



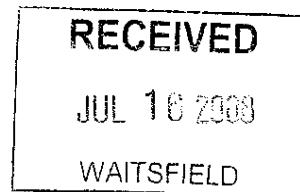
PHELPS ENGINEERING, INC.

79 Court Street, P.O. Box 367
Middlebury, VT 05753
www.phelpseng.com

200810

July 15, 2008

Ms. Valerie Capels
Town of Waitsfield
9 Bridge Street
Waitsfield, VT 05673



Subject: Project Update and Draft Development Review Board Package
Waitsfield Gravel Pit Site Design and Permitting

Dear Valerie:

I am pleased to provide the attached draft package of information for the Gravel Pit project. The package includes a detailed Project Narrative, including attachments, and a set of draft site plans. Three copies are provided for your distribution and review. I intend to review the package with the Selectboard at the upcoming July 28, 2008, meeting and subsequently with the Development Review Board (DRB).

We now have a clearer understanding of the design and permitting needs of the project based on communication with various State agency representatives. The following is a summary of some important changes in the anticipated project scope:

- It appears that the project will not require an Act 250 permit or hearing because the total involved area is less than 10 acres. I am waiting for a letter from the District Coordinator, Ed Stanak, to confirm this.
- Unless requested by the DRB, the project should not require a limited traffic study or an archaeological resources assessment.
- Based on our discussions with the State Stormwater Division regarding Construction General Permitting, a Multi-Sector General Permit will also be required from the Stormwater Division of the Agency of Natural Resources (ANR).
- Because the western access road's existing culverts need to be replaced, the project will require a stream crossing permit.
- Based on the U.S. Army Corps of Engineers' latest policies, a large stream crossing structure, likely either a concrete box culvert or a bridge, will need to be designed and constructed for the western pit access road. This design needs to be submitted to the ANR as part of the Stream Crossing Permit application.

PHELPS ENGINEERING, INC. • MIDDLEBURY, VERMONT

Project Update and Draft Development Review Board Package
Waitsfield Gravel Pit Site Design and Permitting

July 15, 2008

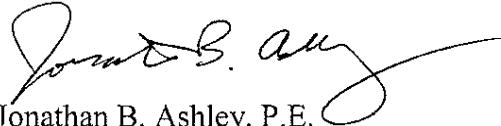
Page 2

- Because the ANR is requiring that we realign the western pit access road, additional topographic surveying is needed to design the realigned western pit access road and stream crossing structure.

I intend to review the project budget status later this week to evaluate the anticipated effect of these scope changes on the project budget. It is helpful that some anticipated permits will not be needed; this will help to offset the additional permitting tasks.

Please call or e-mail me with any questions or to set up a phone call or meeting to review and discuss the draft application package.

Very truly yours,

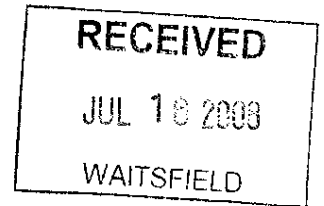


Jonathan B. Ashley, P.E.
Senior Project Manager

JA:kb

Enclosures

TOWN OF WAITSFIELD
PROPOSED MUNICIPAL GRAVEL PIT
ARMSTRONG ROAD, WAITSFIELD, VERMONT
PROJECT NARRATIVE
JULY 15, 2008



The Town of Waitsfield owns a 74.2 acre parcel of land located on Armstrong Road in Waitsfield, north of Waitsfield Village on the west side of Route 100. The property is located in the Agricultural-Residential Zoning District. The site is known to have been used for gravel many years ago, and the Town intends to resume gravel pit operations on a portion of the site involving approximately 9.83 acres.

The project is a proposed municipal gravel pit that will be utilized by the Town road crew in support of Town road construction and maintenance work. The Town currently purchases gravel from pits located in Bolton and Granville which are 42 round-trip miles from the Waitsfield Town Garage. The availability of a local gravel supply would be a valuable financial resource to the Town and would significantly reduce the Town's fuel usage and wear and tear on Town trucks.

The existing land in the project area is primarily forested. Access to the land is via Armstrong Road off Route 100 along a shared driveway and access road that traverses land owned by David and Sherri Armstrong. A limited network of narrow gravel roads that served the previous gravel pit operations currently exists within the proposed project area. Two stream channels run through the property.

Test pit explorations on the site were used to delineate two areas on the property that are suitable for gravel extraction as shown on the attached site plans. The Town is seeking a permit from the Development Review Board for the proposed gravel pit project.

A site location map (1 inch = 1,000 feet) showing the location of the proposed gravel pit in relation to properties, surface waters and drainage, land uses, roads, and utilities is shown as **Attachment 1**. Detailed site plans are also enclosed showing the appropriate project information, property boundary information, existing site features, road plans, extraction, cut and fill areas, proposed site grading, and drainage. Additional detail will be added to the plans as the permitting process progresses.

Information provided below is organized per the Town's Zoning Regulations.

Section 2.03 – Application of Zoning District Standards

The proposed gravel pit parcel is located in the Agricultural-Residential (AR) Zoning District. Extraction of earth resources is a conditional use within the AR District and may be allowed subject to conditional use review under Section 5.03 of the Town Zoning Bylaws.

The following dimensional standards apply in the AR Zoning District:

- Minimum Lot Size: 1 acre; Bed and Breakfast 0.33 acre/unit
- Minimum Road Frontage: Scenic roads 200 feet; all other roads 90 feet
- Minimum Setbacks:
 - Front yard (from road centerline) 75 feet
 - Side yard 25 feet
 - Rear yard 25 feet
 - River or Stream (in accordance with Section 3.12 (stream setback discussed below))
 - Maximum building coverage: N/A
 - Maximum building height: 35 feet

The project meets the requirements for minimum lot size (74.2 acre lot), road frontage (280.98 feet), and setbacks (the gravel pit locations exceed the minimum front, side, and rear setbacks). No buildings are proposed. The adjacent land uses are primarily forested, and the nearest residence is the Armstrong home which is approximately 730 feet from the proposed eastern gravel pit site.

Two stream channels (labeled as Tributary 6 and Tributary 7 on FEMA mapping) run through the property. Tributary 7 drains an area of approximately one square mile, which includes the two proposed gravel pit sites. Near the proposed gravel extraction areas, the stream channel generally has a broad riparian flood plain of 0-7% slope associated with it. A stream setback of 50 feet is required for areas of riparian land with an average grade of 0-8%, and the proposed 50 foot setback lines are depicted on the attached plans. No new excavation or grading is proposed within the 50 foot stream buffer zones with the exception of the proposed crossing of Tributary 7 for the access road to the western gravel pit area.

