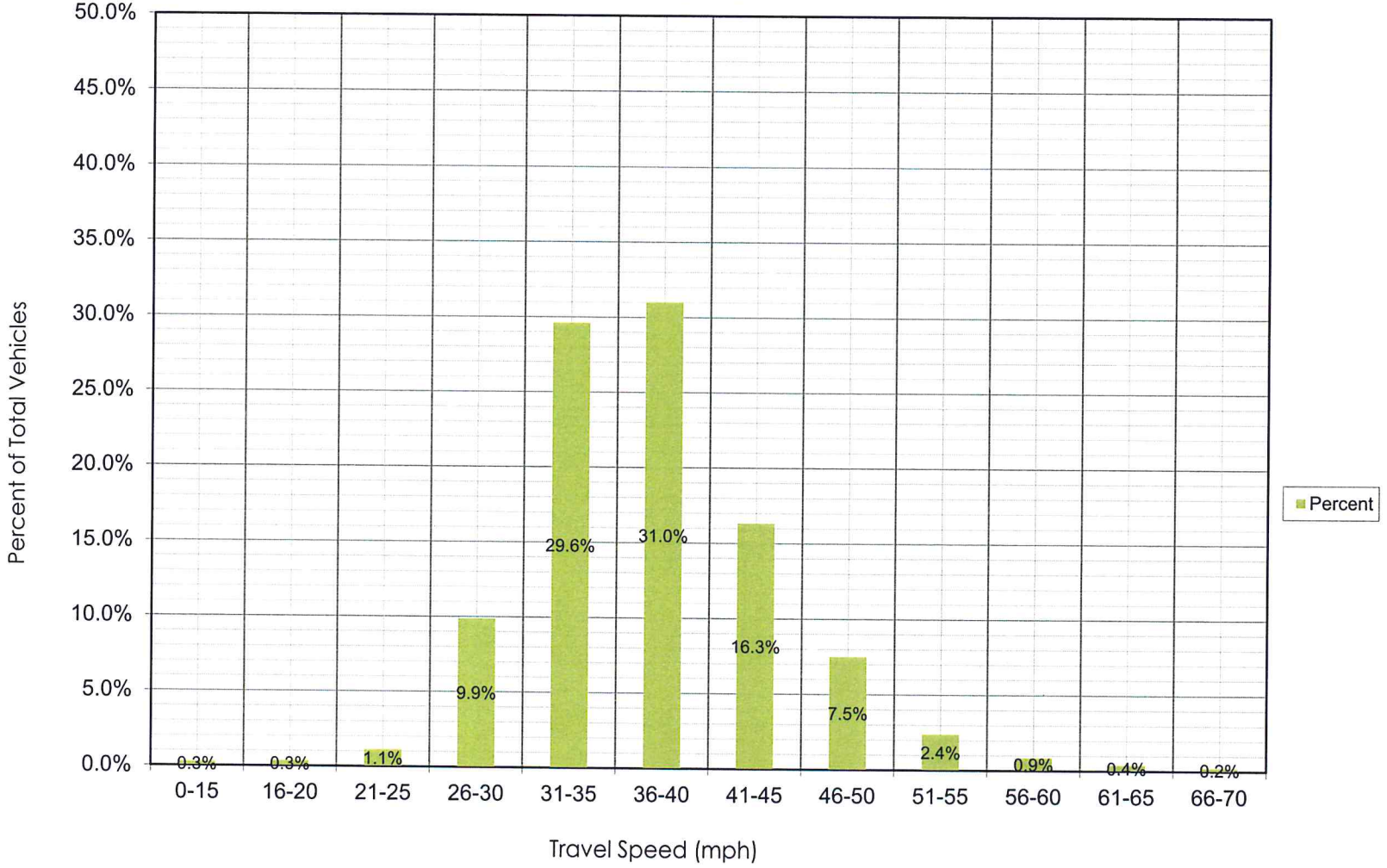
Speed Study
Pleasant Valley Road south of Mountain Road
Underhill, Vermont
June 2015



TRUDELL CONSULTING ENGINEERS (TCE)

Albertini
14-136
8/31/2015

Speed Study
Pleasant Valley Road south of Mountain Road
Underhill, Vermont
June 2015



TRUDELL CONSULTING ENGINEERS (TCE)

Rachel Fifield

From: Charlie VanWinkle <vanwinklechaz@hotmail.com>
Sent: Wednesday, September 16, 2015 9:40 AM
To: Jennifer Desautels; roger@ldengineering.com
Cc: Rachel Fifield
Subject: RE: Independent Traffic Study Review

Jennifer,

Please don't include me on any further communications regarding this application. As you have submitted an application on behalf of the Albertini's, and as chairman of the DRB, I need to be especially careful to avoid even the appearance of ex-parte communication. I will need to disclose receipt of this e-mail at the hearing. Correspondence with the board should be through Rachael Fifield the Planning and Zoning Administrator.

Thanks!

Charlie Van Winkle
88 Corbett Road
Underhill, VT 05489
802.598.0128 (m)
CharlieVanWinkle@Outlook.com

From: Jennifer.Desautels@tcevt.com
To: roger@ldengineering.com
CC: vanwinklechaz@hotmail.com; rfifield@underhillvt.gov
Subject: RE: Independent Traffic Study Review
Date: Tue, 15 Sep 2015 19:56:42 +0000

Hi Roger,

I'm forwarding along our initial submittal to the Selectboard that contains the history as to why this access location was selected for the project access. The location of the proposed access road has evolved since these initial sketch plans were developed, but this should help in explaining why we avoided putting the access road directly across from Mountain Road. We are now looking at more cut than we initially thought at this location, since we are designing for significantly above the posted speed limit.

Please let me know if you have any questions.

Thanks.
Jenn

Jennifer A. Desautels, P.E.
Project Engineer

e. jenn.desautels@tcevt.com
p. 802.879.6331 x109
c. 802.370.4270

TRUDELL
Consulting Engineers

Civil Engineering Land Surveying Landscape Architecture Environmental Services

478 Blair Park Road, Williston, Vermont 05495 www.tcevt.com

From: Rachel Fifield [mailto:Rfifield@underhillvt.gov]
Sent: Tuesday, September 15, 2015 10:39 AM
To: roger@ldengineering.com
Cc: Jennifer Desautels; Charlie VanWinkle
Subject: Independent Traffic Study Review

Dear Roger,
For the review of the existing traffic study on the development road we discussed on Friday the 11th, I've put together this package of information. If there's anything you'd like to see that isn't included, please let me know. Attached to this email, please find the following items for your review, concerning the property at 109 Pleasant Valley Road in Underhill, DRB-15-07.

1. A copy of the existing traffic study for DRB-15-07
2. A copy of the site plan for DRB-15-07
3. A copy of the driveway plan for DRB-15-07
4. A copy of the sight distance information for DRB-15-07
5. A copy of the grading profile for DRB-15-07
6. A copy of the Development Review Board letter after Sketch Review of DRB-15-07, traffic study conditions highlighted.

In reference to your questions about regulations, our town regs are online (Town of Underhill Zoning Regs link) and this project would need to specifically meet the requirements under Section 3.2 (10) Development Roads, but **most relevant is Section 8.6 (B)** starting on page 157 which covers development roads for subdivisions. Although the DRB does not have jurisdiction over the Road Ordinance (link), the Selectboard, who does, will later use these regulations in granting a highway access permit. If there are any issues with conformance there, we would like to know.

We are looking to you to provide technical guidance to the DRB in making a determination as to the adequacy of the submittal in terms of generally accepted engineering practices. We would like a recommendation as to the applicability and conformity of the design improvements in accordance with guidelines established by VAOT, AASHTO and our own zoning regulations. We would also like to know about conformance with our Sketch Plan Approval letter (dated June 3, 2015) and any additional areas of concern regarding traffic safety. If you have any questions, I can be reached at the contact information below.
Sincerely,

Rachel Fifield

Underhill Planning and Zoning Administrator
P.O Box 120 Underhill VT 05489
(802) 899-4434x 6

October 9, 2015

Rachel Fifield, Planning & Zoning Administrator
Town of Underhill
P.O. Box 120
Underhill, VT 05489

RE: Albertini Subdivision Traffic Review

Dear Rachel,

As requested, we have performed an independent traffic study review of the plans and traffic study for the proposed five lot Albertini Subdivision which have been submitted to the Underhill Development Review Board for Preliminary Plat approval. The plans reviewed were the ones labeled "Preliminary Submission Set", dated and/or last revised August 19, 2015 that were sent via email from your office on September 28th. Our review examined whether the foregoing submittal is in conformance with the Town of Underhill Zoning Regulations, the Town of Underhill Road Ordinance and with generally accepted engineering practices with regard to anticipated traffic congestion and safety impacts of this subdivision, and its roadway and driveway design.

Zoning Regulations

1. Section 3.2 Access: It is our opinion that the proposed roadway and driveway layout conforms with the requirements of this section. We note that the proposed PUD maximizes the use of shared roadways and driveways and creates only one new access onto Pleasant Valley Road. Suitable access easements are provided. We presume that there will be legal documents that will allocate the required road maintenance responsibilities among the five lots.

