

Report on Prohibition Zone Well Identification Plan

Purpose: This is a report on Tasks 1, 2 and 3 of the June 17, 2005 Well Identification Work Plan proposed by Pall Life Sciences (PLS).

Task 1: Door-to-Door Survey of Vulnerable Neighborhoods

Task 1 of the Work Plan called for a survey of vulnerable neighborhoods for determining whether or not wells still existed on those properties. At the time of the June 17, 2005 Work Plan, only two “vulnerable” neighborhoods had been identified – the Westover Subdivision and homes along Wagner Road, between Jackson Road and the southern edge of the Prohibition Zone (PZ). It was anticipated that additional vulnerable areas would be identified based on the results of the investigation undertaken as part of Task 2. Vulnerable areas are to be surveyed and information regarding existing wells developed during that survey would be used to support other aspects of the plan.

During the summer of 2005, PLS and DEQ agreed to prioritize one neighborhood (Wagner Road) where it was known that residences drew water from wells and which was located across the street from the PLS facility. This area was surveyed immediately, and a report on the Wagner Road properties follows. All other areas within the PZ already have access to city water supplies, so it was determined to postpone surveying other neighborhoods until a survey tool was approved and Tasks 2 and 3 were completed.

Report on Task 1:

PLS has provided under separate cover a survey tool to be delivered to addresses within the neighborhoods to be identified as a result of completion of Tasks 2 and 3. Upon approval of the survey tool, PLS will commence within 10 days a survey of all of the properties identified in Tables 1-4 as scheduled for a survey.

Wagner Road Properties.

PLS and the DEQ identified seven addresses in the PZ along Wagner Road that were utilizing private water wells. (Table 1). PLS submitted its July 2005 Review of Available Information regarding these wells, which concluded that the wells were not likely to become contaminated. The DEQ disagreed with that conclusion and ultimately, PLS agreed to run a water line to service those properties (no such line existed proximate to the homes in this area) and to pay to connect the properties to municipal water. Six of these properties has been connected at PLS expense to municipal water. The wells formerly servicing these locations have been converted to sampling locations. PLS will abandon those wells when they are no longer part of PLS’s sampling program.

Additional Survey Locations.

Tasks 2 and 3 have been completed and a report is provided herein with references. Based on the results of these tasks, the following additional locations will be surveyed as part of Task 1:

Eastern PZ Township Islands

As discussed in Task 2, the PZ areas east of Maple Road were annexed into the City of Ann Arbor prior to the discovery of contamination at PLS (most during the period of 1920-1965). Some township islands in that area remained along Dexter, Miller, Jackson, Maple, and Newport Roads, and in some isolated areas within subdivisions. In order to identify vulnerable neighborhoods in Task 1, PLS reviewed state well records for the Ann Arbor Township Sections 19,20,28, 29, and 30, and Scio Township Sections 24 and 25. In addition, PLS reviewed zoning maps and the tax records for Scio Township, Ann Arbor Township, and the City of Ann Arbor to determine the age of buildings to see if they were constructed before annexation into the City.

Table 2 lists locations east of Maple Road that were examined in detail because of location, age of construction, and annexation dates. Two well records were found in this area with no corresponding record of well plugging. These addresses will be surveyed to determine if wells do in fact still exist. Fifteen addresses were identified to be included in a survey because either the houses were constructed and are still located in Ann Arbor Township, or because of the age of construction and date of annexation, the houses might have had wells providing water at one time.

Western PZ

In the PZ west of Maple Road, two neighborhoods were examined – the Westover subdivision and houses constructed along Wagner Road. The other neighborhood (Lakewood Subdivision) was not analyzed because the records reviewed in Task 2 establish that this subdivision was platted, annexed to the city, and water lines provided as part of the construction of that neighborhood, so no wells would be expected. No records of wells in the Lakewood Subdivision have been discovered. In addition to the neighborhoods, PLS has learned of three other wells in the Western PZ area: an irrigation well at the cemetery, an irrigation well at Varsity Ford, and a water well used for the cooling tower at Weber's Inn, all off of Jackson Road. These wells are identified on Table 5.

