FINAL

REMEDIAL ACTION OPTIMIZATION CONSTRUCTION COMPLETION REPORT FOR INSTALLATION RESTORATION PROGRAM SITES 4 AND 9

NEW YORK AIR NATIONAL GUARD
(106TH RESCUE WING)
FRANCIS S. GABRESKI INTERNATIONAL AIRPORT

WESTHAMPTON BEACH, NEW YORK

APRIL 2014

THIS PAGE INTENTIONALLY LEFT BLANK.

FINAL

REMEDIAL ACTION OPTIMIZATION CONSTRUCTION COMPLETION REPORT FOR INSTALLATION RESTORATION PROGRAM SITES 4 AND 9

NEW YORK AIR NATIONAL GUARD (106TH RESCUE WING) FRANCIS S. GABRESKI INTERNATIONAL AIRPORT

WESTHAMPTON BEACH, NEW YORK

April 2014

Contract Number 1201W912PQ-13-P-0079

Prepared for
NGB/A7CVR
New York Air National Guard
Westhampton Beach, New York

Prepared by
Leidos
Oak Ridge, Tennessee

LEIDOS

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK.

FIGURES

TABLES

THIS PAGE INTENTIONALLY LEFT BLANK.

ACRONYMS

ANG	Air National Guard
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCR	Construction Completion Report
DERP	Defense Environmental Restoration Program
DoD	U. S. Department of Defense
DPT	direct-push technology
IRP	Installation Restoration Program
µg/L	micrograms per liter
NGB	National Guard Bureau
PVC	polyvinyl chloride
∑	total

THIS PAGE INTENTIONALLY LEFT BLANK.

1.0 INTRODUCTION

The Defense Environmental Restoration Program (DERP) was established in 1984 to promote and coordinate efforts for the evaluation and cleanup of contamination at U. S. Department of Defense (DoD) Installations. In 1987, DERP became part of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and the Superfund Amendments and Reauthorization Act of 1986. The Installation Restoration Program (IRP) was established under DERP to identify, investigate, and clean up contamination at DoD Installations. The IRP is focused on cleanup of contamination associated with past DoD activities to ensure that threats to public health are eliminated and to restore natural resources for future use following applicable, relevant, and appropriate federal, state, and local cleanup standards. Within the Air National Guard (ANG), the National Guard Bureau (NGB) Civil Engineering Directorate, Operations Division, Restoration Branch manages the IRP and related activities.

Leidos has been retained by ANG to provide environmental support services at IRP Sites 4 and 9 during Ramp Improvement Project activities being conducted at Francis S. Gabreski Airport, Westhampton, New York (Figure 1-1).

This Construction Completion Report (CCR) has been prepared under NGB Contract Number 1201W912PQ-13-P-0079 to document field activities conducted in support of providing environmental support services for ramp and taxiway improvements and Contract Number DAHA92-01-D-0008, Delivery Order Number 0198, to document field activities conducted in support of remedial system optimization as described in the Final *Letter Work Plan Addendum #4 for Modifications to the Existing Air Biosparge Treatment System at Installation Restoration Program Sites 4 and 9, New York Air National Guard, Francis S. Gabreski Airport, Westhampton Beach, New York* (ANG 2013). In 2008 through 2013, a biosparge treatment system consisting of an air compressor, biosparge injection wells, and associated piping and other infrastructure was installed to treat petroleum-contaminated groundwater. Performance monitoring has been conducted since that time on a quarterly or semiannual basis. Previous remedial action activities have been conducted and reported under NGB Contract Number DAHA92-01-D-0008, Delivery Order Numbers 0141, 0143, 0166, 0169, 187, 190, and 198.

Figures and tables referenced throughout this document are presented following the main text. The following appendices are also included in this document:

- Appendix A – Permits; and
- Appendix B – Construction Photograph Log.

1.1 PROJECT PURPOSE AND SCOPE

The primary purpose of this CCR is to document field activities conducted from July 12, 2013, through January 13, 2014, associated with providing environmental support services and optimization of the groundwater remediation system at IRP Sites 4 and 9.

Although IRP Sites 4 and 9 are commonly addressed together due to their close proximity and shared historical contamination, impacts from the Ramp Improvement Project are primarily limited to IRP Site 4, which lies on the northern side of Runway 6 (Figure 1-1). Primary components of the environmental support services as documented in the Work Plan Addendum #4 were as follows:

- Protect the existing air biosparge treatment system during construction activities, to the extent practical.

- Install replacement aircraft-rated vaults and supply lines following construction.

- Modify wells and vaults affected by earthwork that resulted in a change in ground surface elevation and/or resulted in necessary structural upgrades.

- Restore system piping and infrastructure to pre-existing conditions for continued operation of the treatment system.

- Restart the sparge compressors and rebalance the system.

Optimization construction activities included the following:

- Install an additional 5 biosparge injection wells using direct-push technology (DPT).
- Install new injection well vaults complete with ball valves, pressure gauges, and flow meters.
- Trench and install new, 1-inch branch lines.

1.2 FIELD PROCEDURES

All field activities associated with the environmental support services and optimization of the biosparge treatment system were conducted in accordance with the procedures outlined in the

- *Final Remedial Action Operations Work Plan Addendum #3* (ANG 2012);
- *Final Letter Work Plan Addendum #4* (ANG 2013); and
- *Final Air National Guard Environmental Restoration Program Investigation Guidance* (ANG 2009).

1.3 DEVIATIONS FROM WORK PLAN

The proposed aircraft-rated vaults were determined to be unnecessary. Based upon the actual footprint of the hardstand expansion, monitoring well SW-7 and biosparge well 67 were verified to be outside of the concrete hardstand and, therefore, did not require placement in the proposed aircraft-rated vaults. Biosparge well AS-66 was relocated 10 ft to the south in order to be outside the footprint of the concrete hardstand, thus also not requiring placement in an aircraft-rated vault. The relocation of AS-66 will not impact performance of this biosparge point.