Section 4.05 – Extraction of Earth Resources

Evaluation of Soil Conditions

The proposed gravel extraction areas were evaluated using test pits. Logs from test pitting performed in 2002, 2003, and 2008 are shown in **Attachment 2**. Generally, the test pitting evaluation showed suitable gravel materials in the areas delineated on the site plans. The depth of suitable material ranged from approximately 5 to 12 feet below existing grades, with the majority of the tested areas showing 9 to 12 feet of suitable material. Topsoil thicknesses over the gravel material ranged from 0.7 to 2.5 feet. Based on a preliminary analysis of 50-foot site sections, it appears that approximately 70,000 cubic yards of suitable gravel material may be removed from the site according to the proposed grading plan.

Depths to apparent groundwater in the test pits ranged from approximately 5 to 12 feet below grade. Based on the apparent depths to groundwater, a groundwater contour map (Sheet 4) was developed. Groundwater appears to flow to the southeast in the proposed western gravel extraction area and to the south/southwest in the proposed eastern gravel extraction area. Generally, groundwater flow beneath the proposed gravel extraction sites appears to be toward Tributary 7.

In addition to qualitatively evaluating the soil conditions, selected gravelly soil horizons were sampled for sieve testing. The sieve testing results are shown in **Attachment 3**. The sieve testing results suggest that much of the gravel material at the site generally meets accepted standards for crushed coarse gravel. If the gravel is processed through a crusher, a large percentage of it may be suitable for use as crushed gravel, bank run gravel, or shoulder gravel, although some screening may also be necessary.

Slopes

Undisturbed, vegetated slopes that already exist at the site in the vicinity of the proposed soil excavation areas were reviewed to evaluate appropriate proposed side slopes for the finished gravel pit excavations. Along the east edge of the proposed western gravel extraction area, the existing bank above Tributary 7 has slopes ranging from 45% to 110%. Along the west edge of the eastern gravel extraction area, the existing bank above the stream has slopes ranging from 46% to 75%.

The proposed side slopes for the finished gravel pit excavations are between 16% and 67%. The excavation bottoms will be sloped similarly to the pre-excavation ground slopes, or approximately 6 to 7%.

Drainage

Existing surface drainage in the proposed gravel extraction areas is generally to the south and southeast. Because of the well-drained soils in both locations, most precipitation appears to infiltrate. The only evident natural drainageway in the proposed excavation areas is a shallow swale at the northwest end of the western gravel extraction area (see Sheet 2 of the site plans);

however, this shallow swale has no obvious outlet so it appears that runoff entering the area from this swale also infiltrates once it reaches the area of well-drained soil.

The proposed drainage plan for the completed gravel pit excavations is to maintain a similar pattern to the pre-existing conditions. Finish grading will generally direct surface drainage to the south and southeast to ultimately infiltrate.

Storage and Stockpiling

The proposed equipment storage and stockpiling areas for each proposed excavation site are shown on the attached plans. Material stockpiling areas will be protected from erosion using silt fences. Because the Town garage is located within approximately 1.25 miles of the gravel pit, equipment storage at the gravel pit site will be primarily limited to crushing and screening equipment.

Operations

Gravel pit extraction and processing operations at the pit will generally be limited to normal Town road crew operating hours as the pit will only be used by the Town.

Adjacent properties will be buffered from the gravel pit site by a minimum buffer of 200 feet of undisturbed woodlands in all directions. The nearest residence to the proposed gravel pit operations is the Armstrong home on Armstrong Road; this home is approximately 730 feet from the nearest area of the proposed gravel operations. Other residences along Main Street and Center Fayston Road are located 850 feet or more from the nearest areas of the proposed gravel operations. The undisturbed woodland buffers around the gravel pit sites, variable topography, and significant distances to the nearest homes should provide sufficient mitigation of potential noise, dust, and vibration.

Access

The proposed access to the site is from an existing Class IV Town Road, Armstrong Road. Permanent right-of-way/easement rights need to be negotiated between the Town and the Armstrongs, and the Town has initiated these discussions.

Because of the relatively low volume of use (by Town trucks only), the access road will be operated as one-way. The Town trucks are equipped with radios, which will allow communication among the road crew. A proposed road width of 18 feet should be sufficient for the access road.

The existing access roads to the gravel pit sites will require some improvements for the Town project. The road will be widened as needed to approximately 18 feet, and roadside ditchlines will be constructed as needed. Due to existing steep grades, the access road to the eastern gravel extraction area needs to be realigned, and the vertical curvature needs to be redesigned. Based on feedback from the Agency of Natural Resources, the access road to the western gravel extraction area needs to be realigned to eliminate the current encroachment on

Tributary 6. The new road alignment will require a new stream crossing structure for crossing Tributary 7, likely either a large concrete box culvert or a small bridge.

Erosion Control and Water Quality

The current proposed erosion control and site reclamation plans for the project are shown on the attached site plans which depict:

- The existing grades, drainage patterns, and depth to water table;
- The extent and magnitude of the proposed operation including proposed phasing (with additional phasing details to be added to the plans);
- Finished grades at the conclusion of the operation; and
- Revegetation of the site (with additional details to be added to the plans).

A detailed phasing schedule for the project (that limits the amount of exposed area) is provided in **Section 5.02** below. The gravel extraction areas will be developed generally from north to south. The entire area will be topsoiled (with topsoil that is removed and stockpiled from the excavation areas at the start of the project), seeded, and mulched as the gravel pits progress. The end result will be grass slopes and a field. Because of the surrounding woodland vegetation and the use of native topsoil from the site for reclamation, woodland vegetation is likely to be re-established at the site by natural progression.

Final erosion control will be achieved by placing native topsoil over all completed slopes when final grades are achieved. The topsoil is to be seeded and mulched after placement. Anticipated procedures for seeding and mulching are as follows:

1. Rough and finish grade the area.
2. If temporary seeding or mulching must be done, permanent seeding will be done as soon as weather conditions allow.
3. Fertilize and lime as needed.
4. Apply seed mix.
5. Mulch with two tons per acre of hay/straw.
6. Anchor mulch by driving on it with light rubber-tired vehicle.
7. Seeding and mulching will be inspected regularly and following major rainstorms. If mulch is blown away, it will be replaced and anchored as soon as conditions allow. If mulch continually blows away from certain areas, it will be anchored by the use of jute matting or a similar commercial product.

