Health Consultation

GENERAL DYNAMICS-LONGWOOD

SEMINOLE COUNTY, FLORIDA

EPA FACILITY ID: FLR000091322

Prepared by the
Florida Department of Health

JULY 26, 2010

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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List of Abbreviations

AOC	Area of concern
ATSDR	Agency for Toxic Substances and Disease Registry
bls	below land surface
CHD	County Health Department
CV	comparison value
DCE	dichloroethylene
EPA	U.S. Environmental Protection Agency
DEP	Florida Department of Environmental Protection
DOH	Florida Department of Health
kg	kilogram
mcl	maximum contaminant level (EPA)
µg/L	micrograms per liter
mg/L	milligrams per liter
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
NPL	National Priority List
PCE	tetrachloroethylene
PHAP	Public Health Action Plan
ppb	parts per billion
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
TCE	trichloroethylene
VOC	volatile organic compound

Foreword

The Florida Department of Health (DOH) evaluates the public health significance of environmental contamination through a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR) in Atlanta, Georgia. ATSDR is required to conduct public health assessment activities at each of the sites on the US Environmental Protection Agency (EPA) National Priorities List (NPL). The aim of these evaluations is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be stopped or reduced.

This document summarizes public health implications of the General Dynamics Longwood site in Longwood, Florida. DOH evaluates site-related public health issues through the following processes:

Evaluating exposure: DOH scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out how much contamination is present, where it occurs on the site, and how people may be exposed to it. Usually, DOH does not collect its own environmental sampling data. We rely on information provided by the Florida Department of Environmental Protection (DEP), the U.S. EPA, and other government agencies, private businesses, and the public.

Evaluating health effects: If there is evidence that people were–, are–, or could be exposed to hazardous substances, DOH scientists will determine whether that exposure could be harmful to human health. We base this report on existing scientific information and focus on public health; that is, the health impact on the community as a whole.

Developing recommendations: In this evaluation report, DOH outlines its conclusions regarding any potential health threat posed by the General Dynamics Longwood site, and offers recommendations for reducing or eliminating human exposure to contaminants. The role of DOH in dealing with hazardous waste sites is primarily advisory. For that reason, the evaluation report will typically recommend actions to be taken by other agencies, including the EPA and DEP. If, however, an immediate health threat exists or is imminent, DOH will issue a public health advisory warning people of the danger and will work to resolve the problem.

Soliciting community input: The evaluation process is interactive. DOH starts by soliciting and evaluating information from various government agencies, individuals or organizations responsible for cleaning up the site, and those living in communities near the site. We share our conclusions about the site with the groups and organizations providing the information. Once an evaluation report has been prepared, DOH seeks feedback from the public.

The purpose of this report is to evaluate environmental exposures at the General Dynamics site and to identify actions needed to reduce exposures to hazardous substances and protect human health. In April 2009, the EPA proposed the General Dynamics Longwood site to the NPL. In preparing this health consultation, DOH reviewed reports from the EPA, DEP and by DEP's consultant MACTEC Engineering and Consulting (MACTEC).

If you have questions or comments about this report, we encourage you to contact us.

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Summary

INTRODUCTION

The Florida Department of Health (DOH) works to serve the public near the General Dynamics Longwood site. We respond quickly with any needed public health actions. We tell people living near hazardous waste sites how to avoid health risks from contacting toxic chemicals at such sites. The General Dynamics site is located in Longwood, Seminole County, Florida, directly adjacent to the Sprague Electric Company (SEC) site. The General Dynamics property is bounded by vacant land to the north, SEC to the south, vacant commercial land to the east and Highway 17-92 to the west.

General Dynamics manufactured circuit boards and SEC manufactured film capacitors, both using vapor degreasers and very similar chemicals. General Dynamics and SEC discharged volatile organic compounds (VOCs) improperly, resulting in groundwater contamination. According to EPA, General Dynamics' and SEC's groundwater contamination has co-mingled.

CONCLUSIONS

The Florida DOH cannot currently conclude whether groundwater contamination could harm people's health. Soil contamination at the site is not expected to harm people's health because access is restricted and there is no indication that the soil is migrating off-site.

BASIS FOR DECISION

No cleanup of on-site soil or groundwater contamination has begun.

More information is needed to determine if there is or could be a public health hazard from this site contamination. According to EPA,VOCs and metals have migrated to groundwater underneath the site. Seminole County Health Department (CHD) is in the process of completing a private well survey in the area. The closest municipal well is 0.25 miles from the General Dynamics property. No investigation has been done to determine if groundwater contamination has moved off-site.

NEXT STEPS

EPA should determine the extent of groundwater contamination both on the General Dynamics site and in the area. Groundwater flow is generally to the north-northeast; however, large municipal wells can change the flow direction. Therefore, groundwater contamination should be investigated in all directions from the site.

EPA should notify municipal and community well owners near the site about the groundwater contamination at General Dynamics and other sources in the area.

Municipal water supply owners should test their incoming water supply for VOCs and metals to determine if any treatment is necessary to reduce levels.

EPA should consider testing private irrigation wells.

If EPA finds VOCs in groundwater under nearby occupied structures, they should see if there is any risk from possible vapor intrusion.

DOH will evaluate additional data collected by EPA and/or DEP to determine if any public health hazard exists from this site.

FOR MORE INFORMATION

If you have concerns about your health, you should call your doctor. You may also contact the Florida DOH toll free at 877 798-2772. Ask for more details about the General Dynamics Longwood site.