A new Valve Vault (Valve Vault 15) was installed just north of the biosparge system shed. It is believed the original (2008) 3-inch supply line between Valve Vaults 1 and 2 was cracked or breeched during earthwork fill activities associated with the ramp and taxiway improvement construction, and limited air was being provided to Site 9. Based on the December 2013 sample results, the ANG Project Manager and Leidos agreed that since closure monitoring was being recommended at Site 9, modifications would be made to direct all air flow to Site 4. Valve Vault 15 was installed to direct the air into the newer (2012) 3-inch supply line from the biosparge system shed to bypass the area of damaged supply line between Valve Vaults 1 and 2. The work was performed on January 13, 2014.

1.4 SUBCONTRACTORS

The following subcontractors participated in the environmental support services and optimization construction activities:

- EnviroTrac, Ltd. installed protective barricades and protective measures.
- Environmental Assessment performed trenching, air supply line installations, vault installation, and site restoration activities.
- Environmental Equipment and Supply performed DPT installation of monitoring and biosparge injection wells.

THIS PAGE INTENTIONALLY LEFT BLANK.

2.0 PERMIT, LICENSE, AND CERTIFICATION REQUIREMENTS

2.1 FACILITY PERMIT, LICENSE, AND CERTIFICATION REQUIREMENTS

Digging permits were obtained from the Gabreski Base Civil Engineer and Gabreski Airport Civil Engineer prior to performing the following intrusive activities: trenching of underground air distribution pipelines, excavation for the installation of valve vaults, and installation of biosparge injection wells. Once these locations were staked, the Gabreski Airport electrician reviewed the historical and current record underground utility drawings, inspected the positions, marked known utility lines in the area, and issued the required digging permits.

Permits from Suffolk County and Long Island Power Authority were requested and obtained during initial design of the biosparge treatment system in 2007. A copy of these permits is provided in Appendix A. Optimization work conducted in 2013 was performed under these existing permits through verbal communications and approval.

No other permits, licenses, or certifications were required.

THIS PAGE INTENTIONALLY LEFT BLANK

3.0 ENVIRONMENTAL SUPPORT SERVICES AND REMEDIAL ACTION OPTIMIZATION FIELD ACTIVITIES

Environmental support services and optimization field activities were conducted between July 11, 2013, and January 13, 2014, as detailed below. The final system layout, including all new components, is shown in Figure 3-1.

3.1 SITE PLANNING AND PREPARATION

Preconstruction meetings were held on July 8, 2013, to discuss the installation of protective measures and on October 17, 2013, to discuss environmental system repairs as part of the ramp and taxiway improvements in addition to field optimization activity specifics.

3.2 FIELD ACTIVITIES

Taxiway expansion activities located around Site 4 began in June 2013 and were substantially complete in the areas impacting the sparge system by January 2014. Remedial optimizations were conducted at the same time as ramp and taxiway construction repair activities. The figures presented within this report reflect the planned expansion.

3.2.1 Environmental System Repairs - Ramp and Taxiway Improvements

Protective measures were installed where the existing air biosparge treatment system was within the construction footprint to mitigate damages to the system. The protective measures were as follows:

- Cut existing supply lines within vaults located in the construction footprint to mitigate damage to sparge wells and provide an indication if line was impacted during excavation activities. Approximately 25 locations were cut and capped.

- Cut existing supply lines located in the construction footprint in strategic locations to mitigate additional damages to sparge lines. Approximately five lines were cut to mitigate damages and provide an indication if line was impacted during excavation activities.

- Protect the biosparge vaults and monitoring wells with fence post barricades wrapped with snow fence to mitigate damages. Approximately 35 locations were protected.

- Remove the existing Valve Vault #7 (North of taxiway) located in the centerline of the proposed ditch. The vault contained a 3-inch gate valve that was buried in place. Additional valves installed during the September 2013 improvements provide similar functions.

Biosparge wells and vaults and monitoring wells located within proposed hardstand, ditch, or retention basin areas were moved or lowered as follows:

- Adjusted the depth of biosparge vaults AS-35, AS-55, AS-67, AS-69, and SW-7 to match new ground surface elevations. Existing biosparge vault concrete was removed and vaults were raised or lowered up to 2 ft and reset in concrete.

- Relocated biosparge well AS-66 approximately 20 ft to the southeast, outside the footprint of the new ramp hardstand.

Existing underground piping was removed during earthwork activities associated with the construction. The system was repaired and tested as follows:

- Installed new supply lines between AS-13 and AS-66 to repair damaged polyvinyl chloride (PVC) piping.

- Reconnected the supply line to sparge wells at AS-3, -4, -7, -10, -13, -70, -69, -68, -67, -64, -65, -21, -22, -56, -57, -58, -38, -55, and VV-13.

- Reconnected the line breaks as detailed in the notes on Figure 3-1.

- Pressure tested the lines originating from Valve Vaults 9, 10, and 11 to ensure that all breaks were repaired.

- Removed Valve Vault 7 and installed new supply line between Valve Vaults 7 and 8.

- Restarted the sparge compressors and rebalanced the sparge system.

3.2.2 Optimization Activities

The existing biosparging system was expanded to more effectively treat the remaining total (∑) benzene, toluene, ethylbenzene, and xylene (BTEX) site contamination. Optimizations included:

- Five additional biosparge injection wells were installed within the area of ∑ BTEX contamination greater than 1,000 micrograms per liter (µg/L).

- Flow meters were installed at existing and new biosparge wells to allow controlled delivery and monitoring of air.

- A ball valve and Valve Vault 15 were installed north of the air biosparge shed to divert all flow into the supply line for Site 4 and bypass the cracked line between Valve Vaults 1 and 2 (see inset A of Figure 3-1).

3.2.2.1 Biosparge injection wells

A total of five additional biosparge injection wells (AS-78 through -82) were installed at Site 4 between October 28 and November 1, 2013 (Figure 3-1). The new biosparge injection wells were placed within elevated source areas where ∑ BTEX concentrations exceeded 1,000 µg/L.

