Appendix G:
Parcel 14 (Plesser Property)
2008 Pumping Test Report

LEGGETTE, BRASHEARS & GRAHAM, INC.

PROFESSIONAL GROUND-WATER AND ENVIRONMENTAL ENGINEERING SERVICES

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March 13, 2008

Mr. Ross Winglovitz
EP Engineering Properties, PC
110 Orange Avenue
Walden, NY 12586

RE: Pumping Test Report-Wells 4, 5, 5A and 8
Crossroads at New Paltz
Planned Unit Development Project
New Paltz, New York

Dear Mr. Winglovitz:

The following report is a summary of the results from the 72-hour pumping tests completed for Wells 4, 5, 5A and 8 for the proposed Crossroads at New Paltz Planned Unit Development Project in August 2007. A site location map for the study property is shown on figure 1.

The pumping test program utilized the New York State Department of Environmental Conservation (NYSDEC) "Recommended Pump Test Procedures for Water Supply Application", January 2002. The proposed pumping test program was outlined in a report titled "Pumping Test Protocol" (Engineering Properties, P.C. dated January 2007) and submitted to the Town Engineer for approval. Verbal permission to proceed with the pumping tests was received in February 2007 from the Town's consultants, David Clouser and Associates.

ESTIMATED WATER DEMAND

The proposed development is comprised of 40 one-bedroom apartment/condominium units, 165 two-bedroom apartment/condominium units, 45 three-bedroom townhouses, a hotel, a restaurant and office/retail space. The estimated combined average water demand for the planned unit development is 59.7 gpm (gallons per minute) or about 85,987 gpd (gallons per day). A summary of the water demand estimate is shown on table 1.

The New York State Department of Health (NYSDOH) requires that the water supply must be equal to or greater than the design maximum daily demand which is calculated as twice the average daily water demand for residential uses plus the average daily demand for the non-residential uses. Therefore, the proposed water supply must have the ability to produce about 146,587 gpd or about 101.8 gpm. NYSDOH guidelines require proof of this supply with the best well out of service.

HYDROGEOLOGIC SETTING

The 57-acre study property is located off of South Ohioville Road in the Town of New Paltz, Ulster County, New York. Major roadways in the immediate vicinity of the site include the New York State (NYS) Thruway exit 18 ramp to the west, NYS Route 299 to the north and South Ohioville Road to the east.

Topography at the site is generally level with elevations ranging from 352 feet on the northwestern portion of the site to 374 feet on the east/southeastern side. The land was previously used for agriculture, but is currently vacant. Wetland areas are located in the eastern, central and southern portions of the study property, and encompass approximately 11.5-acres of the site as shown on figure 2.

Overburden Soils

The surficial soils located on the site contain several different map units as described in the "Soil Survey of Ulster County, New York" published by the United States Department of Agriculture Soil Conservation Service (1979). These units include the Bath, Canandaigua, Chenango, Mardin and Volusia Series. The Bath, Mardin and Volusia Series are described as forming in glacial till deposits. The Chenango and Canadiagua soils formed in glacial outwash deposits and lacustrine deposits of silt, very fine sand and clay, respectively.

There are no significant stratified-drift sand and gravel deposits mapped beneath this site. Subsurface soils are composed mainly of glacial till deposits consisting of non-sorted, non-stratified deposits of clay, silt, sand, gravel and boulders. Till is generally not suitable for high yielding well development.

Bedrock Aquifer

The study property and surrounding area is underlain by sedimentary bedrock identified as the Martinsburg Formation (On). A significant amount of data is available on the Martinsburg Formation bedrock aquifer.

Martinsburg Formation (On)

The name of the dark-gray shale unit underlying this region from the central area of Orange County into Ulster County was originally reported to be the Normanskill Formation by Offield (1967). Re-evaluation of the characteristics of the unit by Jaffe (1973) identified the prevalent shale unit as the Martinsburg Formation (On) (Landing, 1994). According to the later interpretation, the Martinsburg Formation consists of the following (Jaffe, 1973):

- Penn Argyl Member – shale (Offield's Snake Hill Member)
- Ramseyburg Member – greywacke and sandstone (Offield's Austin Glen Member)
- Bushkill Member – shale and siltstone – (Offield's Mt. Merino Member)

The Penn Argyl Member, consists of dark gray to grayish-black calcareous shale. The Ramseyburg Member comprises greywacke and sandstone. The Bushkill Member consists of dark gray calcareous shale and siltstone.

The fractures exhibited in the fine-grained bedrock are few and mostly closed fractures. The unit is resistant to weathering and likely exhibits low primary permeability based on the porosity, and secondary permeability caused by the presence of interconnected fractures can be low to moderate. Water is contained in fractures, joints, bedding planes, contacts and other secondary openings in the bedrock units. Wells drilled in this bedrock unit on the study property have reported yields ranging from 8 to 100(+) gpm.

Existing Onsite Bedrock Wells

Ten bedrock wells are located on the study property (figure 2). Of the ten wells, the Barn Well and Wells 1 and 3 could not be located during the August 2007 72-hour pumping tests. Although located, an obstruction in the borehole of Well 7 prevented the collection of water-level measurements. Drilling logs, located in Appendix I, were available for Wells 1, 2, 3, 4, 5, 6, 7 and 8.

Ground-Water Withdrawals Within 2,500 Feet

There are no public ground-water supply wells within 2,500 feet from Wells 4, 5, 5A and 8 with the exception of individual homeowner wells (figure 3).

PUMPING TEST PROGRAM

The formal testing program began with a simultaneous 72-hour pumping test on Wells 5A and 8 conducted August 6 through August 9, 2007. A second simultaneous 72-hour pumping test was completed on Wells 4 and 5 from August 13 through August 16, 2007. The goal of the pumping tests was to demonstrate stabilized yield and water-level drawdown in the wells during a minimum of the last 6 hours of the pumping test period as required by the regulatories.

The flow rate of the pumping wells was monitored with a flow meter attached to the discharge line and the flow rate from the meter was confirmed/calibrated with a measured bucket and stop watch. A majority of flow meters are off by about ±5% of reported yield, therefore accuracy of a meter is confirmed with a pre-measured bucket/stop watch. Ground-water discharged from the pumping wells was diverted downgradient from the respective wells and directed into a storm-water drainage ditch near the Exit 18 Thruway ramp which allowed the discharge water to drain off the site (figure 2).

Well 8

The pumping of Well 8 was started at 1356-hours on August 6, 2007. The static water-level in Well 8 prior to the start of the test was 8.26 ft btoc (feet below top of casing). The initial pumping rate of Well 8 was 120 gpm. The pumping rate in Well 8 dropped steadily as the

water level in the well declined, and by 1600-hours had decreased to 105 gpm. At 1636-hours, after 40 minutes of pumping, the rate was manually increased to 120 gpm. The pumping rate continued to decline steadily as the water level in the well dropped, until at 1500-hours on August 8, the pumping rate reached 90 gpm and stabilized. The pumping rate in Well 8 remained at 90 gpm for the duration of the pumping test.

The final pumping water-level in Well 8 just prior to the shut down of the test at 1600 hours on August 9, 2007 was 282.74 ft btoc, for a drawdown of 274.48 feet. The pumping rate and water level were stable for approximately the last 18 hours of the testing period. Well 8 was pumped for a total of 74 hours and 4 minutes. The water level in Well 8 had recovered to 90 percent of the pre-test static level within 3 hours of shut down of the pump and was fully recovered after 72 hours. A table summarizing water-level measurements collected and a hydrograph for Well 8 is located in Appendix II.

Well 5A

Pumping of Well 5A was started at 1558 hours on August 6, 2007, two hours following the start of Well 8. The static water-level in Well 5A prior to the start of the pumping test was 8.48 ft btoc. The pumping rate of Well 5A was 43 gpm for the duration of the test.

