PROPOSED REMEDIAL ACTION PLAN

Unisys Corporation
Operable Unit Number 02: Offsite Groundwater
State Superfund Project
Lake Success, Nassau County
Site No. 130045
June 2014

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repositories identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repositories:

Great Neck Public Library
Attn: Ms. Laura Weir
159 Bayview Avenue
Great Neck, NY 11023
Phone: 516-466-8055

Hillside Public Library

Attn: Ms. Charlene Noll
155 Lakeville Road
New Hyde Park, NY 11040
Phone: 516-355-7850

A public comment period has been set from:

June 13, 2014 to July 14, 2014

A public meeting is scheduled for the following date:

June 26, 2014 at 7:00PM

Public meeting location:

Great Neck South Middle School, 349 Lakeville Road, Great Neck, NY 11020

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through to:

Girish Desai
NYS Department of Environmental Conservation
Division of Environmental Remediation
SUNY at Stony Brook 50 Circle Road
Stony Brook, NY 11790-3409
gvdesai@gw.dec.state.ny.us

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at

http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Site Location: The former Unisys Site is located in the Village of Lake Success and the Town of North Hempstead, Nassau County. The site is bounded by Marcus Avenue to the north, Union Turnpike to the south, Lakeville Road to the west and the Triad Office Park to the east.

Site Features: The site is approximately 94 acres in size. The former Unisys property is fully developed, with the bulk of the property comprised of the main manufacturing building, various smaller support buildings (e.g., foundry and boiler building), three recharge basins and parking lots. The smaller buildings are located south of the main building. The site was redeveloped by the current owner for commercial use. Presently, the buildings house a number of tenants. The current site owner has deeded 3.5 acres in the southeast corner of the property to the Town of North Hempstead for their use as soccer fields.

Current Zoning/Use(s): The site straddles the border of the Village of Lake Success and the Town of North Hempstead. The portion of the property in the Village of Lake Success is zoned Economic Development A (commercial). The portion of the property in the Town of North Hempstead, including the soccer fields, is zoned Industrial A. The off-site area (OU2) is mixed residential/commercial/industrial.

Past Use of the Site: The former Unisys facility was an active manufacturing facility from its start-up in 1941 until approximately 1995, when most manufacturing activities ceased, although some assembly, integration, prototype development/testing, and/or engineering and administrative activities continued at the facility through early 1999. The facility has been served by a sanitary sewer system since it was constructed in 1941. The on-site storm water collection system which received runoff from the parking lot, roofs and surrounding roads is connected to the three recharge basins located in the southwest corner of the property. Groundwater had been used for non-contact cooling purposes since the facility was constructed. The non-contact cooling water system consisted of three extraction wells and four diffusion wells which were located to the north and south of the main manufacturing building, respectively. The groundwater is no longer used for cooling purposes. In the past, the facility manufactured a wide range of defense related products. Past manufacturing processes included casting, etching, degreasing, plating, machining and assembly. Chemicals used during manufacturing at the facility included halogenated solvents, cutting oils, paints and fuel oils and plating compounds. The facility had five drywells located off the southeastern corner of the main building. These drywells were used to dispose of water containing solvents and oils from approximately 1941 to 1978.

Operable Units: The site is divided into two Operable Units. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

Operable Unit 1 (OU1) consists of the 94 acre site property. A Record of Decision (ROD) was

issued for OU1 in March 1997.

Operable Unit 2 (OU2) is defined as the off-site area beyond the 94 acre property where contaminants in groundwater have migrated from the site (OU1). Eleven active public supply wells are located within OU2; nine drawing from the Magothy aquifer, and two drawing from the Lloyd aquifer. Four inactive public supply wells (Magothy) are located within OU2, as are six active irrigation wells.

Geology/Hydrogeology: The site and surrounding area is underlain by unconsolidated surficial deposits with an estimated 700 foot thickness, and Precambrian bedrock below. The unconsolidated deposits are comprised of the following formations from the ground surface downward: Upper Glacial deposits (150 ft); Magothy formation (250 ft); Raritan Upper Clay unit (200 feet); Raritan Lloyd Sand unit (190 feet) and bedrock.

The groundwater flow in the area has been divided into four zones: the Upper Glacial aquifer and the upper, middle, and basal portions of the Magothy aquifer. The depth to groundwater is approximately 100 feet below ground surface (bgs). Generally, the groundwater flow direction is north/northwest. However, pumping by several public supply/irrigation wells in the area affects the groundwater flow direction.

Operable Unit (OU) Number 02 is the subject of this document.

A Record of Decision was issued previously for OU 01.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating site remedies. The local zoning and current use of the site and its surroundings are described in Section 3.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Unisys Defense Systems, Inc.

Lockheed Martin Corporation

Loral Corporation

The facility was originally designed and built by the United States Government and was operated

under a contract with Sperry Gyroscope Company (Sperry) from 1941 to 1951. In 1951, the property was sold to Sperry, which merged with Burroughs in 1986 to form the Unisys Corporation. In 1995, Loral Corporation (Loral) obtained the property from Unisys Corporation. In 1996, the property was purchased by Lockheed Martin Corporation (LMC). In 2000, LMC sold the property to i.park, Lake Success, LLP (i.park). The current owner of the property is Apollo Lake Success Property, LLC and 111 Marcus Avenue Unit 2 Owner, LLC.

The NYSDEC and the Unisys Defense System, Inc. entered into a Consent Order (W-1-0527-91-02) on December 13, 1991. The Order obligates the responsible party to implement a remedial program, consisting of a Remedial Investigation (RI), Feasibility Study (FS) and Interim Remedial Measure (IRM). On July 11, 1995 Loral Corporation agreed to implement the obligations under the Order. Effective July 23, 1996, Lockheed Martin Tactical Systems, Inc. undertook the obligations of the aforementioned Order.

The NYSDEC and the Lockheed Martin Corporation entered into a Consent Order (W1-0787-96-12) on October 29, 1997. The Order obligates the responsible party to develop and implement a remedial program in accordance with the Record of Decision for OU1.

After the remedy is selected for OU2, the Department will again approach the PRPs to implement the selected remedy. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- air
- groundwater
- surface water
- drinking water
- soil
- sediment
- soil vapor
- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

Trichloroethene (TCE)
Tetrachloroethylene (PCE)
Cis- 1,2 dichloroethylene (cis-1,2 –DCE)
1,1,2-Trichloro-1,2,2-triflouroethane (Freon 113)

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- drinking water

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

The following IRMs have been completed at this site based on conditions observed during the RI.

OU1 IRM - Groundwater

Two IRMs, dealing with OU1 soils and groundwater, were implemented prior to issuance of the OU1 ROD. The groundwater IRM consisted of the installation of a 1,100 gallon per minute (gpm) groundwater pump and treat system. The groundwater IRM began operation in April 1993 and was initially equipped with an activated carbon treatment system. The control system was upgraded to an air stripper as part of the OU 1 Record of Decision and began operating in August 2002.