Wagner Road

Table 1 lists the addresses on Wagner within the PZ that are to be surveyed. Several addresses as shown in green on that table have already been surveyed, the wells plugged, and connections made to the city water supply. Six houses were connected by Gelman Sciences to the city water supply and annexed in 1987, however there are no records of

well abandonment on file with local units of government. Two houses on Wagner were constructed recently, would have been in the city limits when built, and would have required city water. The other addresses are not developed.

Westover

Table 3 lists the addresses within the Westover subdivision (except for South Wagner Road). PLS proposes surveying eight homes within that subdivision to verify that wells have been properly abandoned. All of the homes in Westover were either connected by Gelman to city water supplies in 1987 and annexed to the City, or were constructed recently and would have been required to connect to city water at that time. There are no known actively used drinking water wells remaining in Westover. The addresses to be surveyed are those

Evergreen

The south side of Valley Road in the Evergreen subdivision is also within the Western PZ. Because of the age of this neighborhood and the fact that many of the houses were built before the neighborhood was supplied with city water and annexed, PLS is proposing to survey many of the homes on Valley as well. As shown in Table 4, except for a few of the properties (which are vacant, or part of PLS's monitoring program, or involve new construction), all of the homes on the south side of Valley Road will be surveyed.

PLS has also submitted written requests to Washtenaw County, Scio Township and Ann Arbor Township to determine if there are any additional records that might indicate properties that need to be surveyed in the Western PZ. PLS will supplement its report on task one within 60 days, indicating whether such records could be obtained and, if so, if they indicate any additional survey is needed.

Task 2: Research and Preparation of Chronology Regarding the Availability of Municipal Water Within the Prohibition Zone.

1. Eastern PZ

This portion of the survey covers the PZ from Maple/Stadium Road east to the Huron River. Land east of Maple Road was generally part of Ann Arbor Township to the extent that the city limits of Ann Arbor did not extend in that direction. Land to the west of Maple Road generally falls within Scio Township (if not part of the city). For the purposes of the following discussion, "Eastern PZ" refers to the area of the PZ east of Maple Road, and "Western PZ" refers to the area of the PZ west of Maple Road.

The purpose of this study is to trace the evolution of Ann Arbor for the purpose of focusing inquiries regarding the existence of wells within the Eastern PZ. To accomplish this, PLS examined changes in population, streets and political boundaries, the growth of the public water supply system, and the development of local ordinances intended to

protect the public water supply. As can be seen from the discussion below, PLS has been able to draw the following conclusions regarding the Eastern PZ:

- 1) Ann Arbor began developing public water supplies in the late 19th century.
- 2) Public water supplies were extended early on to most existing buildings and streets because local supplies were expensive and inadequate.
- 3) By 1926, public water was being supplied to nearly every home within the city limits, and to some outside of the city limits. The city limits in 1926 included the “heart” of the eastern PZ (along Huron to the old fair grounds) as well as most of the areas north and south.
- 4) By 1935, the City limits and water supply system had been further extended. Generally, supplies were extended along newly constructed streets within the city limits (or annexed by developers) in advance of construction of the homes themselves. This lasted until development in the PZ areas was complete.
- 5) City laws and ordinances prohibited private water supplies unless connection to city water was not possible from 1945 to 1957, and again from 1973 to 2005. From 1957 to 1973, private water supplies could not be used for drinking. From 1945 forward, the utilities department was to be notified, and there were special plumbing requirements, for such “secondary” water supplies.
- 6) During the period of westward growth toward Maple Road, all subdivision developments were plumbed with City water and did not have well water supplies. West of Maple Road, the Lakewood Subdivision in the PZ was also built out this way. Commercial areas on Maple Road were generally built in the 1960s. Those that became part of the City were supplied with city water.
- 7) East of Maple Road, the only locations likely to have private wells were on Township islands that remained along Newport, Jackson, Dexter, and Maple Roads. West of Maple Road, most of the residential developments built before 1990 would have had to have private water supplies.