The final pumping water-level in Well 5A just prior to shut down at 1600 hours on August 9, 2007 was 135.83 ft btoc, for a drawdown of 127.35 feet. The pumping rate and water level were stable for approximately the last 57 hours of the testing period. Well 5A was pumped for a total of 72 hours and 2 minutes. The water level in Well 5A had recovered to 90 percent of static within 6 hours of shut down of the pump and was fully recovered after 72 hours. A table summarizing water-level measurements collected and a hydrograph for Well 5A is located in Appendix II.

Well 5

The pumping of Well 5 was started at 1050 hours on August 13, 2007. The static water-level in Well 5 prior to the start of the pumping test was 9.59 ft btoc. The initial pumping rate of Well 5 was 200 gpm. The pumping rate in Well 5 dropped steadily as the water-level in the well declined, and by 1600 hours had decreased to 135 gpm. At 1638 hours, after 5 hours and 48 minutes of pumping, the pumping rate was manually increased to 152 gpm. The pumping

rate continued to decline steadily as the water level in the well dropped, until at 0800 hours on August 15 after approximately 45 hours and 10 minutes of pumping, the pumping rate reached 103 gpm and stabilized. The pumping rate in Well 5 remained at 103 gpm for the duration of the pumping test.

The final pumping water-level in Well 5 just prior to the shut down of the test at 1300 hours on August 16, 2007 was 300.16 ft btoc, for a drawdown of 290.57 feet. The pumping rate and water level were stable for approximately the last 16 hours of the testing period. Well 5 was pumped for a total of 74 hours and 10 minutes. The water level in Well 5 had recovered to 90 percent of the pre-test static level within 6 hours of shut down of the pump and was fully recovered after 72 hours. A table summarizing water-level measurements collected and a hydrograph for Well 5 is located in Appendix II.

Well 4

The pump in Well 4 was started at 1250 hours on August 13, 2007, two hours after the start of Well 5. The static water-level in Well 4 prior to the start of the pumping test was 10.22 ft btoc. The pumping rate of Well 4 was 50 gpm for the duration of the test.

The final pumping water level just prior to the shut down of the test at 1300 hours on August 16, 2007 was 226.09 ft btoc, for a drawdown of 215.87 feet. The pumping rate and water level were stable for approximately the last 57 hours of the testing period. Well 4 was pumped for a total of 72 hours and 10 minutes. The water level in Well 4 had recovered to 90 percent of the pre-test static within 8 hours of shutdown of the pump and was fully recovered after 72 hours. A table summarizing water-level measurements collected and a hydrograph for Well 4 is located in Appendix II.

WELL MONITORING PROGRAM

During the pumping test program for Wells 4, 5, 5A and 8, a well monitoring program was conducted which included both onsite wells and neighboring offsite domestic wells. In total, 6 onsite wells (including the pumping wells) and 12 offsite domestic wells were monitored during the testing program. All wells were monitored using dedicated pressure transducers which collected continuous water-level measurements. The monitoring period began on

August 3, 2007 with the installation of pressure transducers and extended to August 20, 2007 with the removal of all equipment.

The purpose of the monitoring program was to determine if the pumping of the proposed onsite production wells for 72 hours or more at pumping rates totaling more than twice the average water demand of the project would significantly affect water levels and/or yields of existing neighboring wells. A piezometer (PZ-A), located in the wetland feature adjacent to the pumping wells, was also monitored to determine any hydraulic connection with the bedrock aquifer and the wetlands under pumping conditions. A portable weather station was also installed on the site during the pumping test event to monitor precipitation, barometric pressure and temperature. A copy of the graph showing the data recorded by the weather station is located in Appendix III.

Onsite Wells

As described above, water-level measurements were collected from two onsite bedrock monitor wells, Wells 2 and 6, during the pumping tests. In addition, during the pumping test on Wells 5A and 8, Wells 4 and 5 were utilized as a monitor well; and during the pumping test on Wells 4 and 5, Wells 5A and 8 were utilized as monitor wells. A table summarizing water-level drawdown observed in the monitor wells and their approximate distance from the pumping wells is located in Appendix IV along with hydrographs of the water-level measurements collected.

During the simultaneous pumping test event on Wells 5A and 8, water-level drawdown was observed in all of the onsite wells monitored. Water-level drawdown ranged from 4.0 feet in Well 2 to 118.2 feet in Well 5.

During the simultaneous pumping test event on Wells 4 and 5, water-level drawdown was observed in all of the onsite wells monitored. Water-level drawdown ranged from 5.1 feet in Well 2 to approximately 290 feet in Well 5A. The water-level drawdown in Well 5A had to be approximated because of an equipment failure in this well during the second test. The drawdown in Well 5A was estimated based on water-level data collected from Well 5, which is located 10 feet to the west of Well 5A.

Offsite Wells

As described above, twelve offsite residential wells were monitored during the pumping test program. The locations of the wells are shown on figure 3. The hydrographs for most of the offsite wells indicated minor fluctuations in water level from pumping for domestic uses. Fluctuation from domestic water uses (i.e., showering, laundry, etc.) is a rapid decline (drawdown) in the water level from the pumping of the well followed by a rapid rise in the water level from the pumping turning off. An example of this can be seen on the hydrograph for 1 Terbar Loop (Appendix IV). No water-level drawdown caused by the pumping of Wells 4, 5, 5A and 8 was measured in any of the offsite wells monitoring during the testing program. Hydrographs for the offsite wells are located in Appendix IV.

Piezometer

The piezometer, PZ-A, showed no water-level drawdown which can be attributed to the pumping of Wells 4, 5, 5A and 8. The water-level measurements collected from the piezometer show a declining trend prior to the start of the first pumping test event. The trend continued until August 8, 2007 when a small precipitation event occurred causing the water level inside the piezometer to increase for a short period, then resume its declining trend. The decline continued until August 10, 2007 when a large magnitude rain event (1.8 inches) began approximately 12 hours after the shutdown of the first test. Immediately following this rain event, the water level in the piezometer rose rapidly then leveled out. The water-level in the piezometer remained level for the duration of the monitoring period. A copy of the hydrograph for PZ-A is located in Appendix IV.

WATER-QUALITY RESULTS

Ground-water samples were collected from each of the pumping wells during their respective 72-hour pumping test periods. The samples were analyzed for parameters specified in the NYSDOH Sanitary Code, Part 5, Sub-part 5-1. Microscopic Particulate Analysis (MPA) samples were also collected for Wells 5, 5A and 8 because of their proximity within 200 feet of a wetland boundary. The Surface Water Treatment Rule is applied to any well found to be under the direct influence of surface water. Due to an error at the laboratory which compromised the

integrity of the original MPA samples collected from Wells 5A and 8, new MPA samples were collected for these wells on September 5, 2007, after the end of the 72-hour test event and recovery period. Typically, physical parameters such as pH, temperature, conductivity would also be collected from a well's discharge water and compared with the measurements from surface water adjacent to the well. However, no surface water was present in the wetland areas.

Part 5 Sub-Part 5-1

The laboratory results for Wells 4, 5, 5A and 8 are included in Appendix V along with a table summarizing the constituents which were notably elevated or exceeded NYSDOH Drinking Water Standards in one or more of the wells.

Total coliform was present in all of the wells. All wells should be disinfected and resampled prior to being placed in service.

Chloride concentrations of 261, 434 and 342 mg/l (milligrams per liter) were reported in Wells 4, 5 and 5A, respectively, above the MCL (maximum concentration level) of 250 mg/l. The chloride concentration of 147 mg/l in Well 8, although it did not exceed the MCL, was also elevated. Historical water-quality data collected from these wells have reported elevated chloride levels and the contamination is attributed to the road salt application to the New York State Thruway and the ramp for Exit 18.

Sodium levels were also elevated in the wells. Currently, there is no MCL for sodium, but the recommended concentration limit is 270 mg/l. Although the concentrations reported, which range from 26 mg/l to 72 mg/l, are not above the recommended limit, they are well above what would be considered a background concentration. Also, sodium concentrations above 20 mg/l are not recommended for people on severely sodium restricted diets.