8. Plant evergreen seedlings on pit side slopes to limit wind erosion.

A Risk Evaluation Sheet was completed for the proposed project, and it appears that the project will require a Low or Moderate Risk Construction General Permit from the Agency of Natural Resources. Based on the S.I.C. Code for gravel pits, the project will also require a Multi-Sector General Permit. Further detailed erosion prevention and sediment control plans will be developed in the process of applying for the Multi-Sector General Permit and as part of the project's Stormwater Pollution Prevention Plan.

The erosion prevention and sediment control measures to be employed on the project will help protect surface and groundwater quality related to the project site. In addition, the phased reclamation of the pit will limit the exposed area at any given time allowing the natural vegetative cover to reestablish the associated natural filtering effects to protect water quality. The project's Stormwater Pollution Prevention Plan will establish structural and managerial methods for preventing stormwater pollution from the project. The maintenance and storage of equipment is often a concern at gravel pit sites in relation to water quality protection; however, because of the project's close proximity to the Town garage, equipment maintenance and storage on the site will be limited other than the proposed crushing and possible screening equipment.

Resources

The Agency of Natural Resources' Environmental Interest Locator map was reviewed to evaluate the project's potential effect on natural resources. A copy of the map is shown as **Attachment 4**. As shown, a small portion of the northern end of the western gravel extraction area is mapped as "deer wintering area". In the eastern gravel extraction area, the approximate northern third of the area is mapped as "deer wintering area".

The project's impact on deer habitat is expected to be limited. Significant (200+ foot) woodland buffers and 50+ foot stream buffers will be maintained along the sides of each proposed gravel extraction area allowing deer to bypass the gravel pits and providing them continued habitat. In addition, as the site is developed and reclaimed, the first areas to be restored to natural conditions will be the northern portions of the gravel extraction areas.

A groundwater surface protection area for the VerdMont Trailer Park's supply well is also present beneath the eastern portion of the proposed project. As discussed above, the project's impact on groundwater quality is expected to be limited.

Section 5.02 – Application Requirements

The following information is provided for Conditional Use review of this application:

Property Owner, Applicant, and Firm Preparing Application

Landowner: Town of Waitsfield
9 Bridge Street
Waitsfield, VT 05673

Town Representative: Ms. Valerie Capels
Town Administrator

Engineer: Phelps Engineering, Inc.
P.O. Box 367
Middlebury, VT 05753

Adjoining Property Owners

The following properties adjoin the Town parcel that is the subject of this application:

Parcel I.D. #	Landowner	Address
07009.000	John Rassweiler Trustee	513 Center Fayston Road
99031.000	Donald and Laurie J. Spaulding	2758 Main Street
99033.000	David and Sherri Armstrong	57 Armstrong Road
99035.000	Amerigas Gas Service	3224 Main Street
99036.000	Kenyons Enterprises Inc.	3399 Main Street
99038.000	Robert L. Howard	3328 Main Street
99040.000	Howard Kenyon	3337 Main Street
12003.000	Kenneth Quackenbush	152 Old County Road

Project Description

Parcel I.D. Number: 99037.000

Proposed Use: Municipal Gravel Pit – For a detailed description of the proposed gravel pit operations, please refer to **Section 4.05** above.

Total Lot Area: 74.2 acres

Lot Coverage: N/A – No structures are proposed

Zoning District: Agricultural-Residential

Sequence & Timing: Described below

The following is provided as an overall summary of the proposed project sequence including construction, phasing, and reclamation:

1. Prepare western staging area with erosion prevention measures. Remove vegetation and grade as needed to prepare for topsoil stockpiling.
2. Clear, grub, and remove topsoil from north end of western gravel pit site. Stockpile stripped topsoil in staging area.
3. Install erosion prevention measures adjacent to road realignment areas.
4. Clear, grub, and remove topsoil from the proposed access road realignment areas. Remove roadbase from former road alignment and use as base in new road location. Reclaim former road alignment with stockpiled topsoil, seed, and mulch.
5. Build realigned road segments using gravel from north end of western gravel pit. This task will include installation of a new stream crossing under an Agency of Natural Resources Stream Crossing Permit.
6. Setup crusher and screen in staging area for western gravel pit. Begin extracting gravel from north to south and utilizing on Town road projects.
7. When 1.5 acres of disturbed area is opened within the western pit, begin stabilization and reclamation of north end of pit. The area of disturbance shall be limited to no more than 2 acres at any one time.
8. Proceed with gravel extraction, processing, and gravel pit stabilization in western pit area until reclamation is approximately 90% complete before beginning gravel pit operations in eastern pit area.
9. Prepare eastern staging area with erosion prevention measures. Remove vegetation and grade as needed to prepare for topsoil stockpiling.
10. Clear, grub, and remove topsoil from north end of eastern gravel pit site. Stockpile stripped topsoil in staging area.
11. Setup crusher and screen in staging area for eastern gravel pit. Begin extracting gravel from north to south and utilizing on Town road projects.
12. When 1.5 acres of disturbed area is opened within the eastern pit, begin stabilization and reclamation of north end of pit. The area of disturbance shall be limited to no more than 2 acres at any one time.