2. Growth of City Limits and History of Water Supply In Ann Arbor.

The original plat for the village of Ann Arbor was filed in 1824.¹ Early maps of Ann Arbor show that the City’s western growth extended toward Seventh Street generally and followed the five main trunk roads out of town --Huron, Dexter, Miller, Chubb (now Sunset), and Liberty. Various graphic depictions show that houses were concentrated along the City streets, with only a few buildings on the trunk roads west of the City.

Ann Arbor had no public water supply until 1849. Villagers obtained their water from cisterns and from a few community wells located at “places of convenience.”² Although the exact location of these original community wells is not known, it is clear that there was one along the south side of Courthouse Square (on Huron between Main and Fourth). Other reported locations were the corner of Main and Liberty streets, Huron and Fifth

¹ Reference 1, at 1

² Reference 2, at 315

streets, Jefferson and State streets, and one somewhere near the corner of Huron and First streets.³

From 1849 to 1885, Ann Arbor tried to move toward various public water supplies. Some of these efforts are described below. Harrison M. Caswell, who prepared several papers on the history of the water supply in Ann Arbor⁴, reported that in these early days:

The entire water supply was obtained from private wells and springs, and the presence of groundwater within this area was so limited that in many parts of the city it was difficult even to locate such a private supply, and neighborhood groups often found it necessary to obtain water for cooking and drinking purposes from a single source located in the vicinity of their homes.⁵

Other sources also report about the difficulty of finding suitable groundwater resources during the 19th and early 20th centuries.⁶ It therefore appears that private wells serving a single home were probably non-existent or rare within proximity to the City. In 1849, a small system was created along South Main Street using a spring (probably on Allen Creek) and tamarack logs. This system was not pressurized and was inadequate almost from the start.⁷ Another small system was created from a well near Maynard and Liberty (which is not in the PZ) that could supply fifty families.⁸ After the Civil War, a local business formed by drawing water from local springs (again, apparently along Allen Creek and the Huron River) and selling the water to business and private residences.⁹ Following approval by City Council in 1885, a contract was created with a private company, the Ann Arbor Water Company (or Ann Arbor Water Works) to construct Ann Arbor's first municipal water works and distribution system. The plant was constructed in 1886-87 and began providing pressurized water to buildings and to fire hydrants.¹⁰ Water was initially drawn from private springs, but later wells were installed along the Huron River near Barton Pond (pump station No. 1) and from artesian wells along West Washington Street (at 7th Street). Following some financial disasters and complaints about pressure and water quality, the Water Works were purchased by the City of Ann Arbor in 1912.

³ Reference 2, at 315. The well south of the courthouse was reported as "closed and sealed with masonry" in 1888 (Reference 2 at 318). PLS has inspected the other reported locations and has found no evidence of existing wells, probably because each of those areas were developed extensively since the 1840s.

⁴ Mr. Caswell was on the Board of Water Commissioners for Ann Arbor and stayed involved in water supply issues from approximately 1912 until his death in 1963. His papers are collected at the Bentley Historical Library at the University of Michigan, and include several histories of the water supply.

⁵ Reference 3, at 1.

⁶ Reference 4, at 25, 34. Professor Williams noted a number of borings on the west side had been drilled without securing any water (and at considerable cost), and that groundwater appeared to be present in limited quantities and only in pockets of sand and gravel, causing "great uncertainty" to exist as to the supply of groundwater at any particular point. (Ref. 4 at 34).

⁷ Reference 2, at 315.

⁸ *Id.*

⁹ Reference 2, at 316. The "Mineral Spring House" located on Huron near Mann (just west of downtown) was apparently that business. It was situated right on top of the Allen Creek. See Map Reference 2.

¹⁰ Reference 3, at 317.