   Section 3.2.D.9 outlines specific design standards for driveways. The proposed driveways to each lot conform to the required standards. We note that the driveways to Lots 1 and 5 both have a 25 ft section whose grade exceeds 12%, but when averaged with adjacent sections on either side, the average grade over the resulting 50 ft section is less than 12%.

   Section 3.2.D.10 pertains to development roads, which the primary access roadway, Applewood Lane, will be. Such roads must meet town highway standards (Road Ordinance) and VTrans Standard Detail A-76.

2. Section 8.6 Transportation Facilities:
   A.1 Not applicable.

   A.2 It is our opinion that the proposed road and driveway layout satisfies this subsection.
   A.3 A highway access permit will be required from the Underhill Selectboard.

   A.4 Sheet C6-03 identifies a sight line (Section A-A) extending to the north over what will be private property on Lots 1 and 2. The south end of this sight line needs to begin 15 ft back from the edge of Pleasant Valley Road's traveled way (Sta 0+15± on Applewood Lane). We recommend that the legal documents for this subdivision include provisions to maintain the land between this sight line and Pleasant Valley Road free of brush, fences and other potential obstacles that would impede the visibility of approaching southbound Pleasant Valley Road traffic.

   A.5 Satisfied.

   A.6 Satisfied.

   A.7 Not applicable.

   A.8 This section appears to be the most appropriate under which to discuss the location of Applewood Lane's proposed intersection with Pleasant Valley Road. As presently proposed, Applewood Lane will create two offset T-intersections located 176 ft apart (Sheet C6-03). Mountain Road is a dead-end road providing access to local farms, residences and the Underhill State Park. A large majority of the traffic using Mountain Road travels to/from the south. In situations where there may be additional future development and/or extensions of local roads, it is desirable to create four-way intersections where possible instead of offset T-intersections. This is particularly true if future signalization is anticipated. These conditions do not exist with either Applewood Lane or Mountain Road.

   There is a concern with closely spaced offset T-intersections in how left-turns from the major road onto the side roads will function. The proposed configuration of Applewood Lane relative to Mountain Road is the preferred "near-left/far-right" configuration[1]. This configuration helps prevent possible negative traffic congestion impacts in the event of simultaneous left-turns entering the two side streets during peak traffic periods. Another concern with closely spaced offset T-intersections is the ability of major road traffic to monitor one intersection at a time. For this reason, the VTrans Access Management Guidelines recommends a 200 ft spacing of unsignalized accesses on state highways having a 30 mph posted speed limit. The ITE Neighborhood Street Design Guidelines recommends a 150 ft spacing for the near-left/far-right configuration where local roads

[1] Neighborhood Street Design Guidelines, Institute of Transportation Engineers, 2003

(Applewood Ln & Mountain Rd) intersect with a collector road (Pleasant Valley Rd). There does not appear to be a similar spacing standard in either the Zoning Regulations or the Road Ordinance.

A.9 Not applicable.

B.1 We concur with the Project-Generated Traffic calculations presented in the August 31, 2015 Memo by Abigail Dery, P.E., of Trudell Consulting Engineers.

B.2 Our review did not include examination of subsections a-c. With respect to subsection d, it is our opinion that the proposed location of Applewood Lane will provide a safe intersection, will minimize the amount of required cut and fill, and will maintain reasonable finished grades. We respect to subsections e and f, it appears that there is no potential for future connections to existing or planned roads adjoining this subdivision.

B.3 The design of Applewood Lane satisfies the requirements of this section with one exception. Applewood Lane's proposed 24 ft width provides a wider overall cross-section than the 9/0 travel lane and shoulder widths shown in Table 8.1 for a roadway having a 50-100 vpd design volume. With respect to subsection c, our review did not include an examination of pre- or post-development stormwater runoff. Several stormwater related concerns, however:

a) The relatively steep slopes of the roadside drainage swales will necessitate careful attention to erosion potential. We recommend the installation of stone lining, regularly spaced stone check dams and other appropriate erosion prevention measures in those swales.
b) Based on the contours shown on Sheet C3-02 where the driveways to Lots 2 and 4 diverge, it appears that the 18" culvert across Lot 2's driveway may be running uphill. Unless the inlet is intended to have a sump, the outlet of this culvert needs to be extended further downslope.
c) The road profile on Sheet C6-01 indicates that the low point (Sta 0+12) in Applewood Lane at its intersection with Pleasant Valley Rd will have an elevation of 920.7±. Sheet C2-01 gives the inlet invert of the new 18" culvert at this location as being 919.0. This provides approximately 3" of gravel cover over the culvert. Accepted engineering practice is to provide a minimum of 24" of cover. Additional detail (a larger scale plan) is needed showing the proposed modifications to the existing roadside swale south of Applewood Lane along the west side of Pleasant Valley Road towards the 24" culvert to the south.
d) Adequate cover also needs to be provided over all driveway culverts.
e) Lot 5's driveway includes a downstream level spreader at the outlet of the 15" culvert (Sta 1+80±). This should also be detailed in a larger scale plan. This level spreader will be responsible for dispersing a large majority of the runoff from the upper section of Applewood Lane and the lot driveways. The design of this spreader should account for the concentrated culvert discharge potentially blowing it out in a large rain event.

f) Outfall protection using stone rip-rap may be appropriate at other culvert locations.

Lastly, with respect to subsection e, there is no indication on the preliminary plans whether Applewood Lane will have a paved or gravel surface. VTrans Standard Detail A-76 and the Town Road Ordinance recommend paving roads having grades exceeding 7%. Steep gravel roadways, particularly those having grades of 10% or greater, require regular maintenance grading which a private homeowners' association may not always keep up with.

B.4 It is our opinion that the proposed subdivision will not unduly burden any nearby town highways or intersections. We recommend that the DRB require a form of surety to insure that the roadways and driveways are constructed in accordance with the approved plans.

B.5 & B.6 - Not reviewed.

C. There appears to be adequate parking provided on each proposed lot.

D. No opinion.

E. It is our opinion that the 12 ft wide lanes required by VTrans A-76 will, under the low volume conditions that will exist on Applewood Lane, provide adequate space for pedestrian travel outside of the actual traveled way in this rural environment.

Town Road Ordinance

There are several requirements of the Town Road Ordinance that may be pertinent to the DRB's review:

1. Section 5.4 - Requires that driveway grades not exceed 10% and that the length of a 10% grade not exceed 500 ft. Express written permission of the Selectboard is required for a single grade of 12% not exceeding 50 ft in length. We interpret this to require specific Selectboard approval of any grade between 10% and 12%, and note that all five driveways have such grades. Lot 1's driveway also has a grade of 12.3% between Sta 2+75 and Sta 3+00 that exceeds the permitted 12% maximum.

2. Section 6.4.B - Requires a paved apron of at least 10 ft in length at the base of Applewood Lane if Applewood Lane is to have a gravel surface. Sheet C2-01 specifies a 10 ft wide paved apron. We recommend that the length of the paved apron be extended to at least 30 ft so as to maintain the sag vertical curve at the base of Applewood Lane which otherwise will be filled in by gravel migrating downhill over time.

3. Section 6.4.C - A hammerhead turnaround is proposed at the end of Applewood Lane. The width of both legs of the turnaround narrows to 14 ft. There is no standard hammerhead turnaround design referenced in the Road Ordinance or Zoning Regulations. We recommend that the applicant verify that the proposed 14 ft width and corner radii provides adequate width

for emergency vehicles and other large trucks (garbage trucks, plow trucks, fuel trucks, etc.). We recommend that the AASHTO SU-40 (tandem axle single-unit truck) turning template be used for this purpose.

4. With regards to the design requirements outlined in Sections 6.5.B.1 and 6.5.B.2, all driveway and roadway centerline curve radii should be labeled.

5. We presume that the typical gravel drive detail shown on Sheet C8-01 also applies to Applewood Lane. If not, a separate roadway cross-section detail should be added. The typical gravel drive detail shows a 2 ft gravel shoulder plus a 3 ft graded shoulder to the cross-slope break. The grading shown on the plans, however, do not reflect these additional widths. This should be clarified and/or corrected.

6. In the upper left corner of Sheet C8-01 is a typical gravel road or parking section. We recommend that the residential road cross-section of the far left column be used for Applewood Lane. Additionally, who decides where the 6" of sand borrow (layer "C") is needed? If provided over poorly drained soils, the sand borrow needs to daylight to roadside swales in order to be effective (the typical gravel drive detail to the right shows a box cut). Being a private road, how much construction oversight will be provided? The placement of the geotextile stabilization fabric differs in the two details (one is above the sand and the other is beneath the sand).

Conformance with June 3, 2015 Sketch Plan Approval Letter

In general, it appears that the August 31, 2015 Memo by Abigail Dery, P.E., of Trudell Consulting Engineers provides only that information which was specifically requested in the Sketch Plan Approval Letter. It omits any discussion or analysis of potential traffic congestion impacts (e.g. intersection capacity analyses of existing and future levels of service) or of existing traffic safety conditions and potential impacts (e.g. Pleasant Valley Road crash history and geometric conditions) that normally would be included in a traffic impact analysis.

We note that in Table 2 of the above-referenced Memo, the AASHTO sight distances given are for right-turns exiting Applewood Lane. While that may be the prevailing direction of exiting traffic, sight distances for exiting left-turns should also be presented. Those distances equal 335 ft for 30 mph and 500 ft for 45 mph.

