SOURCE WATER PROTECTION PROGRAM
BENEFITING THE TOWN OF HANCOCK
(PWSID 021-0012)
WASHINGTON COUNTY, MARYLAND

ALWI Project No. MD7S075

August 23, 2013

PREPARED FOR THE

TOWN OF HANCOCK

IN PARTIAL FULFILLMENT OF MARYLAND DEPARTMENT OF THE ENVIRONMENT IFB SOLICITATION NO. U00R1400308

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TABLE OF CONTENTS
ALWI Project No. MD7S075

LIST OF TABLES, FIGURES AND APPENDICES
ALWI Project No. MD7S075

TABLES

FIGURES

APPENDICES

SOURCE WATER PROTECTION PROGRAM
BENEFITING THE TOWN OF HANCOCK (PWSID 021-0012)
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1.0 INTRODUCTION

Advanced Land and Water, Inc. (ALWI) was engaged by the Maryland Department of the Environment (MDE) to assist 12 community groundwater systems, including the Town of Hancock (the Town), in developing and implementing Source Water Protection Programs (SWPPs). These programs will help protect public health by identifying implementable measures to address existing and potential contaminant threats to groundwater supplies of drinking water.

In 2004, MDE's Water Supply Program developed a Source Water Assessment Plan (SWAP) and wellhead protection plan (Appendix A) for the Town. The Town was and remains served by two wells in an unconfined consolidated, sedimentary rock aquifer.

We updated the previous SWAP for currency, following technical guidance and advice received from the Water Supply Program of MDE. Notwithstanding this, source water assessment is an intrinsically dynamic process. The currency of a SWAP continuously is affected by new data, changing regulations and the evolving experience and professional judgment of those involved in developing and implementing this report and the recommendations herein.

1.1 PURPOSE

Maryland's Source Water Assessment Program was approved by the U.S. Environmental Protection Agency (EPA) in November 1999, and the initial SWAP for the Town was completed in 2004. The 2004 SWAP included recommendations for ongoing management and protection, as well as periodic updates to reflect changes to the water system, appropriation permit and/or land uses within Source Water Protection Areas (SWPAs) as they may periodically occur. Note that in the 2004 report, the SWPA was termed "wellhead protection area."

While these past efforts recommended certain source protection and management concepts, MDE determined that the Town be included in the SWPP work based on an agency perception of its ongoing vulnerability to potential groundwater contamination. Accordingly, the overall purpose of this work is to assist the Town in developing a SWPP, which includes specific guidance on implementing feasible source protection measures.

1.2 REGULATORY FRAMEWORK FOR SOURCE WATER ASSESSMENT

ALWI followed MDE's source water assessment and wellhead protection guidelines, which stem from the Safe Drinking Water Act (SDWA) of 1974 and its later amendments, which established wellhead protection programs for each state under the oversight of the EPA. The 1996

Amendments to the SDWA mandated the State of Maryland to develop a Source Water Assessment Program. In September of 2011, ALWI was awarded the SWPP contract. The Town's participation in the SWPP was voluntary, and not a regulatory requirement under the SDWA.

1.3 BACKGROUND INFORMATION

The Town's water system (PWSID 021-0012) currently serves 1,921 residents on 650 connections. The Town has an appropriation permit for an average of 300,000 gallons per day (gpd), withdrawn from two wells constructed in the Oriskany Sandstone formation. Both wells are located near Pennsylvania Avenue, north of Interstate-70 (Figure 1). Historically, the Town also held a surface water appropriation permit for Potomac River withdrawals (inactive permit No. WA1975S007). Though this permit no longer is active and the treatment plant has been abandoned and disconnected, we were informed by a Town representative that much of the pipeline infrastructure remains.

In 2004, MDE recommended that the Town form a local planning committee to implement a SWAP for the two wells, while continuing to monitor contaminants listed in the federal Safe Water Drinking Act. Other recommendations included:

- **Public Awareness and Outreach** - MDE recommended conducting education outreach to the facilities that may present potential contaminant sources. Additionally, they suggested placing signs at SWPA boundaries to help protect the System's sources.

- **Planning/ New Development** - MDE also recommended that the Town review the State's Model Wellhead Protection Ordinance (Appendix B) for potential adoption and work with Washington County Department of Planning to coordinate the adoption of a wellhead protection ordinance.

