TOWN OF ESSEX

ADDENDUM NO. 2

February 6, 2017

This Addendum, issued to bid document holders of record, indicates changes to the documents for the *WATER PROJECT ENGINEERING SERVICES* RFP Opening February 10, 2017. All clarifications described herein shall be incorporated into the Contractor's Proposal. This Addendum is part of the Contract Documents. Adjustments required by each item shall be understood to apply to all document references affected by the clarifications described.

Please note that the RFP Opening Date has been extended until: FEBRUARY 17, 2017 at 4:00 P.M.

Please see attached:

1) **Town of Essex Minutes dated January 27, 2017**
2) **Data regarding Wells**
3) **HydroSource Associates Inc Report dated June 15, 2016**
4) **Town of Essex Water System Evaluation Preliminary Report (PER) dated December 8, 2011**

End of Addendum # 2

Town of Essex
2313 Main Street
PO Box 355
Essex, NY 12936

January 27, 2017

Pre-Bid Conference

Present: Edward Gardner, Supervisor; Claire LaPine, Councilperson; James Dougan, Essex County

Attendees: William Lane, Shumaker Consuklting Engineering & Land Survying, DPC
Glen Erb, Bernier Carr & associates
Brady Sherlock, Chazen Engineering
Warren Longrekel, MJ Engineering
Jason Ballard, Barton & Loguidice, DPC
Jim Edwards, CT Male

Jim Dougan gave an overview of how this RFP came about. The RFP is due in this office by 4pm on February 10, 2017. He also went over the RFP Packet. He then explained that there will be an addendum after today' meeting, making it a little cleaner. There are some time frame issues will be changed after todays.

The Town of Essex is under an EPA AN DOH order. The Town currently gets water from the lake using de filter plant. There have been issues in the past but current are with the limits. The town drilled numerous wells. They drilled 3 wells at Beggs Point. Two successful well are located at Beggs Point where the current water plant is located. The two wells are producing approximately 20gpm with the need of 40gpm for three months. They currently use an intake from the lake. We will include the hydro-geologist report with the addendum along with the initial engineering plans. This is also in a park so there will be some requirements from NY Parks &Rec. The treatment system must be worked into the park system.

We would like in your proposals, your experience with systems of this size, with combined surface water and ground water, working with EFC. We are going to change the way the cost system; 1st to identify 2 or 3 options on treating the combined surface and well water (there may be from DOH a pre-permitted treatment system for Lake water so we do not need a pilot); 2nd, an option for piloting of the systems. The pilot will be immediately awarded so that the system can be verified. Lastly would be design for approval of the system.

We prefer that you submit questions to the Essex Town Hall so that we can get definitive answers, email to essexclerk@gmail.com. We will publish all addendums on the Essex county website.

Questions:
Will the date be changed for the bid or will it still be the 10th? Yes, we would like to keep this date. If this date is not going to work, please explain in your bid.

Can we email the questions, yes you can either send to essexclerk@gmail.com or jdougan@essex.co.ny.us

Are the wells on Beggs going to be a part of this project? Yes, we will make available the piloting we have done so far.

Do you have permanent pumps? We do have pumps installed in the two wells that will be used for this project but there are no housings for this. The wells must be incorporated with the current system.

Are there water quality reports? Yes, it will be available.

How is this funded? The town has 1.1 million in grant and the rest in 0% loan for 2.9.

Have you submitted for other grants? No not at this point because we need the design.

This all will be issued at the Essex County web site, www.co.essex.ny.us then scroll down the side till you see the RFP tab.

How many users? There are 171 users but this is a season operation.

At this point, everyone walked down to the site to see the actual system and park.

Well 3 Particle Counter.

Particules	Oct.19th	20th	21st	22nd	23rd	24th	25th	26th	27th
2-5um	1203	474	442	523	510	441	531	502	496
5-10um	98	31	30	43	43	41	45	44	44
10-15um	15	3	4	7	9	8	10	8	9
15-25um	4	1	2	3	3	3	4	4	3
25-50	0	0	0	2	0	1	1	1	1
50-75	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
>100	0	0	0	0	0	0	0	0	0
	28th	29th	30th	31st	Nov.1st	2nd	3rd	4th	5th
2-5um	630	486	444	292	129	433	339	15	35
5-10um	51	38	37	23	12	32	13	1	2
10-15um	10	3	3	5	2	6	3	0	0
15-25	4	1	0	2	1	3	1	0	0
25-50	1	0	0	0	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
>100	0	0	0	0	0	0	0	0	0
	6th	7th	8th	9th	10th	11th	12th	13th	14th
2-5um	88	181	276	256	204	74	136	141	330
5-10um	9	18	24	24	23	9	14	14	34
10-15um	2	3	5	6	4	1	3	2	6
15-25	1	2	2	2	2	1	1	1	3
25-50	0	0	1	0	0	0	0	0	1
50-75	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
>100	0	0	0	0	0	0	0	0	0

Particle counter wells [illegible] / Well [illegible]
17th started pumping both wells

Well 1

Particules	Nov.15th	16th	17th	18th	19th	20th	21st	22nd	23rd
2-5um	381	426	380	978	1622	717	606	536	1274
5-10um	38	42	39	60	61	45	41	43	102
10-15um	7	7	6	9	5	5	5	6	8
15-25um	3	3	3	4	2	1	2	2	1
25-50	1	1	1	1	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
>100	0	0	0	0	0	0	0	0	0
	24th	**25th**	**26th**	**27th**	**28th**	**29th**	**30th**	**Dec.1st**	**2nd**
2-5um	864	734	681	75	705	725	487	586	520
5-10um	65	56	52	5	54	66	39	50	44
10-15um	4	4	3	0	3	6	3	5	3
15-25	1	0	0	0	0	0	1	1	0
25-50	0	0	0	0	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
>100	0	0	0	0	0	0	0	0	0
	3rd	**4th**	**5th**						
2-5um	480	337	295						
5-10um	40	33	28						
10-15um	3	4	2						
15-25	0	0	0						
25-50	0	0	0						
50-75	0	0	0						
75-100	0	0	0						
>100	0	0	0						

20gpm Well 3 + 12gpm Well 1

Date	Well 3 Turb.	Well 1 Turb.	Date	Well 3 Turb.	Well 1 Turb.
Sept. 14th	16.6		18th	1.39	
15th	7.8		19th	0.48	
16th	3.8		20th	0.71	
17th	3.16		21st	0.56	
18th	3.61		22nd	1.01	
19th	2.88		23rd	0.68	
20th	3.99		24th	0.61	
21st	3.06		25th	0.76	
22nd	2.42		26th	0.65	
23rd	3.11		27th	0.78	
24th	2.91		28th	0.84	
25th	3.48		29th	1.71	
26th	2.17		30th	1.02	
27th	1.06		31st	0.55	
28th	1.19		Nov.1st	0.43	
29th	0.48		2nd	0.4	
30th	0.52		3rd	0.39	
Oct.1st	0.47		4th	0.38	
2nd	1		5th	0.78	
3rd	0.97		6th	0.41	
4th	0.62		7th	0.71	
5th	0.52		8th	0.83	
6th	0.73		9th	0.37	
7th	0.72		10th	0.49	
8th	1.26		11th	0.45	
9th	0.91		12th	0.76	
10th	0.82		13th	0.68	
11th	0.92		14th	0.45	
12th	0.85		15th	0.35	
13th	0.86		16th	0.34	
14th	1.24		17th	0.49	16.9
15th	0.81		18th	17.9	10.9
16th	0.75		19th	2.85	2.09
17th	1.77		20th	1.21	1.15

HydroSource Associates, Inc.
50 Winter Street • Ashland, NH 03217
telephone (603) 968-3733 • fax (603) 968-7605
e-mail: info@teamhydrosource.com • website: www.teamhydrosource.com

June 15, 2016

Wayne Ryan, P. E.
AES Northeast, PLLC
10 City Hall Place, Suite 210
Plattsburgh, NY 12901

Re: Pumping Tests of Beggs Point Park Wells - Essex, NY

Dear Mr. Ryan:

The purpose of this letter is to provide an opinion on the sustainable yield of the three wells that have been installed by the Town of Essex at Beggs Point Park. HydroSource Associates (HSA) carried out pumping tests on these wells in April and May. For the record, we will begin with some background information on the Beggs Point Park wells.

Background

The Town has been trying to develop a groundwater supply to replace its ageing filter plant at Beggs Point Park, which filters water from Lake Champlain. After failed attempts over several years to develop wells in other parts of town (often because of inability to obtain land access for promising well sites), the Town decided to determine whether wells drilled on the Town-owned Beggs Point Park property might be capable of providing an adequate water supply. A big advantage of the site was that if the Town were able to develop adequate yields there, the cost of connecting the wells to the existing distribution system would be very low.

The Town independently drilled three randomly-located wells at Beggs Point Park. Their approximate locations are shown in Figure 1. All three wells were drilled by Ormsby's Well Drilling of Schuyler Falls. HSA was not involved with the well installation effort.

The wells are six-inch-diameter bedrock wells, completed with steel casing and a drive shoe. Nearby bedrock outcrops along the shore of Lake Champlain consist of gray limestone with shaley interbeds.

Well TW-1 was drilled first, in early October of 2015. The well was drilled to a final depth of 503 feet, and has 30 feet of steel casing. The uppermost water-bearing zone noted in the well was observed between 280 and 310 feet, and produced one gallon per minute (gpm). An additional water-bearing zone was noted between 450 and 460 feet, and at that level the airlift yield was seven to eight gpm. The well's final stabilized airlift yield was reported as seven to eight gpm.

HSA was asked to oversee the conduct of a step pumping test on TW-1 on November 5, 2015, and the results of that test were reported in a letter dated November 6, 2015. The well was flowing artesian at a low rate (estimated at less than one gpm) before the test began. During the test, the well was pumped at 10 gpm for 90 minutes, and then for 15 gpm for another seven minutes. The 15-gpm step was terminated at that point because the water level had declined nearly to the level of the pump. The test indicated that the well's likely sustainable yield was no greater than a few gallons per minute.

Figure 1 - Well Locations

The Town decided to try to increase the yield using hydrofracking. Starr Hydro of Sterling, Massachusetts, was the frack contractor. Again, HSA was not involved in this effort.

Starr carried out a zone frack on the well on December 7, 2015. Starr fracked 10 independent intervals between 60 feet and 460 feet, each zone being 40 feet long. The frack log indicates that potentially productive "breaks" occurred in some of the intervals. The log indicates that a total of 7,500 gallons of water was injected into the well over the course of the frack job, 750 gallons in each zone.

Following the frack job, the static water level in TW-1 was about two feet below the top of the casing. Because the well had shown a low rate of artesian flow prior to fracking, this indicates that the frack job succeeded in producing a change in the well's hydraulic behavior.

Ormsby ran two unconventional step tests on Well TW-1, the first on December 10, and the second on December 11. The first test was run at ascending flow rate steps of 10 gpm, 15 gpm, and 20 gpm. A total of 3,375 gallons was pumped over four hours, resulting in an average flow rate of 14 gpm, with a maximum water level of 64.50 feet. The pre-test water level was reported at "two feet", assumed to be below the top of the current casing height.

The second test involved a series of three descending flow rates, beginning with 45 gpm, and ending with 36 gpm. It appears that the decisions to reduce the flow rate were made when it became obvious that the water level would reach the level of the pump if the rate were not cut back. Note that the water injected during the fracking effort had not been removed from the aquifer prior to these tests. As a result, it is likely that the injected water created an additional volume of groundwater storage that at least partly supported the water level behavior observed.

Two additional wells were drilled after Well TW-1 was hydrofracked. Wells TW-2 and TW-3 are both 505 feet deep. Well TW-2 has 30 feet of casing, and Well TW-3 has 100 feet of casing. Both wells were zone-isolation hydrofracked in the same manner as TW-1. We understand that lake water was used as the injection medium during the hydrofracking of all three wells. Although we have reviewed both frack reports, we were similarly not involved with any of the installation or fracking activities for these wells.

Pumping Tests Conducted in April and May

HSA was asked to observe and assess the conduct of 72-hour constant rate pumping tests on each of the wells to better assess their sustainable yields. Each test was to be preceded by a step test, the results of which would allow selection of a target flow rate that was likely to be sustainable through 72 hours of continuous pumping. Testing was carried out between April 25, 2016, and May 13, 2016, with one well being tested each week. Each well was also pumped for a multi-hour period several days prior to each test, whereby at least as much water as was injected into each well during the hydrofracking process was removed.

The testing plan also called for collection of water samples for analysis of the complete list of Part V drinking water parameters. Also, because all of the wells are less than 100 feet from the shore of Lake Champlain, MPA analysis was planned for each well. The wells were tested in the following order: TW-2, TW-3, and TW-1.

Well TW-2 Test - A summary report on the Well TW-2 testing has already been produced (April 29, 2016). Details are available in that report, but the main conclusion reached as a result of the testing was that Well TW-2 can probably not support a reliable pumping rate of more than a few gpm. Because the test results were unfavorable, no water quality testing was done on samples from the well.

Well TW-3 Test - The step test of Well TW-3 was conducted on Thursday, April 28. This was two days after the aborted TW-2 constant rate test. Carrying out the test on a Thursday allowed a full weekend for the aquifer to recover between the running of the TW-3 step test and the start of the constant rate test on the following Monday. In addition, starting the constant rate test on a Monday meant that water samples could be collected on a Thursday after 72 hours of pumping, and could be delivered to the lab without violating holding time requirements (the lab will not accept samples on Fridays).

The TW-3 step test consisted of four rate steps, beginning with 20 gpm and increasing in 10-gpm increments to a final 50-gpm step. Three of the steps were about one hour long, though the 40-gpm step was extended to nearly two hours. Total pumping time was 286 minutes. A total of approximately 10,000 gallons was pumped, and the average flow rate was 35 gpm. Based on the step test performance, a target rate of 30 gpm was chosen for the 72-hour test.

Figure 2 is a graph of water levels in Well TW-3 during the well's 72-hour test. The test began at 8:25 AM on May 2. The pre-test water level was 8.58 feet below the monitoring point. That water level was roughly nine feet above the lake level. After a short period of rate adjustment during the early minutes of the test, the rate was held quite close to the target rate of 30 gpm for the remainder of the test. Small irregularities in the pumping-period water level curve indicate times when it was necessary to adjust the pumping rate as the pump had to work progressively harder against the declining water levels. By the end of the 72-hour test the water level had fallen to 244.05 feet below the measuring point, for drawdown of 235.47 feet.

Figure 2 - Well TW-3 Water Levels, TW-3 Test

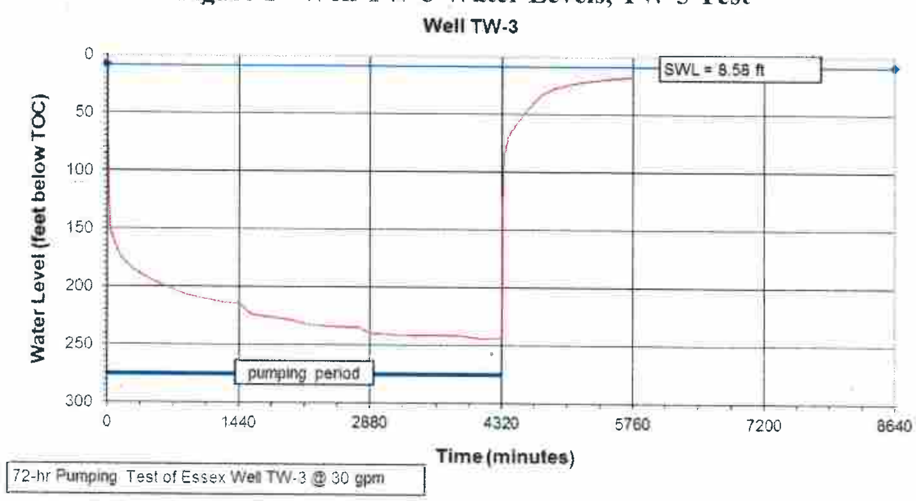


Figure 3 shows pumping-period water levels in TW-3, with time plotted on a logarithmic scale. Figure 4 is a similar graph of recovery-period water levels in the well. Figure 3 shows that after about 30 minutes of pumping, the water level followed a straight-line decline in logarithmic time for the remainder of the test. The declining trend does not steepen, as might be expected if the water level had fallen below the depth of productive fracture zones, but neither does it flatten, as would occur if the cone of depression surrounding the well had expanded sufficiently to induce enough recharge to balance the discharge rate. Thus water levels had not stabilized by the end of the three-day test.

Comparison of Figures 3 and 4 shows that the slope of the drawdown curve is similar to the slope of the recovery curve. This indicates that recovery behavior was mostly satisfactory, although the aquifer did fail to fully recover to its original static level observed prior to the test within an equivalent time of pumping.

Figure 3 - TW-3 Pumping-Period Water Levels, TW-3 Test

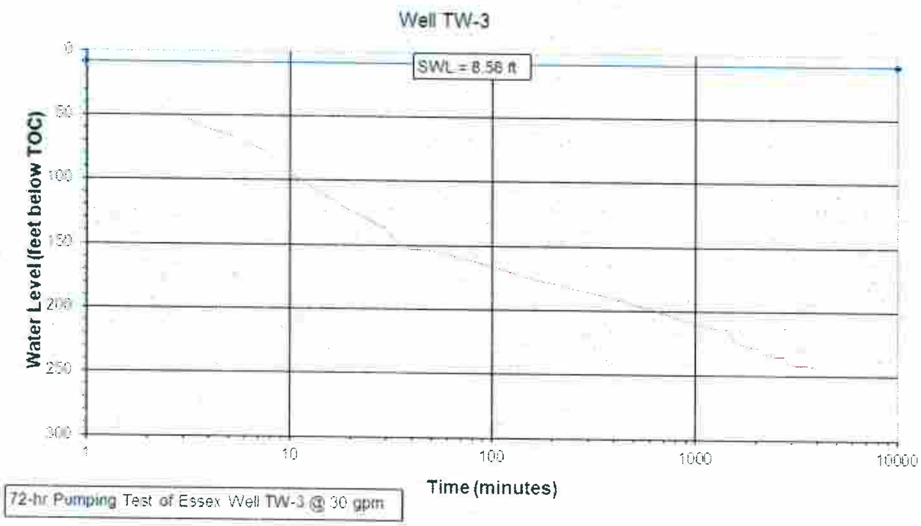
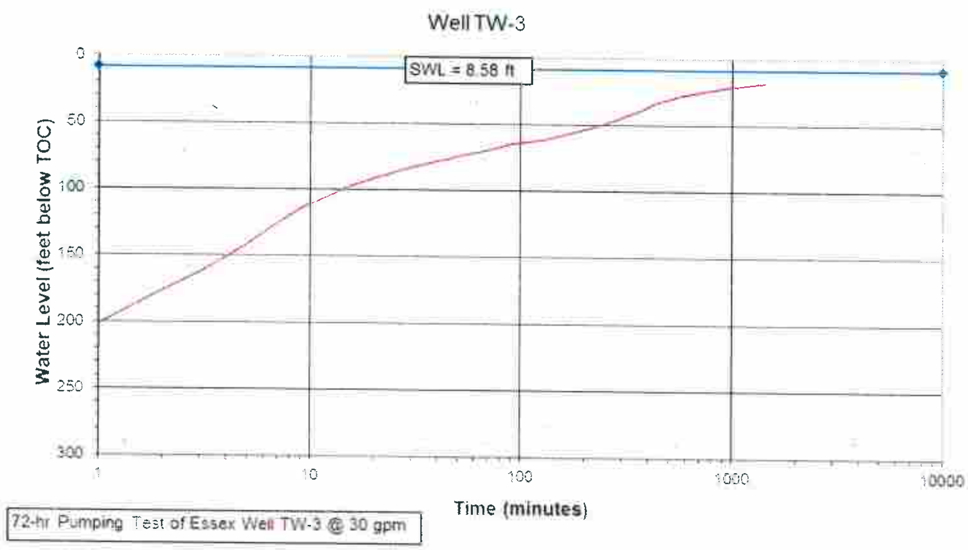


Figure 4 - TW-3 Recovery-Period Water Levels, TW-3 Test



Figures 5 and 6 show pumping-period water levels in Wells TW-1 and TW-2 during the TW-3 test. TW-1 showed 97.46 feet of drawdown by the end of the test, and TW-2 showed 92.25 feet.

Figure 5 - TW-1 Water Levels, TW-3 Pumping Period

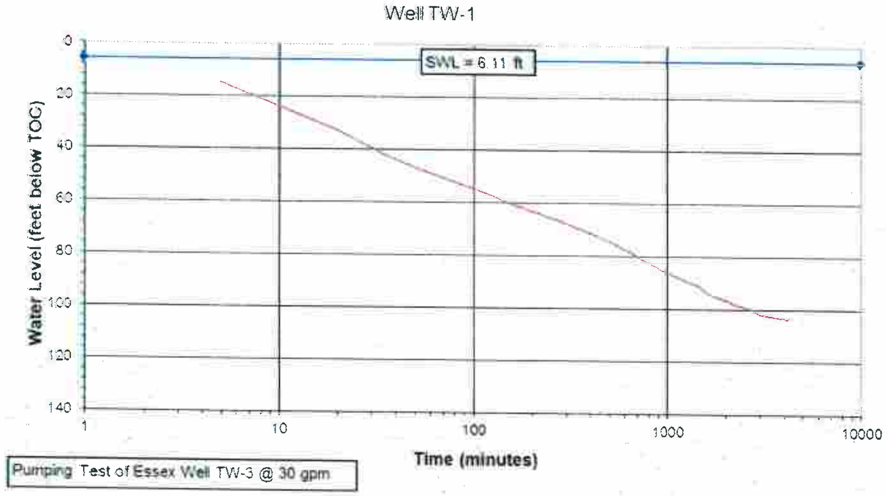
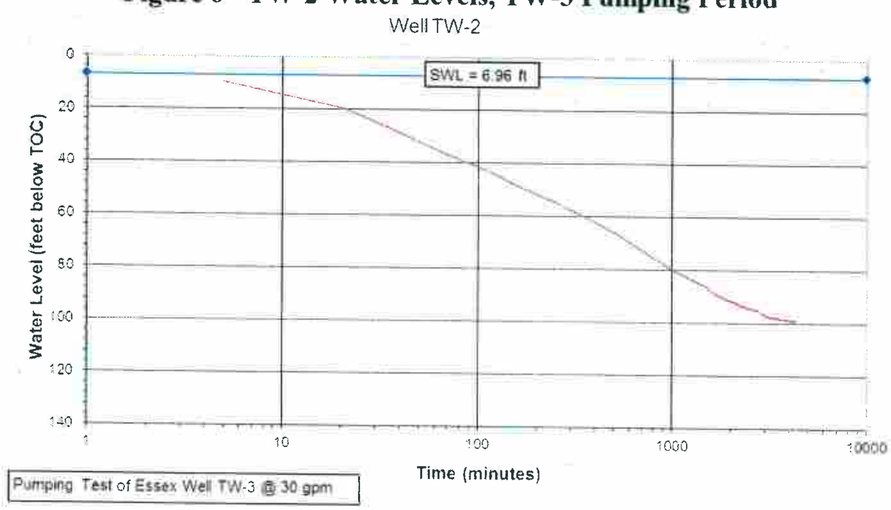


Figure 6 - TW-2 Water Levels, TW-3 Pumping Period



It is notable that the amount of drawdown seen in TW-1, which is only about 20 feet from Well TW-3, is not much greater than that seen in TW-2, which is 94 feet from TW-3. This is further shown by Figure 7, which is a distance-drawdown graph for 72-hour drawdown at the three wells. The graph indicates that TW-3 is quite inefficient, since the slope of the water table between TW-3 and neighboring TW-1 is much steeper than the slope between TW-1 and TW-2. Having said that, the graph also indicates (if the water table gradient between TW-1 and TW-2 is representative of the broader form of the cone of depression) that the edge of the cone of depression (that is, the zero-drawdown point) is a considerable distance from the wellfield. This suggests that the aquifer is poorly connected to sources of recharge, and that the water pumped during the test was being "mined" from the aquifer at a rate faster than the aquifer can be replenished.

Figure 7 - 72-Hour Distance-Drawdown, TW-3 Test

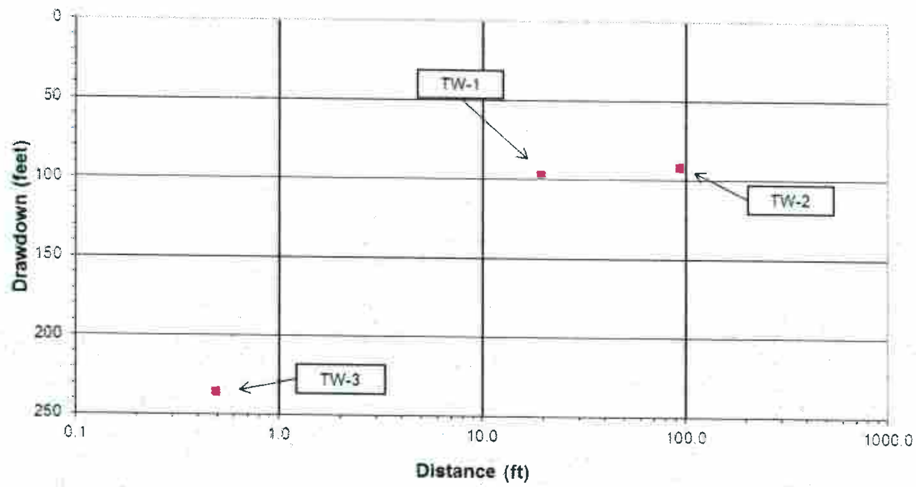


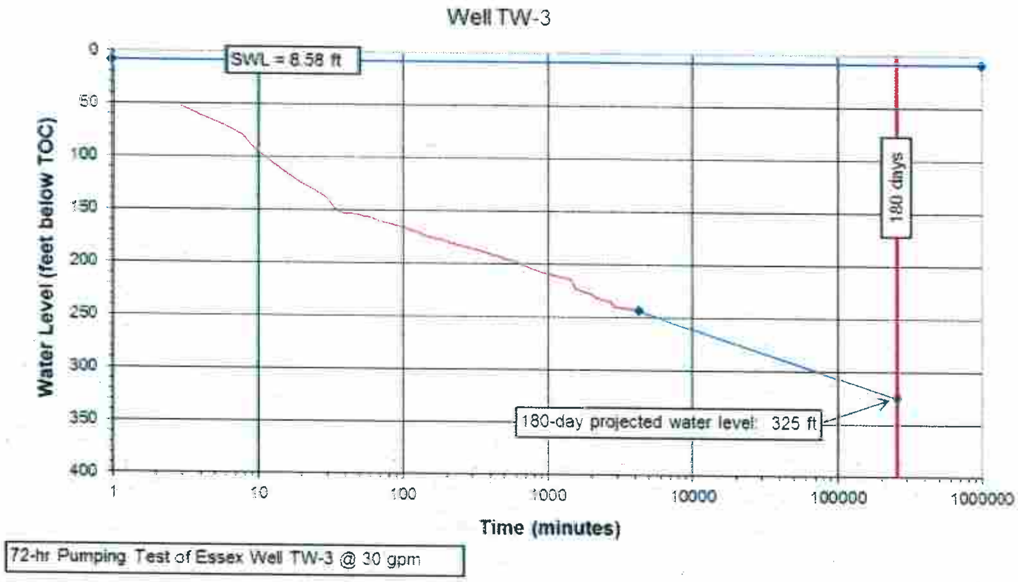
Figure 8 is a 180-day projection of Well TW-3 water levels. The graph shows that if TW-3 were pumped continuously for 180 days (six months) at 30 gpm, and the water level trend established after the first 30 minutes of pumping persisted during that time, the water level at the end of that time would be at a depth of about 325 feet.

This conclusion is an obvious one; it involves simply extending a clearly developed straight-line trend. The more important question is how long and to what depth the observed trend can be expected to persist, and if the trend changes, what that change is likely to be. There are basically two other possibilities: one, that the water level stabilizes at some depth below the 244 feet reached at the end of the pumping test; and two, that the rate of decline steepens.

In the first case, if the cone of depression expands far enough to capture recharge sufficient to just balance the volume being pumped (in this case, 30 gpm), then the water level will cease declining. The graph for times after the stabilization point was reached would be a horizontal line. After that, it would be possible to continue pumping the well indefinitely at the same rate without further declines.

If the rate of declined steepens, this would be an indication that the water level in the well had fallen below the depth of one of the well's water-bearing fracture zones, and that that fracture has become dewatered. We know that in Well TW-1 the driller noted that the majority of the water was encountered at a depth between 450 and 460 feet. He had encountered about one gpm between 280 and 310 feet, and an additional six to seven gpm at the 450-460 foot level.

Figure 8- TW-3 180-Day Water Level Projection at 30 gpm



However, it is clear that the hydrofracking efforts have changed the hydraulic behavior of the well, and it has to be assumed that a substantial fraction of the well's productivity is associated with comparatively shallow water-bearing zones opened up by the fracking. If that is true, then the risk is high that continued pumping would fairly quickly bring the water level down to the level of these uppermost productive zones. After these zones were reached and dewatered, continued pumping at the same rate would be expected to quickly lower the water level to the depth of the pump.

As previously explained in earlier correspondence, when fractures become dewatered and exposed to air, they often promote creation of iron oxides and other precipitants, biofilms and iron bacteria within the dewatered fracture. This may be especially so for wells near surface water bodies. As the well is cycled on-and-off, and the water table is drawn down and then recovers, it repeatedly exposes and re-submerges the dewatered fracture networks. This allows the iron bacteria to spread throughout the well column depth often resulting in the plugging of both shallow and deeper fractures, reducing well yield, and/or creating chronic future water quality issues. The fact that un-disinfected lake water was used as an injection medium also may have resulted in microorganisms having been emplaced far back into the fracture networks. This could exacerbate and/or create additional issues with water quality and well performance (for all three wells) going forward.

Well TW-3 Sustainable Yield Estimate - The uncertainty as to the depth of the uppermost water-bearing zones after fracking makes it difficult to estimate the well's sustainable yield, but we have nonetheless made an estimate based on the following somewhat arbitrary procedure. A common approach to calculating sustainable yield involves choosing a flow rate that would consume a prescribed fraction of available drawdown over the course of 180 days of pumping at the chosen rate. In this case, we will assume that it is acceptable to consume two-thirds (67%) of available drawdown.

Available drawdown can be defined as the difference between the static water level and the depth of the uppermost water-bearing fracture. The static water level at the start of the TW-3 test was 8.58 feet below the measuring point, or roughly five feet below ground surface. The depth of the uppermost productive fracture based on the frack report is assumed to be at 280 feet. Available drawdown is thus 275 feet. Sixty-seven percent of 275 feet is 184.25 feet, which is the amount of drawdown that can be allowed after six months' pumping at the sustainable rate.

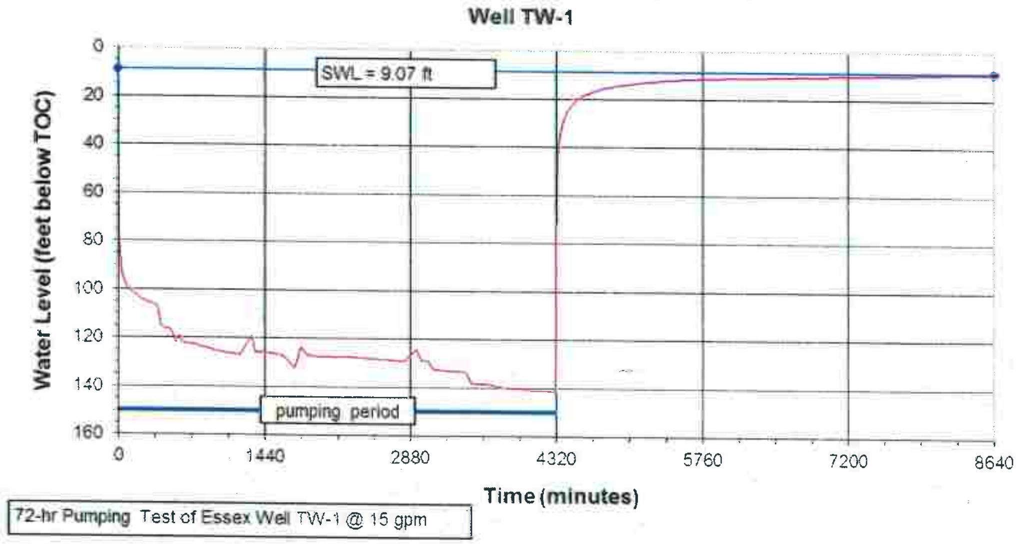
The 180-day projected specific capacity of Well TW-3 at 30 gpm is 0.094 gpm/ft. The sustainable flow rate using that specific capacity would be 0.094 x 184.25 = 17.3 gpm. Because the specific capacity at the lower flow rate might be slightly higher than at 30 gpm, a reasonable estimate of sustainable yield may be as high as 20 gpm.

We offer a few cautionary notes on this estimate. The frack report only provides an indication of the possible depth of the uppermost water-bearing zone. If the uppermost zone is deeper, then a higher rate might be sustained. On the other hand, observations associated with the distance-drawdown graph suggest that the aquifer is not well enough connected to sources of recharge to support a sustained yield as high as 20 gpm.

Well TW-1 Test - The step test of Well TW-1 was conducted on Monday, May 9, beginning at 7:30 AM. The test consisted of an hour-long step at 20 gpm followed by a 70-minute step at 30 gpm. The water level reached a depth of 371 feet by the end of the second step, near the level of the pump, so that it was not possible to run additional steps at higher rates. Based on specific capacities demonstrated by the two steps, a target rate of 15 gpm was adopted for the 72-hour constant-rate test.

Figure 9 is a graph of water levels in Well TW-1 during the constant rate test. Pumping began at 8:00 AM on May 10. The water level in TW-1 was at 9.07 feet below the monitoring point just before the start of the test. After the initial period of rate adjustment at the start of the test, the pumping rate was held very close to the target rate of 15 gpm. By the end of the test, the water level had declined to 141.32 feet, for 132.25 feet of drawdown.

Figure 9 - Well TW-1 Water Levels, TW-1 Test



Recovery performance of the well was judged satisfactory. Three days after the end of pumping, water level recovery was essentially complete, that is, the water level had recovered to the elevation that had been measured immediately prior to the start of the 72-hour test on Well TW-1. The water level was still a few feet below the original static water level that was measured prior to the start of the pumping test performed on TW- 2 two weeks prior.

Figures 10 and 11 are graphs of pump-period and recovery-period water levels in Well TW-1, in each case with time plotted on a logarithmic scale. As Figure 10 shows, the water level followed a straight-line declining trend in logarithmic time after the initial period of pumping rate adjustment. Note that the Figure 10 water levels have been corrected to account for minor flow rate variations above and below 15 gpm. This was done to remove the irregularities that can be seen in the pumping-period data of Figure 9 and better show the water level trend that would be produced by a strictly uniform 15-gpm pumping rate. Figure 10 shows that the declining trend established early in the test persisted through the end of the pumping period. Comparison of Figures 10 and 11 shows how the slope of the recovery curve is similar to that of the drawdown curve, similar to that observed for Well TW-3.

Figure 10 - TW-1 Pumping-Period Water Levels, TW-1 Test

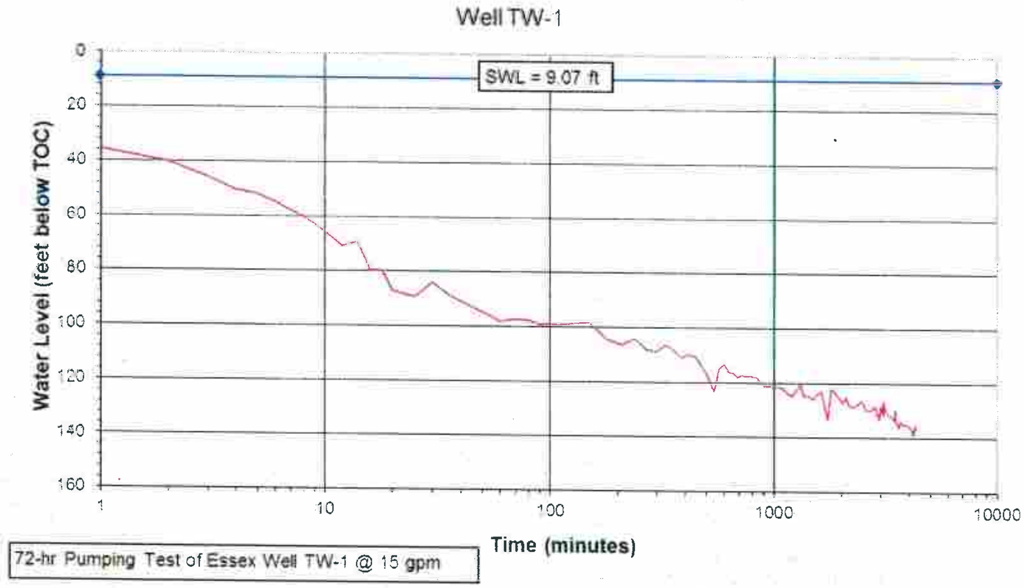
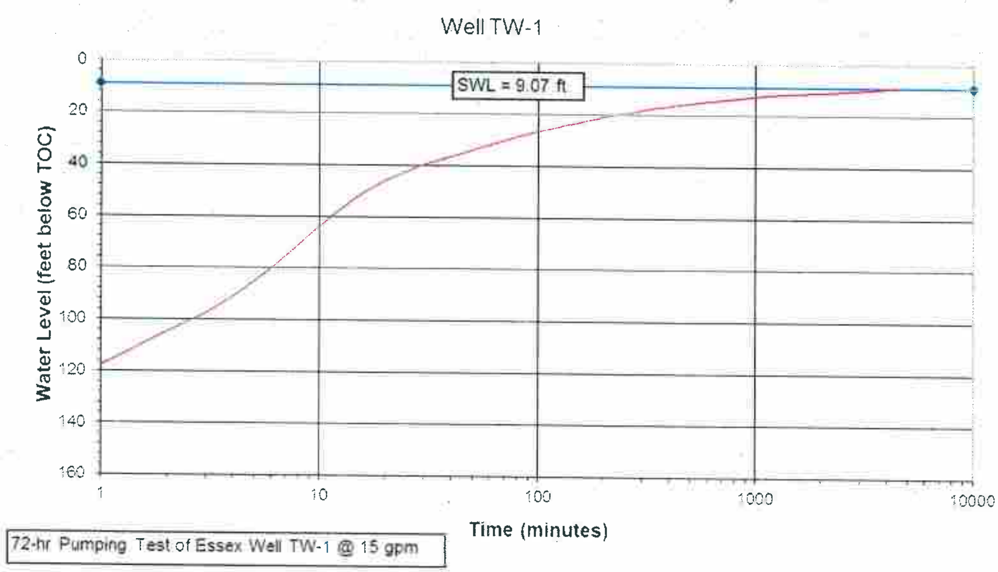
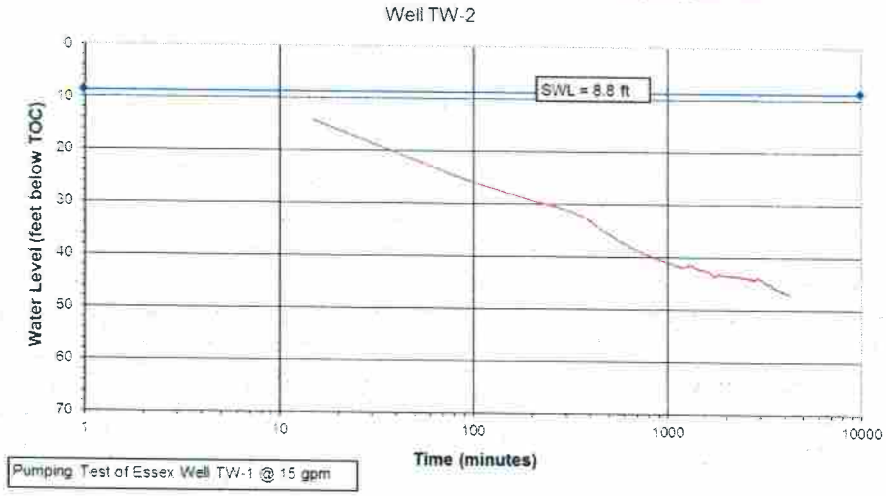


Figure 11 - TW-1 Recovery-Period Water Levels, TW-1 Test



Figures 12 and 13 are graphs of pumping-period water levels in Wells TW-2 and TW-3 during the TW-1 test. The response of the two monitored wells to Well TW-1 pumping resembled that of the wells monitored during the TW-3 test, though the amount of drawdown was smaller in accordance with the lower pumping rate. Water levels declined by similar amounts in the two monitored wells, even though their separation from the pumping well is quite different. Nearby neighbor Well TW-3 showed 41.99 feet of drawdown, while more-distant Well TW-2 showed 38.29 feet of drawdown.

Figure 12 - TW-2 Water Levels, TW-1 Pumping Period



Also resembling the TW-3 test was the distance-drawdown relationship among the wells, as shown by Figure 14. The slope of the water table between Wells TW-3 and TW-2 is comparatively flat. Pumping of TW-1 has succeeded in producing only a moderate gradient in that region. However, the point representing TW-1 falls far below the gradient defined by TW-3 and TW-2. Well TW-1 is thus very inefficient, and the cone of depression in the region between TW-1 and TW-3 is quite steep. Despite that, it is clear that the edge of the 72-hour cone of depression must be a considerable distance beyond Well TW-2.

Figure 13 - TW-3 Water Levels, TW-1 Pumping Period

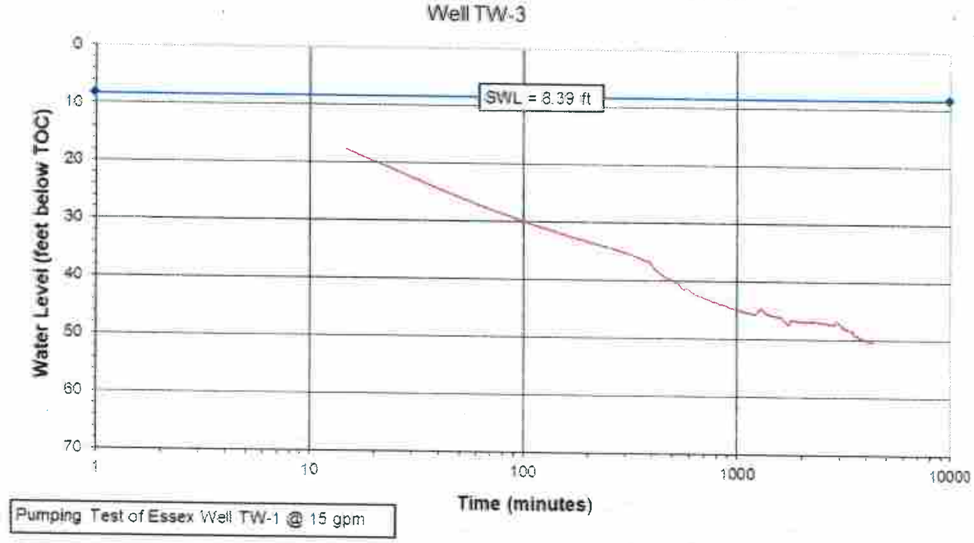


Figure 14 - 72-Hour Distance-Drawdown, TW-1 Test

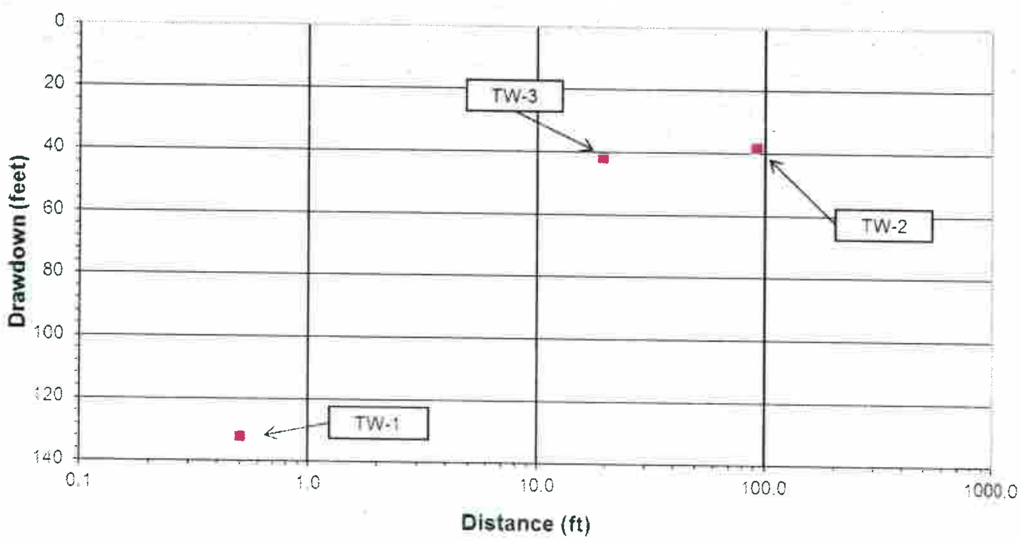
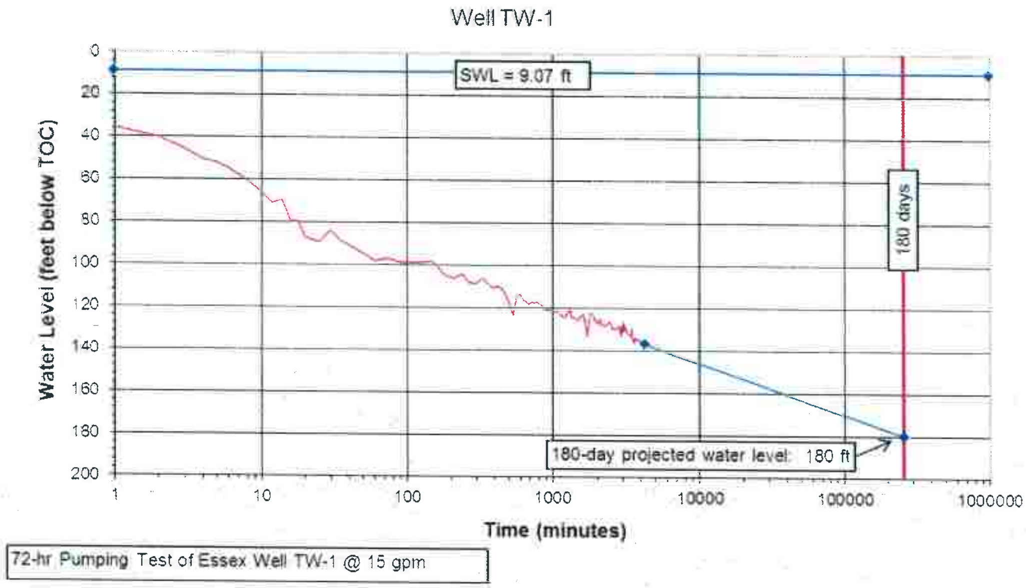


Figure 15 is a 180-day projection of the water level trend established during the portion of the pumping period after the first 60 minutes. If pumping of TW-1 were continued steadily at 15 gpm for 180 days, and no recharge or boundary barriers were encountered in that time, the water level would reach a depth of approximately 180 feet. Figure 15 is based on the same rate-normalized data as Figure 10.

Figure 15 - TW-1 180-Day Water Level Projection at 15 gpm



The same comments made in connection with the TW-3 180-day projection also apply here. The graph shows no sign of impending stabilization. That is, there is no evidence that the expanding cone of depression is approaching the point where recharge to the aquifer is about to come into balance with the pumping rate. If that were happening, a concave-upward curve would be developing in the late-time data.

As was true in TW-3, fracking of the well means that the depth distribution of water-bearing fracture zones through the saturated depth interval is not known. The frack report shows apparent "breaks" at a number of the packer isolation intervals. The isolation interval from 100 to 140 feet showed a maximum pressure of 700 PSI and a minimum pressure of 350 PSI. After the pump was shut off at the end of the TW-1 step test, cascading water could be heard entering the well until the water level rebounded to approximately 140 feet. The sound stopped when the water level rose above that point, indicating that fractures at that level were delivering an unknown quantity of water to the well. If that zone contributes a significant fraction of the well's total productive capacity, then the rate of water level decline would be expected to steepen after the water level fell below that depth, and the zone gradually became dewatered. Moreover, the farther the water level declines, the more likely it is that fractures representing a substantial portion of the well's capacity will be left above the water table, making the well less capable of supporting the pumping rate.

Well TW-1 Sustainable Yield Estimate - We have estimated TW-1 sustainable yield using the same approach described for TW-3. The process involves estimating available drawdown, and then calculating the flow rate that would consume no more than 67% of that drawdown after 180 days of pumping at that rate.

As noted above, the sound of cascading water during the step test suggested that a water-bearing fracture could exist near a depth of 140 feet, and this could be consistent with the frack report, which shows a minimum pressure of 350 PSI in the fracked depth interval from 100 to 140 feet. In the interest of not being too conservative, and recognizing that the main water-bearing zone before fracking was at a depth of 450 feet, we are assuming that this shallow zone is not a significant water-producer. Based on the frack report, there are several zones that could be candidates to represent the uppermost significant zone. We arbitrarily choose the zone from 260 to 300 feet, in which the maximum pressure of 900 PSI was succeeded by a minimum (and presumably "post-break") pressure of 475 PSI. Note that this is largely a guess, however.

If the uppermost water-bearing zone begins at 260 feet, and the static water level is about 5.5 feet below ground surface, then available drawdown is 254.5 feet. Two-thirds of available drawdown is 170.5 feet. The projected 180-day specific capacity at 15 gpm is 0.086 gpm/ft. The resulting safe, sustainable yield would be 14.7 gpm, only slightly less than the rate at which the pumping test was conducted.

The biggest weakness in this calculation is that we do not know the depth of the uppermost water-bearing fractures. The frack report only provides indirect evidence on the depths at which fracking may have produced worthwhile productivity increases. Aside from that, this well taps the same aquifer as Well TW-3, and the long-term recharge of the aquifer remains unknown. The test results suggest that the aquifer's recharge opportunities may not be adequate to support the contemplated pumping rates.

Water Quality

Water quality samples were collected from Well 1 and Well 3, and were analyzed for the full suite of Safe Drinking Water Act parameters that are required for approval of public water supplies under New York regulations. This included inorganics, metals, volatile organics, semivolatiles, and radiologicals. The only parameter category for which analysis was not carried out was bacteriologicals, as recommended by NYSDOH.

Well 1 water samples were collected after 48 hours of pumping. Well 3 samples were collected in the final minutes of the 72-hour test of that well. Both wells were also subjected to an MPA test, with the MPA sample being collected during the 24-hour period that preceded collection of the rest of the water quality samples.

Lab water quality reports are provided in Appendix A. Table 1 provides water quality results for a few key parameters. A few potential water quality flaws are noted. Considerable turbidity was observed in the water pumped from both wells over much of each of the two 72-hour pumping tests. Periodic measurements made during both pumping tests showed that turbidity declined over the course of the tests, suggesting that over the long term it may become lower. Samples collected near the end of each test that were sent for lab analysis also show acceptable turbidity levels. Sodium is reported to be above 74 mg/l, and there was a distinct odor of hydrogen sulfide that originated from the pumped water over much of the duration of both pumping tests.

Otherwise, the natural quality of the water produced by both wells is very good. No parameter exceeded its Maximum Contaminant Level (MCL). Hardness is near the borderline between "hard" and "soft" water. Total dissolved solids are at comparatively low levels. Concentrations of iron and manganese are well below the Secondary MCL for these parameters. No volatile components were detected in either well. Radiological results are acceptable. Both MPA results returned a low risk rating.

Table 1 - Selected Water Quality Parameters

Parameter	TW-1	TW-3
Hardness (mg/l)	102	92.1
pH (pH units)	8.19	8.21
SO^4 (mg/l)	41.3	39.7
TDS (mg/l)	200	300
Turbidity (ntu)	2.06	2.26
Fe (mg/l)	<0.01	0.04
Mn (mg/l)	0.002	0.002

Conclusions

We offer the following conclusions based on the pumping tests of the three wells.

- Well TW-1 may be capable of producing at a rate of 15 gpm sustainably, but the testing does not prove this because there was no indication of water level stabilization during the 72-hour pumping period.

- Well TW-3 may be capable of producing at a rate of 20 gpm sustainably. However, like TW-1, Well TW-3 failed to show that it was even approaching stabilization by the end of the pumping period.

- The capacity of Well TW-2 appears quite limited. The sustainable yield of Well TW-2 operating when the other two wells are not pumping is probably only a few gallons per minute.

- Simultaneous pumping of any combination of the three wells is unlikely to produce a higher volume of water than pumping of TW-1 or TW-3 alone. This is because of hydraulic interference between the wells. Pumping either TW-1 or TW-3 produces substantial drawdown at the other wells, reducing each of the other wells' available drawdown. That loss in available drawdown translates into lower maximum yields at all the wells.

- The test results do not make it clear that the fractured bedrock aquifer tapped by all three wells is capable of capturing recharge at a rate equal to the rate of groundwater withdrawal. Even after fracking of all three wells, their static water level remains roughly nine feet above the level of Lake Champlain. This makes it clear that the bedrock aquifer is poorly connected to the lake, and the straight-line decline shown by pumping-period water levels in the wells shows an absence of recharge boundaries. Although recovery performance appeared to be adequate in Wells TW-1 and TW-3, the observed recovery behavior could largely represent redistribution of water already in storage locally in the aquifer, not the arrival of new water from external recharge sources. It might be necessary to pump the wells for a much longer period of time to confirm that pumping is not simply mining water from storage at a rate faster than it can be replaced by recharge.

- Water quality is acceptable. No parameters were present at levels exceeding an MCL, dissolved solids were comparatively low, hardness was normal for the region, and the "nuisance parameters" iron and manganese are at unusually low levels. MPA testing indicated that the wells are not under the influence of surface water. Possible flaws that may require treatment include turbidity, sodium and/or hydrogen sulfide.

Sincerely,

Fred E. Bickford

Fred E. Bickford
Hydrogeologist

APPENDIX A

Water Quality Results

Well #3
and
Well #1

PHOENIX
Environmental Laboratories, Inc.

Thursday, May 26, 2016

Hydrosource Associates
50 Winter St
Ashland NH 03217

Project ID: ESSEX NY 72 HOW TEST
Sample ID#s: BN26425, BN26580

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Laboratory Director
Phyllis Shiller

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

May 26, 2016

FOR: Hydrosource Associates
50 Winter St
Ashland NH 03217

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:	as	05/05/16	7:25
Location Code:	BUDSPEC	Received by:	LK	05/05/16	17:39
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O #:					

Laboratory Data

SDG ID: GBN26425
Phoenix ID: BN26425

Project ID: ESSEX NY 72 HOW TEST
Client ID: WELL #3

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Hardness (CaCO3)	92.1	0.1	1	mg/L			05/07/16		E200.7	
Alkalinity-CaCO3	225	20.0	1	mg/L			05/06/16	RR/EG	SM2320B-97	
Chloride	9.1	3.0	1	mg/L		250	05/06/16	BS/EG	E300.0	
Color, Apparent	< 1	1	1	Color Units		15	05/05/16 21:00	DH/EG	SM2120B-01	
Cyanide, Free	< 0.005	0.005	1	mg/L	0.2		05/12/16	GD	E335.4/SW9014	
Fluoride	1.91	0.10	1	mg/L	4		05/06/16	BS/EG	E300.0	
Langelier Index	-0.090		1	pH units			05/09/16	DL	SM2330B-05	1
Nitrite as Nitrogen	< 0.004	0.004	1	mg/L	1		05/06/16 03:45	BS/EG	E300.0	
Nitrate as Nitrogen	< 0.05	0.05	1	mg/L	10		05/06/16 03:45	BS/EG	E300.0	
Odor at 60 Degrees C	< 1	1	1	T.O.N.		3	05/05/16 18:30	O	SM2150B-97	
pH	8.21	0.10	1	pH Units		6.5-8.5	05/06/16 03:56	RR/EG	SM4500-H B-00	1
Sulfate	39.7	3.0	1	mg/L		250	05/06/16	BS/EG	E300.0	
Total Cyanide (Drinking water)	< 0.005	0.005	1	mg/L	0.2		05/09/16	O/GD	E335.4	
Tot. Diss. Solids	300	10	1	mg/L		500	05/09/16	CL/KH	SM2540C-97	
Turbidity	2.26	0.200	1	NTU		5	05/06/16 03:56	RR/EG	SM2130B-01	
Silver	< 0.001	0.001	1	mg/L		0.1	05/06/16	EK	E200.7	
Arsenic	0.0021	0.0005	1	mg/L	0.01		05/09/16	MA/RS	E200.9/SM3113B-10	
Barium	0.082	0.001	1	mg/L	2		05/06/16	EK	E200.7	
Beryllium	< 0.0003	0.0003	1	mg/L	0.004		05/06/16	EK	E200.7	
Calcium	15.6	0.005	1	mg/L			05/06/16	EK	E200.7	
Cadmium	< 0.001	0.001	1	mg/L	0.005		05/06/16	EK	E200.7	
Chromium	< 0.001	0.001	1	mg/L	0.1		05/06/16	EK	E200.7	
Copper	0.006	0.002	1	mg/L	1.3		05/06/16	EK	E200.7	
Iron	0.04	0.01	1	mg/L		0.3	05/06/16	EK	E200.7	
Mercury	< 0.0002	0.0002	1	mg/L	0.002		05/09/16	RS	E245.1	
Magnesium	12.9	0.005	1	mg/L			05/06/16	EK	E200.7	
Manganese	0.002	0.001	1	mg/L		0.05	05/06/16	EK	E200.7	

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Sodium	78.2	1.0	10	mg/L			05/06/16	EK	E200.7
*** Sodium exceeds Secondary Goal ***									
Nickel	< 0.001	0.001	1	mg/L			05/06/16	EK	E200.7
Lead	< 0.001	0.001	1	mg/L	0.015		05/06/16	EK	E200.5
Antimony	< 0.0008	0.0008	1	mg/L	0.006		05/10/16	MA	E200.9/SM3113B-10
Selenium	< 0.001	0.001	1	mg/L	0.05		05/07/16	TH/RS	E200.9/SM3113B-10
Thallium	< 0.0007	0.0007	1	mg/L	0.002		05/09/16	RS	E200.9/SM3113B-10
Zinc	0.127	0.001	1	mg/L		5	05/06/16	EK	E200.7
Extraction for Pesticides	Completed						05/09/16	I/I	E507
Extraction for 525.2	Completed						05/11/16	L/L	E525.2
Extraction for Diquat	Completed						05/09/16	E/E	E549
Mercury DW Digestion	Completed						05/09/16	W/W	E245.1
Extraction of DW Pesticides	Completed						05/09/16	I/I	E508
Extraction of DW Herbicides	Completed						05/11/16	D/D	E515
Total Metal Digestion	Completed						05/05/16	AG	E200.9
Total Metal Digestion	Completed						05/05/16	AG	E200.5/E200.7
EDB and DBCP Analysis									
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	1	ug/L	0.2		05/10/16	JRB	E504.1
1,2 Dibromoethane (EDB)	ND	0.01	1	ug/L	0.02		05/10/16	JRB	E504.1
Organophosphorus Pesticides									
Alachlor	ND	0.10	1	ug/L	2		05/10/16	CE	E507
Atrazine	ND	0.10	1	ug/L	3		05/10/16	CE	E507
Butachlor	ND	0.10	1	ug/L			05/10/16	CE	E507
Metolachlor	ND	0.10	1	ug/L			05/10/16	CE	E507
Metribuzin	ND	0.10	1	ug/L			05/10/16	CE	E507
Simazine	ND	0.070	1	ug/L	4		05/10/16	CE	E507
QA/QC Surrogates									
% 1,3 Dimethyl-2-nitrobenzene	71		1	%	NA	NA	05/10/16	CE	70 - 130 %
Pesticides									
Aldrin	ND	0.010	1	ug/L			05/09/16	CE	E508
Chlordane	ND	0.010	1	ug/L	2		05/09/16	CE	E508
Dieldrin	ND	0.010	1	ug/L			05/09/16	CE	E508
Endrin	ND	0.010	1	ug/L	2		05/09/16	CE	E508
Heptachlor	ND	0.010	1	ug/L	0.4		05/09/16	CE	E508
Heptachlor Epoxide	ND	0.010	1	ug/L	0.2		05/09/16	CE	E508
Hexachlorobenzene	ND	0.010	1	ug/L	1		05/09/16	CE	E508
Hexachlorocyclopentadiene	ND	0.010	1	ug/L	50		05/09/16	CE	E508
Lindane	ND	0.010	1	ug/L	0.2		05/09/16	CE	E508
Methoxychlor	ND	0.010	1	ug/L	40		05/09/16	CE	E508
Propachlor	ND	0.050	1	ug/L			05/09/16	CE	E508
Toxaphene	ND	1.0	1	ug/L	3		05/09/16	CE	E508
QA/QC Surrogates									
%DCBP (Surrogate Rec)	107		1	%	NA	NA	05/09/16	CE	70 - 130 %
PCB Screen									
PCB-1016 (screen)	ND	0.080	1	ug/l	0.5		05/10/16	AW	E508
PCB-1221 (screen)	ND	0.10	1	ug/l	0.5		05/10/16	AW	E508

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
PCB-1232 (screen)	ND	0.10	1	ug/l	0.5		05/10/16	AW	E508	1
PCB-1242 (screen)	ND	0.10	1	ug/l	0.5		05/10/16	AW	E508	1
PCB-1248 (screen)	ND	0.10	1	ug/l	0.5		05/10/16	AW	E508	1
PCB-1254 (screen)	ND	0.10	1	ug/l	0.5		05/10/16	AW	E508	1
PCB-1260 (screen)	ND	0.10	1	ug/l	0.5		05/10/16	AW	E508	1
PCB-1262 (screen)	ND	0.10	1	ug/l			05/10/16	AW	E508	1
PCB-1268 (screen)	ND	0.10	1	ug/l			05/10/16	AW	E508	1
QA/QC Surrogates										
%DCBP (Surrogate Rec)	91		1	%	NA	NA	05/10/16	AW	30 - 150 %	

Herbicides

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
2,4,5-T	ND	2.5	1	ug/L			05/13/16	BB	E515.3	1
2,4,5-TP	ND	0.20	1	ug/L	50		05/13/16	BB	E515.3	
2,4-D	ND	0.10	1	ug/L	70		05/13/16	BB	E515.3	
Dalapon	ND	1.0	1	ug/L	200		05/13/16	BB	E515.3	
Dicamba	ND	0.50	1	ug/L			05/13/16	BB	E515.3	
Dichloroprop	ND	2.5	1	ug/L			05/13/16	BB	E515.3	1
Dinoseb	ND	0.20	1	ug/L	7		05/13/16	BB	E515.3	
Pentachlorophenol	ND	0.040	1	ug/L	1		05/13/16	BB	E515.3	
Picloram	ND	0.10	1	ug/L	500		05/13/16	BB	E515.3	
QA/QC Surrogates										
% DCAA	98		1	%	NA	NA	05/13/16	BB	70 - 130 %	

Volatiles

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,1,1-Trichloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,1,2,2-Tetrachloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,1,2-Trichloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,1-Dichloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,1-Dichloroethene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,1-Dichloropropene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2,3-Trichlorobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2,3-Trichloropropane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2,4-Trichlorobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2,4-Trimethylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2-Dichlorobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2-Dichloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,2-Dichloropropane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,3,5-Trimethylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,3-Dichlorobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,3-Dichloropropane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
1,4-Dichlorobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
2,2-Dichloropropane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
2-Chlorotoluene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
4-Chlorotoluene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Benzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Bromobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Bromochloromethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Bromodichloromethane	ND	0.50	1	ug/L			05/08/16	HM	E524.2
Bromoform	ND	0.50	1	ug/L			05/08/16	HM	E524.2

Project ID: ESSEX NY 72 HOW TEST
Client ID: WELL #3

Phoenix I.D.: BN26425

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Bromomethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Carbon tetrachloride	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Chlorobenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Chloroethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Chloroform	ND	0.50	1	ug/L			05/08/16	HM	E524.2
Chloromethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
cis-1,2-Dichloroethene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
cis-1,3-Dichloropropene	ND	0.40	1	ug/L	5		05/08/16	HM	E524.2
Dibromochloromethane	ND	0.50	1	ug/L			05/08/16	HM	E524.2
Dibromomethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Dichlorodifluoromethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Ethylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Hexachlorobutadiene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Isopropylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
m&p-Xylene	ND	0.50	1	ug/L			05/08/16	HM	E524.2
Methyl t-butyl ether (MTBE)	ND	0.50	1	ug/L	10		05/08/16	HM	E524.2
Methylene chloride	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Naphthalene	ND	0.50	1	ug/L			05/08/16	HM	E524.2
n-Butylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
n-Propylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
o-Xylene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
p-Isopropyltoluene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
sec-Butylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Styrene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
tert-Butylbenzene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Tetrachloroethene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Toluene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Total Trihalomethanes	ND	0.50	1	ug/L	80		05/08/16	HM	E524.2
Total Xylenes	ND	0.50	1	ug/L	10000		05/08/16	HM	E524.2
trans-1,2-Dichloroethene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
trans-1,3-Dichloropropene	ND	0.40	1	ug/L	5		05/08/16	HM	E524.2
Trichloroethene	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Trichlorofluoromethane	ND	0.50	1	ug/L	5		05/08/16	HM	E524.2
Vinyl chloride	ND	0.50	1	ug/L	2		05/08/16	HM	E524.2
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	93		1	%	NA	NA	05/08/16	HM	70 - 130 %
% Bromofluorobenzene	96		1	%	NA	NA	05/08/16	HM	70 - 130 %

Semivolatile Organic

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Benzo(a)pyrene	ND	0.02	1	ug/L	0.2		05/13/16	MH	E525.3
Bis(2-ethylhexyl)adipate	ND	0.60	1	ug/L	400		05/13/16	MH	E525.3
Bis(2-ethylhexyl)phthalate	ND	0.60	1	ug/L	6		05/13/16	MH	E525.3
QA/QC Surrogates									
% 1,3-Dimethyl-2-nitrobenzene	92		1	%	NA	NA	05/13/16	MH	70 - 130 %
% benzo(a)pyrene-d12	91		1	%	NA	NA	05/13/16	MH	70 - 130 %
% Triphenylphosphate	103		1	%	NA	NA	05/13/16	MH	70 - 130 %

Carbamates HPLC

Parameter	Result	RL/ PQL	Dil.	Units	DW MCL	Sec Goal	Date/Time	By	Reference
3-Hydroxycarbofuran	ND	0.50	1	ug/L			05/14/16	RM	E531.2
Aldicarb	ND	0.50	1	ug/L	3		05/14/16	RM	E531.2

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Aldicarb Sulfone	ND	0.80	1	ug/L	2		05/14/16	RM	E531.2	
Aldicarb Sulfoxide	ND	0.50	1	ug/L	4		05/14/16	RM	E531.2	
Carbaryl	ND	0.50	1	ug/L			05/14/16	RM	E531.2	
Carbofuran	ND	0.90	1	ug/L	40		05/14/16	RM	E531.2	
Methomyl	ND	0.50	1	ug/L			05/14/16	RM	E531.2	
Oxamyl	ND	2.0	1	ug/L	200		05/14/16	RM	E531.2	
QA/QC Surrogates										
% BDMC	114		1	%	NA	NA	05/14/16	RM	70 - 130 %	
Asbestos in Water										
Asbestos fibers (>0.5u and <10u)	ND	0.960		MFL			05/12/16	*	E600/4-84	C
Asbestos fibers (>10u)	ND	0.192		MFL			05/12/16	*	E600/4-84	C
Gross Alpha Water	3.52 ± 2.88	3		pci/L	15		05/19/16	*	E900.0	C
Gross Beta Water	ND ± 2.38	4		pci/L			05/19/16	*	E900.0	C
Radium 226	ND ± 0.08	1		pci/L	5		05/24/16	*	7500 Ra B/903.0	C
Radium 228	ND ± 0.6	1		pci/L	5		05/23/16	*	7500 Ra D/904.0	C

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.
C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level DIL=Dilution (analysis required diluting to evaluate) ND=Not Detected
BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.)
MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; Public Health Law, Section 225 Part 5, Subpart 5-1. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): 40 CFR Part 143. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

515.3 Analysis Comment:
The RL/PQL is below the laboratory determined detection level for some compounds. (The 515.3 method has an expected detection limit higher then the EPA required detection limits).

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Asbestos in Water (E600/4-84) was analyzed by NY certified lab #10851.
Gross Alpha Water (E900.0), Gross Beta Water (E900.0), Radium 226 (7500 Ra B/903.0), Radium 228 (7500 Ra D/904.0) were analyzed by NY certified lab #11777.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
May 26, 2016

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

May 26, 2016

FOR: Hydrosource Associates
50 Winter St
Ashland NH 03217

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		05/05/16	
Location Code:	BUDSPEC	Received by:	SW	05/05/16	17:39
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBN26425
Phoenix ID: BN26580

Project ID: ESSEX NY
Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
EDB and DBCP Analysis							
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	ug/L	1	05/10/16	JRB	E504.1
1,2-Dibromoethane (EDB)	ND	0.01	ug/L	1	05/10/16	JRB	E504.1

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level

Comments:

TRIP BLANK INCLUDED.

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
May 26, 2016

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NY # 11301

QA/QC Report

May 26, 2016

QA/QC Data

SDG I.D.: GBN26425

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 344861 (mg/L), QC Sample No: BN09229 (BN26425)													
Mercury	BRL	0.0002	<0.0002	<0.0002	NC	99.8			96.7			85 - 115	20
QA/QC Batch 344597 (mg/L), QC Sample No: BN26250 (BN26425)													
ICP Metals - Aqueous													
Barium	BRL	0.001	0.028	0.028	0	99.2			99.6			85 - 115	20
Beryllium	BRL	0.0003	<0.0003	<0.0003	NC	95.8			96.9			85 - 115	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	91.9			91.8			85 - 115	20
Calcium	BRL	0.005	19.9	19.8	0.50	102			NC			85 - 115	20
Chromium	BRL	0.001	<0.001	<0.001	NC	94.8			95.1			85 - 115	20
Copper	BRL	0.002	0.008	0.009	NC	95.0			96.9			85 - 115	20
Iron	BRL	0.01	0.15	0.15	0	94.8			94.3			85 - 115	20
Lead	BRL	0.001	0.002	0.002	NC	93.0			92.7			85 - 115	20
Magnesium	BRL	0.005	3.97	3.91	1.50	93.5			NC			85 - 115	20
Manganese	BRL	0.001	0.008	0.008	0	94.8			94.8			85 - 115	20
Nickel	BRL	0.001	0.001	0.003	NC	94.0			93.4			85 - 115	20
Silver	BRL	0.001	<0.001	<0.001	NC	91.0			93.4			85 - 115	20
Sodium	BRL	0.1	14.0	13.8	1.40	102			NC			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 344599 (mg/L), QC Sample No: BN26425 (BN26425)													
Antimony	BRL	0.002	<0.0008	<0.002	NC	104			107			85 - 115	20
Arsenic	BRL	0.001	0.0021	0.002	NC	102			112			85 - 115	20
Selenium	BRL	0.001	<0.001	<0.001	NC	110			84.7			85 - 115	20
Thallium	BRL	0.001	<0.0007	<0.001	NC	96.8			89.3			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													

PHOENIX

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NY # 11301

QA/QC Report

May 26, 2016

QA/QC Data

SDG I.D.: GBN26425

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 344792 (mg/L), QC Sample No: BN22929 (BN26425)														
Total Cyanide (Drinking water)	BRL	0.01	<0.005	<0.01	NC	97.6			94.0			85 - 115	20	
QA/QC Batch 344633 (mg/L), QC Sample No: BN26011 (BN26425)														
Alkalinity-CaCO3	BRL	5.00	44	44	NC	100						85 - 115	20	
QA/QC Batch 344688 (mg/L), QC Sample No: BN26011 (BN26425)														
Alkalinity-CaCO3	BRL	5.00	44	44	NC	100						85 - 115	20	
QA/QC Batch 344628 (pH), QC Sample No: BN26011 (BN26425)														
pH			7.26	7.19	1.00	98.4						85 - 115	20	
QA/QC Batch 344638 (NTU), QC Sample No: BN26011 (BN26425)														
Turbidity	BRL	0.200	0.22	0.21	NC	90.5						85 - 115	20	
QA/QC Batch 344836 (mg/L), QC Sample No: BN26094 (BN26425)														
Tot. Diss. Solids	BRL	10	340	360	5.70	94.0						85 - 115	20	
QA/QC Batch 345194 (mg/L), QC Sample No: BN26425 (BN26425)														
Free Cyanide	BRL	0.01	<0.005	<0.01	NC	96.4						85 - 115	20	
QA/QC Batch 344702 (mg/L), QC Sample No: BN26425 (BN26425)														
Chloride	BRL	3.0	9.1	8.8	NC	94.7			94.4			90 - 110	20	
Fluoride	BRL	0.10	1.91	1.90	0.50	102			112			90 - 110	20	m
Nitrate as Nitrogen	BRL	0.05	<0.05	<0.05	NC	96.8			96.8			90 - 110	20	
Nitrite as Nitrogen	BRL	0.004	<0.004	<0.004	NC	99.3			97.8			90 - 110	20	
Sulfate	BRL	3.0	39.7	39.6	0.30	94.9			110			90 - 110	20	
QA/QC Batch 344703 (mg/L), QC Sample No: BN26510 (BN26425)														
Chloride	BRL	3.0	28.9	28.5	1.40	94.3			99.1					
Fluoride	BRL	0.10	<0.10	<0.10	NC	101			98.8					
Nitrate as Nitrogen	BRL	0.05	0.08	0.09	NC	96.9			102			90 - 110	20	
Nitrite as Nitrogen	BRL	0.01	<0.01	<0.01	NC	97.9			91.3			85 - 115	20	
Sulfate	BRL	3.0	13.2	12.9	NC	95.1			104			85 - 115	20	

m = This parameter is outside laboratory MS/MSD specified recovery limits.

PHOENIX

Environmental Laboratories, Inc.

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Tel. (860) 645-1102 Fax (860) 645-0823

nelac NY # 11301

QA/QC Report

May 26, 2016

QA/QC Data

SDG I.D.: GBN26425

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 344589 (ug/L), QC Sample No: BN22929 (BN26425, BN26580)											
EDB and DBCP Analysis - Drinking Water											
1,2-Dibromo-3-Chloropropane (DB	ND	0.02	110	110	0.0	102	97	5.0	70 - 130	20	
1,2-Dibromoethane (EDB)	ND	0.01	106	110	3.7	103	102	1.0	70 - 130	20	
QA/QC Batch 345179 (ug/L), QC Sample No: BN24718 (BN26425)											
Herbicides - Drinking Water											
2,4,5-T	ND	0.10	89			94			70 - 130	20	
2,4,5-TP	ND	0.020	84			92			70 - 130	20	
2,4-D	ND	0.010	89			98			70 - 130	20	
Dalapon	ND	0.10	93			95			70 - 130	20	
Dicamba	ND	0.040	91			98			70 - 130	20	
Dichloroprop	ND	0.10	73			79			70 - 130	20	
Dinoseb	ND	0.020	86			102			70 - 130	20	
Pentachlorophenol	ND	0.004	79			85			70 - 130	20	
Picloram	ND	0.010	85			97			70 - 130	20	
% DCAA (Surrogate Rec)	96	%	90			96			70 - 130	20	
QA/QC Batch 344814 (ug/L), QC Sample No: BN24718 (BN26425)											
Organophosphorus Pesticides - Drinking Water											
Alachlor	ND	0.10	90			86			70 - 130	20	
Atrazine	ND	0.10	79			76			70 - 130	20	
Butachlor	ND	0.10	92			88			70 - 130	20	
Metolachlor	ND	0.10	94			89			70 - 130	20	
Metribuzin	ND	0.10	95			91			70 - 130	20	
Simazine	ND	0.070	96			90			70 - 130	20	
% 1,3 Dimethyl-2-nitrobenzene	63	%	51			48			70 - 130	20	l,m
QA/QC Batch 345221 (ug/L), QC Sample No: BN24718 (BN26425)											
Semivolatile Organic Compounds - Drinking Water											
Benzo(a)pyrene	ND	0.02	102			106	95	10.9	70 - 130	20	
Bis(2-ethylhexyl)adipate	ND	0.60	99			94	93	1.1	70 - 130	20	
Bis(2-ethylhexyl)phthalate	ND	0.60	100			102	101	1.0	70 - 130	20	
% 1,3-Dimethyl-2-nitrobenzene	83	%	84			91	85	6.8	70 - 130	20	
% benzo(a)pyrene-d12	97	%	96			105	89	16.5	70 - 130	20	
% Triphenylphosphate	114	%	112			116	107	8.1	70 - 130	20	
QA/QC Batch 344890 (ug/L), QC Sample No: BN24815 (BN26425)											
Carbamates HPLC - Drinking Water											
Diquat	ND	0.40	76			86	86	0.0			
QA/QC Batch 344813 (ug/L), QC Sample No: BN25256 (BN26425)											
Pesticides - Drinking Water											
a-Chlordane	ND	0.010	105			91			70 - 130	20	
Aldrin	ND	0.010	125			108			70 - 130	20	

QA/QC Data

SDG I.D.: GBN26425

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Chlordane	ND	0.10	92			82			70 - 130	20
Dieldrin	ND	0.010	113			99			70 - 130	20
Endrin	ND	0.010	108			94			70 - 130	20
g-BHC	ND	0.010	105			99			70 - 130	20
g-Chlordane	ND	0.010	92			82			70 - 130	20
Heptachlor	ND	0.010	110			96			70 - 130	20
Heptachlor epoxide	ND	0.010	104			91			70 - 130	20
Hexachlorobenzene	ND	0.010	103			88			70 - 130	20
Hexachlorocyclopentadiene	ND	0.010	66			88			70 - 130	20
Methoxychlor	ND	0.010	102			88			70 - 130	20
Propachlor	ND	0.010	91			87			70 - 130	20
Toxaphene	ND	0.40	NA			NA			70 - 130	20
% DCBP	88	%	87			78			70 - 130	20

QA/QC Batch 344833 (ug/L), QC Sample No: BN25412 (BN26425)

Volatiles - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1,1,2-Tetrachloroethane	ND	0.50	93	98	5.2	105	96	9.0	70 - 130	30
1,1,1-Trichloroethane	ND	0.50	94	96	2.1	105	94	11.1	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	97	97	0.0	111	101	9.4	70 - 130	30
1,1,2-Trichloroethane	ND	0.50	99	103	4.0	110	101	8.5	70 - 130	30
1,1-Dichloroethane	ND	0.50	98	100	2.0	113	101	11.2	70 - 130	30
1,1-Dichloroethene	ND	0.50	92	96	4.3	105	93	12.1	70 - 130	30
1,1-Dichloropropene	ND	0.40	99	98	1.0	110	96	13.6	70 - 130	30
1,2,3-Trichlorobenzene	ND	0.50	94	96	2.1	106	96	9.9	70 - 130	30
1,2,3-Trichloropropane	ND	0.50	95	99	4.1	115	103	11.0	70 - 130	30
1,2,4-Trichlorobenzene	ND	0.50	92	93	1.1	103	93	10.2	70 - 130	30
1,2,4-Trimethylbenzene	ND	0.50	95	97	2.1	107	94	12.9	70 - 130	30
1,2-Dichlorobenzene	ND	0.50	93	95	2.1	105	93	12.1	70 - 130	30
1,2-Dichloroethane	ND	0.50	97	99	2.0	109	102	6.6	70 - 130	30
1,2-Dichloropropane	ND	0.50	98	99	1.0	107	98	8.8	70 - 130	30
1,3,5-Trimethylbenzene	ND	0.50	95	96	1.0	105	93	12.1	70 - 130	30
1,3-Dichlorobenzene	ND	0.50	94	95	1.1	105	93	12.1	70 - 130	30
1,3-Dichloropropane	ND	0.50	99	101	2.0	111	102	8.5	70 - 130	30
1,4-Dichlorobenzene	ND	0.50	94	95	1.1	105	94	11.1	70 - 130	30
2,2-Dichloropropane	ND	0.50	98	95	3.1	79	70	12.1	70 - 130	30
2-Chlorotoluene	ND	0.50	93	95	2.1	102	93	9.2	70 - 130	30
4-Chlorotoluene	ND	0.50	95	96	1.0	106	93	13.1	70 - 130	30
Benzene	ND	0.50	94	96	2.1	103	95	8.1	70 - 130	30
Bromobenzene	ND	0.50	91	93	2.2	100	91	9.4	70 - 130	30
Bromochloromethane	ND	0.50	96	98	2.1	104	97	7.0	70 - 130	30
Bromodichloromethane	ND	0.50	95	97	2.1	108	97	10.7	70 - 130	30
Bromoform	ND	0.50	99	100	1.0	112	99	12.3	70 - 130	30
Bromomethane	ND	0.50	103	114	10.1	94	97	3.1	70 - 130	30
Carbon tetrachloride	ND	0.50	89	91	2.2	99	91	8.4	70 - 130	30
Chlorobenzene	ND	0.50	94	95	1.1	106	93	13.1	70 - 130	30
Chloroethane	ND	0.50	97	103	6.0	112	98	13.3	70 - 130	30
Chloroform	ND	0.50	95	97	2.1	107	96	10.8	70 - 130	30
Chloromethane	ND	0.50	106	107	0.9	116	105	10.0	70 - 130	30
cis-1,2-Dichloroethene	ND	0.50	94	97	3.1	106	97	8.9	70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	98	99	1.0	105	94	11.1	70 - 130	30
Dibromochloromethane	ND	0.50	95	97	2.1	107	97	9.8	70 - 130	30
Dibromomethane	ND	0.50	98	100	2.0	112	102	9.3	70 - 130	30
Dichlorodifluoromethane	ND	0.50	77	76	1.3	85	76	11.2	70 - 130	30

QA/QC Data

SDG I.D.: GBN26425

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Ethylbenzene	ND	0.50	92	97	5.3	105	94	11.1	70 - 130	30
Hexachlorobutadiene	ND	0.40	84	87	3.5	92	81	12.7	70 - 130	30
Isopropylbenzene	ND	0.50	94	96	2.1	103	94	9.1	70 - 130	30
m&p-Xylene	ND	0.50	93	96	3.2	105	92	13.2	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	0.50	98	100	2.0	111	103	7.5	70 - 130	30
Methylene chloride	ND	0.50	90	93	3.3	99	92	7.3	70 - 130	30
Naphthalene	ND	0.50	97	100	3.0	113	102	10.2	70 - 130	30
n-Butylbenzene	ND	0.50	93	95	2.1	103	89	14.6	70 - 130	30
n-Propylbenzene	ND	0.50	95	97	2.1	108	93	14.9	70 - 130	30
o-Xylene	ND	0.50	94	94	0.0	100	94	6.2	70 - 130	30
p-Isopropyltoluene	ND	0.50	92	94	2.2	103	89	14.6	70 - 130	30
sec-Butylbenzene	ND	0.50	89	91	2.2	100	87	13.9	70 - 130	30
Styrene	ND	0.50	94	95	1.1	104	93	11.2	70 - 130	30
tert-Butylbenzene	ND	0.50	93	96	3.2	106	93	13.1	70 - 130	30
Tetrachloroethene	ND	0.50	90	92	2.2	100	87	13.9	70 - 130	30
Toluene	ND	0.50	94	96	2.1	104	93	11.2	70 - 130	30
trans-1,2-Dichloroethene	ND	0.50	93	96	3.2	103	91	12.4	70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	104	104	0.0	112	102	9.3	70 - 130	30
Trichloroethene	ND	0.50	96	99	3.1	110	98	11.5	70 - 130	30
Trichlorofluoromethane	ND	0.50	87	91	4.5	96	88	8.7	70 - 130	30
Vinyl chloride	ND	0.50	97	98	1.0	105	95	10.0	70 - 130	30
% 1,2-dichlorobenzene-d4	90	%	101	101	0.0	104	102	1.9	70 - 130	30
% Bromofluorobenzene	97	%	100	101	1.0	100	102	2.0	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

QA/QC Batch 345687 (ug/L), QC Sample No: BN28083 (BN26425)

Carbamates HPLC - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
3-Hydroxycarbofuran	ND	0.50	108	92	16.0	104	98	5.9	70 - 130	20
Aldicarb	ND	0.50	102	94	8.2	95	93	2.1	70 - 130	20
Aldicarb Sulfone	ND	0.80	101	91	10.4	100	99	1.0	70 - 130	20
Aldicarb Sulfoxide	ND	0.50	104	95	9.0	98	96	2.1	70 - 130	20
Carbaryl	ND	0.50	109	96	12.7	102	100	2.0	70 - 130	20
Carbofuran	ND	0.90	110	100	9.5	106	102	3.8	70 - 130	20
Methomyl	ND	0.50	106	97	8.9	100	98	2.0	70 - 130	20
Oxamyl	ND	2.0	108	95	12.8	104	100	3.9	70 - 130	20
% BDMC	99	%	97	130	29.1	102	106	3.8	70 - 130	20

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
May 26, 2016

Thursday, May 26, 2016

Criteria: NY: DWP5

State: NY

Sample Criteria Exceedences Report

GBN26425 - BUDSPEC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BN26425	NA-DW	Sodium	EPA / 40 CFR 141 DW / 143.3 Secondary MCLs	78.2	1.0		0.2	mg/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Comments

May 26, 2016

SDG I.D.: GBN26425

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report:

AA Metals (SE-DW) Narration

PE600-1 05/07/16 02:29: BN26425
The following samples did not meet analytical spike criteria:
BN26425: Selenium 79.1% (85-115%)

Any sample with an analytical spike recovery outside of 85-115% was re-analyzed at a dilution with a passing analytical spike recovery.

ICP Metals Narration

BLUE 05/06/16 18:26: BN26425
The following Continuing Calibration Verification (CCV) compounds did not meet criteria:
CCV 05/07/16 00:02: Sodium 114% (90-110)

Additional CCV criteria:
Sodium and Potassium are poor performing elements, the laboratory's in-house limits are 85-115%

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

NY Temperature Narration

May 26, 2016

SDG I.D.: GBN26425

The samples in this delivery group were received at 4°C.
(Note acceptance criteria is above freezing up to 6°C)

Coolant: IPK ☐ ICE ☒ Cooler: Yes ☒ No ☐

Temp 4 °C Pg of

CHAIN OF CUSTODY RECORD

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:

- ☐ Fax:
- ☒ Phone: (603) 968-3733
- ☒ Email: Crowell@hydrosource.com

Customer: Hydrosource Associates
Address: 50 Winter st, Ashland, NH 03217

Project: Essex, NY 72-Hour Test well #3
Project P.O.:
Report to:
Invoice to:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: [signature] Date: 5/5/16

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil S=Bulk L=Liquid

Analysis Request: NY State Full Part 5 (radiol.)

Bottle quantities: PL HNO3 950 ml: 5; 120 ml Plastic as is: 1; 60 ml Amber vials C6H7KO7: 2; 32 oz Amber K-citrate EDTA: 2; 40 ml VOA vial (x) HCl: 3; Soil VOA Vials ( ) methanol ( ) H2O; GL Soil container ( ) 1oz; GL Soil container ( ) 1oz; 40 ml VOA Vial (x) As is ( ) HCl: 2; PL Amber 1000ml (x) As is ( ) H2SO4: 4; PL As is ( ) 250ml ( ) 500ml ( ) 1000ml: 2; PL H2SO4 ( ) 250ml ( ) 500ml; PL HNO3 250ml 500 ml: 1; PL NaOH 250ml: 1; Bacteria Bottle

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	NY State Full Part 5
26425	Well #3	GW	5/5/16	7:25Am	X
*26580	TB				

Relinquished by:	Accepted by:	Date:	Time:
Tim Barber	X-B	5/5/16	10:10 AM
X-B / NY Courier	[signature] TB	5-5-16	17:39

Comments, Special Requirements or Regulations:
As per Buddy.
* Recieved TB

Turnaround: ☐ 1 Day* ☐ 2 Days* ☐ 3 Days* ☒ Standard ☐ Other
* SURCHARGE APPLIES

RI: ☐ Direct Exposure (Residential) ☐ GW ☐ Other

CT: ☐ RCP Cert ☐ GW Protection ☐ SW Protection ☐ GA Mobility ☐ GB Mobility ☐ Residential DEC ☐ I/C DEC ☐ Other

MA: ☐ MCP Certification ☐ GW-1 ☐ GW-2 ☐ GW-3 ☐ S-1 ☐ S-2 ☐ S-3 ☐ MWRA eSMART ☐ Other

Data Format: ☐ Excel ☐ PDF ☐ GIS/Key ☐ EQuIS ☐ Other

Data Package: ☐ Tier II Checklist ☐ Full Data Package* ☐ Phoenix Std Report ☐ Other

State where samples were collected: NY

* SURCHARGE APPLIES

PHOENIX
Environmental Laboratories, Inc

QUOTATION

DATE: 5/13/2016

QUOTE NUMBER: N051316BA

Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
Manchester, CT 06040
Phone: 860-645-1102
800-827-5426
Fax: 860-645-0823
email: bobbi@phoenixlabs.com

TO: JoAnn Massad
NAVFAC MIDLANT PWD NLON Env.Div
PO Box 400 (Bldg B-439, Rm 104, Tautog Ave)
Groton CT 06349-5400

PROJECT NAME:

Parameter	Unit Price	Quantity	Total
BOD5	$18.75	1	$18.75
TSS	$10.00	1	$10.00
Ammonia	$17.00	1	$17.00
Nitrate	$9.00	1	$9.00
Oil & Grease	$35.00	1	$35.00
VOCs	$80.00	1	$80.00
Formaldehyde	$125.00	1	$125.00
SVOCs	$160.00	1	$160.00
Glycols	$75.00	1	$75.00
Total Cd, Cr, Cu, Pb, Ni, Ag, Sn, Zn,Sb, Be, Co, Mo, Se, Sr, Tl, Ti, V, Zi	$8.00 each	1	$144.00
Total Mercury	$17.00	1	$17.00
Total Metals Digestion	$8.00	1	$8.00
Total			$698.75

Authorized by: Bobbi Aloisa

Bobbi Aloisa, VP/Director of Client Services

Comments:

Pricing is based on a standard five business day TAT with a standard Phoenix report provided. This type of report includes results and batch QC, and is comparable to a Tier II, Level II, ASP Cat. A deliverable.

Sample containers and pickup are included at no additional charge.

Please reference quote number on chain of custody for proper invoicing. Add 6.35% sales tax to quoted pricing, unless you are tax exempt.

Terms : Net 30 days. 1.5% per month interest to be charged commencing 30 days after the invoice date. Collection fees incurred will be charged.

Eastern Analytical Services, Inc.