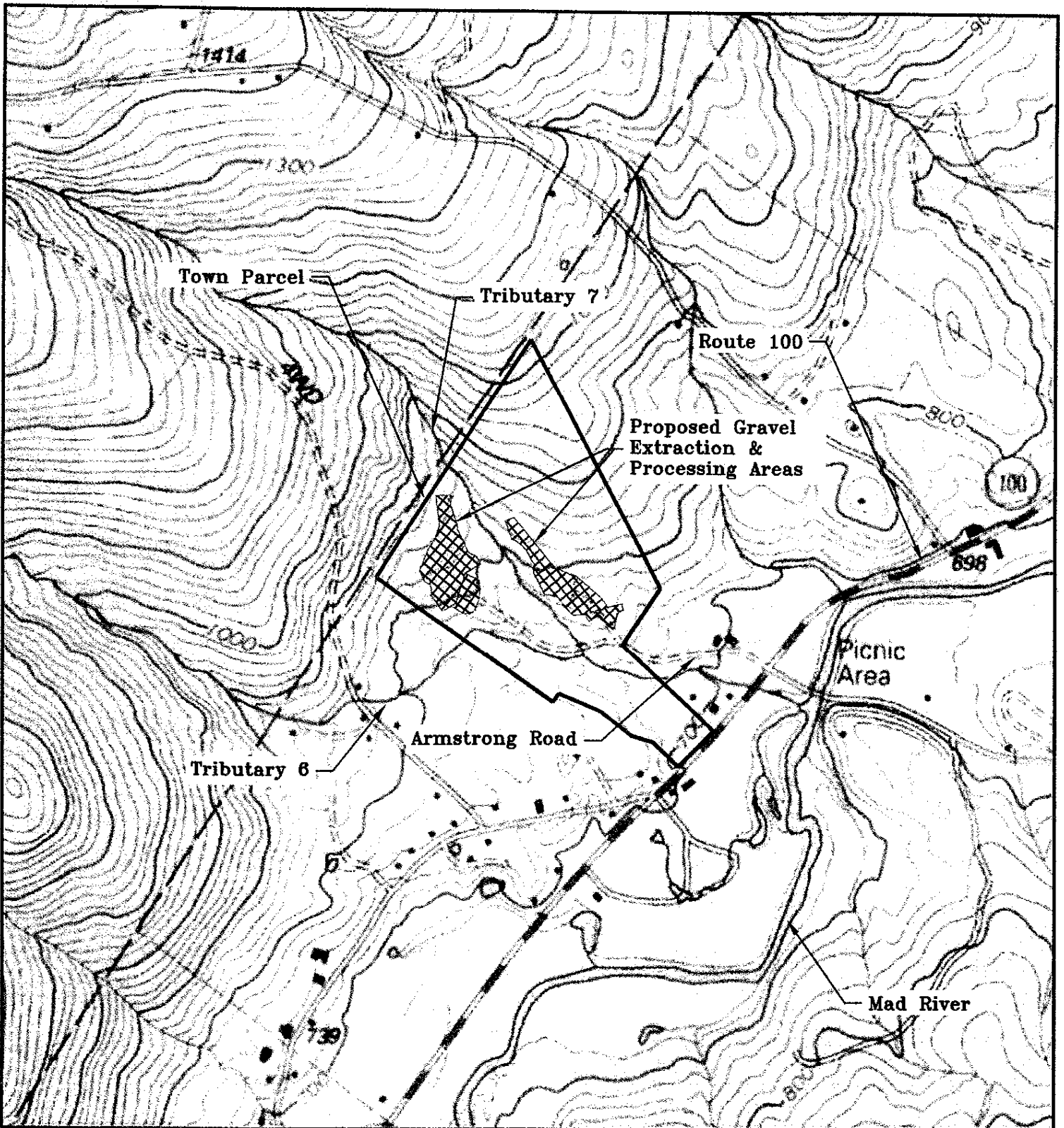
Further details of the proposed project timing, including approximate dates, will be provided after further discussions with Town representatives and additional progress is made in permitting of the project.

Public Needs Served by the Project

The availability of a local gravel resource would be a valuable financial resource to the Town and would significantly reduce the Town's fuel usage and wear and tear on Town trucks. The Town currently purchases gravel from pits located in Bolton and Granville, which are each approximately 42 round-trip miles from the Waitsfield Town Garage.

Based on the Town's anticipated annual needs for road construction and maintenance, this material may be extracted at an average annual extraction rate of 5,000 to 7,500 cubic yards per year. With an available quantity of approximately 70,000 cubic yards of gravel, this equates to a projected timeframe for gravel extraction of approximately 9 to 14 years. In terms of current U.S. dollars, transportation of this quantity of gravel from the Town's current sources in Bolton and Granville would cost approximately \$18,700 to \$28,200 per year, or approximately \$262,000 over the projected life of the pit. This would also reduce the Town's environmental impact by reducing fuel consumption by approximately 4,420 gallons per year, or approximately 44,200 gallons over a 10 year span.

ATTACHMENT 1
SITE LOCATION MAP



PHELPS ENGINEERING, INC.

79 Court St., P.O. Box 367
 Middlebury, Vt. 05753
 Tele. (802) 388-7829

Fax (802) 388-9642

E-Mail info@phelpseng.com

PROJECT: WAITSFIELD GRAVEL PIT

SKETCH #

TITLE: SITE LOCATION

1

SCALE: 1"=1000'

DATE: 2008

ENG: JA

PROJECT #: 200810

REF.SHT. N/A

ATTACHMENT 2
SOIL TEST PIT LOGS

SOIL TEST PIT LOG - TEST PIT # 08-01

Project: Waitsfield Gravel Pit

Project Number: 200810

Location: Former Tucker Property, Armstrong Road

Ground Surface Slope: see topo map %

Date: 4/24/08 Time: morning

Weather Conditions: Sunny, 50s-60s

Method of Excavation: Town Backhoe

Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-1.5	Topsoil	Reddish brown	Rich in organics	None	
B	1.5-9	Sandy gravel		Gravel - long (18"-), subangular, hard		Gravel appears suitable for crushing
C	9+	Silty clay	Moist			

Test Pit General Location: see site plan

SOIL TEST PIT LOG - TEST PIT # 08-02

Project: Waitsfield Gravel Pit

Project Number: 200810

Location: Former Tucker Property, Armstrong Road

Ground Surface Slope: see topo map %

Date: 4/24/08 Time: morning

Weather Conditions: Sunny, 50s-60s

Method of Excavation: Town Backhoe

Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-1.25	Topsoil	Reddish brown	Rich in organics	None	
B	1.25-5.0	Sandy gravel		Gravel - long (20"-), subangular & rounded, hard. Some shale pieces		More gravel at the larger end of distribution than in TP 08-01. *Sampled this interval for sieve testing.
C	5.0-5.5	Till	Reduced		Wet	

Test Pit General Location: see site plan

SOIL TEST PIT LOG - TEST PIT # 08-03

Project: Waitsfield Gravel Pit

Project Number: 200810

Location: Former Tucker Property, Armstrong Road

Ground Surface Slope: see topo map %

Date: 4/24/08 Time: morning

Weather Conditions: Sunny, 50s-60s

Method of Excavation: Town Backhoe

Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-1.5	Topsoil	Reddish brown	Rich in organics	None	
B	1.5-8.5	Sandy gravel		Gravel - long (15"-), subangular & rounded, hard. Some shale pcs.		Gravel appears suitable for crushing
B'	8.5-10	Gravelly sand		2"- gravel and sand		Sampled this interval for sieve testing
C	10-11	Clay till		Firm	Water seepage at 10'	

Test Pit General Location: see site plan

SOIL TEST PIT LOG - TEST PIT # 08-04

Project: Waitsfield Gravel Pit

Project Number: 200810

Location: Former Tucker Property, Armstrong Road

Ground Surface Slope: see topo map %

Date: 4/24/08 Time: morning

Weather Conditions: Sunny, 50s-60s

Method of Excavation: Town Backhoe

Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-1.3	Topsoil	Brown	Rich in organics	None	
B	1.3-6.7	Sandy gravel and cobbles		Rounded gravel & cobbles (10"-), hard.		Gravel appears suitable for crushing
B'	6.7-11.3	Gravelly sand		2"- gravel and sand	Moist	*Sampled this interval for sieve testing
C	11.3-12.5+	Gravelly sand			Wet - water running into pit	