- **Land Acquisition/Easements** - MDE recommended that the community/system should purchase land within the SWPA to protect water supplies.

One of ALWI's overall SWPP goals was to review, modify and implement these and other recommendations. A full list of MDE's 2004 recommendations can be found in Appendix A.

1.4 DELINEATIONS REMAIN UNCHANGED FROM 2004 SOURCE WATER ASSESSMENT PLAN

Updates to the SWPA were not necessary since no new sources were added to the system and there has been no change to the Town's water appropriation permit since 2004. The SWPA is depicted on Figure 1. Delineation methods are summarized in Appendix A and are not repeated herein for brevity.

Although not directly interpretable from the delineation, field observations reveal that both production wells are located within 100 feet of one another. A 1996 report by R.E. Wright Environmental suggests that both probably intercept the same aquifer and sub-horizontal bedding

plane or fracture system. As such, both could be affected by the same possible, future contaminant release[1].

ALWI notes that the SWPA extends into the Thompson Township of Fulton County, Pennsylvania. While Maryland areas are closest to the wells, future source water protection efforts should include Town, Washington County and corresponding local and regional Pennsylvania officials as appropriate.

2.0 CONTAMINANT THREATS ASSESSMENT

ALWI performed regulatory database reviews, field reconnaissance and limited interviews to update the 2004 inventory of potential sources of contamination within the SWPA. Both point and non-point sources of contamination were considered.

2.1 STATE ENVIRONMENTAL DATABASE REVIEW

MDE provided ALWI the following state-maintained environmental databases to incorporate into point-source hazard inventories, with the date of database publication provided parenthetically as follows:

- Municipal and Industrial Groundwater Discharge Permits (12/21/2011)
- Pesticide Dealers (1/12/2012)
- Land Restoration Program Sites (Voluntary Control Program and Comprehensive Environmental Response, Compensation, and Liability Act) (1/16/2012)
- Oil Control Program Underground Storage Tank (UST) and Leaking Underground Storage Tank Databases (10/14/2011)
- Supplemental database listing of solid waste facilities, wood waste disposal sites and other hazardous waste generators (2/2012).

The databases helped with interpretations of groundwater susceptibility, in that the listed facilities may be generators of hazardous materials, petroleum products and/or other drinking water contaminants. Results of this review are integrated with the susceptibility discussion in Chapter 3 of this report. This database search did not result in the identification of point source hazards that were not already identified in the 2004 SWAP or our 2011 field reconnaissance.

[1] In the mid 1990s, the Town drilled a prospective well in the Town Park, approximately 0.6 mile west of the current wellfield. That test well was never permitted as a production well, possibly in part because MDE came to determine that it was groundwater under the influence of surface water (GWUDI). That well remains capped and in existence. No other existing, historical or potential groundwater sources are known to exist.

2.2 FIELD RECONNAISSANCE WITHIN SWPA

On December 15, 2011, ALWI supplemented the database review with a visual reconnaissance within the SWPA. Results of this updated inventory are displayed on Figure 1 and summarized in Table 1.

During this reconnaissance, local land use conditions were observed with emphasis on the potential use, storage and disposal practices of hazardous materials and petroleum products near the wells and elsewhere in the delineated SWPA. Such conditions may have included visual evidence of present or former spills, stained or discolored ground surfaces, stressed vegetation, unusual odors or visible UST appurtenances. Adjacent and nearby properties were visually scanned to the degree practicable from public rights-of-way.

Though ALWI did not observe specific contamination threats warranting further investigation or corrective action, (1) contaminant hazards may exist and could remain undetected due to limitations in the methods employed (concealed visual evidence, etc.) and/or (2) new contamination hazards may develop in the future. For these reasons, the measures employed herein for identifying contaminant hazards should be repeated periodically for the assessment to remain current.

Point source hazards identified or reconfirmed are summarized in Table 1 and Section 2.4 of this report. No significant land use or waste disposal changes were observed. ALWI cautions that some residential and forested areas were not accessible without substantial trespassing on private property. The possibility of concealed point-source contamination hazards remains, consequently.

2.3 FIELD RECONNAISSANCE AT/NEAR WELLHEADS

ALWI's December 15, 2011 field reconnaissance indicated that the two municipal production wells appeared to possess good physical integrity based on above-grade observations made at the wellhead; subsurface or invasive work of a confirmatory nature was not a component of the scope for this contract. Well 1 is enclosed within a locked fence; Well 2 is not.