Water Sample Report

Date Collected: 05/05/2016
Collected By: Not Given
Date Received: 05/06/2016
Date Analyzed: 05/12/2016
Analyzed By: Ghayath Elias
Signature:
Analyte: Asbestos Fibers
Analytical Method: EPA 100.1/100.2
NVLAP Lab No: 101646-0
NYS Lab Number: 10851

Client: Phoenix Environmental Laboratories, Inc.
P.O. Box 370
Manchester, CT 06040

Sample ID# / Lab ID#	Sample Location	Sample Notes	Vol. (mls)	Concentration - 19k ≥0.5 µm < 10.0 µm	Vol. (mls)	Concentration - 10kX ≥10.0 µm
BN26425 2423909	Not Given	Drinking Water	100.	BDL< 9.60E-01 MFL	100.	BDL< 1.92E-01 MFL

MFL = Million Fibers per Liter
Liability Limited to Cost of Analysis.
Results Applicable to Those Items Tested. Samples received in acceptable condition unless otherwise noted.
This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.
AIHA Accreditation No. 418   Rhode Island DOH No. AAL-072T3   Massachusetts DOL No. A A 000072   Connecticut DOH No. PH-0622   Maine DEP No. LA-024   Vermont DOH No. AAS-2005

Eastern Analytical Services, Inc.
Water Sample Report

Date Received:	05/06/2016	Analytical Method:	EPA 100.1/100.2	Filter Type:	0.10μ MCE
Date Collected:	05/05/2016	Instrument:	JEOL 100CXII	Filter Manufacturer:	Advantec
Date Analyzed:	05/12/2016	Accelerating Voltage:	100 kV	Filter Lot No:	41002200
Analyzed By:	Ghayath Elias	Magnification:	19 kX	Effective Filtration Area:	960 mm^2
Client:	Phoenix Environmental	No of Grid Openings:	1	Filter Loading:	Medium
Sample No:	BN26425	Grid Opening Area:	0.010 mm^2	Volume:	100. milliliters
Lab No:	2423909	Area Analyzed:	0.010 mm^2	Minimum Detection Limit	9.60E-01 MFL

Grid Opening	Structure No.	Structure Type	No. of Fibers	Length	Width	SAED	Negative ID	EDS	Spectra File Name
1P2	0	No Structure							

Total Number of Asbestos Structures ≥ 0.5μm < 10.0 μm: 0

Associated Concentration: BDL < 9.60E-01 MFL

Total Number of Asbestos Structures ≥ 10.0 μm: 0

Associated Concentration: BDL < 1.92E-01 MFL

Eastern Analytical Services, Inc.

Water Sample Report

Date Received:	05/06/2016	**Analytical Method:**	EPA 100.1/100.2	**Filter Type:**	0.10µ MCE
Date Collected:	05/05/2016	**Instrument:**	JEOL 100CXII	**Filter Manufacturer:**	Advantec
Date Analyzed:	05/12/2016	**Accelerating Voltage:**	100 kV	**Filter Lot No:**	41002200
Analyzed By:	Ghayath Elias	**Magnification:**	10 kX	**Effective Filtration Area:**	960 mm²
Client:	Phoenix Environmental	**No of Grid Openings:**	5	**Filter Loading:**	Medium
Sample No:	BN26425	**Grid Opening Area:**	0.010 mm²	**Volume:**	100. milliliters
Lab No:	2423909	**Area Analyzed:**	0.050 mm²	**Minimum Detection Limit**	1.92E-01 MFL

Grid Opening	Structure No.	Structure Type	No. of Fibers	Length	Width	SAED	Negative ID	EDS	Spectra File Name
2P8	0	No Structure							
2Q3	0	No Structure							
3I2	0	No Structure							
3J4	0	No Structure							

Total Number of Asbestos Structures ≥ 0.5µm < 10.0 µm:	0	**Total Number of Asbestos Structures ≥ 10.0 µm:**	0
Associated Concentration:	BDL< 9.60E-01 MFL	**Associated Concentration:**	BDL< 1.92E-01 MFL

ANALYTICAL SERVICES, INC.
Microbiological Testing, Research and Consulting

130 Allen Brook Ln., PO Box 515, Williston, VT 05495 USA
1.800.723.4432 / 802.878.5138 Fax: 802.878.6765
www.analyticalservices.com

6/2/2016

Wayne Ryan, PE
AES Northeast
10-12 City Hall Place
Plattsburgh, NY 12901

Subj.: ASI Report 53750

Dear Wayne,

Enclosed please find the results of Microscopic Particulate Analysis (MPA) performed by Analytical Services, Inc. (ASI).

Sample(s) covered in this report were received at ASI on: 5/5/2016

This report contains the following number of pages (total): 3

This report concerns only the samples referenced herein. These results were generated under ASI's quality system, which is in accordance with the NELAC (TNI) standard. Deviations, if any, are noted.

Exceptions: Please note - MPA slide examination performed by ASI's corporate partner lab, IEH-Biovir.

This report shall not be reproduced, except in full, without ASI's written permission.

Thank you for using ASI for your microbiological testing needs. If you have any questions, please contact us at 800-723-4432.

Sincerely,
ANALYTICAL SERVICES, INC. (ASI)
Carolyn M. Fogg
Carolyn M. Fogg
Technical Director

ACCREDITED IN ACCORDANCE WITH nelac

Microscopic Particulate Analysis (MPA)

Sample Information

Client	AES Northeast	Volume Sampled (gal)	1097.5
Site	Beggs Point Well #3 Essex, NY	Filter Color	Black
Water Type	Raw/Well	Sediment Volume (mL)	4.5
Client Sample ID	Well #3	Analysis Start	5/6/16 8:44
ASI Sample #	53750-01	Analysis End	31-May-16

MPA Data (data per 100 gal.)

Vol. Examined at 150x (gal.)	100	Detection Limit at 150X =	1.0
Vol. Examined at 300x (gal.)	N/A	Detection Limit at 300X =	N/A
Amorphous Debris	ND	Iron Bacteria	ND
Vegetative Debris w/ chlorophyll	ND	Crustaceans	ND
Veg. Debris w/o chlorophyll	ND	Crustacean Parts/Eggs	ND
Diatoms w/ chlorophyll	ND	Water Mites	ND
Diatoms w/o chlorophyll	ND	Gastrotrichs	ND
Other Algae (see below)	ND	Tardigrades	ND
Rotifers	ND	Nematodes/N. Eggs	ND
Rotiger Eggs	ND	Invertebrate Eggs	ND
Spores	ND	Annelids	ND
Pollen	ND	Amoeba	ND
Insects/Larvae	ND	Protozoa (non-Crypto/Giardia)	ND

Cryptosporidium and Giardia Data

Volume Examined (L): 460

RESULTS	per Vol. Examined	Per 100L
Cryptosporidium Oocysts:	0	<0.2
Giardia Cysts:	0	<0.2

MPA Risk Rating Score (per EPA Consensus Method)

Numerical Score	0	Risk Rating	Low

Other

Algae Observed: NA

Comments: NA

Methods: MPA - SOP based on EPA Consensus Method (EPA 910/9-92-029)
Cryptosporidium & Giardia - SOP based on purification, staining & exam procedures in EPA 1623/1623.1

Notes MPA Risk Rating Tables were developed by USEPA Region 10 from limited data; interpret with caution.
MPA Risk Rating Score - if less than 100 gallons was examined, interpret with caution.

p2b

Analytical Services, Inc.

CHAIN OF CUSTODY RECORD

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495, Attn: Sample Management
Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 *Web site: www.analyticalservices.com*

Submitted By: Hydroresource Associates
50 Winter St Ashland NH
03217

Phone: 603-968-3733 Email: crowell@teamhydroresource.com

Report To: ___

Phone: ___ Email: ___

Project Name	Well #3 72-Hour test
Job Site	Essex, NY
P.O. Number	

Invoice To: ___

Phone: ___ Email: ___

Sample Identification*	Sample Collection: Date (Start)	Time (Start)	Sampler Initials	Sample Matrix (check one): Water - Raw	Water - Finished	Waste Water	Biosolids	Soil/Sediment	Other	Analysis Requested	Lab Use Only Temp (°C)
Well #3 Essex NY	5/4/16	7:30 AM		X						MPA	10.8

*Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	5/5/16 4:00 PM		5/5/16 1600

Field Comments:

Lab Comments:

White – To accompany samples • Yellow – Sampler Copy

PHOENIX
Environmental Laboratories, Inc.

Tuesday, June 14, 2016

Attn: Mr. Wayne Ryan
AES Northeast
10-12 City Hall Place
Plattsburgh, NY 12901

Project ID:
Sample ID#s: BN31750, BN31773

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

nelac NY # 11301

Analysis Report

June 14, 2016

FOR: Attn: Mr. Wayne Ryan
AES Northeast
10-12 City Hall Place
Plattsburgh, NY 12901

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:		05/12/16	8:00
Location Code:	AES-NE	Received by:	LB	05/12/16	17:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBN31750
Phoenix ID: BN31750

Project ID:
Client ID: ESSEX TW-1

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Hardness (CaCO3)	102	0.1	1	mg/L			05/17/16		E200.7	
Alkalinity-CaCO3	225	20.0	1	mg/L			05/13/16	RR/EG	SM2320B-97	
Chloride	10.4	3.0	1	mg/L		250	05/13/16	BS/EG	E300.0	
Color, Apparent	< 1	1	1	Color Units		15	05/12/16 23:50	DH/EG	SM2120B-01	
Fluoride	1.68	0.10	1	mg/L	4		05/13/16	BS/EG	E300.0	
Free Chlorine	< 0.02	0.02	1	mg/L	4		05/12/16	O	SM4500CIG-00	1
Nitrite as Nitrogen	< 0.004	0.004	1	mg/L	1		05/13/16 13:33	BS/EG	E300.0	
Nitrate as Nitrogen	0.05	0.05	1	mg/L	10		05/13/16 13:33	BS/EG	E300.0	
Odor at 60 Degrees C	< 1	1	1	T.O.N.		3	05/12/16 19:00	O	SM2150B-97	
pH	8.19	0.10	1	pH Units		6.5-8.5	05/13/16 05:53	RR/EG	SM4500-H B-00	1
Sulfate	41.3	3.0	1	mg/L		250	05/13/16	BS/EG	E300.0	
Total Cyanide (Drinking water)	< 0.005	0.005	1	mg/L	0.2		05/16/16	O/EG	E335.4	
Tot. Diss. Solids	200	10	1	mg/L		500	05/13/16	KH	SM2540C-97	
Turbidity	2.06	0.200	1	NTU		5	05/13/16 05:53	RR/EG	SM2130B-01	
Silver	< 0.001	0.001	1	mg/L		0.1	05/14/16	LK	E200.7	
Arsenic	0.0023	0.0005	1	mg/L	0.01		05/17/16	MA/TH	E200.9/SM3113B-10	
Barium	0.086	0.001	1	mg/L	2		05/14/16	LK	E200.7	
Beryllium	< 0.0003	0.0003	1	mg/L	0.004		05/14/16	LK	E200.7	
Calcium	17.1	0.005	1	mg/L			05/14/16	LK	E200.7	
Cadmium	< 0.001	0.001	1	mg/L	0.005		05/14/16	LK	E200.7	
Chromium	< 0.001	0.001	1	mg/L	0.1		05/14/16	LK	E200.7	
Copper	< 0.002	0.002	1	mg/L	1.3		05/14/16	LK	E200.7	
Iron	< 0.01	0.01	1	mg/L		0.3	05/14/16	LK	E200.7	
Mercury	< 0.0002	0.0002	1	mg/L	0.002		05/16/16	MA	E245.1	
Magnesium	14.4	0.005	1	mg/L			05/14/16	LK	E200.7	
Manganese	0.002	0.001	1	mg/L		0.05	05/14/16	LK	E200.7	
Sodium	74.7	1.0	10	mg/L			05/17/16	LK	E200.7	

*** Sodium exceeds Secondary Goal ***

Project ID:
Client ID: ESSEX TW-1

Phoenix I.D.: BN31750

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Nickel	< 0.001	0.001	1	mg/L			05/14/16	LK	E200.7	
Lead	< 0.001	0.001	1	mg/L	0.015		05/14/16	LK	E200.5	
Antimony	< 0.0008	0.0008	1	mg/L	0.006		05/17/16	TH/MA	E200.9/SM3113B-10	
Selenium	< 0.001	0.001	1	mg/L	0.05		05/14/16	MA/TH	E200.9/SM3113B-10	
Thallium	< 0.0007	0.0007	1	mg/L	0.002		05/16/16	MA	E200.9/SM3113B-10	
Zinc	0.062	0.002	1	mg/L		5	05/14/16	LK	E200.7	
Extraction for Pesticides	Completed						05/18/16	IR/IR	E507	
Extraction for 525.2	Completed						05/17/16	L/L	E525.2	
Mercury DW Digestion	Completed						05/16/16	W/W	E245.1	
Extraction of DW Pesticides	Completed						05/18/16	IR/IR	E508	
Extraction of DW Herbicides	Completed						05/18/16	D/D	E515	
Total Metal Digestion	Completed						05/13/16	AG/TH	E200.9	
Total Metal Digestion	Completed						05/13/16	AG	E200.5/E200.7	
Volatile Library Search	Completed						05/16/16	HM		1

EDB and DBCP Analysis

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	1	ug/L	0.2		05/17/16	JRB	E504.1	
1,2-Dibromoethane (EDB)	ND	0.01	1	ug/L	0.02		05/17/16	JRB	E504.1	

Organophosphorus Pesticides

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Alachlor	ND	0.10	1	ug/L	2		05/25/16	CE	E507	
Atrazine	ND	0.10	1	ug/L	3		05/25/16	CE	E507	
Butachlor	ND	0.10	1	ug/L			05/25/16	CE	E507	
Metolachlor	ND	0.10	1	ug/L			05/25/16	CE	E507	
Metribuzin	ND	0.10	1	ug/L			05/25/16	CE	E507	
Simazine	ND	0.070	1	ug/L	4		05/25/16	CE	E507	
QA/QC Surrogates										
% 1,3 Dimethyl-2-nitrobenzene	59		1	%	NA	NA	05/25/16	CE	70 - 130 %	3

Pesticides

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Aldrin	ND	0.010	1	ug/L			05/21/16	CE	E508	
Chlordane	ND	0.010	1	ug/L	2		05/21/16	CE	E508	
Dieldrin	ND	0.010	1	ug/L			05/21/16	CE	E508	
Endrin	ND	0.010	1	ug/L	2		05/21/16	CE	E508	
Heptachlor	ND	0.010	1	ug/L	0.4		05/21/16	CE	E508	
Heptachlor Epoxide	ND	0.010	1	ug/L	0.2		05/21/16	CE	E508	
Hexachlorobenzene	ND	0.010	1	ug/L	1		05/21/16	CE	E508	
Hexachlorocyclopentadiene	ND	0.010	1	ug/L	50		05/21/16	CE	E508	
Lindane	ND	0.010	1	ug/L	0.2		05/21/16	CE	E508	
Methoxychlor	ND	0.010	1	ug/L	40		05/21/16	CE	E508	
Propachlor	ND	0.050	1	ug/L			05/21/16	CE	E508	
Toxaphene	ND	1.0	1	ug/L	3		05/21/16	CE	E508	
QA/QC Surrogates										
%DCBP (Surrogate Rec)	101		1	%	NA	NA	05/21/16	CE	70 - 130 %	

PCB Screen

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
PCB-1016 (screen)	ND	0.080	1	ug/l	0.5		05/20/16	AW	E508	1
PCB-1221 (screen)	ND	0.10	1	ug/l	0.5		05/20/16	AW	E508	1
PCB-1232 (screen)	ND	0.10	1	ug/l	0.5		05/20/16	AW	E508	1
PCB-1242 (screen)	ND	0.10	1	ug/l	0.5		05/20/16	AW	E508	1

Project ID:

Client ID: ESSEX TW-1

Phoenix I.D.: BN31750

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
PCB-1248 (screen)	ND	0.10	1	ug/l	0.5		05/20/16	AW	E508	1
PCB-1254 (screen)	ND	0.10	1	ug/l	0.5		05/20/16	AW	E508	1
PCB-1260 (screen)	ND	0.10	1	ug/l	0.5		05/20/16	AW	E508	1
PCB-1262 (screen)	ND	0.10	1	ug/l			05/20/16	AW	E508	1
PCB-1268 (screen)	ND	0.10	1	ug/l			05/20/16	AW	E508	1
QA/QC Surrogates										
%DCBP (Surrogate Rec)	79		1	%	NA	NA	05/20/16	AW	30 - 150 %	

Herbicides

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
2,4,5-T	ND	2.5	1	ug/L			05/20/16	BB	E515.3	1
2,4,5-TP	ND	0.20	1	ug/L	50		05/20/16	BB	E515.3	
2,4-D	ND	0.10	1	ug/L	70		05/20/16	BB	E515.3	
Dalapon	ND	1.0	1	ug/L	200		05/20/16	BB	E515.3	
Dicamba	ND	0.50	1	ug/L			05/20/16	BB	E515.3	
Dichloroprop	ND	2.5	1	ug/L			05/20/16	BB	E515.3	1
Dinoseb	ND	0.20	1	ug/L	7		05/20/16	BB	E515.3	
Pentachlorophenol	ND	0.040	1	ug/L	1		05/20/16	BB	E515.3	
Picloram	ND	0.10	1	ug/L	500		05/20/16	BB	E515.3	
QA/QC Surrogates										
% DCAA	87		1	%	NA	NA	05/20/16	BB	70 - 130 %	

Volatiles

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,1,1-Trichloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,1,2,2-Tetrachloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,1,2-Trichloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,1-Dichloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,1-Dichloroethene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,1-Dichloropropene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2,3-Trichlorobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2,3-Trichloropropane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2,4-Trichlorobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2,4-Trimethylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2-Dichlorobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2-Dichloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,2-Dichloropropane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,3,5-Trimethylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,3-Dichlorobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,3-Dichloropropane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
1,4-Dichlorobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
2,2-Dichloropropane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
2-Chlorotoluene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
4-Chlorotoluene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Benzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Bromobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Bromochloromethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Bromodichloromethane	ND	0.50	1	ug/L			05/14/16	HM	E524.2
Bromoform	ND	0.50	1	ug/L			05/14/16	HM	E524.2
Bromomethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Carbon tetrachloride	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Chlorobenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Chloroethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Chloroform	ND	0.50	1	ug/L			05/14/16	HM	E524.2
Chloromethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
cis-1,2-Dichloroethene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
cis-1,3-Dichloropropene	ND	0.40	1	ug/L	5		05/14/16	HM	E524.2
Dibromochloromethane	ND	0.50	1	ug/L			05/14/16	HM	E524.2
Dibromomethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Dichlorodifluoromethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Ethylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Hexachlorobutadiene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Isopropylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
m&p-Xylene	ND	0.50	1	ug/L			05/14/16	HM	E524.2
Methyl t-butyl ether (MTBE)	ND	0.50	1	ug/L	10		05/14/16	HM	E524.2
Methylene chloride	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Naphthalene	ND	0.50	1	ug/L			05/14/16	HM	E524.2
n-Butylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
n-Propylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
o-Xylene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
p-Isopropyltoluene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
sec-Butylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Styrene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
tert-Butylbenzene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Tetrachloroethene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Toluene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Total Trihalomethanes	ND	0.50	1	ug/L	80		05/14/16	HM	E524.2
Total Xylenes	ND	0.50	1	ug/L	10000		05/14/16	HM	E524.2
trans-1,2-Dichloroethene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
trans-1,3-Dichloropropene	ND	0.40	1	ug/L	5		05/14/16	HM	E524.2
Trichloroethene	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Trichlorofluoromethane	ND	0.50	1	ug/L	5		05/14/16	HM	E524.2
Vinyl chloride	ND	0.50	1	ug/L	2		05/14/16	HM	E524.2
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	97		1	%	NA	NA	05/14/16	HM	70 - 130 %
% Bromofluorobenzene	99		1	%	NA	NA	05/14/16	HM	70 - 130 %
Semivolatile Organic									
Benzo(a)pyrene	ND	0.02	1	ug/L	0.2		05/20/16	MH	E525.3
Bis(2-ethylhexyl)adipate	ND	0.60	1	ug/L	400		05/20/16	MH	E525.3
Bis(2-ethylhexyl)phthalate	ND	0.60	1	ug/L	6		05/20/16	MH	E525.3
QA/QC Surrogates									
% 1,3-Dimethyl-2-nitrobenzene	90		1	%	NA	NA	05/20/16	MH	70 - 130 %
% benzo(a)pyrene-d12	88		1	%	NA	NA	05/20/16	MH	70 - 130 %
% Triphenylphosphate	91		1	%	NA	NA	05/20/16	MH	70 - 130 %
Carbamates HPLC									
3-Hydroxycarbofuran	ND	0.50	1	ug/L			05/15/16	RM	E531.2
Aldicarb	ND	0.50	1	ug/L	3		05/15/16	RM	E531.2
Aldicarb Sulfone	ND	0.80	1	ug/L	2		05/15/16	RM	E531.2
Aldicarb Sulfoxide	ND	0.50	1	ug/L	4		05/15/16	RM	E531.2

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Carbaryl	ND	0.50	1	ug/L			05/15/16	RM	E531.2	
Carbofuran	ND	0.90	1	ug/L	40		05/15/16	RM	E531.2	
Methomyl	ND	0.50	1	ug/L			05/15/16	RM	E531.2	
Oxamyl	ND	2.0	1	ug/L	200		05/15/16	RM	E531.2	
QA/QC Surrogates										
% BDMC	109		1	%	NA	NA	05/15/16	RM	70 - 130 %	
Asbestos in Water										
Asbestos fibers (>0.5u and <10u)	ND	0.960		MFL			05/17/16	*	E600/4-84	c
Asbestos fibers (>10u)	ND	0.192		MFL			05/17/16	*	E600/4-84	c
Gross Alpha Water	4.28 ± 3.97	3		pci/L	15		06/01/16	*	E900.0	c
Gross Beta Water	ND ± 2.44	4		pci/L			06/01/16	*	E900.0	c
Radium 226	ND ± 0.12	1		pci/L	5		06/07/16	*	7500 Ra B/903.0	c
Radium 228	ND ± 0.5	1		pci/L	5		06/06/16	*	7500 Ra D/904.0	c
Uranium, Total	1.65	1.0		ug/L	30		05/20/16	*	E200.8	c

1 = This parameter is not certified by NY NELAC for this matrix. NY NELAC does not offer certification for all parameters at this time.
3 = This parameter exceeds laboratory specified limits.
C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level DIL=Dilution (analysis required diluting to evaluate) ND=Not Detected
BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.)
MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; Public Health Law, Section 225 Part 5, Subpart 5-1. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): 40 CFR Part 143. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

515.3 Analysis Comment:
The RL/PQL is below the laboratory determined detection level for some compounds. (The 515.3 method has an expected detection limit higher then the EPA required detection limits).

Method 507 Comment:
Surrogate recoveries <70% were observed. Results confirmed via 525 analysis.

Asbestos in Water (E600/4-84) was analyzed by NY certified lab #10851.
Gross Alpha Water (E900.0), Gross Beta Water (E900.0), Radium 226 (7500 Ra B/903.0), Radium 228 (7500 Ra D/904.0), Uranium, Total (E200.8) were analyzed by NY certified lab #11777.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
June 14, 2016
Reviewed and Released by: Bobbi Aloisa, Vice President

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

June 14, 2016

FOR: Attn: Mr. Wayne Ryan
AES Northeast
10-12 City Hall Place
Plattsburgh, NY 12901

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:		05/12/16	
Location Code:	AES-NE	Received by:	B	05/12/16	17:30
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBN31750
Phoenix ID: BN31773

Project ID:
Client ID: ESSEX TW 1

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
EDB and DBCP Analysis									
1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	1	ug/L	0.2		05/17/16	JRB	E504.1
1,2-Dibromoethane (EDB)	ND	0.01	1	ug/L	0.02		05/17/16	JRB	E504.1

RL/PQL=Reporting/Practical Quantitation Level DIL=Dilution (analysis required diluting to evaluate) ND=Not Detected
BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.)
MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; Public Health Law, Section 225 Part 5, Subpart 5-1. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): 40 CFR Part 143. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

TRIP BLANKS RECEIVED

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
June 14, 2016
Reviewed and Released by: Bobbi Aloisa, Vice President

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT ID: ESSEX TW-1

Lab Name: Phoenix Environmental Labs   Client: BUDSPEC

Lab Code: Phoenix   Case No.: ______   SAS No.: ______   SDG No.: GBN31750

Matrix:(soil/water) WATER   Lab Sample ID: BN31750

Sample wt/vol: 5 (g/mL) mL   Lab File ID: 0513_37.D

Level: (low/med) ______   Date Received: 05/12/16

% Moisture: not dec. 100   Date Analyzed: 05/14/16

GC Column: rtx-vms   ID: 0.18 (mm)   Dilution Factor: 1

Purge Volume 5000 (uL)   Soil Aliquot Vol (uL): n.a.

Number TICs found: 0   CONCENTRATION UNITS: (ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

nelac NY # 11301

QA/QC Report

June 14, 2016

QA/QC Data

SDG I.D.: GBN31750

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 345656 (mg/L), QC Sample No: BN30824 (BN31750)													
Mercury	BRL	0.0002	<0.0002	<0.0002	NC	88.4			90.8			85 - 115	20
QA/QC Batch 345525 (mg/L), QC Sample No: BN31731 (BN31750)													
ICP Metals - Aqueous													
Barium	BRL	0.001	0.252	0.253	0.40	105			108			85 - 115	20
Beryllium	BRL	0.0003	<0.0003	<0.0003	NC	93.7			94.4			85 - 115	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	88.1			86.8			85 - 115	20
Calcium	BRL	0.005	34.3	34.3	0	89.6			NC			85 - 115	20
Chromium	BRL	0.001	<0.001	<0.001	NC	92.1			92.2			85 - 115	20
Copper	BRL	0.002	0.004	0.004	NC	95.7			96.5			85 - 115	20
Iron	BRL	0.01	0.03	0.03	NC	93.6			93.2			85 - 115	20
Lead	BRL	0.001	<0.001	<0.001	NC	89.1			87.7			85 - 115	20
Magnesium	BRL	0.005	3.98	4.00	0.50	91.0			NC			85 - 115	20
Manganese	BRL	0.001	0.382	0.388	1.60	93.3			91.5			85 - 115	20
Nickel	BRL	0.001	<0.001	<0.001	NC	91.3			90.8			85 - 115	20
Silver	BRL	0.001	<0.001	<0.001	NC	89.7			92.9			85 - 115	20
Sodium	BRL	0.1	67.1	67.7	0.90	94.2			NC			85 - 115	20
Zinc	BRL	0.002	<0.002	<0.002	NC	89.5			91.9			85 - 115	20

Comment:

Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 345581 (mg/L), QC Sample No: BN32329 (BN31750)													
Antimony	BRL	0.002	<0.0008	<0.002	NC	114			120			85 - 115	20
Arsenic	BRL	0.001	<0.0005	<0.001	NC	97.6			102			85 - 115	20
Selenium	BRL	0.001	<0.001	<0.001	NC	107			106			85 - 115	20
Thallium	BRL	0.001	<0.0007	<0.001	NC	108			97.9			85 - 115	20

Comment:

Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

PHOENIX

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Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

QA/QC Report

June 14, 2016

QA/QC Data

SDG I.D.: GBN31750

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 345464 (mg/L), QC Sample No: BN30991 (BN31750)													
Tot. Diss. Solids	BRL	10	87	95	8.80	93.0						85 - 115	20
QA/QC Batch 345510 (mg/L), QC Sample No: BN31374 (BN31750)													
Alkalinity-CaCO3	BRL	5.00	103	104	1.00	99.7						85 - 115	20
QA/QC Batch 345505 (pH), QC Sample No: BN31374 (BN31750)													
pH			7.61	7.56	0.70	98.8						85 - 115	20
QA/QC Batch 345515 (NTU), QC Sample No: BN31374 (BN31750)													
Turbidity	0.20	0.200	1.02	0.97	NC	91.0						85 - 115	20
QA/QC Batch 345642 (mg/L), QC Sample No: BN31593 (BN31750)													
Total Cyanide (Drinking water)	BRL	0.01	<0.005	<0.01	NC	99.8			95.5			85 - 115	20
QA/QC Batch 345544 (mg/L), QC Sample No: BN31750 (BN31750)													
Chloride	BRL	3.0	10.4	10.3	NC	96.2			97.4			90 - 110	20
Fluoride	BRL	0.10	1.68	1.69	0.60	94.3			97.2			90 - 110	20
Nitrate as Nitrogen	BRL	0.05	0.05	<0.05	NC	100			97.3			90 - 110	20
Nitrite as Nitrogen	BRL	0.004	<0.004	<0.004	NC	96.5			94.7			90 - 110	20
Sulfate	BRL	3.0	41.3	40.9	1.00	94.6			98.6			90 - 110	20

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

nelac
NY # 11301

QA/QC Report

June 14, 2016

QA/QC Data

SDG I.D.: GBN31750

QA/QC Batch 345782 (ug/L), QC Sample No: BN28083 (BN31750)

Semivolatile Organic Compounds - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Benzo(a)pyrene	ND	0.02	118			121	117	3.4	70 - 130	20
Bis(2-ethylhexyl)adipate	ND	0.60	117			115	109	5.4	70 - 130	20
Bis(2-ethylhexyl)phthalate	ND	0.60	101			99	94	5.2	70 - 130	20
% 1,3-Dimethyl-2-nitrobenzene	84	%	84			90	90	0.0	70 - 130	20
% benzo(a)pyrene-d12	86	%	88			89	95	6.5	70 - 130	20
% Triphenylphosphate	93	%	95			96	98	2.1	70 - 130	20

QA/QC Batch 345071 (ug/L), QC Sample No: BN28862 (BN31750, BN31773)

EDB and DBCP Analysis - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,2-Dibromo-3-Chloropropane (DB	ND	0.02	111	103	7.5	102	101	1.0	70 - 130	20
1,2-Dibromoethane (EDB)	ND	0.01	106	107	0.9	109	109	0.0	70 - 130	20

QA/QC Batch 345994 (ug/L), QC Sample No: BN28862 (BN31750)

Herbicides - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
2,4,5-T	ND	0.10	95			95			70 - 130	20
2,4,5-TP	ND	0.020	90			89			70 - 130	20
2,4-D	ND	0.010	100			97			70 - 130	20
Dalapon	ND	0.10	104			98			70 - 130	20
Dicamba	ND	0.040	93			93			70 - 130	20
Dichloroprop	ND	0.10	78			76			70 - 130	20
Dinoseb	ND	0.020	74			74			70 - 130	20
Pentachlorophenol	ND	0.004	89			88			70 - 130	20
Picloram	ND	0.010	95			94			70 - 130	20
% DCAA (Surrogate Rec)	94	%	90			91			70 - 130	20

QA/QC Batch 345967 (ug/L), QC Sample No: BN31110 (BN31750)

Organophosphorus Pesticides - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Alachlor	ND	0.10	76			91			70 - 130	20	
Atrazine	ND	0.10	71			85			70 - 130	20	
Butachlor	ND	0.10	76			90			70 - 130	20	
Metolachlor	ND	0.10	73			88			70 - 130	20	
Metribuzin	ND	0.10	94			113			70 - 130	20	
Simazine	ND	0.070	81			99			70 - 130	20	
% 1,3 Dimethyl-2-nitrobenzene	52	%	55			63			70 - 130	20	l,m

QA/QC Batch 345965 (ug/L), QC Sample No: BN31128 (BN31750)

Pesticides - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
a-Chlordane	ND	0.010	108			123			70 - 130	20
Aldrin	ND	0.010	91			107			70 - 130	20
Chlordane	ND	0.10	92			103			70 - 130	20
Dieldrin	ND	0.010	113			124			70 - 130	20
Endrin	ND	0.010	105			123			70 - 130	20
g-BHC	ND	0.010	108			118			70 - 130	20

QA/QC Data

SDG I.D.: GBN31750

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
g-Chlordane	ND	0.010	92			103			70 - 130	20	
Heptachlor	ND	0.010	108			115			70 - 130	20	
Heptachlor epoxide	ND	0.010	105			116			70 - 130	20	
Hexachlorobenzene	ND	0.010	99			99			70 - 130	20	
Hexachlorocyclopentadiene	ND	0.010	48			51			70 - 130	20	l,m
Methoxychlor	ND	0.010	121			125			70 - 130	20	
Propachlor	ND	0.010	126			117			70 - 130	20	
Toxaphene	ND	0.40	NA			NA			70 - 130	20	
% DCBP	84	%	94			103			70 - 130	20	

Comment:

Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. PCB is not included in the spiking solution.

QA/QC Batch 345738 (ug/L), QC Sample No: BN31750 (BN31750)

Carbamates HPLC - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
3-Hydroxycarbofuran	ND	0.50	103	96	7.0	106	106	0.0	70 - 130	20
Aldicarb	ND	0.50	99	92	7.3	97	98	1.0	70 - 130	20
Aldicarb Sulfone	ND	0.80	95	90	5.4	101	105	3.9	70 - 130	20
Aldicarb Sulfoxide	ND	0.50	99	93	6.3	98	101	3.0	70 - 130	20
Carbaryl	ND	0.50	102	96	6.1	100	101	1.0	70 - 130	20
Carbofuran	ND	0.90	103	98	5.0	102	105	2.9	70 - 130	20
Methomyl	ND	0.50	102	93	9.2	101	103	2.0	70 - 130	20
Oxamyl	ND	2.0	99	93	6.3	103	104	1.0	70 - 130	20
% BDMC	93	%	98	108	9.7	98	90	8.5	70 - 130	20

QA/QC Batch 345697 (ug/L), QC Sample No: BN32043 (BN31750)

Volatiles - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1,1,2-Tetrachloroethane	ND	0.50	99	104	4.9				70 - 130	30
1,1,1-Trichloroethane	ND	0.50	100	105	4.9				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	101	106	4.8				70 - 130	30
1,1,2-Trichloroethane	ND	0.50	103	107	3.8				70 - 130	30
1,1-Dichloroethane	ND	0.50	100	102	2.0				70 - 130	30
1,1-Dichloroethene	ND	0.50	94	98	4.2				70 - 130	30
1,1-Dichloropropene	ND	0.40	98	102	4.0				70 - 130	30
1,2,3-Trichlorobenzene	ND	0.50	100	102	2.0				70 - 130	30
1,2,3-Trichloropropane	ND	0.50	108	110	1.8				70 - 130	30
1,2,4-Trichlorobenzene	ND	0.50	97	101	4.0				70 - 130	30
1,2,4-Trimethylbenzene	ND	0.50	96	100	4.1				70 - 130	30
1,2-Dichlorobenzene	ND	0.50	97	102	5.0				70 - 130	30
1,2-Dichloroethane	ND	0.50	112	115	2.6				70 - 130	30
1,2-Dichloropropane	ND	0.50	94	98	4.2				70 - 130	30
1,3,5-Trimethylbenzene	ND	0.50	94	98	4.2				70 - 130	30
1,3-Dichlorobenzene	ND	0.50	97	100	3.0				70 - 130	30
1,3-Dichloropropane	ND	0.50	103	105	1.9				70 - 130	30
1,4-Dichlorobenzene	ND	0.50	96	99	3.1				70 - 130	30
2,2-Dichloropropane	ND	0.50	97	99	2.0				70 - 130	30
2-Chlorotoluene	ND	0.50	94	98	4.2				70 - 130	30
4-Chlorotoluene	ND	0.50	93	97	4.2				70 - 130	30
Benzene	ND	0.50	94	98	4.2				70 - 130	30
Bromobenzene	ND	0.50	95	100	5.1				70 - 130	30
Bromochloromethane	ND	0.50	101	103	2.0				70 - 130	30
Bromodichloromethane	ND	0.50	101	104	2.9				70 - 130	30
Bromoform	ND	0.50	107	114	6.3				70 - 130	30
Bromomethane	ND	0.50	118	117	0.9				70 - 130	30

QA/QC Data

SDG I.D.: GBN31750

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Carbon tetrachloride	ND	0.50	102	105	2.9				70 - 130	30
Chlorobenzene	ND	0.50	94	98	4.2				70 - 130	30
Chloroethane	ND	0.50	89	94	5.5				70 - 130	30
Chloroform	ND	0.50	103	106	2.9				70 - 130	30
Chloromethane	ND	0.50	97	103	6.0				70 - 130	30
cis-1,2-Dichloroethene	ND	0.50	96	100	4.1				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	97	103	6.0				70 - 130	30
Dibromochloromethane	ND	0.50	100	107	6.8				70 - 130	30
Dibromomethane	ND	0.50	105	109	3.7				70 - 130	30
Dichlorodifluoromethane	ND	0.50	88	87	1.1				70 - 130	30
Ethylbenzene	ND	0.50	91	96	5.3				70 - 130	30
Hexachlorobutadiene	ND	0.40	94	97	3.1				70 - 130	30
Isopropylbenzene	ND	0.50	93	96	3.2				70 - 130	30
m&p-Xylene	ND	0.50	94	99	5.2				70 - 130	30
Methyl t-butyl ether (MTBE)	ND	0.50	100	103	3.0				70 - 130	30
Methylene chloride	ND	0.50	92	98	6.3				70 - 130	30
Naphthalene	ND	0.50	101	104	2.9				70 - 130	30
n-Butylbenzene	ND	0.50	92	95	3.2				70 - 130	30
n-Propylbenzene	ND	0.50	95	97	2.1				70 - 130	30
o-Xylene	ND	0.50	93	99	6.3				70 - 130	30
p-Isopropyltoluene	ND	0.50	91	94	3.2				70 - 130	30
sec-Butylbenzene	ND	0.50	90	93	3.3				70 - 130	30
Styrene	ND	0.50	95	97	2.1				70 - 130	30
tert-Butylbenzene	ND	0.50	94	97	3.1				70 - 130	30
Tetrachloroethene	ND	0.50	94	99	5.2				70 - 130	30
Toluene	ND	0.50	90	94	4.3				70 - 130	30
trans-1,2-Dichloroethene	ND	0.50	96	99	3.1				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	106	112	5.5				70 - 130	30
Trichloroethene	ND	0.50	98	102	4.0				70 - 130	30
Trichlorofluoromethane	ND	0.50	104	107	2.8				70 - 130	30
Vinyl chloride	ND	0.50	90	94	4.3				70 - 130	30
% 1,2-dichlorobenzene-d4	96	%	103	105	1.9				70 - 130	30
% Bromofluorobenzene	99	%	102	106	3.8				70 - 130	30

Comment:

The MS/MSD are not reported for this batch.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
June 14, 2016

Tuesday, June 14, 2016

Criteria: None

State: NY

Sample Criteria Exceedences Report

GBN31750 - AES-NE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BN31750	NA-DW	Sodium	EPA / 40 CFR 141 DW / 143.3 Secondary MCLs	74.7	1.0		0.2	mg/L

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

nelac
NY # 11301

Analysis Comments

June 14, 2016

SDG I.D.: GBN31750

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report:

525

CHEM27 05/19/16-1: BN31750

The following Continuing Calibration compounds did not meet % deviation criteria: Bis(2-ethylhexyl)adipate 31%H (30%)
The following Continuing Calibration compounds did not meet Maximum % deviation criteria: None.

AA Metals (TL-DW) Narration

PE600-1 05/16/16 13:14: BN31750

The following Initial Calibration Verification (ICV) compounds did not meet criteria: Thallium 106% (95-105)

The following samples did not meet analytical spike criteria:
BN31750: Thallium 84.1% (85-115%)

Any sample with an analytical spike recovery outside of 85-115% was re-analyzed at a dilution with a passing analytical spike recovery.

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY# 11301

NY Temperature Narration

June 14, 2016

SDG I.D.: GBN31750

The samples in this delivery group were received at 2°C.
(Note acceptance criteria is above freezing up to 6°C)

1/2

Coolant: IPK ☒ ICE ☒ Cooler: Yes ☒ No ☐ No ☐

NY/NJ CHAIN OF CUSTODY RECORD

Temp 2 °C Pg of

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax:
☒ Phone: 603-968-3733
☐ Email:

Customer: HYDROSOURCE ASSOC.
Address: 50 WINTER ST, BOX 609
ASHLAND, NH 03217

Project: ESSEX TW-1
Report to: FRED BICKFORD, HYDROSOURCE
Invoice to: SAME

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: [signature] Date: 5/12/16

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	EDB (504)	PEST (507)	PEST/PCB (508)	HERB (515)	SEMI VOL (525)	VOL POC (524)	CARBAMATE (531)	ASBESTOS	GR ALPHA, BETA, RA 226/228	TOTAL METALS + HARDNESS	CN	60 ml vials C6H7K07	Soil VOA Vials	GL Soil container ( ) methanol ( ) H2O / 500 ml plastic HNO3	GL Soil container ( ) oz	40 ml VOA Vial (X) As is ( ) HCl	GL Amber 1000ml (X) As is ( ) H2SO4	PL As is ( ) 250ml ( ) 500ml (X) 1000ml	PL H2SO4 ( ) 250ml ( ) 500ml ( ) 1500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
31750	ESSEX TW-1	GW	5/12/16	8:00	X															2						
	↓	↓	↓	↓		X															1					
							X														1					
								X													2					
									X												2**					
										X										3**						
											X					2										
												X										1				
													X									5***				
														X				1								
															X										1	

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	5/12/16	8:45
[signature]	[signature]	5/12/16	1015

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ 5 Days
☐ 10 Days
☐ Other
* SURCHARGE APPLIES

NJ
☐ Res. Criteria
☐ Non-Res. Criteria
☐ Impact to GW Soil Cleanup Criteria
☐ GW Criteria

NY
☐ TAGM 4046 GW
☐ TAGM 4046 SOIL
☐ NY375 Unrestricted Use Soil
☐ NY375 Residential Soil
☐ Restricted/Residential
☐ Commercial
☐ Industrial

Data Format
☐ Phoenix Std Report
☐ Excel
☐ PDF
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other ________

Data Package
☐ NJ Reduced Deliv. *
☐ NY Enhanced (ASP B) *
☐ Other

State where samples were collected: NY

Comments, Special Requirements or Regulations:
* 525 SEMI VOL PRESERV = K citrate, EDTA
** 524 VOC = HCl PRESERV.
*** RADIOLOGICALS = HNO3 PRESERV.
METALS/HARDNESS FIELD-FILTERED

* Received Soil
TB BN31773

NY Courier [signature] 5-12-16 17:30

2/2

Cooler: Yes [X] No [ ]
Coolant: IPK [ ] ICE [X] No [ ]
Temp 2 °C Pg of

PHOENIX
Environmental Laboratories, Inc.

NY/NJ CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
[ ] Fax:
[X] Phone: 603-968-3733
[ ] Email:

Customer: HYDROSOURCE ASSOC.
Address: 50 WINTER ST, PO BOX 609
ASHLAND, NH 03217

Project: ESSEX TW-1
Report to: FRED BICKFORD, HYDROSOURCE
Invoice to: SAME

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification
Sampler's Signature [signature] Date: 5/12/16

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	WET CHEM	ALK	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [X] As is [ ] H2SO4	PL As is [X] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle
31750	ESSEX TW-1	GW	5/12/16	8:00	X						1					
	"	"	"	"		X						1				

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	5/12/16	8:45
[signature]	[signature]	5/12/16	1015

Comments, Special Requirements or Regulations:
WET CHEM = COLOR, TURB, pH, TDS, Cl, F, SO_4, NO_3, NO_2, Free Cl/n, Odor.

My Courier [signature] 5-12-16 17:30

Turnaround:
[ ] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[X] 5 Days
[ ] 10 Days
[ ] Other
* SURCHARGE APPLIES

NJ
[ ] Res. Criteria
[ ] Non-Res. Criteria
[ ] Impact to GW Soil Cleanup Criteria
[ ] GW Criteria

NY
[ ] TAGM 4046 GW
[ ] TAGM 4046 SOIL
[ ] NY375 Unrestricted Use Soil
[ ] NY375 Residential Soil
[ ] Restricted/Residential
[ ] Commercial
[ ] Industrial

Data Format
[ ] Phoenix Std Report
[ ] Excel
[ ] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] NJ Hazsite EDD
[ ] NY EZ EDD (ASP)
[ ] Other ______

Data Package
[ ] NJ Reduced Deliv. *
[ ] NY Enhanced (ASP B) *
[ ] Other

State where samples were collected: NY

Bobbi - Phoenixlabs

From: Buddy Beames <buddy.phoenixlabs@verizon.net>
Sent: Friday, May 13, 2016 2:11 PM
To: 'Bobbi - Phoenixlabs'; 'Lori - Phoenixlabs'
Subject: RE: Hydrosource questions

They field filtered the metals and filled a preserved container. Therefore the metals are dissolved metals and we cannot report out total metals. There was only one metals bottle provided.

Clarence (Buddy) Beames
Regional Sales Manager
Phoenix Environmental Laboratories, Inc.
Ph: (518) 232-2420
Fax: (518) 792-0033

From: Bobbi - Phoenixlabs [mailto:bobbi@phoenixlabs.com]
Sent: Friday, May 13, 2016 1:28 PM
To: 'Buddy Beames' <buddy.phoenixlabs@verizon.net>; 'Lori - Phoenixlabs' <lori@phoenixlabs.com>
Subject: RE: Hydrosource questions

We are waiting to hear back on the field filtered thing still dear ☺

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

From: Buddy Beames [mailto:buddy.phoenixlabs@verizon.net]
Sent: Friday, May 13, 2016 10:42 AM
To: 'Bobbi - Phoenixlabs'; 'Lori - Phoenixlabs'
Subject: RE: Hydrosource questions

I've spoken to them way too many times already about this. Just call it DW if we have to. It's a GW source that's trying to get cleared as DW. They were adamant about calling it GW, but its fine.

They had a lot of turbidity in the sample due to location of pump head. They need analyzed total and dissolved metals. If you have to separate the reports to do that, then you can separate out.

Thank you,

Clarence (Buddy) Beames
Regional Sales Manager
Phoenix Environmental Laboratories, Inc.
Ph: (518) 232-2420
Fax: (518) 792-0033

From: Bobbi - Phoenixlabs [mailto:bobbi@phoenixlabs.com]
Sent: Friday, May 13, 2016 10:26 AM
To: 'Buddy Beames' <buddy.phoenixlabs@verizon.net>; 'Lori - Phoenixlabs' <lori@phoenixlabs.com>
Subject: Hydrosource questions

Buddy
We can't log in these samples as GW for Full Part V's .. the matrix has to match the tests (audit requirement). This must be a DW or they "want it to be " a drinking water with all the tests they are doing?

Also, the client filtered the metals in the field on yesterday's samples? You can't filter DW water samples.. we have to run total on a DW.. and if it isn't a DW then why are they doing Full Part V on it?

These are things we can get into trouble for when being audited. I know they said it is a GW in your email.. but please go back and see if we can call it a DW..

LMK

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

Eastern Analytical Services, Inc.

Water Sample Report

Date Collected: 05/12/2016
Collected By: Not Given
Date Received: 05/13/2016
Date Analyzed: 05/17/2016
Analyzed By: Ghayath Elias
Signature:
Analyte: Asbestos Fibers
Analytical Method: EPA 100.1/100.2
NVLAP Lab No: 101646-0
NYS Lab Number: 10851

Client: Phoenix Environmental Laboratories, Inc.
P.O. Box 370
Manchester, CT 06040

Sample ID# / Lab ID#	Sample Location	Sample Notes	Vol. (mls)	Concentration - 19k ≥0.5 µm < 10.0 µm	Vol. (mls)	Concentration - 10k ≥10.0 µm
BN31750 2425639	Not Given	Drinking Water	100.	BDL< 9.60E-01 MFL	100.	BDL< 1.92E-01 MFL

MFL = Million Fibers per Liter
Liability Limited to Cost of Analysis
Results Applicable to Those Items Tested. Samples received in acceptable condition unless otherwise noted.
This Report Must Not be Used by the Client to Claim Product Endorsement by NVLAP or Any Agency of the US Government.
AIHA Accreditation No. 418   Rhode Island DOH No. A 41-072T3   Massachusetts DOL No. A A 000022   Connecticut DOH No. PH-0622   Maine DEP No. LA-024   Vermont DOH No. AAS-2065

Eastern Analytical Services, Inc.

Water Sample Report

Date Received:	05/13/2016	**Analytical Method:**	EPA 100.1/100.2	**Filter Type:**	0.10μ MCE
Date Collected:	05/12/2016	**Instrument:**	JEOL 100CXII	**Filter Manufacturer:**	Advantec
Date Analyzed:	05/17/2016	**Accelerating Voltage:**	100 kV	**Filter Lot No:**	41002200
Analyzed By:	Ghayath Elias	**Magnification:**	19 kX	**Effective Filtration Area:**	960 mm²
Client:	Phoenix Environmental	**No of Grid Openings:**	1	**Filter Loading:**	Medium
Sample No:	BN31750	**Grid Opening Area:**	0.010 mm²	**Volume:**	100. milliliters
Lab No:	2425639	**Area Analyzed:**	0.010 mm²	**Minimum Detection Limit**	9.60E-01 MFL

Grid Opening	Structure No.	Structure Type	No. of Fibers	Length	Width	SAED	Negative ID	EDS	Spectra File Name
1J7	0	No Structure							

Total Number of Asbestos Structures ≥ 0.5μm < 10.0 μm: 0	**Total Number of Asbestos Structures ≥ 10.0 μm:** 0
Associated Concentration: BDL< 9.60E-01 MFL	**Associated Concentration:** BDL< 1.92E-01 MFL

Eastern Analytical Services, Inc.

Water Sample Report

Date Received:	05/13/2016	**Analytical Method:**	EPA 100.1/100.2	**Filter Type:**	0.10µ MCE
Date Collected:	05/12/2016	**Instrument:**	JEOL 100CXII	**Filter Manufacturer:**	Advantec
Date Analyzed:	05/17/2016	**Accelerating Voltage:**	100 kV	**Filter Lot No:**	41002200
Analyzed By:	Ghayath Elias	**Magnification:**	10 kX	**Effective Filtration Area:**	960 mm²
Client:	Phoenix Environmental	**No of Grid Openings:**	5	**Filter Loading:**	Medium
Sample No:	BN31750	**Grid Opening Area:**	0.010 mm²	**Volume:**	100. milliliters
Lab No:	2425639	**Area Analyzed:**	0.050 mm²	**Minimum Detection Limit**	1.92E-01 MFL

Grid Opening	Structure No.	Structure Type	No. of Fibers	Length	Width	SAED	Negative ID	EDS	Spectra File Name
2I3	0	No Structure							
2P7	0	No Structure							
3I5	0	No Structure							
3H6	0	No Structure							

Total Number of Asbestos Structures ≥ 0.5µm < 10.0 µm:	0	**Total Number of Asbestos Structures ≥ 10.0 µm:**	0
Associated Concentration:	BDL< 9.60E-01 MFL	**Associated Concentration:**	BDL< 1.92E-01 MFL

ANALYTICAL SERVICES, INC.
Microbiological Testing, Research and Consulting

130 Allen Brook Ln., PO Box 515, Williston, VT 05495 USA
1.800.723.4432 / 802.878.5138 Fax: 802.878.6765
www.analyticalservices.com

6/2/2016

Wayne Ryan, PE
AES Northeast
10-12 City Hall Place
Plattsburgh, NY 12901

Subj.: ASI Report 53818

Dear Wayne,

Enclosed please find the results of Microscopic Particulate Analysis (MPA) performed by Analytical Services, Inc. (ASI).

Sample(s) covered in this report were received at ASI on: 5/5/2016

This report contains the following number of pages (total): 3

This report concerns only the samples referenced herein. These results were generated under ASI's quality system, which is in accordance with the NELAC (TNI) standard. Deviations, if any, are noted.

Exceptions: Please note - MPA slide examination performed by ASI's corporate partner lab, IEH-Biovir.

This report shall not be reproduced, except in full, without ASI's written permission.

Thank you for using ASI for your microbiological testing needs. If you have any questions, please contact us at 800-723-4432.

Sincerely,
ANALYTICAL SERVICES, INC. (ASI)

Carolyn M. Fogg

Carolyn M. Fogg
Technical Director

ACCREDITED IN ACCORDANCE WITH nelac

1/3

Microscopic Particulate Analysis (MPA)

Sample Information

Client	AES Northeast	Volume Sampled (gal)	1188.9
Site	Essex, NY	Filter Color	Dark Gray
Water Type	Raw/Well	Sediment Volume (mL)	6
Client Sample ID	Essex TW-1	Analysis Start	5/13/16 7:32
ASI Sample #	53818-01	Analysis End	31-May-16

MPA Data (data per 100 gal.)

Vol. Examined at 150x (gal.)	100	Detection Limit at 150X =	1.0
Vol. Examined at 300x (gal.)	N/A	Detection Limit at 300X =	N/A
Amorphous Debris	ND	Iron Bacteria	ND
Vegetative Debris w/ chlorophyll	ND	Crustaceans	ND
Veg. Debris w/o chlorophyll	ND	Crustacean Parts/Eggs	ND
Diatoms w/ chlorophyll	ND	Water Mites	ND
Diatoms w/o chlorophyll	ND	Gastrotrichs	ND
Other Algae (see below)	ND	Tardigrades	ND
Rotifers	ND	Nematodes/N. Eggs	ND
Rotiger Eggs	ND	Invertebrate Eggs	ND
Spores	ND	Annelids	ND
Pollen	ND	Amoeba	ND
Insects/Larvae	ND	Protozoa (non-Crypto/Giardia)	ND

Cryptosporidium and Giardia Data

Volume Examined (L): 380

	RESULTS	
	per Vol. Examined	Per 100L
Cryptosporidium Oocysts:	0	<0.26
Giardia Cysts:	0	<0.26

MPA Risk Rating Score (per EPA Consensus Method)

Numerical Score	0	Risk Rating	Low

Other

Algae Observed	NA
Comments	NA

Methods: MPA - SOP based on EPA Consensus Method (EPA 910/9-92-029)
Cryptosporidium & Giardia - SOP based on purification, staining & exam procedures in EPA 1623/1623.1

Notes MPA Risk Rating Tables were developed by USEPA Region 10 from limited data; interpret with caution.
MPA Risk Rating Score - if less than 100 gallons was examined, interpret with caution.

p2/3

Analytical Services, Inc.

CHAIN OF CUSTODY RECORD

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495, Attn: Sample Management
Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 Web site: www.analyticalservices.com

Submitted By: HYDROSOURCE ASSOC. 50 WINTER ST, PO BOX 609 ASHLAND, NH 03217	Report To: ←
Phone: 603-968-3733 Email: FREDERICKFORD@GMAIL.COM	Phone: Email:
Project Name: ESSEX NY	Invoice To: ↖
Job Site: ESSEX NY	
P.O. Number:	Phone: Email:

Sample Identification*	Sample Collection: Date (Start)	Time (Start)	Sampler Initials	Sample Matrix (check one): Water - Raw	Water - Finished	Waste Water	Biosolids	Soil/Sediment	Other	Analysis Requested	Lab Use Only: Temp (°C)
ESSEX TW-1	5/11/16	12:30	[illegible]	X						MPA	13.4

*Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
[signature]	5/11/16 8:45	[signature]	5/12/16 8:45
		[signature]	5/12/16 1414

Field Comments: NORMAL TEST - NO DISCREPANCIES. REPLACE SMALL O-RING ON INLET SIDE OF FILTER - IT IS DAMAGED.

Lab Comments:

White – To accompany samples • Yellow – Sampler Copy

1313

COMMUNITY RESOURCES CONTRACT.

Town of Essex

Water System Evaluation
Preliminary Engineering Report
(PER)

Prepared by:
AES Northeast, PLLC
10-12 City Hall Place
Plattsburgh, New York 12901

Prepared for:
Town of Essex
2313 Main Street, PO Box 355
Essex, New York 12936

December 8, 2011

STATE OF NEW YORK
WAYNE ... AN
68220-1
LICENSED PROFESSIONAL ENGINEER

AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, New York
Tel: 518-561-1598 Fax: 518-561-1990
www.aesnortheast.com
AES Project No. 3426

1. BACKGROUND

1.1 General

The Hamlet of Essex is located in the Town of Essex in Essex County, New York approximately 30 miles south of the City of Plattsburgh, New York. The Hamlet is situated on the western shore of Lake Champlain and centered about the intersection of NYS Route 22 and County Route 9 (a.k.a. Lake Shore Road). The Hamlet is approximately 10 miles east of New York State Interstate 87, Exit 32. The Hamlet lies primarily in an agricultural region surrounded by rolling farmlands and forest. A small stream locally known as Library Brook flows through the northern portion of the Hamlet and discharges to Lake Champlain, adjacent to the Lake Champlain Transportation Company, ferry landing (Exhibit A).

The water system serves three separate areas known as Water District #1; Water District #1, Extension #1; and Water District #1, Extension #2. Water District #1 was created by petition of citizens on November 14, 1946, to provide water for the "to-be-formed" Water District #1. Existing records indicate the Town purchased an existing private water system and made improvements, including installation of pump house, pressure tanks and piping. A public hearing was held on March 16, 1949 whereby the Town Board approved the establishment of the Water District #1. On October 13, 1949, the New York State Comptroller approved the newly formed Water District #1 (Exhibit B).

In 2001, the Town Board approved the establishment of Water District #1, Extension #1, which was created to include existing "out-of-district" users of Water District #1 and additional users on the north end of the Hamlet, that were utilizing either unfiltered and untreated surfacewater (i.e., Lake Champlain), or had poor water quality and/or low yielding wells. Water District #1, Extension #1 encompasses a total of (34) properties.

Lastly, a "no-cost" Water District Extension was created in the late 2000's known as Water District #1, Extension #2. This district encompassed the fire department parcel on the west side of the Hamlet on NYS Route 22 and served private properties along NYS Route 22 out to the fire station. Also included were several properties on the south end of the Hamlet on Essex County Route 9 (a.k.a. Lake Shore Road). Refer to Exhibit C for locations of the three (3) distinct district boundary areas.

The existing water source for the Water District customers is classified as a surfacewater supply (i.e., Lake Champlain). The current water source is under much more scrutiny by the NYS Department of Health (DOH) and requires the treatment of the surfacewater source to meet the Environmental Protection Agency (EPA) Regulations, including but not limited to: the 1974 Safe Drinking Water Act (SDWA); Surfacewater Treatment Rule (SWTR), 1989; Interim Enhanced Surfacewater Treatment Rule (ESWTR) 1998; Long-Term 1 Enhanced Surfacewater Treatment Rule (LT1ESWTR), 2002; and Long-Term 2 Enhanced Surfacewater Treatment Rule (LT2ESWTR), 2006 (Exhibit D).

The Town does not have a waiver from disinfection; therefore, the raw water must be disinfected after filtering prior to being consumed by the public. This creates issues for the Town due to the formation of disinfection by-products (DBP) created from the chlorine contacting organic matter in the water.

This report primarily evaluates the types of water sources available to the Town; methods for treatment; costs for the various feasible alternatives; and estimated costs which the users can expect to pay for capital improvements. The report will provide the means for the Town Board and the water users within the Water District areas to make an educated decision for replacing the source water and/or treatment methods and bringing the water system and components into compliance with current regulations to provide safe drinking water. This report is not to be considered as a "Basis of Design" report. That extensive evaluation and design process will be completed once the Alternative for source water and/or treatment is selected by the Water District users and the Town Board.

2. PROJECT PLANNING AREA

2.1 Location

2.1.1 The project planning areas are shown in Exhibits A, C and E. Generally, the existing water district and extensions thereof, encompass the Hamlet of Essex and those properties north on NYS Route 22 (to the Town Line); the properties west of the Hamlet on NYS Route 22 (to the fire department); the properties south along Essex County Route 9 (Lake Shore Road) to the farmstead known as the "Pataki" farm.

2.2 Environmental Resources Present

2.2.1 The project planning areas as noted above encompasses a large geographic area, however, the proposed project work area is restricted to the current water filtration plant, booster pump station and intake structure (continuation of current surfacewater source); filtration plant at the current water storage tank (continuation of surfacewater source); or a remote location in the community for wells and disinfection facilities (new groundwater source). In addition, there will need to be the interconnection of the selected water source and treatment facility with the existing infrastructure. The project also involves evaluation and need for addition of water storage capacity to meet Needed Fire Flow (NFF) as defined by Insurance Service Office (ISO) and the replacement of any water mains in poor condition or undersized within the existing distribution system (specifically, Orchard Lane and Beggs Point Street). This will be discussed further in the Alternatives section of this PER. According to the existing wetland mapping from the NYS DEC Resource Mapper of the anticipated project planning areas, there are no wetlands which will be impacted.

There are no project areas that involve work within the (100) or (500) year floodplains. However, if the final design involves replacement of or removal of the existing source water intake and/or Diatomaceous Earth filter backwash waste discharge line, work would need to take place within the floodplains as well as in the bed and banks of Lake Champlain. Although the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) indicate the area is within the floodplains, actual elevations of existing water filter building is above the all-time recorded Lake Champlain Elevation (2011) of 103.57 (Exhibit F).

2.2.2 A review of the potential endangered species/critical habitats within the project planning areas indicates the potential of "Indiana Bats". Removals of trees (if any) required to make improvements will be completed during the period when the bats are unlikely to be roosting.

2.2.3 The entire project area is considered to be in a historic district and as such all work, especially blasting if necessary, will take into account damage to historical buildings.

As the type of water source and/or treatment is unknown at this time, and only partial funding commitments have been attained to date, a full environmental review (NEPA & SEQR) will only be completed once the project Alternative and complete project funding is defined.

2.3 Growth Areas and Population Trends

2.3.1 The potential for growth, other than rebuilding existing single-family residential units to larger homes, or the conversion of seasonal homes to year-round occupancies, is very limited within the existing water district boundary areas. Coupled with this, is the restriction of development allowed by the Town's Zoning Ordinance (which is consistent with the Adirondack Park Agency (APA) Land Use Regulations. Refer to Exhibit G for the current Town Zoning Map for land use restrictions.

U.S. Census documentation indicates the town-wide population during the past (20) years has actually decreased, specifically, 880 (1980); 687 (1990); and 713 (2000). This represents a reduction in town-wide population of 19% over the (20) year period (Exhibit H).

The project planning area encompasses a specific district boundary as indicated in Exhibit C. The increase in the number of households could change due to development of vacant parcels. In the Water District service areas there are approximately (26) vacant parcels that could be developed at some time in the future.

Also, the population could change if demographics change (i.e., middle to older aged adults to younger aged adults with children). In 2005-2009, the community survey data indicated the median age within the Town was 50.7 years.

Therefore, a (30) year growth projection (loan period), a rate of 2.5% per (10) year period or 7.5% overall, in addition to the full buildout of the vacant lots in the water service areas, is very conservative growth for sizing of any water system components. Although the U.S. Census Bureau data is town-wide, the same growth potential could be assumed for the Water District boundary areas, which is within the Town boundaries studied by the U.S. Census Bureau.

3. EXISTING FACILITIES

3.1 Location Map

3.1.1 Refer to Exhibit I for historical documents portraying the existing water system infrastructure.

3.2 History

3.2.1 As discussed previously, the original Water District was legally formed in 1949 by taking over (in part) a private water system. During this period, improvements were constructed including but not limited to "reservoirs, water purification or treatment works, erection of pump house and pressure tanks, excavation and laying of pipes and all incidental equipment" (excerpt from Legal Notice, dated June 12, 1947 Exhibit B). There are no records available which indicate the extent of construction at the time of water system takeover or on completion of those improvements noted above.

Historical records found at the Town indicate that in the 1970's, a water pumping station was constructed, which is still in service on Beggs Point adjacent to Lake Champlain. It is unknown when the water intake piping was constructed and/or replaced, but a recent inspection is documented by video tape and saved on a CD (Exhibit J).

In the 1980's, the water system was upgraded to provide additional water distribution system network with the addition of an aboveground glass-fused to steel water storage tank. Again, in the mid 1990's, a second major upgrade was completed which included addition of a Diatomaceous Earth (DE) filtration system; including, chemical feed systems for pre-coat and body feed of the filtration process; pumps; chlorination disinfection equipment; chlorine contact tank; distribution system booster pump station and spent filter waste settling tank, with discharge of the filter backwash waste to Lake Champlain.

Since the major upgrades there have been only minor changes to the original system, such as the addition of an emergency "backup" generator to operate the filter plant and booster pumping station during loss of normal power.

As discussed earlier, an extension (Extension #1) of the distribution system was added to serve customers to the north along NYS Route 22. This extension provided water service to an additional (34) properties. Another extension (Extension #2), added approximately (13) properties to the south along Lake Shore Road and west on NYS Route 22, out to the fire station. The total number of properties served by the water system at the time of this report is approximately (190). There are several properties that are in the

Water District areas, but are non-billable due to lot size or are "underwater" lots. The exclusion of these properties is included in the above number.

3.3 Conditions of Facilities

3.3.1 Water Intake System

From historical records it appears the existing intake structure was constructed pre-1975 when the first upgrade was made to the pumping station. The records provided by the diver that inspects the intake system indicate the intake pipe is 8" cast iron, extending approximately 260' out into Lake Champlain, with the intake screen located in approximately 45' of water depth. The actual USGS elevation and intake coordinates are not known. The Town has routinely utilized scuba diver(s) to examine the piping and intake screen for evidence of damage or impacted by zebra mussel infestation clogging of the screening device. Lake Champlain was impacted by the infestation of zebra mussels, a non-native species starting in the 1990's. The routine inspection and cleaning of the screen has been successful in deterring any buildup of the mussels on the screen intake resulting in the restriction of flow to the DE filtration system. The latest inspection and cleaning is shown on the CD (Exhibit J).

3.3.2 Water Filter Plant (Including Treatment and Pumping)

The current water treatment system is considered new compared to the age of the distribution system and building that it is housed in, with the original water treatment system having been replaced circa 1993. The water treatment system currently consists of a pair of raw water supply pumps that draw water from Lake Champlain; two Diatomaceous Earth (DE) filter vessels and their associated pumps and coating solution tanks; chemical feed systems for disinfection of the water; a buried chlorine contact tank adjacent to the filter building; a pair of distribution booster pumps; and a control system. Despite the treatment system being much newer than the building housing it, both are plagued with numerous failed and/or failing components, some of which are critical failure points in the water supply with no redundancy due to previously failed components.

The water filter building is located on Beggs Point along Lake Champlain. It is a concrete structure on 3 of the 4 sides with the southern side facing the parking lot being wood framed. The building is a single room, occupied by the water treatment system. The space is heated by electric heat. There is no ventilation or dehumidification provided. This has created a very humid and corrosive environment for the system components - most metal pieces in the treatment system have rust on them, several have rusted to the point of failure. The reuse of the building in the circa 1993 project, without providing any type of environmental controls or isolations, likely contributed to the premature failing of the current water treatment and building system components.

3.3.2.1 Intake Pump

The intake pumps draw raw water from Lake Champlain through a common PVC header located in the filter building. A manual gate valve serves as a suction side isolation for the header. The piping transitions to ductile iron before heading to the Lake. Each pump is provided with a PVC ball valve for isolation on the suction and discharge sides. Bronze bodied check valves are on the discharge side of each pump. The pumps, being primarily of steel and iron construction, have not escaped the hazards of operating in a humid environment, and are completely covered in rust.

Rust covered raw water intake pumps

3.3.2.2 Diatomaceous Earth Filters and Chemical Additions

The Diatomaceous Earth filters are the primary treatment method for the water system; they are the sole means of removing particulate matter in the raw water. While filtering water, the vessels that contain the filter elements become pressurized; this causes them to be defined as pressure vessels. Pressure vessels are required to be inspected on a regular basis, both visually and internally. Most pressurized tanks require a visual inspection every (2) years and an internal inspection every (5-10 years). The filter vessels used in this treatment system have been in service for approximately (18) years. There are no records available to support documentation of any inspections being conducted during the filter lifetime.

Visually, the filter tanks are coated in rust and have spots that have flaked away. Recently, one of the filters was taken out of service as a hole had developed in the sidewall of the vessel. The rust forming as a result of the building environment has compromised the vessel and caused not only a contamination concern to the water district that is dependent on the proper operation of vessel to supply water, but a safety concern to the operator(s) should the vessel catastrophically fail while the operator is present in the room.

Diatomaceous Earth filters are deemed suitable for only waters with low turbidity and which have no appreciable bacterial counts. The 10-State Standards expressly excludes them for use in the filtration of waters having a high algae count - which the Lake in the immediate vicinity of the raw water intake has a history of algae blooms. See Exhibit K.

High lake water turbidity in the winter of 2010 and spring/summer of 2011, and the DE filtration system's inability to clear the turbidity to minimum acceptable permit levels was the cause of a "Boil Water Order" (BWO) that was in effect from 4/29/11 to 7/20/11. In addition, the New York State Department of Health (NYS DOH) notified the Town that the water quality exceeded maximum permitted levels for Trihalomethane (TTHM) limits for the 2nd and 3rd quarters of 2011 (Exhibit L). This resulted in a recent NYS Department of Health "Administrative Tribunal" being issued to require the Town to correct the violations and have a "Schedule" for implementing change to eliminate the potential for future Surfacewater Treatment Rule violations (Exhibit M).

Diatomaceous Earth filter vessels, covered with rust and visible holes forming

Interior view of filter currently taken out of service

3.3.2.3 Chlorination

While adequate chemical disinfection is currently provided by the system, there is no redundancy of chemical feed equipment as required by the 10-State Standards. In the event that the primary pump is unable to meet demands, or the operator runs the secondary pump in manual mode to exercise it, the chemical feed system is not activated without having to manually move which receptacle the feed pump is connected to. The chemical storage tanks are also not directly vented outside the facility causing any off-gassing of the chlorine solution to stay in the building, creating a corrosive environment.

The following are issues with the chemical system in direct contradiction to requirements of the 10-State Standards, New York State Department of Health (NYS DOH) and other standard practices:

- Systems using a positive displacement pump for chemical feed are required to have at least (1) backup pump.
- Chemical storage tanks are required to have their own ventilation separate from that of the room they are stored in.

Unvented chlorine contact tank with single chemical feed pump

3.3.2.4 Chlorine Contact Tank

Installed in the circa 1993 water filter plant upgrade, the buried chlorine contact tank behind the treatment plant provides the necessary chlorine Contact Time (CT) to allow the system to operate with a main distribution line having users attached to it between the plant and the water storage tank, opposed to a direct transmission main to the storage tank with no users connected prior.

The chlorine contact tank was designed to contain baffled walls to reduce the chances of short cycling of the tank and therefore, not providing adequate contact time. Two hatches exist on the top of the contact tank and are accessible from the Town's community recreation park area built over the tanks. The hatches are accessible by means of a plug removal using a common screwdriver and a square bit to unlatch the hatch - a large enough common screwdriver would also be capable of unlatching the hatch. No actual locks for the hatches are provided nor are there any built in locations for one to be installed for security against tampering by vandals or terrorist acts.

The hatches lie flush with the ground surrounding them, making opening them for inspection require great care to avoid knocking foreign matter (lawn clippings, dirt, leaves, etc.) into the finished water tank. A 4" overflow pipe is cast into the tank to allow spillage, should the raw water pumps continue to fill the tank after the pre-determined high level setpoint has been reached. The tank overflow drains back to the Diatomaceous Earth backwash settling tank, which itself overflows to a final discharge in Lake Champlain.

PVC vent pipes were provided for the chlorine contact tank. The pipes are inverted with the opening approximately 1 foot above grade. The plans for the circa 1993 project stated that they were to be a minimum of 3 feet above grade, which is consistent with both 10-State Standards and standard practices. As installed, the tank vent pipes are too close to grade.

Flush to grade access hatch - tank is shown overflowing, wasting chlorinated "treated" water to Lake Champlain

3.3.2.5 Water Distribution System Booster Pumps

There are two (2) water distribution system booster pumps that draw chlorinated water from the chlorine contact tank. Both pump treated water to the community and also serve as a recharge for the elevated water storage tank. The pumps turn on when a low level setpoint is reached in the water storage tank and prevented from starting if there is a low level in the chlorine contact tank. Water storage tank level is determined by a sensor located at the tank site, which communicates via radio with the filter plant to initiate or turn off the distribution pumps.

The current pumps are potentially capable of providing approximately 130 gallons per minute of flow to the system at the typical operating pressure of approximately 170 feet (73.6 psi) of water induced by the elevated water storage tank. As installed and currently operating, the pumps are providing water at a rate of approximately 60 gallons per minute (GPM). Operating at half of their potential flow rate, the pumps stay powered for twice as long as otherwise needed to refill the water storage tank, resulting in increased electrical consumption and associated costs. The 10 horsepower (HP) distribution pumps are cycled using "across the line" magnetic motor starters, further adding to the electrical demands of the system opposed to using variable frequency drives (VFDs).

3.3.2.6 Controls

The control system is antiquated by modern standards, and provides the operator with minimal control or monitoring of the processes, with no remote monitoring or control capabilities of any fashion. The water quality instrumentation is only present on the output side of the filters making analysis of their actual effectiveness difficult as there is no baseline for comparison to the raw water source.

As the chlorine contact tank has been seen overflowing, there is a problem in the control system's ability to properly switch the raw water intake pumps off and on. Whether this is an inherent flaw in the system, incorrect installation/setup, or lack of proper maintenance is undetermined.

The flow meter installed in the system lies between the filters and the chlorine contact tank. Given that the chlorine contact tank has the tendency to overflow, there is not a direct correlation of water metered at the facility and water actually used by the Town.

3.3.2.7 Building Conditions

The filter building is a remnant of the original system that was reused in the circa 1993 plant upgrade and based on available historical records, may be approximately (60) years old. While the facility does not have obvious signs of imminent failure, it provides a very inhospitable and inefficient environment - being little more than a half buried concrete bunker. There is no ventilation provided, either passive or mechanical, save for a handful of cracks in the walls where the roof beams tie into them.

The building is not insulated and is heated by electric unit heaters. There is an open pit drain in the corner where humidity is generated and a residential style dehumidifier on the work bench, used in an attempt to reduce humidity and its effects on the building and water system components and controls.

3.3.2.8 Water Storage Facilities

In the 1980's distribution capital improvement project, a glass-fused-to-steel "Aquastore" aboveground storage tank was constructed. The water storage tank stores approximately 138,000$^{+/-}$ gallons of treated water to meet domestic daily use and provides limited fire protection storage. The water storage tank is approximately 20' diameter by 60' tall. There appears to have been prior damages that have been repaired (Exhibit N). The Town does not have documented evidence of any inspections of the water storage tank or the interior glass surface conditions. A thorough examination by a qualified tank inspector should be conducted prior to determining future long-term use as a source of water storage.

3.3.2.9 Water Distribution System

The water distribution system is relatively new with most of the piping installed in the 70's and 80's. The original distribution mains located along Main Street are 6" PVC. In the 1980's, other areas of the Hamlet were added/upgraded including, 6" PVC water mains on Church Street and Elm Street and new 8" PVC water mains on School Street to serve a new water storage tank. During the late 1990's and early 2000's, water lines were added/ extended to the fire station on the west and south towards the "Pataki" farm on County Route 9. These lines were 6" PVC and were installed at no costs to Water District #1 users. In 2002, Water District #1, Extension #1 was constructed to serve properties north of the Hamlet along NYS Route 22. This piping is 8" and 6" PVC C-900 piping.

All Water District areas are served by fire hydrants.

Overall, the water distribution system is in good condition although it is purported that some of the PVC pipe utilized did not meet the ANSI/AWWA C-900 Standards for water distribution piping. Also, during the recent construction of new sewer mains within the Hamlet, it was found that existing "saddles" on the water mains that connect service laterals to the mains are prematurely deteriorating and failing. The number of failures is increasing with time.

In 2002, the Town conducted a leak detection survey which identified two (2) service laterals leaking an estimated total of

25,000 gallons per day (GPD). It is assumed these were promptly corrected (Exhibit O).

There is one area on the east side of Lake Street which has multiple properties served by a 1" piping (south and east of Church Street) and 2" piping along Church Street and Beggs Point Street. This distribution network does not meet minimum size requirements and is assumed to be galvanized piping due to the age of the piping network and is suspected to be part of the original piping purchased at time of Water District #1 being formed in the 1940's.

The community has water meters at almost all properties, but the Town has just recently identified that a majority, if not all, of the water meters are either nonfunctioning or have failed.

3.4 Financial Status of any Existing Facilities

3.4.1 The Adopted 2011 Water Budget was for $61,150 for Water District #1. Additionally, Water District #1, Extension #1 had an additional amount in the Adopted 2011 Budget of $4,332 for recovery of debt on the 2002 Water District #1, Extension #1 capital improvement project (Exhibit P).

3.4.2 Debt

The debt service for Water District #1 is charged out as a "benefited" district which charges all properties equally including the Water District #1 and Extensions #1 and #2 area properties. At this time, there are a total of approximately (190) properties which should share in payment of the debt (Exhibit P). The debt is a result of a (38) year, 5% interest loan with USDA Rural Development (RD), which will be retired in 2032. The current annual principal and interest payment for the debt is approximately $5,211/year, but because there is conflicting information in the Town records of the actual payments of principal and interest, the USDA (RD) should clarify the amount so accurate future budgeting may take place.

The debt service for Extension #1 is based on Ad Valorem (AV) assessed value, with a total assessed value of properties in Water District #1, Extension #1 areas of $15,539,993 (2011). This equates to a water tax rate of $0.27877/$1,000 of assessed value or $55.75 for a property assessed for $200,000. All debt obligations are current as of the date of this report.

3.4.3 Operations and Maintenance

The adopted budget for 2011 was $51,503 which is broken down as follows:

Administration	$ 3,577
Source of Supply	$ 17,329
Purification	$ 25,801
Distribution	$ 2,500
Benefits	$ 2,296
Total	$ 51,503

The Adopted Budget for 2012 is $111,482 which is broken down as follows:

Administration	$ 3,377
Contractual Services	$ 50,000
Source of Supply	$ 17,329
Purification	$ 25,801
Distribution	$ 2,500
Benefits	$ 2,828
Total	$101,835

The actual cost for the Water District's Operation and Maintenance (O&M) during the year 2010 and 2011 (to 10/31/2011) was $37,925.81 and $36,868.29, respectively (Exhibit Q). It should be noted a large component of the Adopted 2012 Budget includes a $50,000 line item for contractual services. This is in anticipation of the "soft" costs associated with the evaluation of a replacement water supply, including test wells and/or a "pilot" filter plant study, based on Town's decision as to water source Alternative selection.

3.4.4 Revenues

As discussed earlier in this section, Water District #1 charges all property owners (including the two Extension areas) with debt service recovery by a "benefit" basis for the 1994 USDA Rural Development Loan of approximately $5,211/year or $27.43/property for (190) properties within the Water District. As indicated earlier in this report, the annual payments should be clarified with USDA (RD).

In addition, the (34) properties in Water District #1, Extension #1 areas pay debt service for capital improvements at a rate of $0.27877 per $1,000 AV. Therefore, for a property with an assessed value of $200,000, has a debt service payment of $55.74/year in addition to the $27.43 charged for Water District #1 debt recovery.

All properties at this time are being charged at the same rate of $40/quarter for water service (total of $160/year) for O & M <u>and</u> debt repayment and as detailed below. The exception to this is "not-for-profit" entities such as churches and the fire department.

Water District Area	Debt	O&M	Total
Water District #1	$27.43	$132.57	$160.00
Water District #1, Extension #1	$83.18*	$132.57	$215.75
Water District #2, Extension #2	$27.43	$132.57	$160.00

*Based on $200,000 Assessed Valuation (AV)

The Town has also negotiated a contract/lease to allow a telecommunications company to utilize the water storage tank structure for mounting of antennas.

This generates approximately $19,700 of annual revenue.

3.4.5 Capital Reserve

There is no capital reserve setup to cover replacement of short-lived assets (i.e., metering pumps, motors, etc.) for the water system.

4. NEED FOR PROJECT

4.1 Health and Safety

4.1.1 The condition of the existing water treatment plant is cause for concern. The plant is deteriorating and therefore poses a threat of loss of water to the community should any components in the system fail. The condition of the electrical systems and controls pose a severe safety hazard to the water plant operators.

The water treatment plant/control building has limited process controls such as remote monitoring Supervisory Control and Data Acquisition (SCADA) capabilities that would provide the operator with "real" time data of operations at the water plant. The operator of the water plant is only a part-time position and therefore, is not at the filter plant on a continuous basis to monitor operations. Therefore, should a component of the water plant fail, the operator has no way of knowing. The operator would only find out if pressure or flow loss occurs in the community by complaints from residents presented to the Town office. A loss of pressure or flow that has reached the community may have already resulted in other problems that could be of health and safety concerns, such as "vacuum" conditions, which could allow "sucking" contaminants into the water supply at points in the distribution system where "vacuum breakers" are not provided to prevent backflow. All communities are required to have an active backflow prevention program (i.e., Cross Connection Control Plan).

The water system receives water from Lake Champlain. All water supplies in New York State are required to have the source water (groundwater or surfacewater) to be permitted by NYS DEC. The Water District #1 original Water Supply Permit (WSA) #2115 was rescinded in the 1950's (per DEC records). During the late 1990's this lack of permitting was identified by NYS DEC, Region 5 (Ray Brook) staff when the Water District #1, Extension #1 requested an updated Water Supply Permit was required.

In April 2002, Water District #1 and Extension #1 areas were permitted by Water Supply Permit #9483 (Exhibit R). The Permit allows for the taking of up to 70,000 GPD. It does not appear that a Water Supply Permit was ever issued to incorporate the no cost District known as Water District #1, Extension #2, created in the mid to late 2000's.

4.2 System Operations and Maintenance (O&M)

This existing water filtration and control building is severely lacking in many operational areas. There are several reasons for this:

- Deterioration due to poor interior environmental controls;
- Existing technology at the time of installation is no longer considered adequate;
- Inability to obtain replacement parts for obsolete equipment;
- Previous repairs merging older and newer technologies with varied degrees of success.

4.2.1 Diatomaceous Earth (DE) Filters

The existing Diatomaceous Earth filters are physically in very poor condition due primarily to the interior building environmental conditions. The vessels are covered in rust and falling apart, with one of the vessels having already been removed from service due to a leak having formed. The filtration technology itself is also inadequate for the treatment of water from the current surfacewater supply. The Town has received several violations from the NYS DOH that are a direct result of the filtration technology's inadequacy for this installation and surfacewater supply source, including a recent Tribunal Order being issued to the Town (Exhibits L & M).

4.2.2 Controls

The controls of the current water system offer little in the way of monitoring and control of the treatment system. No remote supervisory or control capabilities found in most modern systems are present, lacking even a basic alarm auto-dialer to warn the operator of immediate problems. The pumps are all controlled with across the line motor starters, which are both inefficient and lacking any form of adjustability in fine tuning the pumps to the application at hand. Chemical injection rates are manually set by the operator and are not controllable by the control system, save for cycling the pumps off and on during specific triggering mechanisms (i.e., a pump turning on). Lack of a flow meter on the side of the distribution pumps makes "scaled" chemical injection to match the flow rates impossible, with the draw and fill level of the water storage tank representing approximately 15 feet of head pressure from pumps on to pumps off, the flow rates being produced can vary up to 50 gallons per minute making flow paced injection rates very desirable (as well as being recommended by 10-State Standards).

4.2.3 Disinfection System

The disinfection system is comprised of a single chlorine feed pump sitting atop a storage tank containing sodium hypochlorite. Disinfection contact time (CT) is provided in a buried vault containing baffles designed to produce a delay in chlorinated water entering the contact tank and being drawn by the distribution pumps. Chlorine being the sole means of disinfection in a system relying on filtration technology that is inadequate at removing turbidity and bacteria is a contributing factor to the Town having received multiple violations for exceeding the minimum contaminant level of chlorine disinfection byproducts (Total Trihalomethanes (TTHMs)).

4.2.4 HVAC / Environmental Quality

The water treatment facility is almost entirely absent of HVAC control save for two (2) electric unit heaters suspended from the ceiling and a residential grade dehumidifier. No ventilation is provided (passive or mechanical), and the building is uninsulated making any efforts to control the environmental quality very inefficient. The lack of interior environmental control has created a humid environment subject to wide temperature fluctuation, which equates to an environment very inhospitable to metal, including the steel based equipment and the copper electrical systems.

4.2.5 Piping and Process Equipment

The piping and valves in the water treatment facility are largely PVC. Several valves have been replaced at various times due to the original PVC valves breaking while in service. The process equipment is comprised mostly of the DE filter vessels, raw water pumps, distribution booster pumps, and filter coating pumps. All of these pieces of equipment have been damaged to varying degrees by the indoor environment conditions. Pumps have been rebuilt and replaced several times, and the DE filter vessels are in very poor condition, with one having already failed.

4.2.6 DE Filter Backwash Waste

The DE filter backwash waste currently is sent to a "glorified" septic tank located below the parking lot which acts as a Diatomaceous Earth backwash waste settling chamber. As the settling chamber fills with settled backwash waste, the effectiveness of the chamber in settling more particulate matter is diminished with the chamber eventually capable of discharging the particulate matter to the lake instead of allowing it to settle. The chlorine contact tank overflow discharge also passes through the settling chamber, allowing chlorinated water to be sent to Lake Champlain. This also creates turbulence in the settling tank, disrupting the DE waste "Floc", possibly sending the waste product matter to the lake.

4.3 Growth

The growth potential within the existing Water District boundaries is limited to conversion of the existing vacant lots to residential (or as allowed from the local and APA zoning restrictions) small commercial (i.e., mom and pop stores). The remaining growth potential within the district boundaries would be the result of conversion of "seasonal" camps to year-round residential units. Any capital water system improvements will be based on the conversion of the seasonal units and addition of existing vacant parcels within the current district boundaries. The land surrounding the current Water Districts is primarily zoned "Resource Management" by the Adirondack Park Agency Land Use Regulations. This classification requires subdivision of lands to have a minimum of 3.2 acres/lot. This minimum size of lot makes development of large subdivisions highly unlikely due to the extensive development costs to provide streets and infrastructure to serve the lots.

However, to be conservative, the projection for growth will be considered to be 7.5% for a (30)-year period (loan period) or (14) additional properties (based on the current (190) properties) being served by water from Water District #1. This increase is exclusive of vacant lots within the current water service areas.

5. ALTERNATIVES CONSIDERED

In the evaluation of alternatives to correct the current deficiencies (i.e., water filtration plant), several factors have been taken into account, those are but not limited to:

- Reuse of existing facilities with no construction.
- Replacement of the filtration system at the current location with the same surfacewater supply.
- Replacement of the filtration system at a new location with the same surfacewater supply.
- Locate and develop a new groundwater source.

In addition, there are common factors that all of the alternatives considered (except no construction) will require upgrades/replacement to other areas of the infrastructure.

5.1 Description of Alternatives

5.1.1 No Construction

This alternative continues with the existing Diatomaceous Earth (DE) filtration system and appurtenances. DE filtration systems lack capability to accommodate raw water quality conditions with total coliforms >50/100 ml; turbidity >5 NTU; and color >5 CU's. (AWWA – *Surfacewater Treatment: The New Rules*, 1991 by Harry VonHuben). In addition, the current DE filters or new DE filters lack the capability to comply with disinfection by-product elimination on their own. Trihalomethanes (TTHM) and Haloacetic Acids (HAA5) removals will require the addition of granular activated carbon (GAC) filtration, or the equivalent.

5.1.2 Lake Champlain Surfacewater Source

Replacement of the existing DE water filtration equipment and appurtenances with state-of-the-art technology and components to address such water quality issues such as, TTHM; HAA5; algae; cryptosporidium; and giardia lamblia cysts. The water filter plant would be located in the same area (Beggs Point Park) as the current DE filter plant, but in the separate new building.

5.1.3 Lake Champlain Surfacewater Source

Replacement of the existing DE filtration equipment and appurtenances with state-of-the-art technology and components to address water quality issues such as, TTHM; HAA5; algae; cryptosporidium; and giardia lamblia cysts. The new water filter plant would be located at the same area as the current water storage tank (School Street). A separate new building would need to be constructed to house the raw water pumps needed to pump raw water to and through the water filters and to the water storage tank.

5.1.4 Groundwater Source

In 2008, the Town Board contracted a hydrogeologist to prepare an initial report to identify favorable groundwater source sites within or adjacent to the existing water system infrastructure that could possibly provide an adequate potable water supply with both adequate water quantity and water quality. This initial, but very extensive review was of such items as mapping of lineaments (from aerial photographs); digital elevation model; published mapping and hydrogeologic reports; and finally, actual site visit(s). The essence of the evaluation was that four (4) general areas of interest were identified that were potential to provide the minimum yielding well(s) of (25) gallons per minute (GPM), 36,000 gallons/day (GPD) needed to support the community needs. One area (2,000$^{+/-}$ feet southwest of the water storage tank). The second location is just east (approximately 500') of the newly constructed wastewater treatment plant site, and more importantly, less than 200' from both a raw sewage forcemain and a gravity effluent main going to and returning from the newly constructed wastewater treatment plant. The third and initially most favorable location is approximately 1,500+/- feet west (upgradient) of the wastewater treatment plant. The disadvantage of this location is that at this time, the Town has not received notice from the property owner of their interest in selling land or for a long-term lease. Lastly, a site (1,600$^{+/-}$) directly north of the wastewater treatment plant has potential to meet the yield requirements and the landowner (fire department) has agreed in principal, to allow test wells to be constructed.

The utilization of a groundwater source will ultimately require a groundwater development phase where additional and more extensive evaluations (i.e., seismic refraction, etc.) will need to be completed prior to drilling a "test" well. The test well will be used to identify the anticipated water quantity and quality of the aquifer at that location. For the purposes of this report, the report *"Groundwater Source Development Project, Hamlet of Essex, New York, Task 1 Report, Hydrogologic Evaluation,* dated October 17, 2008 (Exhibit S), will be used in the evaluation of source locations and infrastructure development necessary to serve the community.

5.1.5 Finished Water Storage Facilities

The current 138,000$^{+/-}$ gallon glass-fused to steel tank was constructed in the early 1980's. The anticipated Needed Fire Flow (NFF) based on the Insurance Organization Office (ISO) rating system. Considering such items as building size, separation distances, construction materials, the Needed Fire

Flow for Essex would be based on the Town offices or the Essex Inn structures. These both require 1,750 gallons per minute (gpm) for a duration of two hours or a storage volume of 210,000 gallons (Exhibit T). In addition, the storage criteria established by 10-States Standards dictates the design volume should be the NFF plus the domestic demands. The Town flow records indicate the daily average demands are 19,300 gallons and 24,100 gallons for 2010 and 2011 (to September 30), respectively (Exhibit U). Because fire protection (i.e., fire hydrants) are currently provided throughout the community, the basis for volume of water storage is per the 10-States Standards and should be a minimum of 210,000 gallons (NFF) plus 32,500 gallons (24,100 + 40 (growth and vacant lots) x 70 (gallons per day per person) x 3 (persons/household) or 242,500 (use 243,000$^{+/-}$ gallons for storage needs).

The flow rates have been confirmed to be relatively accurate compared to actual flow comparisons made by a "strap on meter" installed by AES Northeast for a comparison of flow rates, recorded approximately 22,000 gallons per day. Exhibit V provides the data obtained.

5.1.6 Water Distribution Facilities

The current water distribution system consists of a network of PVC plastic pipe with the majority meeting ANSI/AWWA C-900 Standards. However, there are some locations (i.e., fire department mains (Extension #2 areas)) that are purported to not meet the Standards. Replacement pipe in this area, or other areas found not meeting the C-900 Standard should be considered with appropriate PVC or Ductile Iron (DI) piping materials. In addition, there are some sections of distribution lines that serve several homes that are either 1" or 2" galvanized lines. These should be upgraded with any capital improvement project.

5.1.7 Water Meters

The Town Board was under the understanding that all properties in the Water District areas had individual water meters installed and were functional. Just recently, the Town Board has been notified by the water operator that none of the water meters are operational for one reason or another. Since the newly constructed wastewater treatment system infrastructure operations and maintenance (O & M) costs are to be billed to property owners based by water consumption. However, without functioning water meters, the wastewater system billing system will also defunct.