Test Pit General Location: see site plan

SOIL TEST PIT LOG – TEST PIT # 08-05

Project: Waitsfield Gravel Pit Project Number: 200810
 Location: Former Tucker Property, Armstrong Road Ground Surface Slope: see topo map %
 Date: 4/24/08 Time: morning Weather Conditions: Sunny, 50s-60s
 Method of Excavation: Town Backhoe Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-1.3	Topsoil	Brown	Rich in organics	None	
B	1.3-6	Sandy gravel and cobbles	Darker in color than previous test pits	Rounded gravel and cobbles (10"-), hard.		Gravel appears suitable for crushing
B'	6-7+	Sandy gravel and cobbles		Rounded gravel and cobbles (10"-), hard.	Wet - water running into pit	Gravel appears suitable for crushing

Test Pit General Location: see site plan

SOIL TEST PIT LOG – TEST PIT # 08-06

Project: Waitsfield Gravel Pit Project Number: 200810
 Location: Former Tucker Property, Armstrong Road Ground Surface Slope: see topo map %
 Date: 4/24/08 Time: morning Weather Conditions: Sunny, 50s-60s
 Method of Excavation: Town Backhoe Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-2.5	Silty topsoil	Brown	Rich in organics	None	
B	2.5-6.5	Gravelly sand		Mostly 2"- rounded gravel, occasional 12" piece		Appears to be suitable for screening for sand and crushing for gravel
B'	6.5-12	Gravelly sand		1 1/2"- rounded gravel	Moist, wet at bottom of pit	*Sampled this interval for sieve testing

Test Pit General Location: see site plan

SOIL TEST PIT LOG – TEST PIT # 08-07

Project: Waitsfield Gravel Pit

Project Number: 200810

Location: Former Tucker Property, Armstrong Road

Ground Surface Slope: see topo map %

Date: 4/24/08 Time: morning

Weather Conditions: Sunny, 50s-60s

Method of Excavation: Town Backhoe

Logged By: Jonathan Ashley

Horiz	Depth (feet)	Texture	Color (Moist)	Consistence, Structure	Mottling, Water	Comments
A	0-0.7	Topsoil	Brown	Rich in organics	None	
B	0.7-6.5	Sandy gravel		Mixture of rounded and flat/subangular gravel, 8"-, stoniest at top		*Sampled this interval for sieve testing
B'	6.5-10.5	Gravelly sand		2"- rounded gravel		
C	10.5-11.5+	Silty clay and sand			Wet, seepage into pit	

Test Pit General Location: see site plan

2002-2003 SOIL TEST PITS AND BORING LOG

Project: Town of Waitsfield -- Tucker Property Evaluation

Project Number: 99020.92/ 200810

Location: Tucker Property, Waitsfield, Vermont

Date: see below

Method of Excavation: Rubber Tire Backhoe (Town) for Test Pits, Hollow Stem Auger Drill Rig (Grn Mtn Boring)

Ground Surface Slope: Varies % Logged By: see below

Test Pit/ Boring	Depth (feet)	Texture	Consistence or Density	Color	Mottles	Comments
Test Pits Located (Installed 10/21/02, Logged by Luther Tenny, P.E.)						
tp 02-01	0-0.67	Topsoil	Loose	Dark Brown		Adjacent to Boring 02-1
	0.67-5	Bank run gravel with fines, stones 2-12" in size	Firm for gravel	Orange Brown		
	5-7	Bank run gravel, stones ¾-3"	Loose	Med. Brown		
	7-9	Washed gravel, no fines		Med. Brown	Water seeps at 2gpm at 7 feet in depth.	
tp 02-03	0-0.25	Topsoil				Between Boring 02-2 and 02-4
	0.25-2.8	Bank run gravel with fines	Firm for gravel	Orange Brown		
	2.8-4.2	Gravel with cobbles		Light Brown		40% cobbles
	4.2+	Glacial till	Very firm	Grey		
Borings Located (Installed 9/11/02, Logged by Green Mtn. Boring)						
Boring b-02-11	0-7	Silty sand, some gravel			Water noted at 7 feet	
	7-10	Gray silt, trace of clay				
Town Test Pits Located (Installed 2003, Logged by Paul Hartshorn)						
a-03-01	0-10	Sandy gravel				Possibly suitable for crushing
a-03-02	0-9	Sandy gravel				Possibly suitable for crushing
	9-12	Gravelly sand				
a-03-03	0-11	Sandy gravel				Possibly suitable for crushing
	11-12	Gravelly sand				
a-03-04	0-10	Sandy gravel				Possibly suitable for crushing
	10-12	Gravelly sand				
a-03-05	0-11	Sandy gravel				Possibly suitable for crushing
	11-11.3	Clay				
	11.3-13.3	Gravelly sand				
a-03-06	0-5	Sandy gravel				Possibly suitable for bank run
	5+	Clay				
a-03-07	0-5	Sand with organics				
	5-12	Sandy gravel				Possibly suitable for bank run
b-03-02	0-12	Coarse sandy gravel				Possibly suitable for crushing
b-03-03	0-10	Sandy gravel, some silt				Possibly suitable for crushing, may need screening
b-03-04	0-12	Sandy gravel				Possibly suitable for crushing
c-03-07	0-5	Sandy gravel				Possibly suitable for crushing
c-03-08	0-12	Sandy gravel				Possibly suitable for bank run
c-03-09	0-6	Silty gravel				Likely would need screening

ATTACHMENT 3
SIEVE TEST RESULTS

PHELPS ENGINEERING, INC.