In connection with the purchase, Professor Williams of the University of Michigan prepared a series of reports on the condition of the water system.¹¹ A map shows the distribution system as of 1912.¹² As can be seen by the map, the area within the eastern most portion of the PZ had City water by that date. Other areas (West of 7th street) were largely undeveloped. With respect to water supplies, Professor Williams noted that although most of the City water was then coming from groundwater (Pump Stations 1 and 2), the groundwater resources were not reliable to cover continued growth of the City. He recommended expanding the purification plant and using more river water.¹³

From 1912-1926, the City experienced some westward expansion. Neighborhood streets were laid with water mains for Wildwood Park, Westwood Hills, Periwinkle Park, and Fairview Heights, and houses were built in those subdivisions from the 1920s through 1950. As the City grew, so did the water supply. Steere Farm well field was added in 1915, but gradually the City relied more and more on river water. In 1921, Pump Station No. 2 was discontinued and taken out of service due to the relatively small yield of the artesian wells and contamination of the water by surface water.¹⁴ All that is left of the Pump Station is Water Works Park. Montgomery Well was installed in 1928.¹⁵

In 1921, the National Fire Protection Underwriters recommended that water distribution be extended to the City limits.¹⁶ By 1926, a map of the distribution system shows that it covered the newest additions to the west side of the City (Wildwood and Pleasant Ridge subdivisions).¹⁷ The City limits extended out to Fairview Heights and Periwinkle Park, but did not include the old fair grounds (later, Veteran's Park). By this date, most of the City's water supply came from groundwater (Steere Farms and Pump Station No. 1), and virtually all of the buildings within the City limits were on the distribution system.¹⁸ The distribution system extended to the City limits and beyond, and included undeveloped tracks within the City limits north of Jackson (east of Newport) that are within the PZ.

Maps of the City and of the water distribution system from 1935 through 1960 show that the water distribution system continued to expand to cover the westward and northward growth of the City. By 1941, the water department supplied water "to practically all built-up territory within the city limits."¹⁹ Water came from three groundwater sources (Barton, Steere Farm and Montgomery) and the Huron River.²⁰

Reports prepared by the Ann Arbor Water Department during this period also establish that for the undeveloped tracts (where houses were built during and after WWII), water distribution systems were extended first along proposed streets, and then houses were

¹¹ Reference 4

¹² Map Reference 3.

¹³ Reference 2, at 319.

¹⁴ Reference 5, at 1.

¹⁵ *Id.*

¹⁶ Reference 6, Exhibit 1, page 6.

¹⁷ Map Reference 4.

¹⁸ Reference 6, at 2-4.

¹⁹ Reference 8, at 1.

²⁰ Reference 8, at 2.

built.²¹ This establishes that wells would not have been constructed to serve those houses. Thus, for example, mains were extended to Wilton Court and Brierwood Court, the Twin Oaks Subdivision and Sunset Heights (1947), Arbor View, Westwood, Arlene, Grace, Alice, Bruce (1948), Revena and Newport Place (1950), Maple Village Kroger Plaza (1951), Red Oak Subdivision- Pomona (1952), Westport Heights, Martin Acres (1953), Morningside (1954), Abbott Ave East from Pleasant Place (Zahn Subdivision, 8 new lots)(1956-57). In 1957, the Water Department reported that it would no longer finance developer's water lines in their new subdivisions, but instead would require developer financing of City construction. Thus, the last two subdivisions covered in the PZ (Westport Hills #3 (Wines Road), and Maple Ridge (Carbeck, Walter, Susan, etc) were paid for by the developer and then annexed to the City.

Task 3: Legal Restrictions On Use Of Groundwater Supplies.

The evolution of the water supply system was accompanied by gradual changes in the applicable laws governing construction and use of water and sewers. Initial ordinances set rates, required payment, and provided for redress for complaints against the Ann Arbor Water Company.²² In 1913, upon completion of the purchase of the Ann Arbor Water Company, the City Council created a Water Works Department. Ordinances were adopted to prohibit turning on water by anyone other than a city employee, and to provide for extension of service to properties.²³ The first sewer ordinances were passed in 1894 (and amended periodically thereafter). All owners of any inhabited house or building situated along a sewer were required by ordinance to connect to the sewer system within six months from the date of completion of the sewer in front of the inhabited building.²⁴ Since the costs for the sewer were to be collected through special assessment on the tax rolls of the City, during this time frame it was not possible to provide for extension of sewers to serve properties outside of the city limits.

