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SWCD ...established to promote the conservation and wise use of our county's natural resources

DRAFT Memorandum

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cc: Dick Tupper, Supervisor – Cortlandville (T)
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From: Pat Reidy, SWCD
Date: April 3, 2009

Subject: 2008 TCE Monitoring in the Otter-Dry Creek Aquifer

The Otter-Dry Creek aquifer is the source of drinking water for the City of Cortland and Town of Cortlandville. Groundwater contamination in the form of trichloroethene (TCE) and its degradation products was detected in the aquifer in the mid 1980s. The source of contamination was determined to be the former Smith-Corona facility at Route 13 and Lime Hollow Road.

Extensive monitoring of the aquifer has been conducted since the TCE contamination was first discovered. To date, this contamination has not resulted in water quality violations in the municipal water supplies. TCE contamination, however, continues to occur in the aquifer at significant levels, and regular monitoring continues. This memo summarizes the status of TCE monitoring in the aquifer, and on-site clean-up activities at the former Smith-Corona site.

Figure 1 shows the former Smith-Corona facility, the locations of the public supply wells, and groundwater monitoring wells tested in 2008.

Public Water Supply Wells

The City of Cortland water supply was tested four times in 2008. The two Cortlandville water supplies were each sampled three times in 2008. All samples were analyzed for volatile organic compounds (VOCs) using EPA Method 524, which comprises about 60 different compounds.

No target VOCs, including TCE, were detected in any of the water supply samples.

Aquifer Monitoring

SWCD tested for VOCs at 12 groundwater monitoring wells three separate times in 2008. This testing was conducted under a larger aquifer monitoring program. Six of these wells might potentially be impacted by the TCE plume from the former SCM site. These six wells are shown on Figure 2.

For two of the six wells, TCE and its degradation products were not detected in any of the three sampling rounds. These wells are CP-5 (on Luker Rd) and CT-2S (on Glenn St).

For the other four monitoring wells, TCE was detected in all three sampling rounds in 2008. Table 1 summarizes the results for TCE and its degradation products.

TCE

TCE is the chemical released at the former Smith-Corona facility. The drinking water standard for TCE is 5 ug/l.

Well CT-4D is located at the far southwestern end of the Water Works. TCE was detected at CT-4D during all three rounds in 2008, ranging from about 4-5 ug/l. This is consistent with TCE levels measured at this well in recent years.

Well MW-3D is located on the south side of the Water Works, near the SUNY Cortland football stadium. TCE was detected during all three rounds in 2008, ranging from about 1-2 ug/l. This is consistent with TCE levels measured at this well in recent years.

Well CT-5S is located on Gutchess Lumber property off McLean Rd. TCE was detected during all three rounds in 2008, ranging from 1-14 ug/l. This is consistent with TCE levels measured at this well in recent years.

Well CT-22 is located on private property near the corner of Stupke Rd. and Lime Hollow Rd. TCE was detected during all three rounds in 2008, ranging from 2-3 ug/l. This is consistent with TCE levels measured at this well in recent years.

1,1,1-Trichloroethane (TCA)

TCA is a potential breakdown product of TCE, and has a drinking water standard of 5 ug/l.

MW-3D is the only well where TCA was detected in 2008. It was detected in all three rounds between 1 and 2 ug/l., below the drinking water standard of 5 ug/l.

1,2-Dichloroethene, Total (DCE)

DCE is also a potential breakdown product of TCE, and has a drinking water standard of 5 ug/l.

MW-3D is the only well where DCE was detected in 2008. It was detected in all three rounds between 1 and 2 ug/l, below the drinking water standard of 5 ug/l.

Smith-Corona On-site Remediation and Monitoring

S.C.W.P. LLC is responsible for operating the groundwater remediation system at the former Smith-Corona facility. NYSDEC is the regulatory authority overseeing the clean-up. The remediation system consists of a recovery well and air stripper. The recovery well is intended to perform two main functions: 1) pump contaminated water from the aquifer for treatment, and 2) alter natural groundwater flow patterns to prevent more contamination from migrating off-site. Pumped water is discharged to the air stripper, which removes VOCs. Discharge from the air stripper passes through a pipe, flows down a cascade, and then into one of two infiltration basins located on site.

In addition to monthly monitoring of the air stripper, SCWP conducts annual monitoring of on-site groundwater quality. The results of 2008 on-site monitoring activities were summarized in an annual report dated January 21, 2009 prepared by Buck Engineering. Below is a summary of 2008 on-site remediation:

- Treatment System Monitoring - Based on 12 monthly sampling events, TCE levels from the recovery well ranged from 3.5 to 11 ug/l, averaging 7.6 ug/l. After passing through the air stripper, TCE levels ranged from approximately 2 to 5 ug/l. At the base of the cascade, before entering the infiltration basins, TCE levels ranged from 0 to 2 ug/l, with an average of 1.4 ug/l.