5.2 Design Criteria

All design will be in accordance with the latest revisions to the *Recommended Standards for Water Works, 2007 Edition; NYS Department of Health Sub-Part 5-1, Public Water Systems; NYS Building Code; Insurance Services Office (ISO); NYS Energy Code; AWWA and ANSI Standards; Americans with Disabilities Act (ADA); NYS DOT Standard Specifications and Sheets* (when applicable); *Adirondack Park Agency Zoning and Land Use Policies and Regulations*; and *NYS Department of Environmental Conservation for Discharge of Wastes, Stormwater Management and Public Water Supply Permitting.*

Where specific design criteria cannot be met due to economic and/or practical reasons, variances from the standards will be requested.

5.3 Map

A schematic layout of the various Alternatives is shown in Exhibit W.

5.4 Environmental Impacts

An Environmental Review Record (ERR) will be prepared once the community decides that additional funding opportunities are needed and/or exist at the Federal level (i.e., USDA Rural Development (RD) or Office of Community Renewal (OCR)). Otherwise, the Environmental Review will consist of the state mandated State Environmental Quality Review Act (SEQR) and State Environmental Review Process (SERP). If the "no construction" or the filter plant Alternative is selected, all work will be completed within existing (previously) disturbed areas, with the only major consideration being replacement of water mains within a "Historical" District. Any blasting necessary for the work will be done in accordance with NYS Office of Parks, Recreation and Historic Preservation (OPRHP). Archaeologic Assessments Phase I, and if necessary, Phase 2, will be conducted with any concerns mitigated to the satisfaction of NYS OPRHP. These studies will occur once the Town selects the Alternative.

It is not anticipated that if the existing surface water supply continues to be utilized, that the existing water intake main and intake structure will be upgraded or replaced. It will be necessary to determine that the appropriate easements with the Office of General Services (OGS) are in place for the existing structures which will remain.
If the groundwater alternative is selected, an archaeologic review will need to be completed in those areas of disturbance. The anticipated locations of groundwater sources are outside the Historical District areas but may require permitting of the water lines to crossover possible wetlands.

Additionally, as a determination is made of the Alternative selected, more in-depth reviews of impacts to farmlands, endangered or threatened species, or other environmental concerns will need to be reviewed, evaluated and mitigated, if necessary.

5.5 Land Requirements

Depending on the Alternative selected, the Town may need to purchase property, obtain easements and/or long-term leases.
It is anticipated that if the existing water source continues in existence, the only requirement is for determination that the existing raw water intake mains and structure have a properly executed easement from OGS and the US Coast Guard (notification only). This will be the case whether or not the water filtration plant is located on Beggs Point or at the existing water storage tank site on School Street.

5.6 Construction Problems

The only construction related problem which is anticipated at this time is the need for rock removal to install water lines and/or buildings. The close proximity to existing buildings to the water mains and building components all within a Historical District requires alternative rock removal methods. In a recently constructed sewer project within the community, the contractor utilized a large "Vermeer" saw to "cut" the pipe line trench through the existing subsurface rock material. It is anticipated that this same method would be used for water main installation. In the instance of rock removals for building structures, the customary blasting method of removal would be employed, a limit will be imposed on the maximum vibration standard to 0.5 in/sec. This maximum vibration standard has been reviewed and approved by the NYS ORPHP for blasting within a Historical District.

5.7 Cost Estimates

The estimated project cost for the five (5) Alternatives is shown in Exhibit X with a summary included in this section. In addition to the estimates for associated non-construction and annual operations and maintenance costs, other infrastructure needs are addressed in this section, no matter which Alternative is ultimately selected.

5.7.1 Alternative #1 – No Construction – Optimize Existing Operations

Construction	Not Acceptable
Non-Construction	Not Acceptable
Annual Operation and Maintenance (O&M)	Not Acceptable

5.7.2 Alternative #2 – Existing Source – New Filter Plant at Beggs Point

Construction (a)	$3,929,200
Non-Construction (a)	$ 809,300
Annual Operation and Maintenance (O&M)	$ 84,900

5.7.3 Alternative #3 – Existing Source – New Filter Plant at Existing Water Storage Tank (School Street)

Construction [a]	$3,772,949
Non-Construction [a]	$ 784,380
Annual Operation and Maintenance (O&M)	$ 84,900

5.7.4 Alternative #4A – New Groundwater Source (Close Property)

Construction [a]	$1,248,768
Non-Construction [a] [b]	$ 380,511
Annual Operation and Maintenance (O&M)	$ 34,500

5.7.5 Alternative #4B – New Groundwater Source (Fire Department Property)

Construction [a]	$1,248,468
Non-Construction [a] [b]	$ 390,511
Annual Operation and Maintenance (O&M)	$ 34,500

5.7.6 Water Storage Tank

Construction [a]	$ 412,500
Non-Construction [a]	$ 90,420

5.7.7 Water Distribution Mains

Construction [a]	$1,190,635
Non-Construction [a]	$ 280,855

5.7.8 Water Meters

Construction [a]	$ 463,870
Non-Construction [a]	$ 96,808

5.7.9 Water Service Saddle Replacements

Construction [a]	$ 198,000
Non-Construction [a]	$ 27,146

(a) Includes 10% Contingencies

(b) Includes Property Purchase 5$^{+/-}$ Acres

5.8 Advantages/Disadvantages

5.8.1 No Construction Alternative

This Alternative is to utilize the existing 1993 vintage Diatomaceous Earth (DE) filtration equipment and associated facilities to produce potable water for the community. Diatomaceous (DE) Earth filters, although appear to be excellent in meeting Surface Water Treatment Rule and Enhanced Rules for Cryptosporidium and Giardia Lamblia removal, the treatment method does not respond well to high turbidity and color removal, which is prevalent in the Lake

Champlain waters. Additionally, of concern is the growing presence in the raw water intake area of "blue-green" algae (Exhibit K). The DE filters cannot respond to the algae growth and become "blinded" very easily, if algae enters the filter vessel.

The plant structure and all components have extensive deterioration due to the improper handling, storage, and ventilation of caustic "off gassing" fumes generated by the chlorine disinfectant product (Exhibit Y).

In order to continue utilizing the DE filters and components in the long-term, substantial capital improvements, replacements, and additional equipment must take place to prevent a catastrophic failure or cause an employee accident or death.

The operator will need to spend more time each day in order to keep up with deterioration of components all the while purchasing replacement parts and/or repair services. With increased emphasis on water quality promulgated by the EPA, the use of DE filtration is considered more for clean surface water supplies or groundwater under the direct influence of surfacewaters (GWUDI). Neither of these are the case for the Essex water supply.

This Alternative does not meet the long-term Town and public concerns, as it does not provide the community with a reliable long-term (i.e., 30-years long-term) solution while meeting EPA and NYS DOH water quality regulations. As time passes, equipment parts will become more difficult to obtain, even if they are available. This Alternative will also stretch their operational resources, both in manpower and long-term expense as the equipment (now almost 20 years old) continues to age in the very caustic environment.

5.8.2 Alternative #2 – Existing Source – New Filter Plant at Beggs Point

This Alternative will provide a long-term solution to the Town in providing a potable water supply to the community which is safe and reliable. The filtration system and building components will be state-of-the-art. The filters will be ""piloted" utilizing the source water (Lake Champlain) to ensure the proper media sizing, type and estimated chemical dosing rates. Based on the filter pilot study, the design will encompass details consistent with 10-States Standards and NYS Department of Health criteria and regulations concerning filtration equipment and the Surfacewater Treatment Rules and Regulations.

This Alternative meets the overall needs of the Town and community being served, however, with limited users to pay for debt service incurred for capital expenses, it stretches the economic boundaries for being an "affordable" Alternative without substantial "grant" or "principal forgiveness" funding being allocated to the community. Additionally, the community currently utilizes only a part-time operator. With this Alternative, the total time necessary for proper operations and maintenance of the filtration plant alone will increase 3-4 times the current operator time per average day. This ultimately increases the O&M costs for this option over other types of source waters (i.e., groundwater).

The filtration process will generate wastewater as part of the backwashing of the filters to regenerate the filter media. The current septic tank and lake disposal of the minimally treated backwash water with DE filtrate would be eliminated and a sewage pump station constructed to pump the waste to the recently constructed and new, fully-functional municipal wastewater treatment system.

The location of this Alternative doesn't meet the Town's area-wide development plans, as this location currently is a Town Recreation Park and focal point of the community. The filtration plant would not effectively meet with the aesthetics of the Beggs Point Park and therefore, would need to be constructed so that it is "underground" with any aboveground features disguised so as not to impact the view shed of the lakefront. This location has extensive bedrock exposure so that in order to construct a 2,500$^{+/-}$ square foot structure to house the filtration process and components would result in the need to blast approximately 1,500$^{+/-}$ cubic yards of rock. It is anticipated that any proposed structure would require approvals from the Town Planning and Zoning Boards and would have very stringent conditions even if it were approved in this location and setting.

5.8.3 Alternative #3 – Existing Source – New Filter Plant at Existing Water Storage Tank Site

This Alternative will provide a long-term solution to the Town in providing a potable water supply to the community which is safe and reliable. The filtration system and building components will be state-of-the-art. The filters will be ""piloted" utilizing the source water (Lake Champlain) to increase the proper median sizing, type and estimated chemical dosing rates. Based on the filter pilot study, the design will encompass details consistent with 10-States Standards and NYS Department of Health criteria and regulations concerning filtration equipment and the Surfacewater Treatment Rules and Regulations.

This Alternative meets the overall needs of the Town and community being served, however, with limited users to pay for debt service incurred for capital expenses, it stretches the economic boundaries for being an "affordable" Alternative without substantial "grant" or "principal forgiveness" funding being allocated to the community. Additionally, the community currently utilizes only a part-time operator. With this Alternative, the total time necessary for proper operations and maintenance of the filtration plant alone will increase 3-4 times the current operator time per average day. This ultimately increases the O&M costs for this option over other types of source waters (i.e., groundwater).

The filtration process will generate wastewater as part of the backwashing of the filters to regenerate the filter media. The current septic tank and lake disposal of the minimally treated backwash water with DE filtrate would be eliminated and a sewage pump station constructed to pump the waste to the recently constructed and new, fully-functional municipal wastewater treatment system.

The location of this Alternative is ideal in that it is located on an existing town owned parcel where existing water infrastructure is currently located. However, since there is no water main currently available from the source (i.e., Lake Champlain) at Beggs Point, construction of a new raw water booster pump station and a raw water transmission main from the raw water booster pump station up to the location of the new filtration plant on School Street (approximately 3,300$^{+/-}$ lineal feet) from the source.

Ultimately, this will require increased initial capital expense due to construction of two (2) buildings and 3,300$^{+/-}$ feet of water main. If selected, this alternative would allow correction of the current deficiency of Needed Fire Flow (NFF) for the center of the Hamlet by installing a larger water distribution main from the water storage tank to Beggs Point Street and reutilizing the existing distribution mains along this route to transport raw water to the water filtration plant. Also, this Alternative will correct a portion of another system deficiency by replacing those deteriorated services (saddles) on the existing water main that would be used for raw water transport, by placing those properties on the new larger water distribution main noted above. As noted in Alternative #2, any structure located in the Town Recreation Park at Beggs Point would require blasting, rock removal, and a structure that aesthetically fits to the character of the site or is located underground. Any structure located at the Town Recreation Park will require approvals by the Town Planning and Zoning Boards and would have very stringent conditions, even if it were approved in this location and setting.

5.8.4 <u>Alternative #4A – New Groundwater Source (Close Property; South Side NYS Route 22)</u>

Whenever there exists the possibility of a viable groundwater aquifer that will meet the demands of the customers, the NYS Department of Health encourages a community to evaluate that Alternative prior to delving into a water filtration plant and surfacewater supply. Generally speaking, groundwater sources that have had properly conducted evaluations for quantity and quality, have proper separation distances from known and possible contaminant sources and have a properly constructed well are less susceptible to contamination in the future (all things being equal) and historically have been less regulated by the EPA and NYS Department of Health.

Just as a filtration "Pilot" study for a surfacewater source is required, a groundwater source needs to be "stressed" and assessed to ensure that the aquifer has adequate quantity to meet long-term customer demands and does not possess contaminants that will require the use of filtration equipment in order to make the water safe and aesthetically pleasing to the public (i.e., taste and odor).

Both construction and long-term operations of a groundwater source is typically less costly than surfacewater supply and filtration plant Alternatives. The groundwater source Alternative utilizes less power, less chemicals, and heating and ventilation costs are less due to the building housing the equipment is (1/2) to (2/3) less in size of that for the same design flow of a water filtration plant. Most importantly, most groundwater sources are less complicated to operate and requires much less operator oversight, provided all EPA and NYS DOH regulations are monitoring and reporting are conducted properly.

The location selected for this Alternative is based on a preliminary Hydrogeologic Evaluation (Exhibit S) and has the closet proximity to the existing infrastructure. It consolidates the key and essential public utilities (water and wastewater plants) to one area, specifically the Route 22 site. This location makes the most sense for long-term planning of the community due to the proximity to the potential groundwater source and current wastewater treatment plant site. The control building would be designed to aesthetically "blend" into the surrounding land uses, as the wastewater treatment plant assimilates a farmhouse and barn setting. Any environmental impact/concerns would be mitigated during the design phase to satisfy the public and regulatory agencies.

5.8.5 Alternative #4B – New Groundwater Source (Fire Department Property; North Side NYS Route 22)

Whenever there exists the possibility of a viable groundwater aquifer that will meet the demands of the customers, the NYS Department of Health encourages a community to evaluate that Alternative prior to delving into a water filtration plant and surfacewater supply. Generally speaking, groundwater sources that have properly conducted evaluations for quantity and quality, have proper separation distances from known and possible contaminant sources and have had a properly constructed well are less susceptible to contamination in the future (all things being equal) and historically have been less regulated by the EPA and NYS Department of Health.

Just as a filtration "Pilot" study for a surfacewater source is required, a groundwater source needs to be "stressed" and assessed to ensure that the aquifer has adequate quantity to meet long-term customer demands and does not possess contaminants that will require the use of filtration equipment in order to make the water safe and aesthetically pleasing to the public (i.e., taste and odor).

Both construction and long-term operations of a groundwater source is typically less costly than the surfacewater supply and filtration plant Alternatives. The groundwater source Alternative utilizes less power, less chemicals, and heating and ventilation costs are less due to the building housing the equipment is (1/2) to (2/3) less in size of that for the design flow of a water filtration plant. Most importantly, most groundwater sources are less complicated to operate and requires much less operator oversight, provided all EPA and NYS DOH regulations and monitoring and reporting are conducted properly.

The located selected for this Alternative is based on a preliminary hydrogeologic evaluation (Exhibit S). At the time of this report there has been a general interest by the Essex Fire Department Commissioners to allow use of the northeasterly portion of their property for the groundwater wells siting, protective area surrounding the two (2) production wells, control building, and access drive off NYS Route 22. This location provides for most seclusion from the general public, but at the same time, requires more capital expense to connect to the existing water infrastructure. This Alternative will comply with regulatory requirements and will satisfy public concerns by providing customers with safe and clean drinking water. Any environmental impact/concerns would be mitigated during the design phase to satisfy the public and regulatory agencies.

6. SELECTION OF AN ALTERNATIVE

6.1 The Present Worth (Life Cycle) Cost Analysis

This is presented for each of the "feasible" Alternatives in Exhibit Z. Alternatives #1, #2 & #4A were not included as feasible Alternatives due to a variety of items. Alternative #1 is not feasible due to the recent violations and issuance of a Tribunal Order by the NYS Department of Health, the "no action" Alternative is unacceptable. The Tribunal Order recently signed by the Town has a strict schedule of compliance with severe fines and penalties for non-compliance. Alternative #2 was eliminated due to the proposed location of the plant (i.e., Town Recreation Park). This parcel, although at the same location as the current DE filtration plant, would not pass the rigorous environmental and planning/zoning process to allow construction of this facility on "prime" waterfront property used by the Town's general public to recreate.

Finally, Alternative #4A is prime location for the development of a groundwater source due to the ability to consolidate services with the newly constructed wastewater treatment plant (i.e., bathroom, laboratory and possibly electrical backup power sources). However, at the time of this report, the property owner has been unresponsive as to interest in selling the property to the Town. Until this interest is confirmed, this is not considered a "feasible" Alternative.

6.2 A Matrix Rating System of Alternatives

This is provided in Exhibit AA. This rating system is a simplistic method to compare the relative relationship of the Alternatives ability to meet the Town's need in providing a safe drinking water supply compared to the impact to the overall user and/or the environment. The rating system varies from (1) least cost/impact to (5) most costly/most impact.

Based on this Matrix rating system, the Alternative with the least scores are the two groundwater sources both with a score of (35), with an available range of (22) best rating to (110) least favorable rating.

The choice based on this "tie" should be based on results of test wells for water quality and quantity, comparing those results with the estimated capital improvement costs for construction and implementation of the Alternatives (provided both properties are available for purchase or long-term ((99) year leases).

7. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

7.1 Project Design

7.1.1 Water Supply – At this time, there has been no formal groundwater development phase initiated other than that shown in Exhibit S. The two locations noted in the Hydogeologic Report (Exhibit S) are currently on private property and will require access agreements to drill test wells (i.e., Close and Fire Department properties on NYS Route 22). Once secured and the test wells are drilled, an initial (24) hour pump test and initial water quality tests will be completed to determine water quality. If the results are favorable, a long-term (72) hour pump test will be performed to understand the capacity of the aquifer intercepted by the well casing or screen. The well construction, testing and sampling will be under the direction of a hydrogeologist, licensed professional engineer, or combination of the two.

Based on the water quality identified, further development of production (wells) will be authorized by the Town. The water quality will also determine if further treatment (other than disinfection) will be required to remove such chemical factors as hardness, total dissolved solids (TDS), hydrogen sulfide, etc.

Records provided by the Town and/or NYS Department of Health indicate the current average daily demand for the period of January 2008 to September 2011 is 18,300 gallons. However, the average daily demand during the year 2011 has increased to 24,100 gallons (Exhibit BB). This will be used as the "basis of design" for the future development of construction documents (whether for a groundwater or surfacewater supply). The peak demand of 41,000 gallons per day in January 2011 is the result of a water line break. The peak day based on daily consumption (i.e., without an actual known water line break) is 26,000 gallons.

Based on the actual flow records, a conservative estimated maximum daily system demand would be (2) times average day demand plus (210) gallons/day per vacant lot (26), plus the growth during the loan period of (30) years of (14) new services. This equates to a daily design flow of 56,600 gallons [((24,100 x 2) + (40) (210)) gallons], or a minimum rate of (40) gpm when considering a groundwater source.

7.1.2 Treatment

The Hydrogeologic Evaluation (Exhibit S) does not anticipate any chemical characteristics of the groundwater that will require further treatment, other than disinfection by chlorination. However, the treatment plant will be sized such that room will be provided in the building for "micro-filtration" to treat the groundwater supply or if necessary, future filtration, if EPA or NYS DOH regulations require additional treatment for any groundwater supply or in the unforeseen event the water quality changes overtime of water extraction from the aquifer.

A discussed earlier in this section, the wells (well yield), well pumps, chlorination facilities, and chlorine Contact Time (CT) (prior to first customer) will be based on a maximum daily demand of 56,600+/- gallons per day (40 GPM).

7.1.3 Storage

The current water storage tank (i.e., 138,000 gallons) does not comply with the 10-State Standards based on the current daily demand combined with the Needed Fire Flow (NFF) storage. The storage volume will be based on a NFF of 1,750 gallons per minute for a two hour duration (120 minutes) = 210,000 gallons plus the estimated future full build-out average day demand of 32,500 gallons (24,100 + (40) (210)) or a total storage need of 242,500+/- gallons (use 243,000 gallons).

Because the current Aquastore glass–fused-to-steel tank has no records of inspection (prior to coordinating reuse of the existing storage tank) the Town should conduct a thorough inspection of the water storage tank and foundation to identify and deterioration and determine its anticipated remaining useful life. For purposes of this report, we will consider the worst-case scenario (i.e., the replacement of the water tank). The design size for the water storage tank will be 243,000+/- gallons and similar in style (glass-fused-to-steel) to maintain current height and system pressures. The new tank would be placed at the current location on School Street due to the current base elevation being the highest point within the infrastructure network and which is currently permitted by the Adirondack Park Agency for exceeding the maximum allowable height per APA planning guidelines/restrictions.

7.1.4 Pumping Stations

There are no pumping stations required for the proposed/recommended Alternative.

7.1.5 Distribution Layout

The current distribution system is all encompassing for the service areas obtaining water and fire protection. There are however, limitations within the current water distribution system. Some can be corrected or improved on while some cannot be improved on due to the existing geographic layout of the service areas (i.e., long dead ends such as NYS Route 22 or the north end and Lake Street/County Route 9 on the south end of the Hamlet).

7.1.5.1 Fire Protection: The current water distribution pipe sizing from the water storage tank to the center of the Hamlet limits the available Needed Fire Flow (NFF) of approximately 730 GPM. Based on ISO criteria for the determining NFF, the structure size, construction type and separation distances to determine the minimum recommended fire flow. The two structures evaluated are the Essex Inn and Town Hall buildings, both of which require a rate of flow available of 1,750 GPM. In order to maintain this minimum flow rate, the water main size must be increased to a 10" (storage tank to Main Street) and 8" on Main Street to the Town Hall. Refer to Exhibit CC.

7.1.5.2 Distribution System: There are two sections of distribution system network piping that do not meet minimum sizing standards for fire protection. These are in the Orchard Lane and Beggs Point Street areas. The existing distribution is purported to be 1" and 2" galvanized steel lines located behind and in between residences, making access for town maintenance limited. These two areas would have the distribution mains increased in size to 6" on Orchard Lane and 8" on Beggs Point Street, as determined by the hydraulic analysis (Exhibit CC), and placed within the Town's road right-of-way limits. This improvement will also improve fire flows in the center Hamlet by creating a "looped" system. As an added benefit, these water distribution system changes will improve water quality and household water pressures in those service areas.

7.1.5.3 Water Meters

The Town Board has been advised that the current water meters that were installed over the years are either not functioning properly or are broken. It appears that as recent as 2002, the Town Board anticipated using a "consumption" based billing system to recover costs of providing water service (Exhibit DD).

To date, this system has never been implemented and at this time, the Town Board has no confidence in the correct operations of the meters and use of readings for billing.

The use of water meters is now considered "green" as the use of water meters and billing based on consumption is a means for creating water efficiency and ultimately conserving the natural resource.

The project will include the replacement of all water meters with current metering technology such as Automatic Meter Reading (AMR) systems, smart meters, or advanced metering infrastructure (AMI). The installation of meters will include installation of backflow prevention devices (cross-connection control) to protect the town's water supply from contamination by the customers, which has not occurred to date throughout the community.

7.2 Total Project Cost Estimates

The estimated probable project costs (2011) for each of the Alternatives are shown in Exhibit X.

The summary of each alternative is as follows:

Alternative #1 -	Not Acceptable
Alternative #2 -	$4,738,580
Alternative #3 -	$4,557,330
Alternative #4A -	$1,629,279
Alternative #4B -	$1,629,279

7.3 Annual Operating Budget

The 2012 Adopted Annual Operating Budget (Exhibit P) for the Essex water system is for $101,835, which covers all costs for Water District #1, Extension #1, and Extension #2 areas. This also includes a line item for contractual services for $50,000 to cover initial soft costs to either locate a groundwater source or conduct a filter pilot study for a surfacewater supply Alternative.

7.3.1 Income

The current Town of Essex Water Law (Exhibit EE), as amended December 12, 2002), *"Article 12.1 Water Charges, Fines and Penalties, the charge for water use and all and any fines and penalties associated with this Local Law will be established from time to time by Town Board Resolution."* The Town does not have any means to charge water by consumption due to the determination by the water operator that the current water meters are not functional, and thus, cannot be utilized in a "billing by use" charge system. Therefore, until all meters are replaced with functioning units, the Town has utilized a rate of $40/quarter for all users, except non-profits are charged $28.50/quarter. Records dating back to May 2004 indicate that the charge/water rate was $40/quarter (i.e., no increases in the rate structure for 7½ years (current rate). This is shown in the Capacity Development Program Questionnaire, Section D, Water System Rates (Exhibit P). According to Town provided records, there are a total (190) properties that are located in the service areas. This currently generates a total revenue from user fees of $25,370 per year (Exhibit FF). Additionally, the existing district debt service for the original Water District ($9,647) is paid by all users on a "benefit" basis (i.e., all share equally) or $50.77/property owner (based on 190 properties), which is included in the current $40/quarter rate structure. Water District #1, Extension #1 also pays debt services charges to recover annual debt service costs of $4,332. This is recovered based on assessed value of the properties. In the 2012 Adopted Budget this is at the tax rate of $.2788/$1,000 assessed value.

Lastly, the Water District has secured a Lease Agreement with Nextel for use of the water tower structure to support telephone service antennas. This lease is expected to generate $19,704 during the budget year 2012.

7.3.2 Operations and Maintenance (O & M)

The current operations costs for the existing Diatomaceous Earth (DE) filtration system is shown in Exhibit Q. In summary, the actual costs for the year 2010 (last full year of documented costs) are broken down as follows:

Administration:	$ 1,267
Salaries/Wages:	$10,573
Benefits:	$ 3,529
Electric/Heating:	$ 5,034
Testing:	$ 3,315
Equipment; Parts:	$ 7,060
Chemicals:	$ 2,377
Dues, Postage, Misc.:	$ 1,328
Contractual Work:	$ 2,995

7.3.3 Debt Repayment

The Town has applied for funding assistance from New York State Department of Health through the New York State Environmental Facilities Corporation (NYSEFC). A "Pre-Application" and full "Hardship Application" for a groundwater source development project was submitted by the Town. On August 24, 2011, a letter of eligibility was sent to the Town approving a DWSRF hardship assistance grant of $1,146,341 and $375,864 in interest-free financing for a term of (30) years (Exhibit GG). If the Town Board decides to seek out the surface water supply Alternatives (#2 or #3), there will not be adequate dollars available from the current approved funding program. In this case, the Town would need to "reject" the NYSEFC funding offer letter and re-apply for a project with a much greater scope and capital costs. This will require the Town to compete with other New York State Drinking Water State Revolving Fund (DWSRF) water projects in a future Federal Fiscal Year and possibly require renegotiation of the Schedule of Compliance in the NYS DOH Tribunal Order.

In the case of the current funding approval of a groundwater source, any increased in total project costs will need to be funded as a cost "overrun" utilizing zero percent loan money from NYSEFC, unless a determination that the grant portion can be increased to the maximum allowable of $2,000,000 with the loan increasing to a minimum of $666,667 match.

The Town was awarded a USDA Rural Development (RD) Pre-Planning Grant of $6,250 of which the Town must support the cost, dollar-for-dollar up to the maximum $6,250 (Exhibit HH).

It is anticipated that the Town will also submit a complete application for funding (grant and loan) to USDA (Rural Development) to offset any increase in total project costs over the original funding commitment from NYSEFC.

7.3.4 Reserves

7.3.4.1 Debt Service Reserve: Currently, the rate structure does not include a debt service reserve for either the Rural Development loan or the NYSEFC loan (Water district #1, Extension #1 areas). The inclusion of this reserve would require a Town Board Resolution to amend the Local Water Law. The RD recommended debt service reserve would be one tenth (1/10) of the annual debt repayment or approximately $5/year for each of the (190) properties. This reserve will be initiated in the future rate structure which will be developed by the Town Board as they review their Local Water Law and rate structure, including billing based on consumption (use).

7.3.4.2 Short-Lives Asset Reserve: Currently, the rate structure does not include a short-lived asset reserve. As part of the Local Water Law revisions to be adopted by the Town Board, the recommended list of short-lived assets will be incorporated into the rate structure. Exhibit II details an estimated schedule of short-lived assets and recommended annual reserve deposit to fund replacement. This list is developed based on the recommended Alternative of developing either of the groundwater source Alternatives, with supporting appurtenances. If the Town Board and users select a different Alternative (i.e., surfacewater source), this list and associated annual reserve deposit will be much greater.

8. CONCLUSIONS AND RECOMMENDATIONS

The results of the compilation of data, evaluations of Alternatives, capital costs and long-term operation and maintenance costs clearly defines the Alternative that best supports the needs of community to provide a safe drinking water, that being a groundwater source. The choice of which groundwater source location to pursue will be based primarily on current property owners interest in allowing the Town to conduct further evaluations of groundwater availability at the two (2) sites.

The Town should develop a plan of action that best meets the Tribunal Order timeframes to avoid fines and penalties for non-compliance. The key tasks/milestones are as follows:

1. Select Alternative (by Town Board and/or public referendum).
2. Based on a groundwater source Alternative being selected:
    a. Gain access agreement(s) and land acquisition agreement(s) for the primary "favorable zone" for drilling test well(s).
    b. Conduct geophysical surveys of the (2) sites to determine additional site characteristics which would lead to selection of the more favorable location for developing a groundwater source.
    c. Conduct test well drilling; Contract with a <u>qualified</u> well drilling company.
    d. If water is located, conduct an (8) hour drawdown pump test to initially evaluate the source capacity and collect samples to analyze for water quality.
    e. As a result of the preliminary data acquisition and if water quantity and quality are acceptable and meets the needs of the Water District, a (72) hour (minimum) drawdown pump test needs to be conducted at the desired rate of water demand (for full buildout) for the water service areas (i.e., maximum daily demand 56,600 gallons (40 GPM) minimum yield.
    f. Once acceptable results are achieved, a final well performance report and Water Supply Permit (WSA) Application will be completed for NYS DEC and NYS DOH reviews and approvals.
    g. Design of water system improvements including, but not limited to:
        i. Primary and backup production wells.
        ii. Access Road and site improvements.
        iii. Building to house chlorination equipment, controls, valving and emergency generator.
        iv. Interconnection to the existing community water system.
        v. Other infrastructure improvements identified in the (PER).
        vi. Complete other necessary items to correct "non-capital", "non-construction" type items.
            (i) Update Local Water Law.
            (ii) Develop rate structure to include adequate debt service revenue (without communications lease revenues to offset lack of "fee" revenue), debt service reserves and short-lived assets reserves.
            (iii) Develop Cross-Connection Control Program.

(iv) Revise the Water District Boundary to include existing "out-of-district" users.
(v) Verify, and if necessary, apply for Water Supply Permit for Water District #1, Extension #2 (if not already obtained).

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426

List of Exhibits

Exhibit	Description
A	Project Location Map
B	Water District #1 Formation Documents
C	Map of District Boundaries
D	EPA Regulations for Diatomaceous Earth Filtration
E	Water System Schematic Layout
F	• Flood Insurance Rate Map (FIRM) • Record Level Documentation
G	Town Zoning Map
H	Town of Essex Census Reports
I	Historical Plans of Water System Components
J	• CD of Water Intake Screen and Piping • Intake Structure Report
K	News Article Regarding Algae Bloom
L	NYS Department of Health Notice of Violations
M	NYS Department of Health Administrative Tribunal
N	Water Storage Tank Photographs (3)
O	Leak Detection Survey
P	• Adopted 2011 Budget • Adopted 2012 Budget • "Typical" O&M Bill • Capacity Development Program • Parcels in Essex Water Service Areas
Q	Actual Water Expenses (1/1/2010 through 10/31/2011)
R	NYS DEC Water Supply Permit – WSA #9483
S	Groundwater Source Development Task 1 Report – Hydrogeologic Evaluation, Dated 10/17/08, Prepared by HydroSource Associates, Inc.

T	Needed Fire Flow (NFF)
U	Daily Flow Record (2008-2011)
V	Distribution Pump Flow Rate
W	Schematic Alternatives Layout
X	Estimate of Probable Project Costs for the Alternatives
Y	Photographs of Water Plant Deterioration
Z	Life Cycle Cost Analysis of Feasible Alternatives
AA	Matrix Rating System of Alternatives
BB	Summary of Daily Average and Peak Demands
CC	• Existing Hydraulic Analysis of Distribution System • Proposed Hydraulic Analysis of Distribution System
DD	Town Board Letter Regarding Water Meters and Billing
EE	Town of Essex Water Law
FF	Parcels in Essex Water Service Areas
GG	NYS Environmental Facilities Corporation (NYSEFC) DWSRF Eligibility Letter
HH	USDA Rural Development Predevelopment Planning Grant Letter
II	• List of Short-Lived Assets Alternative #3 • List of Short-Lived Assets Alternative #4B

AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990

ESSEX, NY

Exhibit A: USGS Map

STATE OF NEW YORK - DEPARTMENT OF AUDIT AND CONTROL

In the Matter
of the
Application of the Town Board of the Town of Essex, Essex County, New York, for the permission of the State Comptroller to establish the Essex Water District in said town.

WHEREAS, application has been duly made to the undersigned by the Town Board of the Town of Essex, Essex County, New York, by its Supervisor, pursuant to section 194 of the Town Law, for the permission of the State Comptroller to the establishment of the Essex Water District in said town in accordance with such application and a resolution of said board adopted on March 16, 1949, and

WHEREAS, notice of such application to the State Comptroller has been duly given to the Board of Supervisors of Essex County, New York, by the State Comptroller in the manner prescribed by section 194 of the Town Law, and

WHEREAS, the undersigned has duly examined such application,

NOW, THEREFORE, pursuant to such examination and upon such application of the Town Board of the Town of Essex, the undersigned does hereby find and determine, after due deliberation:

(1) That the public interest will be served by the establishment of the Essex Water District in the Town of Essex in accordance with such application.

(2) That the cost of the proposed district will not be an undue burden upon the property of the proposed district.

I, FRANK C. MOORE, Comptroller of the State of New York, do hereby order that such application of the town board of the Town of Essex for permission to establish the Essex Water

District in the Town of Essex be, and the same hereby is, granted, and I do hereby permit the establishment of said district in accordance with the following description:

Commencing at a point on the bridge at the intersection of the center line of Station Street and the center line of Library Creek; thence South One Degree and Thirty Minutes West a distance of Eight Hundred and Forty-five Feet, more or less; thence North Eighty One Degrees West a distance of Five Hundred and Thirty Feet, more or less; thence South Nine Degrees West a distance of Five Hundred feet, more or less, to a point in the center line of School Street One hundred and Fifty feet West of the School building; thence continuing South Nine Degrees West a distance of Five Hundred feet, more or less; thence South Eighty One Degrees East a distance of One Thousand and Twenty feet, more or less; thence South Ten Degrees and Thirty Minutes West a distance of One Thousand and Seventy Five feet, more or less; thence South Seventy Nine Degrees and Thirty Minutes East a distance of Five Hundred feet, more or less, to a point on the center line of Main Street Two hundred feet South of the residence of one Sandberg; thence continuing South Seventy Nine Degrees and Thirty Minutes East a distance of Three Hundred and Sixty feet, more or less, to the shore line of Lake Champlain; thence Northerly along the shore line of Lake Champlain as it winds and turns to the mouth of Library Creek; thence Westerly along the center line of Library Creek to the point of Beginning.

Executed in duplicate under my hand and the seal of the Comptroller of the State of New York, at the City of Albany, New York, this 13th day of October, 1949.

FRANK C. MOORE
State Comptroller

By Edward D. Siemer

Edward D. Siemer
Deputy Comptroller

1949

Minutes of Special Board Meeting on February 24th held in the Board Rooms.
Meeting held after the public hearing on the proposed Water District.

Board Members Present:
H. W. Albee Supr.
P. A. Saper Justice
L. H. Couchey "
D. G. Main Councilman
D. S. Walker "

Harlan Carson, attorney and Mr. Collam Civil Engineer present at Board Meetin

Board voted to have a public hearing on March 16th for the purpo of revising the district (See attached order

Motion also made and seconded the Town purchase a Mosler safe for the Town Clerks.

Motion made and seconded meeting adjourn.

Barbara M. Sweatt

State of New York } SS:

COUNTY OF ESSEX

M. Priscilla Glade .... being

clerk

duly sworn says, that She is an officer of the Essex County Republican Co., which corporation publishes the Essex County Republican, Keeseville, N. Y., and that a copy of the publication, proof of which is attached, was published in the Essex County Republican, ...1.... weeks, that the first publication was in its issue of ....June 20, ...19 47.... and the last publication in its issue of ....June 20, ... 19 47

....M. Priscilla Glade Clerk

Subscribed and sworn to before me
this ....20th.... day of ....June.... 19 47

....H. Everett DeGroat

Notary Public

H. EVERETT DeGROAT
Notary Public in the State of New York
Residing in the County of Essex
Essex County Official Number 68
Commission expires 3/30/19[illegible]

Notice

At a meeting of the Town Board of the Town of Essex, Essex County, New York, held at the Legion Rooms in said Town of Essex, County of Essex, State of New York, on the 12th day of June, 1947.

PRESENT:

HARRY W. ALBEE
Supervisor.
L. H. COUCHEY
Justice of the Peace.
P. A. SOPER
Justice of the Peace.
D. G. MAIN
Councilman.
D. S. WALKER
Councilman.

In the Matter
of
The petition for the establishment of a Water District in the Town of Essex, Essex County, New York.

WHEREAS, a written petition, dated November 14th, 1946, in due form and containing the required signatures has been presented to and filed with the Town Board of the Town of Essex, Essex County, New York, for the establishment of a Water District in the said Town, to be bounded and described as follows:

Commencing at a point on the bridge at the intersection of the center line of Station Street and the center line of Library Creek, thence, South One Degree and Thirty Minutes West a distance of Eight Hundred and Forty Five feet, more or less, thence, North Eighty One Degrees West a distance of Five Hundred and Thirty Feet, more or less, thence, South Nine Degrees West a distance of Five Hundred Feet, More or less, to a point in the center line of School Street One hundred and Fifty Feet west of the school building, thence continuing South Nine Degrees West a distance of Five Hundred Feet, more or less, thence, South Eighty one Degrees East a distance of One Thousand and Twenty feet, more or less, thence, South Ten Degrees and Thirty Minutes West a distance of One Thousand and Seventy Five Feet, more or less, thence South Seventy Nine Degrees and Thirty Minutes East a distance of Five Hundred Feet, more or less, to a point on the center line of Main Street Two Hundred Feet south of the residence of Mr. Sandberg, thence, continuing South Seventy Nine Degrees and Thirty Minutes East a distance of Three Hundred and Sixty Feet, more or less, to the shore line of Lake Champlain, thence Northerly along the shore line of Lake Champlain as it winds and turns to a point having a bearing of South Eighty Six Degrees and Thirty Minutes East from a point on the center line of State Highway No. 22 distant Two Hundred Feet North of the residence of Mrs. Pultz, thence, North Eighty Six Degrees and Thirty Minutes West a distance of Eight Hundred and Twenty Feet, more or less, to the above described point on center line of highway, thence, continuing North Eighty Six Degrees and Thirty Minutes West a distance of Five Hundred Feet, more or less, thence, South Three Degrees and Thirty Minutes West a distance of Nine Hundred and Sixty Feet, more or less, thence, South Forty Six Degrees West a distance of Two Thousand One Hundred and Seventy Feet, more or less, thence, South One Degree and Thirty Minutes West a distance of Five Hundred Feet, more or less, to the point of beginning.

WHEREAS, the improvements proposed consist of the erection, construction and maintenance of a water system, to serve the said district, including the acquisition or purchase of existing private water rights and system, construction of reservoirs, water purification or treatment works, erection of pump house and pressure tanks, excavation and laying of pipes and all incidental equipment, in accordance with certain plans made a part of such petition and heretofore adopted by this Board and now on file in the office of the Town Clerk of the said Town; and,

WHEREAS, the maximum amount proposed to be expended for the improvement and reconstruction of the existing water system or systems as stated in the said petition is the sum of $30,000.00, it is hereby

ORDERED, that a meeting of the Town Board of the said Town of Essex shall be held at the Legion Rooms in the Town of Essex, New York, on the 30th day of June, 1947, at 4:00 o'clock P. M., (Eastern Daylight Time) in the afternoon of that day, to consider the said petition and to hear all persons interested in the subject thereof, concerning the same, and for such other action on the part of said Town Board with relation to the said petition as may be required by law or proper in the premises.

Dated, June 12th, 1947.

HARRY W. ALBEE
L. H. COUCHEY
P. A. SOPER
D. G. MAIN
D. S. WALKER
Members of the Town Board of the Town of Essex, Essex County, New York

STATE OF NEW YORK)
COUNTY OF ESSEX) SS:
TOWN OF ESSEX)

I, Mary B. Cleland, Town Clerk of the Town of Essex, Essex County, New York, do hereby certify that I have compared the preceding order with the original thereof, filed in my office at Essex, Essex County, New York, on the 12th day of June, 1947, and that the same is a true and correct copy of said original and of the whole thereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of said Town, this 12th day of June, 1947.

Mary B. Cleland,
Town Clerk of the Town of Essex, Essex County, New York.
(Seal) (6-20-47-1 adv)

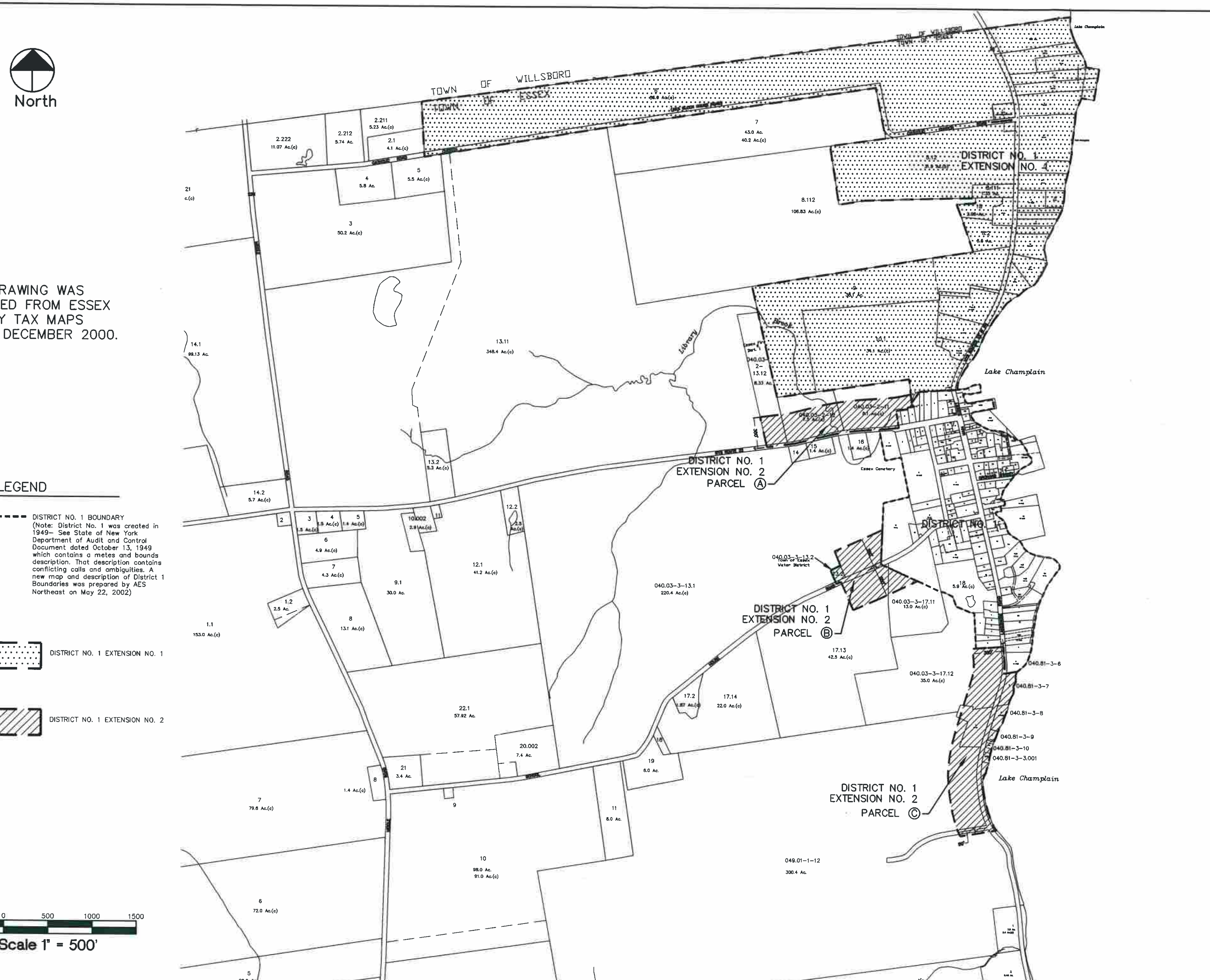
Minutes of Special Town Board Meeting h
in the Board Rooms of Town of Essex this
15th day of November, 1949

Members Present:
H. W. Albee - Supr.
D. G. Main - Councilman
D. S. Walker
L. H. Couchey - Justice
P. A. Soper "

Meeting called to order by the Superv
Mr. Albee at 7:30 P.M.

Motion made by D. S. Walker and seconded by D. G. Main the following Resolution be approved - Approved by
Resolved:
Purchase International Truck Model L18 1950 with 3 yd. Hydraltic body, 2 Speed rear end 1000-20 dual tires, heater + defroster + Blinker Light and Fink Mode 448 S.P. full hydraltic snow plow and 10 ft wing.
Allowance for used truck 5% of purc price of new one, approximately 8500 F.O.B. Es
Transaction with L. S. Jerry & Son of Plattsburg, N

Motion made by P. A. Soper seconded by D. G. Main to enter an order establish a water district in the town to be known the Essex Water District, in accordance with the attached order as proposed by Harlan Car attorney.
H. W. Albee - yes
D. S. Walker - No
D. G. Main - yes
L. H. Couchey - yes
P. A. Soper - yes



NOTE:
THIS DRAWING WAS COMPILED FROM ESSEX COUNTY TAX MAPS DATED DECEMBER 2000.

LEGEND

DISTRICT NO. 1 BOUNDARY
(Note: District No. 1 was created in 1949– See State of New York Department of Audit and Control Document dated October 13, 1949 which contains a metes and bounds description. That description contains conflicting calls and ambiguities. A new map and description of District 1 Boundaries was prepared by AES Northeast on May 22, 2002)

DISTRICT NO. 1 EXTENSION NO. 1

DISTRICT NO. 1 EXTENSION NO. 2

500 0 500 1000 1500

Scale 1" = 500'

AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990

ARCHITECT – ENGINEER – LAND SURVEYOR

PROJECT TITLE:

TOWN OF ESSEX

WATER SYSTEM EVALUATION
PRELIMINARY ENGINEERING REPORT
(PER)

TOWN OF ESSEX
ESSEX COUNTY, NEW YORK

DRAWING TITLE:

MAP OF
DISTRICT BOUNDARIES
ESSEX WATER DISTRICTS
TOWN OF ESSEX

REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
G. Pawlowski		12/08/2011	3426

DRAWING NO.

EXHIBIT C

Plot Date: 12/07/2011 Plot Time: 2:22 PM
File Path: P:\34\3426 Essex Water Source Development\F Drawings\F1 Survey\District Boundary Maps\Map Showing All Districts 28november 2011\Map Showing All Districts.dwg

United States Environmental Protection Agency

Comprehensive Surface Water Treatment Rules Quick Reference Guide: Systems Using Slow Sand, Diatomaceous Earth, or Alternative Filtration

Overview of the Rules

Title	**Surface Water Treatment Rule** (SWTR) - 40 CFR 141.70-141.75 **Interim Enhanced Surface Water Treatment Rule** (IESWTR) - 40 CFR 141.170-141.175 **Long Term 1 Enhanced Surface Water Treatment Rule** (LT1ESWTR) - 40 CFR 141.500-141.571
Purpose	Improve public health protection through the control of microbial contaminants, particularly viruses, *Giardia*, and *Cryptosporidium*.
General Description	The **Surface Water Treatment Rules:** ▸ Applies to all public water systems (PWSs) using surface water or ground water under the direct influence of surface water (GWUDI), otherwise known as "**Subpart H systems.**" ▸ Requires <u>all</u> Subpart H systems to disinfect. ▸ Requires Subpart H systems to filter unless specific filter avoidance criteria are met. ▸ Applies a treatment technique requirement for control of microbials.

Overview of Requirements

The purpose of this table is show how the requirements for the IESWTR and LT1ESWTR build on the existing requirements established in the original SWTR.

APPLICABILITY: PWSs that use surface water or ground water under the direct influence of surface water (Subpart H) that practice slow sand, diatomaceous earth or alternative filtration.		**Final Rule Dates**		
		SWTR 1989	**IESWTR 1998**	**LT1ESWTR 2002**
Population Served	≥10,000	✓	✓	
	< 10,000	✓	N/A (except for sanitary survey provisions)	✓
Regulated Pathogens	99.99% (4-log) removal/inactivation of viruses	✓	Regulated under SWTR	Regulated under SWTR
	99.9% (3-log) removal/inactivation of *Giardia lamblia*	✓	Regulated under SWTR	Regulated under SWTR
	99% (2-log) removal of *Cryptosporidium*		✓	✓
Residual Disinfectant Requirements	Entrance to distribution system (≥ 0.2 mg/L)	✓	Regulated under SWTR	Regulated under SWTR
	Detectable in the distribution system	✓	Regulated under SWTR	Regulated under SWTR
Turbidity Performance Standards	Combined Filter Effluent - Slow Sand and Diatomaceous Earth	✓	Regulated under SWTR	Regulated under SWTR
	Combined Filter Effluent - Alternative	✓	✓	✓
Disinfection Profiling & Benchmarking	Systems must profile inactivation levels and generate benchmark, if required		✓	✓
Sanitary Surveys (state requirement)	CWS: Every 3 years NCWS: Every 5 years		✓	Regulated under IESWTR
Covered Finished Reservoirs/Water Storage Facilities (new construction only)			✓	✓
Operated by Qualified Personnel as Specified by State		✓	Regulated under SWTR	Regulated under SWTR

(CWS) Community Water System (NCWS) Non-community Water System

Turbidity

Turbidity is measured as Combined Filter Effluent (CFE) for slow sand, diatomaceous earth, and alternative filtration. The CFE 95th % value and CFE maximum value for slow sand and diatomaceous earth were not lowered in the IESWTR and LT1ESWTR since these filtration technologies are assumed to provide 2-log *Cryptosporidium* removal with the turbidity limits established by SWTR. Alternative filtration technologies (defined as filtration technologies other than conventional, direct, slow sand, or diatomaceous earth) must demonstrate to the state that filtration and/or disinfection achieve 3-log Giardia and 4-log virus removal and/or inactivation. The IESWTR and LT1ESWTR also require alternative filtration technologies to demonstrate 2-log Cryptosporidium removal.

Turbidity: Monitoring and Reporting Requirements

Turbidity Type and Reporting Requirements *(Reports due by the 10th day of the following month the system serves water to the public.)*		**Monitoring/ Recording Frequency**	**SWTR As of June 29, 1993**	**IESWTR ≥10,000 people As of January 1, 2002**	**LT1ESWTR < 10,000 people As of January 1, 2005**
Slow Sand & Diatomaceous Earth	CFE 95%	At least every 4 hours*	≤1 NTU	Regulated under SWTR	Regulated under SWTR
	CFE Max	At least every 4 hours*	5 NTU	Regulated under SWTR	Regulated under SWTR
Alternative ▸ **Membranes** ▸ **Cartridges** ▸ **Other**	CFE 95%	At least every 4 hours*	≤1 NTU	Established by state	Established by state (not to exceed 1 NTU)
	CFE Max	At least every 4 hours*	5 NTU	Established by state	Established by state (not to exceed 5 NTU)

*Monitoring frequency may be reduced by the state to once per day for systems using slow sand or alternative filtration. Monitoring frequency may be reduced by the state to once per day for systems serving 500 or fewer people regardless of type of filtration used.

CFE Turbidity: Reporting Requirements

Report to State:	**SWTR Measurements**	**IESWTR Measurements**	**LT1ESWTR Measurements****
Within 10 days after the end of the month:	Total number of monthly measurements	Total number of monthly measurements	Total number of monthly measurements
	Number and percent less than or equal to designated 95th percentile turbidity limits	Number and percent less than or equal to designated 95th percentile turbidity limits	Number and percent less than or equal to designated 95th percentile turbidity limits
	Date and value exceeding 5 NTU	Date and value exceeding 5 NTU for slow sand and diatomaceous earth or maximum level set by state for alternative filtration	Date and value exceeding 5 NTU for slow sand and diatomaceous earth or maximum level set by state for alternative filtration
Within 24 hours:	Exceedances of 5 NTU for CFE	Exceedances of 5 NTU for slow sand and diatomaceous earth or maximum CFE level set by state for alternative filtration	Exceedances of 5 NTU for slow sand and diatomaceous earth or maximum CFE level set by state for alternative filtration

** Systems serving fewer than 10,000 people must begin complying with these requirements beginning January 1, 2005.

Disinfection Profiling and Benchmarking Requirements

A **disinfection profile** is the graphical representation of a system's microbial inactivation over 12 consecutive months.

A **disinfection benchmark** is the lowest monthly average microbial inactivation value. The disinfection benchmark is used as a baseline of inactivation when considering changes in the disinfection process.

Disinfection Profiling and Benchmarking Requirements Under IESWTR & LT1ESWTR

The purpose of disinfection profiling and benchmarking is to allow systems and states to assess whether a change in disinfection practices creates a microbial risk. Systems should develop a disinfection profile that reflects *Giardia lamblia* inactivation (systems using ozone or chloramines must also calculate inactivation of viruses), calculate a benchmark (lowest monthly inactivation) based on the profile, and consult with the state prior to making a significant change to disinfection practices.

REQUIREMENT	IESWTR	LT1ESWTR
AFFECTED SYSTEMS:	Community, non-transient non-community, and transient systems.	Community and non-transient non-community systems only.
BEGIN PROFILING BY:	April 1, 2000	➤ July 1, 2003 for systems serving 500-9,999 people. ➤ January 1, 2004 for systems serving fewer than 500 people.
FREQUENCY & DURATION:	**Daily** monitoring for 12 consecutive calendar months to determine the total logs of *Giardia lamblia* inactivation (and viruses, if necessary) for each day in operation.	**Weekly** inactivation of *Giardia lamblia* (and viruses, if necessary), on the same calendar day each week over 12 consecutive months.
STATES MAY WAIVE DISINFECTION PROFILING REQUIREMENTS IF:	TTHM annual average <0.064 mg/L and HAA5 annual average <0.048 mg/L: ➤ Collected during the same period. ➤ Annual average is arithmetic average of the quarterly averages of four consecutive quarters of monitoring. ➤ At least 25% of samples at the maximum residence time in the distribution system. ➤ Remaining 75% of samples at representative locations in the distribution system.	One TTHM sample <0.064 mg/L and one HAA5 sample <0.048 mg/L: ➤ Collected during the month of warmest water temperature; **AND** ➤ At the maximum residence time in the distribution system. Samples must have been collected after January 1, 1998.
DISINFECTION BENCHMARK MUST BE CALCULATED IF:	Systems required to develop a disinfection profile and are considering any of the following: ➤ Changes to the point of disinfection. ➤ Changes to the disinfectant(s) used. ➤ Changes to the disinfection process. ➤ Any other modification identified by the state. Systems must consult the state prior to making any modifications to disinfection practices.	Same as IESWTR, and systems must obtain state approval prior to making any modifications to disinfection practices.

Disinfection

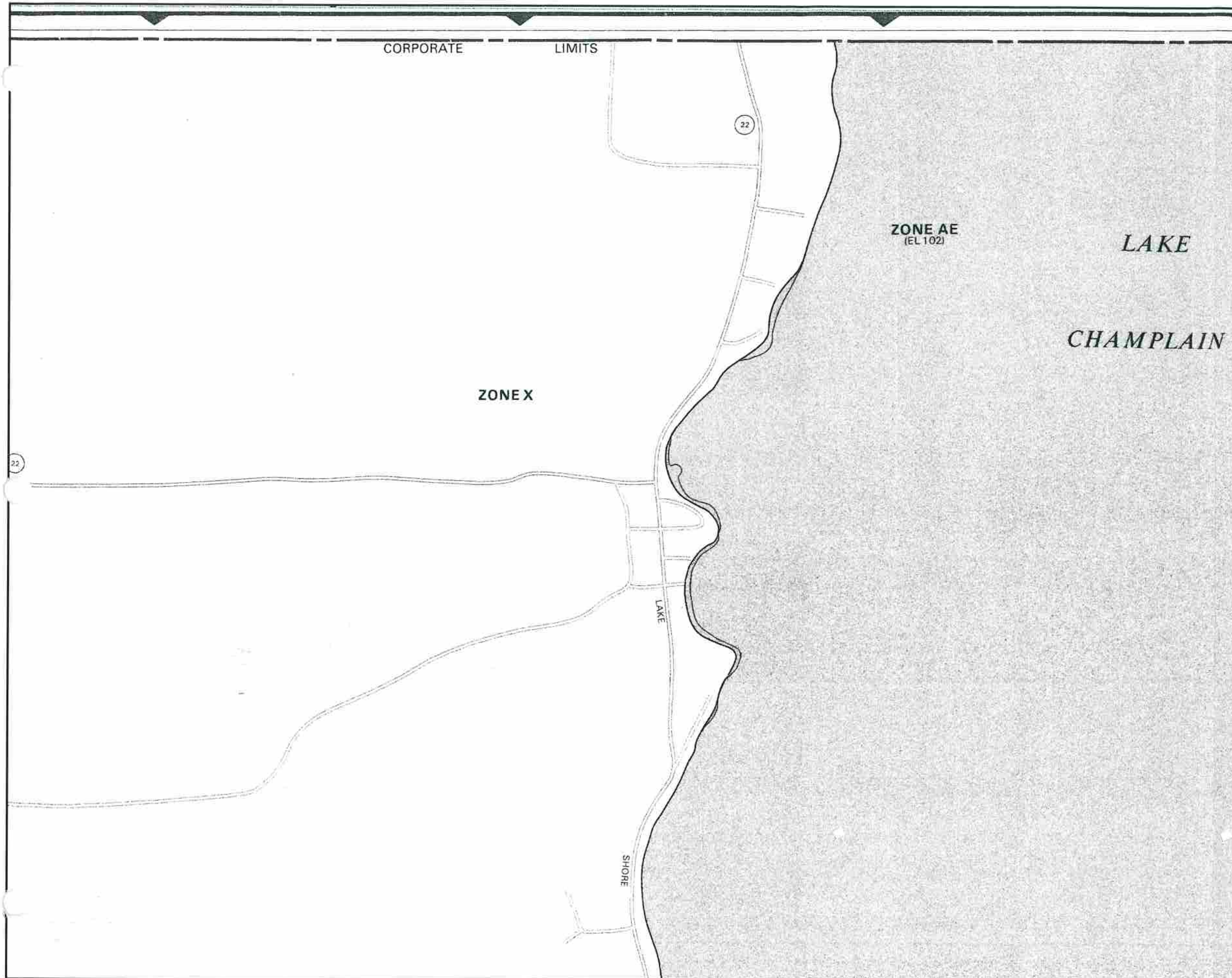
Disinfection must be sufficient to ensure that the total treatment process (disinfection plus filtration) of the system achieves at least:

- 99.9% (3-log) inactivation and/or removal of *Giardia lamblia.*
- 99.99% (4-log) inactivation and/or removal of viruses.

Cryptosporidium must be removed by filtration and no inactivation credits are currently given for disinfection. Systems must also comply with the maximum residual disinfectant level (MRDL) requirements specified in the Stage 1 Disinfectants/ Disinfection Byproducts Rule (Stage 1 DBPR).

Residual Disinfectant Monitoring and Reporting Requirements

Location	Concentration	Monitoring Frequency	Reporting (Reports due 10th of the following month)
Entry to distribution system.	Residual disinfectant concentration cannot be < 0.2 mg/L for more than 4 hours.	Continuous, but states may allow systems serving 3,300 or fewer persons to take grab samples from 1 to 4 times per day, depending on system size.	Lowest daily value for each day, the date and duration when residual disinfectant was < 0.2 mg/L, and when state was notified of events where residual disinfectant was < 0.2 mg/L.
Distribution system - same location as total coliform sample location(s).	Residual disinfectant concentration cannot be undetectable in greater than 5% of samples in a month, for any 2 consecutive months. Heterotrophic plate count (HPC) ≤ 500/mL is deemed to have detectable residual disinfectant.	Same time as total coliform samples.	Number of residual disinfectant or HPC measurements taken in the month resulting in no more than 5% of the measurements as being undetectable in any 2 consecutive months.



APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
and
STREET INDEX

TOWN OF
ESSEX, NEW YORK
ESSEX COUNTY

ONLY PANEL PRINTED

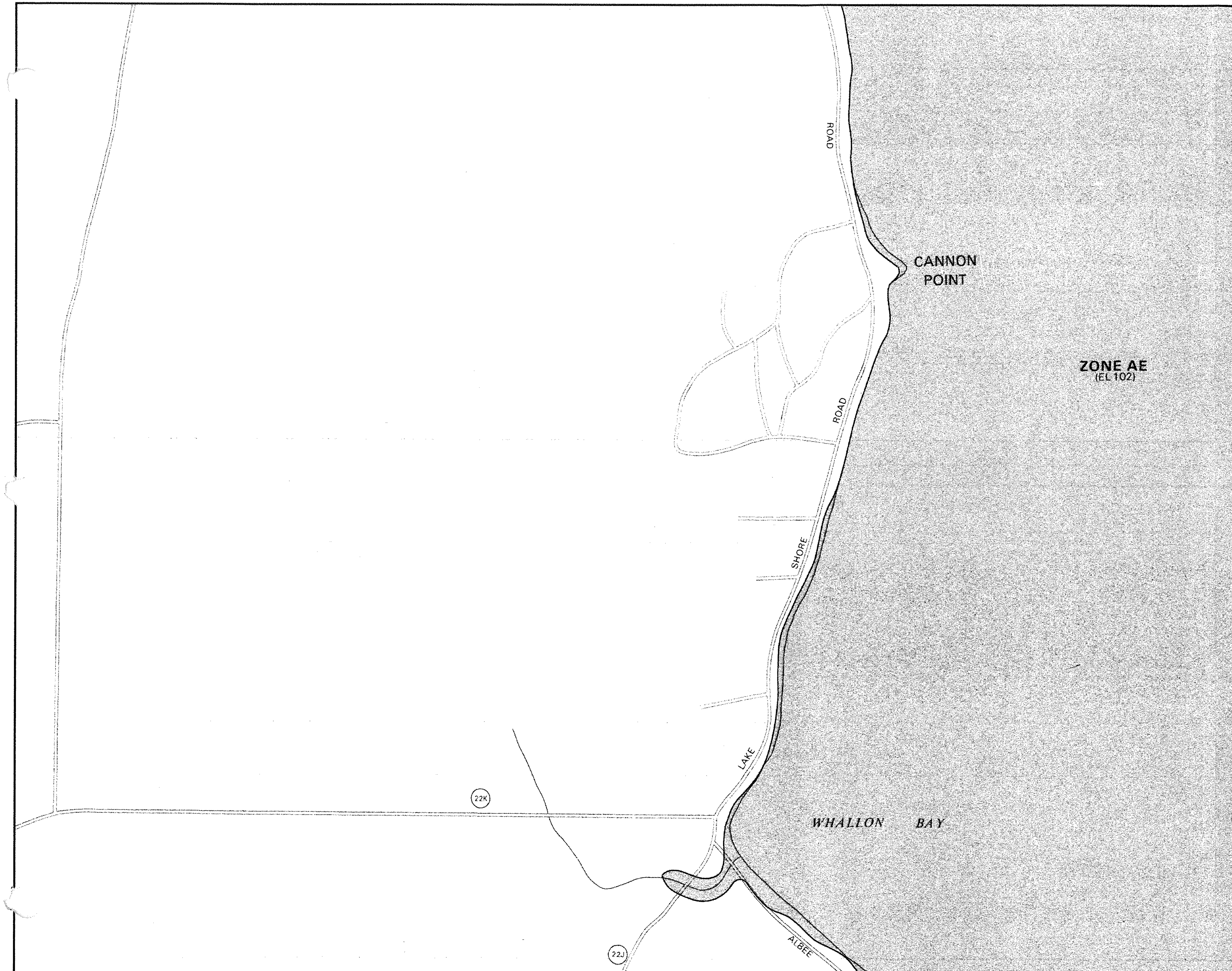
COMMUNITY-PANEL NUMBER
361149 0010 A

EFFECTIVE DATE:
APRIL 3, 1987

Federal Emergency Management Agency

Exhibit F: FEMA Firm Maps

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
and
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TOWN OF
ESSEX, NEW YORK
ESSEX COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
361149 0010 A

EFFECTIVE DATE:
APRIL 3, 1987

Federal Emergency Management Agency

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE A0 Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year flood plain.

ZONE D Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D Cross Section Line

(EL 987) Base Flood Elevation in Feet Where Uniform Within Zone*

RM7 Elevation Reference Mark

APPROXIMATE SCALE

1000 0 1000 FEET

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside special flood hazard areas. The coastal flooding elevations shown may differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Elevation reference marks are described in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of 0.0 NGVD.

Coastal base flood elevations shown on this map include the effects of wave action.

MAP REPOSITORY

Town Hall, Essex, New York, 12936 (Maps available for reference only, not for distribution).

INITIAL IDENTIFICATION:

DECEMBER 20, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:

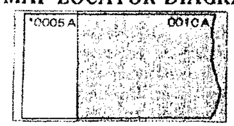
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:

APRIL 3, 1987

FLOOD INSURANCE RATE MAP REVISIONS:

MAP LOCATOR DIAGRAM



*PANEL NOT PRINTED-NO SPECIAL FLOOD HAZARD AREAS

Refer to Flood Insurance Rate Map Effective date shown below to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

Nature of the Basin

LAKE CHAMPLAIN BASIN ATLAS

Lake and Basin Facts

Rock Island is one of the Lake's many islands.

Lake Length: 120 miles (193 kilometers). Lake Champlain flows from Whitehall, New York north almost across the U.S./Canadian border to its outlet at the Richelieu River in Quebec. From there, the water joins the St. Lawrence River, which eventually drains into the Atlantic Ocean at the Gulf of St. Lawrence.

Greatest Width: 12 miles (19 km).

Greatest Lake Depth: 400 ft. (122 meters). The waters of Lake Champlain reach their greatest depth in the area between Charlotte, Vermont and Essex, New York. Visit the Lake Depths page for more information.

Lake Champlain Basin Program

Average Lake Depth: 64 ft. (19.5 meters).

Average Annual Water Level: 95.5 ft. Normal annual variation between high and low average water levels is about six feet (2 meters) in Lake Champlain, but since the early 1870s when daily records began, the maximum range between the high and low average water levels was measured at 9.4 feet (3 meters).

Record High Water Level: 103.57 ft. recorded in 2011 near Whitehall, NY (Burlington, VT recorded 103.27 ft. in the same year).

Record Low Water Level: 92.4 ft. recorded in 1908.

Lake Area: 435 sq. miles (1127 sq. kilometers) of surface water.

Average Volume of Water: 6.8 trillion gallons (25.8 cubic kilometers).

Water Retention Time: Varies by Lake segment. It is longest in the Main Lake, about three years and shortest in the South Lake -- less than two months.

Amount of Shoreline: 587 miles (945 kilometers) of shoreline.

Number of Beaches: There are about 54 public or commercial beaches and 10 private beaches on the Lake's shores. Visit the Beaches page for more information.

Average Lake Freeze Date: The average Lake freeze date (across the Lake's widest part) is February 12th. During the frigid winter of 2003, it froze on February 15th, and during 2004, the Lake froze on January 27th. In 2005, it froze on March 8th. However, the Lake is still freezing less frequently

across its widest part than it has in the past. For example, it only froze during three winters between 1990-2000.


A great blue heron fishing from Lake Champlain's ice during March.

Lake Segments: The Lake is divided into five distinct areas, each with different physical and chemical characteristics and water quality. These lake segments include: the South Lake, the Main Lake (or Broad Lake), Malletts Bay, the Inland Sea (or Northeast Arm), and Missisquoi Bay.

Lake Stratification: Lake Champlain stratifies in the spring and summer. The warmer, less dense, upper layer (epilimnion) of the Lake typically extends down about 33 feet (10 meters) in the Main Lake during the summer. Below this layer, there is a sharp transition in temperature called the "metalimnion" or "thermocline," to the much colder waters below, called the "hypolimnion".

Number of Islands in Lake: More than 70.

Area of the Basin: 8,234 sq. miles (21,326 sq. kms). Ninety percent of the water that enters Lake Champlain flows through the Lake's drainage basin before it reaches the Lake.

Land Distribution: Fifty-six percent of the Basin is in Vermont, 37% is in New York, and 7% is in the Province of Quebec.

Area of Wetlands in the Basin: More than 300,000 acres. Visit the Wetlands page for more information.

Average Annual Precipitation: More than 50 in. (127 cm) in the mountains and 30 in. (76 centimeters) near the Lake or in valleys. Visit the Climate page for more information.

Growing Season: 150 days near the Lake and 105 days in higher terrain.

Average Annual Air Temperature: 40-45 degrees Fahrenheit (4.4-7.2 Celsius).

Population of Basin: 571,000 (541,000 in the US according to the 2000 Census Data, and 30,000 in Quebec). About 68% live in Vermont, 27% in New York, and 5% in Quebec. Density is about 61 people per sq. mi. Visit the Population page for more information.

Drinking Water Use: Approximately 200,000 people or about 35% of the Basin population, depend on Lake Champlain for drinking water. Approximately 4,149 draw water directly from Lake Champlain for individual use. There are 99 public water systems drawing water from Lake Champlain.

Tourism Expenditures: About 3.8 billion in 1998-99. Visit the Economics page for more information.

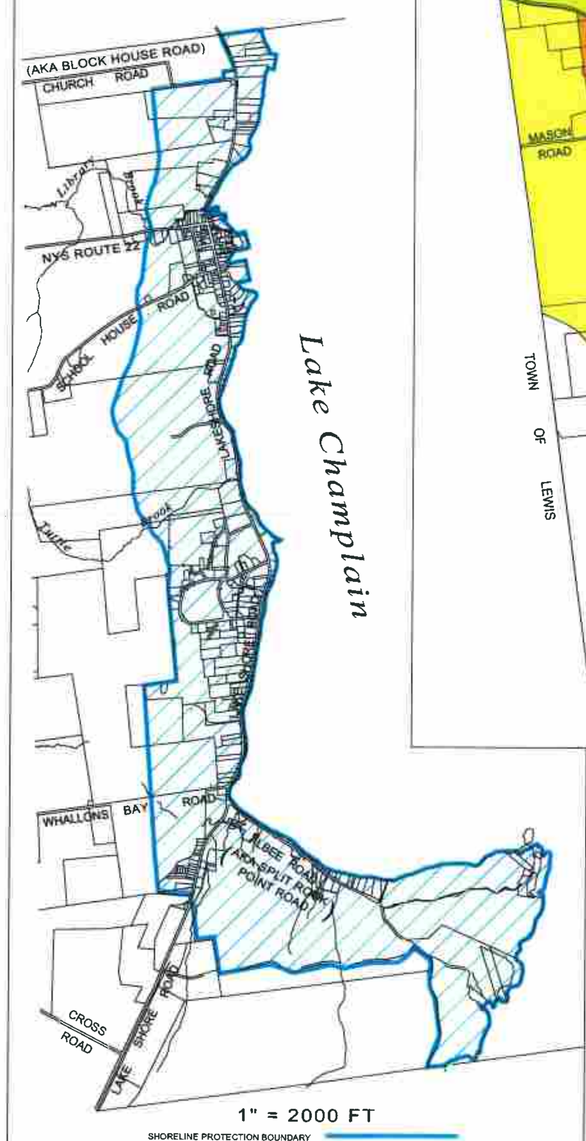
Learn More...

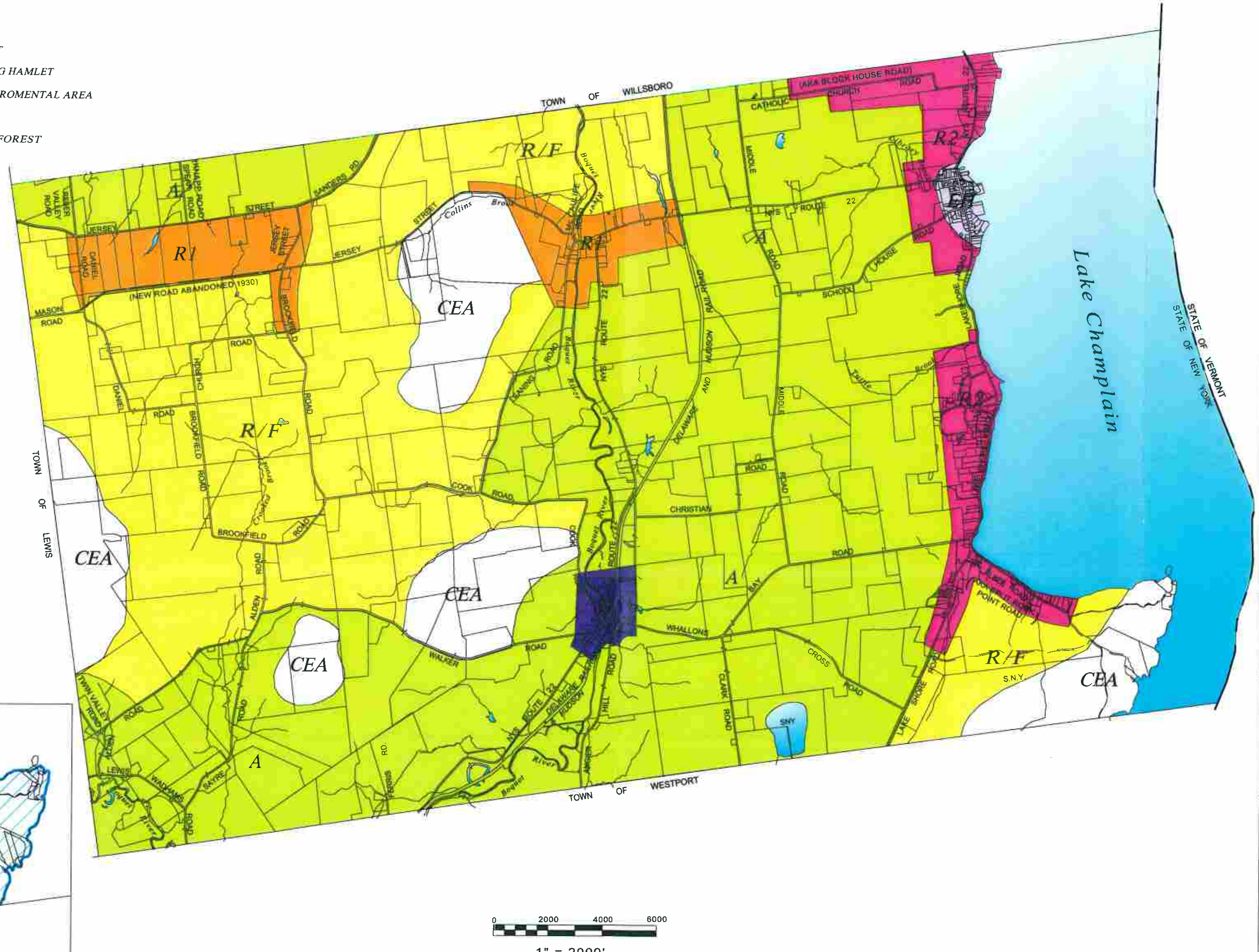
- Lake Champlain Basin - LCBP Fact Sheet #3

TOWN OF ESSEX
ZONING CLASSIFICATIONS

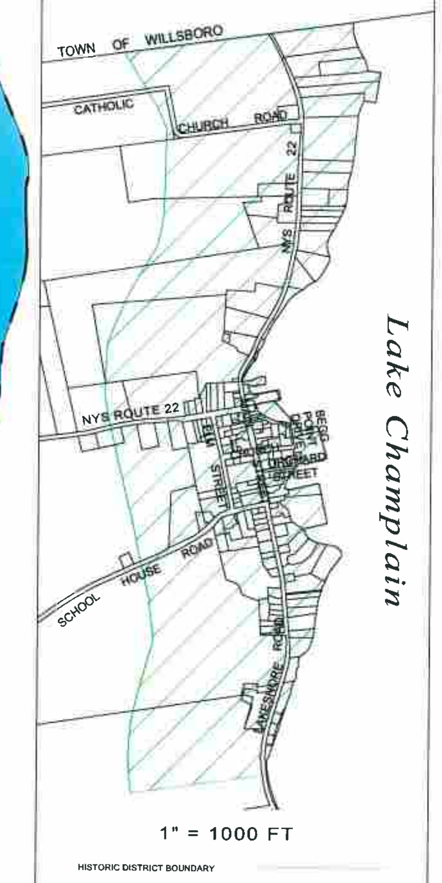
- R1-RESIDENTIAL 1
- R2-RESIDENTIAL 2
- EH- ESSEX HAMLET
- WH- WHALLONSBURG HAMLET
- CEA- CRITICAL ENVIROMENTAL AREA
- A- AGRICULTURE
- R/F- RECREATION/FOREST

SHORELINE PROTECTION OVERLAY DISTRICT





TOWN OF ESSEX HISTORIC DISTRICT BOUNDARY



NO.	DESCRIPTION	DATE
	REVISIONS	

A E S
NORTHEAST
10-12 CITY HALL PLACE
PLATTSBURGH, NEW YORK 12901
TEL: (518) 561 1598
FAX: (518) 561 1990
www.aesnortheast.com

DRAWING TITLE
MAP OF

ZONING CLASSIFICATIONS FOR THE TOWN OF ESSEX

ESSEX COUNTY, NY

DATE 5/12/2003
DRAWN BY: J. BURNS
CHECKED BY: S. ALLEN
PROJECT NO. 2578

U.S. Census Bureau
American FactFinder

FACT SHEET

Essex town, Essex County, New York

2005-2009 American Community Survey 5-Year Estimates - **what's this?**
Data Profile Highlights:

Note: The following links are to data from the American Community Survey and the Population Estimates Program.

NOTE: Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Social Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
Average household size	1.95	(X)	2.60	+/-0.28
Average family size	2.37	(X)	3.19	+/-0.31
Population 25 years and over	427			+/-71
High school graduate or higher	(X)	92.0	84.6%	(X)
Bachelor's degree or higher	(X)	42.9	27.5%	(X)
Civilian veterans (civilian population 18 years and over)	66	12.7	10.1%	+/-27
With a Disability	(X)	(X)	(X)	(X)
Foreign born	23	4.0	12.4%	+/-18
Male, Now married, except separated (population 15 years and over)	140	51.5	52.3%	+/-37
Female, Now married, except separated (population 15 years and over)	141	54.0	48.4%	+/-36
Speak a language other than English at home (population 5 years and over)	22	3.9	19.6%	+/-25
Household population	572			+/-119
Group quarters population	(X)	(X)	(X)	(X)

Economic Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
In labor force (population 16 years and over)	342	64.3	65.0%	+/-94
Mean travel time to work in minutes (workers 16 years and over)	22.4	(X)	25.2	+/-5.4
Median household income (in 2009 inflation-adjusted dollars)	53,125	(X)	51,425	+/-15,490
Median family income (in 2009 inflation-adjusted dollars)	66,458	(X)	62,363	+/-15,944
Per capita income (in 2009 inflation-adjusted dollars)	32,232	(X)	27,041	+/-6,001
Families below poverty level	(X)	0.0	9.9%	+/-18.4
Individuals below poverty level	(X)	3.3	13.5%	+/-2.4

Housing Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
Total housing units	503			+/-45
Occupied housing units	294	58.4	88.2%	+/-46
Owner-occupied housing units	244	83.0	66.9%	+/-46
Renter-occupied housing units	50	17.0	33.1%	+/-24
Vacant housing units	209	41.6	11.8%	+/-39
Owner-occupied homes	244			+/-46
Median value (dollars)	176,000	(X)	185,400	+/-29,416
Median of selected monthly owner costs				
With a mortgage (dollars)	1,281	(X)	1,486	+/-818
Not mortgaged (dollars)	502	(X)	419	+/-98

ACS Demographic Estimates - show more >>	Estimate	Percent	U.S.	Margin of Error
Total population	572			+/-119
Male	292	51.0	49.3%	+/-75
Female	280	49.0	50.7%	+/-60
Median age (years)	50.7	(X)	36.5	+/-6.2
Under 5 years	11	1.9	6.9%	+/-14
18 years and over	518	90.6	75.4%	+/-102

65 years and over	150	26.2	12.6%	+/-45
One race	560	97.9	97.8%	+/-121
White	549	96.0	74.5%	+/-122
Black or African American	0	0.0	12.4%	+/-123
American Indian and Alaska Native	0	0.0	0.8%	+/-123
Asian	11	1.9	4.4%	+/-13
Native Hawaiian and Other Pacific Islander	0	0.0	0.1%	+/-123
Some other race	0	0.0	5.6%	+/-123
Two or more races	12	2.1	2.2%	+/-14
Hispanic or Latino (of any race)	0	0.0	15.1%	+/-123

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Explanation of Symbols:
'***' - The median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
'*****' - The estimate is controlled. A statistical test for sampling variability is not appropriate.
'N' - Data for this geographic area cannot be displayed because the number of sample cases is too small.
'(X)' - The value is not applicable or not available.

U.S. Census Bureau
American FactFinder

FACT SHEET

Essex town, Essex County, New York

View a Fact Sheet for a **race, ethnic, or ancestry group**

Census 2000 Demographic Profile Highlights:

General Characteristics - show more >>	**Number**	**Percent**	**U.S.**		
Total population	713			map	brief
Male	366	51.3	49.1%	map	brief
Female	347	48.7	50.9%	map	brief
Median age (years)	44.8	(X)	35.3	map	brief
Under 5 years	25	3.5	6.8%	map	
18 years and over	561	78.7	74.3%		
65 years and over	146	20.5	12.4%	map	brief
One race	712	99.9	97.6%		
White	711	99.7	75.1%	map	brief
Black or African American	0	0.0	12.3%	map	brief
American Indian and Alaska Native	1	0.1	0.9%	map	brief
Asian	0	0.0	3.6%	map	brief
Native Hawaiian and Other Pacific Islander	0	0.0	0.1%	map	brief
Some other race	0	0.0	5.5%	map	
Two or more races	1	0.1	2.4%	map	brief
Hispanic or Latino (of any race)	1	0.1	12.5%	map	brief
Household population	711	99.7	97.2%	map	brief
Group quarters population	2	0.3	2.8%	map	
Average household size	2.35	(X)	2.59	map	brief
Average family size	2.79	(X)	3.14	map	
Total housing units	522			map	
Occupied housing units	302	57.9	91.0%		brief
Owner-occupied housing units	256	84.8	66.2%	map	
Renter-occupied housing units	46	15.2	33.8%	map	brief
Vacant housing units	220	42.1	9.0%	map	

Social Characteristics - show more >>	**Number**	**Percent**	**U.S.**		
Population 25 years and over	524				
High school graduate or higher	400	76.3	80.4%	map	brief
Bachelor's degree or higher	132	25.2	24.4%	map	
Civilian veterans (civilian population 18 years and over)	95	16.4	12.7%	map	brief
Disability status (population 5 years and over)	129	18.5	19.3%	map	brief
Foreign born	17	2.3	11.1%	map	brief
Male, Now married, except separated (population 15 years and over)	167	52.7	56.7%		brief
Female, Now married, except separated (population 15 years and over)	160	51.8	52.1%		brief
Speak a language other than English at home (population 5 years and over)	15	2.1	17.9%	map	brief

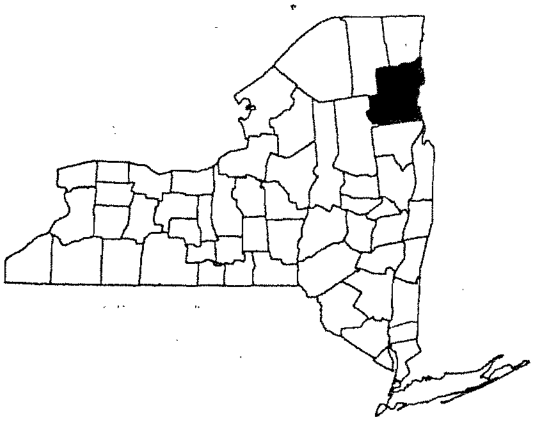
Economic Characteristics - show more >>	**Number**	**Percent**	**U.S.**		
In labor force (population 16 years and over)	376	61.1	63.9%		brief
Mean travel time to work in minutes (workers 16 years and over)	22.4	(X)	25.5	map	brief
Median household income in 1999 (dollars)	37,596	(X)	41,994	map	
Median family income in 1999 (dollars)	40,104	(X)	50,046	map	
Per capita income in 1999 (dollars)	20,087	(X)	21,587	map	
Families below poverty level	23	10.8	9.2%	map	brief
Individuals below poverty level	80	11.0	12.4%	map	

Housing Characteristics - show more >>	**Number**	**Percent**	**U.S.**		
Single-family owner-occupied homes	159				brief
Median value (dollars)	73,700	(X)	119,600	map	brief
Median of selected monthly owner costs	(X)	(X)			brief
With a mortgage (dollars)	821	(X)	1,088	map	
Not mortgaged (dollars)	308	(X)	295		

(X) Not applicable.
Source: U.S. Census Bureau, Summary File 1 (SF 1) and Summary File 3 (SF 3)

The letters PDF or symbol indicate a document is in the Portable Document Format (PDF). To view the file you will need the Adobe® Acrobat® Reader, which is available for **free** from the Adobe web site.

Essex County



The second largest county in the state, Essex County was the site of many battles between the French and British and their Indian allies in the early 1600's. This continued through the Revolutionary War, but a period of relative quiet saw the county being created from Clinton County in 1799 and settlement begun. The end to hostilities came with the end of the war of 1812 and settlement began in earnest. The rich natural resources produced lumber and iron ore and the area's natural beauty continues to make the area a major tourist destination, with Lake Placid the site of the 1932 and 1980 Winter Olympics.