By 1930, the City had in place regulations for zoning and building that required a certificate of occupancy as a condition to occupying and using any new or existing building.²⁵ The certificate, which was issued by the building inspector, stated that the building and its proposed use complied with all the building and health laws and ordinances.²⁶ In 1945, Ordinance No. 102 was enacted.²⁷ This ordinance: (1) required all devices where persons normally come in direct contact with water to be supplied with city water wherever city water was available; (2) required notification to the Water Department of the existence of any "secondary or dual water supply;"²⁸ and (3) required

²¹ Reference 7.

²² *Revised City Ordinances for the City of Ann Arbor (1907-08)*, ordinance of March 12, 1906.

²³ Ordinance of September 5, 1916, and Ordinance of August 6, 1923.

²⁴ Ordinance of May 21, 1894, as amended, see *Charter and Ordinances, City of Ann Arbor (1896)*, at 219 (Section 16); *Ordinances of the City of Ann Arbor (1930)* at 277 (Section 16)

²⁵ *Ordinances of the City of Ann Arbor (1930)*, at 359 (Sec. 10 of zoning ordinance).

²⁶ *Id.*

²⁷ Ordinance No. 102, *Ordinances of the City of Ann Arbor (1941)*.

²⁸ Secondary or dual water supply was defined as any water supply maintained in addition to the city water supply, including sources from rivers, surface or ground water from deep or shallow wells. Ordinance No. 102, 102.2(b), *Ordinances of the City of Ann Arbor (1941)*.

warning labels and color-coded plumbing for all secondary or dual water supplies.²⁹ The certificate of occupancy requirements from the 1930 code were still in effect.

Accordingly, by 1945, no new building permits would be issued for city buildings, new or existing, that allowed for wells or any other “secondary” water supplies where city water supplies were available. As noted in the previous section, city water supplies were extended in the westerly direction to virtually all roads within the city limits, and as new subdivisions were created, water supply was brought in when the roads were laid. This legal framework persisted until 1957. At that time, the ordinances were changed somewhat. Although fixtures supplying water no longer had to be connected to city water where available, the ordinance still required notification to the Department of Utilities of the existence or creation of any secondary water supply, prohibited interconnection, and required color coded pipes and other protections.³⁰ Also, by this time private water supplies of any customer using the sanitary sewer was required to install a meter at their own expense for the purpose of establishing appropriate sanitary sewage charges.³¹ This also assures that the City would have notice of secondary supplies within city limits, since all such properties were required to have sanitary connections.

In 1973, and continuously thereafter until January 3, 2005, the City had in place an ordinance as part of its building code which stated that “no individual water supply shall be allowed in the City of Ann Arbor except in locations where it has been determined by the Superintendent of Utilities that it is impossible to serve the property with public water.”³²

Summary of Results of Tasks 2 and 3: Information on well locations in the Eastern PZ.

For the reasons discussed above, it is unlikely that any wells have been installed in the Eastern PZ, except for the following:

- 1) Wells used as “community” water sources in the 19th century;
- 2) Wells used by the Ann Arbor Water Company or the Utilities Department to supply groundwater for a public system; and
- 3) Private water supplies constructed to serve buildings initially built in Ann Arbor Township, and subsequently annexed into the City.

It is possible that other water sources were constructed for irrigation or process waters. However, City Ordinances have required since 1945 that notification be given to the Utilities Department of any such sources and they were required to be separately

²⁹ Ordinance No. 102, 102.3 to 102.7.

³⁰ Chapter 98, Section 1708.4 (Building Code), *Ann Arbor Michigan Ordinance Code (1957)*.

³¹ Ordinance No. 24-58 (July 21, 1958), Chapter 29, Sec. 2:66.

³² Ordinance No. 7-73, October 1, 1973, Chapter 98, Section P1700.0. *See also* Chapter 98, Sec. P1600.1, City Code of 1980; Chapter 98, Sec. P-1603.1, City Code of 1987.

plumbed and labeled. PLS has requested all such records (if any exist) from the City. PLS will supplement this report based on the City's response to PLS FOIA request.