Total dissolved solids, which currently do not have an MCL, were also reported elevated in all of the wells. TDS is caused by the presence of dissolved salts (calcium, potassium, magnesium, chloride, sodium, etc.) in the water. In the case of these wells, sodium and chloride contamination may have resulted in the elevated TDS concentrations.

The combined total for radium 226 and 228 in Well 5A, including the uncertainty factors, was 5.23 pCi/l (picocuries per liter), above the MCL of 5.0 pCi/l. In the case of radiological parameters, one exceedance does not necessarily preclude the use of a well, the Health Department will most likely require quarterly samples be collected. A violation occurs when the average of four quarterly samples is above the MCL.

Antimony was detected in Wells 4 and 5 at 0.0065 mg/l and 0.011 mg/l, respectively, above the MCL of 0.006 mg/l. Antimony is typically associated with copper and iron smelting and refining industries, but is also naturally occurring in trace amounts in the soil. Antimony clings to sediment particles in the water and the high silt content (reported on the MPA results for Well 5) may account for the presence of antimony in the samples. Further development of the wells and resampling for antimony is recommended to confirm the reported concentrations. If treatment is required, methods for treating water containing antimony include reverse osmosis and coagulation/filtration methods.

Although no other metals exceeded MCLs in these wells, several concentrations were elevated and should be noted. Arsenic levels (MCL 0.01 mg/l) in Wells 5 and 8 were 0.01 and 0.008 mg/l, respectively. Similar to antimony, well redevelopment and resampling for arsenic is recommended to confirm the reported concentrations. Iron and manganese concentrations in Well 4 were 0.17 mg/l and 0.28 mg/l, respectively, for a combined level of 0.45 mg/l. In the case of iron and manganese, the individual MCLs are 0.3 mg/l for each but the combined MCL for iron plus manganese is 0.5 mg/l.

Chloromethane detections were reported for all of the wells and was above the MCL of 5.0 ug/l in Well 5. The reported concentration in Well 5 was 5.4 ug/l. However, as noted in the laboratory report and a letter dated September 24, 2007 (Appendix V), OCL experienced a problem with chloromethane contamination of the preservative used in the vials in which the volatile organic compound samples are collected during this period. The detections of chloromethane reported in Wells 4, 5, 5A and 8 are attributed to this laboratory contamination and do not appear to be contamination of the aquifer. However, the wells should be resampled for chloromethane prior to being placed into service.

Microparticulate Analyses

MPA samples were collected for Wells 5, 5A and 8. As noted above, a second set of samples had to be collected for Wells 5A and 8 following the completion of the 72-hour test because of laboratory error. No MPA sample was collected for Well 4 because of its location greater than 200 feet from the wetland boundary.

The MPA samples collected from Wells 5, 5A and 8 were negative for primary indicator organisms for ground water under the direct influence of surface water (GWUDI). Pollen was noted in the samples from Wells 5 and 5A; however, in the absence of other organisms this is not typically an indication of GWUDI. The presence of the pollen is likely due to the wellheads being open to the atmosphere during the pumping tests. Once the wells are placed in service, the wellheads will have sanitary seals as required by the NYSDOH.

A heavy sediment load was reported in the MPA sample results from Well 5. The laboratory report noted the sediment may have inhibited the identification of chlorophyll containing organisms. The collection of an additional MPA sample from Well 5 may be required to make a clear GWUDI determination for the well.

CONCLUSIONS AND RECOMMENDATIONS

- The average water demand for the proposed project is estimated to be approximately 59.7 gpm or about 85,987 gpd. The NYSDOH requires that the water supply must be equal to or greater than the design maximum daily demand which is calculated as twice the average daily water demand for residential uses plus the average daily demand of the non-residential uses. Therefore, the water supply for the proposed development must have the capacity to produce a minimum of 146,587 gpd or about 101.8 gpm with the best well out of service.

- Data from the pumping test of Wells 5A and 8 indicate the wells can be pumped simultaneously at 43 gpm and 90 gpm, respectively, for a combined yield of 133 gpm. Data from the pumping test of Wells 4 and 5 indicate the wells can be pumped simultaneously at 50 gpm and 103 gpm, respectively, for a combined total of 153 gpm.

These data indicate an adequate water supply has been developed to serve the proposed level of development.

- Water-level drawdown during the pumping test on Wells 5A and 8 in the onsite monitor wells ranged from 4.0 to 118.2 feet. During the test on Wells 4 and 5, water-level drawdown ranged from 5.1 to approximately 290 feet in the onsite wells monitored.

- No water-level drawdown was observed in PZ-A during either of the pumping test events indicating no direct hydraulic connection exists between the bedrock aquifer and the adjacent surface water feature.

- No water-level drawdown as a result of the pumping of Wells 4, 5, 5A and 8 was discernible in any offsite well monitored.

- Chloride concentrations exceeded the MCL in Wells 4, 5 and 5A. The chloride concentration was elevated in Well 8, but below the MCL. Sodium levels were also reported above what could be considered background levels. Road salt application to the adjacent NYS Thruway and exit ramp appears to be the cause of the contamination. Treatment of the water using reverse osmosis is recommended to remove the contaminants.

- The presence of total coliform was reported in all of the wells. The wells will have to be disinfected and resampled prior to being placed in service.

- Antimony was reported above the MCL in Wells 4 and 5. Further development of the wells to lower turbidity levels may result in a decreased concentration of antimony upon resampling. However, should concentration persist above the MCL, filtration of the wells to remove the constituent is recommended.

- Elevated arsenic levels (below the MCL) were reported in Wells 5 and 8. Well redevelopment and resampling for arsenic is recommended to confirm the reported concentrations.

- Combined radium 226 and 228 exceeded the MCL in Well 5A. Quarterly sampling of the well will most likely be required by the Health Department to monitor the radiological parameter levels over time.

- Trace concentrations of chloromethane were detected in all of the wells. The presence of chloromethane in the samples is attributed to laboratory contamination of the preservative used in the sample bottles. However, the wells should be resampled for chloromethane prior to being placed in service.

- MPA results for Wells 5, 5A and 8 were negative for the presence of GWUDI primary indicator organisms. However, the sample from Well 5 was noted to contain a heavy sediment load which may have inhibited the identification of chlorophyll containing organisms. Collection of an additional MPA sample from Well 5 may be necessary to make a clear GWUDI determination. To avoid the need to collection of further MPA samples from Well 5, installation of UV filtration equipment can be completed prior to placing the well into service.

- The ground-water supply developed for the proposed Crossroads at New Paltz project should be further reviewed and approved by the New York State Department of Environmental Conservation, NYSDOH and the Ulster County Department of Health (UCDOH) prior to the Final Application for the Planned Unit Development.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.

Stacy Stieber
Senior Hydrogeologist

Reviewed by:

Thomas P. Cusack, CPG
Vice President

SS:mlr
Enclosures
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Offield, Terry W., 1967, "Geology of Goshen-Greenwood Lake Area, New York", New York State Museum and Science Service Maps and Chart Series No. 9.

United States Department of Agriculture, 1979, "Soil Survey of Ulster County, New York".

Verbal Communication, June 1994, Dr. Edward Landing, Paleontologist, New York State Geological Survey.