79 Court Street
 P.O. Box 367
 Middlebury, VT 05753
 Telephone (802) 388-7829

PROJECT: Waitsfield Gravel Pit
 SAMPLED BY: JA
 SAMPLE ID#: TP-08-02
 ANALYSIS BY: RC
 ANALYSIS DATE: 6/26/08
 SAMPLE DATE: 4/25/08

GRAIN SIZE DISTRIBUTION ANALYSIS

SIEVE NO. (U.S. STD.)	GRAIN SIZE (MM)	WEIGHT MEASURED (INCL. PAN)	CUMULATIVE WEIGHT	PAN WEIGHT	WEIGHT RETAINED	CUMULATIVE WEIGHT %	PERCENT FINER	Crushed Coarse Gravel	Crushed Gravel	Common Sand	Bank Run Gravel	Shoulder Gravel
4 Inch	101.6	146.2	0.0	146.2	0.0	0.00	100.00	25-100%				
3 Inch	76.2	146.2	0.0	146.2	0.0	0.00	100.00				100%	
2 1/2 Inch	63.5	656.4	510.2	146.2	510.2	24.64	75.36				90-100%	
2 Inch	50.8	628.8	992.8	146.2	482.6	47.94	52.06		100%			
1 1/2 Inch	38.1	321.0	1,167.6	146.2	174.8	56.38	43.62		90-100%			100%
1 Inch	25.4	373.2	1,394.6	146.2	227.0	67.34	32.66					90-100%
3/8 Inch	9.525	316.2	1,584.6	146.2	170.0	75.55	24.45			100%		
4	4.75	246.3	1,664.7	146.2	100.1	80.38	19.62	25-50%	30-60%	95-100%	45-75%	45-65%
16	1.190	343.4	1,861.9	146.2	197.2	89.90	10.10			50-80%		
30	0.590	228.3	1,944.0	146.2	82.1	93.87	6.13			25-60%		
50	0.297	223.2	2,021.0	146.2	77.0	97.59	2.41			10-30%		
100	0.150	176.6	2,051.4	146.2	30.4	99.05	0.95	0-12%	0-12%	2-10%	0-12%	0-15%
200	0.075	156.5	2,081.7	146.2	10.3	99.55	0.45	0-6%	0-6%		0-6%	0-12%
PAN	N/A	155.5	2,071.0	146.2	9.3	100.00	0.00					

INITIAL SAMPLE MASS:	2084.7
FINAL SAMPLE MASS:	2,071.0
PERCENT LOSS:	0.66%

NOTE: Stones in this sample ranged from 3" to 24"



Suitability: Needs Crushing Needs crushing No crushing Needs crushing

PHELPS ENGINEERING, INC.

79 Court Street
 P.O. Box 367
 Middlebury, VT 05753
 Telephone (802) 388-7829

PROJECT: Waitsfield Gravel Pit
 SAMPLED BY: JA
 SAMPLE ID#: TP-08-03
 ANALYSIS BY: RC
 ANALYSIS DATE: 6/26/08
 SAMPLE DATE: 4/25/08

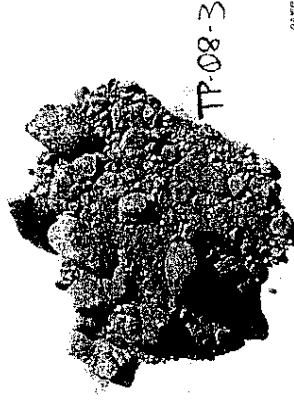
GRAIN SIZE DISTRIBUTION ANALYSIS

SIEVE NO. (U.S. STD.)	GRAIN SIZE (MM)	WEIGHT MEASURED (incl. PAN)	CUMULATIVE WEIGHT	PAN WEIGHT	WEIGHT RETAINED	CUMULATIVE WEIGHT %	PERCENT FINER	Crushed Coarse Gravel	Crushed Gravel	Common Sand	Bank Run Gravel	Shoulder Gravel
4 inch	101.6	146.2	0.0	146.2	0.0	0.00	100.00	25-100%				
3 inch	76.2	327.2	181.0	146.2	181.0	9.08	90.92				100%	
2 1/2 inch	63.5	146.2	181.0	146.2	0.0	9.08	90.92				90-100%	
2 inch	50.8	460.1	494.9	146.2	313.9	24.83	75.17		100%			
1 1/2 inch	38.1	146.2	494.9	146.2	0.0	24.83	75.17		90-100%			100%
1 inch	25.4	367.5	716.2	146.2	221.3	35.93	64.07					90-100%
3/8 inch	9.525	418.0	988.0	146.2	271.8	49.57	50.43			100%		
4	4.75	375.9	1,217.7	146.2	229.7	61.09	38.91	25-50%	30-60%	95-100%	45-75%	45-65%
16	1.190	548.2	1,619.7	146.2	402.0	81.26	18.74			50-80%		
30	0.590	282.7	1,756.2	146.2	136.5	88.11	11.89			25-60%		
50	0.297	280.4	1,870.4	146.2	114.2	93.83	6.17			10-30%		
100	0.150	223.2	1,947.4	146.2	77.0	97.70	2.30	0-12%	0-12%	2-10%	0-12%	0-15%
200	0.075	169.4	1,970.6	146.2	23.2	98.86	1.14	0-6%	0-6%		0-6%	0-12%
PAN	N/A	168.9	1,993.3	146.2	22.7	100.00	0.00					

Suitability: Yes No Needs crushing Needs crushing

INITIAL MASS OF SAMPLE:	1998.6
FINAL MASS OF SAMPLE:	1,993.3
PERCENT LOSS:	0.27%

NOTE: Stones in this sample ranged from 3.5" to 7"



02/25/08

PHELPS ENGINEERING, INC.