In the PZ east of Maple Road, buildings, especially older buildings that exist in township islands or have been recently annexed are potential locations for wells. PLS reviewed the tax records along Miller, Newport, Jackson, Dexter and Maple Roads to determine if there were buildings constructed early enough so as to require private sources of water. PLS also reviewed the zoning maps and tax assessment records for Ann Arbor Township to determine if there were any interior "islands" still in the township. Buildings to be surveyed based on this review are included in Table 2. The rationale for including the building in the survey (or removing it) is included in the table.

PLS also has some imprecise information regarding locations of wells used by the city in the past to supply water. PLS will conduct a visual survey of those locations to determine if those wells can be physically located. This information is presented above. The locations of the former "community wells" are such that it is unlikely that any will be found. The water supply wells on W. Washington Street near 7th and 8th streets were likely plugged, but an effort will be made to visually locate these wells also.

PLS has found a 1935 Map prepared by an engineering company showing well locations throughout the general area. It has overlaid this map on top of the map showing the PZ, and will attempt to correlate these wells with street addresses. If the buildings at these addresses are determined to be old enough to support use of the well in 1935, these addresses will be added to the survey.

Summary of Results of Tasks 2 and 3: Information on well locations in the Western PZ.

Records reviewed in Tasks 2 and 3 show that development of water supplies west of Maple Road came in essentially three stages. Water was supplied along Maple Road for significant commercial developments as they were constructed (such as Maple Village Plaza) and those properties were annexed into the City. Although a few township islands still exist on Maple Road, they are outside the PZ, and will not be surveyed.

A second stage involved the Lakewood subdivision, including its school. This entire subdivision and the school were connected to the water supply prior to 1955.³³ Wells in this neighborhood would not have been necessary, and would have been illegal during the time it was constructed in any event. This neighborhood was not identified as vulnerable and is not included in the survey.

The third stage of expansion of city water involved connections needed in response to contamination from PLS. These connections occurred in 1987-1992, and periodically thereafter. The connections have been paid for by PLS, although some were initially constructed by the state. The owners connected some of the homes in Evergreen

³³ Map References 6 and 7.

subdivision to city water when it became available. Accordingly, it is possible that private water wells serviced homes in the Evergreen subdivision, Westover subdivision, and along Wagner, if they were constructed before annexation to the City or before the plume was known to exist. PLS reviewed the GIS maps, tax records and well information available in these neighborhoods and derived locations that should be surveyed for the existence of wells. Except for houses along Wagner (which are now connected or in the process of connecting with city water), the homes in the Western PZ appear to all have municipal water supplies. However, some abandonment records for wells in Westover and along Wagner could not be located for homes that appear likely to have had wells. These homes are included in the survey. There was no abandonment records for Valley Drive, so all of the homes on that road within the Western PZ are included in the survey, unless there is specific information indicating that such survey is not necessary.

List of References (Books and Papers)

1. Marwil, Jonathan, A History of Ann Arbor, University of Michigan Press (1987).
2. Stephenson, Ann Arbor – The First Hundred Years, Ann Arbor Chamber of Commerce (1927).
3. Caswell, Harrison J. “History of Municipal Water Supply for the City of Ann Arbor, Michigan” (unpublished), February 26, 1947.
4. Williams, Gardner S. “Reports on the Valuation and Extension of the Ann Arbor Water Works,” Ann Arbor (1912).
5. Caswell, Harrison J. “Chronology In Improvements To Plant Up To 1930” (unpublished) (1930).
6. Maury & Gordon, “Report on Water Supply, Ann Arbor, Michigan,” February, 1926 (unpublished report for Water Department).
7. Ann Arbor Water Department, “Annual Reports”, Ann Arbor (1933-1957).
8. Natn’l Bd of Fire Underwriters, “Report on City of Ann Arbor, Mich.,” (Report No. 385) (November, 1941).
9. Natn’l Bd of Fire Underwriters, “Report on City of Ann Arbor, Mich.,” (Report No. 385) (November, 1959).