Additionally, the stopping sight distances shown in Table 3 are for level grades. Pleasant Valley Road has a downhill grade (we estimate an average of 3%) approaching the Applewood Lane intersection from the north. The stopping sight distances should be adjusted accordingly.

We recommend that the sight line shown on Sheet C6-03 be revised to start from a point 15 ft back from the Pleasant Valley Road traveled way. This is likely to reduce the actual sight distance available somewhat with the proposed grading as currently shown on that sheet.

We note that AASHTO itself recognizes that the minimum sight distance required to provide adequate safety at intersections is the minimum stopping sight distance; which in this case equals 378 ft (45 mph 85th percentile speed on an average 3% downhill grade). In comparison, providing 440 ft of intersection sight distance to the north would satisfy AASHTO's intersection sight distance standards for the average speed of 40 mph. The latter is what we recommend the Applicant and the Town strive to provide for vehicles exiting Applewood Lane looking north.

We appreciate this opportunity to be of assistance. Should you have any questions concerning the above or desire additional information or clarification of any item, please feel free to contact me.

Sincerely,

Roger Dickinson

Roger Dickinson, PE, PTOE

P:\2015\15098\Fifield traffic review letter.doc

DRAFT

FOR DISCUSSION PURPOSES ONLY

COMMON ROADWAY MAINTENANCE AGREEMENT

WHEREAS, Richard and Barbara Albertini, and John J. Albertini and Christine M. Albertini, as Trustees of the Albertini Revocable Declaration of Trust dated June 8, 2008 (hereafter together referred to as "Declarants") are the owners of certain lands and premises containing approximately 23 acres in the Town of Underhill, Vermont, title to which lands and premises became vested in the Declarants by Deeds dated _____ and recorded in Volume __, at Pages ___, of the Underhill Land Records (the "Property"), and;

WHEREAS, the Declarants have established a plan for the subdivision of the Property into five (5) residential building lots (the "Lots"), as more particularly shown on a subdivision plat entitled, "Richard & Barbara Albertini, 109 Pleasant Valley Road, Underhill, Vermont", dated _____ prepared by Trudell Consulting Engineers, Project Number _____, Sheet Number _____and to be recorded simultaneously herewith in the Underhill Land Records;

WHEREAS, the Lots share a common access right of way located on and over Lots 1 and 3 (the "Common Roadway") off of Pleasant Valley Road, a town highway; and

WHEREAS, it is the desire and intent of the Declarants to establish and declare covenants for the maintenance, repair and replacement of the Common Roadway and related improvements, for the benefit of the owners of the Lots, and their heirs, successors and assigns (the "Lot Owners"), which covenants, by acceptance of the deeds conveying the Lots to Lot Owners, shall be binding on the Lot Owners and the Lots, and shall be deemed to pertain to and run with the land thereof;

NOW THEREFORE, the Declarants hereby establish and declare the following covenants, which shall be deemed to run with and pertain to the land comprising the Lots and which shall bind and inure to the benefit of each Lot Owner, their heirs, successors and assigns, as hereinafter described:

1. The portion of Lots 1 and 3 as shown on the Subdivision Plan entitled "Subdivision Plat, Richard & Barbara Albertini, Pleasant Valley Road, Underhill, Vermont", dated _____ prepared by Trudell Consulting Engineers, Project Number _____and labeled as "60' Wide Easement" is hereby established and declared as a perpetual private right of way and easement over and upon Lots 1 and 3 in favor of and benefitting the present and future owners of the Lots. The Common Roadway is hereby established in perpetuity and shall run with and not be severable from the title to the Property and/or the Lots. The centerline of the easement and right of way shall be the centerline of the Common Roadway as constructed.

2. The Common Roadway shall be used and enjoyed solely and exclusively as a private common roadway by the owners of the Lots, their guests and invitees, for vehicular and pedestrian access to the Lots, and for installation of electric, telephone, television and similar utilities and facilities to serve the Lots. For purposes of clarification, no machinery, trailers, vehicles or other property may be stored or parked upon the Common Roadway by a Lot

Owner, it being understood that the Common Roadway is for said access and utility purposes only.

3. Title to the Common Roadway shall rest and remain with the owners of Lots 1 and 3, subject to the rights of the owners of Lots 2, 4, and 5 to use the Common Roadway for a single access road and utilities in common with the owners of Lots 1 and 3.

4. No Lot shall be responsible for any maintenance fees for that calendar year unless a foundation has been placed on a lot by _____ of such year.

5. Lot Owners shall meet in Underhill, Vermont during the month of _____ of each year (or, in the event of emergency, upon 10 days notice from any Lot Owner) to establish a budget and assessment for maintenance and repair of the Common Roadway. The foregoing notwithstanding, Lot Owners may, in lieu of meeting, establish the scope of work and budget by written agreement signed by all Lot Owners. Meetings may be attended in person or by telephone conference provided all participants have the opportunity to hear discussion and to comment. Multiple owners of a Lot shall constitute one Lot Owner for purposes of this Agreement.

6. A written agreement of the Lot Owners may authorize a property management company or other agent or representative to engage such services or incur such expenses as are required to perform necessary maintenance and repair of the Common Roadway.

7. In the event of dispute among the Lot Owners or their representatives with respect to the scope of the work or annual budget, a decision by the owners of any three of the Lots shall be controlling.

8. In the event the Lot Owners fail or are unable to meet and/or approve a scope of work and budget for maintenance and repair of the Common Roadway, any of the Lot Owners shall have the right upon thirty (30) days written notice to the other Lot Owners to contract for necessary maintenance and repair services.

9. The Lot Owner giving the notice shall, at the end of the thirty day period, have the authority to enter into such contracts for maintenance of the Common Roadway as such Lot Owner may deem reasonable and necessary, and all Lot Owners shall be deemed to have authorized such contracts or agreements and shall be obligated for their share of the costs thereof.

10. If during the thirty (30) day period the Lot Owners receiving notice file written objections to the proposal for maintenance and repair by the Lot Owner giving the notice, then the Lot Owner giving the notice shall not have the authority to act on behalf of or bind the other Lot Owners, and a meeting of Lot Owners shall be convened within a reasonable period of time not to exceed twenty (20) days to approve a scope of work and budget.

11. As and when bills for maintenance and repair work required and authorized in accordance with these covenants are rendered by the persons performing the services or providing the

materials, copies of such bills shall be submitted to each of the Lot Owners together with an assessment for each Lot Owner's proportionate share of the amount due.

12. The owners of each Lot shall, not later than thirty (30) days following notice of the assessment, pay their proportionate share of the invoice, either directly to the person providing the services or materials or to the Lot Owner's agent who shall in turn pay the invoice. The Lot Owners hereby agree to share in the cost of maintenance and repair pro rata based upon the number of Lots owned, regardless of the size of any particular Lot or distance traveled over the Roadway; provided, however, that in the event that a Lot Owner, or Lot Owner's guest, agent or invitee, causes damages to the Roadway other than ordinary wear and tear, including but not limited to damage caused during construction activities and the like, said Lot Owner shall be required to repair such damage and bear the cost thereof exclusively, in a timely and professional manner, at said Lot Owner's sole expense.

13. If a Lot Owner fails to pay their assessment within the time provided under paragraph 12 above, such assessment shall thereafter bear interest at 1½ percent per month on such assessment and on any amounts advanced or paid by the other Lot Owners on account of the delinquent Lot Owner. In addition, there shall be included in the amounts due from the delinquent Lot Owner all costs and expenses, including legal fees, incurred by the other Lot Owner or Lot Owners in collecting the assessment from the delinquent Lot Owner and, in the event legal action is instituted to collect the assessment, the party bringing the legal action shall be entitled to an ex parte writ of attachment against the property of the delinquent Lot Owner.

14. The Lot Owners hereby agree on behalf of themselves, their heirs, personal representatives, successors, and assigns, to maintain said Common Roadway and to perform repairs so as to maintain the Common Roadway in good and passable condition, and in compliance with applicable State of Vermont and Town of Underhill road ordinances and standards for private shared roadways. Without limiting the foregoing, the terms, "maintenance" and "repair" may include, but not be limited to, repairing the roadway surface, adding stone, clearing obstructions, grading or scraping the roadway as necessary, cleaning or recutting ditches as necessary, trimming brush along the roadside, snow plowing and ice removal, unplugging or opening culverts or drainpipes, and performing any and all other necessary work required to maintain the Roadway in a condition that will allow for reasonable access by standard passenger vehicles and emergency vehicles.

15. It is agreed that _____ shall initially be the agent to contract and oversee and do all acts necessary to accomplish the repairs and maintenance required and/or authorized under this Agreement. The agent may at any time be replaced at the direction of a majority of the Lot Owners, and shall be permitted to withdraw as agent at such time as Declarants do not own a majority of the Lots.

Dated at _____, Vermont this _____ day of _____, 2015.

_____

_____

_____

_____

STATE OF VERMONT
COUNTY OF CHITTENDEN

At _____ in said County and State on this _____ day of _____, 2015 personally appeared _____ who acknowledged the foregoing instrument by them sealed and subscribed to be their free act and deed.