OU1 IRM - Soil

An IRM was undertaken to address soil contamination in 1994. The soil IRM consisted of a soil vapor extraction (SVE) and catalytic incineration system which was installed in the vicinity of the VOC impacted drywell area located off the southeastern corner of the main building. The SVE system uses a blower attached to several soil vapor extraction wells to draw air through soils. This flow of air allows VOCs to evaporate from the soils and into the air spaces between soil particles. Contaminants are then drawn toward the wells and into the treatment system where the vapors are treated prior to discharge to the atmosphere.

The treatment system is catalytic incineration (oxidation) which is a process in which the vapors are passed over a catalyst at an elevated temperature and the contaminants are converted to carbon dioxide, water, and inorganic acids. The SVE system began operating in January 1994. The system was subsequently upgraded, as required by the OU1 ROD, and the upgraded system went into operation in the summer of 2001. The system continues to operate.

OU2 IRM - Lloyd Public Supply Well

The Public Supply Well - Lloyd Well No. N-1802 was located adjacent to the site, on the corner of Lakeville Road and Union Turnpike. The well was installed in 1941. This well was owned and operated by Manhasset-Lakeville Water District (MLWD). The well screen was reported to be set at a depth of 641 to 691 feet in the Lloyd formation. The Lloyd formation is separated from the overlying Magothy formation by approximately 150 feet of impermeable clay (Raritan Clay). Routine testing of this well detected the presence of VOCs in the pretreated water and therefore a treatment system was installed to remove VOCs. NYSDEC requested that the well be investigated as part of the RI. Investigation of the well was conducted between April and June 1993. The contamination was attributed to a hole in the well casing. The casing was repaired as an IRM, and the well was put back in service in July 1996. Since repairing the well, the concentrations of VOCs had slowly decreased to non -detect in the pretreated water. The water is routinely monitored by the water supplier to ensure that it meets NYSDOH public drinking water supply standards.

OU2 IRM - The Great Neck School District Property

During the RI, an area of the groundwater plume was identified below the Great Neck School District property. To address this identified "hot spot", an off-site groundwater IRM was implemented to enhance contaminant mass reduction, to minimize the off-site migration of impacted groundwater toward downgradient public supply wells and other receptors, and minimize further contaminant migration into the North Hills Special Groundwater Protection Area. This IRM consists of a groundwater recovery well screened at various depths in the Magothy aquifer beneath the Great Neck School District property. The system includes two air strippers, an emission control system (located on property leased from the Manhasset-Lakeville Water District) and three injection/diffusion wells located on New York State-owned recharge basin property located east and adjacent to Great Neck School District property. The OU2 groundwater IRM system has been running at 500 gpm since 2006.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was not deemed necessary for OU2.

Operable Unit 2 (OU2):

Nature and Extent of Impacted Groundwater:

The groundwater contamination originates from the former plant site (OU1) and extends over one mile into the off-site area. Groundwater migration from OU1 has resulted in a significant off-site groundwater plume. The groundwater flow direction is to the northwest.

The primary site-related contaminants of concern (COCs) for the groundwater include: 1,2 DCE, TCE, PCE, and Freon 113. The groundwater plume originating from the nearby 400 Lakeville Road site (Site No. 130176), known to contain Freon 22, also extends off that site and comingles with the Unisys site groundwater plume.

The groundwater plume in the Upper Glacial aquifer, as defined by the 5 part per billion (ppb) contour, extends off-site approximately 1,400 feet north of Marcus Avenue and approximately 2,500 feet west of Lakeville Road. The highest level of total volatile organic compounds (260 ppb) was observed 400 feet northwest of the intersection of Marcus Avenue and Lakeville Road. The total VOC groundwater plume in the Magothy aquifer extends off-site approximately 6,000 feet north of Marcus Avenue and approximately 4,800 feet west of Lakeville Road. The peak off-site VOC concentration observed was 910 ppb. The Water Authority of Great Neck North supply wells N12999, N13821 and N13000 are actively pumping water for public supply purposes from the Magothy aquifer. An impact by these public supply wells has been observed as the 5 ppb total VOC contour shows deflection toward the pumping wells. Throughout the

study area, the Lloyd aquifer is isolated and hydraulically separate from the overlying Magothy aquifer, and has not been affected by the VOC plume.

The Manhasset Lakeville Water District (MLWD) public supply well N-5099, when operating, pumps water for public supply purposes from the Magothy aquifer. Site-related VOCs continue to be detected at low levels in this well. Based on groundwater modeling, the maximum total VOC concentration is expected to reach approximately160 ppb after 19 years. This well is not in service at this time.

The OU1 groundwater remedial system is effectively containing on-site VOCs in the Upper Magothy aquifer. This proposed remedy will upgrade the OU1 system to ensure containment in the Basal Magothy.

Surface Water/Sediments in Lake Success and Lake Surprise:

No site-related constituents were detected in the water or sediment in Lake Success or the irrigation pond (Lake Surprise). The groundwater plume is below the bottom of both Lake Success and Lake Surprise and has not impacted either lake, and is not expected to impact these lakes in the future.

Nature and Extent of Impacted Soil Vapor:

An off-site soil vapor intrusion (SVI) evaluation was completed in 2009. The soil vapor intrusion samples were collected from a total of eight off-site properties. TCE and PCE were detected in a limited number of sub-slab soil gas and indoor air samples. However, TCE and PCE were detected below the NYSDOH air guideline of 5 micrograms per cubic meter (ug/m3) and 30 ug/m3, respectively. Based on the NYSDOH guidance, no further action is needed as the data indicate that concentrations in sub-slab soil gas and indoor air are below levels of potential concern.

Resources impacted/threatened: The Long Island Sole Source Aquifer has been impacted with site-related contamination resulting in impacts to nearby Public Supply Wells and Golf Course Irrigation Wells. Several of these wells have treatment systems in place so the water supplied meets acceptable drinking water quality.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking the contaminated groundwater because municipal water suppliers have taken appropriate actions (such as treating the groundwater to remove contaminants prior to distribution or removing wells from service) to ensure that the public water supply continues to meet drinking water standards (OU1/OU2). Potential exposure to contaminated groundwater via irrigation well usage to air (via volatilization) was evaluated and no impacts were identified

(OU2). It is not likely that people will come into direct contact with soil contaminants because the majority of the site (OU1) is covered with buildings and pavement and contaminated soils have been removed from the drywells. Contaminated sediments found in three recharge basins (OU1) are covered with standing water and a fence surrounds the basins preventing unauthorized access. Signs are posted around the recharge basin area, indicating that trespassing, swimming and fishing are prohibited (OU1). Volatile organic compounds in contaminated groundwater or soil may move into the soil vapor (air spaces within the soil), which in turn, may move into overlying buildings and affect indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential for soil vapor intrusion to impact indoor air has been addressed in current on-site structures by the continued operations of sub-slab depressurization systems (active and passive) and a soil vapor extraction system. Based on environmental sampling, the potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in any future on-site building development and occupancy (OU1). Environmental sampling indicates the indoor air quality of off-site structures is not impacted by site-related contamination (OU2).