List of References (Maps)

1. 1897 –Directory Map of Ann Arbor, Glen V. Mills (photograph), from Ann Arbor Public Library maps collection.
2. 1874-Map of Northwest Ann Arbor, Evans and Stewart.
3. 1912- Maps of the Ann Arbor Water Company distribution systems (from Ref. 4)(photographs)
4. 1926 – Map Showing Water Distribution System (Maury & Gordon)
5. 1941 – Map Showing Water Distribution System for Ann Arbor (Ref. 8)
6. 1959 – Map Showing Water Distribution System for Ann Arbor (Ref. 9)
7. 1955 – Tax Assessor’s Map for City of Ann Arbor

TABLES

Table 1
 Survey Locations
 South Wagner Road

Number	Street	Well Record	Well Depth	Will Survey (Y/N)	Notes
3480	Jackson	No	No	Y	Irrigation well at Varsity Ford
3050	Jackson	No	No	Y	Supplies cooling water (Weber's Inn)
127	S. Wagner	No	No	N	Vacant
137	S. Wagner	No	No	N	House built in 2003
157	S. Wagner	No	No	N	Plugging record found
205	S. Wagner	No	No	Y	House annexed in 1987, no plugging record found
215	S. Wagner	No	No	N	House built in 1997
249	S. Wagner	No	No	Y	House annexed in 1987, no plugging record found
267	S. Wagner	No	No	Y	House annexed in 1987, no plugging record found
343	S. Wagner	No	No	Y	House annexed in 1987, no plugging record found
351	S. Wagner	No	No	Y	House annexed in 1987, no plugging record found
359	S. Wagner	No	No		House annexed in 1987, no plugging record found
591	S. Wagner				Well abandoned and replaced with City supply by Pall
597	S. Wagner				Well abandoned and replaced with City supply by Pall
603	S. Wagner				Well abandoned and replaced with City supply by Pall
609	S. Wagner				Well abandoned and replaced with City supply by Pall
679	S. Wagner				Well abandoned and replaced with City supply by Pall
685	S. Wagner				Owner currently reviewing contract for replacement water
697	S. Wagner				Owner currently reviewing contract for replacement water

 = Location to be surveyed



 = Location already identified and connected to city water

Table 2
Survey Locations

Number	Street	Well Record	Well Depth	Will Survey (Y/N)	Notes
1522	Arborview	No	No	Y	In AA Twp, year of construction is not known
2101	Arborview	No	No	Y	House built in 1909 (AA Twp)
402	Glendale	No	No		House built in 1953 (AA Twp)
404	Glendale	No	No		House built in 1950 (AA Twp)
960	Newport	No	No	Y	Irrigation well, per DEQ
2024	Newport	Yes	151	N	Outside of PZ. No plugging record found
1645	Miller	No		Y	House built in 1950 (AA Twp)
2020	Dexter	No		Y	House built in 1946 (AA Twp)
2106	Dexter	No		Y	House built in 1937 (AA Twp)
2200	Dexter	No		Y	House built in 1950 (AA Twp)
2201	Dexter	No		No	Fairview Heights (Ann Arbor)
2205	Dexter	No		No	Fairview Heights (Ann Arbor)
2209	Dexter	No		No	House built in Ann Arbor (1950)
2213	Dexter	No		No	Fairview Heights (Ann Arbor)
2219	Dexter	No		No	Fairview Heights (Ann Arbor)
2225	Dexter	No		No	Fairview Heights (Ann Arbor)
2310	Dexter	No		Y	House in AA Twp until 2002, year of construction unknown
2320	Dexter	No		Y	House in AA Twp until 2002, house built in 1945
2324	Dexter	No		Y	Knight's Inn (1979)
2330	Dexter	No		Y	Fox Auto Service (AA Twp)
2340	Dexter	Y	64	Y	OK Auto Service (AA Twp)
2344	Dexter	N		Y	Imperial Auto Service (AA Twp)
2380	Dexter	N		Y	Vacuum Shop
2390	Dexter	N		N	United Auto Fleet Repair

PZ East of Maple Road (Ann Arbor Township)

 = Location to be surveyed.