No confirmed sources of existing, direct contamination to the wells or aquifer within the vicinity of the wellheads were observed. No visible changes in well physical integrity were noted. Photographs of each wellhead are provided in Appendix C.

2.4 POTENTIAL POINT SOURCE CONTAMINATION HAZARDS

On December 19, 2011, ALWI performed an update to MDE's 2004 point source hazard reconnaissance. In so doing, we observed the existence (or continuing existence) of the point source hazards listed herein (Table 1; Figure 1). Point source hazards reported by MDE in 2004 but not observed during the course of this work were omitted from this list:

- **Automotive Body Shops** - Five such businesses were identified within the SWPA. Both volatile organic compounds (VOCs) and synthetic organic compounds (SOCs) may be

generated, stored, used and thus potentially discharged from these sites through spills or dumping. Such discharges could infiltrate the unconfined aquifer within the SWPA. As discussed further in Section 3.3, Trichloroethylene (TCE) has been detected in the Town's groundwater supplies and may originate from one or more of the identified body shops.

- **Londontown Hancock Sewing** - Though solvents, such as TCE, are often more likely associated with dry cleaning practices (or automotive body shops as stated above), the potential exists for these compounds to be used as water repellent agents in the sewing and textile industry.

- **Underground Storage Tanks** - One site (Pittman's Market; Site D on Figure 1) was identified by a Town representative as having plans to install two USTs at a location within the SWPA. At the time of our reconnaissance, the excavations were underway, though the USTs had not yet been installed. A potential leak from these future tanks may contaminate the aquifer and thus, the source water.

- **Controlled Hazardous Substances -** Of the controlled hazardous substances sites identified by MDE in 2004, Outdoor Equipment Service Company was the only site (aside from Londontown Hancock Sewing), identified by ALWI as being in continued existence.

2.5 POTENTIAL NON-POINT SOURCE CONTAMINATION HAZARDS

In order to evaluate the hazard represented by non-point sources of contamination, MDE guidance suggests consideration and mapping of the public sewer service area and land use data within the SWPA. Pertinent land use acreages and percentages are listed in Table 2. Each of these has implications in terms of non-point contaminant sources (e.g., septic systems). Note that approximately 77% of the SWPA is within public sewer service areas (Table 2; Figure 2). This estimate was derived from sewer service area maps provided from the Maryland Department of Planning (MDP).

Potential sources of non-point-source contamination may include but are not restricted to:

- **Septic System Discharges** - These include nitrate- and bacteria-laden discharges concordant with the intended design of septic systems. They also can include the inappropriate discharge of hazardous and other regulated liquids through such systems, arising from ignorance or intent. For this reason, MDE guidance suggests consideration and mapping of the public sewer service area(s), with the inference that those areas not sewered are on septic systems. Sewer system maps available from MDP[2] (Figure 2) suggest that approximately 23% of the SWPA lies outside of the sewered area. The Town wells exist within the mapped sewer service area. Note also that leaking sewer lines, particularly if the system is aged, also may impart a groundwater contamination risk.

[2] We have found that actual sewer service areas may differ greatly from those provided by the Maryland Department of Planning.

- **Agriculture** - Fertilization of cultivated fields, livestock wastes, and agri-chemical releases constitute the primary sources of groundwater contamination from agricultural sources. Agricultural lands within the SWPA may be sources of nutrients (including nitrates), herbicides, insecticides and/or animal wastes. Land use coverage maps (Figure 2) indicate that only 5% of the SWPA is in agricultural use.

- **Sediment and Stormwater** - Commercial, institutional and industrial land uses, particularly those with substantial impervious areas, may contribute to contaminant- and sediment-laden stormwater within the SWPA. Available mapping data suggests that 7% of the SWPA is in such land uses. Please note that a Town official advised that there are no industrial land uses within the Town limits, which conflicts with the estimated 1% of the total service area that MDP mapping suggests are industrial. Some measure of additional, future development also is possible. In addition, highway spills, including accidental automobile discharges, may act as non-point sources of various SOCs and/or VOCs.