TABLE

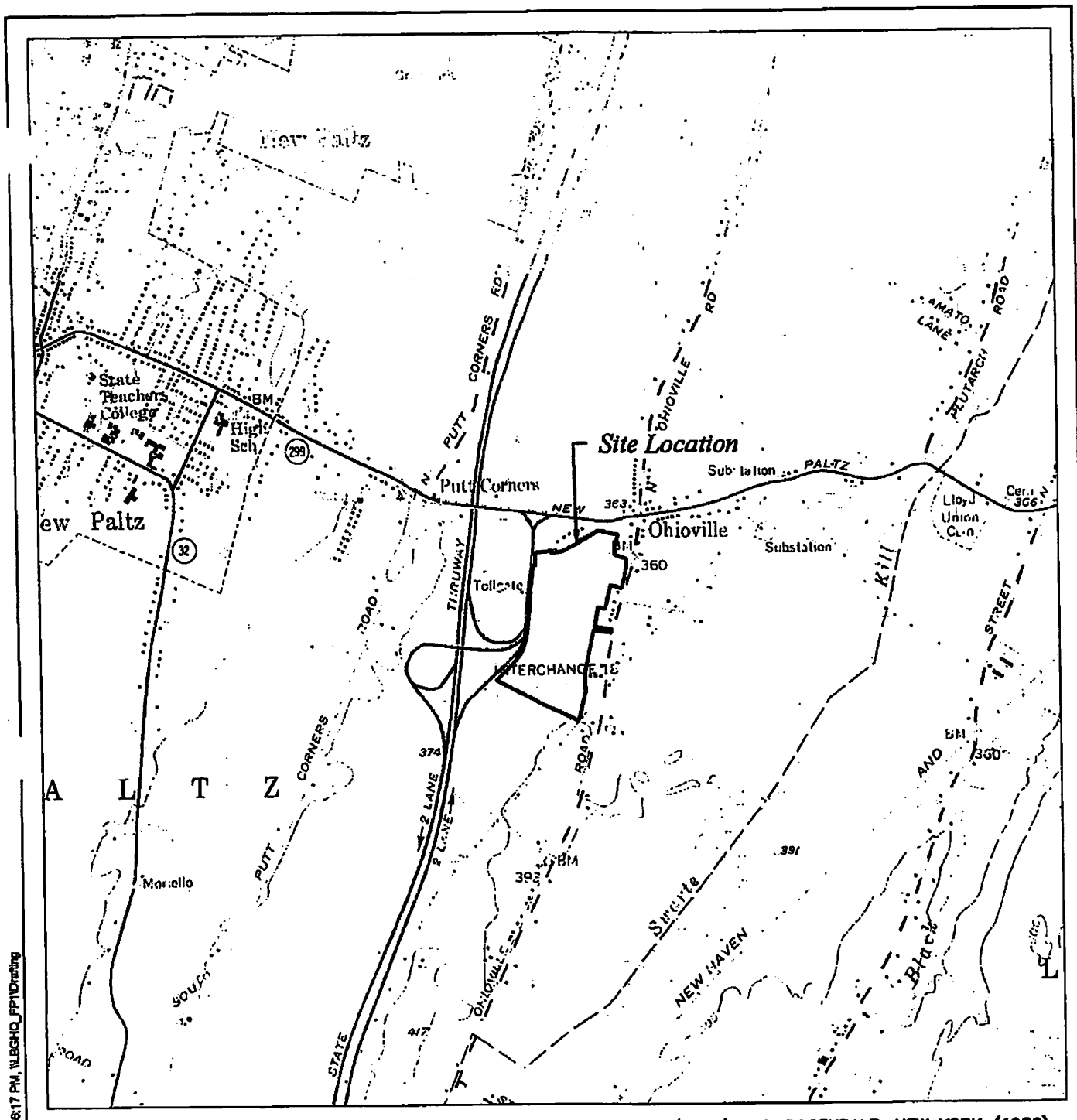
CROSSROADS AT NEW PALTZ
PROPOSED PLANNED UNIT DEVELOPMENT
NEW PALTZ, NEW YORK

Summary of Water Demand Estimate

Building Type	Number of Proposed Units/People/Feet^2	Gallons per Day Usage (gpd)	Total Daily Average Demand (gpd)	Total Daily Average Demand (gpm)	Maximum Daily Water Demand (gpd)	Maximum Daily Water Demand (gpm)
1-Bedroom Apartment/Condominium	40 units	120/unit	4,800	3.3	9,600	6.7
2-Bedroom Apartment/Condominium	165 units	240/unit	39,600	27.5	79,200	55.0
3-Bedroom Townhouse	45 units	360/unit	16,200	11.3	32,400	22.5
Restaurant	200 seats	28/seat	5,600	3.9	5,600	3.9
Hotel	120 rooms	96/room	11,520	8.0	11,520	8.0
Office/Retail Space	103,340 feet^2	0.08/feet^2	8,267	5.7	8,267	5.7
Total Combined Water Demand:			85,987	59.7	146,587	101.8

gpd Gallons per day
gpm Gallons per minute

I:\Crossroads\Water Demand Table.doc



SOURCE: USGS TOPOGRAPHIC QUADRANGLES CLINTONDALE, NEW YORK (1957) AND ROSENDALE, NEW YORK (1980).

QUADRANGLE LOCATION

0 2000

SCALE IN FEET

CROSS ROADS AT NEW PALTZ
PROPOSED PLANED UNIT DEVELOPMENT
NEW PALTZ, NEW YORK

SITE LOCATION MAP

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
4 Research Drive
Suite 301
Shelton, Connecticut 06484
(203) 929-8555

DRAWN:	FCS	CHECKED:	MW	DATE:	9/20/07	FIGURE:	1

C:\DWA RoadsFig-1.dwg, Layout1, 3/13/2008 1:06:17 PM, \\LBGHQ_FP1\Drafting

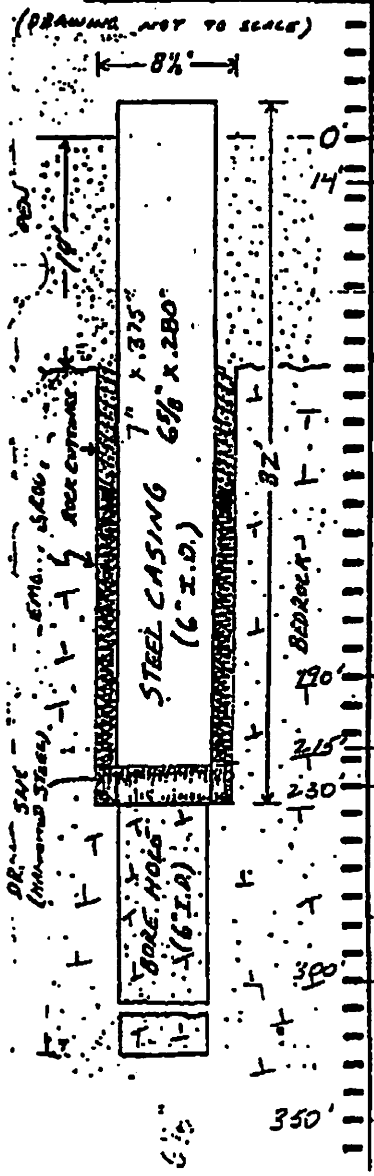
APPENDIX I

Boyd Artesian Well, Co., Inc.
R.D. No. 5, Rte. 52
Carmel, N.Y. 10512
(914) 225-3196

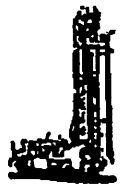
WELL LOG

WELL NO. RW-1
SHEET NO. ______ OF ______
DATE STARTED 6/21/88
DATE FINISHED 6/22/88
DRILLER MITCH
EQUIPMENT D II
TOTAL DEPTH - 606'

PROJECT ______
CLIENT AMERICAN CONTRACT [illegible] PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PARADISE LANE [illegible] RT. 77

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
	0' – 14'	MED BRN SILTY SAND/GRAVEL	0-14' MED BRN SILTY SAND AND GRAVEL SMALL AMT H2O ABOVE BEDROCK
	14' – 190'	MED DRK GREY SHALE	14-190' MED DRK GREY SHALE - TRACE GRAPHITE
	190' – 230' (215')	MED DRK GREY SHALE/ SILTSTONE; FRACTURE (215')	190'-230' MED DRK GREY SHALE/SILTSTONE TRACE GRAPHITE FRACTURE @ 215' H2O - [illegible]
	230' – 350' (300')	MED DRK GREY SHALE; FRACTURE (300')	230'-606' MED DRK GREY SHALE OCCASIONAL THIN [illegible] SILTSTONE [illegible] TRACE GRAPHITE [illegible] (CONT)

Boyd Artesian Well, C_., Inc.
R.D. No. 5 Rte. 52
Carmel, N.Y. 10512
(914) 225-3196