Before me: _____
Notary Public

My Commission Expires: 2/10/19

H:\A\Albertini\Underhill Subdivision\Common Roadway Maintenance Agreement.doc

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, that we, **Richard J. Albertini and Barbara A. Albertini** , of Underhill, County of Chittenden, and State of Vermont, and **John J. Albertini and Christine M. Albertini, as Trustees of the Albertini Revocable Declaration of Trust** dated June 8, 2008**,** of Eureka, County of Humboldt, State of California, Grantors, in consideration of -----**TEN AND MORE DOLLARS-----** paid to our full satisfaction by, _____ Grantees, by these presents, does freely **GIVE, GRANT, SELL, CONVEY AND CONFIRM** unto the said Grantees, _____ and their heirs and assigns, in and to all right and title we, or our heirs and assigns, have in, and to a certain parcel of land in the Town of Underhill, County of Chittenden, State of Vermont, described as follows, viz:

Being a parcel of land containing 8.25 acres, more or less, and being Lot 4 as shown and laid down on a subdivision plat entitled "Richard & Barbara Albertini, Pleasant Valley Road, Underhill, Vermont," prepared by Trudell Consulting Engineers, dated _____, Project Number 14-136, Sheet Number C101, and recorded as Map Slide #_____ of the Town of Underhill Land Records (the "Plan"). Lot 4 shall have an address of _____, Underhill, Vermont. Said land and premises are more particularly described as follows:

[insert metes and bounds]

The herein conveyed Lot 4 is benefitted by the following easements and rights of way:

1. A twenty foot wide easement and right of way to construct, maintain, repair and replace a driveway for vehicle and pedestrian access to Lot 4, and for underground utilities, located along the shared boundary of Lot 2 and Lot 4, and depicted on the Plan as "20' wide easement for Lot 4";

2. A forty foot wide easement and right of way to construct, maintain, repair and replace a shared driveway, for vehicle and pedestrian access to Lots 2 and 4, and for underground utilities, in common with Lot 2, located along the shared boundary lines of Lot 1 and Lot 3, and depicted on the Plan as "40'wide easement for Lots 2 & 4", costs of such construction, maintenance, repair and replacement to be borne by the owners of said lots benefitted by this easement and right of way, provided however that initial construction costs shall only be shared to the extent an owner is building on their respective lot; and

3. A sixty foot wide easement and right of way with hammer head turn around to construct, maintain, repair and replace a shared roadway and associated improvements, for purposes of vehicle and pedestrian access and underground utilities, in common with other lots of the development, located along the shared boundary lines of Lot 1 and Lot 3, and depicted on the Plan as "60'wide easement".

The herein conveyed Lot 4 is conveyed subject to, and has the benefit of, the following:

1. Terms and conditions of the final plan approval for 5 lot subdivision by the Town of Underhill Development Review Board at a meeting held on _____, as set forth in Findings of Fact dated _____.

2. Terms and conditions of State of Vermont Wastewater System and Potable Water Supply Permit #_____, dated _____ and recorded in Volume _____ at Pages_____ of the Underhill Land Records.

3. Terms and Conditions of the Common Roadway Maintenance Agreement dated _____ and recorded in Volume _____ at Pages _____ of the Underhill Land Records; and

4. Utility easements of record.

[insert additional provisions, restrictions as appropriate].

Said premises are a portion of the land and premises conveyed to Grantors by the following deeds:

1. Warranty Deed of Richard J. Albertini and Barbara A. Albertini to John T. Albertini and Christine M. Albertini, as Trustees of the Albertini Revocable Declaration of Trust dated December 19, 2014, and recorded in Volume 211 at Pages 501-502 of the Town of Underhill Land Records as to an undivided one-half interest;

2. Warranty Deed of Lawrence M. Casey and Yvonne Casey to Richard J. Albertini and Barbara A. Albertini and George Chadwick Gregson and Carolyn S. Gregson dated October 10, 1991, and recorded in Volume 71 at Pages 213-214 of the Town of Underhill Land Records, and to Carolyn S. Gregson by Quit Claim Deed of George Chadwick Gregson dated August 2, 1999, and recorded in Volume 98 at Page 140 of the Town of Underhill Land Records;

3. Warranty Deed of Carolyn S. Gregson to Richard J. Albertini and Barbara A. Albertini dated September 21, 2010 and recorded in Volume 183 at Pages 309-310 of the Town of Underhill Land Records; and

4. Warranty Deed of John Angelino and Denise Angelino to Grantors dated _____ and recorded in Volume ___ at Pages _____ of the Town of Underhill Land Records (one of two deeds of a boundary adjustment the second deed being a Warranty Deed of Grantors to John Angelino and Denise Angelino dated _____ and recorded in Volume ___ at Pages _____ of the Town of Underhill Land Records.

Reference is hereby made to the above-referenced instruments, the records thereof, and references therein, in further aid of this description.

Grantees, by acceptance of this Deed, acknowledges that use and development of the herein conveyed lands and premises are subject to local and State laws, rules, ordinances and regulations, including building, zoning, and flood regulations, and wastewater system and potable water supply rules.

[insert language for construction and use as a primary residence within applicable time period for land gains exemption].

TO HAVE AND TO HOLD said granted premises, with all the privileges and appurtenances thereof, to the said Grantees, _____, to their own use and behoof forever; and we the said Grantors, **Richard J. Albertini and Barbara A. Albertini** and **John J. Albertini and Christine M. Albertini, as Trustees of the Albertini Revocable Declaration of Trust** dated June 8, 2008**,** for ourselves and our heirs, executors and administrators, do covenant with the said Grantees, _____, and their successors and assigns, that until the ensealing of these presents we are the sole owners of the premises and

have good right and title to convey the same in manner aforesaid, that it is **FREE FROM EVERY ENCUMBRANCE**, except as aforesaid, and we hereby engage to **WARRANT AND DEFEND** the same against all lawful claims whatever, except as aforesaid.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of _____, 201_.

IN THE PRESENCE OF:

_____ Witness As To Both

_____ **Richard J. Albertini**

_____ **Barbara A. Albertini**

STATE OF VERMONT
CHITTENDEN COUNTY, SS.

At _____, in said County, this ____ day of _____, 201_, personally appeared Richard J. Albertini and Barbara A. Albertini, and they acknowledged the foregoing instrument, by them sealed and subscribed, to be their free act and deed.

Before me, _____
Notary Public
My Commission Expires on 2/10/19

IN THE PRESENCE OF:

Trustees of the Albertini Revocable Declaration of Trust

_____ Witness As To Both

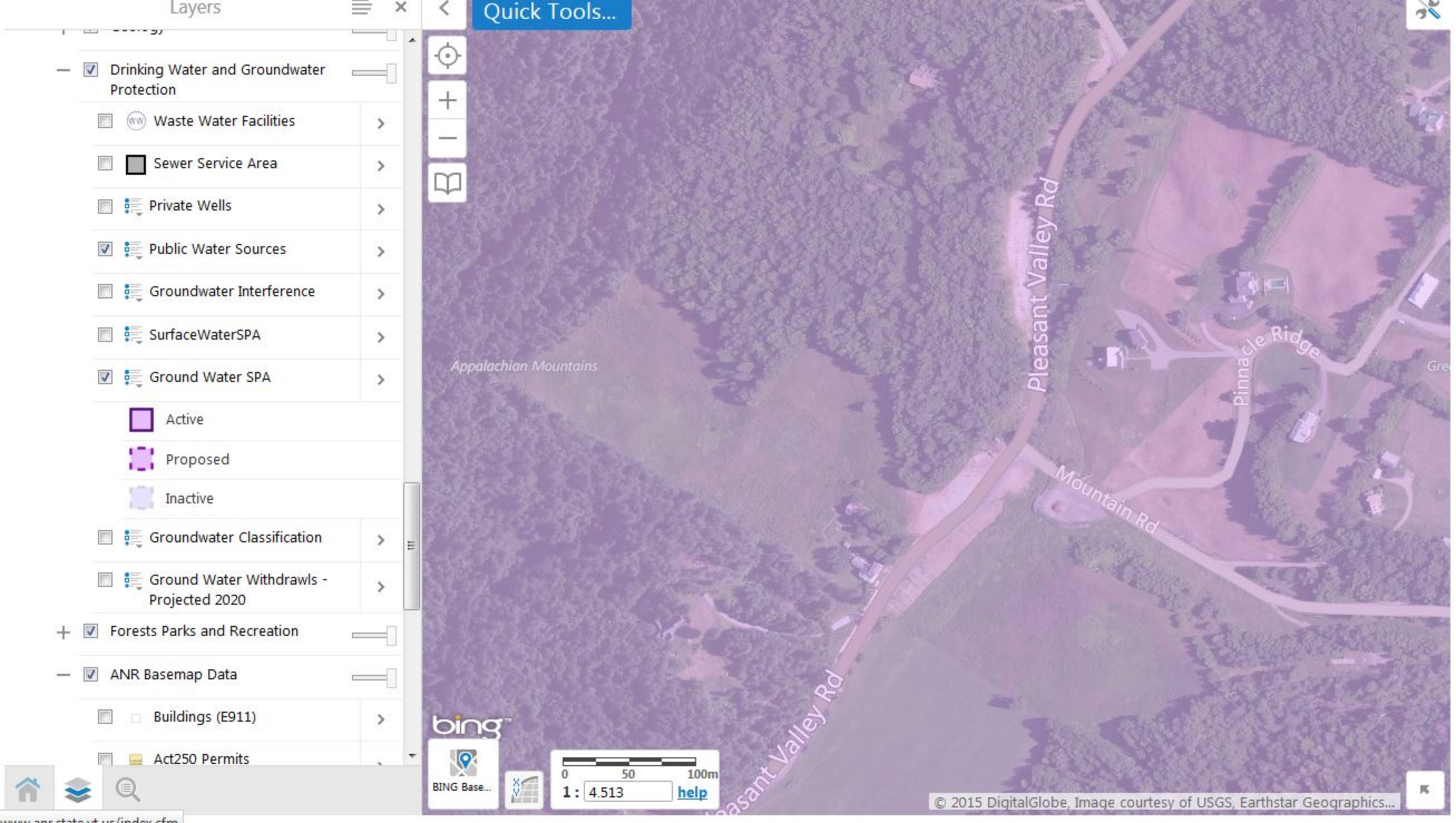
_____ **John J. Albertini, Trustee**

_____ **Christine M. Albertini, Trustee**

STATE OF _____
_____COUNTY, SS.