Sparge points were constructed of ¾-inch, Schedule 40 PVC and installed via DPT to approximate depths of 41 to 48 ft below ground surface (BGS) [see Figure 3-2] with a 3-ft, 0.010-inch slotted screen. A 3-ft, pre-packed bentonite seal was placed above the screen, and the remaining annulus was filled with sand to approximately 2 ft BGS. Finally, approximately 1 ft of cement was placed above the sand. Construction details for the five new biosparge injection wells are summarized in Table 3-1. The biosparge injection wells were equipped with a pressure gage, a ball valve for flow control, and an acrylic flow meter. Existing biosparge wells AS-57, AS-61, AS-66, and AS-67 were upgraded with acrylic flow meters. New completion designs are presented in inset B of Figure 3-1. All new sparge points include light-traffic-rated vaults with a hinged lid.

3.2.2.2 Supply lines

One-inch-diameter PVC branch supply lines were installed as necessary to connect new biosparge injection wells to the appropriate trunk line. Both the main trunk and branch supply lines were placed approximately 24 inches BGS. All known underground assets were located prior to trenching, and assets potentially impacted by excavation were hand-cleared first. Following compaction of the trench bottom, the PVC pipe was placed. Trench spoils were backfilled to approximately 6 inches BGS, at which point underground magnetic marking tape was placed in the centerline of the trench. A solid utility location wire was also installed along all new sections of pipe. Backfilling was then completed and compacted.

3.2.3 Site Restoration Activities

At the completion of optimization construction activities, the disturbed portions of the site were seeded with an off-the-shelf seed, fertilizer, and mulch patch mix.

3.2.4 Photo-Documentation

Photo-documentation of the optimization activities is included in Appendix B.

THIS PAGE INTENTIONALLY LEFT BLANK.

4.0 REFERENCES

ANG (Air National Guard) 2009. *Air National Guard Environmental Restoration Program Investigation Guidance*, Final, September.

ANG 2012. *Remedial Action Operations Work Plan Addendum #3 for Installation Restoration Program Sites 1, 4, 7, 9, 10, 11, and 12, 106th Rescue Wing, New York Air National Guard, Francis S. Gabreski Airport, Westhampton Beach, New York*, Final, August.

ANG 2013. *Letter Work Plan Addendum #4 for Modifications to the Existing Air Biosparge Treatment System at Installation Restoration Program Sites 4 and 9, New York Air National Guard, Francis S. Gabreski Airport, Westhampton Beach, New York*, Final, July.

THIS PAGE INTENTIONALLY LEFT BLANK.

FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK.

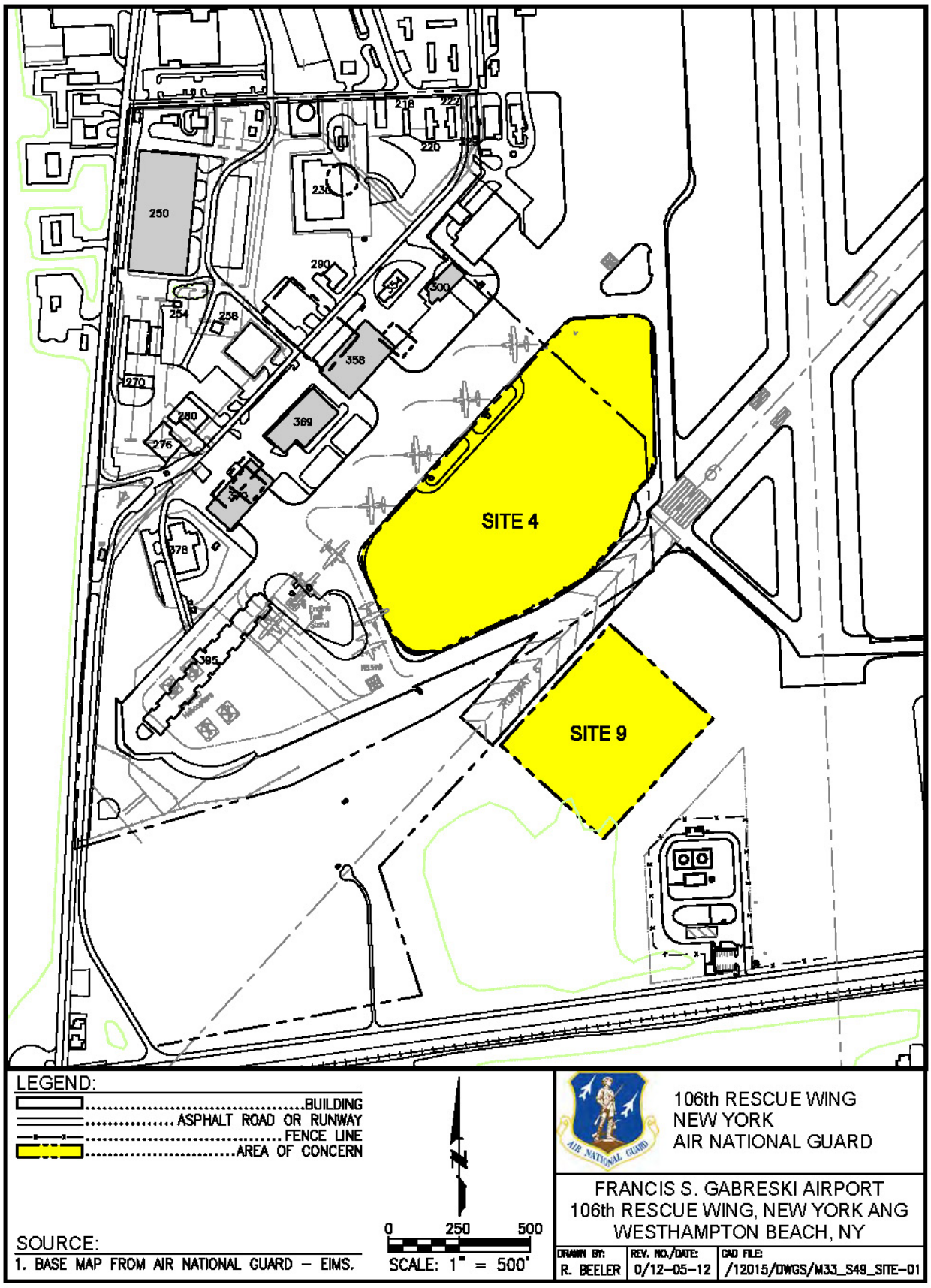


Figure 1-1. IRP Sites 4 and 9 at the 106th Rescue Wing, New York Air National Guard

THIS PAGE INTENTIONALLY LEFT BLANK.