WELL LOG

WELL NO. 12W1
SHEET NO. 2 OF 2
DATE STARTED 6/21/88
DATE FINISHED 6/22/88
DRILLER MITCH
EQUIPMENT OT

PROJECT
CLIENT AMARKAN CONTINENTAL PALOPALTIES
ENGINEER MALCOLM PIRNIE
LOCATION PALADIES LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
	350'		230-606' (CONT.)
			287'-296' MILKY QTZ ~20% OF SAMPLE. NO FRACTURE NOTED. CALCITE SEEN @ 300' (~10%) FR
			@ 300' H_2O - 7 GPM (TOTAL)
		MOD DRK GREY SHALE	CALCITE PRESENT TO ~310'. SLIGHT INCREASE IN H_2O (~9 GPM TOTAL)
			335'-406' OCCASIONAL THIN BEDS OF MOD DRK GREY SILTSTONE.
			406'-415' QTZ AND CALCITE - 10% OF SAMPLE NO FRACTURE NOTED.
	606'	TOTAL DEPTH	415-606' MOD DRK GREY SHALE OCCASIONAL THIN CALCITE AND SILTSTONE H_2O ~

Boyd Artesian Well, Co., Inc.
D. No. 5, Rte. 52
armel, N.Y. 10512
(914) 225-3196

WELL LOG

WELL NO. RW-2

SHEET NO. 1 OF 7

DATE STARTED 6/28/88

DATE FINISHED 6/23/88

DRILLER MITCH

EQUIPMENT D II

TOTAL DEPTH - 406'

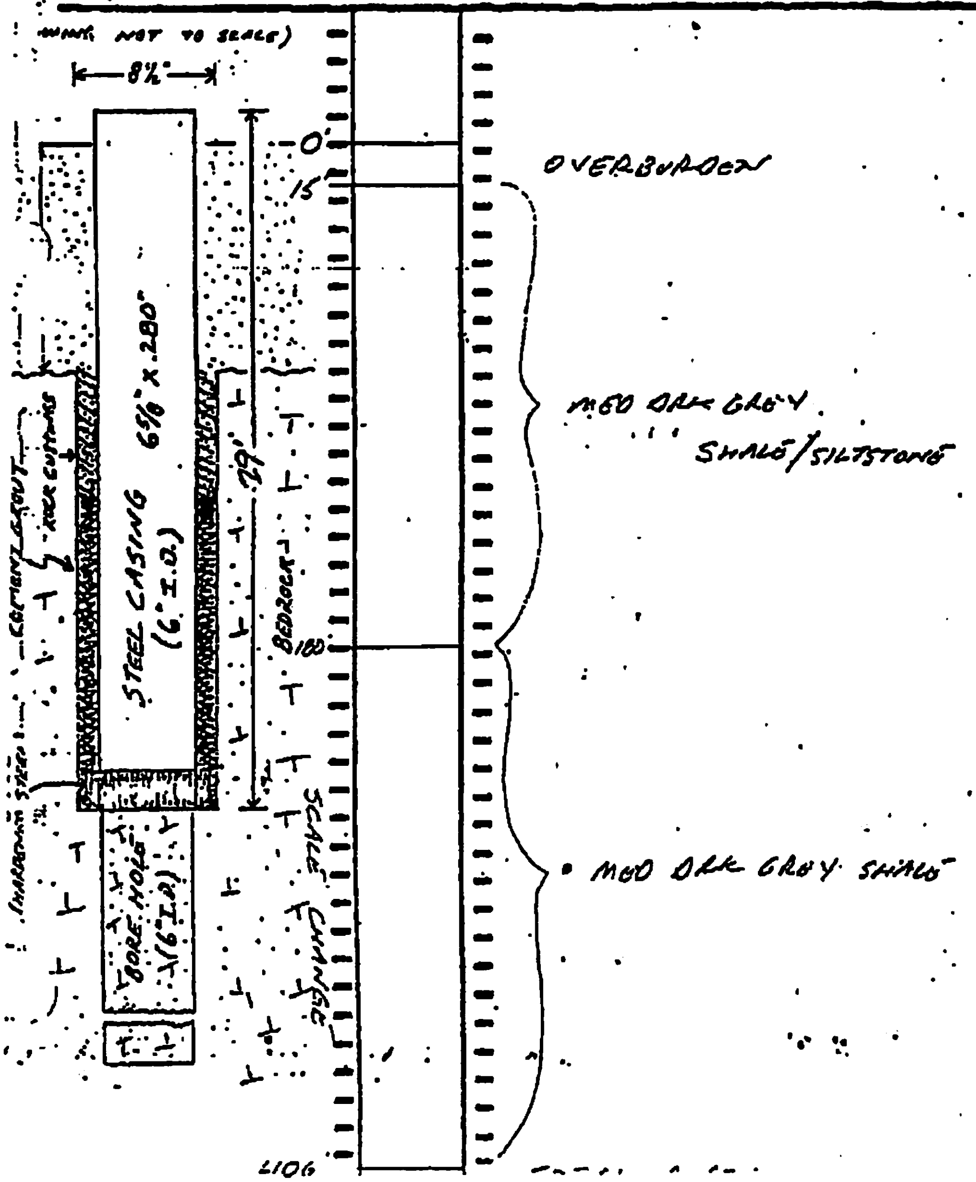
PROJECT

CLIENT AMERICAN CONTINENTAL PROPERTIES

ENGINEER MALCOLM PIRNIE

LOCATION PARADIES LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES



REMARKS

0-15' MED BRN SILTY
SAND AND GRAVEL
SMALL QUANT H_2O
ABOVE BEDROCK

15'-180' MED DRK GRY
SHALE AND SILTSTONE
TRACE GRAPHITE
NO FRACTURES NOTED

180'-406' MED DRK
GREY SHALE. TRACE
GRAPHITE, CALCITE
(OCCASIONAL) THROUGHOUT
NO FRACTURES NOTED
H_2O ~ 1 GPM

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WELL LOG

WELL NO. RW3
SHEET NO. 1 OF 2
DATE STARTED 6/24/88
DATE FINISHED 6/24/88
DRILLER MITCH
EQUIPMENT DII
TOTAL DEPTH - 506'

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM DIRNIE
LOCATION PALADIES LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
(DRAWING NOT TO SCALE) 8½" OVERBURDEN CEMENT GROUT ROCK CUTTINGS STEEL CASING 6⅝" x .280" (6" I.D.) 12' BEDROCK SCALE CHANGE DRIVE SHOE 6" DIA. BORE HOLE 5⅛" (6" I.D.)	0'		
	15'	OVERBURDEN	0-15' MED BRN SILTY SAND AND GRAVEL H₂O ABOVE BEDROCK
		MED DRK GREY SHALE / SILTSTONE	15-110' MED DRK GRY SHALE AND SILTSTONE TRACE GRAPHITE THROUGH
	110'		110'-506' MED DRK GRY SHALE GREY SHALE TRACE GRAPHITE OCCASIONAL THIN BEDS OF SANDY COLOR SILTSTONE AND 235-245' CALCITE ~10% OF SAMPLES NO H₂O NOTED
		MED DRK GRY SHALE	245-506' OCCASIONAL TRACE OF CALCITE AND THIN BEDS OF SILTSTONE NO FOR AND FRACTURES NOTED H₂O ~ 16 GPM
	506'	TOTAL DEPTH	