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Continued Operation of Existing OU2 Groundwater IRM, Upgrade OU1 Groundwater Treatment System, and Public Water Supply Protection Program remedy.

The estimated present worth cost to implement the remedy is $32,000,000. The cost to construct the remedy is estimated to be $8,600,000 and the estimated average annual cost is $1,400,000.

The elements of the proposed remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;
   - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
   - Reducing direct and indirect greenhouse gas and other emissions;
   - Increasing energy efficiency and minimizing use of non-renewable energy;
   - Conserving and efficiently managing resources and materials;

   Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
   - Maximizing habitat value and creating habitat when possible;
   - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
   - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. The continued operation of the existing 500 gpm OU2 IRM groundwater extraction and treatment system located at the Great Neck School property.

3. Upgrade of the current 730 gpm OU1 groundwater remediation system by the installation of a new 120 gpm extraction well to collect and treat an additional volume of groundwater bringing the total system up to 850 gpm. This upgrade is needed to improve groundwater capture from the basal Magothy aquifer to ensure complete capture.

Treatment will be provided by the existing OU1 system. Treated water will be discharged in the same location.

4. Public Water Supply Protection and Mitigation Program.

   A program that promotes the distribution of potable water of the highest quality will be developed and implemented, until such time as groundwater standards are achieved in all areas impacted by the Unisys Groundwater Plume. The program will be consistent with the requirements of Subpart 5-1 of the State Sanitary Code and will include, but may not be limited to, the following:

   - an installation, operation and maintenance plan for public water supply wellhead treatment systems (including continued operation of all existing systems or installation of additional treatment systems or upgrades to existing systems) on wells affected by site-related contamination, now or in the future, to assure for as long as the wells are used as public water supply sources that drinking water standards are achieved and that the finished water is of no lesser quality as currently distributed due to actions taken as part of this remedy;
   - a monitoring plan that will include, but may not be limited to, groundwater monitoring at sentinel wells installed upgradient of water supply wells that could potentially be affected by the continued migration of the groundwater contamination;
   - periodic updates on the groundwater model simulation results to track contaminant migration; and
   - a response plan that will be implemented if site-related contaminant concentration(s) in the sentinel well(s) approach or exceed site-specific action levels and will include, but may not be limited to, notifying the Department, NYSDOH, County Health Department and the potentially impacted water district and evaluating the rate of movement of site-related contaminants toward the public supply well(s) and the need for wellhead treatment. If treatment is needed, an appropriate system will be designed, installed and maintained at the wellhead.

5. Site Management Plan. A site management plan is required, which includes the following:
   a. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
      - monitoring of the groundwater to assess the performance and effectiveness of the remedy;
      - monitoring of the groundwater at irrigation wells that are or that become impacted by site-related groundwater contamination; and
      - a schedule of monitoring and frequency of submittals to the Department.
   b. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
      - compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
      - maintaining site access controls and Department notification;

- providing the Department access to the site and O&M records; and
- an O&M Plan for the on demand treatment system at irrigation well (N-8038) owned by Village of Lake success. This irrigation well is used when needed to supply additional water for golf course irrigation.

c. periodic certification - the remedial party or site owner must provide, on such periodic basis as established by the Department:
   - certification of institutional and/or engineering controls in accordance with Part 375-1.8(h)(3);
   - certification of compliance with the Public Water Supply Protection and Mitigation Program; and
   - certification of compliance with the Department approved Site Management Plan.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide).

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater and soil vapors.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas identified at the site include drywells located off the southeastern comer of the main building. These drywells were used to dispose waste water containing solvents and oils. Soil vapors have been detected under the main building and have been mitigated. Investigations of additional potential source areas under the main building slab are being conducted which may support the need for further remediation pursuant to the ongoing RCRA Closure of the site.

The waste/source areas located off the southeastern corner of the main building were addressed by an IRM and the ongoing OU1 remedy. A soil vapor extraction system was installed in 1994 as an IRM and the OU1 remedy included the removal of approximately 800 tons of contaminated soil from the drywells in 1998.

Groundwater

A complete round of groundwater sampling data was collected from June 2009 through January 2010 and periodic groundwater sampling of selected outpost monitoring wells continued during 2011 and 2012.

Figure 2 provides the location of wells located within a 2.5 mile radius of the former Unisys site. Groundwater samples were collected from off-site monitoring wells, irrigation wells, and public supply wells. Groundwater flow is generally to the northwest, except in local areas affected by current pumping. Figure 3 provides approximate maximum extent and concentration distribution of total volatile organic compounds (VOCs) in groundwater regardless of the aquifer horizon.

As noted on Figure 3, VOCs [cis 1,2 dichloroethene (cis, DCE), trichloroethene (TCE), tetrachloroethene (PCE) and Freon 113] have been detected in on-site and off-site groundwater. The VOC distribution and peak concentrations in the Upper Glacial and Magothy aquifers zones are summarized below:

Upper Glacial Aquifer:

The VOC groundwater plume in the Upper Glacial aquifer, as defined by the 5 ppb contour on Figure 3, extends off-site approximately 1,400 feet north of Marcus Avenue and approximately 2,500 feet west of Lakeville Road. The groundwater flow is to the northwest. The peak VOC concentration of 260 ppb was detected in a monitoring well 18GL located approximately 400 feet northwest of the intersection of Marcus Avenue and Lakeville Road. In monitoring well 18GL, three out of four contaminants of concern (COCs) exceeded the Department's Ambient Water Quality Standards and Guidance values (Standards, Criteria and Guidance-SCGs) of 5 ppb. No site-related VOCs were detected in monitoring well 16GL located approximately 2,000 feet north of the intersection between Marcus Avenue and Lakeville Road on the Great Neck North School property.

The groundwater plume, which is below the bottom of both Lake Success and Lake Surprise, has not affected either lake, and is not expected to impact these lakes in the future because the groundwater is below the bottom of the lakes.

Upper Magothy Aquifer:

The total VOC groundwater plume in the upper Magothy aquifer, as defined by the 5 ppb contour on Figure 3, extends off-site approximately 6,200 feet north of Marcus Avenue and approximately 4,800 feet west of Lakeville Road. The groundwater flow is to the northwest. At least one COC was detected at concentrations above the SCGs in 16 out of 22 wells. The peak VOC concentration of 580 ppb was found in a monitoring well 16ML located approximately 2,000 feet north of intersection between Marcus Avenue and Lakeville Road on the Great Neck North School property. A VOC concentration of 270 ppb was found in a monitoring well ERM-04 located approximately 500 feet west of Lakeville Road. A total VOC concentration of 130 ppb was found in an irrigation well N13266 located approximately 2,000 feet west of Lakeville Road on North Shore Golf Course (high rise residential buildings on the property). A total VOC concentration of 140 ppb was found in monitoring well 45MU located approximately 3,500 feet west of Lakeville Road and 3,000 feet north of Marcus Avenue on the Village of Lake Success property. A total VOC concentration of 4.9 ppb was found in monitoring well 15GL located approximately 250 feet south of Union Turnpike.