Fairview Heights subdivision was vacant until annexed to City and supplied with city water at time streets were constructed. Houses were built starting in the 1920s.

Table 3
Survey Locations
Westover Subdivision

<i>Number</i>	<i>Street</i>	<i>Well Constr Record</i>	<i>Well Depth</i>	<i>Will Survey (Y/N)</i>	<i>Notes</i>
56	Westover	Yes	114	N	Plugging record found
60	Westover	No	No	N	House built in 2004
65	Westover	No		N	Plugging record found
75	Westover	No		N	House built in 2004
126	Westover	Yes	81	N	Plugging record found
143	Westover	No		N	Plugging record found
144	Westover	No		N	Plugging record found
160	Westover	No		N	House built in 2000
163	Westover	No		N	Plugging record found
204	Westover	Yes	85	N	Plugging record found
205	Westover	No			House built in 2000
211	Westover	Yes	90	Y	No plugging record found
212	Westover	Yes	95	N	Plugging record found
213	Westover	No		N	Plugging record found
214	Westover	No		No	Garage of neighboring house
235	Westover	No			Plugging record found
254	Westover	No			Plugging record found
263	Westover	No			Plugging record found
281	Rhea	No	63	Y	No plugging record found
3453	Rhea	No		N	House built in 2004
3390	Porter	No		N	Plugging record found
3404	Porter	No		Y	House built in 1940
3412	Porter	No	89	N	Plugging record found
3415	Porter	No		Y	House built in 1950
3420	Porter	No		N	House built in 2004
3437	Porter	Yes	?	N	Plugging record found
3460	Porter	No		N	House built in 2001
3401	Ferry	Yes	93	Y	No plugging record found
3404	Ferry	No		N	House built in 2000
3409	Ferry	No		Y	House built in 1950
3410	Ferry	No		N	House built in 2000
3416	Ferry	No		N	House built in 2000
3417	Ferry	No		N	Plugging record found
3425	Ferry	No		N	House built in 2003
3432	Ferry	No		N	House built in 2004
3445	Ferry	No		Y	House built in 1925
3459	Ferry	Yes	98	Y	No plugging record found
3460	Ferry	No		N	Undeveloped lot
3463	Ferry	Yes	?	N	Plugging record found
3464	Ferry	No		N	Undeveloped lot
3468	Ferry	No		N	Undeveloped lot
3472	Ferry	No		N	Undeveloped lot



 = Location to be surveyed.

Table 4
 Survey Locations
 Evergreen Subdivision (PZ only)

<i>Number</i>	<i>Street</i>	<i>Well Constr Record</i>	<i>Well Depth</i>	<i>Will Survey (Y/N)</i>	<i>Notes</i>
2575	Valley	Y	105	N	House built in 1958, well is part of PLS monitoring system
2591	Valley	No		N	House built in 2004
2605	Valley	No		Y	House built in 1941
2615	Valley	No		Y	House in Scio Township
2631	Valley	No		Y	House built in 1959
2645	Valley	No		Y	House built in 1972
2661	Valley	No		Y	House built in 1940
2667	Valley	No		Y	House built in 1969
2675	Valley	No		Y	House built in 1969
2681	Valley	No		Y	House built in 1969
2689	Valley	No		Y	House built in 1969
2695	Valley	No		Y	House built in 1969
2721	Valley	No		Y	House built in 1928
2731	Valley	No		Y	House built in 1971
2741	Valley	No		Y	House built in 1978
2751	Valley	No		Y	House built in 1954
2815	Valley	No		Y	House built in 1991
2825	Valley	No		Y	House built in 1949
2835	Valley	No		Y	House built in 1980
2915	Valley	No		Y	House built in 1954
2949	Valley	No		N	House built in 2002

Addresses are for the south side of Valley Drive. North side is not within the PZ.

 = Location to be surveyed.