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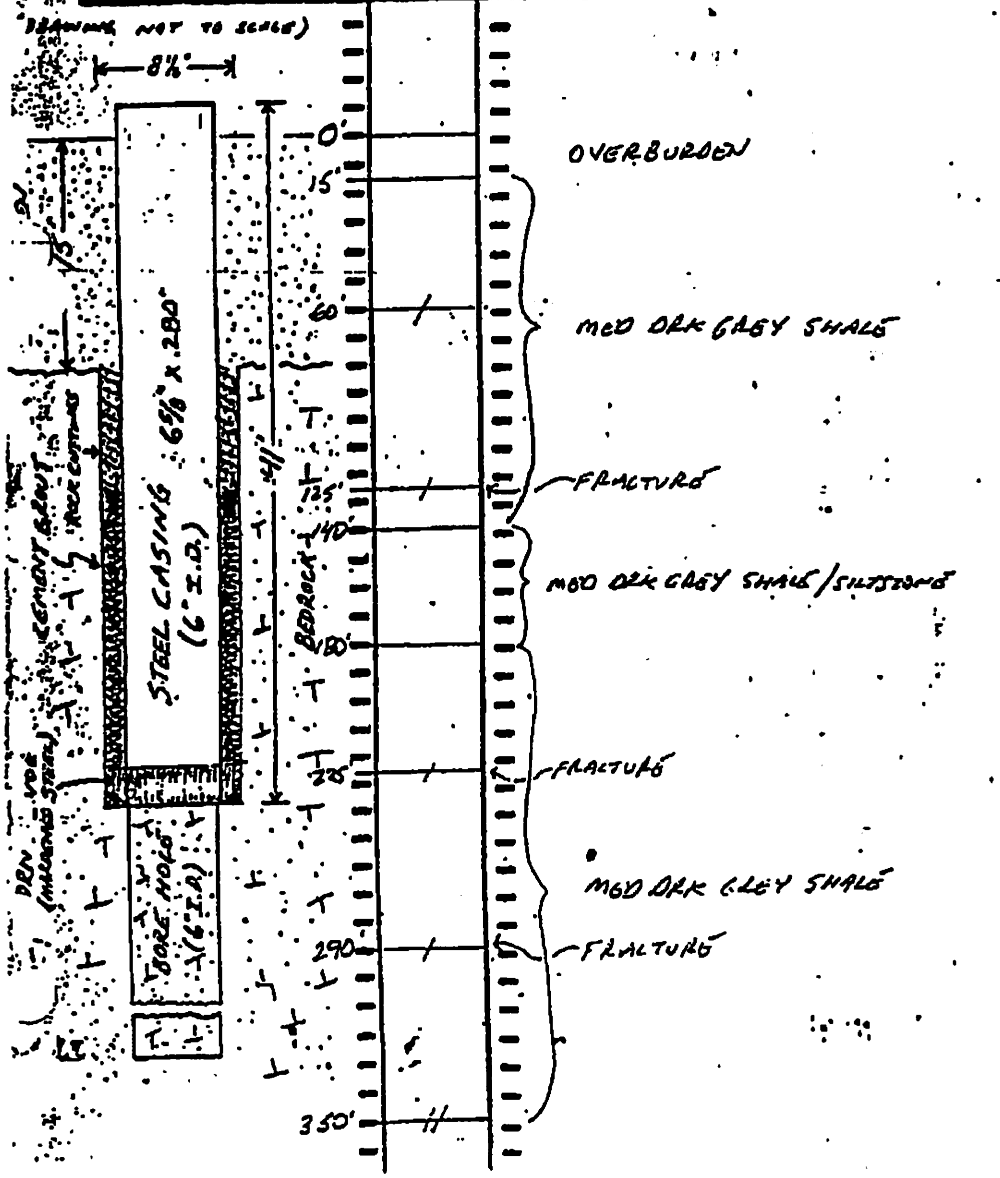
WELL LOG

WELL NO. RW4
SHEET NO. 1 OF 2
DATE STARTED 6/27/88
DATE FINISHED 6/28/88
DRILLER MITCH
EQUIPMENT D V
TOTAL DEPTH - 681'

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PARADIES LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS



0-15' MED BRN SILTY SAND AND GRAVEL. SOME H2O NOTED ABOVE BEDROCK.

15'-140' MED DRK GREY SHALE TRACE GRAPHITE CALCITE. FRACTURED ~60' AND ~125'. H2O ~ 5GPM (TOTAL)

140'-180' MED DRK GREY SHALE AND SILTSTONE TRACE GRAPHITE

180'-400' MED DRK GREY SHALE TRACE GRAPHITE AND CALCITE THROUGHOUT. 220'-230' CALCITE TO ~15% OF SAMPLE. SMALL FRACTURE 240-245' CALCITE AND QTZ TO ~25% OF SAMPLE BUT NO EVIDENCE OF FRACTURE (CONT)

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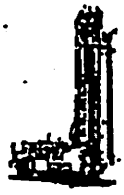

WELL LOG

WELL NO. RW 4
SHEET NO. 2 OF 2
DATE STARTED 6/27/88
DATE FINISHED 6/28/88
DRILLER MITCH
EQUIPMENT OD

PROJECT
CLIENT AMERICAN CONTINONTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PALMERS LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
	350'	MED DRK GRY SHALE	180'-400' (CONT.) FRACTURE @ ~290' NO MAJOR AMT. OF SEC. MINERALS SEEN. H_2O ~25 GPM (TOTAL).
	400'	MED DRK GLOY SHALE / SILTSTONE.	400-681' MED DRK GRY SHALE AND SILTSTONE. TRACE GRAPHITE. OCCASIONAL TRACE CALCITE. TRACE PYRITE @ 440' 505-525' CALCITE SLOWLY INCREASES TO ~20% OF SAMPLE. TO TRACE @ 525'. NO QUANTITY OF FRACTURE FRACTURE @ ~560'
	560'	FRACTURE	
	681'	TOTAL DEPTH	

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WELL LOG

WELL NO. RW5
SHEET NO. 1 OF 2
DATE STARTED 6/29/88
DATE FINISHED 6/30/88
DRILLER MITCH
EQUIPMENT D II
TOTAL DEPTH - 431'

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM ARNIE
LOCATION PALISADES LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
(DRAWING NOT TO SCALE) 8¼" STEEL CASING 6⅝" x .280" (6" I.D.) 42' BOREHOLE 6¼" (6" I.D.) PLUG SHOE (MILLED STEEL) CEMENT GROUT BACKFILL	0 13 176 220 265 273 350	OVERBURDEN MOD OR GREY SHALE FRACTURE FRACTURE	0-13' MOD BRN SILTY SAND GRAVEL TOPSOIL H/D PRESENT ABUG BEDROCK 13'-406' MOD GRY GREY SHALE TRACE GRAPHITE, CALCITE FIRST SIGNIF ~166' (TRACE) FRACTURE @ ~176' H.D - 20 GAL 217'-225' INCREASE IN PERCENTAGE OF CALCITE (~10%) AS WELL AS SIZE OF CHIPS. FRACTURE @ ~220' 246-256' QTZ (~80% CALCITE (~10%) SHALE (~10%) NO FRACTURE NOTED BUT POSSIBLE SMALL FRACTURE @ ~273' AND 277'

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WELL LOG

WELL NO. RW5
SHEET NO. 2 OF 2
DATE STARTED 6/29/88
DATE FINISHED 6/30/88
DRILLER MITCH
EQUIPMENT OT

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PARADISE LAND NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
	350'	MED DRK GREY SHALE	
	406'	MED DRK GREY SHALE/SILTSTONE	406'-681' MED DRK GREY SHALE AND SILTSTONE. TRACE GRAPHITE. OCCASIONAL TRACE CALCITE AND QTZ THROUGHOUT. FRACTURES @ ~535' AND 548'. VOLUME OF H_2O APPEARS TO BE STEADILY INCREASING. POSSIBLY DUE TO MANY SMALL FRACTURES NOT NOTED OR ENLARGEMENT OF THOSE MAJOR FRACTURE NOTED.
	535'	FRACTURES	
	548'		
	681'	TOTAL DEPTH	H_2O ~ 80 GPM