Background

Statement of Issues and Site History

The General Dynamics site is located in Longwood, Seminole County, Florida, directly adjacent to the Sprague Electric Company (SEC) site (Figure 1). The property consists of four parcels covering about 10 acres. The General Dynamics property is bounded by vacant land to the north, SEC to the south, vacant commercial land to the east and Highway 17-92 to the west. A daycare center is located to the east and adjacent to SEC. General Dynamics and SEC share a drainage ditch that runs between the two sites (Figure 2). The property was owned and operated by various electronics-manufacturing firms, including General Dynamics. The property was used for circuit board manufacturing, parts cleaning and soldering from 1959 to approximately 1988. Gould Publications, the current owners, purchased the property in 1993.

The property consists of three large manufacturing buildings, a paved parking area, and an unpaved grassy area. A locked fence restricts the rear of the property, directly adjacent to SEC. There are three non-potable water supply wells on-site, that include an irrigation well, a lavatory supply well and the Gould fire well (Figure 3). These on-site wells were tested in 2003, were well below screening guidelines and have not been part of any sampling events since that time.

General Dynamics manufactured circuit boards and SEC manufactured film capacitors, both using vapor degreasers and very similar chemicals. Portions of the SEC site were originally part of the General Dynamics site. Trichloroethylene (TCE) and tetrachloroethylene (PCE) were commonly used in the printed circuit board manufacturing processes for metal cleaning and vapor degreasing. TCE was stored in 55-gallon drums in a shed located to the east of Building 3. At an unspecified time, TCE was stored in an aboveground storage tank located outside Building 3 near the vapor degreaser. Additional vapor degreasers were located throughout the facility; however, the location of the degreasers, as well as the solvents used in them, are unknown.

General Dynamics and SEC discharged volatile organic compounds (VOCs) improperly, resulting in groundwater contamination. According to EPA, General Dynamics' and SEC's groundwater contamination has co-mingled. The majority of environmental sampling data have been taken in conjunction with the SEC site. The responsible party for SEC is conducting clean-up activities at the SEC property as well as the western portion of the General Dynamics property. A majority of the historical data available for this report are from reports done for SEC. EPA listed SEC as a Superfund Alternative site with NPL-Caliber status in 2004. During the 2005 routine monitoring for the groundwater cleanup at the SEC site, the VOC contamination at General Dynamics was documented.

DEP began environmental investigations at SEC in 1984. In order to delineate the contamination plume at Sprague, monitor well installation began on the General Dynamics property starting in 1988.

In 1991, after the installation of two additional monitor wells on the western portion of General Dynamics, VOC contamination at elevated levels was detected (TCE: 380 micrograms per liter (µg/L)). It is important to note that this sampling was part of the investigation of the SEC property; contamination sources had not yet been attributed to General Dynamics.

In 2001, additional assessment activities began at SEC to determine the source of increasing levels of VOCs in the surficial aquifer. Elevated levels of TCE and its breakdown products (1,1-dichloroethylene (DCE), *cis*-1,2- DCE, *trans*-1,2-DCE, and vinyl chloride) were detected in subsurface soil samples collected from the western portion of the General Dynamics property. According to EPA, the groundwater sample levels found indicated that an additional source of contamination was present at that location. Groundwater samples collected near the contaminated subsurface soil contained TCE (5,770 µg/L), *cis*-1,2-DCE (360 µg/L), and 1,1-DCE (311 µg/l), exceeding EPA maximum contaminant levels (MCLs) (HRS 2009).

In 2005, URS conducted a Remedial Investigation (RI) at SEC and portions of the General Dynamics property. During this environmental sampling, an additional contamination source was identified in the vicinity of a former degreaser on the General Dynamics property.

In 2007, at the request of DEP, MACTEC Engineering and Consulting (MACTEC) conducted a site inspection at the General Dynamics property. MACTEC's initial investigation included soil (both surface and subsurface) and groundwater sampling for field screening and laboratory analysis in order to identify the source of VOC and heavy metal contamination at the site.

According to EPA, two (2) contamination sources have been identified on the General Dynamics property: Source No. 1, contaminated subsurface soil located in the southwestern portion of the property and Source No. 2, contaminated subsurface soil located beneath the southeastern corner of Building No. 3. Groundwater underlying and down-gradient of these sources indicate elevated concentrations of TCE and its breakdown products. The SEC property, located south and hydraulically up-gradient of the General Dynamics property, is a known contributor to the contamination. However, significant increases of TCE and its degradation products have been documented in groundwater underlying and down-gradient of Source Nos. 1 and 2 (EPA 2009).

EPA completed a preliminary assessment for General Dynamics in 2007. EPA proposed the site to the NPL in April 2009 because the on-site groundwater contamination remains a potential threat to the Floridan aquifer, the primary source of drinking water in the area. The closest municipal well is 0.25 miles from the General Dynamics property. DEP fully supported the decision to propose the General Dynamics site to the NPL. EPA is currently negotiating with General Dynamics to initiate remediation of the property.

DOH began evaluating possible health risks associated with the General Dynamics site in April 2009 following the NPL designation.

DOH and ATSDR are required to evaluate the possible health threat at newly proposed NPL sites within one year. In this health consultation, DOH evaluates the latest available environmental sampling data and estimates the possible public health risks to the surrounding population. Comprehensive environmental sampling is necessary in order to determine the extent of groundwater and soil contamination at the General Dynamics site. This document identifies public health concerns and makes recommendations for EPA and DEP while they negotiate future investigations related to this site.