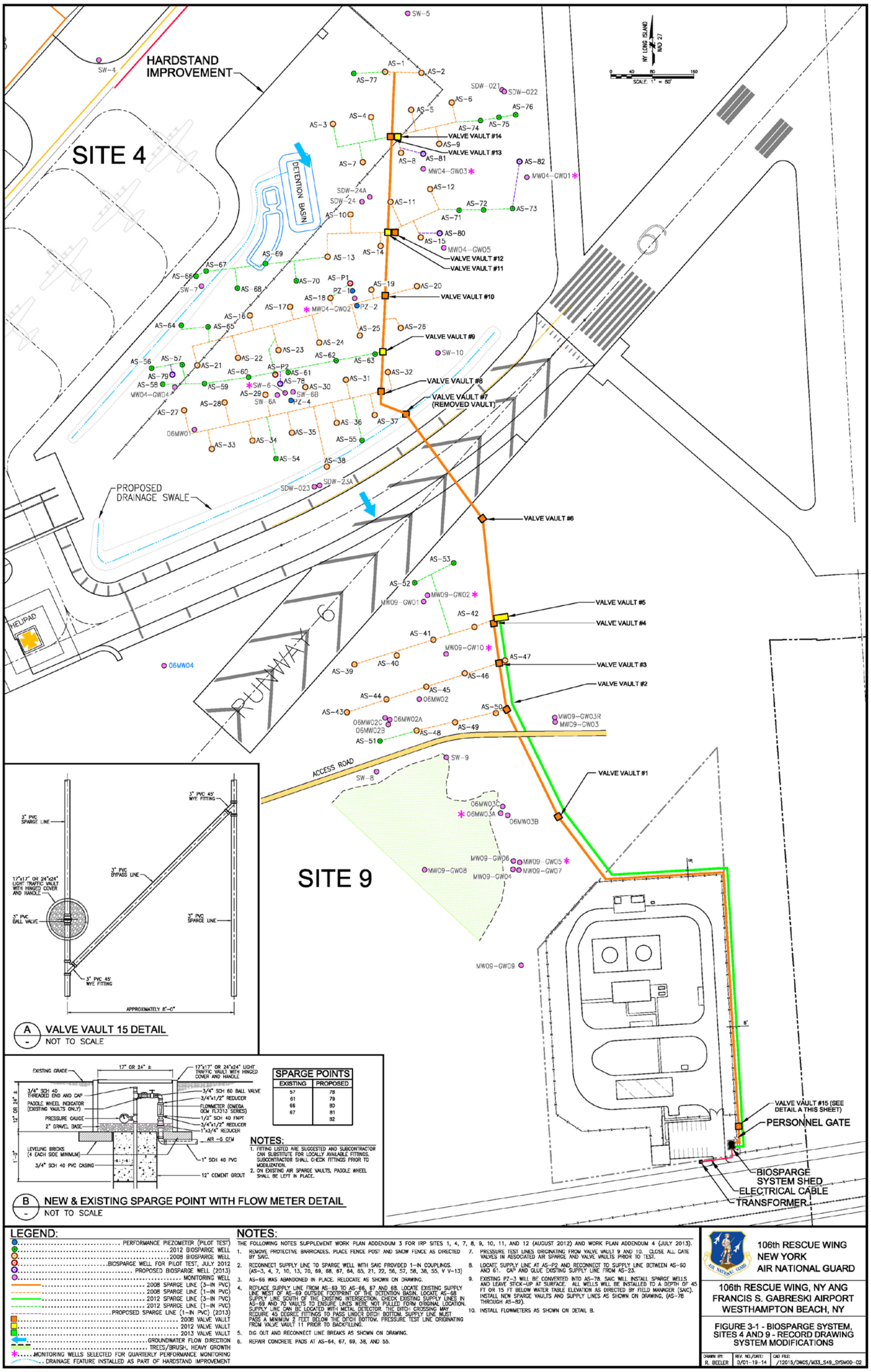


Figure 3-1. Biosparge System Layout, Sites 4 and 9

THIS PAGE INTENTIONALLY LEFT BLANK.