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WELL LOG

PROJECT ______

CLIENT AMERICAN CONTINENTAL PROPERTIES

ENGINEER MALCOLM PIRNIE

LOCATION PALADIBS LANE, NEW PALTZ

WELL NO. RW6

SHEET NO. 1 OF 2

DATE STARTED 6/30/88

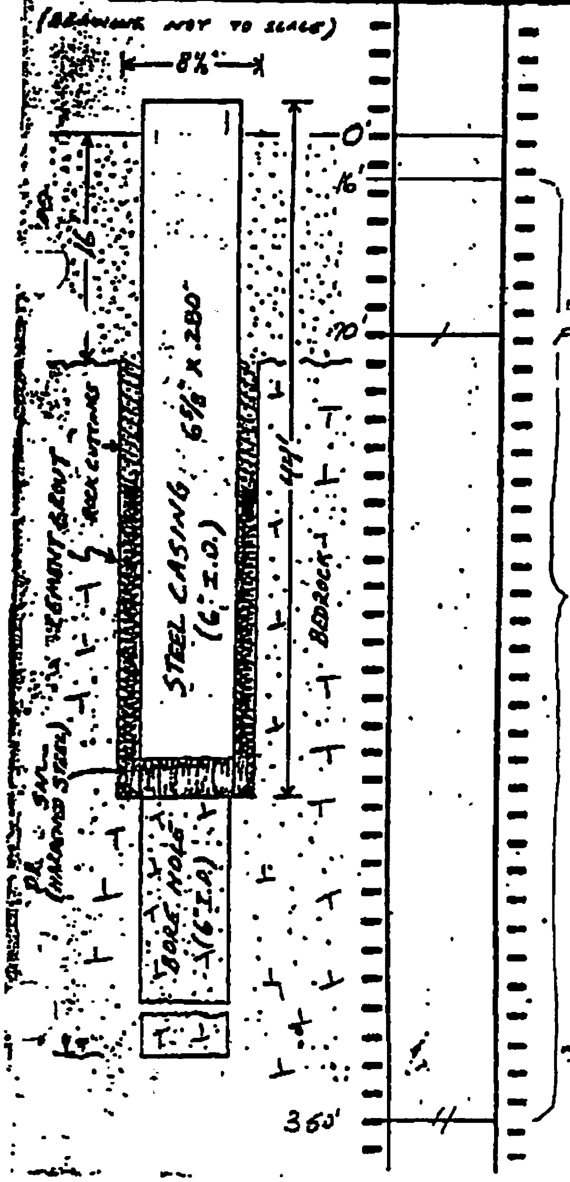
DATE FINISHED 7/1/89

DRILLER MITCH

EQUIPMENT DV

TOTAL DEPTH - 656'

EQUIPMENT INSTALLED | DEPTH IN FT. | FORMATION & SAMPLES | REMARKS



OVERBURDEN

FRACTURE

MED DRK GREY SHALE

REMARKS:

0-16' FIRST ~4' FILL MATERIAL (SOIL - WOOD)
4'-16' MED BRN SILTY SAND GRAVEL. SOME H_2O [illegible] ABOVE BEDROCK.
16'-406' MED DRK GREY SHALE TRACE GRAPHITIC CALCITE (OCCASIONAL) FRACTURE @ ~70' H_2O ~5GPM

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WELL LOG

WELL NO. 2W6
SHEET NO. 2 OF 2
DATE STARTED 6/30/88
DATE FINISHED 7/1/88
DRILLER MITCH
EQUIPMENT DII

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PALADIES LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES
	350'	
		MED DRK GREY SHALE
	406'	
		MED DRK GREY SHALE/ SILTSTONE.
	500'	
		MED DRK GREY SHALE.
	656'	TOTAL DEPTH.

REMARKS

406'-500' MED DRK GREY SHALE AND SILTSTONE. TRACE GRAPHITE. TRACE CALCITE SEEN OCC. FROM ~406'-425'. STEADY TRACE CALCITE AND QTZ FROM ~425-500 LARGER PIECES OF ABOVE MINS FROM 470 TO 480' BUT STILL TRACE QUANTITIES. PERCENTAGE OF SILTSTONE DECREASES STEADILY FROM ~480' TO 500'

500'-656' MED DRK GREY SHALE. TRACE GRAPHITE. INTERMITTENT TRACES OF CALCITE AND QTZ THROUGHOUT.

H_2O ~ 8 GPM

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WELL LOG

WELL NO. RW7

SHEET NO. 1 OF 2

DATE STARTED 7/5/88

DATE FINISHED 7/7/88

DRILLER RICH - CHRIS

EQUIPMENT D II

TOTAL DEPTH - 656'

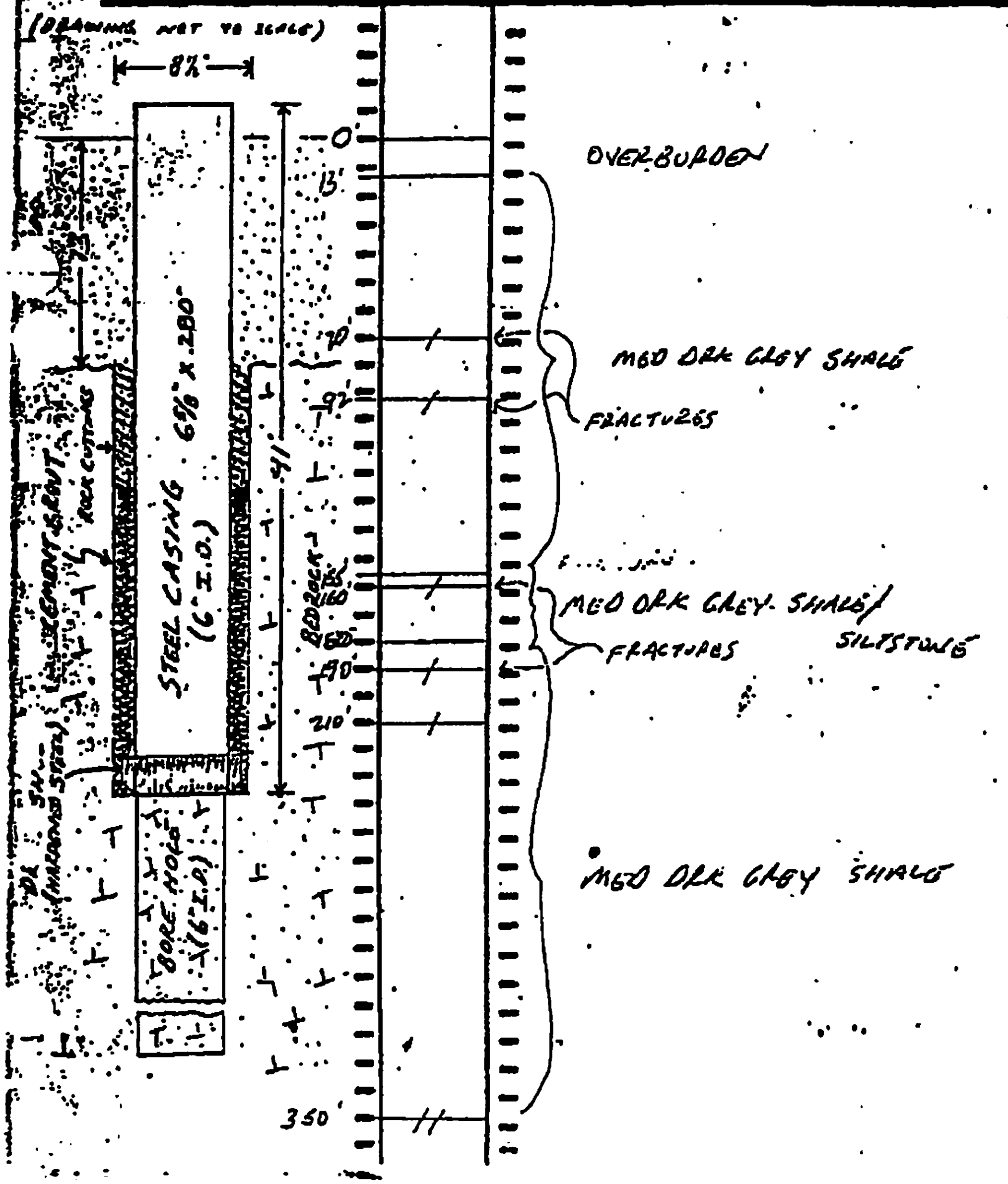
PROJECT

CLIENT AMERICAN CONTINENTAL PROPERTIES

ENGINEER MALCOLM PIRNIE

LOCATION PARADIES LANE, NEW PALTZ

EQUIPMENT INSTALLED | DEPTH IN FT. | FORMATION & SAMPLES | REMARKS



REMARKS

0-13' [illegible] SILTY
SAND AND GRAVEL.
TRACE QUANTITY H2O ABOVE
BEDROCK
13'-155': MED [illegible]
SHALE TRACE GRAPHITE
FRACTURES @ 70' AND
92' H2O ~5GPM (TOTAL)