- **Heating Fuel Use and Storage** - Liquid petroleum products commonly are used as a heating fuel. Though the extent of reliance on heating fuels within the SWPA is unknown, and determining the degree to which heating oil is used was outside of the scope of this SWPP, it is safe to assume that some use exists within the SWPA. Leaks and spills associated with the use and storage of heating fuels may expose Town wells to hydrocarbon contamination.

Sources of the information summarized above included 2010 land use Geographic Information System data obtained from the MDP and data collected at the time of our field reconnaissance. Table 2 reflects dominant land uses by type, within each delineated zone. Figure 3 reflects this information in pie chart form. Please note that data were not available for the small portion of the SWPA that exists in Pennsylvania.

3.0 CONTAMINANT SUSCEPTIBILITY

ALWI completed a review of available groundwater quality records, integrated with other findings herein, to support an assessment of groundwater contaminant susceptibility. MDE guidance defines a threshold for regarding a water source being "susceptible" to a given contaminant as being either:

- When the concentrations exceed or equal 50% of the Maximum Contaminant Level (MCL) for 10% or more of the documented samples for a regulated contaminant; and/or

- When a persistent but lower concentration is either increasing or chemically appears associated with an unknown or unexpected source.

In addition to these water quality data considerations, ALWI also considered the following factors in evaluating overall susceptibility:

- The spatial position of sources of potential contamination relative to sources and SWPAs;

- Observed conditions of wellhead integrity and treatment supplies management,, and

- The natural chemical properties of the source water within contributing aquifers.

3.1 WATER QUALITY DATA REVIEW PROCEDURES

ALWI completed the susceptibility assessment in accordance with the following step-wise procedure:

1. **Obtain and Filter Water Quality Databases** - ALWI reviewed available electronic databases of water quality analyses provided by MDE for the period 2004 to 2011. The raw databases were filtered to isolate mainly contaminants with primary MCLs affecting Town groundwater supplies, though contaminants with secondary MCLs were accounted for and briefly discussed, if relevant.

2. **Consider Chemical Classes and Sampling Conditions** - The furnished databases were developed by MDE as an incidence of operational compliance record-keeping. They contained analytical records for inorganic compounds (IOCs) including radiological species, VOCs and SOCs. In most cases, the available water quality records only reflect post-treatment, composite water samples and not raw groundwater sources, unless otherwise noted. As such, mixing, blending and treatment efficacy is reflected but well-by-well raw water quality trends are not. Generally the absence of comprehensive analytical results of raw groundwater samples hampered correlating specific water quality findings to specific wells and aquifers.

3. **Review of MDE Paper Files** - In order to gain a more thorough understanding of raw water quality by well, ALWI supplemented the MDE databases with raw groundwater quality laboratory reports available in MDE paper files. Specifically, we obtained well-specific bacterial results from 2004 and SOC results from 2011.

4. **Identify "Exceedance" Instances** - In order to identify water quality sample exceedances, we compared each specific analytical result to published MCLs (in COMAR 26.04.01 as of September 2011). Guided by MDE, we judged that a concentration greater than 50% of a given MCL should be considered an "exceedance." Procedurally, this was accomplished by sorting the database by analyte and concentration.

5. **Assess Frequency and Relative Percentage of Exceedance Instances** - The number of times that a given analyte was detected in a concentration greater than 50% of its respective MCL was discerned in terms of overall frequency, percentage of total number of samples and date range of exceedance. Contaminants with results equaling or exceeding 50% of the MCL more than 10% of the time were considered *prima facie* susceptible. ALWI also considered changes in contaminant trends over time, both for those that did and did not equal or exceed 50% of the MCL more than 10% of the time.

6. **Integrate Information** - ALWI then considered these identified exceedances in the context of the results of the contamination hazard reconnaissance to correlate water quality results to specific field observations suggestive of a condition of susceptibility.

As discussed in the following subsections, we found the groundwater supply to be susceptible to TCE (arising from its use in the SWPA) and to naturally occurring radionuclides.

3.2 RADIONUCLIDE SUSCEPTIBILITY

Since composition of the 2004 report, only one test was performed in 2007 to measure the concentration of Gross Alpha particles. The sample had a concentration of 9 picocuries per liter (pCi/L), exceeding the 50% MCL threshold of 7.5 pCi/L.

We currently consider the Town's system to be susceptible to radionuclide contamination until proven otherwise through additional testing. After considering data prior to 2004, we found that two out of five (40%) gross alpha samples exceeded the 50% MCL threshold. The source of gross alpha in groundwater is the natural occurrence of uranium in the aquifer formation.