County Seat: Elizabethtown
Established: 1799

Legislative Districts

Congressional: 22
Senate: 45
Assembly: 109

Area: 1,823 sq. miles

Percent of State: 3.6

Population

1980 Census: 36,176
1990 Census: 37,152
Percent of State: 0.2
Density: 20.4 persons per square miles

Ethnic Breakdown	1990 Census	%
White	35,682	94.1
Black	1,051	2.7
American Indian/Eskimo/Aleut	94	0.2
Asian/Pacific Islander	146	0.4
Other	179	0.5
Hispanic	748	2.0

Cities and Towns	1980	1990
Saranac Lake Village	1,462	5,377
Chesterfield Town	2,398	2,267
Keeseville Village (PT)	970	—?
Crown Point Town	1,837	1,963
Elizabethtown Town	1,267	1,314
Essex Town	880	687
Jay Town	2,221	2,244
Keene Town	919	908
Lewis Town	922	1,057
[illegible] Town	781	758
[illegible] Town	5,139	4,884
Port Henry Village	1,450	1,263
Newcomb Town	681	544
North Elba Town	6,597	7,870
Lake Placid Village	2,490	2,485
North Hudson Town	179	266
St. Armand Town	1,064	1,318
Bloomingdale Village	608	
Schroon Town	1,606	1,721
Ticonderoga Town	5,436	5,149
Ticonderoga Village	2,938	2,770
Westport Town	1,439	1,446
Westport Village	613	539
Willsboro Town	1,759	1,736
Wilmington Town	1,051	1,020
Total	36,176	37,152

Essex County

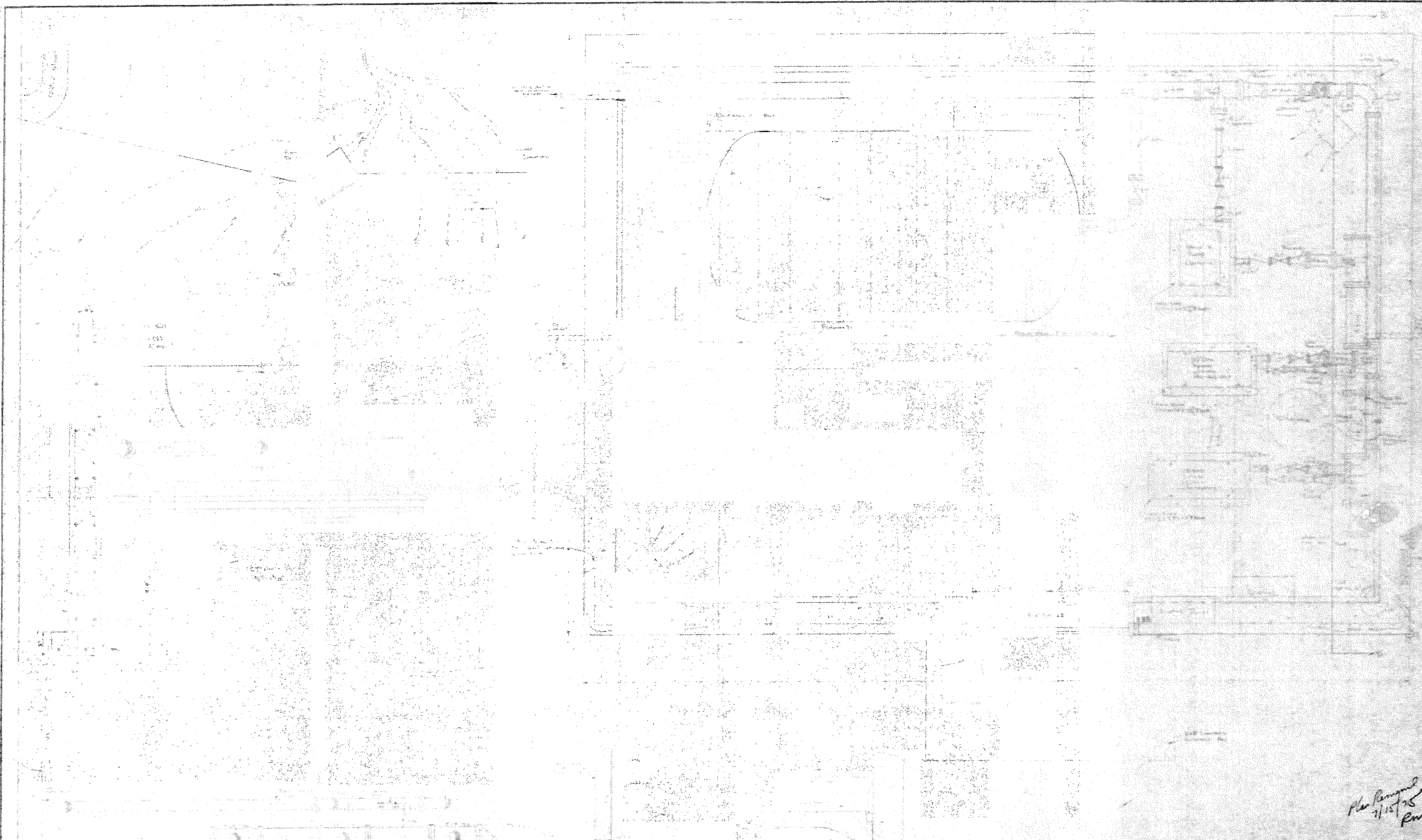
County Government Center
Elizabethtown, NY 12932 .... (518) 873-6301
Or 1-800-562-3660
FAX .... (518) 873-6826

Board of Supervisors

Joseph E. Boone, Chair .... (518) 873-6777
Joyce Morency, Vice Chair .... (518) 891-2199
Roger Poland
Charles Mazurowski
Allen L. Dickerson
Wallace W. Hill
Vern J. McDonald
Robert R. Purdy
Andrew Halloran
Thomas Scozzafava
George H. Canon
Matthew Clark
Mildred Dobie
John J. Kelly
Michael J. Connery
Donald McIntyre
Theresa R. Sayward
Joanne E. Zaumetzer
Clerk: Peter R. Mends .... (518) 876-9109
FAX .... (518) 873-6826

Department Heads

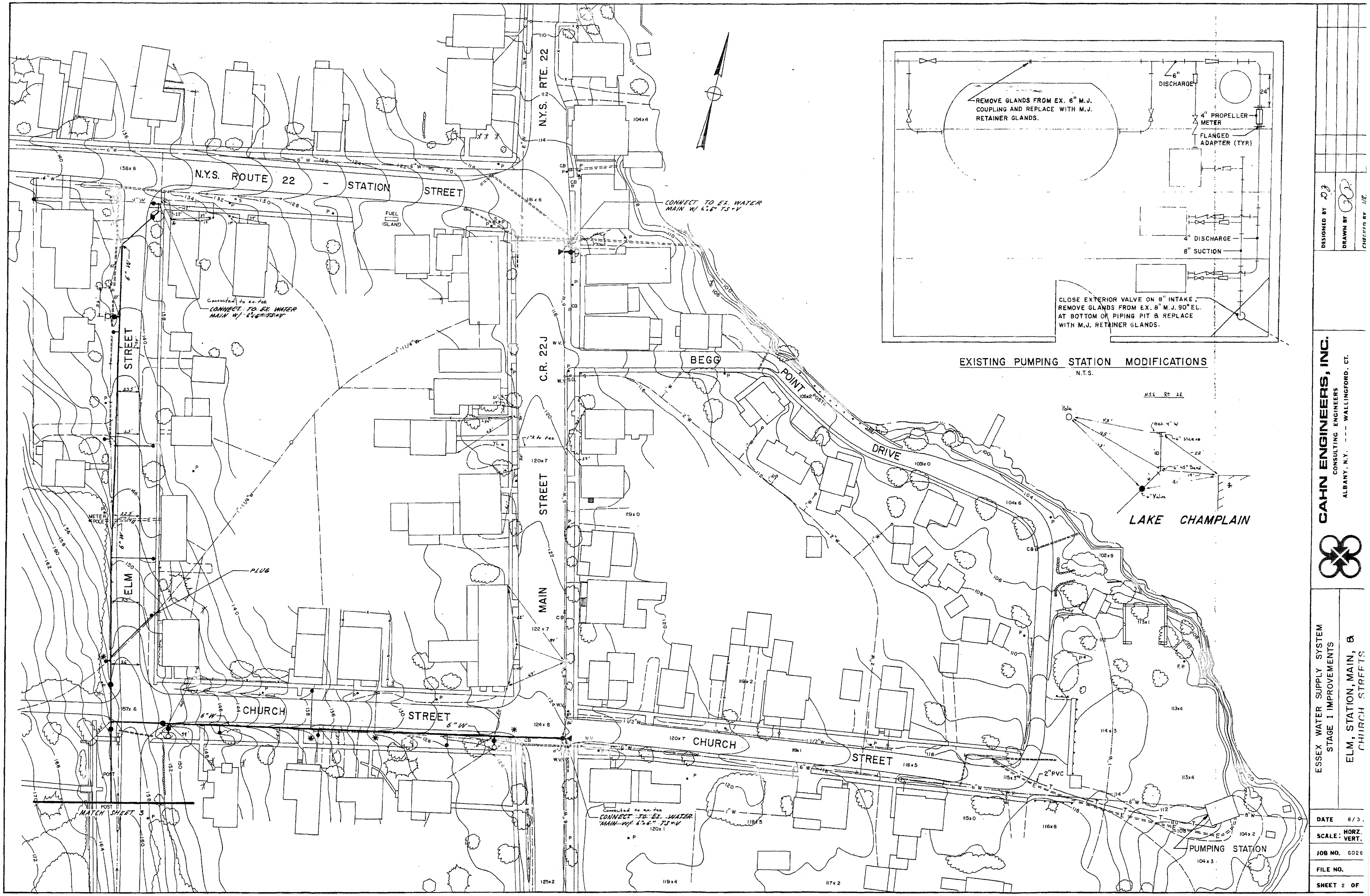
Affirmative Action Officer: Peter R. Mends .... (518) 873-9109
Aging Director: Grace Armstrong .... (518) 873-6301 x 370
Arts Council: Caroline Rubino .... (518) 873-6301 x 359
Auditor: Brenda Sullivan .... (518) 873-6301 x 274
Budget Officer: Kim A. Higgs .... (518) 873-6301 x 269
Building Codes: Terry McDougal .... (518) 873-6301 x 225
Building & Grounds: Roger Pratt .... (518) 873-6301 x 353
Community College President: Gail Rogers Rice .... (518) 891-2915
Community Services Board Chair: Gloria Degling
Coroners:
W. Robert Heustis .... (518) 963-4278
Paul Connery .... (518) 585-2550
Roy Parker .... (518) 523-1935
Herbert V.W. Bergamini .... (518) 523-3395
County Attorney: Richard B. Meyer .... (518) 873-6301 x 275
County Clerk: Joseph Provoncha .... (518) 873-6301 x 281
County Manager: Kim A. Higgs .... (518) 873-6301 x 269
County Treasurer: Spencer Egglefield .... (518) 873-6301 x 296
Data Processing Director:
Michael Brenish .... (518) 873-6301 x 298
Disaster Preparedness Director:
Raymond Thatcher .... (518) 873-6301 x 279 or 280



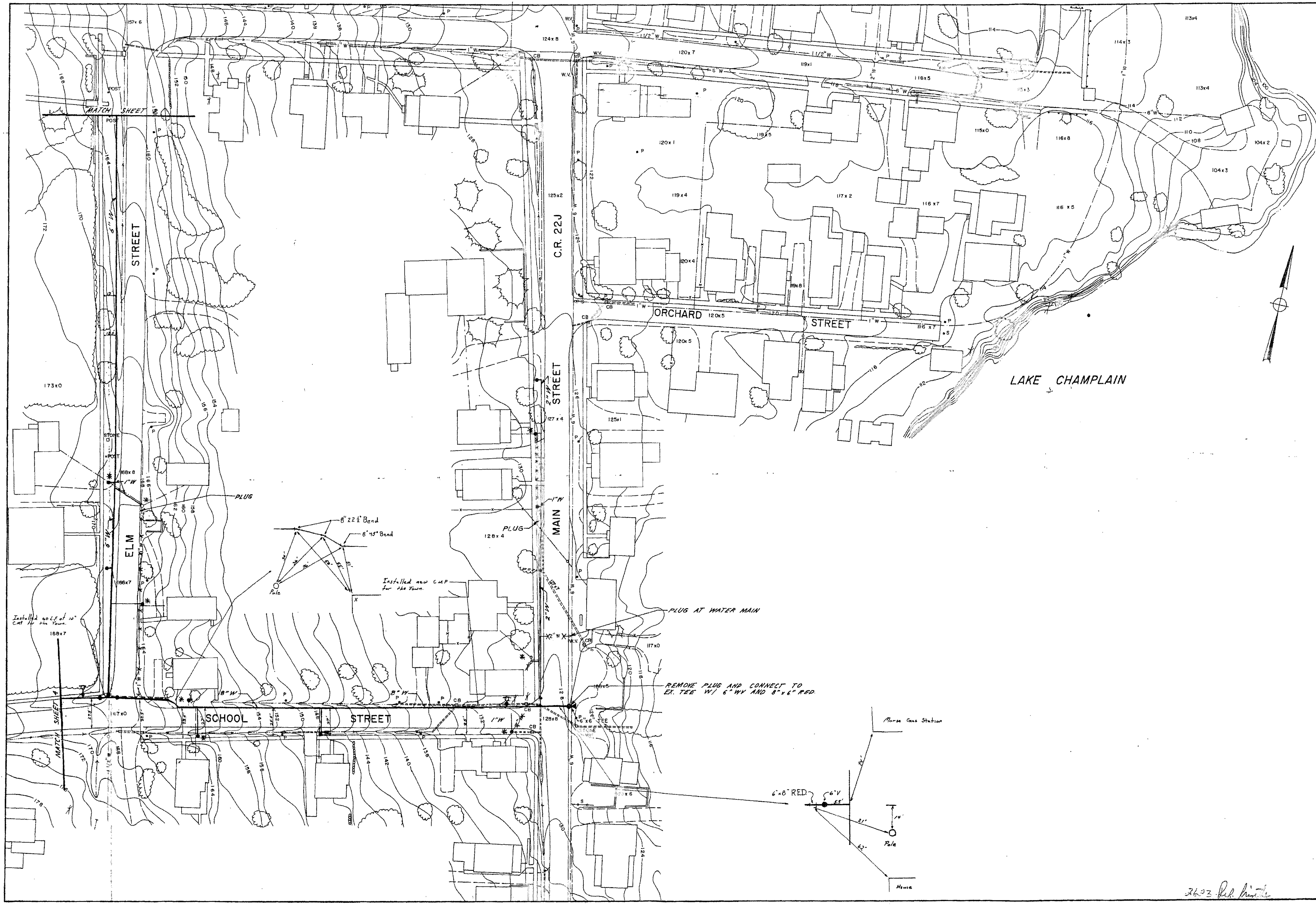
Plan Removed 7/15/25 Rm

TOWN OF ESSEX
ESSEX COUNTY NEW YORK
ESSEX WATER DISTRICT
WATER PUMPING STATION
PLAN AND DETAILS

(68)



N.Y.S. ROUTE 22 - STATION STREET
N.Y.S. RTE. 22
ELM STREET
C.R. 22J
MAIN STREET
CHURCH STREET
BEGG POINT DRIVE
FUEL ISLAND
CONNECT TO EX. WATER MAIN W/ 6"x6" TS+V
Connected to ex. tee
PLUG
METER POLE
MATCH SHEET 3
PUMPING STATION
2"PVC
LAKE CHAMPLAIN
REMOVE GLANDS FROM EX. 6" M.J. COUPLING AND REPLACE WITH M.J. RETAINER GLANDS.
6" DISCHARGE
4" PROPELLER METER
FLANGED ADAPTER (TYP.)
4" DISCHARGE
8" SUCTION
CLOSE EXTERIOR VALVE ON 8" INTAKE, REMOVE GLANDS FROM EX. 8" M.J. 90° EL. AT BOTTOM OF PIPING PIT & REPLACE WITH M.J. RETAINER GLANDS.
EXISTING PUMPING STATION MODIFICATIONS
N.T.S.
CAHN ENGINEERS, INC.
CONSULTING ENGINEERS
ALBANY, N.Y. --- WALLINGFORD, CT.
DESIGNED BY
DRAWN BY
CHECKED BY
ESSEX WATER SUPPLY SYSTEM
STAGE I IMPROVEMENTS
ELM, STATION, MAIN, & CHURCH STREETS
DATE 8/3.
SCALE: HORZ. VERT.
JOB NO. 6026
FILE NO.
SHEET 2 OF



ESSEX WATER SUPPLY SYSTEM
STAGE I IMPROVEMENTS
SCHOOL, ELM, MAIN, &

CAHN ENGINEERS, INC.
CONSULTING ENGINEERS
ALBANY, N.Y. --- WALLINGFORD, CT.

DESIGNED BY
DRAWN BY

DATE 8/
SCALE: HOR VER
JOB NO. 6
FILE NO.
SHEET 3 O

DESIGNED BY
DRAWN BY

CAHN ENGINEERS, INC.
CONSULTING ENGINEERS
ALBANY, N.Y. — WALLINGFORD, CT.

ESSEX WATER SUPPLY SYSTEM
STAGE 1 IMPROVEMENTS

SCHOOL STREET

DATE 8/3
SCALE: HOR; VERT
JOB NO. 60
FILE NO.
SHEET 4 OF

HAMLET OF ESSEX
WATER FILTRATION PROJECT

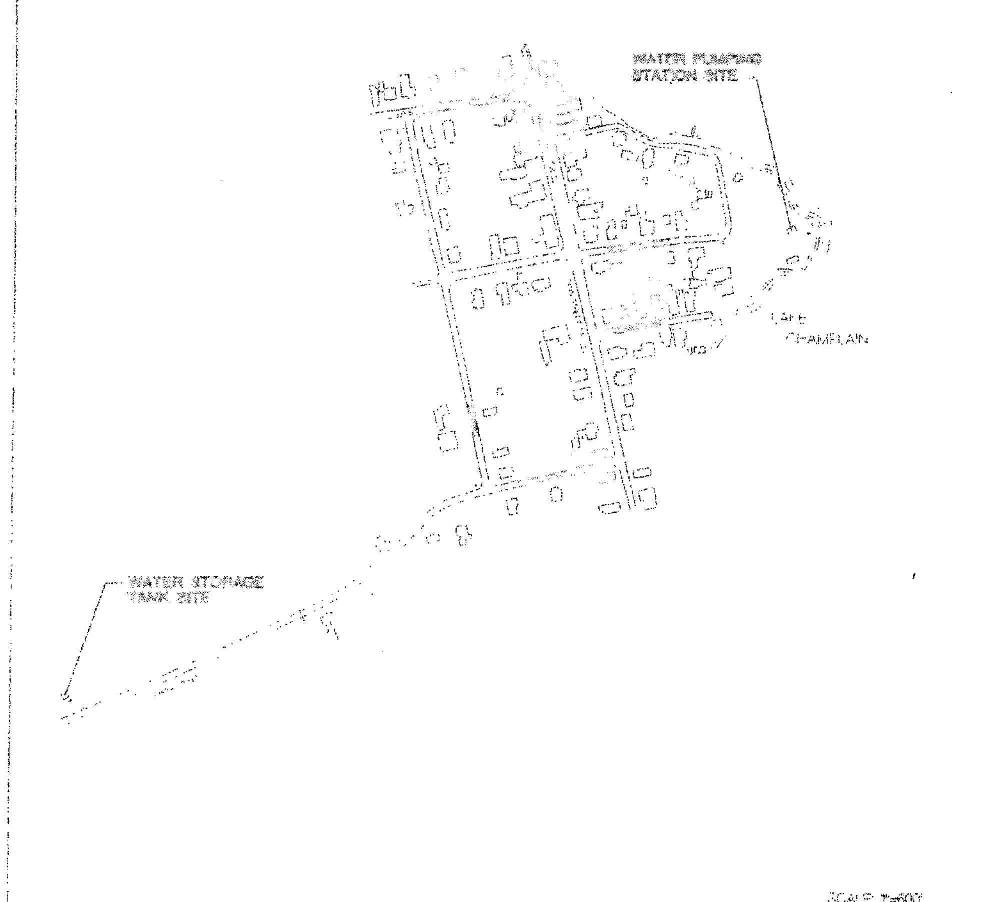
TOWN OF ESSEX, NEW YORK
JANUARY, 1993

TOWN BOARD

WALLACE W. HI... SUPERVISOR
STANLEY J. PIE...
HARRY A. LAPINE...
EDWARD GARD...
MICHAEL PRATT

CONTRACT NO. 1 - GENERAL
CONTRACT NO. 2 - ELECTRICAL

INDEX OF DRAWINGS



VICINITY MAP

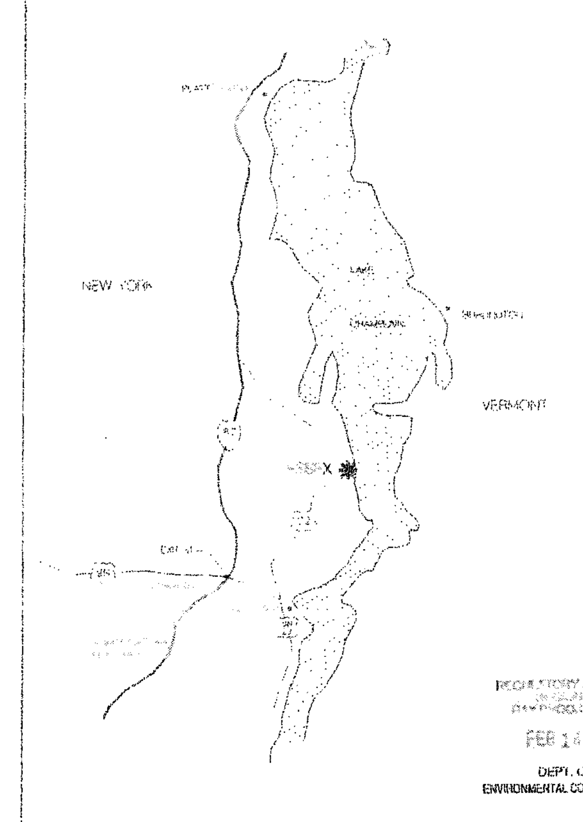
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
REGION 5

Date: ______

This document (s) for ______
is/are hereby APPROVED pursuant to Article ______ of the Environmental Conservation Law and/or 6 NYCRR Part ______
STATE COMMISSIONER OF ENVIRONMENTAL CONSERVATION

BY ______
Designated Representative

the LA group
landscape architecture and engineering, P.C.
Saratoga Springs
New York



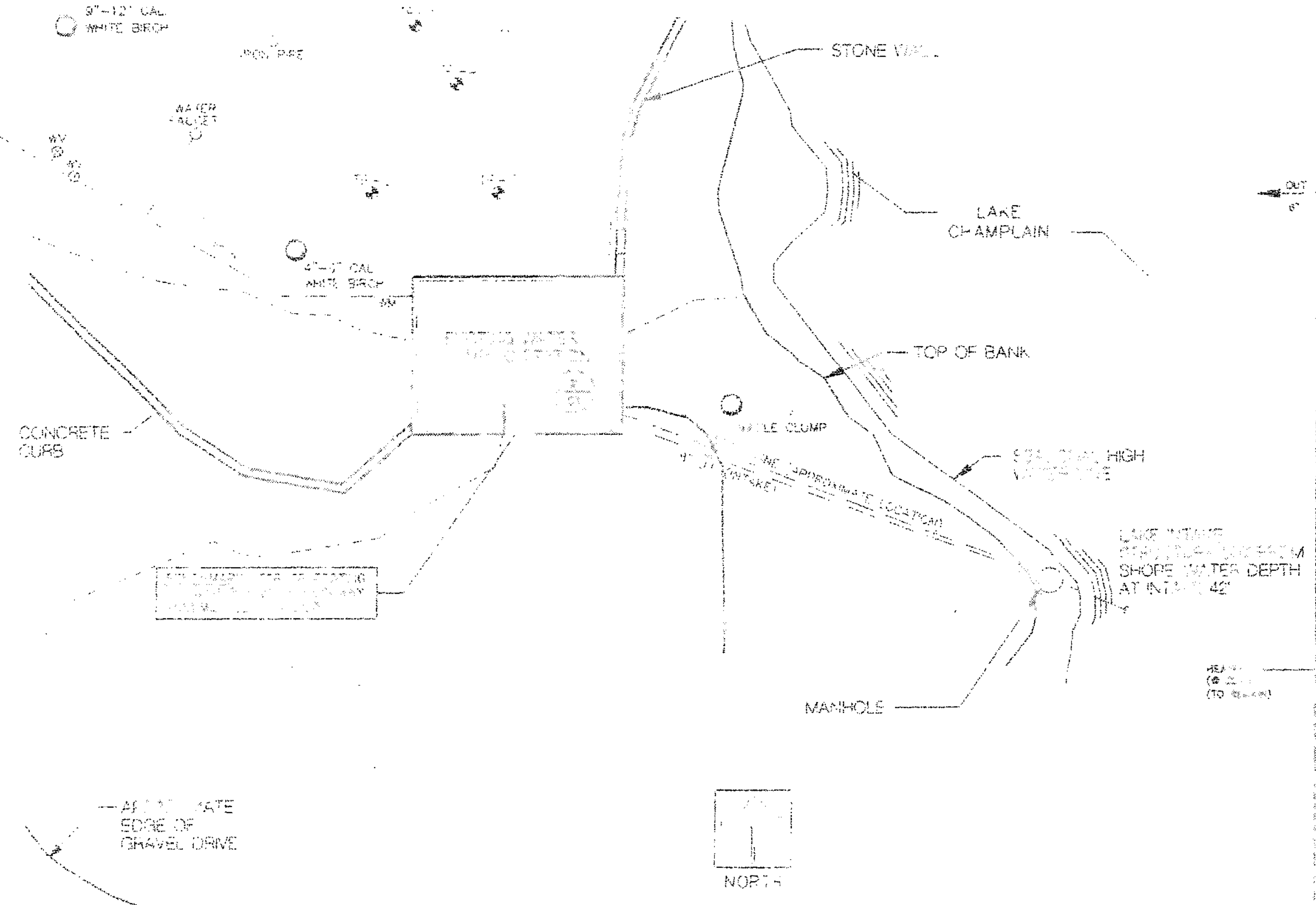
LOCATION MAP

REGULATORY AFFAIRS
FEB 14 1993
DEPT. OF ENVIRONMENTAL CONSERVATION

TEST PIT LOGS

TP-1 ... FILL ...
TP-2 ... MEDIUM SAND WITH GRAVEL, BRICK, WOOD PIECES ... RUBBLE FROM PREVIOUS STRUCTURE ... AT 72"
TP-3 ... MEDIUM SAND ... BUILDING RUBBLE ...
TP-4 ... REFUSAL AT ...

NOTE: BACKHOE OPERATOR REPORTS THAT THE TOP ... OF MATERIAL ...



NOTES:

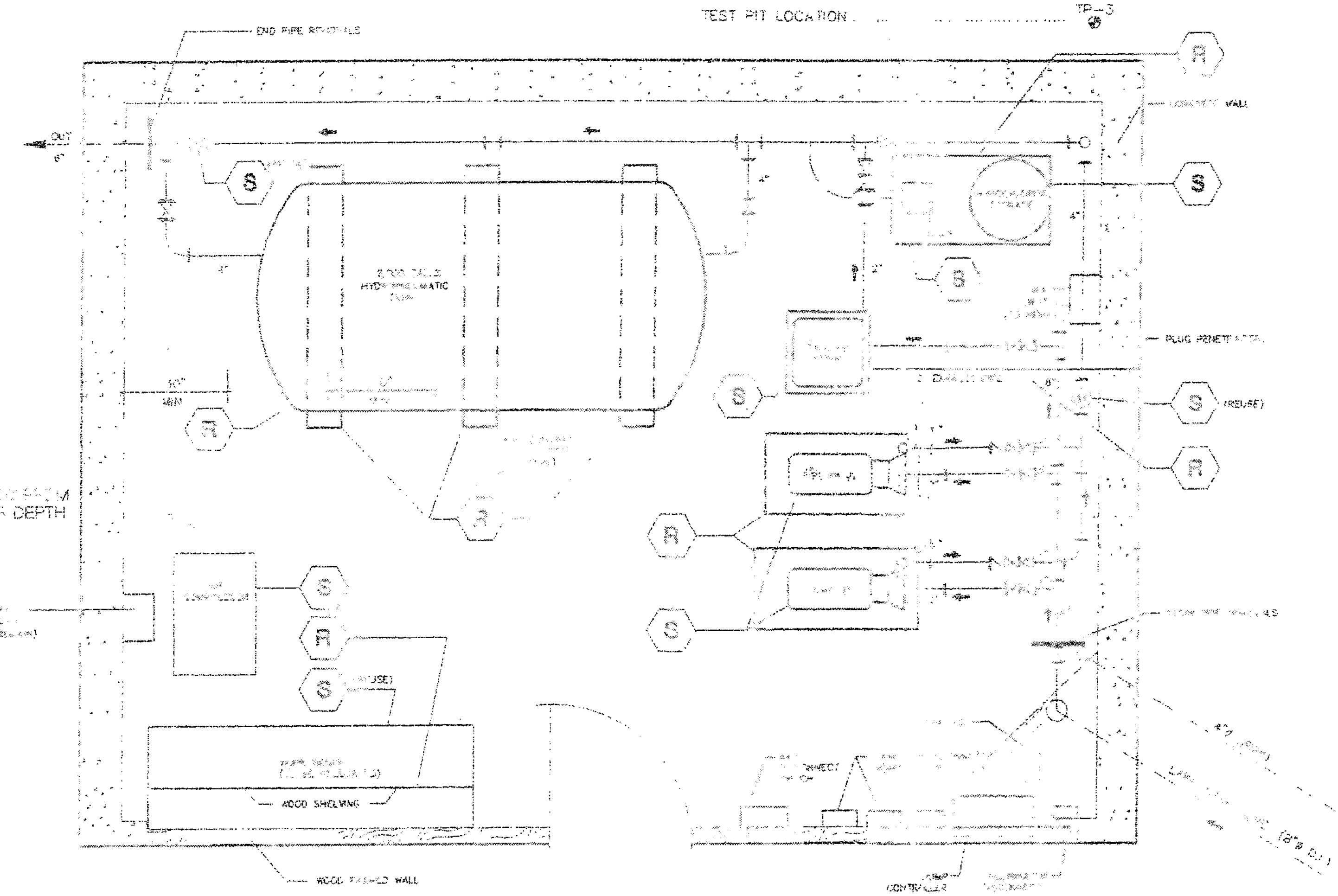
1. ALL PROPERTY LANDWARD OF TOP OF BANK SHOWN IS OWNED BY THE TOWN OF ESSEX. CONSULT WITH ... MATERIAL STORAGE AND STOCKPILE ... OPERATIONS TO TOWN PROPERTY AT BOTH SITES.
2. UNDERGROUND UTILITIES SHOWN ... APPROXIMATE ONLY. LOCATION SHOWN BASED ON LOCATED ... APPURTENANCES.
3. CONTRACTOR SHALL INSPECT THE SITE AND REVIEW EXISTING CONDITIONS BEFORE SUBMITTING A BID. FAILURE OF THE CONTRACTOR TO IDENTIFY EXISTING CONDITIONS SHALL NOT BE JUSTIFICATION FOR ADDITIONAL WORK.
4. REUSE EXISTING ... AND FITTINGS WHERE IN COMPLIANCE WITH THE SPECIFICATIONS AND IN GOOD CONDITION.
5. EXISTING ABANDONED PNEUMATIC LINES TO BE REMOVED FROM WATER PUMPING STATION

1. EXISTING WATER PUMPING STATION SITE PLAN

SCALE 1" = 10'

KEY:

ELBOW – 90 DEG.	JOINT ... PIPE
ELBOW – TURNED UP	GATE VALVE
ELBOW – TURNED DOWN	CHECK VALVE, STRAIGHT WAY
SIDE OUTLET ELBOW – OUTLET DOWN	DIRECTION OF FLOW
SIDE OUTLET ELBOW – OUTLET UP	WATER METER
TEE STRAIGHT SIZE	REMOVE FROM SITE (R)
REDUCER/INCREASER – CONCENTRIC	SALVAGE–TURN OVER TO OWNER (S)
	TEST PIT LOCATION TP-3



2. EXISTING WATER PUMPING STATION

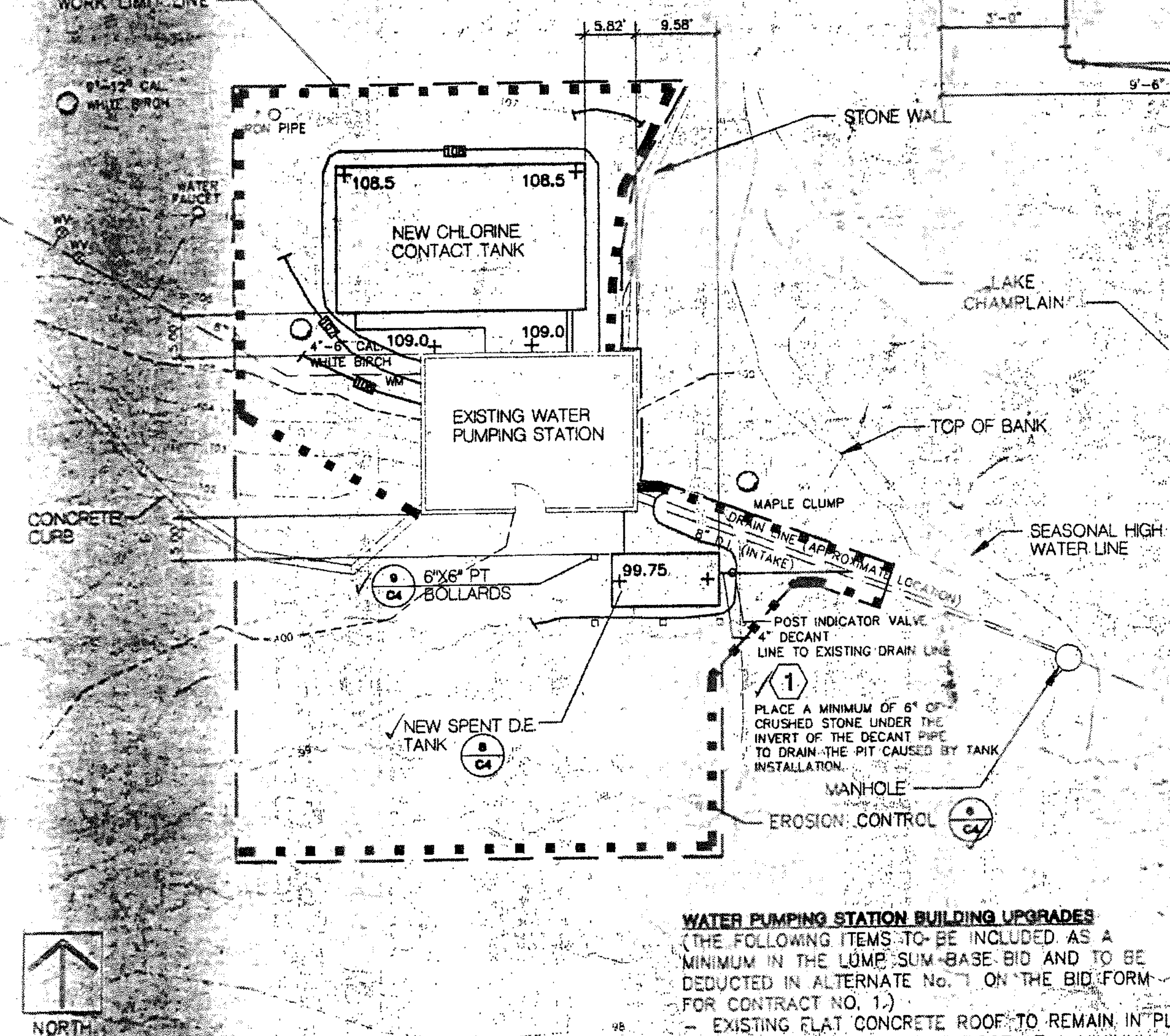
SCALE: 1/2" = 1'-0"

WATER FILTRATION PROJECT

TOWN OF ESSEX, NEW YORK

EXISTING CONDITIONS / REMOVALS

C1



NOTES:

1. FILTER FEED PUMP #'S 1 AND 2 TO BE SELF PRIMING – CLOSE COUPLED CENTRIFUGAL PUMPS.
2. DISTRIBUTION FEED PUMP #'S 1 AND 2 TO BE FLOODED SUCTION – CLOSE COUPLED CENTRIFUGAL PUMPS.
3. CONTRACTOR TO SUBMIT A PLAN, INCLUDING TIMING AND EQUIPMENT, TO THE ENGINEER DETAILING HOW CONTINUOUS WATER SERVICE WILL BE PROVIDED. FOR PLAN SUBMITTAL PURPOSES THE EXISTING STORAGE TANK ON SCHOOL STREET HAS THE CAPACITY TO STORE 36 HOURS OF WATER. THEREFORE THE MAXIMUM INTERRUPTION IN SERVICE CAN BE UP TO 36 HOURS. ANY AND ALL COST INCURRED BY AN INTERRUPTION LONGER THAN 36 HOURS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. PRIOR TO COMPLETION OF THE WORK THE EXISTING GRAVEL DRIVE/PARKING AREA SHALL BE RESTORED TO THE EXISTING OR BETTER CONDITION.
5. EXISTING EQUIPMENT / COMPONENTS ARE SHOWN FOR REFERENCE PURPOSE ONLY.

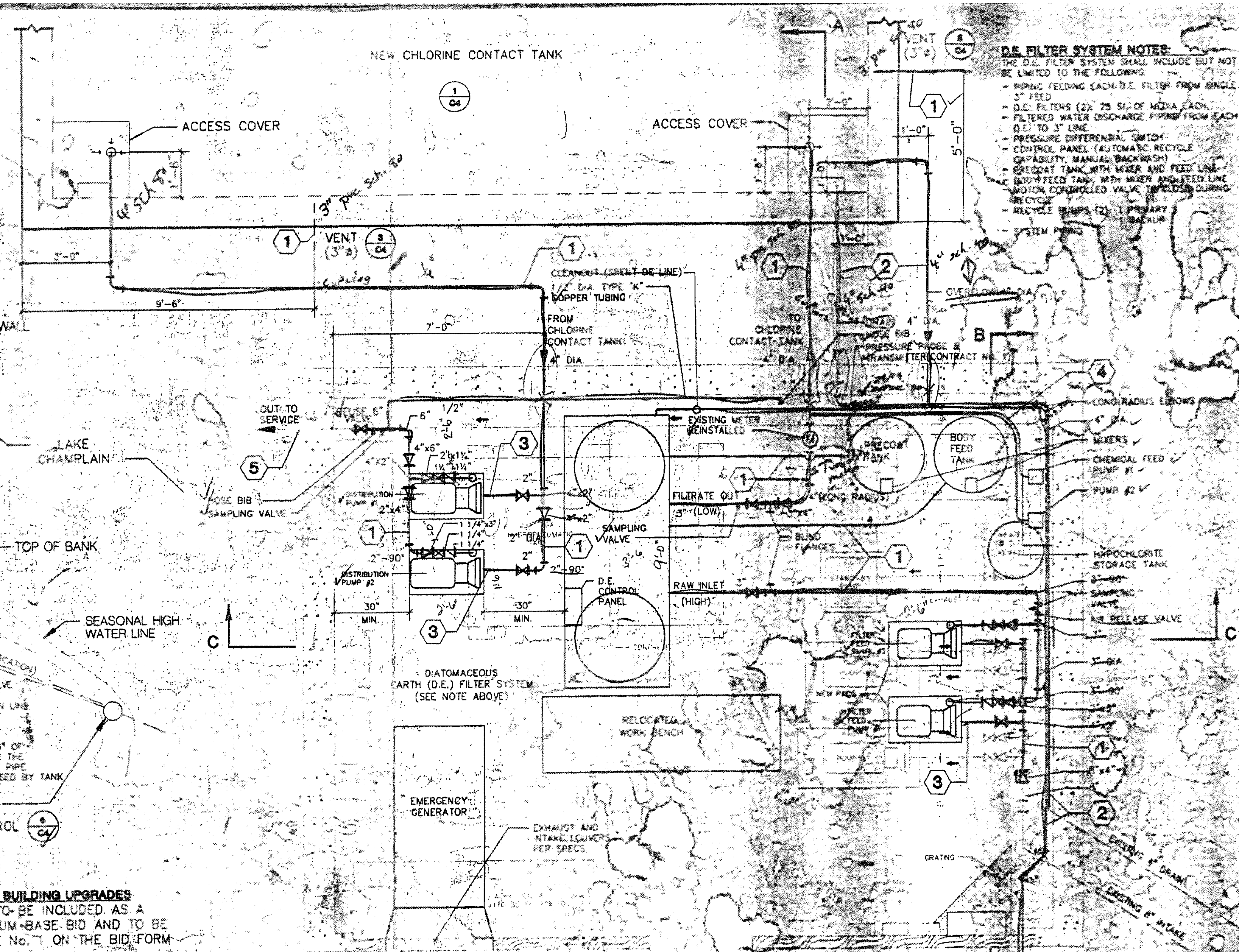
WATER PUMPING STATION BUILDING UPGRADES

(THE FOLLOWING ITEMS TO BE INCLUDED AS A MINIMUM IN THE LUMP SUM BASE BID AND TO BE DEDUCTED IN ALTERNATE No. 1 ON THE BID FORM FOR CONTRACT NO. 1.)

- EXISTING FLAT CONCRETE ROOF TO REMAIN IN PLACE.
- NEW ROOF OVER EXISTING ROOF AT A MINIMUM SLOPE OF 5 ON 12.
- NEW ROOF DESIGN TO MEET DEAD, LIVE AND WIND LOADS PER THE NYS BUILDING CODE FOR THAT SITE.
- ROOFING TO BE A MINIMUM THICKNESS OF 5/8–INCH EXTERIOR GRADE PLYWOOD.
- ROOF FINISH SURFACE TO BE ASPHALT SHINGLES HAVING A MANUFACTURERS LIFE WARRANTY OF AT LEAST 25 YEARS. COLOR TO BE SELECTED BY OWNER.
- RIDGE VENT TO BE PROVIDED FOR VENTILATION.
- ROOF TO OVERHANG A MINIMUM OF 12 INCHES ON ALL FOUR SIDES.
- FINISHED EXPOSED SURFACES (IE. SOFFITS, FASCIA BOARDS, ETC.) TO BE COVERED WITH OR MADE OF ALUMINUM OR VINYL.
- VINYL SIDING TO BE INSTALLED OVER EXISTING EXTERIOR WALLS (ALL FOUR SIDES) TO WITHIN ONE FOOT OF THE PROPOSED FINISHED GRADE. COLOR TO BE SELECTED BY THE OWNER.
- REPLACE ENTRANCE DOOR AND FRAME WITH AN INSULATED METAL DOOR AND METAL FRAME.

1. MODIFIED WATER PUMPING STATION SITE PLAN

SCALE: 1" = 10'



D.E. FILTER SYSTEM NOTES:

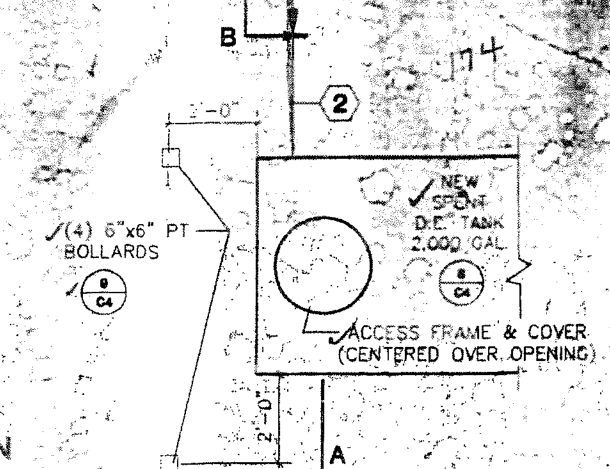
THE D.E. FILTER SYSTEM SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

- PIPING FEEDING EACH D.E. FILTER FROM SINGLE 3" FEED
- D.E. FILTERS (2), 75 SF OF MEDIA EACH
- FILTERED WATER DISCHARGE PIPING FROM EACH D.E. TO 3" LINE
- PRESSURE DIFFERENTIAL SWITCH
- CONTROL PANEL (AUTOMATIC RECYCLE CAPABILITY, MANUAL BACKWASH)
- PRECOAT TANK WITH MIXER AND FEED LINE
- BODY FEED TANK WITH MIXER AND FEED LINE
- MOTOR CONTROLLED VALVE TO CLOSE DURING RECYCLE
- RECYCLE PUMPS (2), 1 PRIMARY 1 BACKUP
- SYSTEM PIPING

NOTE: CONCRETE FLOOR TO BE REPAIRED WITH SIKATOP #122 OR APPROVED EQUIVALENT WHERE DISTURBED BY REMOVAL OF CONCRETE CRADLES OR PUMP PADS.

KEY:

ELBOW – 90 DEG
ELBOW – TURNED UP
ELBOW – TURNED DOWN
SIDE OUTLET ELBOW – OUTLET DOWN
SIDE OUTLET ELBOW – OUTLET UP
TEE STRAIGHT SIZE
REDUCER – CONCENTRIC
JOINT CONNECTING PIPE
GATE VALVE
EXISTING CONTOUR
PROPOSED CONTOUR
CHECK VALVE STRAIGHT WAY
DIRECTION OF FLOW
HOSE BIB
SAMPLING VALUE (SMOOTH NOSED)
WATER METER
PVC SCH 80 (PRESSURE) 1
PVC SCH 40 (GRAVITY) 2
GALVANIZED STEEL 3
POLYETHYLENE 4
DUCTILE IRON 5



2. MODIFIED WATER PUMPING STATION PLAN

SCALE: 1/2" = 1'-0"

the LA group

Design
Drawn SDR
Checked

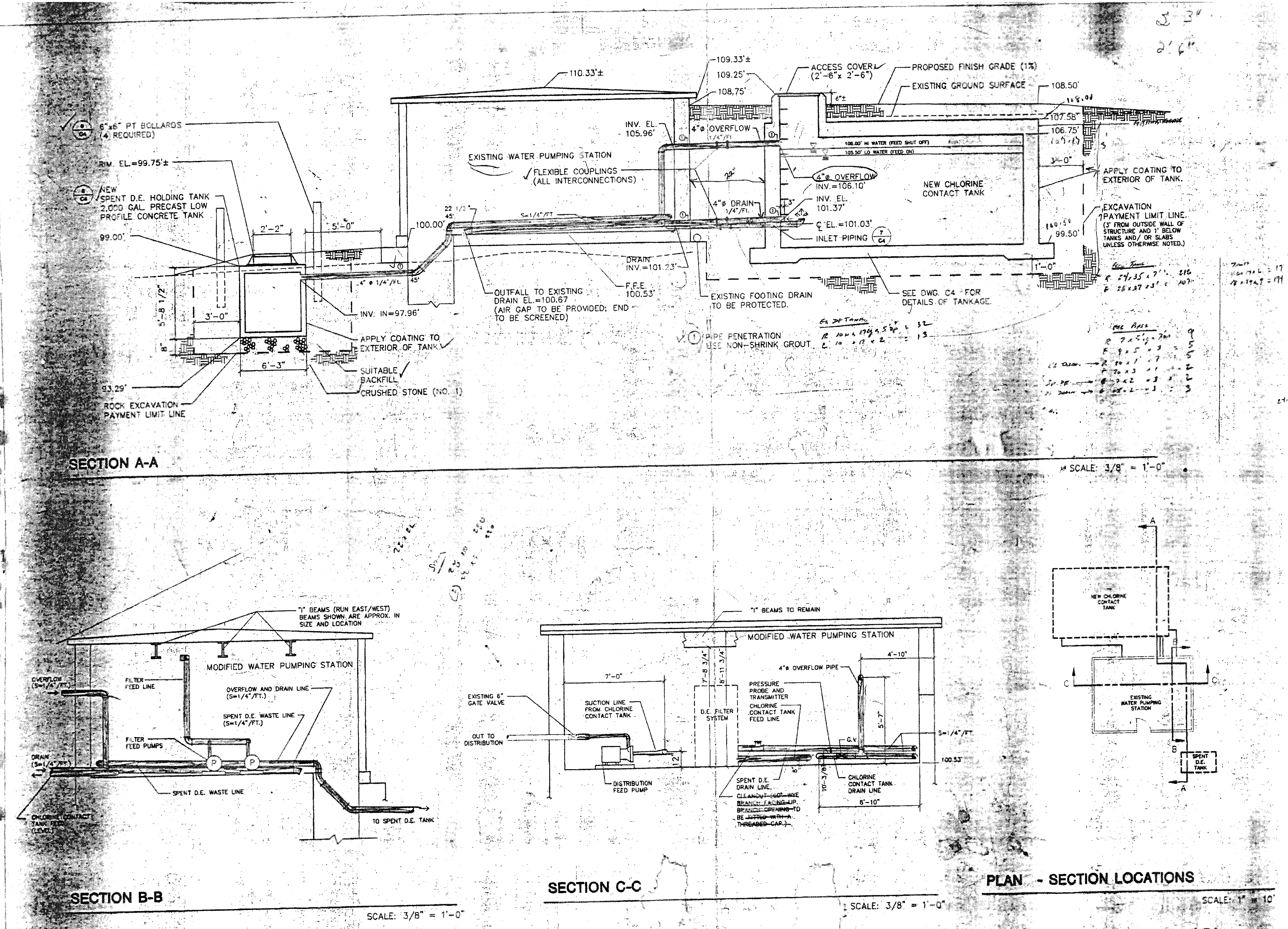
WATER FILTRATION PROJECT

MODIFIED CONDITIONS - PLAN

Revisions 3/12/03

Project
Date

Drawing C2



the LA group

Design TJH
Drawn SDR
Checked TJH

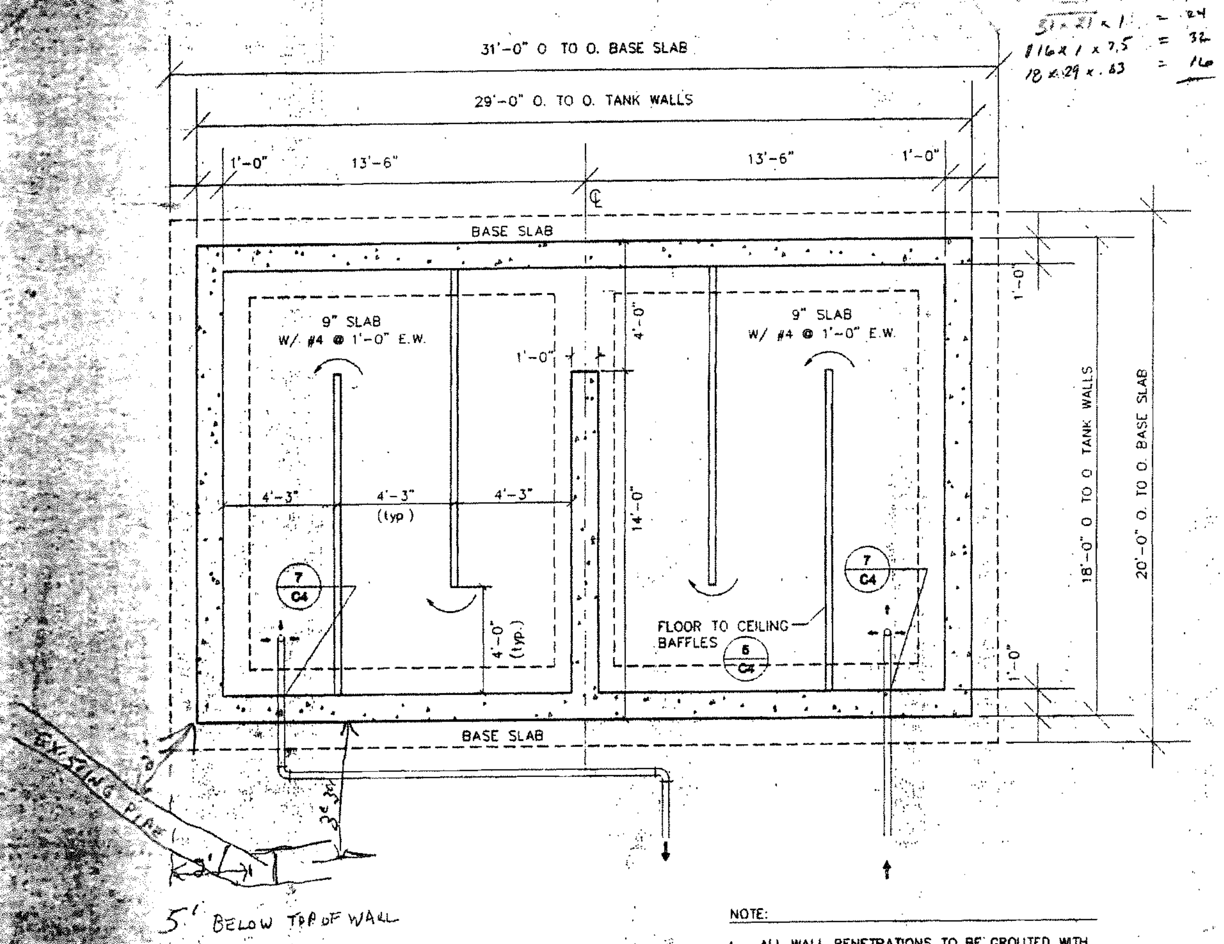
WATER FILTRATION PROJECT
TOWN OF ..., NEW YORK

MODIFIED CONDITIONS - SECTIONS

Revisions 2/12/9_

Project
Date

Drawing **C3**

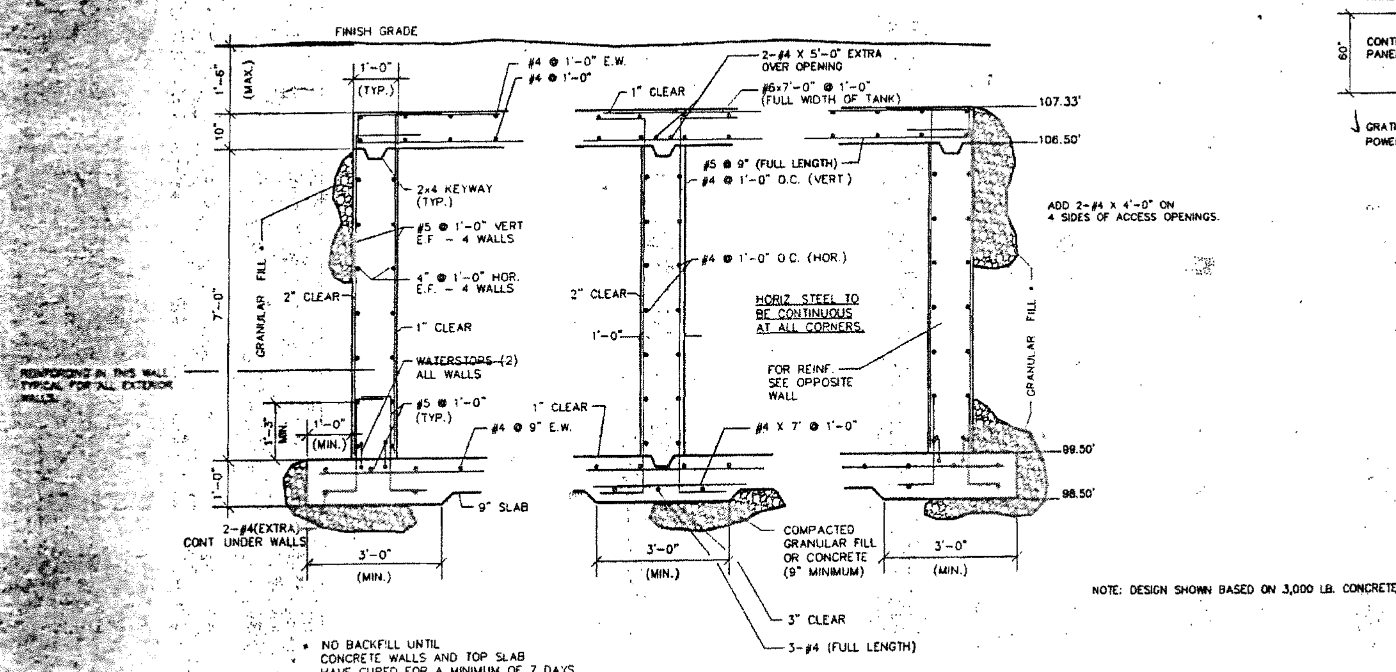


NOTE:

1. ALL WALL PENETRATIONS TO BE GROUTED WITH NON-SHRINK GROUT.

1. PLAN - CHLORINE CONTACT TANK

SCALE: 1" = 3'-0"

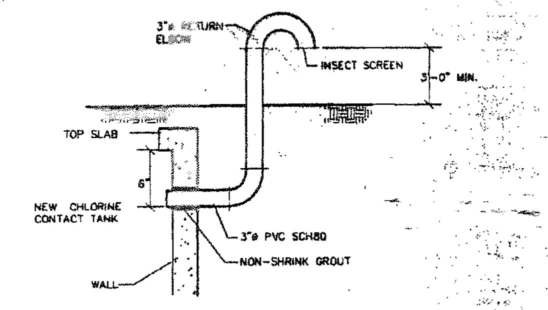


NOTE: DESIGN SHOWN BASED ON 3,000 LB. CONCRETE

* NO BACKFILL UNTIL CONCRETE WALLS AND TOP SLAB HAVE CURED FOR A MINIMUM OF 7 DAYS

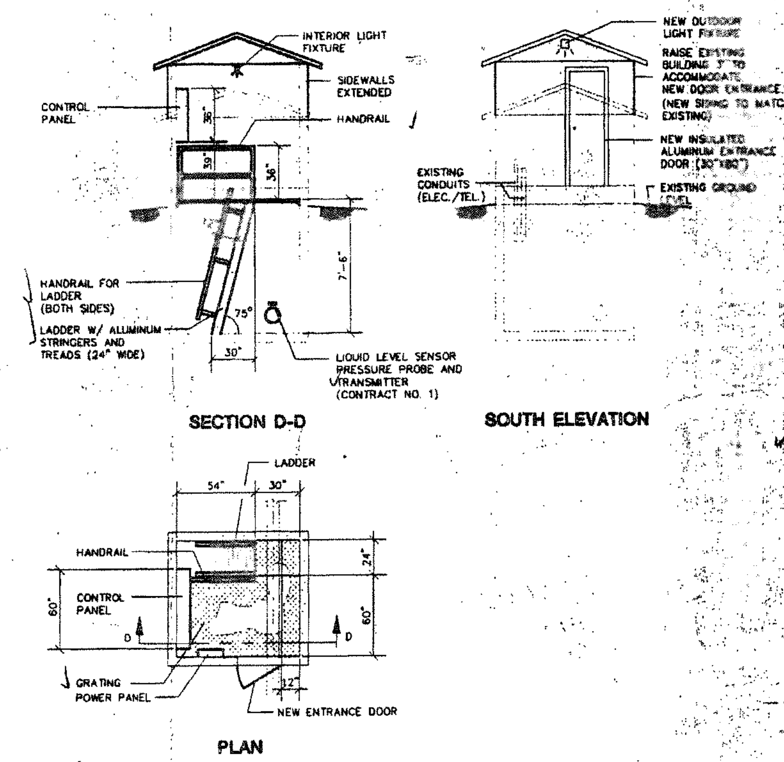
2. WALL SECTIONS - CHLORINE CONTACT TANK

SCALE: 1" = 5'-0"



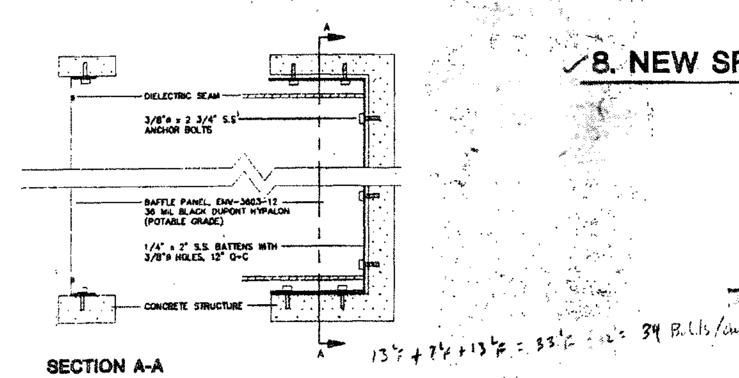
3. VENT DETAIL

N.T.S.



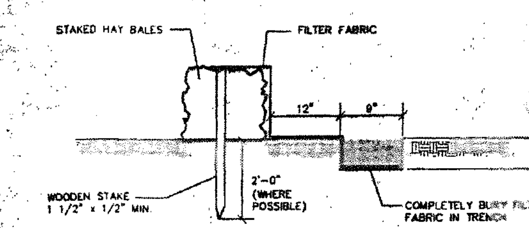
4. VAULT MODIFICATIONS

N.T.S.



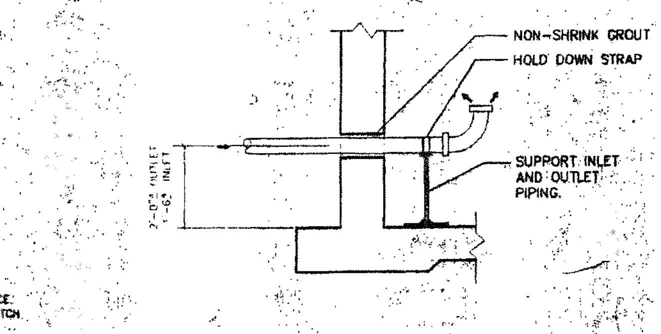
5. BAFFLE ATTACHMENT

N.T.S.



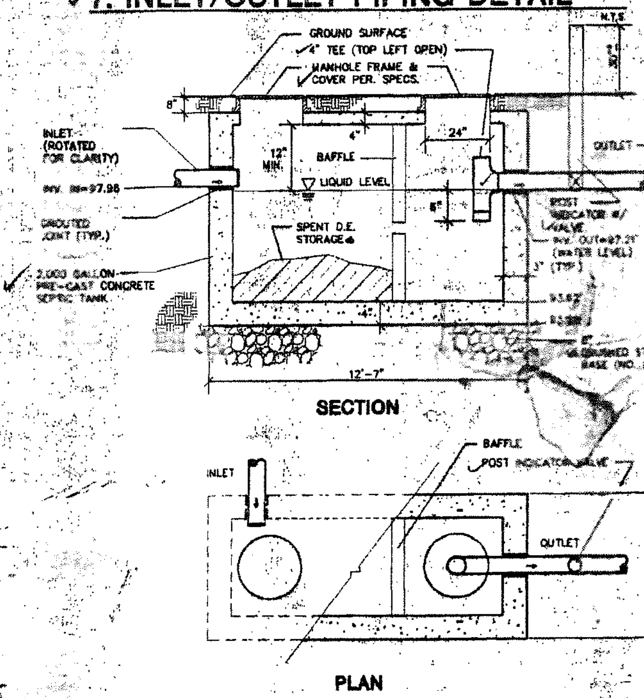
6. EROSION CONTROL DETAIL

N.T.S.



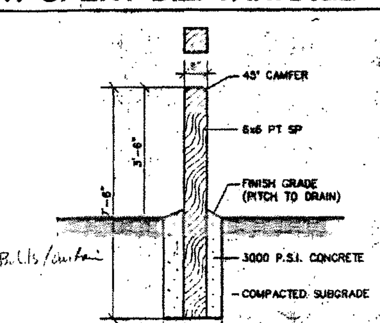
7. INLET/OUTLET PIPING DETAIL

N.T.S.



8. NEW SPENT D.E. TANKAGE

N.T.S.



9. WOOD BOLLARD DETAIL

N.T.S.

the LA group
Landscape Architecture & Engineering, P.C.

Design TJH
Drawn SDR
Checked DPS/DPD

Hypalon 1.05/ft
clip

WATER FILTRATION PROJECT

TOWN OF ESSEX, NEW YORK

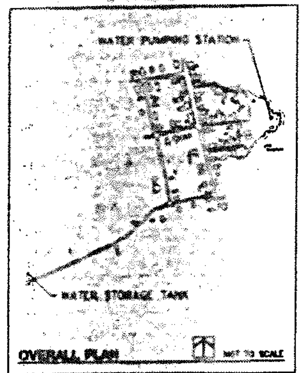
CHLORINE CONTACT & SPENT DE TANKAGE

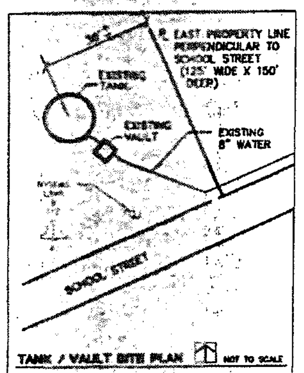
Revisions

Project

Date

Drawing C4





TELEMETRY NOTES:
GENERAL:

THE PURPOSE OF THE TELEMETRY SYSTEM IS TO ALLOW CONVEYANCE OF WATER LEVEL INFORMATION GATHERED AT THE WATER STORAGE TANK ON SCHOOL STREET TO THE WATER PUMPING STATION LOCATED ON THE LAKE SHORE.

1. WORK AT WATER STORAGE TANK INCLUDES:
   - INSTALLATION OF WATER LEVEL SENSING EQUIPMENT AT THE WATER STORAGE TANK.
   - WIRING FROM SENSOR TO TRANSMITTER
   - INSTALLATION OF TRANSMITTER IN EXISTING VALVE VAULT
   - INSTALLATION OF RADIO TRANSMITTER TO BE CONNECTED AT A LATER DATE WHEN FREQUENCY CLEARANCE IS REVIEWED AND GRANTED.

2. WORK AT WATER PUMPING STATION TO INCLUDE:
   - INSTALLATION OF RECEIVER TO RECEIVE RADIO SIGNALS FROM TRANSMITTER AT WATER STORAGE TANK.
   - ELECTRIC EQUIPMENT REQUIRED TO TRANSFER EITHER TELEPHONE OR RADIO SIGNAL INTO CONTROL PANEL FUNCTIONS.
   - PANEL TO ALLOW ADJUSTMENT OF BOTH ON AND OFF LEVELS.
   - PANEL TO PROVIDE CONTINUOUS READING OF WATER LEVEL IN TANK.

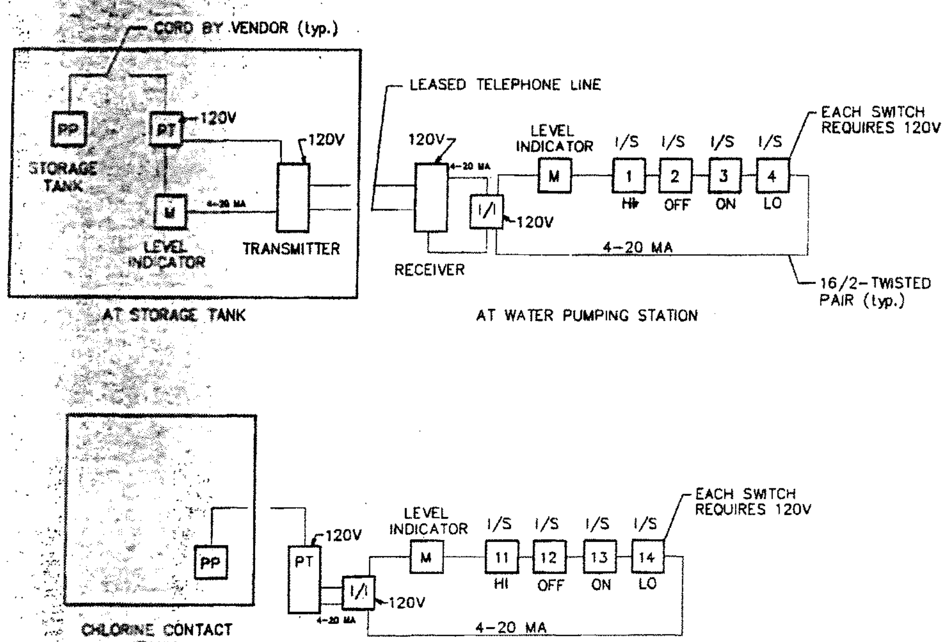
OPERATION:

THE PROPOSED DISTRIBUTION PUMPS LOCATED IN THE WATER PUMPING STATION WILL START/STOP BASED ON WATER LEVELS IN THE WATER STORAGE TANK ON SCHOOL STREET.
WHEN THE WATER LEVEL GETS DOWN TO 45 FEET ABOVE THE TOP OF THE TANK FOUNDATION A SIGNAL WILL BE SENT INDICATING THAT THE DISTRIBUTION PUMP SHOULD START. WHEN THE WATER LEVEL REACHES 55 FEET A SIGNAL WILL BE SENT TO SHUT OFF THE DISTRIBUTION PUMP. ONLY ONE DISTRIBUTION PUMP TO RUN AT ANY GIVEN TIME. SECOND PUMP ONLY THERE IN THE EVENT OF A FAILURE OF THE FIRST.
ADDITIONALLY THE DISTRIBUTION PUMPS WILL NOT START IF THE WATER IN THE CHLORINE CONTACT TANK IS BELOW A PRESET LEVEL OF 105.4'.

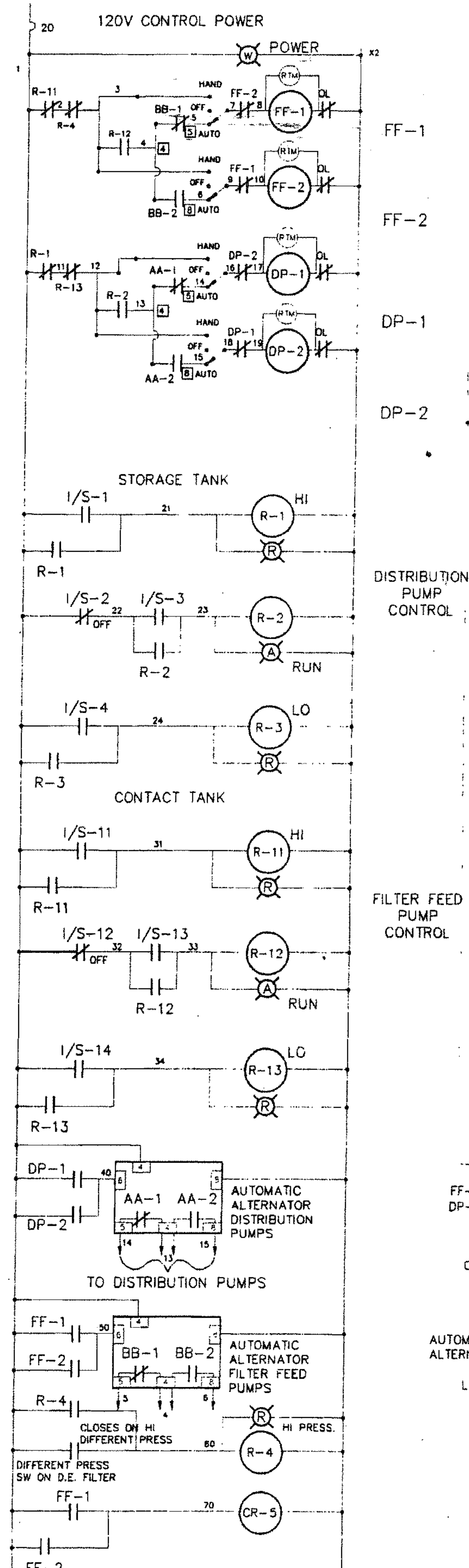
SUBMITTALS:

SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR ALL EQUIPMENT SUPPLIED BY THE CONTRACTOR BEFORE ORDERING/PURCHASING ANY EQUIPMENT.

TELEMETRY SYSTEM



LEVEL CONTROL SCHEMATIC



CONTROL ELEMENTARY

GENERAL ELECTRICAL NOTES:

ALL WIRE SHALL BE COPPER, STRANDED, CLASS B, WITH TYPE THWN OR XHHW INSULATION RATED 600V.

ALL CONDUIT SHALL BE RIGID GALVANIZED STEEL OR INTERMEDIATE GALVANIZED STEEL. USE LIQUID TIGHT FLEXIBLE METALLIC CONDUIT FOR CONNECTIONS TO MOTORS AND ADJUSTABLE OR VIBRATING DEVICES.

CONTRACTOR MAY REUSE EXISTING MOTOR CONTROLLER EXCLOSURE AND COMPONENTS PROVIDED SUCH DEVICES ARE IN GOOD CONDITION AND ARE RATED FOR THE NEW LOADS. CONTRACTOR TO INSPECT SUCH EQUIPMENT BEFORE BID IS SUBMITTED AND INDICATE WITH BID WHAT DEVICES SHALL BE REUSED.

CONTRACTOR TO PROVIDE ALL PULL, JUNCTION BOXES, ENCLOSURES AND ASSOCIATED DEVICES FOR A COMPLETE AND FUNCTIONAL SYSTEM. PROVIDE NEW ENCLOSURES WHERE SPACE LIMITATIONS REQUIRE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

PROVIDE AUXILIARY CONTACT IN GENERATOR CONTROL PANEL TO CLOSE WHEN GENERATOR STARTS AND OPENS INTAKES AND EXHAUST LOUVERS - 120V LOUVER MOTORS ETC. REQUIRED.

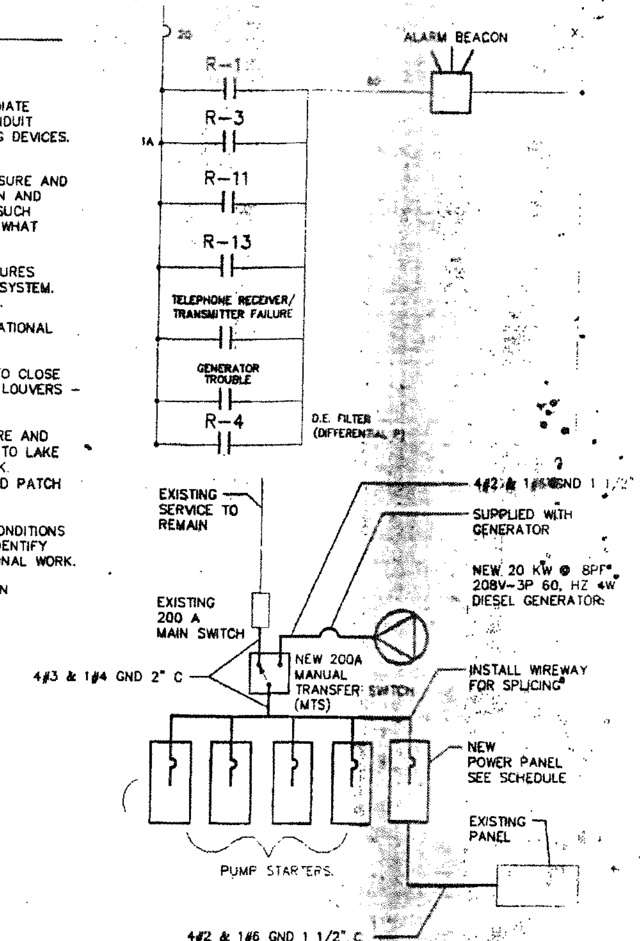
GROUNDING - PROVIDE A NEW #/0 BARE COPPER GROUND WIRE AND BOND TO EXISTING SERVICE GROUND, GENERATOR FRAME, PIPE TO LAKE AND RE-BAR IN NEW BASE SLAB FOR CHLORINE CONTACT TANK. USE APPROVED GROUND CLAMP FOR 8" EXISTING PIPE. CUT AND PATCH ALL WALL PENETRATIONS WATER TIGHT.

CONTRACTOR SHALL INSPECT THE SITE AND REVIEW EXISTING CONDITIONS BEFORE SUBMITTING A BID. FAILURE OF THE CONTRACTOR TO IDENTIFY EXISTING CONDITIONS SHALL NOT BE JUSTIFICATION FOR ADDITIONAL WORK.

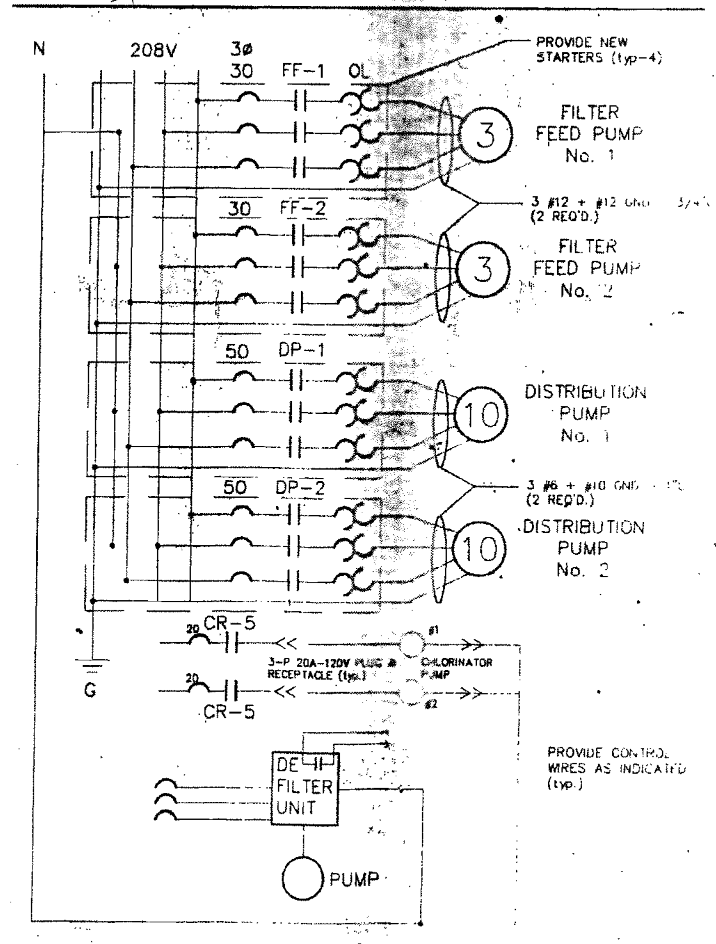
EXISTING ELECTRICAL PANEL BOARD AND CIRCUITS SHALL REMAIN IN SERVICE.

LEGEND:

PP - PRESSURE PROBE
PT - PRESSURE TRANSMITTER
I/I - CURRENT TO CURRENT TRANSMITTER
M - 4-20 MA INDICATOR
I/S - 4-20 MA CURRENT SWITCH - ADJUSTABLE
⌒ - CIRCUIT BREAKER SIZE AND POLES AS REQUIRED
FF-1&2 - NEMA SIZE 0 FVNR COMBINATION STARTER
DP-1&2 - NEMA SIZE 2 STARTER
R - 11 PIN-PLUG IN RELAY AND SOCKET PROVIDE ADDITIONAL RELAYS IN PARALLEL IF REQUIRED
CR-6 - HEAVY DUTY RELAY. ALLEN BRADLEY BULLETIN 700 OR EQUAL
Ⓡ - RED INDICATING LIGHT A=AMBER W=WHITE
AUTOMATIC ALTERNATOR - DIVERSIFIED ELECTRONICS, EVANSVILLE ILL. MODEL ARA-120 ADA OR EQUAL. (typ.-2)
⍉ - RECEPTACLE
L1-L2 - MOTOR OPERATED LOUVERS



ONE-LINE DIAGRAM



POWER DIAGRAM

the LA group

WATER FILTRATION PROJECT

TOWN OF ESSEX, NEW YORK

ELECTRICAL

WATER PUMPING STATION – NEW PANELBOARD

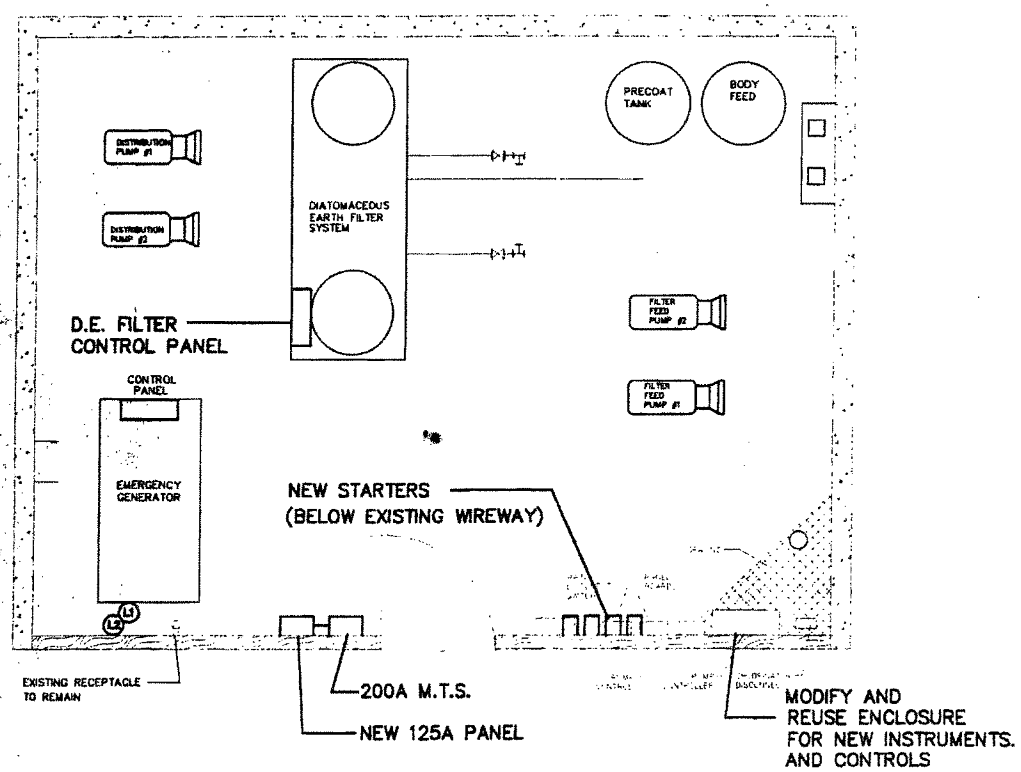
RATING 125A – MAIN CB – 208V – 3ø – 4 WIRE + GND
SIZE – 30 CIRCUIT – FEED – 4 #1 & 1 #4 GND.

DESCRIPTION	AMPS	POLE	POLE	AMPS	DESCRIPTION
PUMP PANEL	20	1	1	20	CHLORINATOR#1
ALARM BEACON	20	1	1	20	RECEPT. GFI
GEN. HEATER	20	1	1	20	GEN. FUEL HTR.
GEN. BATT. CH.	20	1	1	20	GEN. LOUVERS
SIGNAL RECEIVER	15	1			D.E.
PT & I/I STO.T.	15	1	3	30	FILTER
PT & I/I CL.T.	15	1			CONTROL PANEL
SUB FEED			1	20	CHLORINATOR#2
TO EXISTING	100	3	1	20	SPARE
PANEL			1	20	SPARE
SPARE	20	1	1	20	SPARE
SPARE	20	1	1	20	SPARE
SPARE	15	1			
SPARE	15	1	3	125	MAIN
SPACE		1			

WATER STORAGE TANK
PANEL BOARD – LOAD CENTER

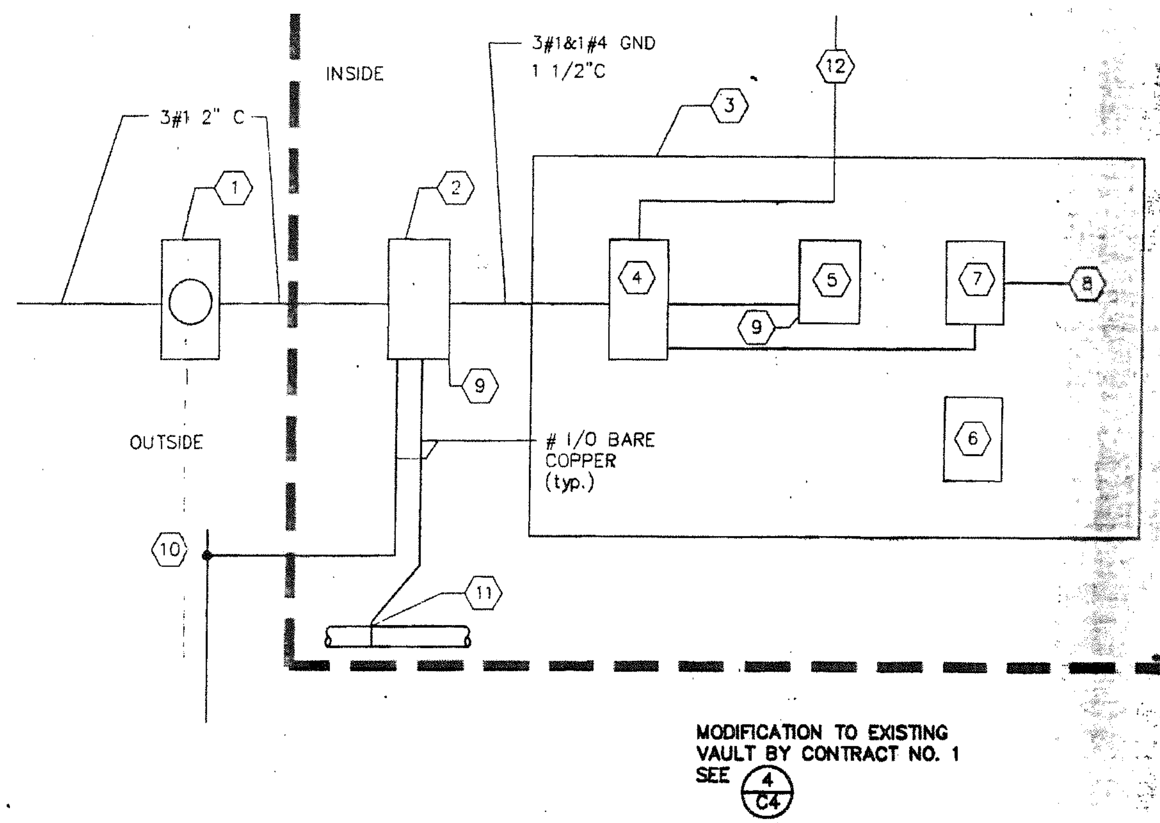
DEVICE	POLE	AMPS
MAIN	2	100
RECEPTACLE	1	20
LIGHTS	1	20
HEATER	1	20
INSTRUMENTS	1	20
SPARE	–	15
SPARE	–	15
VAULT LIGHTS	–	20
SPARE	–	20
SPACE	–	
SPACE	–	

1. METER SOCKET – PROVIDED BY NYSEG, INSTALLED BY CONTRACTOR ON OUTSIDE OF VAULT.
2. 100 AMP – 2 POLE – 240V + NEUTRAL + GROUND – MAIN SERVICE DISCONNECT SWITCH IN NENA 4 ENCLOSURE.
3. NEMA 4 ENCLOSURE 5'x3'x12" WITH BACK PLATE – THERMOSTATICALLY CONTROLLED 250W HEATER – INCANDESCENT LIGHT, SWITCH AND GFI RECEPTACLE.
4. PANEL BOARD – LOAD CENTER 12 CIRCUIT (SEE SCHEDULE)
5. TELEMENTRY OR RADIO TRANSMITTER
6. TELEPHONE Co. – PLYWOOD – SEE TELEPHONE Co. FOR EXACT SPECIFICATIONS.
7. LEVEL TRANSMITTER
8. 1" CONDUIT AND VENDOR SUPPLIED CABLE TO PRESSURE TRANSMITTER ON PIPE.
9. LIGHTING ARRESTOR.
10. 3/4"x 8' COPPER CLAD STEEL GROUND ROD – GROUND WIRE TO BE # 1/0 BARE COPPER WIRE.
11. GROUND CLAMP TO WATER PIPE TO # 1/0 COPPER WIRE – USE APPROVED CLAMP SIZED PER PIPE.
12. INSTALL 2– NEMA 4 WITH GLOBE GUARD LIGHT FIXTURES–ONE INSIDE VAULT AND ONE OUTSIDE OVER DOOR. SWITCH BOTH WITH NEMA 4 SWITCH INSIDE DOOR–3/4" CONDUIT WITH #12 WIRE MINIMUM.



PLAN - WATER PUMPING STATION

SCALE: 3/8" = 1'-0"



SCHEMATIC AND ONE LINE DIAGRAM - EXISTING VAULT

NTS

the LA group
Landscape Architecture and Engineering, P.C.

Design MG
Drawn SDB
Checked MG

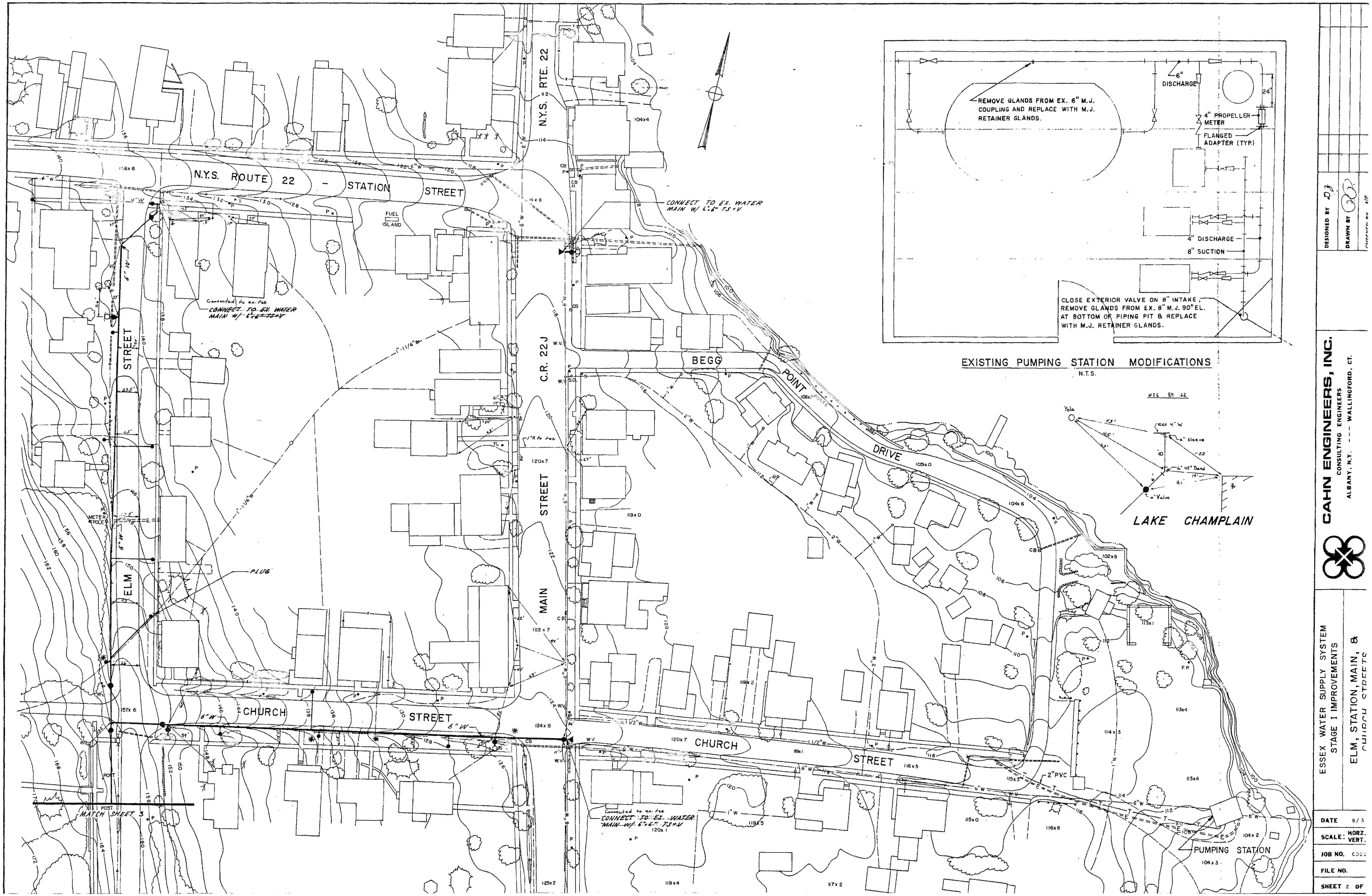
WATER FILTRATION PROJECT

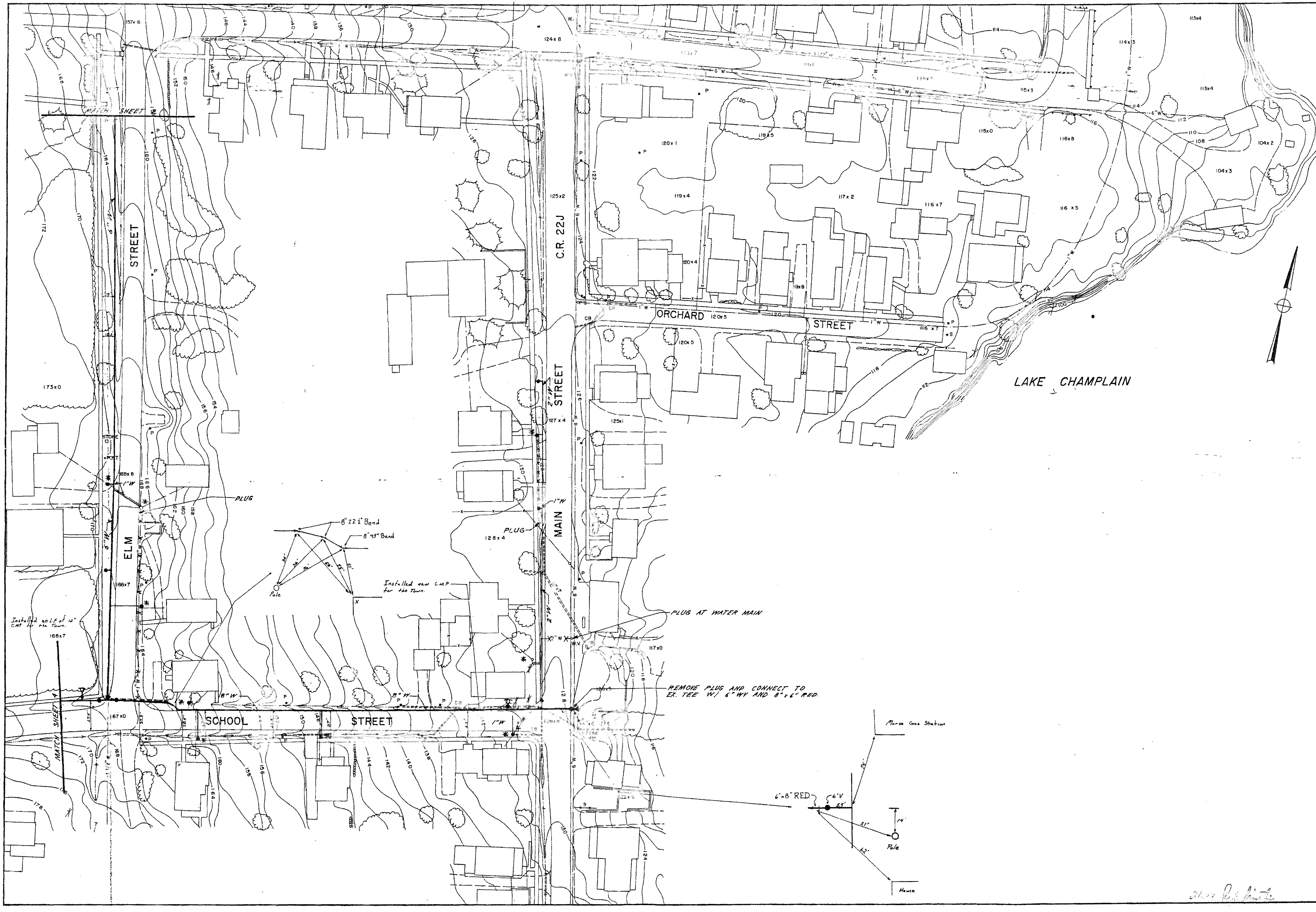
TOWN OF ESSEX, NEW YORK

ELECTRICAL

Revisions

Project 91082
Date 1/21/93


N.Y.S. ROUTE 22 - STATION STREET
N.Y.S. RTE. 22
C.R. 22J
MAIN STREET
ELM STREET
CHURCH STREET
BEGG POINT DRIVE
FUEL ISLAND
CONNECT TO EX. WATER MAIN W/ 6"x6" TS+V
Connected to ex. tee
CONNECT TO EX. WATER MAIN W/ 6"x6" TS+V
PLUG
METER POLE
MATCH SHEET 3
2" PVC
PUMPING STATION
LAKE CHAMPLAIN
REMOVE GLANDS FROM EX. 6" M.J. COUPLING AND REPLACE WITH M.J. RETAINER GLANDS.
6" DISCHARGE
4" PROPELLER METER
FLANGED ADAPTER (TYP.)
4" DISCHARGE
8" SUCTION
CLOSE EXTERIOR VALVE ON 8" INTAKE, REMOVE GLANDS FROM EX. 8" M.J. 90° EL. AT BOTTOM OF PIPING PIT & REPLACE WITH M.J. RETAINER GLANDS.
EXISTING PUMPING STATION MODIFICATIONS
N.T.S.
DESIGNED BY
DRAWN BY
CAHN ENGINEERS, INC.
CONSULTING ENGINEERS
ALBANY, N.Y. --- WALLINGFORD, CT.
ESSEX WATER SUPPLY SYSTEM
STAGE I IMPROVEMENTS
ELM, STATION, MAIN, & CHURCH STREETS
DATE 9/3
SCALE: HORZ. VERT.
JOB NO.
FILE NO.
SHEET 2 OF



CAHN ENGINEERS, INC.
CONSULTING ENGINEERS
ALBANY, N.Y. --- WALLINGFORD, CT.