Middle Magothy Aquifer:

The total VOC plume, as defined by the 5 ppb contour on Figure 3, extends off-site approximately 6,000 feet north of Marcus Avenue and approximately 4,800 feet west of Lakeville Road. At least one COC was detected at concentrations above the SCGs in 12 out of 19 wells. The peak VOC concentration of 910 ppb was found in monitoring well 38MI located approximately 1,200 feet north of Marcus Avenue and 50 feet west of Lakeville Road.

A total VOC concentration of 230 ppb was found in monitoring well 43MI, located approximately 4,500 feet north of Marcus Avenue and 600 feet east of Community Drive Road on the Deepdale Golf Course property. Monitoring well 43MI is an outpost monitoring well for three public supply wells located northeast. The total VOC concentration in monitoring well 31MI, located approximately 5,000 feet north of Marcus Avenue and 500 feet east of Community Drive, was 360 ppb in 2009 and 430 ppb in 2012. Monitoring well 31MI is an outpost monitoring well for three public supply wells located to the northeast.

The total VOC concentration in monitoring well 46MI was 110 ppb in 2009 and 370 ppb in 2012. This well is located approximately 4,500 feet north of Marcus Avenue and 800 feet west of Community Drive. The total VOC concentration found in monitoring well 50MI was 330 ppb. This well is located southeast on an adjacent property. The VOC concentration found in monitoring well 44MI, located approximately 500 feet west of Lakeville Road, was 860 ppb. The total VOC concentration found in outpost monitoring well 51MI, for the

public supply well N-5099, was non-detect in 2010 and 4.7 ppb in 2012. This well is located approximately 6,500 feet north of Marcus Avenue and 800 feet west of Community Drive on the Fresh Meadow Golf Course property.

The groundwater flow is to the northwest, except in local areas affected by current pumping. The Water Authority of Great Neck North supply wells N12999 and N13000 are actively pumping water for public supply purposes. The effect the pumping of these public supply wells have on the plume is seen as the 5 ppb VOC contour is deflected toward these pumping wells.

Basal Magothy Aquifer:

The VOC plume, as defined by the 5 ppb contour on Figure 3, extends off-site approximately 4,800 feet north of Marcus Avenue and approximately 6,000 feet west of Lakeville Road. The groundwater plume is migrating to the north-northwest. At least one COC was detected at concentrations above the SCGs in 8 out of 16 monitoring wells. The peak VOC concentration of 590 ppb was found in monitoring well 37ML located approximately 500 feet north of Marcus Avenue, and 300 feet west of Lakeville Road. A total VOC concentration of 15 ppb was found in monitoring well 15ML, located approximately 250 feet south of Union Turnpike.

Lloyd Aquifer:

The groundwater sampling results from the former Lloyd Public Supply Well N1802, Public Supply Well N12802, and Monitoring Well N12450 indicate that the site-related groundwater plume present in the overlying Upper Glacial and Maghothy aquifers is not present in the Lloyd aquifer. Public supply Well N1802 was located on the southwest side of the site. In 1996, the work performed to repair a hole in the casing of well N1802 had successfully eliminated the source of VOCs from the overlying aquifers. In 2011, a replacement Lloyd aquifer well (N13749) was installed approximately 25 feet from the former N1802 location. This well currently does not show any impacts from site-related COCs.

Development of a Computer Groundwater Model

A groundwater flow and solute transport model was developed for the site. The model was constructed in order to simulate groundwater flow throughout the entire thickness of the Upper Glacial and Magothy aquifers. A groundwater model documentation report is included in the OU2 Remedial Investigation Report and OU2 Feasibility Study Report, dated May 2012.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Cis-1,2 Dichloroethene	ND to 630	5	74 of 143
Tetrachloroethene (PCE)	ND to 95	5	46 of 143
Trichloroethene (TCE)	ND to 190	5	69 of143
1,1,2-Trichloro-1,2,2-triflouroethane (Freon 113)	ND to 29	5	31of 143

a - ppb: parts per billion, which is equivalent to micrograms per liter, µg/L, in water.

b - SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
ND: Non-detect

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: cis-1,2 dichloroethene (cis-1,2 DCE), trichloroethene (TCE), tetrachloroethene (PCE) and Freon 113.

Surface Water

No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface water.

Sediment

No site-related sediment contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for sediment.

Soil Vapor

Off-site soil vapor intrusion (SVI) evaluations were conducted at eight properties in 2009. PCE was detected in the indoor air samples at concentrations ranging from non-detect to 1.7 micrograms per cubic meter (µg/m³), and TCE was detected at concentrations ranging from non-detect to 0.14 µg/m³. The levels of PCE and TCE detected in the indoor air are well below the New York State Department of Health's (NYSDOH) air guideline values of 30 µg/m³ for PCE and 5 µg/m³ for TCE, and do not represent a health concern. PCE was detected in sub-slab soil gas samples ranging from 0.7 µg/m³ to 33 µg/m³ and TCE was detected at concentrations ranging from 0.34 µg/m³to 23 µg/m³. Based on an evaluation of the indoor air and sub-slab soil gas concentrations, soil vapor intrusion is not affecting the indoor air quality of the off-site structures. No further actions are warranted.

Exhibit B

Description of Remedial Alternatives

With the exception of Alternative No. 1, No Action, each of the alternatives includes the following common remedial element:

- Public Water Supply Protection and Mitigation Program - A program that promotes the distribution of potable water of the highest quality will be developed and implemented, until such time as groundwater standards are achieved in all areas impacted by the Unisys Groundwater Plume. The program will be consistent with the requirements of Subpart 5-1 of the State Sanitary Code and will include, but may not be limited to, the following:
    - an installation, operation and maintenance plan for public water supply wellhead treatment systems (including continued operation of all existing systems or installation of additional treatment systems or upgrades to existing systems) on wells affected by site-related contamination, now or in the future, to assure for as long as the wells are used as public water supply sources that drinking water standards are achieved and that the finished water is of no lesser quality as currently distributed due to actions taken as part of this remedy;
    - a monitoring plan that will include, but may not be limited to, groundwater monitoring at sentinel wells installed upgradient of water supply wells that could potentially be affected by the continued migration of the groundwater contamination;
    - periodic updates on the groundwater model simulation results to track contaminant migration; and
    - a response plan that will be implemented if site-related contaminant concentration(s) in the sentinel well(s) approach or exceed site-specific action levels and will include, but may not be limited to, notifying the Department, NYSDOH, County Health Department and the potentially impacted water district and evaluating the rate of movement of site-related contaminants toward the public supply well(s) and the need for wellhead treatment. If treatment is needed, an appropriate system will be designed, installed and maintained at the wellhead.

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment. This baseline scenario does not include continued operation of the current OU2 groundwater IRM system. However, the OU1 soil and groundwater remedial systems will continue to operate as required by OU1 ROD and the order on consent to meet the remedial goals selected for the site.

The OU1 groundwater remediation system is located in the northeast corner of the site and includes a groundwater treatment plant and three remedial groundwater extraction wells. Treated water is conveyed to three off-site diffusion (recharge) wells located northeast of the site, on property owned by the New York State Office of Parks and Historic Preservation. This system is currently operating at a flow rate of 730 gpm.