3.3 VOC SUSCEPTIBILITY

The only VOC detected in the data made available to us for this report was TCE. Statistically, one of eight (12.5%) samples exceeded the 50% MCL threshold of 2.5 micrograms per liter (µg/L). In their previous report, MDE noted that the Town's sources were susceptible to TCE, and TCE concentrations were detected consistently below a concentration of 1.5 µg/L, showing a slight increasing trend until October 2003. Data from2003 through 2010 showed a general increase in TCE concentrations over time, the highest concentration (2.7 µg/L) of which was recorded in 2008 (Figure 4). However, TCE was detected at a concentration of 1.4 µg/L in August 2011 (the most recent sampling result provided to ALWI), suggesting that TCE concentrations continue fluctuating close to, but typically below the 50% MCL threshold.

Given the information presented above, ALWI concluded that the Town's water supply is susceptible to TCE contamination. TCE generally can be used as a degreaser in a variety of industrial and commercial settings. Though several hazardous substance generators have been identified in the SWPA, including automotive body shops and a sewing company (see Section 2.4), based on standard MDE-prescribed methods documented herein, we cannot link any to TCE releases to groundwater.

3.4 OTHER GROUNDWATER CONSTITUENTS

We did not otherwise find the Town's system susceptible to other groundwater contaminants of natural or anthropogenic origin. This finding is supported as follows:

- **Synthetic Organic Compounds -** The only SOC detected was aldicarb sulfoxide[3], in which one of three samples from 2004 to 2010 was equivalent to the MCL of 4 micrograms (µg/L). This SOC was detected once, in 2004, and has not shown up in water quality samples since. In light of this [decline], we have concluded that the Town's system is not susceptible to this, or more generally, SOC contamination. This same sample also resulted in a low detection of methoxychlor, an additional organic insecticide that is poorly soluble in water. Samples were not collected for aldicarb sulfoxide in 2011.

- **Inorganic Compounds** - None of the IOC results, aside from radionuclides, exceeded the 50% MCL threshold, or exhibited a consistent trend toward reaching the 50% MCL. Therefore, the wells are not susceptible to IOC contamination.

- **Microbiological Contaminants** - The water quality data and conditions of the wellheads do not support a finding of susceptibility to microbiological contamination, as coliform bacteria were not detected in the water supply and the wellheads appeared to possess good integrity. ALWI analyzed limited available raw water samples to verify this finding. MDE has determined that the wells are not ground water under the influence.

4.0 STEERING COMMITTEE INTERACTIONS

On November 20, 2012, ALWI met with Mr. David Smith, Town Manager of Hancock. At that time, Mr. Smith stated that the formation of a formal "Steering Committee" was not necessary since he, as Town Manager, served the capacities of many of our suggested participants (e.g., planning and zoning, economic development, etc.). Consequently and herein, we refer to our interactions with Mr. Smith as "Steering Committee interactions." At the November 20 meeting, the following topics were discussed:

- **TCE Susceptibility -** We discussed how TCE concentrations generally increased since 2006, though not to levels yet causing a condition of noncompliance, and that a 2011 sampling event indicated a one-time decline in TCE concentration. We informed the Committee that our interpretation of TCE susceptibility could be revised once additional data are collected that confirm a continued decreasing trend in concentration. Also discussed were possible contributors to the Town's condition of TCE susceptibility. ALWI recommended that the Town consider investigating the source of TCE contamination. The Committee stated that the Town does not presently have plans to commission a TCE study, though it was agreed that if conditions worsen to levels approaching non-compliance, a study would be a good idea. ALWI believes that concentrations rising to a level above 50% of the MCL should be the basis for prioritizing this effort. Absent such an increase, we agreed that this recommendation is not urgent.

[3] Aldicarb sulfoxide is commonly used as an insecticide or soil fumigant on agricultural lands for reducing populations of soil dwelling insects, spider-mites and nematodes. Aldicarb sulfoxide does not bind to soil colloids when released, allowing it to enter the groundwater and making it prone to oxidation, resulting in the formation of aldicarb sulfoxide (EPA, n.d.).