79 Court Street
 P.O. Box 367
 Middlebury, VT 05753
 Telephone (802) 388-7829

PROJECT: Waitfield Gravel Pit

SAMPLED BY: JA
 SAMPLE ID#: TP-08-04
 ANALYSIS BY: RC
 ANALYSIS DATE: 6/25/08
 SAMPLE DATE: 4/25/08

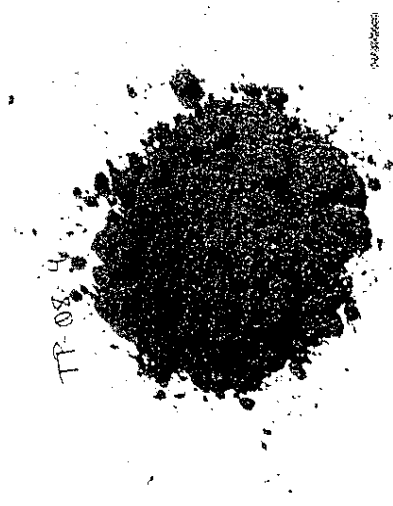
GRAIN SIZE DISTRIBUTION ANALYSIS

SIEVE NO. (U.S. STD.)	GRAIN SIZE (MM)	WEIGHT MEASURED(INC. PAN)	CUMULATIVE WEIGHT	PAN WEIGHT	WEIGHT RETAINED	CUMULATIVE WEIGHT %	PERCENT FINER	Crushed Coarse Gravel	Crushed Gravel	Common Sand	Bank Run Gravel	Shoulder Gravel
4 inch	101.6	146.2	0.0	146.2	0.0	0.00	100.00	25-100%				
3 inch	76.2	662.1	515.9	146.2	515.9	20.79	79.21				100%	
2 1/2 inch	63.5	146.2	515.9	146.2	0.0	20.79	79.21				90-100%	
2 inch	50.8	323.8	693.5	146.2	177.6	27.94	72.06		100%			
1 1/2 inch	38.1	428.5	975.8	146.2	282.3	39.32	60.68		90-100%			100%
1 inch	25.4	416.4	1,246.0	146.2	270.2	50.20	49.80					90-100%
3/8 inch	9.525	392.4	1,491.8	146.2	245.8	60.10	39.90			100%		
4	4.75	322.4	1,668.0	146.2	176.2	67.20	32.80	25-50%	30-60%	95-100%	45-75%	45-55%
16	1.190	434.5	1,956.3	146.2	288.3	78.82	21.18			50-80%		
30	0.590	295.0	2105.1	146.2	148.8	84.81	15.19			25-60%		
50	0.297	326.3	2285.2	146.2	180.1	92.07	7.93			10-30%		
100	0.150	279.9	2418.9	146.2	133.7	97.46	2.54	0-12%	0-12%	2-10%	0-12%	0-15%
200	0.075	181.9	2454.6	146.2	35.7	98.90	1.10	0-6%	0-6%		0-6%	0-12%
PAN	N/A	173.6	2482.0	146.2	27.4	100.00	0.00					

Suitability: Yes Needs crushing No Needs crushing

INITIAL MASS OF SAMPLE:	2503.4
FINAL MASS OF SAMPLE:	2482.0
PERCENT LOSS:	0.85%

NOTE: Stones in this sample ranged from 3.5" to 9"



PHELPS ENGINEERING, INC.

79 Court Street
 P.O. Box 367
 Middlebury, VT 05753
 Telephone (802) 388-7829

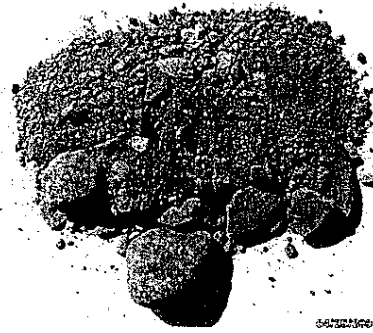
PROJECT: Waitsfield Gravel Pit
 SAMPLED BY: JA
 SAMPLE ID#: TP-08-06
 ANALYSIS BY: RC
 ANALYSIS DATE: 7/7/08
 SAMPLE DATE: 4/25/08

GRAIN SIZE DISTRIBUTION ANALYSIS

SIEVE NO. (U.S. STD.)	GRAIN SIZE (MM)	WEIGHT MEASURED INCL. PAN	CUMULATIVE WEIGHT	PAN WEIGHT	WEIGHT RETAINED	CUMULATIVE WEIGHT %	PERCENT FINER	Crushed Coarse Gravel	Crushed Gravel	Common Sand	Bank Run Gravel	Shoulder Gravel
4 inch	101.6	146.2	0.0	146.2	0	0.00	100.00	25-100%				
3 inch	76.2	146.2	0.0	146.2	0	0.00	100.00				100%	
2 1/2 inch	63.5	464.8	318.6	146.2	318.6	14.88	85.12				90-100%	
2 inch	50.8	146.2	318.6	146.2	0	14.88	85.12		100%			
1 1/2 inch	38.1	309.1	481.5	146.2	162.9	22.49	77.51		90-100%			100%
1 inch	25.4	264.8	600.1	146.2	118.6	28.02	71.98					90-100%
3/8 inch	9.525	433.3	887.2	146.2	287.1	41.43	58.57			100%		
4	4.75	399.8	1,140.8	146.2	253.6	53.27	46.73	25-50%	30-60%	95-100%	45-75%	45-65%
16	1.190	590.2	1,584.8	146.2	444	74.01	25.99			50-80%		
30	0.590	335.0	1,773.6	146.2	188.8	82.82	17.18			25-60%		
50	0.297	318.7	1,946.1	146.2	172.5	90.88	9.12			10-30%		
100	0.150	261.0	2,060.9	146.2	114.8	96.24	3.76	0-12%	0-12%	2-10%	0-12%	0-15%
200	0.075	174.7	2,089.4	146.2	28.5	97.57	2.43	0-6%	0-6%		0-6%	0-12%
PAN	N/A	198.1	2,141.3	146.2	51.9	100.00	0.00					

Suitability: Yes Needs crushing No Needs crushing

TP-08-06



INITIAL SAMPLE MASS:	2141.4
FINAL SAMPLE MASS:	2,141.3
PERCENT LOSS:	0.00%

NOTE: Stones in this sample range from 3.3" to 8.3"

PHELPS ENGINEERING, INC.

79 Court Street
 P.O. Box 367
 Middlebury, VT 05753
 Telephone (802) 388-7829

PROJECT: Waitsfield Gravel Pit
 SAMPLED BY: JA
 SAMPLE ID#: TP-08-07
 ANALYSIS BY: RC
 ANALYSIS DATE: 7/7/08
 SAMPLE DATE: 4/25/08

GRAIN SIZE DISTRIBUTION ANALYSIS

SIEVE NO. (U.S. STD.)	GRAIN SIZE (MM)	WEIGHT MEASURED (INLC. PAN)	CUMULATIVE WEIGHT	PAN WEIGHT	WEIGHT RETAINED	CUMULATIVE WEIGHT %	PERCENT FINER	Crushed Coarse Gravel	Crushed Gravel	Common Sand	Bank Run Gravel	Shoulder Gravel
4 inch	101.6	793.0	646.8	146.2	646.8	28.22	71.78	25-100%				
3 inch	76.2	146.2	646.8	146.2	0	28.22	71.78				100%	
2 1/2 inch	63.5	146.2	646.8	146.2	0	28.22	71.78				90-100%	
2 inch	50.8	146.2	646.8	146.2	0	28.22	71.78		100%			
1 1/2 inch	38.1	330.9	831.5	146.2	184.7	36.28	63.72		90-100%			100%
1 inch	25.4	299.2	984.5	146.2	153	42.96	57.04					90-100%
3/8 inch	9.525	321.3	1,159.6	146.2	175.1	50.60	49.40			100%		
4	4.75	314.7	1,328.1	146.2	168.5	57.95	42.05	25-50%	30-60%	95-100%	45-75%	45-65%
16	1.190	504.3	1,666.2	146.2	358.1	73.58	26.42			50-80%		
30	0.590	303.0	1,843.0	146.2	156.8	80.42	19.58			25-60%		
50	0.297	359.0	2,055.8	146.2	212.8	89.71	10.29			10-30%		
100	0.150	294.7	2,204.3	146.2	148.5	96.19	3.81	0-12%	0-12%	2-10%	0-12%	0-15%
200	0.075	191.5	2,249.6	146.2	45.3	98.16	1.84	0-6%	0-6%		0-6%	0-12%
PAN	N/A	188.3	2,291.7	146.2	42.1	100.00	0.00					