DOH and ATSDR will evaluate the SEC site in the fall of 2010. Assessment activities began at SEC in 1984, based on allegations by a former employee of improper solvent disposal. Groundwater remediation via a pump and treat system began in 1997 and continues today.

Demographics and Land Use

ATSDR and DOH examines demographic and land use data to identify sensitive populations, such as young children, the elderly, and women of childbearing age, to determine whether these sensitive populations are exposed to any potential health risks. Demographics also provide details on population mobility and residential history in a particular area. This information helps ATSDR and DOH evaluate how long residents might have been exposed to contaminants.

Land use surrounding the General Dynamics site is commercial and residential. Directly south of the General Dynamics site is SEC (operational facility manufacturing circuit boards). Just south of SEC is a residential community with approximately 4500 homes, all of which are connected to municipal water. Highlands Elementary School and Kidquest Daycare are just to the southeast of the property (Figure 3). Both the elementary school and the daycare receive municipal water as the primary source of drinking water. As of 2000, nearly 6,800 people live within 1- mile of this site: approximately 85% were White, 4.6% were African-American, and 13% were Hispanic or Latino.

Site Visit

DOH visited the area around the site in June 2009 in order to determine public access and proximity to SEC, schools and daycare facilities in the area. The perimeter of the property is restricted by a chain link fencing except for a small paved parking lot near the entrance of Highway 17/92. There was no evidence of trespass on the site. DOH requested permission to conduct a site visit but was denied access by the current owner of the site.

Community Health Concerns

In January 2010, DOH mailed out 230 fact sheets to inform nearby residents (within ¼ mile of the site) about the General Dynamics Longwood and SEC sites and to announce an open house. The open house, held January 28, provided an opportunity for community members to meet DOH, EPA, DEP and County Health Department (CHD) staff and to learn more about the sites and the health assessment process. The event also allowed residents to express their concerns and ask questions. Five residents attended the meeting and expressed concerns including: shallow irrigation wells posing a health risk; health risks to former workers and safety of the municipal drinking water supply in the area. In addition, Florida DOH received three returned surveys from the January site fact sheet mail out to announce the open house. These surveys cited some other concerns, including whether the area's drinking water is safe to drink or not and which areas are receiving potentially tainted water.

Discussion

In this area of Florida, the Floridan aquifer system is the main source of drinking water, and is divided into the Upper and Lower Floridan aquifers. In Seminole County, the surficial aquifer is separated from the Floridan aquifer by a confining bed of sand, clay and shell (A/B clay layer). At the site, this confining unit is not continuous and is absent just to the north of the property. At

the site, the surficial aquifer system and the Floridan aquifer are hydraulically connected, allowing vertical migration of contamination.

Recharge in the Upper Floridan aquifer is by downward leakage from the surficial aquifer system, through breaches in the intermediate confining unit caused by sinkholes or where the confining unit is thin or missing, by lateral inflow, and through drainage wells (HRS 2009). The groundwater flow direction in both zones of the surficial aquifer is north- northeast across the General Dynamics site. Groundwater flow in the Upper Floridan aquifer under both SEC and General Dynamics' properties is also to the north-northeast (EPA 2009). However, large capacity municipal wells can change the direction of natural groundwater flow.

Environmental Sampling

In 2007, at DEP's request, MACTEC completed a site inspection in order to determine if VOCs found in groundwater samples collected at SEC and General Dynamics originated from a source on the General Dynamics property. At this point, contamination sources had been identified on the SEC property during previous investigations. MACTEC's 2007 investigation identified additional contamination sources on the General Dynamics property by field screening soil and groundwater samples and collecting environmental samples for laboratory analysis. This investigation targeted both shallow and deep groundwater zones at each sampling location in order to investigate potential migration pathways in the shallow aquifer. MACTEC used the groundwater screening data from the mobile laboratory to select suitable locations for micro-well installation.

On-site Groundwater

Following soil sampling and groundwater screening, MACTEC installed five micro-wells to provide permanent sampling locations. MACTEC's 2007 investigation included groundwater samples collected from the five micro-wells (total depth 20- 40 feet (ft) below land surface (bls)) and two existing monitor wells (16- 40 ft bls).

A total of 17 groundwater samples were collected, seven well samples and 10 confirmatory direct push technology (DPT) samples (depths ranging from 10-42 ft bls). All seven well samples were analyzed for both VOCs and metals. The DPT samples were only analyzed for VOCs.

The highest levels found in on-site groundwater during the 2007 sampling came from the DPT confirmatory groundwater samples. PCE (230 micrograms per liter (µg/L)), TCE (1300 µg/L), 1,1-DCE (3400 µg/L), *cis*-1,2-DCE (950 µg/L), and vinyl chloride (130 µg/L) were all found above EPA maximum contaminant levels (MCL) (Table 1). No metals were found above EPA MCLs (MACTEC 2008).

Off-site Groundwater

No off-site groundwater samples have been taken for the General Dynamics site. Groundwater contamination is moving off-site to the north-northeast. However, large capacity municipal wells can change the direction of natural groundwater flow.

Residents near the General Dynamics property, including Highlands Elementary School and Kidquest Daycare, are provided drinking water from one of seven municipal systems: Seminole County, Casselberry, Lake Mary, Longwood, Winter Springs, Sanford and Sanlando Utilities (EPA 2009). The Seminole County, Longwood wells are within two (2) miles of the site. The closest municipal well (Winter Park) is 0.25 miles from the site. Seminole County tested for VOCs in June of 2008 and found no concentrations above MCLs. Longwood tested for VOCs in March of 2008 and found no concentrations above MCLs. Winter Springs tested for VOCs in October of 2008 and found no concentrations above MCLs (Florida DEP, unpublished data, 2010).

