

# TOWN OF CHESTER GRAVEL PIT EVALUATION September 2011



<b>GRAVEL/LEDGE POTENTIAL</b>
Location 1: 58,000 CY gravel @ 20' assumed depth
Location 2: 87,000 CY gravel @ 20' assumed depth
Location 1: 1,340,000 CY Ledge @ 20' assumed depth

# M & M Gravel Pit Evaluation

## Gravel Quality Investigation Phase

1. Review of Existing Plans: I reviewed an electronic set of plans provided by M & M Construction. Their application proposed to extract gravel, stone and bedrock from a 15 acre section of the 139 acre parcel at a rate of 100,000 CY/year over a 10 year period. The application consisted of a 200' forest buffer to the edge of the rock excavation.
2. Observe test pits/take soil samples: 13 test pits were completed during the initial investigation exploratory phase the M & M gravel pit. Due to the surrounding trees and the quantity of stone in the test pits it was not possible to excavate any further than 11', particularly without a permit. The pits ranged in depth from 6' to 11'. Sieves were taken on 10 of the test pits with all results meeting the state specifications on the #200 sieve except 2 of the 10 pits.
3. Gravel sieve analysis: The 10 pages of results will be given to Town Manager

## Gravel Quantity Investigation Phase

4. Survey of existing test pits: I surveyed the test pits with DiBernardo Surveyors and plotted them on the attached plan provided by Amy O'Neal. The first investigation phase included 2 acres of quality gravel with an average overburden of 2' and depth of gravel of 8'. There were a few other extraneous pits with high silt content and a substantial amount of stone.
5. Estimate of gravel quantities: My initial estimate of 25,000 Cubic Yards (CY) for **GRAVEL LOCATION AREA 1** was based on an average of 10' of gravel less 2' of overburden. The estimate increased as follows based on additional possible depths:

<b>GRAVEL LOCATION AREA 1: 2 acres</b>	
10' assumed depth less 2' overburden:	25,000 CY
20' assumed depth less 2' overburden:	58,000 CY
30' assumed depth less 2' overburden:	90,000 CY

Since the initial investigation, M & M was asked to further investigate the 139 acre parcel to see if they could identify any additional resources. Mike O'Neal dug 4 holes south of test pit #9 at a depth of up to 5'. This area is identified on the attached plan as **GRAVEL LOCATION AREA 2** contains an average overburden of 1.5'. This area is indicative of additional gravel sources based on the growth of pine trees, contour of the land and heading in the direction of the former Parker pit. Further investigation of this location would be necessary to better determine the limits and quantity of gravel.

<b>GRAVEL LOCATION AREA 2: 3 Acre Potential</b>	
10' assumed depth less 2' overburden:	39,000 CY
20' assumed depth less 2' overburden:	87,000 CY
30' (not assumed)	
NOTE: Ledge outcrops were visible at the toe of this apparent gravel source	
NOTE: LOCATION 2 Area approximate, located with a hand held GPS	

The Environmental Commission has allowed Mike and Amy O'Neal to open up the closed M&M pit to extract gravel as a result of the 08/28/11 hurricane disaster. The result has been excavation of app 1,100 CY per day since last Wednesday (8/31/11). They did not haul out on 9/4/11. I do not have the exact extraction quantities, however assuming extraction at the

rate of 1,100 CY/day M&M would have extracted app. 7,700 CY since 8/31. M & M is charging \$8/Cy for bank run material which is the average price in the area. This breaks down to \$6/CY for the material and \$2/CY for loading.

6. Review of quality/recommendation:

Due to the recent excavations that we were unable to obtain, it is now evident that **GRAVEL LOCATION AREA 1** may run approximately 20' in depth and possibly deeper. The quality of the excavation in the vicinity of Test Pits # 2, 3 and 6 has been exceptional. The hurricane has provided the means to investigate further, although every day that goes by will be depleting this pit by app. 1,000 +/- CY/day. There are 2 options for consideration:

- OPTION 1: Warn an article on the purchase of this pit.
- OPTION 2: Verify with an attorney to see if the Town of Chester could enter into a Lease Purchase Agreement with M & M with payment over 2.5 years.
- OPTION 3: Further investigate **GRAVEL LOCATION AREA 2** in order to confirm the above assumptions. If quantities are questionable, consult with a quarry expert to determine the possibility of ledge production of **POTENTIAL QUARRY AREA 3**.

<b>POTENTIAL QUARRY AREA 2: 36 Acre Potential</b>
10' assumed depth: 670,000 CY
20' assumed depth: 1,340,000 CY
30' assumed depth: 2,000,000 CY

## Example of a rock quarry for use during a flood



September 3, 2011: Darby Hill Quarry in Rockingham, VT



September 5, 2011: FWW rock truck hauling ledge stone to large river bank erosion



**Gravel location Area 1**  
2 acres x 10' average depth  
20,000 CY at 10' depth, less 2' overburden  
56,000 CY at 20' depth less 2' overburden  
90,000 CY at 30' depth less 2' overburden

Ledge location Area

**Gravel location Area 2**  
3 acres x 10' assumed depth  
36,000 CY at 10' depth, less 2' overburden  
87,000 CY at 20' depth less 2' overburden  
135,000 CY at 30' depth less 2' overburden

**Potential Quarry - Area 3**  
36 acres  
670,000 CY at 10' depth  
1,340,000 CY at 20' depth  
2,000,000 CY at 30' depth