At _____, in said County, this ____ day of _____, 201_, personally appeared **John J. Albertini and Christine M. Albertini, as Trustees of the Albertini Revocable Declaration of Trust** dated June 8, 2008, and they acknowledged the foregoing instrument, by them sealed and subscribed, to be their free act and deed and the free act and deed to the Albertini Revocable Declaration of Trust.

Before me, _____
Notary Public
My Commission Expires on _____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Waste Water Facilities
Sewer Service Area
Private Wells
Public Water Sources
Groundwater Interference
SurfaceWaterSPA
Ground Water SPA
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Proposed
Inactive
Groundwater Classification
Ground Water Withdrawls - Projected 2020
Forests Parks and Recreation
ANR Basemap Data
Buildings (E911)
Act250 Permits
Appalachian Mountains
Pleasant Valley Rd
Pinnacle Ridge
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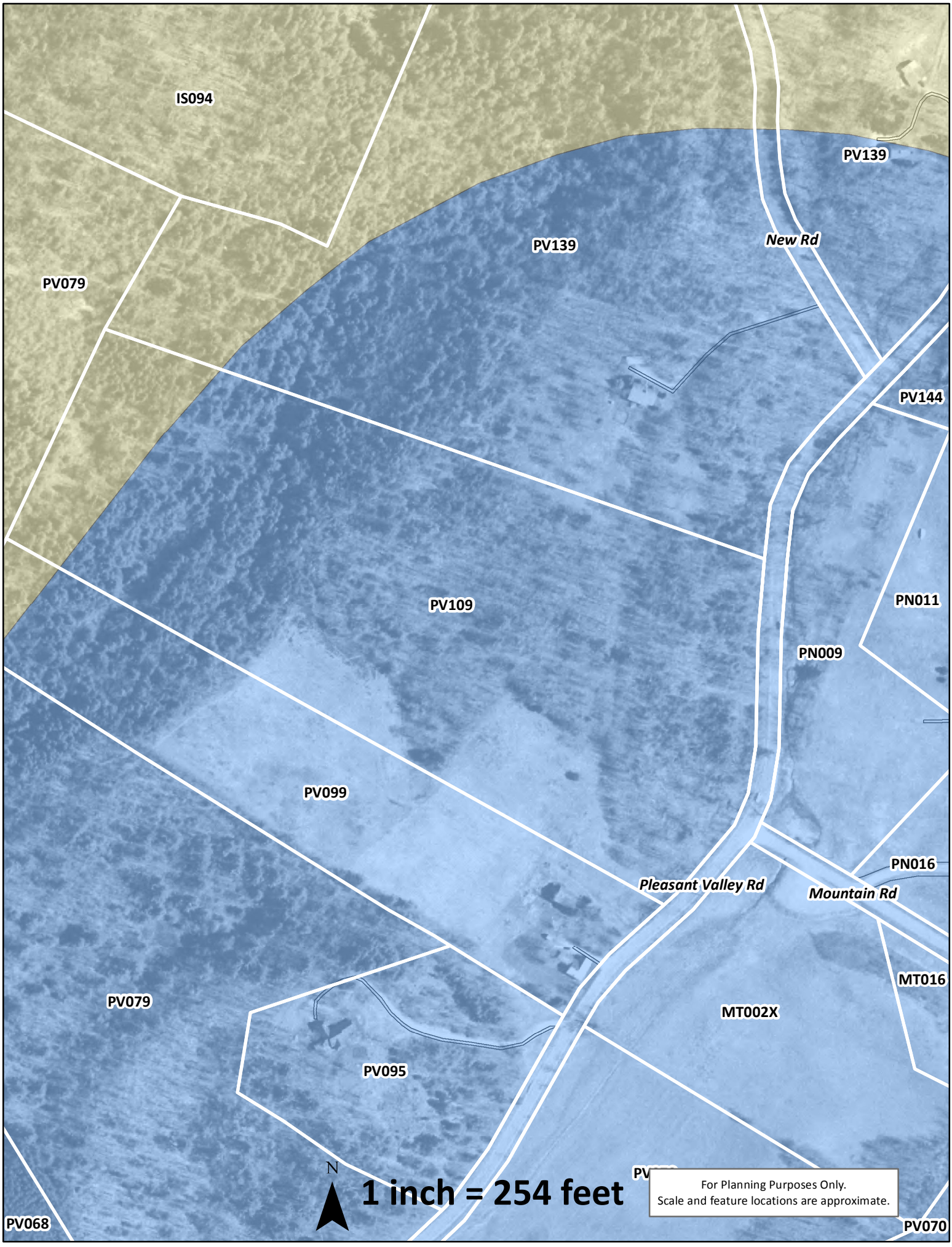
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1 inch = 254 feet
For Planning Purposes Only.
Scale and feature locations are approximate.
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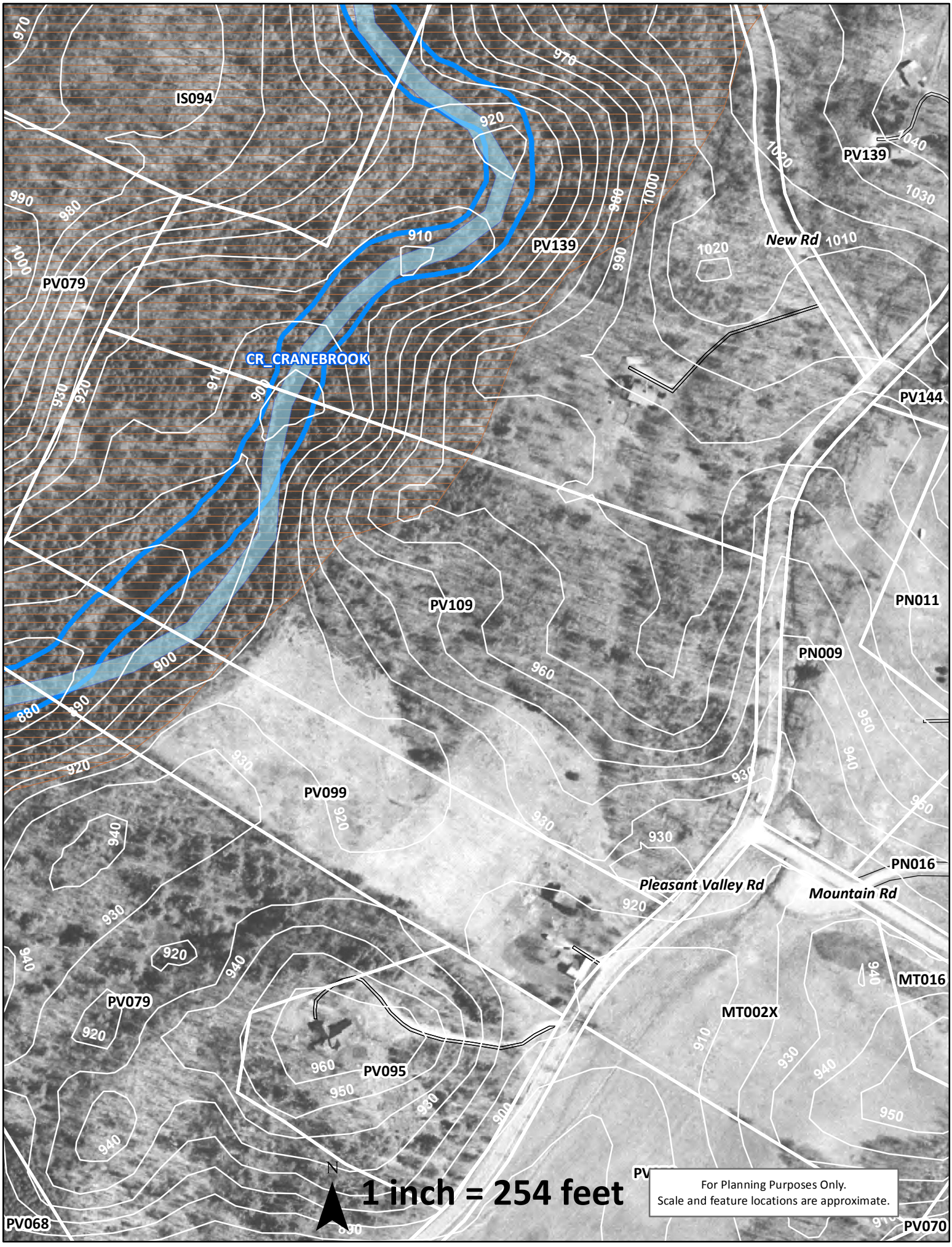
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1 inch = 254 feet
For Planning Purposes Only.
Scale and feature locations are approximate.