There are several community/non-community wells near the site, the closest of which is Circle K/#8715/Longwood, 0.25 miles southwest of the site. The latest sampling, in December of 2005 did not detect any of the contaminants of concern from the General Dynamics site. The Spring Hammock Mobile Home Park community water system is more than a mile to the north-northeast of the site and was last sampled in August of 2006 with no contaminants of concern detected (Seminole CHD, unpublished data, 2010).

Seminole CHD is in the process completing a private well survey. Off-site private irrigation wells near the site have not been tested.

On-site Soil

MACTEC collected 47 soil borings for lithologic description and to estimate the amount of VOC vapors trapped in the sampling container (headspace screening). Both surface soil samples, from 0-2 feet below land surface (bls), and subsurface samples (2-4 ft bls) were collected during this investigation. 67 soil samples were collected and submitted for environmental laboratory analysis with 43 samples analyzed for inorganic analytes (metals) and 24 analyzed for organic analytes (VOCs).

No VOCs were found above Florida Soil Cleanup Target Levels (SCTLs) in on-site surface soil during the 2007 sampling. Cadmium (290 mg/kg) and chromium (430 mg/kg) were both found above Florida SCTLs in on-site surface sampling.

No VOCs were found above Florida SCTLs in on-site subsurface soil. Both chromium (96 mg/kg) and silver (18 mg/kg) were found in the on-site subsurface soil above Florida SCTLs.

Quality Assurance and Quality Control

Soil and groundwater samples were collected as per EPA guidelines. Soil and groundwater samples were analyzed using both the EPA Laboratory and Datachem Laboratory.

Exposure Pathways

To harm you, chemicals must have a way to get into your body. We call this an **exposure pathway**. It includes all the links between a chemical source and the people who are exposed. The links are:

1. A source of a chemical,
2. A way for the chemical to move,
3. A place for human contact,
4. A route of exposure, and
5. People who are likely to be exposed to the chemical.

A ***complete pathway*** occurs when all five links are present. If all five links are not present, but could be in the future, then it is a ***potential exposure pathway***. If one or more of the links are missing and never likely to exist, then it is an ***incomplete pathway***.

An exposure pathway requires that a source of a chemical exists in air, water or soil.

Chemicals cannot harm you unless they have a way to contact you. Chemicals from toxic hazardous waste can get into our bodies three different ways:

⇒ **Inhaling** (breathing)

⇒**Ingesting** (drinking or eating)

⇒**Skin contact** (touching)

Pathways can be direct, when we come directly into contact with a chemical. This occurs when someone splashes themselves with chemicals on the job, walks through a spill, or something similar. Or a pathway can be indirect, like when we contact a chemical through something that it has contaminated. An example would be if someone drinks water that has chemicals in it or eats vegetables from a plant that took up a chemical from the soil.

No completed exposure pathways could be identified in the neighborhoods near the General Dynamics site due to a lack of information. Several potential exposure pathways have been identified due to groundwater contamination.

Potential Exposure Pathway: Environmental sampling confirmed VOC contamination in the **groundwater** under the General Dynamics site. Residential communities in the areas surrounding the site are on municipal water. It is unknown whether groundwater contamination from the General Dynamics site has reached public supply wells in the past. Because the closest municipal wells are within 0.25 miles of the site, there is a potential for exposure to occur through municipal drinking water if contamination has moved off-site or moves off-site in the future. If groundwater contamination moves off-site, potential exposure pathways include: drinking contaminated municipal water, using irrigation wells at homes, and vapor intrusion to homes and businesses.

Eliminated Exposure Pathway: Environmental sampling found contamination in **soil** at the General Dynamics site. Site access is restricted and there is no indication that the soil is moving off-site. DOH does not consider incidental ingestion of soil a potential exposure pathway for past, current and future exposures. Future on-site soil excavation should be performed in a manner that minimizes contamination from moving off-site.

Public Health Implications

DOH considers groundwater contamination at the General Dynamics site a possible threat to the public water supply in the area surrounding the site. Further investigation of the General Dynamics site is necessary to determine the lateral and vertical extent of groundwater contamination and whether it may affect area public supply wells in the future. Groundwater flow is moving in a north-northeast direction however, large capacity production wells can change the flow direction. DOH has evaluated the latest available municipal well data for wells within a mile of the site. The latest sampling for VOCs for municipal well systems within one mile of the site occurred in 2008 and found no concentrations above EPA MCLs.

DOH does not consider the on-site soil at the General Dynamics site to be a current public health concern. Site access is restricted, and there is no indication that soil is migrating off-site. Off-site soil sampling is not necessary at this time.

The highest levels found in groundwater during the most recent groundwater sampling at the General Dynamics site, range from 45 to 450 times the EPA MCLs. It is essential that the extent of groundwater contamination be determined at this site.

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than are adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus, adults need as much information as possible to make informed decisions regarding their children's health.

In addition to children, other susceptible populations may have different or enhanced responses to toxic chemicals than will most people exposed to the same levels of that chemical in the environment. Reasons may include genetic makeup, age, health, nutritional status, and exposure to other toxic substances (like cigarette smoke or alcohol). These factors may limit a susceptible

person's ability to detoxify or excrete harmful chemicals or may increase the effects of damage to their organs or systems.