- **Alternate Groundwater Source Recommendation -** Because the Town's two wells are so close to one another, we discussed the potential for a single contaminant release impacting both Town wells. To address this circumstance, we recommended that an alternative groundwater source be developed and brought online. The Committee stated that the Town has explored elsewhere without success (north of the well-field along Pennsylvania Ave. and in the park). Economic resources are not now budgeted for additional exploration, though if grant monies were available this could be revisited.

- **Temporary Emergency Surface Source** - The Committee advised that the Town's groundwater and surface water (WA1983S011) appropriations are supplemental to each other. Though the primary intended use of the surface appropriation was for canal re-watering, the Committee stated that this permit allows temporary emergency use of the appropriation for sanitary and potable purposes in the event that the Town wells are rendered unavailable. The Committee also stated that a water line, though presently disconnected, exists from the location of the surface water withdrawal to the distribution system. The Committee also made clear that the necessary treatment required to use the surface withdrawal as a potable backup supply is not in place, and directed ALWI to research portable/temporary treatment options for the Town in this connection (Appendix D).

- **Contingency Plan** - The discussion turned to contingency planning for a contamination release that could impact one or both Town wells. The Committee informed us that the Town presently does not have a written contingency plan for that specific circumstance, but that the Town has developed much of the other elements of a contingency plan. Generally, the Town's contingency plan already echoed our recommendations. The Committee offered to furnish the existing Town contingency plan, and asked that we provide portable/temporary treatment options to address the circumstance of severe source contamination. Such a treatment system could be used to treat contaminated water from the existing well(s) or emergency back-up surface water withdrawal.

- **Source Protection Ordinance** - We discussed our recommendation for the Town, with the assistance of ALWI, to develop and implement a Source Water Protection Ordinance. The Committee was very much interested in developing a Source Water Protection Ordinance and directed us to begin pulling together a list of specific recommendations (Table 3). The Committee said that the Town Council would support such an ordinance. ALWI offered that, ideally, the Town and County would develop identical ordinances also to protect those areas within the SWPA but outside of Town limits. However, such a goal seemed impractical given the more general needs of the County's jurisdiction (i.e., a specific ordinance provision that works well in Hancock may not work elsewhere in the County.) While the Committee understood and agreed it would be best to have the County develop an ordinance of their own to protect lands within the SWPA but outside of Town limits, ALWI was directed to focus only on a Town ordinance. ALWI suggested, and the Committee agreed, that the MDE Model Wellhead Protection Ordinance (Appendix B) would be a good template.

- **Plan For Public Workshop** - The Committee expressed a desire to have ALWI deliver a public workshop, but not until after a Source Water Protection Ordinance was implemented. It was suggested by the Committee that the public meeting would occur at a Town Council

meeting to accomplish the goals of (1) updating the Council on the work being performed, and (2) offering the public an opportunity to be exposed to the source protection measures being implemented. The Committee's best sense of timeframe for such a presentation to the Council/public was sometime in spring 2013.

Despite the Committee's expressed interest in developing a source water protection ordinance and holding a public workshop, as discussed during the November 2012 Steering Committee meeting, the Town came not to be able to prioritize the SWPP within the timeframe of the ALWI SWPP contract. Nevertheless, the Committee's enthusiasm for source water protection leaves us hopeful that many of our recommendations will be implemented with time. For now, we suggest the adoption of specific ordinance provisions (Table 3) as a post-contract activity. In this connection, we have drafted a PowerPoint presentation for the Town to consider presenting at a Town Council meeting once priority again can be given to source water protection (Appendix E).

5.0 RECOMMENDATIONS

In developing the following recommendations, ALWI considered the cost and feasibility of implementation, as well as the relative benefit of each measure. Based on these considerations, ALWI recommends the following:

1. **Establish a Source Water Protection Ordinance** - The Town should consider creating or revising an ordinance to restrict certain incompatible land uses and activities from areas proximal or otherwise within the SWPA. The MDE Model Ordinance (Appendix B) may be an appropriate place to start, but less restrictive language may be appropriate so as to be less economically burdensome to the regulated community. Table 3 includes a comparison of the Model Ordinance to what we suggest the Town consider. Such an ordinance could include a requirement for businesses to adopt Best Available Technologies (BATs) to guard against the happenstance release of regulated liquids that may become groundwater contaminants within the SWPA. Inclusion of a right-of-entry provision also may be prudent, which would give the Town the flexibility and authority to inspect facilities suspected of hazardous material (like TCE) and/or petroleum product uses within Hancock limits.