- Monitoring Well Network:

    - The five shallow monitoring wells along Lime Hollow Rd. continue to indicate a slightly decreasing trend. Four of these wells have TCE concentrations below 5 ug/l, and one well slightly exceeded 5 ug/l. On average, the treatment system removes about 80% of the TCE from extracted groundwater, but only if losses along the cascade are included.

    - Three of four deep monitoring wells along Lime Hollow Rd. had increases in TCE concentrations., with one exceeding 5 ug/l. The fourth well continues to demonstrate non-detectable levels of TCE.

    - The four shallow wells on the site interior continue to exhibit decreasing TCE levels, with two wells exceeding 5 ug/l.

    - The two deep well on the site interior declined in TCE concentration, with levels below 5 ug/l.

- Treatment System Operations

    - In recent years and during the first few months of 2008, there were difficulties maintaining design flow (800 gpm) through the treatment system. The problem was reviewed and attributed to a restricted heat exchanger inside the building. SCWP personnel were able to modify the piping to restore flow rates to 800+ gpm as of late May, 2008.

    - During 2008, the system pumped about 380 million gallons at an average pump rate of about 720 gpm. The system removed the equivalent of about 2 gallons of TCE.

- The remediation system operated without major breakdown or other incidents during 2008. The system was shut-down 37 hours during the year for routine maintenance.

- The pumping rate of the recovery well is a critical factor for the treatment system. Pumping alters natural groundwater flow patterns, and can prevent contamination from migrating off-site. There has been concern that the recovery well does not fully contain contamination on-site because of the elevated TCE levels observed in the LaMont Circle area (as described in the next section). In February of 2009, DEC requested that SCWP attempt to achieve better containment by increasing the pump rate.

DEC Monitoring in the LaMont Circle Area

VOCs such as TCE can readily transform from a dissolved phase in groundwater into a gas phase in the air space of the overlying sand and gravel. As a result, TCE in groundwater below a home can potentially migrate into the home, presenting a health risk. This is commonly called vapor intrusion.

The LaMont Circle area is directly downgradient (downstream) of the former Smith-Corona facility. Available data suggests that TCE from the Smith-Corona facility has contaminated groundwater in the LaMont Circle area. DEC has conducted extensive investigations of both groundwater and the air-space in homes in the LaMont Circle area. They have subsequently equipped a number of homes with systems to mitigate vapor intrusion.

DEC continues to monitor the LaMont Circle area, and in December 2008 they tested 33 groundwater monitoring wells for VOCs. The following is a summary of the results:

- TCE was detected at 23 of 33 wells. No other VOCs were detected at any of the wells.

- TCE was greater than 0 but less than 5 ug/l at eight wells

- TCE was between 5 and 10 ug/l at eight wells

- TCE was between 10 and 20 at seven wells

- TCE levels measured in December 2008 are generally similar to DEC measurements in 2006 and 2007.

- Many of the TCE levels measured in the LaMont Circle area are higher than TCE levels measured at the former Smith-Corona facility.

- None of the typical breakdown products of TCE was detected in 2008

Conclusions and Recommendations

No VOCs were detected in the City of Cortland or Town of Cortlandville water supplies in 2008. Both communities continue to distribute water to the public that meets drinking water standards for VOCs.

Low levels of a few different VOCs, including TCE, continue to occur in the aquifer. The presence of this contamination, however, has not caused drinking water quality violations in the public supplies. Over the long term, TCE levels in the aquifer have showed an overall decline in concentration. Natural degradation of TCE in this aquifer appears to be relatively slow, and we believe the TCE plume will persist for a number of years.

On-site remediation at the former Smith-Corona facility continues to operate essentially the same as it has since 2001. SCWP reports that it is meeting all operational requirements for the system.

DEC continues to detect TCE in groundwater beneath the LaMont Circle area. The 2008 results are generally consistent with past monitoring. DEC does not anticipate that additional homes will require mitigation based on the most recent monitoring.

We recommend the following:

- Continue to monitor the City's supply well(s) on a quarterly basis for VOCs. The water sample should be collected from raw water, prior to any treatment, to avoid confusion over possible trihalomethane formation following chlorination. Laboratory analytical methods should be consistent with those required for drinking water.

- Meet in May of this year it discuss and plan additional monitoring activities, including the possibility of monitoring one or more monitoring wells in the Fall of 2009. The meeting should include representatives of the City, Town of Cortlandville, Health Department and SWCD, and others as appropriate.

- Continue to evaluate monitoring data on a regular basis, and prepare an annual summary of the results [SWCD plans to continue to maintain a database, analyze data and prepare an annual report for the City and Town].