DESIGNED BY
DRAWN BY

ESSEX WATER SUPPLY SYSTEM
STAGE I IMPROVEMENTS
SCHOOL ELM MAIN &

DATE
SCALE:
JOB NO.
FILE NO.
SHEET 3

DESIGNED BY
DRAWN BY

CAHN ENGINEERS, INC.
CONSULTING ENGINEERS
ALBANY, N.Y. — WALLINGFORD, CT.

ESSEX WATER SUPPLY SYSTEM
STAGE I IMPROVEMENTS

SCHOOL STREET

DATE 8/3
SCALE: HOR VERT
JOB NO. 60
FILE NO.
SHEET 4 O

Jonathan Pribble Excavating LLC

PO Box 193
18 Ross Way
Essex, NY 12936

Invoice

Date	Invoice #
7/11/2011	1252

Bill To
Town of Essex Town of Essex Essex, NY 12936

P.O. No.	Terms	Due Date
	Net 30	8/10/2011

Item	Quantity	Description	Rate	Amount
		inspection and cleaning of water supply inlet		
Diver	2	Diver	150.00	300.00
labor	2	Labor	40.00	80.00
		The water intake is 260 feet out from concrete structure. It is 45 feet deep. It stands about 4 feet off the bottom. The intake was covered with zebra muscles and silt. I cleaned it. The prior inspection was in 2005.		

Total	$380.00
Payments/Credits	$0.00
Balance Due	$380.00

Phone #
518 963 4641

E-mail
hortonwho2@hotmail.com

Back

Health hazard in Essex: Toxic mass found floating along waterfront in Essex

Written by KIM SMITH DEDAM, Staff Writer

Sunday, September 17, 2006

DEC RECOMMENDS

- Never drink untreated water.
- Avoid direct contact and swimming in algae blooms or areas of algae accumulation.
- Keep pets away from the water during algae blooms and algae accumulations.

ESSEX — A toxic form of blue-green algae has been found on the Lake Champlain waterfront in Essex.
Town officials are warning people to keep children and pets away from lakefront water at Beggs Park and the south side of the Old Dock piers.
Blue-green algae, also called cyanobacteria, produces a poison that can stay in the water even after the floating green mass moves, said Essex Town Supervisor Ron Jackson.
"If the bloom moves, it will leave toxins behind, no smell, no taste. So if it's in the area, you just stay away from the water with your dogs and with your kids."
The New York State Department of Health drew samples from the Essex water intake and from the town's drinking-water supply to test for cyanobacteria toxins.
"The ... tap water is fine; but we don't have results from the water intake," Jackson said after he got results on Friday.
"State labs have been testing for outbreaks of legionella, so apparently cyanobacteria went to the back of the bus."

FIRST IN NY

New York State Department of Environmental Conservation's Lake Champlain Coordinator Art Stemp said the toxin levels in the Essex bloom are "elevated" and "the first indication of a blue-green algae problem from the New York side," in an e-mail sent to DEC officials last week.
The circular bloom, roughly 8 feet in diameter, was first spotted near the beach in Beggs Park, Jackson said.
Then it drifted to the waterfront near where construction on the retaining wall is under way.
Then it moved across the small inlet to its current location beside the Old Dock southern piers.
"It's been here for about a week," Jackson said on Friday.
"It's a green, frothy-foam. (It) looks like wet confetti stuff," Jackson said.
As the algae bloom ages and dies, it begins to smell like rotten garbage.
Jackson said DEC officials consider the Essex outbreak a "transient" bloom.
"It lasts two, three, four weeks, then it goes."
But it is the first incidence of blue-green algae outbreak ever on the New York side of the broad lake, Jackson said.
The DEC said two other isolated areas had blue-green algae blooms in the past.
"In the early 1990s, blooms in waters at Point au Roche and Valcour Island were suspected of contributing to the deaths of dogs that had consumed water at those locations," said spokesman Dave Winchell.

CONDITIONS RIPE

Blue-green algae proliferates when four conditions are ripe, Jackson said.
"You have to have the seed, elevated levels of nitrogen and phosphorus and sunlight."
Cyanobacteria is usually most common in areas where there is a lot of agricultural runoff, like in Missisquoi Bay on the Vermont side of the lake, he said.
"It also happens where there are a lot of people and no wastewater treatment facility, which is the case in Essex."
The Essex bloom is potentially more toxic than the bloom in Missisquoi Bay.
Mary C. Watzin, an ecoscientist at the University of Vermont who tests blue-green algae samples found in Lake Champlain, reported the Essex bloom "had high cell counts, over 75,000 potentially toxic cells (per milliliter)" in an e-mail sent to DEC.
Watzin found cell counts in Missisquoi Bay ranged from 8,000 to 27,500 potentially toxic cells per milliliter.

control methods

Other than changing environmental conditions, there is no way to completely remove blue-green algae from the water, Jackson said.
"You can mechanically remove it, but the thing is, unless you get every single seed, it will grow back. And if you've had it one year, you're much more likely to get it again the next year."
The only cure, Jackson said, is proper wastewater treatment.
"The only option to try to control it is to get rid of the nitrogen and the phosphorus."
The Town of Essex remains the only town on Lake Champlain without a wastewater treatment plant, though planning for one has been under way for years.
The 100 or so residents of the town will need a system that costs approximately $7.1 million, Jackson said.
Now chairman of the Lake Champlain Basin Program's Citizens Advisory Committee, Jackson plans to have a solution by the end of this year with designated financing from several sources in place.
For now, people cannot swim or play near the Town of Essex waterfront.

NEW YORK
state department of
HEALTH

Nirav R. Shah, M.D., M.P.H.
Commissioner

Sue Kelly
Executive Deputy Commissioner

Notice of Violation

Public Water Supply Name: **Essex Water District**	
Federal PWS ID: 1500278	Program Code: 100
Notification Date: 7/25/11	County Code: 15
Violation ID: 2011 2915	Violation Type: 02

Supervisor and Town Board
Town of Essex
PO Box 355
Essex, NY 12936

Re: Total Trihalomethane MCL Violation
2nd Quarter 2011

The **Essex Water District** is in violation of Subpart 5-1 of the State Sanitary Code for exceeding the Maximum Contaminant Level (MCL) for **Total Trihalomethanes** during the **2nd Quarter of 2011**.

The violation is a result of water samples collected in August and December 2010 and March and June 2011. The average of those samples exceeds the Maximum Contaminant Level (MCL) for Total Trihalomethanes which is **80 ug/l** (micrograms per liter).
The average level of Total Trihalomethanes taken on the dates noted was **81.37 ug/l**.

You are required to notify the public, using the enclosed Public Notice, within 30 days of receiving this Notice of Violation. You are also required to repeat the notification process every three months as long as the violation continues.

When you have performed the required notification, the completed Public Notice Certification Form must be sent to this office.

If you have any questions regarding this violation contact me at 891-1800.

Sincerely,

Susan L. Kennedy

Susan L. Kennedy, PE
Senior Sanitary Engineer

Enc
cc: Emmett Coonrod

NEW YORK
state department of
HEALTH

Nirav R. Shah, M.D., M.P.H.
Commissioner

Sue Kelly
Executive Deputy Commissioner

Notice of Violation

Public Water Supply Name: **Essex Water District**	
Federal PWS ID: 1500278	Program Code: 100
Notification Date: 11/9/2011	County Code: 15
Violation ID: 2012 2917	Violation Type: 02

Supervisor and Town Board
Town of Essex
PO Box 355
Essex, NY 12936

Re: Total Trihalomethane MCL Violation
3rd Quarter 2011

The **Essex Water District** is in violation of Subpart 5-1 of the State Sanitary Code for exceeding the Maximum Contaminant Level (MCL) for **Total Trihalomethanes** during the **3rd Quarter of 2011**.

The violation is a result of water samples collected in December 2010 and March, June and September 2011. The average of those samples exceeds the Maximum Contaminant Level (MCL) for Total Trihalomethanes which is **80 ug/l** (micrograms per liter).
The average level of Total Trihalomethanes taken on the dates noted was **81.9 ug/l**.

You are required to notify the public, using the enclosed Public Notice, within 30 days of receiving this Notice of Violation. You are also required to repeat the notification process every three months as long as the violation continues.

When you have performed the required notification, the completed Public Notice Certification Form must be sent to this office.

If you have any questions regarding this violation contact me at 891-1800.

Sincerely,

Susan L. Kennedy

Susan L. Kennedy, PE
Public Health Engineer 2

Enc
cc: Emmett Coonrod

Saranac Lake District Office 41 St Bernard Street Saranac Lake NY 12983 (518) 891-1800

HEALTH.NY.GOV
facebook.com/NYSDOH
twitter.com/HealthNYGov

PUBLIC NOTICE
IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Essex Water District Has Levels of Total Trihalomethanes (TTHMs) Above Drinking Water Standards

Our water system has violated a drinking water standard. Although this is not an emergency, as our consumers, you have a right to know what happened, what you should do, and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Test results collected in August and December 2010 and March and June 2011 show that our system exceeds the standard, or maximum contaminant level (MCL), for Total Trihalomethanes. The standard for Total Trihalomethanes is 80 mcg/l (micrograms per liter). The average level of Total Trihalomethanes taken on the most recent 4 samples was 81.37 mcg/l.

What should I do?
If you have specific health concerns, consult your doctor. You may also wish to use an alternative water supply as your primary drinking water source (e.g. bottled water certified by NYS DOH).

What does this mean?
This is not an immediate risk. If it had been, you would have been notified immediately. Trihalomethanes are a group of chemicals that includes chloroform, bromoform, bromodichloromethane, and chlorodibromomethane. Trihalomethanes are formed in drinking water during treatment by chlorine, which reacts with certain acids that are in naturally-occurring organic material (e.g., decomposing vegetation such as tree leaves, algae or other aquatic plants) in surface water sources such as rivers and lakes. The amount of trihalomethanes in drinking water can change from day to day, depending on the temperature, the amount of organic material in the water, the amount of chlorine added, and a variety of other factors. Drinking water is disinfected by public water suppliers to kill bacteria and viruses that could cause serious illnesses. Chlorine is the most commonly used disinfectant in New York State. For this reason, disinfection of drinking water by chlorination is beneficial to public health.

Some studies suggest that people who drink chlorinated water (which contains trihalomethanes) or water containing elevated levels of trihalomethanes for long periods of time may have an increased risk for certain health effects. For example, some studies of people who drank chlorinated drinking water for 20 to 30 years show that long term exposure to disinfection by-products (including trihalomethanes) is associated with an increased risk for certain types of cancer. A few studies of women who drank water containing trihalomethanes during pregnancy show an association between exposure to elevated levels of trihalomethanes and small increased risks for low birth weights, miscarriages and birth defects. However, in each of the studies, how long and how frequently people actually drank the water, as well as how much trihalomethanes the water contained is not known for certain. Therefore, we do not know for sure if the observed increases in risk for cancer and other health effects are due to trihalomethanes or some other factor. The individual trihalomethanes chloroform, bromodichloromethane and dibromochloromethane cause cancer in laboratory animals exposed to high levels over their lifetimes. Chloroform, bromodichloromethane and dibromochloromethane are also known to cause effects in laboratory animals after high levels of exposure, primarily on the liver, kidney, nervous system and on their ability to bear healthy offspring. Chemicals that cause adverse health effects in laboratory animals after high levels of exposure may pose a risk for adverse health effects in humans exposed to lower levels over long periods of time.

What happened? What is being done?
We believe that the problem is directly related to the elevated turbidity problems we experienced this spring and early summer that resulted in the Boil Water Order. Our filters were not capable of removing the fine particulate matter that was present in Lake Champlain due to the flooding and high waters. We are working with the New York State Department of Health and a consulting engineer to evaluate the water supply and researching options to modify our water supply system. For more information, please contact the Town Office at (518) 963-4287.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This Notice is being sent to you by the Town of Essex.
State Water System ID#: NY1500278
Date distributed:______________

April 29, 2011

ESSEX WATER DISTRICT
ESSEX T., ESSEX COUNTY

BOIL WATER ORDER

YOU ARE HEREBY ORDERED TO BOIL ALL WATER FOR DRINKING AND CULINARY PURPOSES. THIS ORDER IS BEING ISSUED PURSUANT TO SECTION 1107 OF THE PUBLIC HEALTH LAW. THIS ORDER IS BEING ISSUED TO EVERY KNOWN WATER USER OF THE ESSEX WATER DISTRICT.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil in a clean container, let it boil for one minute, and let it cool before using, use bottled water certified by NYSDOH, or use water from a public water system approved by NYSDOH. Boiled or bottled water certified by NYSDOH should be used for drinking, making ice, washing dishes, brushing teeth and food preparation until further notice.

The New York State Department of Health sets drinking water standards and has determined that the presence of microbiological contaminants is a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water but may be caused by a number of factors other than your drinking water. The New York State Department of Health has set enforceable requirements of treating drinking water to reduce the risk of these adverse health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants.

Heavy rainfall and runoff has caused localized flooding throughout the area. The turbidity (i.e., clarity) of Lake Champlain, our source of drinking water, has been impacted by this flooding. While we continue to filter and disinfect our drinking water with chlorine, we are currently unable to remove all of the turbidity in our drinking water and meet NYS standards.

Consumers will be notified as soon as the Boil Water Order is rescinded. The Boil Water Order shall only be lifted when finished water turbidity levels are below the NYS regulatory limits, adequate disinfection is maintained, and two consecutive daily samples show no bacteriological contamination.

BY ORDER OF THE COMMISSIONER OF HEALTH

BY: JULES W. CALLAGHAN
DISTRICT DIRECTOR

This must be posted in a prominent location until the Boil Water Order is lifted

STATE OF NEW YORK DEPARTMENT OF HEALTH
ADMINISTRATIVE TRIBUNAL

November 28, 2011

Name of Respondent:	Sharon Boisen
Address of Respondent:	Town of Essex, 355 Main St.
	Essex NY 12936
Respondent D/B/A:	ESSEX WD
D/B/A Address:	BEGGS POINT
	ESSEX

RE: MATTER OF SHARON BOISEN
D/B/A ESSEX WD
Docket Number: 20110607

Dear Sharon Boisen:

The New York State Department of Health has evidence of violations of the Public Health Law and/or Health Department Regulations contained in Title 10 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (NYCRR), as set forth in the Finding of Violation(s) enclosed. A Hearing has been scheduled before an impartial Administrative Law Judge of the Administrative Tribunal on the following date, time, and place:

Date: **December 14, 2011**

Time: **10:00 AM**

Place: **NYS Department of Health, Saranac Lake District Office, 41 St. Bernard Street, Saranac Lake**

YOU ARE ON NOTICE THAT YOU HAVE SEVEN (7) DAYS FROM RECEIPT OF THIS NOTICE TO RESPOND TO THE DEPARTMENT. FAILURE TO RESPOND WITHIN SEVEN DAYS AFTER RECEIPT OF SERVICE WILL CONSTITUTE AN ADMISSION OF THE CHARGES AND A WAIVER OF THE RIGHT TO A HEARING, AND AUTHORIZE THE ADMINISTRATIVE LAW JUDGE, WITHOUT FURTHER NOTICE, TO FIND THE FACTS TO BE AS ALLEGED IN THE FINDING OF VIOLATION, AND TO RENDER A DECISION AND ORDER SUSTAINING THE ALLEGATIONS, AND IMPOSING A PENALTY. (SUMMARY OF THE APPLICABLE HEARING PROCEDURE IS ENCLOSED).

OFFER OF SETTLEMENT ALTERNATIVE

If you wish to settle this matter without a Hearing, sign and return the enclosed Stipulation (Form AT-15) within seven (7) days of your receipt of this notice. This settlement offer includes payment of a fine of $0 , payable to the New York State Department of Health. Enclose your full payment with the signed stipulation and send to the NYS Department of Health, Saranac Lake District Office, 41 St. Bernard Street, Saranac Lake, NY,129831834. Payment must be made with check or money order. If you wish to decline the offer of Stipulation and opt for a Hearing, please note such intention on the AT-15 Form where indicated, and mail back to the Department.

Sincerely,

Jules W. Callaghan

Jules Callaghan
Administrative Tribunal Representative
Saranac Lake District Office

Enclosures

STATE OF NEW YORK DEPARTMENT OF HEALTH
ADMINISTRATIVE TRIBUNAL

SUMMARY OF HEARING PROCEDURES:

1. The hearing will be held in conformance with Section 12a of the Public Health law, Article 3 of the State Administrative Procedure Act and 10 NYCRR Part 76.7. Hearings are presided over by an Administrative Law Judge, and are open to the Public. The text of the Public Health Law and the Regulations at Title 10 are available at the New York State Department of Health's web site (www.health.state.ny.us). The text of the State Administrative Procedure Act and all other New York State statutes are available at the New York State Senate's web site (www.senate.state.ny.us)

2. The hearing will be conducted in English. If you do not speak or understand English, you are allowed to bring someone to the hearing to assist you.

3. If you or any party or witness to this proceeding is a deaf person, the Department, upon reasonable notice, will provide at no charge, a qualified interpreter of the deaf to interpret the proceedings and the testimony of any deaf person.

4. If you will be represented by an attorney, your attorney must furnish to the Department appropriate documentation of his or her authorization to represent you.

5. A record of all proceedings will be made and witnesses will be sworn and examined. The parties may appear in person and/or be represented by Counsel, may testify, present documentary evidence, produce witnesses, cross - examine adverse witnesses, examine such evidence as may be produced, request the issuance of subpoenas and have all rights essential to a fair and impartial hearing. The burden of proof at the hearing will be on the department.

6. You should bring to the Hearing any evidence of compliance efforts, such as receipts for purchases, contracts, estimates and design plans and be prepared to substantiate your corrective actions and/or plans for correction of violation(s). Prompt correction of violations may be considered by the Department in assessing penalties. However, correction alone does not excuse the violation and fines may be assessed for violations committed by the Respondent. Failure to correct violations after the hearing subjects you to further legal action by the Department.

7. Failure to respond within seven days after receipt of service will constitute an admission of the charges and a waiver of the right to a hearing and authorize the administrative law judge, without further notice to find the facts to be as alleged in the finding of violation and to render a decision and order sustaining the allegations and imposing a penalty.

8. If the Respondent does not appear at the hearing, either in person or by an attorney, the hearing may proceed. Failure to appear at the time and place designated for the hearing will constitute a default in appearance and a decision and order will be rendered and issued by the Administrative Law Judge based on the record.

9. At the conclusion of the Hearing, the Administrative Law Judge will issue a written decision sustaining or dismissing the Finding of Violation(s). The Decision will contain findings of fact and, as applicable, orders issued and penalties assessed based on evidence presented. The Respondent may also be assessed a fine not to exceed $2,000 per violation, pursuant to Sections 12 and 206 of the Public Health Law or as otherwise provided under applicable regulations. Licenses to operate may also be suspended or revoked.

STATE OF NEW YORK DEPARTMENT OF HEALTH
ADMINISTRATIVE TRIBUNAL
FINDING OF VIOLATIONS

Respondent: Sharon Boisen

Address: Town of Essex
355 Main St.
Essex NY 12936

Phone: (518) 963-4287

D/B/A: ESSEX WD

Address: BEGGS POINT
ESSEX

Docket Number: 20110607
Date of Hearing: December 14, 2011
Date of Notice November 28, 2011

Date of Violation	State Law, Sanitary Code, or Regulation (10 NYCRR)		Violation Findings	Maximum Assessable Fine	Surcharge
[Violation 1 of 2 Violation ID 123194]					
Dec 02, 2011	*5-1.51 (a)*	*The maximum contaminant levels are listed in section 5-1.52 tables 1 through 7 of this Subpart. In the case where the MCL is exceeded, notwithstanding anything to the contrary contained in section 5-1.12 of this Subpart, the supplier of water will take the necessary steps to comply with this section, to ensure the protection of the public health, including the undertaking of remedial feasibility studies and the installation of a suitable treatment process.*	Was violated in that: The Essex Water District water supply system has routinely monitored for disinfection byproducts as required and the results showed that the concentrations of disinfection byproducts have exceeded the maximum contaminant levels in the 2nd and 3rd quarter of 2011. The supplier of water must take the necessary steps by undertaking a remedial feasibility study and installing a suitable treatment process.	$2,000.00	
[Violation 2 of 2 Violation ID 123195]					
Dec 02, 2011	*5-1.30 (b)*	*Minimum treatment for surface water sources or ground water sources directly influenced by surface water shall be filtration and disinfection techniques, approved by the State in accordance with section 5-1.22 of this Subpart, capable of 99.9 percent removal and/or inactivation of Giardia lamblia cysts and 99.99 percent removal and/or inactivation of viruses, between a point where the raw water is no longer subject to recontamination by source water runoff and a point downstream before or at the first consumer. Compliance with this treatment technique requirement shall be no later than June 29, 1993 for surface water sources or within 18 months for ground water sources determined to be directly influenced by surface water sources, unless the department determines that the supplier of water can meet specific avoidance criteria as defined in subdivision (c) of this section.*	Was violated in that: The Diatomaceous Earth Filter units at the Essex Water District on Lake Champlain were not able to provide satisfactory filtration of the surface water. A Boil Water Order was issued on April 29, 2011 and was not lifted until July 20, 2011 because the finished water turbidity levels exceeded the allowable levels. This is a violation of the Surface Water Treatment Rule.	$2,000.00	

STATE OF NEW YORK DEPARTMENT OF HEALTH
ADMINISTRATIVE TRIBUNAL
STIPULATION

In the matter of Finding of Violation(s) against

Respondent: Sharon Boisen
Address: Town of Essex
355 Main St.
Essex NY 12936

Docket Number: 20110607
Date Issued: November 28, 2011

D/B/A: ESSEX WD
Address: BEGGS POINT
ESSEX

The parties wish to resolve this matter by means of a settlement instead of an administrative hearing and, therefore agree that:

a. There exist valid and sufficient grounds, as a matter of fact and law, for the issuance of this Stipulation and Order under the Public Health Law and the Respondent consents to its issuance, accepts its terms and conditions and waives any right to challenge this Stipulation/Decision in a proceeding pursuant to Article 78 of the Civil Practice Law and Rules or in any other action or proceeding.

b. That the Respondent agrees to the following terms and conditions:

Docket # *20110607*

State Law, Sanitary Code, or Regulation (10 NYCRR) Violation Findings

[Violation 1 of 2]

5-1.51 (a)	*The maximum contaminant levels are listed in section 5-1.52 tables 1 through 7 of this Subpart. In the case where the MCL is exceeded, notwithstanding anything to the contrary contained in section 5-1.12 of this Subpart, the supplier of water will take the necessary steps to comply with this section, to ensure the protection of the public health, including the undertaking of remedial feasibility studies and the installation of a suitable treatment process.*	Was violated in that: The Essex Water District water supply system has routinely monitored for disinfection byproducts as required and the results showed that the concentrations of disinfection byproducts have exceeded the maximum contaminant levels in the 2nd and 3rd quarter of 2011. The supplier of water must take the necessary steps by undertaking a remedial feasibility study and installing a suitable treatment process.	**Conclusion:** **Alleged** **Assessed Fine:** **$1,000.00** **Modified Fine:** **$0.00**

GO TO THE NEXT PAGE

STATE OF NEW YORK DEPARTMENT OF HEALTH
ADMINISTRATIVE TRIBUNAL
STIPULATION

Docket # 20110607

State Law, Sanitary Code, or Regulation (10 NYCRR) Violation Findings

[Violation 2 of 2]

5-1.30 (b)	*Minimum treatment for surface water sources or ground water sources directly influenced by surface water shall be filtration and disinfection techniques, approved by the State in accordance with section 5-1.22 of this Subpart, capable of 99.9 percent removal and/or inactivation of Giardia lamblia cysts and 99.99 percent removal and/or inactivation of viruses, between a point where the raw water is no longer subject to recontamination by source water runoff and a point downstream before or at the first consumer. Compliance with this treatment technique requirement shall be no later than June 29, 1993 for surface water sources or within 18 months for ground water sources determined to be directly influenced by surface water sources, unless the department determines that the supplier of water can meet specific avoidance criteria as defined in subdivision (c) of this section.*	Was violated in that: The Diatomaceous Earth Filter units at the Essex Water District on Lake Champlain were not able to provide satisfactory filtration of the surface water. A Boil Water Order was issued on April 29, 2011 and was not lifted until July 20, 2011 because the finished water turbidity levels exceeded the allowable levels. This is a violation of the Surface Water Treatment Rule.	**Conclusion:** Alleged **Assessed Fine:** $1,000.00 **Modified Fine:** $0.00

The following abatements are to be completed:

1) On or Before January 31, 2012: An Engineering Report shall be submitted to NYSDOH.

2) On or Before December 31, 2012: Plans and specifications shall be submitted to NYSDOH.

3) On or Before December 31, 2014: Construction shall be completed.

STATE OF NEW YORK DEPARTMENT OF HEALTH
ADMINISTRATIVE TRIBUNAL
STIPULATION

Total Assessed Fines	$2,000.00	Total Fines Payable	$0.00
Total Modified Fines	$0.00		
		Total Amount Due	$0.00

d. This Stipulation shall be effective upon service on the Respondent or the Respondents's attorney or representative of a company by personal service or by certified or registered mail.

☐ I accept the stipulation offer and will comply with the conditions set forth. Payment of the total fines of $0 is enclosed. If the respondent fails to comply with the terms of this Stipulation, the Department may demand the balance of Total Assessed Fines immediately, without the opportunity for a hearing.

OR

☐ I decline the stipulation offer and will appear for the hearing on December 14, 2011.

Owner / Operator   Date

AGREED AND SO ORDERED

Administrative Tribunal Representative of Limited Authority   Date

THIS STIPULATION IS SUBJECT TO PUBLIC RELEASE AS A FINAL AGENCY ACTION

Docket # 20110607

INVOICE NUMBER
10330

INVOICE

DATE
3/28/2002

INVOICE TO

NYLD
NEW YORK LEAK DETECTION

REPORT TO

COMPANY	TOWN OF ESSEX	COMPANY	
ADDRESS	P.O. BOX 355	ADDRESS	
CITY ST ZIP	ESSEX NY 12936		
PHONE	518-963-4287	PHONE	
CONTACT	RON JACKSON	PURCHASE ORDER #	

TOWN OF ESSEX
P.O. BOX 355
ESSEX NY 12936

PHONE 315-469-4601• FAX:315-469-2868 P.O. BOX 269 JAMESVILLE, NY13078

SERVICE REQUESTED

SURVEY WATER DISTRIBUTION LINES.

SERVICE PERFORMED

RAN CORRELATION. LEAK EVIDENT IMMEDIATELY. REPORT MAILED TO RON JACKSON.

DATE WORKED	DATE COMPLETED	TECHNICIAN
3/26/2002	3/26/2002	Steve Birmingham

BASE CHARGE	$1,050.00
HOURLY RATE THERAFTER	
TOTAL HOURS WORKED	
TRAVEL HOURS @	
MEALS	
LODGING	
OTHER	
TOTAL CHARGES	$1,050.00

THANK YOU !

Payment is due and payable upon completion, Signature constitutes agreement to terms and conditions of work and that the work has been completed and performed satisfactorily,. Account balances over 30 days are subject to a late fee of 1.5 % per month. Customer is liable for all collection and legal fees.

NYLD

NEW YORK LEAK DETECTION, INC.

Mr. Ron Jackson
Town of Essex
P.O. Box 355
Essex, NY 12936
518-963-4287

Ref: Leak Detection Survey

Dear Mr. Jackson,

New York Leak Detection is a professional and technical service company that offers leak survey services, aqua zoom inspection, utility location and unidirectional flushing programs. These professional services offered by New York Leak Detection are designed to aid utilities in reducing unaccounted for water and recovering lost revenue.

New York Leak Detection is pleased to submit this report of our leak detection survey for the Town of Essex water system. This survey addresses the complete water distribution system.

METHODOLOGY:

New York Leak Detection used the Fluid Conservation Systems S-30 Survey Instrument and the LC-2100 Computerized Leak Correlator to conduct your survey. Our experienced technicians used these devices as listening equipment to survey the pipeline distribution system. Each hydrant, accessible valve and service were used as listening points to indentify leaks. Leak correlators are computerized microprocessor units that measure the time it takes the sound of the leak to travel from the leak to the point where the leak correlator is connected to the water line. By connecting the leak correlator to the water line at two locations, it will compute the distance from the leak to each connection point thus enabling us to determine the exact leak location. The results of the leak survey, including the locations of each leak identified, are documented in this report.

We thank you for the opportunity to work for your utility and look forward to serving you again. If you have any questions please don't hesitate to call.

Sincerely,

Michael R. Goodfellow Pres

Michael R. Goodfellow - President 3/28/2002
(800) 928-4350

Phone (315) 469-4601 • Fax (315) 469-2868 • P.O. Box 269 • Jamesville, NY 13078

NYLD
NEW YORK LEAK DETECTION, INC.

The leaks that were found were classified as follows:

Class 1: Leaks which are hazardous in terms of potential underground washouts, possibly resulting in surface collapse, encroachment and/or damage to nearby utilities, commercial and private properties or leaks that indicate leakage to be severe enough to warrant immediate repair by the utility department work force.

Class 2: Leaks which display water losses significant enough to be placed on a regular repair schedule.

Class 3: Relatively small leaks which should be repaired as work time permits.

LEAK DETECTION SURVEY:

The area covered by the survey was shown on maps provided by the Town of Essex, making up the entire water distribution system.

LEAKAGE CONTROL REPORTS:

Leakage control reports were prepared for all leaks located. Each report shows the location of the leak, the classification of severity, and estimated amount of water loss.

SUMMARY OF LEAKS:

The New York Leak Detection survey resulted in the location of 2 leaks estimated at 25,000 gallons per day. The leaks were classified as follows:

TYPE OF LEAK	NUMBER OF LEAKS
SERVICE LINE	2
FIRE HYDRANT	0
VALVE	0
MAIN LINE	0
JOINT	0
METER	0
METER SPUD	0
CURB AND STOP	0
OTHER	0
TOTAL LEAKS	2

	GALLONS PER DAY
SERVICE LINE G.P.D.	25,000
FIRE HYDRANT G.P.D.	0
VALVE G.P.D.	0
MAIN LINE G.P.D.	0
JOINT G.P.D.	0
METER G.P.D.	0
Meter Spud G.P.D.	0
Curb & Stop G.P.D.	0
OTHER G.P.D.	0
TOTAL G.P.D.	25,000

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NEW YORK LEAK DETECTION, INC.

CONCLUSIONS AND RECOMMENDATIONS:

The New York Leak Detection survey for the Town of Essex resulted in the location of an estimated 25,000 gallons per day of water leakage. After repairs are made, a savings of 9,125,000 gallons per year will save the Town of Essex water authority a substantial amount of lost water and revenue.

It is recommended that the program of surveying the water distribution system be continued on a regular basis in order to keep underground leakage to a minimum.

In conclusion, we wish to express our appreciation for the courtesy and cooperation your employees extended to us during the course of the survey.

Respectfully Submitted,
New York Leak Detection Inc.

Michael R. Goodfellow Pres

Michael R. Goodfellow, President 3/28/2002

Phone (315) 469-4601 • Fax (315) 469-2868 • P.O. Box 269 • Jamesville, NY 13078

NYLD

New York Leak Detection
Phone 315-469-4601 P.O. Box 269, Jamesville, NY 13078 Fax:315-469-2868

10330

Town of Essex
P.O. Box 355
Essex NY 12936 518-963-4287 Ron

Date 3/28/2002
Technician Steve

Leak No.	SERVICE LINE	FIRE HYDRANT	VALVE	MAIN LINE	JOINT LEAKS	METER	METER SPUD	OTHER	CURB & STOP	Location or Description	Class	Est (G.P.D.)	Pipe/ Valve/ Size Additional Comments
01	☒									Orchard St.	2	5,000	Inca/Battle house
02	☒									Greystone 55' to 60' from valve	1	20,000	See report
												0	
												0	
												0	
												0	
										Inca/Battle 040.73-3-29		0	
												0	
										Greystone 040.65-1-4		0	
												0	
												0	
												0	
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												0	
												0	
												0	
											2	0	Inca/Battle house
											1	0	See report
												0	
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												0	

Number of Leaks	Type of Leaks	Loss in Gallons Per Day (GPD)
2	SERVICE LINE	25,000
0	FIRE HYDRANT	0
0	VALVE	0
0	MAIN LINE	0
0	JOINT LEAKS	0
0	METER	0
0	METER SPUD	0
0	OTHER *	0
0	CURB AND STOP	0

OTHER *

TOTAL LEAKS PAGE ONE	2
TOTAL PAGE 1 GPD	25,000
TOTAL LEAKS	2
EST TOTAL GPD	25,000

NYLD

NEW YORK LEAK DETECTION

PHONE 315-469-4601• FAX:315-469-2868 P.O. BOX 269 JAMESVILLE, NY13078

COMPANY TOWN OF ESSEX

TECHNICIAN STEVE

REPORT # NYLD0028 DATE 3/28/2002

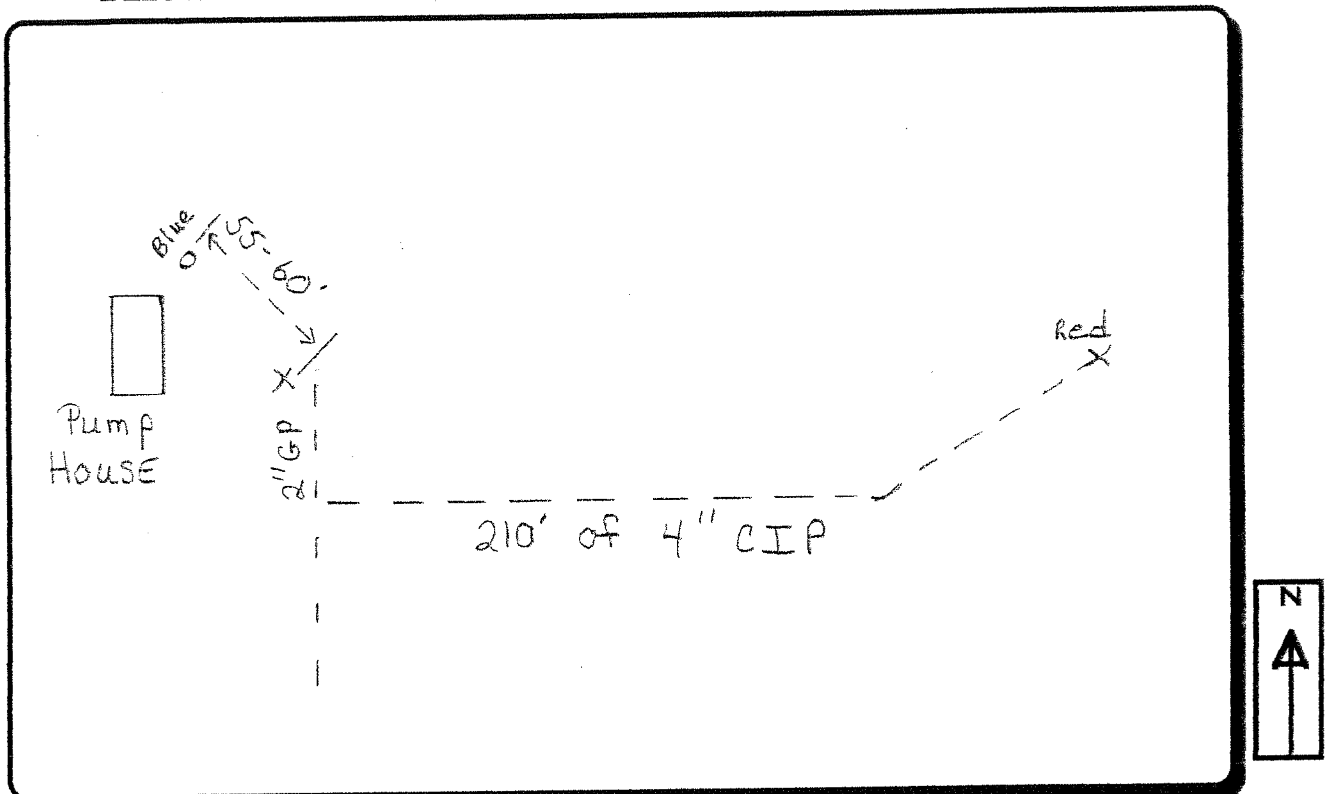
- ☐ MAIN LINE
- ☒ SERVICE
- ☐ FIRE HYDRANT
- ☐ VALVE
- ☐ JOINT
- ☐ METER
- ☐ METER SPUD
- ☐ METER YOKE
- ☐ CURB STOP
- ☐ OTHER
- ☐ CONCRETE
- ☐ ASPHALT
- ☐ SOIL
- ☐ OTHER

ACTION RECOMMENDED

CLASS 1 LEAK - ARRANGE FOR IMMEDIATE REPAIR

LEAK SITE MARKED YES ESTIMATED LEAKAGE 20,000 G.P.D

BELOW IS A DIAGRAM OF THE AREA SURVEYED FOR A SUSPECT LEAK



LEAK NUMBER 2 - GREYSTONE

DISTANCE

CONNECTION

CONNECTION

CONNECTION

LEAK LOCATION 55 - 60 FEET FROM VALVE

COMMENTS LEAK PEAKED IMMEDIATELY AND WATER IS SURFACING AT PUMP HOUSE

WE THANK YOU FOR THE OPPORTUNITY TO WORK FOR YOUR COMPANY. WE LOOK FORWARD TO SERVING YOU AGAIN IN THE FUTURE. IF YOU HAVE ANY QUESTIONS FEEL FREE TO CALL.

NYLD

NEW YORK LEAK DETECTION

LEAKAGE CONTROL REPORT

Date 3/26/02

Ownership Public Private Easement

Leak Priority Classification

I II III (circle one)

Work Order 2

Investigator Steve Birmingham

Community Essex

Street Address Greystone 040265-1-4

INVESTIGATION OF LEAK

Sonic	✓
Surfaced Water	
Other	

Estimation of Leak

20,000	

LEAK DETECTED AT

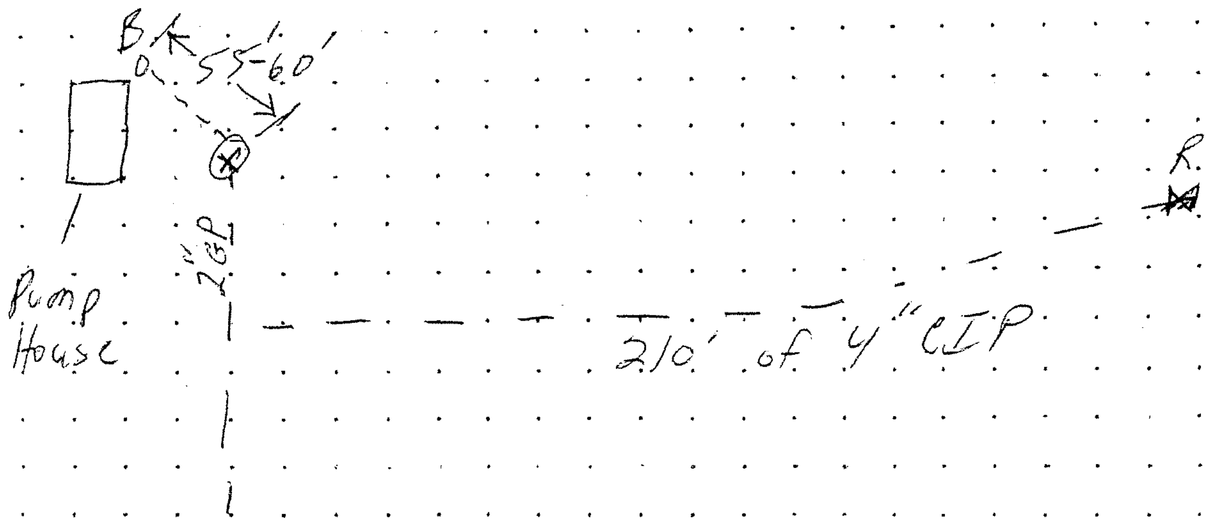
Main Valve	✓
Curb Valve	✓
Meter Box	
Selected Test	
Hydrant	
See Remarks	

LEAK APPEARS TO BE ON

Main	
Service	✓
Joint Connection	
Hydrant	
Valve	
Misc.	

COVER

Concrete	
Asphalt	
Brick	
Gravel	
Soil	✓
Other	



Comments Great Correlation The leak peaked right away I can hear the leak listening on the ground with the 5-30 and water is surfacing with House

Phone (315) 469-4601: Fax (315) 469-2868· PO box 269 Jamesville, NY 13078 E-mail: mgleaks@twcny.rr.com

NYLD

NEW YORK LEAK DETECTION INC. (wefindleaks.com)
Phone 315-469-4601 : Fax 315-469-2868 P.O. Box 269 Jamesville, N.Y. 13078 E-mail: mgleaks@twcny.rr.com

Client: Essex	Technician: Steve Birmingham	Date: 3/26/02

Leak	Type of Leak	Location or Description	Est. Size G.P.D	Pipe/Valve/Size Additional Comments
1	Service	Orchard street	5,000	Inca/Battle House
2	service	Greystone 55' to 60' from valve	20,000	See Report
3				
4				
5		Inca/Battle 040.73-3-29		
6				
7		Greystone 040.65-1-4		
8				
9				
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2011 BUDGET FOR THE TOWN OF ESSEX

Summary of All Funds

Round # 3

FUNDS:	FUND CODE:	Last Years Actual 2009	Budget as Modified 2010	Actual YTD 2010	Tentative Budget 2011	Preliminary Budget 2011	Adopted Budget 2011	Change from 2010	% Change from 2010
Appropriations									
General	A	891,069	497,792	241,248	529,671	495,842	489,670	-8,122	-1.6%
Highway	DA	415,142	496,582	305,967	437,228	539,008	449,845	-46,737	-9.4%
Essex Lighting District	ES	2,658	4,000	2,220	4,500	4,500	4,500	500	12.5%
Whallonsburg Lighting D	ES	1,224	2,000	1,120	2,000	2,000	2,250	250	12.5%
Water District # 1	SW	24,426	44,779	30,283	46,553	46,649	61,150	16,371	36.6%
Water Dist#1-Extension #	SW	4,332	4,332	4,332	4,332	4,332	4,332	0	0.0%
Fire District 2	SF	0	48,000	48,000	48,000	48,000	48,000	0	0.0%
Fire District 1	SF	0	96,330	96,330	96,330	96,330	85,330	-11,000	-11.4%
SEWER DISTRICT	SS	0	0	0	0	0	75,000	75,000	********
Appropriation TOTALS:		1,338,851	1,193,815	729,500	1,168,614	1,236,661	1,220,077	26,262	2.2%
Revenues									
General	A	196,967	170,775	47,517	157,486	157,286	156,642	-14,133	-8.3%
Highway	DA	249,582	240,870	99,093	184,000	184,000	181,459	-59,411	-24.7%
Essex Lighting District	ES	0	0	0	0	0	0	0	********
Whallonsburg Lighting D	ES	0	0	0	0	0	0	0	********
Water District # 1	SW	45,613	46,811	36,331	60,150	60,150	61,150	14,339	30.6%
Water Dist#1-Extension #	SW	0	0	0	0	0	0	0	********
Fire District 2	SF	0	0	0	0	0	0	0	********
Fire District 1	SF	0	1,000	0	0	0	0	-1,000	-100.0%
SEWER DISTRICT	SS	0	0	0	0	0	75,000	75,000	********

2011 BUDGET FOR THE TOWN OF ESSEX

Tax Rate Schedule

Round # 3

FUNDS:	Appro-priations	Less Estimated Revenues	Less Fund Balance & Approp. Reserves	Amount to be Raised By Tax	Taxable Assessed Value	Implied Tax Rate: $ per Thousand	Current Tax Rate: $ per Thousand	%Change from Current Yr.
General	489,670	156,642	44,890	288,138	125,411,427	2.29754	2.21873	3.55%
Highway	449,845	184,000	40,000	225,845	125,411,427	1.80083	1.81248	-0.64%
Essex Lighting District	4,500	0	0	4,500	54,075,215	0.08322	0.07384	12.70%
Whallonsburg Lighting	2,250	0	0	2,250	16,310,812	0.13795	0.12389	11.35%
Water District # 1	61,150	61,150	0	0	49,436,496	0.00000	0.00000	***.***
Water Dist#1-Extensio	4,332	0	0	4,332	15,738,263	0.27525	0.27710	-0.67%
Fire District 2	48,000	0	0	48,000	45,744,524	1.04931	1.06703	-1.66%
Fire District 1	85,330	0	0	85,330	91,026,965	0.93741	1.04502	-10.30%
SEWER DISTRICT	75,000	75,000	0	0	0	0.00000		***.***
TOTALS:	1,220,077	476,792	84,890	658,395				

2011 BUDGET FOR THE TOWN OF ESSEX

Water District # 1 Fund

Round # 3

ACCOUNT:	ACCOUNT CODE:	Last Years Actual 2009	Budget as Modified 2010	Actual YTD 2010	Tentative Budget 2011	Preliminary Budget 2011	Adopted Budget 2011	Change from 2010	%Change from 2010
Appropriations									
ADMINISTRATION	SW							0	********
Clerk	SW8310.1	1,337	1,377	913	1,377	1,377	1,377	0	0.0%
Equipment	SW8310.2	0	0	0	1,300	1,300	2,000	2,000	********
Contractual Expense	SW8310.4	0	515	48	200	200	200	-315	-61.2%
SUB-TOTAL:		1,337	1,892	961	2,877	2,877	3,577	1,685	89.1%
SOURCE OF SUPPLY	SW							0	********
Asst. Water Supt.	SW8320.1	1,290	1,329	886	1,329	1,329	1,329	0	0.0%
Equipment-sewer ame	SW8320.2	0	0	0	0	0	10,000	0	********
Contractual Expense	SW8320.4	0	6,000	5,713	6,000	6,000	6,000	0	0.0%
SUB-TOTAL:		1,290	7,329	6,599	7,329	7,329	17,329	0	0.0%
PURIFICATION	SW							0	********
Water Supt.	SW8330.1	6,146	6,330	4,220	7,500	7,500	7,500	1,170	18.5%
Equipment	SW8330.2	0	0	0	5,000	5,000	5,000	5,000	********
Contractual Expense	SW8330.4	0	12,637	10,419	12,000	12,000	13,301	-637	-5.0%
SUB-TOTAL:		6,146	18,967	14,639	24,500	24,500	25,801	5,533	29.2%
DISTRIBUTION	SW							0	********
Contractual Expense	SW8340.4	2	5,000	127	500	0	2,500	-2,500	-50.0%
SUB-TOTAL:		2	5,000	127	500	0	2,500	-2,500	-50.0%
State Retirement	SW9010.8	530	1,075	0	750	1,385	1,385	310	28.8%
Social Security	SW9030.8	671	671	460	725	781	781	110	16.4%

2011 BUDGET FOR THE TOWN OF ESSEX
Water District # 1 Fund

Round # 3

ACCOUNT:	ACCOUNT CODE:	Last Years Actual 2009	Budget as Modified 2010	Actual YTD 2010	Tentative Budget 2011	Preliminary Budget 2011	Adopted Budget 2011	Change from 2010	%Change from 2010
Workers Compensatio	SW9040.8	162	198	198	225	130	130	-68	-34.3%
Disability Ins.	SW9055.8	0	0	0	0	0	0	0	********
SUB-TOTAL:		1,363	1,944	658	1,700	2,296	2,296	352	18.1%
DEBT SERVICE	SW							0	********
Principal	SW9710.6	8,332	6,300	4,300	6,300	6,300	6,300	0	0.0%
Interest	SW9710.7	5,956	3,347	2,999	3,347	3,347	3,347	0	0.0%
SUB-TOTAL:		14,288	9,647	7,299	9,647	9,647	9,647	0	0.0%
Appropriation TOTALS:		24,426	44,779	30,283	46,553	46,649	61,150	5,070	11.3%
Revenues									
Metered Sales	SW2140	27,682	0	0	0	0	0	0	********
Unmetered Sales	SW2142	478	26,600	20,796	40,000	40,000	40,000	13,400	50.4%
Connection Fees	SW2144	0	0	758	0	0	1,000	1,000	********
Penalties & Interest	SW2148	0	0	0	0	0	0	0	********
Lease-Nextel	SW2440	17,276	18,858	14,614	20,000	20,000	20,000	1,142	6.1%
Interest Earnings	SW2401	177	1,353	163	150	150	150	-1,203	-88.9%
Sales of Scrap	SW2650	0	0	0	0	0	0	0	********
Refunds-Prior Year Ex	SW2701	0	0	0	0	0	0	0	********
Revenue TOTALS:		45,613	46,811	36,331	60,150	60,150	61,150	14,339	30.6%

2011 BUDGET FOR THE TOWN OF ESSEX
Water Dist#1-Extension #1 Fund

Round # 3

ACCOUNT:	ACCOUNT CODE:	Last Years Actual 2009	Budget as Modified 2010	Actual YTD 2010	Tentative Budget 2011	Preliminary Budget 2011	Adopted Budget 2011	Change from 2010	%Change from 2010
Appropriations								0	********
DEBT SERVICE	SW								
Principal	SW9710.62	4,332	4,332	4,332	4,332	4,332	4,332	0	0.0%
Interest	SW9710.7	0	0	0	0	0	0	0	********
Appropriation TOTALS:		4,332	4,332	4,332	4,332	4,332	4,332	0	0.0%
Revenues									
Revenue TOTALS:		0	0	0	0	0	0	0	********

TOWN OF ESSEX
ESSEX, NY 12936
SEP 10 2011
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2012 BUDGET FOR THE TOWN OF ESSEX

Summary of All Funds

Round # 1

FUNDS:	FUND CODE:	Last Years Actual 2010	Budget as Modified 2011	Actual YTD 2011	Tentative Budget 2012	Preliminary Budget 2012	Adopted Budget 2012	Change from 2011	% Change from 2011
Appropriations									
General	A	352,019	489,670	243,342	603,324	0	0	113,654	23%
Highway	DA	405,953	499,295	280,437	482,728	0	0	-16,567	-3%
Essex Lighting District	ES	2,658	4,000	2,716	4,000	0	0	0	0%
Whallonsburg Lighting D	ES	1,224	2,000	1,297	1,500	0	0	-500	-25%
Water District # 1	SW	24,426	61,150	35,459	59,704	0	0	-1,446	-2%
Water Dist#1-Extension #	SW	4,332	4,332	4,332	4,332	0	0	0	0%
Fire District 2	SF	0	48,000	48,000	48,000	48,000	48,000	0	0%
Fire District 1	SF	0	96,330	96,330	96,330	96,330	85,330	0	0%
SEWER DISTRICT	SS	0	30,000	0	53,400	0	0	23,400	0%
SEWER BOND	SS	0	0	0	75,000	0	0	75.000	#DIV/0!
Appropriation TOTALS:		790,612	1,234,777	711,913	1,353,318	144,330	133,330	118,541	10%
Revenues									
General	A	76,879	156,642	111,751	152,250	0	0	-4,392	-3%
Highway	DA	256,194	233,450	5,309	255,000	0	0	21,550	9%
Essex Lighting District	ES	0	0	0	0	0	0	0	0%
Whallonsburg Lighting D	ES	0	0	0	0	0	0	0	0%
Water District # 1	SW	45,613	61,150	3,421	59,704	0	0	-1,446	-2%
Water Dist#1-Extension #	SW	0	0	0	0	0	0	0	0%
Fire District 2	SF	0	0	0	0	0	0	0	0%
Fire District 1	SF	0	1,000	0	0	0	0	-1,000	-100%
SEWER DISTRICT	SS	0	75,000	0	53,400	0	0	-21,600	-29%

2012 BUDGET FOR THE TOWN OF ESSEX

Tax Rate Schedule

Round # 1

FUNDS:	Appro-priations	Less Estimated Revenues	Less Fund Balance & Approp. Reserves	Amount to be Raised by Tax for 2011	Amount to be Raised by Tax for 2012	Taxable Assessed Value	Implied Tax Rate: $ per Thousand	Current Tax Rate: $ per Thousand
General	603,324	152,250	225,000	288,138	226,074	125,571,770	2.29461	2.29754
Highway	482,728	255,000	0	225,845	227,728	125,571,770	1.79853	1.80083
Essex Lighting District	4,000	0	0	4,500	4,000	54,213,080	0.08301	0.08322
Whallonsburg Lighting	1,500	0	0	2,250	1,500	15,098,272	0.14902	0.13795
Water District # 1	59,704	59,704	0	0	0	50,148,598	0.00000	0.00000
Water Bond	4,332	0	0	4,332	4,332	15,539,493	0.27525	0.27525
Fire District 2	48,000	0	0	48,00	48,000	44,601,080	1.07621	1.04931
Fire District 1	96,330	0	0	85,330	96,330	91,356,745	1.05444	0.93742
SEWER DISTRICT	53,400	53,400	0	0	0	30,662,204	0.00000	0.00000
SEWER BOND	0	0	0	0	0	32,811,554	0	0
TOTALS:	1,353,318	520,354	225,000	610,395	607,964			

Audrey Hoskins
Town Clerk

2012 BUDGET FOR THE TOWN OF ESSEX

Water Dist#1-Extension #1 Fund

Round # 1

ACCOUNT:	ACCOUNT CODE:	Last Years Actual 2009	Budget as Modified 2011	Actual YTD 2011	Tentative Budget 2012	Preliminary Budget 2012	Adopted Budget 2012	Change from 2011	%Change from 2011
Appropriations									
DEBT SERVICE	SW								
Principal	SW9710.62	4,332	4,332	4,332	4,332	0	0	0	0%
Interest	SW9710.7	0	0	0	0	0	0	0	
Appropriation TOTALS:		4,332	4,332	4,332	4,332	0	0	0	0%
Revenues		0	0	0	0	0	0	0	0%
Revenue TOTALS:		0	0	0	0	0	0	0	0%

2012 BUDGET FOR THE TOWN OF ESSEX

Water District # 1 Fund

Round # 3

ACCOUNT:	ACCOUNT CODE:	Last Years Actual 2010	Budget as Modified 2011	Actual YTD 2011	Tentative Budget 2012	Preliminary Budget 2012	Adopted Budget 2012	Change from 2011	%Change from 2011
Appropriations									
ADMINISTRATION	SW								
Clerk	SW8310.1	1,337	1,377	459	1,377	1,377	1,377	0	0%
Equipment	SW8310.2	0	2,000	0	2,000	2,000	2,000	0	0%
Contractual Expense	SW8310.4	0	200	112	200	50,000	50,000	49,800	24900%
SUB-TOTAL:		1,337	3,577	571	3,577	53,377	53,377	49,800	1392%
SOURCE OF SUPPLY	SW								
Asst. Water Supt.	SW8320.1	1,290	1,329	927	1,329	1,329	1,329	0	0%
Equipment-sewer ame	SW8320.2	0	10,000	0	10,000	10,000	10,000	0	0%
Contractual Expense	SW8320.4	0	6,000	2,868	6,000	6,000	6,000	0	0%
SUB-TOTAL:		1,290	17,329	3,795	17,329	17,329	17,329	0	0%
PURIFICATION	SW								
Water Supt.	SW8330.1	6,146	7,500	3,333	7,500	7,500	7,500	0	0%
Equipment	SW8330.2	0	5,000	141	5,000	5,000	5,000	0	0%
Contractual Expense	SW8330.4	0	13,301	17,865	13,301	13,301	13,301	0	0%
SUB-TOTAL:		6,146	25,801	21,339	25,801	25,801	25,801	0	0%
DISTRIBUTION	SW								
Contractual Expense	SW8340.4	2	2,500	68	2,500	2,500	2,500	0	0%
SUB-TOTAL:		2	2,500	68	2,500	2,500	2,500	0	0%
State Retirement	SW9010.8	530	1,385	0	1,385	1,910	1,910	525	38%
Social Security	SW9030.8	671	781	292	700	781	781	0	0%

2012 BUDGET FOR THE TOWN OF ESSEX

Water District # 1 Fund

Round # 3

ACCOUNT:	ACCOUNT CODE:	Last Years Actual 2010	Budget as Modified 2011	Actual YTD 2011	Tentative Budget 2012	Preliminary Budget 2012	Adopted Budget 2012	Change from 2011	%Change from 2011
Workers Compensatio	SW9040.8	162	130	0	150	137	137	7	5%
Disability Ins.	SW9055.8	0	0	0	0	0	0	0	0%
SUB-TOTAL:		1,363	2,296	292	2,235	2,828	2,828	532	24%
DEBT SERVICE	SW								
Principal	SW9710.6	8,332	6,300	0	6,300	6,300	6,300	0	0%
Interest	SW9710.7	5,956	3,347	1,049	3,347	3,347	3,347	0	0%
SUB-TOTAL:		14,288	9,647	1,049	9,647	9,647	9,647	0	0%
Appropriation TOTALS:		24,426	61,150	27,114	61,089	111,482	111,482	50,332	82%
Revenues									
Metered Sales	SW2140	27,682	0	0	0	0	0	0	0%
Unmetered Sales	SW2142	478	40,000	0	40,000	90,628	64,689	24,689	62%
Connection Fees	SW2144	0	1,000	0	0	0	0	-1,000	0%
Penalties & Interest	SW2148	0	0	0	0	0	0	0	0%
Lease-Nextel	SW2440	17,276	20,000	3,421	19,704	11,337	21,143	1,143	6%
Interest Earnings	SW2401	177	150	0	0	150	150	0	0%
Sales of Scrap	SW2650	0	0	0	0	500	500	500	0%
Refunds-Prior Year Ex	SW2701	0	0	0	0	500	0	0	0%
Interfund Transfer	SW5031	0	0	0	0	0	25,000	25,000	0%
Revenue TOTALS:		45,613	61,150	3,421	59,704	103,115	111,482	50,332	84%

Invoice # WS0722111403145

Paid Date: ____
Amt Paid: ____
Check# ____
Rcvd by: ____

Town o. ESSEX

PO Box 45
Essex, NY 12936
Tel: (518) 963-4287 Fax: (518) 963-4288

Payments Accepted: MONDAY - FRIDAY 8:30 AM TO 3:30 PM

WATER/SEWER BILL

Line1
Line2
Line3
Line4

Acct#	**0145**
Billing Date	7/15/2011
Due Date	10/1/2011
Service	10/01/2010-03/31/2011

Friday, October 28, 2011

Service Location: 2263 LAKE SHORE RD

Acct # 0145
Water# F0145
Sewer# F0145

Current Usage

4TH QUARTER 2010 - $40.00

	Now Due
CHARGE	$40.00
OTHER	$0.00
ARREARS	$0.00
FINAL	$40.00

Home Assessed Value $279,880.00

Unpaid amounts levied to your tax bill 10/31/2011

Pay this amount by 10/1/2011 Total Due **$40.00**

0% WATER and/or 0% SEWER Penalty applied after 30 days

Check here if receipt request ☐ Enclosed is full payment of **$40.00**

Acct#	0145
District	WS
Due Date	10/1/2011
Tax Map	040.073-0005-009.000

Please Remit to:
Water Rents Clerk
Town of Essex
PO Box 45
Essex, NY 12936

Line1
Line2
Line3
Line4

CAPACITY DEVELOPMENT PROGRAM

TECHNICAL, MANAGERIAL, AND FINANCIAL EVALUATION CRITERIA
FOR: SMALL, COMMUNITY WATER SYSTEMS AND NONCOMMUNITY WATER SYSTEMS

SYSTEM NAME: Essex WD
COUNTY: Essex County **PWSID #:** 1500278
COMPLETED BY: James Z. Morgan Jr. Essex WD **DATE:** 5/18/04

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MAY 20 2004
NYS DEPT. OF HEALTH
SARANAC LAKE DISTRICT OFFICE

Technical Capacity

A. System Infrastructure

1. Does the system have as-built plans, drawings, or maps of its facilities including source, treatment, storage, and distribution?

   ☒ Yes ☐ No ☐ Not Applicable

   If the system lacks certain plans, please specify: ______________________

2. Does the system have exact location measurements of all main valves and service shut-offs?

   ☒ Yes ☐ No ☐ Not Applicable

3. Can the system's pumping, storage and distribution facilities meet current normal and peak demands and required distribution pressures?

   ☒ Yes ☐ No ☐ Not Applicable

4. Does the system have a water conservation plan?

   ☐ Yes ☒ No ☐ Not Applicable

5. Are all customers on the water system metered?

   ☒ Yes ☐ No ☐ Not Applicable

6. Is the system equipped with "master" meters that measure the amount of water the system produces or purchases for each source of water?

   ☒ Yes ☐ No ☐ Not Applicable

B. Source Water Evaluation

1. Does the system have a copy of its Source Water Assessment?

   ☐ Yes ☒ No ☐ Not Applicable

2. Has a yield analysis been done for the system's source?

☐ Yes ☒ No ☐ Not Applicable

3. Does the system have a description of the existing source-pumping capacity and the system's raw and finished water storage capacity?

☒ Yes ☐ No ☐ Not Applicable

4. For groundwater systems, does your system have a wellhead protection program in place?

☐ Yes ☐ No ☐ Not Applicable

C. Technical Knowledge

1. Has an evaluation of the water system facilities been conducted with respect to its ability to reliably meet current and proposed State and Federal drinking water regulations?

☒ Yes ☐ No ☐ Not Applicable

If system can't meet regulations, please specify: ______________________________

2. Does the system have monthly water production records or treatment records that show daily and monthly water production for <u>each source</u> used by the system?

☒ Yes ☐ No ☐ Not Applicable

3. Has an evaluation been conducted to document the condition and remaining service life of existing facilities?

☐ Yes ☒ No ☐ Not Applicable

4. Has the system been cited within the past two years for failing to sample and report test results?

☒ Yes ☐ No ☐ Not Applicable

5. Has the system been cited within the past two years for operating deficiencies as a result of a sanitary survey or other inspection conducted by the DOH?

☐ Yes ☒ No ☐ Not Applicable

6. If you answered *"Yes"* to Questions 4 or 5, has corrective action been taken to correct all deficiencies?

☒ Yes ☐ No ☐ Not Applicable

D. Certified Operators

1. Does the water system have a certified water operator(s) and designated an operator in responsible charge?

   ☒ Yes ☐ No

2. If the water system does not have a state-certified water treatment operator, or lacks the necessary number of operators to safely and reliably operate the system, does the system have a plan to acquire the services of a (additional) state-certified operator?

   ☐ Yes ☐ No ☐ Not Applicable

Managerial Capacity

A. Staffing and Organization

1. What type of training/continuing education did system personnel attend within the last two years (please specify)?

   ____

   ____

2. Who is responsible for policy and operational decisions for the water system *(name and title)*?

   Ron Jackson - Town Supervisor - Town Board - Jim Morgan - Water Supt

3. Who is responsible for ensuring compliance with state regulatory requirements *(name and title)*?

   Jim Morgan Water Supt.

4. Who is responsible for approving expenditures *(name and title)*?

   Town Board

5. *For systems that contract for system operation or management:* Does the system have a valid (signed) contract that summarizes the duties and responsibilities the contractor must provide to the system?

   ☐ Yes ☒ No ☐ Not Applicable

B. Ownership

1. *If the system is under temporary ownership*, has a future owner been found for the water system?

   ☐ Yes ☐ No ☒ Not Applicable

   If *"Yes"*, who will the future owner be? ______________________________

2. *For systems that use, but do not own, land or facilities that are essential to water system operation:* Is there a valid long-term contract (i.e., lease) between the water system and the owner of the land or facilities essential to the operation of the system?

   ☐ Yes ☐ No ☑ Not Applicable

3. *For systems with a single proprietor:* Does the system have a contingency plan for continuing system operation in the event the owner becomes incapable of carrying out his/her responsibilities?

☒ Yes ☐ No ☐ Not Applicable

C. Consolidation/Restructuring

1. Has the system examined the feasibility of:

a) Incorporating with an existing water system in the immediate proximity?

☐ Yes ☒ No ☐ Not Applicable

b) Selling ownership to an existing water system?

☐ Yes ☒ No ☐ Not Applicable

c) Contracting for the management or operation of the system with an existing system or satellite management/operations agency?

☐ Yes ☒ No ☐ Not Applicable

D. Emergency/Disaster Response Plans

1. Has the system developed an Emergency Response Plan?

☐ Yes ☒ No ☐ Not Applicable

2. Does the Emergency Response Plan:

a) Designate responsible personnel in the event of an emergency?

☐ Yes ☐ No ☐ Not Applicable

b) Provide for emergency phone and radio capabilities?

☐ Yes ☐ No ☐ Not Applicable

c) Describe public and health department notification procedures?

☐ Yes ☐ No ☐ Not Applicable

3. Does the system have any emergency contract agreements under which it operates (e.g., emergency water interconnections and alternative sources)?

☐ Yes ☒ No ☐ Not Applicable

E. Water System Policies

1. Does the system have a *written* System Operations Manual or Policy?

☒ Yes ☐ No ☐ Not Applicable

F. Record Keeping

1. Does the system keep water utility records including: financial, regulatory, facility, operations and maintenance, data quality, Annual Water Quality Reports, and correspondence with the NYS Department of Health and/or local Health Departments (and where appropriate, the NYSPSC)?

☒ Yes ☐ No ☐ Not Applicable

Financial Capacity

A. Budget Projection – Revenues and Expenses

1. Does the system have a water budget?

   ☒ Yes ☐ No ☐ Not Applicable

2. Are the system's annual water revenues sufficient to cover the annual water expenses as well as anticipated capital improvements?

   ☒ Yes ☐ No ☐ Not Applicable

3. Are the system's water rates, when combined with other revenue sources, sufficient to cover all listed expenditures for the water system?

   ☒ Yes ☐ No ☐ Not Applicable

4. Does the system retain budget information for at least two years?

   ☒ Yes ☐ No ☐ Not Applicable

B. Reserves

1. Does the system have a reserve account (or funds within a reserve account) dedicated to:

   a) Financing the emergency replacement of critical facilities in the event of their failure?

   ☒ Yes ☐ No ☐ Not Applicable

   b) The maintenance of cash flow in the event of an unexpected funding shortfall?

   ☐ Yes ☒ No ☐ Not Applicable

2. If the system has a reserve account, how does it determine the amount to put into the account?
   _X_ Fixed Amount ____Percentage of Revenues ____Percentage of Expenses
   ____Other (please specify) ____

3. If the system has a reserve account, what type(s) of reserve account(s) does it have?

_____Operation and Maintenance _____Capital Projects _____Debt Service
_____Other (please specify)_____________________________________

C. Capital Improvement Plan

1. How do you finance operation and maintenance costs (Check all that apply)?

   __X__Rates collected from ratepayers
   _____Other business revenue
   _____Surcharges
   _____Other (Please specify) _____________________________________
   __X__Rental fees
   _____Personal capital
   _____Reserve account

2. How did you finance your LAST major repair or improvement?

   _____Commercial bank loan
   _____DWSRF
   _____Surcharge
   _____Reserve Account
   _____Other (Please specify) _____________________________________
   __X__Bonds
   ____Other State or federal loan/grant program
   ____Personal Capital
   ____Revenue from other business

3. What options do you have for financing your NEXT major repair or improvement?

   _____Commercial bank loan
   _____DWSRF
   _____Surcharge
   _____Reserve Account
   _____Other (Please specify) _____________________________________
   __X__Bonds
   ____Other State or federal loan/grant program
   ____Personal Capital
   ____Revenue from other business

D. Water System Rates

1. Does the water system management review user fee, user charge, or rate system at least once every two years?

   ☒ Yes ☐ No ☐ Not Applicable

2. What is the frequency of billing (e.g., 12, 6, or 4 times per/year)? __4__times/year

3. Where applicable, what are the system's water rates? ____46 per quarter____

4. What are rates based on?

   _____Capital Improvement Plan and Annual Budget
   __✓__Annual Budget Only
   _____Cash on Hand
   _____Last year's expenses
   _____Not sure
   _____Other (Please specify_____________________________________)

5. What was the date of the last rate increase? __—__________________

8-Dec-11

EXHIBIT P

PARCELS IN ESSEX WATER SERVICE AREAS

Item No.	PARCEL NO.	CHARGE/ QUARTER	COMMENTS
1	40.3-2-6.000	$ 40.00	
2	40.3-2-8.111	$ 40.00	
3	40.3-2-8.120	-	abandoned agr
4	40.3-2-8.200	$ 40.00	
5	40.3-2-9.100	$ 40.00	
6	40.3-2-9.200	-	rural vacant
7	40.3-2-10.110	$ 40.00	
8	40.3-2-10.200	-	rural vacant
9	40.3-2-11.000	$ 40.00	
10	40.3-2-12.000	$ 40.00	
11	40.3-2-13.120	$ 28.50	
12	40.3-2-18.000	$ 40.00	
13	40.3-3-13.110	-	rural land
14	40.3-3-13.120	$ 40.00	sewer plant - out of district user
15	40.3-3-13.200	-	water tank
16	40.3-3-14.000		out of district user
17	40.3-3-15.000	$ 40.00	out of district user
18	40.3-3-16.000	-	cemetery out of district but no water
19	40.3-3-17.110	$ 40.00	
20	40.3-3-17.120	$ 40.00	
21	40.3-3-17.130	$ 40.00	
22	40.11-1-1.000	-	vacant land
23	40.57-1-1.000	$ 28.50	
24	40.57-1-2.000	$ 40.00	old Smith Hse
25	40.57-2-1.000	$ 40.00	
26	40.57-3-1.000	-	vacant land
27	40.57-3-2.000	$ 40.00	
28	40.57-3-3.000		
29	40.57-3-4.000	$ 40.00	
30	40.57-3-5.100	$ 40.00	
31	40.57-3-5.200	$ 40.00	
32	40.57-3-6.000	$ 40.00	
33	40.57-3-7.000	-	vacant land
34	40.57-3-8.000	-	vacant
35	40.57-3-9.000	$ 40.00	vacant
36	40.57-3-10.000	$ 40.00	seasonal
37	40.57-3-11.000	$ 40.00	
38	40.57-3-12.000	-	vacant
39	40.57-3-14.000		
40	40.57-3-15.000	$ 40.00	
41	40.65-1-1.100	$ 40.00	
42	40.65-1-1.200	$ 40.00	
43	40.65-1-2.000	$ 40.00	
44	40.65-1-3.000	$ 40.00	
45	40.65-1-4.000	$ 40.00	
46	40.65-2-1.000	$ 40.00	
47	40.65-2-2.000	$ 40.00	
48	40.65-2-3.000	$ 40.00	
49	40.65-2-4.000	$ 40.00	
50	40.65-2-5.000	$ 40.00	
51	40.65-2-6.000	$ 40.00	
52	40.65-2-7.100	$ 40.00	
53	40.65-2-8.000	$ 40.00	
54	40.65-2-9.100	-	vacant
55	40.65-2-10.000	$ 40.00	library
56	40.65-2-11.002	$ 40.00	
57	40.65-2-12.000	$ 28.50	church
58	40.65-3-1.000	$ 40.00	
59	40.65-3-2.000	$ 28.50	
60	40.65-3-3.000	$ 40.00	
61	40.65-3-4.002	$ 40.00	
62	40.65-3-5.200	$ 40.00	
63	40.65-3-6.000	$ 40.00	
64	40.65-3-7.000	$ 40.00	
65	40.65-4-1.000	-	underwater
66	40.73-1-1.000	$ 40.00	
67	40.73-1-2.000	$ 40.00	
68	40.73-1-3.000	$ 40.00	
69	40.73-1-4.000	$ 40.00	

8-Dec-11

EXHIBIT P

PARCELS IN ESSEX WATER SERVICE AREAS

Item No.	PARCEL NO.	CHARGE/ QUARTER	COMMENTS
70	40.73-1-5.000	$ 40.00	
71	40.73-1-6.000	$ 40.00	
72	40.73-1-7.000	$ 40.00	
73	40.73-1-8.000	$ 40.00	
74	40.73-2-1.000	$ 40.00	
75	40.73-2-2.000	$ 40.00	
76	40.73-2-3.000	-	lot non-buildable
77	40.73-2-7.000	$ 40.00	town hall
78	40.73-2-8.000	$ 40.00	
79	40.73-2-9.000	$ 40.00	
80	40.73-2-10.100	$ 40.00	
81	40.73-2-10.200	-	vacant
82	40.73-2-11.000	$ 40.00	P.O.; Architect; and (1) apt.
83	40.73-2-12.000	$ 40.00	
84	40.73-2-13.000	$ 40.00	senior center
85	40.73-2-14.002	$ 40.00	
86	40.73-2-15.001	$ 40.00	
87	40.73-2-16.1000	$ 40.00	
88	40.73-2-17.000	$ 40.00	
89	40.73-3-1.000	$ 40.00	
90	40.73-3-2.000	$ 40.00	
91	40.73-3-3.000	$ 40.00	
92	40.73-3-4.000	$ 40.00	
93	40.73-3-5.000	$ 40.00	
94	40.73-3-6.100	$ 40.00	
95	40.73-3-6.200	-	vacant non-build
96	40.73-3-7.000	$ 40.00	
97	40.73-3-8.000	-	motel/closed
98	40.73-3-9.000	$ 40.00	
99	40.73-3-10.000	$ 40.00	
100	40.73-3-11.000	-	vacant lot
101	40.73-3-12.003	$ 40.00	
102	40.73-3-13.000	$ 40.00	
103	40.73-3-14.000	$ 40.00	
104	40.73-3-15.000	$ 40.00	
105	40.73-3-16.000	$ 40.00	
106	40.73-3-17.000	$ 40.00	
107	40.73-3-18.000	$ 40.00	
108	40.73-3-19.000	-	vacant land
109	40.73-3-20.000	$ 40.00	
110	40.73-3-21.000	$ 40.00	
111	40.73-3-22.004	$ 40.00	beggs park
112	40.73-3-23.000	-	vacant land
113	40.73-3-24.000	$ 40.00	
114	40.73-3-25.000	$ 40.00	
115	40.73-3-26.000	$ 40.00	
116	40.73-3-27.000	$ 40.00	
117	40.73-3-28.000	$ 40.00	
118	40.73-3-29.000	$ 40.00	
119	40.73-3-30.000	$ 40.00	
120	40.73-3-31.000	$ 40.00	
121	40.73-3-32.100	$ 40.00	under water
122	40.73-3-32.100/1	-	Dock
123	40.73-4-1.000	$ 28.50	church
124	40.73-4-2.000	$ 40.00	
125	40.73-4-3.000	$ 40.00	
126	40.73-4-4.000	$ 40.00	
127	40.73-4-5.000	$ 40.00	
128	40.73-4-6.000	$ 40.00	
129	40.73-4-7.000	-	vacant
130	40.73-4-8.000	$ 40.00	
131	40.73-4-9.000	$ 40.00	
132	40.73-4-10.000	$ 40.00	
133	40.73-4-11.000	$ 40.00	
134	40.73-4-12.000	$ 40.00	vacant land
135	40.73-4-13.000	$ 40.00	
136	40.73-5-1.000	$ 40.00	
137	40.73-5-3.100	$ 40.00	
138	40.73-5-3.200	$ 40.00	
139	40.73-5-4.000	$ 40.00	

8-Dec-11

EXHIBIT P

PARCELS IN ESSEX WATER SERVICE AREAS

Item No.	PARCEL NO.	CHARGE/ QUARTER	COMMENTS
140	40.73-5-5.000	$ 40.00	
141	40.73-5-6.000	$ 40.00	
142	40.73-5-7.000	-	vacant lot
143	40.73-5-8.000	$ 40.00	
144	40.73-5-9.000	$ 40.00	
145	40.73-5-10.000	$ 40.00	
146	40.73-5-11.000	$ 40.00	
147	40.73-5-12.000	$ 40.00	
148	40.73-5-13.000	$ 40.00	
149	40.73-5-14.000	-	vacant
150	40.73-5-15.000	$ 40.00	
151	40.73-5-16.000	$ 40.00	
152	40.73-5-17.000	$ 40.00	
153	40.73-5-18.000	$ 40.00	barn
154	40.73-6-1.000	$ 40.00	
155	40.73-6-2.000	$ 40.00	
156	40.73-6-3.000	$ 40.00	
157	40.73-6-4.100	$ 40.00	
158	40.73-6-5.000	$ 40.00	
159	40.73-6-6.100	$ 40.00	marina
160	40.73-6-6.202	$ 40.00	marina
161	40.73-6-7.000	$ 40.00	
162	40.73-6-8.000	$ 40.00	
163	40.73-6-9.000	$ 40.00	
164	40.73-6-10.000	$ 40.00	
165	40.73-6-11.100	-	house vacant
166	40.73-6-11.210	$ 40.00	
167	40.73-6-11.220	-	vacant lot
168	40.73-6-11.240	$ 40.00	
169	40.73-6-12.000	$ 40.00	
170	40.73-6-13.100	-	vacant lot
171	40.73-6-13.200	-	vacant lot
172	40.73-7-1.100	-	underwater lot
173	40.73-7-1.200	-	underwater lot
174	40.73-8-1.000	$ 40.00	
175	40.73-8-2.000	-	vacant
176	40.73-8-3.000	$ 40.00	
177	40.73-8-4.000	$ 40.00	
178	40.81-1-1.000	$ 40.00	
179	40.81-1-2.000	$ 40.00	
180	40.81-1-3.000	$ 40.00	
181	40.81-1-4.000	-	abandoned hse
182	40.81-1-5.000	$ 40.00	
183	40.81-1-6.000	$ 40.00	
184	40.81-1-7.000	-	vacant lot
185	40.81-2-1.000	$ 40.00	
186	40.81-3-1.000	$ 40.00	
187	40.81-3-2.100	$ 40.00	
188	40.81-3-2.200	$ 40.00	
189	40.81-3-3.001	$ 40.00	vacant land
190	40.81-3-4.100	-	vacant land
191	40.81-3-4.200	$ 40.00	
192	40.81-3-5.000	$ 40.00	
193	40.81-3-6.000	$ 40.00	
194	40.81-3-8.00	-	vacant land
195	40.81-3-9.000	$ 40.00	
196	40.81-3-10.000	$ 40.00	
197	49.1-1-12.000	$ 40.00	dairy barn
198	49.1-1-13.000	$ 40.00	out of district user

TOWN OF ESSEX

Expenses for 2011 - 6-1-11 to 10-31-11

Abstract Of Vouchers - "Paid" - For the period: 6/1/2011 thru 10/31/2011

Paid Date	Inv. No.	Supplier	Amount	Voucher #	Description	GL Number / Name		Check #
WATER DISTRICT #1 SW								
6/16/2011	06-01-2011	Adirondack Hardware	$28.98	2011-12	May Invoice -Water	083404.08.000.00	8340.4 - Transmission/Distribution CE WATER DISTRICT #1 SW	6931
7/18/2011	763628	Adirondack Hardware	$39.51	2011-72	Water	083404.08.000.00	8340.4 - Transmission/Distribution CE WATER DISTRICT #1 SW	6973
10/14/2011	7393	AES Northeast	$96.32	2011-226	water	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7109
7/18/2011	1107919	Benefactor Funding Corp	$30.00	2011-68	Town Hall - Water Sample	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6976
6/16/2011	1105825	Benefactor Funding Corp	$25.00	2011-22	Water Test/ Town Hall	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6934
9/9/2011	8-28-2011	Benefactor Funding Corp	$30.00	2011-167	Water Test/ Town Hall	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7059
10/14/2011	10-14	Benefactor Funding Corp	$30.00	2011-228	water testing	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7113
8/16/2011	1109642	Benefactor Funding Corp	$30.00	2011-128	Town Hall - Water Sample	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7026
9/9/2011	8-31-2011	Casey Marshall	$96.00	2011-169	Milage 192 @.5/mile Trai	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7061
7/25/2011	318	Clinton Community Colle	$450.00	2011-96	Casey Marshall's Water O	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7016
6/16/2011	06-2011	Cornerstone Telephone	$92.08	2011-13	Water - Pump House	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	6936
7/18/2011	6-21-2011	Cornerstone Telephone	$92.27	2011-49	Pump House	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	6979
9/9/2011	9-9-2011	Cornerstone Telephone	$92.76	2011-152	Pump House	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7063
8/16/2011	8-16-2011	Cornerstone Telephone	$92.72	2011-113	Pump House	083201.08.000.00	8320.1 - Source Power Pump PS WATER DISTRICT #1 SW	7028
10/14/2011	10-14-11	Cornerstone Telephone	$92.70	2011-209	pump house	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7117
7/18/2011	6-20/7-12	Emmet Coonrod	$237.00	2011-69	Mileage (check Memo)	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6983
6/16/2011	11-666	Emmons Pump & Control	$756.00	2011-24	Leachnate System	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6939
7/18/2011	078766,078895	Endyne Laboratory Servi	$100.00	2011-70	Test Coliform + Ecoli Rush	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6984
8/16/2011	8-16-2011	Endyne Laboratory Servi	$50.00	2011-129	Water Testing	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7032
9/9/2011	9-9-11	Essex County Treasurer	$30.00	2011-145	Water Bills Paper	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7067

Paid Date	Inv. No.	Supplier	Amount	Voucher #	Description	GL Number / Name		Check #
8/9/2011	8-9-2011	Essex Postmaster	$88.00	2011-104	2 Rolls	083104.08.000.00	8310.4 - Administration CE WATER DISTRICT #1 SW	7022
6/27/2011	6-27-2011	Essex Postmaster	$140.75	2011-39	Postage	083302.08.000.00	8330.2 - Purification EQ WATER DISTRICT #1 SW	6968
6/17/2011	129	Gardner's Outdoor Wood	$200.00	2011-35	Loabor on filter pump, elec	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	6964
8/16/2011	148	Gardner's Plumbing And	$318.55	2011-131	Pump House	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7035
10/14/2011	10-14-11	Gardner's Plumbing And	$120.00	2011-225	labor	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7125
7/18/2011	7299162	Hach Company	$902.10	2011-71	Portable Turbidimeter	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6992
7/18/2011	7299162	Hach Company	$8,622.90	2011-71	Water Pump House	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6992
6/16/2011	S123275.001	Hulburt Bros., Inc.	$5.35	2011-19	4000 Water Finding Paste	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6946
9/9/2011	8-29-2011	J. H. Consulting Group	$140.00	2011-165	Water Test Load and Cop	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7072
10/14/2011	10-14	J. H. Consulting Group	$319.50	2011-227	water testing	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7130
7/18/2011	1252	Jonathan Pribble Excavat	$380.00	2011-73	Inspecting and Cleaning of	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6996
10/14/2011	10-14	Lake Champlain Pools	$272.58	2011-224	chlorine - july, august, sept	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7131
6/16/2011	052500148017	Lake Champlain Pools	$1,199.94	2011-23	Zincorthophosphoric Acid	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6948
6/16/2011	2202	New York Section AWW	$270.00	2011-18	Emmitt Coonrod & Casey	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	6950
10/26/2011	10-26-2011	NYSEG	$17.06	2011-233	Water Tower	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7155
10/14/2011	10-14-2011	NYSEG	$35.61	2011-232	Pump House	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7153
10/14/2011	10-14-2011	NYSEG	$281.67	2011-232	Beggs 3 Phase	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7153
9/9/2011	9-9-2011	NYSEG	$435.43	2011-170	Beggs Three Phase	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7078
8/31/2011	8-31-2011CR	NYSEG	($253.19)	2011-141	Beggs Three Phase	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7056
8/31/2011	8-31-11	NYSEG	$253.19	2011-142	Beggs Three Phase	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7056
8/31/2011	8-31-11	NYSEG	$34.79	2011-142	Water Tower	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7056
6/16/2011	06-07-2011	NYSEG	$357.29	2011-20	Water - Pump House & Be	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	6955
8/31/2011	8-31-2011	NYSEG	$253.19	2011-141	Beggs Three Phase	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7056

Paid Date	Inv. No.	Supplier	Amount	Voucher #	Description	GL Number / Name		Check #
8/31/2011	8-31-2011	NYSEG	$34.79	2011-141	Water Tower	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7056
8/31/2011	8-31-2011CR	NYSEG	($34.79)	2011-141	Water Tower	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7056
8/5/2011	8-5-2011	NYSEG	$28.98	2011-103	Water Tower	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7021
7/18/2011	7-15-2011	NYSEG	$266.88	2011-65	Beggs Three Phase	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7000
7/18/2011	7-15-2011	NYSEG	$17.33	2011-65	Beggs Pump House	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7000
8/5/2011	8-5-2011	NYSEG	$17.33	2011-103	Pump House	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7021
7/18/2011	6-21-2011	USA Blue Book	$2,267.14	2011-67	HCBY11300V PVC Butterf	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7011
6/16/2011	403982	USA Blue Book	$896.20	2011-21	Door Knob Cards	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	6961
7/18/2011	6-21-2011	USA Blue Book	$325.94	2011-67	Econo Value Box and Cur	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7011
7/18/2011	6-21-2011	USA Blue Book	$77.68	2011-67	Curb Box 5 ft.	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7011
8/16/2011	8-16-2011	USA Blue Book	$700.07	2011-130	Inv: 435284 + 435528	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7049
9/9/2011	8-28-2011	USA Blue Book	$117.92	2011-166	inv 469267	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7083
9/9/2011	8-28-2011	USA Blue Book	$651.69	2011-166	Inv 471550	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7083
7/18/2011	6-21-2011	USA Blue Book	$35.63	2011-67	6 x 9 Econo Value Box Liel	083304.08.000.00	8330.4 - Purification CE WATER DISTRICT #1 SW	7011
8/16/2011	8-16-2011	USDA Rural Developmen	$1,048.62	2011-132	Laon # 9102 Interest	097107.08.000.00	9710.7 - Interest on Debt Service WATER DISTRICT #1 SW	7050
9/9/2011	8-28-2011	Water Environment Fede	$100.00	2011-168	Miscellaneous	083204.08.000.00	8320.4 - Source Power Pump CE WATER DISTRICT #1 SW	7084
		Total	**$23,437.46**					

Paid Date	Inv. No.	Supplier	Amount	Voucher #	Description	GL Number / Name	Check #
		Grand Total	$23,437.46				

I hereby certify that the vouchers listed on this abstract for this period consisting of these attached pages were audited and allowed in the amounts shown. Authorization is hereby given and direction is made to pay each of the claimants the amount opposite his name.