2. **Create A Highway Spill Notification System** - The potential exists for surficial spills from accidents along Interstate 70 to infiltrate the soil surface and percolate into the unconfined aquifer from which the Town draws its water. A spill notification would give water plant managers notice of potential contaminants that could impact drinking water quality. This could allow them time to design and incorporate preventative measures to reduce the impact of these spills. Also, consideration should be given to requesting the State Highway Administration to lower the I-70 speed limit below its presently posted 60 miles per hour (mph) in the SWPA. Similarly, the Town and County should consider mandating SWPA speed limits to 30 mph or less.

3. **Consider Portable/Temporary Treatment for Emergency Surface Withdrawals** - As discussed in Chapter 4, both the Town and ALWI independently arrived at the consideration of portable/temporary treatment of surface water for emergency surface withdrawals. The existing C&O Canal re-watering permit (WA1983S011) is supplemental to the Town's

groundwater permit (WA1994G016) and as such possibly could be used for potable use in emergency situations. It is our understanding that the treatment plant previously used for the inactive potable surface water appropriation no longer is available for use, however much of the pipeline infrastructure remains. To address the lack of surface water treatment, ALWI provided the Town with various portable/temporary treatment options (Appendix D). The Town should work with MDE on securing the necessary permits and approvals to use such a treatment option in the case of a large-scale contamination release impacting their existing wells. Alternatively, portable/temporary treatment may be available to treat the hypothetically contaminated wells, directly. It remains the Town's prerogative to determine which of these options is in the best overall interest of the Town.

4. **Determine Source(s) of TCE Contamination -** The Town should commission and execute a comprehensive hydrogeologic and environmental evaluation to determine the source(s) of TCE contamination. This effort should receive even greater priority should future sampling results increase to levels approaching the MCL. TCE can be a long-lived species in the subsurface and tends to sink rather than float in groundwater. These characteristics make tracking and mapping its migration in groundwater challenging and potentially expensive. However, treatment of the municipal supply to remove TCE would be even more expensive. Identifying a responsible party is the most assured way of protecting the Town from the expense of treatment. On-premises environmental inspections and/or compliance reviews at the identified TCE-generators within the SWPA probably would be how to start; the assistance of MDE may be needed to compel compliance with the effort (i.e., to achieve a right-of-entry and full cooperation/disclosure). Assuming the release is ongoing, close volumetric record-keeping of TCE inventories may identify source(s) and/or may lead to determinations of a need for improved housekeeping practices. The study could expand to other facilities if this initial review proves inconclusive.

5. **Develop and Permit an Alternate Groundwater Source** - The Town should budget for renewal of 1990s efforts to develop a permitted and approved alternate groundwater source. Having a well in a physically differing location than the existing production wells would better guard against an existing or future contaminant release affecting the entire water supply. The Town Park was and remains a hydrogeologically viable area to explore. ALWI hydrogeologists are of the opinion that a carefully designed and purposefully executed drilling program could lessen and possibly eliminate the risk of surface water influence upon a well positioned in this area. ALWI believes that the existing test well in the Park was under surface water influence because of the design and execution of its construction, and probably not because any well at this location would be inevitably connected to surface water. If this recommendation is accepted, any future SWAP report should encompass the Park area as well.

6. **Sampling Groundwater Sources Directly** - Taking raw water samples directly from each well, as opposed to treatment or distribution plants, makes it easier to identify and interpret water quality results, allowing for a more accurate susceptibility analysis. Sampling from raw sources reduces erroneous interpretations and allows more accurate identification of potential point sources of contamination.

7. **Plan and Execute Community Outreach and Public Education Initiatives** - Educating the residents within the SWPA about the issues associated with the improper use and disposal of chemicals could lessen the likelihood of groundwater contamination. The Town may consider a SWPA-wide community outreach and awareness program, focusing on residential and commercial landowners. The Town should consider a mass mailing with pertinent information on best management practices for landscaping and handling of household chemicals as a measure to educate landowners on contamination issues. An electronic version of such a flyer should be posted on the Town's website and hard copies should be posted at appropriate public settings such as schools, libraries and Town government buildings.

6.0 REFERENCES

Maryland Department of the Environment, Source Water Assessment for the Town of Hancock Water System, Washington County, Maryland. February, 2004.

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