Assuming that the existing OU2 IRM is turned off and no further off-site remediation is undertaken, a review of the groundwater modeling results predicts that the leading edge of the site related VOC plume will be approximately 2.5 miles downgradient of the site in approximately 30 years.

Present Worth: *$00*
Capital Cost: *$00*
Annual Costs: *$00*

Alternative 2: Continue Operation of existing OU2 Groundwater IRM, Upgrade OU1 groundwater treatment system and Public Water Supply Protection and Mitigation Plan

This Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2, and includes Site Management and Institutional Controls and Engineering Controls to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs. This alternative would include:

a. the continued operation of the existing 500 gpm OU2 IRM groundwater extraction and treatment system at the Great Neck School;

b. installation of a new 120 gpm extraction well and increasing capacity of the current OU1 groundwater remediation system from 730 gpm to 850 gpm; and

c. upgrade the existing groundwater and air emission control systems to accommodate the increased groundwater extraction in OU1.

This alternative would remediate 59% volume of impacted groundwater.

Present Worth: *$32,000,000*
Capital Cost: *$8,600,000*
Annual Costs: *$1,400,000*

Alternative 3: Removing COCs with one Additional Treatment System and Public Water Supply Protection and Mitigation Plan

This alternative would include:

a. the continued operation of the existing 500 gpm OU2 IRM groundwater extraction and treatment system at the Great Neck School;

b. installation of a new 120 gpm extraction well and upgrade of the current OU1 groundwater remediation system to treat additional treatment volume;

c. installation of another 500 gpm groundwater extraction and treatment system at the Village of Lake Success Golf Course (VLSGC) property and the diffusion of treated water on VLSGC property;

d. the treatment system should be designed to remove VOCs from all of the extracted groundwater to meet the State Pollutant Discharge Elimination System (SPDES) Permit discharge limitations; and

e. the installation of air emission controls, if required, to comply with the NYSDEC air regulations.

This alternative would remediate 68% volume of impacted groundwater.

Present Worth: *$55,000,000*
Capital Cost: *$20,000,000*
Annual Costs: *$2,500,000*

Alternative 4: Removing COCs with two additional Treatment Systems and Public Water Supply Protection and Mitigation Plan

This alternative would include:

a. continued operation of the existing 500 gpm OU2 IRM groundwater extraction and treatment system at the Great Neck School;

b. installation of a new 120 gpm extraction well and upgrade of the current OU1 groundwater remediation system to treat additional treatment volume;

c. installation of another 500 gpm groundwater extraction and treatment system at the Village of Lake Success Golf Course (VLSGC) property and the diffusion of treated water on VLSGC property;

d. installation of a 1,100 gpm groundwater extraction and treatment system at the North Shore Long Island Jewish Hospital (NSLIJH) property and the diffusion of treated water along the southeast portion of the NSLIJH property or the Deepdale golf course property;

e. the treatment system should be designed to remove VOCs from all of the extracted groundwater to meet the State Pollutant Discharge Elimination System (SPDES) Permit discharge limitations; and

f. the installation of air emission controls, if required, to comply with the NYSDEC air regulations.

This alternative would remediate 76% volume of impacted groundwater.

Present Worth: *$80,000,000*
Capital Cost: *$31,000,000*
Annual Costs: *$4,000,000*

Alternative 5: Restoration to Pre-Disposal Conditions and Public Water Supply Protection and Mitigation Plan

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A. This alternative will include:

a. Continued operation of the existing 500 gpm OU2 IRM groundwater extraction and treatment system at the Great Neck School;

b. installation of a new 120 gpm extraction well and upgrade of the current OU1 groundwater remediation system to treat additional treatment volume;

c. extraction of groundwater at a rate of 1,300 gpm from northwest of the Long Island Expressway (LIE), 1,000 gpm from the Fresh Meadow Country Club (FMCC), and 1000 gpm from North Shore Long Island Jewish Hospital (NSLIJH). The combined 3,300 gpm of extracted groundwater will be treated by two separate treatment plants at VLSGC and NSLIJH. The treated water will be diffused back into the aquifer by the diffusion wells;

d. the treatment system should be designed to remove VOCs from all of the extracted groundwater to meet the State Pollutant Discharge Elimination System (SPDES) Permit discharge limitations; and

e. the installation of air emission controls, if required, to comply with the NYSDEC air regulations.

This alternative would remediate 95% volume of impacted groundwater.

Present Worth: *$97,000,000*
Capital Cost: *$34,000,000*
Annual Costs: *$5,500,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Alternative 2	8,600,000	1,400,000	32,000,000
Alternative 3	20,000,000	2,500,000	55,000,000
Alternative 4	31,000,000	4,000,000	80,000,000
Alternative 5	34,000,000	5,500,000	97,000,000

Remedial Alternative costs are adapted from the 2012 FS Report.

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 2, which removes COCs and reduces impacts to public supply wells by treatment of off-site groundwater at three separate locations as the remedy for this site. Alternative 2 with a provision for the public water supply protection program would achieve the remediation goals for the site by preventing exposure to public health and the environment to site-related contamination, minimize potential impacts to the public water supply wells, reduce impacts to North Hills Special Groundwater Protection Area and treat elevated concentration of groundwater contamination off-site. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 4.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy, Alternative 2, would satisfy this criterion by continuing treatment of groundwater contamination at the existing OU1 and OU2 (IRM) groundwater treatment systems, upgrade the OU1 groundwater treatment system and implement a wellhead treatment plan for all public supply wells currently impacted, or threatened, by the Unisys site plume. The area is currently served by one public water supply with existing wellhead treatment.

Alternative 1 (No Action) is not protective of public health or the environment since it would discontinue the existing OU2 IRM groundwater treatment system thus deceasing, rather than achieving, protection of public health and the environment. Hence, Alternative 1 will not be evaluated further.

Alternative 5, by restoring the groundwater aquifer to pre-disposal/pre-release conditions meets the threshold criteria. Alternative 4 would control spread of higher concentrations of groundwater contamination in the area near the two new pump and treat locations. Alternatives 3, 4 and 5 would provide varying degrees of additional environmental protection as compared to Alternative 2 since these three alternatives would allow less migration of higher concentration groundwater within the plume, however they are not more protective of public health since Alternatives 2, 3, 4 and 5 would all require wellhead treatments at impacted public supply wells.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternatives 2, 3, 4 and 5 would meet SCGs for groundwater to varying degrees. The additional pumping and treating (P&T) of Alternatives 3,4 and will provide SCG compliance in somewhat reduced time periods than

Alternative 2 since they allow less migration of higher concentration groundwater. Alternative 2 will meet groundwater standards eventually, but a wider area will be affected before this occurs. However, under for all alternatives, wellhead treatment will be required at the currently impacted well and threatened well for at least 20 years.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation.