DOH and ATSDR can not assess what level of risk, if any, the General Dynamics site poses to children living near the site at this time since little to no off-site sampling has yet occurred.

Community Health Concerns Evaluation

Residents expressed concerns about shallow irrigation wells in the adjacent neighborhood posing a health risk and health risks to former workers and safety of the municipal drinking water supply in the area. Groundwater contamination from the General Dynamics site is moving to the north-northeast however, due to the close proximity of the SEC site, the elementary school, daycare and residential neighborhood, testing of shallow irrigation wells in this area should be considered. The health of workers is the responsibility of the Occupational Safety and Health Administration (OSHA) and the Centers for Disease Control and Prevention (CDC)/National Institute for Occupational Safety and Health (NIOSH). Exposures directly related to worker activities fall under the purview of these agencies (ATSDR 2005). Further investigation of the General Dynamics site is necessary to determine the lateral and vertical extent of groundwater contamination and whether it has affected area public supply wells. DOH has evaluated the latest available municipal well data for wells within a mile of the site. The latest sampling for VOCs occurred in 2008 and found no concentrations above EPA MCLs at that time. DOH and ATSDR will offer this draft report to the community for public comment and will address any concerns in the final report.

Conclusions

Florida DOH cannot currently conclude whether contaminated groundwater found on the General Dynamics site is harming or could harm people's health. There has been no off-site testing and the extent of contamination is unknown.

1. The extent of groundwater contamination from the General Dynamics site is unknown.
2. Nearby community and municipal supply wells are not thought to be contaminated but some have not been tested in over four years.
3. Nearby private irrigation wells have not been tested.
4. It is not known if VOCs have traveled underneath any occupied structures near the site so the potential for vapor intrusion is unknown.

Soil contamination at the site is not expected to harm people's health because access is restricted and there is no indication that the soil is moving off-site.

Recommendations

1. EPA should determine the extent of groundwater contamination from the General Dynamics site.

2. EPA should notify nearby municipal and community well owners of the groundwater contamination from the site. These well owners should consider more frequent testing for VOCs and metals.
3. EPA should consider testing nearby private irrigation wells.
4. EPA should evaluate the vapor intrusion pathway if groundwater contamination is found to extend under nearby occupied structures.

Public Health Action Plan

EPA is currently in negotiations with General Dynamics, the responsible party for this site, to begin assessing the extent of groundwater contamination. DOH will re-evaluate the health threat once EPA completes a Remedial Investigation at the site or any other additional data collected by EPA and/or DEP becomes available. DOH will continue to inform the community of any pertinent site related information.

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[EPA 2009] Environmental Protection Agency (EPA). 2009. Hazard Ranking System, HRS Documentation Record for General Dynamics Longwood. Seminole County, Florida, EPA ID: FLR000091322. April 2009.

[MACTEC 2008] MACTEC Engineering and Consulting Inc.2008. Site Inspection Report, Gould Property Site. Seminole County, Florida, EPA ID: FLR 000091322. Prepared for: Florida Department of Environmental Protection. January 2008.

Appendix A: Tables

Table 1: Highest Concentrations Detected in On-site Groundwater

Chemical of Concern	Highest Concentration Detected (ppb)	Comparison Value (ppb)	Source of Comparison Value
Tetrachloroethene (PCE) Sample depth: 20 – 24’	230	5	EPA MCL
Trichloroethylene (TCE) Sample depth: 38 – 42’	1300	5	EPA MCL
1,1-Dichloroethylene (1,1-DCE) Sample depth: 20 – 24’	3400	7	EPA MCL
***cis*-1,2-Dichloroetheylene (*cis*-1,2 DCE)** Sample depth: 38 – 42’	950	70	EPA MCL
Vinyl Chloride Sample depth: 18-22’	130	2	EPA MCL