Authorized Official	**Date**
Authorized Official	**Authorized Official**
Authorized Official	**Authorized Official**
Authorized Official	**Authorized Official**

Town of Essex

Register: Water Checking
From 01/01/2011 through 05/31/2011
rted by: Date and Order Entered

10/27/2011 9:38 AM

Expenses for 2011 1-1-11 - 5-31-11

Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
01/13/2011	5145	NYSEG	-split-		598.72	X		750.88
01/13/2011	5146	Hulbert Brothers, Inc.	S8330.4 · Purification	S1192070.001	132.78	X		618.10
01/13/2011	5147	Gardner's Outdoor B...	S8330.4 · Purification	57	68.72	X		549.38
01/13/2011	5148	Adirondack Hardwar...	S8340.4 · Transmissio...	Water	124.01	X		425.37
01/13/2011	5149	JH Consulting Group...	S8320.4 · Source of Su...	21697	319.50	X		105.87
01/13/2011	5150	Essex County Treasu...	S9040.8 · Workers Co...		129.64	X		-23.77
01/21/2011			Water, Money Market	fund transfer		X	5,000.00	4,976.23
01/31/2011	5153	Coonrod, Emmett	-split-		570.86	X		4,405.37
01/31/2011	5152	Marshall, Casey J	-split-		104.49	X		4,300.88
01/31/2011	5151	Hoskins, Audrey	-split-		105.27	X		4,195.61
02/01/2011	5154	NYSEG	S8320.4 · Source of Su...		32.74	X		4,162.87
02/11/2011	5155	Adirondack Hardwar...	S8340.4 · Transmissio...	Water	68.77	X		4,094.10
02/11/2011	5156	Cornerstone	S8320.4 · Source of Su...	phone 963-7961	92.00	X		4,002.10
02/11/2011	5157	Lake Champlain Poo...	S8330.4 · Purification	74813	154.80	X		3,847.30
02/11/2011	5158	USDA Rural Develo...	-split-		3,098.62	X		748.68
02/12/2011	5159	NYSEG	S8320.4 · Source of Su...		609.13	X		139.55
02/12/2011	5160	Benefactor Funding	S8320.4 · Source of Su...	1020602	25.00	X		114.55
12/2011	5161	Coonrod, Emmett	S8320.4 · Source of Su...	Milage 12/3-12/7	43.00	X		71.55
02/15/2011			Water, Money Market	Funds Transfer		X	2,500.00	2,571.55
02/22/2011	5162	NYSEG	S8320.4 · Source of Su...		31.45	X		2,540.10
02/28/2011	5165	Hoskins, Audrey J	-split-		108.27	X		2,431.83
02/28/2011	5163	Marshall, Casey J	-split-		104.50	X		2,327.33
02/28/2011	5164	Coonrod, Emmett	-split-		481.86	X		1,845.47
03/15/2011	5166	Cornerstone	S8320.4 · Source of Su...	phone 963-7961	92.04	X		1,753.43
03/15/2011	5167	Northern Tool & Equ...	S8320.2 · Pumping Eq...	233528446	300.13	X		1,453.30
03/15/2011	5168	Life Science Labs	S8320.4 · Source of Su...	1101354	25.00	X		1,428.30
03/15/2011	5169	NYSEG	-split-	Acc # 1001226...	523.55	X		904.75
03/21/2011	5170	NYSEG	S8320.4 · Source of Su...	1001-0201-241	31.36	X		873.39
03/31/2011	5171	Coonrod, Emmett	-split-		570.86	X		302.53
03/31/2011	5173	Hoskins, Audrey J	-split-		108.26	X		194.27
03/31/2011	5172	Marshall, Casey J	-split-		104.49	X		89.78
03/31/2011			Water, Money Market	Funds Transfer		X	1,000.00	1,089.78
04/16/2011			Water, Money Market	Funds Transfer		X	500.00	1,589.78
04/18/2011	5174	Cornerstone	S8320.4 · Source of Su...	phone 963-7961	92.11	X		1,497.67
04/18/2011	5175	JH Consulting Group...	S8320.4 · Source of Su...	water testing	319.50	X		1,178.17
04/18/2011	5176	Benefactor Funding	S8320.4 · Source of Su...	water testing	25.00	X		1,153.17
04/27/2011			Water, Money Market	Funds Transfer		X	2,500.00	3,653.17
29/2011	5179	Coonrod, Emmett	-split-		481.87	X		3,171.30
04/29/2011	5178	Hoskins, Audrey J	-split-		108.27	X		3,063.03
04/29/2011	5177	Marshall, Casey J	-split-		104.49	X		2,958.54

9891.06

Register: Water Checking
From 01/01/2011 through 05/31/2011
Sorted by: Date and Order Entered

Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
05/02/2011	5181	Coonrod, Emmett	S8330.1 · Purification ...		178.13	X		2,780.41
05/17/2011	5182	Cornerstone	S8320.4 · Source of Su...	phone 963-7961	92.04	X		2,688.37
05/17/2011	5183	NYSEG	S8320.4 · Source of Su...	1001-2262-951...	860.65	X		1,827.72
05/17/2011	5184	Lake Champlain Poo...	S8330.4 · Purification	Inv: 75632	209.00	X		1,618.72
05/17/2011	5185	Benefactor Funding	S8330.4 · Purification	water testing I...	25.00	X		1,593.72
05/17/2011	5186	USDA Rural Develo...	-split-	Loan # 9101	3,272.01	X		-1,678.29
05/17/2011	5187	Manufacturers and T...	S9710.6 · Debt service ...	Ref #: 1006999	4,332.00	X		-6,010.29
05/17/2011	5188	MIS Inc.	S8320.2 · Pumping Eq...	Inv: 11-8632	1,144.28	X		-7,154.57
05/18/2011			Water, Money Market	Funds Transfer		X	10,000.00	2,845.43
05/18/2011	5189	NYSEG	S8320.4 · Source of Su...	10010201241	62.30	X		2,783.13
05/31/2011	5190	Coonrod, Emmett	-split-		570.86	X		2,212.27
05/31/2011	5191	Hoskins, Audrey J	-split-		108.26	X		2,104.01
05/31/2011	5192	Marshall, Casey J	-split-		104.49			1,999.52
					$ 10,959.02			

Town of Essex 10/27/2011 8:38 AM

Register: Water Checking
From 01/01/2010 through 12/31/2010
rted by: Date and Order Entered

Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
01/15/2010	4982	Essex County Treasu...	S9040.8 · Workers Co...		198.00	X		5,290.09
01/15/2010	4983	**NYSEG**	-split-	VOID:		X		5,290.09
01/15/2010	4984	Lake Champlain Poo...	S8330.4 · Purification		141.90	X		5,148.19
01/15/2010	4985	JH Consulting Group...	S8330.4 · Purification		317.00	X		4,831.19
01/15/2010	4986	USDA Rural Develo...	S9710.7 · Interest expe...		447.00	X		4,384.19
01/15/2010	4987	**NYSEG**	-split-		549.72	X		3,834.47
01/29/2010	4988	Coonrod, Emmett	-split-		471.31	X		3,363.16
01/29/2010	4989	Leaning, Garth W.	-split-		102.27	X		3,260.89
01/29/2010	4990	Sayward, Lois	-split-		105.05	X		3,155.84
01/29/2010	4991	Trust and Agency - 1...	Trust and Agency chec...		73.37	X		3,082.47
01/29/2010	4992	Trust and Agency - 1...	Trust and Agency chec...		57.54	X		3,024.93
02/01/2010	4994	**NYSEG**	S8320.4 · Source of Su...		123.49	X		2,901.44
02/09/2010			Water, Money Market	Funds Transfer		X	10,000.00	12,901.44
02/10/2010	4995	Life Science Labs	S8320.4 · Source of Su...		25.00	X		12,876.44
02/10/2010	4997	USDA Rural Develo...	-split-		3,148.62	X		9,727.82
02/10/2010	4998	CSTC	S8320.4 · Source of Su...		91.91	X		9,635.91
02/10/2010	5009	**NYSEG**	S8320.4 · Source of Su...		501.44	X		9,134.47
/18/2010	4999	Coonrod, Emmett	S8320.4 · Source of Su...		221.00	X		8,913.47
02/22/2010	5000	**New York Rural Wat...**	S8320.4 · Source of Su...	class John Coo...	24.00	X		8,889.47
02/23/2010	5006	**NYSEG**	S8320.4 · Source of Su...		74.71	X		8,814.76
02/26/2010	5001	Coonrod, Emmett	-split-		471.32	X		8,343.44
02/26/2010	5002	Leaning, Garth W.	-split-		102.29	X		8,241.15
02/26/2010	5003	Sayward, Lois	-split-		105.05	X		8,136.10
02/26/2010	5004	Trust and Agency - 1...	Trust and Agency chec...		57.51	X		8,078.59
02/26/2010	5005	Trust and Agency - 1...	Trust and Agency chec...		73.34	X		8,005.25
03/01/2010	5007	CSTC	S8320.4 · Source of Su...	VOID:		X		8,005.25
03/01/2010	5008	**New York Rural Wat...**	S8320.4 · Source of Su...	class John Coo...	450.00	X		7,555.25
03/12/2010	5015	CSTC	S8320.4 · Source of Su...		91.91	X		7,463.34
03/12/2010	5016	**NYSEG**	-split-		519.89	X		6,943.45
03/12/2010	5017	Life Science Labs	S8320.4 · Source of Su...	VOID:		X		6,943.45
03/12/2010	5009	Life Science Labs	S8320.4 · Source of Su...		25.00	X		6,918.45
03/12/2010	5010	Garth Leaning	S8330.4 · Purification		12.00	X		6,906.45
03/22/2010	5011	University Enterprise...	S8330.4 · Purification		317.00	X		6,589.45
03/23/2010	5012	**NYSEG**	S8320.4 · Source of Su...		105.63	X		6,483.82
03/26/2010	5020	Essex Postmaster	S8320.4 · Source of Su...		88.00	X		6,395.82
03/31/2010	5013	Coonrod, Emmett	-split-		471.31	X		5,924.51
03/31/2010	5014	Leaning, Garth W.	-split-		102.27	X		5,822.24
/31/2010	5017	Sayward, Lois	-split-		105.06	X		5,717.18
03/31/2010	5018	Trust and Agency - 1...	Trust and Agency chec...		73.36	X		5,643.82
03/31/2010	5019	Trust and Agency - 1...	Trust and Agency chec...		57.53	X		5,586.29

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Register: Water Checking

From 01/01/2010 through 12/31/2010

ɔrted by: Date and Order Entered

Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
04/08/2010	5021	Coonrod, Emmett	S8330.4 · Purification		35.00	X		5,551.29
04/08/2010	5022	Life Science Labs	S8330.4 · Purification		25.00	X		5,526.29
04/08/2010	5023	**NYSEG**	-split-		247.68	X		5,278.61
04/08/2010	5024	CSTC	S8320.4 · Source of Su...		91.91	X		5,186.70
04/08/2010	5025	Lake Champlain Poo...	S8330.4 · Purification		141.90	X		5,044.80
04/23/2010	5026	**NYSEG**	S8320.4 · Source of Su...		66.82	X		4,977.98
04/30/2010	5027	Coonrod, Emmett	-split-		471.32	X		4,506.66
04/30/2010	5028	Leaning, Garth W.	-split-		102.28	X		4,404.38
04/30/2010	5029	Sayward, Lois	-split-		105.05	X		4,299.33
04/30/2010	5030	Trust and Agency - 1...	Trust and Agency chec...		57.52	X		4,241.81
04/30/2010	5031	Trust and Agency - 1...	Trust and Agency chec...		73.35	X		4,168.46
05/12/2010	5032	CSTC	S8320.4 · Source of Su...		91.89	X		4,076.57
05/12/2010	5033	Lake Champlain Poo...	S8330.4 · Purification		799.96	X		3,276.61
05/12/2010	5034	**NYSEG**	-split-		327.51	X		2,949.10
05/12/2010	5035	Essex County Treasu...	S8310.4 · Clerk PS		48.00	X		2,901.10
05/12/2010	5036	Life Science Labs	S8330.4 · Purification		25.00	X		2,876.10
05/12/2010	5037	Adirondack Hardwar...	S8340.4 · Transmissio...		53.84	X		2,822.26
;/12/2010	5038	Jonathan Pribble Exc...	S8320.4 · Source of Su...		280.00	X		2,542.26
05/25/2010	5044	USDA Rural Develo...	S9710.7 · Interest expe...		305.16	X		2,237.10
05/28/2010	5039	Leaning, Garth W.	-split-		102.28	X		2,134.82
05/28/2010	5040	Sayward, Lois	-split-		105.04	X		2,029.78
05/28/2010	5041	Coonrod, Emmett	-split-		471.32	X		1,558.46
05/28/2010	5042	Trust and Agency - 1...	Trust and Agency chec...		73.36	X		1,485.10
05/28/2010	5043	Trust and Agency - 1...	Trust and Agency chec...		57.53	X		1,427.57
06/01/2010	5045	**NYSEG**	S8320.4 · Source of Su...		79.74	X		1,347.83
06/04/2010			Water, Money Market	Funds Transfer		X	10,000.00	11,347.83
06/08/2010	5046	**New York Rural Wat...**	S8320.4 · Source of Su...		75.00	X		11,272.83
06/11/2010	5047	CSTC	S8320.4 · Source of Su...		91.90	X		11,180.93
06/11/2010	5048	Life Science Labs	S8330.4 · Purification		25.00	X		11,155.93
06/11/2010	5049	**NYSEG**	-split-		365.01	X		10,790.92
06/11/2010	5050	Manufacturers and T...	S9710.6 · Debt service ...	Town of Essex ...	4,332.00	X		6,458.92
06/11/2010	5051	Alan Gardner	S8330.4 · Purification		60.00	X		6,398.92
06/11/2010	5052	CPI Controls Upstate...	S8330.4 · Purification		3,349.52	X		3,049.40
06/11/2010	5053	Adirondack Hardwar...	S8340.4 · Transmissio...		57.35	X		2,992.05
06/11/2010	5054	Coonrod, Emmett	S8330.4 · Purification		180.42	X		2,811.63
06/15/2010	5055	Essex Postmaster	S8320.4 · Source of Su...	water bills post...	88.00	X		2,723.63
06/30/2010	5056	Leaning, Garth W.	-split-		102.27	X		2,621.36
;/30/2010	5057	Sayward, Lois	-split-		105.96	X		2,515.40
06/30/2010	5058	Coonrod, Emmett	-split-		471.32	X		2,044.08
06/30/2010	5059	Trust and Agency - 1...	Trust and Agency chec...		73.45	X		1,970.63

8970.50

Register: Water Checking
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Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
06/30/2010	5060	Trust and Agency - 1...	Trust and Agency chec...		57.62	X		1,913.01
07/14/2010			Water, Money Market	Funds Transfer		X	10,000.00	11,913.01
07/16/2010	5061	Hynes Electrical Sup...	S8340.4 · Transmissio...		14.04	X		11,898.97
07/16/2010	5062	Adirondack Hardwar...	S8340.4 · Transmissio...	June statement	2.17	X		11,896.80
07/16/2010	5063	Gardner's Outdoor B...	S8330.4 · Purification		320.00	X		11,576.80
07/16/2010	5064	Morrisonville Septic ...	S8330.4 · Purification		986.00	X		10,590.80
07/16/2010	5065	Coonrod, Emmett	S8330.4 · Purification		37.50	X		10,553.30
07/16/2010	5066	Life Science Labs	S8330.4 · Purification	#1009060	25.00	X		10,528.30
07/16/2010	5067	CSTC	S8320.4 · Source of Su...		91.90	X		10,436.40
07/16/2010	5068	USDA Rural Develo...	S9710.6 · Debt service ...		2,300.00	X		8,136.40
07/16/2010	5069	Gardner's Outdoor B...	S8330.4 · Purification		952.98	X		7,183.42
07/16/2010	5070	**NYSEG**	-split-		303.40	X		6,880.02
07/21/2010	5071	**NYSEG**	S8320.4 · Source of Su...		23.01	X		6,857.01
07/28/2010	5077	**New York Rural Wat...**	S8320.4 · Source of Su...		75.00	X		6,782.01
07/30/2010	5072	Leaning, Garth W.	-split-		102.28	X		6,679.73
07/30/2010	5073	Sayward, Lois	-split-		105.97	X		6,573.76
07/30/2010	5074	Coonrod, Emmett	-split-		471.31	X		6,102.45
'/30/2010	5075	Trust and Agency - 1...	Trust and Agency chec...		57.61	X		6,044.84
07/30/2010	5076	Trust and Agency - 1...	Trust and Agency chec...		73.44	X		5,971.40
08/11/2010			Water, Money Market	Funds Transfer		X	5,000.00	10,971.40
08/16/2010	5078	JH Consulting Group...	S8330.4 · Purification	21065	319.50	X		10,651.90
08/16/2010	5079	Emmons Pump & Co...	S8330.4 · Purification	205-045315	1,966.10	X		8,685.80
08/16/2010	5080	Lake Champlain Poo...	-split-		338.00	X		8,347.80
08/16/2010	5081	CSTC	S8320.4 · Source of Su...		91.91	X		8,255.89
08/16/2010	5082	**NYSEG**	-split-		412.36	X		7,843.53
08/16/2010	5083	USDA Rural Develo...	S9710.7 · Interest expe...		1,098.63	X		6,744.90
08/24/2010	5084	Coonrod, Emmett	S8330.4 · Purification		44.00	X		6,700.90
08/30/2010	5090	Essex Postmaster	S8320.4 · Source of Su...	water samples	18.55	X		6,682.35
08/31/2010	5085	Leaning, Garth W.	-split-		102.28	X		6,580.07
08/31/2010	5086	Sayward, Lois	-split-		105.97	X		6,474.10
08/31/2010	5087	Coonrod, Emmett	-split-		471.32	X		6,002.78
08/31/2010	5088	Trust and Agency - 1...	Trust and Agency chec...		73.44	X		5,929.34
08/31/2010	5089	Trust and Agency - 1...	Trust and Agency chec...		57.60	X		5,871.74
09/07/2010	5091	Life Science Labs	S8330.4 · Purification	1012923	25.00	X		5,846.74
09/07/2010	5092	Lake Champlain Poo...	S8330.4 · Purification	142238	799.96	X		5,046.78
09/07/2010	5093	**NYSEG**	-split-		367.08	X		4,679.70
09/07/2010	5094	Gardner's Outdoor B...	S8330.4 · Purification		356.49	X		4,323.21
)/07/2010	5095	CSTC	S8320.4 · Source of Su...		91.95	X		4,231.26
09/21/2010	5096	**NYSEG**	S8320.4 · Source of Su...		4.82	X		4,226.44
09/22/2010	5097	Essex Postmaster	S8320.4 · Source of Su...	postage water b...	88.00	X		4,138.44

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Register: Water Checking
From 01/01/2010 through 12/31/2010
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Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
09/30/2010	5099	Leaning, Garth W.	-split-		102.28	X		4,036.16
09/30/2010	5100	Sayward, Lois	-split-		105.97	X		3,930.19
09/30/2010	5098	Coonrod, Emmett	-split-		471.31	X		3,458.88
10/01/2010			Trust and Agency chec...	VOID: Funds ...		X		3,458.88
10/01/2010			Trust and Agency chec...	Funds Transfer	131.05	X		3,327.83
10/15/2010	5101	CSTC	S8320.4 · Source of Su...		91.95	X		3,235.88
10/15/2010	5102	JH Consulting Group...	S8320.4 · Source of Su...	20737, 21334	1,050.00	X		2,185.88
10/15/2010	5103	Coonrod, Emmett	S8330.4 · Purification		52.00	X		2,133.88
10/15/2010	5104	Life Science Labs	S8330.4 · Purification	1015341	25.00	X		2,108.88
10/15/2010	5105	**NYSEG**	-split-		299.47	X		1,809.41
10/19/2010	110		Trust and Agency chec...			X	131.05	1,940.46
10/28/2010			Water, Money Market	Funds Transfer		X	5,000.00	6,940.46
10/28/2010			Trust and Agency chec...	VOID: Funds ...		X		6,940.46
10/28/2010			Trust and Agency chec...	Funds Transfer	131.05	X		6,809.41
10/29/2010	5106	Coonrod, Emmett	-split-		471.32	X		6,338.09
10/29/2010	5107	Leaning, Garth W.	-split-		102.27	X		6,235.82
10/29/2010	5108	Sayward, Lois	-split-		105.97	X		6,129.85
)/31/2010	109		66900 · Reconciliation ...	VOID: Balance...		X		6,129.85
11/01/2010			Trust and Agency chec...	Funds Transfer		X	131.05	6,260.90
11/03/2010	5109	**NYSEG**	S8320.4 · Source of Su...		16.42	X		6,244.48
11/04/2010			Trust and Agency chec...	VOID: Deposit		X	0.00	6,244.48
11/04/2010	108		Trust and Agency chec...			X		6,244.48
11/12/2010	5110	Coonrod, Emmett	-split-		337.74	X		5,906.74
11/15/2010	5111	CSTC	S8320.4 · Source of Su...		92.12	X		5,814.62
11/15/2010	5112	Adirondack Hardwar...	S8340.4 · Transmissio...	757274, 757278	118.32	X		5,696.30
11/15/2010	5113	**NYSEG**	-split-		279.61	X		5,416.69
11/15/2010	5114	Endyne, Inc.	S8330.2 · Purification ...	VOID: 066336		X		5,416.69
11/15/2010	5115	Life Science Labs	S8330.4 · Purification	1017283	25.00	X		5,391.69
11/15/2010	5116	Coonrod, Emmett	S8320.4 · Source of Su...		118.00	X		5,273.69
11/15/2010	5117	**New York Rural Wat...**	S8330.4 · Purification		185.00	X		5,088.69
11/15/2010	5118	Endyne, Inc.	S8330.2 · Purification ...		50.00	X		5,038.69
11/15/2010			Trust and Agency chec...	Funds Transfer	69.18	X		4,969.51
11/30/2010	5119	Coonrod, Emmett	-split-		471.32	X		4,498.19
11/30/2010	5120	Leaning, Garth W.	-split-		102.29	X		4,395.90
11/30/2010	5121	Sayward, Lois	-split-		105.97	X		4,289.93
11/30/2010	5122	Coonrod, Emmett	-split-		1,146.56	X		3,143.37
11/30/2010	5123	**NYSEG**	S8320.4 · Source of Su...		17.33	X		3,126.04
1/30/2010			Trust and Agency chec...	Funds Transfer	418.35	X		2,707.69
12/06/2010	5126	Essex Postmaster	S8320.4 · Source of Su...	VOID: postage...		X		2,707.69
12/06/2010	5124	Essex Postmaster	S8320.4 · Source of Su...	postage water s...	8.30	X		2,699.39

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Register: Water Checking
From 01/01/2010 through 12/31/2010
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Date	Number	Payee	Account	Memo	Payment	C	Deposit	Balance
12/13/2010			Water, Money Market	Funds Transfer		X	5,000.00	7,699.39
12/13/2010	5126	CSTC	S8320.4 · Source of Su...		92.02	X		7,607.37
12/13/2010	5127	USDA Rural Develo...	S9710.7 · Interest expe...		290.37	X		7,317.00
12/13/2010	5128	Lake Champlain Poo...	S8330.4 · Purification	74813	154.80	X		7,162.20
12/13/2010	5129	USA Bluebook	S8330.4 · Purification		1,008.46	X		6,153.74
12/13/2010	5130	**NYSEG**	S8320.4 · Source of Su...		17.33	X		6,136.41
12/13/2010	5131	Adirondack Hardwar...	S8340.4 · Transmissio...	**November**	203.75	X		5,932.66
12/13/2010	5132	Life Science Labs	S8320.4 · Source of Su...	1018883	25.00	X		5,907.66
12/13/2010	5133	**NYS Retirement**	S9010.8 · Retirement		1,075.00	X		4,832.66
12/15/2010	5125	Coonrod, Emmett	-split-		685.54	X		4,147.12
12/15/2010			Trust and Agency chec...	Funds Transfer	147.66	X		3,999.46
12/30/2010	5134	Coonrod, Emmett	-split-		471.31	X		3,528.15
12/30/2010	5135	Leaning, Garth W.	-split-		102.27	X		3,425.88
12/30/2010	5136	Sayward, Lois	-split-		105.98	X		3,319.90
12/30/2010	5137	Coonrod, Emmett	-split-		716.25	X		2,603.65
12/30/2010	5138	Essex Postmaster	S8320.4 · Source of Su...	Postage water b...	88.00	X		2,515.65
12/30/2010	5139	**NYSEG**	-split-		331.18	X		2,184.47
/30/2010			Trust and Agency chec...	Funds Transfer	286.77	X		1,897.70
12/31/2010	5140	Coonrod, Emmett	S8320.4 · Source of Su...	Milage 12/3-12/7	44.00	X		1,853.70
12/31/2010	5141	Hulbert Brothers, Inc.	S8320.4 · Source of Su...	51186090.001, ...	286.98	X		1,566.72
12/31/2010	5142	Benefactor Funding	S8320.4 · Source of Su...	1020602	25.00	X		1,541.72
12/31/2010	5143	Jonathan Pribble Exc...	S8320.4 · Source of Su...	1201	100.00			1,441.72
12/31/2010	5144	Cornerstone	S8320.4 · Source of Su...	phone 963-7961	92.12	X		1,349.60
					6059.42			

TOTAL - 37,925.81

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 5
232 Hudson Street – P. O. Box 220, Warrensburg, New York 12885-0220
Phone: (518) 623-1281 • **FAX:** (518) 623-3603
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

April 3, 2002

TOWN OF ESSEX
ESSEX, N.Y. 12936

Ronald Jackson, Supervisor
Town of Essex
PO Box 355
Essex, NY 12936

RE: Water Supply Permit (WSA # 9483)
Town of Essex - Water District #1 and Extension
Town of Essex, Essex County
DEC Permit #5-1526-00049/00001

Dear Supervisor Jackson:

Enclosed is the Water Supply permit for the above project, issued under Article 15, Title 15 of the Environmental Conservation Law. Please review all conditions contained in the permit.

Questions regarding the terms and conditions of the permit may be directed to Vincent Kavanagh of our Environmental Quality office in Ray Brook, (518) 897-1267. Should the project change, please contact Mr. Kavanagh to determine if a permit modification is required.

This permit does not eliminate the need to obtain approvals from other agencies, including the Adirondack Park Agency (APA) and U.S. Army Corps of Engineers (ACOE). The APA contact for this project is George Outcalt ((518)-891-4050); the ACOE may be reached at (518) 270-0588. Thank you.

Sincerely,

Walter L. Haynes

Walter L. Haynes
Deputy Regional Permit Administrator

Enclosure

c: Vincent Kavanagh, Ray Brook
Michael Holt, Albany BWP (3505)
Michael Montysko, NYS DOH-Troy
William Amberman, NYS DOH - Saranac Lake
George Outcalt, APA (#2002-37)
Wayne Ryan, PE - AES Northeast
Victor Putman, Essex County Planning Office

95-20-6 (10/90)-25c NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER		EFFECTIVE DATE
5-1526-00049/00001		April 3, 2002
FACILITY/PROGRAM NUMBER(S)	**PERMIT** Under the Environmental Conservation Law (ECL)	EXPIRATION DATE
WSA # 9483		None

TYPE OF PERMIT (Check all Applicable Boxes)
☒ New ☐ Renewal ☐ Modification ☐ Permit to Construct ☐ Permit to Operate

☐ Article 15, Title 5: Protection of Water	☐ Article 17, Titles 7, 8: SPDES	☐ Article 27, Title 9; 6 NYCRR 373: Hazardous Waste Management
☒ Article 15, Title 15: Water Supply	☐ Article 19: Air Pollution Control	☐ Article 34: Coastal Erosion Management
☐ Article 15, Title 15: Water Transport	☐ Article 23, Title 27: Mined Land Reclamation	☐ Article 36: Floodplain Management
☐ Article 15, Title 15: Long Island Wells	☐ Article 24: Freshwater Wetlands	☐ Articles 1, 3, 17, 19, 27, 37; 6 NYCRR 380, Radiation Control
☐ Article 15, Title 27: Wild, Scenic and Recreational Rivers	☐ Article 25: Tidal Wetlands	☐ Other: ________
☐ 6 NYCRR 608: Water Quality Certification	☐ Article 27, Title 7; 6 NYCRR 360: Solid Waste Management	

PERMIT ISSUED TO	TELEPHONE NUMBER
Essex Water District # 1 - 2nd Application	(518) 963-4287
ADDRESS OF PERMITTEE	
Town of Essex, P.O. Box 355, Main Street, Essex, N.Y. 12936	
CONTACT PERSON FOR PERMITTED WORK	TELEPHONE NUMBER
Ronald Jackson, Supervisor	(518) 963-4287
NAME AND ADDRESS OF PROJECT/FACILITY	
Ratification of Water District Boundary & authorization of extension of service outside of Water District No. 1.	
LOCATION OF PROJECT/FACILITY	
Hamlet of Essex	

COUNTY	TOWN	WATERCOURSE/WETLAND NO.	NYTM COORDINATES
Essex	Essex	N/A	E: 631.6 N: 907.3

DESCRIPTION OF AUTHORIZED ACTIVITY

Ratification of existing Essex Water District #1 boundaries and authorization of extension of service outside of Water District No. 1 into an area having boundaries as shown on exhibits supporting this application, and whose combined maximum daily use is 53,600 gallons per day (gpd) from an existing filtered Lake Champlain source of water supply rated at 70,000 gpd.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified (See Reverse Side) and any Special Conditions included as part of this permit.

DEPUTY REGIONAL PERMIT ADMINISTRATOR	ADDRESS	
Walter L. Haynes	NYS DEC, 232 Hudson Street, P.O. Box 220 Warrensburg, NY 12885-0220	
AUTHORIZED SIGNATURE	DATE	
Walter L. Haynes	April 3, 2002	PAGE 1 OF 3

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees and agents ("DEC") for all claims, suits, actions and damages, to the extent attributable the permittee's undertaking of activities or operation and maintenance of the facility or facilities authorized by the permit in compliance or noncompliance with the terms and conditions of the permit. This indemnification does no extend to any claims, suits, actions or damages to the extent attributable to DEC's own negligent acts.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

GENERAL CONDITIONS

General Condition 1: Facility Inspection by the Department

The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

General Condition 2: Relationship of this Permit to Other Department Orders and Determinations

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

General Condition 3: Applications for Permit Renewals or Modifications

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

The permittee must submit a renewal application at least:

a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and
b) 30 days before expiration of all other permit types.

Submission of applications for permit renewal or modification are to be submitted to:

NYSDEC Deputy Regional Permit Administrator, Region 5, PO Box 220, 232 Hudson St., Warrensburg, NY 12885-0220 telephone: (518) 623-1281.

General Condition 4: Permit Modifications, Suspensions and Revocations by the Department

The Department reserves the right to modify, suspend or revoke this permit in accordance with 6 NYCRR Part 621. The grounds for modification, suspension or revocation include:

a) materially false or inaccurate statements in the permit application or supporting papers;
b) failure by the permittee to comply with any terms or conditions of the permit;
c) exceeding the scope of the project as described in the permit application;
d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permit activity.

ADDITIONAL GENERAL CONDITIONS FOR ARTICLE 15, TITLE 15 (Water Supply)

5. Prior to starting work on any construction authorized herein, detailed plans of the structures proposed to be built and specifications for such work shall have been submitted to and approved by the Department. Thereafter such construction work shall be entirely completed in full accordance with the plans and specifications which have been submitted and approved

NOTE: Approval by this Department of final plans and specifications, and of completed works, will not be issued until equivalent approvals have been issued by the NYS Department of Health.

6. Section 15-1529 of the Environmental Conservation Law forbids the operation of any of these works until, as constructed, they have been approved by the Department. Such final approval will be given only on written request. In general, such approval will not be given until all provisions affecting quality of the water and safety of the works have been complied with in full.

7. The Department reserves the right to rescind this permit or to take whatever action it may deem suitable and proper if the work authorized to be constructed herein are not initiated by N.A. .

ADDITIONAL CONDITIONS

8. Nothing contained herein shall be held to authorize the permittee to distribute water to any other district or service area which has not already been approved by the Department or its predecessors without having received a further permit from the Department.

9. That a new and separate water supply application be submitted within 6 months to ratify the taking of water to serve the new fire house and other "south end" users. The application must clearly delineate the boundaries of each water district and its extensions.

M. Montysko, NYSDOH - Troy
W. Amberman, NYSDOH - Saranac Lake
W. Ryan, AES Northeast
V. Kavanagh, NYSDEC - Ray Brook
M. Holt, NYSDEC/BWP - Albany

DEC PERMIT NUMBER
5-1526-00049/00001

PROGRAM/FACILITY NUMBER
WSA # 9483

Groundwater Source Development Project Hamlet of Essex, New York Task 1 Report - Hydrogeologic Evaluation

October 17, 2008

A Report By

HydroSource Associates, Inc.

50 Winter Street, P.O. Box 609
Ashland, New Hampshire 03217
(603) 968-3733

HydroSource Associates, Inc.
Post Office Box 609 • 50 Winter Street • Ashland, NH 03217
telephone: (603) 968-3733 • fax: (603) 968-7605
e-mail: info@teamhydrosource.com • website: www.teamhydrosource.com

October 17, 2008

Ron Jackson, Town Supervisor
Town of Essex
2313 Main Street
Essex, New York 12936

Dear Mr. Jackson:

I am enclosing the hydrogeologic evaluation that we prepared as part of our project to find an optimal site for a well to serve the Hamlet of Essex water system. The report documents the work we did, and includes a map showing four Favorable Zones, which are areas which we think look promising for further exploration. Assuming that you do not find any "fatal flaws" with the areas we are proposing, please send us tax maps covering these zones. We will identify the individual properties for which we will need permission to run geophysical surveys, and (given favorable geophysical results) test drilling. We will then return that list to you so that you can obtain the necessary permissions.

Thank you very much for your hospitality on September 25, including the visit with Sally Johnson, the tour of the town, and the loan of the boat. The boat gave me my best opportunity to see good exposures of some of the rock units we will be targeting, given the scarcity of rock exposures back from the shore. Let me know if you have any questions on the report, or on any aspect of how we would plan to proceed from this point.

Sincerely,

Fred E. Bickford
Hydrogeologist

FEB:cwr
cc: Wayne P. Ryan, AES Northeast, PLLC

Groundwater Source Development Project
Hamlet of Essex, New York
Task 1 Report - Hydrogeologic Evaluation

October 17, 2008

Introduction

The Town of Essex, New York, is seeking to develop a groundwater source for the Hamlet of Essex Water System. The system currently uses a treatment plant to treat water drawn from Lake Champlain, but the plant will soon require an expensive upgrade. The Town is investigating the possibility that a groundwater source could be a less-expensive alternative. The Town hired HydroSource Associates, Inc. (HSA), to help it locate and develop the new groundwater source. The system's minimum yield requirement is 25 gallons per minute (gpm).

The project scope was described in a proposal dated July 23, 2008. This document covers the work outlined in Task 1, Hydrogeologic Evaluation. The report explains the work that was done, and identifies Favorable Zones within which more intensive exploration is recommended.

The work that is the subject of this report was based on review of published mapping and hydrogeologic reports, mapping of lineaments based on aerial photographs at two scales and a digital elevation model, and a field trip made in September. Figure 1 is a topographic map showing the outline of the hamlet.

Surficial Geology

Published mapping shows that the hamlet and surrounding area is mostly underlain by till or lacustrine silt and clay (Figure 2). The till is most commonly exposed at higher elevations, where it forms a thin layer over bedrock. This includes the north-trending ridge followed by Middle Road. It also includes the hilltop surrounding the water tank on School Street. Near the water tank, bedrock is only intermittently covered by till, and the surface is strewn with locally derived slabs of bedrock that appear not to have been moved far by glacial transport. Till is clay-rich, poorly sorted glacial debris that was deposited directly beneath the ice sheet. It typically has no groundwater development potential.

The lacustrine silt and clay was deposited in the quiet water of the glacial lake that occupied the Champlain Valley about 10,000 years ago, when the northern outlets for meltwater drainage were still blocked by the ice sheet. These fine-grained deposits have low transmissivity, and generally cannot support high well yields, though it may be possible to install a dug well tapping sand interbeds in them capable of supplying a single-family home.

The most promising unconsolidated deposits in the area from the standpoint of groundwater development are the delta deposits mapped south of the mouth of the Bouquet River in Willsboro. However, these deposits do not appear to extend close enough to the hamlet to be useful. Coarse-grained, permeable sand and gravel deposits occur in a gravel pit a few thousand feet northwest of St. Josephs Church, just outside of the hamlet boundary. It is not clear that these deposits extend to the south into the hamlet, or that they extend far enough below the water table to have groundwater development potential. The gravel evidently was too small to be shown on the regional-scale published mapping, which shows the area in question as being underlain by till.

In general, we believe that the groundwater development potential of glacial sediments in and near the hamlet appears limited. There is no surface evidence that coarse-grained sand and gravel were deposited. Moreover, surficial deposits appear to be a relatively thin layer on top of a low-relief nearly horizontal bedrock surface. Thus, in most places there is likely to be minimal thickness of unconsolidated sediments below the water table. Despite the apparent absence of sand and gravel, and the general limited saturated thickness of overburden, it still remains possible that surficial deposits with properties adequate to support a 25 gpm well exist in the hamlet.

We note that an overburden aquifer reportedly with the potential to provide yields of 100 gpm or more to wells has been shown on a published map (Bugliosi, Trudell, and Casey, 1988) as underlying much of the central portion of the study area (Figure 2). This aquifer outline appears to have been derived from a hydrogeologic map in an earlier report (Giese and Hobba, 1970). On that map, the outlined area was shown as being underlain by sand, with expected well yields between 5 and 325 gpm. The 1970 report does not indicate that data from overburden wells supported the aquifer delineation in this area. The gravel pit northwest of St. Josephs Church is within the delineated area, and it is possible that the aquifer delineation was made by assuming that the gravel deposit persisted with substantial thickness southward into the central part of the hamlet. However, the outline of this aquifer is not consistent with mapped surficial geology, and our observations lead us to conclude that such a highly productive aquifer is not likely to be present in this area.

Bedrock Geology

Information on bedrock geology came from several sources. Published mapping included a regional-scale bedrock geologic map (Isachsen and Fisher, 1970), and a quadrangle-scale map of the Willsboro quadrangle (Buddington and Whitcomb, 1941). Information on the stratigraphy of the Paleozoic sedimentary section came from the field trip guidebook that accompanied the 2008 field trips run by the New York State Geological Association. I attended that field trip, and saw good exposures of many of the same formations that are present in Essex in nearby localities. I also examined outcrops in the hamlet, including in cliff exposures along the shore of Lake Champlain, in the Olmer quarry south of the hamlet, and at isolated outcrops in the area.

Figure 3 is a bedrock geologic map. Essex is underlain by a layered sequence of Paleozoic-age sedimentary rocks. From oldest to youngest, these are the Potsdam Sandstone, the Beekmantown Limestone, the Chazy Limestone, the Trenton/Black River Group, and the Canajoharie Shale. The Potsdam is the rock exposed in the river beneath the Bouquet bridge. This rock, which represents the first sediments laid down on the Precambrian gneisses of the area, is a brittle rock that can produce large water volumes where it is fractured. It is not exposed in the hamlet, and within the hamlet it may be too deeply buried to be a practical drilling target.

The rocks overlying the Potsdam, all of them of Ordovician age, are mostly carbonates (limestones or dolomites). The Canajoharie is a shale, and the Trenton includes some shale. The carbonates are the preferred drilling target. Where they are fractured, they typically can produce water volumes that are much greater than the hamlet's yield target. The shale on average is likely to be less productive, and can also be associated with poor water quality.

An intrusion of Mesozoic-age trachyte porphyry has been mapped within the Chazy Formation south of School Street. A larger exposure of the same rock type occurs further south at Cannon Point. Contact zones between igneous intrusives and the adjacent rock can sometimes be good water-producers. However, intrusions into carbonate rocks can produce skarn deposits that may be associated with water quality problems.

The sedimentary rocks are nearly flatlying. Published mapping shows a variety of strike directions, and dips rarely greater than 10 degrees. In the Chazy exposed in the cliffs along Lake Champlain and in the Olmer quarry, dips are generally to the north. Very gentle, open folding can be seen in the cliffs.

Several normal faults pass through the area, at various orientations (Figure 3). A northeast-trending fault passes through the southern part of the hamlet, and is well exposed in the cliffs below the Sally Johnson property. The fault juxtaposes the Canajoharie Shale against Chazy Limestone. The Canajoharie beds are dragged up toward the fault plane. Dips remain shallow in the Chazy sediments of the footwall. The smooth fault surface is a carbonate breccia. A west-trending fault runs from the shore near the center of the village to a point north of Bouquet, where it terminates against a north-northeast-trending fault. Finally, a north-trending fault separates Beekmantown from Trenton/Black River sediments in the northwest quadrant of the hamlet. Faults such as these can be associated with higher-than-average well yields, especially where partial dissolution of fractured limestone increases open space. However, the mapped faults are often accompanied by subordinate zones of concentrated fracturing that can be equally productive.

Joint orientations were measured where joints could be seen. Review of the collected orientations shows no systematic patterns. Thus, joint orientation data does not provide evidence that test drilling should target structural features at any particular orientation.

Lineament Mapping

Lineaments were mapped using three different platforms: 1) a digital elevation model (DEM); 2) high-altitude color infrared (CIR) aerial photos; and 3) low-altitude black & white aerial photographs. The DEM was used to produce a hillshaded image simulating the way the landscape would appear if it were illuminated by light from a northern source. Both the CIR and black & white photographs were examined using a stereo viewer, to allow the landscape to be seen in three dimensional relief. Lineaments were drawn on clear mylar overlays to the photographs. The black & white photos, which were loaned by AES, include three flight lines which provide coverage of only a portion of the hamlet.

Figure 4 shows the hillshaded DEM, along with the lineaments drawn on the DEM backdrop. Several families of lineaments can be seen at the scale of this map, including lineament sets with northeasterly, northerly, and northwesterly trends. The pattern reflects the manner in which the west shore of Lake Champlain has been cut into fault blocks, and at least some of the lineaments coincide with locations of mapped faults. Relief is lower in the eastern half of the image because that area is largely underlain by flatlying Paleozoic sedimentary rocks, whereas the western region is underlain by granites and gneisses of the Adirondacks.

Figure 5 shows the lineaments produced from all three platforms. It also shows the locations of mapped faults, to assist in determining the degree to which the lineaments are an expression of the mapped structure. Caution should be used in interpreting the lineaments. In particular, some of the lineaments based on the black & white air photos may have a limited relationship to underlying bedrock structure. Many of these lineaments are based on very subtle tonal anomalies. However, some of them appear to coincide with grand-scale lineaments mapped on the CIRs and DEM, and these may have more significance.

Well Data and Water Quality

A water sample was collected from the bedrock well on the Jackson property by Susan Kennedy of the NY State Department of Health (NYSDOH), and was analyzed for a range of drinking water parameters. The Jackson well is about one mile west of the hamlet on the south side of Route 22 (Figure 7). The well is a flowing artesian well, but its depth is unknown. Published geologic mapping indicates it is near a west-trending fault, and that it is in an area underlain by limestone of either the Chazy or Beekmantown Formation. Because the well is not far from the geographic center of the hamlet, and is thought to be completed in limestone similar to that which would be found beneath much of the study area, its water quality is likely to be representative of bedrock aquifer water quality in the hamlet.

The lab report from the testing is included as Appendix A. Overall, water quality looks good. The pH of 8.14 is somewhat basic, which would be expected from a well completed in limestone. The water has a hardness of 160 mg/l, slightly above the concentration of 100 mg/l that marks the division between soft and hard water. Elevated hardness levels are normal for limestone aquifers, although the hardness in this case is quite moderate. Nitrate is below the detection limit of 0.02 mg/l for this parameter, which indicates that fertilizer use in nearby fields has not degraded water quality. The federally mandated Maximum Contaminant Level (MCL) for nitrate is 10 mg/l. Total dissolved solids (TDS) were 290 mg/l, which is quite good, especially for a well in limestone.

Most metals were below detection levels. The iron concentration of 0.17 mg/l was well below the Secondary MCL (SMCL) for iron of 0.3 mg/l, above which aesthetic problems occur (e.g., staining of bathroom fixtures, odor). The manganese concentration of 0.048 mg/l was just below the SMCL for manganese of 0.05 mg/l. Iron and manganese are considered "nuisance" parameters. Drinking water concentrations above their respective SMCLs may result in aesthetic problems, but do not constitute a health risk. No volatile organic compounds were detected in the water. The water samples were not analyzed for radiological (gross beta, uranium, radium 226/228, radon) or bacteriological parameters.

A report containing water quality results from a sampling of wells in the Lake Champlain basin was reviewed (Nystrom, 2006). The report included data on several wells in the Town of Essex, both in bedrock and in sand and gravel deposits, though none of them were in or very near the hamlet. The quality of water from the sampled wells was generally good, and consistent with expectations based on the geology of the region. There was no indication of particular water quality problems.

Little data was available on local wells from typical sources. Giese and Hobba (1970) provide details on a bedrock well drilled in 1948 near St. Josephs Church. The well is 75 feet deep, and its yield was reported to be 20 gpm. NYSDEC records show only two wells in the Essex area, both located over one mile south of the study area near Whallon Bay.

Recharge

As a rule of thumb, the volume of water that can be pumped sustainably from a well is commonly considered to be correlated with the size of the enclosing watershed. The local watershed area upgradient from most likely well sites in the hamlet is relatively small. Furthermore, the fine-grained lakebed sediments that underlie much of the hamlet can be expected to restrict the ability of local runoff to enter the bedrock aquifer. However, these limitations are not considered a serious problem for Essex because the hamlet's yield requirements are small and because the bedrock fractures likely to be tapped by a hamlet well probably are connected to sources of recharge beyond the local drainage basin, perhaps including Lake Champlain. Consequently, the choice of favorable zones within the hamlet need not be strongly influenced by recharge availability considerations.

Contaminant Threats

Efforts to identify potential groundwater contamination threats consisted of querying New York State Department of Environmental Conservation (NYSDEC) databases and an informal "windshield survey" during the September mapping trip. Few significant contaminant threats have been recognized. An old landfill is near the southwest edge of the village, at the site of an abandoned quarry. The current transfer station is near the western boundary of the hamlet. Most of the current and former activities that might be associated with the use of potential groundwater contaminants appear to be concentrated in and around the densely developed part of the hamlet, an area that would not be a natural candidate for a well site anyway.

The NYSDEC database query turned up two petroleum bulk storage tanks that were identified as being within the hamlet (Figure 6). We reviewed reports of petroleum spills in the NYSDEC database for the past 10 years. Two spills were reported that fall within the hamlet boundary, both of them in thickly settled parts of the village far from sites that would be considered for wells (Figure 6). Moreover, these cases have been closed, indicating that they do not present a groundwater threat.

Most of the land area of the hamlet is field land, pasture, or forest. Application of fertilizer and pesticides on fields could produce a risk of elevated levels of contaminants such as nitrate, phosphate, or bacteria. However, areas where farm operations are most intensive tend to be underlain by fine-grained lakebed sediments that limit the ability of surface contaminants to reach the underlying bedrock aquifers. Overall, the groundwater contamination risk appears low.

Favorable Zones

Figure 7 is a map showing Favorable Zones. These are zones in which we recommend that geophysical surveying be done. The purpose of the geophysics will be to identify anomalies that may mark the location of buried bedrock fracture zones and/or sufficiently thick sand and gravel deposits, and to allow precise siting of test wells targeting those anomalies. The map shows four zones, labeled A through D.

Zone A is on the north side of Route 22. It is an elongate zone which follows a northwest-trending drainage, and its southeast end is just north of the Essex fire department. The zone is within an area mapped as Trenton/Black River limestone. The northern end of the zone encloses an area in which lineaments at several orientations intersect. If the lineaments actually represent the surface expression of fracture zones in the bedrock, this should be an area with an above-average fracture density. The south end of the zone approaches the inferred location of the west-trending fault that parallels Route 22. The rock near that fault could be fractured, and associated with higher-than-average well yields. This is also an area in which several lineaments intersect, though the individual lineaments are not particularly prominent. An unconsolidated (i.e., sand and gravel) aquifer with the ability to support well yields of 100 gpm or more has also been mapped as underlying this area, although our observations do not indicate its presence.

Zone B is south of Route 22, roughly a mile west of Essex village. The zone is elongate to the northeast, parallel to mapped lineaments and a straight stream segment. The zone also crosses the inferred location of the west-trending fault already mentioned, and is not far from the southern end of the inferred north-trending fault. If the fault locations are correct, and the lineaments represent zones of rock fracturing, it may be possible to develop above-average well yields from the limestones in this area. Based on the published mapping, a well in this area could intersect the Chazy, Trenton/Black River, or Beekmantown formations. The drilled well that was sampled by NYSDOH is about 1,500 feet west of the center of the zone. We note that this area lies approximately 2,000 feet downgradient of the transfer station. The significant separation distance and likelihood that silt and clay overlie bedrock indicate that the threat of contamination from the transfer station should be low.

Zone C is south of the cemetery beside Route 22 just west of the hamlet. In this area, lineaments at several orientations intersect, and the zone also includes a segment of the west-trending fault shown on published mapping. A test well in this zone would be expected to encounter either the Chazy or Trenton/Black River formations.

Zone D is south of School Street, about 2,000 feet southwest of the School Street water tank. The zone is near the north contact of the trachyte intrusion, and also on the Chazy side of the northeast-trending fault that separates the Chazy Formation from the Canajoharie Shale.

Next Steps

HSA requests that the Town provide us with tax maps covering the areas within the Favorable Zones. HSA will choose properties on which permission should be obtained for geophysical surveys. The Town will then seek permission from the owners of these properties for the geophysical surveys, with the expectation that this will be followed by test drilling if the geophysical results justify it. At the same time, the Town should discuss with these landowners the possibility of purchasing a portion of the land as the site for the new community wells (one primary well, and one backup well). After permissions have been received, HSA will carry out geophysical surveys in portions of the zones and produce recommendations on test well locations, as outlined in our proposal.

References

Buddington, A. F., and Lawrence Whitcomb, 1941, Geology of the Willsboro Quadrangle, New York, NY State Museum Bulletin No. 325.

Buglìosi, E. R., and Ruth A. Trudell, 1988, Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Adirondack Sheet.

Cadwell, Donald H., and Donald L. Pair, 1991, Surficial Geologic Map of New York, Adirondack Sheet.

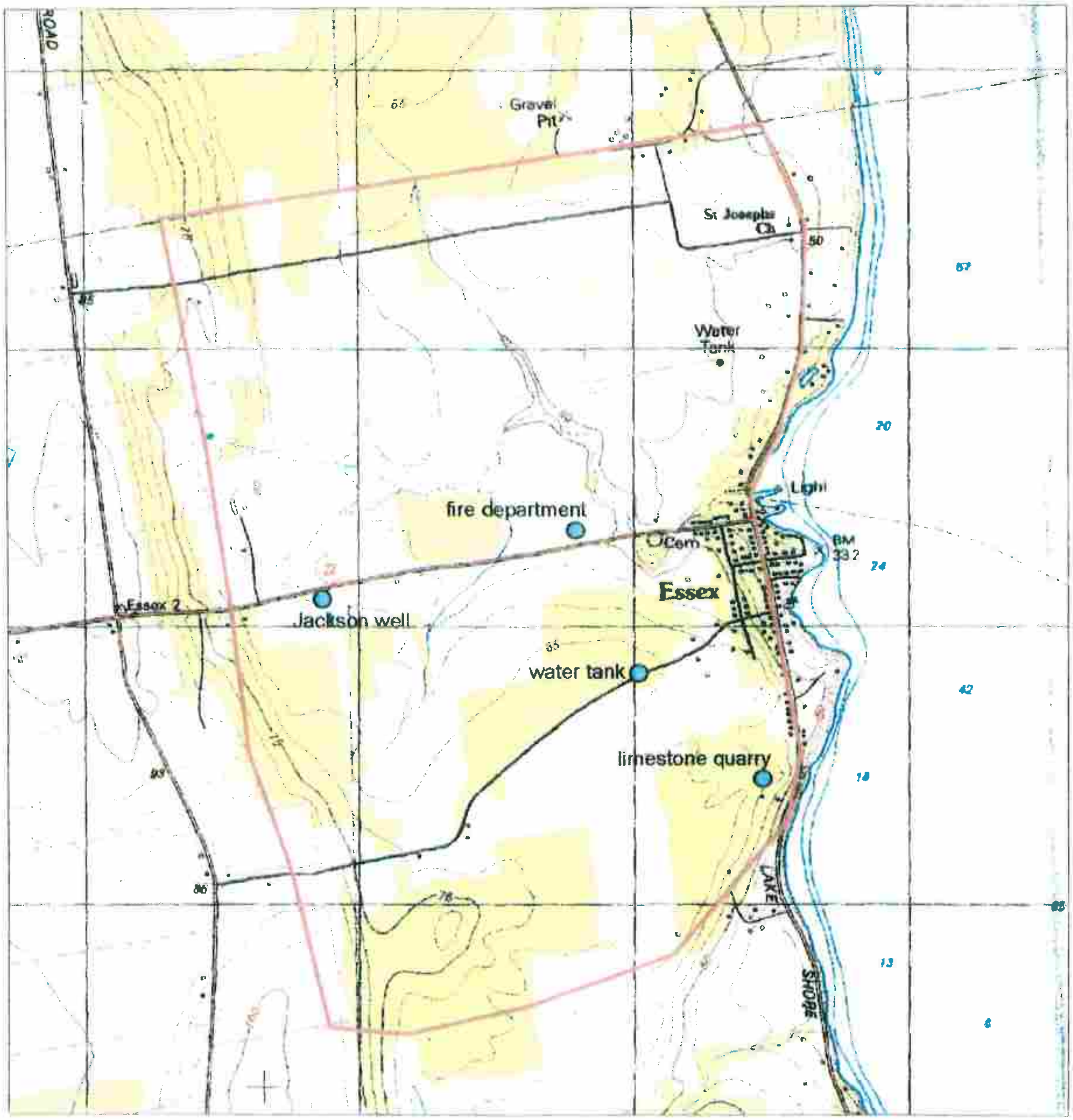
Giese, G. L., and W. A. Hobba, Jr., 1970, Water Resources of the Champlain-Upper Hudson Basins in New York State, NY State Office of Planning Coordination.

Isachsen, Yngvar W., and Donald W. Fisher, 1970, Geologic Map of New York, Adirondack Sheet.

Mehrtens, Charlotte, and Bruce Selleck, 2008, Depositional Environments of the Ordovician at Crown Point, New York, in Fieldtrip Guidebook for the 80th Annual Meeting of the NY State Geological Association.

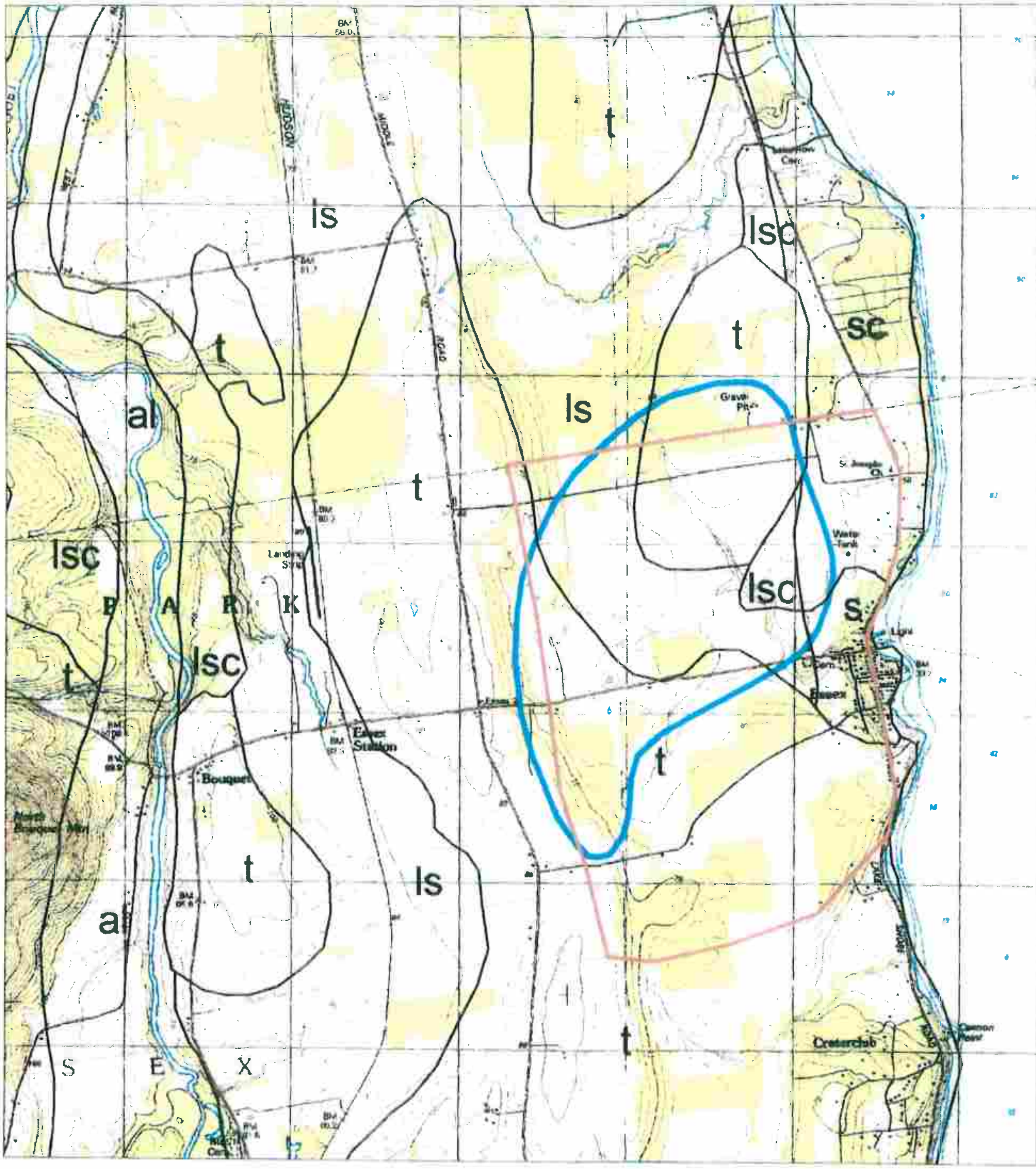
Nystrom, Elizabeth A., 2006. Ground-Water Quality in the Lake Champlain Basin, New York, 2004, USGS Open-File Report 2006-1088.

Figure 1 - Location Map



Hamlet Outline

Figure 2 - Surficial Geology



Hamlet Outline

Unconfined aquifer area, per Bugliosi et al., 1988

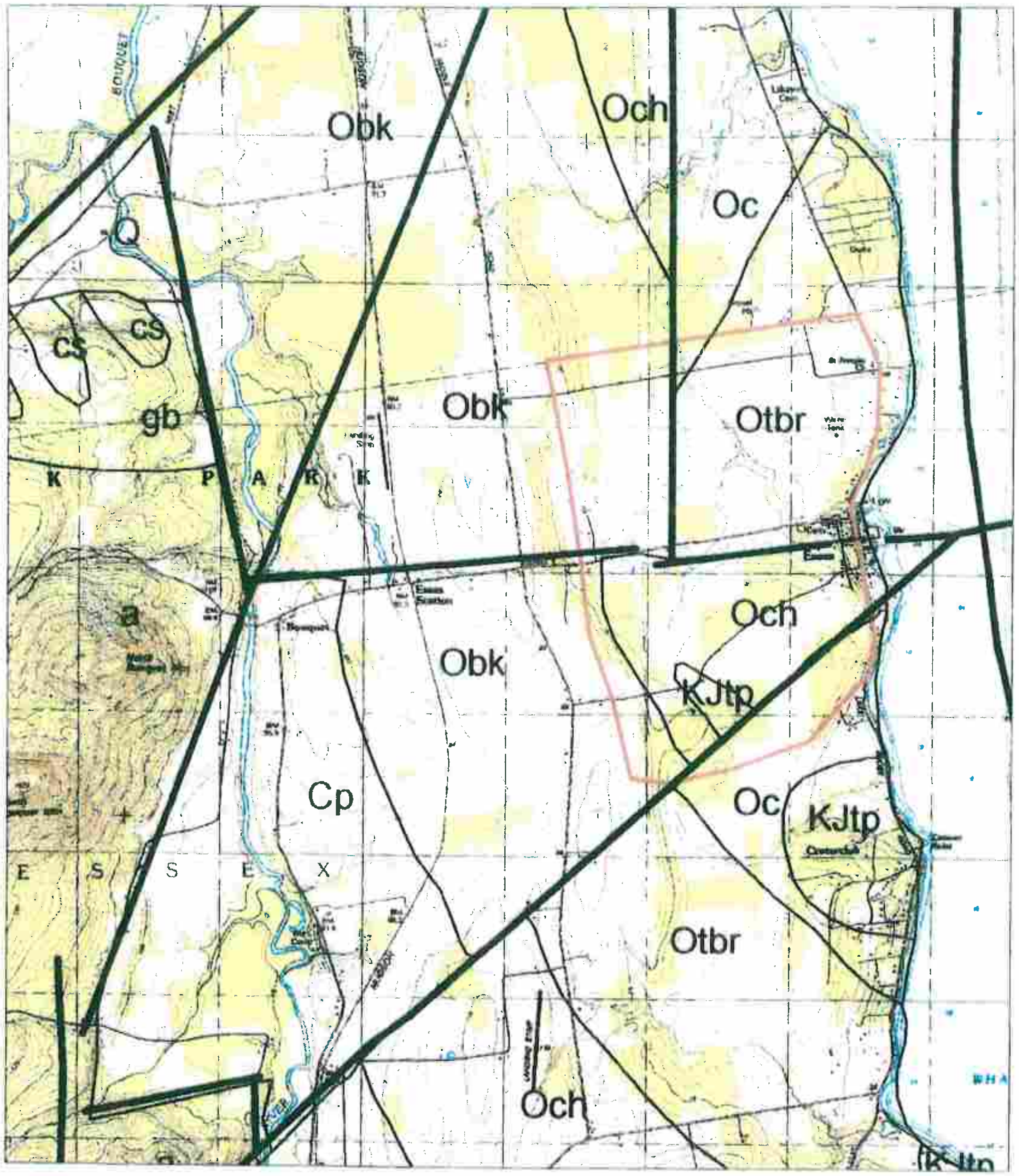
LITHOLOGY CODES
al - alluvium
ls - lacustrine sand
lsc - lacustrine silt and clay
s - sand (undifferentiated marine/lacustrine)
t - till

N
W E
S

3000 0 3000 Feet

HSA
HYDROSOURCE ASSOCIATES, INC

Figure 3 - Bedrock Geology



Hamlet Outline

contact

fault

LITHOLOGY CODES
Q - Quaternary overburden
KJtp - trachyte porphyry
Oc - Canajoharie Formation
Otbr - Trenton/Black River Group
Och - Chazy Formation
Obk - Beekmantown Formation
Cp - Potsdam Formation
cs - marble
gb - gabbro
a - anorthosite

N
W E
S

4000 0 4000 Feet

HYDROSOURCE ASSOCIATES, INC

Figure 4- DEM Lineaments

Hillshaded digital elevation model, light source from azimuth 15 degrees.

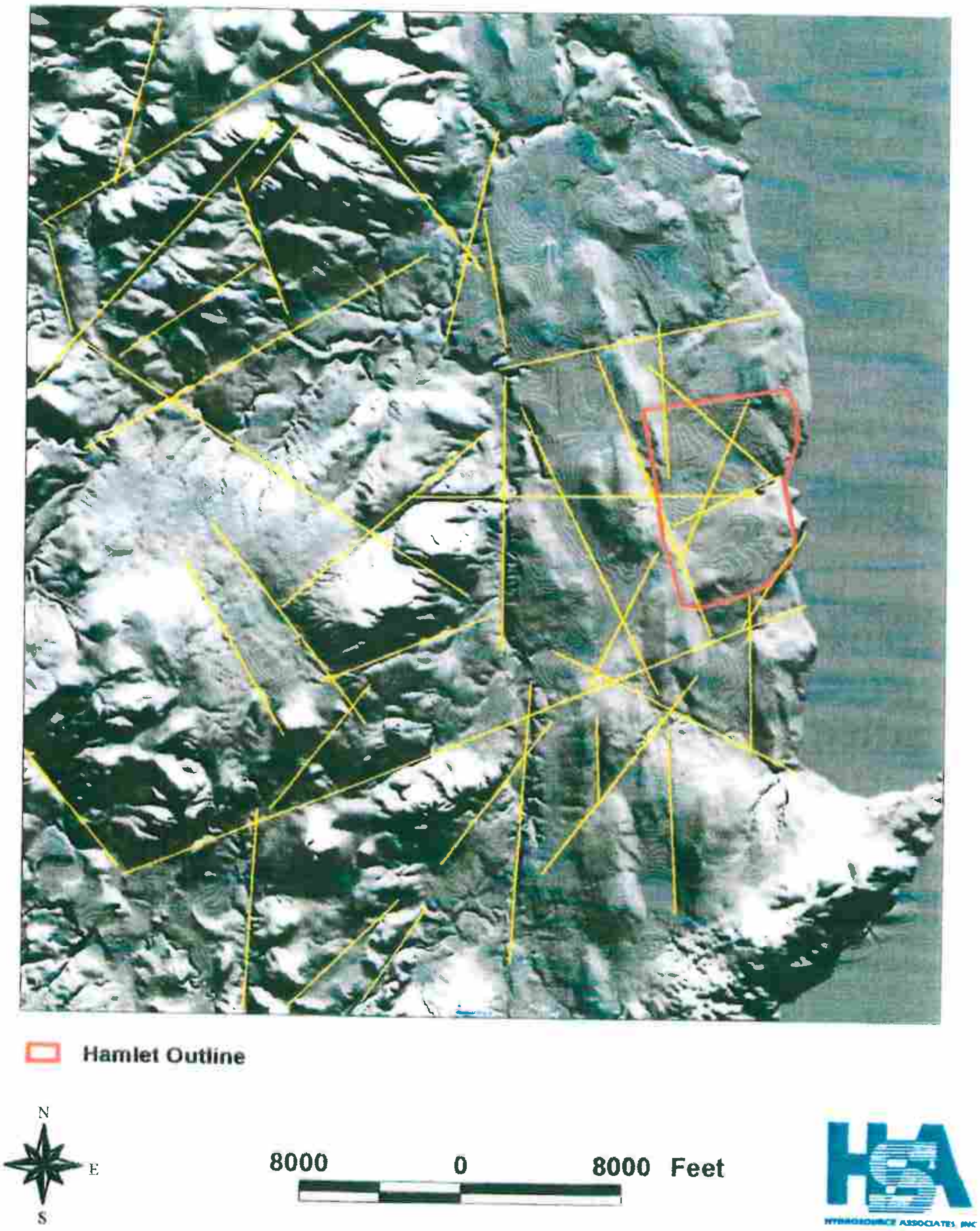


Figure 5 - Lineaments and Faults

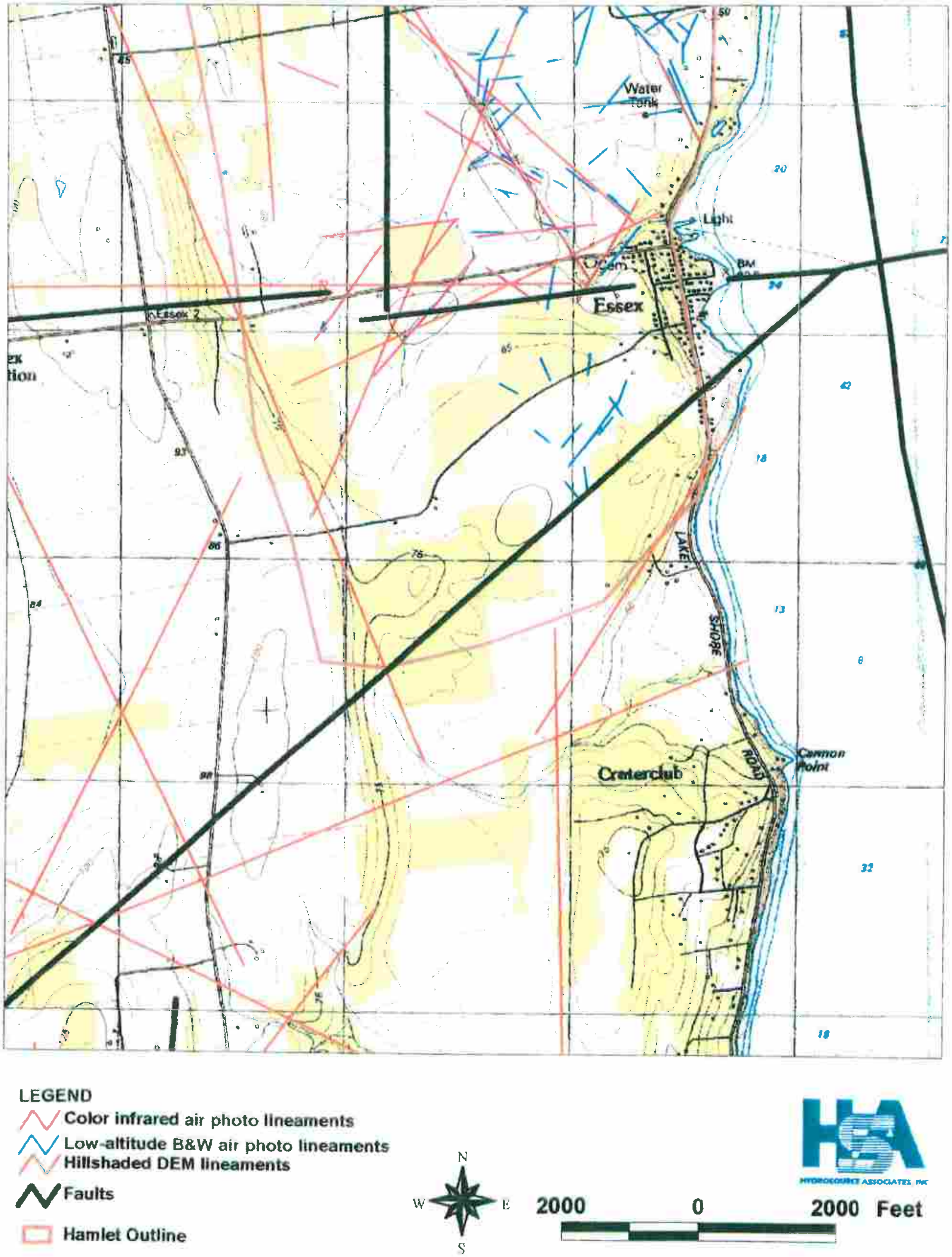


Figure 6 - Contaminant Threats

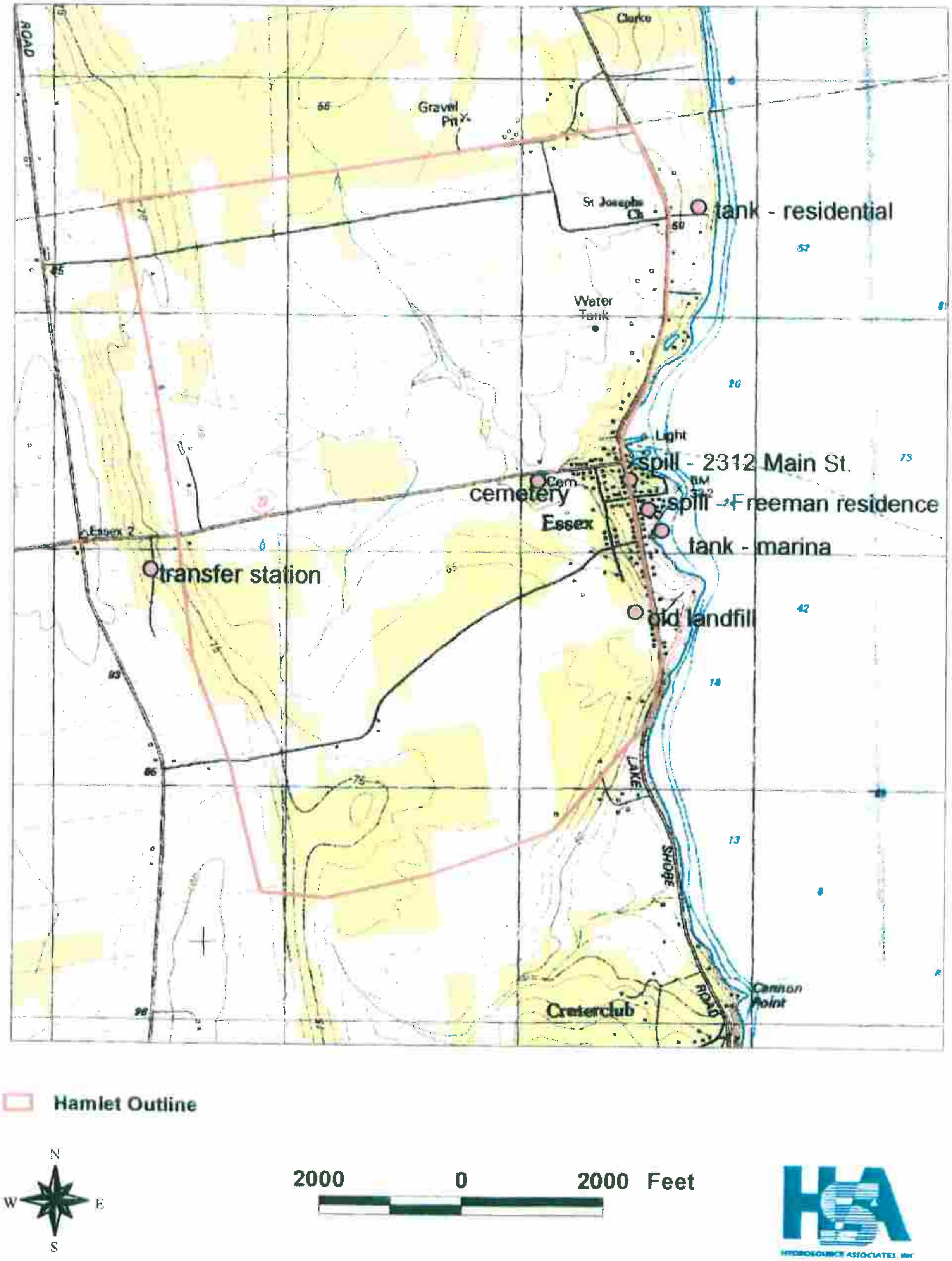


Figure 7 - Favorable Zones

APPENDIX A

Lab Report, Sample from Ron Jackson Well

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200880032 SAMPLE RECEIVED: 07/15/2008 14HR CHARGE: 21.58
PROGRAM: 100: MUNICIPAL WATER SUPPLIES
SOURCE ID: NY1500278 DRAINAGE BASIN: 10 GAZETTEER CODE: 1553
POLITICAL SUBDIVISION: ESSEX COUNTY: ESSEX
LATITUDE: LONGITUDE:
LOCATION: ESSEX W.D.
DESCRIPTION: TEST WELL - RON JACKSON PROPERTY
REPORTING LAB: DEDP: DIV. ENVIRONMENTAL DISEASE PREVENTION - ACCESSION LAB
TEST PATTERN. 5022W: VOLATILE ORGANICS IN WATER
SAMPLE TYPE: 000: RAW WATER
TEMPERATURE OF SAMPLE AT RECEIPT : 3.1 DEG C
TIME OF SAMPLING: 07/11/2008 11:30 DATE PRINTED: 08/23/2008

ANALYSIS: 5022W VOLATILE ORGANICS IN WATER
DATE REPORTED: 07/22/2008 REPORT MAILED OUT
|---> METHOD: EPA 502.2
DATE OF ANALYSIS 07/17/2008

AUG 2? 2008

PARAMETER	RESULT	
DICHLORODIFLUOROMETHANE (FREON-12)	< 0.5 MCG/L	NELAP
CHLOROMETHANE	< 0.5 MCG/L	NELAP
VINYL CHLORIDE	< 0.5 MCG/L	NELAP
BROMOMETHANE	< 0.5 MCG/L	NELAP
CHLOROETHANE	< 0.5 MCG/L	NELAP
TRICHLOROFLUOROMETHANE (FREON-11)	< 0.5 MCG/L	NELAP
1,1-DICHLOROETHENE	< 0.5 MCG/L	NELAP
METHYLENE CHLORIDE (DICHLOROMETHANE)	< 0.5 MCG/L	NELAP
METHYL tert BUTYL ETHER (MTBE)	< 0.5 MCG/L	NELAP
TRANS-1,2-DICHLOROETHENE	< 0.5 MCG/L	NELAP
1,1-DICHLOROETHANE	< 0.5 MCG/L	NELAP
2,2-DICHLOROPROPANE	< 0.5 MCG/L	NELAP
CIS-1,2-DICHLOROETHENE	< 0.5 MCG/L	NELAP
CHLOROFORM	< 0.5 MCG/L	NELAP
BROMOCHLOROMETHANE	< 0.5 MCG/L	NELAP
1,1,1-TRICHLOROETHANE	< 0.5 MCG/L	NELAP
1,1-DICHLOROPROPENE	< 0.5 MCG/L	NELAP
CARBON TETRACHLORIDE	< 0.5 MCG/L	NELAP
1,2-DICHLOROETHANE	< 0.5 MCG/L	NELAP
BENZENE	< 0.5 MCG/L	NELAP
TRICHLOROETHENE	< 0.5 MCG/L	NELAP

**** CONTINUED ON NEXT PAGE ****

NYS ELAP ID'S: 10762(INORGANIC,NUCLEAR) 10763(ORGANIC) 10765(MICROBIOLOGY)
NYS ELAP ID 10762, LAB DIR DR L. HUSAIN, CONTACT DR H. KHWAJA 518-474-0516
NYS ELAP ID 10763, LAB DIR DR K. KANNAN, CONTACT MR A. BUCCIFERRO 518-486-2530
NELAP : ACCREDITED BY THE NATIONAL ENVIR. LAB. APPROVAL PROGRAM
THE RESULTS IN THIS REPORT RELATE ONLY TO THE SAMPLE SUBMITTED TO THE LABORATORY
COPIES SENT TO: CO(1) RO(0) LPHE(1) FED(0) INFO-P(0) INFO-L(0)

NEW YORK STATE DEPARTMENT OF HEALTH
SARANAC LAKE DISTRICT OFFICE
41 ST. BERNARD ST.
SARANAC LAKE, N.Y. 12983

COLLECTED BY:KENNEDY
SUBMITTED BY:KENNEDY

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

RESULTS OF EXAMINATION

FINAL REPORT

SAMPLE ID: 200880032 SAMPLE RECEIVED: 07/15/2008 14HR CHARGE: 21.58
POLITICAL SUBDIVISION: ESSEX COUNTY: ESSEX
LOCATION: ESSEX W.D.
TIME OF SAMPLING: 07/11/2008 11:30 DATE PRINTED: 08/23/2008

PARAMETER	RESULT	
1,2-DICHLOROPROPANE	< 0.5 MCG/L	NELAP
BROMODICHLOROMETHANE	< 0.5 MCG/L	NELAP
DIBROMOMETHANE	< 0.5 MCG/L	NELAP
CIS-1,3-DICHLOROPROPENE	< 0.5 MCG/L	NELAP
TOLUENE	< 0.5 MCG/L	NELAP
TRANS-1,3-DICHLOROPROPENE	< 0.5 MCG/L	NELAP
1,1,2-TRICHLOROETHANE	< 0.5 MCG/L	NELAP
1,3-DICHLOROPROPANE	< 0.5 MCG/L	NELAP
TETRACHLOROETHENE	< 0.5 MCG/L	NELAP
DIBROMOCHLOROMETHANE	< 0.5 MCG/L	NELAP
1,2-DIBROMOETHANE (EDB)	< 0.5 MCG/L	NELAP
CHLOROBENZENE	< 0.5 MCG/L	NELAP
1,1,1,2-TETRACHLOROETHANE	< 0.5 MCG/L	NELAP
ETHYLBENZENE	< 0.5 MCG/L	NELAP
m/p-XYLENE	< 0.5 MCG/L	NELAP
o-XYLENE	< 0.5 MCG/L	NELAP
STYRENE	< 0.5 MCG/L	NELAP
ISOPROPYLBENZENE (Cumene)	< 0.5 MCG/L	NELAP
BROMOFORM	< 0.5 MCG/L	NELAP
1,1,2,2-TETRACHLOROETHANE	< 0.5 MCG/L	NELAP
1,2,3-TRICHLOROPROPANE	< 0.5 MCG/L	NELAP
n-PROPYLBENZENE	< 0.5 MCG/L	NELAP
BROMOBENZENE	< 0.5 MCG/L	NELAP
1,3,5-TRIMETHYLBENZENE	< 0.5 MCG/L	NELAP
o-CHLOROTOLUENE	< 0.5 MCG/L	NELAP
p-CHLOROTOLUENE	< 0.5 MCG/L	NELAP
tert-BUTYLBENZENE	< 0.5 MCG/L	NELAP
1,2,4-TRIMETHYLBENZENE	< 0.5 MCG/L	NELAP
sec-BUTYLBENZENE	< 0.5 MCG/L	NELAP
4-ISOPROPYLTOLUENE (p-Cymene)	< 0.5 MCG/L	NELAP
1,3-DICHLOROBENZENE	< 0.5 MCG/L	NELAP
1,4-DICHLOROBENZENE	< 0.5 MCG/L	NELAP
n-BUTYLBENZENE	< 0.5 MCG/L	NELAP
1,2-DICHLOROBENZENE	< 0.5 MCG/L	NELAP
1,2-DIBROMO-3-CHLOROPROPANE	< 0.5 MCG/L	NELAP
1,2,4-TRICHLOROBENZENE	< 0.5 MCG/L	NELAP
HEXACHLOROBUTADIENE (C-46)	< 0.5 MCG/L	NELAP
NAPHTHALENE	< 0.5 MCG/L	NELAP
1,2,3-TRICHLOROBENZENE	< 0.5 MCG/L	NELAP
PH OF VOLATILE ALIQUOT	2	NELAP

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WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200880032 SAMPLE RECEIVED: 07/15/2008 14HR CHARGE: 21.58
POLITICAL SUBDIVISION: ESSEX COUNTY: ESSEX
LOCATION: ESSEX W.D.
TIME OF SAMPLING: 07/11/2008 11:30 DATE PRINTED: 08/23/2008

**** ADDITIONAL PARAMETERS ****

ANALYSIS: PH-ALK PH AND ALKALINITY
DATE REPORTED: 07/24/2008 REPORT MAILED OUT
|---> METHOD: SM18 4500-H-B, 2320-B
DATE ANALYZED 07/17/2008 12HR

PARAMETER	RESULT	
pH	8.14	SLIGHTLY BASIC
ALKALINITY TO PH 4.5 (AS CACO3)	123. MG/L	

ANALYSIS: ODOR ODOR ANALYSIS OLFACTORY CHARACTERIZATION
DATE REPORTED: 07/24/2008 REPORT MAILED OUT
HOLDING TIME EXCEEDED DUE TO TRANSIT TIME
DATE ANALYZED 07/16/2008 10HR

PARAMETER	RESULT	
ODOR, COLD	NONE	NELAP

ANALYSIS: COLOR-TURB COLOR AND TURBIDITY ANALYSIS
DATE REPORTED: 07/24/2008 REPORT MAILED OUT
|---> METHOD: SM18 2120-B EPA180.1
HOLDING TIME EXCEEDED DUE TO TRANSIT TIME
COLOR AND TURBIDITY ANALYZED 07/16/2008 10HR

PARAMETER	RESULT	
COLOR, APPARENT	6.	NELAP
TURBIDITY	0.6 N.T.U.	NELAP

ANALYSIS: NO3 NITRATE ANALYSIS
DATE REPORTED: 07/24/2008 REPORT MAILED OUT
|---> METHOD: EPA 353.2
DATE ANALYZED 07/23/2008

PARAMETER	RESULT	
NITROGEN, NITRATE (+NO2) AS N	< 0.02 MG/L	NELAP

ANALYSIS: CL-SO4-IC CHLORIDE AND SULFATE EPA 300.1
DATE REPORTED: 08/18/2008 REPORT MAILED OUT
|---> METHOD: EPA 300.0
DATE ANALYZED 07/29/2008

PARAMETER	RESULT	
CHLORIDE	1.43 MG/L	NELAP
SULFATE AS SO4	111.0 MG/L	NELAP

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D.O.H. WANTS < 250

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200880032 SAMPLE RECEIVED: 07/15/2008 14HR CHARGE: 21.58
POLITICAL SUBDIVISION: ESSEX COUNTY: ESSEX
LOCATION: ESSEX W.D.
TIME OF SAMPLING: 07/11/2008 11:30 DATE PRINTED: 08/23/2008

ANALYSIS: HARDNESS HARDNESS AS CACO3 EPA 200.7
DATE REPORTED: 08/18/2008 REPORT MAILED OUT

PARAMETER	RESULT	
HARDNESS, TOTAL AS CACO3	160. MG/L	

ANALYSIS: HG MERCURY
DATE PRINTED: 08/22/2008 FINAL REPORT
|---> METHOD: EPA 245.1
HOLDING TIME EXCEEDED
DATE ANALYZED 08/21/2008

PARAMETER	RESULT	
MERCURY	< 0.2 MCG/L	NELAP

ANALYSIS: ICP-MS ICP-MS
DATE REPORTED: 08/05/2008 REPORT MAILED OUT
|---> METHOD: EPA 200.8
DATE ANALYZED 07/29/2008

PARAMETER	RESULT	
ARSENIC	< 3.0 MCG/L	NELAP
SELENIUM	< 5.0 MCG/L	NELAP
CADMIUM	< 1.0 MCG/L	NELAP
ANTIMONY	< 1.0 MCG/L	NELAP
THALLIUM	< 0.5 MCG/L	NELAP
LEAD	< 5.0 MCG/L	NELAP

ANALYSIS: ICP ICP
DATE REPORTED: 08/18/2008 REPORT MAILED OUT
|---> METHOD: EPA 200.7
DATE OF ICP ANALYSIS 08/11/2008
DATE OF TURBIDITY CHECK 07/16/2008

PARAMETER	RESULT	
BERYLLIUM	< 1. MCG/L	NELAP
SILVER	< 5. MCG/L	NELAP
BARIUM	21. MCG/L	NELAP
COBALT	< 5. MCG/L	NELAP
CHROMIUM	< 5. MCG/L	NELAP
COPPER	< 5. MCG/L	NELAP
IRON	170. MCG/L DOH. WANS <300	NELAP
MANGANESE	48. MCG/L	NELAP
NICKEL	< 5. MCG/L	NELAP
STRONTIUM	880. MCG/L NO DOH. LIMIT	NELAP
TITANIUM	< 5. MCG/L	NELAP
VANADIUM	< 5. MCG/L	NELAP
ZINC	< 5. MCG/L	NELAP

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WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 5 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200880032 SAMPLE RECEIVED: 07/15/2008 14HR CHARGE: 21.58
POLITICAL SUBDIVISION: ESSEX COUNTY: ESSEX
LOCATION: ESSEX W.D.
TIME OF SAMPLING: 07/11/2008 11:30 DATE PRINTED: 08/23/2008

-----------PARAMETER-----------	-----------RESULT---------------	
MOLYBDENUM	11. MCG/L	NELAP
TIN	12. MCG/L	NELAP
ALUMINUM	< 100. MCG/L	NELAP
CALCIUM	35. MG/L	NELAP
POTASSIUM	2. MG/L	NELAP
MAGNESIUM	18. MG/L	NELAP
SODIUM	37. MG/L	NELAP

DOH LIKES LESS THAN 20, BUT BOTTLED WATER OFTEN HIGH.