Alternatives 3, 4 and 5 would reduce the contaminant mass to varying degrees before reaching public supply wells and thus providing marginally better long-term effectiveness and permanence for environmental protection than Alternative 2. However, all alternatives would provide similar protection for public health. Alternative 2 would reduce less contaminant mass than other Alternatives 3, 4 and 5 before reaching public supply wells but provide similar protection for public health.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 2, 3, 4 and 5 all address the off-site contaminated groundwater to varying degrees and thus each result in reduction of the toxicity and mobility or volume of the contaminants in the off-site groundwater. Alternative 3, 4 and 5 would further reduce toxicity and mobility or volume at P&T locations. Alternatives 3 and 4 would not completely contain the groundwater plume, which will continue to spread in those areas outside the capture zone of the pump and treat systems, but to a lesser extent than Alternative 2. Alternative 5 best satisfies this criteria, by providing the most containment. Alternative 2 will reduce the toxicity and mobility or volume at public supply well locations, but plume will spread in those areas outside capture zone of public supply well locations.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 2 poses minimal disruption to the community as the treatment systems are largely already installed and additional wells will not be required. Alternatives 3 through 5 will result in increased short-term impacts to the community due to the degree of difficulty of constructing the ever larger off-site groundwater pump and treatment systems. These systems would include a larger number of groundwater extraction wells, pipelines, treatment system(s) and points of discharge at several locations in the plume. There are potential risks to the community, workers, and environment that would result from the carrying out of these tasks under Alternatives 3, 4 and 5 to varying degrees associated with the significant construction related noise, dust, traffic and road closures within highly developed residential/commercial areas. These impacts would be controlled with the appropriate health and safety measures and proper engineering controls. Alternative 3 has the highest potential short-term impacts and would take the longest to implement followed by Alternatives 4 and 5.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel

and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

There is a significantly greater degree of difficulty for the implementation of Alternatives 3, 4 and 5 as gaining access to multiple off-site properties (including park land) would be required for the construction of the wells, treatment systems and pipelines associated with these alternatives. This will require negotiation with several parties. All of this would be occurring within highly developed residential/commercial areas. Alternative 4 would have a somewhat lesser degree of difficulty relative to implementation, than Alternative 5. Alternative 3 would have a lesser degree of difficulty than Alternatives 4 and 5. The OU2 groundwater IRM is already implemented and operational. No impediments exist to implement Alternative 2. It could begin as soon as the ROD is issued.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

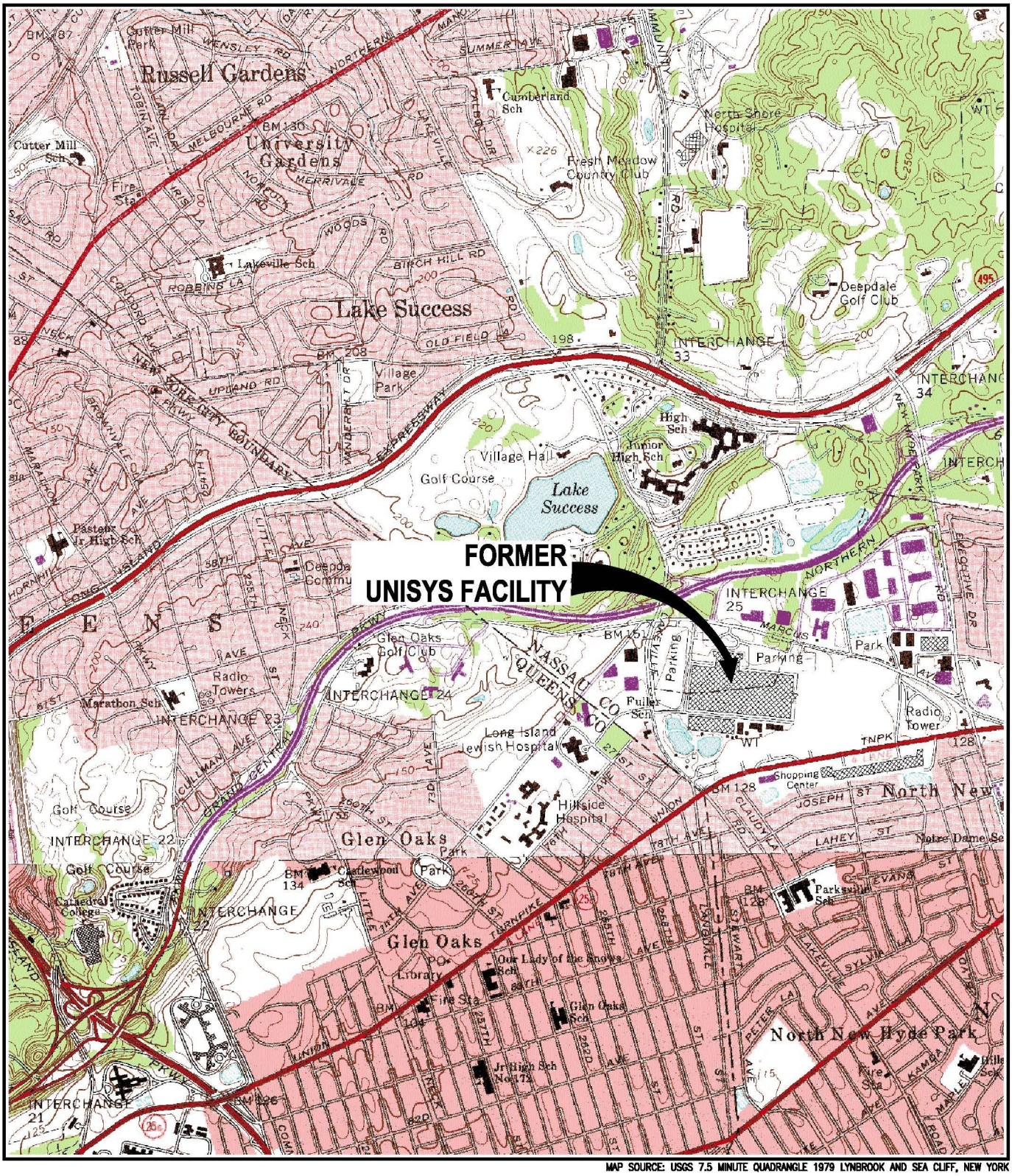
The estimated total present worth for the four alternatives under consideration ranged from $32 to $97M. From the least expensive to the most expensive they are Alternative 2, Alternative 3, Alternative 4 and Alternative 5. While Alternatives 3 through 5 would result in some increase in environmental protection; and reduction in toxicity, mobility and volume by limiting expansion of the plume, they would all result in comparable degrees of protection of public health as all would have relied on wellhead protection. Long-term effectiveness also would be marginally more effective under Alternatives 5, 4 and 3, respectively than Alternative 2, though all would require wellhead protection for at least 20 years. Short-term impacts would be insignificant for Alternative 2, as would issues that could affect the implementability of this alternative, since it could proceed as soon as the ROD is issued. However, for Alternatives 3 through 5, significant nuisance short-term impacts to the community resulting from construction related noise, dust, traffic and road closures are likely. Issues relative to the implementability of Alternatives 3 through 5 would be significant, and experience with other such large projects indicate these issues (notably access) could result in months to years of delay in the implementation of these alternatives. Finally, given the incremental benefit to environmental protection, with comparable public health protection afforded by Alternatives 3 through 5, Alternative 2, at a cost of $32M, is viewed as the most cost effective alternative.