GUIDELINES FOR THE REVIEW & MITIGATION OF IMPACTS TO WHITE-TAILED DEER WINTER HABITAT IN VERMONT 1999

Signed: Ronald J. Regan

Commissioner, Vermont Department of Fish & Wildlife

Date: 01/26/00

VERMONT DEPARTMENT OF FISH & WILDLIFE
AGENCY OF NATURAL RESOURCES

TABLE OF CONTENTS

I. Introduction:

This document provides Vermont Department of Fish & Wildlife (DFW) wildlife biologists with guidelines to ensure consistent, objective application of mitigation measures where deer winter habitat (also referenced as "deer wintering areas", and "deer yards") is threatened from some forms of development. These guidelines are specifically intended for the development of biological opinions in the Act 250 process and other local, state, and federal regulatory processes that apply to the protection of deer winter habitat in Vermont. Furthermore, these guidelines set forth a decision-making framework by which DFW determines the level of impact and necessary avoidance, minimization and mitigation/compensation measures that apply to a proposed development's impact on deer winter habitat. Therefore, these guidelines are used to make recommendations to Act 250 District Environmental Commissions and other local, state and federal regulatory decision-makers for permit conditions, mitigation agreements, land conservation instruments (e.g., easements), and, if necessary, permit denials.

These guidelines are designed for application on a case-by-case basis in order to allow for the use of professional judgement and discretion by the DFW. For example, some impacts may be relatively minor and thus, may not require habitat compensation in perpetuity. In some cases, restrictions on timber harvesting in a deer wintering area, or habitat protection for a specified period of time (e.g., for the life of the permit) may be sufficient to mitigate relatively minor impacts to a deer wintering area. These determinations will be made by DFW and will be based on past precedent and individual circumstances.

These guidelines are consistent with and derived from the Agency of Natural Resources' Conservation Procedure (1996), the DFW's Position Regarding Wildlife Habitat Impact Assessments in the State of Vermont (1998), Vermont Environmental Board precedent, and the language of 10 V.S.A. section 6086 ((8)(A)(i-iii)).

II. Justification:

Deer winter habitat is universally regarded as critical habitat for the survival of white-tailed deer *(Odocoileus virginianus)* at northern latitudes. It affords necessary and invaluable shelter which minimizes energy expenditures and provides for energy conservation by deer, thus, maximizing their chances for survival. Vermont is part of the northern extreme of the white-tailed deer's range, and therefore, winter habitat is absolutely essential for maintaining populations of deer throughout this state. Consequently, Act 250 and other local, state and federal statutes and regulations that require the consideration and/or protection of wildlife habitats are employed by the DFW to ensure the conservation of the Vermont white-tailed deer resource and the public's interests in that resource. These guidelines take into consideration the public's interests in this resource and legal opportunities to ensure the protection of necessary winter habitat as determined through the DFW white-tailed deer management planning process and public opinion survey, all of which have demonstrated strong public support for such efforts.

III. Procedure:

The environmental review process established by these guidelines relies on the direction of the Agency of Natural Resources' Conservation Procedure (1996), the DFW's "Position Regarding Wildlife Habitat Impact Assessments in the State of Vermont", and extensive legal precedent as set by the Vermont Act 250 process, Vermont Wetlands Rules, and other applicable regulatory processes. The ANR's environmental review process, in general, involves assessment of impact avoidance, impact minimization, and finally, impact mitigation. The following information explains considerations the DFW incorporates into the review process for the assessment of impacts to deer wintering areas (DWAs).

1. *Resource Categorization*

The DFW places habitat types into one of three "resource categories" (RC's) which determine mitigation options. This allows DFW to consider a habitat's quality and determine its relative significance. All DWAs will be considered RC3 (i.e., high to medium value, relatively scarce or becoming scarce regionally) except for those considered "unique". Those DWAs that are considered unique will be classified as RC2 (high value, unique, and irreplaceable on a regional basis). An RC2 designation requires no net loss of in-kind habitat values on site. An RC2 designation for a DWA may be based on a variety of factors including, but not limited to: (1) it is the only DWA within a town or region; (2) it has regional significance for populations of deer within a Wildlife Management Unit; (3) its level of significance is raised by the fact that other wintering areas in a town or region are of lesser value (quality) and/or significantly impacted by existing development.

2. *On-Site vs. Off-Site Mitigation*

On-site mitigation refers to habitat compensation, protection and/or management within the same DWA. On-site mitigation should always be considered a priority for any RC designation, even for RC3 designations that allow, in some cases, for off-site mitigation. Off-site mitigation refers to habitat compensation, protection and/or management outside of the impacted DWA. All efforts should be made to secure off-site mitigation lands within the same town as the affected DWA. There may be some circumstances, such as in highly developed areas of Chittenden County, where off-site mitigation would be more reasonable and feasible. The DFW will carefully consider these circumstances when addressing issues of on-site vs. off-site mitigation/compensation.

3. *Direct vs. Indirect Impact Determinations*

Impacts should be categorized as "direct" (e.g., roadway or housing/building construction) or "indirect" (e.g., stress or disturbance of wintering deer caused by human or domestic animal, especially dog, activity). Direct impacts should not be allowed in RC2 designated wintering areas, except for insignificant intrusions or when outstanding mitigation opportunities are presented. Direct impacts may be allowed in RC3 designated wintering areas only after a complete assessment of

alternatives for avoiding or minimizing impacts has been conducted. Determinations of direct and indirect impacts are in the form of acres of habitat.

4. *Habitat Compensation Ratios*

Mitigation ratios of 2:1 (i.e., two (2) acres of DWA protected for every one (1) acre impacted) on-site (i.e., within the same DWA) and 4:1 off-site encourage avoiding impacts and, if necessary, rectifying impacts within the same DWA. In addition, where possible, off-site mitigation should be restricted to the town(s) in which the impacted DWA is located. Habitat that is used to compensate for destroyed or impacted habitat will usually be protected by creating a conservation easement. However, in some cases, deed restrictions can serve this purpose (refer to Appendix). The mitigation ratios are not intended to be punitive, but rather, are designed to yield the proportion of deer winter range necessary to maintain state deer population goals as established in the White-tailed Deer Management Plan for the State of Vermont. The ratios incorporate anticipated frequencies of mitigation and changes in the habitat value of protected deer winter habitat when managed as a result of mitigation. In sum, the compensation ratios recognize the biological needs of Vermont's white-tailed deer resource as well as the public's long-term interests in the resource.

5. *Habitat Management Plans*

Habitat management plans may be required as part of a mitigation strategy in order to augment the habitat that may be used for compensation. The purpose of habitat management plans must be to maintain and enhance the long-term integrity of the DWA. The DFW must review and approve all habitat management plans. Habitat management plans for DWAs must be based on the management standards set forth in Management Guide for Deer Wintering Areas in Vermont by the DFW and the Vermont Department of Forests, Parks and Recreation (1990). Habitat management plans should be based on current habitat specific information including, but not limited to: (1) general character of the softwood stands; (2) percent (%) of tree species composition; (3) delineation of individual stands; (4) basal area by stand; and (5) mean stand diameter. Other important information that may be necessary for the development of an acceptable habitat management plan includes the level of use by deer within the habitat. The plan should include a copy of the Town or U.S.G.S. topographic map showing the general location and property boundaries. In addition, a property map should be included which shows stand delineations. The objective of a habitat management plan is not to promote timber harvesting. However, the responsible land steward for an area of protected DWA can typically develop a habitat management plan that meets the objective of maintaining and enhancing the long-term integrity of the DWA, and that is compatible with reasonable timber harvesting opportunities.

6. *Conservation Easements for Conserved Deer Winter Habitat*

As indicated in section III(4), habitat that is used for compensation of impacted habitat will usually be protected through the development of a conservation easement. In most cases, areas of conserved deer winter habitat that are 25 acres or greater shall be protected by a conservation easement. All

lands that are covered under an easement shall be delineated on town tax maps, as well as on property or development plans, and a copy of the applicable U.S.G.S. map. All conservation easements that are used to satisfy the Department's interests in habitat conservation must be reviewed and approved by the Department prior to being recorded in the town land records. Typically, the Department will request that a permit not be issued until such time as the necessary easement(s) have been agreed upon by all parties, finalized, and recorded in the town land records. The Department will request a permit condition make reference to the conservation easement and any critical habitat conservation provisions in the easement in order to ensure an understandable connection to the permit. As explained later in this document, a variety of conservation groups, organizations or public institutions may serve as grantee to an easement including: (1) the Vermont Department of Fish & Wildlife; (2) the Vermont Department of Forests, Parks, and Recreation; (3) The Nature Conservancy; (4) the Vermont Land Trust; (5) a Town; (6) a local conservation group or organization; (7) others. The Department will assist in the determination of an appropriate grantee to an easement. Typically, the Department will only serve as grantee to an easement if the parcel is large (e.g., over 50 acres), or if the habitat is of exceptional quality or highly significant for other reasons. The exact language of any conservation easement must be coordinated with the reviewing biologist and Department and Agency Land Use Attorney. Examples of acceptable easements may be provided upon request.