ANALYSIS: FLUORIDE FLUORIDE
DATE REPORTED: 08/05/2008 REPORT MAILED OUT
|---> METHOD: EPA 340.2
DATE ANALYZED 07/23/2008

-----------PARAMETER-----------	-----------RESULT---------------	
FLUORIDE, FREE	0.4 MG/L	NELAP

ANALYSIS: SOLIDDISS TOTAL DISSOLVED SOLIDS SM18 2540-C
DATE REPORTED: 07/24/2008 REPORT MAILED OUT
DATE ANALYZED 07/16/2008

-----------PARAMETER-----------	-----------RESULT---------------	
SOLIDS, TOTAL DISSOLVED, 180 C	290. MG/L	NELAP

ANALYSIS: CYANIDE CYANIDE EPA 335.3
DATE REPORTED: 08/05/2008 REPORT MAILED OUT
DATE ANALYZED 07/21/2008

-----------PARAMETER-----------	-----------RESULT---------------	
CYANIDE, HYDROLYZABLE	< 0.006 MG/L	NELAP

**** END OF REPORT ****

Essex Water System ISO Determination of Needed Fire Flow

Exhibit T

Needed Fire Flow (NFF) 1750 gpm

Matt Mears, P.E. 12/8/2011

Town Hall			Construction factor		Occupancy Factor		Exposure		Communications
					Combustibility Class	O_i	X_i		P_i
Area, sq ft	3000		F	1.5	C-1	0.75	Length of wall	28	
Floors	2		F	1	C-2	0.85	Number of Stories	2	open passageway
A_i	4500		F	0.8	C-3	1	$X_i = L * H$ (in stories)	56	
			F	0.6	C-4	1.15	Table 330.A		
					C-5	1.25	$X_i =$	0.17	$P_i =$ 0
			$C_i = 18F(A_i)^{.5}$						
		$C_i =$	1811						
		$C_{i\ Rounded}=$	1750						
NFF = (Ci)(Oi)[(1.0+(X+P)i]	1740.38								
NFF	1750	Assumptions:	Wood Frame		Office				

Church			Construction factor		Occupancy Factor		Exposure		Communications
					Combustibility Class	O_i	X_i		P_i
Area, sq ft	2809		F	1.5	C-1	0.75	Length of wall	44	
Floors	2		F	1	C-2	0.85	Number of Stories	2	open passageway
A_i	4213.5		F	0.8	C-3	1	$X_i = L * H$ (in stories)	88	
			F	0.6	C-4	1.15	Table 330.A		
					C-5	1.25	$X_i =$	0.22	$P_i =$ 0
			$C_i = 18F(A_i)^{.5}$						
		$C_i =$	1168						
		$C_{i\ Rounded}=$	1000						
NFF = (Ci)(Oi)[(1.0+(X+P)i]	1037								
NFF	1000	Assumptions:	Wood Frame		Church				

Marina			Construction factor		Occupancy Factor		Exposure		Communications
					Combustibility Class	O_i	X_i		P_i
Area, sq ft	15414		F	1.5	C-1	0.75	Length of wall	50	
Floors	2		F	1	C-2	0.85	Number of Stories	2	open passageway
A_i	23121		F	0.8	C-3	1	$X_i = L * H$ (in stories)	100	
			F	0.6	C-4	1.15	Table 330.A		
					C-5	1.25	$X_i =$	0.17	$P_i =$ 0
			$C_i = 18F(A_i)^{.5}$						
		$C_i =$	4106						
		$C_{i\ Rounded}=$	4000						
NFF = (Ci)(Oi)[(1.0+(X+P)i]	3978								
NFF	4000	Assumptions:	Wood Frame		Office				

Town of Essex
Water System Evaluation
Preliminary Engineer Report (PER)
Daily Flow Record 2011
Exhibit U

Date	Day	Gallons X 1000
1/1/2011	Saturday	16
1/2/2011	Sunday	18
1/3/2011	Monday	18
1/4/2011	Tuesday	16
1/5/2011	Wednesday	18
1/6/2011	Thursday	18
1/7/2011	Friday	16
1/8/2011	Saturday	18
1/9/2011	Sunday	18
1/10/2011	Monday	18
1/11/2011	Tuesday	18
1/12/2011	Wednesday	32
1/13/2011	Thursday	33
1/14/2011	Friday	31
1/15/2011	Saturday	32
1/16/2011	Sunday	34
1/17/2011	Monday	32
1/18/2011	Tuesday	34
1/19/2011	Wednesday	34
1/20/2011	Thursday	36
1/21/2011	Friday	38
1/22/2011	Saturday	36
1/23/2011	Sunday	38
1/24/2011	Monday	38
1/25/2011	Tuesday	38
1/26/2011	Wednesday	41
1/27/2011	Thursday	11
1/28/2011	Friday	32
1/29/2011	Saturday	34
1/30/2011	Sunday	23
1/31/2011	Monday	21
2/1/2011	Tuesday	24
2/2/2011	Wednesday	20
2/3/2011	Thursday	21
2/4/2011	Friday	18
2/5/2011	Saturday	16
2/6/2011	Sunday	18
2/7/2011	Monday	17
2/8/2011	Tuesday	18
2/9/2011	Wednesday	18
2/10/2011	Thursday	16
2/11/2011	Friday	19
2/12/2011	Saturday	21
2/13/2011	Sunday	22
2/14/2011	Monday	21

Town of Essex
Water System Evaluation
Preliminary Engineer Report (PER)
Daily Flow Record 2011
Exhibit U

2/15/2011	Tuesday	24
2/16/2011	Wednesday	23
2/17/2011	Thursday	24
2/18/2011	Friday	24
2/19/2011	Saturday	23
2/20/2011	Sunday	23
2/21/2011	Monday	24
2/22/2011	Tuesday	23
2/23/2011	Wednesday	24
2/24/2011	Thursday	25
2/25/2011	Friday	25
2/26/2011	Saturday	21
2/27/2011	Sunday	22
2/28/2011	Monday	22
3/1/2011	Tuesday	26
3/2/2011	Wednesday	25
3/3/2011	Thursday	26
3/4/2011	Friday	28
3/5/2011	Saturday	30
3/6/2011	Sunday	31
3/7/2011	Monday	28
3/8/2011	Tuesday	30
3/9/2011	Wednesday	29
3/10/2011	Thursday	30
3/11/2011	Friday	24
3/12/2011	Saturday	21
3/13/2011	Sunday	22
3/14/2011	Monday	22
3/15/2011	Tuesday	21
3/16/2011	Wednesday	22
3/17/2011	Thursday	22
3/18/2011	Friday	21
3/19/2011	Saturday	22
3/20/2011	Sunday	21
3/21/2011	Monday	21
3/22/2011	Tuesday	22
3/23/2011	Wednesday	22
3/24/2011	Thursday	22
3/25/2011	Friday	22
3/26/2011	Saturday	22
3/27/2011	Sunday	21
3/28/2011	Monday	22
3/29/2011	Tuesday	21
3/30/2011	Wednesday	22
3/31/2011	Thursday	22
4/1/2011	Friday	24
4/2/2011	Saturday	25

Town of Essex
Water System Evaluation
Preliminary Engineer Report (PER)
Daily Flow Record 2011
Exhibit U

4/3/2011	Sunday	24
4/4/2011	Monday	24
4/5/2011	Tuesday	22
4/6/2011	Wednesday	21
4/7/2011	Thursday	22
4/8/2011	Friday	22
4/9/2011	Saturday	21
4/10/2011	Sunday	22
4/11/2011	Monday	21
4/12/2011	Tuesday	21
4/13/2011	Wednesday	22
4/14/2011	Thursday	21
4/15/2011	Friday	22
4/16/2011	Saturday	23
4/17/2011	Sunday	21
4/18/2011	Monday	22
4/19/2011	Tuesday	22
4/20/2011	Wednesday	22
4/21/2011	Thursday	21
4/22/2011	Friday	22
4/23/2011	Saturday	22
4/24/2011	Sunday	23
4/25/2011	Monday	22
4/26/2011	Tuesday	23
4/27/2011	Wednesday	23
4/28/2011	Thursday	23
4/29/2011	Friday	24
4/30/2011	Saturday	23
5/1/2011	Sunday	24
5/2/2011	Monday	23
5/3/2011	Tuesday	23
5/4/2011	Wednesday	24
5/5/2011	Thursday	24
5/6/2011	Friday	23
5/7/2011	Saturday	23
5/8/2011	Sunday	22
5/9/2011	Monday	24
5/10/2011	Tuesday	23
5/11/2011	Wednesday	24
5/12/2011	Thursday	22
5/13/2011	Friday	24
5/14/2011	Saturday	23
5/15/2011	Sunday	22
5/16/2011	Monday	23
5/17/2011	Tuesday	23
5/18/2011	Wednesday	24
5/19/2011	Thursday	24
5/20/2011	Friday	23

Town of Essex
Water System Evaluation
Preliminary Engineer Report (PER)
Daily Flow Record 2011
Exhibit U

5/21/2011	Saturday	22
5/22/2011	Sunday	24
5/23/2011	Monday	24
5/24/2011	Tuesday	23
5/25/2011	Wednesday	24
5/26/2011	Thursday	23
5/27/2011	Friday	24
5/28/2011	Saturday	24
5/29/2011	Sunday	24
5/30/2011	Monday	23
5/31/2011	Tuesday	24
6/1/2011	Wednesday	24
6/2/2011	Thursday	24
6/3/2011	Friday	23
6/4/2011	Saturday	24
6/5/2011	Sunday	24
6/6/2011	Monday	23
6/7/2011	Tuesday	24
6/8/2011	Wednesday	24
6/9/2011	Thursday	23
6/10/2011	Friday	24
6/11/2011	Saturday	22
6/12/2011	Sunday	23
6/13/2011	Monday	24
6/14/2011	Tuesday	25
6/15/2011	Wednesday	24
6/16/2011	Thursday	24
6/17/2011	Friday	25
6/18/2011	Saturday	24
6/19/2011	Sunday	25
6/20/2011	Monday	23
6/21/2011	Tuesday	24
6/22/2011	Wednesday	25
6/23/2011	Thursday	24
6/24/2011	Friday	24
6/25/2011	Saturday	25
6/26/2011	Sunday	23
6/27/2011	Monday	24
6/28/2011	Tuesday	24
6/29/2011	Wednesday	25
6/30/2011	Thursday	26
7/1/2011	Friday	
7/2/2011	Saturday	
7/3/2011	Sunday	
7/4/2011	Monday	
7/5/2011	Tuesday	
7/6/2011	Wednesday	

Town of Essex
Water System Evaluation
Preliminary Engineer Report (PER)
Daily Flow Record 2011
Exhibit U

7/7/2011	Thursday	
7/8/2011	Friday	
7/9/2011	Saturday	
7/10/2011	Sunday	
7/11/2011	Monday	
7/12/2011	Tuesday	
7/13/2011	Wednesday	
7/14/2011	Thursday	
7/15/2011	Friday	
7/16/2011	Saturday	
7/17/2011	Sunday	
7/18/2011	Monday	
7/19/2011	Tuesday	
7/20/2011	Wednesday	
7/21/2011	Thursday	
7/22/2011	Friday	
7/23/2011	Saturday	
7/24/2011	Sunday	
7/25/2011	Monday	
7/26/2011	Tuesday	
7/27/2011	Wednesday	
7/28/2011	Thursday	
7/29/2011	Friday	
7/30/2011	Saturday	
7/31/2011	Sunday	
8/1/2011	Monday	24
8/2/2011	Tuesday	26
8/3/2011	Wednesday	25
8/4/2011	Thursday	26
8/5/2011	Friday	24
8/6/2011	Saturday	25
8/7/2011	Sunday	25
8/8/2011	Monday	24
8/9/2011	Tuesday	26
8/10/2011	Wednesday	26
8/11/2011	Thursday	25
8/12/2011	Friday	26
8/13/2011	Saturday	25
8/14/2011	Sunday	26
8/15/2011	Monday	26
8/16/2011	Tuesday	26
8/17/2011	Wednesday	26
8/18/2011	Thursday	25
8/19/2011	Friday	26
8/20/2011	Saturday	26
8/21/2011	Sunday	25
8/22/2011	Monday	26
8/23/2011	Tuesday	25

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8/24/2011	Wednesday	26
8/25/2011	Thursday	26
8/26/2011	Friday	26
8/27/2011	Saturday	25
8/28/2011	Sunday	25
8/29/2011	Monday	26
8/30/2011	Tuesday	26
8/31/2011	Wednesday	26
9/1/2011	Thursday	26
9/2/2011	Friday	25
9/3/2011	Saturday	26
9/4/2011	Sunday	26
9/5/2011	Monday	25
9/6/2011	Tuesday	26
9/7/2011	Wednesday	25
9/8/2011	Thursday	26
9/9/2011	Friday	25
9/10/2011	Saturday	26
9/11/2011	Sunday	25
9/12/2011	Monday	25
9/13/2011	Tuesday	26
9/14/2011	Wednesday	26
9/15/2011	Thursday	26
9/16/2011	Friday	25
9/17/2011	Saturday	26
9/18/2011	Sunday	24
9/19/2011	Monday	24
9/20/2011	Tuesday	25
9/21/2011	Wednesday	25
9/22/2011	Thursday	24
9/23/2011	Friday	25
9/24/2011	Saturday	24
9/25/2011	Sunday	25
9/26/2011	Monday	24
9/27/2011	Tuesday	25
9/28/2011	Wednesday	24
9/29/2011	Thursday	25
9/30/2011	Friday	24
10/1/2011	Saturday	
10/2/2011	Sunday	
10/3/2011	Monday	
10/4/2011	Tuesday	
10/5/2011	Wednesday	
10/6/2011	Thursday	
10/7/2011	Friday	
10/8/2011	Saturday	
10/9/2011	Sunday	

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10/10/2011	Monday
10/11/2011	Tuesday
10/12/2011	Wednesday
10/13/2011	Thursday
10/14/2011	Friday
10/15/2011	Saturday
10/16/2011	Sunday
10/17/2011	Monday
10/18/2011	Tuesday
10/19/2011	Wednesday
10/20/2011	Thursday
10/21/2011	Friday
10/22/2011	Saturday
10/23/2011	Sunday
10/24/2011	Monday
10/25/2011	Tuesday
10/26/2011	Wednesday
10/27/2011	Thursday
10/28/2011	Friday
10/29/2011	Saturday
10/30/2011	Sunday
10/31/2011	Monday
11/1/2011	Tuesday
11/2/2011	Wednesday
11/3/2011	Thursday
11/4/2011	Friday
11/5/2011	Saturday
11/6/2011	Sunday
11/7/2011	Monday
11/8/2011	Tuesday
11/9/2011	Wednesday
11/10/2011	Thursday
11/11/2011	Friday
11/12/2011	Saturday
11/13/2011	Sunday
11/14/2011	Monday
11/15/2011	Tuesday
11/16/2011	Wednesday
11/17/2011	Thursday
11/18/2011	Friday
11/19/2011	Saturday
11/20/2011	Sunday
11/21/2011	Monday
11/22/2011	Tuesday
11/23/2011	Wednesday
11/24/2011	Thursday
11/25/2011	Friday
11/26/2011	Saturday

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11/27/2011	Sunday
11/28/2011	Monday
11/29/2011	Tuesday
11/30/2011	Wednesday
12/1/2011	Thursday
12/2/2011	Friday
12/3/2011	Saturday
12/4/2011	Sunday
12/5/2011	Monday
12/6/2011	Tuesday
12/7/2011	Wednesday
12/8/2011	Thursday
12/9/2011	Friday
12/10/2011	Saturday
12/11/2011	Sunday
12/12/2011	Monday
12/13/2011	Tuesday
12/14/2011	Wednesday
12/15/2011	Thursday
12/16/2011	Friday
12/17/2011	Saturday
12/18/2011	Sunday
12/19/2011	Monday
12/20/2011	Tuesday
12/21/2011	Wednesday
12/22/2011	Thursday
12/23/2011	Friday
12/24/2011	Saturday
12/25/2011	Sunday
12/26/2011	Monday
12/27/2011	Tuesday
12/28/2011	Wednesday
12/29/2011	Thursday
12/30/2011	Friday
12/31/2011	Saturday

24.10331 Average Day Demand

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Date	Day	Gallons X 1000
1/1/2010	Friday	16
1/2/2010	Saturday	17
1/3/2010	Sunday	16
1/4/2010	Monday	18
1/5/2010	Tuesday	16
1/6/2010	Wednesday	17
1/7/2010	Thursday	16
1/8/2010	Friday	16
1/9/2010	Saturday	17
1/10/2010	Sunday	16
1/11/2010	Monday	11
1/12/2010	Tuesday	16
1/13/2010	Wednesday	16
1/14/2010	Thursday	17
1/15/2010	Friday	16
1/16/2010	Saturday	17
1/17/2010	Sunday	16
1/18/2010	Monday	16
1/19/2010	Tuesday	17
1/20/2010	Wednesday	17
1/21/2010	Thursday	16
1/22/2010	Friday	18
1/23/2010	Saturday	15
1/24/2010	Sunday	17
1/25/2010	Monday	16
1/26/2010	Tuesday	17
1/27/2010	Wednesday	16
1/28/2010	Thursday	15
1/29/2010	Friday	17
1/30/2010	Saturday	16
1/31/2010	Sunday	15
2/1/2010	Monday	15
2/2/2010	Tuesday	14
2/3/2010	Wednesday	16
2/4/2010	Thursday	17
2/5/2010	Friday	16
2/6/2010	Saturday	17
2/7/2010	Sunday	18
2/8/2010	Monday	17
2/9/2010	Tuesday	16
2/10/2010	Wednesday	17
2/11/2010	Thursday	17
2/12/2010	Friday	16
2/13/2010	Saturday	17
2/14/2010	Sunday	15

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Date	Day	Gallons X 1000
2/15/2010	Monday	17
2/16/2010	Tuesday	16
2/17/2010	Wednesday	16
2/18/2010	Thursday	17
2/19/2010	Friday	16
2/20/2010	Saturday	16
2/21/2010	Sunday	16
2/22/2010	Monday	17
2/23/2010	Tuesday	16
2/24/2010	Wednesday	17
2/25/2010	Thursday	16
2/26/2010	Friday	16
2/27/2010	Saturday	17
2/28/2010	Sunday	16
3/1/2010	Monday	15
3/2/2010	Tuesday	16
3/3/2010	Wednesday	15
3/4/2010	Thursday	15
3/5/2010	Friday	16
3/6/2010	Saturday	16
3/7/2010	Sunday	15
3/8/2010	Monday	15
3/9/2010	Tuesday	15
3/10/2010	Wednesday	16
3/11/2010	Thursday	15
3/12/2010	Friday	15
3/13/2010	Saturday	16
3/14/2010	Sunday	16
3/15/2010	Monday	15
3/16/2010	Tuesday	16
3/17/2010	Wednesday	15
3/18/2010	Thursday	14
3/19/2010	Friday	15
3/20/2010	Saturday	16
3/21/2010	Sunday	15
3/22/2010	Monday	16
3/23/2010	Tuesday	14
3/24/2010	Wednesday	15
3/25/2010	Thursday	15
3/26/2010	Friday	15
3/27/2010	Saturday	16
3/28/2010	Sunday	18
3/29/2010	Monday	16
3/30/2010	Tuesday	15
3/31/2010	Wednesday	15

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Date	Day	Gallons X 1000
4/1/2010	Thursday	15
4/2/2010	Friday	15
4/3/2010	Saturday	16
4/4/2010	Sunday	15
4/5/2010	Monday	14
4/6/2010	Tuesday	16
4/7/2010	Wednesday	15
4/8/2010	Thursday	16
4/9/2010	Friday	15
4/10/2010	Saturday	15
4/11/2010	Sunday	19
4/12/2010	Monday	18
4/13/2010	Tuesday	19
4/14/2010	Wednesday	20
4/15/2010	Thursday	19
4/16/2010	Friday	18
4/17/2010	Saturday	19
4/18/2010	Sunday	19
4/19/2010	Monday	18
4/20/2010	Tuesday	19
4/21/2010	Wednesday	18
4/22/2010	Thursday	19
4/23/2010	Friday	19
4/24/2010	Saturday	18
4/25/2010	Sunday	19
4/26/2010	Monday	20
4/27/2010	Tuesday	20
4/28/2010	Wednesday	19
4/29/2010	Thursday	20
4/30/2010	Friday	19
5/1/2010	Saturday	19
5/2/2010	Sunday	19
5/3/2010	Monday	18
5/4/2010	Tuesday	20
5/5/2010	Wednesday	19
5/6/2010	Thursday	20
5/7/2010	Friday	19
5/8/2010	Saturday	20
5/9/2010	Sunday	18
5/10/2010	Monday	20
5/11/2010	Tuesday	19
5/12/2010	Wednesday	19
5/13/2010	Thursday	21
5/14/2010	Friday	22

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Date	Day	Gallons X 1000
5/15/2010	Saturday	21
5/16/2010	Sunday	20
5/17/2010	Monday	21
5/18/2010	Tuesday	22
5/19/2010	Wednesday	21
5/20/2010	Thursday	23
5/21/2010	Friday	19
5/22/2010	Saturday	20
5/23/2010	Sunday	20
5/24/2010	Monday	22
5/25/2010	Tuesday	21
5/26/2010	Wednesday	23
5/27/2010	Thursday	22
5/28/2010	Friday	22
5/29/2010	Saturday	19
5/30/2010	Sunday	23
5/31/2010	Monday	23
6/1/2010	Tuesday	22
6/2/2010	Wednesday	21
6/3/2010	Thursday	21
6/4/2010	Friday	22
6/5/2010	Saturday	21
6/6/2010	Sunday	22
6/7/2010	Monday	23
6/8/2010	Tuesday	21
6/9/2010	Wednesday	22
6/10/2010	Thursday	22
6/11/2010	Friday	23
6/12/2010	Saturday	21
6/13/2010	Sunday	22
6/14/2010	Monday	21
6/15/2010	Tuesday	22
6/16/2010	Wednesday	23
6/17/2010	Thursday	21
6/18/2010	Friday	22
6/19/2010	Saturday	22
6/20/2010	Sunday	23
6/21/2010	Monday	21
6/22/2010	Tuesday	22
6/23/2010	Wednesday	24
6/24/2010	Thursday	26
6/25/2010	Friday	24
6/26/2010	Saturday	25
6/27/2010	Sunday	26
6/28/2010	Monday	24

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Date	Day	Gallons X 1000
6/29/2010	Tuesday	25
6/30/2010	Wednesday	24
7/1/2010	Thursday	24
7/2/2010	Friday	23
7/3/2010	Saturday	23
7/4/2010	Sunday	24
7/5/2010	Monday	23
7/6/2010	Tuesday	24
7/7/2010	Wednesday	23
7/8/2010	Thursday	23
7/9/2010	Friday	22
7/10/2010	Saturday	24
7/11/2010	Sunday	23
7/12/2010	Monday	24
7/13/2010	Tuesday	25
7/14/2010	Wednesday	23
7/15/2010	Thursday	23
7/16/2010	Friday	24
7/17/2010	Saturday	24
7/18/2010	Sunday	25
7/19/2010	Monday	24
7/20/2010	Tuesday	23
7/21/2010	Wednesday	25
7/22/2010	Thursday	24
7/23/2010	Friday	22
7/24/2010	Saturday	25
7/25/2010	Sunday	24
7/26/2010	Monday	24
7/27/2010	Tuesday	25
7/28/2010	Wednesday	24
7/29/2010	Thursday	24
7/30/2010	Friday	25
7/31/2010	Saturday	25
8/1/2010	Sunday	24
8/2/2010	Monday	25
8/3/2010	Tuesday	24
8/4/2010	Wednesday	24
8/5/2010	Thursday	23
8/6/2010	Friday	24
8/7/2010	Saturday	23
8/8/2010	Sunday	24
8/9/2010	Monday	24
8/10/2010	Tuesday	23
8/11/2010	Wednesday	23

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Date	Day	Gallons X 1000
8/12/2010	Thursday	24
8/13/2010	Friday	22
8/14/2010	Saturday	24
8/15/2010	Sunday	23
8/16/2010	Monday	24
8/17/2010	Tuesday	22
8/18/2010	Wednesday	24
8/19/2010	Thursday	23
8/20/2010	Friday	24
8/21/2010	Saturday	23
8/22/2010	Sunday	24
8/23/2010	Monday	24
8/24/2010	Tuesday	24
8/25/2010	Wednesday	23
8/26/2010	Thursday	22
8/27/2010	Friday	24
8/28/2010	Saturday	23
8/29/2010	Sunday	24
8/30/2010	Monday	24
8/31/2010	Tuesday	23
9/1/2010	Wednesday	24
9/2/2010	Thursday	23
9/3/2010	Friday	24
9/4/2010	Saturday	25
9/5/2010	Sunday	24
9/6/2010	Monday	25
9/7/2010	Tuesday	24
9/8/2010	Wednesday	23
9/9/2010	Thursday	22
9/10/2010	Friday	23
9/11/2010	Saturday	23
9/12/2010	Sunday	22
9/13/2010	Monday	23
9/14/2010	Tuesday	22
9/15/2010	Wednesday	23
9/16/2010	Thursday	22
9/17/2010	Friday	22
9/18/2010	Saturday	21
9/19/2010	Sunday	22
9/20/2010	Monday	21
9/21/2010	Tuesday	20
9/22/2010	Wednesday	21
9/23/2010	Thursday	20
9/24/2010	Friday	20
9/25/2010	Saturday	21

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Date	Day	Gallons X 1000
9/26/2010	Sunday	20
9/27/2010	Monday	21
9/28/2010	Tuesday	20
9/29/2010	Wednesday	21
9/30/2010	Thursday	21
10/1/2010	Friday	20
10/2/2010	Saturday	22
10/3/2010	Sunday	21
10/4/2010	Monday	22
10/5/2010	Tuesday	22
10/6/2010	Wednesday	20
10/7/2010	Thursday	21
10/8/2010	Friday	20
10/9/2010	Saturday	20
10/10/2010	Sunday	21
10/11/2010	Monday	20
10/12/2010	Tuesday	21
10/13/2010	Wednesday	19
10/14/2010	Thursday	18
10/15/2010	Friday	19
10/16/2010	Saturday	20
10/17/2010	Sunday	19
10/18/2010	Monday	19
10/19/2010	Tuesday	18
10/20/2010	Wednesday	19
10/21/2010	Thursday	18
10/22/2010	Friday	19
10/23/2010	Saturday	19
10/24/2010	Sunday	19
10/25/2010	Monday	18
10/26/2010	Tuesday	19
10/27/2010	Wednesday	18
10/28/2010	Thursday	19
10/29/2010	Friday	18
10/30/2010	Saturday	19
10/31/2010	Sunday	19
11/1/2010	Monday	18
11/2/2010	Tuesday	16
11/3/2010	Wednesday	17
11/4/2010	Thursday	18
11/5/2010	Friday	16
11/6/2010	Saturday	17
11/7/2010	Sunday	18
11/8/2010	Monday	18

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Date	Day	Gallons X 1000
11/9/2010	Tuesday	17
11/10/2010	Wednesday	18
11/11/2010	Thursday	17
11/12/2010	Friday	18
11/13/2010	Saturday	16
11/14/2010	Sunday	18
11/15/2010	Monday	18
11/16/2010	Tuesday	17
11/17/2010	Wednesday	16
11/18/2010	Thursday	18
11/19/2010	Friday	17
11/20/2010	Saturday	17
11/21/2010	Sunday	18
11/22/2010	Monday	17
11/23/2010	Tuesday	18
11/24/2010	Wednesday	17
11/25/2010	Thursday	16
11/26/2010	Friday	18
11/27/2010	Saturday	16
11/28/2010	Sunday	18
11/29/2010	Monday	18
11/30/2010	Tuesday	17
12/1/2010	Wednesday	18
12/2/2010	Thursday	17
12/3/2010	Friday	16
12/4/2010	Saturday	17
12/5/2010	Sunday	17
12/6/2010	Monday	16
12/7/2010	Tuesday	17
12/8/2010	Wednesday	16
12/9/2010	Thursday	17
12/10/2010	Friday	17
12/11/2010	Saturday	16
12/12/2010	Sunday	17
12/13/2010	Monday	17
12/14/2010	Tuesday	16
12/15/2010	Wednesday	17
12/16/2010	Thursday	17
12/17/2010	Friday	16
12/18/2010	Saturday	17
12/19/2010	Sunday	16
12/20/2010	Monday	17
12/21/2010	Tuesday	17
12/22/2010	Wednesday	16
12/23/2010	Thursday	17

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Date	Day	Gallons X 1000
12/24/2010	Friday	17
12/25/2010	Saturday	17
12/26/2010	Sunday	16
12/27/2010	Monday	17
12/28/2010	Tuesday	16
12/29/2010	Wednesday	17
12/30/2010	Thursday	18
12/31/2010	Friday	17

19.32329 Average Day Demand

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Date	Day	Gallons X 1000
8/12/2009	Wednesday	21
8/13/2009	Thursday	24
8/14/2009	Friday	22
8/15/2009	Saturday	23
8/16/2009	Sunday	24
8/17/2009	Monday	24
8/18/2009	Tuesday	26
8/19/2009	Wednesday	28
8/20/2009	Thursday	26
8/21/2009	Friday	22
8/22/2009	Saturday	24
8/23/2009	Sunday	24
8/24/2009	Monday	22
8/25/2009	Tuesday	23
8/26/2009	Wednesday	21
8/27/2009	Thursday	22
8/28/2009	Friday	23
8/29/2009	Saturday	22
8/30/2009	Sunday	21
8/31/2009	Monday	23
9/1/2009	Tuesday	21
9/2/2009	Wednesday	20
9/3/2009	Thursday	22
9/4/2009	Friday	19
9/5/2009	Saturday	20
9/6/2009	Sunday	19
9/7/2009	Monday	21
9/8/2009	Tuesday	20
9/9/2009	Wednesday	19
9/10/2009	Thursday	22
9/11/2009	Friday	18
9/12/2009	Saturday	19
9/13/2009	Sunday	21
9/14/2009	Monday	19
9/15/2009	Tuesday	19
9/16/2009	Wednesday	22
9/17/2009	Thursday	21
9/18/2009	Friday	19
9/19/2009	Saturday	20
9/20/2009	Sunday	19
9/21/2009	Monday	18
9/22/2009	Tuesday	19
9/23/2009	Wednesday	20
9/24/2009	Thursday	19
9/25/2009	Friday	20

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Date	Day	Gallons X 1000
9/26/2009	Saturday	20
9/27/2009	Sunday	19
9/28/2009	Monday	21
9/29/2009	Tuesday	19
9/30/2009	Wednesday	20
10/1/2009	Thursday	21
10/2/2009	Friday	20
10/3/2009	Saturday	19
10/4/2009	Sunday	20
10/5/2009	Monday	18
10/6/2009	Tuesday	21
10/7/2009	Wednesday	21
10/8/2009	Thursday	19
10/9/2009	Friday	21
10/10/2009	Saturday	18
10/11/2009	Sunday	19
10/12/2009	Monday	19
10/13/2009	Tuesday	18
10/14/2009	Wednesday	19
10/15/2009	Thursday	18
10/16/2009	Friday	20
10/17/2009	Saturday	19
10/18/2009	Sunday	20
10/19/2009	Monday	18
10/20/2009	Tuesday	19
10/21/2009	Wednesday	20
10/22/2009	Thursday	18
10/23/2009	Friday	19
10/24/2009	Saturday	19
10/25/2009	Sunday	18
10/26/2009	Monday	19
10/27/2009	Tuesday	20
10/28/2009	Wednesday	19
10/29/2009	Thursday	20
10/30/2009	Friday	19
10/31/2009	Saturday	20
11/1/2009	Sunday	22
11/2/2009	Monday	23
11/3/2009	Tuesday	21
11/4/2009	Wednesday	22
11/5/2009	Thursday	23
11/6/2009	Friday	22
11/7/2009	Saturday	21
11/8/2009	Sunday	21

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Water System Evaluation
Preliminary Engineering Report (PER)
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Date	Day	Gallons X 1000
11/9/2009	Monday	20
11/10/2009	Tuesday	19
11/11/2009	Wednesday	19
11/12/2009	Thursday	17
11/13/2009	Friday	17
11/14/2009	Saturday	18
11/15/2009	Sunday	16
11/16/2009	Monday	15
11/17/2009	Tuesday	16
11/18/2009	Wednesday	14
11/19/2009	Thursday	15
11/20/2009	Friday	14
11/21/2009	Saturday	14
11/22/2009	Sunday	15
11/23/2009	Monday	14
11/24/2009	Tuesday	15
11/25/2009	Wednesday	15
11/26/2009	Thursday	14
11/27/2009	Friday	14
11/28/2009	Saturday	15
11/29/2009	Sunday	14
11/30/2009	Monday	14
12/1/2009	Tuesday	
12/2/2009	Wednesday	
12/3/2009	Thursday	
12/4/2009	Friday	
12/5/2009	Saturday	
12/6/2009	Sunday	
12/7/2009	Monday	
12/8/2009	Tuesday	
12/9/2009	Wednesday	
12/10/2009	Thursday	
12/11/2009	Friday	
12/12/2009	Saturday	
12/13/2009	Sunday	
12/14/2009	Monday	
12/15/2009	Tuesday	
12/16/2009	Wednesday	
12/17/2009	Thursday	
12/18/2009	Friday	
12/19/2009	Saturday	
12/20/2009	Sunday	
12/21/2009	Monday	
12/22/2009	Tuesday	
12/23/2009	Wednesday	

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Date	Day	Gallons X 1000
12/24/2009	Thursday	
12/25/2009	Friday	
12/26/2009	Saturday	
12/27/2009	Sunday	
12/28/2009	Monday	
12/29/2009	Tuesday	
12/30/2009	Wednesday	
12/31/2009	Thursday	

16.37126 Average Day Demand

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Date	Day	Gallons X 1000
1/1/2009	Thursday	12
1/2/2009	Friday	11
1/3/2009	Saturday	13
1/4/2009	Sunday	12
1/5/2009	Monday	11
1/6/2009	Tuesday	12
1/7/2009	Wednesday	11
1/8/2009	Thursday	11
1/9/2009	Friday	12
1/10/2009	Saturday	12
1/11/2009	Sunday	11
1/12/2009	Monday	12
1/13/2009	Tuesday	11
1/14/2009	Wednesday	10
1/15/2009	Thursday	11
1/16/2009	Friday	12
1/17/2009	Saturday	12
1/18/2009	Sunday	11
1/19/2009	Monday	10
1/20/2009	Tuesday	11
1/21/2009	Wednesday	12
1/22/2009	Thursday	11
1/23/2009	Friday	11
1/24/2009	Saturday	12
1/25/2009	Sunday	12
1/26/2009	Monday	11
1/27/2009	Tuesday	12
1/28/2009	Wednesday	12
1/29/2009	Thursday	12
1/30/2009	Friday	11
1/31/2009	Saturday	12
2/1/2009	Sunday	11
2/2/2009	Monday	11
2/3/2009	Tuesday	12
2/4/2009	Wednesday	11
2/5/2009	Thursday	12
2/6/2009	Friday	11
2/7/2009	Saturday	12
2/8/2009	Sunday	12
2/9/2009	Monday	12
2/10/2009	Tuesday	11
2/11/2009	Wednesday	12
2/12/2009	Thursday	12
2/13/2009	Friday	12
2/14/2009	Saturday	11

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2009
Exhibit U

Date	Day	Gallons X 1000
2/15/2009	Sunday	11
2/16/2009	Monday	12
2/17/2009	Tuesday	11
2/18/2009	Wednesday	11
2/19/2009	Thursday	11
2/20/2009	Friday	12
2/21/2009	Saturday	11
2/22/2009	Sunday	12
2/23/2009	Monday	11
2/24/2009	Tuesday	11
2/25/2009	Wednesday	12
2/26/2009	Thursday	13
2/27/2009	Friday	11
2/28/2009	Saturday	12
3/1/2009	Sunday	12
3/2/2009	Monday	11
3/3/2009	Tuesday	11
3/4/2009	Wednesday	10
3/5/2009	Thursday	11
3/6/2009	Friday	10
3/7/2009	Saturday	11
3/8/2009	Sunday	12
3/9/2009	Monday	11
3/10/2009	Tuesday	10
3/11/2009	Wednesday	11
3/12/2009	Thursday	11
3/13/2009	Friday	12
3/14/2009	Saturday	11
3/15/2009	Sunday	12
3/16/2009	Monday	11
3/17/2009	Tuesday	10
3/18/2009	Wednesday	9
3/19/2009	Thursday	10
3/20/2009	Friday	10
3/21/2009	Saturday	9
3/22/2009	Sunday	10
3/23/2009	Monday	11
3/24/2009	Tuesday	11
3/25/2009	Wednesday	12
3/26/2009	Thursday	11
3/27/2009	Friday	11
3/28/2009	Saturday	10
3/29/2009	Sunday	11
3/30/2009	Monday	12
3/31/2009	Tuesday	11

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2009
Exhibit U

Date	Day	Gallons X 1000
4/1/2009	Wednesday	11
4/2/2009	Thursday	12
4/3/2009	Friday	11
4/4/2009	Saturday	11
4/5/2009	Sunday	10
4/6/2009	Monday	11
4/7/2009	Tuesday	12
4/8/2009	Wednesday	11
4/9/2009	Thursday	12
4/10/2009	Friday	11
4/11/2009	Saturday	11
4/12/2009	Sunday	12
4/13/2009	Monday	11
4/14/2009	Tuesday	12
4/15/2009	Wednesday	11
4/16/2009	Thursday	12
4/17/2009	Friday	12
4/18/2009	Saturday	12
4/19/2009	Sunday	11
4/20/2009	Monday	11
4/21/2009	Tuesday	11
4/22/2009	Wednesday	11
4/23/2009	Thursday	11
4/24/2009	Friday	12
4/25/2009	Saturday	11
4/26/2009	Sunday	11
4/27/2009	Monday	13
4/28/2009	Tuesday	13
4/29/2009	Wednesday	13
4/30/2009	Thursday	14
5/1/2009	Friday	13
5/2/2009	Saturday	14
5/3/2009	Sunday	12
5/4/2009	Monday	14
5/5/2009	Tuesday	14
5/6/2009	Wednesday	13
5/7/2009	Thursday	12
5/8/2009	Friday	14
5/9/2009	Saturday	13
5/10/2009	Sunday	14
5/11/2009	Monday	15
5/12/2009	Tuesday	14
5/13/2009	Wednesday	15
5/14/2009	Thursday	15

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2009
Exhibit U

Date	Day	Gallons X 1000
5/15/2009	Friday	14
5/16/2009	Saturday	15
5/17/2009	Sunday	16
5/18/2009	Monday	14
5/19/2009	Tuesday	14
5/20/2009	Wednesday	16
5/21/2009	Thursday	16
5/22/2009	Friday	15
5/23/2009	Saturday	15
5/24/2009	Sunday	16
5/25/2009	Monday	15
5/26/2009	Tuesday	15
5/27/2009	Wednesday	15
5/28/2009	Thursday	16
5/29/2009	Friday	15
5/30/2009	Saturday	16
5/31/2009	Sunday	16
6/1/2009	Monday	13
6/2/2009	Tuesday	14
6/3/2009	Wednesday	14
6/4/2009	Thursday	14
6/5/2009	Friday	15
6/6/2009	Saturday	16
6/7/2009	Sunday	15
6/8/2009	Monday	16
6/9/2009	Tuesday	16
6/10/2009	Wednesday	17
6/11/2009	Thursday	17
6/12/2009	Friday	18
6/13/2009	Saturday	18
6/14/2009	Sunday	18
6/15/2009	Monday	19
6/16/2009	Tuesday	20
6/17/2009	Wednesday	19
6/18/2009	Thursday	20
6/19/2009	Friday	21
6/20/2009	Saturday	22
6/21/2009	Sunday	21
6/22/2009	Monday	21
6/23/2009	Tuesday	20
6/24/2009	Wednesday	22
6/25/2009	Thursday	21
6/26/2009	Friday	22
6/27/2009	Saturday	22
6/28/2009	Sunday	22

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2009
Exhibit U

Date	Day	Gallons X 1000
6/29/2009	Monday	21
6/30/2009	Tuesday	22
7/1/2009	Wednesday	20
7/2/2009	Thursday	22
7/3/2009	Friday	21
7/4/2009	Saturday	22
7/5/2009	Sunday	24
7/6/2009	Monday	20
7/7/2009	Tuesday	21
7/8/2009	Wednesday	20
7/9/2009	Thursday	21
7/10/2009	Friday	22
7/11/2009	Saturday	21
7/12/2009	Sunday	22
7/13/2009	Monday	20
7/14/2009	Tuesday	21
7/15/2009	Wednesday	22
7/16/2009	Thursday	22
7/17/2009	Friday	21
7/18/2009	Saturday	22
7/19/2009	Sunday	21
7/20/2009	Monday	21
7/21/2009	Tuesday	22
7/22/2009	Wednesday	20
7/23/2009	Thursday	22
7/24/2009	Friday	21
7/25/2009	Saturday	22
7/26/2009	Sunday	21
7/27/2009	Monday	22
7/28/2009	Tuesday	21
7/29/2009	Wednesday	22
7/30/2009	Thursday	21
7/31/2009	Friday	22
8/1/2009	Saturday	24
8/2/2009	Sunday	23
8/3/2009	Monday	24
8/4/2009	Tuesday	22
8/5/2009	Wednesday	26
8/6/2009	Thursday	24
8/7/2009	Friday	25
8/8/2009	Saturday	24
8/9/2009	Sunday	23
8/10/2009	Monday	24
8/11/2009	Tuesday	22

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000
1/1/2008	Tuesday	11
1/2/2008	Wednesday	12
1/3/2008	Thursday	10
1/4/2008	Friday	11
1/5/2008	Saturday	11
1/6/2008	Sunday	10
1/7/2008	Monday	12
1/8/2008	Tuesday	11
1/9/2008	Wednesday	11
1/10/2008	Thursday	12
1/11/2008	Friday	10
1/12/2008	Saturday	11
1/13/2008	Sunday	10
1/14/2008	Monday	11
1/15/2008	Tuesday	12
1/16/2008	Wednesday	12
1/17/2008	Thursday	10
1/18/2008	Friday	11
1/19/2008	Saturday	11
1/20/2008	Sunday	12
1/21/2008	Monday	11
1/22/2008	Tuesday	11
1/23/2008	Wednesday	12
1/24/2008	Thursday	10
1/25/2008	Friday	11
1/26/2008	Saturday	11
1/27/2008	Sunday	12
1/28/2008	Monday	12
1/29/2008	Tuesday	12
1/30/2008	Wednesday	12
1/31/2008	Thursday	11
2/1/2008	Friday	10
2/2/2008	Saturday	12
2/3/2008	Sunday	11
2/4/2008	Monday	12
2/5/2008	Tuesday	10
2/6/2008	Wednesday	11
2/7/2008	Thursday	11
2/8/2008	Friday	12
2/9/2008	Saturday	12
2/10/2008	Sunday	11
2/11/2008	Monday	10
2/12/2008	Tuesday	10
2/13/2008	Wednesday	11

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000
2/14/2008	Thursday	12
2/15/2008	Friday	15
2/16/2008	Saturday	11
2/17/2008	Sunday	12
2/18/2008	Monday	13
2/19/2008	Tuesday	11
2/20/2008	Wednesday	10
2/21/2008	Thursday	11
2/22/2008	Friday	11
2/23/2008	Saturday	11
2/24/2008	Sunday	12
2/25/2008	Monday	10
2/26/2008	Tuesday	11
2/27/2008	Wednesday	12
2/28/2008	Thursday	11
2/29/2008	Friday	11
3/1/2008	Saturday	12
3/2/2008	Sunday	11
3/3/2008	Monday	11
3/4/2008	Tuesday	10
3/5/2008	Wednesday	10
3/6/2008	Thursday	13
3/7/2008	Friday	12
3/8/2008	Saturday	13
3/9/2008	Sunday	13
3/10/2008	Monday	12
3/11/2008	Tuesday	11
3/12/2008	Wednesday	11
3/13/2008	Thursday	11
3/14/2008	Friday	12
3/15/2008	Saturday	10
3/16/2008	Sunday	12
3/17/2008	Monday	11
3/18/2008	Tuesday	11
3/19/2008	Wednesday	11
3/20/2008	Thursday	11
3/21/2008	Friday	11
3/22/2008	Saturday	12
3/23/2008	Sunday	11
3/24/2008	Monday	10
3/25/2008	Tuesday	12
3/26/2008	Wednesday	10
3/27/2008	Thursday	10
3/28/2008	Friday	9

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000	
3/29/2008	Saturday	9	
3/30/2008	Sunday	9	
3/31/2008	Monday	10	
4/1/2008	Tuesday	9	
4/2/2008	Wednesday	11	
4/3/2008	Thursday	10	
4/4/2008	Friday	11	
4/5/2008	Saturday	12	
4/6/2008	Sunday	10	
4/7/2008	Monday	11	
4/8/2008	Tuesday	10	
4/9/2008	Wednesday	9	
4/10/2008	Thursday	9	
4/11/2008	Friday	8	
4/12/2008	Saturday	9	
4/13/2008	Sunday	8	
4/14/2008	Monday	9	
4/15/2008	Tuesday	8	
4/16/2008	Wednesday	0	no run
4/17/2008	Thursday	9	
4/18/2008	Friday	8	
4/19/2008	Saturday	8	
4/20/2008	Sunday	7	
4/21/2008	Monday	9	
4/22/2008	Tuesday	8	
4/23/2008	Wednesday	7	
4/24/2008	Thursday	0	shutdown
4/25/2008	Friday	12	
4/26/2008	Saturday	11	
4/27/2008	Sunday	12	
4/28/2008	Monday	13	
4/29/2008	Tuesday	11	
4/30/2008	Wednesday	0	no reading
5/1/2008	Thursday	7	
5/2/2008	Friday	10	
5/3/2008	Saturday	12	
5/4/2008	Sunday	11	
5/5/2008	Monday	12	
5/6/2008	Tuesday	8	
5/7/2008	Wednesday	12	
5/8/2008	Thursday	12	
5/9/2008	Friday	14	
5/10/2008	Saturday	15	

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000
5/11/2008	Sunday	16
5/12/2008	Monday	17
5/13/2008	Tuesday	18
5/14/2008	Wednesday	18
5/15/2008	Thursday	17
5/16/2008	Friday	19
5/17/2008	Saturday	19
5/18/2008	Sunday	2
5/19/2008	Monday	19
5/20/2008	Tuesday	21
5/21/2008	Wednesday	19
5/22/2008	Thursday	21
5/23/2008	Friday	20
5/24/2008	Saturday	21
5/25/2008	Sunday	20
5/26/2008	Monday	22
5/27/2008	Tuesday	21
5/28/2008	Wednesday	23
5/29/2008	Thursday	21
5/30/2008	Friday	22
5/31/2008	Saturday	21
6/1/2008	Sunday	22
6/2/2008	Monday	21
6/3/2008	Tuesday	22
6/4/2008	Wednesday	20
6/5/2008	Thursday	21
6/6/2008	Friday	20
6/7/2008	Saturday	22
6/8/2008	Sunday	21
6/9/2008	Monday	20
6/10/2008	Tuesday	21
6/11/2008	Wednesday	20
6/12/2008	Thursday	20
6/13/2008	Friday	21
6/14/2008	Saturday	20
6/15/2008	Sunday	21
6/16/2008	Monday	21
6/17/2008	Tuesday	23
6/18/2008	Wednesday	21
6/19/2008	Thursday	24
6/20/2008	Friday	22
6/21/2008	Saturday	24
6/22/2008	Sunday	24
6/23/2008	Monday	22

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000
6/24/2008	Tuesday	21
6/25/2008	Wednesday	25
6/26/2008	Thursday	24
6/27/2008	Friday	22
6/28/2008	Saturday	22
6/29/2008	Sunday	24
6/30/2008	Monday	22
7/1/2008	Tuesday	22
7/2/2008	Wednesday	21
7/3/2008	Thursday	20
7/4/2008	Friday	23
7/5/2008	Saturday	21
7/6/2008	Sunday	22
7/7/2008	Monday	22
7/8/2008	Tuesday	21
7/9/2008	Wednesday	24
7/10/2008	Thursday	21
7/11/2008	Friday	22
7/12/2008	Saturday	20
7/13/2008	Sunday	21
7/14/2008	Monday	22
7/15/2008	Tuesday	21
7/16/2008	Wednesday	22
7/17/2008	Thursday	23
7/18/2008	Friday	20
7/19/2008	Saturday	21
7/20/2008	Sunday	22
7/21/2008	Monday	21
7/22/2008	Tuesday	23
7/23/2008	Wednesday	21
7/24/2008	Thursday	22
7/25/2008	Friday	20
7/26/2008	Saturday	21
7/27/2008	Sunday	21
7/28/2008	Monday	22
7/29/2008	Tuesday	24
7/30/2008	Wednesday	23
7/31/2008	Thursday	25
8/1/2008	Friday	21
8/2/2008	Saturday	25
8/3/2008	Sunday	23
8/4/2008	Monday	24
8/5/2008	Tuesday	21

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000
8/6/2008	Wednesday	22
8/7/2008	Thursday	23
8/8/2008	Friday	21
8/9/2008	Saturday	22
8/10/2008	Sunday	21
8/11/2008	Monday	24
8/12/2008	Tuesday	21
8/13/2008	Wednesday	23
8/14/2008	Thursday	21
8/15/2008	Friday	21
8/16/2008	Saturday	22
8/17/2008	Sunday	22
8/18/2008	Monday	21
8/19/2008	Tuesday	22
8/20/2008	Wednesday	20
8/21/2008	Thursday	12
8/22/2008	Friday	21
8/23/2008	Saturday	23
8/24/2008	Sunday	21
8/25/2008	Monday	22
8/26/2008	Tuesday	20
8/27/2008	Wednesday	22
8/28/2008	Thursday	21
8/29/2008	Friday	22
8/30/2008	Saturday	21
8/31/2008	Sunday	22
9/1/2008	Monday	22
9/2/2008	Tuesday	21
9/3/2008	Wednesday	21
9/4/2008	Thursday	19
9/5/2008	Friday	22
9/6/2008	Saturday	21
9/7/2008	Sunday	20
9/8/2008	Monday	22
9/9/2008	Tuesday	20
9/10/2008	Wednesday	19
9/11/2008	Thursday	19
9/12/2008	Friday	18
9/13/2008	Saturday	19
9/14/2008	Sunday	18
9/15/2008	Monday	15
9/16/2008	Tuesday	17
9/17/2008	Wednesday	19
9/18/2008	Thursday	18

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

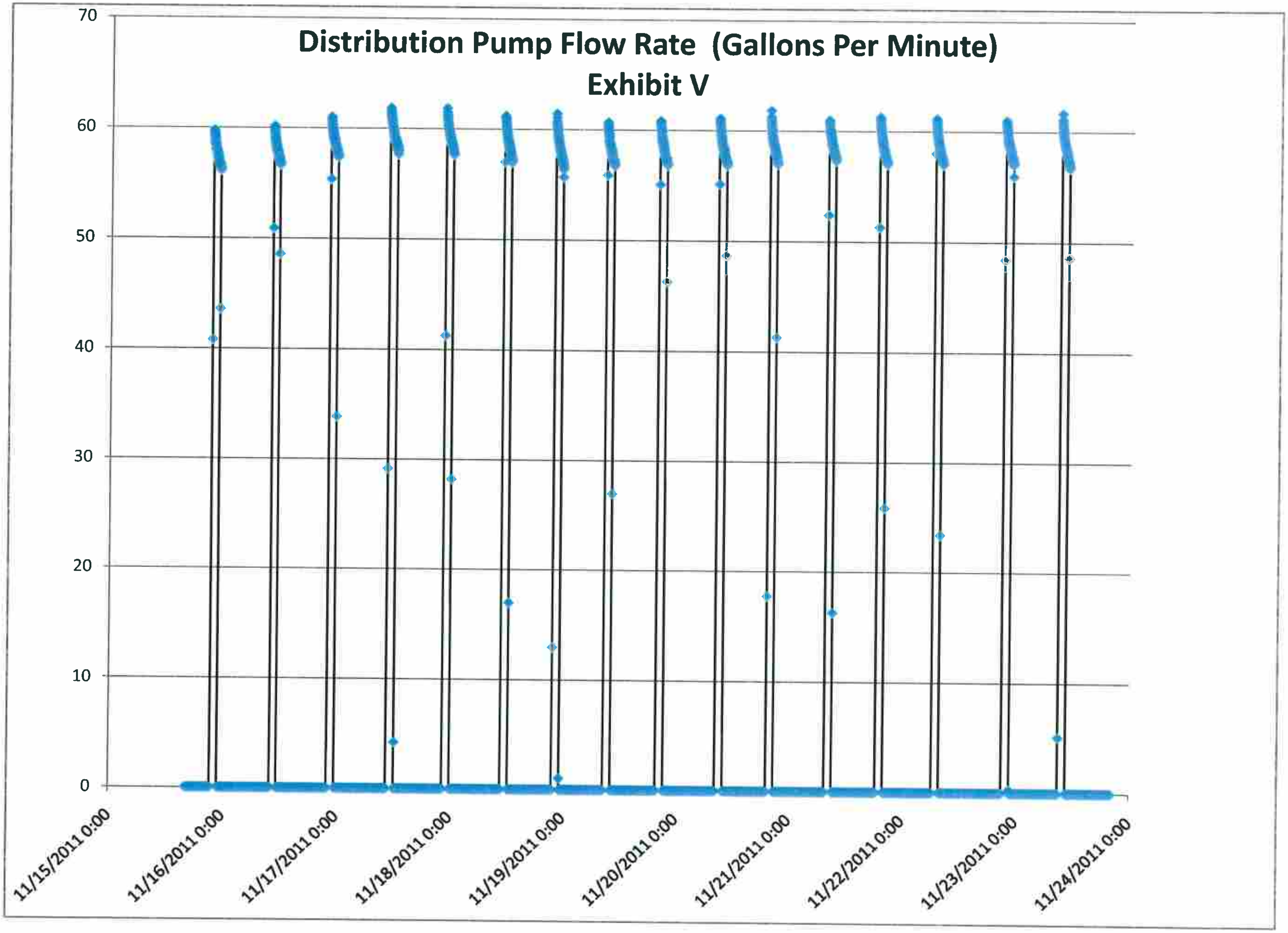
Date	Day	Gallons X 1000
9/19/2008	Friday	17
9/20/2008	Saturday	16
9/21/2008	Sunday	17
9/22/2008	Monday	16
9/23/2008	Tuesday	18
9/24/2008	Wednesday	17
9/25/2008	Thursday	16
9/26/2008	Friday	18
9/27/2008	Saturday	17
9/28/2008	Sunday	18
9/29/2008	Monday	17
9/30/2008	Tuesday	16
10/1/2008	Wednesday	17
10/2/2008	Thursday	16
10/3/2008	Friday	18
10/4/2008	Saturday	17
10/5/2008	Sunday	16
10/6/2008	Monday	17
10/7/2008	Tuesday	16
10/8/2008	Wednesday	18
10/9/2008	Thursday	0
10/10/2008	Friday	24
10/11/2008	Saturday	18
10/12/2008	Sunday	16
10/13/2008	Monday	16
10/14/2008	Tuesday	18
10/15/2008	Wednesday	17
10/16/2008	Thursday	16
10/17/2008	Friday	17
10/18/2008	Saturday	17
10/19/2008	Sunday	16
10/20/2008	Monday	16
10/21/2008	Tuesday	17
10/22/2008	Wednesday	16
10/23/2008	Thursday	16
10/24/2008	Friday	17
10/25/2008	Saturday	16
10/26/2008	Sunday	17
10/27/2008	Monday	16
10/28/2008	Tuesday	17
10/29/2008	Wednesday	16
10/30/2008	Thursday	16
10/31/2008	Friday	14

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

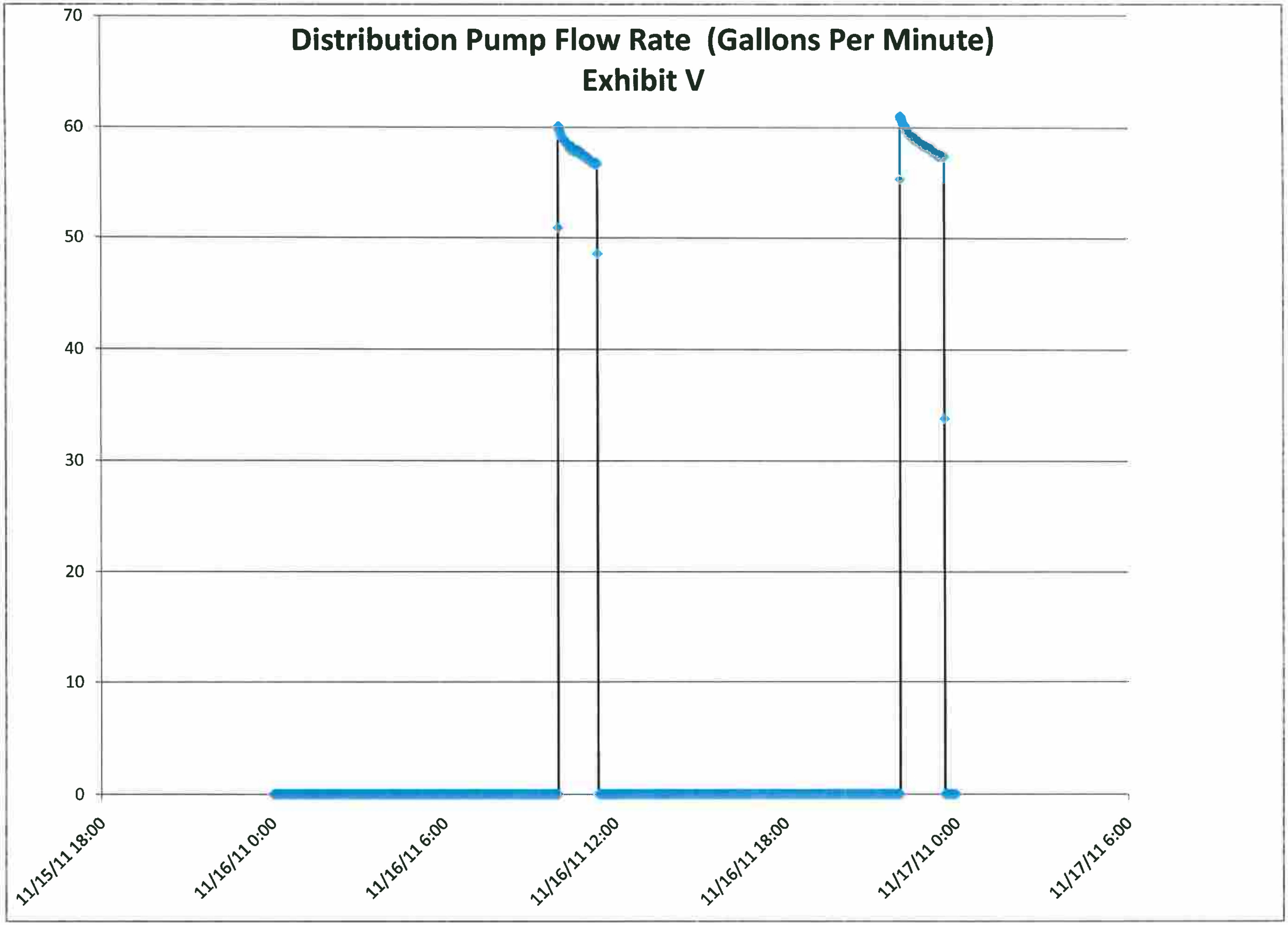
Date	Day	Gallons X 1000
11/1/2008	Saturday	16
11/2/2008	Sunday	14
11/3/2008	Monday	12
11/4/2008	Tuesday	13
11/5/2008	Wednesday	14
11/6/2008	Thursday	12
11/7/2008	Friday	14
11/8/2008	Saturday	11
11/9/2008	Sunday	12
11/10/2008	Monday	12
11/11/2008	Tuesday	11
11/12/2008	Wednesday	14
11/13/2008	Thursday	14
11/14/2008	Friday	13
11/15/2008	Saturday	12
11/16/2008	Sunday	13
11/17/2008	Monday	12
11/18/2008	Tuesday	12
11/19/2008	Wednesday	12
11/20/2008	Thursday	13
11/21/2008	Friday	12
11/22/2008	Saturday	11
11/23/2008	Sunday	12
11/24/2008	Monday	12
11/25/2008	Tuesday	13
11/26/2008	Wednesday	11
11/27/2008	Thursday	12
11/28/2008	Friday	13
11/29/2008	Saturday	11
11/30/2008	Sunday	13
12/1/2008	Monday	14
12/2/2008	Tuesday	16
12/3/2008	Wednesday	15
12/4/2008	Thursday	16
12/5/2008	Friday	15
12/6/2008	Saturday	16
12/7/2008	Sunday	16
12/8/2008	Monday	17
12/9/2008	Tuesday	12
12/10/2008	Wednesday	14
12/11/2008	Thursday	13
12/12/2008	Friday	12
12/13/2008	Saturday	13
12/14/2008	Sunday	12

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
Daily Flow Record 2008
Exhibit U

Date	Day	Gallons X 1000	
12/15/2008	Monday	13	
12/16/2008	Tuesday	12	
12/17/2008	Wednesday	13	
12/18/2008	Thursday	11	
12/19/2008	Friday	12	
12/20/2008	Saturday	11	
12/21/2008	Sunday	12	
12/22/2008	Monday	12	
12/23/2008	Tuesday	13	
12/24/2008	Wednesday	11	
12/25/2008	Thursday	13	
12/26/2008	Friday	12	
12/27/2008	Saturday	12	
12/28/2008	Sunday	12	
12/29/2008	Monday	12	
12/30/2008	Tuesday	11	
12/31/2008	Wednesday	12	
		15.34153	Average Day Demand



Distribution Pump Flow Rate (Gallons Per Minute)
Exhibit V
70
60
50
40
30
20
10
0
11/15/2011 0:00
11/16/2011 0:00
11/17/2011 0:00
11/18/2011 0:00
11/19/2011 0:00
11/20/2011 0:00
11/21/2011 0:00
11/22/2011 0:00
11/23/2011 0:00
11/24/2011 0:00



Distribution Pump Flow Rate (Gallons Per Minute)
Exhibit V
70
60
50
40
30
20
10
0
11/15/11 18:00
11/16/11 0:00
11/16/11 6:00
11/16/11 12:00
11/16/11 18:00
11/17/11 0:00
11/17/11 6:00

NOTE:
THIS DRAWING WAS COMPILED FROM ESSEX COUNTY TAX MAPS.

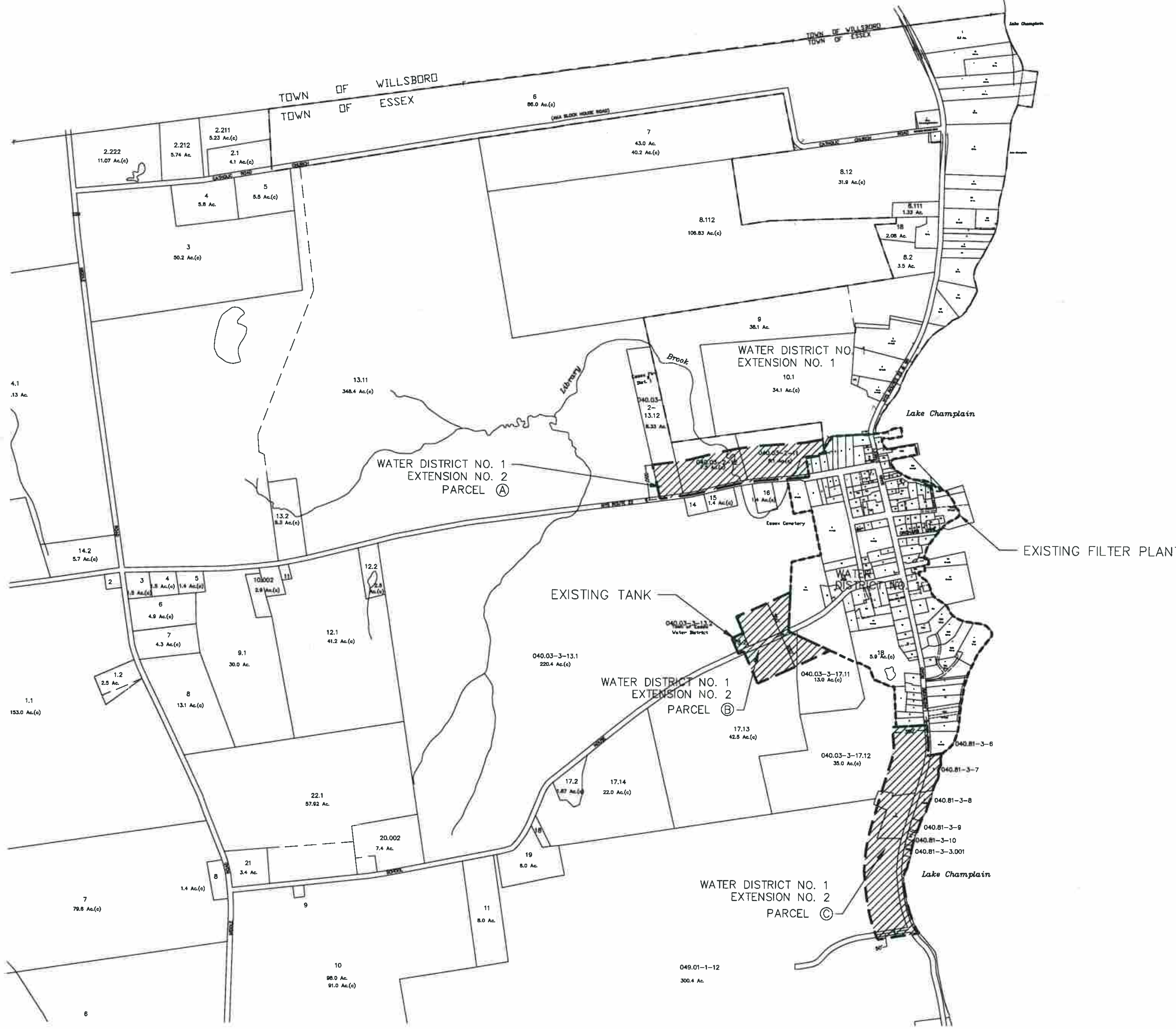
LEGEND

DISTRICT NO. 1 BOUNDARY (Note: District No. 1 was created in 1949- See State of New York Department of Audit and Control Document dated October 13, 1949 which contains a metes and bounds description. That description contains conflicting calls and ambiguities. A new map and description of District 1 Boundaries was prepared by AES Northeast on May 22, 2002)

DISTRICT NO. 1 EXTENSION NO. 2

500 0 500 1000 1500

Scale 1" = 500'



AES NORTHEAST
Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone (518) 561-1598 Fax (518) 561-1990

ARCHITECT – ENGINEER – LAND SURVEYOR

GENERAL LOCATION MAP

PROJECT TITLE:
TOWN OF ESSEX
PRELIMINARY ENGINEERING REPORT (PER)
ESSEX COUNTY, NEW YORK

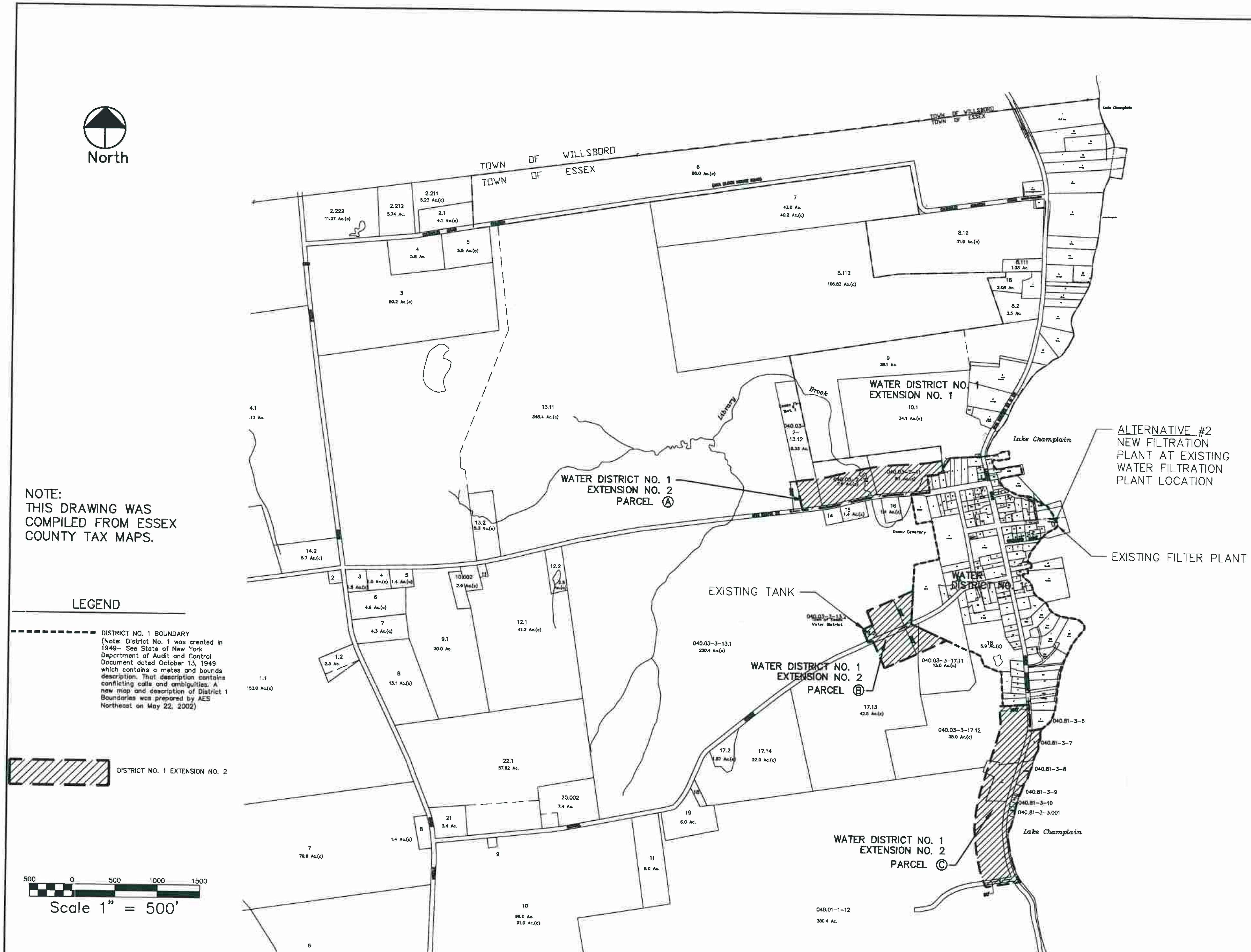
DRAWING TITLE:
ALTERNATIVE 1

REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
M. MEARS		12/08/2011	3426

DRAWING NO.
EXHIBIT W



AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone (518) 561-1598 Fax (518) 561-1990

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ARCHITECT – ENGINEER – LAND SURVEYOR

GENERAL LOCATION MAP

PROJECT TITLE:

TOWN OF ESSEX

PRELIMINARY ENGINEERING REPORT (PER)

ESSEX COUNTY, NEW YORK

DRAWING TITLE:

ALTERNATIVE 2

REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
M. MEARS		12/08/2011	3426

DRAWING NO.

EXHIBIT W

North

NOTE:
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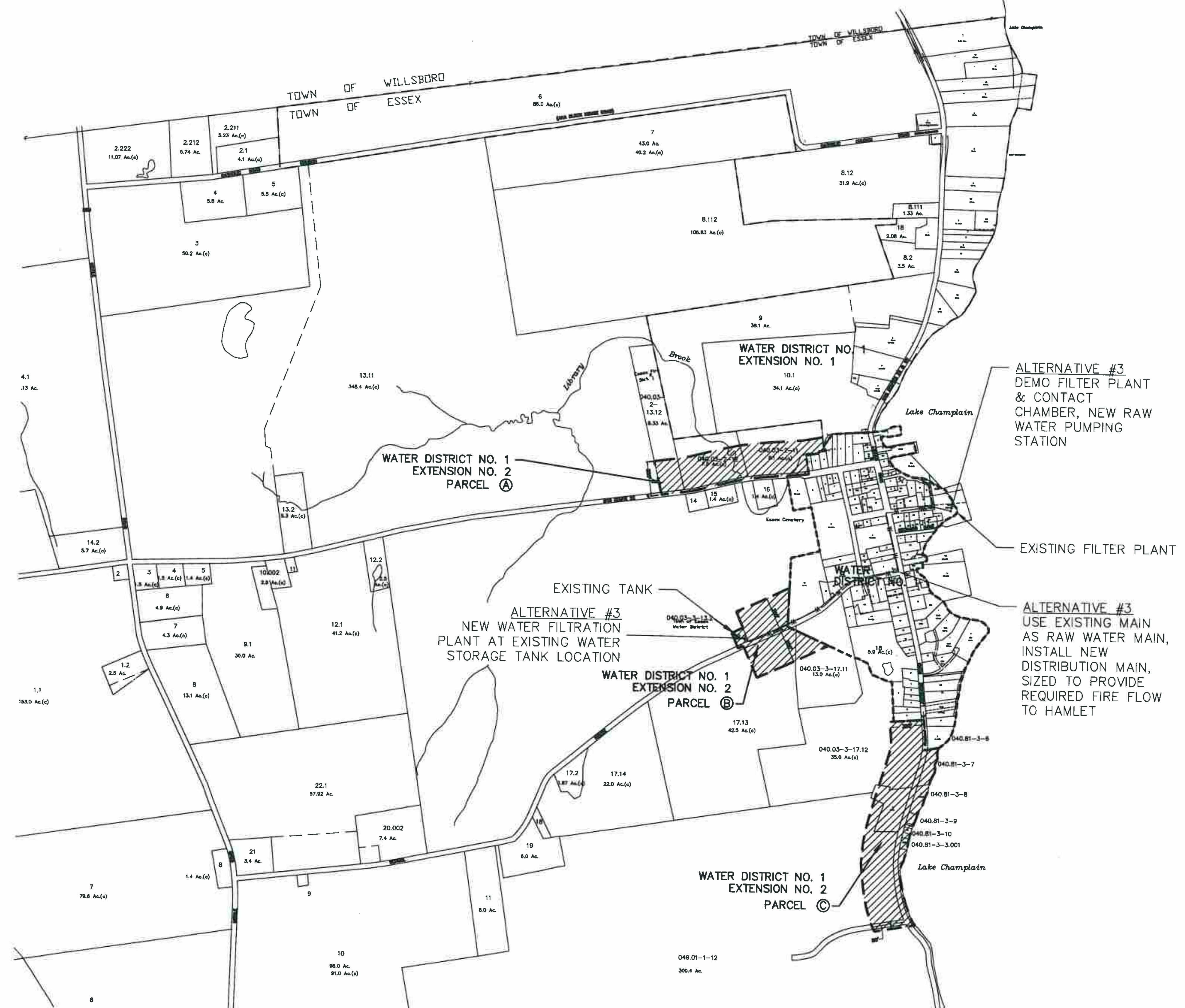


LEGEND

DISTRICT NO. 1 BOUNDARY (Note: District No. 1 was created in 1949– See State of New York Department of Audit and Control Document dated October 13, 1949 which contains a metes and bounds description. That description contains conflicting calls and ambiguities. A new map and description of District 1 Boundaries was prepared by AES Northeast on May 22, 2002)

DISTRICT NO. 1 EXTENSION NO. 2

500 0 500 1000 1500

Scale 1" = 500'

AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990

ARCHITECT – ENGINEER – LAND SURVEYOR

GENERAL LOCATION MAP

PROJECT TITLE:

TOWN OF ESSEX

PRELIMINARY ENGINEERING REPORT (PER)

ESSEX COUNTY, NEW YORK

DRAWING TITLE:

ALTERNATIVE 3

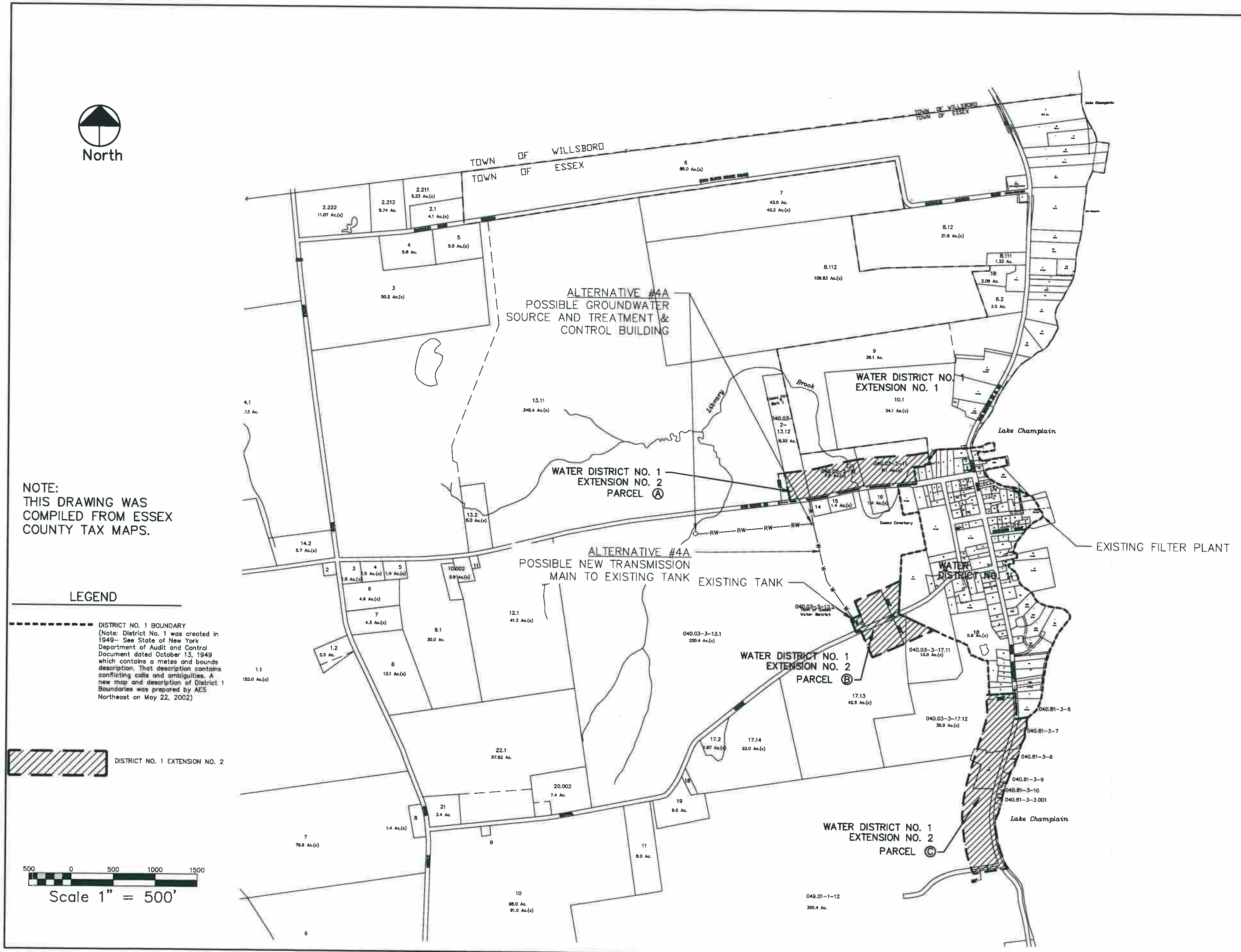
REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
M. MEARS		12/08/2011	3426

DRAWING NO.

EXHIBIT W



AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990

ARCHITECT – ENGINEER – LAND SURVEYOR

GENERAL LOCATION MAP

PROJECT TITLE:

TOWN OF ESSEX

PRELIMINARY ENGINEERING REPORT (PER)

ESSEX COUNTY, NEW YORK

DRAWING TITLE:

ALTERNATIVE 4A

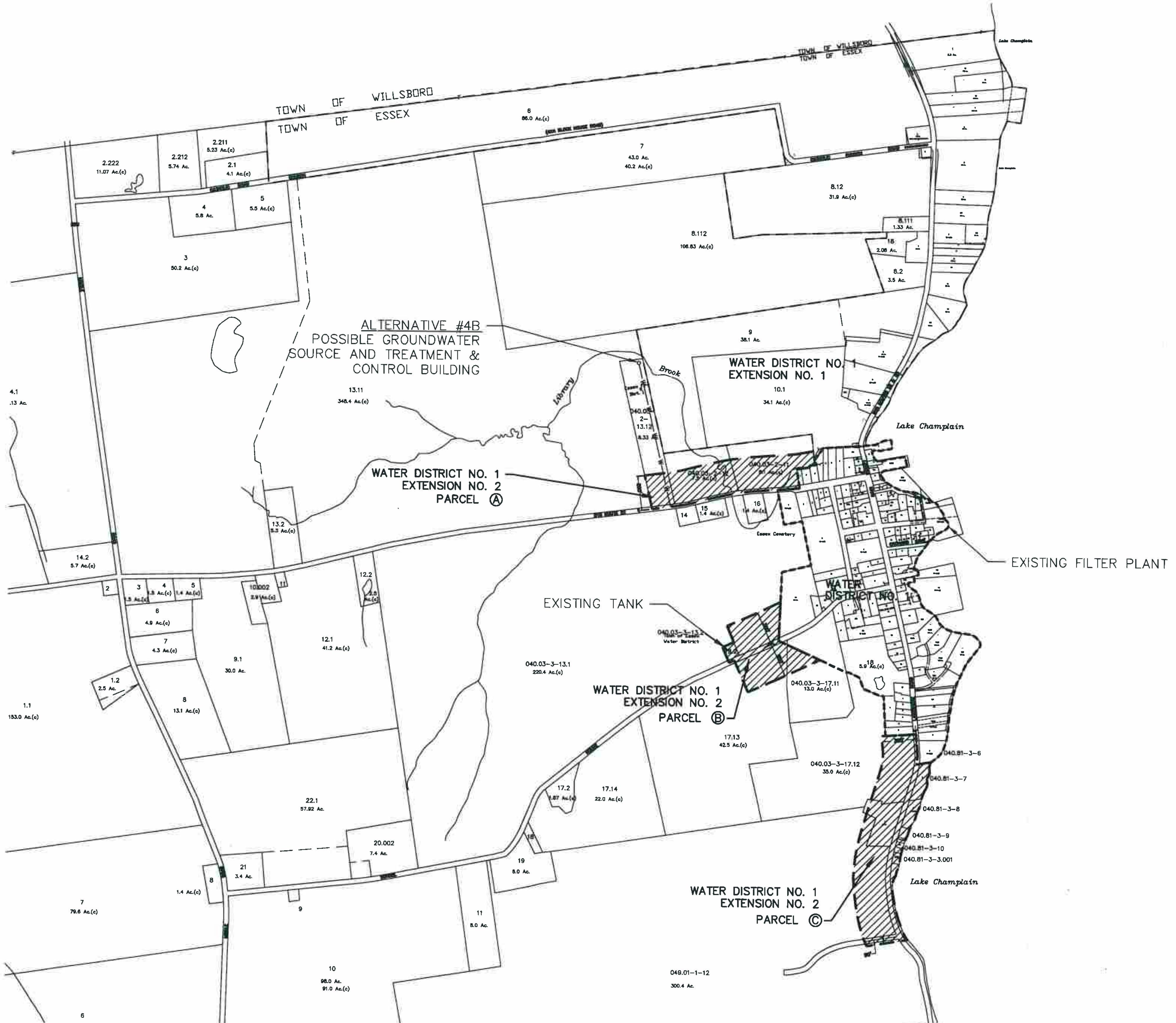
REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
M. MEARS		12/08/2011	3426

DRAWING NO.

EXHIBIT W



NOTE:
THIS DRAWING WAS COMPILED FROM ESSEX COUNTY TAX MAPS.

LEGEND

DISTRICT NO. 1 BOUNDARY
(Note: District No. 1 was created in 1949– See State of New York Department of Audit and Control Document dated October 13, 1949 which contains a metes and bounds description. That description contains conflicting calls and ambiguities. A new map and description of District 1 Boundaries was prepared by AES Northeast on May 22, 2002)

DISTRICT NO. 1 EXTENSION NO. 2

500 0 500 1000 1500

Scale 1" = 500'

AES NORTHEAST
Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990

ARCHITECT – ENGINEER – LAND SURVEYOR

GENERAL LOCATION MAP

PROJECT TITLE:
TOWN OF ESSEX
PRELIMINARY ENGINEERING REPORT (PER)
ESSEX COUNTY, NEW YORK

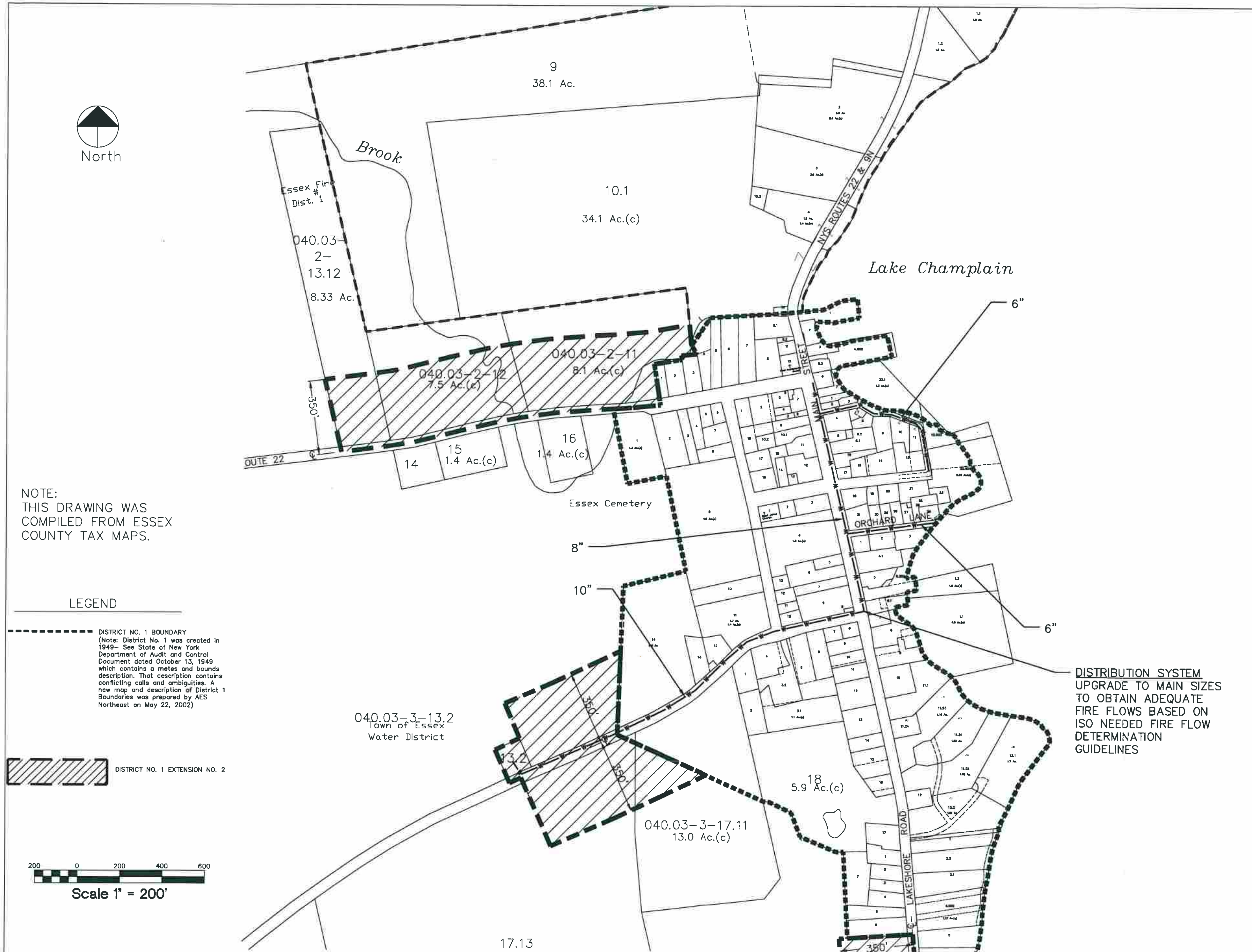
DRAWING TITLE:
ALTERNATIVE 4B

REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
M. MEARS		12/08/2011	3426

DRAWING NO.
EXHIBIT W



AES NORTHEAST

Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone (518) 561-1598 Fax (518) 561-1990

ARCHITECT – ENGINEER – LAND SURVEYOR

GENERAL LOCATION MAP

PROJECT TITLE:

TOWN OF ESSEX

PRELIMINARY ENGINEERING REPORT (PER)

ESSEX COUNTY, NEW YORK

DRAWING TITLE:

DISTRIBUTION SYSTEM

REVISIONS

NO.	DESCRIPTION	DATE (MM/DD/YYYY)

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:
M. MEARS		12/08/2011	3426

DRAWING NO.