8. Land Use.
Alternative 2 does not require any change in land use or commitment of new land areas to construct the remedy. Alternatives 3, 4 and 5 should not result in any new restriction on current land use. However, there will be a commitment of land area for treatment facilities and wells, as well as the rights of way for the pipelines.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 2 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



MAP SOURCE: USGS 7.5 MINUTE QUADRANGLE 1979 LYNBROOK AND SEA CLIFF, NEW YORK

0 2000' 4000'

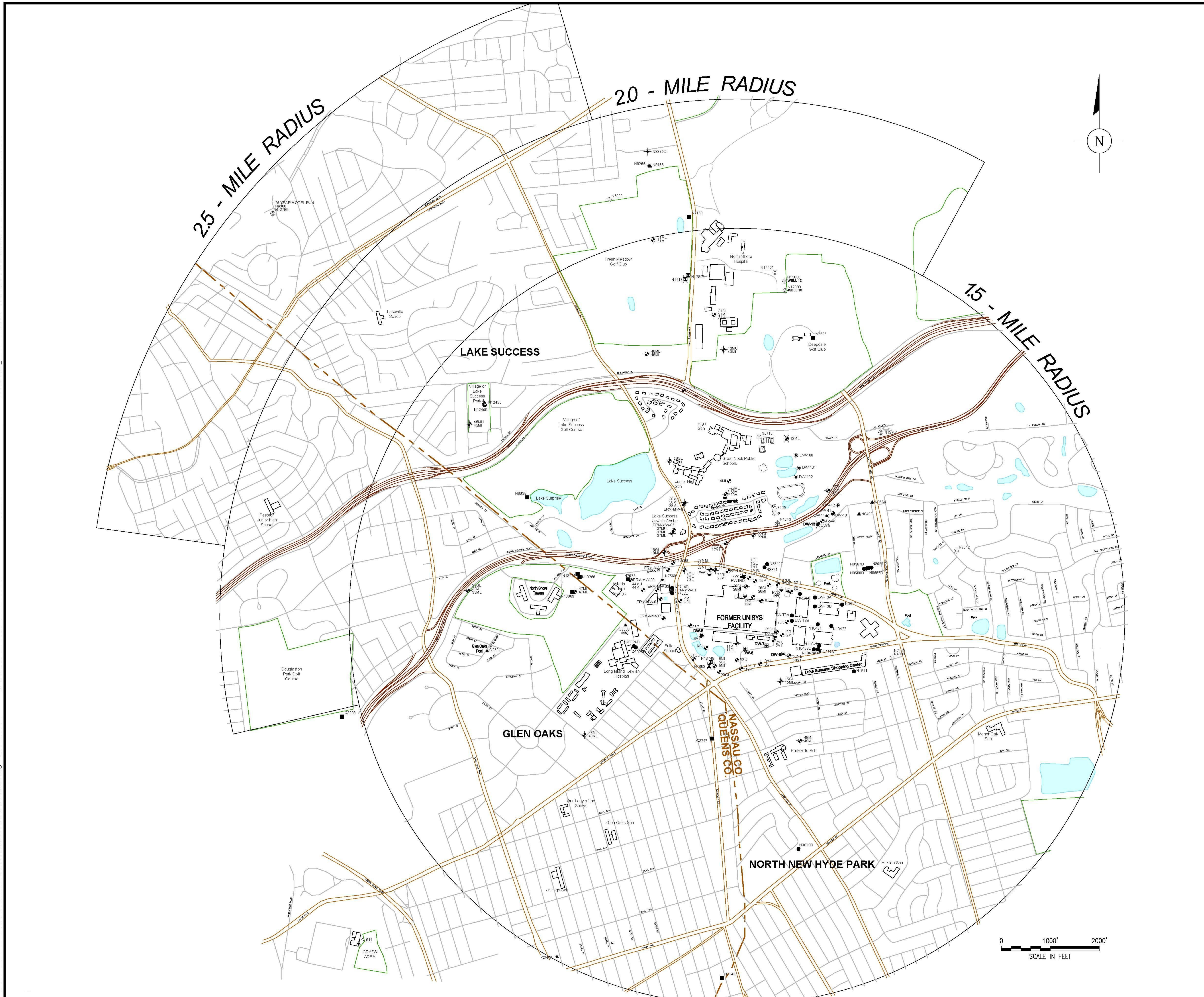
SCALE IN FEET

LOCKHEED MARTIN CORPORATION
FORMER UNISYS FACILITY, GREAT NECK, NEW YORK
OPERABLE UNIT 2

SITE LOCATION MAP

PROPOSED REMEDIAL ACTION PLAN

FIGURE
1



LEGEND:

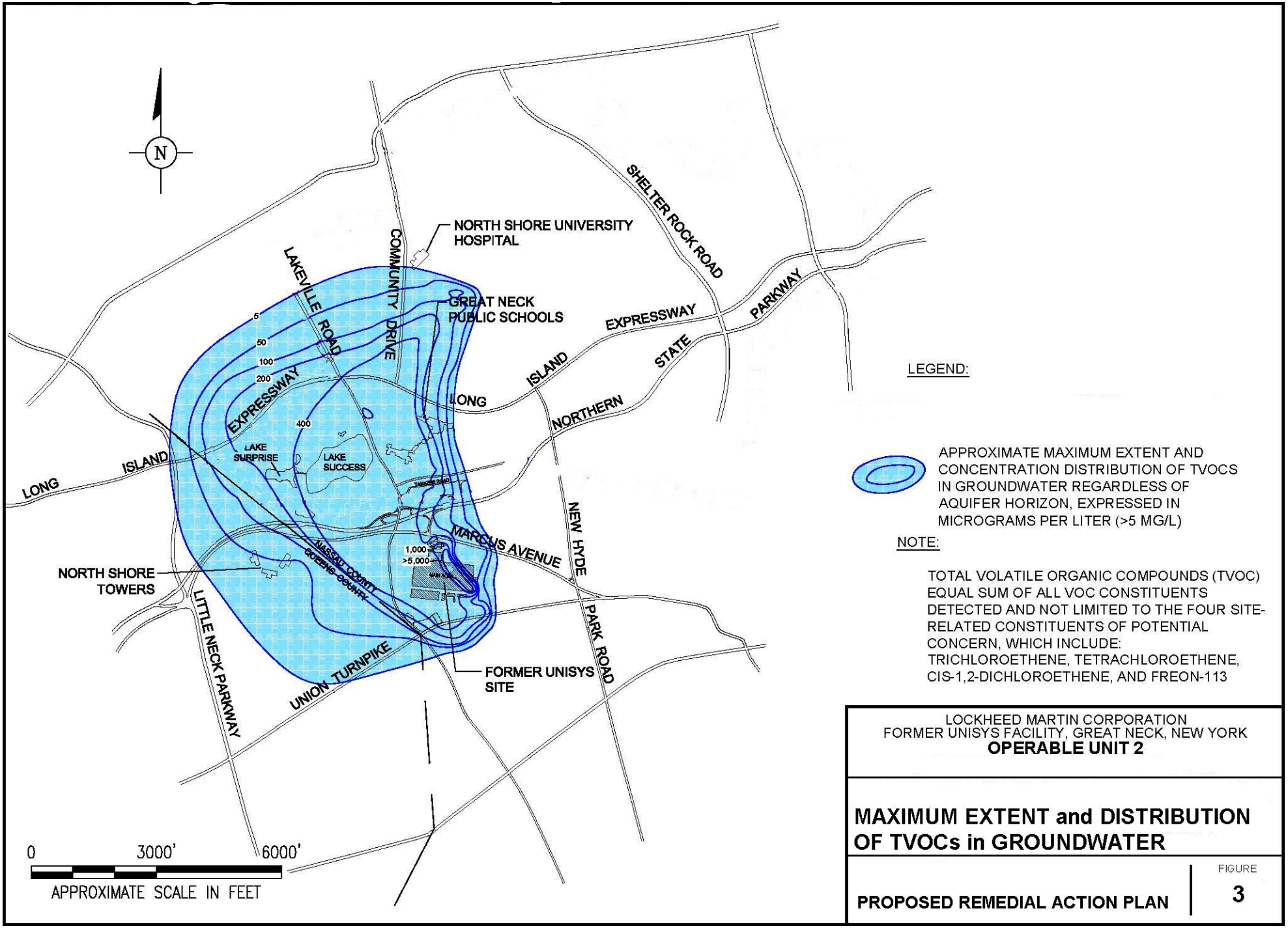
- BODY OF WATER
- GOLF COURSE OR PARK
- MONITORING WELL CLUSTER
- MONITORING WELL
- SITE EXTRACTION OR RECOVERY WELL
- REMEDIATION SYSTEM DIFFUSION WELL
- DOMESTIC WELL
- MUNICIPAL SUPPLY WELL
- NON-MUNICIPAL SUPPLY WELL
- NON-MUNICIPAL IRRIGATION WELL
- NON-MUNICIPAL DIFFUSION WELL
- LOCATION ABANDONED/DESTROYED
- LOCATION OF FORMER ONSITE DIFFUSION WELLS
- LLOYD AQUIFER MONITORING WELL
- LLOYD AQUIFER MUNICIPAL SUPPLY WELL
- ABANDONED LLOYD AQUIFER MUNICIPAL SUPPLY WELL
- LLOYD AQUIFER NON-MUNICIPAL SUPPLY WELL
- LLOYD AQUIFER NON-MUNICIPAL DIFFUSION WELL
- (NA) NOT ACCESSIBLE

LOCKHEED MARTIN CORPORATION
FORMER UNISYS FACILITY, GREAT NECK, NEW YORK
OPERABLE UNIT 2

WELLS LOCATED WITHIN A 1.5-MILE, 2-MILE, AND 2.5-MILE RADIUS OF THE FORMER UNISYS FACILITY

PROPOSED REMEDIAL ACTION PLAN

FIGURE **2**


N
NORTH SHORE UNIVERSITY HOSPITAL
SHELTER ROCK ROAD
COMMUNITY DRIVE
LAKEVILLE ROAD
GREAT NECK PUBLIC SCHOOLS
EXPRESSWAY
PARKWAY
STATE
ISLAND
LONG
NORTHERN
EXPRESSWAY
5
50
100
200
400
LAKE SURPRISE
LAKE SUCCESS
LONG ISLAND
NEW HYDE
MARCUS AVENUE
1,000
>5,000
NASSAU COUNTY
QUEENS COUNTY
NORTH SHORE TOWERS
LITTLE NECK PARKWAY
UNION TURNPIKE
PARK ROAD
FORMER UNISYS SITE
0
3000'
6000'
APPROXIMATE SCALE IN FEET
LEGEND:
APPROXIMATE MAXIMUM EXTENT AND CONCENTRATION DISTRIBUTION OF TVOCS IN GROUNDWATER REGARDLESS OF AQUIFER HORIZON, EXPRESSED IN MICROGRAMS PER LITER (>5 MG/L)
NOTE:
TOTAL VOLATILE ORGANIC COMPOUNDS (TVOC) EQUAL SUM OF ALL VOC CONSTITUENTS DETECTED AND NOT LIMITED TO THE FOUR SITE-RELATED CONSTITUENTS OF POTENTIAL CONCERN, WHICH INCLUDE: TRICHLOROETHENE, TETRACHLOROETHENE, CIS-1,2-DICHLOROETHENE, AND FREON-113
LOCKHEED MARTIN CORPORATION
FORMER UNISYS FACILITY, GREAT NECK, NEW YORK
OPERABLE UNIT 2
MAXIMUM EXTENT and DISTRIBUTION OF TVOCs in GROUNDWATER
PROPOSED REMEDIAL ACTION PLAN
FIGURE
3

NOTE

1. THE FOLLOWING ON-SITE EXTRACTION AND RECOVERY WELLS WITHDRAW FROM THE INDICATED AQUIFERS:
   - UPPER GLACIAL AND UPPER PORTION OF THE MAGOTHY - RW1RS
   - UPPER AND MIDDLE PORTION OF THE MAGOTHY - RW1RD
   - UPPER PORTION OF THE MAGOTHY - EW1
   - UPPER AND MIDDLE PORTION OF THE MAGOTHY - RW100

LEGEND:

●	BODY OF WATER
●	SITE EXTRACTION AND RECOVERY WELLS
●	REMEDIATION SYSTEM DIFFUSION WELL
●	MUNICIPAL SUPPLY WELL
▲	NON-MUNICIPAL SUPPLY WELL
■	NON-MUNICIPAL IRRIGATION WELL
●	NON-MUNICIPAL DIFFUSION WELL
■	LLOYD AQUIFER MUNICIPAL SUPPLY WELL
✦	LLOYD AQUIFER NON-MUNICIPAL SUPPLY WELL
✦	LLOYD AQUIFER NON-MUNICIPAL DIFFUSION WELL
■	PROPOSED RECOVERY WELL
☐	EXISTING IRM TREATMENT SYSTEM AND COMPOUND
☐	NEW TREATMENT SYSTEM AND COMPOUND
▨	EXISTING OU-1 TREATMENT SYSTEM AREA AND COMPOUND LOCATION
—	GROUNDWATER 30 YEARS MODEL PREDICTED 5 ug/L TVOC CONCENTRATION CONTOUR LINE
—	CURRENT 5 ug/L TVOC CONCENTRATION CONTOUR LINE
—	EXISTING SYSTEM PIPING LAYOUT

0 1600' 3200'

SCALE IN FEET

LOCKHEED MARTIN CORPORATION
FORMER UNISYS FACILITY
Operable Unit 2

ALTERNATIVE 2

NYSDEC
Proposed Remedial Action Plan

FIGURE
4