In assessing mitigation options, the following process should be applied (refer to Table 1):

A. Analysis of Alternatives

i. A determination should be made as to whether an alternative site, on or off the proposed project parcel, is available to accommodate the project. If the determination results in positive findings (i.e., yes, an alternative site exists), then no direct impacts should be allowed, except for insignificant intrusions. Indirect impacts may be allowed pursuant to the adoption of mitigation strategies outlined below.

ii. If the determination results in negative findings (i.e., no, an alternative site does not exist), then proceed to step B.

B. Resource Categorization (RC) Determination

i. A determination should be made regarding whether the project site is located within or adjacent to an RC2 or RC3 DWA, or portion thereof. In making this determination, DFW will consider whether a DWA has unique or irreplaceable public or biological values on a regional basis. Criteria for evaluating these values may include, but are not limited to: (1) it is the only DWA in a town or region; (2) it consistently supports high numbers of deer; (3) it shows extremely heavy use; or, (4) there are no imminent development threats to its integrity.

ii. If this determination results in positive findings (i.e., yes, the DWA exhibits one or more of these or other significant values) then it should be considered RC2 and no direct impacts should be allowed, except for insignificant intrusions or when outstanding mitigation opportunities are presented. Indirect impacts may be allowed pursuant to adoption of mitigation strategies outlined below.

iii. If this determination results in negative findings, (i.e., the DWA does not exhibit one or more of these or other significant values) then it should be considered RC3 and step C should be applied.

C. Application of Mitigation Strategies

i. A determination should be made regarding whether an applicant is willing to apply all feasible and reasonable mitigation strategies, as determined by the DFW.

ii. If this determination results in positive findings (i.e., yes, an applicant is willing to apply necessary mitigation strategies) then the following mitigation guidelines should be applied for all direct and/or indirect impacts.

iii. If this determination results in negative findings (i.e., no, an applicant is not willing to apply necessary mitigation strategies) then no direct impacts should be allowed except for insignificant intrusions.

Table 1. Steps for Determining Mitigation Alternatives for Deer Winter Habitat.

Step 1: Is an alternative development site, on or off the project parcel, available to avoid impacts?	
YES * No Direct Impacts Allowed * Utilize Guidelines for Indirect Impacts	NO * Go to Step 2
Step 2: Is the project within a wintering area, or portion thereof, with unique or irreplaceable public or biological values on a regional basis?	
YES (RC2 DWA) * No Direct Impacts Allowed * Utilize Guidelines for Indirect Impacts	NO (RC3 DWA) * Go to Step 3
Step 3: Is the Applicant willing to apply feasible and reasonable mitigation measures per Guidelines?	
YES * Utilize Guidelines for Direct and Indirect Impacts	NO * No Direct Impacts Allowed * Utilize Guidelines for Indirect Impacts

IV. Mitigation Strategies

The following mitigation strategies are organized based on the type of development being considered. Within each strategy, the mitigation measures and considerations are classified based on types of impact, e.g., direct impact and indirect impact. Table 2 provides a summary of these mitigation strategies.

1. Mitigation Guidelines for Residential Development:

Direct Impacts:

All direct impacts should be avoided except for insignificant intrusions. However, if steps III (A) through (C) above lead to an affirmative conclusion then the following guidelines may be implemented:

A. For every acre of DWA impacted, a predetermined number of DWA acres must be protected and managed in perpetuity according to the following compensation ratios:

On-site Compensation:	2:1 ratio
Off-site Compensation:	4:1 ratio

Any acreage proposed for compensation/mitigation must contain habitat of equal or greater quality than the impacted habitat as determined by DFW and must be approved by the DFW. A habitat management plan must be prepared at the applicant's or permittee's expense, approved by the DFW and any other applicable regulatory bodies, and implemented by the property owner or responsible land steward.

B. Habitat that is to be used for the compensation of destroyed or impacted habitat shall be protected in perpetuity with a conservation easement. The grantee(s) to such easements should be an appropriate public or private land stewardship organization such as DFW, Vermont Department of Forests, Parks and Recreation, the Vermont Land Trust, The Nature Conservancy, local land trusts or conservation groups, or others. The easement must meet with the prior review and approval of the DFW. It may be necessary in some cases to survey the area subject to an easement. If this is the case, the Applicant/Permittee shall assume the cost of having the area surveyed.

In cases where the level of impact is sufficient to warrant application of these guidelines, but not so great as to warrant permanent protection of habitat with a conservation easement, other legal habitat protection mechanisms may be considered such as deed covenants which restrict the development of a

specified area of DWA and define appropriate uses and restrictions. Where applicable, homeowner associations may be able to serve the habitat stewardship role. These decisions shall be made by the DFW on a case-by-case basis.

C. No further subdivision of the remaining DWA on the applicant's/permittee's property can occur and must be expressly stated in any applicable deed(s).

D. No softwood trees within a protected area of DWA shall be harvested or otherwise removed without the prior review and approval of the DFW unless recommended in a habitat management plan approved by DFW.

E. The following language shall be incorporated as covenant into all applicable deeds:

Each landowner is hereby put on notice that this development is in the immediate vicinity of a deer wintering area. Domestic dog activity seriously jeopardizes this critical habitat and the existence of the deer in this area. A person who owns a dog that is not leashed, kenneled or otherwise under the owner's immediate control is subject to the penalties of 10 V.S.A. section 4748 (Dogs Pursuing Deer) and section 4514 (Possession of Flesh of Game).

F. Cross-country skiing, snowmobiling, and travel by ORVs must be restricted to trails approved by the DFW and shall be expressly stated in any applicable deeds. Snowmobiling and ORVs shall be prohibited within a 500 foot radius around the DWA. Commercial ventures regarding these activities shall be prohibited.

Indirect Impacts:

Indirect impacts constitute the physical intrusion of development into a 300 to 500 foot wide buffer zone around a DWA. Indirect impacts also constitute a 300 foot wide radius around the area of development if direct impacts are allowed (i.e., the area within a 300 foot wide radius around the area of development shall also be considered impacted).

Indirect impacts may be allowed pursuant to the following mitigation measures (mitigation measures A through F above shall apply).

2. Mitigation Guidelines for Commercial Development:

Direct Impacts:

All direct impacts should be avoided except for insignificant intrusions. However, if steps III (A) through (C) above lead to an affirmative conclusion then the following guidelines should be implemented:

A. For every acre of DWA impacted, a predetermined number of DWA acres must be protected and managed in perpetuity according to the following compensation ratios:

On-site Compensation:	2:1 ratio
Off-site Compensation:	4:1 ratio

Any acreage proposed for compensation/mitigation must contain habitat of equal or greater quality than the impacted habitat as determined by DFW and must be approved by the DFW. A habitat management plan must be prepared at the applicant's or permittee's expense, approved by the DFW and any other applicable regulatory bodies, and implemented by the property owner or responsible land steward.

B. Habitat that is to be used for the compensation of destroyed or impacted habitat shall be protected in perpetuity with a conservation easement. The grantee(s) to such easements should be an appropriate public or private land stewardship organization such as DFW, Vermont Department of Forests, Parks and Recreation, the Vermont Land Trust, The Nature Conservancy, local land trusts or conservation groups, or others. The easement must meet with the prior review and approval of the DFW.

In cases where the level of impact is sufficient to warrant application of these guidelines, but not so great as to warrant permanent protection of habitat with a conservation easement, other legal habitat protection mechanisms may be considered such as deed covenants which restrict the development of a specified area of DWA and define appropriate uses and restrictions. These decisions shall be made by the DFW on a case-by-case basis.

C. No further subdivision of the remaining DWA on the applicant's/permittee's property can occur and must be expressly stated in any applicable deed(s).

D. No softwood trees within a protected area of DWA shall be harvested or otherwise removed without the prior review and approval of the DFW unless recommended by a habitat management plan approved by DFW.

E. The following language shall be incorporated as covenant into all applicable deeds:

Each landowner is hereby put on notice that this development is in the immediate vicinity of a deer wintering area. Domestic dog activity seriously jeopardizes this critical habitat and the existence of the deer in this area. A person who owns a dog that is not leashed, kenneled or otherwise under the owner's immediate control is subject to the penalties of 10 V.S.A. section 4748 (Dogs Pursuing Deer) and section 4514 (Possession of Flesh of Game).

F. Cross-country skiing, snowmobiling, and travel by ORVs must be prohibited within 500 feet of the DWA and shall be expressly stated in any applicable deeds.

Indirect Impacts:

Indirect impacts constitute the physical intrusion of development into a 300 to 500 foot wide buffer zone around a DWA. Indirect impacts also constitute a 300 foot wide radius around the area of development if direct impacts are allowed (i.e., the area within a 300 foot wide radius around the area of development shall also be considered impacted).