- Continue to remain informed of activities related to on-site groundwater remediation at the former Smith-Corona facility, and groundwater monitoring activities being conducted by DEC.

Table 1

Summary of 2008 Results for Monitoring Wells

for TCE and Related VOCs

Round	Trichloroethene (TCE)			
	CT-4D Water Works	**MW-3D Water Works**	**CT-5S Gutchess**	**CT-22 Stupke Rd**
Round 1	5.4	1.3	1	2.2
Round 2	4	1.4	14	2.9
Round 3	5.2	1.2	14	2.6

Round	MW-3D Water Works	
	1,1,1-Trichloroethane	**1,2-Dichloro-ethene,Total**
Round 1	1.6	1.9
Round 2	1.4	1.4
Round 3	1.4	1.4

all values in ug/l

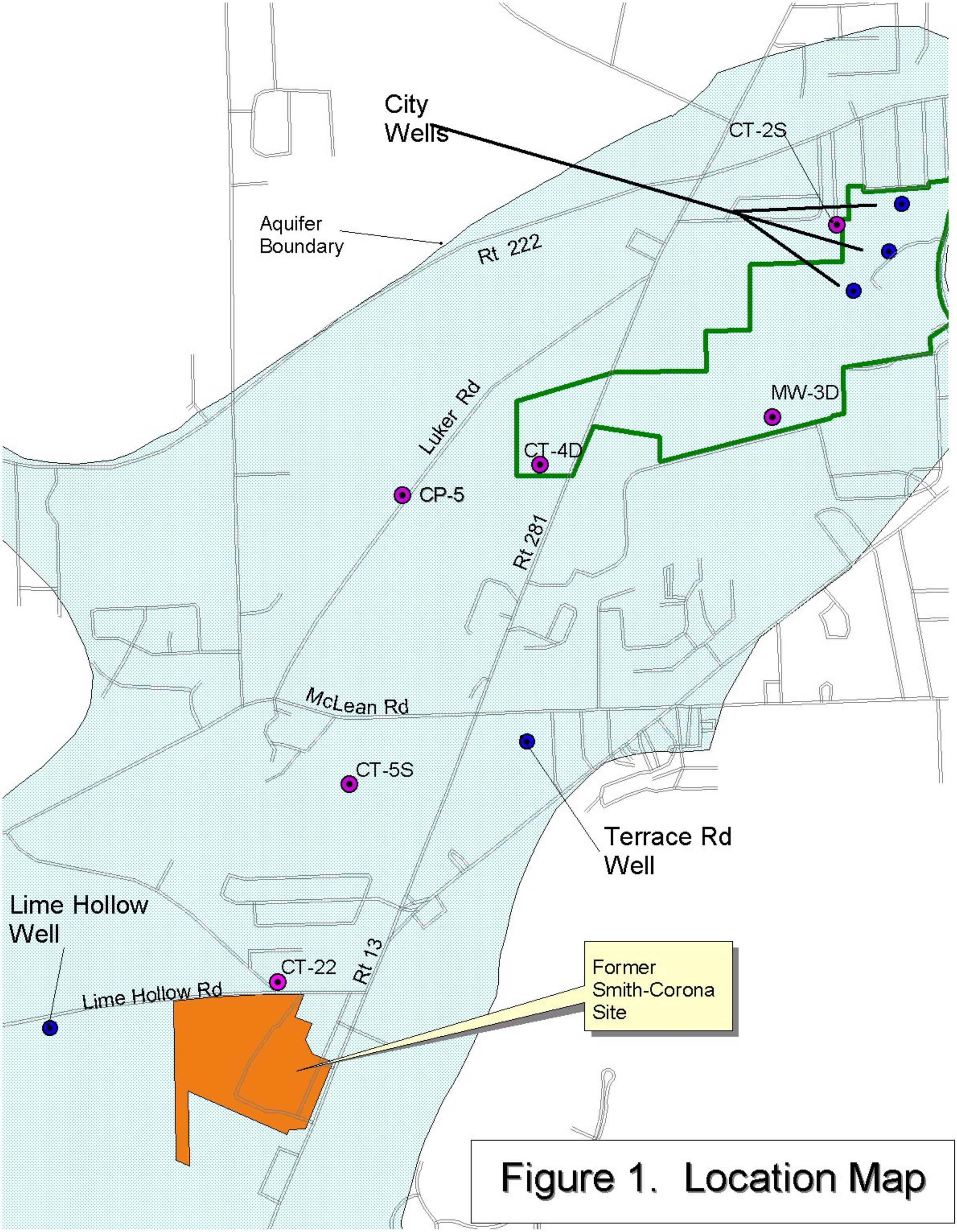

Figure 1. Location Map