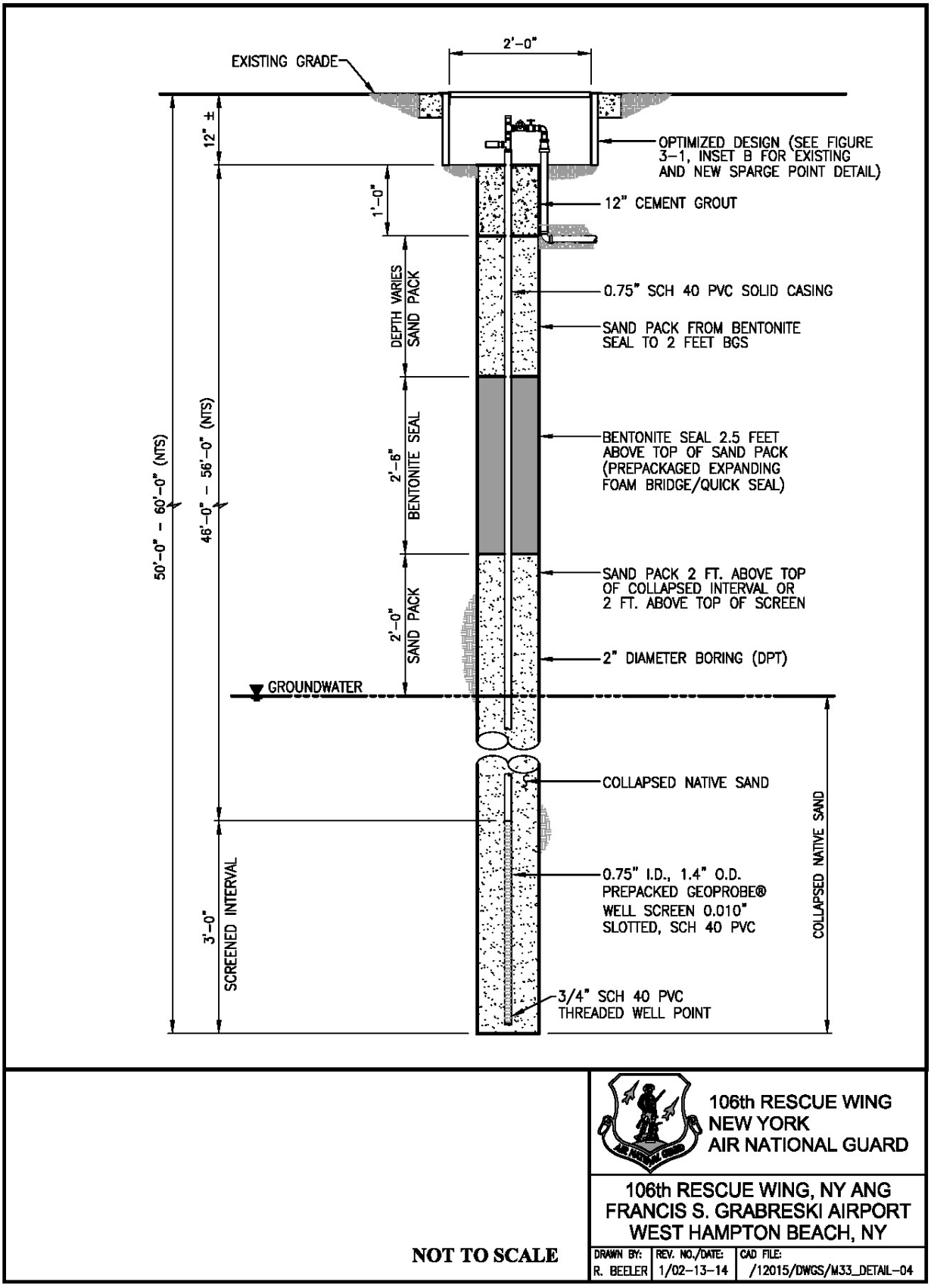


Figure 3-2. Sparge Point Detail Drawing

THIS PAGE INTENTIONALLY LEFT BLANK.

TABLES

THIS PAGE INTENTIONALLY LEFT BLANK.

Table 3-1. Air Biosparging Well Construction Summary

Air Biosparging Point	Installation Date	Total Depth (ft BGS)	Screened Interval (ft BGS)	Bentonite Seal Depth (ft BGS)	Sand Backfill Depth (ft BGS)	Grout Seal Depth (ft BGS)
AS-78	10/23/13	44	44 – 41	41 – 38	38 – 3	3 – 2
AS-79	10/23/13	45	45 – 42	42 – 39	39 – 3	3 – 2
AS-80	10/23/13	43	43 – 40	40 – 37	37 – 3	3 – 2
AS-81	10/23/13	41	41 – 38	41 – 38	38 – 3	3 – 2
AS-82	10/23/13	48	48 – 45	45 – 42	42 – 3	3 – 2

BGS = Below ground surface.

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX A – PERMITS

THIS PAGE INTENTIONALLY LEFT BLANK.

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

April 9, 2007

Jim Morgo, Commissioner
Economic Development and Workforce Housing
H. Lee Dennison Building
100 Veterans Memorial Highway
Hauppauge, New York 11788

Re: Building Permit No. 63-ANG-2007-1
Installation of Air Sparge System for Remediation of Ground Water
Francis S. Gabreski Airport, Westhampton Beach

Dear Commissioner Morgo:

I am in receipt of the permit application for the above noted project. The Remedial Action Plan has been reviewed and I am issuing a building permit, inspection schedule and a stamped, approved copy of the Remedial Action Plan for your use.

Please contact us at least two weeks prior to the start of construction so that we can perform all required inspections.

Thank you for your cooperation.

Very truly yours,

Thomas LaGuardia, P.E.
Chief Engineer

TL/MVM/dk
attachments
cc: Gilbert Anderson, P.E., Commissioner
Louis Calderone, Deputy Commissioner
Tedd Godek, R.A., County Architect
Warren Horst, Chief Fire Marshal
Anthony Ceglio, Airport Manager
James Mangelli, Special Projects Supervisor, DPW
Martin McMorrow, P.E., Sr. Mechanical Engineer, DPW
Neil Toomb, Economic Development

H:\BDC\Building Permits\BUILDING PERMITS\2007 BUILDING PERMITS\63-ANG-2007-1\L.Morgo cover w permit 07-3-21.doc

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

Building Permit Number: 63-ANG-2007-1 **Date Issued: April 9, 2007**

This notice, which must be prominently displayed on the property or premises to which it pertains, indicates that a

PERMIT

Has been issued to:	**Economic Development and Workforce Housing** **H. Lee Dennison Building** **100 Veterans Highway** **Hauppauge, New York 11788**
Permitting:	**Installation of an air sparge system for remediation of ground water contaminated with petroleum related products**
Location:	**Francis S. Gabreski Airport, Westhampton Beach**
Building No.	**Air National Guard, Petroleum Spill Sites 4 & 9**
Special Conditions:	**None**

All work shall be executed in strict compliance with the permit application, approved plans, the Building Codes of New York State, and all other applicable laws, rules and regulations. The permit does not constitute authority to build in violation of any federal, state or local law or other rule or regulation.

Attached, please find an inspection schedule for the job. No work shall proceed beyond these points until these inspections have been performed and approved by the Department of Public Works or the appropriate inspection agency. Please contact this office at 631-852-4391 at least two weeks before construction commences.

Permission is hereby granted to proceed with the work as set forth in the plans and specifications now on file in this Department. Any amendments made to the original plans or specifications must be submitted for approval.

Building Official _____
Thomas LaGuardia, P.E. Chief Engineer

H:\BDC\Building Permits\BUILDING PERMITS\2007 BUILDING PERMITS\63-ANG-2007-1\BUILDING PERMIT.doc

335 YAPHANK AVENUE ■ YAPHANK, N.Y. 11980 ■ (631) 852-4010 FAX (631) 852-4150

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

BUILDING PERMIT
INSPECTION SCHEDULE

Building Permit No.: 63-ANG-2007-1

Name of Project: Installation of an air sparge system for remediation of ground water contaminated with petroleum related products.