EXHIBIT W

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Estimate of Alternatives
Exhibit X

Alternative 1 - No Construction - Optimize Existing Operations

Operational Labor and Needed Repairs					
No.	**Description of Item**	**Units**	**Est. Qty**	**Cost/Unit**	**Cost**
1	Labor for Operation*	LS	1		$ -
2	Parts and Repair Work*	LS	1		$ -
*N/A - Not a Feasible Alternative				**Total:**	**$ -**

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Estimate of Alternatives
Exhibit X

Alternative 2 - Existing Source, New Filter Plant at Begg's Point

Filter Plant					
No.	**Description of Item**	**Units**	**Est. Qty.**	**Cost/Unit**	**Cost**
1	Sitework				$ 385,000
2	Demolition				$ 25,000
3	Concrete				$ 265,000
4	Masonry				$ 36,000
5	Metals				$ 158,000
6	Wood				$ 10,000
7	Thermal / Moisture				$ 52,000
8	Windows and Doors				$ 30,000
9	Finishes				$ 72,000
10	Specialties				$ 10,000
11	Process Equipment				$ 1,450,000
12	Lab casework				$ 8,000
13	Controls				$ 180,000
14	Mechanical and Plumbing Systems				$ 285,000
15	Electrical				$ 242,000
16	General Conditions				$ 269,000
17	General Allowance				$ 70,000
18	Testing Allowance				$ 25,000
				Total:	**$ 3,572,000**
	Design, Bidding, Legal, Bonding	1			$ 571,520
	Construction Period Services[a]	1			$ 164,280
	Sub-Total				$ 4,307,800
	Contingencies	1			$ 430,780
	Total Alternative 2				**$ 4,738,580**

[a]Includes (12) months of Fulltime Resident Project Representative (RPR) On-site

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Estimate of Alternatives
Exhibit X

Alternative 3 - Existing Source, New Filter Plant at Tank Site

Filter Plant					
No.	**Description of Item**	**Units**	**Est. Qty.**	**Cost/Unit**	**Cost**
1	Sitework				$ 185,000
2	Demolition				$ 25,000
3	Concrete				$ 65,000
4	Masonry				$ 46,000
5	Metals				$ 58,000
6	Wood				$ 45,000
7	Thermal / Moisture				$ 97,000
8	Windows and Doors				$ 67,000
9	Finishes				$ 72,000
10	Specialties				$ 10,000
11	Process Equipment				$ 1,469,000
12	Lab casework				$ 8,000
13	Controls				$ 216,000
14	Mechanical and Plumbing Systems				$ 303,000
15	Electrical				$ 315,000
16	General Conditions				$ 229,000
17	General Allowance				$ 50,000
18	Testing Allowance				$ 25,000
				Total:	**$ 3,285,000**

Convert Existing Main Street and School Street Water Mains to Raw Water Main					
No.	**Description of Item**	**Units**	**Est. Qty**	**Cost/Unit**	**Cost**
1	6" Water Pipe	LF	500	$ 75	$ 37,500
2	8" Water Pipe	LF	50	$ 90	$ 4,500
3	3/4" Water Curb, Corp and Fittings	EA	12	$ 500	$ 6,000
4	3/4" Type "K" Copper (Open Cut with Restoration)	LF	120	$ 35	$ 4,200
5	Repair of Unmarked Water Laterals	EA	5	$ 500	$ 2,500
6	Granular Fill	CY	443	$ 12	$ 5,311
7	Rock Removal	CY	333	$ 100	$ 33,304
8	#2 Stone	CY	6	$ 28	$ 156
9	Asphalt Replacement	SY	348	$ 40	$ 13,933
10	Restoration	LF	27	$ 20	$ 550
11	Disconnect Existing Pipe	EA	8	$ 1,500	$ 12,000
12	Allowance (General)	LS	1	$ 20,000	$ 20,000
13	Allowance (Testing)	LS	1	$ 5,000	$ 5,000
				Total	**$ 144,954**
	Sub-Total				**$ 3,429,954**
	Design, Bidding, Legal, Bonding	1			$ 548,793
	Construction Period Services[a]	1			$ 164,280
	Sub-Total				$ 4,143,027
	Contingencies	1			$ 414,303
	Total Alternative 3				**$ 4,557,330**

[a]Includes (12) months of Fulltime Resident Project Representative (RPR) On-site

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Estimate of Alternatives
Exhibit X

Alternative 4A - New Groundwater Source On Property South of Route 22 (Close Property)

Control Building					
No.	**Description of Item**	**Units**	**Est. Qty.**	**Cost/Unit**	**Cost**
1	Sitework				$ 289,100
2	Demolition				$ 25,000
3	Concrete				$ 51,200
4	Masonry				$ 27,400
5	Metals				$ 14,900
6	Wood				$ 6,800
7	Thermal / Moisture				$ 21,100
8	Windows and Doors				$ 12,800
9	Finishes				$ 15,900
10	Specialties				$ 2,800
11	Process Equipment				$ 143,000
12	Lab casework				$ 4,200
13	Controls				$ 120,000
14	Mechanical and Plumbing Systems				$ 115,000
15	Electrical				$ 128,500
16	Sewer Forcemain from Control Building to WWTP				$ 40,000
17	General Conditions				$ 57,544
18	General Allowance				$ 50,000
19	Testing Allowance				$ 10,000
				Total:	**$ 1,135,244**
	Design, Bidding, Legal, Bonding	1			$ 181,639
	Construction Period Services[a]	1			$ 164,280
	Sub-Total				$ 1,481,163
	Contingencies	1			148,116
	Total Alternative 4A				**$ 1,629,279**

[a]Includes (12) months of Fulltime Resident Project Representative (RPR) On-site

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Estimate of Alternatives
Exhibit X

Alternative 4B - New Groundwater Source at Fire Station Property

Control Building					
No.	**Description of Item**	**Units**	**Est. Qty.**	**Cost/Unit**	**Cost**
1	Sitework				$ 289,100
2	Demolition				$ 25,000
3	Concrete				$ 51,200
4	Masonry				$ 27,400
5	Metals				$ 14,900
6	Wood				$ 6,800
7	Thermal / Moisture				$ 21,100
8	Windows and Doors				$ 12,800
9	Finishes				$ 15,900
10	Specialties				$ 2,800
11	Process Equipment				$ 143,000
12	Lab casework				$ 4,200
13	Controls				$ 120,000
14	Mechanical and Plumbing Systems				$ 115,000
15	Electrical				$ 128,500
16	Sewer Forcemain from Control Building to WWTP				$ 40,000
17	General Conditions				$ 57,544
18	General Allowance				$ 50,000
19	Testing Allowance				$ 10,000
				Total:	**$ 1,135,244**
	Design, Bidding, Legal, Bonding	1			$ 181,639
	Construction Period Services[a]	1			$ 164,280
	Sub-Total				$ 1,481,163
	Contingencies	1			148,116
	Total Alternative 4B				**$ 1,629,279**

[a]Includes (12) months of Fulltime Resident Project Representative (RPR) On-site

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Estimate of Alternatives
Exhibit X

Miscellaneous Items Not Associated with an Alternative

Distribution					
No.	**Description of Item**	**Units**	**Est. Qty**	**Cost/Unit**	**Cost**
1	6" Water Pipe	LF	1175	$ 75	$ 88,125
2	8" Water Pipe	LF	1150	$ 90	$ 103,500
3	10" Water Pipe	LF	2000	$ 105	$ 210,000
4	6" Gate Valve & Box	EA	5	$ 1,300	$ 6,500
5	8" Gate Valve & Box	EA	8	$ 1,600	$ 12,800
6	10" Gate Valve & Box	EA	3	$ 1,900	$ 5,700
7	Hydrant Units	EA	4	$ 4,800	$ 19,200
8	Tie in Existing Water Service (new saddle, corp)	EA	46	$ 350	$ 16,100
9	3/4" Type "K" Copper (Open Cut with Restoration)	LF	1060	$ 35	$ 37,100
10	3/4" Water Curb, Corp and Fittings	EA	12	$ 500	$ 6,000
11	Repair of Unmarked Water Laterals	EA	5	$ 500	$ 2,500
12	Granular Fill	CY	3888	$ 12	$ 46,653
13	Rock Removal	CY	2563	$ 100	$ 256,296
14	#2 Stone	CY	500	$ 28	$ 14,000
15	Asphalt Replacement	SY	2774	$ 40	$ 110,960
16	Sidewalks	LF	265	$ 70	$ 18,550
17	Restoration	LF	164	$ 12	$ 1,968
18	Tie into Existing Pipe	EA	6	$ 1,500	$ 9,000
19	Silt Fence	LF	600	$ 4	$ 2,400
20	Check Dams	LF	500	$ 5	$ 2,500
21	Storm Drain Inlet Protection	EA	5	$ 200	$ 1,000
22	Allowance (General)	LS	1	$ 50,000	$ 50,000
23	Allowance (Testing)	LS	1	$ 10,000	$ 10,000
24	Escalation	LS	1	$ 51,543	$ 51,543
				Total:	**$ 1,082,395**
	Design, Bidding, Legal, Bonding	1			$ 173,183
	Construction Period Services[b]	1			$ 82,140
	Sub-Total				$ 1,337,718
	Contingencies	1			$ 133,772
Total Distribution					**$ 1,471,490**

[b]Includes (6) months of Fulltime Resident Project Representative (RPR) On-site

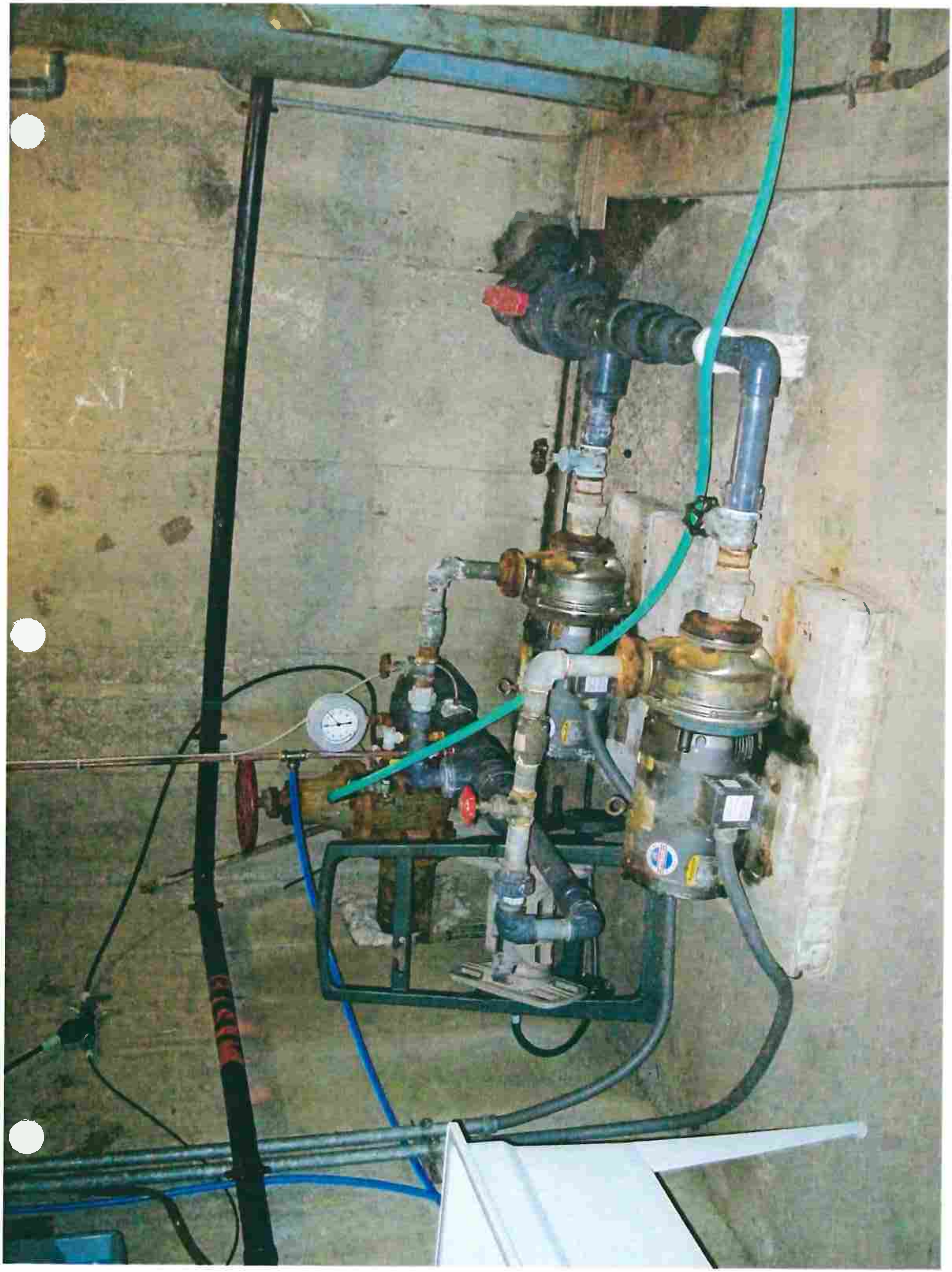
Water Service Replacement Saddles					
No.	Description of Item	Units	Est. Qty	Cost/Unit	Cost
1	Replace Service Saddle With Restoration	EA	150	$ 1,200	$ 180,000
				Total:	**$ 180,000**
	Design, Bidding, Legal, Bonding	1			$ 14,400
	Construction Period Services[(c)]	1			$ 10,278
	Sub-Total				$ 204,678
	Contingencies	1			$ 20,468
	Total Water Service Replacement Saddles				**$ 225,146**

Water Meters					
No.	Description of Item	Units	Est. Qty	Cost/Unit	Cost
1	3/4" Meter	EA	185	$ 1,000	$ 185,000
2	1" Meter	EA	5	$ 1,500	$ 7,500
3	Meter Pit	EA	37	$ 1,600	$ 59,200
4	Reading Equipment - Mesh Network	LS	1	$ 125,000	$ 125,000
5	Accessories/Startup and Commissioning	LS	1	$ 20,000	$ 20,000
6	Allowance (General)	LS	1	$ 25,000	$ 25,000
				Total:	**$ 421,700**
	Design, Bidding, Legal, Bonding	1			$ 67,472
	Construction Period Services[(c)]	1			$ 20,535
	Sub-Total				$ 509,707
	Contingencies	1			$ 50,971
	Total Water Meters				**$ 560,678**

Water Tank					
No.	Description of Item	Units	Est. Qty	Cost/Unit	Cost
1	Glass-Lined Tank with Foundation	EA	1	$ 275,000	$ 275,000
2	Site Work	LS	1	$ 50,000	$ 50,000
3	Allowance (General)	LS	1	$ 50,000	$ 50,000
				Total:	**$ 375,000**
	Design, Bidding, Legal, Bonding	1			$ 60,000
	Construction Period Services[(b)]	1			$ 82,140
	Sub-Total				$ 517,140
	Contingencies	1			$ 51,714
	Total Water Tank				**$ 568,854**

[(b)]Includes (6) months of Fulltime Resident Project Representative (RPR) On-site

[('c)]Excludes Resident Project Representative (RPR)

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1


ESSEX
WATER DISTRICT
PUMP HOUSE
KEEP OUT

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Life Cycle Cost Analysis of Feasible Alternatives
Exhibit Z

Alternative 3 - Existing Source, New Filter Plant at Water Storage Tank Site - (School Street)

Alternative 3 -Surfacewater Source Filter Plant and Raw Water Pumping Station

No.	Description of Item	Units	Est. Qty.	Cost/Unit	Initial Cost	Expected Useful Life (up to 30)	Interest Rate (a)	Number of Replacements	Sum of Present Day Replacement Costs (Up to 15 Replacements)	Operation and Maintenance Cost Per Year	Present Day O/M Cost for 30 years	Total Present Day Cost
1	Sitework				$ 185,000	30	2.30%	0	$ -	$0	$ -	$ 185,000.00
2	Demolition				$ 25,000	30	2.30%	0	$ -	$0	$ -	$ 25,000.00
3	Concrete				$ 65,000	30	2.30%	0	$ -	$0	$ -	$ 65,000.00
4	Masonry				$ 46,000	30	2.30%	0	$ -	$0	$ -	$ 46,000.00
5	Metals				$ 58,000	30	2.30%	0	$ -	$0	$ -	$ 58,000.00
6	Wood				$ 45,000	30	2.30%	0	$ -	$0	$ -	$ 45,000.00
7	Thermal / Moisture				$ 97,000	30	2.30%	0	$ -	$0	$ -	$ 97,000.00
8	Windows and Doors				$ 67,000	30	2.30%	0	$ -	$0	$ -	$ 67,000.00
9	Finishes				$ 72,000	30	2.30%	0	$ -	$0	$ -	$ 72,000.00
10	Specialties				$ 10,000	30	2.30%	0	$ -	$0	$ -	$ 10,000.00
11	Process Equipment				$ 1,193,000	30	2.30%	0	$ -	$65,000	$ 1,397,467.67	$ 2,590,467.67
	* Chemical Feed Pumps		3	$ 2,000	$ 6,000	5	0.40%	5	$ 23,255.76	$50	$ 1,074.98	$ 30,330.73
	* Chemical Feed Parts		3	$ 2,000	$ 6,000	2	0.00%	14	$ 65,072.73	$50	$ 1,074.98	$ 72,147.71
	* Raw Water Pumps		2	$ 16,000	$ 32,000	10	1.30%	2	$ 49,239.75	$50	$ 1,074.98	$ 82,314.72
	* Backwash Pumps		2	$ 16,000	$ 32,000	10	1.30%	2	$ 49,239.75	$50	$ 1,074.98	$ 82,314.72
	* Filter Media		1	$ 200,000	$ 200,000	10	1.30%	2	$ 307,748.41	$200	$ 4,299.90	$ 512,048.31
12	Lab casework				$ 8,000	30	2.30%	0	$ -	$0	$ -	$ 8,000.00
13	Controls				$ 216,000	15	1.70%	1	$ 167,741.09	$50	$ 1,074.98	$ 384,816.06
14	Mechanical and Plumbing Systems				$ 292,000	30	2.30%	0	$ -	$12,000	$ 257,994.03	$ 549,994.03
	*Domestic Hot Water Circulator		1	$ 400	$ 400	10	1.30%	2	$ 615.50	$0	$ -	$ 1,015.50
	* Hot Water Heater		1	$ 1,600	$ 1,600	15	1.70%	1	$ 1,242.53	$0	$ -	$ 2,842.53
	* Backflow Preventer		1	$ 300	$ 300	15	1.70%	1	$ 232.97	$0	$ -	$ 532.97
	* Miscellaneous Valves		1	$ 1,700	$ 1,700	10	1.30%	2	$ 2,615.86	$50	$ 1,029.08	$ 5,344.94
	* Boiler Temperature Sensor		1	$ 500	$ 500	10	1.30%	2	$ 769.37	$0	$ -	$ 1,269.37
	* AC Split System		1	$ 1,500	$ 1,500	15	1.70%	1	$ 1,164.87	$250	$ 5,145.38	$ 7,810.25
	* Boiler Circulator Pumps		2	$ 400	$ 800	10	1.30%	2	$ 1,230.99	$0	$ -	$ 2,030.99
	* Zone Valves		6	$ 600	$ 3,600	10	1.30%	2	$ 5,539.47	$0	$ -	$ 9,139.47
	* Thermostats		5	$ 120	$ 600	10	1.30%	2	$ 923.25	$0	$ -	$ 1,523.25
15	Electrical				$ 307,000	30	2.30%	0	$ -	$7,000	$ 150,496.52	$ 457,496.52
	* Ballasts		8	$ 250	$ 2,000	5	0.40%	5	$ 7,751.92	$0	$ -	$ 9,751.92
	* Genset Service Contract		2	$ 3,000	$ 6,000	10	1.30%	2	$ 9,232.45	$150	$ 3,157.38	$ 18,389.83
16	General Conditions				$ 229,000	30	2.30%	0	$ -	$0	$ -	$ 229,000.00
17	General Allowance				$ 50,000	30	2.30%	0	$ -	$0	$ -	$ 50,000.00
18	Testing Allowance				$ 25,000	30	2.30%	0	$ -	$0	$ -	$ 25,000.00
19	Raw Water Main Conversion				$ 144,954	30	2.30%	0	$ -	$0	$ -	$ 144,953.70
				Total	**$ 3,429,954**				Total	$84,900		
										Total	$ 1,824,964.83	
											Total	$ 5,948,535.19

*a Office of Management and Budget, Circular No. A-94, Dec. 2010

Town of Essex
Water District #1
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Life Cycle Cost Analysis of Feasible Alternatives
Exhibit Z

New Groundwater Source (Either Alternative 4A or 4B)

Alternative 4B - Groundwater Source Water Plant

No.	Description of Item	Units	Est. Qty.	Cost/Unit	Initial Cost	Expected Useful Life (up to 30)	Interest Rate (a)	Number of Replacements	Sum of Present Day Replacement Costs (Up to 15 Replacements)	Operation and Maintenance Cost Per Year	Present Day O/M Cost for 30 years	Total Present Day Cost
1	Sitework				$ 289,100	30	2.30%	0	$ -	$0	$ -	$ 289,100.00
2	Demolition				$ 25,000	30	2.30%	0	$ -	$0	$ -	$ 25,000.00
3	Concrete				$ 51,200	30	2.30%	0	$ -	$0	$ -	$ 51,200.00
4	Masonry				$ 27,400	30	2.30%	0	$ -	$0	$ -	$ 27,400.00
5	Metals				$ 14,900	30	2.30%	0	$ -	$0	$ -	$ 14,900.00
6	Wood				$ 6,800	30	2.30%	0	$ -	$0	$ -	$ 6,800.00
7	Thermal / Moisture				$ 21,100	30	2.30%	0	$ -	$0	$ -	$ 21,100.00
8	Windows and Doors				$ 12,800	30	2.30%	0	$ -	$0	$ -	$ 12,800.00
9	Finishes				$ 15,900	30	2.30%	0	$ -	$0	$ -	$ 15,900.00
10	Specialties				$ 2,800	30	2.30%	0	$ -	$0	$ -	$ 2,800.00
11	Process Equipment				$ 103,000	30	2.30%	0	$ -	$25,000	$ 537,487.56	$ 640,487.56
	* Chemical Feed Pumps		2	$ 2,000	$ 4,000	5	0.40%	5	$ 15,503.84	$50	$ 1,074.98	$ 20,578.81
	* Chemical Feed Parts		2	$ 2,000	$ 4,000	2	0.00%	14	$ 43,381.82	$0	$ -	$ 47,381.82
	* Well pumps		2	$ 16,000	$ 32,000	10	1.30%	2	$ 49,239.75	$0	$ -	$ 81,239.75
12	Lab casework				$ 4,200	30	2.30%	0	$ -	$0	$ -	$ 4,200.00
13	Controls				$ 120,000	15	1.70%	1	$ 93,189.49	$50	$ 1,074.98	$ 214,264.47
14	Mechanical and Plumbing Systems				$ 104,000	30	2.30%	0	$ -	$5,000	$ 107,497.51	$ 211,497.51
	*Domestic Hot Water Circulator		1	$ 400	$ 400	10	1.30%	2	$ 615.50	$0	$ -	$ 1,015.50
	* Hot Water Heater		1	$ 1,600	$ 1,600	15	1.70%	1	$ 1,242.53	$0	$ -	$ 2,842.53
	* Backflow Preventer		1	$ 300	$ 300	15	1.70%	1	$ 232.97	$0	$ -	$ 532.97
	* Miscellaneous Valves		1	$ 1,700	$ 1,700	10	1.30%	2	$ 2,615.86	$50	$ 1,074.98	$ 5,390.84
	* Boiler Temperature Sensor		1	$ 500	$ 500	10	1.30%	2	$ 769.37	$0	$ -	$ 1,269.37
	* AC Split System		1	$ 1,500	$ 1,500	15	1.70%	1	$ 1,164.87	$250	$ 5,374.88	$ 8,039.74
	* Boiler Circulator Pumps		2	$ 400	$ 800	10	1.30%	2	$ 1,230.99	$0	$ -	$ 2,030.99
	* Zone Valves		6	$ 600	$ 3,600	10	1.30%	2	$ 5,539.47	$0	$ -	$ 9,139.47
	* Thermostats		5	$ 120	$ 600	10	1.30%	2	$ 923.25	$0	$ -	$ 1,523.25
15	Electrical				$ 125,000	30	2.30%	0	$ -	$4,000	$ 85,998.01	$ 210,998.01
	* Ballasts		2	$ 250	$ 500	5	0.40%	5	$ 1,937.98	$0	$ -	$ 2,437.98
	* Genset Service Contract		1	$ 3,000	$ 3,000	10	1.30%	2	$ 4,616.23	$100	$ 2,149.95	$ 9,766.18
16	Sewer Forcemain from Control Building to WWTP				$ 40,000	30	2.30%	0	$ -	$0	$ -	$ 40,000.00
17	General Conditions				$ 57,544	30	2.30%	0	$ -	$0	$ -	$ 57,544.00
18	General Allowance				$ 50,000	30	2.30%	0	$ -	$0	$ -	$ 50,000.00
19	Testing Allowance				$ 10,000	30	2.30%	0	$ -	$0	$ -	$ 10,000.00
				Total	**$ 1,135,244**				**Total**	**$34,500**		
										Total	**$ 741,732.84**	
											Total	**$ 2,099,180.75**

*a Office of Management and Budget, Circular No. A-94, Dec. 2010

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project No. 3426
Matrix Rating of Alternatives
Exhibit AA

Item Number	Description of Rating Component	Alternative #1	Alternative #2	Alternative #3		Alternative #4A		Alternative #4B	
1	Meets or exceeds Surfacewater Treatment Rules and LT2 Enhanced Water Treatment Rules	5	1	1		1		1	
2	Corrosion Control	2	1	1		1		1	
3	Corrects Disinfection By-products (DBP)	5	1	1		1		1	
4	Cost to operate and maintain during term of loan (30) years	5	5	5		1		1	
5	Operator user-friendly ease of operations	5	5	5		1		1	
6	Generates waste and requires further permitting to discharge waste (if not to a wastewater treatment plant); excludes chlorine residual waste	5	1	1		1		1	
7	Provide Supervisory Control and Data Acquisition (SCADA) Systems Compatible	5	1	1		1		1	
8	NYS DOH rating of water operator license and labor cost burden	5	5	5		1		1	
9	Possible future loss of water supply (source of water)	1	1	1		5		5	
10	Possible future "enhanced" regulations from EPA and DOH on water quality and treatment requirements	5	5	5		2		2	
11	Able to protect consumers from blue/green algae water quality impacts	5	3	3		1		1	
12	Building footprint maintenance costs	5	5	5		2		2	
13	Aesthetics (with modifications to meet setting in community)	5	1	1		1		1	
14	Noise of operations / equipment	5	2	2		1		1	
15	Need to spend capital to update distribution system network to connect treated water from Alternative	1	1	5	(a)	2		2	
16	Provide backup/redundant systems	3	1	1		1		1	
17	Provides chlorine residual monitoring	5	1	1		1		1	
18	Possible removals of Rx drug wastes	5	2	2		1		1	
19	Initial capital cost	1	5	4		2		2	
20	Property acquisition	1	1	3		5		5	
21	Requires Zebra mussel control	5	5	5		1		1	
22	Environmental impacts	5	5	3		2		2	
	Total	**89**	**58**	**61**		**35**	(b)	**35**	(b)

Rating System:
1 = Excellent/least costly/least impact
5 = Poor/more costly/most impact

Maximum score available = 110
Minimum score available = 22
[a]Requires raw water mains from pump station to water treatment plant on School Street
[b]Test well required to determine best location if both parcels are available to Town

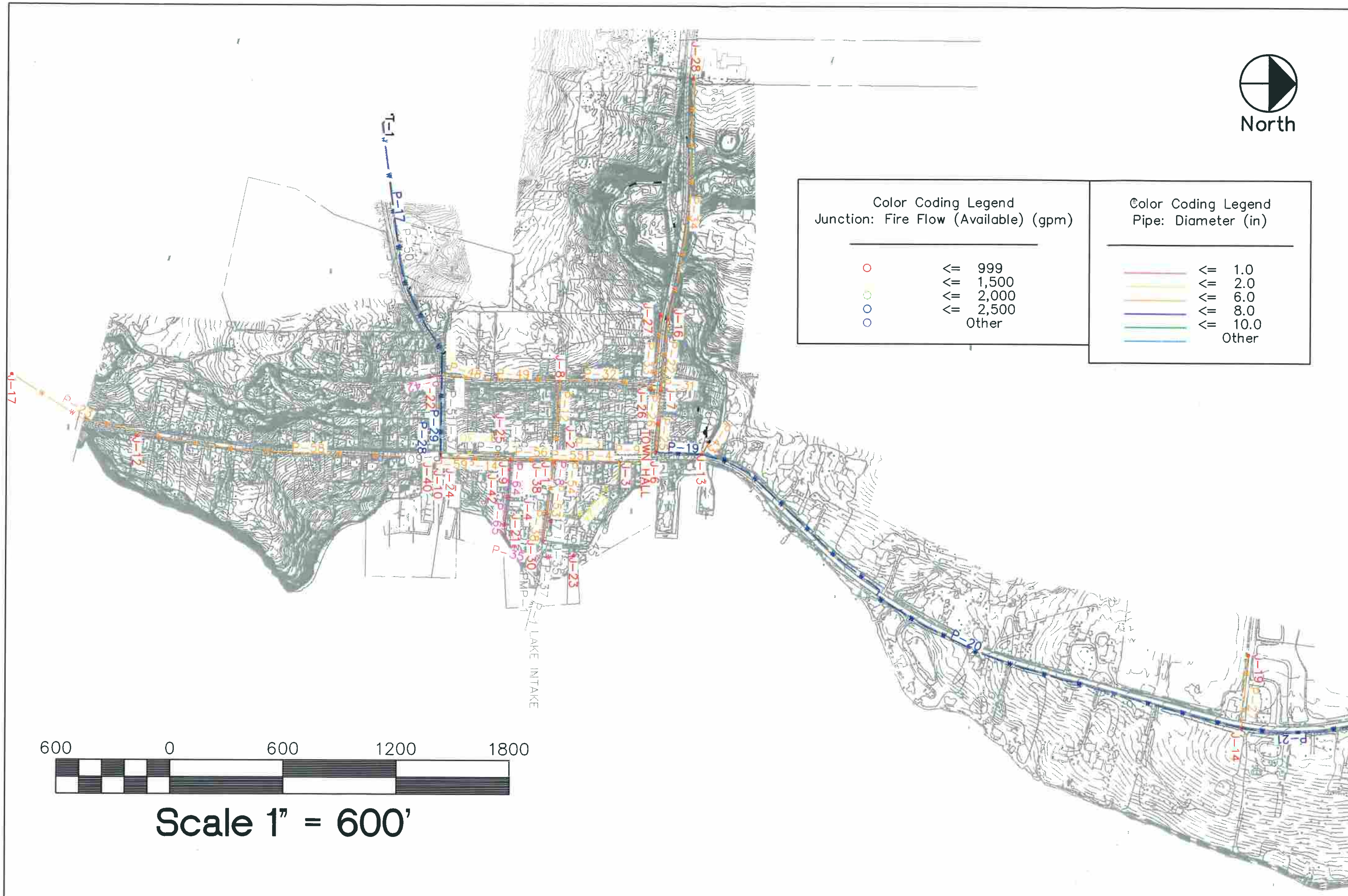
Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)

SUMMARY OF DAILY AVERAGE AND DAILY PEAK (GPD) DEMANDS

Exhibit BB

Month	GPD Average 2011	Monthly Peak 2011	GPD Average 2010	Monthly Peak 2010	GPD Average 2009	Monthly Peak 2009	GPD Average 2008	Monthly Peak 2008
JAN	27.1	41	16.2	18	11.5	13	11.2	12
FEB	21.3	25	16.3	18	11.5	13	11.3	15
MAR	23.9	31	15.4	18	10.8	12	11.0	13
APR	22.3	25	17.7	20	11.6	14	8.6	13
MAY	23.4	24	20.5	23	14.5	16	16.5	23
JUNE	24.0	26	22.6	26	18.5	22	21.8	25
JULY	DNA	DNA	23.8	25	21.4	24	21.7	25
AUG	25.5	26	23.5	25	23.4	28	21.5	25
SEP	25.1	26	22.1	25	19.8	22	18.4	22
OCT			19.5	22	19.3	21	16.3	24
NOV			17.3	18	17.3	23	12.5	16
DEC			16.7	18	DNA	DNA	13.1	17
	24.1	**41.0**	**19.3**	**26.0**	**16.3**	**28.0**	**15.3**	**25.0**

Gallons x 1000
DNA - Data Not Available



PROJECT NO.: 3426

DRAWING NO. CC

DRAWN BY: M.MEARS

DATE: 11/08/2011

CHECKED BY:

DRAWING TITLE: EXISTING CONDITIONS

PROJECT TITLE: HAMLET OF ESSEX WATER SYSTEM PRELIMINARY ENGINEERING REPORT

AES NORTHEAST
Architecture, Engineering, and Land Surveying Northeast, PLLC
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990
www.aesnortheast.com

Plot Date: 12/08/2011 Plot Time: 9:48 AM

Fire Flow Node FlexTable: Fire Flow Report (3426ModelBaseMap.wtg)

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
H-1	1	8	False	1,250	737	1,250	737	20.0	47.3	20.0	20.0	J-28	(N/A)	17.8	J-23	True
J-1	1	10	False	1,500	828	1,500	828	20.0	42.8	20.0	20.0	J-28	(N/A)	15.7	J-23	True
J-2	1	11	False	1,500	823	1,500	823	20.0	42.6	20.0	20.0	J-28	(N/A)	15.8	J-23	True
J-3	1	11	False	1,500	772	1,500	772	20.0	44.0	20.0	20.0	J-28	(N/A)	17.2	J-23	True
J-4	1	6	False	1,000	828	1,000	828	20.0	40.9	20.0	20.0	J-28	(N/A)	15.7	J-23	True
J-5	2	11	False	250	20	250	20	20.0	22.7	20.0	28.0	J-23	(N/A)	28.0	J-23	True
J-6	1	8	False	1,500	745	1,500	745	20.0	45.1	20.0	20.0	J-28	(N/A)	17.8	J-23	True
J-7	1	6	False	1,000	711	1,000	711	20.0	38.6	20.0	20.0	J-28	(N/A)	18.6	J-23	True
J-8	1	6	False	1,000	824	1,000	824	20.0	28.1	20.0	20.0	J-28	(N/A)	16.4	J-23	True
J-9	1	11	False	1,500	872	1,500	872	20.0	41.6	20.0	20.0	J-28	(N/A)	13.7	J-23	True
J-10	1	7	False	1,250	956	1,250	956	20.0	41.7	20.0	20.0	J-12	(N/A)	15.0	J-23	True
J-11	1	6	True	1,000	1,059	1,000	1,059	20.0	24.7	20.0	20.0	J-12	(N/A)	14.7	J-23	True
J-12	1	3	False	500	445	500	445	20.0	20.0	20.0	29.4	J-28	(N/A)	24.0	J-23	True
J-13	1	9	False	1,000	745	1,000	745	20.0	48.3	20.0	20.0	J-28	(N/A)	17.8	J-23	True
J-14	3	3	True	500	590	500	590	20.0	20.0	20.0	20.9	J-19	(N/A)	17.4	J-43	True
J-16	1	6	False	750	585	750	585	20.0	36.0	20.0	20.0	J-28	(N/A)	20.0	J-28	True
J-17	1	5	False	500	445	500	445	20.0	28.2	20.0	20.0	J-12	(N/A)	20.0	J-12	True
J-19	3	3	True	500	546	500	546	20.0	20.0	20.0	22.2	J-14	(N/A)	19.6	J-43	True
J-21	2	16	False	250	10	250	10	20.0	28.7	20.0	21.9	J-23	(N/A)	21.9	J-23	True
J-22	2	12	False	250	33	250	33	20.0	20.7	20.0	27.9	J-23	(N/A)	27.9	J-23	True
J-23	2	3	False	250	9	250	9	20.0	20.6	20.0	30.6	J-21	(N/A)	30.6	J-21	True
J-24	1	7	False	1,250	959	1,250	959	20.0	40.7	20.0	20.0	J-12	(N/A)	14.9	J-23	True
J-25	1	3	False	250	126	250	126	20.0	20.0	20.0	32.6	J-12	(N/A)	27.3	J-23	True
J-26	1	6	False	1,000	719	1,000	719	20.0	37.5	20.0	20.0	J-28	(N/A)	18.4	J-23	True
J-27	1	7	True	500	719	500	719	20.0	29.6	20.0	20.0	J-28	(N/A)	18.4	J-23	True
J-28	1	3	False	500	406	500	406	20.0	20.0	20.0	30.0	J-12	(N/A)	23.9	J-23	True
J-30	1	7	True	750	828	750	828	20.0	39.1	20.0	20.0	J-28	(N/A)	15.7	J-23	True
J-32	1	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	20.0	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-35	1	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	20.0	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-36	1	6	True	750	1,036	750	1,036	20.0	24.5	20.0	20.0	J-28	(N/A)	14.8	J-23	True
J-37	1	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	20.0	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-38	1	11	False	1,500	820	1,500	820	20.0	42.7	20.0	20.0	J-28	(N/A)	15.7	J-23	True
J-39	1	20	False	1,500	1,456	1,500	1,456	20.0	21.6	0.0	0.0	J-28	(N/A)	-3.2	J-23	True
J-40	1	7	False	1,000	911	1,000	911	20.0	41.1	20.0	20.0	J-12	(N/A)	15.7	J-23	True
J-41	1	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	20.0	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-42	2	16	False	250	13	250	13	20.0	45.0	20.0	20.4	J-23	(N/A)	20.4	J-23	True
J-43	1	3	True	500	517	500	517	20.0	20.0	20.0	25.8	J-28	(N/A)	22.2	J-23	True
TOWN HALL	1	6	False	1,750	730	1,750	730	20.0	42.2	20.0	20.0	J-28	(N/A)	18.2	J-23	True

Existing Conditions:
Available Fire Flow

FlexTable: Pipe Table (3426ModelBaseMap.wtg)

Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
31	P-1	295	LAKE INTAKE	PMP-1	8.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
36	P-3	20	J-1	J-2	6.0	PVC	150.0	False	0.000	60	0.68	0.000	False	0
38	P-4	324	J-2	J-3	6.0	PVC	150.0	False	0.000	44	0.49	0.000	False	0
43	P-8	326	J-5	J-2	1.0	PVC	150.0	False	0.000	-8	3.27	0.046	False	0
65	P-9	244	J-6	J-3	6.0	PVC	150.0	False	0.000	-37	0.42	0.000	False	0
34	P-12	425	J-8	J-1	6.0	PVC	150.0	False	0.000	27	0.30	0.000	False	0
49	P-14	372	J-9	J-10	6.0	PVC	150.0	False	0.000	-83	0.94	0.001	False	0
57	P-17	1,460	T-1	J-11	8.0	PVC	150.0	False	0.000	224	1.43	0.001	False	0
68	P-19	242	J-6	J-13	8.0	PVC	150.0	False	0.000	32	0.20	0.000	False	0
70	P-20	3,331	J-13	J-14	8.0	PVC	150.0	False	0.000	24	0.15	0.000	False	0
74	P-21	606	J-14	J-43	8.0	PVC	150.0	False	0.000	8	0.05	0.000	False	0
60	P-22	378	J-16	J-7	6.0	PVC	150.0	False	0.000	-16	0.18	0.000	False	0
55	P-23	760	J-17	J-12	6.0	PVC	150.0	False	0.000	-8	0.09	0.000	False	0
44	P-24	544	J-4	J-3	2.0	PVC	150.0	False	0.000	2	0.18	0.000	False	0
64	P-25	150	TOWN HALL	J-6	6.0	PVC	150.0	False	0.000	3	0.03	0.000	False	0
62	P-26	181	J-7	TOWN HALL	6.0	PVC	150.0	False	0.000	11	0.12	0.000	False	0
72	P-27	384	J-14	J-19	6.0	PVC	150.0	False	0.000	8	0.09	0.000	False	0
82	P-28	24	J-10	J-24	8.0	PVC	150.0	False	0.000	-107	0.68	0.000	False	0
83	P-29	414	J-24	J-11	8.0	PVC	150.0	False	0.000	-123	0.78	0.000	False	0
85	P-30	306	J-24	J-25	2.0	PVC	150.0	False	0.000	8	0.82	0.002	False	0
87	P-31	54	J-7	J-26	6.0	PVC	150.0	False	0.000	-35	0.39	0.000	False	0
88	P-32	504	J-26	J-8	6.0	PVC	150.0	False	0.000	-51	0.57	0.000	False	0
90	P-33	409	J-26	J-27	6.0	PVC	150.0	False	0.000	8	0.09	0.000	False	0
92	P-34	1,282	J-28	J-16	6.0	PVC	150.0	False	0.000	-8	0.09	0.000	False	0
80	P-35	461	J-21	J-23	1.0	PVC	150.0	False	0.000	8	3.27	0.046	False	0
100	P-37	187	PMP-1	J-30	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
101	P-38	147	J-30	J-4	6.0	PVC	150.0	False	0.000	-8	0.09	0.000	False	0
78	P-42	60	J-11	J-22	1.0	PVC	150.0	False	0.000	8	3.27	0.046	False	0
114	P-43	73	J-13	H-1	6.0	PVC	150.0	False	0.000	0	0.00	0.000	False	0
125	P-45	708	J-35	J-3	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
126	P-46	34	J-35	J-30	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
127	P-47	436	J-35	J-2	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
129	P-48	20	J-11	J-36	6.0	PVC	150.0	False	0.000	85	0.97	0.001	False	0
130	P-49	604	J-36	J-8	6.0	PVC	150.0	False	0.000	85	0.97	0.001	False	0
131	P-50	1,462	T-1	J-36	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
133	P-51	400	J-36	J-37	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
134	P-52	78	J-36	J-22	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
136	P-53	274	J-4	J-38	6.0	PVC	150.0	False	0.000	-18	0.20	0.000	False	0
137	P-54	14	J-38	J-1	6.0	PVC	150.0	False	0.000	-18	0.20	0.000	False	0
139	P-55	17	J-1	J-39	6.0	PVC	150.0	False	0.000	-59	0.66	0.000	False	0
140	P-56	215	J-39	J-9	6.0	PVC	150.0	False	0.000	-59	0.66	0.000	False	0
141	P-57	18	J-38	J-39	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
143	P-58	1,579	J-12	J-40	6.0	PVC	150.0	False	0.000	-16	0.18	0.000	False	0
144	P-59	37	J-40	J-10	6.0	PVC	150.0	False	0.000	-16	0.18	0.000	False	0
145	P-60	77	J-37	J-40	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
148	P-62	378	J-37	J-41	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
149	P-63	234	J-41	J-1	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
151	P-64	55	J-9	J-42	1.0	PVC	150.0	False	0.000	16	6.54	0.166	False	0
152	P-65	292	J-42	J-21	1.0	PVC	150.0	False	0.000	16	6.54	0.166	False	0
153	P-66	99	J-41	J-42	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0
159	P-68	34	R-2	PMP-2	6.0	PVC	150.0	False	0.000	(N/A)	(N/A)	(N/A)	False	0

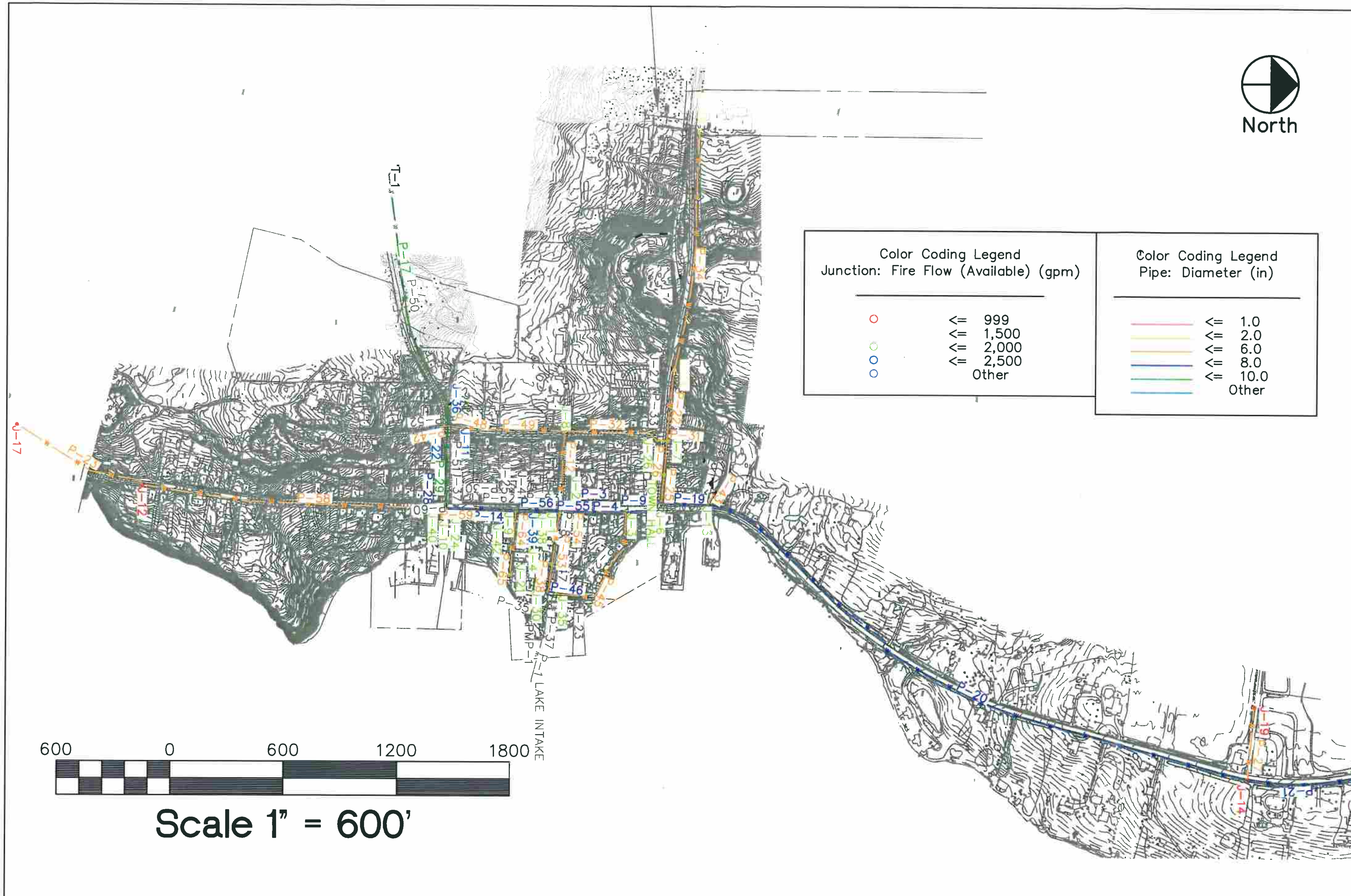
Existing Conditions:
Pipe Table

FlexTable: Junction Table (3426ModelBaseMap.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	122.50	1	<Collection: 1 items>	8	253.32	56.6
35	J-2	122.75	1	<Collection: 1 items>	8	253.31	56.5
37	J-3	118.00	1	<Collection: 1 items>	8	253.25	58.5
39	J-4	116.00	1	<Collection: 1 items>	8	253.31	59.4
42	J-5	115.75	2	<Collection: 1 items>	8	238.33	53.0
63	J-6	115.50	1	<Collection: 1 items>	8	253.22	59.6
59	J-7	133.00	1	<Collection: 1 items>	8	253.23	52.0
32	J-8	157.00	1	<Collection: 1 items>	8	253.35	41.7
46	J-9	124.00	1	<Collection: 1 items>	8	253.39	56.0
48	J-10	126.50	1	<Collection: 1 items>	8	253.59	55.0
50	J-11	165.75	1	<Collection: 1 items>	8	253.72	38.1
54	J-12	176.50	1	<Collection: 1 items>	8	253.55	33.3
67	J-13	106.00	1	<Collection: 1 items>	8	253.22	63.7
69	J-14	164.00	3	<Collection: 1 items>	8	253.17	38.6
58	J-16	139.00	1	<Collection: 1 items>	8	253.22	49.4
53	J-17	148.00	1	<Collection: 1 items>	8	253.55	45.7
71	J-19	162.00	3	<Collection: 1 items>	8	253.17	39.4
75	J-21	115.50	2	<Collection: 1 items>	8	195.98	34.8
77	J-22	167.00	2	<Collection: 1 items>	8	250.96	36.3
79	J-23	110.00	2	<Collection: 1 items>	8	174.82	28.0
81	J-24	128.66	1	<Collection: 1 items>	8	253.60	54.1
84	J-25	126.00	1	<Collection: 1 items>	8	253.12	55.0
86	J-26	135.31	1	<Collection: 1 items>	8	253.23	51.0
89	J-27	141.00	1	<Collection: 1 items>	8	253.23	48.6
91	J-28	176.00	1	<Collection: 1 items>	8	253.21	33.4
99	J-30	114.15	1	<Collection: 1 items>	8	253.31	60.2
105	J-32	198.00	1	<Collection: 1 items>	(N/A)	(N/A)	(N/A)
123	J-35	114.25	1	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
128	J-36	165.68	1	<Collection: 0 items>	0	253.71	38.1
132	J-37	127.00	1	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
135	J-38	122.19	1	<Collection: 0 items>	0	253.32	56.7
138	J-39	122.61	1	<Collection: 0 items>	0	253.32	56.6
142	J-40	127.66	1	<Collection: 0 items>	0	253.59	54.5
147	J-41	125.00	1	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
150	J-42	122.66	2	<Collection: 0 items>	0	244.34	52.6
73	J-43	170.00	1	<Collection: 1 items>	8	253.17	36.0
61	TOWN HALL	123.00	1	<Collection: 1 items>	8	253.22	56.3

Existing Conditions:
Junction Table



PROJECT NO.: 3426

DRAWING NO. CC

DRAWN BY: M.MEARS

DATE: 11/08/2011

CHECKED BY:

DRAWING TITLE: PROPOSED DISTRIBUTION SYSTEM TO ACHIEVE REQUIRED FIRE FLOW

PROJECT TITLE: HAMLET OF ESSEX WATER SYSTEM PRELIMINARY ENGINEERING REPORT

AES NORTHEAST
10-12 City Hall Place, Plattsburgh, NY 12901
Phone: (518) 561-1598 Fax: (518) 561-1990
www.aesnortheast.com
Architecture, Engineering, and Land Surveying Northeast, PLLC

Plot Date: 12/07/2011 Plot Time: 10:47 AM

Fire Flow Node FlexTable: Fire Flc

Current Time: (

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressur (Residual L Limit) (psi)
H-1	1	6	True	1,250	1,935	1,250	1,935	
J-1	1	4	True	1,500	1,934	1,500	1,934	
J-2	1	4	True	1,500	1,934	1,500	1,934	
J-3	1	7	True	1,500	1,940	1,500	1,940	
J-4	1	6	True	1,000	1,935	1,000	1,935	
J-5	1	(N/A)	(N/A)	250	(N/A)	(N/A)	(N/A)	
J-6	1	8	True	1,500	1,943	1,500	1,943	
J-7	1	6	True	1,000	1,863	1,000	1,863	
J-8	1	4	True	1,000	1,875	1,000	1,875	
J-9	1	4	True	1,500	1,915	1,500	1,915	
J-10	1	4	True	1,250	1,867	1,250	1,867	
J-11	1	6	True	1,000	2,112	1,000	2,112	
J-12	1	3	True	500	517	500	517	
J-13	1	8	True	1,000	1,943	1,000	1,943	
J-14	2	5	True	500	703	500	703	
J-16	1	3	True	750	1,267	750	1,267	
J-17	1	5	True	500	517	500	517	
J-19	2	3	True	500	676	500	676	
J-21	1	4	True	250	1,757	250	1,757	
J-22	1	4	True	250	2,002	250	2,002	
J-23	2	(N/A)	(N/A)	250	(N/A)	(N/A)	(N/A)	
J-24	1	4	True	1,250	1,893	1,250	1,893	
J-25	1	(N/A)	(N/A)	250	(N/A)	(N/A)	(N/A)	
J-26	2	6	True	1,000	1,602	1,000	1,602	
J-27	1	(N/A)	(N/A)	500	(N/A)	(N/A)	(N/A)	
J-28	1	5	True	500	1,268	500	1,268	
J-30	1	6	True	750	1,936	750	1,936	
J-32	1	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	
J-35	1	6	True	1,000	1,928	1,000	1,928	
J-36	1	6	True	750	2,092	750	2,092	
J-37	1	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	
J-38	1	4	True	1,500	1,926	1,500	1,926	
J-39	1	2	True	1,500	2,500	1,500	2,500	
J-40	1	5	True	1,000	1,661	1,000	1,661	
J-41	2	(N/A)	(N/A)	1,000	(N/A)	(N/A)	(N/A)	
J-42	1	6	True	250	1,907	250	1,907	
J-43	2	3	True	500	661	500	661	
TOWN HALL	1	7	True	1,750	1,946	1,750	1,946	

Proposed C
Available Fi

FlexTable: Pipe Tabl

Current Time: 0.000 hou

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C
31	P-1	295	LAKE INTAKE	PMP-1	8.0	PVC	150.0
36	P-3	20	J-1	J-2	8.0	PVC	150.0
38	P-4	324	J-2	J-3	8.0	PVC	150.0
43	P-8	326	J-5	J-2	1.0	PVC	150.0
65	P-9	244	J-6	J-3	8.0	PVC	150.0
34	P-12	425	J-8	J-1	6.0	PVC	150.0
49	P-14	372	J-9	J-10	8.0	PVC	150.0
57	P-17	1,460	T-1	J-11	10.0	PVC	150.0
68	P-19	242	J-6	J-13	8.0	PVC	150.0
70	P-20	3,331	J-13	J-14	8.0	PVC	150.0
74	P-21	606	J-14	J-43	8.0	PVC	150.0
60	P-22	378	J-16	J-7	6.0	PVC	150.0
55	P-23	760	J-17	J-12	6.0	PVC	150.0
44	P-24	544	J-4	J-3	2.0	PVC	150.0
64	P-25	150	TOWN HALL	J-6	6.0	PVC	150.0
62	P-26	181	J-7	TOWN HALL	6.0	PVC	150.0
72	P-27	384	J-14	J-19	6.0	PVC	150.0
82	P-28	24	J-10	J-24	8.0	PVC	150.0
83	P-29	414	J-24	J-11	10.0	PVC	150.0
85	P-30	306	J-24	J-25	2.0	PVC	150.0
87	P-31	54	J-7	J-26	6.0	PVC	150.0
88	P-32	504	J-26	J-8	6.0	PVC	150.0
90	P-33	409	J-26	J-27	6.0	PVC	150.0
92	P-34	1,282	J-28	J-16	6.0	PVC	150.0
80	P-35	461	J-21	J-23	1.0	PVC	150.0
100	P-37	187	PMP-1	J-30	6.0	PVC	150.0
101	P-38	147	J-30	J-4	6.0	PVC	150.0
78	P-42	60	J-11	J-22	6.0	PVC	150.0
114	P-43	73	J-13	H-1	6.0	PVC	150.0
125	P-45	708	J-35	J-3	6.0	PVC	150.0
126	P-46	34	J-35	J-30	8.0	PVC	150.0
127	P-47	436	J-35	J-2	6.0	PVC	150.0
129	P-48	20	J-11	J-36	6.0	PVC	150.0
130	P-49	604	J-36	J-8	6.0	PVC	150.0
131	P-50	1,462	T-1	J-36	6.0	PVC	150.0
133	P-51	400	J-36	J-37	6.0	PVC	150.0
134	P-52	78	J-36	J-22	6.0	PVC	150.0
136	P-53	274	J-4	J-38	6.0	PVC	150.0
137	P-54	14	J-38	J-1	6.0	PVC	150.0
139	P-55	17	J-1	J-39	8.0	PVC	150.0
140	P-56	215	J-39	J-9	8.0	PVC	150.0
141	P-57	18	J-38	J-39	6.0	PVC	150.0
143	P-58	1,579	J-12	J-40	6.0	PVC	150.0
144	P-59	37	J-40	J-10	6.0	PVC	150.0
145	P-60	77	J-37	J-40	6.0	PVC	150.0
148	P-62	378	J-37	J-41	6.0	PVC	150.0
149	P-63	234	J-41	J-1	6.0	PVC	150.0
151	P-64	55	J-9	J-42	6.0	PVC	150.0
152	P-65	292	J-42	J-21	6.0	PVC	150.0
153	P-66	99	J-41	J-42	6.0	PVC	150.0

Proposed
Pipe Tabl

FlexTable: Junction Table (3426ModelBaseMap.wtg)

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	122.50	1	<Collection: 1 items>	8	254.53	57.1
35	J-2	122.75	1	<Collection: 1 items>	8	254.53	57.0
37	J-3	118.00	1	<Collection: 1 items>	8	254.51	59.1
39	J-4	116.00	1	<Collection: 1 items>	8	254.52	59.9
42	J-5	115.75	1	<Collection: 1 items>	(N/A)	(N/A)	(N/A)
63	J-6	115.50	1	<Collection: 1 items>	8	254.50	60.1
59	J-7	133.00	1	<Collection: 1 items>	8	254.49	52.6
32	J-8	157.00	1	<Collection: 1 items>	8	254.54	42.2
46	J-9	124.00	1	<Collection: 1 items>	8	254.56	56.5
48	J-10	126.50	1	<Collection: 1 items>	8	254.63	55.4
50	J-11	165.75	1	<Collection: 1 items>	8	254.68	38.5
54	J-12	176.50	1	<Collection: 1 items>	8	254.58	33.8
67	J-13	106.00	1	<Collection: 1 items>	8	254.49	64.2
69	J-14	164.00	2	<Collection: 1 items>	8	254.44	39.1
58	J-16	139.00	1	<Collection: 1 items>	8	254.48	50.0
53	J-17	148.00	1	<Collection: 1 items>	8	254.58	46.1
71	J-19	162.00	2	<Collection: 1 items>	8	254.44	40.0
75	J-21	115.50	1	<Collection: 1 items>	8	254.56	60.2
77	J-22	167.00	1	<Collection: 1 items>	8	254.67	37.9
79	J-23	110.00	2	<Collection: 1 items>	(N/A)	(N/A)	(N/A)
81	J-24	128.66	1	<Collection: 1 items>	8	254.63	54.5
84	J-25	126.00	1	<Collection: 1 items>	(N/A)	(N/A)	(N/A)
86	J-26	135.31	2	<Collection: 1 items>	8	254.50	51.6
89	J-27	141.00	1	<Collection: 1 items>	(N/A)	(N/A)	(N/A)
91	J-28	0.00	1	<Collection: 1 items>	8	254.48	110.1
99	J-30	114.15	1	<Collection: 1 items>	8	254.51	60.7
105	J-32	0.00	1	<Collection: 1 items>	(N/A)	(N/A)	(N/A)
123	J-35	114.25	1	<Collection: 0 items>	0	254.51	60.7
128	J-36	165.68	1	<Collection: 0 items>	0	254.67	38.5
132	J-37	127.00	1	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
135	J-38	122.19	1	<Collection: 0 items>	0	254.53	57.3
138	J-39	122.61	1	<Collection: 0 items>	0	254.53	57.1
142	J-40	127.66	1	<Collection: 0 items>	0	254.63	54.9
147	J-41	75.71	2	<Collection: 0 items>	(N/A)	(N/A)	(N/A)
150	J-42	122.66	1	<Collection: 0 items>	0	254.56	57.1
73	J-43	170.00	2	<Collection: 1 items>	8	254.44	36.5
61	TOWN HALL	123.00	1	<Collection: 1 items>	8	254.49	56.9

Proposed Conditions:
Junction Table

TOWN OF ESSEX

355 Main Street
Essex, New York 12936
Tel. (518) 963-4287 / Fax (518) 963-4288
essexny@willex.com

Ronald E. Jackson
Supervisor

Debra Bridge
Town Clerk

COUNCILMEN:
Suzanne Perley
Stephen Sayward
Mark Wrisley
James LaForest

Date: March 19, 2004

To: Water Committee members

From: Ron Jackson, Supervisor

Subject: Tuesday March 23 meeting

I'm sorry it has taken me a week to get the enclosure assembled and this letter out, but the last two weeks have been extremely hectic.

We are meeting on Tuesday March 23 at 7:00 at the Town Hall to go over the changes we previously approved in the billing structure as we change over to billing from the meters. Since it has been two years since we decided this, it should be reviewed before being implemented.

Enclosed are the minutes of our April 16, 2002 meeting and the letter I sent out to our customers on June 26, 2002 for your review. Thank you for your time and once again I apologize for the short notification.

Sincerely,

Ronald E. Jackson

Town of Essex
Water District # 1 Committee
Tuesday, April 16, 2002

Present: Ron Jackson, Suzanne Perley, Mark Wrisley, Jim Laforest, Steve Sayward, Claire LaPine

Extension # 1:
Ron reported that he had all the necessary easements and the bond for the project as required by EFC and that he had hand delivered all the paperwork to Albany personally today.

Permit for the original water district is still outstanding is now finalized.

Extension/District # 2
Ron is working with Don Duley.

Water District # 1 Meters:

Ron prepared some assumptions for water billing which he presented to the committee. He suggested eliminating the category structure (residential and commercial) and going with only one single rate structure for everyone. There was extensive discussion about multiple uses on one meter. Mark wanted to clearly define the word "user." It was agreed that a user would equal one meter.

There was discussion about ways to assist the Water Superintendent in reading the meters. Ron will discuss the situation with him, and Ron and Jim said they would be willing to help Jim Morgan and Dave Hance with the readings. Suzanne suggested that the Town investigate the cost of "outside read" meters which would help in reading the meters. Steve said that the meters could be more subject to tampering. It was agreed that outside read meters would be helpful and Ron will get some cost estimates.

Based on historical readings, Ron estimated the average water use per user to be 45,300 gals per residential and 50,700 gals per commercial.

The following rate structure was proposed and agreed to:

$30 per user per quarter which would include 6,000 "free" gallons.
.006 per gallon ($6 per thousand gals) above the 6,000 free gallons.

On a yearly basis this would result in the following revenue:

147 meters (135 existing + 12 new) x $30 base user charge: $17,640.00
assume 80% residential & 20%non residential
(avg consumption @ 46,400 gals minus 20% conservation factor
= 37,100 average gallons used) with 24,000 no additional charge
13,100 avg gals x .006/per gallons x 147 users = $11,554.00

Benitord user

Local Law Number 1 of 2001
As amended December 12, 2002

TOWN OF ESSEX WATER LAW

It is the purpose of the Town Board in enacting this local law to regulate the use of public water facilities and provide for the service of water within the Town and to collect charges for such service. This law supercedes the Town of Essex Water Use Law enacted by the Town Board on May 14, 1998.

Be it enacted by the Essex. Town Board ("Town Board") as follows:

ARTICLE 1

General Regulations

1.1 The following rules and regulations are a part of this local law between the District and water consumers ("consumers") for the supply and use of water. Each District consumer is bound by, and is considered to have agreed to, this local law as a condition of service from the District.

1.2 All water service of whatsoever kind and nature, shall be rendered by the District, and consumers shall be billed for such service by the Town of Essex.

1.3 The Town undertakes to use reasonable care and diligence to provide to users in the respective water districts a continuous supply of water at a reasonable pressure but reserves the right at any time and without notice to shut off the water in any water district main for any purpose. The Town shall not be liable for a deficiency or failure in the supply of water or in line pressure from any cause whatsoever. The Town will give notice of the shutting off of water when time and conditions permit.

1.4 Permission of the Town Water Superintendent must be secured before any water can be turned on, off or tampered with. No person (except for fire protection purposes) shall open or interfere or draw water from any hydrant without permission of the Water Superintendent or the Town Board. No person shall molest, tamper with or damage any Town and/or Town Water District facility, including but not limited to hydrants, mains, valves, curb boxes, meters, meter seals, and service pipes. Any person violating this law shall be dealt with according to the Penal Law.

ARTICLE 2

New Connections to System

2.1 Application and Fee - Anyone wanting to connect to a District main must apply to the Town Clerk for permission, and pay a fee as established by the Town Board for each connection at the time of application. This fee is for the cost of the permit and inspection.

2.2 Curb Stop and Service Pipe - The District curb stop (shut-off) will be provided by the District and will be placed at the point on the consumer's property or right of way nearest to the main. All work incident to the digging of the trench, laying of service pipe, backfill, and making connection from the main to the consumer's premise will be at the sole expense of the applicant, and must be done to the satisfaction of the Water Superintendent (the "Superintendent") or his representative. The curb stop will remain closed and will be opened only by the Superintendent, unless he grants permission otherwise.

2.3 Connection to District Main: Penalty - No one but the Superintendent will make any connection to the District mains, and no connection will be made to the service pipe between the main and the curb stop. Anyone who violates this provision will be subject to a penalty as established by the Town Board for each offense plus the cost of all necessary repairs and expenses incurred by the District.

2.4 Materials Used - All materials used in connection with work and improvements undertaken with respect to this local law, except for the curb stop, will

(i) be at the sole expense of the applicant,

(ii) be proper and adequate for the type of service intended,

(iii) meet the quality standards of the American Water Works Association, and

(iv) be approved by the Superintendent before installation.

Service pipe will be Type K copper with bronze fittings is preferred. All underground connections will be of the flared, compression or o-ring gasket type. Connections will not contain plastic or galvanized material. No banding or clamps are allowed. The service pipe will have an inside diameter of three-quarters of an inch, unless application is made for a larger size and it is approved by the Town.

While Type K copper is the preferred material for service pipes, both for durability and because it can be thawed out if it freezes, the Town Board realizes that in some situations other pipe can be used successfully. The Town Board and the water district assumes no liability if the service main freezes and can not be thawed out since we advise that type K copper be installed. If any other materials are used they must:

(i) Meet AWWA standards.
(ii) Be NSF rated for domestic water.
(iii) Be rated for 200 PSI minimum.
(iv) Be bedded in screened sand, 6" beneath and 12" above minimum.
(v) Be HDPE DR9 (or equal) or.
(vi) Be SDR21 (or equal) or.
(vii) Be Copper Tubing Size.
(viii) No galvanized pipe is allowed.

2.5 Permits Required: Liability of Applicant; Indemnification - No work will be done until the applicant has obtained a street opening and building permit. Check with the Code Enforcement Officer for what, if any, permits are required. A competent person must do all plumbing, and New York State plumbing code must be followed as a minimum standard. The Town Water Law may be more stringent that New York State plumbing code in some areas. The installation shall be inspected by the water superintendent to insure that it complies with the Town Water Law. The installation may also be inspected by the Code Enforcement Officer to insure that it complies with New York State plumbing code. The applicant assumes all liability for injuries, claims or suits for damages occurring while, or arising out of, the work being performed. The applicant will indemnify and hold harmless the District and Town, their agents, servants and employees from all such injuries, claims or suits.

2.6 Separate Service: Penalty - A separate tap and service will be installed for each premise on a street in which there is a District main, and no consumer will supply water to another premise unless written permission is obtained from the Town. The word "premise" means a building under one roof occupied as a residence or for commercial purposes. Town permission will be granted for water service from one premise to another where only one of two or more premises on the same lot has frontage on a street in which there is a District main. In such case, the Superintendent must be notified before the connection is installed and before any water is drawn. Anyone who violates this provision will be subject to a penalty as established by the Town Board.

2.7 Existing Curb Stop - Where connection is made to an existing curb stop, all work will be performed according to these rules and regulations. It will be the applicant's duty to determine that the connection previously made (between the curb stop and main) is in satisfactory condition, and to make any repairs thereto required by the Superintendent; all of which will be at the applicant's expense. The connection to the existing curb stop and any repairs required will be made to the satisfaction of the Superintendent.

ARTICLE 3

General Operations

3.1 Permit required to use hydrants; Exception for fires; Penalty- Except in cases of fire, no one will take water from District fire hydrants without obtaining permission from the Superintendent or Town Supervisor, which permission will be conditioned by the circumstances involved. A fee for the use of such water will be at the current per gallon rate as established by the Town Board and in effect. In case of fire, fire hydrants will be opened and water taken only by Town employees or active members of the Fire Department. Anyone violating these provisions will be subject to a penalty as established by the Town Board.

3.2 Work performed only by Superintendent - No work will be done upon a District main or upon the service pipe between the main and curb stop except at the direction of the Superintendent. No connection will be made to a main after November 1 and before May 1 except with permission of the Superintendent.

3.3 Reporting damage or leaks; Repairs - The consumer will notify the Superintendent of any leak in, or damage to, the service pipe. In case of such leak or damage, upon 24 hours notice to the consumer the water service may be turned off at the curb stop, and remain turned off until the leak or damage is repaired to the Superintendent's satisfaction. Repairs to the service pipe between the curb stop and the consumer's premise will be made by the consumer at his/her own cost and expense.

3.4 Responsibility for Water Lines and Service

(i) The Town will control the installation, maintenance, repair and adjustment of taps, mains, curb stops, and service pipes between the main and curb stop. The District and Town will not be responsible for breaks, obstructions, or interruptions in service arising from any cause. However, they may take the steps necessary to restore service from the main to the curb stop.

(ii) The property owner will be liable for the service pipe from the curb stop to the owner's premise, including the costs and expenses of installation, repair, replacement, and damages. What is allowed for service pipe is listed in section 2.4.

3.5 Control of Curb Stop Violations - Service will be controlled at the curb stop, and water will be turned on or off only by the Superintendent. Violations of this provision will be sufficient cause for suspending service, in addition to which a penalty will be imposed as established by the Town Board.

3.6 Town Not Liable for Change or Shut Off of Water; No Guarantee of Service - The District and Town are not liable for any damage or loss that many arise from or be caused by any change, diminution, or increase of water pressure or by the termination of water service. No deductions from the service charge will be made for periods when the service is temporarily shut off. The District and Town do not guarantee service from the main to the premises or through any piping, valves or connections therein.

3.7 Safety Valves - All steam boilers, heating systems and hot-water tanks supplied with District water will contain a suitable safety valve, vacuum valve, backflow preventer or other similar device to prevent damage from collapse, explosion or burnout due to a loss of water supply. Such valve will be installed at the consumer's expense, and at his/her peril. The District and Town assume no responsibility for proper operation and functioning of such valves.

3.8 Backflow Preventors – New York State now requires double check valve backflow preventors to be installed on the outlet side of all water meters.

3.9 Control of Water Supply - The District and Town are not liable for any damage sustained by failure to supply water to a consumer, and they reserve the right to control the amount of water supplied. They also reserve the right at any time considered necessary to prohibit the use of water for sprinkling of lawns or gardens, irrigation, or for any other purpose.

3.10 Misuse of Town Water - In case of misuse of water the following procedure will be followed:

(i) The Superintendent will identify the water misuse and report it to the Town Board.

(ii) Written notification by certified mail will be given to the misuser, granting him/her three days to correct the misuse.

(iii) If the misuse continues for a period of three (3) days after the date of the postmark of the notification by certified mail, the Superintendent will declare a continued misuse and will turn off service at the curb stop.

(iv) Service will be reinstated upon correction or discontinuance of the misuse, and upon recommendation of the Superintendent to the Town Board. Payment of all indebtedness and a connection fee as established by the Town Board must be paid BEFORE service is reinstated.

(v) Exceptions to the turn-off will be made if the misuse is justified by health, emergency, or similar circumstances.

3.11 Interpretation of Rules - The Town Board will be the sole judge of the meaning of these rules and regulations. Its interpretation will be final and binding upon all applicants for water service and upon all consumers of water.

ARTICLE 4

Water Meter Installations

4.1 Water Meters; Installation; Penalty - Each consumer will be supplied with a District meter, which must be installed according to specifications, at the consumer's expense. It is strongly recommended that such installation be made by an experienced plumber. The meter must be installed within each building to be served as close as practical to the point where the service pipe enters the building from an outside wall, and will be set with the inlet and outlet in a horizontal line and the register on top. A horn will be provided by the District if necessary. The meters must be located to be readily accessible always for reading, inspection and repair. Stop valves will be installed on both inlet and outlet sides of the meter, and the final installation must be approved by the Superintendent. Nothing but the stop valve can be installed before the meter. Any consumer who has not installed a water meter as of the effective date of this local law, will be subject to a penalty in an amount as established by the Town Board.

4.2 Access - Each owner of premises provided water by the District grants to the District and Town an easement over such premises for purposes of entering thereupon with men and machinery at any reasonable time to examine the pipe and fixtures, ascertain the quantity of water used and the manner of its use, and inspect, operate, maintain, repair and replace any District Property.

4.3 Improper functioning of water meters

(a) The District and Town assume no responsibility for frozen service, notwithstanding the fact that installation of the service was made or approved of by the Superintendent. All costs associated with the replacement of frozen meters shall be the responsibility of the consumer.

(b) When a meter is deemed to be no longer functional (inaccurate or inoperable) by the Water Superintendent, a replacement thereof shall be made by the Town. The Town reserves the right to remove and test any meter, at no cost to the consumer, at any time if it is deemed necessary by the Superintendent.

(c) In the case of a malfunctioning water meter, which includes a stuck, noisy or leaking meter, the consumer shall, with all diligence, give timely notice thereof to the Superintendent.

(d) If it is found necessary to remove the meter for repair, another meter shall be substituted and installed and sealed by the Superintendent or his representative. The most current water bill will be adjusted as necessary either up or down to compensate for the meter error. The cost of water will be averaged based on the previous year's recorded use.

(e) The costs for all repairs to meters damaged due to negligence shall be borne by the consumer.

(f) The District will store any meter turned into the Superintendent by the consumer at no charge.

4.4 Sub-metering Prohibited – Sub-metering or resale of water by consumers is prohibited unless specifically approved in writing by the Superintendent or Town Board.

4.5 Meter Tampering Prohibited – Meters and seals shall not be tampered with or disturbed by any unauthorized person. Tampering with meters or seals is a violation of 16.15 of the Penal Law, entitled "Theft of Services."

ARTICLE 5

Reading of Meters

5.1 Where authorized personnel of the District are unable to read a meter during the scheduled period, an estimated bill shall be rendered. The estimated bill shall be at the minimum charge or an average amount based on previously recorded consumed water in an equivalent period during previous years, whichever is higher.

5.2 The property owner shall be responsible for making a special arrangement to have the meter read if two (2) consecutive readings are estimated. If special arrangements cannot be made for reading the meter on a weekday between 8:00 a.m. and 3:30 p.m. the consumer should notify the District and request a special meter reading. Water service may be discontinued to the premises until such time as authorized personnel of the Department are able to read the meter. If a special meter reading on Saturday is necessary, there will be a charge for each meter reading as established by the Town Board.

ARTICLE 6

Shutting Off and Turning On Water

6.1 If a consumer wants to end service, the Superintendent will shut off the water at the curb stop upon three days notice. There is no charge for this service. If service is ended for one continuous calendar year or more, there will be no water charge for such premises after such year. If water is provided to the premise any time during the calendar year, the full year's water charges will apply. When a consumer wants to resume service, three days written notice must be given to the Superintendent.

6.2 Upon payment of all indebtedness, the Superintendent will turn on the water at the curb box. There will be a fee for this service as established by the Town Board.

ARTICLE 7

Bills and Penalties

7.1 All charges to an account shall be payable to the Town within thirty (30) days of the date of the bill. An additional charge of ten percent (10%) of the total amount of current charges shall be added to the bill, if payment has not been received within thirty (30) days of the date of the bill. Under certain extenuating circumstances, partial payments submitted by consumers will be accepted at the discretion of the Town. If such bills remain unpaid for ninety (90) days or more after the date of the bill, the water service may be discontinued until such time as the bill is paid.

7.2 If payment is not received by October 31st, all delinquent amounts will be added to the Essex County Tax rolls. Payments for the delinquent amounts after October 31st cannot be accepted by the Town. Any such payment to the Town after October 31st will be returned to the consumer.

7.3 Bills are due and payable in full as of the date of billing. Regardless of any understanding or agreement to the contrary between other parties, the owner of the property shall be responsible for payment of the bill. However, by special written arrangement, a bill may be sent to the owner in care of a tenant or lessee for payment, but the owner remains responsible for all unpaid bills.

7.4 Errors in bills - Any consumer finding an error in his bill shall report same to the Town as soon as possible after receipt of the bill so that any valid adjustments may be made.

7.5 Change in ownership

(i) If property is to be conveyed, the current owner or his authorized representative shall notify the Town in writing to have the meter read at least one (1) week prior to conveyance of the property, after which a statement of charges due on the account shall be rendered.

(ii) The new owner or his authorized representative shall make a notarized application for water service upon taking title to the property, although water service may not have been interrupted. The new owner or his authorized representative shall be responsible for all current water charges and any unpaid balances upon accepting title to the property.

ARTICLE 8

8.1 Private Fire Protection

Application for connection to private fire protection systems will be made in writing to the Town. The application will set forth the details thereof, and will be accompanied by a sketch or diagram showing the plan of the system to be installed. This plan must be approved by the Town before commencement of any work. All installations serving private line protection systems will be constructed and maintained at the sole expense of the owner or applicant. Connections for private fire protection purposes will be properly valved to prevent the use of water for purposes other than fire protection.

ARTICLE 9

9.1 Violations

Service of any notice upon the owner or consumer may be made personally or by sending it to his/her last address furnished to the Town.

ARTICLE 10

10.1 Abandonment of Town Pipes

The District and Town will abandon all their water mains and pipes that are no longer in use.

ARTICLE 11

11.1 Outside Users

Anyone wanting to use District water whose premise is not within the District must petition the Town for permission to connect a private service line to the District main or the nearest source of District water. If such permission is granted:

(a) these rules and regulations will apply,

(b) there will be a control valve located on the District line for all mains, branch lines, and service lines outside the District, and

(c) the District will have the right to end water service to any outside user whenever an emergency arises, when the District water supply is so depleted to allow the District to supply water only to District residents, and in cases of violations of rules and regulations. All expenses and costs of installation, maintenance and repair of water mains, branch lines and water service lines outside the District will be borne by the owner.

ARTICLE 12

12.1 Water Charges, Fines, and Penalties

The charge for water use and all and any fines and penalties associated with this Local Law will be established from time to time by Town Board Resolution.

ARTICLE 13

13.1 Effective Date

This Local Law shall take effect upon its being duly filed in the office of the Secretary of State.

10/29/01

Town of Essex
Water District Fee Schedule
Adopted by the Essex Town Board July 12, 2001.

	ITEM	FEE	INSTRUCTIONS
1	Meters (New Installation)		Paid by the Water District
2	Meters (Replacement of disfunctioning meter)		Paid by the Water District
3	Meters (Replacement of meter damaged by consumer)		Paid by Consumer
4	New Connection	$ 300.00	Must be installed by an experienced plumber under the supervision of the Water Supt.
5	Reinstatment of Service after 1 year lapse	$ 100.00	Must be done by Water Dept. Personnel
6	Reinstatment of Service - Seasonal User (user must pay all other water assessments to be eligible for this rate)	$ 10.00	Must be done by Water Dept. Personnel
7	Fine for Meter tampering	$ 100.00	Includes hook-ups and shut-off by unauthorized persons. (Plus cost of any damages/necessary repairs)
8	Fine for non-installation of meter	$ 100.00	Per billing cycle If no installation after 3 consecutive cycles, service will be suspended.
9	Reinstatement of service after suspension	$ 150.00	Must be done by Water Dept. Personnel
10	Meter Reading by appointment	$ 25.00	Must be done by Water Dept. Personnel
11	Fine for tampering with Fire Hydrant	$ 100.00	
12	Fine for misuse of Town water	$ 100.00	Plus suspension of water service. A reconnection fee of $50 will be charged.

Adopted by Essex Town Board
Effective 1/1/2001

8-Dec-11			
	EXHIBIT FF		
	PARCELS IN ESSEX WATER SERVICE AREAS		
Item No.	**PARCEL NO.**	**CHARGE/ QUARTER**	**COMMENTS**
1	40.3-2-6.000	$ 40.00	
2	40.3-2-8.111	$ 40.00	
3	40.3-2-8.120	-	abandoned agr
4	40.3-2-8.200	$ 40.00	
5	40.3-2-9.100	$ 40.00	
6	40.3-2-9.200	-	rural vacant
7	40.3-2-10.110	$ 40.00	
8	40.3-2-10.200	-	rural vacant
9	40.3-2-11.000	$ 40.00	
10	40.3-2-12.000	$ 40.00	
11	40.3-2-13.120	$ 28.50	
12	40.3-2-18.000	$ 40.00	
13	40.3-3-13.110	-	rural land
14	40.3-3-13.120	$ 40.00	sewer plant - out of district user
15	40.3-3-13.200	-	water tank
16	40.3-3-14.000		out of district user
17	40.3-3-15.000	$ 40.00	out of district user
18	40.3-3-16.000	-	cemetery - out of district but no water
19	40.3-3-17.110	$ 40.00	
20	40.3-3-17.120	$ 40.00	
21	40.3-3-17.130	$ 40.00	
22	40.11-1-1.000	-	vacant land
23	40.57-1-1.000	$ 28.50	
24	40.57-1-2.000	$ 40.00	old Smith Hse
25	40.57-2-1.000	$ 40.00	
26	40.57-3-1.000	-	vacant land
27	40.57-3-2.000	$ 40.00	
28	40.57-3-3.000		
29	40.57-3-4.000	$ 40.00	
30	40.57-3-5.100	$ 40.00	
31	40.57-3-5.200	$ 40.00	
32	40.57-3-6.000	$ 40.00	
33	40.57-3-7.000	-	vacant land
34	40.57-3-8.000	-	vacant
35	40.57-3-9.000	$ 40.00	vacant
36	40.57-3-10.000	$ 40.00	seasonal
37	40.57-3-11.000	$ 40.00	
38	40.57-3-12.000	-	vacant
39	40.57-3-14.000	-	
40	40.57-3-15.000	$ 40.00	
41	40.65-1-1.100	$ 40.00	
42	40.65-1-1.200	$ 40.00	
43	40.65-1-2.000	$ 40.00	
44	40.65-1-3.000	$ 40.00	
45	40.65-1-4.000	$ 40.00	
46	40.65-2-1.000	$ 40.00	
47	40.65-2-2.000	$ 40.00	
48	40.65-2-3.000	$ 40.00	
49	40.65-2-4.000	$ 40.00	
50	40.65-2-5.000	$ 40.00	
51	40.65-2-6.000	$ 40.00	
52	40.65-2-7.100	$ 40.00	
53	40.65-2-8.000	$ 40.00	
54	40.65-2-9.100	-	vacant
55	40.65-2-10.000	$ 40.00	library
56	40.65-2-11.002	$ 40.00	
57	40.65-2-12.000	$ 28.50	church
58	40.65-3-1.000	$ 40.00	
59	40.65-3-2.000	$ 28.50	
60	40.65-3-3.000	$ 40.00	
61	40.65-3-4.002	$ 40.00	
62	40.65-3-5.200	$ 40.00	
63	40.65-3-6.000	$ 40.00	
64	40.65-3-7.000	$ 40.00	
65	40.65-4-1.000	-	underwater
66	40.73-1-1.000	$ 40.00	
67	40.73-1-2.000	$ 40.00	
68	40.73-1-3.000	$ 40.00	
69	40.73-1-4.000	$ 40.00	

8-Dec-11

EXHIBIT FF

PARCELS IN ESSEX WATER SERVICE AREAS

Item No.	PARCEL NO.	CHARGE/ QUARTER	COMMENTS
140	40.73-5-5.000	$ 40.00	
141	40.73-5-6.000	$ 40.00	
142	40.73-5-7.000	-	vacant lot
143	40.73-5-8.000	$ 40.00	
144	40.73-5-9.000	$ 40.00	
145	40.73-5-10.000	$ 40.00	
146	40.73-5-11.000	$ 40.00	
147	40.73-5-12.000	$ 40.00	
148	40.73-5-13.000	$ 40.00	
149	40.73-5-14.000	-	vacant
150	40.73-5-15.000	$ 40.00	
151	40.73-5-16.000	$ 40.00	
152	40.73-5-17.000	$ 40.00	
153	40.73-5-18.000	$ 40.00	barn
154	40.73-6-1.000	$ 40.00	
155	40.73-6-2.000	$ 40.00	
156	40.73-6-3.000	$ 40.00	
157	40.73-6-4.100	$ 40.00	
158	40.73-6-5.000	$ 40.00	
159	40.73-6-6.100	$ 40.00	marina
160	40.73-6-6.202	$ 40.00	marina
161	40.73-6-7.000	$ 40.00	
162	40.73-6-8.000	$ 40.00	
163	40.73-6-9.000	$ 40.00	
164	40.73-6-10.000	$ 40.00	
165	40.73-6-11.100	-	house vacant
166	40.73-6-11.210	$ 40.00	
167	40.73-6-11.220	-	vacant lot
168	40.73-6-11.240	$ 40.00	
169	40.73-6-12.000	$ 40.00	
170	40.73-6-13.100	-	vacant lot
171	40.73-6-13.200	-	vacant lot
172	40.73-7-1.100	-	underwater lot
173	40.73-7-1.200	-	underwater lot
174	40.73-8-1.000	$ 40.00	
175	40.73-8-2.000	-	vacant
176	40.73-8-3.000	$ 40.00	
177	40.73-8-4.000	$ 40.00	
178	40.81-1-1.000	$ 40.00	
179	40.81-1-2.000	$ 40.00	
180	40.81-1-3.000	$ 40.00	
181	40.81-1-4.000	-	abandoned hse
182	40.81-1-5.000	$ 40.00	
183	40.81-1-6.000	$ 40.00	
184	40.81-1-7.000	-	vacant lot
185	40.81-2-1.000	$ 40.00	
186	40.81-3-1.000	$ 40.00	
187	40.81-3-2.100	$ 40.00	
188	40.81-3-2.200	$ 40.00	
189	40.81-3-3.001	$ 40.00	vacant land
190	40.81-3-4.100	-	vacant land
191	40.81-3-4.200	$ 40.00	
192	40.81-3-5.000	$ 40.00	
193	40.81-3-6.000	$ 40.00	
194	40.81-3-8.00	-	vacant land
195	40.81-3-9.000	$ 40.00	
196	40.81-3-10.000	$ 40.00	
197	49.1-1-12.000	$ 40.00	dairy barn
198	49.1-1-13.000	$ 40.00	out of district user

New York State
ENVIRONMENTAL FACILITIES CORPORATION

MATTHEW J. DRISCOLL, President and CEO

August 24, 2011

Honorable Sharon M. Boisen
Supervisor, Town of Essex
PO Box 355
Essex, NY 12936

Re: Drinking Water State Revolving Fund
Project No.: 17629
Town of Essex
Essex County

Dear Supervisor Boisen:

Thank you for your recent hardship application to the New York State Department of Health (DOH) and the New York State Environmental Facilities Corporation (EFC) seeking financial assistance from the Drinking Water State Revolving Fund (DWSRF). I am very pleased to inform you that your proposed drinking water project is eligible for a DWSRF hardship assistance grant of $1,146,341 and $375,864 in interest-free financing for a term of 30 years.

This determination is based on the information provided in your hardship application, including the following:

- 176 equivalent dwelling units (EDUs) within the service area;
- A target annual service charge per EDU of $468;
- A Median Household Income of $37,596 based on the 2000 census;
- Projected annual operation and maintenance costs of $76,658;
- A municipal contribution of $6,250; and,
- A total project cost of $1,528,455.

This proposed funding package results in a projected service charge (PSC) of $567 per equivalent dwelling unit and is available for **two years** from the date of this letter, which expires August 24, 2013.

In order to receive DWSRF financial assistance prior to the aforementioned two-year funding deadline, we request that the Town submit a completed DWSRF application to EFC as soon as practicable, or at the latest, by February 24, 2013, which is six months prior to the expiration date of this letter.

625 Broadway, Albany, New York 12207-2997
518.402.6924 • 800.882.9721
www.nysefc.org

Please note that upon review of your completed application, EFC reserves the right to adjust the financial assistance offered in this letter due to any material changes that may occur in the factors presented in your original hardship application, including for example, the availability of grants from sources other than the DWSRF. In addition, EFC may only provide financial assistance for your project after receiving formal approvals from the Corporation's Board of Directors and the New York State Public Authorities Control Board.

Finally, submission of a completed application is necessary to determine whether your project is compliant with the recently enacted State Smart Growth Public Infrastructure Policy Act.

Should you have any questions or require any assistance in completing your DWSRF application packet, please do not hesitate to contact EFC's Assistant Financial Development Manager Christopher Rienzo at 1-800-882-9721, (518) 402-7085, or christopher.rienzo@efc.ny.gov.

Thank you again for your interest in the DWSRF program and congratulations to you and the community you represent on receiving hardship assistance from this invaluable program. We look forward to working with you to ensure that your community has a safe, affordable and sustainable water supply for generations to come.

Sincerely,

Matthew J. Driscoll
President and CEO

MJD/MF
c: Howard A. Freed, M.D., DOH

USDA Rural Development

United States Department of Agriculture
Rural Development
Syracuse, NY

A[illegible]7, 2009

Ronald Jackson, Town Supervisor
Town of Essex
2313 Main Street
Essex, NY 12936

Dear Mr. Jackson:

We are pleased to notify you that a Predevelopment Planning Grant in the amount of $6,250 has been awarded by Rural Development to the Town for the evaluation of the proposed upgrades to the water system.

The funds are retained by Rural Development for delivery upon substantial completion of the project.

The enclosed Form RD 1940-1, "Request for Obligation of Funds", is forwarded for your records.

Sincerely,

Jill Harvey
State Director

Enclosure

cc: Gretchen Pinkel, Area Specialist, Cortland
Brenda Smith, CPS

USDA-RD
Form RD 1940-1
(Automated 8-97)

RF JEST FOR OBLIGATION OF FUN

INSTRUCTIONS-TYPE IN CAPITALIZED ELITE TYPE IN SPACES MARKED
Complete Items 1 through 30 and applicable Items 31 through 43. See FMI.

1. CASE NUMBER — ST: 37 | CO: 016 | BORROWER ID: *****2176
LOAN NUMBER:
FISCAL YEAR:

2. BORROWER NAME
ESSEX TOWN OF

3. NUMBER NAME FIELDS
1 (1, 2, or 3 from Item 2)

4. STATE NAME
New York

5. COUNTY NAME
016 Essex

GENERAL BORROWER/LOAN INFORMATION

6. RACE/ETHNIC CLASSIFICATION
1 - WHITE 2 - BLACK 3 - AI/AN 4 - HISPANIC 5 - A/PI

7. TYPE OF APPLICANT: 4
1 - INDIVIDUAL 2 - PARTNERSHIP 3 - CORPORATION 4 - PUBLIC BODY 5 - ASSOC. OF FARMERS 6 - ORG. OF FARM WORKERS 7 - OTHER

8. COLLATERAL CODE
1 - REAL ESTATE SECURED 2 - REAL ESTATE AND CHATTEL 3 - NOTE ONLY OR CHATTEL ONLY 4 - MACHINERY ONL 5 - LIVESTOCK ONL 6 - CROPS ONLY 7 - SECURED BY BONDS

9. EMPLOYEE RELATIONSHIP CODE: 0
1 - EMPLOYEE 2 - MEMBER OF FAMILY 3 - CLOSE RELATIVE 4 - ASSOC.

10. SEX CODE: 6
1 - MALE 2 - FEMALE 3 - FAMILY UNIT 4 - ORGAN. MALE OWNED 5 - ORGAN. FEMALE OWNED 6 - PUBLIC BODY

11. MARITAL STATUS
1 - MARRIED 2 - SEPARATE 3 - UNMARRIED (INCLUDES WIDOWED/DIVORCED)

12. VETERAN CODE
1 - YES 2 - NO

13. CREDIT REPORT: 2
1 - YES 2 - NO

14. DIRECT PAYMENT
(See FMI)

15. TYPE OF PAYMENT
1 - MONTHLY 2 - ANNUALLY 3 - SEMI-ANNUALLY 4 - QUARTERLY

16. FEE INSPECTION: 2
1 - YES 2 - NO

17. INTEREST CREDIT
1 - YES (FRO SFH ONLY) 2 - NO

18. COMMUNITY SIZE
1 - 10,000 OR LESS 2 - OVER 10,000 (FOR SFH AND HPG ONLY)

19. DWELLING TYPE/USE OF FUNDS CODE
(See FMI)

COMPLETE FOR OBLIGATION OF FUNDS

20. TYPE OF ASSISTANCE: 373 (See FMI)

21. PURPOSE CODE: 9

22. SOURCE OF FUNDS: 2

23. TYPE OF ACTION: 1
1 - OBLIGATION ONLY 2 - OBLIGATION/CHECK REQUEST 3 - CORRECTION OF OBLIGATION

24. TYPE OF SUBMISSION: 1
1 - INITIAL 2 - SUBSEQUENT

25. AMOUNT OF LOAN

26. AMOUNT OF GRANT
$ 6,250.00

27. AMOUNT OF IMMEDIATE ADVANCE
$ 0.00

28. DATE OF APPROVAL
MO DA YR
08 - 07 - 09

29. INTEREST RATE

30. REPAYMENT TERMS

COMPLETE FOR SINGLE FAMILY HOUSING ONLY

31. INCOME CATEGORY CODES
1 - VERY LOW 2 - LOW 3 - MODERATE 4 - ABOVE MODERATE

32. LOW INCOME LIMIT-MAX.

33. ADJUSTED FAMILY INCOME

34. R.E.INSURANCE

35. R.E.TAXES 1st year

36. R.E. TAXES 2nd year

37. NOTE INSTALLMENT INELIGIBLE

38. TYPE OF UNIT
1 - FARM TRACT 2 - NON-FARM TRACT

COMPLETE FOR COMMUNITY PROGRAM AND CERTAIN MULTIPLE-FAMILY HOUSING LOANS

39. PROFIT TYPE
1 - FULL PROFIT 2 - LIMITED PROFIT 3 - NONPROFIT

COMPLETE FOR EM LOANS ONLY

40. DISASTER DESIGNATION NUMBER
(See FMI)

COMPLETE FOR CREDIT SALE-ASSUMPTION

41. TYPE OF SALE
1 - CREDIT SALE ONLY 2 - ASSUMPTION ONLY 3 - CREDIT SALE WITH SUB LOA 4 - ASSUMPTION WIT SUBSEQUENT LOAN

FINANCE OFFICE USE ONLY

42. OBLIGATION DATE
MO DA YR
08 - 17 - 09

COMPLETE FOR FP LOANS ONLY

43. BEGINNING FARMER/RANCHER
(See FMI)

If the decision contained above in this form results in denial, reduction or cancellation of USDA assistance, you may appeal this decision and have a hearing or you may request a review in lieu of a hearing. Please use the form we have included for this purpose.

Position 2

ORIGINAL - Borrower's Case Folder COPY 1 - Finance Office COPY 2 - Applicant/Lender Copy 3 - State Office

CERTIFICATION APPROVAL

For All Farmer Programs

EM, OL, FO, and SW Loans

This loan is approved subject to the availablity of funds. If this loan does not close for any reason within 90 days from the date of approval on this document, the approval offical will request updated eligibility information. The undersigned loan applicant agrees that the approval official will have 14 working days to review any updated information prior to submitting this document for obligation of funds. If there have been significant changes that may affect eligibility, a decision as to eligibility and feasibility will be made within 30 days from the time the applicant provides the necessary information.

If this is a loan aproval for which a lien and/or title search is necessary, the undersigned applicant agrees that the 15-working-day loan closing requirement may be exceeded for the purposes of the applicant's legal representatives completing title work and completing loan closing.

44. COMMENTS AND REQUIREMENTS OF CERTIFYING OFFICAL

APPROVAL OF FINANCIAL ASSISTANCE SUBJECTS TO THE TERMS CONTAINED IN THE LETTER OF CONDITIONS DATED 7/27/09.

45. I HEREBY CERTIFY that I am unable to obtain sufficient credit elsewhere to finance my actual needs at reasonable rates and terms, taking into consideration prevailing private and cooperative rates and terms in or near my community for loans for similar purposes and periods of time. I agree to use the sum specified herein, subject to and in accordance with regulations applicable to the type of assistance indicated above, and requested payment of such sum. I agree to report to USDA any material adverse changes, financial or otherwise, that occur prior to loan closing. I certify that no part of the sum specified herein has been received. I have reviewed the loan approval requirements and comments associated with this loan request and agree to comply with these provisions.

(For SFH & FP loans at eligible terms only) If this loan is approved, I elect the interest rate to be charged on my loan to be the lower of the interest rate in effect at the time of approval or loan closing. If I check "NO", the interest rate charged on my loan will be the rate specified in Item 29 of this form.

_________YES _________NO

WARNING: **Whoever, in any matter within the jurisdication of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined under this title or imprisoned not more five years, or both."**

Date 8-3-9

Date 8-3-9

ESSEX TOWN OF

By: Ronald E. Jackson

Ronald Jackson
Supervisor

46. I HEREBY CERTIFY that all of the committee and administrative determinations and certifications required by regulations prerequisite to providing assistance of the type indicated above have been made and that evidence thereof is in the docket, and that all requirements of pertinent regulations have been complied with. I hereby approve the above-described assistance in the amount set forth above, and by this document, subject to the availability of funds, the Government agrees to advance such amount to the applicant for the purpose of and subject to the availability prescribed by regulations applicable to this type of assistance.

(Signature of Approving Official)

Date Approved: 8/7/09 Title [illegible]

47. TO THE APPLICANT: As of this date 8/17/09 this is notice that your application for financial assistance from the USDA has been approved, as indicated above, subject to the availability of funds and other conditions required by the USDA. If you have any questions contact the County Supervisor or District Director.

The grantee understands that any property acquired or improved with Federal grant funds may have use and disposition conditions which apply to the property as provided by 7 CFR parts 3015, 3016, or 3019 in effect at this time as may be subsequently modified.

The grantee understands that any sale or transfer or property is subject to the interest of the United States Government in the market value in proportion to its participation in the project as provided by 7 CFR parts 3015, 3016 or 3019 in effect at this time or as may be subsequently modified.

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project #3426

EXHIBIT II

12/08/11

List of Short-Lived Assets Alternative #3

Item Description	Expected Useful Life (years)	Materials Replacement Costs ($$)	Labor Replacement Cost ($$)	Total Replacement Cost ($$)	
Process Equipment					
1- 5 year life expectancy					
Metering Pump	2	$ 1,300	Note 2	$ 1,300	Note 1
Chem Parts	5	$ 1,300	Note 2	$ 1,300	Note 1
6 - 10 year life expectancy					
Raw Water Pumps Parts	10	$ 6,000	Note 2	$ 6,000	Note 1
Backwash Pumps	10	$ 6,000	Note 2	$ 6,000	Note 1
11-15 year life expectancy					
Raw Water Pumps	15	$ 10,000	Note 2	$ 10,000	Note 1
Plumbing					
6 - 10 year life expectancy					
Dom. Hot Water Circulator	10	$ 250	Note 2	$ 250	Pump Replacement
Misc. Plumbing Valves	10	$ 750	Note 2	$ 250	Replacement
11 -15 year life expectancy					
Water Heater	15	$ 1,500	Note 2	$ 2,600	20 gal. Commercial
Main Backflow Preventor	15	$ 250	$ 200	$ 450	Pump Seals
HVAC					
6 - 10 year life expectancy					
Boiler Circulator #1	7	$ 250	Note 2	$ 250	Pump Seals
Boiler Circulator #2	7	$ 250	Note 2	$ 250	Pump Seals
Primary Circulator	7	$ 325	Note 2	$ 325	Pump Seals
Zone Valves (Misc.)	10	$ 400	Note 2	$ 400	25% of Total
Modulating Valve	10	$ 385	$ 40	$ 425	Includes Actuator
Thermostats	10	$ 75	Note 2	$ 75	10% of Total
Boiler Temp. Sensors	10	$ 300	$ 40	$ 340	
11-15 year life expectancy					
Misc. Boiler Burner Items	15	$ 250	$ 120	$ 370	Solenoids, Contacts
Ventilation Controls	15	$ 500	$ 80	$ 580	Starters, Relays
Misc. Heating Valves	15	$ 500	$ 200	$ 700	
A/C Split System	15	$ 1,000	$ 500	$ 1,500	Compressors
Electrical					
1 - 5 year life expectancy					
Light Fixture Type A Ballast	5	$ 240	$ 120	$ 360	25% Replacement
6 - 15 year life expectancy					
Emergency Generator Contract	10	$ 500	$ 2,500	$ 3,000	

Notes -
1 Parts necessary for the first replacement are to be provided by the contractor at construction completion
2 No labor cost included, assumed water plant operator to provide installation

Town of Essex
Water System Evaluation
Preliminary Engineering Report (PER)
AES Project #3426

EXHIBIT II

12/08/11

List of Short-Lived Assets Alternative #4B

Item Description	Expected Useful Life (years)	Materials Replacement Costs ($$)	Labor Replacement Cost ($$)	Total Replacement Cost ($$)	
Process Equipment					
1- 5 year life expectancy					
Metering Pump	2	$ 1,300	Note 2	$ 1,300	Note 1
Chem Parts	5	$ 1,300	Note 2	$ 1,300	Note 1
11-15 year life expectancy					
Deep Well Pumps	15	$ 10,000	Note 2	$ 10,000	Note 1
Plumbing					
6 - 10 year life expectancy					
Dom. Hot Water Circulator	10	$ 250	Note 2	$ 250	Pump Replacement
Misc. Plumbing Valves	10	$ 750	Note 2	$ 250	Replacement
11 -15 year life expectancy					
Water Heater	15	$ 1,500	Note 2	$ 2,600	20 gal. Commercial
Main Backflow Preventor	15	$ 250	$ 200	$ 450	Pump Seals
HVAC					
6 - 10 year life expectancy					
Boiler Circulator #1	7	$ 250	Note 2	$ 250	Pump Seals
Primary Circulator	7	$ 325	Note 2	$ 325	Pump Seals
Zone Valves (Misc.)	10	$ 400	Note 2	$ 400	25% of Total
Modulating Valve	10	$ 385	$ 40	$ 425	Includes Actuator
Thermostats	10	$ 75	Note 2	$ 75	10% of Total
Boiler Temp. Sensors	10	$ 300	$ 40	$ 340	
11-15 year life expectancy					
Misc. Boiler Burner Items	15	$ 250	$ 120	$ 370	Solenoids, Contacts
Ventilation Controls	15	$ 500	$ 80	$ 580	Starters, Relays
Misc. Heating Valves	15	$ 500	$ 200	$ 700	
A/C Split System	15	$ 1,000	$ 500	$ 1,500	Compressors
Electrical					
1 - 5 year life expectancy					
Light Fixture Type A Ballast	5	$ 240	$ 120	$ 360	25% Replacement
6 - 15 year life expectancy					
Emergency Generator Contract	10	$ 500	$ 2,500	$ 3,000	

Notes -
1 Parts necessary for the first replacement are to be provided by the contractor at construction completion
2 No labor cost included, assumed water plant operator to provide installation