Source: MACTEC 2008
ppb = parts per billion
MCL=Maximum Contaminant Level

Appendix B: Figures

Figure1: General Dynamics Site Location

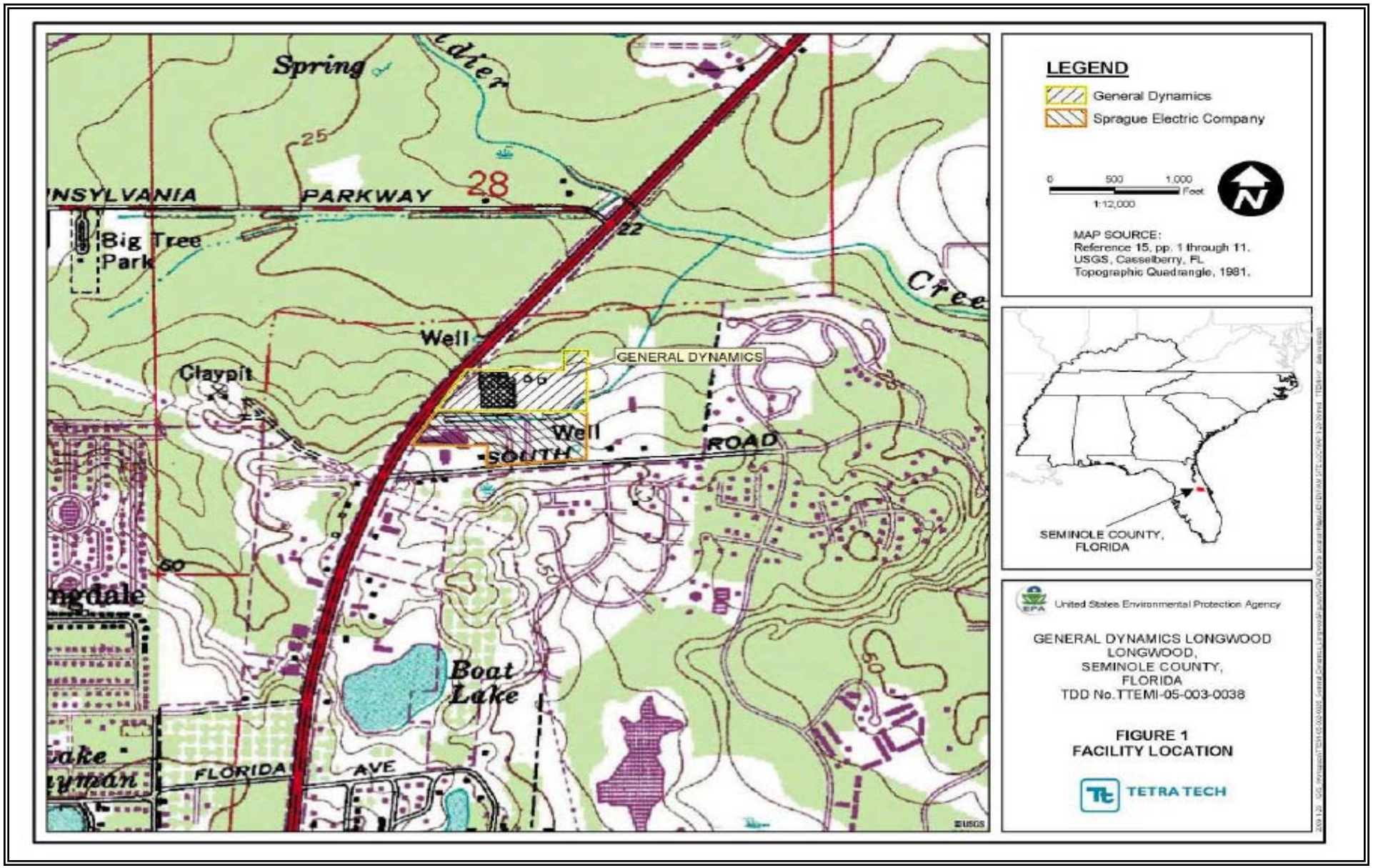


Figure 2: General Dynamics Site Boundary

Figure 3: General Dynamics Surrounding Area Map

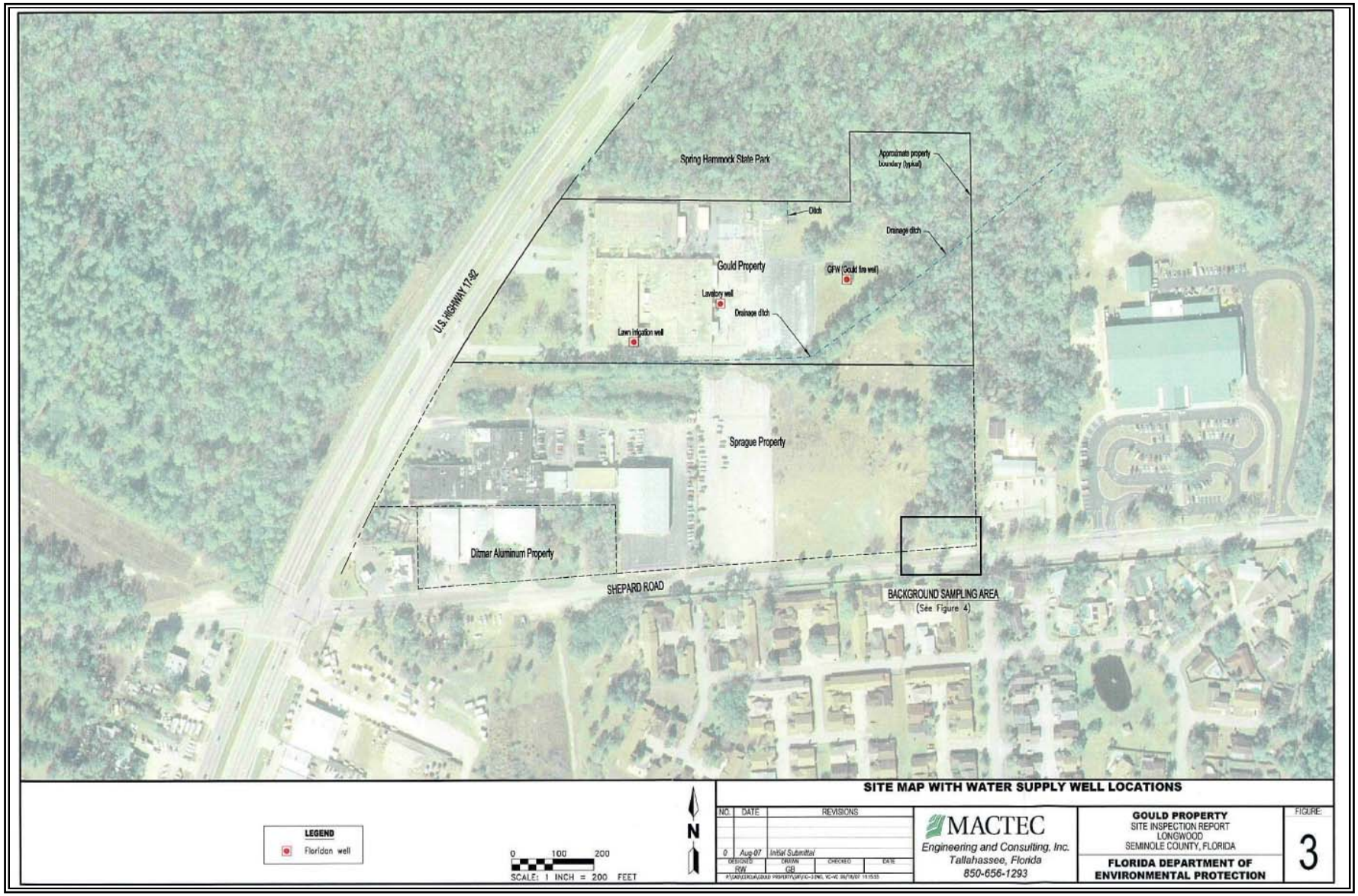
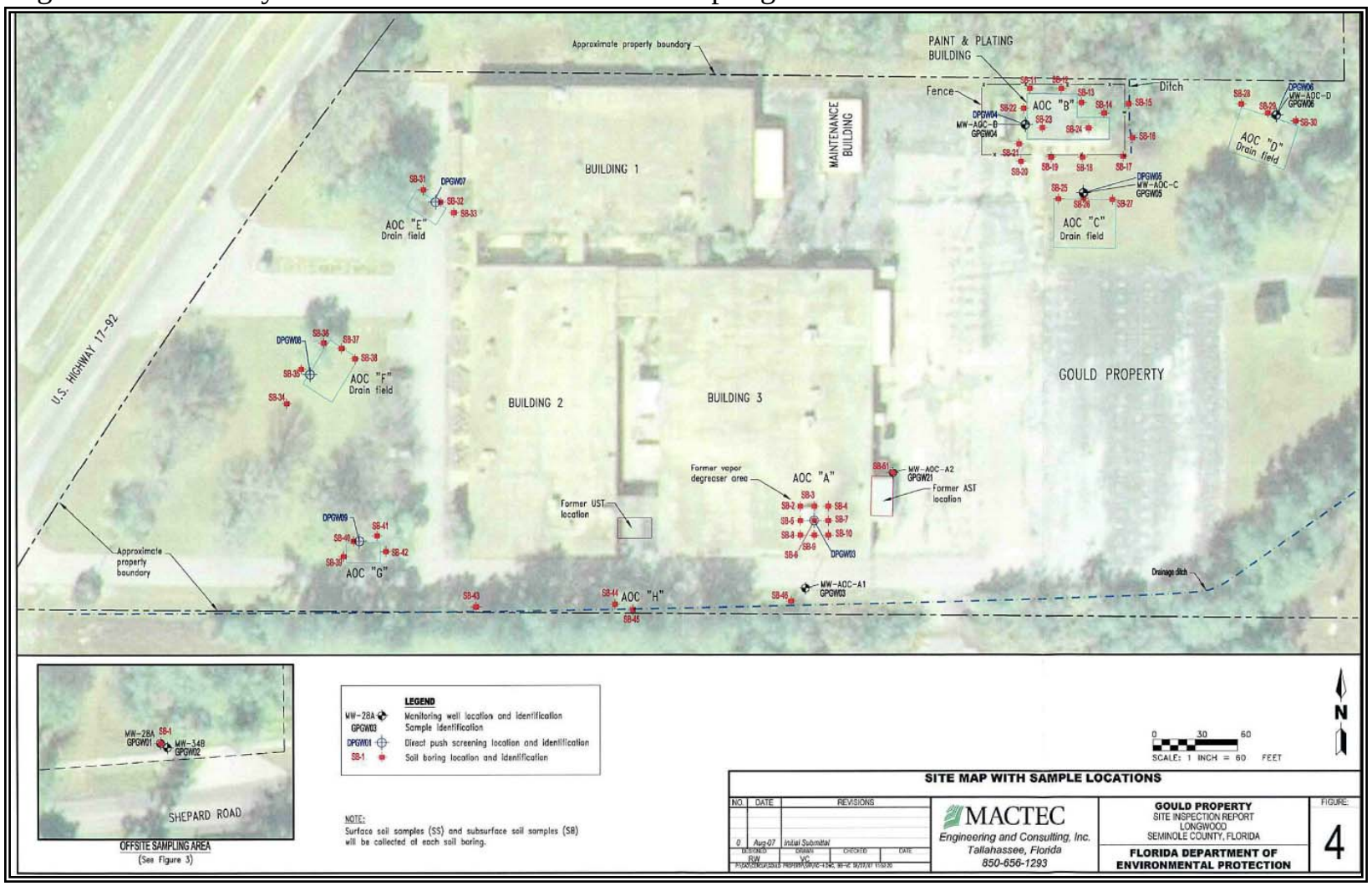


Figure 4: General Dynamics Groundwater and Soil Sampling Locations



Appendix C: Response to Public Comments

This document was available for public comment from March 31, 2010 to May 31, 2010. Florida DOH received one health concern and many general comments about the site from nearby residents. Florida DOH also received comments from General Dynamics. The following is a summary of the comments and Florida DOH response. To receive the full text of the comments please contact Florida DOH.

Community Comments/Concerns and Responses:

Comment: One resident wanted to find out if her diagnosis of rheumatoid arthritis could be site-related since she had no family history of the disease.

Response: The chemical levels found thus far in drinking water supplies have been all below health based guidelines and would not be expected to cause rheumatoid arthritis.

Comment: One resident of the Highlands neighborhood wanted to be sure that she would receive updates regarding these sites.