Location: Francis S. Gabreski Airport, Westhampton Beach, NY
Air National Guard, Petroleum Spill Sites 4 & 9

No work shall proceed beyond these points until all tests & inspections have been performed and approved by the Department of Public Works or the appropriate inspection agency.

Tests and inspections shall include but not be limited to the following:

- Work site prior to issuance of permit
- Pre-Excavation Inspection
- Follow LIPA inspection requirements for incoming service, transformer and meter.
- Electrical Code – Wiring inspection (from electrical meter to blower) prior to back-fill and Final with Underwriters Certificate.
- Final Inspection

335 YAPHANK AVENUE ■ YAPHANK, N.Y. 11980 ■ (631) 852-4226
FAX (631) 852-4246

LIPA
Long Island Power Authority

117 Doctors Path
Riverhead, NY 11901

September 25, 2006

Mr. Kevin Heaphy
47 Marlborough Rd.
West Hempstead, NY 11552

Re: Req#T100669140
Gabreski Airport 106th Rescue Wing Remediation Project
County Rd. 105, Westhampton Beach

Dear Mr. Heaphy:

We have initiated our survey to supply electric service to the subject project. It is our understanding that your plans call for the installation of a 400 ampere, three phase, four-wire wye electric service in the building. Connected load will be approximately 25 kW. Please note that the electric service characteristics for this service will be four-wire, three-phase wye with a nominal voltage of 277/480 volts.

To confirm the breakdown of the connected load, we are designing our electric supply based on the following:

-	Compressor	25 kW
	Total	25 kW

LIPA will provide 277/480 volt secondary metered service subject to the following specifications:

WORK BY ELECTRICAL CONTRACTOR

A. Provide and install the transformer pad in accordance with the following construction standards (latest revision attached):

CS# 5362 - Transformer Installation
CS# 5369 - Protection for Pad-Mount Equipment
CS# 5370 - Transformer Pad Location

All Construction Standards must be adhered to and final pad location should be verified with LIPA before installation. Should the pad mount transformer be located in an area subject to vehicular traffic, barrier protection must be installed according to CS# 5369. Pad mounted transformers will not be energized until barrier protection is installed in cases where deemed necessary.

B. Provide and install three (3) 2/C #2 copper or aluminum, jacketed concentric neutral, 15 kV, shielded, cross-linked polyethylene insulated cables, from the transformer pad, to the proposed Load Break Cable Tap Assembly enclosure (LBCTA) on the south side of the property.

The concentric neutral cable must be installed in accordance with the following LIPA's guidelines:

1. 220 mil insulation thickness must be used.

2. Cable is required to have a 50 mil semiconducting jacket extruded to fill over the concentric neutral, yet shall be free stripping from the insulation shielding.

3. The depth of burial must be 30 inches (assuming direct-bury).

4. If the cable crosses under a sidewalk, roadway or driveway, the cable must be installed in an approved conduit from the property line to a point near the base of the proposed LBCTA.

C. As noted in #3, the cable on private property can be direct buried. If the entire cable run from transformer to the cable tap is to be in conduit, a property line pullbox must be installed outside the cable tap box. Refer to LIPA's CS# 6533 and 6539 ("TS" Box standards) for details.

D. Provide and install all secondary wiring and perform all wiring within the transformer pad, including the load break elbow connections to the primary bushings and hylug connections to the secondary spade terminals. All required bonding and grounding hardware is to be provided and installed by the contractor. Refer to LIPA's CS# 5362 for additional details.

E. Primary elbows will be delivered with the pad mounted transformer. The contractor will wire the elbows in accordance with LIPA's CS# 3722 Load Break Elbow Terminator. **Follow the LIPA Construction Standard, in conjunction with the manufacturer's cutback length instructions, as explained in step 6 on page 2 of 8 of LIPA's CS# 3722.** Surge arrester elbows will also be delivered with the pad mounted transformer. The contractor will wire the surge arrester elbows in accordance with LIPA's CS# 4028 Surge Protection 3 Phase Radial Only.

F. Install metering facilities in accordance with LIPA's Specifications and Requirements for Electric Installations.

G. It will be the responsibility of the contractor to obtain any applicable permits prior to the installation of any facilities on public property or right-of-way.

WORK BY LIPA:

A. Furnish and deliver on the pad: One pad-mounted, metal-clad transformer complete with locks, three load break elbows with bushings, three elbow lightning arresters with bushings, and one copper hot line clamp.

B. Install meter and wire current transformer. LIPA will own and maintain the pad mount transformer, metering current transformers and the meter. All other electrical facilities to the service location are owned and maintained by the customer.

SERVICE AT 480Y/277 VOLTS

A. At the higher secondary distribution voltage of 480Y/277 volts, arcing faults do not tend to burn clear as readily as the lower secondary distribution voltage of 208Y/120 volts. It is therefore, important to design and construct 480Y/277 volt secondary systems in such a manner as to minimize the occurrence of electrical failures and to incorporate protective devices for sending and rapidly clearing arcing faults in order to minimize equipment damage, safeguard against injury to personnel and maintain service continuity. For these reasons, LIPA has established certain specific design standards, and the National Electric Code requires ground fault protection of equipment for any service disconnecting means rated 1000 amperes or more (Art. 230-95, 1999 N.E.C.).

LIPA recommends ground fault protection on all 480Y/277-volt service.

B. Services at 480Y/277 volts shall be limited to supplying one (1) meter or one (1) main disconnect switch.

C. For multiple meter installation, ground fault protection will be required at the main disconnect switch regardless of switch size. Meter pans to be isolated neutral type if GFI is on line side of meter.

D. All secondary cables on line and load sides of the metering equipment including current carrying neutral conductors shall be insulated, 600 volt Type "USE-2" or "XHHW-2".

E. 480Y/277 volt service above 400 amperes shall only be supplied from pad-mounted or underground transformers. In overhead distribution areas, services up to 400 amperes may be supplied from pole mounted overhead transformers. Check with LIPA before proceeding with overhead service installations.