Suitability:

Yes

Needs
crushing

No

Needs
crushing

Needs
crushing

INITIAL SAMPLE MASS:	2306.8
FINAL SAMPLE MASS:	2,291.7
PERCENT LOSS:	0.65%

NOTE: Stones in this sample ranged from 4" to 14"

TP-08-07



Acceptance or rejection of this material is dependent on approval by the design firm and the VT DEC (or other permitting Agency) on a case-by-case basis.

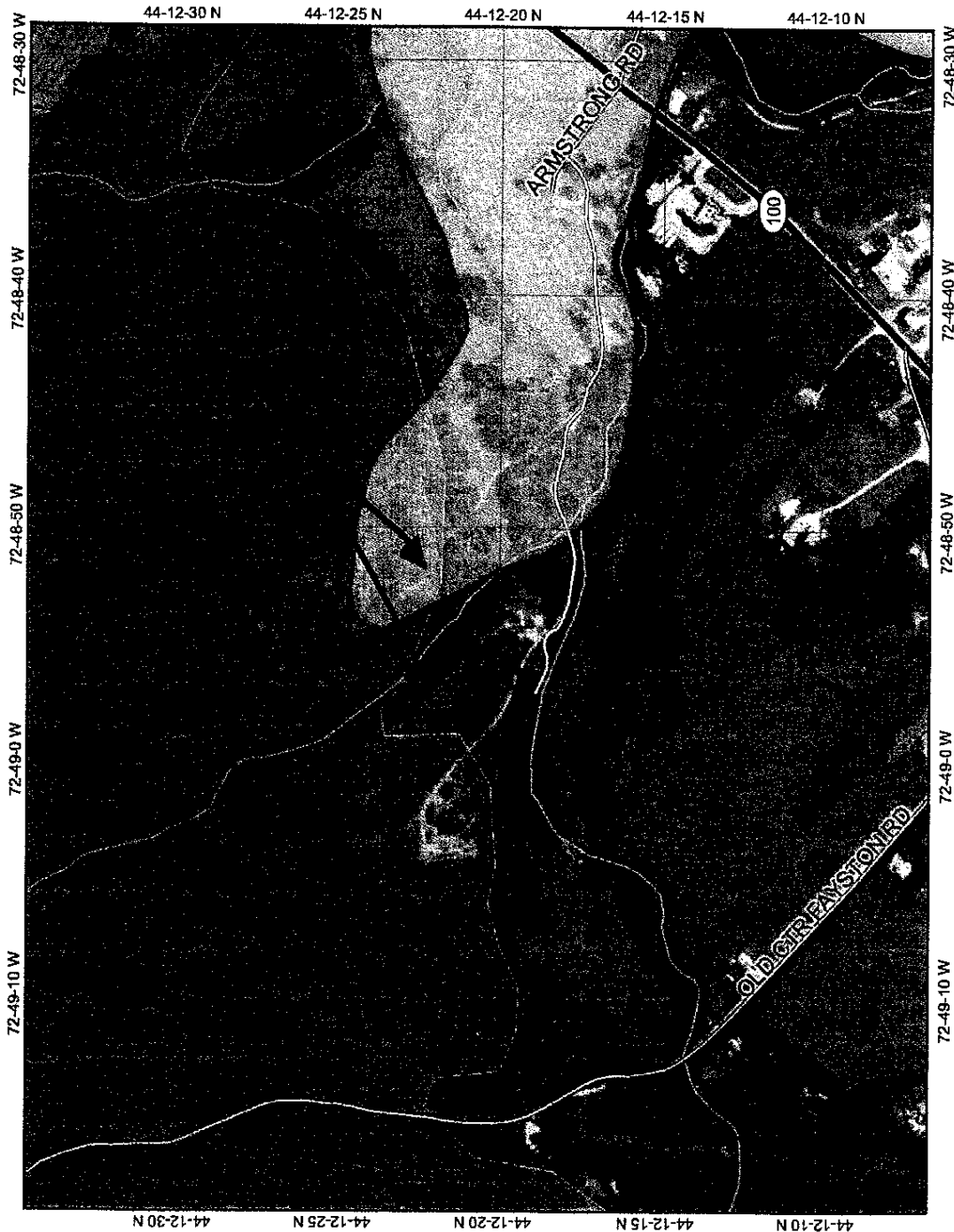
ATTACHMENT 4
AGENCY OF NATURAL RESOURCES
ENVIRONMENTAL INTEREST
LOCATOR MAP



ANR Environmental Interest Locator

Vermont Agency of Natural Resources (ANR)

Gravel Pit Site



Map center: 474828, 189547

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. VCGI and the State of Vermont make no representations of any kind, including but not limited to the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

URL: http://maps.vermont.gov/imf/sites/ANR_NATRES/iewerfjsp/launch.jsp



Legend

- Roads**
 - US Highway
 - Vermont State Highway
 - Class One
 - Class Two
 - Legal Trail
 - Emergency U-Turn Area
 - Proposed Class Two
 - Proposed Class Three
 - Proposed Vermont State Highway
 - Proposed US Highway
 - Proposed Interstate
 - Discontinued
 - Interstate
 - Class Three
 - Class Four
 - State National Forest Highway
 - Military Road (No Public Access)
 - Private Road
 - VSWI
- Rare, Threatened, and Endangered Species**
 - Threatened or Endangered
 - Rare (Not T or E)
 - Significant Natural Communities
- Preexisting**
 - Terraced
 - Surface Water/SPA
 - Ground Water/SPA
 - Stormwater Impaired Subwatershed
 - Stormwater Impaired Watershed
 - Hydrography (VRD 5k)
 - Hydrography (VRD 5k)
 - Deer Wintering Areas
- VT County Boundary**
- VT Town Boundaries (No Fill)**
- NAP Color Orthophotos**
- USGS 1:24000 Topomaps**
- VT State Boundary (Fill)**

VT State Plane Meters (NAD83)



Scale: 1:6,042