155'-180' MED DARK GREY
SHALE AND SILTSTONE
157'-165' QTZ ~30%
CALCITE ~5%.
BOTH DECREASE TO TRACE
BY ~180'. VERY SMALL
INCREASE IN H2O (~7GPM)

180'-656' MED DRK
GREY SHALE TRACE
GRAPHITE 190'-195'
QTZ (~20%) CALCITE
(~5%) FRACTURE @
197' H2O ~[illegible]GPM
(TOTAL)

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WELL LOG

WELL NO. LW7
SHEET NO. 2 OF 2
DATE STARTED 7/5/88
DATE FINISHED 7/7/88
DRILLER RICH - CHRIS
EQUIPMENT D II

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PARADIES LANE, NEW PALTZ.

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
	350'		180-656' (CONT.) INCREASE IN QTZ (~20% AND CALCITE (~5%) FROM 210'-215'. SMALL FRACTURE BOTH MINS IN TRACE AMOUNT UNTIL ~25[illegible] CALCITE TO ~10% OF SAMPLE. NO FRACTURE NOTE QTZ TO (~10%) AND CALCITE (~2%) @ ~270' DROP STEADILY TO TRACE @ 280'. TRACE QTZ CALC SEEN INTERMITTENTLY FROM ~280' TO 656'
			H_2O ~17GPM
	656'	TOTAL DEPTH	

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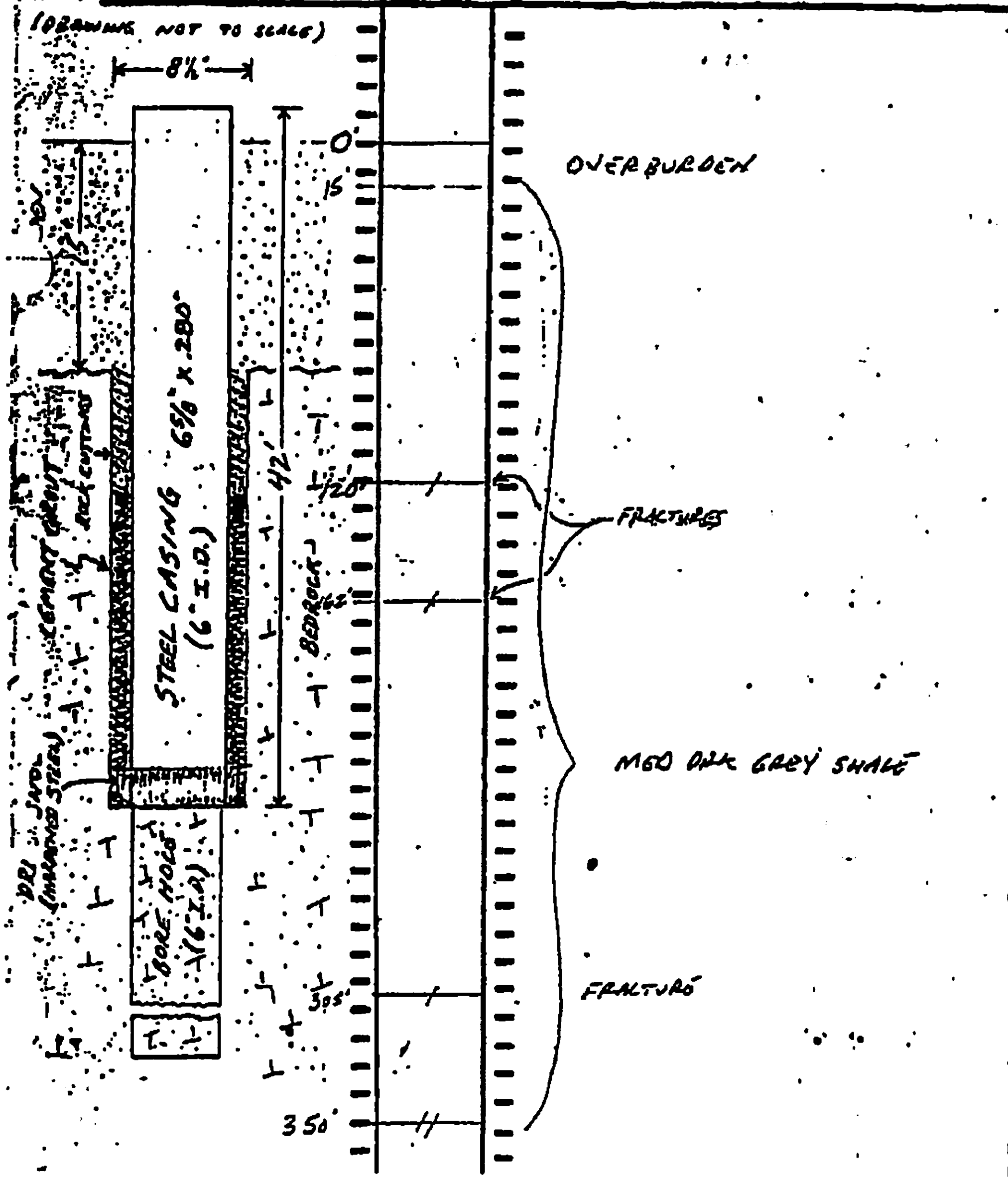
WELL LOG

WELL NO. RW-8
SHEET NO. 1 OF 2
DATE STARTED 7/7/89
DATE FINISHED 7/9/89
DRILLER CHRIS
EQUIPMENT D II
TOTAL DEPTH - 581'

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PALADIES LANE - NEW PALTZ

EQUIPMENT INSTALLED | DEPTH IN FT. | FORMATION & SAMPLES | REMARKS



REMARKS

0-15' MED BRN SILTY
SAND WITH GRAVEL. H2O
NOTED JUST ABOVE
BEDROCK
15'-400' MED DRK
GREY SHALE. TRACE
GRAY/WHITE CALCITE (FROM
~110'). INCREASE IN
CALCITE (~10%) FROM
140'-150' AND 160'-170'
(~10%) QTZ APPEARS
FROM 160'-170' (~15%)
FRACTURES @ 120' AND
~162' (MAJOR). TOTAL
H2O ~ 30GPM. SMALL
FRACTURE @ ~305'

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WELL LOG

WELL NO. 12W8
SHEET NO. 2 OF 2
DATE STARTED 7/7/88
DATE FINISHED 7/8/88
DRILLER CHAS
EQUIPMENT OT

PROJECT
CLIENT AMERICAN CONTINENTAL PROPERTIES
ENGINEER MALCOLM PIRNIE
LOCATION PARADISE LANE, NEW PALTZ

EQUIPMENT INSTALLED	DEPTH IN FT.	FORMATION & SAMPLES	REMARKS
H	350'	MED. DK. GREY SHALE	400 - 581' MED DK GREY SHALE AND SILTSTONE. TRACE CALCITE THROUGHOUT. OCCASIONAL TRACE QTZ AND CAL T SEVERAL ROUGH SPOTS ENCOUNTERED. POSSIBLE FRACTURES BUT NO H_2O NOTED. NO CHANGE IN MINERALOGY. VOLUME OF H_2O INCREASING WITH DEPTH. PROBABLY AS A RESULT OF ACTION OF IN COMPRESSED AIR.
	400'	MED DK GREY SHALE / SILTSTONE	
	581'	TOTAL DEPTH	
			H_2O ~ 80 GPM