Indirect impacts may be allowed pursuant to the following mitigation measures (mitigation measures A through F above shall apply).

3. Mitigation Guidelines for Extraction of Earth Resources:

Direct Impacts:

All direct impacts should be avoided except for insignificant intrusions. However, if steps III (A) through (C) above lead to an affirmative conclusion then the following guidelines should be implemented:

A. For every acre of DWA impacted, a predetermined number of DWA acres must be protected and managed in perpetuity according to the following compensation ratios:

On-site Compensation:	2:1 ratio
Off-site Compensation:	4:1 ratio

Any acreage proposed for compensation/mitigation must contain habitat of equal or greater quality than the impacted habitat as determined by DFW and must be approved by the DFW. A habitat management plan must be prepared at the applicant's or permittee's expense, approved by the DFW and any other

applicable regulatory bodies, and implemented by the property owner or responsible land steward.

B. Habitat that is to be used for the compensation of destroyed or impacted habitat shall be protected in perpetuity with a conservation easement. The grantee(s) to such easements should be an appropriate public or private land stewardship organization such as DFW, Vermont Department of Forests, Parks and Recreation, the Vermont Land Trust, The Nature Conservancy, local land trusts or conservation groups, or others. The easement must meet with the prior review and approval of the DFW.

In cases where the level of impact is sufficient to warrant application of these guidelines, but not so great as to warrant permanent protection of habitat with a conservation easement, other legal habitat protection mechanisms may be considered such as deed covenants which restrict the development of a specified area of DWA and define appropriate uses and restrictions. These decisions shall be made by the DFW on a case-by-case basis.

C. No further subdivision of the remaining DWA on the applicant's/permittee's property can occur and must be expressly stated in any applicable deed(s).

D. No softwood trees within a protected area of DWA shall be harvested or otherwise removed without the prior review and approval of the DFW unless recommended by a habitat management plan approved by DFW.

E. Cross-country skiing, snowmobiling, and travel by ORVs must be prohibited within 500 feet of the DWA and shall be expressly stated in any applicable deeds.

F. All DWA impacted by the extraction project must be reclaimed as prescribed in a habitat or reclamation management plan prepared by the applicant/permittee and approved by the DFW.

Indirect Impacts:

Indirect impacts shall be accounted for by the following restriction:

The Permittee shall not operate the project during the period December 15 through April 15 unless prior written authorization has been secured from the DFW.

This provision allows for exemptions to the time of year for operation restriction based on winter severity conditions. Exemptions are only granted if it has been

determined by DFW that the winter weather and snow conditions are mild. Additionally, exemptions are only granted for short specified period of time. It is recommended that Permittees stockpile material away from protected DWA prior to December 15 so it will be available during the restricted period.

4. Mitigation Guidelines for Transmission Lines:

These guidelines apply to the construction of new transmission lines and the upgrade of existing transmission lines.

Direct Impacts:

All direct impacts should be avoided except for insignificant intrusions. However, if steps III (A) through (C) above lead to an affirmative conclusion then the following guidelines shall be implemented:

A. For every acre of DWA impacted, a predetermined number of DWA acres must be protected and managed in perpetuity according to the following compensation ratios:

On-site Compensation:	2:1 ratio
Off-site Compensation:	4:1 ratio

Any acreage proposed for compensation/mitigation must contain habitat of equal or greater quality than the impacted habitat as determined by DFW and must be approved by DFW. A habitat management plan must be prepared at the applicant's or permittee's expense, approved by DFW and any other responsible regulatory bodies, and implemented by the property owner or responsible land steward.

B. Habitat that is to be used for the compensation of destroyed or impacted habitat shall be protected in perpetuity with a conservation easement. The grantee(s) to such easements should be an appropriate public or private land stewardship organization such as DFW, Vermont Department of Forests, Parks and Recreation, the Vermont Land Trust, The Nature Conservancy, local land trusts or conservation groups, or others. The easement must meet with the prior review and approval of the DFW.

In cases where the level of impact is sufficient to warrant application of these guidelines, but not so great as to warrant permanent protection of habitat with a conservation easement, other legal habitat protection mechanisms may be considered such as deed covenants which restrict the development of a

specified area of DWA and define appropriate uses and restrictions. These decisions shall be made by the DFW on a case-by-case basis.

C. Softwood travel corridors with a minimum width of 200 feet must be retained and managed at designated points along the transmission line route. The number of travel corridors needed will be determined by DFW and dictated by the length of the transmission corridor. An additional 1 foot must be added to the travel corridor width for every 1 foot the transmission corridor width exceeds 200 feet. The 200 foot minimum corridor width may be expanded or contracted, depending on case-specific circumstances, and as determined by the reviewing DFW biologist.

D. Whenever possible, residual softwood cover on both sides of the transmission line corridor must be at least 1,000 feet wide.

E. Control of vegetation within the transmission line corridor shall be restricted to mechanical treatment (i.e., no herbicide treatment) in order to maintain and promote the production of browse.

Indirect Impacts:

Indirect impacts shall be accounted for by the following restriction:

The Permittee shall not construct or authorize the use of snowmobiles or snowmobile trails without the prior review and approval of the DFW.

5. Mitigation Guidelines for Transportation Projects:

Direct Impacts:

All direct impacts should be avoided except for insignificant intrusions. Direct impacts must maintain the integrity of the DWA (i.e., road development should be located as close to the edge of the DWA as possible in order to avoid bisecting the habitat). However, if steps III (A) through (C) above lead to an affirmative conclusion then the following guidelines should be implemented:

A. For every acre of DWA impacted (as determined by the roadway footprint, 300 feet on either side of the roadway, and any bisected DWA less than 50 acres in size), a predetermined number of DWA acres must be protected and managed in perpetuity according to the following compensation ratios:

On-site Compensation:	2:1 ratio
Off-site Compensation:	4:1 ratio

Any acreage proposed for compensation/mitigation must contain habitat of equal or greater quality than the impacted habitat as determined by DFW and must be approved by the DFW. A habitat management plan must be prepared at the applicant's or permittee's expense, approved by the DFW and any other applicable regulatory bodies, and implemented by the property owner or responsible land steward.

B. Habitat that is to be used for the compensation of destroyed or impacted habitat shall be protected in perpetuity with a conservation easement. The grantee(s) to such easements should be an appropriate public or private land stewardship organization such as DFW, the Vermont Land Trust, The Nature Conservancy, local land trusts or conservation groups, or others. The easement must meet with the prior review and approval of the DFW.

C. Where appropriate, the road must be classified as a restricted access highway.

D. The permittee shall erect signs warning of deer crossings for that portion of the highway that passes through the wintering area.

E. The use of wildlife underpass and overpass technologies may be considered on a case-by-case basis for mitigating impacts from transportation projects that bisect deer winter habitat.

Indirect Impacts:

Indirect impacts occur when the traveled portion of the roadway is located within 300 feet of the DWA. Mitigation measures A through D above shall apply to indirect impacts.

Table 2. Summary of Mitigation Alternatives by Resource Category, Type of Development, and Type of Impact.

Type of Development	Resource Category 2 Mitigation		Resource Category 3 Mitigation	
	Direct Impacts	Indirect Impacts	Direct Impacts	Indirect Impacts
Residential	Not allowed	Allowed, 2:1 ratio, on-site only	Allowed, variable ratio, on- or off-site	Allowed, variable ratio, on- or off-site
Commercial	Not allowed	Allowed, 2:1 ratio, on-site only	Allowed, variable ratio, on- or off-site	Allowed, variable ratio, on- or off-site
Earth Resource Extraction	Allowed per "outstanding mitigation offer"	Limited months of operation per guidelines	Allowed, variable ratio, on- or off-site	Limited months of operation per guidelines
Transmission Lines	Allowed per guidelines	No snowmobile trails	Allowed, variable ratio, on- or off-site	No snowmobile trails
Transportation (roads, highways)	Not allowed	Allowed, 2:1 ration, on-site only	Allowed, variable ratio, on- or off-site	Allowed, variable ratio, on- or off-site

APPENDIX

VERMONT DEPARTMENT OF FISH & WILDLIFE

EXAMPLE LANGUAGE FOR DEED RESTRICTIONS FOR THE PROTECTION OF CRITICAL WILDLIFE HABITAT

1. Deed restriction(s) for the protection of wildlife habitat such as deer wintering area should begin by clearly identifying the boundary of the lands to which the deed restriction(s) apply.

2. Following an identification of the protected lands to which the restriction(s) apply, the deed should clearly indicate the purpose of the restrictions. For example,

> *These lands are hereby dedicated to serve as critical (deer wintering habitat) in perpetuity.*

3. The deed should clearly indicate what activities are and are not allowed on the applicable lands. For example,

> *These lands shall not be subdivided, or otherwise developed including unauthorized logging or removal of vegetation that is not in conformance with the conditions of all applicable permits or other liens, development of trails, or extraction of earth resources.*

4. Finally, the deed language should indicate that the restrictions "run with the land" and apply to all heirs, successors and assigns. Again, the intent is to maintain the habitat area for the good of present and future generations as well as the general ecological integrity of the region and therefore, the restrictions are perpetual, applying to all future holders of title.