F. The maximum single service connection shall not exceed 2500 amperes. Multiple service entrances from separate pad mounted transformers are permitted for higher rated services.

G. 480Y/277 volt service up to and including 800 amperes, may be installed using integrated phase construction. Isolated phase construction is recommended on all 480Y/277 volt services where future plans call for the eventual increase in service size to above 800 amperes.

H. For services over 800 amperes, all secondary conductor runs between the transformer enclosure and the service entrance equipment shall be run in an isolated phase configuration in non-metallic conduit. Because of poor voltage regulation, isolated phase construction runs in excess of 50 feet are not generally permitted and when necessary, must be reviewed with LIPA for special consideration.

H. Services at 480Y/277 volts shall be in accordance with LIPA Specifications and Requirements for Electric Installations, section 6.0 (January 2000 revision).

ELECTRIC MOTOR REQUIREMENTS

Please refer to Section 9 of LIPA's Specifications and Requirements for Electrical Installation in which we outline the permissible starting currents for various size motors. If your particular equipment exceeds the value of inrush specified for this service, please contact the undersigned.

For your convenience, it is recommended that all motors and special apparatus be equipped with suitable undervoltage time delay tripping mechanisms for protection against sustained undervoltage and to avoid automatic interruption of equipment as a result of momentary voltage disturbances. All three-phase motors should also be equipped with suitable protection to prevent single-phase operation and improper direction of rotation and excessive heating.

GENERAL REQUIREMENTS

The New York State Department of Labor has enacted rules for notification when an excavator plans to use mechanical equipment on public or private property.

Pursuant to Industrial Code Rule 53, which became effective April 1, 1975, the excavator must notify each operator of existing underground facilities (such as Verizon, Water Co., Cablevision, etc) that are within 15 feet of the proposed work area. This notice must be given within 10 days prior to the planned date of excavation so that facilities can be marked in the field to avoid damage.

You are being advised that LIPA must comply with these requirements and you should take into account the additional lead time this procedure will take in order to meet your service need date.

To notify both LIPA and Verizon for mark out of underground facilities or if you require further information regarding "Rule 53", please call 1-800-272-4480.

Arrangements will be made to connect the new service when the electrical contractor has completed the installation in accordance with our Specifications and Requirements for Electric Installations and has presented to this Company a certificate, from an approved electrical inspection agency or other authority having jurisdiction, approving the wiring of the service entrance equipment.

As you develop a construction schedule for this project, it is very important to advise us of your anticipated service need date, so that LIPA can plan and schedule our installation. Please keep us apprised of any scheduling developments so that we can coordinate our efforts with your construction activity.

Please be advised that there may be customer charges associated with this project. All charges are based upon LIPA's "Tariff for Electric Service". Any applicable tariff change becomes part of this agreement and may affect your bill. LIPA reserves the right to rebill in accordance with any such change.

The electrical specifications and general terms and conditions as outlined in this letter are subject to change as dictated by field construction, status of our electric facilities and revision of our construction standards. The latest revisions should always be used. If the electrical installation has not been started within ninety (90) days of the date of this letter, it will be the responsibility of the electrician/builder to contact this office and confirm these specifications.

APPLICATION AND DEPOSIT REQUIREMENTS

We require a deposit for new accounts equivalent to two months estimated billing. Please forward your remittance in the amount of $750.00 for the electric deposit required. **Charges in excess of $1,000.00 must be paid by Certified or Cashiers check.**

Before service can be established to the building, the attached application must be completed and signed by an authorized representative of the applicant and returned to this office.

If you have any questions regarding this installation, kindly contact Mr. Bob Delaney at (631) 548-7043.

Very truly yours,

Steven P. Aylward
Design Engineer
Electric Design & Construction Department
Eastern Suffolk Division

SPA/rh

APPENDIX B – CONSTRUCTION PHOTOGRAPH LOG

THIS PAGE INTENTIONALLY LEFT BLANK.