Response: Florida DOH will continue to provide nearby residents with health information for both the Sprague Electric and General Dynamics-Longwood sites.

Comment: Many residents wanted to make sure that the extent of contamination was determined and requested additional well testing.

Response: Florida DOH has recommended that EPA and the responsible parties continue to work towards delineating the vertical and lateral extent of the contamination plume. Florida DOH has recommended more frequent well testing within one mile of the site to ensure the safety of the public water supply.

Comment: Many residents were unhappy with the length of time it took for them to be notified of these sites. They were also concerned about how long it would take to clean these sites up.

Response: Investigation and clean up at hazardous waste sites and Superfund sites typically takes many years. Notification and clean up are the responsibility of EPA and Florida DEP.

Comment: Numerous residents were very concerned about the potential **t**hreat to the aquifer in an environmentally sensitive area.

Response: Florida DOH has recommended that the full extent of the plume be investigated.

Comment: One resident was concerned that the cancer deaths of her three dogs might be site related.

Response: Florida DOH focuses on human health and possible human exposures and recommends you contact your veterinarian about pet health.

Comment: Several residents were very concerned about the safety of their drinking water and the potential health effects from drinking and showering in contaminated water.

Response: The chemical levels found thus far in drinking water supplies have all been below health-based guidelines and would not be expected to harm human health. Florida DOH recommends more frequent well testing within one mile of the site to ensure the safety of the public water supply.

Comment: Two residents were concerned about the safety of private irrigation wells in the area and requested sampling.

Response: Florida DOH recommends that EPA consider testing private irrigation wells in the area near the site.

Comment: Two residents wanted to make sure that Florida DOH knew how close Highlands Elementary school was to both the sites and was concerned with the possibility of health effects to students.

Response: Florida DOH is aware that the nearby school receives municipal drinking water supplies. Florida DOH recommends more frequent well testing within one mile of the site to ensure the safety of the public water supply.

Comment: Two residents were concerned about the safety of **c**hildren playing in the area, specifically playing soccer on the vacant lot next to the Sprague Electric site.

Response: The vacant lot adjacent to Sprague is not within the hazardous waste site boundary. The contamination associated with Sprague is in the groundwater. Florida DOH is unaware of any contamination on the vacant lot or of any possible route of exposure.

Comment: One resident wanted to know if the City of Winter Springs knew about the contamination at the sites.

Response: Florida DOH has contacted the City of Winter Springs about this report. They are actively monitoring water supplies for contaminants.

General Dynamics Comments and Responses:

In their comments, General Dynamics maintains that the source of groundwater contamination has not been determined. They object to instances in the draft health consultation report that state General Dynamics is the source.

Comment: There are numerous places in the report that state that General Dynamics is the source of groundwater contamination. The source of contamination has not been determined.

Response: In places where the report states that groundwater contamination is from General Dynamics, Florida DOH referenced the applicable EPA document.

Comment: In third sentence on page 1, the report includes metals as groundwater contaminants. The concentrations of these metals are, however, below EPA MCLs.

Response: Florida DOH clarified the report to attribute to EPA the inclusion of metals as groundwater contaminants, regardless of the concentration.

Comment: The statement on Page 1 that no investigation has been done to determine if groundwater contamination has moved off-site is misleading.

Response: Florida DOH clarified the report to explain that the extent of groundwater contamination from General Dynamics has not been determined.

Comment: The third sentence of the third paragraph on Page 3 erroneously states that tetrachloroethylene (PCE) was used at this site.

Response: Florida DOH clarified thee report to indicate that PCE was commonly used in this type of operation.

Comment: The last sentence of the fourth paragraph on page 3 erroneously states that VOC contamination at General Dynamics was discovered during routine monitoring.

Response: Florida DOH modified the report to indicate that VOC contamination at General Dynamics was discovered during an investigation of the adjacent Sprague Electric site.

Comment: The second sentence of the second paragraph on page 7, erroneously states that Seminole County, Longwood, and Winter Springs wells are within one mile of General Dynamics.

Response: Florida DOH changed the distance to indicate these wells are within two (2) miles of the site.

Comment: In the sixth paragraph on page 8, inclusion of the qualifier "…due to lack of information" is misleading. Furthermore, there is no indication that groundwater is used at the Longwood site.

Response: Florida DOH clarified the report to state: "No completed exposure pathways could be identified in the neighborhoods near the General Dynamics site due to a lack of information.

Comment: The units in the second column of Table 1 on page 15 are in error.

Response: Florida DOH changed the units in this table from parts per million to parts per billion.

Comment: The report states that large capacity municipal wells can change groundwater flow direction. The report should clarify that large municipal wells can "influence" but not "change" nearby groundwater flow direction.

Response: In areas like central Florida with little topographical relief, large capacity municipal wells can influence/change groundwater flow direction over a substantial area. Until the extent of groundwater contamination from the General Dynamics site is determined, it is protective of public health to assume that nearby large capacity municipal wells can influence/change groundwater flow and these wells are at risk of contamination.

Comment: In the first paragraph on Page 5, it is unclear in what layer is the "confining bed of sand, clay and shell."

Response: Florida DOH modified the report to state: "…a confining bed of sand, clay and shell (A/B clay layer)."

CERTIFICATION

The Florida Department of Health, Division of Environmental Health prepared this Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It followed approved methodology and procedures existing at the time it began and completed editorial review.

Jennifer Freed
Technical Project Officer,
CAT, CAPEB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.

Alan Yarbrough
Team Lead
CAT, CAPEB, DHAC, ATSDR