1. Valve Vault Protective Measure Example

2. Valve Vault Protective Measure Example

3. Valve Vault Protective Measure Example

4. Valve Vault Protective Measure Example

5. Monitoring Well Protective Measure Example

6. Monitoring Well Protective Measure Example

7. PVC Piping Protective Measure Example

8. Trench to New AS-78 Sparge Well

9. Trench to New AS-78 Sparge Well

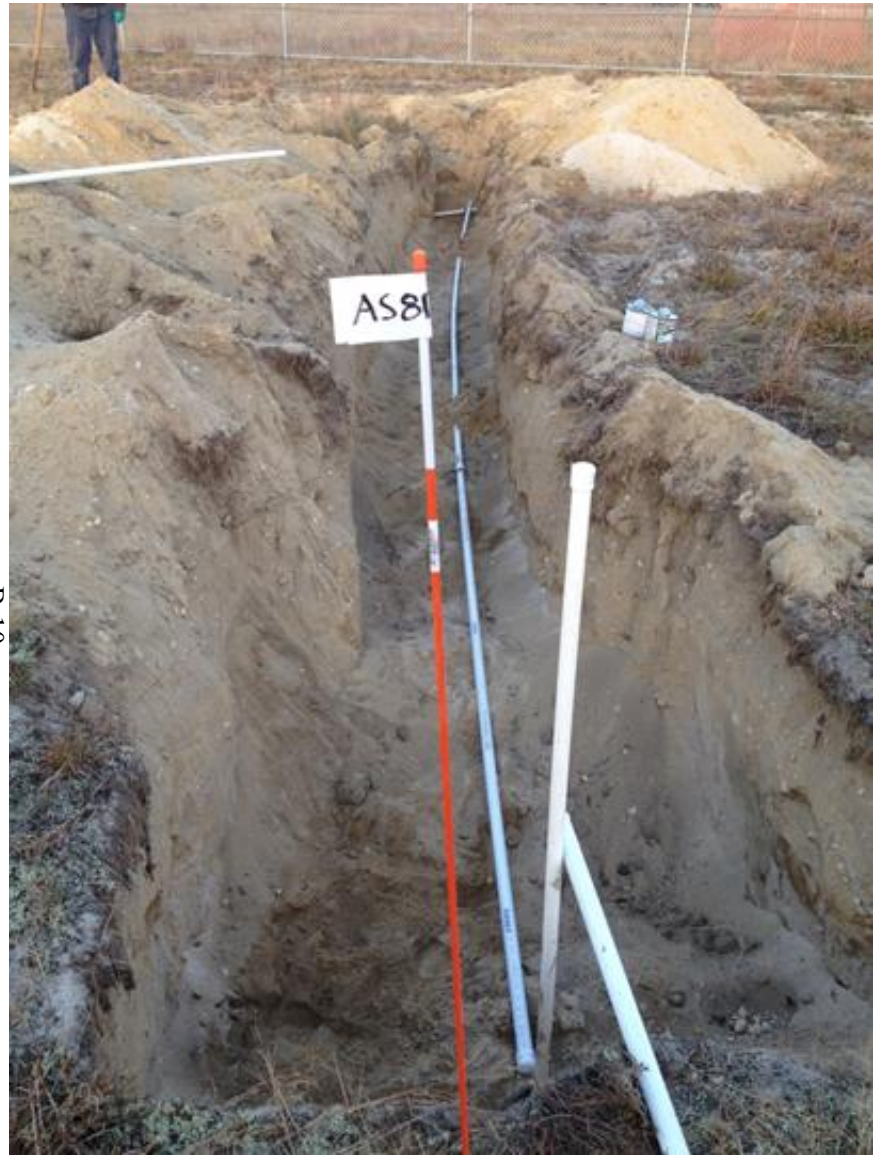
10. Trench to New AS-81 Sparge Well

11. Trench to New AS-81 Sparge Well

12. Trench to New AS-P2 Sparge Well

13. Trench to New AS-P2 Sparge Well

14. Utility Locate Wire Installation



15. PVC Piping Installation to AS-81 Sparge Well

16. PVC Piping Installation at AS-81 Sparge Well

17. PVC Piping Installation to AS-78 Sparge Well

18. PVC Piping Installation at AS-P2 Sparge Well

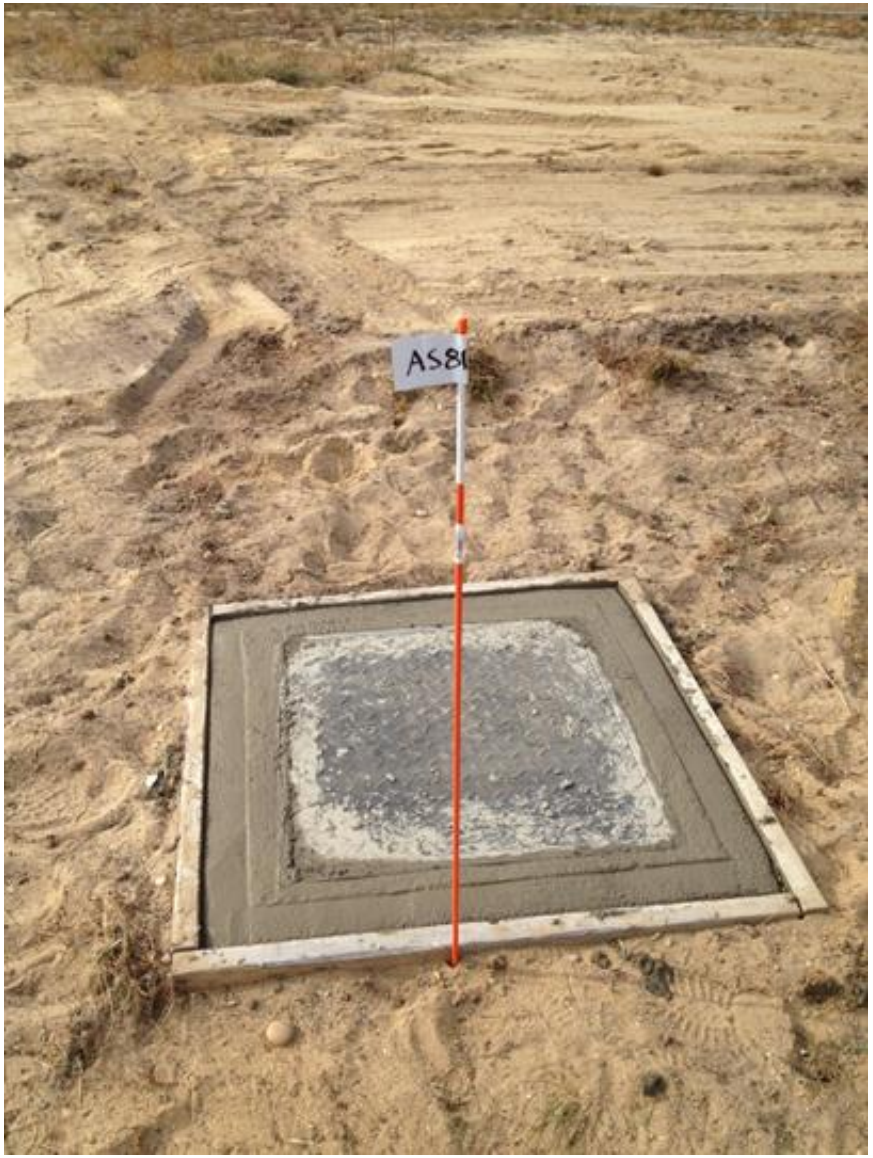
19. PVC Piping Installation to AS-78 and AS-P2 Sparge Well

20. PVC Piping Installation at AS-78 Sparge Well

21. Vault Placement at AS-78 Sparge Well

22. Concrete Placement at AS-78 Sparge Well

23. Utility Locate Wire Installation at AS-81



24. Concrete Placement at AS-81 Sparge Well

25. PVC Piping Installation to AS-67 Sparge Well

26. PVC Piping Installation to AS-66 and AS-67 Sparge Well

27. Vault Placement at AS-66 Sparge Well

28. Vault Placement at AS-66 Sparge Well

29. Vault Placement at AS-66 Sparge Well

30. Utility Locate Wire Installation at AS-66

THIS PAGE INTENTIONALLY LEFT BLANK.